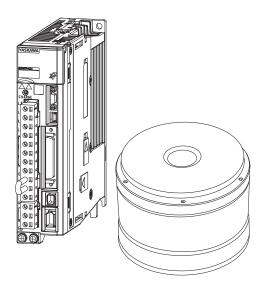
## **YASKAWA**

Σ-7-Series AC Servo Drive
Σ-7S SERVOPACK with
FT/EX Specification
for Application with Special Motor,
SGM7D Motor
Product Manual

Model: SGD7S-DDDDDDDDDDF82, -DDDD00ADDDF83





Basic Information on SERVOPACKs

SERVOPACK Ratings and Specifications

Maintenance

Parameter Lists

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## **About this Manual**

This manual describes the SGM7D motor drive application option for the  $\Sigma$ -7-Series AC Servo Drive  $\Sigma$ -7S SERVOPACKs for special motors.

Read and understand this manual to ensure correct usage of the  $\Sigma$ -7-Series AC Servo Drives. Keep this manual in a safe place so that it can be referred to whenever necessary.

## **Outline of Manual**

The contents of the chapters of this manual are described in the following table.

When you drive an SGM7D motor with a  $\Sigma$ -7-Series AC Servo Drive  $\Sigma$ -7S SERVOPACK for application with special motors, use this manual together with the relevant  $\Sigma$ -7-Series product manual.

#### ◆ FT82 SERVOPACKs

ltem		This Man- ual	Σ-7S SERVO- PACK with Analog Voltage/Pulse Train References Prod- uct Manual (Man- ual No.: SIEP S800001 26)	Σ-7S SERVO- PACK with MECHATROLINK- II Communica- tions References Product Manual (Manual No.: SIEP S800001 27)	Σ-7S SERVO- PACK with MECHATROLINK- III Communica- tions References Product Manual (Manual No.: SIEP S800001 28)	Σ-7S SERVO- PACK Command Option Attachable Type with INDEXER Module Product Manual (Manual No.: SIEP S800001 64)
	The $\Sigma$ -7 Series	_	1.1	1.1	1.1	1.1
	Product Introduction	1.1	_	_	-	-
	Interpreting the Nameplates	_	1.2	1.2	1.2	1.3
	Part Names	-	1.3	1.3	1.3	1.4
Basic	Model Designations	1.2	_	-	-	_
Informa- tion on SERVO-	Combinations of SERVOPACKs and Servomotors	1.3	_	_	-	_
PACKs	Functions	_	1.6	1.6	1.6	1.8
	SigmaWin+	1.5	_	_	-	_
	Combining the SERVO- PACKs with MP-Series Machine Controllers and the MPE720 Engi- neering Tool	1.6	-	-	ı	-
	Ratings	2.1	_	_	-	_
	SERVOPACK Overload Protection Characteristics	_	2.1.2	2.1.2	2.1.2	2.1.2
Selecting	Specifications	2.3.1	_	_	_	_
a SERVO-	Block Diagrams	-	2.2	2.2	2.2	2.2
PACK	External Dimensions	-	2.3	2.3	2.3	2.3
	Examples of Standard Connections between SERVOPACKs and Peripheral Devices	_	2.4	2.4	2.4	2.4
SERVOPA	CK Installation	-	Chapter 3	Chapter 3	Chapter 3	Chapter 3
Wiring and SERVOPAGE	l Connecting CKs	-	Chapter 4	Chapter 4	Chapter 4	Chapter 4
Continued on next page.						

Continued from previous pa				from previous page.		
ltem		This Man- ual	Σ-7S SERVO- PACK with Analog Voltage/Pulse Train References Prod- uct Manual (Man- ual No.: SIEP S800001 26)	Σ-7S SERVO- PACK with MECHATROLINK- II Communica- tions References Product Manual (Manual No.: SIEP S800001 27)	Σ-7S SERVO- PACK with MECHATROLINK- III Communica- tions References Product Manual (Manual No.: SIEP S800001 28)	Σ-7S SERVO- PACK Command Option Attachable Type with INDEXER Module Product Manual (Manual No.: SIEP S800001 64)
	ctions That Require	_	Chapter 5	Chapter 5	Chapter 5	Chapter 5
	efore Operation		·	·		· ·
	n Functions ation and Actual	-	Chapter 6	Chapter 6	Chapter 6	Chapter 6
Operation		-	Chapter 7	Chapter 7	Chapter 7	Chapter 7
Tuning		-	Chapter 8	Chapter 8	Chapter 8	Chapter 8
Monitoring	g	-	Chapter 9	Chapter 9	Chapter 9	Chapter 9
Fully-Clos	ed Loop Control	_	Chapter 10	Chapter 10	Chapter 10	Chapter 10
Safety Fu		-	Chapter 11	Chapter 11	Chapter 11	Chapter 11
	or the INDEXER Module	_	-	-	-	Chapter 12
	with Digital I/O	-	-	_	-	Chapter 13
	s with Serial I Communications	-	-	-	-	Chapter 14
	Inspections and Part Replacement	-	12.1	12.1	12.1	15.1
	Alarm Displays	3.1.1, 3.2.1, 3.3.1, 3.4.1	-	-	_	-
	List of Alarms	3.1.2, 3.2.2, 3.3.2, 3.4.2	-	-	_	-
	Troubleshooting Alarms	3.1.3, 3.2.3, 3.3.3, 3.4.3	-	-	-	-
	INDEXER Module Alarm Displays and Troubleshooting	3.4.4	-	-	-	-
	Resetting Alarms	_	12.2.3	12.2.3	12.2.3	15.2.4
Mainte-	Displaying the Alarm History	-	12.2.4	12.2.4	12.2.4	15.2.5
nance	Clearing the Alarm History	_	12.2.5	12.2.5	12.2.5	15.2.6
	Resetting Alarms Detected in Option Modules	_	12.2.6	12.2.6	12.2.6	15.2.7
	Resetting Motor Type Alarms	_	12.2.7	12.2.7	12.2.7	15.2.8
	Warning Displays	3.1.4, 3.2.4, 3.3.4, 3.4.5	-	-	_	-
	List of Warnings	3.1.5, 3.2.5, 3.3.5, 3.4.6	-	-	-	-
	Troubleshooting Warnings	3.1.6, 3.2.6, 3.3.6, 3.4.7	_	-	_	-
	INDEXER Module Error Displays and Troubleshooting	3.4.8	_	_	_	-

	ltem	This Man- ual	Σ-7S SERVO- PACK with Analog Voltage/Pulse Train References Prod- uct Manual (Man- ual No.: SIEP S800001 26)	Σ-7S SERVO- PACK with MECHATROLINK- II Communica- tions References Product Manual (Manual No.: SIEP S800001 27)	Σ-7S SERVO- PACK with MECHATROLINK- III Communica- tions References Product Manual (Manual No.: SIEP S800001 28)	Σ-7S SERVO- PACK Command Option Attachable Type with INDEXER Module Product Manual (Manual No.: SIEP S800001 64)
Mainta	Monitoring Communications Data during Alarms or Warnings	-	-	12.4	12.4	-
Mainte- nance	Troubleshooting Based on the Operation and Conditions of the Servomotor	3.1.7, 3.2.7, 3.3.7, 3.4.9	_	_	_	_
	plays and Panel Procedures	_	Chapter 13	-	-	_
	Parameter Configuration	-	-	-	-	16.1
List of Parame-	Parameter Lists	4.1, 4.2, 4.3.1, 4.4	-	-	-	-
ters	List of MECHATROLINK-III Common Parameters	4.3.2	-	_	-	-
	Parameter Recording Table	_	14.2	13.2	13.3	16.3
Appendix		_	Chapter 15	Chapter 14	Chapter 14	Chapter 17

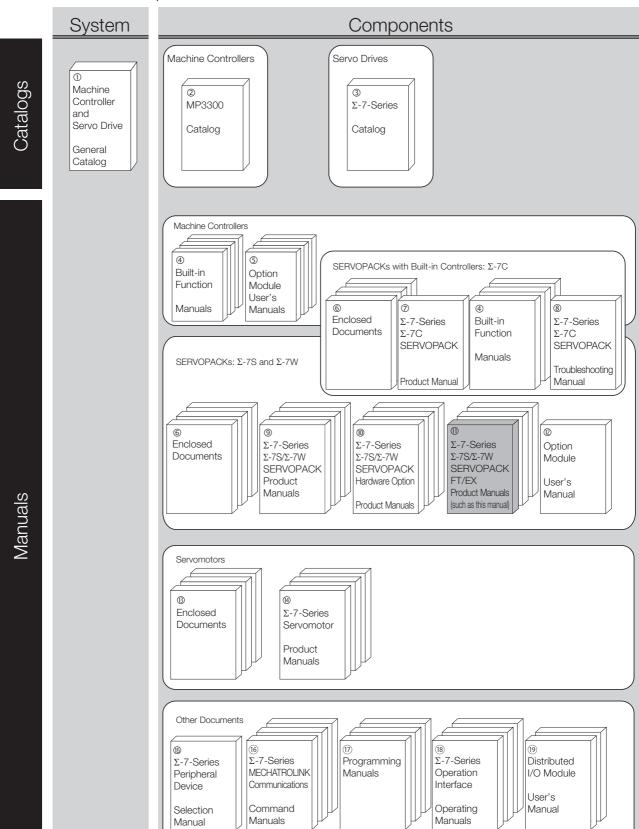
#### ♦ FT83 SERVOPACKs

	Item	This Man- ual	Σ-7S SERVOPACK with Analog Voltage/Pulse Train References Product Manual (Manual No.: SIEP S800001 26)	Σ-7S SERVOPACK with FT/EX Specification for Indexing Applications Product Manual (Manual No.: SIEP S800001 84)
	The $\Sigma$ -7 Series	_	1.1	_
	Product Introduction	1.1	_	_
	Interpreting the Nameplates	_	1.2	-
	Part Names	_	1.3	_
Basic	Model Designations	1.2	_	_
Information on SERVOPACKs	Combinations of SERVOPACKs and Servomotors	1.3	-	-
	Functions	_	1.6	_
	SigmaWin+	1.5	-	-
	Combining the SERVOPACKs with MP-Series Machine Controllers and the MPE720 Engineering Tool	1.6	-	-
	Ratings	2.1	-	-
	SERVOPACK Overload Protection Characteristics	-	-	2.2
Selecting a	Specifications	2.3.2	-	-
SERVOPACK	Block Diagrams	_	2.2	-
22.1.0.7.010	External Dimensions	-	2.3	-
	Examples of Standard Connections between SERVOPACKs and Peripheral Devices	-	2.4	-
SERVOPACK Ins	tallation	_	Chapter 3	-
	Wiring Precautions	-	4.1	-
	Basic Wiring Diagrams	_	-	3.1
Wiring and	Wiring the Power Supply to the SERVOPACK	-	4.3	-
Connecting SERVOPACKs	Wiring Servomotors	-	4.4	-
SERVOFACIOS	I/O Signal Connections	_	-	3.2
	Connecting Safety Function Signals	_	4.6	_
	Connecting the Other Connectors	_	4.7	-
Basic Functions	That Require Setting before Operation	_	Chapter 5	-
Application Fund	etions	_	Chapter 6	-
	Flow of Trial Operation	_	7.1	-
	Inspections and Confirmations before Trial Operation	-	7.2	-
	Trial Operation of Servomotor without a Load	-	7.3	-
Trial Operation	Trial Operation Example	-	-	4.1
and Actual Operation	Trial Operation from the Host Controller for the Servomotor without a Load	_	7.4	-
	Trial Operation with the Servomotor Connected to the Machine	-	7.5	_
	Convenient Function to Use during Trial Operation	-	7.6	-
Tuning		_	Chapter 8	_
	Monitoring Product Information	_	9.1	_
	Monitoring SERVOPACK Status	_	_	5.1
Monitoring	Monitoring Machine Operation Status and Signal Waveforms	-	-	5.2
	Monitoring Product Life	_	9.4	_
Fully-Closed Loc	pp Control	_	Chapter 10	_
Safety Function		-	Chapter 11	_
				Continued on next page.

	Item	This Man- ual	Σ-7S SERVOPACK with Analog Voltage/Pulse Train References Product Manual (Manual No.: SIEP S800001 26)	Σ-7S SERVOPACK with FT/EX Specification for Indexing Applications Product Manual (Manual No.: SIEP S800001 84)
	Control Method Selection	_	_	6.1
Setting	I/O Signal Allocations	_	-	6.2
	Moving Mode and Coordinate Settings	_	-	6.3
	Settings for References	_	-	6.4
	Origin Settings	_	-	6.5
	Operation Functions	_	-	7.1
0 " "	Origin Return	-	-	7.2
Operation with Digital I/O	Program Table Operation	_	-	7.3
Digital I/O	Jog Speed Table Operation	_	-	7.4
	ZONE Outputs	-	-	7.5
	Inspections and Part Replacement	_	12.1	-
	Alarm Displays	3.5.1	-	-
	List of Alarms	3.5.2	-	-
	Troubleshooting Alarms	3.5.3	-	-
	INDEXER Module Alarm Displays and Troubleshooting	3.5.4	-	-
	Resetting Alarms	_	12.2.3	-
	Displaying the Alarm History	_	12.2.4	-
	Clearing the Alarm History	_	12.2.5	-
Maintenance	Resetting Alarms Detected in Option Modules	-	12.2.6	-
	Resetting Motor Type Alarms	-	12.2.7	-
	Warning Displays	3.5.5	-	-
	List of Warnings	3.5.6	-	-
	Troubleshooting Warnings	3.5.7	-	-
	INDEXER Warning Displays and Troubleshooting	3.5.8	-	-
	Troubleshooting Based on the Operation and Conditions of the Servomotor		-	-
Panel Displays a	nd Panel Operator Procedures	_	Chapter 13	-
1:1. (5	Parameter Configurations	_	-	9.1
List of Parame- ters	List of Parameters	4.5	-	-
1013	Parameter Recording Table	-	14.2	-
	Examples of Connections to Host Controllers	-	15.1	-
Appendix	Corresponding SERVOPACK and SigmaWin+ Function Names	-	-	10.1
	Operation of Digital Operator	-	-	10.2

## **Related Documents**

The relationships between the documents that are related to the Servo Drives are shown in the following figure. The numbers in the figure correspond to the numbers in the table on the following pages. Refer to these documents as required.



Classification	Document Name	Document No.	Description
Machine Controller and Servo Drive General Catalog	Machine Controller and AC Servo Drive Solutions Catalog	KAEP S800001 22	Describes the features and application examples for combinations of MP3000-Series Machine Controllers and $\Sigma$ -7-Series AC Servo Drives.
② MP3300 Catalog	Machine Controller MP3300	KAEP C880725 03	Provides detailed information on MP3300 Machine Controllers, including features and specifications.
③ Σ-7-Series Catalog	AC Servo Drives Σ-7 Series	KAEP S800001 23	Provides detailed information on $\Sigma$ -7-Series AC Servo Drives, including features and specifications.
Built-in Function Manuals	Σ-7-Series AC Servo Drive Σ-7C SERVOPACK Motion Control User's Manual	SIEP S800002 03	Provides detailed information on the specifications, system configuration, and application methods of the Motion Control Function Modules (SVD, SVC4, and SVR4) for $\Sigma$ -7-Series $\Sigma$ -7C SERVOPACKs.
	Machine Controller MP3000 Series Communications User's Manual	SIEP C880725 12	Provides detailed information on the specifications, system configuration, and communications connection methods for the Ethernet communications that are used with MP3000-Series Machine Controllers and $\Sigma$ -7-Series $\Sigma$ -7C SERVO-PACKs.
	Machine Controller MP2000 Series Communication Module User's Manual	SIEP C880700 04	
	Machine Controller MP2000 Series 262IF-01 FL-net Communication Module User's Manual	SIEP C880700 36	Provide detailed information on the specifications and communications methods for the Communications Modules that can be mounted to MP3000-Series Machine Controllers and $\Sigma$ -7-Series $\Sigma$ -7C
⑤ Option Module User's Manuals	Machine Controller MP2000 Series 263IF-01 EtherNet/IP Communication Module User's Manual	SIEP C880700 39	SERVOPACKs.
	Machine Controller MP2000 Series I/O Module User's Manual	SIEP C880700 34	Dunido detello diefermostico on the
	Machine Controller MP2000 Series Analog Input/Analog Output Module Al-01/AO-01 User's Manual	SIEP C880700 26	Provide detailed information on the specifications and communications methods for the I/O Modules that can be mounted to MP3000-Series Machine Controllers and Σ-7-Series Σ-7C SERVOPACKs.
	Machine Controller MP2000 Series Counter Module CNTR-01 User's Manual	SIEP C880700 27	1-Series 2-70 SEMVUPACKS.

Classification	Document Name	Document No.	Description
	Σ-7-Series AC Servo Drive Σ-7S, Σ-7W, and Σ-7C SERVOPACK Safety Precautions	TOMP C710828 00	Provides detailed information for the safe usage of Σ-7-Series SERVOPACKs.
	Σ-V-Series/Σ-V-Series for Large-Capacity Models/ Σ-7-Series Safety Precautions Option Module	TOBP C720829 00	Provides detailed information for the safe usage of Option Modules.
	Σ-V-Series/Σ-V-Series for Large-Capacity Models/ Σ-7-Series Installation Guide Command Option Module	TOBP C720829 01	Provides detailed procedures for installing the Command Option Module in a SERVOPACK.
© Enclosed Documents	Σ-V-Series/Σ-V-Series for Large-Capacity Models/ Σ-7-Series Installation Guide Fully-closed Module	TOBP C720829 03	Provides detailed procedures for installing the Fully-closed Module in a SERVOPACK.
	Σ-V-Series/Σ-V-Series for Large-Capacity Models/ Σ-7-Series Installation Guide Safety Module	TOBP C720829 06	Provides detailed procedures for installing the Safety Module in a SERVOPACK.
	Σ-V-Series/Σ-V-Series for Large-Capacity Models/ Σ-7-Series Installation Guide INDEXER Module	TOBP C720829 02	Provides detailed procedures for installing the INDEXER Module in a SERVOPACK.
	Σ-V-Series/Σ-V-Series for Large-Capacity Models/ Σ-7-Series Installation Guide DeviceNet Module	TOBP C720829 07	Provides detailed procedures for installing the DeviceNet Module in a SERVOPACK.
⑦ Σ-7-Series Σ-7C SERVOPACK Product Manual	Σ-7-Series AC Servo Drive Σ-7C SERVOPACK Product Manual	SIEP S800002 04	Provides detailed information on selecting $\Sigma$ -7-Series $\Sigma$ -7C SERVO-PACKs; installing, connecting, setting, testing in trial operation, and tuning Servo Drives; writing, monitoring, and maintaining programs; and other information.
® Σ-7-Series Σ-7C SERVOPACK Troubleshooting Manual	Σ-7-Series AC Servo Drive Σ-7C SERVOPACK Troubleshooting Manual	SIEP S800002 07	Provides detailed troubleshooting information for $\Sigma$ -7-Series $\Sigma$ -7C SERVOPACKs.

Classification	Document Name	Document No.	Description
	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with MECHATROLINK-4 Communications References Product Manual	SIEP S800002 31	·
	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with MECHATROLINK-III Communications References Product Manual	SIEP S800001 28	
	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with MECHATROLINK-II Communications References Product Manual	SIEP S800001 27	
<ul><li>⑤</li><li>Σ-7-Series</li><li>Σ-7S/Σ-7W</li><li>SERVOPACK</li><li>Product Manuals</li></ul>	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with Analog Voltage/Pulse Train References Product Manual	SIEP S800001 26	Provide detailed information on selecting $\Sigma$ -7-Series SERVO-PACKs and information on installing, connecting, setting, performing trial operation for, tuning, monitoring, and maintaining the Servo Drives.
	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK Command Option Attachable Type with INDEXER Module Product Manual	SIEP S800001 64	
	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK Command Option Attachable Type with DeviceNet Module Product Manual	SIEP S800001 70	
	Σ-7-Series AC Servo Drive Σ-7W SERVOPACK with MECHATROLINK-III Communications References Product Manual	SIEP S800001 29	
<ul><li></li></ul>	Σ-7-Series AC Servo Drive Σ-7S/Σ-7W SERVOPACK with Hardware Option Specifica- tions Dynamic Brake Product Manual	SIEP S800001 73	Provide detailed information on
SERVOPACK with Hardware Option Specifications Product Manuals	Σ-7-Series AC Servo Drive Σ-7W/Σ-7C SERVOPACK with Hardware Option Specifica- tions HWBB Function Product Manual	SIEP S800001 72	Hardware Options for Σ-7-Series SERVOPACKs.

Classification	Document Name	Document No.	Continued from previous page.
Classification	Σ-7-Series AC Servo Drive	Document No.	Description
	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with FT/EX Specification for Indexing Application Product Manual	SIEP S800001 84	
	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with FT/EX Specification for Track- ing Application Product Manual	SIEP S800001 89	
	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with FT/EX Specification for Application with Special Motor, SGM7D Motor Product Manual	This manual (SIEP S800001 91)	
	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with FT/EX Specification for Press and Injection Molding Application Product Manual	SIEP S800001 94	
$^{\scriptsize{\scriptsize{\scriptsize{\scriptsize{\scriptsize{0}}}}}}$ \$\Sigma-7-Series \$\Sigma-7S/\Sigma-7W \text{SERVOPACK}\$	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with FT/EX Specification for Transfer and Alignment Application Product Manual	SIEP S800001 95	Provide detailed information on the FT/EX Option for Σ-7-Series
FT/EX Product Manuals	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with FT/EX Specification for Torque/Force Assistance for Conveyance Application Product Manual	SIEP S800002 09	SERVOPACKs.
	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with FT/EX Specification for Cutting Application Feed Shaft Motor Product Manual	SIEP S800002 10	
	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with FT/EX Specification for Three-Point Latching for Conveyance Application Product Manual	SIEP S800002 17	
	Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with FT/EX Specification for Semi-/Fully-Closed Loop Control Online Switching for Conveyance Application	SIEP S800002 27	
	$\Sigma$ -7-Series AC Servo Drive $\Sigma$ -7W SERVOPACK with FT/EX Specification for Gantry Applications	SIEP S800002 29	
© Option Module User's Manual	AC Servo Drives  Σ-V Series/Σ-V Series for Large-Capacity Models/ Σ-7 Series User's Manual Safety Module	SIEP C720829 06	Provides details information required for the design and maintenance of a Safety Module.

Continued from previous page.

Classification	Document Name	Document No.	Continued from previous page.
Ciassilication	Document Name	Document No.	Description
® Enclosed Documents	AC Servo Drive Rotary Servomotor Safety Precautions	TOBP C230260 00	Provides detailed information for the safe usage of Rotary Servomo- tors and Direct Drive Servomotors.
	AC Servomotor Linear Σ Series Safety Precautions	TOBP C230800 00	Provides detailed information for the safe usage of Linear Servomotors.
	Σ-7-Series AC Servo Drive Rotary Servomotor Product Manual	SIEP S800001 36	
<sup>®</sup> Σ-7-Series Servomotor Product Manuals	Σ-7-Series AC Servo Drive Linear Servomotor Product Manual	SIEP S800001 37	Provide detailed information on selecting, installing, and connecting the $\Sigma$ -7-Series Servomotors.
	Σ-7-Series AC Servo Drive Direct Drive Servomotor Product Manual	SIEP S800001 38	
® Σ-7-Series Peripheral Device Selection Manual	Σ-7-Series AC Servo Drive Peripheral Device Selection Manual	SIEP S800001 32	<ul> <li>Provides the following information in detail for Σ-7-Series Servo Systems.</li> <li>Cables: Models, dimensions, wiring materials, connector models, and connection specifications</li> <li>Peripheral devices: Models, specifications, diagrams, and selection (calculation) methods</li> </ul>
	Σ-7-Series AC Servo Drive MECHATROLINK-II Communications Command Manual	SIEP S800001 30	Provides detailed information on the MECHATROLINK-II communications commands that are used for a $\Sigma$ -7-Series Servo System.
© Σ-7-Series MECHATROLINK Communications Command Manuals	Σ-7-Series AC Servo Drive MECHATROLINK-III Communications Standard Servo Profile Command Manual	SIEP S800001 31	Provides detailed information on the MECHATROLINK-III communications standard servo profile commands that are used for a $\Sigma$ -7-Series Servo System.
	Σ-7-Series AC Servo Drive MECHATROLINK-4 Communications Standard Servo Profile Command Manual	SIEP S800002 32	Provides detailed information on the MECHATROLINK-4 communications standard servo profile commands that are used for a $\Sigma$ -7-Series Servo System.

Classification	Document Name	Document No.	Description
Ciassilication	Document Name	Document No.	·
<b>①</b>	Machine Controller MP3000 Series Ladder Programming Manual	SIEP C880725 13	Provides detailed information on the ladder programming specifications and instructions for MP3000-Series Machine Controllers and $\Sigma$ -7-Series $\Sigma$ -7C SERVOPACKs.
Programming Manuals	Machine Controller MP3000 Series Motion Programming Manual	SIEP C880725 14	Provides detailed information on the motion programming and sequence programming specifications and instructions for MP3000-Series Machine Controllers and $\Sigma$ -7-Series $\Sigma$ -7C SERVOPACKs.
	System Integrated Engineering Tool MPE720 Version 7 User's Manual	SIEP C880761 03	Describes in detail how to operate MPE720 version 7.
<sup>®</sup> Σ-7-Series Operation Interface Operating Manuals	Σ-7-Series AC Servo Drive Digital Operator Operating Manual	SIEP S800001 33	Describes the operating procedures for a Digital Operator for a Σ-7-Series Servo System.
	AC Servo Drive Engineering Tool SigmaWin+ Operation Manual	SIET S800001 34	Provides detailed operating procedures for the SigmaWin+ Engineering Tool for a $\Sigma$ -7-Series Servo System.
® Distributed	MECHATROLINK-III Compatible I/O Module User's Manual	SIEP C880781 04	Describes the functions, specifications, operating methods, and MECHATROLINK-III communications for the Remote I/O Modules for MP2000/MP3000-Series Machine Controllers.
I/O Module User's Manual	MECHATROLINK-4 Compatible I/O Module User's Manual	SIEP C880782 01	Describes the functions, specifications, operating methods, and MECHATROLINK-4 communications for the Remote I/O Modules for MP3000-Series Machine Controllers.

## **Using This Manual**

#### ◆ Technical Terms Used in This Manual

The following terms are used in this manual.

Term	Meaning	
Servomotor	A Σ-7-Series Direct Drive Servomotor.	
SERVOPACK	A $\Sigma$ -7-Series $\Sigma$ -7S SERVOPACK.	
Servo Drive	The combination of a Servomotor and SERVOPACK.	
Servo System	A servo control system that includes the combination of a Servo Drive with a host controller and peripheral devices.	
servo ON	Supplying power to the motor.	
servo OFF	Not supplying power to the motor.	
base block (BB)	Shutting OFF the power supply to the motor by shutting OFF the base current to the power transistor in the SERVOPACK.	
servo lock	A state in which the motor is stopped and is in a position loop with a position reference of 0.	
Main Circuit Cable	One of the cables that connect to the main circuit terminals, including the Main Circuit Power Supply Cable, Control Power Supply Cable, and Servomotor Main Circuit Cable.	
SigmaWin+	The Engineering Tool for setting up and tuning Servo Drives or a computer in which the Engineering Tool is installed.	

#### Notation Used in this Manual

#### ■ Notation for Reverse Signals

The names of reverse signals (i.e., ones that are valid when low) are written with a forward slash (/) before the signal abbreviation.

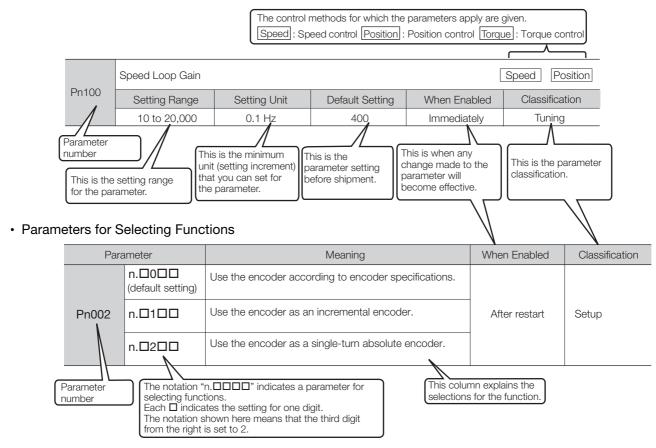
Notation Example

BK is written as /BK.

#### ■ Notation for Parameters

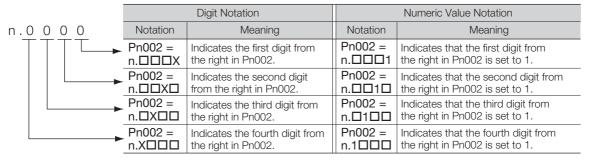
The notation depends on whether the parameter requires a numeric setting (parameter for numeric setting) or requires the selection of a function (parameter for selecting functions).

#### · Parameters for Numeric Settings



#### Notation Example

Notation Examples for Pn002



## ◆ Engineering Tools Used in This Manual

This manual uses the interfaces of the SigmaWin+ for descriptions.

#### **♦** Trademarks

- QR code is a trademark of Denso Wave Inc.
- Other product names and company names are the trademarks or registered trademarks of the respective company. "TM" and the ® mark do not appear with product or company names in this manual.

#### ◆ Visual Aids

The following aids are used to indicate certain types of information for easier reference.



Indicates precautions or restrictions that must be observed.

Also indicates alarm displays and other precautions that will not result in machine damage.



Indicates definitions of difficult terms or terms that have not been previously explained in this manual.

**Example** Indicates operating or setting examples.

Information Indicates supplemental information to deepen understanding or useful information.

## **Safety Precautions**

#### Safety Information

To prevent personal injury and equipment damage in advance, the following signal words are used to indicate safety precautions in this document. The signal words are used to classify the hazards and the degree of damage or injury that may occur if a product is used incorrectly. Information marked as shown below is important for safety. Always read this information and heed the precautions that are provided.

## DANGER

• Indicates precautions that, if not heeded, are likely to result in loss of life, serious injury, or fire.

## WARNING

• Indicates precautions that, if not heeded, could result in loss of life, serious injury, or fire.

## **CAUTION**

 Indicates precautions that, if not heeded, could result in relatively serious or minor injury, or in fire.

## **NOTICE**

• Indicates precautions that, if not heeded, could result in property damage.

#### Safety Precautions That Must Always Be Observed

#### General Precautions

## DANGER

- Read and understand this manual to ensure the safe usage of the product.
- Keep this manual in a safe, convenient place so that it can be referred to whenever necessary. Make sure that it is delivered to the final user of the product.
- Do not remove covers, cables, connectors, or optional devices while power is being supplied to the SERVOPACK.

There is a risk of electric shock, operational failure of the product, or burning.

## **WARNING**

- Use a power supply with specifications (number of phases, voltage, frequency, and AC/DC type) that are appropriate for the product.
   There is a risk of burning, electric shock, or fire.
- Connect the ground terminals on the SERVOPACK and Servomotor to ground poles according to local electrical codes (100  $\Omega$  or less for a SERVOPACK with a 100-VAC or 200-VAC power supply, and 10  $\Omega$  or less for a SERVOPACK with a 400-VAC power supply). There is a risk of electric shock or fire.
- Do not attempt to disassemble, repair, or modify the product.
   There is a risk of fire or failure.
   The warranty is void for the product if you disassemble, repair, or modify it.

## **CAUTION**

- The SERVOPACK heat sinks, regenerative resistors, External Dynamic Brake Resistors, Servomotors, and other components can be very hot while power is ON or soon after the power is turned OFF. Implement safety measures, such as installing covers, so that hands and parts such as cables do not come into contact with hot components.
   There is a risk of burn injury.
- For a 24-VDC power supply, use a power supply device with double insulation or reinforced insulation.

There is a risk of electric shock.

- Do not damage, pull on, apply excessive force to, place heavy objects on, or pinch cables. There is a risk of failure, damage, or electric shock.
- The person who designs the system that uses the hard wire base block safety function must have a complete knowledge of the related safety standards and a complete understanding of the instructions in this document.

There is a risk of injury, product damage, or machine damage.

 Do not use the product in an environment that is subject to water, corrosive gases, or flammable gases, or near flammable materials.

There is a risk of electric shock or fire.

- Do not attempt to use a SERVOPACK or Servomotor that is damaged or that has missing parts.
- Install external emergency stop circuits that shut OFF the power supply and stops operation immediately when an error occurs.
- In locations with poor power supply conditions, install the necessary protective devices (such as AC reactors) to ensure that the input power is supplied within the specified voltage range.
   There is a risk of damage to the SERVOPACK.
- Use a Noise Filter to minimize the effects of electromagnetic interference.

  Electronic devices used near the SERVOPACK may be affected by electromagnetic interference.
- Always use a Servomotor and SERVOPACK in one of the specified combinations.
- Do not touch a SERVOPACK or Servomotor with wet hands.
   There is a risk of product failure.

#### ■ Storage Precautions

## **⚠** CAUTION

 Do not place an excessive load on the product during storage. (Follow all instructions on the packages.)

There is a risk of injury or damage.

## NOTICE

- Do not install or store the product in any of the following locations.
  - Locations that are subject to direct sunlight
  - Locations that are subject to ambient temperatures that exceed product specifications
  - Locations that are subject to relative humidities that exceed product specifications
  - · Locations that are subject to condensation as the result of extreme changes in temperature
  - Locations that are subject to corrosive or flammable gases
  - · Locations that are near flammable materials
  - · Locations that are subject to dust, salts, or iron powder
  - Locations that are subject to water, oil, or chemicals
  - · Locations that are subject to vibration or shock that exceeds product specifications
  - · Locations that are subject to radiation

If you store or install the product in any of the above locations, the product may fail or be damaged.

#### ■ Transportation Precautions

## **A CAUTION**

- Transport the product in a way that is suitable to the mass of the product.
- Do not use the eyebolts on a SERVOPACK or Servomotor to move the machine. There is a risk of damage or injury.
- When you handle a SERVOPACK or Servomotor, be careful of sharp parts, such as the corners. There is a risk of injury.
- Do not place an excessive load on the product during transportation. (Follow all instructions on the packages.)

There is a risk of injury or damage.

- Do not hold onto the front cover or connectors when you move a SERVOPACK.
   There is a risk of the SERVOPACK falling.
- A SERVOPACK or Servomotor is a precision device. Do not drop it or subject it to strong shock. There is a risk of failure or damage.
- Do not subject connectors to shock.

  There is a risk of faulty connections or damage.
- If disinfectants or insecticides must be used to treat packing materials such as wooden frames, plywood, or pallets, the packing materials must be treated before the product is packaged, and methods other than fumigation must be used.

Example: Heat treatment, where materials are kiln-dried to a core temperature of 56°C for 30 minutes or more.

If the electronic products, which include stand-alone products and products installed in machines, are packed with fumigated wooden materials, the electrical components may be greatly damaged by the gases or fumes resulting from the fumigation process. In particular, disinfectants containing halogen, which includes chlorine, fluorine, bromine, or iodine can contribute to the erosion of the capacitors.

Do not overtighten the eyebolts on a SERVOPACK or Servomotor.
 If you use a tool to overtighten the eyebolts, the tapped holes may be damaged.

#### ■ Installation Precautions

## **CAUTION**

- Install the Servomotor or SERVOPACK in a way that will support the mass given in technical documents.
- Install SERVOPACKs, Servomotors, regenerative resistors, and External Dynamic Brake Resistors on nonflammable materials.

Installation directly onto or near flammable materials may result in fire.

 Provide the specified clearances between the SERVOPACK and the control panel as well as with other devices.

There is a risk of fire or failure.

- Install the SERVOPACK in the specified orientation. There is a risk of fire or failure.
- Do not step on or place a heavy object on the product. There is a risk of failure, damage, or injury.
- Do not allow any foreign matter to enter the SERVOPACK or Servomotor.
   There is a risk of failure or fire.

- Do not install or store the product in any of the following locations.
  - Locations that are subject to direct sunlight
  - · Locations that are subject to ambient temperatures that exceed product specifications
  - · Locations that are subject to relative humidities that exceed product specifications
  - · Locations that are subject to condensation as the result of extreme changes in temperature
  - Locations that are subject to corrosive or flammable gases
  - · Locations that are near flammable materials
  - · Locations that are subject to dust, salts, or iron powder
  - · Locations that are subject to water, oil, or chemicals
  - · Locations that are subject to vibration or shock that exceeds product specifications
  - · Locations that are subject to radiation

If you store or install the product in any of the above locations, the product may fail or be damaged.

- Use the product in an environment that is appropriate for the product specifications. If you use the product in an environment that exceeds product specifications, the product may fail or be damaged.
- A SERVOPACK or Servomotor is a precision device. Do not drop it or subject it to strong shock.
   There is a risk of failure or damage.
- Always install a SERVOPACK in a control panel.
- Do not allow any foreign matter to enter a SERVOPACK or a Servomotor with a Cooling Fan and do not cover the outlet from the Servomotor's cooling fan.
   There is a risk of failure.

#### Wiring Precautions

## **A** DANGER

• Do not change any wiring while power is being supplied. There is a risk of electric shock or injury.

## **WARNING**

- Wiring and inspections must be performed only by qualified engineers. There is a risk of electric shock or product failure.
- Check all wiring and power supplies carefully.

  Incorrect wiring or incorrect voltage application to the output circuits may cause short-circuit failures. If a short-circuit failure occurs as a result of any of these causes, the holding brake will not work. This could damage the machine or cause an accident that may result in death or injury.
- Connect the AC and DC power supplies to the specified SERVOPACK terminals.
  - Connect an AC power supply to the L1, L2, and L3 terminals and the L1C and L2C terminals on the SERVOPACK.
  - Connect a DC power supply to the B1/⊕ and ⊕2 terminals and the L1C and L2C terminals on the SERVOPACK.

There is a risk of failure or fire.

• If you use a SERVOPACK that supports a Dynamic Brake Option, connect an External Dynamic Brake Resistor that is suitable for the machine and equipment specifications to the specified terminals

There is a risk of unexpected operation, machine damage, burning, or injury when an emergency stop is performed.

## **CAUTION**

 Wait for six minutes after turning OFF the power supply and then make sure that the CHARGE indicator is not lit before starting wiring or inspection work. Do not touch the power supply terminals while the CHARGE lamp is lit after turning OFF the power supply because high voltage may still remain in the SERVOPACK.

There is a risk of electric shock.

• Observe the precautions and instructions for wiring and trial operation precisely as described in this document.

Failures caused by incorrect wiring or incorrect voltage application in the brake circuit may cause the SERVOPACK to fail, damage the equipment, or cause an accident resulting in death or injury.

- Check the wiring to be sure it has been performed correctly.
   Connectors and pin layouts are sometimes different for different models. Always confirm the pin layouts in technical documents for your model before operation.
   There is a risk of failure or malfunction.
- Connect wires to power supply terminals and motor connection terminals securely with the specified methods and tightening torque.
   Insufficient tightening may cause wires and terminal blocks to generate heat due to faulty contact, possibly resulting in fire.
- Use shielded twisted-pair cables or screened unshielded multi-twisted-pair cables for I/O Signal Cables and Encoder Cables.
- The maximum wiring length is 3 m for I/O Signal Cables, and 50 m for Encoder Cables or Servomotor Main Circuit Cables.
- Observe the following precautions when wiring the SERVOPACK's main circuit terminals.
  - Turn ON the power supply to the SERVOPACK only after all wiring, including the main circuit terminals, has been completed.
  - If a connector is used for the main circuit terminals, remove the main circuit connector from the SER-VOPACK before you wire it.
  - Insert only one wire per insertion hole in the main circuit terminals.
  - When you insert a wire, make sure that the conductor wire (e.g., whiskers) does not come into contact with adjacent wires.
- Install molded-case circuit breakers and other safety measures to provide protection against short circuits in external wiring.

There is a risk of fire or failure.

## NOTICE

- Whenever possible, use the Cables specified by Yaskawa. If you use any other cables, confirm the rated current and application environment of your model and use the wiring materials specified by Yaskawa or equivalent materials.
- Securely tighten connector screws and lock mechanisms.
   Insufficient tightening may result in connectors falling off during operation.
- Do not bundle power lines (e.g., the Main Circuit Cable) and low-current lines (e.g., the I/O Signal Cables or Encoder Cables) together or run them through the same duct. If you do not place power lines and low-current lines in separate ducts, separate them by at least 30 cm. If the cables are too close to each other, malfunctions may occur due to noise affecting the low-current lines.
- Install a battery at either the host controller or on the Encoder Cable.

  If you install batteries both at the host controller and on the Encoder Cable at the same time, you will create a loop circuit between the batteries, resulting in a risk of damage or burning.
- When connecting a battery, connect the polarity correctly. There is a risk of battery rupture or encoder failure.

#### Operation Precautions

## WARNING

- Before starting operation with a machine connected, change the settings of the switches and parameters to match the machine.
  - Unexpected machine operation, failure, or personal injury may occur if operation is started before appropriate settings are made.
- Do not radically change the settings of the parameters.
   There is a risk of unstable operation, machine damage, or injury.
- Install limit switches or stoppers at the ends of the moving parts of the machine to prevent unexpected accidents.

There is a risk of machine damage or injury.

- For trial operation, securely mount the Servomotor and disconnect it from the machine. There is a risk of injury.
- Forcing the motor to stop for overtravel is disabled when the Jog, Origin Search, or Easy FFT utility function is executed. Take necessary precautions.

  There is a risk of machine damage or injury.
- When an alarm occurs, the Servomotor will coast to a stop or stop with the dynamic brake
  according to the SERVOPACK Option specifications and settings. The coasting distance will
  change with the moment of inertia of the load and the resistance of the External Dynamic Brake
  Resistor. Check the coasting distance during trial operation and implement suitable safety measures on the machine.
- Do not enter the machine's range of motion during operation. There is a risk of injury.
- Do not touch the moving parts of the Servomotor or machine during operation.
   There is a risk of injury.

## **CAUTION**

- Design the system to ensure safety even when problems, such as broken signal lines, occur. For example, the P-OT and N-OT signals are set in the default settings to operate on the safe side if a signal line breaks. Do not change the polarity of this type of signal.
- When overtravel occurs, the power supply to the motor is turned OFF and the brake is released.
  If you use the Servomotor to drive a vertical load, set the Servomotor to enter a zero-clamped
  state after the Servomotor stops. Also, install safety devices (such as an external brake or
  counterweight) to prevent the moving parts of the machine from falling.
- Always turn OFF the servo before you turn OFF the power supply. If you turn OFF the main circuit power supply or control power supply during operation before you turn OFF the servo, the Servomotor will stop as follows:
  - If you turn OFF the main circuit power supply during operation without turning OFF the servo, the Servomotor will stop abruptly with the dynamic brake.
  - If you turn OFF the control power supply without turning OFF the servo, the stopping method that is used by the Servomotor depends on the model of the SERVOPACK. For details, refer to the manual for the SERVOPACK.
  - If you use a SERVOPACK that supports a Dynamic Brake Option, the Servomotor stopping methods
    will be different from the stopping methods used without the Option or for other Hardware Option
    specifications. For details, refer to the Σ-7-Series AC Servo Drive Σ-7S/Σ-7W SERVOPACK with
    Hardware Option Specifications Dynamic Brake Product Manual.
- Do not use the dynamic brake for any application other than an emergency stop.

  There is a risk of failure due to rapid deterioration of elements in the SERVOPACK and the risk of unexpected operation, machine damage, burning, or injury.

- When you adjust the gain during system commissioning, use a measuring instrument to monitor the torque waveform and speed waveform and confirm that there is no vibration.
   If a high gain causes vibration, the Servomotor will be damaged quickly.
- Do not frequently turn the power supply ON and OFF. After you have started actual operation, allow at least one hour between turning the power supply ON and OFF (as a guideline).
   Do not use the product in applications that require the power supply to be turned ON and OFF frequently.

The elements in the SERVOPACK will deteriorate quickly.

- An alarm or warning may occur if communications are performed with the host controller while the SigmaWin+ or Digital Operator is operating.
  - If an alarm or warning occurs, it may interrupt the current process and stop the system.
- After you complete trial operation of the machine and facilities, use the SigmaWin+ to back up
  the settings of the SERVOPACK parameters. You can use them to reset the parameters after
  SERVOPACK replacement.

If you do not copy backed up parameter settings, normal operation may not be possible after a faulty SERVOPACK is replaced, possibly resulting in machine or equipment damage.

■ Maintenance and Inspection Precautions

## **A** DANGER

• Do not change any wiring while power is being supplied. There is a risk of electric shock or injury.

## **⚠ WARNING**

• Wiring and inspections must be performed only by qualified engineers. There is a risk of electric shock or product failure.

## **⚠** CAUTION

- Wait for six minutes after turning OFF the power supply and then make sure that the CHARGE indicator is not lit before starting wiring or inspection work. Do not touch the power supply terminals while the CHARGE lamp is lit after turning OFF the power supply because high voltage may still remain in the SERVOPACK.
  - There is a risk of electric shock.
- Before you replace a SERVOPACK, back up the settings of the SERVOPACK parameters. Copy
  the backed up parameter settings to the new SERVOPACK and confirm that they were copied
  correctly.

If you do not copy backed up parameter settings or if the copy operation is not completed normally, normal operation may not be possible, possibly resulting in machine or equipment damage.

## **NOTICE**

 Discharge all static electricity from your body before you operate any of the buttons or switches inside the front cover of the SERVOPACK.

There is a risk of equipment damage.

#### ■ Troubleshooting Precautions

## **A** DANGER

If the safety device (molded-case circuit breaker or fuse) installed in the power supply line operates, remove the cause before you supply power to the SERVOPACK again. If necessary, repair or replace the SERVOPACK, check the wiring, and remove the factor that caused the safety device to operate.

There is a risk of fire, electric shock, or injury.

## **MARNING**

The product may suddenly start to operate when the power supply is recovered after a momentary power interruption. Design the machine to ensure human safety when operation restarts.
 There is a risk of injury.

## **CAUTION**

- When an alarm occurs, remove the cause of the alarm and ensure safety. Then reset the alarm or turn the power supply OFF and ON again to restart operation.
   There is a risk of injury or machine damage.
- If the Servo ON signal is input to the SERVOPACK and an alarm is reset, the Servomotor may suddenly restart operation. Confirm that the servo is OFF and ensure safety before you reset an alarm.

There is a risk of injury or machine damage.

- Always insert a magnetic contactor in the line between the main circuit power supply and the main circuit power supply terminals on the SERVOPACK so that the power supply can be shut OFF at the main circuit power supply.
  - If a magnetic contactor is not connected when the SERVOPACK fails, a large current may flow, possibly resulting in fire.
- If an alarm occurs, shut OFF the main circuit power supply.
   There is a risk of fire due to a regenerative resistor overheating as the result of regenerative transistor failure.
- Install a ground fault detector against overloads and short-circuiting or install a molded-case circuit breaker combined with a ground fault detector.
   There is a risk of SERVOPACK failure or fire if a ground fault occurs.
- The holding brake on a Servomotor will not ensure safety if there is the possibility that an external force (including gravity) may move the current position and create a hazardous situation when power is interrupted or an error occurs. If an external force may cause movement, install an external braking mechanism that ensures safety.

#### ■ Disposal Precautions

 Correctly discard the product as stipulated by regional, local, and municipal laws and regulations. Be sure to include these contents in all labelling and warning notifications on the final product as necessary.



#### ■ General Precautions

- Figures provided in this document are typical examples or conceptual representations. There may be differences between them and actual wiring, circuits, and products.
- The products shown in illustrations in this document are sometimes shown without covers or protective guards. Always replace all covers and protective guards before you use the product.
- If you need a new copy of this document because it has been lost or damaged, contact your nearest Yaskawa representative or one of the offices listed on the back of this document.
- This document is subject to change without notice for product improvements, specifications changes, and improvements to the manual itself.
   We will update the document number of the document and issue revisions when changes are made.
- Any and all quality guarantees provided by Yaskawa are null and void if the customer modifies
  the product in any way. Yaskawa disavows any responsibility for damages or losses that are
  caused by modified products.

## Warranty

#### Details of Warranty

#### ■ Warranty Period

The warranty period for a product that was purchased (hereinafter called the "delivered product") is one year from the time of delivery to the location specified by the customer or 18 months from the time of shipment from the Yaskawa factory, whichever is sooner.

#### ■ Warranty Scope

Yaskawa shall replace or repair a defective product free of charge if a defect attributable to Yaskawa occurs during the above warranty period.

This warranty does not cover defects caused by the delivered product reaching the end of its service life and replacement of parts that require replacement or that have a limited service life.

This warranty does not cover failures that result from any of the following causes.

- Improper handling, abuse, or use in unsuitable conditions or in environments not described in product catalogs or manuals, or in any separately agreed-upon specifications
- Causes not attributable to the delivered product itself
- Modifications or repairs not performed by Yaskawa
- Use of the delivered product in a manner in which it was not originally intended
- Causes that were not foreseeable with the scientific and technological understanding at the time of shipment from Yaskawa
- · Events for which Yaskawa is not responsible, such as natural or human-made disasters

#### Limitations of Liability

- Yaskawa shall in no event be responsible for any damage or loss of opportunity to the customer that arises due to failure of the delivered product.
- Yaskawa shall not be responsible for any programs (including parameter settings) or the results of program execution of the programs provided by the user or by a third party for use with programmable Yaskawa products.
- The information described in product catalogs or manuals is provided for the purpose of the customer purchasing the appropriate product for the intended application. The use thereof does not guarantee that there are no infringements of intellectual property rights or other proprietary rights of Yaskawa or third parties, nor does it construe a license.
- Yaskawa shall not be responsible for any damage arising from infringements of intellectual property rights or other proprietary rights of third parties as a result of using the information described in catalogs or manuals.

#### Suitability for Use

- It is the customer's responsibility to confirm conformity with any standards, codes, or regulations that apply if the Yaskawa product is used in combination with any other products.
- The customer must confirm that the Yaskawa product is suitable for the systems, machines, and equipment used by the customer.
- Consult with Yaskawa to determine whether use in the following applications is acceptable. If use in the application is acceptable, use the product with extra allowance in ratings and specifications, and provide safety measures to minimize hazards in the event of failure.
  - Outdoor use, use involving potential chemical contamination or electrical interference, or use in conditions or environments not described in product catalogs or manuals
  - Nuclear energy control systems, combustion systems, railroad systems, aviation systems, vehicle systems, medical equipment, amusement machines, and installations subject to separate industry or government regulations
  - Systems, machines, and equipment that may present a risk to life or property
  - Systems that require a high degree of reliability, such as systems that supply gas, water, or electricity, or systems that operate continuously 24 hours a day
  - · Other systems that require a similar high degree of safety
- Never use the product for an application involving serious risk to life or property without first ensuring that the system is designed to secure the required level of safety with risk warnings and redundancy, and that the Yaskawa product is properly rated and installed.
- The circuit examples and other application examples described in product catalogs and manuals are for reference. Check the functionality and safety of the actual devices and equipment to be used before using the product.
- Read and understand all use prohibitions and precautions, and operate the Yaskawa product correctly to prevent accidental harm to third parties.

#### Specifications Change

The names, specifications, appearance, and accessories of products in product catalogs and manuals may be changed at any time based on improvements and other reasons. The next editions of the revised catalogs or manuals will be published with updated code numbers. Consult with your Yaskawa representative to confirm the actual specifications before purchasing a product.

## Compliance with UL Standards, EU Directives, UK Regulations, and Other Safety Standards

Certification marks for the standards for which the product has been certified by certification bodies are shown on nameplate. Products that do not have the marks are not certified for the standards. Refer to the Servomotor manual for compliant standards of Servomotors.

#### North American Safety Standards (UL)



Product	Model North American Safety Standards (UL F	
SERVOPACK	1 5(51)/5	UL 61800-5-1 (E147823), CSA C22.2 No.274

#### ◆ European Directives



Product	Model	EU Directive	Harmonized Standards
SERVOPACK	SGD7S	Machinery Directive 2006/42/EC	EN ISO 13849-1: 2015 EN IEC 62061 EN 61800-5-2
		EMC Directive 2014/30/EU	EN 55011 Group 1, Class A EN 61000-6-2 EN 61000-6-4 EN 61800-3 (Category C2, Second environment)
		Low Voltage Directive 2014/35/EU	EN 61800-5-1
		RoHS Directive 2011/65/EU (EU)2015/863	EN IEC 63000

Note: 1. We declared the CE Marking based on the harmonized standards in the above table.

<sup>2.</sup> These products are for industrial use. In home environments, these products may cause electromagnetic interference and additional noise reduction measures may be necessary.

## ♦ UK Conformity Assessed (UKCA)



Product	Model	UK Regulations	Designated Standards
SERVOPACK		Supply of Machinery (Safety) Regulations S.I. 2008/1597	EN ISO 13849-1: 2015 EN IEC 62061 EN 61800-5-2
		Electromagnetic Compatibility Regulations S.I. 2016/1091	EN 55011 Group 1, Class A EN 61000-6-2 EN 61000-6-4 EN 61800-3 (Category C2, Second environment)
	SGD7S	Electrical Equipment (Safety) Regulations S.I. 2016/1101	EN 61800-5-1
		Restriction of the Use of Certain Hazardous Sub- stances in Electrical and Electronic Equipment Reg- ulations S.I. 2012/3032	EN IEC 63000

Note: We declared the UKCA marking based on the designated standards in the above table.

## ◆ Safety Standards

Product	Model	Safety Standards	Standards
SERVOPACK	SGD7S	Safety of Machinery	EN ISO 13849-1:2015 EN 60204-1
		Functional Safety	EN 61508 series EN IEC 62061 EN 61800-5-2
		Functional Safety EMC	EN 61326-3-1 EN 61000-6-7

#### Safety Parameters

Item	Standards	Performance Level	
Safety Integrity Level	EN 61508	SIL3	
Safety integrity Level	EN IEC 62061	maximum SIL 3	
Mission Time	EN 61508	10 years	20 years
Probability of Dangerous Failure per Hour	EN 61508 EN IEC 62061	PFH = $4.04 \times 10^{-9}$ [1/h] (4.04% of SIL3)	PFH = $4.05 \times 10^{-9}$ [1/h] (4.05% of SIL3)
Performance Level	EN ISO 13849-1	PLe (Category 3)	
Mean Time to Dangerous Failure of Each Channel	EN ISO 13849-1	MTTFd: High	
Average Diagnostic Coverage	EN ISO 13849-1	DCavg: Medium	
Stop Category	EN 60204-1	Stop category 0	
Safety Function	EN 61800-5-2	STO	
Hardware Fault Tolerance	EN 61508	HFT = 1	
Subsystem	EN 61508	В	

## Contents

		Outline Relate Using Safety Warrar Compl and Ot	this Manual
1	Ba	asic l	nformation on SERVOPACKs
	1.1	Produ	uct Introduction
	1.2	Mode	el Designations1-3
		1.2.1 1.2.2 1.2.3	Interpreting FT82 SERVOPACK Model Numbers
	1.3	Comb	pinations of SERVOPACKs and Servomotors1-6
	1.4	1.4.1 1.4.2	SERVOPACK Functions
	1.5	Sigma	aWin+1-11
	1.6	Combinir	ng the SERVOPACKs with MP-Series Machine Controllers and the MPE720 Engineering Tool 1-12
2	SI		PACK Ratings and Specifications
	2.1	Ratin	gs2-2
		2.1.1 2.1.2 2.1.3	Three-Phase, 200 VAC2-2Single-Phase, 200 VAC2-2Single-Phase, 100 VAC2-3
	2.2	SERV	OPACK Overload Protection Characteristics 2-4
	2.3	Speci	ifications
		2.3.1 2.3.2	FT82 SERVOPACKs with Analog Voltage/Pulse Train References
		2.3.3	FT82 SERVOPACK with  MECHATROLINK-III Communications References
		2.3.4	Command Option Attachable-type FT82 SERVOPACKs with INDEXER Modules
		2.3.5	FT83 SERVOPACKs with Analog Voltage/Pulse Train References

## Maintenance

3.1	FT82	SERVOPACKs with Analog Voltage/Pulse Train References 3-3
	3.1.1 3.1.2 3.1.3 3.1.4 3.1.5 3.1.6 3.1.7	Alarm Displays. 3-3 List of Alarms 3-3 Troubleshooting Alarms 3-9 Warning Displays 3-34 List of Warnings 3-34 Troubleshooting Warnings 3-35 Troubleshooting Based on the Operation and Conditions of the Servomotor 3-41
3.2	FT82 S	ERVOPACK with MECHATROLINK-II Communications References 3-50
	3.2.1 3.2.2 3.2.3 3.2.4 3.2.5 3.2.6 3.2.7	Alarm Displays. 3-50 List of Alarms 3-50 Troubleshooting Alarms 3-55 Warning Displays 3-81 List of Warnings 3-81 Troubleshooting Warnings 3-83 Troubleshooting Based on the Operation and Conditions of the Servomotor 3-90
3.3	FT82 S	ERVOPACK with MECHATROLINK-III Communications References 3-99
	3.3.1 3.3.2 3.3.3 3.3.4 3.3.5 3.3.6 3.3.7	Alarm Displays. 3-99 List of Alarms 3-99 Troubleshooting Alarms 3-104 Warning Displays 3-130 List of Warnings 3-130 Troubleshooting Warnings 3-132 Troubleshooting Based on the Operation and Conditions of the Servomotor 3-139
3.4	Comma	and Option Attachable-type FT82 SERVOPACKs with INDEXER Modules 3-147
	3.4.1 3.4.2 3.4.3 3.4.4 3.4.5 3.4.6 3.4.7 3.4.8 3.4.9	Alarm Displays. 3-147 List of Alarms 3-148 Troubleshooting Alarms 3-153 INDEXER Module Alarm Displays and Troubleshooting 3-180 Warning Displays 3-184 List of Warnings 3-184 Troubleshooting Warnings 3-186 INDEXER Module Error Displays and Troubleshooting 3-192 Troubleshooting Based on the Operation and Conditions of the Servomotor 3-200
3.5	FT83 \$	SERVOPACKs with Analog Voltage/Pulse Train References 3-208
	3.5.1 3.5.2 3.5.3 3.5.4 3.5.5 3.5.6 3.5.7 3.5.8 3.5.9	Alarm Displays



## Parameter Lists

4.1	FT82 SERVOPACKs with Analog Voltage/Pulse Train References 4-2
4.2	FT82 SERVOPACK with MECHATROLINK-II Communications References 4-32
4.3	FT82 SERVOPACK with MECHATROLINK-III Communications References 4-67
	4.3.1 List of Servo Parameters
4.4	Command Option Attachable-type FT82 SERVOPACKs with INDEXER Modules 4-110
4.5	FT83 SERVOPACKs with Analog Voltage/Pulse Train References 4-134

## Index

## **Revision History**

# **Basic Information on SERVOPACKs**

1

This chapter provides basic information, including an introduction to the product, and describes how to interpret model numbers and combinations with Servomotors.

1.1	Product Introduction1-2		
1.2	Model Designations1-3		
	1.2.1 Interpreting FT82 SERVOPACK Model Numbers1-3 1.2.2 Interpreting FT83 SERVOPACK Model Numbers1-4 1.2.3 Interpreting Direct Drive Servomotor Model Numbers		
1.3	Combinations of SERVOPACKs and Servomotors1-6		
1.4	Functions		
	1.4.1 SERVOPACK Functions		
1.5	SigmaWin+1-11		
1.6	Combining the SERVOPACKs with MP-Series Machine Controllers and the MPE720 Engineering Tool1-12		

## 1.1

## **Product Introduction**

The SERVOPACKs described in this manual were developed to drive SGM7D motors.

The SGM7D motors were designed for applications that require high torque, easy operation, and high precision. The SERVOPACK will make the most of machine performance in the shortest time possible, thus contributing to improving productivity.

## 1.2 Model Designations

## 1.2.1 Interpreting FT82 SERVOPACK Model Numbers















1st+2nd+3rd digit	Maximum Applicabl Motor Capacity

Voltage	Code	Specification
Three-Ph	2R8*1	0.4 kW
ase, 200 VAC	120*2	1.5 kW
Single- Phase, 100 VAC	2R8	0.4 kW



Code	Specification	
Α	200 VAC	
F	100 VAC	
5th+6th digits. Interface		

# Code Specification

Analog voltage/pulse train reference
 MECHATROLINK-II communications references

 MECHATROLINK-III communications reference

 Communications reference

 Command option attachable type\*3



Other Other 4 Other disaller	Hardware Options
8th+9th+10th digits	Specification

Code	Specification	Applicable Models
None	VA ('Alle and a see Alle and	All models
000	Without options	
001	Rack-mounted	All models
002	Varnished	All models
800	Single-phase, 200-VAC power supply input	SGD7S-120A
000*4	No dynamic brake	SGD7S-2R8A and -2R8F
020*4	External dynamic brake resistor	SGD7S-120A

Code	Specification	
F82	Application function option for special motors, SGM7D motor drive	

- \*1. You can use these models with either a single-phase or three-phase input.
- A model with a single-phase, 200-VAC power supply input is available as a hardware option (model: SGD7S-120A00A008).
- \*3. This interface is supported only by an INDEXER Module. Refer to the following catalog for details. AC Servo Drives Σ-7 Series (Manual No.: KAEP S800001 23)
- \*4. Refer to the following manual for details.
  - Σ-7-Series Σ-7Š/Σ-7W SERVOPACK with Dynamic Brake Hardware Option Specifications Product Manual (Manual No.: SIEP S800001 73)

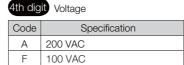
1.2.2 Interpreting FT83 SERVOPACK Model Numbers

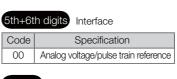
## 1.2.2 Interpreting FT83 SERVOPACK Model Numbers



1st+2nd+3rd digits Maximum Applicable Motor Capacity

Voltage	Code	Specification
Three-	2R8*1	0.4 kW
Phase, 200 VAC	120*2	1.5 kW
Single- Phase, 100 VAC	2R8	0.4 kW







011 011 1011 11 11	Hardware Options
8th+9th+10th digits	Specification

Code	Specification	Applicable Models
None	\A /!+!= + +!	All models
000	Without options	
001	Rack-mounted	All models
002	Varnished	All models
800	Single-phase, 200-VAC power supply input	SGD7S-120A
020*3	No dynamic brake	SGD7S-2R8A and -2R8F
02013	External dynamic brake resistor	SGD7S-120A

11th+12th+13th digits	FT/EX Specification

Code	Specification
F83	Application function option for special motors, SGM7D motor drive, indexing

- \*1. You can use these models with either a single-phase or three-phase input.
- A model with a single-phase, 200-VAC power supply input is available as a hardware option (model: SGD7S-120A00A008).
- \*3. Refer to the following manual for details.
  - □ Σ-7-Series AC Servo Drive Σ-7S/Σ-7W SERVOPACK with Hardware Option Specifications Dynamic Brake Product Manual (Manual No.: SIEP S800001 73)

## 1.2.3 Interpreting Direct Drive Servomotor Model Numbers

SGM7D - 30 F 7 C 4 1

Direct Drive Servomotors:

| Direct Drive Servomotors: | 1st+2nd digit | 3rd digit | 4th digit | 5th digit | 6th dig

1st+2nd digits Rated Torque

SGM7D

Code	Specification	Code	Specification	Code	Specification
01	1.30 N·m	18	18.0 N·m	58	58.0 N·m
02	2.06 N·m	20	20.0 N·m	70	70.0 N·m
03	3.00 N·m	24	24.0 N·m	90	90.0 N·m
05	5.00 N·m	28	28.0 N·m	1Z	100 N·m
06	6.00 N·m	30	30.0 N·m	1A	110 N·m
08	8.00 N·m	34	34.0 N·m	1C	130 N·m
09	9.00 N·m	38	38.0 N·m	2B	220 N·m
12	12.0 N·m	45	45.0 N·m	2D	240 N·m

#### 3rd digit Servomotor Outer Diameter

Code	Specification	Code	Specification
F	264-mm dia.	J	150-mm dia.
G	160-mm dia.	K	107-mm dia.
Н	116-mm dia.	L	224 mm × 224 mm
	264-mm dia		

Note: 1. Direct Drive Servomotors are not available with holding brakes.

2. This information is provided to explain model numbers.

It is not meant to imply that models are available for all combinations of codes.

## 4th digit Serial Encoder

Code	Specification
7	24-bit multiturn absolute encoder
F	24-bit incremental encoder

5th digit Design Revision Order

6th digit Flange

Code Mounting		Di	Servomotor Outer Diameter Code (3rd Digit)						
		F	G	Н	1	J	K	L	
4	With cable on side		✓	✓	✓	-	-	-	✓
5	With cable on bottom		<b>√</b>	<b>√</b> *	-	✓	✓	✓	-

- ✓: Applicable models.
- \* SGM7D-01G and -05G are not available with a cable extending from the bottom.

#### 7th digit Options

Code	Specification
1	Standard mechanical precision
2	High mechanical precision*

<sup>\*</sup> The SGM7D-01G, -05G, and -03H are available only with high mechanical precision.

## Manufactured Models

Rated	Servomotor Outer Diameter						
Torque	F	G	Н	I	J	L (224 mm ×	
N∙m	(264-mm dia.)	(160-mm dia.)	(116-mm dia.)	(264-mm dia.)	(150-mm dia.)	(107-mm dia.)	224 mm)
1.30	-	SGM7D-01G	_	_	-	_	-
2.06	-	_	_	_	-	SGM7D-02K	-
3.00	-	_	SGM7D-03H	_	-	_	-
5.00	-	SGM7D-05G	_	_	-	_	-
6.00	-	_	_	_	SGM7D-06J	SGM7D-06K	SGM7D-06L
8.00	-	SGM7D-08G	_	_	-	SGM7D-08K	-
9.00	-	_	_	_	SGM7D-09J	_	-
12.0	-	_	_	_	-	_	SGM7D-12L
18.0	-	SGM7D-18G	_	-	SGM7D-18J	-	-
20.0	-	_	_	_	SGM7D-20J	_	-
24.0	-	SGM7D-24G	_	_	-	_	-
28.0	-	_	_	SGM7D-28I	-	_	-
30.0	SGM7D-30F	_	_	_	-	_	SGM7D-30L
34.0	-	SGM7D-34G	_	_	-	_	-
38.0	-	_	_	_	SGM7D-38J	_	-
45.0	-	SGM7D-45G	_	_	-	_	-
58.0	SGM7D-58F	-	-	-	-	-	-
70.0	-	-	-	SGM7D-70I	-	-	-
90.0	SGM7D-90F	-	-	-	-	-	-
100	-	-	-	SGM7D-1ZI	-	-	-
110	SGM7D-1AF	-	-	-	-	-	_
130	-	-	-	SGM7D-1CI	-	-	_
220	-	-	-	SGM7D-2BI	-	-	-
240	-	_	_	SGM7D-2DI	ı	_	-

Note: The above table shows combinations of the rated torque and outer diameter. The fourth through seventh digits have been omitted.

## 1.3

## Combinations of SERVOPACKs and Servomotors

		SERVOPACK Model
Direct Drive Servomotor Model	Capacity	SGD7S-
SGM7D-30F	188 W	
SGM7D-58F	364 W	1004
SGM7D-90F	565 W	- 120A
SGM7D-1AF	691 W	
SGM7D-01G	16 W	0D0A and 0D0F
SGM7D-05G	63 W	- 2R8A and 2R8F
SGM7D-08G	101 W	
SGM7D-18G	226 W	
SGM7D-24G	302 W	120A
SGM7D-34G	320 W	
SGM7D-45G	565 W	
SGM7D-03H	38 W	2R8A and 2R8F
SGM7D-28I	264 W	
SGM7D-70I	440 W	
SGM7D-1ZI	628 W	
SGM7D-1CI	817 W	
SGM7D-2BI	691 W	
SGM7D-2DI	754 W	120A
SGM7D-06J	75 W	
SGM7D-09J	113 W	
SGM7D-18J	226 W	
SGM7D-20J	251 W	
SGM7D-38J	358 W	
SGM7D-02K	52 W	
SGM7D-06K	151 W	
SGM7D-08K	201 W	2R8A and 2R8F
SGM7D-06L	113 W	
SGM7D-12L	226 W	
SGM7D-30L	565 W	120A

## **Functions**

This section lists the functions provided by SERVOPACKs. Refer to the following manuals for details on the functions.

- FT82 SERVOPACKs
  - □Σ-7-Series Σ-7S SERVOPACK with Analog Voltage/Pulse Train References Product Manual (Manual No.: SIEP S800001 26)
  - ΩΣ-7-Series Σ-7S SERVOPACK with MECHATROLINK-II Communications References Product Manual (Manual No.: SIEP S800001 27)
  - Σ-7-Series Σ-7S SERVOPACK with MECHATROLINK-III Communications References Product Manual (Manual No.: SIEP S800001 28)
  - ΩΣ-7-Series Σ-7S Command Option Attachable-type SERVOPACK with INDEXER Module Product Manual (Manual No.: SIEP S800001 64)
- FT83 SERVOPACKs

  - $\square$   $\Sigma$ -7-Series  $\Sigma$ -7S SERVOPACK with FT/EX Specification for Indexing Applications Product Manual (Manual No. SIEP S800001 84)

Functions in bold boxes in the functions tables are restricted if the above SERVOPACKs are used. Refer to the following section for details on restrictions to these functions.

1.4.2 Function Application Restrictions on page 1-10

#### **SERVOPACK Functions** 1.4.1

Functions Related to the Machine
Functions
Power Supply Type Settings for the Main Circuit and Control Circuit
Automatic Detection of Connected Motor
Motor Direction Setting
Setting the Linear Encoder Pitch
Writing Linear Servomotor Parameters
Selecting the Phase Sequence for a Linear Servomotor
Polarity Sensor Setting
Polarity Detection
Overtravel Function and Settings
Holding Brake
Motor Stopping Method for Servo OFF and Alarms
Resetting the Absolute Encoder
Setting the Origin of the Absolute Encoder
Setting the Regenerative Resistor Capacity

Motor Maximum Speed Setting

Software Limits and Settings\*

Multiturn Limit Setting

SEMI F47 Function

Adjustment of Motor Current Detection Signal Offset

Operation for Momentary Power Interruptions

Forcing the Motor to Stop

Overheat Protection

Speed Ripple Compensation

Current Control Mode Selection

Current Gain Level Setting

Speed Detection Method Selection

Fully-closed Loop Control

Safety Function

External Latches\*

<sup>\*</sup> These functions can be used with SERVOPACKs with MECHATROLINK-II Communications References and SERVOPACKs with MECHATROLINK-III Communications References.

## 1.4.1 SERVOPACK Functions

## • Functions Related to the Host Controller

Functions
Electronic Gear Setting
I/O Signal Allocations
ALM (Servo Alarm) Signal
ALO1 to ALO3 (Alarm Code) Signals*
/WARN (Warning) Signal
/TGON (Rotation Detection) Signal
Servo Ready Output (/S-RDY) Signal
Speed Control*
Basic Settings for Speed Control*
Speed Reference Filter*
Zero Clamping*
/V-CMP (Speed Coincidence Detection) Signal
Position Control*
Reference Pulse Form*
CLR (Position Deviation Clear) Signal Function and Settings*
Reference Pulse Input Multiplication Switching*
/COIN (Positioning Completion) Signal
/NEAR (Near) Signal
Reference Pulse Inhibition Function and Settings*
Torque Control*
Basic Settings for Torque Control*
Torque Reference Filter Settings*
Speed Limit during Torque Control
/VLT (Speed Limit Detection) Signal
Encoder Divided Pulse Outputs
Selecting Torque Limits
Initializing the Vibration Detection Level
Resetting Alarms
Replacing the Battery
Setting the Position Deviation Overflow Alarm Level
* There for the company of the CEDVODA OVER A color Val

<sup>\*</sup> These functions can be used with SERVOPACKs with Analog Voltage/Pulse Train References.

## • Functions to Achieve Optimum Motions

Functions
Speed Control*1
Soft Start Settings*1
Position Control*1
Smoothing Settings*1
Torque Control*1
Tuning-less Function
Autotuning without Host Reference
Autotuning with a Host Reference
Custom Tuning
Anti-resonance Control Adjustment
Vibration Suppression
Gain Selection
Friction Compensation
Gravity Compensation
Backlash Compensation*2
Model Following Control
Compatible Adjustment Functions
Mechanical Analysis
Easy FFT

<sup>\*1.</sup> These functions can be used with SERVOPACKs with Analog Voltage/Pulse Train References.

## • Functions for Trial Operation during Setup

Functions
Software Reset
Trial Operation for the Servomotor without a Load
Program Jogging
Origin Searches
Test without a Motor
Monitoring Machine Operation Status and Signal Waveforms

## • Functions for Inspection and Maintenance

Functions
Write Prohibition Setting for Parameters
Initializing Parameter Settings
Automatic Detection of Connected Motor
Monitoring Product Information
Monitoring Product Life
Displaying the Alarm History
Alarm Tracing

<sup>\*2.</sup> These functions can be used with SERVOPACKs with MECHATROLINK-II Communications References and SERVOPACKs with MECHATROLINK-III Communications References.

## 1.4.2 Function Application Restrictions

The following functional restrictions apply when you use the FT82/FT83 SERVOPACKs.

Function	Restriction
Setting the Linear Encoder Pitch	Cannot be used.
Writing Linear Servomotor Parameters	Cannot be used.
Selecting the Phase Sequence for a Linear Servomotor	Cannot be used.
Polarity Sensor Setting	Cannot be used.
Polarity Detection	Cannot be used.
Speed Ripple Compensation	Cannot be used. Do not change the following default setting: Pn423 = n.□□□0.
Tuning-less Function	Cannot be used if the load moment of inertia ratio is 10 or greater.

## 1.5 SigmaWin+

To use the SigmaWin+, a model information file for the SERVOPACK must be added to SigmaWin+ version 7.

- FT82 SERVOPACKs
  Add the FT82 model information file to SigmaWin+ to use the SigmaWin+.
- FT83 SERVOPACKs
  Add the FT83 model information file to SigmaWin+ to use the SigmaWin+.

## 1.6

## Combining the SERVOPACKs with MP-Series Machine Controllers and the MPE720 Engineering Tool

If you combine the SERVOPACK with an MP-Series Machine Controller or the MPE720 Engineering Tool, it will be recognized as a SERVOPACK with standard specifications. To use the parameters that have been added or changed for the SERVOPACKs described in this manual, use the SigmaWin+.

# SERVOPACK Ratings and Specifications

This chapter provides information required to select SERVOPACKs, such as specifications.

2.1	Rating	gs2-2
	2.1.1 2.1.2 2.1.3	Three-Phase, 200 VAC       2-2         Single-Phase, 200 VAC       2-2         Single-Phase, 100 VAC       2-3
2.2	SERVO	PACK Overload Protection Characteristics 2-4
2.3	Speci	fications2-5
	2.3.1	FT82 SERVOPACKs with Analog Voltage/ Pulse Train References
	2.3.2	FT82 SERVOPACK with MECHATROLINK-II Communications References2-9
	2.3.3	FT82 SERVOPACK with MECHATROLINK-III Communications References
	2.3.4	Command Option Attachable-type FT82 SERVOPACKs with INDEXER Modules 2-15
	2.3.5	FT83 SERVOPACKs with Analog Voltage/ Pulse Train References

## 2.1.1 Three-Phase, 200 VAC

## 2.1 Ratings

The ratings of the FT82 and FT83 SERVOPACKs are the same. This section gives the ratings of SERVOPACKs.

## 2.1.1 Three-Phase, 200 VAC

	Model SGD7S	2R8A	120A	
Maximum App	licable Motor Capacity [	0.4	1.5	
Continuous Ou	utput Current [Arms]		2.8	11.6
Instantaneous	Maximum Output Curre	9.3 28		
	Power Supply		200 VAC to 240 \	/AC, 50 Hz/60 Hz
Main Circuit	Permitted Voltage Fluc	ctuation	-15% to	o +10%
Oli Gait	Input Current [Arms]*		2.5	7.3
	Power Supply		200 VAC to 240 \	/AC, 50 Hz/60 Hz
Control		ctuation	-15% to +10%	
	Input Current [Arms]*	0.2     0.2       1.0     3.2		
Power Supply	Capacity [kVA]*	1.0	3.2	
	Main Circuit Power Lo	ss [W]	22.5	72.6
Power Loss*	Control Circuit Power	Loss [W]	12	15
Fower Loss.	Built-in Regenerative F	Resistor Power Loss [W]	-	12
	Total Power Loss [W]		34.5	97.6
-	Built-In Regenerative	Resistance $[\Omega]$	-	20
Regenerative Resistor	Resistor	Capacity [W]	-	60
	Minimum Allowable Ex	ternal Resistance $[\Omega]$	40	20
Overvoltage C	ategory		I	İl

<sup>\*</sup> This is the net value at the rated load.

## 2.1.2 Single-Phase, 200 VAC

	Model SGD7S	2R8A	120A		
Maximum App	licable Motor Capacity [I	kW]	0.4	1.5	
Continuous Ou	utput Current [Arms]		2.8	11.6	
Instantaneous	Maximum Output Curre	um Output Current [Arms] 9.3			
	Power Supply		200 VAC to 240 \	/AC, 50 Hz/60 Hz	
Main Circuit	Permitted Voltage Fluc	ctuation	-15% to	+10%	
	Input Current [Arms]*		5.0	16	
	Power Supply		200 VAC to 240 \	/AC, 50 Hz/60 Hz	
Control	Permitted Voltage Fluc	ctuation	-15% to +10%		
	Input Current [Arms]*	ms]* 0.2 0.25	0.25		
Power Supply	Capacity [kVA]*	1.2	4.0		
	Main Circuit Power Lo	ss [W]	23.7	71.8	
Power Loss*	Control Circuit Power	Loss [W]	12	16	
Power Loss.	Built-in Regenerative F	Resistor Power Loss [W]	_	12	
	Total Power Loss [W]		35.7	103.8	
	Built-In Regenerative	Resistance $[\Omega]$	_	12	
Regenerative Resistor	Resistor	Capacity [W]	-	60	
1.0010101	Minimum Allowable Ex	ternal Resistance $[\Omega]$	40	12	
Overvoltage Ca	ategory			I	

<sup>\*</sup> This is the net value at the rated load.

## 2.1.3 Single-Phase, 100 VAC

	SGD7S-	2R8F
Maximum Appli	cable Motor Capacity [kW]	0.4
Continuous Out	put Current [Arms]	2.8
Instantaneous N	Maximum Output Current [Arms]	9.3
	Power Supply	100 VAC to 120 VAC, 50 Hz/60 Hz
Main Circuit	Permitted Voltage Fluctuation	-15% to +10%
	Input Current [Arms]*	10
	Power Supply	100 VAC to 120 VAC, 50 Hz/60 Hz
Control	Permitted Voltage Fluctuation	-15% to +10%
	Input Current [Arms]*	0.38
Power Supply C	Capacity [kVA]*	1.4
	Main Circuit Power Loss [W]	26.2
Power Loss*	Control Circuit Power Loss [W]	12
	Total Power Loss [W]	38.2
Regenerative Resistor	Minimum Allowable Resistance $[\Omega]$	40
Overvoltage Ca	tegory	III

<sup>\*</sup> This is the net value at the rated load.

## 2.2

## **SERVOPACK Overload Protection Characteristics**

The overload protection characteristics of the FT82/FT83 SERVOPACKs are the same as the standard  $\Sigma$ -7-Series SERVOPACKs. Refer to the following manual for details.



- $\Sigma$ -7-Series  $\Sigma$ -7S SERVOPACK with Analog Voltage/Pulse Train References Product Manual (Manual No.: SIEP S800001 26)
- $\Sigma$ -7-Series  $\Sigma$ -7S SERVOPACK with MECHATROLINK-II Communications References Product Manual (Manual No.: SIEP S800001 27)
- $\Sigma$ -7-Series  $\Sigma$ -7S SERVOPACK with MECHATROLINK-III Communications References Product Manual (Manual No.: SIEP S800001 28)
- Σ-7-Series Σ-7S Command Option Attachable-type SERVOPACK with INDEXER Module Product Manual (Manual No.: SIEP S800001 64)

#### FT83 SFRVOPACKs

 $\Sigma$ -7-Series  $\Sigma$ -7S SERVOPACK with Analog Voltage/Pulse Train References Product Manual (Manual No.: SIEP S800001 26)

# 3 Specifications

# 2.3.1 FT82 SERVOPACKs with Analog Voltage/Pulse Train References

Item		Specification	
Control Met	hod	IGBT-based PWM control, sine wave current drive	
Feedback		Serial encoder: 24 bits (incremental encoder/absolute encoder)	
	Surrounding Air Temperature*1	-5°C to 55°C (With derating, usage is possible between 55°C and 60°C.) Refer to the following manual for derating specifications.  Σ-7-Series Σ-7S SERVOPACK with Analog Voltage/Pulse Train References Product Manual (Manual No.: SIEP S800001 26)	
	Storage Temperature	-20°C to 85°C	
	Surrounding Air Humidity	95% relative humidity max. (with no freezing or condensation)	
	Storage Humidity	95% relative humidity max. (with no freezing or condensation)	
	Vibration Resistance	4.9 m/s <sup>2</sup>	
	Shock Resistance	19.6 m/s <sup>2</sup>	
		Degree SERVOPACK Models	
Environ- mental Conditions	Degree of Protection	IP20 SGD7S-2R8A, -120A (three-phase, 200-VAC input), and -2R8F	
Conditions		IP10 SGD7S-120A00A008 (single-phase, 200-VAC input)	
	Pollution Degree	Must be no corrosive or flammable gases.     Must be no exposure to water, oil, or chemicals.     Must be no dust, salts, or iron dust.	
	Altitude*1	<ul> <li>1,000 m max. (With derating, usage is possible between 1,000 m an 2,000 m.)</li> <li>Refer to the following manual for derating specifications.</li> <li>Σ-7-Series Σ-7S SERVOPACK with Analog Voltage/Pulse Train References Product Manual (Manual No.: SIEP S800001 26)</li> </ul>	
	Others	Do not use the SERVOPACK in the following locations: Locations subject to static electricity, noise, strong electromagnetic/magnetic fields, or radioactivity	
Compliant S	Standards	Refer to the following section for details.  © Compliance with UL Standards, EU Directives, UK Regulations, and Other Safety Standards on page xxx	
Mounting		Base-mounted or rack-mounted	
	Speed Control Range	1:5000 (At the rated torque, the lower limit of the speed control range must not cause the Servomotor to stop.)	
		±0.01% of rated speed max. (for a load fluctuation of 0% to 100%)	
	Coefficient of Speed	0% of rated speed max. (for a load fluctuation of ±10%)	
Perfor- mance	Fluctuation*2	$\pm 0.1\%$ of rated speed max. (for a temperature fluctuation of 25°C $\pm 25$ °C)	
	Torque Control Precision (Repeatability)	±1%	
	Soft Start Time Set- ting	0 s to 10 s (Can be set separately for acceleration and deceleration.)	
	·	Continued on next page.	

Continued from previous page.

Item			Specification
	Encoder Divided Pulse Output		Phase A, phase B, phase C: Line-driver output Number of divided output pulses: Any setting is allowed.
	Overheat Protection		Number of input points: 1
	Input		Input voltage range: 0 V to +5 V
		Fixed	Allowable voltage range: 5 VDC ±5%
		Input	Number of input points: 1
		'	SEN (Absolute Data Request) signal
			Allowable voltage range: 24 VDC ±20% Number of input points: 7
			Input method: Sink inputs or source inputs Input Signals
ļ			/S-ON (Servo ON) signal
			<ul> <li>/P-CON (Proportional Control) signal</li> <li>P-OT (Forward Drive Prohibit) and N-OT (Reverse Drive Prohibit) sig-</li> </ul>
	Sequence		nals
	Input Signals	Input Signals	<ul> <li>/ALM-RST (Alarm Reset) signal</li> <li>/P-CL (Forward External Torque Limit) and /N-CL (Reverse External Torque Limit) signals</li> </ul>
ļ		That Can	/SPD-D (Motor Direction) signal
ļ		Be Allo- cated	/SPD-A and /SPD-B (Internal Set Speed Selection) signals
		Catca	/C-SEL (Control Selection) signal
			/ZCLAMP (Zero Clamping) signal
			/INHIBIT (Reference Pulse Inhibit) signal
ļ			• /P-DET (Polarity Detection) signal
			/G-SEL (Gain Selection) signal     //PSEL (Reference Bules Input Multiplication Switch) signal
I/O Signals			
			A signal can be allocated and the positive and negative logic can be
			changed.
		Fixed Output	Allowable voltage range: 5 VDC to 30 VDC
ļ			Number of output points: 1
			Output signal: ALM (Servo Alarm) signal
			Allowable voltage range: 5 VDC to 30 VDC
ļ			Number of output points: 6
			(A photocoupler output (isolated) is used for three of the outputs.) (An open-collector output (non-isolated) is used for the other three outputs.)
ļ			puts.) Output signals
	Sequence		
ļ	Output		
	Signals		/S-RDY (Servo Ready) signal
			/CLT (Torque Limit Detection) signal
		Allocated	VLT (Speed Limit Detection) signal
1			,,, and , ( Jodo) orginal
			A signal can be allocated and the positive and negative logic can be
		Output Signals That Can Be Allocated	<ul> <li>/COIN (Positioning Completion) signal</li> <li>/V-CMP (Speed Coincidence Detection) signal</li> <li>/TGON (Rotation Detection) signal</li> <li>/S-RDY (Servo Ready) signal</li> <li>/CLT (Torque Limit Detection) signal</li> </ul>

Continued from previous page.

Item			Specification
		Inter- faces	Digital Operator (JUSP-OP05A-1-E) and personal computer (with SigmaWin+)
	RS-422A Communi- cations	1:N Commu- nications	Up to N = 15 stations possible for RS-422A port
Communi- cations	(CN3)	Axis Address Setting	Set with parameters.
	USB	Interface	Personal computer (with SigmaWin+)
	Communications (CN7)	Communications Standard	Conforms to USB2.0 standard (12 Mbps).
Displays/Ind	icators		CHARGE indicator and five-digit seven-segment display
Panel Opera	tor		Four push switches
Analog Monitor (CN5)			Number of points: 2 Output voltage range: ±10 VDC (effective linearity range: ±8 V) Resolution: 16 bits Accuracy: ±20 mV (Typ) Maximum output current: ±10 mA Settling time (±1%): 1.2 ms (Typ)
Dynamic Bra	Dynamic Brake (DB)		Activated when a servo alarm or overtravel (OT) occurs, or when the power supply to the main circuit or servo is OFF.
Regenerative Processing			Built-in Refer to the following catalog for details.  Ω AC Servo Drives Σ-7 Series (Manual No.: KAEP S800001 23)
Overtravel (C	Overtravel (OT) Prevention		Stopping with dynamic brake, deceleration to a stop, or coasting to a stop for the P-OT (Forward Drive Prohibit) or N-OT (Reverse Drive Prohibit) signal
Protective Fu	unctions		Overcurrent, overvoltage, low voltage, overload, regeneration error, etc.
Utility Functions			Gain adjustment, alarm history, jogging, origin search, etc.
Inputs			/HWBB1 and /HWBB2: Base block signals for Power Modules
Safety	Output		EDM1: Monitors the status of built-in safety circuit (fixed output).
Functions	Compliant dards*3	Stan-	ISO13849-1 PLe (Category 3) and IEC61508 SIL3
Applicable Option Modules		es	Fully-closed Modules and Safety Modules Note: You cannot use a Fully-closed Module and a Safety Module together.  Continued on next page.

Continued from previous page.

	Item				Specification	
		Soft Sting	Start T	ime Set-	0 s to 10 s (Can be set separately for acceleration and deceleration.)	
		9		Refer- ence Voltage	<ul> <li>Maximum input voltage: ±12 V (forward motor rotation for positive reference).</li> <li>6 VDC at rated speed (default setting). Input gain setting can be changed.</li> </ul>	
		Input Signa		Input Imped- ance	Approx. 14 kΩ	
	Speed Con- trol			Circuit Time Con- stant	30 μs	
		Internal Set Speed Control		Rota- tion Direc- tion Selec- tion	With Proportional Control signal	
				Speed Selec- tion	With Forward/Reverse External Torque Limit signals (speed 1 to 3 selection). Servomotor stops or another control method is used when both signals are OFF.	
		Feedforward Compensation Output Signal Positioning Completed Width Setting			0% to 100%	
Controls				nal Posi- npleted	0 to 1,073,741,824 reference units	
Con			Ref-	Refer- ence Pulse Form	One of the following is selected: Sign + pulse train, CW + CCW pulse trains, and two-phase pulse trains with 90° phase differential	
	Posi-			Input Form	Line driver or open collector	
	tion Con- trol	n-     In-	eren ce puls es	Maxi- mum Input Fre- quency	<ul> <li>Line Driver Sign + pulse train or CW + CCW pulse trains: 4 Mpps Two-phase pulse trains with 90° phase differential: 1 Mpps</li> <li>Open Collector Sign + pulse train or CW + CCW pulse trains: 200 kpps Two-phase pulse trains with 90° phase differential: 200 kpps</li> </ul>	
						Input Multiplica- tion Switching
			Clear	Signal	Position deviation clear Line driver or open collector	
	Torque		Ref enc Volt		<ul> <li>Maximum input voltage: ±12 V (forward torque output for positive reference).</li> <li>3 VDC at rated torque (default setting). Input gain setting can be changed.</li> </ul>	
	Con- trol	Con- Input Signal		Input Imped- ance	Approx. 14 kΩ	
				Circuit Time Constant	16 μs	

<sup>\*1.</sup> If you combine a  $\Sigma$ -7-Series SERVOPACK with a  $\Sigma$ -V-Series Option Module, the following  $\Sigma$ -V-Series SERVO-PACKs specifications must be used: a surrounding air temperature of 0°C to 55°C and an altitude of 1,000 m max. Also, the applicable surrounding range cannot be increased by derating.

## 2.3.2 FT82 SERVOPACK with MECHATROLINK-II Communications References

\*2. The coefficient of speed fluctuation for load fluctuation is defined as follows: Coefficient of speed fluctuation = No-load motor speed - Total-load motor speed × 100% Rated motor speed

\*3. Always perform risk assessment for the system and confirm that the safety requirements are met.

## FT82 SERVOPACK with MECHATROLINK-II Communications References 2.3.2

Item		Specification	
Control Met	hod	IGBT-based PWM control, sine wave current drive	
Feedback		Serial encoder: 24 bits (incremental encoder/absolute encoder)	
	Surrounding Air Temperature*1	-5°C to 55°C (With derating, usage is possible between 55°C and 60°C.) Refer to the following manual for derating specifications.  Σ-7-Series Σ-7S SERVOPACK with MECHATROLINK-II Communications References Product Manual (Manual No.: SIEP S800001 27)	
	Storage Temperature	-20°C to 85°C	
	Surrounding Air Humidity	95% relative humidity max. (with no freezing or condensation)	
	Storage Humidity	95% relative humidity max. (with no freezing or condensation)	
	Vibration Resistance	4.9 m/s <sup>2</sup>	
	Shock Resistance	19.6 m/s <sup>2</sup>	
		Degree SERVOPACK Models	
Environ- mental Conditions	Degree of Protection	IP20 SGD7S-2R8A, -120A (three-phase, 200-VAC input), and -2R8F	
		IP10 SGD7S-120A10A008 (single-phase, 200-VAC input)	
	Pollution Degree	Must be no corrosive or flammable gases. Must be no exposure to water, oil, or chemicals. Must be no dust, salts, or iron dust.  1,000 m max. (With derating, usage is possible between 1,000 m and 2,000 m.)	
	Altitude*1	Refer to the following manual for derating specifications.  Σ-7-Series Σ-7S SERVOPACK with MECHATROLINK-II Communications References Product Manual (Manual No.: SIEP S800001 27)	
	Others	Do not use the SERVOPACK in the following locations: Locations subject to static electricity, noise, strong electromagnetic/magnetic fields, or radioactivity	
0 "		Refer to the following section for details.	
Compliant S	standards	Compliance with UL Standards, EU Directives, UK Regulations, and Other Safety Standards on page xxx	
Mounting		Base-mounted or rack-mounted	
	Speed Control Range	1:5000 (At the rated torque, the lower limit of the speed control range must not cause the Servomotor to stop.)	
		±0.01% of rated speed max. (for a load fluctuation of 0% to 100%)	
Davidan	Coefficient of Speed	0% of rated speed max. (for a voltage fluctuation of ±10%)	
Perfor- mance	Fluctuation*2	±0.1% of rated speed max. (for a temperature fluctuation of 25°C ±25°C)	
	Torque Control Precision (Repeatability)	±1%	
	Soft Start Time Setting	0 s to 10 s (Can be set separately for acceleration and deceleration.)	
	·	Continued on next page.	

## 2.3.2 FT82 SERVOPACK with MECHATROLINK-II Communications References

Continued from previous page.

Item			Specification
	Encoder Div Pulse Outp		Phase A, phase B, phase C: Line-driver output Number of divided output pulses: Any setting is allowed.
	Overheat Protection Input		Number of input points: 1 Input voltage range: 0 V to +5 V
			Allowable voltage range: 24 VDC ±20% Number of input points: 7
	Sequence Input Signals	Input Signals That Can Be Allo- cated	Input method: Sink inputs or source inputs Input Signals  • /DEC (Origin Return Deceleration Switch) signal  • /EXT1 to /EXT3 (External Latch Input 1 to 3) signals  • P-OT (Forward Drive Prohibit) and N-OT (Reverse Drive Prohibit) signals  • /P-CL (Forward External Torque Limit) and /N-CL (Reverse External Torque Limit) signals  • /P-DET (Polarity Detection) signal  A signal can be allocated and the positive and negative logic can be changed.
I/O Signals		Fixed Output	Allowable voltage range: 5 VDC to 30 VDC Number of output points: 1 Output signal: ALM (Servo Alarm) signal
	Sequence Output Signals	Output Signals That Can Be Allo- cated	Allowable voltage range: 5 VDC to 30 VDC Number of output points: 3 (A photocoupler output (isolated) is used.)  Output Signals  • /COIN (Positioning Completion) signal  • /V-CMP (Speed Coincidence Detection) signal  • /TGON (Rotation Detection) signal  • /S-RDY (Servo Ready) signal  • /CLT (Torque Limit Detection) signal  • /VLT (Speed Limit Detection) signal  • /WLT (Speed Limit Detection) signal  • /WARN (Warning) signal  • /WARN (Warning) signal  • /NEAR (Near) signal  A signal can be allocated and the positive and negative logic can be changed.
Communi- cations	RS-422A Communi- cations	Inter- faces 1:N Commu- nications	Digital Operator (JUSP-OP05A-1-E) and Personal computer (with SigmaWin+)  Up to N = 15 stations possible for RS-422A port
	(CN3)	Axis Address Setting	Set with parameters.
	USB Com-	Interface	Personal computer (with SigmaWin+)
	munica- tions (CN7)	Communica- tions Standard	Conforms to USB2.0 standard (12 Mbps).
Displays/Indicators			CHARGE, PWR, and COM indicators, and one-digit seven-segment display

## 2.3.2 FT82 SERVOPACK with MECHATROLINK-II Communications References

Continued from previous page.

Item		Specification
	Communications Protocol	MECHATROLINK-II
MECHATR OLINK-II	Station Address Settings	41h to 5Fh (maximum number of slaves: 30) Selected with the combination of a rotary switch (S2) and DIP switch (S3).
Communi- cations	Baud Rate	10 Mbps, 4 Mbps A DIP switch (S3) is used to select the baud rate.
	Transmission Cycle	250 μs or 0.5 ms to 4.0 ms (multiples of 0.5 ms)
	Number of Transmission Bytes	17 or 32 bytes/station A DIP switch (S3) is used to select the number of transmission bytes.
Reference	Performance	Position, speed, or torque control with MECHATROLINK-II communications
Method	Reference Input	MECHATROLINK-I or MECHATROLINK-II commands (sequence, motion, data setting, data access, monitoring, adjustment, etc.)
MECHATRO	LINK-II Communica-	Rotary switch (S2) positions: 16
tions Setting	g Switches	Number of DIP switch (S3) pins: 4
Analog Monitor (CN5)		Number of points: 2 Output voltage range: ±10 VDC (effective linearity range: ±8 V) Resolution: 16 bits Accuracy: ±20 mV (Typ) Maximum output current: ±10 mA Settling time (±1%): 1.2 ms (Typ)
Dynamic Br	ake (DB)	Activated when a servo alarm or overtravel (OT) occurs, or when the power supply to the main circuit or servo is OFF.
Regenerative Processing		Built-in Refer to the following catalog for details.  Ω AC Servo Drives Σ-7 Series (Manual No.: KAEP S800001 23)
Overtravel (OT) Prevention		Stopping with dynamic brake, deceleration to a stop, or coasting to a stop for the P-OT (Forward Drive Prohibit) or N-OT (Reverse Drive Prohibit) signal
Protective Functions		Overcurrent, overvoltage, low voltage, overload, regeneration error, etc.
Utility Functions		Gain adjustment, alarm history, jogging, origin search, etc.
	Inputs	/HWBB1 and /HWBB2: Base block signals for Power Modules
Safety	Output	EDM1: Monitors the status of built-in safety circuit (fixed output).
Functions	Compliant Standards*3	ISO13849-1 PLe (Category 3), IEC61508 SIL3
Applicable Option Modules		Fully-closed Modules and Safety Modules Note: You cannot use a Fully-closed Module and a Safety Module together.

<sup>\*1.</sup> If you combine a  $\Sigma$ -7-Series SERVOPACK with a  $\Sigma$ -V-Series Option Module, the following  $\Sigma$ -V-Series SERVO-PACKs specifications must be used: a surrounding air temperature of 0°C to 55°C and an altitude of 1,000 m max. Also, the applicable surrounding range cannot be increased by derating.

 $\label{eq:coefficient} \mbox{Coefficient of speed fluctuation} = \frac{\mbox{No-load motor speed - Total-load motor speed}}{\mbox{Rated motor speed}} \times 100\%$ 

<sup>\*2.</sup> The coefficient of speed fluctuation for load fluctuation is defined as follows:

<sup>\*3.</sup> Always perform risk assessment for the system and confirm that the safety requirements are met.

# 2.3.3 FT82 SERVOPACK with MECHATROLINK-III Communications References

	Item	Specification			
Drive Method		IGBT-based PWM control, sine wave current drive			
Feedback		Serial end	coder: 24 bits (incremental encoder/absolute encoder)		
	Surrounding Air Temperature*1	(With dera Refer to the Σ-7-S	-5°C to 55°C (With derating, usage is possible between 55°C and 60°C.) Refer to the following manual for derating specifications.  Σ-7-Series Σ-7S SERVOPACK with MECHATROLINK-III Communications References Product Manual (Manual No.: SIEP S800001 28)		
	Storage Temperature	-20°C to 85°C			
	Surrounding Air Humidity	95% relat	ive humidity max. (with no freezing or condensation)		
	Storage Humidity	95% relat	tive humidity max. (with no freezing or condensation)		
	Vibration Resistance	4.9 m/s <sup>2</sup>			
	Shock Resistance	19.6 m/s <sup>2</sup>	2		
		Degree	SERVOPACK Models		
Environ- mental Conditions	Degree of Protection	IP20	SGD7S-2R8A, -120A (three-phase, 200-VAC input), and -2R8F		
Conditions		IP10	SGD7S-120A20A008 (single-phase, 200-VAC input)		
	Pollution Degree  Altitude*1	• Must be • Must be 1,000 m r 2,000 m.) Refer to tl	e no corrosive or flammable gases. e no exposure to water, oil, or chemicals. e no dust, salts, or iron dust.  max. (With derating, usage is possible between 1,000 m and he following manual for derating specifications.  eries Σ-7S SERVOPACK with MECHATROLINK-III Communications ences Product Manual (Manual No.: SIEP S800001 28)		
	Others	Do not us ject to sta	Do not use the SERVOPACK in the following locations: Locations subject to static electricity, noise, strong electromagnetic/magnetic fields, or radioactivity		
Compliant S	itandards	Refer to the following section for details.  © Compliance with UL Standards, EU Directives, UK Regulations, and Other Safety Standards on page xxx			
Mounting		Base-mou	unted or rack-mounted		
	Speed Control Range		1:5000 (At the rated torque, the lower limit of the speed control range must not cause the Servomotor to stop.)		
		±0.01% of rated speed max. (for a load fluctuation of 0% to 100%)			
Dantan	Coefficient of Speed Fluctuation*2	0% of rated speed max. (for a load fluctuation of ±10%)			
Perfor- mance		±0.1% of ±25°C)	±0.1% of rated speed max. (for a temperature fluctuation of 25°C ±25°C)		
	Torque Control Precision (Repeatability)	±1%			
	Soft Start Time Setting	0 s to 10	0 s to 10 s (Can be set separately for acceleration and deceleration.)		

## 2.3.3 FT82 SERVOPACK with MECHATROLINK-III Communications References

Continued from previous page.

	Item		Specification		
	Encoder Div Pulse Outp		Phase A, phase B, phase C: Line-driver output Number of divided output pulses: Any setting is allowed.		
	Overheat P Input	rotection	Number of input points: 1 Input voltage range: 0 V to +5 V		
			Allowable voltage range: 24 VDC ±20% Number of input points: 7		
	Sequence Input Signals	Input Signals That Can Be Allo- cated	Input method: Sink inputs or source inputs Input Signals  • /DEC (Origin Return Deceleration Switch) signal  • /EXT1 to /EXT3 (External Latch Input 1 to 3) signals  • P-OT (Forward Drive Prohibit) and N-OT (Reverse Drive Prohibit) signals  • /P-CL (Forward External Torque Limit) and /N-CL (Reverse External Torque Limit) signals  • /P-DET (Polarity Detection) signal  A signal can be allocated and the positive and negative logic can be changed.		
/O Signals		Fixed Output	Allowable voltage range: 5 VDC to 30 VDC  Number of output points: 1  Output signal: ALM (Servo Alarm) signal		
			Allowable voltage range: 5 VDC to 30 VDC Number of output points: 3 (A photocoupler output (isolated) is used.)		
	Sequence Output Signals	Output Signals That Can Be Allo- cated	Output Signals  • /COIN (Positioning Completion) signal  • /V-CMP (Speed Coincidence Detection) signal  • /TGON (Rotation Detection) signal  • /S-RDY (Servo Ready) signal  • /CLT (Torque Limit Detection) signal  • /VLT (Speed Limit Detection) signal  • /WLT (Speed Limit Detection) signal  • /WARN (Warning) signal  • /WARN (Warning) signal  • /NEAR (Near) signal  A signal can be allocated and the positive and negative logic can be changed.		
		Inter- faces	Digital Operator (JUSP-OP05A-1-E) and personal computer (with SigmaWin+)		
	RS-422A Communi- cations	1:N Commu- nications	Up to N = 15 stations possible for RS-422A port		
Communi- cations	(CN3)	Axis Address Setting	Set with parameters.		
	USB	Interface	Personal computer (with SigmaWin+)		
	Communi- cations (CN7)	Commu- nications Standard	Conforms to USB2.0 standard (12 Mbps).		
Displays/Indi			CHARGE, PWR, CN, L1, and L2 indicators, and one-digit seven-seg-		

## 2.3.3 FT82 SERVOPACK with MECHATROLINK-III Communications References

Continued from previous page.

Item		Specification		
	Communications Protocol	MECHATROLINK-III		
MECHATR	Station Address Settings	03h to EFh (maximum number of slaves: 62) The rotary switches (S1 and S2) are used to set the station address.		
OLINK-III Communi-	Baud Rate	100 Mbps		
cations	Transmission Cycle	125 μs, 250 μs, 500 μs, 750 μs, 1.0 ms to 4.0 ms (multiples of 0.5 ms)		
	Number of Transmission Bytes	32 or 48 bytes/station A DIP switch (S3) is used to select the number of transmission bytes.		
D (	Performance	Position, speed, or torque control with MECHATROLINK-III communications		
Reference Method	Reference Input	MECHATROLINK-III commands (sequence, motion, data setting, data access, monitoring, adjustment, etc.)		
	Profile	MECHATROLINK-III standard servo profile		
MECHATROLINK-III Communications Setting Switches  Analog Monitor (CN5)		Rotary switch (S1 and S2) positions: 16		
		Number of DIP switch (S3) pins: 4		
		Number of points: 2 Output voltage range: ±10 VDC (effective linearity range: ±8 V) Resolution: 16 bits Accuracy: ±20 mV (Typ) Maximum output current: ±10 mA Settling time (±1%): 1.2 ms (Typ)		
Dynamic Br	ake (DB)	Activated when a servo alarm or overtravel (OT) occurs, or when the power supply to the main circuit or servo is OFF.		
Regenerativ	e Processing	Built-in Refer to the following catalog for details.  Ω AC Servo Drives Σ-7 Series (Manual No.: KAEP S800001 23)		
Overtravel (OT) Prevention		Stopping with dynamic brake, deceleration to a stop, or coasting to a stop for the P-OT (Forward Drive Prohibit) or N-OT (Reverse Drive Prohibit) signal		
Protective Functions		Overcurrent, overvoltage, low voltage, overload, regeneration error, etc.		
Utility Functions		Gain adjustment, alarm history, jogging, origin search, etc.		
	Inputs	/HWBB1 and /HWBB2: Base block signals for Power Modules		
Safety	Output	EDM1: Monitors the status of built-in safety circuit (fixed output).		
Functions	Compliant Standards*3	ISO13849-1 PLe (Category 3), IEC61508 SIL3		
Applicable Option Modules		Fully-closed Modules and Safety Modules Note: You cannot use a Fully-closed Module and a Safety Module together.		

<sup>\*1.</sup> If you combine a Σ-7-Series SERVOPACK with a Σ-V-Series Option Module, the following Σ-V-Series SERVO-PACKs specifications must be used: a surrounding air temperature of 0°C to 55°C and an altitude of 1,000 m max. Also, the applicable surrounding range cannot be increased by derating.

 $\begin{tabular}{ll} \begin{tabular}{ll} Coefficient of speed fluctuation = & \hline & No-load motor speed - Total-load motor speed \\ \hline & Rated motor speed \\ \hline \end{tabular} \times 100\% \\ \end{tabular}$ 

<sup>\*2.</sup> The coefficient of speed fluctuation for load fluctuation is defined as follows:

<sup>\*3.</sup> Always perform risk assessment for the system and confirm that the safety requirements are met.

# Command Option Attachable-type FT82 SERVOPACKs with INDEXER Modules

2.3.4

The specifications when the INDEXER Module is combined with a Command Option Attachable-type SERVOPACK are given in the following table.

	Item	Specification			
Control Met	hod	IGBT-based PWM control, sine wave current drive			
Feedback		Serial encoder: 24 bits (incremental encoder/absolute encoder)			
	Surrounding Air Temperature	0°C to 55°C			
	Storage Temperature	-20°C to 85°C			
	Surrounding Air Humidity	90% relative humidity max. (with no freezing or condensation)			
	Storage Humidity	90% relative humidity max. (with no freezing or condensation)			
	Vibration Resistance	4.9 m/s <sup>2</sup>			
Environ-	Shock Resistance	19.6 m/s <sup>2</sup>			
mental Conditions	Degree of Protection	IP10			
	Pollution Degree	<ul> <li>Must be no corrosive or flammable gases.</li> <li>Must be no exposure to water, oil, or chemicals.</li> <li>Must be no dust, salts, or iron dust.</li> </ul>			
	Altitude	1,000 m or less.			
	Others	Do not use the SERVOPACK in the following locations: Locations subject to static electricity, noise, strong electromagnetic/magnetic fields, or radioactivity			
Compliant S	Standards	Refer to the following section for details.  © Compliance with UL Standards, EU Directives, UK Regulations, and Other Safety Standards on page xxx			
Mounting		Base-mounted or rack-mounted			
	Speed Control Range	1:5000 (At the rated torque, the lower limit of the speed control range must not cause the Servomotor to stop.)			
		±0.01% of rated speed max. (for a load fluctuation of 0% to 100%)			
	Coefficient of Speed	0% of rated speed max. (for a voltage fluctuation of ±10%)			
Perfor- mance	Fluctuation*1	±0.1% of rated speed max. (for a temperature fluctuation of 25°C ±25°C)			
	Torque Control Precision (Repeatability)	±1%			
	Soft Start Time Setting	0 s to 10 s (Can be set separately for acceleration and deceleration.)			
		Continued on post page			

## 2.3.4 Command Option Attachable-type FT82 SERVOPACKs with INDEXER Modules

Continued from previous page.

	Item			Specification			
	Encoder D Pulse Out		d		Phase A, phase B, phase C: Line-driver output Number of divided output pulses: Any setting is allowed.		
	Overheat Input	Prote	ction	Number of input points: 1 Input voltage range: 0 V to +5 V			
		SERVOPACK		Allowable voltage range: 24 VDC ±2 Number of input points: 6	20%		
				Input method: Sink inputs or source inputs Input signals:  • /ALM-RST (Alarm Reset) signal  • P-OT (Forward Drive Prohibit) signal  • N-OT (Reverse Drive Prohibit) signal  • /DEC (Origin Return Deceleration) switch  • /RGRT (Registration Input) signal  • /S-ON (Servo ON) signal  Positive or negative logic can be changed in the parameters.			
				Allowable voltage range: 24 VDC ±10% Number of input points: 11			
				/MODE 0/1 (Mode Switch Input) signal			
I/O Signals				Mode 0	Mode 1		
I/O Signals	Sequence Input Signals	INDEXER Module	Fixed Inputs	<ul> <li>/START-STOP (Program Table Operation Start-Stop Input) signal</li> <li>/PGMRES (Program Table Operation Reset Input) signal</li> <li>/SEL0 (Program Step Selection Input 0) signal</li> <li>/SEL1 (Program Step Selection Input 1) signal</li> <li>/SEL2 (Program Step Selection Input 2) signal</li> <li>/SEL3 (Program Step Selection Input 3) signal</li> <li>/SEL4 (Program Step Selection Input 4) signal</li> <li>/SEL5 (Program Step Selection Input 5) signal</li> <li>/SEL6 (Program Step Selection Input 6) signal</li> <li>/SEL7 (Program Step Selection Input 7) signal</li> </ul>	<ul> <li>/HOME (Origin Return Input) signal</li> <li>/JOGP (Forward Jog Input) signal</li> <li>/JOGN (Reverse Jog Input) signal</li> <li>/JOG0 (Jog Speed Table Selection Input 0) signal</li> <li>/JOG1 (Jog Speed Table Selection Input 1) signal</li> <li>/JOG2 (Jog Speed Table Selection Input 2) signal</li> <li>/JOG3 (Jog Speed Table Selection Input 3) signal</li> </ul>		

## 2.3.4 Command Option Attachable-type FT82 SERVOPACKs with INDEXER Modules

Continued from previous page.

Fixed Out-		Item			Specification
Number of output points: 3				Out-	Allowable voltage range: 5 VDC to 30 VDC Number of output points: 1
Allowable voltage range: 5 VDC to 30 VDC Number of output points: 9 Output signals: - /POUT0 (Programmable Output 0) signal - /POUT1 (Programmable Output 1) signal - /POUT3 (Programmable Output 2) signal - /POUT4 (Programmable Output 3) signal - /POUT5 (Programmable Output 4) signal - /POUT6 (Programmable Output 5) signal - /POUT6 (Programmable Output 5) signal - /POUT6 (Programmable Output 6) signal - /POUT7 (Programmable Output 7) signal - /POUT6 (Programmable Output 7) signal -			YOK	/hich ıanged	Number of output points: 3
Number of output points: 9   Output signals   //POUT0 (Programmable Output 1) signal   //POUT1 (Programmable Output 2) signal   //POUT3 (Programmable Output 3) signal   //POUT3 (Programmable Output 3) signal   //POUT4 (Programmable Output 3) signal   //POUT5 (Programmable Output 4) signal   //POUT6 (Programmable Output 3) signal   //POUT6 (Programmable Output 4) signal   //POUT7 (Programmable Output 5) signal   //POUT6 (Programmable Output 7) signal   //POUT7 (Programmable Output 7) signal   //POUT6 (Programmable Output	I/O Signals	Output	SERVOPA	Output Signals for V Allocations Can Be CI	<ul> <li>/WARN (Warning Output) signal</li> <li>/BK (Brake Output) signal</li> <li>/S-RDY (Servo Ready Output) signal</li> <li>ALO1, ALO2, and ALO3 (Alarm Code Output) signals</li> <li>Signal allocations and positive or negative logic can be changed in the</li> </ul>
RS-422A   Communications   Tick   Communications   Com			INDEXER Module	Out-	Number of output points: 9 Output signals:  • /INPOSITION (Positioning Completion Output) signal  • /POUT0 (Programmable Output 0) signal  • /POUT1 (Programmable Output 1) signal  • /POUT2 (Programmable Output 2) signal  • /POUT3 (Programmable Output 3) signal  • /POUT4 (Programmable Output 4) signal  • /POUT5 (Programmable Output 5) signal  • /POUT6 (Programmable Output 6) signal
CommunicationsT:N CommunicationsUp to N = 15 stations possible for RS-422A portCommunicationsAxis Address SettingSet with parameters.USB Communications (CN7)Interface Personal computer (with SigmaWin+)Communications (CN7)Communications StandardConforms to USB2.0 standard (12 Mbps).Displays/IndicatorsSERVOPACKCHARGE and PWR indicators, and one-digit seven-segment displayDisplays/IndicatorsINDEXER ModuleRefer to the following manual for details.Communications (CN7)SERVOPACK with		DO 400A	Inter	faces	
Communications       (CN3)       Axis Address Setting       Set with parameters.         USB Communications (CN7)       Interface Communications Standard       Personal computer (with SigmaWin+)         Conforms to USB2.0 standard (12 Mbps).         CHARGE and PWR indicators, and one-digit seven-segment display         Displays/Indicators       INDEXER Module       Refer to the following manual for details.         CM SERVOPACK with       CHARGE and PWR indicators, and one-digit seven-segment display		Commu- nica-	Con		Up to N = 15 stations possible for RS-422A port
Communica- tions (CN7)       Communications Standard         Conforms to USB2.0 standard (12 Mbps).         Conforms to USB2.0 standard (12 Mbps).         SERVOPACK       CHARGE and PWR indicators, and one-digit seven-segment display         Displays/ Indicators       INDEXER Module       Refer to the following manual for details.         Indicators       INDEXER Module			Address		Set with parameters.
nications (CN7)   Conforms to USB2.0 standard (12 Mbps).			Inter	face	Personal computer (with SigmaWin+)
Displays/ Indicators  INDEXER Module  Refer to the following manual for details.  Ω Σ-7-Series Σ-7S Command Option Attachable-type SERVOPACK with		nica- tions	cations		Conforms to USB2.0 standard (12 Mbps).
Indicators INDEXER Module Ω Σ-7-Series Σ-7S Command Option Attachable-type SERVOPACK with		SERVOPA	CK		CHARGE and PWR indicators, and one-digit seven-segment display
	, ,	INDEXER	Modu	ule	$\square$ $\Sigma$ -7-Series $\Sigma$ -7S Command Option Attachable-type SERVOPACK with

## 2.3.4 Command Option Attachable-type FT82 SERVOPACKs with INDEXER Modules

Continued from previous page.

Item		Specification	
	Program Table Method	<ul> <li>Program table positioning in which steps are executed sequentially by commands given through contact input or serial communications</li> <li>Positioning in which station numbers are specified by commands given through contact input or serial communications</li> </ul>	
	Max. Number of Steps	256	
Operating Methods	Max. Number of Tables	256	
Methods	Max. Number of Stations	256	
	Serial Communications Method	Serial command by 1-channel ASCII code Communications specifications: RS-422/485 (50 m max.) Connection topology: Multi-drop connection (16 axes max.) Baud rate: 9600, 19200, 38400 bps	
	Other Functions	Registration (positioning by external signals), origin return	
Analog Monitor (CN5)		Number of points: 2 Output voltage range: ±10 VDC (effective linearity range: ±8 V) Resolution: 16 bits Accuracy: ±20 mV (Typ) Maximum output current: ±10 mA Settling time (±1%): 1.2 ms (Typ)	
Dynamic Bra	ake (DB)	Activated when a servo alarm or overtravel (OT) occurs, or when the power supply to the main circuit or servo is OFF.	
Regenerativ	e Processing	Built-in Refer to the following manual for details.  Σ-7-Series Peripheral Device Selection Manual (Manual No.: SIEP S800001 32)	
Overtravel (0	OT) Prevention	Stopping with dynamic brake, deceleration to a stop, or coasting to a stop for the P-OT (Forward Drive Prohibit) or N-OT (Reverse Drive Prohibit) signal	
Protective Functions		Overcurrent, overvoltage, low voltage, overload, regeneration error, etc.	
Utility Functions		Gain adjustment, alarm history, jogging, origin search, etc.	
	Inputs	/HWBB1 and /HWBB2: Base block signals for Power Modules	
Safety	Output	EDM1: Monitors the status of built-in safety circuit (fixed output).	
Functions	Compliant Standards*2	ISO13849-1 PLe (Category 3), IEC61508 SIL3	
Applicable C	Option Modules	Fully-Closed Module Note: You cannot use a Safety Module if you are using an INDEXER Module.	

<sup>\*2.</sup> Always perform risk assessment for the system and confirm that the safety requirements are met.

The product specifications are given below.

Gurrounding Air Temperature*1	IGBT-based PWM control, sine wave current drive Serial encoder: 24 bits (incremental encoder/absolute encoder)  0°C to 55°C
Temperature*1	encoder)
Temperature*1	0°C to 55°C
· -	
Storage Temperature	-20°C to 85°C
Surrounding Air Humidity	90% relative humidity max. (with no freezing or condensation)
Storage Humidity	90% relative humidity max. (with no freezing or condensation)
/ibration Resistance	4.9 m/s <sup>2</sup>
Shock Resistance	19.6 m/s <sup>2</sup>
Degree of Protection	IP10
Pollution Degree	<ul> <li>Must be no corrosive or flammable gases.</li> <li>Must be no exposure to water, oil, or chemicals.</li> <li>Must be no dust, salts, or iron dust.</li> </ul>
Altitude <sup>*1</sup>	1,000 m max.
Others	Do not use the SERVOPACK in the following locations: Locations subject to static electricity, noise, strong electro- magnetic/magnetic fields, or radioactivity
ndards	Refer to the following section for details.  © Compliance with UL Standards, EU Directives, UK Regulations, and Other Safety Standards on page xxx
	Base-mounted or rack-mounted
Speed Control Range	1:5000 (At the rated torque, the lower limit of the speed control range must not cause the Servomotor to stop.)
2	$\pm 0.01\%$ of rated speed max. (for a load fluctuation of 0% to 100%)
•	0% of rated speed max. (for a load fluctuation of ±10%)
	$\pm 0.1\%$ of rated speed max. (for a temperature fluctuation of 25°C $\pm 25$ °C)
Torque Control Precision Repeatability)	±1%
Soft Start Time Setting	0 s to 10 s (Can be set separately for acceleration and deceleration.)
Encoder Divided Pulse Output	Phase A, phase B, phase C: Line-driver output Number of divided output pulses: Any setting is allowed.
Overheat Protection Input	Number of input points: 1 Input voltage range: 0 V to +5 V
	Storage Humidity  /ibration Resistance Shock Resistance Degree of Protection  Pollution Degree  Altitude*1  Others  Indards  Speed Control Range  Coefficient of Speed Fluctuation*2  Forque Control Precision Repeatability)  Soft Start Time Setting  Encoder Divided Pulse Output

Continued from previous page.

	Item	1		Specification
	Item		Fixed Input	Specification  Allowable voltage range: 5 VDC ±5% Number of input points: 1 SEN (Absolute Data Request) signal  Number of input points: 1 Input method: Line driver or open collector Input Signals  • /DEC (Origin Return Deceleration Switch) signal  • /RGRT (Registration Input) signal
I/O Signals	Sequence Input Signals	SERVO- PACKs	Input Signals for Which Alloca- tions Can Be Changed	CLR (Clear) signal  Allowable voltage range: 24 VDC ±20%  Number of input points: 7 Input method: Sink inputs or source inputs Input Signals  · /S-ON (Servo ON) signal  · /P-CON (Proportional Control) Signal  · P-OT (Forward Drive Prohibit) and N-OT (Reverse Drive Prohibit) signals  · /ALM-RST (Alarm Reset) signal  · /P-CL (Forward External Torque Limit) and /N-CL (Reverse External Torque Limit) signals  · /SPD-D (Motor Direction) signal  · /SPD-A and /SPD-B (Internal Set Speed Selection) signals  · /C-SEL (Control Selection) signal  · /C-SEL (Control Selection) signal  · /INHIBIT (Reference Pulse Inhibit) signal  · /P-DET (Polarity Detection) signal  · /P-DET (Polarity Detection) signal  · /PSEL (Reference Pulse Input Multiplication Switch) Signal  · /PSEL (Reference Pulse Input Multiplication Switch) Signal  · /DEC (Origin Return Deceleration Switch) signal  · /DEC (Origin Return Deceleration Switch) signal  · /JOGP (Forward Jog Input) signal  · /JOGP (Forward Jog Input) signal  · /JOGN (Reverse Jog Input) signal  · /SEL0 (Program Step Selection Input 0) signal  · /SEL1 (Program Step Selection Input 1) signal  · /SEL2 (Program Step Selection Input 2) signal  · /SEL3 (Program Step Selection Input 3) signal  · /SEL4 (Program Step Selection Input 4) signal  · /JOG0 (Jog Speed Table Selection Input 1) signal  · /JOG1 (Jog Speed Table Selection Input 2) signal  · /JOG2 (Jog Speed Table Selection Input 2) signal

				Continued from previous page.
	Item	1		Specification
			Fixed Output	Allowable voltage range: 5 VDC to 30 VDC  Number of output points: 1  Output signal: ALM (Servo Alarm) signal
I/O Signals	Sequence Output Signals	SERVO- PACKs	Output Signals That Can Be Allocated	Allowable voltage range: 5 VDC to 30 VDC Number of output points: 6 (A photocoupler output (isolated) is used for three of the outputs.) (An open-collector output (non-isolated) is used for the other three outputs.) Output Signals • /COIN (Positioning Completion) Signal • /V-CMP (Speed Coincidence Detection) Signal • /TGON (Rotation Detection) Signal • /S-RDY (Servo Ready) signal • /CLT (Torque Limit Detection) Signal • /VLT (Speed Limit Detection) Signal • /WARN (Warning) Signal • /WARN (Warning) Signal • /PSELA (Reference Pulse Input Multiplication Switching Output) signal • ALO1, ALO2, and ALO3 (Alarm Code) signals • /POUT0 (Programmable Output 0) signal • /POUT1 (Programmable Output 1) signal • /POUT2 (Programmable Output 2) signal • /POUT3 (Programmable Output 3) signal • /POUT4 (Programmable Output 4) signal • /POUT4 (Programmable Output 4) signal • /POSRDY (Origin Return Completed Output) signal • /POSRDY (Origin Return Completed Output) signal • Asignal can be allocated and the positive and negative logic can be changed.
	Digital	Interfaces		Digital Operator (JUSP-OP05A-1-E)
	Operator Communi-	1:N Communications		Up to N = 15 stations possible for RS-422A port
Communi- cations	cations (CN3)	Axis Address Set- ting		Set with parameters.
000.07.0	USB	Interface		Personal computer (with SigmaWin+)
	cations (CN7)	Communications Standard		Conforms to USB2.0 standard (12 Mbps).
Displays/ Indicators	SERVOPAC	K		CHARGE indicator and five-digit seven-segment display
Panel Opera	ntor			Four push switches
Operating	Program Ta	ble		<ul> <li>Program table positioning in which steps are executed in sequence with commands from contact inputs</li> <li>Positioning by specifying station numbers with commands from contact inputs</li> </ul>
Methods	Maxii Steps	mum Numb	per of	256 steps (32 steps max. if input signals are used)
	Other Func	tions		Registration (positioning with external signals) and origin returns.
Analog Mon	itor (CN5)			Number of points: 2 Output voltage range: ±10 VDC (effective linearity range: ±8 V) Resolution: 16 bits Accuracy: ±20 mV (Typ) Maximum output current: ±10 mA Settling time (±1%): 1.2 ms (Typ)

Continued from previous page.

		Item		Specification
Dyn	namic Bra	ke (DB)		Activated when a servo alarm or overtravel (OT) occurs, or when the power supply to the main circuit or servo is OFF.
Reg	generative	e Processing		Built-in (An external resistor must be connected to the SGD7S-470A to -780A.) Refer to the following catalog for details.  Σ-7 Series AC Servo Drive Peripheral Device Selection Manual (Manual No.: SIEP S800001 32)
Ove	ertravel (C	OT) Prevention		Stopping with dynamic brake, deceleration to a stop, or coasting to a stop for the P-OT (Forward Drive Prohibit) or N-OT (Reverse Drive Prohibit) signal
Pro	tective Fu	unctions		Overcurrent, overvoltage, low voltage, overload, regeneration error, etc.
Utili	ty Functi	ons		Gain adjustment, alarm history, jogging, origin search, etc.
		Inputs		/HWBB1 and /HWBB2: Base block signals for Power Modules
Safe Fun	ety ictions	Output		EDM1: Monitors the status of built-in safety circuit (fixed output).
		Compliant Standards*	3	ISO13849-1 PLe (Category 3) and IEC61508 SIL3
App	olicable C	ption Modules		Fully-closed Modules and Safety Modules Note: You cannot use a Fully-closed Module and a Safety Module together.
		Soft Start Time Setting	9	0 s to 10 s (Can be set separately for acceleration and deceleration.)
		Input Signal	Refer- ence Voltage	<ul> <li>Maximum input voltage: ±12 V (forward motor rotation for positive reference).</li> <li>6 VDC at rated speed (default setting). Input gain setting can be changed.</li> </ul>
			Input Imped- ance	Approx. 14 kΩ
Controls	Speed Con- trol		Circuit Time Con- stant	30 μs
		Internal Set Speed Control	Rota- tion Direc- tion Selec- tion	With Proportional Control signal
			Speed Selec- tion	With Forward/Reverse External Torque Limit signals (speed 1 to 3 selection).  Servomotor stops or another control method is used when both signals are OFF.

Continued from previous page.

		Item	1		Specification
		Feedforward Compensation			0% to 100%
		Output Sigr pleted Widt		ing Com-	0 to 1,073,741,824 reference units
				Refer- ence Pulse Form	One of the following is selected: Sign + pulse train, CW + CCW pulse trains, and two-phase pulse trains with 90° phase differential
	Posi-			Input Form	Line driver or open collector
Controls	tion Con- trol	Input Sig- nals	Refer- ence pulses	Maxi- mum Input Fre- quency	<ul> <li>Line Driver         Sign + pulse train or CW + CCW pulse trains: 4 Mpps         Two-phase pulse trains with 90° phase differential: 1 Mpps</li> <li>Open Collector         Sign + pulse train or CW + CCW pulse trains: 200 kpps         Two-phase pulse trains with 90° phase differential: 200 kpps</li> </ul>
Co				Input Multiplica- tion Switching	1 to 100 times
			Clear Signal		Position deviation clear Line driver or open collector
	Torque	Input Signal Input Impedance Circuit Time Constant		ence	<ul> <li>Maximum input voltage: ±12 V (forward torque output for positive reference).</li> <li>3 VDC at rated torque (default setting).</li> <li>Input gain setting can be changed.</li> </ul>
	Con- trol			Imped-	Approx. 14 k $\Omega$
					16 μs

<sup>\*1.</sup> If you combine a Σ-7-Series SERVOPACK with a Σ-V-Series Option Module, the following Σ-V-Series SERVO-PACKs specifications must be used: a surrounding air temperature of 0°C to 55°C and an altitude of 1,000 m max. Also, the applicable surrounding range cannot be increased by derating.

 $\label{eq:coefficient} \mbox{Coefficient of speed fluctuation} = \frac{\mbox{No-load motor speed - Total-load motor speed}}{\mbox{Rated motor speed}} \times 100\%$ 

<sup>\*2.</sup> The coefficient of speed fluctuation for load fluctuation is defined as follows:

<sup>\*3.</sup> Always perform risk assessment for the system and confirm that the safety requirements are met.

This chapter provides information on the meaning of, causes of, and corrections for alarms and warnings.

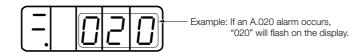
3.1	FT82 SE	RVOPACKs with Analog Voltage/Pulse Train References 3-3
	3.1.1 3.1.2 3.1.3 3.1.4 3.1.5 3.1.6 3.1.7	Alarm Displays
3.2	FT82 SEF	RVOPACK with MECHATROLINK-II Communications References 3-50
	3.2.1 3.2.2 3.2.3 3.2.4 3.2.5 3.2.6 3.2.7	Alarm Displays
3.3	FT82 SERVOPACK with MECHATROLINK-III Communications References 3-9	
	3.3.1 3.3.2 3.3.3 3.3.4 3.3.5 3.3.6 3.3.7	Alarm Displays

3.4	Command	Option Attachable-type FT82 SERVOPACKs with INDEXER Modules3-147
	3.4.1	Alarm Displays
	3.4.2	List of Alarms
	3.4.3	Troubleshooting Alarms3-153
	3.4.4	INDEXER Module Alarm Displays and
		Troubleshooting3-180
	3.4.5	Warning Displays3-184
	3.4.6	List of Warnings
	3.4.7	Troubleshooting Warnings3-186
	3.4.8	INDEXER Module Error Displays and
		Troubleshooting3-192
	3.4.9	Troubleshooting Based on the Operation and
		Conditions of the Servomotor3-200
3.5	FT83 SE	RVOPACKs with Analog Voltage/Pulse Train References 3-208
3.5	FT83 SE 3.5.1	RVOPACKs with Analog Voltage/Pulse Train References 3-208  Alarm Displays
3.5		, , ,
3.5	3.5.1	Alarm Displays
3.5	3.5.1 3.5.2	Alarm Displays
3.5	3.5.1 3.5.2 3.5.3	Alarm Displays
3.5	3.5.1 3.5.2 3.5.3	Alarm Displays
3.5	3.5.1 3.5.2 3.5.3 3.5.4	Alarm Displays3-208 List of Alarms3-208 Troubleshooting Alarms3-213 INDEXER Alarm Displays and Troubleshooting3-238
3.5	3.5.1 3.5.2 3.5.3 3.5.4 3.5.5	Alarm Displays
3.5	3.5.1 3.5.2 3.5.3 3.5.4 3.5.5 3.5.6	Alarm Displays
3.5	3.5.1 3.5.2 3.5.3 3.5.4 3.5.5 3.5.6 3.5.7	Alarm Displays
3.5	3.5.1 3.5.2 3.5.3 3.5.4 3.5.5 3.5.6 3.5.7	Alarm Displays

# FT82 SERVOPACKs with Analog Voltage/Pulse Train References

# 3.1.1 Alarm Displays

If an error occurs in the SERVOPACK, an alarm number will be displayed on the panel display. However, if only "-" appears on the panel display, this indicates a SERVOPACK system error. Replace the SERVOPACK.



# 3.1.2 List of Alarms

The list of alarms gives the alarm name, alarm meaning, alarm stopping method, alarm reset possibility, and alarm code output in order of the alarm numbers.

# **Servomotor Stopping Method for Alarms**

Refer to the following manual for information on the stopping method for alarms.

Σ-7-Series Σ-7S SERVOPACK with Analog Voltage/Pulse Train References Product Manual (Manual No.: SIEP S800001 26)

# **Alarm Reset Possibility**

Yes: You can use an alarm reset to clear the alarm. However, this assumes that the cause of the alarm has been removed.

No: You cannot clear the alarm.

# **List of Alarms**

Alarm Number	Alarm Name	Alarm Meaning	Servo- motor	Alarm Reset	Alarm Code Output		
			Stop- ping Method	Possi- ble?	ALO1	ALO2	ALO3
A.020	Parameter Checksum Error	There is an error in the parameter data in the SER-VOPACK.	Gr.1	No	Н	Н	Н
A.021	Parameter Format Error	There is an error in the parameter data format in the SERVOPACK.	Gr.1	No	Н	Н	Н
A.022	System Checksum Error	There is an error in the parameter data in the SER-VOPACK.	Gr.1	No	Н	Н	Н
A.024	System Alarm	An internal program error occurred in the SERVO-PACK.	Gr.1	No	Н	Н	Н
A.025	System Alarm	An internal program error occurred in the SERVO-PACK.	Gr.1	No	Н	Н	Н
A.030	Main Circuit Detector Error	There is an error in the detection data for the main circuit.	Gr.1	Yes	Н	Н	Н

#### 3.1.2 List of Alarms

Continued from previous page.

Alarm		Alarm Name Alarm Meaning	Servo- motor	Alarm Reset		Alarm Code Output	
Number	Alarm Name	Alarm Meaning	Stop- ping Method	ping Possi-		ALO2	ALO3
A.040	Parameter Setting Error	A parameter setting is outside of the setting range.	Gr.1	No	Н	Н	Н
A.041	Encoder Output Pulse Setting Error	The setting of Pn212 (Encoder Output Pulses) or Pn281 (Encoder Output Res- olution) is outside of the set- ting range or does not satisfy the setting conditions.	Gr.1	No	Н	Н	Н
A.042	Parameter Combination Error	The combination of some parameters exceeds the setting range.	Gr.1	No	Н	Н	Н
A.044	Semi-Closed/Fully-Closed Loop Control Parameter Setting Error	The settings of the Option  Module and Pn002 =  n.X□□□ (External Encoder  Usage) do not match.	Gr.1	No	Н	Н	Н
A.050	Combination Error	The capacities of the SER-VOPACK and Servomotor do not match.	Gr.1	Yes	Н	Н	Н
A.051	Unsupported Device Alarm	An unsupported device was connected.	Gr.1	No	Н	Н	Н
A.0b0	Invalid Servo ON Com- mand Alarm	The /S-ON (Servo ON) signal was input from the host controller after a utility function that turns ON the Servomotor was executed.	Gr.1	Yes	Н	Н	Н
A.100	Overcurrent Detected	An overcurrent flowed through the power transformer or the heat sink overheated.	Gr.1	No	L	Н	Н
A.101	Motor Overcurrent Detected	The current to the motor exceeded the allowable current.	Gr.1	No	L	Н	Н
A.300	Regeneration Error	There is an error related to regeneration.	Gr.1	Yes	L	L	Н
A.320	Regenerative Overload	A regenerative overload occurred.	Gr.2	Yes	L	L	Н
A.330	Main Circuit Power Supply Wiring Error	<ul> <li>The AC power supply input setting or DC power supply input setting is not correct.</li> <li>The power supply wiring is not correct.</li> </ul>	Gr.1	Yes	L	L	Н
A.400	Overvoltage	The main circuit DC voltage is too high.	Gr.1	Yes	Н	Н	L
A.410	Undervoltage	The main circuit DC voltage is too low.	Gr.2	Yes	Н	Н	L
A.510	Overspeed	The motor exceeded the maximum speed.	Gr.1	Yes	L	Н	L
A.511	Encoder Output Pulse Overspeed	The pulse output speed for the setting of Pn212 (Encoder Output Pulses) was exceeded.	Gr.1	Yes	L	Н	L
A.520	Vibration Alarm	Abnormal oscillation was detected in the motor speed.	Gr.1	Yes	L	Н	L
A.521	Autotuning Alarm	Vibration was detected during autotuning for the tuning-less function.	Gr.1	Yes	L	Н	L

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Continued from previous page.

			Servo- motor	Alarm	Alarm Co Output		de
Alarm Number	Alarm Name	Alarm Meaning	Stop- ping Method	Reset Possi- ble?	ALO1		
A.550	Maximum Speed Setting Error	The setting of Pn385 (Maximum Motor Speed) is greater than the maximum motor speed.	Gr.1	Yes	L	Н	L
A.710	Instantaneous Overload	The Servomotor was operating for several seconds to several tens of seconds under a torque that largely exceeded the rating.	Gr.2	Yes	L	L	L
A.720	Continuous Overload	The Servomotor was operating continuously under a torque that exceeded the rating.	Gr.1	Yes	L	L	L
A.730 A.731	Dynamic Brake Overload	When the dynamic brake was applied, the rotational or linear kinetic energy exceeded the capacity of the dynamic brake resistor.	Gr.1	Yes	L	L	L
A.740	Inrush Current Limiting Resistor Overload	The main circuit power supply was frequently turned ON and OFF.	Gr.1	Yes	L	L	L
A.7A1	Internal Temperature Error 1 (Control Board Tempera- ture Error)	The surrounding temperature of the control PCB is abnormal.	Gr.2	Yes	L	L	L
A.7A2	Internal Temperature Error 2 (Power Board Tempera- ture Error)	The surrounding temperature of the power PCB is abnormal.	Gr.2	Yes	L	L	L
A.7A3	Internal Temperature Sensor Error	An error occurred in the temperature sensor circuit.	Gr.2	No	L	L	L
A.7Ab	SERVOPACK Built-in Fan Stopped	The fan inside the SERVO-PACK stopped.	Gr.1	Yes	L	L	L
A.810	Encoder Backup Alarm	The power supplies to the encoder all failed and the position data was lost.	Gr.1	No	Н	Н	Н
A.820	Encoder Checksum Alarm	There is an error in the checksum results for encoder memory.	Gr.1	No	Н	Н	Н
A.830	Encoder Battery Alarm	The battery voltage was lower than the specified level after the control power supply was turned ON.	Gr.1	Yes	Н	Н	Н
A.840	Encoder Data Alarm	There is an internal data error in the encoder.	Gr.1	No	Н	Н	Н
A.850	Encoder Overspeed	The encoder was operating at high speed when the power was turned ON.	Gr.1	No	Н	Н	Н
A.860	Encoder Overheated	The internal temperature of the rotary encoder or linear encoder is too high.	Gr.1	No	Н	Н	Н
A.861	Motor Overheated	The internal temperature of motor is too high.	Gr.1	No	Н	Н	Н

#### 3.1.2 List of Alarms

Continued from previous page.

Alarm	Alarm Name	Alarm Name Alarm Meaning	Servo- motor	Alarm Reset	Ala	Alarm Code Output	
Number		Alarm Meaning	Stop- ping Method	Possi- ble?	ALO1	ALO2	ALO3
A.862	Overheat Alarm	The input voltage (temperature) for the overheat protection input (TH) signal exceeded the setting of Pn61B (Overheat Alarm Level).	Gr.1	Yes	Н	Н	Н
A.8A0	External Encoder Error	An error occurred in the external encoder.	Gr.1	Yes	Н	Н	Н
A.8A1	External Encoder Module Error	An error occurred in the Serial Converter Unit.	Gr.1	Yes	Н	Н	Н
A.8A2	External Incremental Encoder Sensor Error	An error occurred in the external encoder.	Gr.1	Yes	Н	Н	Н
A.8A3	External Absolute Encoder Position Error	An error occurred in the position data of the external encoder.	Gr.1	Yes	Н	Н	Н
A.8A5	External Encoder Over- speed	An overspeed error occurred in the external encoder.	Gr.1	Yes	Н	Н	Н
A.8A6	External Encoder Over- heated	An overheating error occurred in the external encoder.	Gr.1	Yes	Н	Н	Н
A.b10	Speed Reference A/D Error	An error occurred in the A/D converter for the speed reference input.	Gr.2	Yes	Н	Н	Н
A.b11	Speed Reference A/D Data Error	An error occurred in the A/D conversion data for the speed reference.	Gr.2	Yes	Н	Н	Н
A.b20	Torque Reference A/D Error	An error occurred in the A/D converter for the torque reference input.	Gr.2	Yes	Н	Н	Н
A.b33	Current Detection Error 3	An error occurred in the current detection circuit.	Gr.1	No	Н	Н	Н
A.bF0	System Alarm 0	Internal program error 0 occurred in the SERVO-PACK.	Gr.1	No	Н	Н	Н
A.bF1	System Alarm 1	Internal program error 1 occurred in the SERVO-PACK.	Gr.1	No	Н	Н	Н
A.bF2	System Alarm 2	Internal program error 2 occurred in the SERVO-PACK.	Gr.1	No	Н	Н	Н
A.bF3	System Alarm 3	Internal program error 3 occurred in the SERVO-PACK.	Gr.1	No	Н	Н	Н
A.bF4	System Alarm 4	Internal program error 4 occurred in the SERVO-PACK.	Gr.1	No	Н	Н	Н
A.bF5	System Alarm 5	Internal program error 5 occurred in the SERVO-PACK.	Gr.1	No	Н	Н	Н
A.bF6	System Alarm 6	Internal program error 6 occurred in the SERVO-PACK.	Gr.1	No	Н	Н	Н
A.bF7	System Alarm 7	Internal program error 7 occurred in the SERVO-PACK.	Gr.1	No	Н	Н	Н

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Alarm	Alarm Name	Alarm Maaning	Servo- motor	Alarm Reset	Alarm Co Output		
Number	, uam rame	Alarm Meaning	Stop- ping Method	Possi- ble?	ALO1	ALO2	ALO3
A.bF8	System Alarm 8	Internal program error 8 occurred in the SERVO-PACK.	Gr.1	No	Н	Н	Н
A.C10	Servomotor Out of Control	The Servomotor ran out of control.	Gr.1	Yes	L	Н	L
A.C80	Encoder Clear Error or Multiturn Limit Setting Error	The multiturn data for the absolute encoder was not correctly cleared or set.	Gr.1	No	L	Н	L
A.C90	Encoder Communications Error	Communications between the encoder and SERVO-PACK is not possible.	Gr.1	No	L	Н	L
A.C91	Encoder Communications Position Data Acceleration Rate Error	An error occurred in calculating the position data of the encoder.	Gr.1	No	L	Н	L
A.C92	Encoder Communications Timer Error	An error occurred in the communications timer between the encoder and SERVO-PACK.	Gr.1	No	L	Н	L
A.CA0	Encoder Parameter Error	The parameters in the encoder are corrupted.	Gr.1	No	L	Н	L
A.Cb0	Encoder Echoback Error	The contents of communications with the encoder are incorrect.	Gr.1	No	L	Н	L
A.CC0	Multiturn Limit Disagree- ment	Different multiturn limits have been set in the encoder and the SERVOPACK.	Gr.1	No	L	Н	L
A.CF1	Reception Failed Error in Feedback Option Module Communications	Receiving data from the Feedback Option Module failed.	Gr.1	No	L	Н	L
A.CF2	Timer Stopped Error in Feedback Option Module Communications	An error occurred in the timer for communications with the Feedback Option Module.	Gr.1	No	L	Н	L
A.d00	Position Deviation Over- flow	The setting of Pn520 (Excessive Position Deviation Alarm Level) was exceeded by the position deviation.	Gr.1	Yes	L	L	Н
A.d01	Position Deviation Over- flow Alarm at Servo ON	The servo was turned ON after the position deviation exceeded the setting of Pn526 (Excessive Position Deviation Alarm Level at Servo ON) while the servo was OFF.	Gr.1	Yes	L	L	Н
A.d02	Position Deviation Over- flow Alarm for Speed Limit at Servo ON	If position deviation remains in the deviation counter, the setting of Pn529 or Pn584 (Speed Limit Level at Servo ON) limits the speed when the servo is turned ON. This alarm occurs if reference pulses are input and the setting of Pn520 (Excessive Position Deviation Alarm Level) is exceeded before the limit is cleared.	Gr.2	Yes	L	L	Н

#### 3.1.2 List of Alarms

Continued from previous page.

Alarm		Alarm Meaning	Servo- motor	Alarm Reset		Alarm Code Output	
Number	Alarm Name	Alarm Meaning	Stop- ping Method	Possi- ble?	ALO1	ALO2	ALO3
A.d10	Motor-Load Position Deviation Overflow	There was too much position deviation between the motor and load during fully-closed loop control.	Gr.2	Yes	L	L	Н
A.d30	Position Data Overflow	The position feedback data exceeded ±1,879,048,192.	Gr.1	No	L	L	Н
A.E71	Safety Option Module Detection Failure	Detection of the Safety Option Module failed.	Gr.1	No	Н	L	L
A.E72	Feedback Option Module Detection Failure	Detection of the Feedback Option Module failed.	Gr.1	No	Н	L	L
A.E74	Unsupported Safety Option Module	An unsupported Safety Option Module was con- nected.	Gr.1	No	Н	L	L
A.Eb1	Safety Function Signal Input Timing Error	An error occurred in the input timing of the safety function signal.	Gr.1	No	Н	L	L
A.EC8	Gate Drive Error 1	An error occurred in the gate drive circuit.	Gr.1	No	Н	L	L
A.EC9	Gate Drive Error 2	An error occurred in the gate drive circuit.	Gr.1	No	Н	L	L
A.F10	Power Supply Line Open Phase	The voltage was low for more than one second for phase R, S, or T when the main power supply was ON.	Gr.2	Yes	Н	L	Н
FL-1*							
FL-2*							
FL-3*	System Alarm	An internal program error occurred in the SERVO-	_	No	Ur	ndefine	ed.
FL-4*	,	PACK.					•
FL-5*							
FL-6*	Digital On avatav Camana	Communications were not					
CPF00	Digital Operator Commu- nications Error 1	Communications were not possible between the Digital					
CPF01	Digital Operator Commu- nications Error 2	Operator (model: JUSP- OP05A-1-E) and the SERVO- PACK (e.g., a CPU error occurred).	_	No	Ur	ndefine	ed.

<sup>\*</sup> These alarms are not stored in the alarm history. They are only displayed on the panel display.

Note: The A.Eb0, A.Eb2 to A.Eb9, and A.EC0 to A.EC2 alarms can occur when a Safety Module is connected.

Refer to the following manual for details.

Σ-V-Series/Σ-V-Series for Large-Capacity Models/Σ-7-Series User's Manual Safety Module (Manual No.: SIEP C720829 06)

# Troubleshooting Alarms

3.1.3

The causes of and corrections for the alarms are given in the following table. Contact your Yaskawa representative if you cannot solve a problem with the correction given in the table.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage suddenly dropped.	Measure the power supply voltage.	Set the power supply voltage within the specified range, and initialize the parameter settings.	*1
	The power supply was shut OFF while writing parameter settings.	Check the timing of shutting OFF the power supply.	Initialize the parameter settings and then set the parameters again.	
A.020: Parameter	The number of times that parameters were written exceeded the limit.	Check to see if the parameters were frequently changed from the host controller.	The SERVOPACK may be faulty. Replace the SER-VOPACK. Reconsider the method for writing the parameters.	-
Checksum Error (There is an error in the parameter data in the SER- VOPACK.)	A malfunction was caused by noise from the AC power supply, ground, static electricity, or other source.	Turn the power supply to the SERVOPACK OFF and ON again. If the alarm still occurs, noise may be the cause.	Implement countermeasures against noise.	*1
	Gas, water drops, or cutting oil entered the SERVOPACK and caused failure of the internal components.	Check the installation conditions.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
	A failure occurred in the SERVOPACK.	Turn the power supply to the SERVOPACK OFF and ON again. If the alarm still occurs, the SERVOPACK may have failed.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.021: Parameter Format Error (There is an error in the parameter data format in the	The software version of the SERVOPACK that caused the alarm is older than the software version of the parameters specified to write.	Read the product information to see if the software versions are the same. If they are different, it could be the cause of the alarm.	Write the parameters from another SERVOPACK with the same model and the same software version, and then turn the power OFF and ON again.	*1
SERVOPACK.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
	The power supply voltage suddenly dropped.	Measure the power supply voltage.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
A.022: System Check- sum Error (There is an error in the parameter data in the SER- VOPACK.)	The power supply was shut OFF while setting a utility function.	Check the timing of shutting OFF the power supply.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	A failure occurred in the SERVOPACK.	Turn the power supply to the SERVOPACK OFF and ON again. If the alarm still occurs, the SERVOPACK may have failed.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-

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Alarm Number:	Possible Cause	Confirmation	Correction	Reference
Alarm Name	FUSSIDIE Gause	Committation	Correction	Herefelice
A.024: System Alarm (An internal program error occurred in the SERVOPACK.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.025: System Alarm (An internal pro- gram error occurred in the SERVOPACK.)	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.030: Main Circuit Detector Error	The jumper between the DC Reactor terminals (⊝1 and ⊝2) was removed or there is faulty contact.		Correct the wiring	
	The cable between the DC Reactor and SERVOPACK is not wired correctly or there is a faulty contact.	_	between the DC Reactor terminals.	-
	The SERVOPACK and Servomotor capacities do not match each other.	Check the combination of the SERVOPACK and Servomotor capacities.	Select a proper combination of SERVOPACK and Servomotor capacities.	*1
A.040: Parameter Set-	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
ting Error (A parameter setting is outside of the setting	A parameter setting is outside of the setting range.	Check the setting ranges of the parameters that have been changed.	Set the parameters to values within the setting ranges.	-
range.)	The electronic gear ratio is outside of the setting range.	Check the electronic gear ratio. The ratio must be within the following range: 0.001 < (Pn20E/Pn210) < 64,000.	Set the electronic gear ratio in the following range: 0.001 < (Pn20E/Pn210) < 64,000.	*1
A.041: Encoder Output Pulse Setting Error	The setting of Pn212 (Encoder Output Pulses) or Pn281 (Encoder Output Resolution) is outside of the setting range or does not satisfy the setting conditions.	Check the setting of Pn212 or Pn281.	Set Pn212 or Pn281 to an appropriate value.	*1

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.042: Parameter Combination Error	The speed of program jogging went below the setting range when the electronic gear ratio (Pn20E/Pn210) or the Servomotor was changed.	Check to see if the detection conditions*2 are satisfied.	Decrease the setting of the electronic gear ratio (Pn20E/Pn210).	*1
	The speed of program jogging went below the setting range when Pn533 or Pn585 (Program Jogging Speed) was changed.	Check to see if the detection conditions*2 are satisfied.	Increase the setting of Pn533 or Pn585.	*1
	The movement speed of advanced autotuning went below the setting range when the electronic gear ratio (Pn20E/ Pn210) or the Servomotor was changed.	Check to see if the detection conditions*3 are satisfied.	Decrease the setting of the electronic gear ratio (Pn20E/Pn210).	*1
A.044: Semi-Closed/ Fully-Closed Loop Control Parameter Setting Error	The setting of the Fully-Closed Module does not match the setting of Pn002 = n.X□□□ (External Encoder Usage).	Check the setting of Pn002 = n.X□□□.	Make sure that the setting of the Fully-closed Module agrees with the setting of Pn002 = n.X□□□.	*1
A.050: Combination Error	The SERVOPACK and Servomotor capacities do not match each other.	Confirm that the follow- ing condition is met: 1/4 ≤ (Servomotor capacity/SERVOPACK capacity) ≤ 4	Select a proper combination of the SERVOPACK and Servomotor capacities.	*1
(The capacities of the SERVOPACK and Servomotor	A failure occurred in the encoder.	Replace the encoder and check to see if the alarm still occurs.	Replace the Servomotor or encoder.	_
do not match.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.051: Unsupported Device Alarm	An unsupported Serial Converter Unit or encoder (e.g., an external encoder) is connected to the SERVOPACK.	Check the product combination specifications.	Change to a correct combination of models.	_
A.0b0: Invalid Servo ON Command Alarm	The /S-ON (Servo ON) signal was input from the host controller after a utility function that turns ON the Servomotor was executed.	_	Turn the power supply to the SERVOPACK OFF and ON again. Or, execute a software reset.	*1

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The Main Circuit Cable is not wired correctly or there is faulty contact.	Check the wiring.	Correct the wiring.	
	There is a short-circuit or ground fault in a Main Circuit Cable.	Check for short-circuits across Servomotor phases U, V, and W, or between the ground and Servomotor phases U, V, and W.	The cable may be short-circuited. Replace the cable.	
	There is a short-circuit or ground fault inside the Servomotor.	Check for short-circuits across Servomotor phases U, V, and W, or between the ground and Servomotor phases U, V, or W.	The Servomotor may be faulty. Replace the Servomotor.	*1
A.100: Overcurrent	There is a short-circuit or ground fault inside the SERVOPACK.	Check for short-circuits across the Servomotor connection terminals U, V, and W on the SER-VOPACK, or between the ground and terminals U, V, or W.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	
Detected (An overcurrent flowed through the power trans-	The regenerative resistor is not wired correctly or there is faulty contact.	Check the wiring.	Correct the wiring.	*1
former or the heat sink overheated.)	The dynamic brake (DB, emergency stop executed from the SERVOPACK) was frequently activated, or a DB overload alarm occurred.	Check the power consumed by the DB resistor to see how frequently the DB is being used. Or, check the alarm display to see if a DB overload alarm (A.730 or A.731) has occurred.	Change the SERVOPACK model, operating methods, or the mechanisms so that the dynamic brake does not need to be used so frequently.	-
	The regenerative processing capacity was exceeded.	Check the regenerative load ratio in the SigmaWin+ Motion Monitor Tab Page to see how frequently the regenerative resistor is being used.	Recheck the operating conditions and load.	*4
	The SERVOPACK regenerative resistance is too small.	Check the regenerative load ratio in the SigmaWin+ Motion Monitor Tab Page to see how frequently the regenerative resistor is being used.	Change the regenerative resistance to a value larger than the SERVO-PACK minimum allowable resistance.	

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Continued from pro-	Reference
A.100: Overcurrent Detected (An overcurrent flowed through the power trans- former or the heat	A heavy load was applied while the Servomotor was stopped or running at a low speed.	Check to see if the operating conditions exceed Servo Drive specifications.	Reduce the load applied to the Servomotor. Or, increase the operating speed.	-
	A malfunction was caused by noise.	Improve the noise envi- ronment, e.g. by improving the wiring or installation conditions, and check to see if the alarm still occurs.	Implement countermea- sures against noise, such as correct wiring of the FG. Use an FG wire size equivalent to the SERVO- PACK's main circuit wire size.	-
sink overheated.)	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The Main Circuit Cable is not wired correctly or there is faulty contact.	Check the wiring.	Correct the wiring.	
	There is a short-circuit or ground fault in a Main Circuit Cable.	Check for short-circuits across cable phases U, V, and W, or between the ground and cable phases U, V, and W.	The cable may be short-circuited. Replace the cable.	
A.101:  Motor Overcurrent Detected (The current to the motor exceeded the	There is a short-circuit or ground fault inside the Servomotor.	Check for short-circuits across Servomotor phases U, V, and W, or between the ground and Servomotor phases U, V, or W.	The Servomotor may be faulty. Replace the Servomotor.	*1
allowable cur- rent.)	There is a short-circuit or ground fault inside the SERVOPACK.	Check for short-circuits across the Servomotor connection terminals U, V, and W on the SER-VOPACK, or between the ground and terminals U, V, or W.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	
	A heavy load was applied while the Servomotor was stopped or running at a low speed.	Check to see if the operating conditions exceed Servo Drive specifications.	Reduce the load applied to the Servomotor. Or, increase the operating speed.	-
A.101: Motor Overcurrent Detected (The current to	A malfunction was caused by noise.	Improve the noise environment, e.g. by improving the wiring or installation conditions, and check to see if the alarm still occurs.	Implement countermeasures against noise, such as correct wiring of the FG. Use an FG wire size equivalent to the SERVO-PACK's main circuit wire size.	-
the motor exceeded the allowable current.)	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.300: Regeneration Error	Pn600 (Regenerative Resistor Capacity) is not set to 0 and an External Regenerative Resistor is not con- nected to one of the following SERVO- PACKs: SGD7S-2R8A or -2R8F.	Check it see if an External Regenerative Resistor is connected and check the setting of Pn600.	Connect an External Regenerative Resistor, or set Pn600 (Regenerative Resistor Capacity) to 0 (setting unit: ×10 W) if no Regenerative Resistor is required.	*1
	The jumper between the regenerative resistor terminals (B2 and B3) was removed from one of the following SERVO-PACKs: SGD7S-120A.	Check to see if the jumper is connected between power supply terminals B2 and B3.  Note: If an External Regenerative Resistor or Regenerative Resistor Unit is connected while the jumper remains connected between B2 and B3, the SERVO-PACK may be damaged.	Correctly connect a jumper.	*1
	The External Regenerative Resistor or Regenerative Resistor tor Unit is not wired correctly, or was removed or disconnected.	Check the wiring of the External Regenerative Resistor or Regenerative Resistor Unit.  Note: If an External Regenerative Resistor or Regenerative Resistor or Regenerative Resistor Unit is connected while the jumper remains connected between B2 and B3, the SERVO-PACK may be damaged.	Correct the wiring of the External Regenerative Resistor or Regenerative Resistor Unit.	
	A failure occurred in the SERVOPACK.	_	While the main circuit power supply is OFF, turn the control power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
	The external regenerative resistance value or regenerative resistor capacity is too small, or there has been a continuous regeneration state.	Check the operating conditions or the capacity using the SigmaJunmaSize+ Capacity Selection Software or other means.	Change the regenerative resistance value or capacity. Reconsider the operating conditions using the SigmaJunmaSize+ Capacity Selection Software or other means.	*4
	There was a continuous regeneration state because a negative load was continuously applied.	Check the load applied to the Servomotor during operation.	Reconsider the system including the servo, machine, and operating conditions.	-
A.320: Regenerative Overload	The setting of Pn600 (Regenerative Resistor Capacity) is smaller than the capacity of the External Regenerative Resistor.	Check it see if a Regenerative Resistor is connected and check the setting of Pn600.	Correct the setting of Pn600.	*1
	The setting of Pn603 (Regenerative Resistor Capacity) is smaller than the capacity of the External Regenerative Resistor.	Check to see if a Regenerative Resistor is connected and check the setting of Pn603.	Correct the setting of Pn603.	*1
	The external regenerative resistance is too high.	Check the regenerative resistance.	Change the regenerative resistance to a correct value or use an External Regenerative Resistor of an appropriate capacity.	*4
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The regenerative resistor was disconnected when the SERVOPACK power supply voltage was high.	Measure the resistance of the regenerative resistor using a measuring instrument.	If you are using the regenerative resistor built into the SERVOPACK, replace the SERVOPACK.  If you are using an External Regenerative Resistor, replace the External Regenerative Resistor.	-
A.330: Main Circuit Power Supply Wiring Error (Detected when	DC power was supplied when an AC power supply input was specified in the settings.  AC power was supplied when a DC	Check the power supply to see if it is a DC power supply.  Check the power sup-	Correct the power supply setting to match the actual power supply.  Correct the power supply	*1
the main circuit power supply is turned ON.)	power supply input was specified in the settings.	ply to see if it is an AC power supply.	setting to match the actual power supply.	
	Pn600 (Regenerative Resistor Capacity) is not set to 0 and an External Regenerative Resistor is not con- nected to an SGD7S- 2R8A SERVOPACKs.	Check it see if an External Regenerative Resistor is connected and check the setting of Pn600.	Connect an External Regenerative Resistor, or if an External Regenera- tive Resistor is not required, set Pn600 to 0.	*1
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the AC/DC power supply voltage within the specified range.	_
	The power supply is not stable or was influenced by a lightning surge.	Measure the power supply voltage.	Improve the power supply conditions, install a surge absorber, and then turn the power supply OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.400: Overvoltage (Detected in the	The voltage for AC power supply was too high during acceleration or deceleration.	Check the power supply voltage and the speed and torque during operation.	Set the AC power supply voltage within the specified range.	_
main circuit power supply section of the SERVOPACK.)	The external regenerative resistance is too high for the operating conditions.	Check the operating conditions and the regenerative resistance.	Select a regenerative resistance value that is appropriate for the operating conditions and load.	*4
	The moment of inertia ratio or mass ratio exceeded the allowable value.	Check to see if the moment of inertia ratio or mass ratio is within the allowable range.	Increase the deceleration time, or reduce the load.	_
	A failure occurred in the SERVOPACK.	_	While the main circuit power supply is OFF, turn the control power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number:	Descible Cause	Confirmation	Correction	
Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage went below the specified range.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
	The power supply voltage dropped during operation.	Measure the power supply voltage.	Increase the power supply capacity.	_
	A momentary power interruption occurred.	Measure the power supply voltage.	If you have changed the setting of Pn509 (Momentary Power Interruption Hold Time), decrease the setting.	*1
A.410:	The SERVOPACK fuse is blown out.	Check the power supply wiring.	Correct the power supply wiring and replace the SERVOPACK.	-
Undervoltage (Detected in the main circuit power supply section of the	The SERVOPACK fuse is blown out.	_	Replace the SERVO- PACK and connect a reactor to the DC reactor terminals (⊝1 and ⊝2) on the SERVOPACK.	-
SERVOPACK.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	The jumper between the DC Reactor terminals (⊝1 and ⊝2) was removed or there is faulty contact.		Correct the wiring between the DC Reactor	
	The cable between the DC Reactor and SERVOPACK is not wired correctly or there is a faulty contact.		terminals.	
	The order of phases U, V, and W in the motor wiring is not correct.	Check the wiring of the Servomotor.	Make sure that the Servo- motor is correctly wired.	_
A.510: Overspeed	A reference value that exceeded the over- speed detection level was input.	Check the input reference.	Reduce the reference value. Or, adjust the gain.	
(The motor exceeded the maximum speed.)	The motor exceeded the maximum speed.	Check the waveform of the motor speed.	Reduce the speed reference input gain and adjust the servo gain. Or, reconsider the operating conditions.	*1
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
A.511:	The encoder output pulse frequency exceeded the limit.	Check the encoder output pulse setting.	Decrease the setting of Pn212 (Encoder Output Pulses) or Pn281 (Encoder Output Resolu- tion).	*1
Encoder Output Pulse Overspeed	The encoder output pulse frequency exceeded the limit because the motor speed was too high.	Check the encoder output pulse setting and the motor speed.	Reduce the motor speed.	-

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Alarm Number:	Descible Cours	Confinentia	Continued from pre	
Alarm Name	Possible Cause	Confirmation	Correction	Reference
	Abnormal oscillation was detected in the motor speed.	Check for abnormal motor noise, and check the speed and torque waveforms during operation.	Reduce the motor speed. Or, reduce the setting of Pn100 (Speed Loop Gain).	*1
A.520: Vibration Alarm	The setting of Pn103 (Moment of Inertia Ratio) is greater than the actual moment of inertia or was greatly changed.	Check the moment of inertia ratio or mass ratio.	Set Pn103 (Moment of Inertia Ratio) to an appropriate value.	*1
	The vibration detection level (Pn312 or Pn384) is not suitable.	Check that the vibration detection level (Pn312 or Pn384) is suitable.	Set a suitable vibration detection level (Pn312 or Pn384).	*1
A.521: Autotuning Alarm (Vibration was detected while executing the	The Servomotor vibrated considerably while performing the tuning-less function.	Check the waveform of the motor speed.	Reduce the load so that the moment of inertia ratio is within the allowable value. Or increase the load level or reduce the rigidity level in the tuning- less level settings.	*1
custom tuning, Easy FFT, or the tuning-less func- tion.)	The Servomotor vibrated considerably while performing custom tuning or Easy FFT.	Check the waveform of the motor speed.	Check the operating procedure of corresponding function and implement corrections.	*1
A.550: Maximum Speed Setting Error	The setting of Pn385 (Maximum Motor Speed) is greater than the maximum speed.	Check the setting of Pn385, and the upper limits of the maximum motor speed setting and the encoder output resolution setting.	Set Pn385 to a value that does not exceed the maximum motor speed.	*1
	The wiring is not correct or there is a faulty contact in the motor or encoder wiring.	Check the wiring.	Make sure that the Servo- motor and encoder are correctly wired.	*1
	Operation was performed that exceeded the overload protection characteristics.	Check the motor over- load characteristics and Run command.	Reconsider the load and operating conditions. Or, increase the motor capacity.	-
A.710: Instantaneous Overload A.720: Continuous Overload	An excessive load was applied during operation because the Servomotor was not driven due to mechanical problems.	Check the operation reference and motor speed.	Correct the mechanical problem.	-
	Operation was performed with a load applied to the shaft of the servomotor that exceeded the allowable value.	Check the condition of the machine to deter- mine if a load was applied to the shaft of the servomotor that exceeded the allowable value.	Correct the condition of the machine so that the load on the shaft during servomotor operation does not exceed the allowable value.	-
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A 720 and	The Servomotor was rotated by an external force.	Check the operation status.	Implement measures to ensure that the motor will not be rotated by an external force.	-
A.730 and A.731: Dynamic Brake Overload (An excessive power consumption by the dynamic brake was detected.)	When the Servomotor was stopped with the dynamic brake, the rotational or linear kinetic energy exceeded the capacity of the dynamic brake resistor.	Check the power consumed by the DB resistor to see how frequently the DB is being used.	<ul> <li>Reconsider the following:</li> <li>Reduce the Servomotor command speed.</li> <li>Decrease the moment of inertia ratio or mass ratio.</li> <li>Reduce the frequency of stopping with the dynamic brake.</li> </ul>	-
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.740: Inrush Current Limiting Resistor Overload (The main circuit power supply	The allowable frequency of the inrush current limiting resistor was exceeded when the main circuit power supply was turned ON and OFF.	_	Reduce the frequency of turning the main circuit power supply ON and OFF.	-
was frequently turned ON and OFF.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVO-PACK installation conditions.	*1
A 7A1.	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
A.7A1: Internal Temperature Error 1 (Control Board Temperature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVOPACK installation conditions.	Install the SERVOPACK according to specifications.	*1
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVO-PACK installation conditions.	*1
	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
A.7A2: Internal Tempera- ture Error 2 (Power Board Temperature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVOPACK installation conditions.	Install the SERVOPACK according to specifications.	*1
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.7A3: Internal Temperature Sensor Error (An error occurred in the temperature sensor circuit.)	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.7Ab: SERVOPACK Built-in Fan Stopped	The fan inside the SERVOPACK stopped.	Check for foreign matter inside the SERVOPACK.	Remove foreign matter from the SERVOPACK. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	The power to the absolute encoder was turned ON for the first time.	Check to see if the power supply was turned ON for the first time.	Set up the encoder.	
A.810: Encoder Backup Alarm (Detected at the encoder, but only when an abso- lute encoder is used.)	The Encoder Cable was disconnected and then connected again.	Check to see if the power supply was turned ON for the first time.	Check the encoder connection and set up the encoder.	*1
	Power is not being supplied both from the control power supply (+5 V) from the SERVOPACK and from the battery power supply.	Check the encoder connector battery and the connector status.	Replace the battery or implement similar measures to supply power to the encoder, and set up the encoder.	
	A failure occurred in the absolute encoder.	_	If the alarm still occurs after setting up the encoder again, replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.820: Encoder Check- sum Alarm (Detected at the encoder.)	A failure occurred in the encoder.	-	■When Using an Absolute Encoder Set up the encoder again. If the alarm still occurs, the Servomotor may be faulty. Replace the Servomotor. ■When Using a Singleturn Absolute Encoder or Incremental Encoder The Servomotor may be faulty. Replace the Servomotor.	*1
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
A.830: Encoder Battery	The battery connection is faulty or a battery is not connected.	Check the battery connection.	Correct the battery connection.	*1
Alarm (The absolute encoder battery voltage was lower	The battery voltage is lower than the specified value (2.7 V).	Measure the battery voltage.	Replace the battery.	*1
than the speci- fied level.)	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.840: Encoder Data Alarm	The encoder malfunctioned.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor or linear encoder may be faulty. Replace the Servo- motor or linear encoder.	_
(Detected at the encoder.)	The encoder malfunctioned due to noise.	_	Correct the wiring around the encoder by separating the Encoder Cable from the Servomotor Main Circuit Cable or by grounding the encoder.	-
A.850: Encoder Overspeed (Detected at the encoder when the control power supply is turned	The Servomotor speed was 200 min <sup>-1</sup> or higher when the control power supply was turned ON.	Check the motor speed when the power supply is turned ON.	Reduce the Servomotor speed to a value less than 200 min <sup>-1</sup> , and turn ON the control power supply.	_
	A failure occurred in the encoder.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	_
ON.)	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number:			Continued from pri	l l l l l l l l l l l l l l l l l l l
Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding air temperature around the Servomotor is too high.	Measure the surrounding air temperature around the Servomotor.	Reduce the surrounding air temperature of the Servomotor to 40°C or less.	-
A.860:	The Servomotor load is greater than the rated load.	Use the accumulated load ratio to check the load.	Operate the Servo Drive so that the motor load remains within the specified range.	*1
Encoder Over- heated (Detected at the encoder.)	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The surrounding temperature around the Servomotor is too high.	Measure the surrounding temperature around the Servomotor.	Reduce the surrounding air temperature of the Servomotor to 40° or less.	_
	The motor load is greater than the rated load.	Check the load with the accumulated load ratio on the Motion Monitor Tab Page on the SigmaWin+.	Operate the Servo Drive so that the motor load remains within the specified range.	*1
A.861: Motor Over- heated	A failure occurred in the Serial Converter Unit.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Serial Con- verter Unit may be faulty. Replace the Serial Con- verter Unit.	-
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

3

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat.	Lower the surrounding temperature by improving the installation conditions of the machine.	-
	The overheat protection input signal line is disconnected or short-circuited.	Check the input voltage with the overheat protection input information on the Motion Monitor Tab Page on the SigmaWin+.	Repair the line for the overheat protection input signal.	-
A.862: Overheat Alarm	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
	Operation was performed under an excessive load.	Use the accumulated load ratio to check the load during operation.	Reconsider the load and operating conditions.	-
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The sensor attached to the machine is faulty.	_	The sensor attached to the machine may be faulty. Repair the sensor attached to the machine.	-
A.8A0: External Encoder Error	Setting the origin of the absolute linear encoder failed because the motor moved.	Before you set the origin, use the fully-closed feedback pulse counter to confirm that the motor is not moving.	The motor must be stopped while setting the origin position.	*1
	A failure occurred in the external encoder.	-	Replace the external encoder.	-
A.8A1:	A failure occurred in the external encoder.	_	Replace the external encoder.	-
External Encoder Module Error	A failure occurred in the Serial Converter Unit.	_	Replace the Serial Converter Unit.	-
A.8A2: External Incremental Encoder Sensor Error	A failure occurred in the external encoder.	_	Replace the external encoder.	-
A.8A3: External Absolute Encoder Position Error	A failure occurred in the external absolute encoder.	_	The external absolute encoder may be faulty. Refer to the encoder manufacturer's instruction manual for corrections.	-
A.8A5: External Encoder Overspeed	An overspeed error was detected in the external encoder.	Check the maximum speed of the external encoder.	Keep the external encoder below its maximum speed.	-
A.8A6: External Encoder Overheated	An overheating error was detected in the external encoder.	-	Replace the external encoder.	_

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Alarm Number:	Possible Cause	Confirmation	Continued from pro	Reference
Alarm Name		Committation	Correction	Ticicionoc
A.b10: Speed Reference	A malfunction occurred in the speed reference input section.	_	Reset the alarm and restart operation.	*1
A/D Error (Detected when the servo is turned ON.)	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.b11:	A malfunction occurred in the speed reference input section.	_	Reset the alarm and restart operation.	*1
Speed Reference A/D Data Error	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.b20: Torque Refer-	A malfunction occurred in the reading section for the torque reference input.	_	Reset the alarm and restart operation.	*1
ence A/D Error (Detected when the servo is turned ON.)	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.b33: Current Detection Error 3	A failure occurred in the current detection circuit.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF0: System Alarm 0	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF1: System Alarm 1	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF2: System Alarm 2	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF3: System Alarm 3	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

3

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.bF4: System Alarm 4	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF5: System Alarm 5	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF6: System Alarm 6	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF7: System Alarm 7	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF8: System Alarm 8	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The order of phases U, V, and W in the motor wiring is not correct.	Check the Servomotor wiring.	Make sure that the Servo- motor is correctly wired.	-
A.C10: Servomotor Out of Control (Detected when the servo is	A failure occurred in the encoder.	_	If the motor wiring is correct and an alarm still occurs after turning the power supply OFF and ON again, the Servomotor may be faulty. Replace the Servomotor.	-
turned ON.)	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.C80: Encoder Clear Error or Multiturn Limit Setting Error	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number:	Possible Cause	Confirmation	Continued from pro	Reference
Alarm Name		Communation	Correction	1101010100
	There is a faulty contact in the connector or the connector is not wired correctly for the encoder.	Check the condition of the encoder connector.	Reconnect the encoder connector and check the encoder wiring.	*1
	There is a cable disconnection or short-circuit in the encoder. Or, the cable impedance is outside the specified values.	Check the condition of the Encoder Cable.	Use the Encoder Cable within the specifications.	-
A.C90: Encoder Commu-	One of the following has occurred: corrosion caused by improper temperature, humidity, or gas, a short-circuit caused by entry of water drops or cutting oil, or faulty contact in connector caused by vibration.	Check the operating environment.	Improve the operating environmental, and replace the cable. If the alarm still occurs, replace the SERVOPACK.	*1
nications Error	A malfunction was caused by noise.	-	Correct the wiring around the encoder by separating the Encoder Cable from the Servomotor Main Circuit Cable or by grounding the encoder.	*1
	A failure occurred in the SERVOPACK.	-	Connect the Servomotor to another SERVOPACK, and turn ON the control power supply. If no alarm occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	A failure occurred in the encoder.	_	Connect the Servomotor to another SERVOPACK, and turn ON the control power supply. If the alarm occurs, the Servomotor may be faulty. Replace the Servomotor.	-
A.C91: Encoder Communications Position Data Acceleration Rate Error	Noise entered on the signal lines because the Encoder Cable is bent or the sheath is damaged.	Check the condition of the Encoder Cable and connectors.	Check the Encoder Cable to see if it is installed correctly.	*1
	The Encoder Cable is bundled with a high- current line or installed near a high- current line.	Check the installation condition of the Encoder Cable.	Confirm that there is no surge voltage on the Encoder Cable.	-
	There is variation in the FG potential because of the influ- ence of machines on the Servomotor side, such as a welder.	Check the installation condition of the Encoder Cable.	Properly ground the machine to separate it from the FG of the encoder.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	Noise entered on the signal line from the encoder.	_	Implement countermeasures against noise for the encoder wiring.	*1
	Excessive vibration or shock was applied to the encoder.	Check the operating conditions.	Reduce machine vibration. Correctly install the Servomotor.	-
A.C92: Encoder Communications Timer Error	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.CA0: Encoder Parame- ter Error	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number:	Possible Cause	Confirmation	Correction	Reference
Alarm Name	The encoder is wired incorrectly or there is faulty contact.	Check the wiring of the encoder.	Make sure that the encoder is correctly wired.	*1
	The specifications of the Encoder Cable are not correct and noise entered on it.	-	Use a shielded twisted- pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm <sup>2</sup> .	-
	The Encoder Cable is too long and noise entered on it.	_	The encoder cable wiring distance must be 50 m max.	-
A.Cb0: Encoder Echo-	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Check the condition of the Encoder Cable and connectors.	Properly ground the machine to separate it from the FG of the encoder.	-
back Error	Excessive vibration or shock was applied to the encoder.	Check the operating conditions.	Reduce machine vibration. Correctly install the Servomotor.	-
	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.CC0: Multiturn Limit Disagreement	When using a Direct Drive Servomotor, the setting of Pn205 (Mul- titurn Limit Setting) does not agree with the encoder.	Check the setting of Pn205.	Correct the setting of Pn205 (0 to 65,535).	*1
	The multiturn limit of the encoder is different from that of the SERVOPACK. Or, the multiturn limit of the SERVOPACK has been changed.	Check the setting of Pn205 in the SERVO-PACK.	Change the setting if the alarm occurs.	*1
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

Maintenance

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Correction	Reference	

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The cable between the Serial Converter Unit and SERVOPACK is not wired correctly or there is a faulty contact.	Check the wiring of the external encoder.	Correctly wire the cable between the Serial Converter Unit and SERVO-PACK.	*1
A.CF1: Reception Failed Error in Feed-	A specified cable is not being used between Serial Con- verter Unit and SER- VOPACK.	Check the wiring specifications of the external encoder.	Use a specified cable.	-
back Option Module Commu- nications	The cable between the Serial Converter Unit and SERVOPACK is too long.	Measure the length of the cable that connects the Serial Converter Unit.	The length of the cable between the Serial Converter Unit and SERVO-PACK must be 20 m or less.	-
	The sheath on cable between the Serial Converter Unit and SERVOPACK is broken.	Check the cable that connects the Serial Converter Unit.	Replace the cable between the Serial Converter Unit and SERVO-PACK.	-
A.CF2: Timer Stopped Error in Feed-	Noise entered the cable between the Serial Converter Unit and SERVOPACK.	_	Correct the wiring around the Serial Converter Unit, e.g., separate I/O signal lines from the Main Circuit Cables or ground.	-
back Option Module Commu- nications	A failure occurred in the Serial Converter Unit.	_	Replace the Serial Converter Unit.	-
	A failure occurred in the SERVOPACK.	_	Replace the SERVO- PACK.	_
	The Servomotor U, V, and W wiring is not correct.	Check the wiring of the Servomotor's Main Circuit Cables.	Make sure that there are no faulty contacts in the wiring for the Servomotor and encoder.	-
A.d00: Position Deviation Overflow (The setting of Pn520 (Excessive Position Deviation Alarm Level) was exceeded by the position deviation.)	The frequency of the position reference pulse is too high.	Reduce the reference pulse frequency and try operating the SERVO- PACK.	Reduce the position reference pulse frequency or the reference acceleration rate, or reconsider the electronic gear ratio.	*1
	The acceleration of the position reference is too high.	Reduce the reference acceleration and try operating the SERVO-PACK.	Apply smoothing, i.e., by using Pn216 (Position Reference Acceleration/ Deceleration Time Constant).	*1
	The setting of Pn520 (Excessive Position Deviation Alarm Level) is too low for the operating conditions.	Check Pn520 (Excessive Position Deviation Alarm Level) to see if it is set to an appropriate value.	Optimize the setting of Pn520.	*1
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.d01: Position Deviation Overflow Alarm at Servo ON	The servo was turned ON after the position deviation exceeded the setting of Pn526 (Excessive Position Deviation Alarm Level at Servo ON) while the servo was OFF.	Check the position deviation while the servo is OFF.	Set the position deviation to be cleared while the servo is OFF. Optimize the setting of Pn526 (Excessive Position Deviation Alarm Level at Servo ON).	
A.d02: Position Deviation Overflow Alarm for Speed Limit at Servo ON	If position deviation remains in the deviation counter, the setting of Pn529 or Pn584 (Speed Limit Level at Servo ON) limits the speed when the servo is turned ON. This alarm occurs if reference pulses are input and the setting of Pn520 (Excessive Position Deviation Alarm Level) is exceeded.	_	Set the position deviation to be cleared while the servo is OFF. Optimize the setting of Pn520 (Excessive Position Deviation Alarm Level). Or, adjust the setting of Pn529 or Pn584 (Speed Limit Level at Servo ON).	*1
A.d10: Motor-Load Position Deviation	The motor direction and external encoder installation orientation are backward.	Check the motor direction and the external encoder installation orientation.	Install the external encoder in the opposite direction, or change the setting of Pn002 = n.XDDD (External Encoder Usage) to reverse the direction.	*1
Overflow	There is an error in the connection between the load (e.g., stage) and external encoder coupling.	Check the coupling of the external encoder.	Check the mechanical coupling.	_
A.d30: Position Data Overflow	The position data exceeded ±1,879,048,192.	Check the input reference pulse counter.	Reconsider the operating specifications.	-
	There is a faulty connection between the SERVOPACK and the Safety Option Module.	Check the connection between the SERVO- PACK and the Safety Option Module.	Correctly connect the Safety Option Module.	-
A.E71: Safety Option Module Detec- tion Failure	The Safety Option Module was discon- nected.	_	Execute Fn014 (Reset Option Module Configuration Error) from the Digital Operator or SigmaWin+ and then turn the power supply to the SERVO-PACK OFF and ON again.	*1
	A failure occurred in the Safety Option Module.	_	Replace the Safety Option Module.	-
	A failure occurred in the SERVOPACK.	_	Replace the SERVO-PACK.	_

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Alarm Number: 5 11 0 0 5 11 0 0 15 15 15 15 15 15 15 15 15 15 15 15 15				
Alarm Name	Possible Cause	Confirmation	Correction	Reference
	There is a faulty connection between the SERVOPACK and the Feedback Option Module.	Check the connection between the SERVO-PACK and the Feedback Option Module.	Correctly connect the Feedback Option Module.	-
A.E72: Feedback Option Module Detec- tion Failure	The Feedback Option Module was discon- nected.	_	Reset the Option Module configuration error and turn the power supply to the SERVOPACK OFF and ON again.	*1
	A failure occurred in the Feedback Option Module.	_	Replace the Feedback Option Module.	-
	A failure occurred in the SERVOPACK.	-	Replace the SERVO- PACK.	-
A.E74: Unsupported Safety Option Module	A failure occurred in the Safety Option Module.	_	Replace the Safety Option Module.	-
	An unsupported Safety Option Module was connected.	Refer to the catalog of the connected Safety Option Module.	Connect a compatible Safety Option Module.	-
A.Eb1: Safety Function Signal Input Tim- ing Error	The delay between activation of the /HWBB1 and /HWBB2 input signals for the HWBB was ten second or longer.	Measure the time delay between the /HWBB1 and /HWBB2 signals.	The output signal circuits or devices for /HWBB1 and /HWBB2 or the SER-VOPACK input signal circuits may be faulty. Alternatively, the input signal cables may be disconnected. Check to see if any of these items are faulty or have been disconnected.	-
	A failure occurred in the SERVOPACK.	-	Replace the SERVO- PACK.	_
A.EC8: Gate Drive Error 1 (An error occurred in the gate drive circuit.)  A.EC9: Gate Drive Error 2 (An error occurred in the gate drive circuit.)	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number:	Described O	0 1'	Continued from pro	
Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The three-phase power supply wiring is not correct.	Check the power supply wiring.	Make sure that the power supply is correctly wired.	*1
A.F10: Power Supply Line Open Phase	The three-phase power supply is unbalanced.	Measure the voltage for each phase of the three-phase power supply.	Balance the power supply by changing phases.	-
(The voltage was low for more than one second for phase R, S, or T when the main power supply	A single-phase power supply was input without specifying a signal-phase AC power supply input (Pn00B = n.□1□□).	Check the power supply and the parameter setting.	Match the parameter setting to the power supply.	*1
was ON.)	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
FL-1*5: System Alarm FL-2*5: System Alarm FL-3*5: System Alarm FL-4*5: System Alarm FL-5*5: System Alarm FL-6*5: System Alarm	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_
CPF00: Digital Operator	There is a faulty contact between the Digital Operator and the SERVOPACK.	Check the connector contact.	Disconnect the connector and insert it again. Or, replace the cable.	-
Communications Error 1	A malfunction was caused by noise.	_	Keep the Digital Operator or the cable away from sources of noise.	-
CPF01: Digital Operator Communications Error 2	A failure occurred in the Digital Operator.	_	Disconnect the Digital Operator and then connect it again. If an alarm still occurs, the Digital Operator may be faulty. Replace the Digital Operator.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

<sup>\*1.</sup> Refer to the following manual for details.

Σ-7-Series Σ-7S SERVOPACK with Analog Voltage/Pulse Train References Product Manual (Manual No.: SIEP S800001 26)

# Maintenance

\*2. Detection Conditions

If either of the following conditions is detected, an alarm will occur.

• Pn533 [min<sup>-1</sup>] × Encoder resolution 
$$\leq$$
 Pn20E Pn210

• Maximum motor speed [min
$$^{-1}$$
] ×  $\frac{\text{Encoder resolution}}{\text{Approx. } 3.66 \times 10^{12}}$  ≥  $\frac{\text{Pn20E}}{\text{Pn210}}$ 

\*3. Detection Conditions

If either of the following conditions is detected, an alarm will occur.

• Rated motor speed [min<sup>-1</sup>] 
$$\times$$
 1/3  $\times$   $\frac{\text{Encoder resolution}}{6 \times 10^5} \le \frac{\text{Pn20E}}{\text{Pn210}}$ 

• Maximum motor speed [min<sup>-1</sup>] 
$$\times \frac{\text{Encoder resolution}}{\text{Approx. } 3.66 \times 10^{12}} \ge \frac{\text{Pn20E}}{\text{Pn210}}$$

- \*4. Refer to the following manual for details.
  - Ω Σ-7-Series Peripheral Device Selection Manual (Manual No.: SIEP S800001 32)
- \*5. These alarms are not stored in the alarm history. They are only displayed on the panel display.

3.1.4 Warning Displays

# 3.1.4 Warning Displays

If a warning occurs in the SERVOPACK, a warning number will be displayed on the panel display. Warnings are displayed to warn you before an alarm occurs.

# 3.1.5 List of Warnings

The list of warnings gives the warning name, warning meaning, and warning code output in order of the warning numbers.

Warning	Warning Name	Meaning		rning C Output	
Number				ALO2	ALO3
A.900	Position Deviation Overflow	The position deviation exceeded the percentage set with the following formula: (Pn520 × Pn51E/100)	Н	Н	Н
A.901	Position Deviation Overflow Alarm at Servo ON	The position deviation when the servo was turned ON exceeded the percentage set with the following formula: (Pn526 × Pn528/100)	Н	Н	Н
A.910	Overload	This warning occurs before an overload alarm (A.710 or A.720) occurs. If the warning is ignored and operation is continued, an alarm may occur.	L	Н	Н
A.911	Vibration	Abnormal vibration was detected during motor operation. The detection level is the same as A.520. Set whether to output an alarm or a warning by setting Pn310 (Vibration Detection Switch).	L	Н	Н
A.912	Internal Temperature Warning 1 (Control Board Temperature Error)	The surrounding temperature of the control PCB is abnormal.	Н	L	Н
A.913	Internal Temperature Warning 2 (Power Board Temperature Error)	The surrounding temperature of the power PCB is abnormal.	Н	L	Н
A.920	Regenerative Overload	This warning occurs before an A.320 alarm (Regenerative Overload) occurs. If the warning is ignored and operation is continued, an alarm may occur.	Н	L	Н
A.921	Dynamic Brake Over- load	This warning occurs before an A.731 alarm (Dynamic Brake Overload) occurs. If the warning is ignored and operation is continued, an alarm may occur.	Н	L	Н
A.923	SERVOPACK Built-in Fan Stopped	The fan inside the SERVOPACK stopped.	Н	L	Н
A.930	Absolute Encoder Bat- tery Error	This warning occurs when the voltage of absolute encoder's battery is low.	L	L	Н
A.93B	Overheat Warning	The input voltage (temperature) for the overheat protection input (TH) signal exceeded the setting of Pn61C (Overheat Warning Level).	L	L	Н
A.941	Change of Parameters Requires Restart	Parameters have been changed that require the power supply to be turned OFF and ON again.	Н	Н	L
A.942	Speed Ripple Compensation Information Disagreement	The speed ripple compensation information stored in the encoder does not agree with the speed ripple compensation information stored in the SER-VOPACK.	Н	Н	L
A.971	Undervoltage	This warning occurs before an A.410 alarm (Undervoltage) occurs. If the warning is ignored and operation is continued, an alarm may occur.	L	L	L
A.9A0	Overtravel	Overtravel was detected while the servo was ON.	Н	L	L

Continued from previous page.

Warning Number	Warning Name	Meaning		Warning Code Output		
Number			ALO1	ALO2	ALO3	
A.9b0	Preventative Mainte- nance Warning	One of the consumable parts has reached the end of its service life.	Η	L	Н	

- Note: 1. A warning code is not output unless you set Pn001 to n.1 \(\sigma\) (Output both alarm codes and warning codes).
  - 2. Use Pn008 = n.□X□□ (Warning Detection Selection) to control warning detection. However, the following warnings are not affected by the setting of Pn008 = n.□X□□ and other parameter settings are required in addition to Pn008 = n.□X□□.

Warning	Parameters That Must Be Set to Select Warning Detection
A.911	Pn310 = n.□□□X (Vibration Detection Setting)
A.923	(Not affected by the setting of Pn008 = n.□X□□.)
A.930	Pn008 = n.□□□X (Low Battery Voltage Alarm/Warning Selection)
A.942	Pn423 = n.□□X□ (Speed Ripple Compensation Information Disagreement Warning Detection Selection)
A.971	Pn008 = n.□□□X (Low Battery Voltage Alarm/Warning Selection) (Not affected by the setting of Pn008 = n.□X□□.)
A.9A0	Pn00D = n.X□□□ (Overtravel Warning Detection Selection) (Not affected by the setting of Pn008 = n.□X□□.)
A.9b0	Pn00F = n.□□□X (Preventative Maintenance Selection)

# 3.1.6 Troubleshooting Warnings

The causes of and corrections for the warnings are given in the following table. Contact your Yaskawa representative if you cannot solve a problem with the correction given in the table.

Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The Servomotor U, V, and W wiring is not correct.	Check the wiring of the Servomotor's Main Circuit Cables.	Make sure that there are no faulty connections in the wiring for the Servomotor and encoder.	-
	A SERVOPACK gain is too low.	Check the SERVO- PACK gains.	Increase the servo gain, e.g., by using autotuning without a host reference.	*
A.900: Position Deviation Overflow	The frequency of the position reference pulse is too high.	Reduce the reference pulse frequency and try operating the SERVO- PACK.	Reduce the position reference pulse frequency or the reference acceleration rate, or reconsider the electronic gear ratio.	*
	The acceleration of the position reference is too high.	Reduce the reference acceleration and try operating the SERVO-PACK.	Apply smoothing, i.e., by using Pn216 (Position Reference Acceleration/ Deceleration Time Constant).	*
	The excessive position deviation alarm level (Pn520 × Pn51E/100) is too low for the operating conditions.	Check excessive position deviation alarm level (Pn520 × Pn51E/100) to see if it is set to an appropriate value.	Optimize the settings of Pn520 and Pn51E.	*
	A failure occurred in the SERVO-PACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

# 3.1.6 Troubleshooting Warnings

Continued from previous page.

Warning Number:	Possible Cause	Confirmation	Correction	Reference
Warning Name		- Committation	CONTOUROR	101010100
A.901: Position Deviation Overflow Alarm at Servo ON	The position deviation when the servo was turned ON exceeded the percentage set with the following formula: (Pn526 × Pn528/100)	-	Set the position deviation to be cleared while the servo is OFF. Optimize the setting of Pn528 (Excessive Position Error Warning Level at Servo ON).	*
A.910: Overload (warning before an A.710 or A.720 alarm occurs)	The wiring is not correct or there is a faulty contact in the motor or encoder wiring.	Check the wiring.	Make sure that the Servo- motor and encoder are cor- rectly wired.	-
	Operation was performed that exceeded the overload protection characteristics.	Check the motor over- load characteristics and Run command.	Reconsider the load and operating conditions. Or, increase the motor capacity.	-
	An excessive load was applied during operation because the Servomotor was not driven because of mechanical problems.	Check the operation reference and motor speed.	Remove the mechanical problem.	-
	The overload warning level (Pn52B) is not suitable.	Check that the overload warning level (Pn52B) is suitable.	Set a suitable overload warning level (Pn52B).	*
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-
A.911: Vibration	Abnormal vibration was detected during motor operation.	Check for abnormal motor noise, and check the speed and torque waveforms during operation.	Reduce the motor speed. Or, reduce the servo gain with custom tuning.	*
	The setting of Pn103 (Moment of Inertia Ratio) is greater than the actual moment of inertia or was greatly changed.	Check the moment of inertia ratio or mass ratio.	Set Pn103 (Moment of Inertia Ratio) to an appropriate value.	*
	The vibration detection level (Pn312 or Pn384) is not suitable.	Check that the vibration detection level (Pn312 or Pn384) is suitable.	Set a suitable vibration detection level (Pn312 or Pn384).	*

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Warning Number:	Possible Cause	Confirmation	Continued from pre	Reference
Warning Name	1 Ussible Gause		Correction	Helefelle
A.912: Internal Tempera- ture Warning 1 (Control Board Tem- perature Error)	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVOPACK installation conditions.	*
	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVO- PACK installation con- ditions.	Install the SERVOPACK according to specifications.	*
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-
A.913: Internal Tempera- ture Warning 2 (Power Board Tem- perature Error)	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVOPACK installation conditions.	*
	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	_
	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVO- PACK installation con- ditions.	Install the SERVOPACK according to specifications.	*
	A failure occurred in the SERVO-PACK.	-	The SERVOPACK may be faulty. Replace the SERVO-PACK.	_

# 3.1.6 Troubleshooting Warnings

Continued from previous page.

Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
A.920: Regenerative Over- load (warning before an A.320 alarm occurs)	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
	There is insufficient external regenerative resistance, regenerative resistor capacity, or SER-VOPACK capacity, or there has been a continuous regeneration state.	Check the operating conditions or the capacity using the SigmaJunmaSize+ Capacity Selection Software or another means.	Change the regenerative resistance value, regenerative resistance capacity, or SERVOPACK capacity. Reconsider the operating conditions using the Sigma-JunmaSize+ Capacity Selection Software or other means.	-
	There was a continuous regeneration state because a negative load was continuously applied.	Check the load applied to the Servomotor during operation.	Reconsider the system including the servo, machine, and operating conditions.	-
A.921:  Dynamic Brake  Overload (warning before an A.731 alarm occurs)	The Servomotor was rotated by an external force.	Check the operation status.	Implement measures to ensure that the motor will not be rotated by an external force.	-
	When the Servo- motor was stopped with the dynamic brake, the rotational or linear kinetic energy exceeded the capacity of the dynamic brake resistor.	Check the power consumed by the DB resistor to see how frequently the DB is being used.	Reconsider the following:  Reduce the Servomotor command speed.  Decrease the moment of inertia or mass.  Reduce the frequency of stopping with the dynamic brake.	-
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	_
A.923: SERVOPACK Built- in Fan Stopped	The fan inside the SERVOPACK stopped.	Check for foreign matter inside the SERVO-PACK.	Remove foreign matter from the SERVOPACK. If an alarm still occurs, the SER- VOPACK may be faulty. Replace the SERVOPACK.	-
A.930: Absolute Encoder Battery Error (The absolute encoder battery voltage was lower than the spec- ified level.) (Detected only when an abso- lute encoder is con- nected.)	The battery con- nection is faulty or a battery is not connected.	Check the battery connection.	Correct the battery connection.	*
	The battery voltage is lower than the specified value (2.7 V).	Measure the battery voltage.	Replace the battery.	*
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	_

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Warning Number:	Possible Cause	Confirmation	Correction	Reference
Warning Name	Possible Gause	Committation		neierence
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat.	Lower the surrounding tem- perature by improving the installation conditions of the machine.	_
A.93B:	Operation was performed under an excessive load.	Use the accumulated load ratio to check the load during operation.	Reconsider the load and operating conditions.	_
Overheat Warning	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	_
	The sensor attached to the machine is faulty.	-	The sensor attached to the machine may be faulty. Repair the sensor attached to the machine.	-
A.941: Change of Parameters Requires Restart	Parameters have been changed that require the power supply to be turned OFF and ON again.	_	Turn the power supply to the SERVOPACK OFF and ON again.	-
	The speed ripple	-	Reset the speed ripple compensation value on the SigmaWin+.	*
A.942: Speed Ripple Compensation Information Disagreement	compensation information stored in the encoder does not agree with the speed ripple compensa-	_	Set Pn423 to n. □□1□ (Do not detect A.942 alarms). However, changing the setting may increase the speed ripple.	*
tion bloagreement	tion information stored in the SER- VOPACK.	-	Set Pn423 to n. \(\subseteq \subseteq 0\) (Disable torque ripple compensation). However, changing the setting may increase the speed ripple.	*
	For a 200-V SER- VOPACK, the AC power supply volt- age dropped below 140 V.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
	For a 100-V SER- VOPACK, the AC power supply volt- age dropped below 60 V.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
A.971: Undervoltage	The power supply voltage dropped during operation.	Measure the power supply voltage.	Increase the power supply capacity.	-
	A momentary power interruption occurred.	Measure the power supply voltage.	If you have changed the setting of Pn509 (Momentary Power Interruption Hold Time), decrease the setting.	*
	The SERVOPACK fuse is blown out.	_	Replace the SERVOPACK and connect a reactor.	*
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	_

#### 3.1.6 Troubleshooting Warnings

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Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
A.9A0: Overtravel (Overtravel status was detected.)	Overtravel was detected while the servo was ON.	Check the status of the overtravel signals on the input signal monitor.	Even if an overtravel signal is not shown by the input signal monitor, momentary overtravel may have been detected. Take the following precautions.  • Do not specify movements that would cause overtravel from the host controller.  • Check the wiring of the overtravel signals.  • Implement countermeasures against noise.	*
A.9b0: Preventative Mainte- nance Warning	One of the consumable parts has reached the end of its service life.	_	Replace the part. Contact your Yaskawa representative for replacement.	*

<sup>\*</sup> Refer to the following manual for details.

Ω Σ-7-Series Σ-7S SERVOPACK with Analog Voltage/Pulse Train References Product Manual (Manual No.: SIEP S800001 26)

# 3.1.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

This section provides troubleshooting based on the operation and conditions of the Servomotor, including causes and corrections.

Problem	Possible Cause	Confirmation	Correction	Reference
	The control power supply is not turned ON.	Measure the voltage between control power supply terminals.	Turn OFF the power supply to the servo system. Correct the wiring so that the control power supply is turned ON.	-
	The main circuit power supply is not turned ON.	Measure the voltage between the main circuit power input terminals.	Turn OFF the power supply to the servo system. Correct the wiring so that the main circuit power supply is turned ON.	-
	The I/O signal connector (CN1) pins are not wired correctly or are disconnected.	Turn OFF the power supply to the servo system. Check the wiring condition of the I/O signal connector (CN1) pins.	Correct the wiring of the I/O signal connector (CN1) pins.	*
	The wiring for the Servomotor Main Circuit Cables or Encoder Cable is disconnected.	Check the wiring conditions.	Turn OFF the power supply to the servo system. Wire the cable correctly.	-
Servomotor Does Not Start	There is an overload on the Servomotor.	Operate the Servomotor with no load and check the load status.	Turn OFF the power supply to the servo system. Reduce the load or replace the Servomotor with a Servomotor with a larger capacity.	-
	The type of encoder that is being used does not agree with the setting of Pn002 = n.□X□□ (Encoder Usage).	Check the type of the encoder that is being used and the setting of Pn002 = n.□X□□.	Set Pn002 = n. \(\Pi\)X\(\Pi\)\\ according to the type of the encoder that is being used.	*
	No speed or position reference is input.	Turn OFF the power supply to the servo system. Check the allocation status of the input signals.	Allocate an input signal so that the speed and position references are input correctly.	*
	There is a mistake in the input signal allocations (Pn50A to Pn50D, Pn515, and Pn516).	Check the input signal allocations (Pn50A to Pn50D, Pn515, and Pn516).	Correctly allocate the input signals (Pn50A to Pn50D, Pn515, and Pn516).	*
	The /S-ON (Servo ON) signal is OFF.	Check the settings of Pn50A = n.□□□X (Input Signal Allocation Mode) and Pn50A =n.□□X□ (Servo ON (/S-ON) Signal Mapping).	Set Pn50A = n.□□XX correctly and turn ON the /S-ON signal.	*
	The function setting of the /P-CON (Proportional Control) signal is not correct.	Check the setting of Pn000 = n.□□X□ (Control Method Selection).	Set the parameter to match the application.	*
	The SEN input is OFF.	Check the ON/OFF status of the SEN input.	If you are using an absolute encoder, turn ON the SEN signal.	*

#### 3.1.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

Problem	Possible Cause	Confirmation	Correction	Reference
	The reference pulse mode selection is not correct.	Check the setting of Pn200 =n.□□□X (Reference Pulse Form) and the reference pulse form.	Set Pn200 =n. \(\begin{align*} \pi \pi \) so that is agrees with the reference pulse form.	*
	Speed control: The speed reference input is not appropriate.	Check between the speed reference input (V-REF) and signal ground (SG) to see if the control method and the input agree.	Correctly set the control method and input method.	*
	Torque control: The torque reference input is not appropriate.	Check between the torque reference input (T-REF) and signal ground (SG) to see if the control method and the input agree.	Correctly set the control method and input method.	*
	Position control: The reference pulse input is not appropriate.	Check the setting of Pn200 =n. \(\sigma\) \(\sigma\) (Reference Pulse Form) and the sign and pulse signals.	Correctly set the control method and input method.	*
	The /CLR (Position Deviation Clear) input signal has not been turned OFF.	Check the /CLR signal (CN1-14 and CN1-15).	Turn OFF the /CLR signal.	*
Servomotor Does Not Start	The P-OT (Forward Drive Prohibit) or N-OT (Reverse Drive Prohibit) signal is still OFF.	Check the P-OT and N-OT signals.	Turn ON the P-OT and N-OT signals.	*
	The safety input signals (/HWBB1 or /HWBB2) were not turned ON.	Check the /HWBB1 and /HWBB2 input signals.	Turn ON the /HWBB1 and /HWBB2 input signals. If you are not using the safety function, connect the Safety Jumper Connector (provided as an accessory) to CN8.	*
	The FSTP (Forced Stop Input) signal is still OFF.	Check the FSTP signal.	Turn ON the FSTP signal.     If you will not use the function to force the motor to stop, set Pn516 = n.□□□X (FSTP (Forced Stop Input) Signal Allocation) to disable the signal.	*
	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-
Servomotor Moves Instanta-	There is a mistake in the Servomotor wiring.	Turn OFF the power supply to the servo system. Check the wiring.	Wire the Servomotor correctly.	_
neously, and Then Stops	There is a mistake in the wiring of the encoder or Serial Converter Unit.	Turn OFF the power supply to the servo system. Check the wiring.	Wire the Serial Converter Unit correctly.	_
Servomotor Speed Is Unstable	There is a faulty connection in the Servomotor wiring.	Turn OFF the power supply to the servo system. The connector connections for the power line (U, V, and W phases) and the encoder or Serial Converter Unit may be unstable. Check the wiring.	Tighten any loose terminals or connectors and correct the wiring.	- next page.

3.1.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

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Problem	Possible Cause	Confirmation	Correction	Reference
Servomotor Moves with-	Speed control: The speed reference input is not appropriate.	Check between the speed reference input (V-REF) and signal ground (SG) to see if the control method and the input agree.	Correctly set the control method and input method.	*
	Torque control: The torque reference input is not appropriate.	Check between the torque reference input (T-REF) and signal ground (SG) to see if the control method and the input agree.	Correctly set the control method and input method.	*
out a Refer- ence Input	The speed reference offset is not correct.	The SERVOPACK offset is adjusted incorrectly.	Adjust the SERVO- PACK offset.	*
	Position control: The reference pulse input is not appropriate.	Check the setting of Pn200 =n.□□□X (Reference Pulse Form) and the sign and pulse signals.	Correctly set the control method and input method.	-
	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-
	The setting of Pn001 = n.□□□X (Servo OFF or Alarm Group 1 Stopping Method) is not suitable.	Check the setting of Pn001 = n.□□□X.	Set Pn001 = n.□□□X correctly.	-
Dynamic Brake Does Not Operate	The dynamic brake resistor is disconnected.	Check the moment of inertia, motor speed, and dynamic brake frequency of use. If the moment of inertia, motor speed, or dynamic brake frequency of use is excessive, the dynamic brake resistance may be disconnected.	Turn OFF the power supply to the servo system. Replace the SERVO-PACK. To prevent disconnection, reduce the load.	-
	There was a failure in the dynamic brake drive circuit.	_	Turn OFF the power supply to the servo system. There is a defective component in the dynamic brake circuit. Replace the SERVO-PACK.	-

#### 3.1.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

Possible Cause	Confirmation	Continued from pre	Reference
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The Servomotor vibrated considerably while performing the tuning-less function with the default settings.	Check the waveform of the motor speed.	that the moment of inertia ratio or mass ratio is within the allowable value, or increase the load level or reduce the rigidity level in the tuning-less level settings.	*
The machine mounting is not secure.	Turn OFF the power supply to the servo system. Check to see if there are any loose mounting screws.	Tighten the mounting screws.	_
The machine mounting is not	Turn OFF the power supply to the servo system. Check to see if there is misalignment in the coupling.	Align the coupling.	-
secure.	Turn OFF the power supply to the servo system. Check to see if the coupling is balanced.	Balance the coupling.	_
The bearings are defective.	Turn OFF the power supply to the servo system. Check for noise and vibration around the bearings.	Replace the Servomotor.	-
There is a vibration source at the driven machine.	Turn OFF the power supply to the servo system. Check for any foreign matter, damage, or deformation in the machine's moving parts.	Consult with the machine manufacturer.	-
Noise interference occurred because of incorrect I/O signal cable specifications.	Turn OFF the power supply to the servo system. Check the I/O signal cables to see if they satisfy specifications. Use shielded twisted-pair wire cables or screened twisted-pair cables with conductors of at least 0.12 mm <sup>2</sup> .	Use cables that satisfy the specifications.	-
Noise interference occurred because an I/O signal cable is too long.	Turn OFF the power supply to the servo system. Check the lengths of the I/O signal cables.	The I/O signal cables must be no longer than 3 m.	-
Noise interference occurred because of incorrect Encoder Cable specifications.	Turn OFF the power supply to the servo system. Make sure that the rotary or Linear Encoder Cable satisfies the specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with a conductors of at least 0.12 mm <sup>2</sup> .	Use cables that satisfy the specifications.	-
Noise interference occurred because the Encoder Cable is too long.	Turn OFF the power supply to the servo system. Check the length of the Encoder Cable.	The Encoder Cable length must be 50 m max.	_
Noise interference occurred because the Encoder Cable is damaged.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it is pinched or the sheath is damaged.	Replace the Encoder Cable and correct the cable installation envi- ronment.	_
	considerably while performing the tuning-less function with the default settings.  The machine mounting is not secure.  The machine mounting is not secure.  The bearings are defective.  There is a vibration source at the driven machine.  Noise interference occurred because of incorrect I/O signal cable specifications.  Noise interference occurred because an I/O signal cable is too long.  Noise interference occurred because of incorrect Encoder Cable specifications.	The Servomotor vibrated considerably while performing the tuning-less function with the default settings.  The machine mounting is not secure.  Turn OFF the power supply to the servo system. Check to see if there are any loose mounting screws.  Turn OFF the power supply to the servo system. Check to see if the coupling.  Turn OFF the power supply to the servo system. Check to see if the coupling is balanced.  Turn OFF the power supply to the servo system. Check for noise and vibration around the bearings.  Turn OFF the power supply to the servo system. Check for noise and vibration around the bearings.  Turn OFF the power supply to the servo system. Check for any foreign matter, damage, or deformation in the machine's moving parts.  Turn OFF the power supply to the servo system. Check the I/O signal cables to see if they satisfy specifications. Use shielded twisted-pair wire cables or screened twisted-pair cables with conductors of at least 0.12 mm².  Noise interference occurred because of incorrect Encoder Cable specifications.  Noise interference occurred because of incorrect Encoder Cable specifications.  Turn OFF the power supply to the servo system. Check the lengths of the I/O signal cables.  Turn OFF the power supply to the servo system. Check the lengths of the I/O signal cables.  Turn OFF the power supply to the servo system. Check the length of the servo system.  The service of	The Servomotor vibrated considerably while performing the tuning-less function with the default settings.  Turn OFF the power supply to the servo system. Check to see if there is misalignment in the coupling.  Turn OFF the power supply to the servo system. Check to see if there is misalignment in the coupling.  Turn OFF the power supply to the servo system. Check to see if there is misalignment in the coupling.  Turn OFF the power supply to the servo system. Check to see if there is misalignment in the coupling is balanced.  Turn OFF the power supply to the servo system. Check to see if there is misalignment in the coupling is balanced.  Turn OFF the power supply to the servo system. Check to roise and vibration around the bearings.  Turn OFF the power supply to the servo system. Check for noise and the driven machine.  Turn OFF the power supply to the servo system. Check for noise and the driven machine.  Turn OFF the power supply to the servo system. Check for any foreign matter, damage, or deformation in the machine manufacturer.  Turn OFF the power supply to the servo system. Check the I/O signal cable is too long.  Noise interference occurred because of incorrect Encoder Cable specifications.  Turn OFF the power supply to the servo system. Check the lengths of the incoder Cable is too long.  Noise interference occurred because of incorrect Encoder Cable specifications.  Turn OFF the power supply to the servo system. Check the lengths of the incoder Cable is too long.  Noise interference occurred because of incorrect Encoder Cable is too long.  Turn OFF the power supply to the servo system. Check the length of the expectations.  Turn OFF the power supply to the serve system. Check the length of the expectations.  Turn OFF the power supply to the serve system. Check the length of the expectations.  Turn OFF the power supply to the serve system. Check the length of the expectations.  Turn OFF the power supply to the serve system. Check the length of the expectations.  Turn OFF the power supply to the serve sy

3.1.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

Problem	Possible Cause	Confirmation	Correction	Reference
	The Encoder Cable was subjected to excessive noise interference.	Turn OFF the power supply to the servo system. Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-current line.	Correct the cable lay- out so that no surge is applied by high-current lines.	-
	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Turn OFF the power supply to the servo system. Check to see if the machines are correctly grounded.	Properly ground the machines to separate them from the FG of the encoder.	_
Abnormal Noise from Servomotor	There is a SERVOPACK pulse counting error due to noise.	Check to see if there is noise interference on the signal line from the encoder.	Turn OFF the power supply to the servo system. Implement countermeasures against noise for the encoder wiring.	-
	The encoder was subjected to excessive vibration or shock.	Turn OFF the power supply to the servo system. Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting surface precision, securing state, and alignment).	Reduce machine vibration. Improve the mounting conditions of the Servomotor.	-
	A failure occurred in the encoder.	_	Turn OFF the power supply to the servo system. Replace the Servomotor.	_
	The servo gains are not balanced.	Check to see if the servo gains have been correctly tuned.	Perform autotuning without a host reference.	*
Composerate	The setting of Pn100 (Speed Loop Gain) is too high.	Check the setting of Pn100. The default setting is Kv = 40.0 Hz.	Set Pn100 to an appropriate value.	-
Servomotor Vibrates at Frequency of Approx. 200 to 400 Hz.	The setting of Pn102 (Position Loop Gain) is too high.	Check the setting of Pn102. The default setting is Kp = 40.0/s.	Set Pn102 to an appropriate value.	-
	The setting of Pn101 (Speed Loop Integral Time Constant) is not appropriate.	Check the setting of Pn101. The default setting is Ti = 20.0 ms.	Set Pn101 to an appropriate value.	_
	The setting of Pn103 (Moment of Inertia Ratio or Mass Ratio) is not appropri- ate.	Check the setting of Pn103.	Set Pn103 to an appropriate value.	-

#### 3.1.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

Problem	Possible Cause	Confirmation	Continued from pre	Reference
	The servo gains are not balanced.	Check to see if the servo gains have been correctly tuned.	Perform autotuning without a host reference.	*
	The setting of Pn100 (Speed Loop Gain) is too high.	Check the setting of Pn100. The default setting is Kv = 40.0 Hz.	Set Pn100 to an appropriate value.	-
Large Motor Speed	The setting of Pn102 (Position Loop Gain) is too high.	Check the setting of Pn102. The default setting is Kp = 40.0/s.	Set Pn102 to an appropriate value.	-
Overshoot on Starting and Stop- ping	The setting of Pn101 (Speed Loop Integral Time Constant) is not appropriate.	Check the setting of Pn101. The default setting is Ti = 20.0 ms.	Set Pn101 to an appropriate value.	-
	The setting of Pn103 (Moment of Inertia Ratio or Mass Ratio) is not appropri- ate.	Check the setting of Pn103.	Set Pn103 to an appropriate value.	-
	The torque reference is saturated.	Check the waveform of the torque reference.	Use the mode switch.	_
	The force limits (Pn483 and Pn484) are set to the default values.	The default values of the force limits and Pn483 = 30% and Pn484 = 30%.	Set Pn483 and Pn484 to appropriate values.	*
	Noise interference occurred because of incorrect Encoder Cable specifications.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it satisfies specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm <sup>2</sup> .	Use cables that satisfy the specifications.	-
Absolute Encoder Position Deviation	Noise interference occurred because the Encoder Cable is too long.	Turn OFF the power supply to the servo system. Check the length of the Encoder Cable.	The Encoder Cable length must be 50 m max.	-
Error (The position that was saved in the host con-	Noise interference occurred because the Encoder Cable is damaged.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it is pinched or the sheath is damaged.	Replace the Encoder Cable and correct the cable installation envi- ronment.	-
troller when the power was turned OFF is dif- ferent from the posi- tion when the power was next turned ON.)	Replace the Encoder Cable and correct the cable installation environment.	Turn OFF the power supply to the servo system. Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-current line.	Correct the cable lay- out so that no surge is applied by high-current lines.	-
	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Turn OFF the power supply to the servo system. Check to see if the machines are correctly grounded.	Properly ground the machines to separate them from the FG of the encoder.	-
	There is a SERVOPACK pulse counting error due to noise.	Turn OFF the power supply to the servo system. Check to see if there is noise interference on the I/O signal line from the encoder or Serial Converter Unit.	Implement counter- measures against noise for the encoder or Serial Converter Unit wiring.	-

Maintenance

3.1.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

	Continued from previous page.			
Problem	Possible Cause	Confirmation	Correction	Reference
Absolute Encoder Position Deviation Error (The position that was	The encoder was subjected to excessive vibration or shock.	Turn OFF the power supply to the servo system. Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting surface precision, securing state, and alignment).	Reduce machine vibration. Or, improve the mounting conditions of the Servomotor.	-
	A failure occurred in the encoder.	_	Turn OFF the power supply to the servo system. Replace the Servomotor.	-
saved in the host con- troller when the power was turned	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-
OFF is dif- ferent from the posi-		Check the error detection section of the host controller.	Correct the error detection section of the host controller.	-
tion when the power was next turned ON.)	Host Controller Multiturn Data or Absolute Encoder	Check to see if the host controller is executing data parity checks.	Perform parity checks for the multiturn data or absolute encoder posi- tion data.	_
	Position Data Reading Error	Check for noise interference in the cable between the SERVO-PACK and the host controller.	Implement counter- measures against noise and then perform parity checks again for the multiturn data or abso- lute encoder position data.	-
	The P-OT/N-OT (Forward Drive Prohibit or Reverse Drive Prohibit) signal was input.	Check the external power supply (+24 V) voltage for the input signals.	Correct the external power supply (+24 V) voltage for the input signals.	-
		Check the operating condition of the overtravel limit switches.	Make sure that the overtravel limit switches operate correctly.	-
		Check the wiring of the overtravel limit switches.	Correct the wiring of the overtravel limit switches.	*
		Check the settings of the overtravel input signal allocations (Pn50A/Pn50B).	Set the parameters to correct values.	*
Overtravel Occurred		Check for fluctuation in the external power supply (+24 V) voltage for the input signals.	Eliminate fluctuation from the external power supply (+24 V) voltage for the input signals.	_
33 34	The P-OT/N-OT (Forward Drive Prohibit) or Reverse Drive Prohibit) signal mal-	Check to see if the operation of the overtravel limit switches is unstable.	Stabilize the operating condition of the over-travel limit switches.	-
	functioned.	Check the wiring of the overtravel limit switches (e.g., check for cable damage and loose screws).	Correct the wiring of the overtravel limit switches.	_
	There is a mistake in the allocation of the P-OT or N-OT (Forward Drive Prohibit) or	Check to see if the P-OT signal is allocated in Pn50A = n.X□□□.	If another signal is allocated in Pn50A =n.X□□□, allocate the P-OT signal instead.	*
	(Forward Drive Prohibit or Reverse Drive Prohibit) signal in Pn50A = n.X□□□ or Pn50B = n.□□□X.	Check to see if the N-OT signal is allocated in Pn50B = n.□□□X.	If another signal is allocated in Pn50B =n.□□□X, allocate the N-OT signal instead.	

#### 3.1.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

Problem	Possible Cause	Confirmation	Correction	Reference
Overtravel	The selection of the Servo-	Check the servo OFF stopping method set in Pn001 = n.□□□X or Pn001 = n.□□X□.	Select a Servomotor stopping method other than coasting to a stop.	*
Occurred	motor stopping method is not correct.	Check the torque control stopping method set in Pn001 = n.□□□X or Pn001 = n.□□X□.	Select a Servomotor stopping method other than coasting to a stop.	*
Improper Stop Posi- tion for	The limit switch position and dog length are not appropriate.	-	Install the limit switch at the appropriate position.	_
Overtravel (OT) Signal	The overtravel limit switch position is too close for the coasting distance.	-	Install the overtravel limit switch at the appropriate position.	-
	Noise interference occurred because of incorrect Encoder Cable specifications.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it satisfies specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm <sup>2</sup> .	Use cables that satisfy the specifications.	-
	Noise interference occurred because the Encoder Cable is too long.	Turn OFF the power supply to the servo system. Check the length of the Encoder Cable.	The Encoder Cable length must be 50 m max.	-
	Noise interference occurred because the Encoder Cable is damaged.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it is pinched or the sheath is damaged.	Replace the Encoder Cable and correct the cable installation envi- ronment.	-
Position	The Encoder Cable was subjected to excessive noise interference.	Turn OFF the power supply to the servo system. Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-current line.	Correct the cable lay- out so that no surge is applied by high-current lines.	-
Deviation (without Alarm)	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Turn OFF the power supply to the servo system. Check to see if the machines are correctly grounded.	Properly ground the machines to separate them from the FG of the encoder.	-
	There is a SERVOPACK pulse counting error due to noise.	Turn OFF the power supply to the servo system. Check to see if there is noise interference on the I/O signal line from the encoder or Serial Converter Unit.	Implement counter- measures against noise for the encoder wiring or Serial Converter Unit wiring.	-
	The encoder was subjected to excessive vibration or shock.	Turn OFF the power supply to the servo system. Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting surface precision, securing state, and alignment).	Reduce machine vibration. Or, improve the mounting conditions of the Servomotor.	-
	The coupling between the machine and Servomotor is not suitable.	Turn OFF the power supply to the servo system. Check to see if position offset occurs at the coupling between machine and Servomotor.	Correctly secure the coupling between the machine and Servomotor.	-

3.1.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

Problem	Possible Cause	Confirmation	Correction	Reference
Position Deviation (without Alarm)	Noise interference occurred because of incorrect I/O signal cable specifications.	Turn OFF the power supply to the servo system. Check the I/O signal cables to see if they satisfy specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm <sup>2</sup> .	Use cables that satisfy the specifications.	-
	If reference pulse input multiplication switching is being used, noise may be causing the I/O signals used for this function (/PSEL and /PSELA) to be falsely detected.	Turn OFF the power supply to the servo system. Check the I/O signal cables to see if they satisfy specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm <sup>2</sup> .	Use cables that satisfy the specifications.	-
	Noise interference occurred because an I/O signal cable is too long.	Turn OFF the power supply to the servo system. Check the lengths of the I/O signal cables.	The I/O signal cables must be no longer than 3 m.	-
	An encoder fault occurred. (The pulse count does not change.)	_	Turn OFF the power supply to the servo system. Replace the Servomotor.	-
	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-
	The surrounding air temperature is too high.	Measure the surrounding air temperature around the Servomotor.	Reduce the surrounding air temperature to 40°C or less.	-
	The surface of the Servomotor is dirty.	Turn OFF the power supply to the servo system. Visually check the surface for dirt.	Clean dirt, dust, and oil from the surface.	-
Servomotor Overheated	There is an overload on the Servomotor.	Check the load status with a monitor.	If the Servomotor is overloaded, reduce the load or replace the Servo Drive with a SERVOPACK and Ser- vomotor with larger capacities.	-
	Polarity detection was not performed correctly.	Check to see if electrical angle 2 (electrical angle from polarity origin) at any position is between ±10°.	Correct the settings for the polarity detection-related parameters.	-
Estimating the moment of inertia failed.	The acceleration rate is low and travel distance is short.	Check the Condition Setting Dialog Box used to perform moment of inertia estimation.	Increase the acceleration rate and travel distance.	-

<sup>\*</sup> Refer to the following manual for details.

Σ-7-Series Σ-7S SERVOPACK with Analog Voltage/Pulse Train References Product Manual (Manual No.: SIEP S800001 26)

3.2.1 Alarm Displays

# 3.2

## FT82 SERVOPACK with MECHATROLINK-II Communications References

## 3.2.1 Alarm Displays

If an error occurs in the SERVOPACK, an alarm number will be displayed on the panel display. However, if  $\Box\Box\Box\Box\Box$  appears on the panel display, the display will indicate a SERVOPACK system error. Replace the SERVOPACK.

If there is an alarm, the display will change in the following order.

Example: Alarm A.E60

$$\begin{array}{c} \text{Status} \\ \text{Indications} \end{array} \longrightarrow \text{Not lit.} \longrightarrow \text{R.} \longrightarrow \text{Not lit.} \longrightarrow \text{E} \longrightarrow \text{Not lit.} \longrightarrow \text{D} \longrightarrow \text{Not lit.} \longrightarrow \\ \end{array}$$

### 3.2.2 List of Alarms

The list of alarms gives the alarm name, alarm meaning, alarm stopping method, and alarm reset possibility in order of the alarm numbers.

## **Servomotor Stopping Method for Alarms**

Refer to the following manual for information on the stopping method for alarms.

Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with MECHATROLINK-II Communications References Product Manual (Manual No.: SIEP S800001 27)

## **Alarm Reset Possibility**

Yes: You can use an alarm reset to clear the alarm. However, this assumes that the cause of the alarm has been removed.

No: You cannot clear the alarm.

#### **List of Alarms**

Alarm Number	Alarm Name	Alarm Meaning	Servo- motor Stop- ping Method	Alarm Reset Possi- ble?
A.020	Parameter Checksum Error	There is an error in the parameter data in the SERVOPACK.	Gr.1	No
A.021	Parameter Format Error	There is an error in the parameter data format in the SERVOPACK.	Gr.1	No
A.022	System Checksum Error	There is an error in the parameter data in the SERVOPACK.	Gr.1	No
A.024	System Alarm	An internal program error occurred in the SER-VOPACK.	Gr.1	No
A.025	System Alarm	An internal program error occurred in the SER-VOPACK.	Gr.1	No
A.030	Main Circuit Detector Error	There is an error in the detection data for the main circuit.	Gr.1	Yes
A.040	Parameter Setting Error	A parameter setting is outside of the setting range.	Gr.1	No

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Continued from previous page.

Alarm Number	Alarm Name	Alarm Meaning	Servo- motor Stop- ping Method	Alarm Reset Possi- ble?
A.041	Encoder Output Pulse Setting Error	The setting of Pn212 (Encoder Output Pulses) or Pn281 (Encoder Output Resolution) is outside of the setting range or does not satisfy the setting conditions.	Gr.1	No
A.042	Parameter Combination Error	The combination of some parameters exceeds the setting range.	Gr.1	No
A.044	Semi-Closed/Fully-Closed Loop Control Parameter Setting Error	The settings of the Option Module and Pn002 = n.XDDD (External Encoder Usage) do not match.	Gr.1	No
A.04A	Parameter Setting Error 2	There is an error in the bank members or bank data settings.	Gr.1	No
A.050	Combination Error	The capacities of the SERVOPACK and Servomotor do not match.	Gr.1	Yes
A.051	Unsupported Device Alarm	An unsupported device was connected.	Gr.1	No
A.0b0	Invalid Servo ON Com- mand Alarm	The SV_ON (Servo ON) command was sent from the host controller after a utility function that turns ON the Servomotor was executed.	Gr.1	Yes
A.100	Overcurrent Detected	An overcurrent flowed through the power transformer or the heat sink overheated.	Gr.1	No
A.101	Motor Overcurrent Detected	The current to the motor exceeded the allowable current.	Gr.1	No
A.300	Regeneration Error	There is an error related to regeneration.	Gr.1	Yes
A.320	Regenerative Overload	A regenerative overload occurred.	Gr.2	Yes
A.330	Main Circuit Power Supply Wiring Error	<ul> <li>The AC power supply input setting or DC power supply input setting is not correct.</li> <li>The power supply wiring is not correct.</li> </ul>	Gr.1	Yes
A.400	Overvoltage	The main circuit DC voltage is too high.	Gr.1	Yes
A.410	Undervoltage	The main circuit DC voltage is too low.	Gr.2	Yes
A.510	Overspeed	The motor exceeded the maximum speed.	Gr.1	Yes
A.511	Encoder Output Pulse Overspeed	The pulse output speed for the setting of Pn212 (Encoder Output Pulses) was exceeded.	Gr.1	Yes
A.520	Vibration Alarm	Abnormal oscillation was detected in the motor speed.	Gr.1	Yes
A.521	Autotuning Alarm	Vibration was detected during autotuning for the tuning-less function.	Gr.1	Yes
A.550	Maximum Speed Setting Error	The setting of Pn385 (Maximum Motor Speed) is greater than the maximum motor speed.	Gr.1	Yes
A.710	Instantaneous Overload	The Servomotor was operating for several seconds to several tens of seconds under a torque that largely exceeded the rating.	Gr.2	Yes
A.720	Continuous Overload	The Servomotor was operating continuously under a torque that exceeded the rating.	Gr.1	Yes
A.730		When the dynamic brake was applied, the rota-		
A.731	ynamic Brake Overload tional or linear kinetic energy exceeded the capacity of the dynamic brake resistor.		Gr.1	Yes
A.740	Inrush Current Limiting Resistor Overload	The main circuit power supply was frequently turned ON and OFF.	Gr.1	Yes
A.7A1	Internal Temperature Error 1 (Control Board Tempera- ture Error)	The surrounding temperature of the control PCB is abnormal.	Gr.2	Yes

#### 3.2.2 List of Alarms

Continued from previous page.

		Continued		ras page.
Alarm Number	Alarm Name	Alarm Meaning	Servo- motor Stop- ping Method	Alarm Reset Possi- ble?
A.7A2	Internal Temperature Error 2 (Power Board Tempera- ture Error)	The surrounding temperature of the power PCB is abnormal.	Gr.2	Yes
A.7A3	Internal Temperature Sensor Error	An error occurred in the temperature sensor circuit.	Gr.2	No
A.7Ab	SERVOPACK Built-in Fan Stopped	The fan inside the SERVOPACK stopped.	Gr.1	Yes
A.810	Encoder Backup Alarm	The power supplies to the encoder all failed and the position data was lost.	Gr.1	No
A.820	Encoder Checksum Alarm	There is an error in the checksum results for encoder memory.	Gr.1	No
A.830	Encoder Battery Alarm	The battery voltage was lower than the specified level after the control power supply was turned ON.	Gr.1	Yes
A.840	Encoder Data Alarm	There is an internal data error in the encoder.	Gr.1	No
A.850	Encoder Overspeed	The encoder was operating at high speed when the power was turned ON.	Gr.1	No
A.860	Encoder Overheated	The internal temperature of encoder is too high.	Gr.1	No
A.861	Motor Overheated	The internal temperature of motor is too high.	Gr.1	No
A.862	Overheat Alarm	The input voltage (temperature) for the overheat protection input (TH) signal exceeded the setting of Pn61B (Overheat Alarm Level).	Gr.1	Yes
A.8A0	External Encoder Error	An error occurred in the external encoder.	Gr.1	Yes
A.8A1	External Encoder Module Error	An error occurred in the Serial Converter Unit.	Gr.1	Yes
A.8A2	External Incremental Encoder Sensor Error	An error occurred in the external encoder.	Gr.1	Yes
A.8A3	External Absolute Encoder Position Error	An error occurred in the position data of the external encoder.	Gr.1	Yes
A.8A5	External Encoder Over- speed	An overspeed error occurred in the external encoder.	Gr.1	Yes
A.8A6	External Encoder Over- heated	An overheating error occurred in the external encoder.	Gr.1	Yes
A.b33	Current Detection Error 3	An error occurred in the current detection circuit.	Gr.1	No
A.b6A	MECHATROLINK Communications ASIC Error 1	ASIC error 1 occurred in MECHATROLINK communications.	Gr.1	No
A.b6b	MECHATROLINK Communications ASIC Error 2	ASIC error 2 occurred in MECHATROLINK communications.	Gr.2	No
A.bF0	System Alarm 0	Internal program error 0 occurred in the SERVO-PACK.	Gr.1	No
A.bF1	System Alarm 1	Internal program error 1 occurred in the SERVO-PACK.	Gr.1	No
A.bF2	System Alarm 2	Internal program error 2 occurred in the SERVO-PACK.	Gr.1	No
A.bF3	System Alarm 3	Internal program error 3 occurred in the SERVO-PACK.	Gr.1	No
A.bF4	System Alarm 4	Internal program error 4 occurred in the SERVO-PACK.	Gr.1	No
A.bF5	System Alarm 5	Internal program error 5 occurred in the SERVO-PACK.	Gr.1	No
		Internal program error 6 occurred in the SERVO-	1	i e

Continued from previous page.

Alarm Number	Alarm Name	Alarm Meaning	Servo- motor Stop- ping Method	Alarm Reset Possi- ble?
A.bF7	System Alarm 7	Internal program error 7 occurred in the SERVO-PACK.	Gr.1	No
A.bF8	System Alarm 8	Internal program error 8 occurred in the SERVO-PACK.	Gr.1	No
A.C10	Servomotor Out of Control	The Servomotor ran out of control.	Gr.1	Yes
A.C80	Encoder Clear Error or Multiturn Limit Setting Error	The multiturn data for the absolute encoder was not correctly cleared or set.	Gr.1	No
A.C90	Encoder Communications Error	Communications between the encoder and SER-VOPACK is not possible.	Gr.1	No
A.C91	Encoder Communications Position Data Acceleration Rate Error	An error occurred in calculating the position data of the encoder.	Gr.1	No
A.C92	Encoder Communications Timer Error	An error occurred in the communications timer between the encoder and SERVOPACK.	Gr.1	No
A.CA0	Encoder Parameter Error	The parameters in the encoder are corrupted.	Gr.1	No
A.Cb0	Encoder Echoback Error	The contents of communications with the encoder are incorrect.	Gr.1	No
A.CC0	Multiturn Limit Disagree- ment	Different multiturn limits have been set in the encoder and the SERVOPACK.	Gr.1	No
A.CF1	Reception Failed Error in Feedback Option Module Communications	Receiving data from the Feedback Option Module failed.	Gr.1	No
A.CF2	Timer Stopped Error in Feedback Option Module Communications	An error occurred in the timer for communications with the Feedback Option Module.	Gr.1	No
A.d00	Position Deviation Over- flow	The setting of Pn520 (Excessive Position Deviation Alarm Level) was exceeded by the position deviation while the servo was ON.	Gr.1	Yes
A.d01	Position Deviation Over- flow Alarm at Servo ON	The servo was turned ON after the position deviation exceeded the setting of Pn526 (Excessive Position Deviation Alarm Level at Servo ON) while the servo was OFF.	Gr.1	Yes
A.d02	Position Deviation Over- flow Alarm for Speed Limit at Servo ON	If position deviation remains in the deviation counter, the setting of Pn529 or Pn584 (Speed Limit Level at Servo ON) limits the speed when the servo is turned ON. This alarm occurs if a position reference is input and the setting of Pn520 (Excessive Position Deviation Alarm Level) is exceeded before the limit is cleared.	Gr.2	Yes
A.d10	Motor-Load Position Deviation Overflow	There was too much position deviation between the motor and load during fully-closed loop control.	Gr.2	Yes
A.d30	Position Data Overflow	The position feedback data exceeded ±1,879,048,192.	Gr.1	No
A.E02	MECHATROLINK Internal Synchronization Error 1	A synchronization error occurred during MECHATROLINK communications with the SER-VOPACK.	Gr.1	Yes
A.E40	MECHATROLINK Trans- mission Cycle Setting Error	The setting of the MECHATROLINK communications transmission cycle is not correct.	Gr.2	Yes
A.E50*	MECHATROLINK Syn- chronization Error	A synchronization error occurred during MECHATROLINK communications.	Gr.2	Yes

#### 3.2.2 List of Alarms

Continued from previous page.

Alarm Number	Alarm Name	Alarm Meaning	Servo- motor Stop- ping Method	Alarm Reset Possi- ble?
A.E51	MECHATROLINK Syn- chronization Failed	Synchronization failed during MECHATROLINK communications.	Gr.2	Yes
A.E60*	Reception Error in MECHATROLINK Commu- nications	Communications errors occurred continuously during MECHATROLINK communications.	Gr.2	Yes
A.E61	Synchronization Interval Error in MECHATROLINK Transmission Cycle	An error occurred in the transmission cycle during MECHATROLINK communications.	Gr.2	Yes
A.E71	Safety Option Module Detection Failure	Detection of the Safety Option Module failed.	Gr.1	No
A.E72	Feedback Option Module Detection Failure	Detection of the Feedback Option Module failed.	Gr.1	No
A.E74	Unsupported Safety Option Module	An unsupported Safety Option Module was connected.	Gr.1	No
A.Eb1	Safety Function Signal Input Timing Error	An error occurred in the input timing of the safety function signal.		No
A.EC8	Gate Drive Error 1	An error occurred in the gate drive circuit.	Gr.1	No
A.EC9	Gate Drive Error 2	An error occurred in the gate drive circuit.	Gr.1	No
A.Ed1	Command Execution Timeout	A timeout error occurred for a MECHATROLINK command.	Gr.2	Yes
A.F10	Power Supply Line Open Phase	The voltage was low for more than one second for phase R, S, or T when the main power supply was ON.	Gr.2	Yes
FL-1*				
FL-2*				
FL-3*	Custom Alama	An internal program error occurred in the SER-		NI-
FL-4*	System Alarm	VOPACK.	_	No
FL-5*				
FL-6*				
CPF00	Digital Operator Commu- nications Error 1	Communications were not possible between the Digital Operator (model: JUSP-OP05A-1-E) and	_	No
CPF01	Digital Operator Communications Error 2	the SERVOPACK (e.g., a CPU error occurred).		INO

<sup>\*</sup> These alarms are not stored in the alarm history. They are only displayed on the panel display.

Note: The A.Eb0, A.Eb2 to A.Eb9, and A.EC0 to A.EC2 alarms can occur when a Safety Module is connected. Refer to the following manual for details.

AC Servo Drive Σ-V-Series/Σ-V-Series for Large-Capacity Models/Σ-7-Series User's Manual Safety Module (Manual No.: SIEP C720829 06)

# **Troubleshooting Alarms**

3.2.3

The causes of and corrections for the alarms are given in the following table. Contact your Yaskawa representative if you cannot solve a problem with the correction given in the table.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage suddenly dropped.	Measure the power supply voltage.	Set the power supply voltage within the specified range, and initialize the parameter settings.	*1
	The power supply was shut OFF while writing parameter settings.	Check the timing of shutting OFF the power supply.	Initialize the parameter settings and then set the parameters again.	
A.020: Parameter	The number of times that parameters were written exceeded the limit.	Check to see if the parameters were frequently changed from the host controller.	The SERVOPACK may be faulty. Replace the SER-VOPACK. Reconsider the method for writing the parameters.	-
Checksum Error (There is an error in the parameter data in the SER- VOPACK.)	A malfunction was caused by noise from the AC power supply, ground, static electricity, or other source.	Turn the power supply to the SERVOPACK OFF and ON again. If the alarm still occurs, noise may be the cause.	Implement countermeasures against noise.	*1
	Gas, water drops, or cutting oil entered the SERVOPACK and caused failure of the internal components.	Check the installation conditions.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	A failure occurred in the SERVOPACK.	Turn the power supply to the SERVOPACK OFF and ON again. If the alarm still occurs, the SERVOPACK may have failed.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.021: Parameter Format Error (There is an error in the parameter data format in the	The software version of the SERVOPACK that caused the alarm is older than the software version of the parameters specified to write.	Read the product information to see if the software versions are the same. If they are different, it could be the cause of the alarm.	Write the parameters from another SERVOPACK with the same model and the same software version, and then turn the power OFF and ON again.	*1
SERVOPACK.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	The power supply voltage suddenly dropped.	Measure the power supply voltage.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.022: System Check- sum Error (There is an error	The power supply was shut OFF while setting a utility function.	Check the timing of shutting OFF the power supply.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
in the parameter data in the SER- VOPACK.)	A failure occurred in the SERVOPACK.	Turn the power supply to the SERVOPACK OFF and ON again. If the alarm still occurs, the SERVOPACK may have failed.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-

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Alarm Number: Continued from previous particular Co				
Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.024: System Alarm (An internal pro- gram error occurred in the SERVOPACK.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.025: System Alarm (An internal pro- gram error occurred in the SERVOPACK.)	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.030: Main Circuit Detector Error	The jumper between the DC Reactor terminals (⊖1 and ⊖2) was removed or there is faulty contact.		Correct the wiring between the DC Reactor	
20.0000	The cable between the DC Reactor and SERVOPACK is not wired correctly or there is a faulty contact.		terminals.	_
	The SERVOPACK and Servomotor capacities do not match each other.	Check the combination of the SERVOPACK and Servomotor capacities.	Select a proper combination of SERVOPACK and Servomotor capacities.	*1
A.040: Parameter Set-	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
ting Error (A parameter setting is outside of the setting	A parameter setting is outside of the setting range.	Check the setting ranges of the parameters that have been changed.	Set the parameters to values within the setting ranges.	_
range.)	The electronic gear ratio is outside of the setting range.	Check the electronic gear ratio. The ratio must be within the following range: 0.001 < (Pn20E/Pn210) < 64,000.	Set the electronic gear ratio in the following range: 0.001 < (Pn20E/Pn210) < 64,000.	*1
A.041: Encoder Output Pulse Setting Error	The setting of Pn212 (Encoder Output Pulses) or Pn281 (Encoder Output Resolution) is outside of the setting range or does not satisfy the setting conditions.	Check the setting of Pn212 or Pn281.	Set Pn212 or Pn281 to an appropriate value.	*1

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The speed of program jogging went below the setting range when the electronic gear ratio (Pn20E/Pn210) or the Servomotor was changed.	Check to see if the detection conditions*2 are satisfied.	Decrease the setting of the electronic gear ratio (Pn20E/Pn210).	*1
A.042: Parameter Combination Error	The speed of program jogging went below the setting range when Pn533 or Pn585 (Program Jogging Speed) was changed.	Check to see if the detection conditions*2 are satisfied.	Increase the setting of Pn533 or Pn585.	*1
	The movement speed of advanced autotuning went below the setting range when the electronic gear ratio (Pn20E/ Pn210) or the Servomotor was changed.	Check to see if the detection conditions*3 are satisfied.	Decrease the setting of the electronic gear ratio (Pn20E/Pn210).	*1
A.044: Semi-Closed/ Fully-Closed Loop Control Parameter Setting Error	The setting of the Fully-Closed Module does not match the setting of Pn002 = n.XDDD (External Encoder Usage).	Check the setting of Pn002 = n.X□□□.	Make sure that the setting of the Fully-closed Module agrees with the setting of Pn002 = n.X□□□.	*1
A.04A: Parameter Set-	For 4-byte parameter bank members, there are two consecutive members with nothing registered.	_	Change the number of bytes for bank members to an appropriate value.	-
ting Error 2	The total amount of bank data exceeds 64 (Pn900 × Pn901 > 64).	_	Reduce the total amount of bank data to 64 or less.	-
A.050: Combination Error	The SERVOPACK and Servomotor capacities do not match each other.	Confirm that the follow- ing condition is met: 1/4 ≤ (Servomotor capacity/SERVOPACK capacity) ≤ 4	Select a proper combination of the SERVOPACK and Servomotor capacities.	*1
(The capacities of the SERVOPACK and Servomotor	A failure occurred in the encoder.	Replace the encoder and check to see if the alarm still occurs.	Replace the Servomotor or encoder.	_
do not match.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.051: Unsupported Device Alarm	An unsupported Serial Converter Unit or encoder (e.g., an external encoder) is connected to the SERVOPACK.	Check the product combination specifications.	Change to a correct combination of models.	-
A.0b0: Invalid Servo ON Command Alarm	The SV_ON (Servo ON) command was sent from the host controller after a utility function that turns ON the Servomotor was executed.	_	Turn the power supply to the SERVOPACK OFF and ON again. Or, execute a software reset.	*1

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The Main Circuit Cable is not wired correctly or there is faulty contact.	Check the wiring.	Correct the wiring.	
	There is a short-circuit or ground fault in a Main Circuit Cable.	Check for short-circuits across Servomotor phases U, V, and W, or between the ground and Servomotor phases U, V, and W.	The cable may be short-circuited. Replace the cable.	
	There is a short-circuit or ground fault inside the Servomotor.	Check for short-circuits across Servomotor phases U, V, and W, or between the ground and Servomotor phases U, V, or W.	The Servomotor may be faulty. Replace the Servomotor.	*1
A.100: Overcurrent	There is a short-circuit or ground fault inside the SERVOPACK.	Check for short-circuits across the Servomotor connection terminals U, V, and W on the SER-VOPACK, or between the ground and terminals U, V, or W.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	
Detected (An overcurrent flowed through the power trans-	The regenerative resistor is not wired correctly or there is faulty contact.	Check the wiring.	Correct the wiring.	*1
former or the heat sink overheated.)	The dynamic brake (DB, emergency stop executed from the SERVOPACK) was frequently activated, or a DB overload alarm occurred.	Check the power consumed by the DB resistor to see how frequently the DB is being used. Or, check the alarm display to see if a DB overload alarm (A.730 or A.731) has occurred.	Change the SERVOPACK model, operating methods, or the mechanisms so that the dynamic brake does not need to be used so frequently.	-
	The regenerative processing capacity was exceeded.	Check the regenerative load ratio in the SigmaWin+ Motion Monitor Tab Page to see how frequently the regenerative resistor is being used.	Recheck the operating conditions and load.	*4
	The SERVOPACK regenerative resistance is too small.	Check the regenerative load ratio in the SigmaWin+ Motion Monitor Tab Page to see how frequently the regenerative resistor is being used.	Change the regenerative resistance to a value larger than the SERVO-PACK minimum allowable resistance.	

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.100: Overcurrent Detected (An overcurrent flowed through the power trans- former or the heat	A heavy load was applied while the Servomotor was stopped or running at a low speed.	Check to see if the operating conditions exceed Servo Drive specifications.	Reduce the load applied to the Servomotor. Or, increase the operating speed.	-
	A malfunction was caused by noise.	Improve the noise envi- ronment, e.g. by improving the wiring or installation conditions, and check to see if the alarm still occurs.	Implement countermeasures against noise, such as correct wiring of the FG. Use an FG wire size equivalent to the SERVO-PACK's main circuit wire size.	-
sink overheated.)	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The Main Circuit Cable is not wired correctly or there is faulty contact.	Check the wiring.	Correct the wiring.	
	There is a short-circuit or ground fault in a Main Circuit Cable.	Check for short-circuits across cable phases U, V, and W, or between the ground and cable phases U, V, and W.	The cable may be short-circuited. Replace the cable.	
	There is a short-circuit or ground fault inside the Servomotor.	Check for short-circuits across Servomotor phases U, V, and W, or between the ground and Servomotor phases U, V, or W.	The Servomotor may be faulty. Replace the Servomotor.	*1
A.101: Motor Overcurrent Detected (The current to the motor exceeded the	There is a short-circuit or ground fault inside the SERVOPACK.	Check for short-circuits across the Servomotor connection terminals U, V, and W on the SER-VOPACK, or between the ground and terminals U, V, or W.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	
allowable cur- rent.)	A heavy load was applied while the Servomotor was stopped or running at a low speed.	Check to see if the operating conditions exceed Servo Drive specifications.	Reduce the load applied to the Servomotor. Or, increase the operating speed.	-
	A malfunction was caused by noise.	Improve the noise envi- ronment, e.g. by improving the wiring or installation conditions, and check to see if the alarm still occurs.	Implement countermeasures against noise, such as correct wiring of the FG. Use an FG wire size equivalent to the SERVO-PACK's main circuit wire size.	-
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	Pn600 (Regenerative Resistor Capacity) is not set to 0 and an External Regenerative Resistor is not con- nected to one of the following SERVO- PACKs: SGD7S-2R8A or -2R8F.	Check it see if an External Regenerative Resistor is connected and check the setting of Pn600.	Connect an External Regenerative Resistor, or set Pn600 (Regenerative Resistor Capacity) to 0 (setting unit: ×10 W) if no Regenerative Resistor is required.	*1
A.300:	The jumper between the regenerative resistor terminals (B2 and B3) was removed from one of the following SERVO-PACKs: SGD7S-120A.	Check to see if the jumper is connected between power supply terminals B2 and B3.  Note: If an External Regenerative Resistor or Regenerative Resistor Unit is connected while the jumper remains connected between B2 and B3, the SERVO-PACK may be damaged.	Correctly connect a jumper.	*1
Regeneration Error	The External Regenerative Resistor or Regenerative Resistor tor Unit is not wired correctly, or was removed or disconnected.	Check the wiring of the External Regenerative Resistor or Regenerative Resistor Unit.  Note: If an External Regenerative Resistor or Regenerative Resistor or Regenerative Resistor Unit is connected while the jumper remains connected between B2 and B3, the SERVO-PACK may be damaged.	Correct the wiring of the External Regenerative Resistor or Regenerative Resistor Unit.	
	A failure occurred in the SERVOPACK.	_	While the main circuit power supply is OFF, turn the control power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
	The external regenerative resistance value or regenerative resistor capacity is too small, or there has been a continuous regeneration state.	Check the operating conditions or the capacity using the SigmaJunmaSize+ Capacity Selection Software or other means.	Change the regenerative resistance value or capacity. Reconsider the operating conditions using the SigmaJunmaSize+ Capacity Selection Software or other means.	*4
	There was a continuous regeneration state because a negative load was continuously applied.	Check the load applied to the Servomotor during operation.	Reconsider the system including the servo, machine, and operating conditions.	-
A.320: Regenerative Overload	The setting of Pn600 (Regenerative Resistor Capacity) is smaller than the capacity of the External Regenerative Resistor.	Check it see if a Regenerative Resistor is connected and check the setting of Pn600.	Correct the setting of Pn600.	*1
	The setting of Pn603 (Regenerative Resistor Capacity) is smaller than the capacity of the External Regenerative Resistor.	Check to see if a Regenerative Resistor is connected and check the setting of Pn603.	Correct the setting of Pn603.	*1
	The external regenerative resistance is too high.	Check the regenerative resistance.	Change the regenerative resistance to a correct value or use an External Regenerative Resistor of an appropriate capacity.	*4
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_

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Alarm Number:			Continued from pre	
Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The regenerative resistor was disconnected when the SERVOPACK power supply voltage was high.	Measure the resistance of the regenerative resistor using a measuring instrument.	If you are using the regenerative resistor built into the SERVOPACK, replace the SERVOPACK.  If you are using an External Regenerative Resistor, replace the External Regenerative Resistor.	-
A.330: Main Circuit Power Supply	DC power was supplied when an AC power supply input was specified in the settings.	Check the power supply to see if it is a DC power supply.	Correct the power supply setting to match the actual power supply.	*1
Wiring Error (Detected when the main circuit power supply is turned ON.)	AC power was supplied when a DC power supply input was specified in the settings.	Check the power supply to see if it is an AC power supply.	Correct the power supply setting to match the actual power supply.	
	Pn600 (Regenerative Resistor Capacity) is not set to 0 and an External Regenerative Resistor is not con- nected to an SGD7S- 2R8A SERVOPACKs.	Check it see if an External Regenerative Resistor is connected and check the setting of Pn600.	Connect an External Regenerative Resistor, or if an External Regenera- tive Resistor is not required, set Pn600 to 0.	*1
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the AC/DC power supply voltage within the specified range.	_
	The power supply is not stable or was influenced by a lightning surge.	Measure the power supply voltage.	Improve the power supply conditions, install a surge absorber, and then turn the power supply OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.400: Overvoltage (Detected in the	The voltage for AC power supply was too high during acceleration or deceleration.	Check the power supply voltage and the speed and torque during operation.	Set the AC power supply voltage within the specified range.	_
main circuit power supply section of the SERVOPACK.)	The external regenerative resistance is too high for the operating conditions.	Check the operating conditions and the regenerative resistance.	Select a regenerative resistance value that is appropriate for the operating conditions and load.	*4
	The moment of inertia ratio or mass ratio exceeded the allowable value.	Check to see if the moment of inertia ratio or mass ratio is within the allowable range.	Increase the deceleration time, or reduce the load.	_
	A failure occurred in the SERVOPACK.	_	While the main circuit power supply is OFF, turn the control power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number:	Descible Cause	Configuration	Continued from pro	
Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage went below the specified range.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
	The power supply voltage dropped during operation.	Measure the power supply voltage.	Increase the power supply capacity.	_
	A momentary power interruption occurred.	Measure the power supply voltage.	If you have changed the setting of Pn509 (Momentary Power Interruption Hold Time), decrease the setting.	*1
A.410:	The SERVOPACK fuse is blown out.	Check the power supply wiring.	Correct the power supply wiring and replace the SERVOPACK.	_
Undervoltage (Detected in the main circuit power supply section of the	The SERVOPACK fuse is blown out.	-	Replace the SERVO- PACK and connect a reactor to the DC reactor terminals (⊝1 and ⊝2) on the SERVOPACK.	-
SERVOPACK.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	The jumper between the DC Reactor terminals (⊝1 and ⊝2) was removed or there is faulty contact.		Correct the wiring between the DC Reactor	
	The cable between the DC Reactor and SERVOPACK is not wired correctly or there is a faulty contact.		terminals.	_
	The order of phases U, V, and W in the motor wiring is not correct.	Check the wiring of the Servomotor.	Make sure that the Servo- motor is correctly wired.	_
A.510: Overspeed	A reference value that exceeded the over- speed detection level was input.	Check the input reference.	Reduce the reference value. Or, adjust the gain.	
(The motor exceeded the maximum speed.)	The motor exceeded the maximum speed.	Check the waveform of the motor speed.	Reduce the speed reference input gain and adjust the servo gain. Or, reconsider the operating conditions.	_
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.511:	The encoder output pulse frequency exceeded the limit.	Check the encoder output pulse setting.	Decrease the setting of Pn212 (Encoder Output Pulses) or Pn281 (Encoder Output Resolu- tion).	*1
Encoder Output Pulse Overspeed	The encoder output pulse frequency exceeded the limit because the motor speed was too high.	Check the encoder output pulse setting and the motor speed.	Reduce the motor speed.	-

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Alarm Number:	Descible Cours	Confinentia	Continued from pre	
Alarm Name	Possible Cause	Confirmation	Correction	Reference
	Abnormal oscillation was detected in the motor speed.	Check for abnormal motor noise, and check the speed and torque waveforms during operation.	Reduce the motor speed. Or, reduce the setting of Pn100 (Speed Loop Gain).	*1
A.520: Vibration Alarm	The setting of Pn103 (Moment of Inertia Ratio) is greater than the actual moment of inertia or was greatly changed.	Check the moment of inertia ratio or mass ratio.	Set Pn103 (Moment of Inertia Ratio) to an appropriate value.	*1
	The vibration detection level (Pn312 or Pn384) is not suitable.	Check that the vibration detection level (Pn312 or Pn384) is suitable.	Set a suitable vibration detection level (Pn312 or Pn384).	*1
A.521: Autotuning Alarm (Vibration was detected while executing the	The Servomotor vibrated considerably while performing the tuning-less function.	Check the waveform of the motor speed.	Reduce the load so that the moment of inertia ratio is within the allowable value. Or increase the load level or reduce the rigidity level in the tuning- less level settings.	*1
custom tuning, Easy FFT, or the tuning-less func- tion.)	The Servomotor vibrated considerably while performing custom tuning or Easy FFT.	Check the waveform of the motor speed.	Check the operating procedure of corresponding function and implement corrections.	*1
A.550: Maximum Speed Setting Error	The setting of Pn385 (Maximum Motor Speed) is greater than the maximum speed.	Check the setting of Pn385, and the upper limits of the maximum motor speed setting and the encoder output resolution setting.	Set Pn385 to a value that does not exceed the maximum motor speed.	*1
	The wiring is not correct or there is a faulty contact in the motor or encoder wiring.	Check the wiring.	Make sure that the Servo- motor and encoder are correctly wired.	*1
	Operation was performed that exceeded the overload protection characteristics.	Check the motor over- load characteristics and Run command.	Reconsider the load and operating conditions. Or, increase the motor capacity.	-
A.710: Instantaneous Overload A.720: Continuous Overload	An excessive load was applied during operation because the Servomotor was not driven due to mechanical problems.	Check the operation reference and motor speed.	Correct the mechanical problem.	-
	Operation was performed with a load applied to the shaft of the servomotor that exceeded the allowable value.	Check the condition of the machine to deter- mine if a load was applied to the shaft of the servomotor that exceeded the allowable value.	Correct the condition of the machine so that the load on the shaft during servomotor operation does not exceed the allowable value.	-
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.730 and	The Servomotor was rotated by an external force.	Check the operation status.	Implement measures to ensure that the motor will not be rotated by an external force.	-
A.731: Dynamic Brake Overload (An excessive power consumption by the dynamic brake was detected.)	When the Servomotor was stopped with the dynamic brake, the rotational or linear kinetic energy exceeded the capacity of the dynamic brake resistor.	Check the power consumed by the DB resistor to see how frequently the DB is being used.	<ul> <li>Reconsider the following:</li> <li>Reduce the Servomotor command speed.</li> <li>Decrease the moment of inertia ratio or mass ratio.</li> <li>Reduce the frequency of stopping with the dynamic brake.</li> </ul>	-
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.740: Inrush Current Limiting Resistor Overload (The main circuit power supply was frequently	The allowable frequency of the inrush current limiting resistor was exceeded when the main circuit power supply was turned ON and OFF.	_	Reduce the frequency of turning the main circuit power supply ON and OFF.	-
turned ON and OFF.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVO-PACK installation conditions.	*1
A.7A1:	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
Internal Temperature Error 1 (Control Board Temperature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVOPACK installation conditions.	Install the SERVOPACK according to specifications.	*1
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.  Continued o	_

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVO-PACK installation conditions.	*1
	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
A.7A2: Internal Tempera- ture Error 2 (Power Board Temperature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVOPACK installation conditions.	Install the SERVOPACK according to specifications.	*1
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.7A3: Internal Temperature Sensor Error (An error occurred in the temperature sensor circuit.)	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.7Ab: SERVOPACK Built-in Fan Stopped	The fan inside the SERVOPACK stopped.	Check for foreign matter inside the SERVOPACK.	Remove foreign matter from the SERVOPACK. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	The power to the absolute encoder was turned ON for the first time.	Check to see if the power supply was turned ON for the first time.	Set up the encoder.	*1
A.810: Encoder Backup Alarm (Detected at the encoder, but only when an abso- lute encoder is used.)	The Encoder Cable was disconnected and then connected again.	Check to see if the power supply was turned ON for the first time.	Check the encoder connection and set up the encoder.	
	Power is not being supplied both from the control power supply (+5 V) from the SERVOPACK and from the battery power supply.	Check the encoder connector battery and the connector status.	Replace the battery or implement similar measures to supply power to the encoder, and set up the encoder.	
	A failure occurred in the absolute encoder.	_	If the alarm still occurs after setting up the encoder again, replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.820: Encoder Check- sum Alarm (Detected at the encoder.)	A failure occurred in the encoder.	_	■ When Using an Absolute Encoder Set up the encoder again. If the alarm still occurs, the Servomotor may be faulty. Replace the Servomotor. ■ When Using a Singleturn Absolute Encoder or Incremental Encoder The Servomotor may be faulty. Replace the Servomotor.	*1
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.830: Encoder Battery	The battery connection is faulty or a battery is not connected.	Check the battery connection.	Correct the battery connection.	*1
Alarm (The absolute encoder battery voltage was lower	The battery voltage is lower than the specified value (2.7 V).	Measure the battery voltage.	Replace the battery.	*1
than the speci- fied level.)	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.840: Encoder Data	The encoder malfunctioned.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
Alarm (Detected at the encoder.)	The encoder malfunctioned due to noise.	-	Correct the wiring around the encoder by separating the Encoder Cable from the Servomotor Main Circuit Cable or by grounding the encoder.	-
A.850: Encoder Overspeed (Detected at the encoder when the control power supply is turned	The Servomotor speed was 200 min <sup>-1</sup> or higher when the control power supply was turned ON.	Check the motor speed when the power supply is turned ON.	Reduce the Servomotor speed to a value less than 200 min <sup>-1</sup> , and turn ON the control power supply.	_
	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
ON.)	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	- n next page.

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Alarm Number:			Continued from pri	l l l l l l l l l l l l l l l l l l l
Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding air temperature around the Servomotor is too high.	Measure the surrounding air temperature around the Servomotor.	Reduce the surrounding air temperature of the Servomotor to 40°C or less.	-
A.860:	The Servomotor load is greater than the rated load.	Use the accumulated load ratio to check the load.	Operate the Servo Drive so that the motor load remains within the specified range.	*1
Encoder Over- heated (Detected at the encoder.)	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The surrounding temperature around the Servomotor is too high.	Measure the surrounding temperature around the Servomotor.	Reduce the surrounding air temperature of the Servomotor to 40° or less.	_
	The motor load is greater than the rated load.	Check the load with the accumulated load ratio on the Motion Monitor Tab Page on the SigmaWin+.	Operate the Servo Drive so that the motor load remains within the specified range.	*1
A.861: Motor Over- heated	A failure occurred in the Serial Converter Unit.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Serial Con- verter Unit may be faulty. Replace the Serial Con- verter Unit.	-
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat.	Lower the surrounding temperature by improving the installation conditions of the machine.	-
	The overheat protection input signal line is disconnected or short-circuited.	Check the input voltage with the overheat protection input information on the Motion Monitor Tab Page on the SigmaWin+.	Repair the line for the overheat protection input signal.	-
A.862: Overheat Alarm	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
	Operation was performed under an excessive load.	Use the accumulated load ratio to check the load during operation.	Reconsider the load and operating conditions.	_
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The sensor attached to the machine is faulty.	_	The sensor attached to the machine may be faulty. Repair the sensor attached to the machine.	-
A.8A0: External Encoder Error	Setting the origin of the absolute linear encoder failed because the motor moved.	Before you set the origin, use the fully-closed feedback pulse counter to confirm that the motor is not moving.	The motor must be stopped while setting the origin position.	*1
	A failure occurred in the external encoder.	_	Replace the external encoder.	_
A.8A1:	A failure occurred in the external encoder.	-	Replace the external encoder.	_
External Encoder Module Error	A failure occurred in the Serial Converter Unit.	_	Replace the Serial Converter Unit.	-
A.8A2: External Incremental Encoder Sensor Error	A failure occurred in the external encoder.	_	Replace the external encoder.	-
A.8A3: External Absolute Encoder Position Error	A failure occurred in the external absolute encoder.	-	The external absolute encoder may be faulty. Refer to the encoder manufacturer's instruction manual for corrections.	-
A.8A5: External Encoder Overspeed	An overspeed error was detected in the external encoder.	Check the maximum speed of the external encoder.	Keep the external encoder below its maximum speed.	-
A.8A6: External Encoder Overheated	An overheating error was detected in the external encoder.	_	Replace the external encoder.	_
A.b33: Current Detection Error 3	A failure occurred in the current detection circuit.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.b6A: MECHATROLINK Communications ASIC Error 1	There is a fault in the SERVOPACK MECHATROLINK communications section.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.b6b: MECHATROLINK Communications	A malfunction occurred in the MECHATROLINK communications section due to noise.	_	Implement the following countermeasures against noise.  • Check the MECHATROLINK Communications Cable and FG wiring.  • Attach a ferrite core to the MECHATROLINK Communications Cable.	-
	There is a fault in the SERVOPACK MECHATROLINK communications section.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF0: System Alarm 0	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF1: System Alarm 1	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF2: System Alarm 2	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF3: System Alarm 3	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF4: System Alarm 4	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF5: System Alarm 5	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.bF6: System Alarm 6	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF7: System Alarm 7	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF8: System Alarm 8	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The order of phases U, V, and W in the motor wiring is not correct.	Check the Servomotor wiring.	Make sure that the Servo- motor is correctly wired.	_
A.C10: Servomotor Out of Control (Detected when the servo is turned ON.)	A failure occurred in the encoder.	_	If the motor wiring is correct and an alarm still occurs after turning the power supply OFF and ON again, the Servomotor may be faulty. Replace the Servomotor.	-
turned ON.)	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.C54: Polarity Detection Failure 2	An external force was applied to the Servomotor.	_	Increase the setting of Pn495 (Polarity Detection Confirmation Force Reference). Increase the setting of Pn498 (Polarity Detection Allowable Error Range). Increasing the allowable error will also increase the motor temperature.	-
A.C80: Encoder Clear Error or Multiturn Limit Setting Error	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.  Continued o	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Continued from pro-	Reference
Alami Name	There is a faulty contact in the connector or the connector is not wired correctly for the encoder.	Check the condition of the encoder connector.	Reconnect the encoder connector and check the encoder wiring.	*1
	There is a cable disconnection or short-circuit in the encoder. Or, the cable impedance is outside the specified values.	Check the condition of the Encoder Cable.	Use the Encoder Cable within the specified specifications.	-
A.C90: Encoder Commu-	One of the following has occurred: corrosion caused by improper temperature, humidity, or gas, a short-circuit caused by entry of water drops or cutting oil, or faulty contact in connector caused by vibration.	Check the operating environment.	Improve the operating environmental, and replace the cable. If the alarm still occurs, replace the SERVOPACK.	*1
nications Error	A malfunction was caused by noise.	_	Correct the wiring around the encoder by separating the Encoder Cable from the Servomotor Main Circuit Cable or by grounding the encoder.	*1
	A failure occurred in the SERVOPACK.	_	Connect the Servomotor to another SERVOPACK, and turn ON the control power supply. If no alarm occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	A failure occurred in the encoder.	_	Connect the Servomotor to another SERVOPACK, and turn ON the control power supply. If the alarm occurs, the Servomotor may be faulty. Replace the Servomotor.	-
A.C91: Encoder Communications Position Data Acceleration Rate Error	Noise entered on the signal lines because the Encoder Cable is bent or the sheath is damaged.	Check the condition of the Encoder Cable and connectors.	Check the Encoder Cable to see if it is installed correctly.	*1
	The Encoder Cable is bundled with a high- current line or installed near a high- current line.	Check the installation condition of the Encoder Cable.	Confirm that there is no surge voltage on the Encoder Cable.	-
	There is variation in the FG potential because of the influ- ence of machines on the Servomotor side, such as a welder.	Check the installation condition of the Encoder Cable.	Properly ground the machine to separate it from the FG of the encoder.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.C92: Encoder Communications Timer Error	Noise entered on the signal line from the encoder.	_	Implement countermeasures against noise for the encoder wiring.	*1
	Excessive vibration or shock was applied to the encoder.	Check the operating conditions.	Reduce machine vibration. Correctly install the Servomotor.	-
	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.CA0: Encoder Parame- ter Error	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.Cb0: Encoder Echo- back Error	The encoder is wired incorrectly or there is faulty contact.	Check the wiring of the encoder.	Make sure that the encoder is correctly wired.	*1
	The specifications of the Encoder Cable are not correct and noise entered on it.	_	Use a shielded twisted- pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm <sup>2</sup> .	_
	The Encoder Cable is too long and noise entered on it.	_	Rotary Servomotors: The Encoder Cable wiring distance must be 50 m max.	-
	There is variation in the FG potential because of the influ- ence of machines on the Servomotor side, such as a welder.	Check the condition of the Encoder Cable and connectors.	Properly ground the machine to separate it from the FG of the encoder.	-
	Excessive vibration or shock was applied to the encoder.	Check the operating conditions.	Reduce machine vibration. Correctly install the Servomotor.	-
	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.CC0: Multiturn Limit Disagreement	When using a Direct Drive Servomotor, the setting of Pn205 (Mul- titurn Limit Setting) does not agree with the encoder.	Check the setting of Pn205.	Correct the setting of Pn205 (0 to 65,535).	*1
	The multiturn limit of the encoder is different from that of the SERVOPACK. Or, the multiturn limit of the SERVOPACK has been changed.	Check the setting of Pn205 in the SERVO-PACK.	Change the setting if the alarm occurs.	*1
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.CF1: Reception Failed Error in Feed-	The cable between the Serial Converter Unit and SERVOPACK is not wired correctly or there is a faulty contact.	Check the wiring of the external encoder.	Correctly wire the cable between the Serial Converter Unit and SERVO-PACK.	*1
	A specified cable is not being used between Serial Con- verter Unit and SER- VOPACK.	Check the wiring specifications of the external encoder.	Use a specified cable.	-
back Option Module Commu- nications	The cable between the Serial Converter Unit and SERVOPACK is too long.	Measure the length of the cable that connects the Serial Converter Unit.	The length of the cable between the Serial Converter Unit and SERVO-PACK must be 20 m or less.	-
	The sheath on cable between the Serial Converter Unit and SERVOPACK is broken.	Check the cable that connects the Serial Converter Unit.	Replace the cable between the Serial Converter Unit and SERVO-PACK.	-
A.CF2: Timer Stopped Error in Feed-	Noise entered the cable between the Serial Converter Unit and SERVOPACK.	_	Correct the wiring around the Serial Converter Unit, e.g., separate I/O signal lines from the Main Circuit Cables or ground.	-
back Option Module Commu- nications	A failure occurred in the Serial Converter Unit.	_	Replace the Serial Converter Unit.	-
	A failure occurred in the SERVOPACK.	_	Replace the SERVO-PACK.	-
	The Servomotor U, V, and W wiring is not correct.	Check the wiring of the Servomotor's Main Circuit Cables.	Make sure that there are no faulty contacts in the wiring for the Servomotor and encoder.	-
	The position command speed is too fast.	Reduce the position command speed and try operating the SER-VOPACK.	Reduce the position reference speed or the reference acceleration rate, or reconsider the electronic gear ratio.	*1
A.d00: Position Deviation Overflow (The setting of Pn520 (Excessive Position Deviation Alarm Level) was exceeded by the position deviation while the servo was ON.)	The acceleration of the position reference is too high.	Reduce the reference acceleration and try operating the SERVO-PACK.	Reduce the acceleration of the position reference using a MECHATROLINK command. Or, smooth the position reference acceleration by selecting the position reference filter (ACCFIL) using a MECHATROLINK command.	-
	The setting of Pn520 (Excessive Position Deviation Alarm Level) is too low for the operating conditions.	Check Pn520 (Excessive Position Deviation Alarm Level) to see if it is set to an appropriate value.	Optimize the setting of Pn520.	*1
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

### 3.2.3 Troubleshooting Alarms

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.d01: Position Deviation Overflow Alarm at Servo ON	The servo was turned ON after the position deviation exceeded the setting of Pn526 (Excessive Position Deviation Alarm Level at Servo ON) while the servo was OFF.	Check the position deviation while the servo is OFF.	Optimize the setting of Pn526 (Excessive Position Deviation Alarm Level at Servo ON).	
A.d02: Position Deviation Overflow Alarm for Speed Limit at Servo ON	If position deviation remains in the deviation counter, the setting of Pn529 or Pn584 (Speed Limit Level at Servo ON) limits the speed when the servo is turned ON. This alarm occurs if a position reference is input and the setting of Pn520 (Excessive Position Deviation Alarm Level) is exceeded.	_	Optimize the setting of Pn520 (Excessive Position Deviation Alarm Level). Or, adjust the setting of Pn529 or Pn584 (Speed Limit Level at Servo ON).	*1
A.d10:  Motor-Load Position Deviation	The motor direction and external encoder installation orientation are backward.	Check the motor direction and the external encoder installation orientation.	Install the external encoder in the opposite direction, or change the setting of Pn002 = n.X□□□ (External Encoder Usage) to reverse the direction.	*1
Overflow	There is an error in the connection between the load (e.g., stage) and external encoder coupling.	Check the coupling of the external encoder.	Check the mechanical coupling.	_
A.d30: Position Data Overflow	The position data exceeded ±1,879,048,192.	Check the input reference pulse counter.	Reconsider the operating specifications.	-
A.E02:	The MECHATROLINK transmission cycle fluctuated.	_	Remove the cause of transmission cycle fluctuation at the host controller.	_
MECHATROLINK Internal Synchro- nization Error 1	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.E40: MECHATROLINK Transmission Cycle Setting Error	The setting of MECHATROLINK transmission cycle is outside of the specified range.	Check the setting of the MECHATROLINK transmission cycle.	Set the MECHATROLINK transmission cycle to an appropriate value.	_
A.E50*5:	The WDT data in the host controller was not updated normally.	Check to see if the WDT data is being updated at the host controller.	Correctly update the WDT data at the host controller.	_
MECHATROLINK Synchronization Error	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.E51: MECHATROLINK Synchronization	The WDT data at the host controller was not updated correctly at the start of synchronous communications, so synchronous communications could not be started.	Check to see if the WDT data is being updated in the host controller.	Correctly update the WDT data at the host controller.	_
Failed	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	MECHATROLINK wiring is not correct.	Check the MECHATROLINK wiring.	Correct the MECHATROLINK Communications Cable wiring. Correctly connect the terminator.	-
A.E60*5: Reception Error in MECHATROLINK Communications	A MECHATROLINK data reception error occurred due to noise.	_	Implement countermeasures against noise. (Check the MECHATROLINK Communications Cable and FG wiring, and implement measures such as attaching a ferrite core to the MECHATROLINK Communications Cable.)	_
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.E61: Synchronization	The MECHATROLINK transmission cycle fluctuated.	Check the setting of the MECHATROLINK transmission cycle.	Remove the cause of transmission cycle fluctuation at the host controller.	-
Interval Error in MECHATROLINK Transmission Cycle	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.E71: Safety Option Module Detec- tion Failure	There is a faulty con- nection between the SERVOPACK and the Safety Option Module.	Check the connection between the SERVO- PACK and the Safety Option Module.	Correctly connect the Safety Option Module.	-
	The Safety Option Module was discon- nected.	-	Execute Fn014 (Reset Option Module Configuration Error) from the Digital Operator or SigmaWin+ and then turn the power supply to the SERVO-PACK OFF and ON again.	*1
	A failure occurred in the Safety Option Module.	-	Replace the Safety Option Module.	_
	A failure occurred in the SERVOPACK.	_	Replace the SERVO-PACK.	_

#### 3.2.3 Troubleshooting Alarms

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Alarm Number:				vious page.
Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	There is a faulty connection between the SERVOPACK and the Feedback Option Module.	Check the connection between the SERVO- PACK and the Feed- back Option Module.	Correctly connect the Feedback Option Module.	_
A.E72: Feedback Option Module Detec- tion Failure	The Feedback Option Module was discon- nected.	_	Reset the Option Module configuration error and turn the power supply to the SERVOPACK OFF and ON again.	*1
	A failure occurred in the Feedback Option Module.	-	Replace the Feedback Option Module.	-
	A failure occurred in the SERVOPACK.	-	Replace the SERVO- PACK.	_
A.E74: Unsupported	A failure occurred in the Safety Option Module.	_	Replace the Safety Option Module.	-
Safety Option Module	An unsupported Safety Option Module was connected.	Refer to the catalog of the connected Safety Option Module.	Connect a compatible Safety Option Module.	-
A.Eb1: Safety Function Signal Input Tim- ing Error	The delay between activation of the /HWBB1 and /HWBB2 input signals for the HWBB was ten second or longer.	Measure the time delay between the /HWBB1 and /HWBB2 signals.	The output signal circuits or devices for /HWBB1 and /HWBB2 or the SER-VOPACK input signal circuits may be faulty. Alternatively, the input signal cables may be disconnected. Check to see if any of these items are faulty or have been disconnected.	-
	A failure occurred in the SERVOPACK.	-	Replace the SERVO-PACK.	-
A.EC8: Gate Drive Error 1 (An error occurred in the gate drive circuit.) A.EC9: Gate Drive Error 2 (An error occurred in the gate drive circuit.)	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.Ed1:	A timeout error	Check the motor status when the command is executed.	Execute the SV_ON or SENS_ON command only when the motor is not operating.	-
Command Exe- cution Timeout	MECHATROLINK command.	For fully-closed loop control, check the sta- tus of the external encoder when the com- mand is executed.	Execute the SENS_ON command only when an external encoder is connected.	_
-	*	•		

Alarm Number: Continued from previous pa				
Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.F10: Power Supply	The three-phase power supply wiring is not correct.	Check the power supply wiring.	Make sure that the power supply is correctly wired.	*1
	The three-phase power supply is unbalanced.	Measure the voltage for each phase of the three-phase power supply.	Balance the power supply by changing phases.	-
Line Open Phase (The voltage was low for more than one second for phase R, S, or T when the main power supply	A single-phase power supply was input without specifying a signal-phase AC power supply input (Pn00B = n.□1□□).	Check the power supply and the parameter setting.	Match the parameter setting to the power supply.	*1
was ON.)	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
FL-1*5: System Alarm FL-2*5: System Alarm FL-3*5: System Alarm FL-4*5: System Alarm FL-5*5: System Alarm FL-5*5: System Alarm FL-6*5: System Alarm	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_
CPF00: Digital Operator Communications	There is a faulty contact between the Digital Operator and the SERVOPACK.	Check the connector contact.	Disconnect the connector and insert it again. Or, replace the cable.	-
Error 1	A malfunction was caused by noise.	_	Keep the Digital Operator or the cable away from sources of noise.	-
CPF01: Digital Operator Communications Error 2	A failure occurred in the Digital Operator.	_	Disconnect the Digital Operator and then con- nect it again. If an alarm still occurs, the Digital Operator may be faulty. Replace the Digital Oper- ator.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

<sup>\*1.</sup> Refer to the following manual for details.

Σ-7-Series Σ-7S SERVOPACK with MECHATROLINK-II Communications References Product Manual (Manual No.: SIEP S800001 27)

#### 3.2 FT82 SERVOPACK with MECHATROLINK-II Communications References

#### 3.2.3 Troubleshooting Alarms

\*2. Detection Conditions

If either of the following conditions is detected, an alarm will occur.

• Pn533 [min<sup>-1</sup>] × 
$$\frac{\text{Encoder resolution}}{6 \times 10^5} \le \frac{\text{Pn20E}}{\text{Pn210}}$$

• Maximum motor speed [min<sup>-1</sup>] 
$$\times$$
 Encoder resolution
Approx.  $3.66 \times 10^{12}$   $\geq$  Pn20E
Pn210

\*3. Detection Conditions

If either of the following conditions is detected, an alarm will occur.

• Rated motor speed 
$$[min^{-1}] \times 1/3 \times \frac{Encoder resolution}{6 \times 10^5} \le \frac{Pn20E}{Pn210}$$

• Maximum motor speed [min<sup>-1</sup>] 
$$\times \frac{\text{Encoder resolution}}{\text{Approx. } 3.66 \times 10^{12}} \ge \frac{\text{Pn20E}}{\text{Pn210}}$$

\*4. Refer to the following manual for details.

Ω Σ-7-Series Peripheral Device Selection Manual (Manual No.: SIEP S800001 32)

\*5. These alarms are not stored in the alarm history. They are only displayed on the panel display.

# 3.2.4 Warning Displays

If a warning occurs in the SERVOPACK, a warning number will be displayed on the panel display. Warnings are displayed to warn you before an alarm occurs.

# 3.2.5 List of Warnings

The list of warnings gives the warning name and warning meaning in order of the warning numbers.

Warning Number	Warning Name	Meaning
A.900	Position Deviation Overflow	The position deviation exceeded the percentage set with the following formula: $(Pn520 \times Pn51E/100)$
A.901	Position Deviation Overflow Alarm at Servo ON	The position deviation when the servo was turned ON exceeded the percentage set with the following formula: (Pn526 $\times$ Pn528/100)
A.910	Overload	This warning occurs before an overload alarm (A.710 or A.720) occurs. If the warning is ignored and operation is continued, an alarm may occur.
A.911	Vibration	Abnormal vibration was detected during motor operation. The detection level is the same as A.520. Set whether to output an alarm or a warning by setting Pn310 (Vibration Detection Switch).
A.912	Internal Temperature Warning 1 (Control Board Temperature Error)	The surrounding temperature of the control PCB is abnormal.
A.913	Internal Temperature Warning 2 (Power Board Temperature Error)	The surrounding temperature of the power PCB is abnormal.
A.920	Regenerative Overload	This warning occurs before an A.320 alarm (Regenerative Overload) occurs. If the warning is ignored and operation is continued, an alarm may occur.
A.921	Dynamic Brake Over- load	This warning occurs before an A.731 alarm (Dynamic Brake Overload) occurs. If the warning is ignored and operation is continued, an alarm may occur.
A.923	SERVOPACK Built-in Fan Stopped	The fan inside the SERVOPACK stopped.
A.930	Absolute Encoder Battery Error	This warning occurs when the voltage of absolute encoder's battery is low.
A.93B	Overheat Warning	The input voltage (temperature) for the overheat protection input (TH) signal exceeded the setting of Pn61C (Overheat Warning Level).
A.942	Speed Ripple Compensation Information Disagreement	The speed ripple compensation information stored in the encoder does not agree with the speed ripple compensation information stored in the SERVOPACK.
A.94A	Data Setting Warning 1 (Parameter Number Error)	There is an error in the parameter number for a Data Setting Warning 1 (Parameter Number) command.
A.94b	Data Setting Warning 2 (Out of Range)	The command data is out of range.
A.94C	Data Setting Warning 3 (Calculation Error)	A calculation error was detected.
A.94d	Data Setting Warning 4 (Parameter Size)	The data sizes do not match.
A.94E	Data Setting Warning 5	A latch mode error was detected.

#### 3.2.5 List of Warnings

Continued from previous page.

Warning Number	Warning Name	Meaning
A.95A	Command Warning 1 (Unsatisfied Com- mand Conditions)	A command was sent when the conditions for sending a command were not satisfied.
A.95b	Command Warning 2 (Unsupported Command)	An unsupported command was sent.
A.95d	Command Warning 4 (Command Interference)	There was command interference, particularly latch command interference.
A.95E	Command Warning 5 (Subcommand Not Possible)	The subcommand and main command interfere with each other.
A.95F	Command Warning 6 (Undefined Command)	An undefined command was sent.
A.960	MECHATROLINK Communications Warning	A communications error occurred during MECHATROLINK communications.
A.971	Undervoltage	This warning occurs before an A.410 alarm (Undervoltage) occurs. If the warning is ignored and operation is continued, an alarm may occur.
A.9A0	Overtravel	Overtravel was detected while the servo was ON.
A.9b0	Preventative Mainte- nance Warning	One of the consumable parts has reached the end of its service life.

- Note: 1. A warning code is not output unless you set Pn001 to n.1 \(\sigma\) (Output both alarm codes and warning codes).
  - 2. Use Pn008 = n.□X□□ (Warning Detection Selection) to control warning detection. However, the following warnings are not affected by the setting of Pn008 = n.□X□□ and other parameter settings are required in addition to Pn008 = n.□X□□.

Warning	Parameters That Must Be Set to Select Warning Detection
A.911	Pn310 = n.□□□X (Vibration Detection Setting)
A.923	_ (Not affected by the setting of Pn008 = n.□X□□.)
A.930	Pn008 = n.□□□X (Low Battery Voltage Alarm/Warning Selection)
A.942	Pn423 = n.□□X□ (Speed Ripple Compensation Information Disagreement Warning Detection Selection)
A.94A to A.960	Pn800=n.□□X□ (Warning Check Masks)
A.971	Pn008 = n.□□□X (Low Battery Voltage Alarm/Warning Selection) (Not affected by the setting of Pn008 = n.□X□□.)
A.9A0	Pn00D = n.X□□□ (Overtravel Warning Detection Selection) (Not affected by the setting of Pn008 = n.□X□□.)
A.9b0	Pn00F = n.□□□X (Preventative Maintenance Selection)

# Troubleshooting Warnings

3.2.6

The causes of and corrections for the warnings are given in the following table. Contact your Yaskawa representative if you cannot solve a problem with the correction given in the table.

Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The Servomotor U, V, and W wiring is not correct.	Check the wiring of the Servomotor's Main Circuit Cables.	Make sure that there are no faulty connections in the wiring for the Servomotor and encoder.	-
	A SERVOPACK gain is too low.	Check the SERVO- PACK gains.	Increase the servo gain, e.g., by using autotuning without a host reference.	*
A.900: Position Deviation Overflow	The acceleration of the position reference is too high.	Reduce the reference acceleration and try operating the SERVO-PACK.	Reduce the acceleration of the position reference using a MECHATROLINK com- mand. Or, smooth the posi- tion reference acceleration by selecting the position reference filter (ACCFIL) using a MECHATROLINK command.	-
	The excessive position deviation alarm level (Pn520 × Pn51E/100) is too low for the operating conditions.	Check excessive position deviation alarm level (Pn520 × Pn51E/100) to see if it is set to an appropriate value.	Optimize the settings of Pn520 and Pn51E.	*
	A failure occurred in the SERVO-PACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.901: Position Deviation Overflow Alarm at Servo ON	The position deviation when the servo was turned ON exceeded the percentage set with the following formula: (Pn526 × Pn528/100)	_	Optimize the setting of Pn528 (Excessive Position Error Warning Level at Servo ON).	-

### 3.2.6 Troubleshooting Warnings

Continued from previous page.

Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The wiring is not correct or there is a faulty contact in the motor or encoder wiring.	Check the wiring.	Make sure that the Servo- motor and encoder are cor- rectly wired.	-
	Operation was performed that exceeded the overload protection characteristics.	Check the motor over- load characteristics and Run command.	Reconsider the load and operating conditions. Or, increase the motor capacity.	-
A.910: Overload (warning before an A.710 or A.720 alarm occurs)	An excessive load was applied during operation because the Servomotor was not driven because of mechanical problems.	Check the operation reference and motor speed.	Remove the mechanical problem.	-
	The overload warning level (Pn52B) is not suitable.	Check that the overload warning level (Pn52B) is suitable.	Set a suitable overload warning level (Pn52B).	*
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-
A.911: Vibration	Abnormal vibration was detected during motor operation.	Check for abnormal motor noise, and check the speed and torque waveforms during operation.	Reduce the motor speed. Or, reduce the servo gain with custom tuning.	*
	The setting of Pn103 (Moment of Inertia Ratio) is greater than the actual moment of inertia or was greatly changed.	Check the moment of inertia ratio or mass ratio.	Set Pn103 (Moment of Inertia Ratio) to an appropriate value.	*
	The vibration detection level (Pn312 or Pn384) is not suitable.	Check that the vibration detection level (Pn312 or Pn384) is suitable.	Set a suitable vibration detection level (Pn312 or Pn384).	*

6

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Warning Number:			Continued from pre	vious page.
Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVOPACK installation conditions.	*
	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
A.912: Internal Tempera- ture Warning 1 (Control Board Tem- perature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVO- PACK installation con- ditions.	Install the SERVOPACK according to specifications.	*
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVOPACK installation conditions.	*
	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
A.913: Internal Tempera- ture Warning 2 (Power Board Tem- perature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVO- PACK installation con- ditions.	Install the SERVOPACK according to specifications.	*
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	_

### 3.2.6 Troubleshooting Warnings

Continued from previous page.

Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
A.920: Regenerative Overload (warning before an A.320 alarm occurs)	There is insufficient external regenerative resistance, regenerative resistor capacity, or SER-VOPACK capacity, or there has been a continuous regeneration state.	Check the operating conditions or the capacity using the SigmaJunmaSize+ Capacity Selection Software or another means.	Change the regenerative resistance value, regenerative resistance capacity, or SERVOPACK capacity. Reconsider the operating conditions using the Sigma-JunmaSize+ Capacity Selection Software or other means.	-
	There was a continuous regeneration state because a negative load was continuously applied.	Check the load applied to the Servomotor during operation.	Reconsider the system including the servo, machine, and operating conditions.	-
	The Servomotor was rotated by an external force.	Check the operation status.	Implement measures to ensure that the motor will not be rotated by an external force.	-
A.921: Dynamic Brake Overload (warning before an A.731 alarm occurs)	When the Servo- motor was stopped with the dynamic brake, the rotational or linear kinetic energy exceeded the capacity of the dynamic brake resistor.	Check the power consumed by the DB resistor to see how frequently the DB is being used.	Reconsider the following:  Reduce the Servomotor command speed.  Decrease the moment of inertia or mass.  Reduce the frequency of stopping with the dynamic brake.	-
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-
A.923: SERVOPACK Built- in Fan Stopped	The fan inside the SERVOPACK stopped.	Check for foreign matter inside the SERVO-PACK.	Remove foreign matter from the SERVOPACK. If an alarm still occurs, the SER- VOPACK may be faulty. Replace the SERVOPACK.	-
A.930: Absolute Encoder Battery Error (The absolute encoder battery voltage was lower than the spec- ified level.) (Detected only when an abso-	The battery con- nection is faulty or a battery is not connected.	Check the battery connection.	Correct the battery connection.	*
	The battery voltage is lower than the specified value (2.7 V).	Measure the battery voltage.	Replace the battery.	*
lute encoder is connected.)	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	_

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Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat.	Lower the surrounding temperature by improving the installation conditions of the machine.	-
A.93B:	Operation was performed under an excessive load.	Use the accumulated load ratio to check the load during operation.	Reconsider the load and operating conditions.	_
Overheat Warning	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-
	The sensor attached to the machine is faulty.	_	The sensor attached to the machine may be faulty. Repair the sensor attached to the machine.	-
	The speed ripple	_	Reset the speed ripple compensation value on the SigmaWin+.	*
A.942: Speed Ripple Compensation Information Disagreement	compensation information stored in the encoder does not agree with the speed	_	Set Pn423 to n. \(\bigcup \bigcup 1 \bigcup \) (Do not detect A.942 alarms). However, changing the setting may increase the speed ripple.	*
tion info	ripple compensa- tion information stored in the SER- VOPACK.	_	Set Pn423 to n. \(\sum \subseteq 0\) (Disable torque ripple compensation). However, changing the setting may increase the speed ripple.	*
A.94A: Data Setting Warning 1 (Parameter Number Error)	An invalid parameter number was used.	Check the command that caused the warning.	Use the correct parameter number.	*
A.94b: Data Setting Warn- ing 2 (Out of Range)	The set com- mand data was clamped to the minimum or maxi- mum value of the setting range.	Check the command that caused the warning.	Set the parameter within the setting range.	*
A.94C: Data Setting Warning 3 (Calculation Error)	The calculation result of the setting is not correct.	Check the command that caused the warning.	Set the parameter within the setting range.	*
A.94d: Data Setting Warning 4 (Parameter Size)	The parameter size set in the command is not correct.	Check the command that caused the warning.	Set the correct parameter size.	*
A.94E: Data Setting Warn- ing 5 (Latch Mode Error)	A latch mode error was detected.	Check the command that caused the warning.	Change the setting of Pn850 or the LT_MOD data for the LTMOD_ON command sent by the host controller to an appropriate value.	*
A.95A: Command Warning 1 (Unsatisfied Command Conditions)	The command conditions are not satisfied.	Check the command that caused the warning.	Send the command after the command conditions are satisfied.	*
A.95b: Command Warning 2 (Unsupported Command)	An unsupported command was received.	Check the command that caused the warning.	Do not send unsupported commands.	*

#### 3.2.6 Troubleshooting Warnings

Continued from previous page.

Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
A.95d: Command Warning 4 (Command Inter- ference)	The command sending conditions for latchrelated commands was not satisfied.	Check the command that caused the warning.	Send the command after the command conditions are satisfied.	*
A.95E: Command Warning 5 (Subcommand Not Possible)	The command sending conditions for subcommands was not satisfied.	Check the command that caused the warning.	Send the command after the conditions are satisfied.	*
A.95F: Command Warning 6 (Undefined Com- mand)	An undefined command was sent.	Check the command that caused the warning.	Do not send undefined commands.	*
	The MECHATROLINK Communications Cable is not wired correctly.	Check the wiring conditions.	Correct the MECHATROLINK communications cable wiring. Or, connect a terminator to the final station.	*
A.960: MECHATROLINK Communications Warning	A MECHATROLINK data reception error occurred due to noise.	Confirm the installation conditions.	Implement the following countermeasures against noise.  • Check the MECHATROLINK Communications Cable and FG wiring and implement countermeasures to prevent noise from entering.  • Attach a ferrite core to the MECHATROLINK Communications Cable.	-
	A failure occurred in the SERVO-PACK.	-	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-
	For a 200-V SER- VOPACK, the AC power supply volt- age dropped below 140 V.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
	For a 100-V SER- VOPACK, the AC power supply volt- age dropped below 60 V.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
A.971: Undervoltage	The power supply voltage dropped during operation.	Measure the power supply voltage.	Increase the power supply capacity.	-
	A momentary power interruption occurred.	Measure the power supply voltage.	If you have changed the setting of Pn509 (Momentary Power Interruption Hold Time), decrease the setting.	*
	The SERVOPACK fuse is blown out.	_	Replace the SERVOPACK and connect a reactor.	*
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	_

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Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
A.9A0: Overtravel (Overtravel status was detected.)	Overtravel was detected while the servo was ON.	Check the status of the overtravel signals on the input signal monitor.	Even if an overtravel signal is not shown by the input signal monitor, momentary overtravel may have been detected. Take the following precautions.  • Do not specify movements that would cause overtravel from the host controller.  • Check the wiring of the overtravel signals.  • Implement countermeasures against noise.	*
A.9b0: Preventative Mainte- nance Warning	One of the consumable parts has reached the end of its service life.	_	Replace the part. Contact your Yaskawa representative for replacement.	*

<sup>\*</sup> Refer to the following manual for details.

Σ-7-Series Σ-7S SERVOPACK with MECHATROLINK-II Communications References Product Manual (Manual No.: SIEP S800001 27)

# 3.2.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

This section provides troubleshooting based on the operation and conditions of the Servomotor, including causes and corrections.

Problem	Possible Cause	Confirmation	Correction	Reference
	The control power supply is not turned ON.	Measure the voltage between control power supply terminals.	Turn OFF the power supply to the servo system. Correct the wiring so that the control power supply is turned ON.	-
	The main circuit power supply is not turned ON.	Measure the voltage across the main circuit power input terminals.	Turn OFF the power supply to the servo system. Correct the wiring so that the main circuit power supply is turned ON.	-
	The I/O signal connector (CN1) pins are not wired correctly or are disconnected.	Turn OFF the power supply to the servo system. Check the wiring condition of the I/O signal connector (CN1) pins.	Correct the wiring of the I/O signal connector (CN1) pins.	*
	The wiring for the Servomotor Main Circuit Cables or Encoder Cable is disconnected.	Check the wiring conditions.	Turn OFF the power supply to the servo system. Wire the cable correctly.	-
Servomotor Does Not Start	There is an overload on the Servomotor.	Operate the Servomotor with no load and check the load status.	Turn OFF the power supply to the servo system. Reduce the load or replace the Servomotor with a Servomotor with a larger capacity.	-
	The type of encoder that is being used does not agree with the setting of Pn002 = n. \(\Delta \times \Delta	Check the type of the encoder that is being used and the setting of Pn002 = n.□X□□.	Set Pn002 = n.\(\perp\)X\(\pi\)\\ according to the type of the encoder that is being used.	*
	There is a mistake in the input signal allocations (Pn50A, Pn50B, Pn511, and Pn516).	Check the input signal allocations (Pn50A, Pn50B, Pn511, and Pn516).	Correctly allocate the input signals (Pn50A, Pn50B, Pn511, and Pn516).	*
	The SV_ON command was not sent.	Check the commands sent from the host controller.	Send the SV_ON command from the host controller.	-
	The SENS_ON (Turn ON Sensor) command was not sent.	Check the commands sent from the host controller.	Send the commands to the SERVOPACK in the correct sequence.	-
	The P-OT (Forward Drive Prohibit) or N-OT (Reverse Drive Prohibit) signal is still OFF.	Check the P-OT and N-OT signals.	Turn ON the P-OT and N-OT signals.	*
	The safety input signals (/HWBB1 or /HWBB2) were not turned ON.	Check the /HWBB1 and /HWBB2 input signals.	Turn ON the /HWBB1 and /HWBB2 input signals. If you are not using the safety function, connect the Safety Jumper Connector (provided as an accessory) to CN8.	*

3.2.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

Problem	Possible Cause	Confirmation	Continued from pre	Reference
1 TODIETTI	1 033ible Oduse	Committation	Turn ON the FSTP	TIGIGIGIICE
Servomotor Does Not Start	The FSTP (Forced Stop Input) signal is still OFF.	Check the FSTP signal.	signal.  If you will not use the function to force the motor to stop, set Pn516 = n.□□□X (FSTP (Forced Stop Input) Signal Allocation) to disable the signal.	*
	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-
Servomotor Moves Instanta-	There is a mistake in the Servomotor wiring.	Turn OFF the power supply to the servo system. Check the wiring.	Wire the Servomotor correctly.	_
neously, and Then Stops	There is a mistake in the wiring of the encoder or Serial Converter Unit.	Turn OFF the power supply to the servo system. Check the wiring.	Wire the Serial Converter Unit correctly.	_
Servomotor Speed Is Unstable	There is a faulty connection in the Servomotor wiring.	Turn OFF the power supply to the servo system. The connector connections for the power line (U, V, and W phases) and the encoder or Serial Converter Unit may be unstable. Check the wiring.	Tighten any loose terminals or connectors and correct the wiring.	-
Servomotor Moves with- out a Refer- ence Input	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	_
	The setting of Pn001 = n.□□□X (Servo OFF or Alarm Group 1 Stopping Method) is not suitable.	Check the setting of Pn001 = n.□□□X.	Set Pn001 = n.□□□X correctly.	-
Dynamic Brake Does Not Operate	The dynamic brake resistor is disconnected.	Check the moment of inertia, motor speed, and dynamic brake frequency of use. If the moment of inertia, motor speed, or dynamic brake frequency of use is excessive, the dynamic brake resistance may be disconnected.	Turn OFF the power supply to the servo system. Replace the SERVO-PACK. To prevent disconnection, reduce the load.	-
	There was a failure in the dynamic brake drive circuit.	_	Turn OFF the power supply to the servo system. There is a defective component in the dynamic brake circuit. Replace the SERVO-PACK.	-

#### 3.2.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

			Continued from pre	
Problem	Possible Cause	Confirmation	Correction	Reference
	The Servomotor vibrated considerably while performing the tuning-less function with the default settings.	Check the waveform of the motor speed.	Reduce the load so that the moment of inertia ratio or mass ratio is within the allowable value, or increase the load level or reduce the rigidity level in the tuning-less level settings.	*
	The machine mounting is not secure.	Turn OFF the power supply to the servo system. Check to see if there are any loose mounting screws.	Tighten the mounting screws.	_
	The machine mounting is not secure.	Turn OFF the power supply to the servo system. Check to see if there is misalignment in the coupling.	Align the coupling.	-
	scourc.	Turn OFF the power supply to the servo system. Check to see if the coupling is balanced.	Balance the coupling.	_
	The bearings are defective.	Turn OFF the power supply to the servo system. Check for noise and vibration around the bearings.	Replace the Servomotor.	-
Abnormal Noise from	There is a vibration source at the driven machine.	Turn OFF the power supply to the servo system. Check for any foreign matter, damage, or deformation in the machine's moving parts.	Consult with the machine manufacturer.	-
Servomotor	Noise interference occurred because of incorrect I/O signal cable specifications.	Turn OFF the power supply to the servo system. Check the I/O signal cables to see if they satisfy specifications. Use shielded twisted-pair wire cables or screened twisted-pair cables with conductors of at least 0.12 mm <sup>2</sup> .	Use cables that satisfy the specifications.	-
	Noise interference occurred because an I/O signal cable is too long.	Turn OFF the power supply to the servo system. Check the lengths of the I/O signal cables.	The I/O signal cables must be no longer than 3 m.	-
	Noise interference occurred because of incorrect Encoder Cable specifications.	Turn OFF the power supply to the servo system. Make sure that the rotary or Linear Encoder Cable satisfies the specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with a conductors of at least 0.12 mm <sup>2</sup> .	Use cables that satisfy the specifications.	-
	Noise interference occurred because the Encoder Cable is too long.	Turn OFF the power supply to the servo system. Check the length of the Encoder Cable.	Rotary Servomotors: The Encoder Cable length must be 50 m max.	_
	Noise interference occurred because the Encoder Cable is damaged.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it is pinched or the sheath is damaged.	Replace the Encoder Cable and correct the cable installation envi- ronment.	-

3.2.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

Problem	Possible Cause	Confirmation	Correction	Reference
	The Encoder Cable was subjected to excessive noise interference.	Turn OFF the power supply to the servo system. Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-current line.	Correct the cable lay- out so that no surge is applied by high-current lines.	-
	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Turn OFF the power supply to the servo system. Check to see if the machines are correctly grounded.	Properly ground the machines to separate them from the FG of the encoder.	_
Abnormal Noise from Servomotor	There is a SERVOPACK pulse counting error due to noise.	Check to see if there is noise interference on the signal line from the encoder.	Turn OFF the power supply to the servo system. Implement countermeasures against noise for the encoder wiring.	-
	The encoder was subjected to excessive vibration or shock.	Turn OFF the power supply to the servo system. Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting surface precision, securing state, and alignment).	Reduce machine vibration. Improve the mounting conditions of the Servomotor.	-
	A failure occurred in the encoder.	_	Turn OFF the power supply to the servo system. Replace the Servomotor.	-
	The servo gains are not balanced.	Check to see if the servo gains have been correctly tuned.	Perform autotuning without a host reference.	*
Conjomater	The setting of Pn100 (Speed Loop Gain) is too high.	Check the setting of Pn100. The default setting is Kv = 40.0 Hz.	Set Pn100 to an appropriate value.	-
Servomotor Vibrates at Frequency of Approx. 200 to 400 Hz.	The setting of Pn102 (Position Loop Gain) is too high.	Check the setting of Pn102. The default setting is Kp = 40.0/s.	Set Pn102 to an appropriate value.	-
	The setting of Pn101 (Speed Loop Integral Time Constant) is not appropriate.	Check the setting of Pn101. The default setting is Ti = 20.0 ms.	Set Pn101 to an appropriate value.	-
	The setting of Pn103 (Moment of Inertia Ratio or Mass Ratio) is not appropri- ate.	Check the setting of Pn103.	Set Pn103 to an appropriate value.	-

#### 3.2.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

Problem	Possible Cause	Confirmation	Continued from pre	Reference
Problem		Check to see if the servo	Perform autotuning	neierence
Large Motor Speed	The servo gains are not balanced.	gains have been correctly tuned.	without a host reference.	*
	The setting of Pn100 (Speed Loop Gain) is too high.	Check the setting of Pn100. The default setting is Kv = 40.0 Hz.	Set Pn100 to an appropriate value.	_
	The setting of Pn102 (Position Loop Gain) is too high.	Check the setting of Pn102. The default setting is Kp = 40.0/s.	Set Pn102 to an appropriate value.	-
Overshoot on Starting and Stop- ping	The setting of Pn101 (Speed Loop Integral Time Constant) is not appropriate.	Check the setting of Pn101. The default setting is Ti = 20.0 ms.	Set Pn101 to an appropriate value.	-
	The setting of Pn103 (Moment of Inertia Ratio or Mass Ratio) is not appropriate.	Check the setting of Pn103.	Set Pn103 to an appropriate value.	_
	The torque reference is saturated.	Check the waveform of the torque reference.	Use the mode switch.	-
	The force limits (Pn483 and Pn484) are set to the default values.	The default values of the force limits and Pn483 = 30% and Pn484 = 30%.	Set Pn483 and Pn484 to appropriate values.	*
	Noise interference occurred because of incorrect Encoder Cable specifications.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it satisfies specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm <sup>2</sup> .	Use cables that satisfy the specifications.	-
Absolute Encoder Position Deviation	Noise interference occurred because the Encoder Cable is too long.	Turn OFF the power supply to the servo system. Check the length of the Encoder Cable.	Rotary Servomotors: The Encoder Cable length must be 50 m max.	_
Error (The position that was saved in the host con-	Noise interference occurred because the Encoder Cable is damaged.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it is pinched or the sheath is damaged.	Replace the Encoder Cable and correct the cable installation envi- ronment.	-
troller when the power was turned OFF is dif- ferent from the posi- tion when the power was next turned ON.)	Replace the Encoder Cable and correct the cable installation environment.	Turn OFF the power supply to the servo system. Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-current line.	Correct the cable lay- out so that no surge is applied by high-current lines.	-
	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Turn OFF the power supply to the servo system. Check to see if the machines are correctly grounded.	Properly ground the machines to separate them from the FG of the encoder.	-
	There is a SERVOPACK pulse counting error due to noise.	Turn OFF the power supply to the servo system. Check to see if there is noise interference on the I/O signal line from the encoder or Serial Converter Unit.	Implement counter- measures against noise for the encoder or Serial Converter Unit wiring.	-

3.2.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

Problem	Possible Cause	Confirmation	Correction	Reference
Absolute	The encoder was subjected to excessive vibration or shock.	Turn OFF the power supply to the servo system. Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting surface precision, securing state, and alignment).	Reduce machine vibration. Or, improve the mounting conditions of the Servomotor.	-
Encoder Position Deviation Error (The position that was	A failure occurred in the encoder.	_	Turn OFF the power supply to the servo system. Replace the Servomotor.	-
saved in the host con- troller when the power was turned	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-
OFF is dif- ferent from the posi-		Check the error detection section of the host controller.	Correct the error detection section of the host controller.	-
tion when the power was next turned ON.)	Host Controller Multiturn Data or Absolute Encoder	Check to see if the host controller is executing data parity checks.	Perform parity checks for the multiturn data or absolute encoder posi- tion data.	-
	Data or Absolute Encoder Position Data Reading Error	Check for noise interference in the cable between the SERVO-PACK and the host controller.	Implement counter- measures against noise and then perform parity checks again for the multiturn data or abso- lute encoder position data.	-

#### 3.2.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

Problem	Possible Cause	Confirmation	Continued from pre	Reference
Problem	Possible Cause	Commitmation	Correct the external	neierence
		Check the external power supply (+24 V) voltage for the input signals.	power supply (+24 V) voltage for the input signals.	-
	The P-OT/N-OT (Forward Drive Prohibit or Reverse	Check the operating condition of the overtravel limit switches.	Make sure that the overtravel limit switches operate correctly.	-
	Drive Prohibit) signal was input.	Check the wiring of the overtravel limit switches.	Correct the wiring of the overtravel limit switches.	*
		Check the settings of the overtravel input signal allocations (Pn50A/Pn50B).	Set the parameters to correct values.	*
		Check for fluctuation in the external power supply (+24 V) voltage for the input signals.	Eliminate fluctuation from the external power supply (+24 V) voltage for the input signals.	-
Overtravel	The P-OT/N-OT (Forward Drive Prohibit or Reverse Drive Prohibit) signal mal-	Check to see if the operation of the overtravel limit switches is unstable.	Stabilize the operating condition of the over-travel limit switches.	_
Occurred	functioned.	Check the wiring of the overtravel limit switches (e.g., check for cable damage and loose screws).	Correct the wiring of the overtravel limit switches.	-
	There is a mistake in the allocation of the P-OT or N-OT (Forward Drive Prohibit or Reverse Drive Prohibit) signal in Pn50A = n.X□□□ or Pn50B = n.□□□X.	Check to see if the P-OT signal is allocated in Pn50A = n.X□□□.	If another signal is allocated in Pn50A =n.X□□□, allocate the P-OT signal instead.	*
		Check to see if the N-OT signal is allocated in Pn50B = n.□□□X.	If another signal is allocated in Pn50B =n.□□□X, allocate the N-OT signal instead.	
	The selection of the Servo- motor stopping method is not correct.	Check the servo OFF stopping method set in Pn001 = n.□□□X or Pn001 = n.□□X□.	Select a Servomotor stopping method other than coasting to a stop.	*
		Check the torque control stopping method set in Pn001 = n.□□□X or Pn001 = n.□□X□.	Select a Servomotor stopping method other than coasting to a stop.	
Improper Stop Posi- tion for	The limit switch position and dog length are not appropriate.	-	Install the limit switch at the appropriate position.	_
Overtravel (OT) Signal	The overtravel limit switch position is too close for the coasting distance.	_	Install the overtravel limit switch at the appropriate position.	-
Position Deviation (without Alarm)	Noise interference occurred because of incorrect Encoder Cable specifications.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it satisfies specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm <sup>2</sup> .	Use cables that satisfy the specifications.	-
	Noise interference occurred because the Encoder Cable is too long.	Turn OFF the power supply to the servo system. Check the length of the Encoder Cable.	Rotary Servomotors: The Encoder Cable length must be 50 m max.	-
	Noise interference occurred because the Encoder Cable is damaged.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it is pinched or the sheath is damaged.	Replace the Encoder Cable and correct the cable installation envi- ronment.	-

3.2.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

Problem	Possible Cause	Confirmation	Continued from pre	Reference
Problem	Possible Cause		Correction	helefelice
	The Encoder Cable was subjected to excessive noise interference.	Turn OFF the power supply to the servo system. Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-current line.	Correct the cable lay- out so that no surge is applied by high-current lines.	_
	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Turn OFF the power supply to the servo system. Check to see if the machines are correctly grounded.	Properly ground the machines to separate them from the FG of the encoder.	-
	There is a SERVOPACK pulse counting error due to noise.	Turn OFF the power supply to the servo system. Check to see if there is noise interference on the I/O signal line from the encoder or Serial Converter Unit.	Implement counter- measures against noise for the encoder wiring or Serial Converter Unit wiring.	-
Position Deviation (without Alarm)	The encoder was subjected to excessive vibration or shock.	Turn OFF the power supply to the servo system. Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting surface precision, securing state, and alignment).	Reduce machine vibration. Or, improve the mounting conditions of the Servomotor.	-
	The coupling between the machine and Servomotor is not suitable.	Turn OFF the power supply to the servo system. Check to see if position offset occurs at the coupling between machine and Servomotor.	Correctly secure the coupling between the machine and Servomotor.	-
	Noise interference occurred because of incorrect I/O signal cable specifications.	Turn OFF the power supply to the servo system. Check the I/O signal cables to see if they satisfy specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm <sup>2</sup> .	Use cables that satisfy the specifications.	-
	Noise interference occurred because an I/O signal cable is too long.	Turn OFF the power supply to the servo system. Check the lengths of the I/O signal cables.	The I/O signal cables must be no longer than 3 m.	_
	An encoder fault occurred. (The pulse count does not change.)	_	Turn OFF the power supply to the servo system. Replace the Servomotor.	-
	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	_
	+			

#### 3.2.7 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

Problem	Possible Cause	Confirmation	Correction	Reference
	The surrounding air temperature is too high.	Measure the surrounding air temperature around the Servomotor.	Reduce the surrounding air temperature to 40°C or less.	-
	The surface of the Servomotor is dirty.	Turn OFF the power supply to the servo system. Visually check the surface for dirt.	Clean dirt, dust, and oil from the surface.	-
Servomotor Overheated	There is an overload on the Servomotor.	Check the load status with a monitor.	If the Servomotor is overloaded, reduce the load or replace the Servo Drive with a SERVOPACK and Ser- vomotor with larger capacities.	-
	Polarity detection was not performed correctly.	Check to see if electrical angle 2 (electrical angle from polarity origin) at any position is between ±10°.	Correct the settings for the polarity detection-related parameters.	-
Estimating the moment of inertia failed.	The acceleration rate is low and travel distance is short.	Check the Condition Setting Dialog Box used to perform moment of inertia estimation.	Increase the acceleration rate and travel distance.	_

<sup>\*</sup> Refer to the following manual for details.

Ω Σ-7-Series Σ-7S SERVOPACK with MECHATROLINK-II Communications References Product Manual (Manual No.: SIEP S800001 27)

# 3.3

# FT82 SERVOPACK with MECHATROLINK-III Communications References

# 3.3.1 Alarm Displays

If an error occurs in the SERVOPACK, an alarm number will be displayed on the panel display. However, if no alarm number appears on the panel display, this indicates a SERVOPACK system error. Replace the SERVOPACK.

If there is an alarm, the display will change in the following order.

Example: Alarm A.E60

Status Not lit. 
$$\longrightarrow$$
 Not lit.  $\longrightarrow$  Not lit.

# 3.3.2 List of Alarms

The list of alarms gives the alarm name, alarm meaning, alarm stopping method, and alarm reset possibility in order of the alarm numbers.

# **Servomotor Stopping Method for Alarms**

Refer to the following manual for information on the stopping method for alarms.

Σ-7-Series AC Servo Drive Σ-7S SERVOPACK with MECHATROLINK-III Communications References Product Manual (Manual No.: SIEP S800001 28)

# **Alarm Reset Possibility**

Yes: You can use an alarm reset to clear the alarm. However, this assumes that the cause of the alarm has been removed.

No: You cannot clear the alarm.

### **List of Alarms**

Alarm Number	Alarm Name	Alarm Meaning	Servo- motor Stop- ping Method	Alarm Reset Possi- ble?
A.020	Parameter Checksum Error	There is an error in the parameter data in the SERVOPACK.	Gr.1	No
A.021	Parameter Format Error	There is an error in the parameter data format in the SERVOPACK.	Gr.1	No
A.022	System Checksum Error	There is an error in the parameter data in the SERVOPACK.	Gr.1	No
A.024	System Alarm	An internal program error occurred in the SER-VOPACK.	Gr.1	No
A.025	System Alarm	An internal program error occurred in the SER-VOPACK.	Gr.1	No
A.030	Main Circuit Detector Error	There is an error in the detection data for the main circuit.	Gr.1	Yes
A.040	Parameter Setting Error	A parameter setting is outside of the setting range.	Gr.1	No

### 3.3.2 List of Alarms

Continued from previous page.

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Alarm Number	Alarm Name	Alarm Meaning	Servo- motor Stop- ping Method	Alarm Reset Possi- ble?
A.041	Encoder Output Pulse Setting Error	The setting of Pn212 (Encoder Output Pulses) or Pn281 (Encoder Output Resolution) is outside of the setting range or does not satisfy the setting conditions.	Gr.1	No
A.042	Parameter Combination Error	The combination of some parameters exceeds the setting range.	Gr.1	No
A.044	Semi-Closed/Fully-Closed Loop Control Parameter Setting Error	The settings of the Option Module and Pn002 = n.X□□□ (External Encoder Usage) do not match.	Gr.1	No
A.04A	Parameter Setting Error 2	There is an error in the bank members or bank data settings.	Gr.1	No
A.050	Combination Error	The capacities of the SERVOPACK and Servomotor do not match.	Gr.1	Yes
A.051	Unsupported Device Alarm	An unsupported device was connected.	Gr.1	No
A.0b0	Invalid Servo ON Com- mand Alarm	The SV_ON (Servo ON) command was sent from the host controller after a utility function that turns ON the Servomotor was executed.	Gr.1	Yes
A.100	Overcurrent Detected	An overcurrent flowed through the power transformer or the heat sink overheated.	Gr.1	No
A.101	Motor Overcurrent Detected	The current to the motor exceeded the allowable current.	Gr.1	No
A.300	Regeneration Error	There is an error related to regeneration.	Gr.1	Yes
A.320	Regenerative Overload	A regenerative overload occurred.	Gr.2	Yes
A.330	Main Circuit Power Supply Wiring Error	<ul> <li>The AC power supply input setting or DC power supply input setting is not correct.</li> <li>The power supply wiring is not correct.</li> </ul>	Gr.1	Yes
A.400	Overvoltage	The main circuit DC voltage is too high.	Gr.1	Yes
A.410	Undervoltage	The main circuit DC voltage is too low.	Gr.2	Yes
A.510	Overspeed	The motor exceeded the maximum speed.	Gr.1	Yes
A.511	Encoder Output Pulse Overspeed	The pulse output speed for the setting of Pn212 (Encoder Output Pulses) was exceeded.	Gr.1	Yes
A.520	Vibration Alarm	Abnormal oscillation was detected in the motor speed.	Gr.1	Yes
A.521	Autotuning Alarm	Vibration was detected during autotuning for the tuning-less function.	Gr.1	Yes
A.550	Maximum Speed Setting Error	The setting of Pn385 (Maximum Motor Speed) is greater than the maximum motor speed.	Gr.1	Yes
A.710	Instantaneous Overload	The Servomotor was operating for several seconds to several tens of seconds under a torque that largely exceeded the rating.	Gr.2	Yes
A.720	Continuous Overload	The Servomotor was operating continuously under a torque that exceeded the rating.	Gr.1	Yes
A.730 A.731	Dynamic Brake Overload	When the dynamic brake was applied, the rotational or linear kinetic energy exceeded the	Gr.1	Yes
A.740	Inrush Current Limiting	capacity of the dynamic brake resistor.  The main circuit power supply was frequently turned ON and OFF.	Gr.1	Yes
A.7A1	Resistor Overload Internal Temperature Error 1 (Control Board Tempera-	The surrounding temperature of the control PCB is abnormal.	Gr.2	Yes
	ture Error)			

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Continued from previous page.

Alarm Number	Alarm Name	Alarm Meaning	Servo- motor Stop- ping Method	Alarm Reset Possi- ble?
A.7A2	Internal Temperature Error 2 (Power Board Temperature Error)	The surrounding temperature of the power PCB is abnormal.	Gr.2	Yes
A.7A3	Internal Temperature Sensor Error	An error occurred in the temperature sensor circuit.	Gr.2	No
A.7Ab	SERVOPACK Built-in Fan Stopped	The fan inside the SERVOPACK stopped.	Gr.1	Yes
A.810	Encoder Backup Alarm	The power supplies to the encoder all failed and the position data was lost.	Gr.1	No
A.820	Encoder Checksum Alarm	There is an error in the checksum results for encoder memory.	Gr.1	No
A.830	Encoder Battery Alarm	The battery voltage was lower than the specified level after the control power supply was turned ON.	Gr.1	Yes
A.840	Encoder Data Alarm	There is an internal data error in the encoder.	Gr.1	No
A.850	Encoder Overspeed	The encoder was operating at high speed when the power was turned ON.	Gr.1	No
A.860	Encoder Overheated	The internal temperature of encoder is too high.	Gr.1	No
A.861	Motor Overheated	The internal temperature of motor is too high.	Gr.1	No
A.862	Overheat Alarm	The input voltage (temperature) for the overheat protection input (TH) signal exceeded the setting of Pn61B (Overheat Alarm Level).	Gr.1	Yes
A.8A0	External Encoder Error	An error occurred in the external encoder.	Gr.1	Yes
A.8A1	External Encoder Module Error	An error occurred in the Serial Converter Unit.	Gr.1	Yes
A.8A2	External Incremental Encoder Sensor Error	An error occurred in the external encoder.	Gr.1	Yes
A.8A3	External Absolute Encoder Position Error	An error occurred in the position data of the external encoder.	Gr.1	Yes
A.8A5	External Encoder Over- speed	An overspeed error occurred in the external encoder.	Gr.1	Yes
A.8A6	External Encoder Over- heated	An overheating error occurred in the external encoder.	Gr.1	Yes
A.b33	Current Detection Error 3	An error occurred in the current detection circuit.	Gr.1	No
A.b6A	MECHATROLINK Communications ASIC Error 1	ASIC error 1 occurred in MECHATROLINK communications.	Gr.1	No
A.b6b	MECHATROLINK Communications ASIC Error 2	ASIC error 2 occurred in MECHATROLINK communications.	Gr.2	No
A.bF0	System Alarm 0	Internal program error 0 occurred in the SERVO-PACK.	Gr.1	No
A.bF1	System Alarm 1	Internal program error 1 occurred in the SERVO-PACK.	Gr.1	No
A.bF2	System Alarm 2	Internal program error 2 occurred in the SERVO-PACK.	Gr.1	No
A.bF3	System Alarm 3	Internal program error 3 occurred in the SERVO-PACK.	Gr.1	No
A.bF4	System Alarm 4	Internal program error 4 occurred in the SERVO-PACK.	Gr.1	No
A.bF5	System Alarm 5	Internal program error 5 occurred in the SERVO-PACK.	Gr.1	No
A.bF6	System Alarm 6	Internal program error 6 occurred in the SERVO-PACK.	Gr.1	No ext page.

### 3.3.2 List of Alarms

Continued from previous page.

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Alarm Name	Alarm Meaning	Servo- motor Stop- ping Method	Alarm Reset Possi- ble?
System Alarm 7	Internal program error 7 occurred in the SERVO-PACK.	Gr.1	No
System Alarm 8	Internal program error 8 occurred in the SERVO-PACK.	Gr.1	No
Servomotor Out of Control	The Servomotor ran out of control.	Gr.1	Yes
Encoder Clear Error or Multiturn Limit Setting Error	The multiturn data for the absolute encoder was not correctly cleared or set.	Gr.1	No
Encoder Communications Error	Communications between the encoder and SER-VOPACK is not possible.	Gr.1	No
Encoder Communications Position Data Acceleration Rate Error	An error occurred in calculating the position data of the encoder.	Gr.1	No
Encoder Communications Timer Error	An error occurred in the communications timer between the encoder and SERVOPACK.	Gr.1	No
Encoder Parameter Error	The parameters in the encoder are corrupted.	Gr.1	No
Encoder Echoback Error	The contents of communications with the encoder are incorrect.	Gr.1	No
Multiturn Limit Disagree- ment	Different multiturn limits have been set in the encoder and the SERVOPACK.	Gr.1	No
Reception Failed Error in Feedback Option Module Communications	Receiving data from the Feedback Option Module failed.	Gr.1	No
Timer Stopped Error in Feedback Option Module Communications	An error occurred in the timer for communications with the Feedback Option Module.	Gr.1	No
Position Deviation Over- flow	The setting of Pn520 (Excessive Position Deviation Alarm Level) was exceeded by the position deviation.	Gr.1	Yes
Position Deviation Over- flow Alarm at Servo ON	The servo was turned ON after the position deviation exceeded the setting of Pn526 (Excessive Position Deviation Alarm Level at Servo ON) while the servo was OFF.	Gr.1	Yes
Position Deviation Over- flow Alarm for Speed Limit at Servo ON	If position deviation remains in the deviation counter, the setting of Pn529 or Pn584 (Speed Limit Level at Servo ON) limits the speed when the servo is turned ON. This alarm occurs if a position reference is input and the setting of Pn520 (Excessive Position Deviation Alarm Level) is exceeded before the limit is cleared.	Gr.2	Yes
Motor-Load Position Deviation Overflow	There was too much position deviation between the motor and load during fully-closed loop con- trol.	Gr.2	Yes
Position Data Overflow	The position feedback data exceeded ±1,879,048,192.	Gr.1	No
MECHATROLINK Internal Synchronization Error 1	A synchronization error occurred during MECHATROLINK communications with the SER-VOPACK.	Gr.1	Yes
MECHATROLINK Trans- mission Cycle Setting Error	The setting of the MECHATROLINK communications transmission cycle is not correct.	Gr.2	Yes
MECHATROLINK Communications Data Size Setting Error	The setting of the MECHATROLINK communications data size is not correct.	Gr.2	Yes
	System Alarm 7  System Alarm 8  Servomotor Out of Control Encoder Clear Error or Multiturn Limit Setting Error  Encoder Communications Error  Encoder Communications Position Data Acceleration Rate Error  Encoder Communications Timer Error  Encoder Parameter Error  Encoder Echoback Error  Multiturn Limit Disagreement  Reception Failed Error in Feedback Option Module Communications  Timer Stopped Error in Feedback Option Module Communications  Position Deviation Overflow  Position Deviation Overflow Alarm at Servo ON  Position Deviation Overflow Alarm for Speed Limit at Servo ON  Motor-Load Position Deviation Overflow Alarm for Speed Limit at Servo ON  Motor-Load Position Deviation Overflow Alarm for Speed Limit at Servo ON  Mechatrolink Internal Synchronization Error 1  MECHATROLINK Internal Synchronization Error 1  MECHATROLINK Communications Data Size Set-	System Alarm 7  Alarm Name  Alarm Meaning  Internal program error 7 occurred in the SERVO-PACK.  System Alarm 8  Internal program error 8 occurred in the SERVO-PACK.  Servomotor Out of Control  Encoder Clear Error or Multiturn Limit Setting Error  Encoder Communications Position Data Acceleration An error occurred in calculating the position data of the encoder and SERVOPACK is not possible.  Encoder Communications Position Data Acceleration An error occurred in calculating the position data of the encoder.  Encoder Communications Timer Error  Encoder Communications An error occurred in the communications timer between the encoder and SERVOPACK.  Encoder Parameter Error  Encoder Echoback Error  Multiturn Limit Disagreement  Multiturn Limit Disagreement  Enception Falled Error in Feedback Option Module Communications  Timer Stopped Error in Feedback Option Module Communications  Timer Stopped Error in Feedback Option Module Communications  Position Deviation Overflow  Position Deviation Overflow Alarm at Servo ON  The setting of Pn520 (Excessive Position Deviation Alarm Level) was exceeded by the position deviation Alarm Level at Servo ON) while the servo was OFF.  If position deviation remains in the deviation counter, the setting of Pn520 (Excessive Position Deviation Alarm Level) is exceeded before the limit is cleared.  Motor-Load Position Deviation Overflow was owned to be served on the setting of Pn520 (Excessive Position Deviation Alarm Level) is exceeded before the limit is cleared.  The rewas too much position deviation between the motor and load during fully-closed loop control.  The position feedback data exceeded the MECHATROLINK fransmission Cycle Setting  The setting of the MECHATROLINK communications data size is not correct.  The setting of the MECHATROLINK communications data size is not correct.	Alarm Name  Alarm Meaning  Servomotor Stopping Method  System Alarm 7  Internal program error 7 occurred in the SERVO-PACK.  System Alarm 8  Internal program error 8 occurred in the SERVO-PACK.  Servomotor Out of Control  The Servomotor ran out of control.  Gr.1  The multiturn data for the absolute encoder was not correctly cleared or set.  Encoder Communications  Error  Encoder Communications  Position Data Acceleration Rate Error  An error occurred in the communication timer between the encoder.  An error occurred in the communications timer between the encoder and SERVOPACK.  Gr.1  The parameter in the encoder are corrupted.  Gr.1  The parameters in the encoder are corrupted.  Gr.1  The contents of communications with the encoder are incorrect.  Multiturn Limit Disagreement  Feedback Option Module Communications  Timer Stopped Error in Feedback Option Module Communications  Timer Stopped Error in Feedback Option Module Communications  Position Deviation Overflow  Position Deviation Overflow Alarm at Servo ON  The setting of Ph520 (Excessive Position Deviation Alarm Level) was exceeded by the position deviation exceeded the setting of Ph526 (Excessive Position Deviation Alarm Level) was exceeded by the position deviation exceeded the setting of Ph526 (Excessive Position Deviation Alarm Level) was exceeded by the position deviation exceeded the setting of Ph526 (Excessive Position Deviation Alarm Level) was exceeded by the position deviation exceeded the setting of Ph526 (Excessive Position Deviation Alarm Level) at Servo ON) while the servo was OFF.  It position Deviation Deviation Deviation Deviation Deviation Deviation Deviation Every at Servo ON) initis the speed when the servo is turned ON. This alarm occurs if a position effective is in the science of Ph526 (Excessive Position Deviation Alarm Level) is exceeded before the limit is cleared.  There was too much position deviation between the motor and load during fully-closed loop control.  Mechatrollink Communications of the Mechatrollink communications d

Alarm Number	Alarm Name	Alarm Meaning	Servo- motor Stop- ping Method	Alarm Reset Possi- ble?
A.E42	MECHATROLINK Station Address Setting Error	The setting of the MECHATROLINK station address is not correct.	Gr.2	No
A.E50*	MECHATROLINK Syn- chronization Error	A synchronization error occurred during MECHATROLINK communications.	Gr.2	Yes
A.E51	MECHATROLINK Syn- chronization Failed	Synchronization failed during MECHATROLINK communications.	Gr.2	Yes
A.E60*	Reception Error in MECHATROLINK Communications	Communications errors occurred continuously during MECHATROLINK communications.	Gr.2	Yes
A.E61	Synchronization Interval Error in MECHATROLINK Transmission Cycle	An error occurred in the transmission cycle during MECHATROLINK communications.	Gr.2	Yes
A.E63	MECHATROLINK Syn- chronization Frame Not Received	Synchronization frames were continuously not received during MECHATROLINK communications.	Gr.2	Yes
A.E71	Safety Option Module Detection Failure	Detection of the Safety Option Module failed.	Gr.1	No
A.E72	Feedback Option Module Detection Failure	Detection of the Feedback Option Module failed.	Gr.1	No
A.E74	Unsupported Safety Option Module	An unsupported Safety Option Module was connected.	Gr.1	No
A.Eb1	Safety Function Signal Input Timing Error	An error occurred in the input timing of the safety function signal.	Gr.1	No
A.EC8	Gate Drive Error 1	An error occurred in the gate drive circuit.	Gr.1	No
A.EC9	Gate Drive Error 2	An error occurred in the gate drive circuit.	Gr.1	No
A.Ed1	Command Execution Timeout	A timeout error occurred for a MECHATROLINK command.	Gr.2	Yes
A.F10	Power Supply Line Open Phase	The voltage was low for more than one second for phase R, S, or T when the main power supply was ON.	Gr.2	Yes
FL-1*				
FL-2*				
FL-3*	System Alarm	An internal program error occurred in the SER-	_	No
FL-4*	System Adding	VOPACK.		140
FL-5*				
FL-6*				
CPF00	Digital Operator Communications Error 1	Communications were not possible between the Digital Operator (model: JUSP-OP05A-1-E) and	_	No
CPF01	Digital Operator Communications Error 2	the SERVOPACK (e.g., a CPU error occurred).		INO

<sup>\*</sup> These alarms are not stored in the alarm history. They are only displayed on the panel display.

Note: The A.Eb0, A.Eb2 to A.Eb9, and A.EC0 to A.EC2 alarms can occur when a Safety Module is connected. Refer to the following manual for details.

AC Servo Drive Σ-V-Series/Σ-V-Series for Large-Capacity Models/Σ-7-Series User's Manual Safety Module (Manual No.: SIEP C720829 06)

# 3.3.3 Troubleshooting Alarms

The causes of and corrections for the alarms are given in the following table. Contact your Yaskawa representative if you cannot solve a problem with the correction given in the table.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage suddenly dropped.	Measure the power supply voltage.	Set the power supply voltage within the specified range, and initialize the parameter settings.	*1
	The power supply was shut OFF while writing parameter settings.	Check the timing of shutting OFF the power supply.	Initialize the parameter settings and then set the parameters again.	
A.020: Parameter	The number of times that parameters were written exceeded the limit.	Check to see if the parameters were frequently changed from the host controller.	The SERVOPACK may be faulty. Replace the SER-VOPACK. Reconsider the method for writing the parameters.	-
Checksum Error (There is an error in the parameter data in the SER- VOPACK.)	A malfunction was caused by noise from the AC power supply, ground, static electricity, or other source.	Turn the power supply to the SERVOPACK OFF and ON again. If the alarm still occurs, noise may be the cause.	Implement countermea- sures against noise.	*1
	Gas, water drops, or cutting oil entered the SERVOPACK and caused failure of the internal components.	Check the installation conditions.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	A failure occurred in the SERVOPACK.	Turn the power supply to the SERVOPACK OFF and ON again. If the alarm still occurs, the SERVOPACK may have failed.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.021: Parameter Format Error (There is an error in the parameter data format in the	The software version of the SERVOPACK that caused the alarm is older than the software version of the parameters specified to write.	Read the product information to see if the software versions are the same. If they are different, it could be the cause of the alarm.	Write the parameters from another SERVOPACK with the same model and the same software version, and then turn the power OFF and ON again.	*1
SERVOPACK.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
	The power supply voltage suddenly dropped.	Measure the power supply voltage.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.022: System Check- sum Error (There is an error in the parameter data in the SER- VOPACK.)	The power supply was shut OFF while setting a utility function.	Check the timing of shutting OFF the power supply.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	A failure occurred in the SERVOPACK.	Turn the power supply to the SERVOPACK OFF and ON again. If the alarm still occurs, the SERVOPACK may have failed.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.024: System Alarm (An internal pro- gram error occurred in the SERVOPACK.)	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.025: System Alarm (An internal pro- gram error occurred in the SERVOPACK.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
A.030: Main Circuit Detector Error	The jumper between the DC Reactor terminals (⊝1 and ⊝2) was removed or there is faulty contact.		Correct the wiring	
Detector Entire	The cable between the DC Reactor and SERVOPACK is not wired correctly or there is a faulty contact.	_	between the DC Reactor terminals.	-
	The SERVOPACK and Servomotor capacities do not match each other.	Check the combination of the SERVOPACK and Servomotor capacities.	Select a proper combination of SERVOPACK and Servomotor capacities.	*1
A.040: Parameter Set-	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
ting Error (A parameter setting is outside of the setting	A parameter setting is outside of the setting range.	Check the setting ranges of the parameters that have been changed.	Set the parameters to values within the setting ranges.	_
range.)	The electronic gear ratio is outside of the setting range.	Check the electronic gear ratio. The ratio must be within the following range: 0.001 < (Pn20E/Pn210) < 64,000.	Set the electronic gear ratio in the following range: 0.001 < (Pn20E/Pn210) < 64,000.	*1
A.041: Encoder Output Pulse Setting Error	The setting of Pn212 (Encoder Output Pulses) or Pn281 (Encoder Output Resolution) is outside of the setting range or does not satisfy the setting conditions.	Check the setting of Pn212 or Pn281.	Set Pn212 or Pn281 to an appropriate value.	*1

#### 3.3.3 Troubleshooting Alarms

Continued from previous page.

Alarm Number:	D 111 C	0 "	Continued from pre	
Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The speed of program jogging went below the setting range when the electronic gear ratio (Pn20E/Pn210) or the Servomotor was changed.	Check to see if the detection conditions*2 are satisfied.	Decrease the setting of the electronic gear ratio (Pn20E/Pn210).	*1
A.042: Parameter Combination Error	The speed of program jogging went below the setting range when Pn533 or Pn585 (Program Jogging Speed) was changed.	Check to see if the detection conditions*2 are satisfied.	Increase the setting of Pn533 or Pn585.	*1
	The movement speed of advanced autotuning went below the setting range when the electronic gear ratio (Pn20E/ Pn210) or the Servomotor was changed.	Check to see if the detection conditions*3 are satisfied.	Decrease the setting of the electronic gear ratio (Pn20E/Pn210).	*1
A.044: Semi-Closed/ Fully-Closed Loop Control Parameter Setting Error	The setting of the Fully-Closed Module does not match the setting of Pn002 = n.X□□□ (External Encoder Usage).	Check the setting of Pn002 = n.X□□□.	Make sure that the setting of the Fully-closed Module agrees with the setting of Pn002 = n.X□□□.	*1
A.04A: Parameter Set-	For 4-byte parameter bank members, there are two consecutive members with nothing registered.	-	Change the number of bytes for bank members to an appropriate value.	-
ting Error 2	The total amount of bank data exceeds 64 (Pn900 × Pn901 > 64).	-	Reduce the total amount of bank data to 64 or less.	_
A.050: Combination Error	The SERVOPACK and Servomotor capacities do not match each other.	Confirm that the follow- ing condition is met: 1/4 ≤ (Servomotor capacity/SERVOPACK capacity) ≤ 4	Select a proper combination of the SERVOPACK and Servomotor capacities.	*1
(The capacities of the SERVOPACK and Servomotor	A failure occurred in the encoder.	Replace the encoder and check to see if the alarm still occurs.	Replace the Servomotor or encoder.	-
do not match.)	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.051: Unsupported Device Alarm	An unsupported Serial Converter Unit or encoder (e.g., an external encoder) is connected to the SERVOPACK.	Check the product combination specifications.	Change to a correct combination of models.	-
A.0b0: Invalid Servo ON Command Alarm	The SV_ON (Servo ON) command was sent from the host controller after a utility function that turns ON the Servomotor was executed.	_	Turn the power supply to the SERVOPACK OFF and ON again. Or, execute a software reset.	*1

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The Main Circuit Cable is not wired correctly or there is faulty contact.	Check the wiring.	Correct the wiring.	
	There is a short-circuit or ground fault in a Main Circuit Cable.	Check for short-circuits across Servomotor phases U, V, and W, or between the ground and Servomotor phases U, V, and W.	The cable may be short-circuited. Replace the cable.	
	There is a short-circuit or ground fault inside the Servomotor.	Check for short-circuits across Servomotor phases U, V, and W, or between the ground and Servomotor phases U, V, or W.	The Servomotor may be faulty. Replace the Servomotor.	*1
A.100: Overcurrent	There is a short-circuit or ground fault inside the SERVOPACK.	Check for short-circuits across the Servomotor connection terminals U, V, and W on the SER-VOPACK, or between the ground and terminals U, V, or W.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	
Detected (An overcurrent flowed through the power trans-	The regenerative resistor is not wired correctly or there is faulty contact.	Check the wiring.	Correct the wiring.	*1
former or the heat sink overheated.)	The dynamic brake (DB, emergency stop executed from the SERVOPACK) was frequently activated, or a DB overload alarm occurred.	Check the power consumed by the DB resistor to see how frequently the DB is being used. Or, check the alarm display to see if a DB overload alarm (A.730 or A.731) has occurred.	Change the SERVOPACK model, operating methods, or the mechanisms so that the dynamic brake does not need to be used so frequently.	-
	The regenerative processing capacity was exceeded.	Check the regenerative load ratio in the SigmaWin+ Motion Monitor Tab Page to see how frequently the regenerative resistor is being used.	Recheck the operating conditions and load.	*4
	The SERVOPACK regenerative resistance is too small.	Check the regenerative load ratio in the SigmaWin+ Motion Monitor Tab Page to see how frequently the regenerative resistor is being used.	Change the regenerative resistance to a value larger than the SERVO-PACK minimum allowable resistance.	

### 3.3.3 Troubleshooting Alarms

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.100: Overcurrent Detected (An overcurrent flowed through the power trans- former or the heat	A heavy load was applied while the Servomotor was stopped or running at a low speed.	Check to see if the operating conditions exceed Servo Drive specifications.	Reduce the load applied to the Servomotor. Or, increase the operating speed.	-
	A malfunction was caused by noise.	Improve the noise environment, e.g. by improving the wiring or installation conditions, and check to see if the alarm still occurs.	Implement countermeasures against noise, such as correct wiring of the FG. Use an FG wire size equivalent to the SERVO-PACK's main circuit wire size.	-
sink overheated.)	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The Main Circuit Cable is not wired correctly or there is faulty contact.	Check the wiring.	Correct the wiring.	
	There is a short-circuit or ground fault in a Main Circuit Cable.	Check for short-circuits across cable phases U, V, and W, or between the ground and cable phases U, V, and W.	The cable may be short-circuited. Replace the cable.	
	There is a short-circuit or ground fault inside the Servomotor.	Check for short-circuits across Servomotor phases U, V, and W, or between the ground and Servomotor phases U, V, or W.	The Servomotor may be faulty. Replace the Servomotor.	*1
A.101:  Motor Overcurrent Detected (The current to the motor exceeded the	There is a short-circuit or ground fault inside the SERVOPACK.	Check for short-circuits across the Servomotor connection terminals U, V, and W on the SER-VOPACK, or between the ground and terminals U, V, or W.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	
allowable cur- rent.)	A heavy load was applied while the Ser- vomotor was stopped or running at a low speed.	Check to see if the operating conditions exceed Servo Drive specifications.	Reduce the load applied to the Servomotor. Or, increase the operating speed.	-
	A malfunction was caused by noise.	Improve the noise envi- ronment, e.g. by improving the wiring or installation conditions, and check to see if the alarm still occurs.	Implement countermeasures against noise, such as correct wiring of the FG. Use an FG wire size equivalent to the SERVO-PACK's main circuit wire size.	-
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	Pn600 (Regenerative Resistor Capacity) is not set to 0 and an External Regenerative Resistor is not con- nected to one of the following SERVO- PACKs: SGD7S-2R8A or -2R8F.	Check it see if an External Regenerative Resistor is connected and check the setting of Pn600.	Connect an External Regenerative Resistor, or set Pn600 (Regenerative Resistor Capacity) to 0 (setting unit: ×10 W) if no Regenerative Resistor is required.	*1
A.300:	The jumper between the regenerative resistor terminals (B2 and B3) was removed from one of the following SERVO-PACKs: SGD7S-120A.	Check to see if the jumper is connected between power supply terminals B2 and B3.  Note: If an External Regenerative Resistor or Regenerative Resistor Unit is connected while the jumper remains connected between B2 and B3, the SERVO-PACK may be damaged.	Correctly connect a jumper.	*1
Regeneration Error	The External Regenerative Resistor or Regenerative Resistor Unit is not wired correctly, or was removed or disconnected.	Check the wiring of the External Regenerative Resistor or Regenerative Resistor Unit.  Note: If an External Regenerative Resistor or Regenerative Resistor or Regenerative Resistor Unit is connected while the jumper remains connected between B2 and B3, the SERVO-PACK may be damaged.	Correct the wiring of the External Regenerative Resistor or Regenerative Resistor Unit.	
	A failure occurred in the SERVOPACK.	_	While the main circuit power supply is OFF, turn the control power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

#### 3.3.3 Troubleshooting Alarms

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
	The external regenerative resistance value or regenerative resistor capacity is too small, or there has been a continuous regeneration state.	Check the operating conditions or the capacity using the SigmaJunmaSize+ Capacity Selection Software or other means.	Change the regenerative resistance value or capacity. Reconsider the operating conditions using the SigmaJunmaSize+ Capacity Selection Software or other means.	*4
	There was a continuous regeneration state because a negative load was continuously applied.	Check the load applied to the Servomotor during operation.	Reconsider the system including the servo, machine, and operating conditions.	-
A.320: Regenerative Overload	The setting of Pn600 (Regenerative Resistor Capacity) is smaller than the capacity of the External Regenerative Resistor.	Check it see if a Regenerative Resistor is connected and check the setting of Pn600.	Correct the setting of Pn600.	*1
	The setting of Pn603 (Regenerative Resistor Capacity) is smaller than the capacity of the External Regenerative Resistor.	Check to see if a Regenerative Resistor is connected and check the setting of Pn603.	Correct the setting of Pn603.	*1
	The external regenerative resistance is too high.	Check the regenerative resistance.	Change the regenerative resistance to a correct value or use an External Regenerative Resistor of an appropriate capacity.	*4
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_

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Alarm Number:	Describle Occurs	Confineration	Continued from pro	, ,
Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The regenerative resistor was disconnected when the SERVOPACK power supply voltage was high.	Measure the resistance of the regenerative resistor using a measuring instrument.	If you are using the regenerative resistor built into the SERVOPACK, replace the SERVOPACK.  If you are using an External Regenerative Resistor, replace the External Regenerative Resistor.	-
A.330: Main Circuit Power Supply	DC power was supplied when an AC power supply input was specified in the settings.	Check the power supply to see if it is a DC power supply.	Correct the power supply setting to match the actual power supply.	*1
Wiring Error (Detected when the main circuit power supply is turned ON.)	AC power was supplied when a DC power supply input was specified in the settings.	Check the power supply to see if it is an AC power supply.	Correct the power supply setting to match the actual power supply.	
	Pn600 (Regenerative Resistor Capacity) is not set to 0 and an External Regenerative Resistor is not con- nected to an SGD7S- 2R8A SERVOPACKs.	Check it see if an External Regenerative Resistor is connected and check the setting of Pn600.	Connect an External Regenerative Resistor, or if an External Regenera- tive Resistor is not required, set Pn600 to 0.	*1
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the AC/DC power supply voltage within the specified range.	-
	The power supply is not stable or was influenced by a lightning surge.	Measure the power supply voltage.	Improve the power supply conditions, install a surge absorber, and then turn the power supply OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_
A.400: Overvoltage (Detected in the	The voltage for AC power supply was too high during acceleration or deceleration.	Check the power supply voltage and the speed and torque during operation.	Set the AC power supply voltage within the specified range.	-
main circuit power supply section of the SERVOPACK.)	The external regenerative resistance is too high for the operating conditions.	Check the operating conditions and the regenerative resistance.	Select a regenerative resistance value that is appropriate for the operating conditions and load.	*4
	The moment of inertia ratio or mass ratio exceeded the allowable value.	Check to see if the moment of inertia ratio or mass ratio is within the allowable range.	Increase the deceleration time, or reduce the load.	_
	A failure occurred in the SERVOPACK.	_	While the main circuit power supply is OFF, turn the control power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number:			Continued from pre	
Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage went below the specified range.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	_
	The power supply voltage dropped during operation.	Measure the power supply voltage.	Increase the power supply capacity.	_
	A momentary power interruption occurred.	Measure the power supply voltage.	If you have changed the setting of Pn509 (Momentary Power Interruption Hold Time), decrease the setting.	*1
A.410:	The SERVOPACK fuse is blown out.	Check the power supply wiring.	Correct the power supply wiring and replace the SERVOPACK.	_
Undervoltage (Detected in the main circuit power supply section of the	The SERVOPACK fuse is blown out.	-	Replace the SERVO- PACK and connect a reactor to the DC reactor terminals (⊝1 and ⊝2) on the SERVOPACK.	-
SERVOPACK.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
	The jumper between the DC Reactor terminals (⊝1 and ⊝2) was removed or there is faulty contact.		Correct the wiring	
	The cable between the DC Reactor and SERVOPACK is not wired correctly or there is a faulty contact.	_	between the DC Reactor terminals.	_
	The order of phases U, V, and W in the motor wiring is not correct.	Check the wiring of the Servomotor.	Make sure that the Servo- motor is correctly wired.	-
A.510: Overspeed	A reference value that exceeded the over- speed detection level was input.	Check the input reference.	Reduce the reference value. Or, adjust the gain.	
(The motor exceeded the maximum speed.)	The motor exceeded the maximum speed.	Check the waveform of the motor speed.	Reduce the speed reference input gain and adjust the servo gain. Or, reconsider the operating conditions.	_
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
A.511:	The encoder output pulse frequency exceeded the limit.	Check the encoder output pulse setting.	Decrease the setting of Pn212 (Encoder Output Pulses) or Pn281 (Encoder Output Resolu- tion).	*1
Encoder Output Pulse Overspeed	The encoder output pulse frequency exceeded the limit because the motor speed was too high.	Check the encoder output pulse setting and the motor speed.	Reduce the motor speed.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	Abnormal oscillation was detected in the motor speed.	Check for abnormal motor noise, and check the speed and torque waveforms during operation.	Reduce the motor speed. Or, reduce the setting of Pn100 (Speed Loop Gain).	*1
A.520: Vibration Alarm	The setting of Pn103 (Moment of Inertia Ratio) is greater than the actual moment of inertia or was greatly changed.	Check the moment of inertia ratio or mass ratio.	Set Pn103 (Moment of Inertia Ratio) to an appropriate value.	*1
	The vibration detection level (Pn312 or Pn384) is not suitable.	Check that the vibration detection level (Pn312 or Pn384) is suitable.	Set a suitable vibration detection level (Pn312 or Pn384).	*1
A.521: Autotuning Alarm (Vibration was detected while executing the custom tuning, Easy FFT, or the tuning-less func- tion.)	The Servomotor vibrated considerably while performing the tuning-less function.	Check the waveform of the motor speed.	Reduce the load so that the moment of inertia ratio is within the allowable value. Or increase the load level or reduce the rigidity level in the tuning- less level settings.	*1
	The Servomotor vibrated considerably while performing custom tuning or Easy FFT.	Check the waveform of the motor speed.	Check the operating procedure of corresponding function and implement corrections.	*1
A.550: Maximum Speed Setting Error	The setting of Pn385 (Maximum Motor Speed) is greater than the maximum speed.	Check the setting of Pn385, and the upper limits of the maximum motor speed setting and the encoder output resolution setting.	Set Pn385 to a value that does not exceed the maximum motor speed.	*1
	The wiring is not correct or there is a faulty contact in the motor or encoder wiring.	Check the wiring.	Make sure that the Servo- motor and encoder are correctly wired.	*1
	Operation was performed that exceeded the overload protection characteristics.	Check the motor over- load characteristics and Run command.	Reconsider the load and operating conditions. Or, increase the motor capacity.	_
A.710: Instantaneous Overload A.720: Continuous Overload	An excessive load was applied during operation because the Servomotor was not driven due to mechanical problems.	Check the operation reference and motor speed.	Correct the mechanical problem.	-
	Operation was per- formed with a load applied to the shaft of the servomotor that exceeded the allow- able value.	Check the condition of the machine to deter- mine if a load was applied to the shaft of the servomotor that exceeded the allowable value.	Correct the condition of the machine so that the load on the shaft during servomotor operation does not exceed the allowable value.	_
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
4.700	The Servomotor was rotated by an external force.	Check the operation status.	Implement measures to ensure that the motor will not be rotated by an external force.	-
A.730 and A.731: Dynamic Brake Overload (An excessive power consumption by the dynamic brake was detected.)	When the Servomotor was stopped with the dynamic brake, the rotational or linear kinetic energy exceeded the capacity of the dynamic brake resistor.	Check the power consumed by the DB resistor to see how frequently the DB is being used.	Reconsider the following: Reduce the Servomotor command speed. Decrease the moment of inertia ratio or mass ratio. Reduce the frequency of stopping with the dynamic brake.	-
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.740: Inrush Current Limiting Resistor Overload (The main circuit power supply	The allowable frequency of the inrush current limiting resistor was exceeded when the main circuit power supply was turned ON and OFF.	-	Reduce the frequency of turning the main circuit power supply ON and OFF.	-
was frequently turned ON and OFF.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVO-PACK installation conditions.	*1
A 7A1.	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	_
A.7A1: Internal Temperature Error 1 (Control Board Temperature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVOPACK installation conditions.	Install the SERVOPACK according to specifications.	*1
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVO-PACK installation conditions.	*1
A 740.	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
A.7A2: Internal Tempera- ture Error 2 (Power Board Temperature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVOPACK installation conditions.	Install the SERVOPACK according to specifications.	*1
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.7A3: Internal Temperature Sensor Error (An error occurred in the temperature sensor circuit.)	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.7Ab: SERVOPACK Built-in Fan Stopped	The fan inside the SERVOPACK stopped.	Check for foreign matter inside the SERVOPACK.	Remove foreign matter from the SERVOPACK. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	The power to the absolute encoder was turned ON for the first time.	Check to see if the power supply was turned ON for the first time.	Set up the encoder.	
A.810: Encoder Backup Alarm (Detected at the encoder, but only when an absolute encoder is used.)	The Encoder Cable was disconnected and then connected again.	Check to see if the power supply was turned ON for the first time.	Check the encoder connection and set up the encoder.	*1
	Power is not being supplied both from the control power supply (+5 V) from the SERVOPACK and from the battery power supply.	Check the encoder connector battery and the connector status.	Replace the battery or implement similar measures to supply power to the encoder, and set up the encoder.	
	A failure occurred in the absolute encoder.	_	If the alarm still occurs after setting up the encoder again, replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction Correction	Reference
A.820: Encoder Check- sum Alarm (Detected at the encoder.)	A failure occurred in the encoder.	_	■ When Using an Absolute Encoder Set up the encoder again. If the alarm still occurs, the Servomotor may be faulty. Replace the Servomotor. ■ When Using a Singleturn Absolute Encoder or Incremental Encoder The Servomotor may be faulty. Replace the Servomotor.	*1
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.830: Encoder Battery	The battery connection is faulty or a battery is not connected.	Check the battery connection.	Correct the battery connection.	*1
Alarm (The absolute encoder battery voltage was lower	The battery voltage is lower than the specified value (2.7 V).	Measure the battery voltage.	Replace the battery.	*1
than the speci- fied level.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.840: Encoder Data	The encoder malfunctioned.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
Alarm (Detected at the encoder.)	The encoder malfunctioned due to noise.	_	Correct the wiring around the encoder by separating the Encoder Cable from the Servomotor Main Circuit Cable or by grounding the encoder.	-
A.850: Encoder Overspeed (Detected at the encoder when the control power supply is turned	The Servomotor speed was 200 min <sup>-1</sup> or higher when the control power supply was turned ON.	Check the motor speed when the power supply is turned ON.	Reduce the Servomotor speed to a value less than 200 min <sup>-1</sup> , and turn ON the control power supply.	-
	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
ON.)	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding air temperature around the Servomotor is too high.	Measure the surrounding air temperature around the Servomotor.	Reduce the surrounding air temperature of the Servomotor to 40°C or less.	-
A.860:	The Servomotor load is greater than the rated load.	Use the accumulated load ratio to check the load.	Operate the Servo Drive so that the motor load remains within the specified range.	*1
Encoder Over- heated (Detected at the encoder.)	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The surrounding temperature around the Servomotor is too high.	Measure the surrounding temperature around the Servomotor.	Reduce the surrounding air temperature of the Servomotor to 40° or less.	_
	The motor load is greater than the rated load.	Check the load with the accumulated load ratio on the Motion Monitor Tab Page on the SigmaWin+.	Operate the Servo Drive so that the motor load remains within the specified range.	*1
A.861: Motor Over- heated	A failure occurred in the Serial Converter Unit.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Serial Con- verter Unit may be faulty. Replace the Serial Con- verter Unit.	_
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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A1 1.	Continued from previous page.			
Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat.	Lower the surrounding temperature by improving the installation conditions of the machine.	-
	The overheat protection input signal line is disconnected or short-circuited.	Check the input voltage with the overheat protection input information on the Motion Monitor Tab Page on the SigmaWin+.	Repair the line for the overheat protection input signal.	-
A.862: Overheat Alarm	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
	Operation was performed under an excessive load.	Use the accumulated load ratio to check the load during operation.	Reconsider the load and operating conditions.	_
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SERVOPACK.	_
	The sensor attached to the machine is faulty.	_	The sensor attached to the machine may be faulty. Repair the sensor attached to the machine.	-
A.8A0: External Encoder Error	Setting the origin of the absolute linear encoder failed because the motor moved.	Before you set the origin, use the fully-closed feedback pulse counter to confirm that the motor is not moving.	The motor must be stopped while setting the origin position.	*1
	A failure occurred in the external encoder.	_	Replace the external encoder.	_
A.8A1:	A failure occurred in the external encoder.	-	Replace the external encoder.	_
External Encoder Module Error	A failure occurred in the Serial Converter Unit.	_	Replace the Serial Converter Unit.	-
A.8A2: External Incre- mental Encoder Sensor Error	A failure occurred in the external encoder.	_	Replace the external encoder.	_
A.8A3: External Absolute Encoder Position Error	A failure occurred in the external absolute encoder.	-	The external absolute encoder may be faulty. Refer to the encoder manufacturer's instruction manual for corrections.	-
A.8A5: External Encoder Overspeed	An overspeed error was detected in the external encoder.	Check the maximum speed of the external encoder.	Keep the external encoder below its maximum speed.	_
A.8A6: External Encoder Overheated	An overheating error was detected in the external encoder.	_	Replace the external encoder.	_
A.b33: Current Detection Error 3	A failure occurred in the current detection circuit.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

Confirmation

Alarm Number:

Alarm Name

**MECHATROLINK** 

Communications

**MECHATROLINK** 

Communications

ASIC Error 2

ASIC Error 1

A.b6A:

A.b6b:

A.bF0:

A.bF1:

A.bF2:

A.bF3:

A.bF4:

A.bF5:

System Alarm 0

System Alarm 1

System Alarm 2

System Alarm 3

System Alarm 4

System Alarm 5

Possible Cause

There is a fault in the

communications sec-

**SERVOPACK** 

A malfunction

occurred in the

**MECHATROLINK** 

tion due to noise.

communications sec-

There is a fault in the

communications sec-

A failure occurred in

A failure occurred in the SERVOPACK.

A failure occurred in

A failure occurred in

A failure occurred in

A failure occurred in

the SERVOPACK.

the SERVOPACK.

the SERVOPACK.

the SERVOPACK.

the SERVOPACK.

**SERVOPACK** 

tion.

**MECHATROLINK** 

tion.

**MECHATROLINK** 

Reference

Continued from previous page.

Correction

Turn the power supply to

the SERVOPACK OFF and

ON again. If an alarm still

occurs, the SERVOPACK

may be faulty. Replace the

Implement the following countermeasures against

the MECHATROLINK

Turn the power supply to

the SERVOPACK OFF and

ON again. If an alarm still

occurs, the SERVOPACK

may be faulty. Replace the

Communications Cable.

SERVOPACK.

· Check the

FG wiring.

SERVOPACK.

noise.

MECHATROLINK Communications Cable and Attach a ferrite core to

SERVOPACK. Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the

may be faulty. Replace the SERVOPACK. Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK

Turn the power supply to the SERVOPACK OFF and

ON again. If an alarm still

occurs, the SERVOPACK

may be faulty. Replace the SERVOPACK. Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still

occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.

Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK. Turn the power supply to the SERVOPACK OFF and

ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.bF6: System Alarm 6	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF7: System Alarm 7	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF8: System Alarm 8	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The order of phases U, V, and W in the motor wiring is not correct.	Check the Servomotor wiring.	Make sure that the Servo- motor is correctly wired.	-
A.C10: Servomotor Out of Control (Detected when the servo is	A failure occurred in the encoder.	_	If the motor wiring is correct and an alarm still occurs after turning the power supply OFF and ON again, the Servomotor may be faulty. Replace the Servomotor.	-
turned ON.)	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_
A.C54: Polarity Detection Failure 2	An external force was applied to the Servomotor.	_	Increase the setting of Pn495 (Polarity Detection Confirmation Force Reference). Increase the setting of Pn498 (Polarity Detection Allowable Error Range). Increasing the allowable error will also increase the motor temperature.	-
A.C80: Encoder Clear	A failure occurred in the encoder.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
Error or Multiturn Limit Setting Error	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

Alarm Number:			Continued from pro	evious page
Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	There is a faulty contact in the connector or the connector is not wired correctly for the encoder.	Check the condition of the encoder connector.	Reconnect the encoder connector and check the encoder wiring.	*1
	There is a cable disconnection or short-circuit in the encoder. Or, the cable impedance is outside the specified values.	Check the condition of the Encoder Cable.	Use the Encoder Cable within the specified specifications.	-
A.C90: Encoder Communications Error	One of the following has occurred: corrosion caused by improper temperature, humidity, or gas, a short-circuit caused by entry of water drops or cutting oil, or faulty contact in connector caused by vibration.	Check the operating environment.	Improve the operating environmental, and replace the cable. If the alarm still occurs, replace the SERVOPACK.	*1
	A malfunction was caused by noise.	-	Correct the wiring around the encoder by separating the Encoder Cable from the Servomotor Main Circuit Cable or by grounding the encoder.	*1
	A failure occurred in the SERVOPACK.	_	Connect the Servomotor to another SERVOPACK, and turn ON the control power supply. If no alarm occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	A failure occurred in the encoder.	_	Connect the Servomotor to another SERVOPACK, and turn ON the control power supply. If the alarm occurs, the Servomotor may be faulty. Replace the Servomotor.	_
	Noise entered on the signal lines because the Encoder Cable is bent or the sheath is damaged.	Check the condition of the Encoder Cable and connectors.	Check the Encoder Cable to see if it is installed correctly.	*1
A.C91: Encoder Communications Position Data Acceleration Rate Error	The Encoder Cable is bundled with a high- current line or installed near a high- current line.	Check the installation condition of the Encoder Cable.	Confirm that there is no surge voltage on the Encoder Cable.	-
	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Check the installation condition of the Encoder Cable.	Properly ground the machine to separate it from the FG of the encoder.	-

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	Noise entered on the signal line from the encoder.	_	Implement countermeasures against noise for the encoder wiring.	*1
	Excessive vibration or shock was applied to the encoder.	Check the operating conditions.	Reduce machine vibration. Correctly install the Servomotor.	-
A.C92: Encoder Communications Timer Error	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.CA0: Encoder Parameter Error	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The encoder is wired incorrectly or there is faulty contact.	Check the wiring of the encoder.	Make sure that the encoder is correctly wired.	*1
	The specifications of the Encoder Cable are not correct and noise entered on it.	_	Use a shielded twisted- pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm <sup>2</sup> .	-
	The Encoder Cable is too long and noise entered on it.	_	Rotary Servomotors: The Encoder Cable wiring distance must be 50 m max.	-
A.Cb0: Encoder Echo-	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Check the condition of the Encoder Cable and connectors.	Properly ground the machine to separate it from the FG of the encoder.	-
back Error	Excessive vibration or shock was applied to the encoder.	Check the operating conditions.	Reduce machine vibration. Correctly install the Servomotor.	-
	A failure occurred in the encoder.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	When using a Direct Drive Servomotor, the setting of Pn205 (Mul- titurn Limit Setting) does not agree with the encoder.	Check the setting of Pn205.	Correct the setting of Pn205 (0 to 65,535).	*1
A.CC0: Multiturn Limit Disagreement	The multiturn limit of the encoder is different from that of the SERVOPACK. Or, the multiturn limit of the SERVOPACK has been changed.	Check the setting of Pn205 in the SERVO-PACK.	Change the setting if the alarm occurs.	*1
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The cable between the Serial Converter Unit and SERVOPACK is not wired correctly or there is a faulty contact.	Check the wiring of the external encoder.	Correctly wire the cable between the Serial Converter Unit and SERVO-PACK.	*1
A.CF1: Reception Failed Error in Feed- back Option	A specified cable is not being used between Serial Con- verter Unit and SER- VOPACK.	Check the wiring specifications of the external encoder.	Use a specified cable.	-
Module Communications	The cable between the Serial Converter Unit and SERVOPACK is too long.	Measure the length of the cable that connects the Serial Converter Unit.	The length of the cable between the Serial Converter Unit and SERVO-PACK must be 20 m or less.	-
	The sheath on cable between the Serial Converter Unit and SERVOPACK is broken.	Check the cable that connects the Serial Converter Unit.	Replace the cable between the Serial Converter Unit and SERVO-PACK.	-
A.CF2: Timer Stopped Error in Feed-	Noise entered the cable between the Serial Converter Unit and SERVOPACK.	_	Correct the wiring around the Serial Converter Unit, e.g., separate I/O signal lines from the Main Circuit Cables or ground.	-
back Option Module Commu- nications	A failure occurred in the Serial Converter Unit.	_	Replace the Serial Converter Unit.	-
	A failure occurred in the SERVOPACK.	_	Replace the SERVO- PACK.	_
	The Servomotor U, V, and W wiring is not correct.	Check the wiring of the Servomotor's Main Circuit Cables.	Make sure that there are no faulty contacts in the wiring for the Servomotor and encoder.	-
	The position command speed is too fast.	Reduce the position command speed and try operating the SER-VOPACK.	Reduce the position reference speed or the reference acceleration rate, or reconsider the electronic gear ratio.	*1
A.d00: Position Deviation Overflow (The setting of Pn520 (Excessive Position Deviation Alarm Level) was exceeded by the position deviation.)	The acceleration of the position reference is too high.	Reduce the reference acceleration and try operating the SERVO-PACK.	Reduce the acceleration of the position reference using a MECHATROLINK command. Or, smooth the position reference acceleration by selecting the position reference filter (ACCFIL) using a MECHATROLINK command.	-
	The setting of Pn520 (Excessive Position Deviation Alarm Level) is too low for the operating conditions.	Check Pn520 (Excessive Position Deviation Alarm Level) to see if it is set to an appropriate value.	Optimize the setting of Pn520.	*1
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

6

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Alarm Number:				
Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.d01: Position Deviation Overflow Alarm at Servo ON	The servo was turned ON after the position deviation exceeded the setting of Pn526 (Excessive Position Deviation Alarm Level at Servo ON) while the servo was OFF.	Check the position deviation while the servo is OFF.	Optimize the setting of Pn526 (Excessive Position Deviation Alarm Level at Servo ON).	
A.d02: Position Deviation Overflow Alarm for Speed Limit at Servo ON	If position deviation remains in the deviation counter, the setting of Pn529 or Pn584 (Speed Limit Level at Servo ON) limits the speed when the servo is turned ON. This alarm occurs if a position reference is input and the setting of Pn520 (Excessive Position Deviation Alarm Level) is exceeded.	_	Optimize the setting of Pn520 (Excessive Position Deviation Alarm Level). Or, adjust the setting of Pn529 or Pn584 (Speed Limit Level at Servo ON).	*1
A.d10: Motor-Load Position Deviation Overflow	The motor direction and external encoder installation orientation are backward.	Check the motor direction and the external encoder installation orientation.	Install the external encoder in the opposite direction, or change the setting of Pn002 = n.X□□□ (External Encoder Usage) to reverse the direction.	*1
	There is an error in the connection between the load (e.g., stage) and external encoder coupling.	Check the coupling of the external encoder.	Check the mechanical coupling.	-
A.d30: Position Data Overflow	The position data exceeded ±1,879,048,192.	Check the input reference pulse counter.	Reconsider the operating specifications.	_
A.E02:	The MECHATROLINK transmission cycle fluctuated.	_	Remove the cause of transmission cycle fluctuation at the host controller.	_
MECHATROLINK Internal Synchro- nization Error 1	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_
A.E40: MECHATROLINK Transmission Cycle Setting Error	The setting of MECHATROLINK transmission cycle is outside of the specified range.	Check the setting of the MECHATROLINK transmission cycle.	Set the MECHATROLINK transmission cycle to an appropriate value.	-
A.E41: MECHATROLINK Communications Data Size Setting Error	The number of transmission bytes set on DIP switch S3 is not correct.	Check the MECHATROLINK com- munications data size of the host controller.	Reset DIP switch S3 to change the number of transmission bytes to an appropriate value.	*1

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.E42: MECHATROLINK	The station address is outside of the setting range.	Check rotary switches S1 and S2 to see if the station address is between 03 and EF.	Check the setting of the station address of the host controller, and reset rotary switches S1 and S2 to change the address to an appropriate value between 03 and EF.	*1
Station Address Setting Error	Two or more stations on the communications network have the same address.	Check to see if two or more stations on the communications network have the same address.	Check the setting of the station address of the host controller, and reset rotary switches S1 and S2 to change the address to an appropriate value between 03 and EF.	
A.E50*5:	The WDT data in the host controller was not updated normally.	Check to see if the WDT data is being updated at the host controller.	Correctly update the WDT data at the host controller.	-
MECHATROLINK Synchronization Error	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.E51: MECHATROLINK Synchronization Failed	The WDT data at the host controller was not updated correctly at the start of synchronous communications, so synchronous communications could not be started.	Check to see if the WDT data is being updated in the host controller.	Correctly update the WDT data at the host controller.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	MECHATROLINK wiring is not correct.	Check the MECHATROLINK wir- ing.	Correct the MECHATROLINK Communications Cable wiring. Correctly connect the terminator.	-
A.E60*5: Reception Error in MECHATROLINK Communications	A MECHATROLINK data reception error occurred due to noise.	_	Implement countermea- sures against noise. (Check the MECHATROLINK Com- munications Cable and FG wiring, and implement measures such as attach- ing a ferrite core to the MECHATROLINK Com- munications Cable.)	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_

3

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.E61: Synchronization	The MECHATROLINK transmission cycle fluctuated.	Check the setting of the MECHATROLINK transmission cycle.	Remove the cause of transmission cycle fluctuation at the host controller.	-
Interval Error in MECHATROLINK Transmission Cycle	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	MECHATROLINK wiring is not correct.	Check the Servomotor wiring.	Correct the MECHATROLINK Communications Cable wiring.	-
A.E63: MECHATROLINK Synchronization Frame Not Received	A MECHATROLINK data reception error occurred due to noise.	_	Implement countermea- sures against noise. (Check the MECHATROLINK Com- munications Cable and FG wiring, and implement measures such as attach- ing a ferrite core to the MECHATROLINK Com- munications Cable.)	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	There is a faulty con- nection between the SERVOPACK and the Safety Option Module.	Check the connection between the SERVO- PACK and the Safety Option Module.	Correctly connect the Safety Option Module.	-
A.E71: Safety Option Module Detec- tion Failure	The Safety Option Module was discon- nected.	_	Execute Fn014 (Reset Option Module Configuration Error) from the Digital Operator or SigmaWin+ and then turn the power supply to the SERVO-PACK OFF and ON again.	*1
	A failure occurred in the Safety Option Module.	_	Replace the Safety Option Module.	_
	A failure occurred in the SERVOPACK.	_	Replace the SERVO-PACK.	_
A.E72: Feedback Option Module Detec- tion Failure	There is a faulty connection between the SERVOPACK and the Feedback Option Module.	Check the connection between the SERVO- PACK and the Feed- back Option Module.	Correctly connect the Feedback Option Module.	-
	The Feedback Option Module was discon- nected.	-	Reset the Option Module configuration error and turn the power supply to the SERVOPACK OFF and ON again.	*1
	A failure occurred in the Feedback Option Module.	-	Replace the Feedback Option Module.	-
	A failure occurred in the SERVOPACK.	_	Replace the SERVO-PACK.	_

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Continued from pre	Reference
A.E74: Unsupported	A failure occurred in the Safety Option Module.	-	Replace the Safety Option Module.	-
Safety Option Module	An unsupported Safety Option Module was connected.	Refer to the catalog of the connected Safety Option Module.	Connect a compatible Safety Option Module.	_
A.Eb1: Safety Function Signal Input Tim- ing Error	The delay between activation of the /HWBB1 and /HWBB2 input signals for the HWBB was ten second or longer.	Measure the time delay between the /HWBB1 and /HWBB2 signals.	The output signal circuits or devices for /HWBB1 and /HWBB2 or the SER-VOPACK input signal circuits may be faulty. Alternatively, the input signal cables may be disconnected. Check to see if any of these items are faulty or have been disconnected.	_
A 500	A failure occurred in the SERVOPACK.	-	Replace the SERVO-PACK.	-
A.EC8: Gate Drive Error 1 (An error occurred in the gate drive circuit.)  A.EC9: Gate Drive Error 2 (An error occurred in the gate drive circuit.)	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_
A.Ed1:	A timeout error occurred for a	Check the motor status when the command is executed.	Execute the SV_ON or SENS_ON command only when the motor is not operating.	_
Command Exe- cution Timeout	MECHATROLINK command.	For fully-closed loop control, check the sta- tus of the external encoder when the com- mand is executed.	Execute the SENS_ON command only when an external encoder is connected.	_
	The three-phase power supply wiring is not correct.	Check the power supply wiring.	Make sure that the power supply is correctly wired.	*1
A.F10: Power Supply Line Open Phase (The voltage was low for more than one second for phase R, S, or T when the main power supply was ON.)	The three-phase power supply is unbalanced.	Measure the voltage for each phase of the three-phase power supply.	Balance the power supply by changing phases.	-
	A single-phase power supply was input without specifying a signal-phase AC power supply input (Pn00B = n.□1□□).	Check the power supply and the parameter setting.	Match the parameter setting to the power supply.	*1
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
FL-1*5: System Alarm FL-2*5: System Alarm FL-3*5: System Alarm FL-4*5: System Alarm FL-5*5: System Alarm FL-5*5: System Alarm	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_
CPF00: Digital Operator Communications Error 1	There is a faulty contact between the Digital Operator and the SERVOPACK.	Check the connector contact.	Disconnect the connector and insert it again. Or, replace the cable.	_
	A malfunction was caused by noise.	_	Keep the Digital Operator or the cable away from sources of noise.	_
CPF01: Digital Operator Communications Error 2	A failure occurred in the Digital Operator.	_	Disconnect the Digital Operator and then con- nect it again. If an alarm still occurs, the Digital Operator may be faulty. Replace the Digital Oper- ator.	_
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_

\*1. Refer to the following manual for details.

Σ-7-Series Σ-7S SERVOPACK with MECHATROLINK-III Communications References Product Manual (Manual No.: SIEP S800001 28)

#### \*2. Detection Conditions

If either of the following conditions is detected, an alarm will occur.

• Pn533 [min<sup>-1</sup>] 
$$\times$$
 Encoder resolution  $\leq$  Pn20E Pn210

• Maximum motor speed [min<sup>-1</sup>] 
$$\times$$
 Encoder resolution
Approx.  $3.66 \times 10^{12}$   $\geq$  Pn20E
Pn210

#### \*3. Detection Conditions

If either of the following conditions is detected, an alarm will occur.

• Rated motor speed [min<sup>-1</sup>] 
$$\times$$
 1/3  $\times$   $\frac{\text{Encoder resolution}}{6 \times 10^5} \le \frac{\text{Pn20E}}{\text{Pn210}}$ 

• Maximum motor speed [min<sup>-1</sup>] 
$$\times \frac{\text{Encoder resolution}}{\text{Approx. } 3.66 \times 10^{12}} \ge \frac{\text{Pn20E}}{\text{Pn210}}$$

\*4. Refer to the following manual for details.

Σ-7-Series Peripheral Device Selection Manual (Manual No.: SIEP S800001 32)

\*5. These alarms are not stored in the alarm history. They are only displayed on the panel display.

3.3.4 Warning Displays

# 3.3.4 Warning Displays

If a warning occurs in the SERVOPACK, a warning number will be displayed on the panel display. Warnings are displayed to warn you before an alarm occurs.

# 3.3.5 List of Warnings

The list of warnings gives the warning name and warning meaning in order of the warning numbers.

Warning Number	Warning Name	Meaning	Resetting
A.900	Position Deviation Overflow	The position deviation exceeded the percentage set with the following formula: (Pn520 × Pn51E/100)	Required.
A.901	Position Deviation Overflow Alarm at Servo ON	The position deviation when the servo was turned ON exceeded the percentage set with the following formula: (Pn526 × Pn528/100)	Required.
A.910	Overload	This warning occurs before an overload alarm (A.710 or A.720) occurs. If the warning is ignored and operation is continued, an alarm may occur.	Required.
A.911	Vibration	Abnormal vibration was detected during motor operation. The detection level is the same as A.520. Set whether to output an alarm or a warning by setting Pn310 (Vibration Detection Switch).	Required.
A.912	Internal Temperature Warning 1 (Control Board Temperature Error)	The surrounding temperature of the control PCB is abnormal.	Required.
A.913	Internal Temperature Warning 2 (Power Board Temperature Error)	The surrounding temperature of the power PCB is abnormal.	Required.
A.920	Regenerative Overload	This warning occurs before an A.320 alarm (Regenerative Overload) occurs. If the warning is ignored and operation is continued, an alarm may occur.	Required.
A.921	Dynamic Brake Over- load	This warning occurs before an A.731 alarm (Dynamic Brake Overload) occurs. If the warning is ignored and operation is continued, an alarm may occur.	Required.
A.923	SERVOPACK Built-in Fan Stopped	The fan inside the SERVOPACK stopped.	Required.
A.930	Absolute Encoder Bat- tery Error	This warning occurs when the voltage of absolute encoder's battery is low.	Required.
A.93B	Overheat Warning	The input voltage (temperature) for the overheat protection input (TH) signal exceeded the setting of Pn61C (Overheat Warning Level).	Required.
A.942	Speed Ripple Compensation Information Disagreement	The speed ripple compensation information stored in the encoder does not agree with the speed ripple compensation information stored in the SERVOPACK.	Required.
A.94A	Data Setting Warning 1 (Parameter Number Error)	There is an error in the parameter number for a Data Setting Warning 1 (Parameter Number) command.	Automatically reset.*
A.94b	Data Setting Warning 2 (Out of Range)	The command data is out of range.	Automatically reset.*
A.94C	Data Setting Warning 3 (Calculation Error)	A calculation error was detected.	Automatically reset.*

Continued from previous page.

Warning Number	Warning Name	Meaning	Resetting
A.94d	Data Setting Warning 4 (Parameter Size)	The data sizes do not match.	Automatically reset.*
A.94E	Data Setting Warning 5 (Latch Mode Error)	A latch mode error was detected.	Required.
A.95A	Command Warning 1 (Unsatisfied Com- mand Conditions)	A command was sent when the conditions for sending a command were not satisfied.	Automatically reset.*
A.95b	Command Warning 2 (Unsupported Com- mand)	An unsupported command was sent.	Automatically reset.*
A.95d	Command Warning 4 (Command Interference)	There was command interference, particularly latch command interference.	Automatically reset.*
A.95E	Command Warning 5 (Subcommand Not Possible)	The subcommand and main command interfere with each other.	Automatically reset.*
A.95F	Command Warning 6 (Undefined Command)	An undefined command was sent.	Automatically reset.*
A.960	MECHATROLINK Communications Warning	A communications error occurred during MECHATROLINK communications.	Required.
A.971	Undervoltage	This warning occurs before an A.410 alarm (Undervoltage) occurs. If the warning is ignored and operation is continued, an alarm may occur.	Required.
A.97A	Command Warning 7 (Phase Error)	A command that cannot be executed in the current phase was sent.	Automatically reset.*
A.97b	Data Clamp Out of Range	The set command data was clamped to the minimum or maximum value of the allowable setting range.	Automatically reset.*
A.9A0	Overtravel	Overtravel was detected while the servo was ON.	Required.
A.9b0	Preventative Mainte- nance Warning	One of the consumable parts has reached the end of its service life.	Required.

<sup>\*</sup> The warning will automatically be cleared after the correct command is received.

Note: 1. A warning code is not output unless you set Pn001 to n.1 \(\sigma\) (Output both alarm codes and warning codes).

2. Use Pn008 = n.□X□□ (Warning Detection Selection) to control warning detection.

However, the following warnings are not affected by the setting of Pn008 = n.□X□□ and other parameter settings are required in addition to Pn008 = n.□X□□.

Warning	Parameters That Must Be Set to Select Warning Detection
A.911	Pn310 = n.□□□X (Vibration Detection Setting)
A.923	_ (Not affected by the setting of Pn008 = n.□X□□.)
A.930	Pn008 = n.□□□X (Low Battery Voltage Alarm/Warning Selection)
A.942	Pn423 = n.□□X□ (Speed Ripple Compensation Information Disagreement Warning Detection Selection)
A.94A to A.960 and A.97A to A.97b	Pn800=n.□□X□ (Warning Check Masks)
A.971	Pn008 = n.□□□X (Low Battery Voltage Alarm/Warning Selection) (Not affected by the setting of Pn008 = n.□X□□.)
A.9A0	Pn00D = n.X□□□ (Overtravel Warning Detection Selection) (Not affected by the setting of Pn008 = n.□X□□.)
A.9b0	Pn00F = n.□□□X (Preventative Maintenance Selection)

# 3.3.6 Troubleshooting Warnings

The causes of and corrections for the warnings are given in the following table. Contact your Yaskawa representative if you cannot solve a problem with the correction given in the table.

Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The Servomotor U, V, and W wiring is not correct.	Check the wiring of the Servomotor's Main Circuit Cables.	Make sure that there are no faulty connections in the wiring for the Servomotor and encoder.	-
	A SERVOPACK gain is too low.	Check the SERVO- PACK gains.	Increase the servo gain, e.g., by using autotuning without a host reference.	*
A.900: Position Deviation Overflow	The acceleration of the position reference is too high.	Reduce the reference acceleration and try operating the SERVO-PACK.	Reduce the acceleration of the position reference using a MECHATROLINK com- mand. Or, smooth the posi- tion reference acceleration by selecting the position reference filter (ACCFIL) using a MECHATROLINK command.	-
	The excessive position deviation alarm level (Pn520 × Pn51E/100) is too low for the operating conditions.	Check excessive position deviation alarm level (Pn520 × Pn51E/100) to see if it is set to an appropriate value.	Optimize the settings of Pn520 and Pn51E.	*
	A failure occurred in the SERVO-PACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.901: Position Deviation Overflow Alarm at Servo ON	The position deviation when the servo was turned ON exceeded the percentage set with the following formula: (Pn526 × Pn528/100)	_	Optimize the setting of Pn528 (Excessive Position Error Warning Level at Servo ON).	-

Continued from previous page.

Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The wiring is not correct or there is a faulty contact in the motor or encoder wiring.	Check the wiring.	Make sure that the Servo- motor and encoder are cor- rectly wired.	-
A.910: Overload (warning before an A.710 or A.720 alarm occurs)	Operation was performed that exceeded the overload protection characteristics.	Check the motor over- load characteristics and Run command.	Reconsider the load and operating conditions. Or, increase the motor capacity.	-
	An excessive load was applied during operation because the Servomotor was not driven because of mechanical problems.	Check the operation reference and motor speed.	Remove the mechanical problem.	_
	The overload warning level (Pn52B) is not suitable.	Check that the overload warning level (Pn52B) is suitable.	Set a suitable overload warning level (Pn52B).	*
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	_
	Abnormal vibration was detected during motor operation.	Check for abnormal motor noise, and check the speed and torque waveforms during operation.	Reduce the motor speed. Or, reduce the servo gain with custom tuning.	*
A.911: Vibration	The setting of Pn103 (Moment of Inertia Ratio) is greater than the actual moment of inertia or was greatly changed.	Check the moment of inertia ratio or mass ratio.	Set Pn103 (Moment of Inertia Ratio) to an appropriate value.	*
	The vibration detection level (Pn312 or Pn384) is not suitable.	Check that the vibration detection level (Pn312 or Pn384) is suitable.	Set a suitable vibration detection level (Pn312 or Pn384).	*

### 3.3.6 Troubleshooting Warnings

Continued from previous page.

Warning Number: Warning Name	Possible Cause	Confirmation	Correction Correction	Reference
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVOPACK installation conditions.	*
	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
A.912: Internal Tempera- ture Warning 1 (Control Board Tem- perature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVO- PACK installation con- ditions.	Install the SERVOPACK according to specifications.	*
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVOPACK installation conditions.	*
	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
A.913: Internal Tempera- ture Warning 2 (Power Board Tem- perature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVO- PACK installation con- ditions.	Install the SERVOPACK according to specifications.	*
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	_

3

Continued from previous page.

Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
A.920: Regenerative Overload (warning before an A.320 alarm occurs)	There is insufficient external regenerative resistance, regenerative resistor capacity, or SER-VOPACK capacity, or there has been a continuous regeneration state.	Check the operating conditions or the capacity using the SigmaJunmaSize+ Capacity Selection Software or another means.	Change the regenerative resistance value, regenerative resistance capacity, or SERVOPACK capacity. Reconsider the operating conditions using the Sigma-JunmaSize+ Capacity Selection Software or other means.	_
	There was a continuous regeneration state because a negative load was continuously applied.	Check the load applied to the Servomotor during operation.	Reconsider the system including the servo, machine, and operating conditions.	-
	The Servomotor was rotated by an external force.	Check the operation status.	Implement measures to ensure that the motor will not be rotated by an external force.	-
A.921:  Dynamic Brake  Overload (warning before an A.731 alarm occurs)	When the Servo- motor was stopped with the dynamic brake, the rotational or linear kinetic energy exceeded the capacity of the dynamic brake resistor.	Check the power consumed by the DB resistor to see how frequently the DB is being used.	Reconsider the following:  Reduce the Servomotor command speed.  Decrease the moment of inertia or mass.  Reduce the frequency of stopping with the dynamic brake.	_
	A failure occurred in the SERVO-PACK.	-	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-
A.923: SERVOPACK Built- in Fan Stopped	The fan inside the SERVOPACK stopped.	Check for foreign matter inside the SERVO-PACK.	Remove foreign matter from the SERVOPACK. If an alarm still occurs, the SER- VOPACK may be faulty. Replace the SERVOPACK.	-
A.930: Absolute Encoder Battery Error (The absolute encoder battery voltage was lower than the spec- ified level.) (Detected only when an abso- lute encoder is con- nected.)	The battery connection is faulty or a battery is not connected.	Check the battery connection.	Correct the battery connection.	*
	The battery voltage is lower than the specified value (2.7 V).	Measure the battery voltage.	Replace the battery.	*
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	_

### 3.3.6 Troubleshooting Warnings

Continued from previous page.

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Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat.	Lower the surrounding temperature by improving the installation conditions of the machine.	-
A.93B:	Operation was performed under an excessive load.	Use the accumulated load ratio to check the load during operation.	Reconsider the load and operating conditions.	_
Overheat Warning	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-
	The sensor attached to the machine is faulty.	_	The sensor attached to the machine may be faulty. Repair the sensor attached to the machine.	-
	The speed ripple	_	Reset the speed ripple compensation value on the SigmaWin+.	*
A.942: Speed Ripple Compensation Information Disagreement	compensation information stored in the encoder does not agree with the speed ripple compensa-	_	Set Pn423 to n.□□1□ (Do not detect A.942 alarms). However, changing the setting may increase the speed ripple.	*
ti	tion information stored in the SER- VOPACK.	_	Set Pn423 to n. \(\sum \sup 0\) (Disable torque ripple compensation). However, changing the setting may increase the speed ripple.	*
A.94A: Data Setting Warning 1 (Parameter Number Error)	An invalid parameter number was used.	Check the command that caused the warning.	Use the correct parameter number.	*
A.94b: Data Setting Warning 2 (Out of Range)	The set command data was clamped to the minimum or maximum value of the setting range.	Check the command that caused the warning.	Set the parameter within the setting range.	*
A.94C: Data Setting Warning 3 (Calculation Error)	The calculation result of the setting is not correct.	Check the command that caused the warning.	Set the parameter within the setting range.	*
A.94d: Data Setting Warning 4 (Parameter Size)	The parameter size set in the command is not correct.	Check the command that caused the warning.	Set the correct parameter size.	*
A.94E: Data Setting Warning 5 (Latch Mode Error)	A latch mode error was detected.	Check the command that caused the warning.	Change the setting of Pn850 or the LT_MOD data for the LTMOD_ON command sent by the host controller to an appropriate value.	*
A.95A: Command Warning 1 (Unsatisfied Command Conditions)	The command conditions are not satisfied.	Check the command that caused the warning.	Send the command after the command conditions are satisfied.	*
A.95b: Command Warning 2 (Unsupported Command)	An unsupported command was received.	Check the command that caused the warning.	Do not send unsupported commands.	*

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Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
A.95d: Command Warning 4 (Command Inter- ference)	The command sending conditions for latchrelated commands was not satisfied.	Check the command that caused the warning.	Send the command after the command conditions are satisfied.	*
A.95E: Command Warning 5 (Subcommand Not Possible)	The command sending conditions for subcommands was not satisfied.	Check the command that caused the warning.	Send the command after the conditions are satisfied.	*
A.95F: Command Warning 6 (Undefined Com- mand)	An undefined command was sent.	Check the command that caused the warning.	Do not send undefined commands.	*
	The MECHATROLINK Communications Cable is not wired correctly.	Check the wiring conditions.	Correct the MECHATROLINK communications cable wiring.	als:
A.960: MECHATROLINK Communications Warning	A MECHATROLINK data reception error occurred due to noise.	Confirm the installation conditions.	Implement the following countermeasures against noise.  • Check the MECHATROLINK Communications Cable and FG wiring and implement countermeasures to prevent noise from entering.  • Attach a ferrite core to the MECHATROLINK Communications Cable.	-
	A failure occurred in the SERVO-PACK.	-	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-
	For a 200-V SER- VOPACK, the AC power supply volt- age dropped below 140 V.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
	For a 100-V SER- VOPACK, the AC power supply volt- age dropped below 60 V.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
A.971: Undervoltage	The power supply voltage dropped during operation.	Measure the power supply voltage.	Increase the power supply capacity.	-
	A momentary power interruption occurred.	Measure the power supply voltage.	If you have changed the setting of Pn509 (Momentary Power Interruption Hold Time), decrease the setting.	*
	The SERVOPACK fuse is blown out.	-	Replace the SERVOPACK and connect a reactor.	*
	A failure occurred in the SERVO-PACK.	-	The SERVOPACK may be faulty. Replace the SERVO-PACK.	_

### 3.3.6 Troubleshooting Warnings

Continued from previous page.

Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
A.97A: Command Warning 7 (Phase Error)	A command that cannot be executed in the current phase was sent.	_	Send the command after the command conditions are satisfied.	-
A.97b: Data Clamp Out of Range	The set command data was clamped to the minimum or maximum value of the setting range.	_	Set the command data within the setting ranges.	-
A.9A0: Overtravel (Over- travel status was detected.)	Overtravel was detected while the servo was ON.	Check the status of the overtravel signals on the input signal monitor.	Even if an overtravel signal is not shown by the input signal monitor, momentary overtravel may have been detected. Take the following precautions.  • Do not specify movements that would cause overtravel from the host controller.  • Check the wiring of the overtravel signals.  • Implement countermeasures against noise.	*
A.9b0: Preventative Mainte- nance Warning	One of the consumable parts has reached the end of its service life.	_	Replace the part. Contact your Yaskawa representative for replacement.	*

<sup>\*</sup> Refer to the following manual for details.

Σ-7-Series Σ-7S SERVOPACK with MECHATROLINK-III Communications References Product Manual (Manual No.: SIEP S800001 28)

3.3.7

This section provides troubleshooting based on the operation and conditions of the Servomotor, including causes and corrections.

Problem	Possible Cause	Confirmation	Correction	Reference
	The control power supply is not turned ON.	Measure the voltage between control power supply terminals.	Turn OFF the power supply to the servo system. Correct the wiring so that the control power supply is turned ON.	-
	The main circuit power supply is not turned ON.	Measure the voltage across the main circuit power input terminals.	Turn OFF the power supply to the servo system. Correct the wiring so that the main circuit power supply is turned ON.	-
	The I/O signal connector (CN1) pins are not wired correctly or are disconnected.	Turn OFF the power supply to the servo system. Check the wiring condition of the I/O signal connector (CN1) pins.	Correct the wiring of the I/O signal connector (CN1) pins.	*
	The wiring for the Servomotor Main Circuit Cables or Encoder Cable is disconnected.	Check the wiring conditions.	Turn OFF the power supply to the servo system. Wire the cable correctly.	-
Servomotor Does Not Start	There is an overload on the Servomotor.	Operate the Servomotor with no load and check the load status.	Turn OFF the power supply to the servo system. Reduce the load or replace the Servomotor with a Servomotor with a larger capacity.	-
	The type of encoder that is being used does not agree with the setting of Pn002 = n. \(\Delta \times \Delta	Check the type of the encoder that is being used and the setting of Pn002 = n.□X□□.	Set Pn002 = n.\(\perp\)\(\pi\)\(\perp\) according to the type of the encoder that is being used.	*
	There is a mistake in the input signal allocations (Pn50A, Pn50B, Pn511, and Pn516).	Check the input signal allocations (Pn50A, Pn50B, Pn511, and Pn516).	Correctly allocate the input signals (Pn50A, Pn50B, Pn511, and Pn516).	*
	The SV_ON command was not sent.	Check the commands sent from the host controller.	Send the SV_ON command from the host controller.	-
	The SENS_ON (Turn ON Sensor) command was not sent.	Check the commands sent from the host controller.	Send the commands to the SERVOPACK in the correct sequence.	-
	The P-OT (Forward Drive Prohibit) or N-OT (Reverse Drive Prohibit) signal is still OFF.	Check the P-OT and N-OT signals.	Turn ON the P-OT and N-OT signals.	*
	The safety input signals (/HWBB1 or /HWBB2) were not turned ON.	Check the /HWBB1 and /HWBB2 input signals.	Turn ON the /HWBB1 and /HWBB2 input signals. If you are not using the safety function, connect the Safety Jumper Connector (provided as an accessory) to CN8.	*

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Problem	Possible Cause	Confirmation	Continued from pre	Reference
			Turn ON the FSTP	
Servomotor Does Not Start	The FSTP (Forced Stop Input) signal is still OFF.	Check the FSTP signal.	signal.  • If you will not use the function to force the motor to stop, set Pn516 = n.□□□X (FSTP (Forced Stop Input) Signal Allocation) to disable the signal.	*
	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-
Servomotor Moves Instanta-	There is a mistake in the Servomotor wiring.	Turn OFF the power supply to the servo system. Check the wiring.	Wire the Servomotor correctly.	_
neously, and Then Stops	There is a mistake in the wiring of the encoder or Serial Converter Unit.	Turn OFF the power supply to the servo system. Check the wiring.	Wire the Serial Converter Unit correctly.	_
Servomotor Speed Is Unstable	There is a faulty connection in the Servomotor wiring.	Turn OFF the power supply to the servo system. The connector connections for the power line (U, V, and W phases) and the encoder or Serial Converter Unit may be unstable. Check the wiring.	Tighten any loose terminals or connectors and correct the wiring.	-
Servomotor Moves with- out a Refer- ence Input	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	_
	The setting of Pn001 = n.□□□X (Servo OFF or Alarm Group 1 Stopping Method) is not suitable.	Check the setting of Pn001 = n.□□□X.	Set Pn001 = n.□□□X correctly.	-
Dynamic Brake Does Not Operate	The dynamic brake resistor is disconnected.	Check the moment of inertia, motor speed, and dynamic brake frequency of use. If the moment of inertia, motor speed, or dynamic brake frequency of use is excessive, the dynamic brake resistance may be disconnected.	Turn OFF the power supply to the servo system. Replace the SERVO-PACK. To prevent disconnection, reduce the load.	-
	There was a failure in the dynamic brake drive circuit.	_	Turn OFF the power supply to the servo system. There is a defective component in the dynamic brake circuit. Replace the SERVO-PACK.	-

Problem	Possible Cause	Confirmation	Continued from pre	Reference
	The Servomotor vibrated considerably while performing the tuning-less function with the default settings.	Check the waveform of the motor speed.	Reduce the load so that the moment of inertia ratio or mass ratio is within the allowable value, or increase the load level or reduce the rigidity level in the tuning-less level settings.	*
	The machine mounting is not secure.	Turn OFF the power supply to the servo system. Check to see if there are any loose mounting screws.	Tighten the mounting screws.	-
	The machine mounting is not secure.	Turn OFF the power supply to the servo system. Check to see if there is misalignment in the coupling.	Align the coupling.	-
	secure.	Turn OFF the power supply to the servo system. Check to see if the coupling is balanced.	Balance the coupling.	_
Abnormal	The bearings are defective.	Turn OFF the power supply to the servo system. Check for noise and vibration around the bearings.	Replace the Servomotor.	-
Noise from Servomotor	There is a vibration source at the driven machine.	Turn OFF the power supply to the servo system. Check for any foreign matter, damage, or deformation in the machine's moving parts.	Consult with the machine manufacturer.	-
	Noise interference occurred because of incorrect I/O signal cable specifications.	Turn OFF the power supply to the servo system. Check the I/O signal cables to see if they satisfy specifications. Use shielded twisted-pair wire cables or screened twisted-pair cables with conductors of at least 0.12 mm <sup>2</sup> .	Use cables that satisfy the specifications.	_
	Noise interference occurred because an I/O signal cable is too long.	Turn OFF the power supply to the servo system. Check the lengths of the I/O signal cables.  Turn OFF the power supply the pow	The I/O signal cables must be no longer than 3 m.	-
	Noise interference occurred because of incorrect Encoder Cable specifications.	ply to the servo system. Make sure that the rotary or Linear Encoder Cable satisfies the specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with a conductors of at least 0.12 mm <sup>2</sup> .	Use cables that satisfy the specifications.	_

Continued from previous page.

Problem	Possible Cause	Confirmation	Continued from pre	Reference
	Noise interference occurred because the Encoder Cable is too long.	Turn OFF the power supply to the servo system. Check the length of the Encoder Cable.	Rotary Servomotors: The Encoder Cable length must be 50 m max.	-
	Noise interference occurred because the Encoder Cable is damaged.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it is pinched or the sheath is damaged.	Replace the Encoder Cable and correct the cable installation envi- ronment.	-
	The Encoder Cable was subjected to excessive noise interference.	Turn OFF the power supply to the servo system. Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-current line.	Correct the cable lay- out so that no surge is applied by high-current lines.	-
Abnormal Noise from	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Turn OFF the power supply to the servo system. Check to see if the machines are correctly grounded.	Properly ground the machines to separate them from the FG of the encoder.	-
Servomotor	There is a SERVOPACK pulse counting error due to noise.	Check to see if there is noise interference on the signal line from the encoder.	Turn OFF the power supply to the servo system. Implement countermeasures against noise for the encoder wiring.	-
	The encoder was subjected to excessive vibration or shock.	Turn OFF the power supply to the servo system. Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting surface precision, securing state, and alignment).	Reduce machine vibration. Improve the mounting conditions of the Servomotor.	-
	A failure occurred in the encoder.	-	Turn OFF the power supply to the servo system. Replace the Servomotor.	-
	The servo gains are not balanced.	Check to see if the servo gains have been correctly tuned.	Perform autotuning without a host reference.	*
Saryamatar	The setting of Pn100 (Speed Loop Gain) is too high.	Check the setting of Pn100. The default setting is Kv = 40.0 Hz.	Set Pn100 to an appropriate value.	-
Servomotor Vibrates at Frequency of Approx. 200 to 400 Hz.	The setting of Pn102 (Position Loop Gain) is too high.	Check the setting of Pn102. The default setting is Kp = 40.0/s.	Set Pn102 to an appropriate value.	_
	The setting of Pn101 (Speed Loop Integral Time Constant) is not appropriate.	Check the setting of Pn101. The default setting is Ti = 20.0 ms.	Set Pn101 to an appropriate value.	_
	The setting of Pn103 (Moment of Inertia Ratio or Mass Ratio) is not appropri- ate.	Check the setting of Pn103.	Set Pn103 to an appropriate value.  Continued or	_

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Problem	Possible Cause	Confirmation	Continued from pre	Referenc
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	The servo gains are not balanced.	Check to see if the servo gains have been correctly tuned.	Perform autotuning without a host reference.	*
	The setting of Pn100 (Speed Loop Gain) is too high.	Check the setting of Pn100. The default setting is Kv = 40.0 Hz.	Set Pn100 to an appropriate value.	_
Large Motor Speed	The setting of Pn102 (Position Loop Gain) is too high.	Check the setting of Pn102. The default setting is Kp = 40.0/s.	Set Pn102 to an appropriate value.	-
Overshoot on Starting and Stop- ping	The setting of Pn101 (Speed Loop Integral Time Constant) is not appropriate.	Check the setting of Pn101. The default setting is Ti = 20.0 ms.	Set Pn101 to an appropriate value.	-
	The setting of Pn103 (Moment of Inertia Ratio or Mass Ratio) is not appropri- ate.	Check the setting of Pn103.	Set Pn103 to an appropriate value.	-
	The torque reference is saturated.	Check the waveform of the torque reference.	Use the mode switch.	-
	The force limits (Pn483 and Pn484) are set to the default values.	The default values of the force limits and Pn483 = 30% and Pn484 = 30%.	Set Pn483 and Pn484 to appropriate values.	*
	Noise interference occurred because of incorrect Encoder Cable specifications.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it satisfies specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm <sup>2</sup> .	Use cables that satisfy the specifications.	-
Absolute Encoder Position Deviation	Noise interference occurred because the Encoder Cable is too long.	Turn OFF the power supply to the servo system. Check the length of the Encoder Cable.	Rotary Servomotors: The Encoder Cable length must be 50 m max.	-
Error (The position that was saved in the host con-	Noise interference occurred because the Encoder Cable is damaged.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it is pinched or the sheath is damaged.	Replace the Encoder Cable and correct the cable installation envi- ronment.	-
troller when the power was turned OFF is dif- ferent from the posi- tion when the power was next turned ON.)	Replace the Encoder Cable and correct the cable installation environment.	Turn OFF the power supply to the servo system. Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-current line.	Correct the cable lay- out so that no surge is applied by high-current lines.	-
	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Turn OFF the power supply to the servo system. Check to see if the machines are correctly grounded.	Properly ground the machines to separate them from the FG of the encoder.	-
	There is a SERVOPACK pulse counting error due to noise.	Turn OFF the power supply to the servo system. Check to see if there is noise interference on the I/O signal line from the encoder or Serial Converter Unit.	Implement counter- measures against noise for the encoder or Serial Converter Unit wiring.	-

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Possible Cause		Correction	Reference
The encoder was subjected to excessive vibration or shock.	Turn OFF the power supply to the servo system. Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting surface precision, securing state, and alignment).	Reduce machine vibration. Or, improve the mounting conditions of the Servomotor.	-
A failure occurred in the encoder.	_	Turn OFF the power supply to the servo system. Replace the Servomotor.	-
A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-
	Check the error detection section of the host controller.	Correct the error detection section of the host controller.	_
Host Controller Multiturn Data or Absolute Encoder Position Data Reading Error	Check to see if the host controller is executing data parity checks.	Perform parity checks for the multiturn data or absolute encoder posi- tion data.	-
	Check for noise interference in the cable between the SERVO-PACK and the host controller.	Implement counter- measures against noise and then perform parity checks again for the multiturn data or abso- lute encoder position data.	-
The P-OT/N-OT (Forward Drive Prohibit or Reverse Drive Prohibit) signal was input.	Check the external power supply (+24 V) voltage for the input signals.	Correct the external power supply (+24 V) voltage for the input signals.	-
	Check the operating condition of the overtravel limit switches.	Make sure that the overtravel limit switches operate correctly.	_
	Check the wiring of the overtravel limit switches.	Correct the wiring of the overtravel limit switches.	*
	Check the settings of the overtravel input signal allocations (Pn50A/Pn50B).	Set the parameters to correct values.	*
	Check for fluctuation in the external power supply (+24 V) voltage for the input signals.	Eliminate fluctuation from the external power supply (+24 V) voltage for the input signals.	_
The P-OT/N-OT (Forward Drive Prohibit or Reverse Drive Prohibit) signal mal-	Check to see if the operation of the overtravel limit switches is unstable.	Stabilize the operating condition of the over-travel limit switches.	_
functioned.	Check the wiring of the overtravel limit switches (e.g., check for cable damage and loose screws).	Correct the wiring of the overtravel limit switches.	-
	to excessive vibration or shock.  A failure occurred in the encoder.  A failure occurred in the SER-VOPACK.  Host Controller Multiturn Data or Absolute Encoder Position Data Reading Error  The P-OT/N-OT (Forward Drive Prohibit or Reverse Drive Prohibit) signal was input.  The P-OT/N-OT (Forward Drive Prohibit or Reverse Drive Prohibit) signal mal-	Turn OFF the power supply to the servo system. Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting surface precision, securing state, and alignment).  A failure occurred in the encoder.  A failure occurred in the SER-VOPACK.  Check the error detection section of the host controller.  Check to see if the host controller is executing data parity checks.  Check to see if the host controller is executing data parity checks.  Check for noise interference in the cable between the SERVO-PACK and the host controller.  Check the external power supply (+24 V) voltage for the input signals allocations (Pn50A/Pn50B).  Check the settings of the overtravel limit switches.  Check to see if the host controller.  Check the operating condition of the overtravel limit switches.  Check the settings of the overtravel limit switches.  Check to see if the operation of the overtravel limit switches is unstable.  Check the wiring of the overtravel limit switches is unstable.  Check the wiring of the overtravel limit switches is unstable.  Check the wiring of the overtravel limit switches is unstable.	The encoder was subjected to excessive vibration or shock.  A failure occurred in the encoder.  Check the Servomotor installation (mounting surface precision, securing state, and alignment).  Turn OFF the power supply to the servo system. Replace the Servomotor.  Turn OFF the power supply to the servo system. Replace the Servomotor.  Turn OFF the power supply to the servo system. Replace the Servomotor.  Turn OFF the power supply to the servo system. Replace the Servomotor.  Turn OFF the power supply to the servo system. Replace the Servomotor.  Turn OFF the power supply to the servo system. Turn OFF the power supply to the servo system. Replace the Servomotor.  Turn OFF the power supply to the servo system. Turn OFF the power supply to the servo system. The Servomotor installation (mounting conditions of the servomotor.  Check the servomotor.  Turn OFF the power supply to the servo system. Check to see if the power supply to the servo system. Turn OFF the power supply to the servo system. The P-OT/N-OT (Forward Drive Prohibit) signal was input.  Check the external power supply (+24 V) voltage for the input signals.  Check the wiring of the overtravel limit switches.  Check the settings of the overtravel limit switches.  Check the for fluctuation in the external power supply (+24 V) voltage for the input signals.  Check to see if the operating conditions of the overtravel limit switches.  Check the serting of the overtravel limit switches.  Check to see if the operating condition of the overtravel limit switches.  Check the wiring of the overtravel limit switches.  Check the wiring of the overtravel limit switches.  Check the wiring of the overtravel limit switches.  Check the viring of the overtravel limit switches.  Check the operating conditions of the overtravel limit switches.  Check the wiring

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Problem	Possible Cause	Confirmation	Correction	Reference
	There is a mistake in the allocation of the P-OT or N-OT (Forward Drive Prohibit or	Check to see if the P-OT signal is allocated in Pn50A = n.XDDD.	If another signal is allocated in Pn50A =n.X□□□, allocate the P-OT signal instead.	*
Overtravel	Reverse Drive Prohibit) signal in Pn50A = n.X□□□ or Pn50B = n.□□□X.	Check to see if the N-OT signal is allocated in Pn50B = n.□□□X.	If another signal is allocated in Pn50B =n.□□□X, allocate the N-OT signal instead.	
Occurred	The selection of the Servo- motor stopping method is not correct.	Check the servo OFF stopping method set in Pn001 = n.□□□X or Pn001 = n.□□X□.  Check the torque control stopping method set in Pn001 = n.□□□X or Pn001 = n.□□□X□.	Select a Servomotor stopping method other than coasting to a stop.  Select a Servomotor stopping method other than coasting to a stop.	. *
Improper Stop Posi- tion for Overtravel	The limit switch position and dog length are not appropriate.  The overtravel limit switch	_	Install the limit switch at the appropriate position.  Install the overtravel	-
(OT) Signal	position is too close for the coasting distance.	_	limit switch at the appropriate position.	_
	Noise interference occurred because of incorrect Encoder Cable specifications.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it satisfies specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm <sup>2</sup> .	Use cables that satisfy the specifications.	-
	Noise interference occurred because the Encoder Cable is too long.	Turn OFF the power supply to the servo system. Check the length of the Encoder Cable.	Rotary Servomotors: The Encoder Cable length must be 50 m max.	-
Position Deviation (without Alarm)	Noise interference occurred because the Encoder Cable is damaged.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it is pinched or the sheath is damaged.	Replace the Encoder Cable and correct the cable installation envi- ronment.	-
	The Encoder Cable was subjected to excessive noise interference.	Turn OFF the power supply to the servo system. Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-current line.	Correct the cable lay- out so that no surge is applied by high-current lines.	-
	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Turn OFF the power supply to the servo system. Check to see if the machines are correctly grounded.	Properly ground the machines to separate them from the FG of the encoder.	-
	There is a SERVOPACK pulse counting error due to noise.	Turn OFF the power supply to the servo system. Check to see if there is noise interference on the I/O signal line from the encoder or Serial Converter Unit.	Implement counter- measures against noise for the encoder wiring or Serial Converter Unit wiring.	-

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Problem	Possible Cause	Confirmation	Continued from pre	Reference
		Turn OFF the power sup-		
Position Deviation (without Alarm)	The encoder was subjected to excessive vibration or shock.	ply to the servo system. Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting surface precision, securing state, and alignment).	Reduce machine vibration. Or, improve the mounting conditions of the Servomotor.	-
	The coupling between the machine and Servomotor is not suitable.	Turn OFF the power supply to the servo system. Check to see if position offset occurs at the coupling between machine and Servomotor.	Correctly secure the coupling between the machine and Servomotor.	_
	Noise interference occurred because of incorrect I/O signal cable specifications.	Turn OFF the power supply to the servo system. Check the I/O signal cables to see if they satisfy specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm <sup>2</sup> .	Use cables that satisfy the specifications.	_
	Noise interference occurred because an I/O signal cable is too long.	Turn OFF the power supply to the servo system. Check the lengths of the I/O signal cables.	The I/O signal cables must be no longer than 3 m.	-
	An encoder fault occurred. (The pulse count does not change.)	_	Turn OFF the power supply to the servo system. Replace the Servomotor.	-
	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-
Servomotor Overheated	The surrounding air temperature is too high.	Measure the surrounding air temperature around the Servomotor.	Reduce the surrounding air temperature to 40°C or less.	_
	The surface of the Servomotor is dirty.	Turn OFF the power supply to the servo system. Visually check the surface for dirt.	Clean dirt, dust, and oil from the surface.	-
	There is an overload on the Servomotor.	Check the load status with a monitor.	If the Servomotor is overloaded, reduce the load or replace the Servo Drive with a SERVOPACK and Servomotor with larger capacities.	-
	Polarity detection was not performed correctly.	Check to see if electrical angle 2 (electrical angle from polarity origin) at any position is between ±10°.	Correct the settings for the polarity detection-related parameters.	-
Estimating the moment of inertia failed.	The acceleration rate is low and travel distance is short.	Check the Condition Setting Dialog Box used to perform moment of inertia estimation.	Increase the acceleration rate and travel distance.	_

<sup>\*</sup> Refer to the following manual for details.  $\square$   $\Sigma$ -7-Series  $\Sigma$ -7S SERVOPACK with MECHATROLINK-III Communications References Product Manual (Manual No.: SIEP S800001 28)

# 3.4

# Command Option Attachable-type FT82 SERVOPACKs with INDEXER Modules

# 3.4.1 Alarm Displays

If an error occurs in the SERVOPACK, the status is displayed as described below.

# ◆ Status Display

SERVOPACK Panel Display	The alarm number will be displayed. Refer to the following section for details.  Σ-7-Series Σ-7S SERVOPACK Command Option Attachable Type with INDEXER Module Product Manual (Manual No.: SIEP S800001 64)
Indicators	Green indicator: Remains unlit Red indicator: Remains lit Refer to the following section for details.  Σ-7-Series Σ-7S SERVOPACK Command Option Attachable Type with INDEXER Module Product Manual (Manual No.: SIEP S800001 64)
Digital Operator	The alarm code is displayed at the top left of the screen.
Response to the Alarm or Warning Read Command (ALM)	Alarm code
Response to the Most Recent Error Read Command (ERR)	No change
ALM Signal	The alarm signal turns ON. (The photocoupler turns OFF.)
/WARN Signal	No change

3-147

# 3.4.2 List of Alarms

The alarms when the INDEXER Module is combined with a Command Option Attachable-type SERVOPACK are given in the following table.

				Servo- Alarm		Alarm Code Output			
Alarm Number	Alarm Name	Alarm Meaning	motor Stop- ping Method	Reset Possi- ble?	/ALO1	/ALO2	/ALO3		
A.020	Parameter Checksum Error	There is an error in the parameter data in the SERVOPACK.	Gr.1	No					
A.021	Parameter Format Error	There is an error in the parameter data format in the SERVOPACK.	Gr.1	No					
A.022	System Checksum Error	There is an error in the parameter data in the SERVOPACK.	Gr.1	No					
A.024	System Alarm	An internal program error occurred in the SERVOPACK.	Gr.1	No					
A.025	System Alarm	An internal program error occurred in the SERVOPACK.	Gr.1	No	Н	Н	Н		
A.030	Main Circuit Detector Error	There is an error in the detection data for the main circuit.	Gr.1	Yes					
A.040	Parameter Setting Error	A parameter setting is outside of the setting range.	Gr.1	No					
A.041	Encoder Output Pulse Setting Error	The setting of Pn212 (Encoder Output Pulses) or Pn281 (Encoder Output Resolution) is outside of the setting range or does not satisfy the setting conditions.	Gr.1	No					
A.042	Parameter Combination Error	The combination of some parameters exceeds the setting range.	Gr.1	No					
A.044	Semi-Closed/Fully- Closed Loop Control Parameter Setting Error	The settings of the Option Module and Pn002 = n.X□□□ (External Encoder Usage) do not match.	Gr.1	No					
A.04A	Parameter Setting Error 2	There is an error in setting of parameters reserved by the system.	Gr.1	No					
A.050	Combination Error	The capacities of the SERVOPACK and Servomotor do not match.	Gr.1	Yes	Н	Н	Н		
A.051	Unsupported Device Alarm	An unsupported device was connected.	Gr.1	No					
A.0b0	Invalid Servo ON Command Alarm	The /S-ON (Servo ON) signal was input from the host controller after a utility function that turns ON the Servomotor was executed.	Gr.1	Yes					
A.100	Overcurrent Detected	An overcurrent flowed through the power transformer or the heat sink overheated.	Gr.1	No	L	Н	Н		
A.101	Motor Overcurrent Detected	The current to the motor exceeded the allowable current.	Gr.1	No					
A.300	Regeneration Error	There is an error related to regeneration.	Gr.1	Yes					
A.320	Regenerative Over- load	A regenerative overload occurred.	Gr.2	Yes					
A.330	Main Circuit Power Supply Wiring Error	<ul> <li>The AC power supply input setting or DC power supply input setting is not correct.</li> <li>The power supply wiring is not correct.</li> </ul>	Gr.1	Yes		L	Н		
A.400	Overvoltage	The main circuit DC voltage is too high.	Gr.1	Yes					
A.410	Undervoltage	The main circuit DC voltage is too low.	Gr.2	Yes	- H	Н	L		

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Alarm Number	Alarm Name	Alarm Meaning	Servo- motor Stop- ping Method	Alarm Reset Possi- ble?	/ALO1	/ALO2	
A.510	Overspeed	The motor exceeded the maximum speed.	Gr.1	Yes			
A.511	Encoder Output Pulse Overspeed	The pulse output speed for the setting of Pn212 (Encoder Output Pulses) was exceeded.	Gr.1	Yes			
A.520	Vibration Alarm	Abnormal oscillation was detected in the motor speed.	Gr.1	Yes	L	Н	L
A.521	Autotuning Alarm	Vibration was detected during autotuning for the tuning-less function.	Gr.1	Yes			
A.550	Maximum Speed Set- ting Error	The setting of Pn385 (Maximum Motor Speed) is greater than the maximum motor speed.	Gr.1	Yes	-		
A.710	Instantaneous Over- load	The Servomotor was operating for several seconds to several tens of seconds under a torque that largely exceeded the rating.	Gr.2	Yes			
A.720	Continuous Overload	The Servomotor was operating continuously under a torque that exceeded the rating.	Gr.1	Yes			
A.730	Dynamic Brake Over-	When the dynamic brake was applied, the rotational or linear kinetic energy	Gr.1	Yes			
A.731	load	exceeded the capacity of the dynamic brake resistor.	GI. I	163			
A.740	Inrush Current Limit- ing Resistor Overload	The main circuit power supply was frequently turned ON and OFF.	Gr.1	Yes	L	L	L
A.7A1	Internal Temperature Error 1 (Control Board Temperature Error)	The surrounding temperature of the control PCB is abnormal.	Gr.2	Yes			
A.7A2	Internal Temperature Error 2 (Power Board Temperature Error)	The surrounding temperature of the power PCB is abnormal.	Gr.2	Yes			
A.7A3	Internal Temperature Sensor Error	An error occurred in the temperature sensor circuit.	Gr.2	No			
A.7Ab	SERVOPACK Built-in Fan Stopped	The fan inside the SERVOPACK stopped.	Gr.1	Yes			
A.810	Encoder Backup Alarm	The power supplies to the encoder all failed and the position data was lost.	Gr.1	No			
A.820	Encoder Checksum Alarm	There is an error in the checksum results for encoder memory.	Gr.1	No			
A.830	Encoder Battery Alarm	The battery voltage was lower than the specified level after the control power supply was turned ON.	Gr.1	Yes	-		
A.840	Encoder Data Alarm	There is an internal data error in the encoder.	Gr.1	No			
A.850	Encoder Overspeed	The encoder was operating at high speed when the power was turned ON.	Gr.1	No	Н	Н	Н
A.860	Encoder Overheated	The internal temperature of encoder is too high.	Gr.1	No			
A.861	Motor Overheated	The internal temperature of motor is too high.	Gr.1	No			
A.862	Overheat Alarm	The input voltage (temperature) for the overheat protection input (TH) signal exceeded the setting of Pn61B (Overheat Alarm Level).	Gr.1	Yes			

### 3.4.2 List of Alarms

Continued from previous page.

			Servo-		Alarm Code Output		
Alarm Number	Alarm Name	Alarm Meaning	motor Stop- ping Method	Alarm Reset Possi- ble?	/ALO1	/ALO2	/ALO3
A.8A0	External Encoder Error	An error occurred in the external encoder.	Gr.1	Yes			
A.8A1	External Encoder Module Error	An error occurred in the Serial Converter Unit.	Gr.1	Yes			
A.8A2	External Incremental Encoder Sensor Error	An error occurred in the external encoder.	Gr.1	Yes			
A.8A3	External Absolute Encoder Position Error	An error occurred in the position data of the external encoder.	Gr.1	Yes	Н	Н	Н
A.8A5	External Encoder Overspeed	An overspeed error occurred in the external encoder.	Gr.1	Yes			
A.8A6	External Encoder Overheated	An overheating error occurred in the external encoder.	Gr.1	Yes			
A.AEF	INDEXER Module Alarm	Some kind of alarm has occurred at the INDEXER Module.	Gr.1	Depends on module alarm.*1	Н	L	L
A.b33	Current Detection Error 3	An error occurred in the current detection circuit.	Gr.1	No			
A.bF0	System Alarm 0	Internal program error 0 occurred in the SERVOPACK.	Gr.1	No			
A.bF1	System Alarm 1	Internal program error 1 occurred in the SERVOPACK.	Gr.1	No			
A.bF2	System Alarm 2	Internal program error 2 occurred in the SERVOPACK.	Gr.1	No			
A.bF3	System Alarm 3	Internal program error 3 occurred in the SERVOPACK.	Gr.1	No	Н	Н	Н
A.bF4	System Alarm 4	Internal program error 4 occurred in the SERVOPACK.	Gr.1	No			
A.bF5	System Alarm 5	Internal program error 5 occurred in the SERVOPACK.	Gr.1	No			
A.bF6	System Alarm 6	Internal program error 6 occurred in the SERVOPACK.	Gr.1	No			
A.bF7	System Alarm 7	Internal program error 7 occurred in the SERVOPACK.	Gr.1	No			
A.bF8	System Alarm 8	Internal program error 8 occurred in the SERVOPACK.	Gr.1	No			
A.C10	Servomotor Out of Control	The Servomotor ran out of control.	Gr.1	Yes			
A.C80	Encoder Clear Error or Multiturn Limit Set- ting Error	The multiturn data for the absolute encoder was not correctly cleared or set.	Gr.1	No	L	Н	L
A.C90	Encoder Communica- tions Error	Communications between the encoder and SERVOPACK is not possible.	Gr.1	No			

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			Servo-		Alarm Code C		
Alarm Number	Alarm Name	Alarm Meaning	motor Stop- ping Method	Alarm Reset Possi- ble?	/ALO1		
A.C91	Encoder Communications Position Data Acceleration Rate Error	An error occurred in calculating the position data of the encoder.	Gr.1	No			
A.C92	Encoder Communications Timer Error	An error occurred in the communications timer between the encoder and SERVO-PACK.	Gr.1	No			
A.CA0	Encoder Parameter Error	The parameters in the encoder are corrupted.	Gr.1	No			
A.Cb0	Encoder Echoback Error	The contents of communications with the encoder are incorrect.	Gr.1	No	L	Н	L
A.CC0	Multiturn Limit Dis- agreement	Different multiturn limits have been set in the encoder and the SERVOPACK.	Gr.1	No			
A.CF1	Reception Failed Error in Feedback Option Module Communica- tions	Receiving data from the Feedback Option Module failed.	Gr.1	No			
A.CF2	Timer Stopped Error in Feedback Option Module Communica- tions	An error occurred in the timer for communications with the Feedback Option Module.	Gr.1	No			
A.d00	Position Deviation Overflow	The setting of Pn520 (Excessive Position Deviation Alarm Level) was exceeded by the position deviation.	Gr.1	Yes			
A.d01	Position Deviation Overflow Alarm at Servo ON	The servo was turned ON after the position deviation exceeded the setting of Pn526 (Excessive Position Deviation Alarm Level at Servo ON) while the servo was OFF.	Gr.1	Yes			
A.d02	Position Deviation Overflow Alarm for Speed Limit at Servo ON	If position deviation remains in the deviation counter, the setting of Pn529 or Pn584 (Speed Limit Level at Servo ON) limits the speed when the servo is turned ON. This alarm occurs if a position reference is input and the setting of Pn520 (Excessive Position Deviation Alarm Level) is exceeded before the limit is cleared.	Gr.2	Yes	L	L	Н
A.d10	Motor-Load Position Deviation Overflow	There was too much position deviation between the motor and load during fully-closed loop control.	Gr.2	Yes			
A.d30	Position Data Over- flow	The position feedback data exceeded ±1,879,048,192.	Gr.1	No			
A.E00	Command Option Module IF Initializa- tion Timeout Error	Communications initialization failed between the SERVOPACK and the Command Option Module.	Gr.2	Yes			
A.E02	Command Option Module IF Synchroni- zation Error 1	An synchronization error occurred between the SERVOPACK and the Command Option Module.	Gr.1	Yes	Н	L	L
A.E03	Command Option Module IF Communi- cations Data Error	An error occurred in the data of communications between the SERVOPACK and the Command Option Module.	Gr.1	Yes			_ L
A.E70	Command Option Module Detection Failure	Detection of the Command Option Module failed.	Gr.1	No			

### 3.4.2 List of Alarms

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			Servo-		Alarm Code Output		
Alarm Number	Alarm Name	Alarm Meaning	motor Stop- ping Method	Alarm Reset Possi- ble?	/ALO1	/ALO2	/ALO3
A.E71	Safety Option Module Detection Failure	Detection of the safety option module failed.	Gr.1	No			
A.E72	Feedback Option Module Detection Failure	Detection of the Feedback Option Module failed.	Gr.1	No			
A.E73	Unsupported Com- mand Option Module	An unsupported command option module was connected.	Gr.1	No			
A.E74	Unsupported Safety Option Module	An unsupported safety option module was connected.	Gr.1	No			
A.E75	Unsupported Feed- back Option Module	An unsupported feedback option module was connected.	Gr.1	No			
A.E80	Command Option Module Unmatched Error	The command option module was replaced with a different model.	Gr.1	No			
A.EA2	Alarm in Current Communications between the INDEXER Module and SERVO- PACK 1	An error occurred in communications between the INDEXER Module and SER-VOPACK during operation.	Gr.1	Yes	Н	L	L
A.EA3	Alarm in Current Communications between the INDEXER Module and SERVO- PACK 2	An error occurred in communications between the INDEXER Module and SER-VOPACK during operation.	Gr.1	Yes			
A.Eb1	Safety Function Sig- nal Input Timing Error	An error occurred in the input timing of the safety function signal.	Gr.1	No			
A.EC8	Gate Drive Error 1	An error occurred in the gate drive circuit.	Gr.1	No			
A.EC9	Gate Drive Error 2	An error occurred in the gate drive circuit.	Gr.1	No			
A.Ed1	Command Option Module IF Command Timeout Error	Processing of command from the command option module was not completed.	Gr.2	Yes			
A.F10	Power Supply Line Open Phase	The voltage was low for more than one second for phase R, S, or T when the main power supply was ON.	Gr.2	Yes	Н	L	Н
FL-1*2 FL-2*2 FL-3*2 FL-4*2 FL-5*2 FL-6*2	System Alarm	An internal program error occurred in the SERVOPACK.	-	No	U	Indefined	d.
CPF00	Digital Operator Com- munications Error 1 Digital Operator Com- munications Error 2	Communications were not possible between the Digital Operator (model: JUSP-OP05A-1-E) and the SERVOPACK (e.g., a CPU error occurred).	-	No			

<sup>\*2.</sup> These alarms are not stored in the alarm history. They are only displayed on the panel display.

# **Troubleshooting Alarms**

3.4.3

The causes of and corrections for the alarms are given in the following table. Contact your Yaskawa representative if you cannot solve a problem with the correction given in the table.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage suddenly dropped.	Measure the power supply voltage.	Set the power supply voltage within the specified range, and initialize the parameter settings.	*1
	The power supply was shut OFF while writing parameter settings.	Check the timing of shutting OFF the power supply.	Initialize the parameter settings and then set the parameters again.	
A.020: Parameter	The number of times that parameters were written exceeded the limit.	Check to see if the parameters were frequently changed from the host controller.	The SERVOPACK may be faulty. Replace the SER-VOPACK. Reconsider the method for writing the parameters.	-
Checksum Error (There is an error in the parameter data in the SER- VOPACK.)	A malfunction was caused by noise from the AC power supply, ground, static electricity, or other source.	Turn the power supply to the SERVOPACK OFF and ON again. If the alarm still occurs, noise may be the cause.	Implement countermeasures against noise.	*1
	Gas, water drops, or cutting oil entered the SERVOPACK and caused failure of the internal components.	Check the installation conditions.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
	A failure occurred in the SERVOPACK.	Turn the power supply to the SERVOPACK OFF and ON again. If the alarm still occurs, the SERVOPACK may have failed.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.021: Parameter Format Error (There is an error in the parameter data format in the	The software version of the SERVOPACK that caused the alarm is older than the software version of the parameters specified to write.	Read the product information to see if the software versions are the same. If they are different, it could be the cause of the alarm.	Write the parameters from another SERVOPACK with the same model and the same software version, and then turn the power OFF and ON again.	*1
SERVOPACK.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
	The power supply voltage suddenly dropped.	Measure the power supply voltage.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
A.022: System Check- sum Error (There is an error in the parameter data in the SER- VOPACK.)	The power supply was shut OFF while setting a utility function.	Check the timing of shutting OFF the power supply.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	A failure occurred in the SERVOPACK.	Turn the power supply to the SERVOPACK OFF and ON again. If the alarm still occurs, the SERVOPACK may have failed.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-

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Alarm Number:	D 111 2	0 "	Continued from pre	
Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.024: System Alarm (An internal pro- gram error occurred in the SERVOPACK.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.025: System Alarm (An internal pro- gram error occurred in the SERVOPACK.)	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.030: Main Circuit Detector Error	The jumper between the DC Reactor terminals (⊖1 and ⊖2) was removed or there is faulty contact.		Correct the wiring between the DC Reactor	
	The cable between the DC Reactor and SERVOPACK is not wired correctly or there is a faulty contact.		terminals.	_
	The SERVOPACK and Servomotor capacities do not match each other.	Check the combination of the SERVOPACK and Servomotor capacities.	Select a proper combination of SERVOPACK and Servomotor capacities.	*1
A.040: Parameter Set-	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
ting Error (A parameter setting is outside of the setting	A parameter setting is outside of the setting range.	Check the setting ranges of the parameters that have been changed.	Set the parameters to values within the setting ranges.	_
range.)	The electronic gear ratio is outside of the setting range.	Check the electronic gear ratio. The ratio must be within the following range: 0.001 < (Pn20E/Pn210) < 64,000.	Set the electronic gear ratio in the following range: 0.001 < (Pn20E/Pn210) < 64,000.	*1
A.041: Encoder Output Pulse Setting Error	The setting of Pn212 (Encoder Output Pulses) or Pn281 (Encoder Output Resolution) is outside of the setting range or does not satisfy the setting conditions.	Check the setting of Pn212 or Pn281.	Set Pn212 or Pn281 to an appropriate value.	*1

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Alarm Number:	Possible Cause	Confirmation	Correction	Reference
Alarm Name		Communation	Correction	7101010100
	The speed of program jogging went below the setting range when the electronic gear ratio (Pn20E/Pn210) or the Servomotor was changed.	Check to see if the detection conditions*2 are satisfied.	Decrease the setting of the electronic gear ratio (Pn20E/Pn210).	*1
A.042: Parameter Combination Error	The speed of program jogging went below the setting range when Pn533 or Pn585 (Program Jogging Speed) was changed.	Check to see if the detection conditions*2 are satisfied.	Increase the setting of Pn533 or Pn585.	*1
	The movement speed of advanced autotuning went below the setting range when the electronic gear ratio (Pn20E/ Pn210) or the Servomotor was changed.	Check to see if the detection conditions*3 are satisfied.	Decrease the setting of the electronic gear ratio (Pn20E/Pn210).	*1
A.044: Semi-Closed/ Fully-Closed Loop Control Parameter Setting Error	The setting of the Fully-Closed Module does not match the setting of Pn002 = n.XDDD (External Encoder Usage).	Check the setting of Pn002 = n.X□□□.	Make sure that the setting of the Fully-closed Module agrees with the setting of Pn002 = n.X□□□.	*1
A.04A: Parameter Set- ting Error 2	A parameter reserved by the system was changed.	_	Set the following reserved parameters to the default settings. Pn200.2 Pn207.1 Pn50A.0 Pn50A.1 Pn50A.2 Pn50C Pn50D	-
A.050: Combination Error	The SERVOPACK and Servomotor capacities do not match each other.	Confirm that the following condition is met: 1/4 ≤ (Servomotor capacity/SERVOPACK capacity) ≤ 4	Select a proper combination of the SERVOPACK and Servomotor capacities.	*1
(The capacities of the SERVOPACK and Servomotor	A failure occurred in the encoder.	Replace the encoder and check to see if the alarm still occurs.	Replace the Servomotor or encoder.	_
do not match.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
A.051: Unsupported Device Alarm	An unsupported Serial Converter Unit or encoder (e.g., an external encoder) is connected to the SERVOPACK.	Check the product combination specifications.	Change to a correct combination of models.	-
A.0b0: Invalid Servo ON Command Alarm	The /S-ON (Servo ON) signal was input from the host controller after a utility function that turns ON the Servomotor was executed.	_	Turn the power supply to the SERVOPACK OFF and ON again. Or, execute a software reset.	*1

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Alarm Number:	Possible Cause	Confirmation	Correction	Reference
Alarm Name		- Committation	30113011011	.1010101106
	The Main Circuit Cable is not wired correctly or there is faulty contact.	Check the wiring.	Correct the wiring.	
	There is a short-circuit or ground fault in a Main Circuit Cable.	Check for short-circuits across Servomotor phases U, V, and W, or between the ground and Servomotor phases U, V, and W.	The cable may be short-circuited. Replace the cable.	
	There is a short-circuit or ground fault inside the Servomotor.	Check for short-circuits across Servomotor phases U, V, and W, or between the ground and Servomotor phases U, V, or W.	The Servomotor may be faulty. Replace the Servomotor.	*1
A.100: Overcurrent	There is a short-circuit or ground fault inside the SERVOPACK.	Check for short-circuits across the Servomotor connection terminals U, V, and W on the SER-VOPACK, or between the ground and terminals U, V, or W.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	
Detected (An overcurrent flowed through the power trans-	The regenerative resistor is not wired correctly or there is faulty contact.	Check the wiring.	Correct the wiring.	*1
former or the heat sink overheated.)	The dynamic brake (DB, emergency stop executed from the SERVOPACK) was frequently activated, or a DB overload alarm occurred.	Check the power consumed by the DB resistor to see how frequently the DB is being used. Or, check the alarm display to see if a DB overload alarm (A.730 or A.731) has occurred.	Change the SERVOPACK model, operating methods, or the mechanisms so that the dynamic brake does not need to be used so frequently.	-
	The regenerative processing capacity was exceeded.	Check the regenerative load ratio in the SigmaWin+ Motion Monitor Tab Page to see how frequently the regenerative resistor is being used.	Recheck the operating conditions and load.	*4
	The SERVOPACK regenerative resistance is too small.  Check the regenerat load ratio in the SigmaWin+ Motion Mon Tab Page to see how frequently the regenerative resistor is being used.		Change the regenerative resistance to a value larger than the SERVO-PACK minimum allowable resistance.	

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	A heavy load was applied while the Servomotor was stopped or running at a low speed.	Check to see if the operating conditions exceed Servo Drive specifications.	Reduce the load applied to the Servomotor. Or, increase the operating speed.	-
A.100: Overcurrent Detected (An overcurrent flowed through the power trans- former or the heat sink overheated.)	A malfunction was caused by noise.	Improve the noise envi- ronment, e.g. by improving the wiring or installation conditions, and check to see if the alarm still occurs.	Implement countermeasures against noise, such as correct wiring of the FG. Use an FG wire size equivalent to the SERVO-PACK's main circuit wire size.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The Main Circuit Cable is not wired correctly or there is faulty contact.	Check the wiring.	Correct the wiring.	
	There is a short-circuit or ground fault in a Main Circuit Cable.	Check for short-circuits across cable phases U, V, and W, or between the ground and cable phases U, V, and W.	The cable may be short-circuited. Replace the cable.	
	There is a short-circuit or ground fault inside the Servomotor.	Check for short-circuits across Servomotor phases U, V, and W, or between the ground and Servomotor phases U, V, or W.	The Servomotor may be faulty. Replace the Servomotor.	*1
A.101: Motor Overcurrent Detected (The current to the motor exceeded the	There is a short-circuit or ground fault inside the SERVOPACK.	Check for short-circuits across the Servomotor connection terminals U, V, and W on the SER-VOPACK, or between the ground and terminals U, V, or W.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	
allowable cur- rent.)	A heavy load was applied while the Servomotor was stopped or running at a low speed.	Check to see if the operating conditions exceed Servo Drive specifications.	Reduce the load applied to the Servomotor. Or, increase the operating speed.	-
	A malfunction was caused by noise.	Improve the noise envi- ronment, e.g. by improving the wiring or installation conditions, and check to see if the alarm still occurs.	Implement countermeasures against noise, such as correct wiring of the FG. Use an FG wire size equivalent to the SERVO-PACK's main circuit wire size.	-
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	Pn600 (Regenerative Resistor Capacity) is not set to 0 and an External Regenerative Resistor is not con- nected to one of the following SERVO- PACKs: SGD7S-2R8A or -2R8F.	Check it see if an External Regenerative Resistor is connected and check the setting of Pn600.	Connect an External Regenerative Resistor, or set Pn600 (Regenerative Resistor Capacity) to 0 (setting unit: ×10 W) if no Regenerative Resistor is required.	*1
A.300:	The jumper between the regenerative resistor terminals (B2 and B3) was removed from one of the following SERVO-PACKs: SGD7S-120A.	Check to see if the jumper is connected between power supply terminals B2 and B3.  Note: If an External Regenerative Resistor or Regenerative Resistor Unit is connected while the jumper remains connected between B2 and B3, the SERVO-PACK may be damaged.	Correctly connect a jumper.	*1
Regeneration Error	The External Regenerative Resistor or Regenerative Resistor tor Unit is not wired correctly, or was removed or disconnected.	Check the wiring of the External Regenerative Resistor or Regenerative Resistor Unit.  Note: If an External Regenerative Resistor or Regenerative Resistor or Regenerative Resistor Unit is connected while the jumper remains connected between B2 and B3, the SERVO-PACK may be damaged.	Correct the wiring of the External Regenerative Resistor or Regenerative Resistor Unit.	
	A failure occurred in the SERVOPACK.	_	While the main circuit power supply is OFF, turn the control power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

3

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
	The external regenerative resistance value or regenerative resistor capacity is too small, or there has been a continuous regeneration state.	Check the operating conditions or the capacity using the SigmaJunmaSize+ Capacity Selection Software or other means.	Change the regenerative resistance value or capacity. Reconsider the operating conditions using the SigmaJunmaSize+ Capacity Selection Software or other means.	*4
	There was a continuous regeneration state because a negative load was continuously applied.	Check the load applied to the Servomotor during operation.	Reconsider the system including the servo, machine, and operating conditions.	-
A.320: Regenerative Overload	The setting of Pn600 (Regenerative Resistor Capacity) is smaller than the capacity of the External Regenerative Resistor.	Check it see if a Regenerative Resistor is connected and check the setting of Pn600.	Correct the setting of Pn600.	*1
	The setting of Pn603 (Regenerative Resistor Capacity) is smaller than the capacity of the External Regenerative Resistor.	Check to see if a Regenerative Resistor is connected and check the setting of Pn603.	Correct the setting of Pn603.	*1
	The external regenerative resistance is too high.	Check the regenerative resistance.	Change the regenerative resistance to a correct value or use an External Regenerative Resistor of an appropriate capacity.	*4
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_

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Alarm Number:			Continued from pro	evious page.
Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.330: Main Circuit Power Supply Wiring Error (Detected when the main circuit power supply is turned ON.)	The regenerative resistor was disconnected when the SERVOPACK power supply voltage was high.	Measure the resistance of the regenerative resistor using a measuring instrument.	If you are using the regenerative resistor built into the SERVOPACK, replace the SERVOPACK.  If you are using an External Regenerative Resistor, replace the External Regenerative Resistor.	-
	DC power was supplied when an AC power supply input was specified in the settings.	Check the power supply to see if it is a DC power supply.	Correct the power supply setting to match the actual power supply.	*1
	AC power was supplied when a DC power supply input was specified in the settings.	Check the power supply to see if it is an AC power supply.	Correct the power supply setting to match the actual power supply.	
	Pn600 (Regenerative Resistor Capacity) is not set to 0 and an External Regenerative Resistor is not con- nected to an SGD7S- 2R8A SERVOPACKs.	Check it see if an External Regenerative Resistor is connected and check the setting of Pn600.	Connect an External Regenerative Resistor, or if an External Regenera- tive Resistor is not required, set Pn600 to 0.	*1
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the AC/DC power supply voltage within the specified range.	-
	The power supply is not stable or was influenced by a lightning surge.	Measure the power supply voltage.	Improve the power supply conditions, install a surge absorber, and then turn the power supply OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.400: Overvoltage (Detected in the	The voltage for AC power supply was too high during acceleration or deceleration.	Check the power supply voltage and the speed and torque during operation.	Set the AC power supply voltage within the specified range.	-
main circuit power supply section of the SERVOPACK.)	The external regenerative resistance is too high for the operating conditions.	Check the operating conditions and the regenerative resistance.	Select a regenerative resistance value that is appropriate for the operating conditions and load.	*4
	The moment of inertia ratio or mass ratio exceeded the allowable value.	Check to see if the moment of inertia ratio or mass ratio is within the allowable range.	Increase the deceleration time, or reduce the load.	-
	A failure occurred in the SERVOPACK.	-	While the main circuit power supply is OFF, turn the control power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage went below the specified range.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
	The power supply voltage dropped during operation.	Measure the power supply voltage.	Increase the power supply capacity.	-
	A momentary power interruption occurred.	Measure the power supply voltage.	If you have changed the setting of Pn509 (Momentary Power Interruption Hold Time), decrease the setting.	*1
A.410:	The SERVOPACK fuse is blown out.	Check the power supply wiring.	Correct the power supply wiring and replace the SERVOPACK.	-
Undervoltage (Detected in the main circuit power supply section of the	The SERVOPACK fuse is blown out.	_	Replace the SERVO- PACK and connect a reactor to the DC reactor terminals (⊝1 and ⊝2) on the SERVOPACK.	-
SERVOPACK.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	The jumper between the DC Reactor terminals (⊝1 and ⊝2) was removed or there is faulty contact.		Correct the wiring	
	The cable between the DC Reactor and SERVOPACK is not wired correctly or there is a faulty contact.	_	between the DC Reactor terminals.	-
	The order of phases U, V, and W in the motor wiring is not correct.	Check the wiring of the Servomotor.	Make sure that the Servo- motor is correctly wired.	-
A.510: Overspeed	A reference value that exceeded the over- speed detection level was input.	Check the input reference.	Reduce the reference value. Or, adjust the gain.	
(The motor exceeded the maximum speed.)	The motor exceeded the maximum speed.	Check the waveform of the motor speed.	Reduce the speed reference input gain and adjust the servo gain. Or, reconsider the operating conditions.	_
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
A.511:	The encoder output pulse frequency exceeded the limit.	Check the encoder output pulse setting.	Decrease the setting of Pn212 (Encoder Output Pulses) or Pn281 (Encoder Output Resolu- tion).	*1
Encoder Output Pulse Overspeed	The encoder output pulse frequency exceeded the limit because the motor speed was too high.	Check the encoder output pulse setting and the motor speed.	Reduce the motor speed.	-

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Alarm Number:	Descible Cours	Confinentia	Continued from pre	
Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.520: Vibration Alarm	Abnormal oscillation was detected in the motor speed.	Check for abnormal motor noise, and check the speed and torque waveforms during operation.	Reduce the motor speed. Or, reduce the setting of Pn100 (Speed Loop Gain).	*1
	The setting of Pn103 (Moment of Inertia Ratio) is greater than the actual moment of inertia or was greatly changed.	Check the moment of inertia ratio or mass ratio.	Set Pn103 (Moment of Inertia Ratio) to an appropriate value.	*1
	The vibration detection level (Pn312 or Pn384) is not suitable.	Check that the vibration detection level (Pn312 or Pn384) is suitable.	Set a suitable vibration detection level (Pn312 or Pn384).	*1
A.521: Autotuning Alarm (Vibration was detected while executing the	The Servomotor vibrated considerably while performing the tuning-less function.	Check the waveform of the motor speed.	Reduce the load so that the moment of inertia ratio is within the allowable value. Or increase the load level or reduce the rigidity level in the tuning- less level settings.	*1
custom tuning, Easy FFT, or the tuning-less func- tion.)	The Servomotor vibrated considerably while performing custom tuning or Easy FFT.	Check the waveform of the motor speed.	Check the operating procedure of corresponding function and implement corrections.	*1
A.550: Maximum Speed Setting Error	The setting of Pn385 (Maximum Motor Speed) is greater than the maximum speed.	Check the setting of Pn385, and the upper limits of the maximum motor speed setting and the encoder output resolution setting.	Set Pn385 to a value that does not exceed the maximum motor speed.	*1
	The wiring is not correct or there is a faulty contact in the motor or encoder wiring.	Check the wiring.	Make sure that the Servo- motor and encoder are correctly wired.	*1
	Operation was performed that exceeded the overload protection characteristics.	Check the motor over- load characteristics and Run command.	Reconsider the load and operating conditions. Or, increase the motor capacity.	-
A.710: Instantaneous Overload A.720: Continuous Overload	An excessive load was applied during operation because the Servomotor was not driven due to mechanical problems.	Check the operation reference and motor speed.	Correct the mechanical problem.	-
	Operation was performed with a load applied to the shaft of the servomotor that exceeded the allowable value.	Check the condition of the machine to deter- mine if a load was applied to the shaft of the servomotor that exceeded the allowable value.	Correct the condition of the machine so that the load on the shaft during servomotor operation does not exceed the allowable value.	-
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A 730 and	The Servomotor was rotated by an external force.	Check the operation status.	Implement measures to ensure that the motor will not be rotated by an external force.	-
A.730 and A.731: Dynamic Brake Overload (An excessive power consumption by the dynamic brake was detected.)	When the Servomotor was stopped with the dynamic brake, the rotational or linear kinetic energy exceeded the capacity of the dynamic brake resistor.	Check the power consumed by the DB resistor to see how frequently the DB is being used.	<ul> <li>Reconsider the following:</li> <li>Reduce the Servomotor command speed.</li> <li>Decrease the moment of inertia ratio or mass ratio.</li> <li>Reduce the frequency of stopping with the dynamic brake.</li> </ul>	-
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.740: Inrush Current Limiting Resistor Overload (The main circuit power supply	The allowable frequency of the inrush current limiting resistor was exceeded when the main circuit power supply was turned ON and OFF.	_	Reduce the frequency of turning the main circuit power supply ON and OFF.	-
was frequently turned ON and OFF.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVO-PACK installation conditions.	*1
. 7.4	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
A.7A1: Internal Temperature Error 1 (Control Board Temperature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVOPACK installation conditions.	Install the SERVOPACK according to specifications.	*1
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVO-PACK installation conditions.	*1
	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
A.7A2: Internal Tempera- ture Error 2 (Power Board Temperature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVOPACK installation conditions.	Install the SERVOPACK according to specifications.	*1
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.7A3: Internal Temperature Sensor Error (An error occurred in the temperature sensor circuit.)	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.7Ab: SERVOPACK Built-in Fan Stopped	The fan inside the SERVOPACK stopped.	Check for foreign matter inside the SERVOPACK.	Remove foreign matter from the SERVOPACK. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	The power to the absolute encoder was turned ON for the first time.	Check to see if the power supply was turned ON for the first time.	Set up the encoder.	
A.810: Encoder Backup Alarm (Detected at the encoder, but only when an abso- lute encoder is used.)	The Encoder Cable was disconnected and then connected again.	Check to see if the power supply was turned ON for the first time.	Check the encoder connection and set up the encoder.	*1
	Power is not being supplied both from the control power supply (+5 V) from the SERVOPACK and from the battery power supply.	Check the encoder connector battery and the connector status.	Replace the battery or implement similar measures to supply power to the encoder, and set up the encoder.	
	A failure occurred in the absolute encoder.	_	If the alarm still occurs after setting up the encoder again, replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.820: Encoder Check- sum Alarm (Detected at the encoder.)	A failure occurred in the encoder.	_	■When Using an Absolute Encoder Set up the encoder again. If the alarm still occurs, the Servomotor may be faulty. Replace the Servomotor. ■When Using a Singleturn Absolute Encoder or Incremental Encoder The Servomotor may be faulty. Replace the Servomotor.	*1
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.830: Encoder Battery	The battery connection is faulty or a battery is not connected.	Check the battery connection.	Correct the battery connection.	*1
Alarm (The absolute encoder battery voltage was lower	The battery voltage is lower than the specified value (2.7 V).	Measure the battery voltage.	Replace the battery.	*1
than the speci- fied level.)	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.840: Encoder Data	The encoder malfunctioned.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
Alarm (Detected at the encoder.)	The encoder malfunctioned due to noise.	_	Correct the wiring around the encoder by separating the Encoder Cable from the Servomotor Main Circuit Cable or by grounding the encoder.	-
۸ 950۰	The Servomotor speed was 200 min <sup>-1</sup> or higher when the control power supply was turned ON.	Check the motor speed when the power supply is turned ON.	Reduce the Servomotor speed to a value less than 200 min <sup>-1</sup> , and turn ON the control power supply.	-
A.850: Encoder Over- speed (Detected at the encoder when the control power supply is turned	A failure occurred in the encoder.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
OŇ.)	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number:			Continued from pr	
Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.860:	The surrounding air temperature around the Servomotor is too high.	Measure the surrounding air temperature around the Servomotor.	Reduce the surrounding air temperature of the Servomotor to 40°C or less.	-
	The Servomotor load is greater than the rated load.	Use the accumulated load ratio to check the load.	Operate the Servo Drive so that the motor load remains within the specified range.	*1
Encoder Over- heated (Detected at the encoder.)	high.  The Servomotor load is greater than the rated load.  Use the accumulated load ratio to check the load.  Use the accumulated load remains within the specified range.  Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.  Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK off and ON again. If an alarm still occurs, the SERVOPACK off and ON again. If an alarm still occurs, the SERVOPACK off and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.  The surrounding temperature around the Servomotor is too high.  Measure the surrounding air temperature of the Servomotor to 40° or less.  Check the load with the accumulated load ratio on the Motion Monitor Tab Page on the SigmaWin+.  Turn the power supply to the SERVOPACK off and ON again. If an alarm still occurs, the Servomotor to 40° or less.  Turn the power supply to the SERVOPACK off and ON again. If an alarm still occurs, the Servomotor to 40° again. If an alarm still occurs, the Servomotor to 40° again. If an alarm still occurs, the Serial Con-	-		
		_	the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the	-
	perature around the Servomotor is too	ing temperature around	air temperature of the	-
A.861: Motor Over- heated	greater than the rated	accumulated load ratio on the Motion Monitor Tab Page on the Sig-	so that the motor load remains within the speci-	*1
		-	the SERVOPACK OFF and ON again. If an alarm still	-
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number:	Continued from previous pa			
Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat.	Lower the surrounding temperature by improving the installation conditions of the machine.	-
	The overheat protection input signal line is disconnected or short-circuited.	Check the input voltage with the overheat protection input information on the Motion Monitor Tab Page on the SigmaWin+.	Repair the line for the overheat protection input signal.	-
A.862: Overheat Alarm	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
	Operation was performed under an excessive load.	Use the accumulated load ratio to check the load during operation.	Reconsider the load and operating conditions.	-
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The sensor attached to the machine is faulty.	_	The sensor attached to the machine may be faulty. Repair the sensor attached to the machine.	-
A.8A0: External Encoder Error	Setting the origin of the absolute linear encoder failed because the motor moved.	Before you set the origin, use the fully-closed feedback pulse counter to confirm that the motor is not moving.	The motor must be stopped while setting the origin position.	*1
	A failure occurred in the external encoder.	_	Replace the external encoder.	_
A.8A1:	A failure occurred in the external encoder.	-	Replace the external encoder.	_
External Encoder Module Error	A failure occurred in the Serial Converter Unit.	-	Replace the Serial Converter Unit.	-
A.8A2: External Incremental Encoder Sensor Error	A failure occurred in the external encoder.	_	Replace the external encoder.	-
A.8A3: External Absolute Encoder Position Error	A failure occurred in the external absolute encoder.	_	The external absolute encoder may be faulty. Refer to the encoder manufacturer's instruction manual for corrections.	-
A.8A5: External Encoder Overspeed	An overspeed error was detected in the external encoder.	Check the maximum speed of the external encoder.	Keep the external encoder below its maximum speed.	-
A.8A6: External Encoder Overheated	An overheating error was detected in the external encoder.	_	Replace the external encoder.	-
A.AEF: INDEXER Module Alarm	Some kind of alarm has occurred at the INDEXER Module.	Use the SigmaWin+ to check the serial command negative response of the INDEXER Module.	Observe the processing method for serial command negative responses from the INDEXER Module.	*1

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Alarm Number:	Possible Cause	Confirmation	Continued from pro	Reference
Alarm Name	Fossible Cause	Committation		neielelice
A.b33: Current Detection Error 3	A failure occurred in the current detection circuit.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF0: System Alarm 0	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF1: System Alarm 1	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF2: System Alarm 2	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF3: System Alarm 3	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF4: System Alarm 4	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF5: System Alarm 5	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF6: System Alarm 6	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF7: System Alarm 7	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF8: System Alarm 8	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The order of phases U, V, and W in the motor wiring is not correct.	Check the Servomotor wiring.	Make sure that the Servo- motor is correctly wired.	-
A.C10: Servomotor Out of Control (Detected when the servo is	A failure occurred in the encoder.	_	If the motor wiring is correct and an alarm still occurs after turning the power supply OFF and ON again, the Servomotor may be faulty. Replace the Servomotor.	-
turned ON.)	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.C54: Polarity Detection Failure 2	An external force was applied to the Servomotor.	_	Increase the setting of Pn495 (Polarity Detection Confirmation Force Reference). Increase the setting of Pn498 (Polarity Detection Allowable Error Range). Increasing the allowable error will also increase the motor temperature.	-
A.C80: Encoder Clear Error or Multiturn Limit Setting Error	A failure occurred in the encoder.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Continued from pro-	Reference
Alami Name	There is a faulty contact in the connector or the connector is not wired correctly for the encoder.	Check the condition of the encoder connector.	Reconnect the encoder connector and check the encoder wiring.	*1
	There is a cable disconnection or short-circuit in the encoder. Or, the cable impedance is outside the specified values.	Check the condition of the Encoder Cable.	Use the Encoder Cable within the specified specifications.	-
A.C90: Encoder Commu-	One of the following has occurred: corrosion caused by improper temperature, humidity, or gas, a short-circuit caused by entry of water drops or cutting oil, or faulty contact in connector caused by vibration.	Check the operating environment.	Improve the operating environmental, and replace the cable. If the alarm still occurs, replace the SERVOPACK.	*1
nications Error	A malfunction was caused by noise.	_	Correct the wiring around the encoder by separating the Encoder Cable from the Servomotor Main Circuit Cable or by grounding the encoder.	*1
	A failure occurred in the SERVOPACK.	_	Connect the Servomotor to another SERVOPACK, and turn ON the control power supply. If no alarm occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	A failure occurred in the encoder.	_	Connect the Servomotor to another SERVOPACK, and turn ON the control power supply. If the alarm occurs, the Servomotor may be faulty. Replace the Servomotor.	-
A.C91: Encoder Communications Position Data Acceleration Rate Error	Noise entered on the signal lines because the Encoder Cable is bent or the sheath is damaged.	Check the condition of the Encoder Cable and connectors.	Check the Encoder Cable to see if it is installed correctly.	*1
	The Encoder Cable is bundled with a high- current line or installed near a high- current line.	Check the installation condition of the Encoder Cable.	Confirm that there is no surge voltage on the Encoder Cable.	-
	There is variation in the FG potential because of the influ- ence of machines on the Servomotor side, such as a welder.	Check the installation condition of the Encoder Cable.	Properly ground the machine to separate it from the FG of the encoder.	-

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	Noise entered on the signal line from the encoder.	_	Implement countermeasures against noise for the encoder wiring.	*1
	Excessive vibration or shock was applied to the encoder.	Check the operating conditions.	Reduce machine vibration. Correctly install the Servomotor.	-
A.C92: Encoder Communications Timer Error	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.CA0: Encoder Parameter Error	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The encoder is wired incorrectly or there is faulty contact.	Check the wiring of the encoder.	Make sure that the encoder is correctly wired.	*1
	The specifications of the Encoder Cable are not correct and noise entered on it.	_	Use a shielded twisted- pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm <sup>2</sup> .	_
	The Encoder Cable is too long and noise entered on it.	-	Rotary Servomotors: The Encoder Cable wiring distance must be 50 m max.	-
A.Cb0: Encoder Echo-	There is variation in the FG potential because of the influ- ence of machines on the Servomotor side, such as a welder.	Check the condition of the Encoder Cable and connectors.	Properly ground the machine to separate it from the FG of the encoder.	-
back Error	Excessive vibration or shock was applied to the encoder.	Check the operating conditions.	Reduce machine vibration. Correctly install the Servomotor or linear encoder.	-
	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.CC0: Multiturn Limit Disagreement	When using a Direct Drive Servomotor, the setting of Pn205 (Mul- titurn Limit Setting) does not agree with the encoder.	Check the setting of Pn205.	Correct the setting of Pn205 (0 to 65,535).	*1
	The multiturn limit of the encoder is different from that of the SERVOPACK. Or, the multiturn limit of the SERVOPACK has been changed.	Check the setting of Pn205 in the SERVO-PACK.	Change the setting if the alarm occurs.	*1
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The cable between the Serial Converter Unit and SERVOPACK is not wired correctly or there is a faulty contact.	Check the wiring of the external encoder.	Correctly wire the cable between the Serial Converter Unit and SERVO-PACK.	*1
A.CF1: Reception Failed Error in Feed-	A specified cable is not being used between Serial Con- verter Unit and SER- VOPACK.	Check the wiring specifications of the external encoder.	Use a specified cable.	-
back Option Module Commu- nications	The cable between the Serial Converter Unit and SERVOPACK is too long.	Measure the length of the cable that connects the Serial Converter Unit.	The length of the cable between the Serial Converter Unit and SERVO-PACK must be 20 m or less.	-
	The sheath on cable between the Serial Converter Unit and SERVOPACK is broken.	Check the cable that connects the Serial Converter Unit.	Replace the cable between the Serial Converter Unit and SERVO-PACK.	-
A.CF2: Timer Stopped Error in Feed- back Option Module Commu- nications	Noise entered the cable between the Serial Converter Unit and SERVOPACK.	_	Correct the wiring around the Serial Converter Unit, e.g., separate I/O signal lines from the Main Circuit Cables or ground.	-
	A failure occurred in the Serial Converter Unit.	_	Replace the Serial Converter Unit.	_
	A failure occurred in the SERVOPACK.	_	Replace the SERVO-PACK.	_

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Alarm Number:			Continued from pro	, ,
Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.d00: Position Deviation Overflow (The setting of Pn520 (Excessive Position Deviation Alarm Level) was exceeded by the position deviation.)	The Servomotor U, V, and W wiring is not correct.	Check the wiring of the Servomotor's Main Circuit Cables.	Make sure that there are no faulty contacts in the wiring for the Servomotor and encoder.	-
	The position command speed is too fast.	Reduce the position command speed and try operating the SER-VOPACK.	Reduce the position reference speed or the reference acceleration rate, or reconsider the electronic gear ratio.	*1
	The acceleration of the position reference is too high.	Reduce the reference acceleration and try operating the SERVO-PACK.	Reduce the acceleration of the position reference with one of the following methods.  • Reduce the acceleration rate (ACC) and deceleration rate (DEC) in the program table.  • Reduce the settings of PnB29 (Acceleration Rate) and PnB2B (Deceleration Rate).	_
	The setting of Pn520 (Excessive Position Deviation Alarm Level) is too low for the operating conditions.	Check Pn520 (Excessive Position Deviation Alarm Level) to see if it is set to an appropriate value.	Optimize the setting of Pn520.	*1
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.d01: Position Deviation Overflow Alarm at Servo ON	The servo was turned ON after the position deviation exceeded the setting of Pn526 (Excessive Position Deviation Alarm Level at Servo ON) while the servo was OFF.	Check the position deviation while the servo is OFF.	Optimize the setting of Pn526 (Excessive Position Deviation Alarm Level at Servo ON).	
A.d02: Position Deviation Overflow Alarm for Speed Limit at Servo ON	If position deviation remains in the deviation counter, the setting of Pn529 or Pn584 (Speed Limit Level at Servo ON) limits the speed when the servo is turned ON. This alarm occurs if a position reference is input and the setting of Pn520 (Excessive Position Deviation Alarm Level) is exceeded.	_	Optimize the setting of Pn520 (Excessive Position Deviation Alarm Level). Or, adjust the setting of Pn529 or Pn584 (Speed Limit Level at Servo ON).	*1

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.d10:  Motor-Load Position Deviation	The motor direction and external encoder installation orientation are backward.	Check the motor direction and the external encoder installation orientation.	Install the external encoder in the opposite direction, or change the setting of Pn002 = n.X□□□ (External Encoder Usage) to reverse the direction.	*1
Overflow	There is an error in the connection between the load (e.g., stage) and external encoder coupling.	Check the coupling of the external encoder.	Check the mechanical coupling.	-
A.d30: Position Data Overflow	The position data exceeded ±1,879,048,192.	Check the input reference pulse counter.	Reconsider the operating specifications.	-
A.E00: Command Option	The connection between the SERVO-PACK and the command option module is faulty.	Check the connection between the SERVO-PACK and the command option module.	Correctly connect the command option module.	-
Module IF Initial- ization Timeout Error	A command option module fault occurred.	_	Replace the command option module.	-
	A SERVOPACK fault occurred.	_	Replace the SERVO- PACK.	_
A.E02: Command Option Module IF Synchronization Error 1	The timing of synchro- nization between the servomotor and com- mand option module changed due to change in the com- munications cycle of the host controller connected to the command option module.	_	Turn the power supply OFF and then ON again. If the alarm occurs again, restart communications processing from the host controller.	-
	The connection between the SERVO-PACK and the command option module is faulty.	Check the connection between the SERVO-PACK and the command option module.	Correctly connect the command option module.	-
	A command option module fault occurred.	_	Replace the command option module.	_
	A SERVOPACK fault occurred.	_	Replace the SERVO- PACK.	_

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A 500:	An error occurred due to noise in the communications between the SERVOPACK and the command option module.	_	Take measures against noise.	-
A.E03: Command Option Module IF Com- munications Data Error	The connection between the SERVO-PACK and the command option module is faulty.	Check the connection between the SERVO-PACK and the command option module.	Correctly connect the command option module.	-
	A command option module fault occurred.	-	Replace the command option module.	-
	A SERVOPACK fault occurred.	_	Replace the SERVO-PACK.	_
4.570	The connection between the SERVO-PACK and the command option module is faulty.	Check the connection between the SERVO-PACK and the command option module.	Correctly connect the command option module.	-
A.E70: Command Option Module Detec-	The command option module is not connected.	_	Correctly connect the command option module.	-
tion Failure	A command option module fault occurred.	-	Replace the command option module.	-
	A SERVOPACK fault occurred.	-	Replace the SERVO- PACK.	_
	The connection between the SERVO-PACK and the safety option module is faulty.	Check the connection between the SERVO-PACK and the safety option module.	Correctly connect the safety option module.	-
A.E71: Safety Option Module Detec- tion Failure	The safety option module was disconnected.	-	Execute Fn014 (Resetting configuration error of option module) using the digital operator or SigmaWin+ and turn the power supply OFF and then ON again.	*1
	A safety option module fault occurred.	-	Replace the safety option module.	-
	A SERVOPACK fault occurred.	_	Replace the SERVO-PACK.	_
A.E72: Feedback Option Module Detec- tion Failure	There is a faulty con- nection between the SERVOPACK and the Feedback Option Module.	Check the connection between the SERVO- PACK and the Feed- back Option Module.	Correctly connect the Feedback Option Module.	-
	The Feedback Option Module was discon- nected.	_	Reset the Option Module configuration error and turn the power supply to the SERVOPACK OFF and ON again.	*1
	A failure occurred in the Feedback Option Module.	-	Replace the Feedback Option Module.	_
	A failure occurred in the SERVOPACK.	_	Replace the SERVO-PACK.	_

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.E73: Unsupported	A command option module fault occurred.	-	Replace the command option module.	-
Command Option Module	A unsupported command option module was connected.	_	Connect a compatible command option module.	-
A.E74: Unsupported	A safety option module fault occurred.	_	Replace the safety option module.	_
Safety Option Module	A unsupported safety option module was connected.	_	Connect a compatible safety option module.	_
A.E75 <sup>*3</sup> :	A feedback option module fault occurred.	_	Replace the feedback option module.	_
Unsupported Feedback Option Module	A unsupported feed- back option module was connected.	Refer to the catalog of the connected feed- back option module or the manual of the SER- VOPACK.	Connect a compatible feedback option module.	-
A.E80: Command Option Module Unmatched Error	The command option module was replaced with a different model.	_	Execute Fn014 (Resetting configuration error of option module) using the digital operator or SigmaWin+ and turn the power supply OFF and then ON again.	-
A.EA2: Alarm in Current Communications between the INDEXER Module and SERVO- PACK 1	An error occurred in communications between the INDEXER Module and SERVO-PACK during operation.	_	Take steps to reduce noise in the system such as improving frame ground.	*1
A.EA3: Alarm in Current Communications between the INDEXER Module and SERVO- PACK 2	An error occurred in communications between the INDEXER Module and SERVO-PACK during operation.	_	Take steps to reduce noise in the system such as improving frame ground.	*1
A.Eb1: Safety Function Signal Input Tim- ing Error	The delay between activation of the /HWBB1 and /HWBB2 input signals for the HWBB was ten second or longer.	Measure the time delay between the /HWBB1 and /HWBB2 signals.	The output signal circuits or devices for /HWBB1 and /HWBB2 or the SER-VOPACK input signal circuits may be faulty. Alternatively, the input signal cables may be disconnected. Check to see if any of these items are faulty or have been disconnected.	-
	A failure occurred in the SERVOPACK.	-	Replace the SERVO- PACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.EC8: Gate Drive Error 1 (An error occurred in the gate drive circuit.)  A.EC9: Gate Drive Error 2 (An error occurred in the gate drive circuit.)	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.Ed1: Command Option	Processing of the servo ON command from the command option module is not completed.	-	Input a servo ON command when the motor is stopped.	-
Module IF Com- mand Timeout Error	Processing of the sensor ON command from the command option module is not completed.	-	Check that the encoder is connected properly.	-
	The three-phase power supply wiring is not correct.	Check the power supply wiring.	Make sure that the power supply is correctly wired.	*1
A.F10: Power Supply Line Open Phase	The three-phase power supply is unbalanced.	Measure the voltage for each phase of the three-phase power supply.	Balance the power supply by changing phases.	-
(The voltage was low for more than one second for phase R, S, or T when the main	A single-phase power supply was input without specifying a signal-phase AC power supply input (Pn00B = n.□1□□).	Check the power supply and the parameter setting.	Match the parameter setting to the power supply.	*1
power supply was ON.)	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
FL-1*5: System Alarm FL-2*5: System Alarm FL-3*5: System Alarm FL-4*5: System Alarm FL-5*5: System Alarm FL-6*5: System Alarm	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_
CPF00: Digital Operator Communications	There is a faulty contact between the Digital Operator and the SERVOPACK.	Check the connector contact.	Disconnect the connector and insert it again. Or, replace the cable.	_
Error 1	A malfunction was caused by noise.	_	Keep the Digital Operator or the cable away from sources of noise.	_

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
CPF01: Digital Operator Communications Error 2	A failure occurred in the Digital Operator.	_	Disconnect the Digital Operator and then con- nect it again. If an alarm still occurs, the Digital Operator may be faulty. Replace the Digital Oper- ator.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

<sup>\*1.</sup> Refer to the following manual for details.

Σ-7-Series Σ-7S SERVOPACK Command Option Attachable Type with INDEXER Module Product Manual (Manual No.: SIEP S800001 64)

\*2. Detection Conditions

If either of the following conditions is detected, an alarm will occur.

• Pn533 [min<sup>-1</sup>] 
$$\times$$
 Encoder resolution  $\leq$  Pn20E Pn210

• Maximum motor speed [min<sup>-1</sup>] 
$$\times$$
 Encoder resolution Approx.  $3.66 \times 10^{12}$   $\ge$  Pn20E Pn210

\*3. Detection Conditions

If either of the following conditions is detected, an alarm will occur.

• Rated motor speed [min<sup>-1</sup>] 
$$\times$$
 1/3  $\times$   $\frac{\text{Encoder resolution}}{6 \times 10^5} \le \frac{\text{Pn20E}}{\text{Pn210}}$ 

• Maximum motor speed [min<sup>-1</sup>] 
$$\times \frac{\text{Encoder resolution}}{\text{Approx. } 3.66 \times 10^{12}} \ge \frac{\text{Pn20E}}{\text{Pn210}}$$

Σ-7-Series Peripheral Device Selection Manual (Manual No.: SIEP S800001 32)

<sup>\*4.</sup> Refer to the following manual for details.

<sup>\*5.</sup> These alarms are not stored in the alarm history. They are only displayed on the panel display.

# 3.4.4 INDEXER Module Alarm Displays and Troubleshooting

The INDEXER Module alarm list and the corresponding corrective actions are shown below.

Serial Command Negative Response	Alarm Number	Alarm Name	Meaning	Corrective Action	Servo- motor Stop Method	Alarm Reset
E12A	A.AEF	Firmware Execution Alarm	The firmware processing time was too long.	Upgrade the firm-ware version.     Reduce the number of functions being used.	Gr.1	N/A
E13A	A.AEF	Firmware Version Unmatched	The SERVOPACK does not supported this function, because the software version do not match.	Upgrade the SER-VOPACK software version.     Use the SERVO-PACK that supports the corresponding function.     Use the SERVO-PACK with the function set disabled.	Gr.1	N/A
E14A	A.AEF	Parameter Checksum Alarm (Detected only when control power supply is turned ON.)	Incorrect or corrupted parameters are stored in EEPROM. (This alarm can occur if the control power supply is turned OFF while the parameters are being initialized or changed.)	<ul> <li>Initialize the parameters with the PRMI-NIT command or FnB0B.</li> <li>If the problem is not solved, correct the parameters.</li> </ul>	Gr.1	N/A
E15A	A.AEF	Parameter Version Unmatched (Detected only when the control power supply is turned ON.)	The combination of the firmware version number and the parameter version number is wrong.	Change the firmware version. Change the parameter version to match the firmware version.	Gr.1	N/A
E16A	A.AEF	Parameter Out- of-range Alarm (Detected only when control power supply is turned ON.)	The moving method is set to a rotary method (PnB20 = 1, 2, or 3), but the origin set in PnB25 exceeds the software limits set in PnB21 and PnB23.	Correct the origin setting (PnB25) or the software limits (PnB21 and PnB23).	Gr.1	N/A

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Serial Command Negative Response	Alarm Number	Alarm Name	Meaning	Corrective Action	Servo- motor Stop Method	Alarm Reset
E17A	A.E00	Initial Communication Alarm between INDEXER Module and SERVO-PACK (Detected only when control power supply is turned ON.)	The INDEXER Module failed in initialization of communications with the SERVO-PACK when the control power was turned ON.	Take steps to reduce noise in the system such as improving frame ground.	Gr.1	N/A
	A.AEF		The SERVOPACK is not compatible with the INDEXER Module.	Upgrade the SER-VOPACK's software version.     Replace the SER-VOPACK with a SERVOPACK that is compatible with the INDEXER Module.		
	A.C90 or A.040		The INDEXER Module failed in parameter calcula- tion during initial communications with the SERVO- PACK when the control power was turned ON. This can happen in the following cases: When a parame- ter has been changed while the encoder is not connected When a parame- ter has been changed during occurrence of A.040 alarm	Connect the encoder and then change the parameter. Cancel the A.040 alarm and then change the parameter. (If the alarm display is other than A.E00, it can be reset by turning the power OFF and back ON.)		
E18A	A.EA2, A.EA3	Communication Alarm between INDEXER Mod- ule and SERVO- PACK	An error occurred in communications between the INDEXER Module and SERVOPACK during operation.	Take steps to reduce noise in the system such as improving frame ground.	Gr.1	Available
E19A	A.AEF	Program Table Checksum Alarm (Detected only when control power supply is turned ON.)	The program table stored in flash memory was not recorded properly. (This alarm can occur if the control power supply is turned OFF while the program table is being saved or initialized.)	<ul> <li>Initialize the program table with the PGMINIT command or FnB06.</li> <li>If the problem is not solved, correct the program table.</li> </ul>	Gr.1	Available*1

# 3.4.4 INDEXER Module Alarm Displays and Troubleshooting

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Serial Command Negative Response	Alarm Number	Alarm Name	Meaning	Corrective Action	Servo- motor Stop Method	Alarm Reset
E1AA	A.AEF	Program Table Version Unmatched (Detected only when the control power is ON.)	The combination of the firmware version and the program table version is wrong.	Change the firm-ware version.     Change the program table version to match the firm-ware version.	Gr.1	Available*1
E1BA	A.AEF	Program Out- of-range Alarm (Detected only when control power supply is turned ON.)	A value set in the program table is not within the allowed setting range.	Change the firm-ware version.     Change the program table version to match the firm-ware version.	Gr.1	Available*1
E1CA	A.AEF	Zone Table Checksum Alarm (Detected only when control power supply is turned ON.)	The zone table stored in flash memory was not recorded properly. (This alarm can occur if the control power supply is turned OFF while the zone table is being saved or initialized.)	Initialize the zone table with the ZONEINIT command or FnB07.*2 If the problem is not solved, correct the zone table.	Gr.1	Available*2
E1DA	A.AEF	ZONE Table Version Unmatched (Detected only when the control power supply is turned ON.)	The combination of the firmware version and the ZONE table version is wrong.	Change the firmware version. Change the ZONE table version to match the firmware version.	Gr.1	Available*2
E1EA	A.AEF	Zone Table Out- of-range Alarm (Detected only when control power supply is turned ON.)	A value set in the zone table is not within the allowed setting range.	Change the firm-ware version.     Change the ZONE table version to match the firmware version.	Gr.1	Available*2
E1FA	A.AEF	JOG Speed Table Check- sum Alarm (Detected only when control power supply is turned ON.)	The JOG speed table stored in flash memory was not recorded properly. (This alarm can occur if the control power supply is turned OFF while the JOG speed table is being saved or initialized.)	Initialize the JOG speed table with the JSPDINIT command or FnB08.     If the problem is not solved, correct the JOG speed table.	Gr.1	Available*3
E21A	A.AEF	JOG Speed Table Version Unmatched (Detected only when the control power supply is turned ON.)	The combination of the firmware version and the JOG speed table version is wrong.	Change the firm-ware version. Change the JOG speed table version to match the firm-ware version.	Gr.1	Available*3

3.4.4 INDEXER Module Alarm Displays and Troubleshooting

Serial Command Negative Response	Alarm Number	Alarm Name	Meaning	Corrective Action	Servo- motor Stop Method	Alarm Reset
E22A	A.AEF	JOG Speed Table Out-of- range Alarm (Detected only when control power supply is turned ON.)	A value set in the JOG speed table is not within the allowed setting range.	Change the firm-ware version. Change the JOG speed table version to match the firm-ware version.	Gr.1	Available*3
E23A	A.AEF	Insufficient Reg- istration Dis- tance Alarm	The registration distance was shorter than the deceleration distance when the /RGRT signal went ON to start registration operation. (The current position will exceed the position specified by registration.)	Either increase the registration distance or reduce the deceleration distance (increase the deceleration rate).  The registration distance can be set by executing the RDST command or changing the RDST parameter in the program table.  The deceleration rate can be changed by executing the DEC command or changing parameter PnB2B.	Gr.1	Available

<sup>\*1.</sup> These alarms can be reset, but a Canceled Program Table Error (E44E) will occur the next time you attempt to start program table operation, so program table operation will not be possible.

<sup>\*2.</sup> These alarms can be reset, but it is possible that the zone signals (POUT0 to POUT7) will be output incorrectly. When using the zone table, correct the zone table without resetting.

<sup>\*3.</sup> These alarms can be reset, but a Canceled JOG Speed Table Error (E46E) will occur the next time you attempt to start JOG speed table operation, so JOG speed table operation will not be possible.

3.4.5 Warning Displays

# 3.4.5 Warning Displays

Warnings are displayed to warn you before an alarm occurs. If a warning occurs in the SERVO-PACK, the status is displayed as described below.

### Status Display

The alarm number will be displayed.  Refer to the following section for details.  Σ-7-Series Σ-7S SERVOPACK Command Option Attachable Type with INDEXER Module Product Manual (Manual No.: SIEP S800001 64)
Green indicator: Remains unlit Red indicator: Remains lit Refer to the following section for details.  Σ-7-Series Σ-7S SERVOPACK Command Option Attachable Type with INDEXER Module Product Manual (Manual No.: SIEP S800001 64)
When a warning occurs, the warning code is displayed at the top left of the screen.
Warning code
No change
No change
Turns ON.

# 3.4.6 List of Warnings

### ◆ Troubleshooting Warnings

This section gives the warning names, warning meanings, and warning code outputs in order of the warning numbers.

Warning	Warning Namo	Warning Name Meaning		g Code	Output
Number	vvarning ivaine			/ALO2	/ALO3
A.900	Position Deviation Overflow	The position deviation exceeded the percentage set with the following formula: (Pn520 x Pn51E/100)	Н	Н	Н
A.901	Position Deviation Overflow Alarm at Servo ON	The position deviation when the servo was turned ON exceeded the percentage set with the following formula: (Pn526 × Pn528/100)	П		
A.910	Overload	This warning occurs before an overload alarm (A.710 or A.720) occurs. If the warning is ignored and operation is continued, an alarm may occur.			
A.911	Vibration	Abnormal vibration was detected during motor operation. The detection level is the same as A.520. Set whether to output an alarm or a warning by setting Pn310 (Vibration Detection Switch).	LH		Н

Continued from previous page.

Warning	Warning Name	Magning	Warnin	g Code	Output
Number	Warning Name	Meaning	/ALO1	/ALO2	/ALO3
A.912	Internal Temperature Warning 1 (Control Board Temperature Error)	The surrounding temperature of the control PCB is abnormal.			
A.913	Internal Temperature Warning 2 (Power Board Temperature Error)	The surrounding temperature of the power PCB is abnormal.			
A.920	Regenerative Overload	This warning occurs before an A.320 alarm (Regenerative Overload) occurs. If the warning is ignored and operation is continued, an alarm may occur.	Н	L	H
A.921	Dynamic Brake Over- load	This warning occurs before an A.731 alarm (Dynamic Brake Overload) occurs. If the warning is ignored and operation is continued, an alarm may occur.			
A.923	SERVOPACK Built-in Fan Stopped	The fan inside the SERVOPACK stopped.			
A.930	Absolute Encoder Bat- tery Error	This warning occurs when the voltage of absolute encoder's battery is low.	L	L	Н
A.93B	Overheat Warning	The input voltage (temperature) for the overheat protection input (TH) signal exceeded the setting of Pn61C (Overheat Warning Level).	L	L	Н
A.942	Speed Ripple Compensation Information Disagreement	The speed ripple compensation information stored in the encoder does not agree with the speed ripple compensation information stored in the SERVO-PACK.	Н	Н	L
A.971	Undervoltage	This warning occurs before an A.410 alarm (Undervoltage) occurs. If the warning is ignored and operation is continued, an alarm may occur.	L	L	L
A.9A0	Overtravel	Overtravel was detected while the servo was ON.	Н	L	L
A.9b0	Preventative Mainte- nance Warning	One of the consumable parts has reached the end of its service life.	Н	L	Н
A.A9F	Error	Some kind of error has occurred at the INDEXER Module.*	L	Н	Н

<sup>\*</sup> Refer to the following manual for details.

Σ-7-Series Σ-7S SERVOPACK Command Option Attachable Type with INDEXER Module Product Manual (Manual No.: SIEP S800001 64)

Note: 1. A warning code is not output unless you set Pn001 to n.1 \(\sigma\) (Output both alarm codes and warning codes).

Use Pn008 = n.□X□□ (Warning Detection Selection) to control warning detection.
 However, the following warnings are not affected by the setting of Pn008 = n.□X□□ and other parameter settings are required in addition to Pn008 = n.□X□□.

Warning	Parameters That Must Be Set to Select Warning Detection
A.911	Pn310 = n.□□□X (Vibration Detection Setting)
A.930	Pn008 = n.□□□X (Low Battery Voltage Alarm/Warning Selection)
A.942	Pn423 = n.□□X□ (Speed Ripple Compensation Information Disagreement Warning Detection Selection)
A.971	Pn008 = n.□□□X (Low Battery Voltage Alarm/Warning Selection) (Not affected by the setting of Pn008 = n.□X□□.)
A.9A0	Pn00D = n.X□□□ (Overtravel Warning Detection Selection) (Not affected by the setting of Pn008 = n.□X□□.)
A.9b0	Pn00F = n.□□□X (Preventative Maintenance Selection)

# 3.4.7 **Troubleshooting Warnings**

The causes of and corrections for the warnings are given in the following table. Contact your Yaskawa representative if you cannot solve a problem with the correction given in the table.

Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The Servomotor U, V, and W wiring is not correct.	Check the wiring of the Servomotor's Main Circuit Cables.	Make sure that there are no faulty connections in the wiring for the Servomotor and encoder.	-
	A SERVOPACK gain is too low.	Check the SERVO- PACK gains.	Increase the servo gain, e.g., by using autotuning without a host reference.	*
A.900: Position Deviation Overflow	The acceleration of the position reference is too high.	Reduce the reference acceleration and try operating the SERVO-PACK.	Reduce the acceleration of the position reference with one of the following methods.  • Reduce the acceleration rate (ACC) and deceleration rate (DEC) in the program table.  • Reduce the settings of PnB29 (Acceleration Rate) and PnB2B (Deceleration Rate).	-
	The excessive position deviation alarm level (Pn520 × Pn51E/100) is too low for the operating conditions.	Check excessive position deviation alarm level (Pn520 × Pn51E/100) to see if it is set to an appropriate value.	Optimize the settings of Pn520 and Pn51E.	*
	A failure occurred in the SERVO-PACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.901: Position Deviation Overflow Alarm at Servo ON	The position deviation when the servo was turned ON exceeded the percentage set with the following formula: (Pn526 × Pn528/100)	_	Optimize the setting of Pn528 (Excessive Position Error Warning Level at Servo ON).	-

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Warning Number:	Deseible Cour	Confineration	Committee from pre	
Warning Name	Possible Cause	Confirmation	Correction	Reference
	The wiring is not correct or there is a faulty contact in the motor or encoder wiring.	Check the wiring.	Make sure that the Servo- motor and encoder are cor- rectly wired.	-
	Operation was performed that exceeded the overload protection characteristics.	Check the motor over- load characteristics and Run command.	Reconsider the load and operating conditions. Or, increase the motor capacity.	-
A.910: Overload (warning before an A.710 or A.720 alarm occurs)	An excessive load was applied during operation because the Servomotor was not driven because of mechanical problems.	Check the operation reference and motor speed.	Remove the mechanical problem.	-
	The overload warning level (Pn52B) is not suitable.	Check that the overload warning level (Pn52B) is suitable.	Set a suitable overload warning level (Pn52B).	*
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-
	Abnormal vibration was detected during motor operation.	Check for abnormal motor noise, and check the speed and torque waveforms during operation.	Reduce the motor speed. Or, reduce the servo gain with custom tuning.	*
A.911: Vibration	The setting of Pn103 (Moment of Inertia Ratio) is greater than the actual moment of inertia or was greatly changed.	Check the moment of inertia ratio or mass ratio.	Set Pn103 (Moment of Inertia Ratio) to an appropriate value.	*
	The vibration detection level (Pn312 or Pn384) is not suitable.	Check that the vibration detection level (Pn312 or Pn384) is suitable.	Set a suitable vibration detection level (Pn312 or Pn384).	*

### 3.4.7 Troubleshooting Warnings

Continued from previous page.

Warning Number: Warning Name	Possible Cause	Confirmation	Continued from pre	Reference
Warming Warne	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environ-	Decrease the surrounding temperature by improving the SERVOPACK installation conditions.	*
	An overload alarm was reset by turning OFF the power supply too many times.	ment monitor.  Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	_
A.912: Internal Tempera- ture Warning 1 (Control Board Tem- perature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVO- PACK installation con- ditions.	Install the SERVOPACK according to specifications.	*
	A failure occurred in the SERVO-PACK.	-	The SERVOPACK may be faulty. Replace the SERVO-PACK.	_
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVOPACK installation conditions.	*
	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
A.913: Internal Tempera- ture Warning 2 (Power Board Tem- perature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVO- PACK installation con- ditions.	Install the SERVOPACK according to specifications.	*
	A failure occurred in the SERVO-PACK.	-	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-

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Continued from	previous page.

Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
A.920: Regenerative Overload (warning before an A.320 alarm occurs)	There is insufficient external regenerative resistance, regenerative resistor capacity, or SER-VOPACK capacity, or there has been a continuous regeneration state.	Check the operating conditions or the capacity using the SigmaJunmaSize+ Capacity Selection Software or another means.	Change the regenerative resistance value, regenerative resistance capacity, or SERVOPACK capacity. Reconsider the operating conditions using the Sigma-JunmaSize+ Capacity Selection Software or other means.	-
	There was a continuous regeneration state because a negative load was continuously applied.	Check the load applied to the Servomotor during operation.	Reconsider the system including the servo, machine, and operating conditions.	-
	The Servomotor was rotated by an external force.	Check the operation status.	Implement measures to ensure that the motor will not be rotated by an external force.	-
A.921: Dynamic Brake Overload (warning before an A.731 alarm occurs)	When the Servo- motor was stopped with the dynamic brake, the rotational or linear kinetic energy exceeded the capacity of the dynamic brake resistor.	Check the power consumed by the DB resistor to see how frequently the DB is being used.	Reconsider the following:  Reduce the Servomotor command speed.  Decrease the moment of inertia or mass.  Reduce the frequency of stopping with the dynamic brake.	-
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	_
A.923: SERVOPACK Built- in Fan Stopped	The fan inside the SERVOPACK stopped.	Check for foreign matter inside the SERVO-PACK.	Remove foreign matter from the SERVOPACK. If an alarm still occurs, the SER- VOPACK may be faulty. Replace the SERVOPACK.	-
A.930: Absolute Encoder Battery Error (The absolute encoder battery voltage was lower than the spec- ified level.) (Detected only when an abso-	The battery con- nection is faulty or a battery is not connected.	Check the battery connection.	Correct the battery connection.	*
	The battery voltage is lower than the specified value (2.7 V).	Measure the battery voltage.	Replace the battery.	*
lute encoder is connected.)	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	_

#### 3.4.7 Troubleshooting Warnings

Continued from previous page.

Warning Number:	Warning Number:			
Warning Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat.	Lower the surrounding temperature by improving the installation conditions of the machine.	-
A.93B:	Operation was performed under an excessive load.	Use the accumulated load ratio to check the load during operation.	Reconsider the load and operating conditions.	-
Overheat Warning	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	_
	The sensor attached to the machine is faulty.	-	The sensor attached to the machine may be faulty. Repair the sensor attached to the machine.	-
	The speed ripple	_	Reset the speed ripple compensation value on the SigmaWin+.	*
A.942: Speed Ripple Compensation Informa-	compensation information stored in the encoder does not agree with the speed ripple compensa-	_	Set Pn423 to n. □□1□ (Do not detect A.942 alarms). However, changing the setting may increase the speed ripple.	*
tion Disagreement	tion information stored in the SER- VOPACK.	_	Set Pn423 to n. \(\sum \sup \sup \sup \sup \) (Disable torque ripple compensation). However, changing the setting may increase the speed ripple.	*
	For a 200-V SER- VOPACK, the AC power supply volt- age dropped below 140 V.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
	For a 100-V SER- VOPACK, the AC power supply volt- age dropped below 60 V.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
A.971: Undervoltage	The power supply voltage dropped during operation.	Measure the power supply voltage.	Increase the power supply capacity.	_
	A momentary power interruption occurred.	Measure the power supply voltage.	If you have changed the setting of Pn509 (Momentary Power Interruption Hold Time), decrease the setting.	*
	The SERVOPACK fuse is blown out.	_	Replace the SERVOPACK and connect a reactor.	*
	A failure occurred in the SERVO-PACK.	-	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-

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Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
A.9A0: Overtravel (Overtravel status was detected.)	Overtravel was detected while the servo was ON.	Check the status of the overtravel signals on the input signal monitor.	Even if an overtravel signal is not shown by the input signal monitor, momentary overtravel may have been detected. Take the following precautions.  • Do not specify movements that would cause overtravel from the host controller.  • Check the wiring of the overtravel signals.  • Implement countermeasures against noise.	*
A.9b0: Preventative Mainte- nance Warning	One of the consumable parts has reached the end of its service life.	_	Replace the part. Contact your Yaskawa representative for replacement.	*
A.A9F: Error	An error occurred in the INDEXER Module.	Use the SigmaWin+ to check the serial command negative response of the INDEXER Module.	Observe the processing method for serial command negative responses from the INDEXER Module.	*

<sup>\*</sup> Refer to the following manual for details.

Ω Σ-7-Series Σ-7S SERVOPACK Command Option Attachable Type with INDEXER Module Product Manual (Manual No.: SIEP S800001 64)

# 3.4.8 INDEXER Module Error Displays and Troubleshooting

Negative responses (error responses) to input signals, serial commands, or operations from the Digital Operator are known as errors.

The servo will not be turned OFF when an error occurs.

### Status Displays

SERVOPACK Panel Display	"A.A9F" is displayed for 2 seconds.
Indicator	Red indicator: Flashes for 2 seconds. Refer to the following manual for details.  S-7-Series S-7S SERVOPACK Command Option Attachable Type with INDEXER Module Product Manual (Manual No.: SIEP S800001 64)
Digital Operator	"A.A9F" is displayed for 2 seconds at the top left of the screen.
Response to the Alarm or Warning Read Command (ALM)	No change
Response to the Most Recent Error Read Command (ERR)	Error code (the most recent (closest) error code)
ALM Signal	No change
/WARN Signal	The signal is valid for 2 seconds.

The INDEXER Module error displays and the corrective actions are shown below.

Serial Command Negative Response	Alarm Number	Error Name	Meaning	Corrective Action
E41E	A.A9F	Program Table Save Failure Error	<ul> <li>While writing data to the flash memory, a failure occurred during one of the following operation.</li> <li>While saving a program table by using a PGMSTORE command</li> <li>While saving a program table by using FnB03</li> <li>While initializing a program table by using a PGMINIT command</li> <li>While initializing a program table by using FnB06</li> </ul>	Repair the hard- ware.
E42E	A.A9F	Zone Table Save Failure Error	<ul> <li>While writing data to the flash memory, a failure occurred during one of the following operation.</li> <li>While saving a zone table by using a ZONESTORE command</li> <li>While saving a zone table by using FnB04</li> <li>While initializing a zone table by using a ZONEINIT command</li> <li>While initializing a zone table by using FnB07</li> </ul>	Repair the hardware.

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Serial Command Negative Response	Alarm Number	Error Name	Meaning	Corrective Action
E43E	A.A9F	JOG Speed Table Save Failure Error	<ul> <li>While writing data to the flash memory, a failure occurred during one of the following operation.</li> <li>While saving a JOG speed table by using a JSPDSTORE command</li> <li>While saving a JOG speed table by using FnB05</li> <li>While initializing a JOG speed table by using a JSPDINIT command</li> <li>While initializing a JOG speed table by using FnB08</li> </ul>	Repair the hard- ware.
E44E	A.A9F	Canceled Pro- gram Table Error	There was a request to start program table operation even though an E19A or E1BA alarm occurred when the control power supply was turned ON.	Remove the cause of the alarm.
E46E	A.A9F	Canceled JOG Speed Table Error	There was a request to start JOG speed table operation even though an E1FA or E22A alarm occurred when the control power supply was turned ON.	Remove the cause of the alarm.
E47E	A.A9F	Serial Communications Receiving Buffer Overflow Error	There was an overflow in the reception buffer used for serial commands.  • An error will occur if too many serial commands are sent consecutively without waiting for the responses.  (Normally, the reception buffer will not overflow if there is command/response handshaking.)  • When an overflow has occurred, error code E47E will be returned and all of the data that has accumulated in the reception buffer will be discarded.	Wait for a response to be received before sending the next command. The reception buffer can contain up to 100 commands.
E48E	A.A9F	Serial Communications Parity Error	A parity check error occurred with the serial command.  This error will occur if even parity is not being used.  The command that caused this error will be discarded and no response will be returned.  There will be no response, but the /WARN output and LED indicators will indicate that an error has occurred.	Check the serial communications protocol (PnB00) and bit rate (PnB01) settings. Check the wiring. If noise may be causing the problem, take steps to reduce noise such as using communications cables with ferrite cores.

#### 3.4.8 INDEXER Module Error Displays and Troubleshooting

Continued from previous page.

Serial Command Negative Response	Alarm Number	Error Name	Meaning	Corrective Action
E49E	A.A9F	Serial Communi- cations Framing Error	A stop bit detection error occurred with the serial command.  • The command that caused this error will be discarded and no response will be returned.  • There will be no response, but the /WARN output and LED indicators will indicate that an error has occurred.	<ul> <li>Check the serial communications protocol (PnB00) and bit rate (PnB01) settings.</li> <li>Check the wiring.</li> <li>If noise may be causing the problem, take steps to reduce noise such as using communications cables with ferrite cores.</li> </ul>
E4AE	A.A9F	Serial Communi- cations Overrun Error	Serial command reception failed.  • The hardware's reception buffer was overwritten with the subsequent data.  (Normally, data is read before it is overwritten, so this error does not occur.)	Repair the hard- ware.
E4BE	A.A9F	Moving Disabled Error due to P-OT	Travel in the forward direction was requested when P-OT was in effect. (Forward movement is disabled when P-OT (forward overtravel) is in effect.)	<ul> <li>When P-OT is being used, move to a position where the P-OT is not in effect.</li> <li>When P-OT is not being used, disable P-OT in the parameter (PnBOF = 3).</li> </ul>
E4CE	A.A9F	Moving Disabled Error due to N-OT	Travel in the reverse direction was requested when N-OT was in effect. (Reverse movement is disabled when N-OT (reverse overtravel) is in effect.)	<ul> <li>When N-OT is being used, move to a position where the N-OT is not in effect.</li> <li>When N-OT is not being used, disable N-OT in the parameter (PnB10 = 3).</li> </ul>

Serial Command Negative Response	Alarm Number	Error Name	Meaning	Corrective Action
E4DE	A.A9F	Moving Disabled Error due to P-LS	The specified target position exceeds the position reference of forward software limit set in PnB21.	<ul> <li>Check the target position specification.</li> <li>Check the forward software limit in PnB21.</li> <li>Check the moving mode (rotary or linear) set in PnB20.</li> <li>If software limits are not being used, either select a rotary moving mode in PnB20 or disable the software limits by setting PnB21 = PnB23 = 0.</li> </ul>
E4EE	A.A9F	Moving Disabled Error due to N-LS	The specified target position exceeds the position reference of reverse software limit set in PnB23.	<ul> <li>Check the target position specification.</li> <li>Check the reverse software limit in PnB23.</li> <li>Check the moving mode (rotary or linear) set in PnB20.</li> <li>If software limits are not being used, either select a rotary moving mode in PnB20 or disable the software limits by setting PnB21 = PnB23 = 0.</li> </ul>
E4FE	A.A9F	Position Reference Out-of-range Error  The moving method is set to rotary (PnB20 = 1, 2, or 3) and the target position specification exceeds the position reference limits in PnB21 and PnB23.		Check the target position specification. Check the positioning range set with PnB21 and PnB23. Check the moving method (rotary or linear) set in PnB20.

#### 3.4.8 INDEXER Module Error Displays and Troubleshooting

Continued from previous page.

Serial Command Negative Response	Alarm Number	Error Name	Meaning	Corrective Action
E51E	A.A9F	Target Position Unspecified Error	Even though the target position was not specified even once, there was a request by the ST command to start positioning or a request by the RS command to start registration positioning.	Specify a target position with a command such as the POS command, STnnnnnnnnn command, or RSnnnnnnnn command.
E52E	A.A9F	Registration Distance Unspecified Error	Even though the registration distance was not specified even once, there was a request by the RS command to start registration positioning.	Specify a registration distance with the RDST command.
E53E	A.A9F	Move Reference Duplication Error	There was a new move reference requested even though the system was already moving in a positioning or other traveling operation.	Send the next move reference request only after the current movement is completed (Position reference distribution is completed). A movement can be interrupted or canceled with the HOLD or SKIP commands. Also, STOP can be specified in the target position specification (POS) with the program table.

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Serial Command Negative Response	Alarm Number	Error Name	Meaning	Corrective Action	
E54E	A.A9F	Servo ON Incomplete Error	The servo is not ON.  • There was a positioning request or other move reference request in servo OFF status.  The servo went OFF during program table operation.  (Program table operation will be interrupted while just the step that was being executed is canceled (If LOOP ≠ 1, the first LOOP is canceled.))	Send the move reference request only after turning the servo ON by turning ON the / S-ON signal, setting PnBOE = 2 so that the /S-ON signal is always ON, or executing the SVON command. There are two possibilities.  The program can be canceled with the / PGMRES signal or PGM-RES command.  The servo can be turned ON and the program can be restarted with the /START-STOP signal or the START command.	
E55E	A.A9F	Servo ON Failure Error	The servo could not be turned ON within 2 s after turning ON the /S-ON signal or executing the SVON command.  The motor is rotating during servo ON execution.  The main power supply went OFF during servo ON execution.  Hard wire base block status (HWBB status)  Error E5BE will occur if there was an alarm when the servo ON request was sent using the SVON command. Error E5CE will occur if the main power supply was OFF when the servo ON request was sent.	Turn the servo ON when the motor is stopped. Check the main power supply. Turn ON signals /HWBB1, /HWBB2. After that, temporarily establish the servo OFF status by turning the /S-ON signal OFF or sending the SVOFF command, then turn the servo ON again.	
E56E	A.A9F	Undefined Serial Command Error	There was a syntax error in the serial command. There was a number in the serial command longer than 8 digits or 10 digits.	Check the serial command's character string.	
E57E	A.A9F	Address Out-of- range Error	The specified address was incorrect for a parameter, program table, zone table, JOG speed table, alarm history, or monitor read/write command.	Check the address.	

#### 3.4.8 INDEXER Module Error Displays and Troubleshooting

Continued from previous page.

Serial Command Negative Response	Alarm Number	Error Name	Meaning	Corrective Action
E58E	A.A9F	Data Out-of- range Error	The specified setting was incorrect in a parameter or program table write command.	Check the set- ting.
E59E	A.A9F	Communication Failure Error between INDEXER Module and SERVOPACK	Communications between the INDEXER Module and the SERVOPACK have failed.	Check the version of the SER-VOPACK.
E5AE	A.A9F	Execution Dis- abled while Servo ON Error	Some of the utility functions, such as parameter initialization, has been requested while still in the servo ON status. For safety, the following functions cannot be executed in the servo ON status.  • Serial commands: Parameter initialization, absolute encoder reset, motor current zero adjustment  • SigmaWin+: Parameter initialization	Execute these functions after turning the servo OFF.
E5BE	A.A9F	Execution Dis- abled while Alarm Activated Error	Servo ON was requested (the SVON command was executed) while there was an alarm.	Turn the servo ON after eliminating the cause of the alarm and clearing the alarm.
E5CE	A.A9F	Execution Dis- abled while Main Power OFF Error	Servo ON was requested (the SVON command was executed) while the main power supply was OFF.	Turn the servo ON after turning ON the main power supply.
E5DE	A.A9F	Origin Return Method Unspeci- fied Error	The origin return method is not specified.  • An origin return start was requested (/ HOME signal was turned ON or ZRN command was executed) without setting the origin return method.	Specify the origin return method in PnB31.
E5EE	A.A9F	Execution Dis- abled during Pro- gram Table Operation Error	There was a request to execute a process that is not allowed during program table operation while program table operation was in progress or on hold. There was an attempt to change the program table while program table operation was in progress or on hold. There was a request to start positioning by a serial command while program table operation was in progress or on hold.	Request execution of the process again after canceling program table operation by turning the /PGMRES signal ON.
E5FE	A.A9F	Session Conflict Error	There was a request that could not be executed at the same time as the function that was being executed.  Example: There was a request to start program table operation while the program table was being initialized.	Execute the operation again after the execution of the current function is completed.

3

Continued from previous page.

Serial Command Negative Response	Alarm Number	Error Name	Meaning	Corrective Action
E61E	A.A9F	Encoder Mis- match Error	There was a request that was incompatible with the connected encoder.  Examples:  • An Absolute Encoder Reset (ABSPGRES command) was requested when an incremental encoder is connected.  • An origin return start was requested (/ HOME signal was turned ON or ZRN command was executed) when an absolute encoder is connected.  (An absolute encoder can be used as an incremental encoder if parameter Pn002.2 = 1.)	Check the encoder.
E62E	A.A9F	No A.CC0 Alarm Occurred Error	A Multi-turn Limit Setting (MLTLIMSET command) was requested even though alarm A.CC0 has not occurred. (Alarm A.CC0 indicates that Pn205 does not match the setting in the encoder after the multi-turn limit setting in Pn205 was changed and the control power supply was turned OFF and ON.)	Use the Multi- turn Limit Setting operation to adjust the setting in the encoder to match Pn205 only after alarm A.CC0 has occurred.
E63E	A.A9F	Continuous Stop Execution Dis- abled Error	An attempt was made to execute a continuous stop under conditions where it could not be executed.  Examples:  • The coordinates have been set to linear moving method.  • The immediately-preceding table target position is not ±INFINITE.  • The immediately-preceding table target position is ±INFINITE, but the registration distance is set.  • A value other than 1 has been set for the execution count.	Execute a continuous stop under conditions where it can be executed.
E65E	A.9F9	Execution Error during Position Deviation Clear	Program table operation, JOG speed table operation, or homing was executed during position deviation clear.	Clear the status of position deviation clear.

# 3.4.9 Troubleshooting Based on the Operation and Conditions of the Servomotor

This section provides troubleshooting based on the operation and conditions of the Servomotor, including causes and corrections.

Problem	Possible Cause	Confirmation	Correction	Reference
	The control power supply is not turned ON.	Measure the voltage between control power supply terminals.	Turn OFF the power supply to the servo system. Correct the wiring so that the control power supply is turned ON.	-
	The main circuit power supply is not turned ON.	Measure the voltage across the main circuit power input terminals.	Turn OFF the power supply to the servo system. Correct the wiring so that the main circuit power supply is turned ON.	-
	The I/O signal connector (CN1) pins are not wired correctly or are disconnected.	Turn OFF the power supply to the servo system. Check the wiring condition of the I/O signal connector (CN1) pins.	Correct the wiring of the I/O signal connector (CN1) pins.	*
Servomotor Does Not Start	The wiring for the Servomotor Main Circuit Cables or Encoder Cable is disconnected.	Check the wiring conditions.	Turn OFF the power supply to the servo system. Wire the cable correctly.	-
	There is an overload on the Servomotor.	Operate the Servomotor with no load and check the load status.	Turn OFF the power supply to the servo system. Reduce the load or replace the Servomotor with a Servomotor with a larger capacity.	-
	The type of encoder that is being used does not agree with the setting of Pn002 = n.\(\sigma \times \sigma	Check the type of the encoder that is being used and the setting of $Pn002 = n.\square X \square \square$ .	Set Pn002 = n.□X□□ according to the type of the encoder that is being used.	*
	Settings for input signals PnB03 to PnB12 are incor- rect.	Check settings of input signals PnB03 to PnB12.	Correct the settings of input signals PnB03 to PnB12.	*
	The /S-ON (Servo ON) signal was not received.	Check the commands sent from the host controller.	Turn ON the /S-ON signal from the host controller.	*
	The P-OT (Forward Drive Prohibit) or N-OT (Reverse Drive Prohibit) signal is still OFF.	Check the P-OT and N-OT signals.	Turn ON the P-OT and N-OT signals.	*
	The current position of the servomotor is outside the software limit setting range.	Check the error at the INDEXER Module.	Check the motor position and software limit setting (PnB21, PnB23), then move the servomotor into the software limit setting range.	-
	There is no position reference, or it is incorrect.	Check the error at the INDEXER Module.	Set the program table correctly.  Continued or	_

3.4.9 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

Problem	Possible Cause	Confirmation	Correction	Reference
	. coolsie cause		Turn ON the /HWBB1	11010101100
Servomotor	The safety input signals (/HWBB1 or /HWBB2) were not turned ON.	Check the /HWBB1 and /HWBB2 input signals.	and /HWBB2 input sig- nals. If you are not using the safety func- tion, connect the Safety Jumper Connector (provided as an acces- sory) to CN8.	*
Moves Instanta- neously, and Then Stops	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	_
	There is a mistake in the Servomotor wiring.	Turn OFF the power supply to the servo system. Check the wiring.	Wire the Servomotor correctly.	-
	There is a mistake in the wiring of the encoder or Serial Converter Unit.	Turn OFF the power supply to the servo system. Check the wiring.	Wire the Serial Converter Unit correctly.	-
Servomotor Speed Is Unstable	There is a faulty connection in the Servomotor wiring.	Turn OFF the power supply to the servo system. The connector connections for the power line (U, V, and W phases) and the encoder or Serial Converter Unit may be unstable. Check the wiring.	Tighten any loose terminals or connectors and correct the wiring.	-
Servomotor Moves with- out a Refer- ence Input	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	_
	The setting of Pn001 = n.□□□X (Servo OFF or Alarm Group 1 Stopping Method) is not suitable.	Check the setting of Pn001 = n.□□□X.	Set Pn001 = n.□□□X correctly.	-
Dynamic Brake Does Not Operate	The dynamic brake resistor is disconnected.	Check the moment of inertia, motor speed, and dynamic brake frequency of use. If the moment of inertia, motor speed, or dynamic brake frequency of use is excessive, the dynamic brake resistance may be disconnected.	Turn OFF the power supply to the servo system. Replace the SERVO-PACK. To prevent disconnection, reduce the load.	-
	There was a failure in the dynamic brake drive circuit.	_	Turn OFF the power supply to the servo system. There is a defective component in the dynamic brake circuit. Replace the SERVO-PACK.	-

#### 3.4.9 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

Problem	Possible Cause	Confirmation	Continued from pre	Reference
TODICITI	i ossibie oduse	Committation	Reduce the load so	Ticicience
	The Servomotor vibrated considerably while performing the tuning-less function with the default settings.	Check the waveform of the motor speed.	that the moment of inertia ratio or mass ratio is within the allowable value, or increase the load level or reduce the rigidity level in the tuning-less level settings.	*
		Turn OFF the power supply to the servo system. Check to see if there are any loose mounting screws.	Tighten the mounting screws.	-
	The machine mounting is not secure.	Turn OFF the power supply to the servo system. Check to see if there is misalignment in the coupling.	Align the coupling.	_
		Turn OFF the power supply to the servo system. Check to see if the coupling is balanced.	Balance the coupling.	_
	The bearings are defective.	Turn OFF the power supply to the servo system. Check for noise and vibration around the bearings.	Replace the Servomotor.	-
Abnormal Noise from Servomotor	There is a vibration source at the driven machine.	Turn OFF the power supply to the servo system. Check for any foreign matter, damage, or deformation in the machine's moving parts.	Consult with the machine manufacturer.	_
	Noise interference occurred because of incorrect I/O signal cable specifications.	Turn OFF the power supply to the servo system. Check the I/O signal cables to see if they satisfy specifications. Use shielded twisted-pair wire cables or screened twisted-pair cables with conductors of at least 0.12 mm <sup>2</sup> .	Use cables that satisfy the specifications.	-
	Noise interference occurred because an I/O signal cable is too long.	Turn OFF the power supply to the servo system. Check the lengths of the I/O signal cables.	The I/O signal cables must be no longer than 3 m.	-
	Noise interference occurred because of incorrect Encoder Cable specifications.	Turn OFF the power supply to the servo system. Make sure that the rotary or Linear Encoder Cable satisfies the specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with a conductors of at least 0.12 mm <sup>2</sup> .	Use cables that satisfy the specifications.	-
	Noise interference occurred because the Encoder Cable is too long.	Turn OFF the power supply to the servo system. Check the length of the Encoder Cable.	Rotary Servomotors: The Encoder Cable length must be 50 m max.	_

3.4.9 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

Problem	em Possible Cause Confirmation		Correction	Reference
	Noise interference occurred because the Encoder Cable is damaged.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it is pinched or the sheath is damaged.	Replace the Encoder Cable and correct the cable installation envi- ronment.	-
	The Encoder Cable was subjected to excessive noise interference.	Turn OFF the power supply to the servo system. Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-current line.	Correct the cable lay- out so that no surge is applied by high-current lines.	-
	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Turn OFF the power supply to the servo system. Check to see if the machines are correctly grounded.	Properly ground the machines to separate them from the FG of the encoder.	-
Abnormal Noise from Servomotor	There is a SERVOPACK pulse counting error due to noise.	Check to see if there is noise interference on the signal line from the encoder.	Turn OFF the power supply to the servo system. Implement countermeasures against noise for the encoder wiring.	_
	The encoder was subjected to excessive vibration or shock.	Turn OFF the power supply to the servo system. Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting surface precision, securing state, and alignment).	Reduce machine vibration. Improve the mounting conditions of the Servomotor.	-
	A failure occurred in the encoder.	_	Turn OFF the power supply to the servo system. Replace the Servomotor.	-
	The servo gains are not balanced.	Check to see if the servo gains have been correctly tuned.	Perform autotuning without a host reference.	*
Commenter	The setting of Pn100 (Speed Loop Gain) is too high.	Check the setting of Pn100. The default setting is Kv = 40.0 Hz.	Set Pn100 to an appropriate value.	-
Servomotor Vibrates at Frequency of Approx. 200 to 400 Hz.	The setting of Pn102 (Position Loop Gain) is too high.	Check the setting of Pn102. The default setting is Kp = 40.0/s.	Set Pn102 to an appropriate value.	-
	The setting of Pn101 (Speed Loop Integral Time Constant) is not appropriate.	Check the setting of Pn101. The default setting is Ti = 20.0 ms.	Set Pn101 to an appropriate value.	_
	The setting of Pn103 (Moment of Inertia Ratio or Mass Ratio) is not appropri- ate.	Check the setting of Pn103.	Set Pn103 to an appropriate value.	-

#### 3.4.9 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

Problem	Possible Cause	Confirmation	Continued from pre	Reference
1 TOBIONI	The servo gains are not balanced.	Check to see if the servo gains have been correctly tuned.	Perform autotuning without a host reference.	*
	The setting of Pn100 (Speed Loop Gain) is too high.	Check the setting of Pn100. The default setting is Kv = 40.0 Hz.	Set Pn100 to an appropriate value.	-
Large Motor Speed	The setting of Pn102 (Position Loop Gain) is too high.	Check the setting of Pn102. The default setting is Kp = 40.0/s.	Set Pn102 to an appropriate value.	-
Overshoot on Starting and Stop- ping	The setting of Pn101 (Speed Loop Integral Time Constant) is not appropriate.	Check the setting of Pn101. The default setting is Ti = 20.0 ms.	Set Pn101 to an appropriate value.	_
	The setting of Pn103 (Moment of Inertia Ratio or Mass Ratio) is not appropri- ate.	Check the setting of Pn103.	Set Pn103 to an appropriate value.	_
	The torque reference is saturated.	Check the waveform of the torque reference.	Use the mode switch.	_
	The force limits (Pn483 and Pn484) are set to the default values.	The default values of the force limits and Pn483 = 30% and Pn484 = 30%.	Set Pn483 and Pn484 to appropriate values.	*
Absolute Encoder Position	Noise interference occurred because of incorrect Encoder Cable specifications.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it satisfies specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm <sup>2</sup> .	Use cables that satisfy the specifications.	-
Deviation Error (The position that was saved in the	Noise interference occurred because the Encoder Cable is too long.	Turn OFF the power supply to the servo system. Check the length of the Encoder Cable.	Rotary Servomotors: The Encoder Cable length must be 50 m max.	_
host con- troller when the power was turned OFF is dif-	Noise interference occurred because the Encoder Cable is damaged.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it is pinched or the sheath is damaged.	Replace the Encoder Cable and correct the cable installation envi- ronment.	-
ferent from the posi- tion when the power was next turned ON.)	Noise interference occurred because the Encoder Cable is damaged.	Turn OFF the power supply to the servo system. Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-current line.	Correct the cable lay- out so that no surge is applied by high-current lines.	-
	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Turn OFF the power supply to the servo system. Check to see if the machines are correctly grounded.	Properly ground the machines to separate them from the FG of the encoder.	-

Problem	Possible Cause	Confirmation	Correction	Reference
Absolute Encoder Position	There is a SERVOPACK pulse counting error due to noise.	Turn OFF the power supply to the servo system. Check to see if there is noise interference on the I/O signal line from the encoder or Serial Converter Unit.	Implement counter- measures against noise for the encoder or Serial Converter Unit wiring.	-
Deviation Error (The position that was saved in the host con- troller when the power was turned	The encoder was subjected to excessive vibration or shock.	Turn OFF the power supply to the servo system. Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting surface precision, securing state, and alignment).	Reduce machine vibration. Or, improve the mounting conditions of the Servomotor.	-
OFF is dif- ferent from the posi- tion when the power was next	A failure occurred in the encoder.	_	Turn OFF the power supply to the servo system. Replace the Servomotor.	-
turned ON.)	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-
		Check the external power supply (+24 V) voltage for the input signals.	Correct the external power supply (+24 V) voltage for the input signals.	-
	The P-OT/N-OT (Forward Drive Prohibit or Reverse Drive Prohibit) signal was input.	Check the operating condition of the overtravel limit switches.	Make sure that the overtravel limit switches operate correctly.	-
		Check the wiring of the overtravel limit switches.	Correct the wiring of the overtravel limit switches.	*
		Check the settings of PnB0F and PnB10.	Set the parameters to correct values.	*
Overtravel Occurred		Check for fluctuation in the external power supply (+24 V) voltage for the input signals.	Eliminate fluctuation from the external power supply (+24 V) voltage for the input signals.	_
	The P-OT/N-OT (Forward Drive Prohibit or Reverse Drive Prohibit) signal mal-	Check to see if the operation of the overtravel limit switches is unstable.	Stabilize the operating condition of the over-travel limit switches.	_
	functioned.	Check the wiring of the overtravel limit switches (e.g., check for cable damage and loose screws).	Correct the wiring of the overtravel limit switches.	-
	The selection of the Servo- motor stopping method is not correct.	Check the servo OFF stopping method set in Pn001 = n.□□□X or PnB1F.	Select a Servomotor stopping method other than coasting to a stop.	*
Improper Stop Posi- tion for	The limit switch position and dog length are not appropriate.	_	Install the limit switch at the appropriate position.	-
Overtravel (OT) Signal	The overtravel limit switch position is too close for the coasting distance.		Install the overtravel limit switch at the appropriate position.  Continued or	_

#### 3.4.9 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

Problem	Problem Possible Cause Confirmation Correction		Continued from pre	Reference
	Noise interference occurred because of incorrect Encoder Cable specifications.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if is satisfies specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm <sup>2</sup> .	Use cables that satisfy the specifications.	-
	Noise interference occurred because the Encoder Cable is too long.	Turn OFF the power supply to the servo system. Check the length of the Encoder Cable.	Rotary Servomotors: The Encoder Cable length must be 50 m max.	-
	Noise interference occurred because the Encoder Cable is damaged.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it is pinched or the sheath is damaged.	Replace the Encoder Cable and correct the cable installation envi- ronment.	-
	The Encoder Cable was subjected to excessive noise interference.	Turn OFF the power supply to the servo system. Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-current line.	Correct the cable lay- out so that no surge is applied by high-current lines.	-
Position	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Turn OFF the power supply to the servo system. Check to see if the machines are correctly grounded.	Properly ground the machines to separate them from the FG of the encoder.	-
Deviation (without Alarm)	There is a SERVOPACK pulse counting error due to noise.	Turn OFF the power supply to the servo system. Check to see if there is noise interference on the I/O signal line from the encoder or Serial Converter Unit.	Implement counter- measures against noise for the encoder wiring or Serial Converter Unit wiring.	-
	The encoder was subjected to excessive vibration or shock.	Turn OFF the power supply to the servo system. Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting surface precision, securing state, and alignment).	Reduce machine vibration. Or, improve the mounting conditions of the Servomotor. Replace the Servomotor.	-
	The coupling between the machine and Servomotor is not suitable.	Turn OFF the power supply to the servo system. Check to see if position offset occurs at the coupling between machine and Servomotor.	Correctly secure the coupling between the machine and Servomotor.	-
	Noise interference occurred because of incorrect I/O signal cable specifications.	Turn OFF the power supply to the servo system. Check the I/O signal cables to see if they satisfy specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm <sup>2</sup> .	Use cables that satisfy the specifications.	-

Maintenance

3.4.9 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

Problem	Possible Cause	Confirmation	Correction	Reference
Position Deviation (without Alarm)	Noise interference occurred because an I/O signal cable is too long.	Turn OFF the power supply to the servo system. Check the lengths of the I/O signal cables.	The I/O signal cables must be no longer than 3 m.	-
	An encoder fault occurred. (The pulse count does not change.)	_	Turn OFF the power supply to the servo system. Replace the Servomotor.	-
	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-
	The surrounding air temperature is too high.	Measure the surrounding air temperature around the Servomotor.	Reduce the surrounding air temperature to 40°C or less.	-
	The surface of the Servomotor is dirty.	Turn OFF the power supply to the servo system. Visually check the surface for dirt.	Clean dirt, dust, and oil from the surface.	-
Servomotor Overheated	There is an overload on the Servomotor.	Check the load status with a monitor.	If the Servomotor is overloaded, reduce the load or replace the Servo Drive with a SERVOPACK and Servomotor with larger capacities.	-
	Polarity detection was not performed correctly.	Check to see if electrical angle 2 (electrical angle from polarity origin) at any position is between ±10°.	Correct the settings for the polarity detection-related parameters.	-
Estimating the moment of inertia failed.	The acceleration rate is low and travel distance is short.	Check the Condition Setting Dialog Box used to perform moment of inertia estimation.	Increase the acceleration rate and travel distance.	-

<sup>\*</sup> Refer to the following manual for details.

Σ-7-Series Σ-7S SERVOPACK Command Option Attachable Type with INDEXER Module Product Manual (Manual No.: SIEP S800001 64)

3.5.1 Alarm Displays

# 3.5

# FT83 SERVOPACKs with Analog Voltage/Pulse Train References

# 3.5.1 Alarm Displays

If an error occurs in the SERVOPACK, the status is displayed as described below.

### ◆ Status Display

SERVOPACK Panel Display	The alarm number will be displayed. Refer to the following manual for details.  Σ-7-Series Σ-7S SERVOPACK with Analog Voltage/Pulse Train References Product Manual (Manual No.: SIEP S800001 26)
Digital Operator	The alarm code is displayed at the top left of the screen.
ALM Signal	The alarm signal turns ON. (The photocoupler turns OFF.)
/WARN Signal	No change

## 3.5.2 List of Alarms

The list of alarms gives the alarm name, alarm meaning, alarm stopping method, alarm reset possibility, and alarm code output in order of the alarm numbers.

# **Servomotor Stopping Method for Alarms**

Refer to the following manual for information on the stopping method for alarms.

 $\ \square$   $\Sigma$ -7-Series  $\Sigma$ -7S SERVOPACK with Analog Voltage/Pulse Train References Product Manual (Manual No.: SIEP S800001 26)

# **Alarm Reset Possibility**

Yes: You can use an alarm reset to clear the alarm. However, this assumes that the cause of the alarm has been removed.

No: You cannot clear the alarm.

### **List of Alarms**

				Alarm	Alarm	Code C	Output
Alarm Number	Alarm Name	Alarm Meaning	motor Stop- ping Method	Reset Possi- ble?	/ALO1	/ALO2	/ALO3
A.020	Parameter Checksum Error	There is an error in the parameter data in the SERVOPACK.	Gr.1	No			
A.021	Parameter Format Error	There is an error in the parameter data format in the SERVOPACK.	Gr.1	No			
A.022	System Checksum Error	There is an error in the parameter data in the SERVOPACK.	Gr.1	No			
A.024	System Alarm	An internal program error occurred in the SERVOPACK.	Gr.1	No	Н	Н	Н
A.025	System Alarm	An internal program error occurred in the SERVOPACK.	Gr.1	No			
A.030	Main Circuit Detector Error	There is an error in the detection data for the main circuit.	Gr.1	Yes			
A.040	Parameter Setting Error	A parameter setting is outside of the setting range.	Gr.1	No			

Continued from previous page.

			Servo-		Alarm	Code C	1 0
Alarm Number	Alarm Name	Alarm Meaning	motor Stop- ping Method	Alarm Reset Possi- ble?	/ALO1		/ALO3
A.041	Encoder Output Pulse Setting Error	The setting of Pn212 (Encoder Output Pulses) or Pn281 (Encoder Output Resolution) is outside of the setting range or does not satisfy the setting conditions.	Gr.1	No			
A.042	Parameter Combina- tion Error	The combination of some parameters exceeds the setting range.	Gr.1	No			
A.044	Semi-Closed/Fully- Closed Loop Control Parameter Setting Error	The settings of the Option Module and Pn002 = n.X□□□ (External Encoder Usage) do not match.	Gr.1	No			
A.04A	Parameter Setting Error 2	There is an error in setting of parameters reserved by the system.	Gr.1	No	H	H	Н
A.050	Combination Error	The capacities of the SERVOPACK and Servomotor do not match.	Gr.1	Yes			
A.051	Unsupported Device Alarm	An unsupported device was connected.	Gr.1	No			
A.0b0	Invalid Servo ON Command Alarm	The /S-ON (Servo ON) signal was input from the host controller after a utility function that turns ON the Servomotor was executed.	Gr.1	Yes			
A.100	Overcurrent Detected	An overcurrent flowed through the power transformer or the heat sink overheated.	Gr.1	No	L	Н	Н
A.101	Motor Overcurrent Detected	The current to the motor exceeded the allowable current.	Gr.1	No		11	
A.300	Regeneration Error	There is an error related to regeneration.	Gr.1	Yes			
A.320	Regenerative Over- load	A regenerative overload occurred.	Gr.2	Yes			
A.330	Main Circuit Power Supply Wiring Error	<ul> <li>The AC power supply input setting or DC power supply input setting is not correct.</li> <li>The power supply wiring is not correct.</li> </ul>	Gr.1	Yes	L	L	Н
A.400	Overvoltage	The main circuit DC voltage is too high.	Gr.1	Yes	Н	Н	L
A.410	Undervoltage	The main circuit DC voltage is too low.	Gr.2	Yes			_
A.510	Overspeed	The motor exceeded the maximum speed.	Gr.1	Yes			
A.511	Encoder Output Pulse Overspeed	The pulse output speed for the setting of Pn212 (Encoder Output Pulses) was exceeded.	Gr.1	Yes			
A.520	Vibration Alarm	Abnormal oscillation was detected in the motor speed.	Gr.1	Yes	L	Н	L
A.521	Autotuning Alarm	Vibration was detected during autotuning for the tuning-less function.	Gr.1	Yes			
A.550	Maximum Speed Set- ting Error	The setting of Pn385 (Maximum Motor Speed) is greater than the maximum motor speed.	Gr.1	Yes			

#### 3.5.2 List of Alarms

Continued from previous page.

			Servo-			Code C	
Alarm Number	Alarm Name	Alarm Meaning	motor Stop- ping Method	Alarm Reset Possi- ble?	/ALO1	/ALO2	
A.710	Instantaneous Over- load	The Servomotor was operating for several seconds to several tens of seconds under a torque that largely exceeded the rating.	Gr.2	Yes			
A.720	Continuous Overload	The Servomotor was operating continuously under a torque that exceeded the rating.	Gr.1	Yes			
A.730	Dynamia Braka Ovor	When the dynamic brake was applied,					
A.731	Dynamic Brake Over- load	the rotational or linear kinetic energy exceeded the capacity of the dynamic brake resistor.	Gr.1	Yes			
A.740	Inrush Current Limit- ing Resistor Overload	The main circuit power supply was frequently turned ON and OFF.	Gr.1	Yes	L	L	L
A.7A1	Internal Temperature Error 1 (Control Board Temperature Error)	The surrounding temperature of the control PCB is abnormal.	Gr.2	Yes			
A.7A2	Internal Temperature Error 2 (Power Board Temperature Error)	The surrounding temperature of the power PCB is abnormal.	Gr.2	Yes			
A.7A3	Internal Temperature Sensor Error	An error occurred in the temperature sensor circuit.	Gr.2	No			
A.7Ab	SERVOPACK Built-in Fan Stopped	The fan inside the SERVOPACK stopped.	Gr.1	Yes			
A.810	Encoder Backup Alarm	The power supplies to the encoder all failed and the position data was lost.	Gr.1	No			
A.820	Encoder Checksum Alarm	There is an error in the checksum results for encoder memory.	Gr.1	No			
A.830	Encoder Battery Alarm	The battery voltage was lower than the specified level after the control power supply was turned ON.	Gr.1	Yes			
A.840	Encoder Data Alarm	There is an internal data error in the encoder.	Gr.1	No			
A.850	Encoder Overspeed	The encoder was operating at high speed when the power was turned ON.	Gr.1	No			
A.860	Encoder Overheated	The internal temperature of encoder is too high.	Gr.1	No			
A.861	Motor Overheated	The internal temperature of motor is too high.	Gr.1	No			
A.862	Overheat Alarm	The input voltage (temperature) for the overheat protection input (TH) signal exceeded the setting of Pn61B (Overheat Alarm Level).	Gr.1	Yes	Н	Н	Н
A.8A0	External Encoder Error	An error occurred in the external encoder.	Gr.1	Yes			
A.8A1	External Encoder Module Error	An error occurred in the Serial Converter Unit.	Gr.1	Yes			
A.8A2	External Incremental Encoder Sensor Error	An error occurred in the external encoder.	Gr.1	Yes			
A.8A3	External Absolute Encoder Position Error	An error occurred in the position data of the external encoder.	Gr.1	Yes			
A.8A5	External Encoder Overspeed	An overspeed error occurred in the external encoder.	Gr.1	Yes			
A.8A6	External Encoder Overheated	An overheating error occurred in the external encoder.	Gr.1	Yes			

Continued from previous page.

						·	de Output	
Alarm Number	Alarm Name	Alarm Meaning	Servo- motor Stop- ping Method	Alarm Reset Possi- ble?		/ALO2		
A.b33	Current Detection Error 3	An error occurred in the current detection circuit.	Gr.1	No				
A.bF0	System Alarm 0	Internal program error 0 occurred in the SERVOPACK.	Gr.1	No				
A.bF1	System Alarm 1	Internal program error 1 occurred in the SERVOPACK.	Gr.1	No				
A.bF2	System Alarm 2	Internal program error 2 occurred in the SERVOPACK.	Gr.1	No				
A.bF3	System Alarm 3	Internal program error 3 occurred in the SERVOPACK.	Gr.1	No	Н	Н	Н	
A.bF4	System Alarm 4	Internal program error 4 occurred in the SERVOPACK.	Gr.1	No	] ''	''		
A.bF5	System Alarm 5	Internal program error 5 occurred in the SERVOPACK.	Gr.1	No				
A.bF6	System Alarm 6	Internal program error 6 occurred in the SERVOPACK.	Gr.1	No				
A.bF7	System Alarm 7	Internal program error 7 occurred in the SERVOPACK.	Gr.1	No				
A.bF8	System Alarm 8	Internal program error 8 occurred in the SERVOPACK.	Gr.1	No				
A.C10	Servomotor Out of Control	The Servomotor ran out of control.	Gr.1	Yes				
A.C80	Encoder Clear Error or Multiturn Limit Set- ting Error	The multiturn data for the absolute encoder was not correctly cleared or set.	Gr.1	No	L	Н	L	
A.C90	Encoder Communica- tions Error	Communications between the encoder and SERVOPACK is not possible.	Gr.1	No				
A.C91	Encoder Communications Position Data Acceleration Rate Error	An error occurred in calculating the position data of the encoder.	Gr.1	No				
A.C92	Encoder Communications Timer Error	An error occurred in the communications timer between the encoder and SERVO-PACK.	Gr.1	No				
A.CA0	Encoder Parameter Error	The parameters in the encoder are corrupted.	Gr.1	No				
A.Cb0	Encoder Echoback Error	The contents of communications with the encoder are incorrect.	Gr.1	No	L	Н	L	
A.CC0	Multiturn Limit Dis- agreement	Different multiturn limits have been set in the encoder and the SERVOPACK.	Gr.1	No	1			
A.CF1	Reception Failed Error in Feedback Option Module Communica- tions	Receiving data from the Feedback Option Module failed.	Gr.1	No				
A.CF2	Timer Stopped Error in Feedback Option Module Communica- tions	An error occurred in the timer for communications with the Feedback Option Module.	Gr.1	No				

#### 3.5.2 List of Alarms

Continued from previous page.

					Alarm Code Out		
Alarm Number	Alarm Name	Alarm Meaning	Servo- motor Stop- ping Method	Alarm Reset Possi- ble?	/ALO1	/ALO2	
A.d00	Position Deviation Overflow	The setting of Pn520 (Excessive Position Deviation Alarm Level) was exceeded by the position deviation.	Gr.1	Yes			
A.d01	Position Deviation Overflow Alarm at Servo ON	The servo was turned ON after the position deviation exceeded the setting of Pn526 (Excessive Position Deviation Alarm Level at Servo ON) while the servo was OFF.	Gr.1	Yes			
A.d02	Position Deviation Overflow Alarm for Speed Limit at Servo ON	If position deviation remains in the deviation counter, the setting of Pn529 or Pn584 (Speed Limit Level at Servo ON) limits the speed when the servo is turned ON. This alarm occurs if a position reference is input and the setting of Pn520 (Excessive Position Deviation Alarm Level) is exceeded before the limit is cleared.	Gr.2	Yes	L	L	Н
A.d10	Motor-Load Position Deviation Overflow	There was too much position deviation between the motor and load during fully-closed loop control.	Gr.2	Yes			
A.d30	Position Data Over- flow	The position feedback data exceeded ±1,879,048,192.	Gr.1	No			
A.E71	Safety Option Module Detection Failure	Detection of the safety option module failed.	Gr.1	No			
A.E72	Feedback Option Module Detection Failure	Detection of the Feedback Option Module failed.	Gr.1	No			
A.E74	Unsupported Safety Option Module	An unsupported safety option module was connected.	Gr.1	No	Н	L	L
A.E75	Unsupported Feed- back Option Module	An unsupported feedback option module was connected.	Gr.1	No			
A.Eb1	Safety Function Sig- nal Input Timing Error	An error occurred in the input timing of the safety function signal.	Gr.1	No			
A.EC8	Gate Drive Error 1	An error occurred in the gate drive circuit.	Gr.1	No			
A.EC9	Gate Drive Error 2	An error occurred in the gate drive circuit.	Gr.1	No			
A.EF9	INDEXER Alarm	An alarm occurred in the INDEXER.	Gr.1	No			
A.F10	Power Supply Line Open Phase	The voltage was low for more than one second for phase R, S, or T when the main power supply was ON.	Gr.2	Yes	Н	L	Н
FL-1*							
FL-2*							
FL-3*	System Alarm	An internal program error occurred in the	_	No			
FL-4*	System / Marin	SERVOPACK.		140			
FL-5*					ι	Indefined	d.
FL-6*							
CPF00	Digital Operator Communications Error 1	Communications were not possible between the Digital Operator (model:	_	No			
CPF01	Digital Operator Com- munications Error 2	JUSP-OP05A-1-E) and the SERVOPACK (e.g., a CPU error occurred).					

<sup>\*</sup> These alarms are not stored in the alarm history. They are only displayed on the panel display.

Note: The A.Eb0, A.Eb2 to A.Eb9, and A.EC0 to A.EC2 alarms can occur when a Safety Module is connected. Refer to the following manual for details.

AC Servo Drive Σ-V-Series/Σ-V-Series for Large-Capacity Models/Σ-7-Series User's Manual Safety Module (Manual No.: SIEP C720829 06)

# 3.5.3 Troubleshooting Alarms

The causes of and corrections for the alarms are given in the following table. Contact your Yaskawa representative if you cannot solve a problem with the correction given in the table.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage suddenly dropped.	Measure the power supply voltage.	Set the power supply voltage within the specified range, and initialize the parameter settings.	*1
	The power supply was shut OFF while writing parameter settings.	Check the timing of shutting OFF the power supply.	Initialize the parameter settings and then set the parameters again.	
A.020: Parameter	The number of times that parameters were written exceeded the limit.	Check to see if the parameters were frequently changed from the host controller.	The SERVOPACK may be faulty. Replace the SER-VOPACK. Reconsider the method for writing the parameters.	*1
Checksum Error (There is an error in the parameter data in the SER- VOPACK.)	A malfunction was caused by noise from the AC power supply, ground, static electricity, or other source.	Turn the power supply to the SERVOPACK OFF and ON again. If the alarm still occurs, noise may be the cause.	Implement countermeasures against noise.	-
	Gas, water drops, or cutting oil entered the SERVOPACK and caused failure of the internal components.	Check the installation conditions.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
	A failure occurred in the SERVOPACK. to the SOFF and the alarr the SER	Turn the power supply to the SERVOPACK OFF and ON again. If the alarm still occurs, the SERVOPACK may have failed.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.021: Parameter Format Error (There is an error in the parameter data format in the SERVOPACK.)	The software version of the SERVOPACK that caused the alarm is older than the software version of the parameters specified to write.	Read the product information to see if the software versions are the same. If they are different, it could be the cause of the alarm.	Write the parameters from another SERVOPACK with the same model and the same software version, and then turn the power OFF and ON again.	*1
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	

### 3.5.3 Troubleshooting Alarms

Continued from previous page.

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.022: System Check- sum Error (There is an error in the parameter data in the SER- VOPACK.)	The power supply voltage suddenly dropped.	Measure the power supply voltage.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	The power supply was shut OFF while setting a utility function.	Check the timing of shutting OFF the power supply.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	A failure occurred in the SERVOPACK.	Turn the power supply to the SERVOPACK OFF and ON again. If the alarm still occurs, the SERVOPACK may have failed.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.024: System Alarm (An internal pro- gram error occurred in the SERVOPACK.)	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.025: System Alarm (An internal pro- gram error occurred in the SERVOPACK.)	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.030: Main Circuit Detector Error	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
	The jumper between the DC Reactor terminals (⊝1 and ⊝2) was removed or there is faulty contact.		Correct the wiring	
	The cable between the DC Reactor and SERVOPACK is not wired correctly or there is a faulty contact.	-	between the DC Reactor terminals.	_
A.040: Parameter Setting Error (A parameter setting is outside of the setting range.)	The SERVOPACK and Servomotor capacities do not match each other.	Check the combination of the SERVOPACK and Servomotor capacities.	Select a proper combination of SERVOPACK and Servomotor capacities.	*1
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	A parameter setting is outside of the setting range.	Check the setting ranges of the parameters that have been changed.	Set the parameters to values within the setting ranges.	-
	The electronic gear ratio is outside of the setting range.	Check the electronic gear ratio. The ratio must be within the following range: 0.001 < (Pn20E/Pn210) < 64,000.	Set the electronic gear ratio in the following range: 0.001 < (Pn20E/Pn210) < 64,000.	*1
	Out-of-Range Origin Setting	See if the origin is between the settings of Pn638 and Pn63A.	Set the origin between Pn638 and Pn63A.	_

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Alarm Number:	Possible Cause	Confirmation	Continued from pro-	Reference
A.041: Encoder Output Pulse Setting Error	The setting of Pn212 (Encoder Output Pulses) or Pn281 (Encoder Output Resolution) is outside of the setting range or does not satisfy the setting conditions.	Check the setting of Pn212 or Pn281.	Set Pn212 or Pn281 to an appropriate value.	*1
A.042: Parameter Com- bination Error	The speed of program jogging went below the setting range when the electronic gear ratio (Pn20E/Pn210) or the Servomotor was changed.	Check to see if the detection conditions*2 are satisfied.	Decrease the setting of the electronic gear ratio (Pn20E/Pn210).	*1
	The speed of program jogging went below the setting range when Pn533 or Pn585 (Program Jogging Speed) was changed.	Check to see if the detection conditions*2 are satisfied.	Increase the setting of Pn533 or Pn585.	*1
	The movement speed of advanced autotuning went below the setting range when the electronic gear ratio (Pn20E/ Pn210) or the Servomotor was changed.	Check to see if the detection conditions*3 are satisfied.	Decrease the setting of the electronic gear ratio (Pn20E/Pn210).	*1
A.044: Semi-Closed/ Fully-Closed Loop Control Parameter Setting Error	The setting of the Fully-Closed Module does not match the setting of Pn002 = n.X□□□ (External Encoder Usage).	Check the setting of Pn002 = n.X□□□.	Make sure that the setting of the Fully-closed Module agrees with the setting of Pn002 = n.X□□□.	*1
A.04A: Parameter Set- ting Error 2	A parameter reserved by the system was changed.	_	Set the following reserved parameters to the default settings. Pn200.2 Pn207.1 Pn50A.0 Pn50A.1 Pn50A.2 Pn50C Pn50D	-
A.050: Combination Error (The capacities of the SERVOPACK and Servomotor do not match.)	The SERVOPACK and Servomotor capacities do not match each other.	Confirm that the following condition is met: 1/4 ≤ (Servomotor capacity/SERVOPACK capacity) ≤ 4	Select a proper combination of the SERVOPACK and Servomotor capacities.	*1
	A failure occurred in the encoder.	Replace the encoder and check to see if the alarm still occurs.	Replace the Servomotor or encoder.	_
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.051: Unsupported Device Alarm	An unsupported Serial Converter Unit or encoder (e.g., an external encoder) is connected to the SERVOPACK.	Check the product combination specifications.	Change to a correct combination of models.	-

### 3.5.3 Troubleshooting Alarms

Continued from previous page.

Alarm Number:	Possible Cause	Confirmation	Continued from pro	Reference
Alarm Name	The /S-ON (Servo ON)	23	20110011011	7.0.0.0.00
A.0b0: Invalid Servo ON Command Alarm	signal was input from the host controller after a utility function that turns ON the Ser- vomotor was exe- cuted.	-	Turn the power supply to the SERVOPACK OFF and ON again. Or, execute a software reset.	-
A.100: Overcurrent Detected (An overcurrent flowed through the power trans- former or the heat sink overheated.)	The Main Circuit Cable is not wired correctly or there is faulty contact.	Check the wiring.	Correct the wiring.	
	There is a short-circuit or ground fault in a Main Circuit Cable.	Check for short-circuits across Servomotor phases U, V, and W, or between the ground and Servomotor phases U, V, and W.	The cable may be short-circuited. Replace the cable.	*1
	There is a short-circuit or ground fault inside the Servomotor.	Check for short-circuits across Servomotor phases U, V, and W, or between the ground and Servomotor phases U, V, or W.	The Servomotor may be faulty. Replace the Servomotor.	
	There is a short-circuit or ground fault inside the SERVOPACK.	Check for short-circuits across the Servomotor connection terminals U, V, and W on the SER-VOPACK, or between the ground and terminals U, V, or W.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	
	The regenerative resistor is not wired correctly or there is faulty contact.	Check the wiring.	Correct the wiring.	*1
	The dynamic brake (DB, emergency stop executed from the SERVOPACK) was frequently activated, or a DB overload alarm occurred.	Check the power consumed by the DB resistor to see how frequently the DB is being used. Or, check the alarm display to see if a DB overload alarm (A.730 or A.731) has occurred.	Change the SERVOPACK model, operating methods, or the mechanisms so that the dynamic brake does not need to be used so frequently.	-
	The regenerative resistor value exceeded the SER-VOPACK regenerative processing capacity.	Check the regenerative load ratio in the SigmaWin+ Motion Monitor Tab Page to see how frequently the regenerative resistor is being used.	Select a regenerative resistance value that is appropriate for the operating conditions and load.	*4
	The SERVOPACK regenerative resistance is too small.	Check the regenerative load ratio in the SigmaWin+ Motion Monitor Tab Page to see how frequently the regenerative resistor is being used.	Change the regenerative resistance to a value larger than the SERVO-PACK minimum allowable resistance.	

Alama N			Continued from pro	evious page
Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.100: Overcurrent Detected (An overcurrent flowed through the power trans- former or the heat sink overheated.)	A heavy load was applied while the Servomotor was stopped or running at a low speed.	Check to see if the operating conditions exceed Servo Drive specifications.	Reduce the load applied to the Servomotor. Or, increase the operating speed.	-
	A malfunction was caused by noise.	Improve the noise environment, e.g. by improving the wiring or installation conditions, and check to see if the alarm still occurs.	Implement countermea- sures against noise, such as correct wiring of the FG. Use an FG wire size equivalent to the SERVO- PACK's main circuit wire size.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.101: Motor Overcurrent Detected (The current to the motor exceeded the allowable current.)	The Main Circuit Cable is not wired correctly or there is faulty contact.	Check the wiring.	Correct the wiring.	*1
	There is a short-circuit or ground fault in a Main Circuit Cable.	Check for short-circuits across cable phases U, V, and W, or between the ground and cable phases U, V, and W.	The cable may be short-circuited. Replace the cable.	
	There is a short-circuit or ground fault inside the Servomotor.	Check for short-circuits across Servomotor phases U, V, and W, or between the ground and Servomotor phases U, V, or W.	The Servomotor may be faulty. Replace the Servomotor.	
	There is a short-circuit or ground fault inside the SERVOPACK.	Check for short-circuits across the Servomotor connection terminals U, V, and W on the SER-VOPACK, or between the ground and terminals U, V, or W.	The SERVOPACK may be faulty. Replace the SER-VOPACK.	
	A heavy load was applied while the Ser- vomotor was stopped or running at a low speed.	Check to see if the operating conditions exceed Servo Drive specifications.	Reduce the load applied to the Servomotor. Or, increase the operating speed.	-
	A malfunction was caused by noise.	Improve the noise envi- ronment, e.g. by improving the wiring or installation conditions, and check to see if the alarm still occurs.	Implement countermea- sures against noise, such as correct wiring of the FG. Use an FG wire size equivalent to the SERVO- PACK's main circuit wire size.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

### 3.5.3 Troubleshooting Alarms

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.300: Regeneration Error	Pn600 (Regenerative Resistor Capacity) is not set to 0 and an External Regenerative Resistor is not con- nected to one of the following SERVO- PACKs: SGD7S-2R8A or -2R8F.	Check it see if an External Regenerative Resistor is connected and check the setting of Pn600.	Connect an External Regenerative Resistor, or set Pn600 (Regenerative Resistor Capacity) to 0 (setting unit: ×10 W) if no Regenerative Resistor is required.	*1
	The jumper between the regenerative resistor terminals (B2 and B3) was removed from one of the following SERVO-PACKs: SGD7S-120A.	Check to see if the jumper is connected between power supply terminals.  Note: If an External Regenerative Resistor or Regenerative Resistor Unit is connected while the jumper remains connected between B2 and B3, the SERVO-PACK may be damaged.	Correctly connect a jumper.	*1
	The External Regenerative Resistor or Regenerative Resistor tor Unit is not wired correctly, or was removed or disconnected.	Check the wiring of the External Regenerative Resistor or Regenerative Resistor Unit.  Note: If an External Regenerative Resistor or Regenerative Resistor or Regenerative Resistor Unit is connected while the jumper remains connected between B2 and B3, the SERVO-PACK may be damaged.	Correct the wiring of the External Regenerative Resistor or Regenerative Resistor Unit.	
	A failure occurred in the SERVOPACK.	_	While the main circuit power supply is OFF, turn the control power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
	The external regenerative resistance value or regenerative resistor capacity is too small, or there has been a continuous regeneration state.	Check the operating conditions or the capacity using the SigmaJunmaSize+ Capacity Selection Software or other means.	Change the regenerative resistance value or capacity. Reconsider the operating conditions using the SigmaJunmaSize+ Capacity Selection Software or other means.	*4
	There was a continuous regeneration state because a negative load was continuously applied.	Check the load applied to the Servomotor during operation.	Reconsider the system including the servo, machine, and operating conditions.	_
A.320: Regenerative Overload	The setting of Pn600 (Regenerative Resistor Capacity) is smaller than the capacity of the External Regenerative Resistor.	Check it see if a Regenerative Resistor is connected and check the setting of Pn600.	Correct the setting of Pn600.	*1
	The setting of Pn603 (Regenerative Resistor Capacity) is smaller than the capacity of the External Regenerative Resistor.	Check to see if a Regenerative Resistor is connected and check the setting of Pn603.	Correct the setting of Pn603.	*1
	The external regenerative resistance is too high.	Check the regenerative resistance.	Change the regenerative resistance to a correct value or use an External Regenerative Resistor of an appropriate capacity.	*4
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_

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Alarm Number:			Continued from pre	
Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The regenerative resistor was disconnected when the SERVOPACK power supply voltage was high.	Measure the resistance of the regenerative resistor using a measuring instrument.	If you are using the regenerative resistor built into the SERVOPACK, replace the SERVOPACK.  If you are using an External Regenerative Resistor, replace the External Regenerative Resistor.	-
A.330: Main Circuit Power Supply	DC power was supplied when an AC power supply input was specified in the settings.	Check the power supply to see if it is a DC power supply.	Correct the power supply setting to match the actual power supply.	*1
Wiring Error (Detected when the main circuit power supply is turned ON.)	AC power was supplied when a DC power supply input was specified in the settings.	Check the power supply to see if it is an AC power supply.	Correct the power supply setting to match the actual power supply.	
	Pn600 (Regenerative Resistor Capacity) is not set to 0 and an External Regenerative Resistor is not con- nected to an SGD7S- 2R8A SERVOPACKs.	Check it see if an External Regenerative Resistor is connected and check the setting of Pn600.	Connect an External Regenerative Resistor, or if an External Regenera- tive Resistor is not required, set Pn600 to 0.	*1
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the AC/DC power supply voltage within the specified range.	_
	The power supply is not stable or was influenced by a lightning surge.	Measure the power supply voltage.	Improve the power supply conditions, install a surge absorber, and then turn the power supply OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.400: Overvoltage (Detected in the	The voltage for AC power supply was too high during acceleration or deceleration.	Check the power supply voltage and the speed and torque during operation.	Set the AC power supply voltage within the specified range.	_
main circuit power supply section of the SERVOPACK.)	The external regenerative resistance is too high for the operating conditions.	Check the operating conditions and the regenerative resistance.	Select a regenerative resistance value that is appropriate for the operating conditions and load.	*4
	The moment of inertia ratio or mass ratio exceeded the allowable value.	Check to see if the moment of inertia ratio or mass ratio is within the allowable range.	Increase the deceleration time, or reduce the load.	_
	A failure occurred in the SERVOPACK.	_	While the main circuit power supply is OFF, turn the control power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
, dam rame	The power supply voltage went below the specified range.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
	The power supply voltage dropped during operation.	Measure the power supply voltage.	Increase the power supply capacity.	-
	A momentary power interruption occurred.	Measure the power supply voltage.	If you have changed the setting of Pn509 (Momentary Power Interruption Hold Time), decrease the setting.	*1
A.410:	The SERVOPACK fuse is blown out.	Check the power supply wiring.	Correct the power supply wiring and replace the SERVOPACK.	-
Undervoltage (Detected in the main circuit power supply section of the	The SERVOPACK fuse is blown out.	_	Replace the SERVO- PACK and connect a reactor to the DC reactor terminals (⊝1 and ⊝2) on the SERVOPACK.	-
SERVOPACK.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	The jumper between the DC Reactor terminals (⊝1 and ⊝2) was removed or there is faulty contact.		Correct the wiring between the DC Reactor	
	The cable between the DC Reactor and SERVOPACK is not wired correctly or there is a faulty contact.		terminals.	
	The order of phases U, V, and W in the motor wiring is not correct.	Check the wiring of the Servomotor.	Make sure that the Servo- motor is correctly wired.	-
A.510: Overspeed	A reference value that exceeded the over- speed detection level was input.	Check the input reference.	Reduce the reference value. Or, adjust the gain.	
(The motor exceeded the maximum speed.)	The motor exceeded the maximum speed.	Check the waveform of the motor speed.	Reduce the speed reference input gain and adjust the servo gain. Or, reconsider the operating conditions.	*1
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.511: Encoder Output Pulse Overspeed	The encoder output pulse frequency exceeded the limit.	Check the encoder output pulse setting.	Decrease the setting of Pn212 (Encoder Output Pulses) or Pn281 (Encoder Output Resolu- tion).	*1
	The encoder output pulse frequency exceeded the limit because the motor speed was too high.	Check the encoder output pulse setting and the motor speed.	Reduce the motor speed.	-

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Alarm Number:	Descible Cours	Confinentia	Continued from pre	
Alarm Name	Possible Cause	Confirmation	Correction	Reference
	Abnormal oscillation was detected in the motor speed.	Check for abnormal motor noise, and check the speed and torque waveforms during operation.	Reduce the motor speed. Or, reduce the setting of Pn100 (Speed Loop Gain).	*1
A.520: Vibration Alarm	The setting of Pn103 (Moment of Inertia Ratio) is greater than the actual moment of inertia or was greatly changed.	Check the moment of inertia ratio or mass ratio.	Set Pn103 (Moment of Inertia Ratio) to an appropriate value.	*1
	The vibration detection level (Pn312 or Pn384) is not suitable.	Check that the vibration detection level (Pn312 or Pn384) is suitable.	Set a suitable vibration detection level (Pn312 or Pn384).	*1
A.521: Autotuning Alarm (Vibration was detected while executing the	The Servomotor vibrated considerably while performing the tuning-less function.	Check the waveform of the motor speed.	Reduce the load so that the moment of inertia ratio is within the allowable value. Or increase the load level or reduce the rigidity level in the tuning- less level settings.	*1
custom tuning, Easy FFT, or the tuning-less func- tion.)	The Servomotor vibrated considerably while performing custom tuning or Easy FFT.	Check the waveform of the motor speed.	Check the operating procedure of corresponding function and implement corrections.	*1
A.550: Maximum Speed Setting Error	The setting of Pn385 (Maximum Motor Speed) is greater than the maximum speed.	Check the setting of Pn385, and the upper limits of the maximum motor speed setting and the encoder output resolution setting.	Set Pn385 to a value that does not exceed the maximum motor speed.	*1
	The wiring is not correct or there is a faulty contact in the motor or encoder wiring.	Check the wiring.	Make sure that the Servo- motor and encoder are correctly wired.	*1
	Operation was performed that exceeded the overload protection characteristics.	Check the motor over- load characteristics and Run command.	Reconsider the load and operating conditions. Or, increase the motor capacity.	-
A.710: Instantaneous Overload A.720: Continuous Overload	An excessive load was applied during operation because the Servomotor was not driven due to mechanical problems.	Check the operation reference and motor speed.	Correct the mechanical problem.	-
	Operation was performed with a load applied to the shaft of the servomotor that exceeded the allowable value.	Check the condition of the machine to deter- mine if a load was applied to the shaft of the servomotor that exceeded the allowable value.	Correct the condition of the machine so that the load on the shaft during servomotor operation does not exceed the allowable value.	-
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_

2

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.730 and	The Servomotor was rotated by an external force.	Check the operation status.	Implement measures to ensure that the motor will not be rotated by an external force.	-
A.731: Dynamic Brake Overload (An excessive power consumption by the dynamic brake was detected.)	When the Servomotor was stopped with the dynamic brake, the rotational or linear kinetic energy exceeded the capacity of the dynamic brake resistor.	Check the power consumed by the DB resistor to see how frequently the DB is being used.	Reconsider the following: Reduce the Servomotor command speed. Decrease the moment of inertia ratio or mass ratio. Reduce the frequency of stopping with the dynamic brake.	-
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
A.740: Inrush Current Limiting Resistor Overload (The main circuit power supply was frequently	The allowable frequency of the inrush current limiting resistor was exceeded when the main circuit power supply was turned ON and OFF.	_	Reduce the frequency of turning the main circuit power supply ON and OFF.	-
turned ON and OFF.)	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVO-PACK installation conditions.	*1
۸ 7.01۰	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
A.7A1: Internal Temperature Error 1 (Control Board Temperature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVOPACK installation conditions.	Install the SERVOPACK according to specifications.	*1
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	_

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVO-PACK installation conditions.	*1
	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
A.7A2: Internal Tempera- ture Error 2 (Power Board Temperature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVOPACK installation conditions.	Install the SERVOPACK according to specifications.	*1
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.7A3: Internal Temperature Sensor Error (An error occurred in the temperature sensor circuit.)	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.7Ab: SERVOPACK Built-in Fan Stopped	The fan inside the SERVOPACK stopped.	Check for foreign matter inside the SERVOPACK.	Remove foreign matter from the SERVOPACK. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SER-VOPACK.	-
	The power to the absolute encoder was turned ON for the first time.	Check to see if the power supply was turned ON for the first time.	Set up the encoder.	
A.810: Encoder Backup Alarm (Detected at the encoder, but only when an abso- lute encoder is used.)	The Encoder Cable was disconnected and then connected again.	Check to see if the power supply was turned ON for the first time.	Check the encoder connection and set up the encoder.	*1
	Power is not being supplied both from the control power supply (+5 V) from the SERVOPACK and from the battery power supply.	Check the encoder connector battery and the connector status.	Replace the battery or implement similar measures to supply power to the encoder, and set up the encoder.	
	A failure occurred in the absolute encoder.	_	If the alarm still occurs after setting up the encoder again, replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.820: Encoder Check- sum Alarm (Detected at the encoder.)	A failure occurred in the encoder.	_	■When Using an Absolute Encoder Set up the encoder again. If the alarm still occurs, the Servomotor may be faulty. Replace the Servomotor. ■When Using a Singleturn Absolute Encoder or Incremental Encoder The Servomotor may be faulty. Replace the Servomotor.	*1
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.830: Encoder Battery	The battery connection is faulty or a battery is not connected.	Check the battery connection.	Correct the battery connection.	*1
Alarm (The absolute encoder battery voltage was lower	The battery voltage is lower than the specified value (2.7 V).	Measure the battery voltage.	Replace the battery.	*1
than the speci- fied level.)	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SER-VOPACK.	-
A.840: Encoder Data	The encoder malfunctioned.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
Alarm (Detected at the encoder.)	The encoder malfunctioned due to noise.	_	Correct the wiring around the encoder by separating the Encoder Cable from the Servomotor Main Circuit Cable or by grounding the encoder.	-
A.850: Encoder Overspeed (Detected at the encoder when the control power supply is turned	The Servomotor speed was 200 min <sup>-1</sup> or higher when the control power supply was turned ON.	Check the motor speed when the power supply is turned ON.	Reduce the Servomotor speed to a value less than 200 min <sup>-1</sup> , and turn ON the control power supply.	-
	A failure occurred in the encoder.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
OŇ.)	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number:			Continued from previous page.		
Alarm Name	Possible Cause	Confirmation	Correction	Reference	
	The surrounding air temperature around the Servomotor is too high.	Measure the surrounding air temperature around the Servomotor.	Reduce the surrounding air temperature of the Servomotor to 40°C or less.	-	
A.860:	The Servomotor load is greater than the rated load.	Use the accumulated load ratio to check the load.	Operate the Servo Drive so that the motor load remains within the specified range.	*1	
Encoder Over- heated (Detected at the encoder.)	A failure occurred in the encoder.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-	
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_	
	The surrounding temperature around the Servomotor is too high.	Measure the surrounding temperature around the Servomotor.	Reduce the surrounding air temperature of the Servomotor to 40° or less.	_	
A.861: Motor Over- heated	The motor load is greater than the rated load.	Check the load with the accumulated load ratio on the Motion Monitor Tab Page on the SigmaWin+.	Operate the Servo Drive so that the motor load remains within the specified range.	*1	
	A failure occurred in the Serial Converter Unit.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Serial Con- verter Unit may be faulty. Replace the Serial Con- verter Unit.	-	
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-	

3

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat.	Lower the surrounding temperature by improving the installation conditions of the machine.	-
	The overheat protection input signal line is disconnected or short-circuited.	Check the input voltage with the overheat protection input information on the Motion Monitor Tab Page on the SigmaWin+.	Repair the line for the overheat protection input signal.	-
A.862: Overheat Alarm	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
	Operation was performed under an excessive load.	Use the accumulated load ratio to check the load during operation.	Reconsider the load and operating conditions.	_
	A failure occurred in the SERVOPACK.	-	The SERVOPACK may be faulty. Replace the SERVOPACK.	-
	The sensor attached to the machine is faulty.	_	The sensor attached to the machine may be faulty. Repair the sensor attached to the machine.	-
A.8A0: External Encoder Error	Setting the origin of the absolute linear encoder failed because the motor moved.	Before you set the origin, use the fully-closed feedback pulse counter to confirm that the motor is not moving.	The motor must be stopped while setting the origin position.	*1
	A failure occurred in the external encoder.	_	Replace the external encoder.	_
A.8A1:	A failure occurred in the external encoder.	-	Replace the external encoder.	_
External Encoder Module Error	A failure occurred in the Serial Converter Unit.	_	Replace the Serial Converter Unit.	-
A.8A2: External Incremental Encoder Sensor Error	A failure occurred in the external encoder.	_	Replace the external encoder.	-
A.8A3: External Absolute Encoder Position Error	A failure occurred in the external absolute encoder.	-	The external absolute encoder may be faulty. Refer to the encoder manufacturer's instruction manual for corrections.	-
A.8A5: External Encoder Overspeed	An overspeed error was detected in the external encoder.	Check the maximum speed of the external encoder.	Keep the external encoder below its maximum speed.	-
A.8A6: External Encoder Overheated	An overheating error was detected in the external encoder.	_	Replace the external encoder.	_
A.b33: Current Detection Error 3	A failure occurred in the current detection circuit.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.bF0: System Alarm 0	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF1: System Alarm 1	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF2: System Alarm 2	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF3: System Alarm 3	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF4: System Alarm 4	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF5: System Alarm 5	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF6: System Alarm 6	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF7: System Alarm 7	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.bF8: System Alarm 8	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The order of phases U, V, and W in the motor wiring is not correct.	Check the Servomotor wiring.	Make sure that the Servo- motor is correctly wired.	-
A.C10: Servomotor Out of Control (Detected when the servo is turned ON.)	A failure occurred in the encoder.	_	If the motor wiring is correct and an alarm still occurs after turning the power supply OFF and ON again, the Servomotor may be faulty. Replace the Servomotor.	-
turnea ON.)	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.C80: Encoder Clear Error or Multiturn Limit Setting Error	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Continued from pro-	Reference
Alami Name	There is a faulty contact in the connector or the connector is not wired correctly for the encoder.	Check the condition of the encoder connector.	Reconnect the encoder connector and check the encoder wiring.	*1
	There is a cable disconnection or short-circuit in the encoder. Or, the cable impedance is outside the specified values.	Check the condition of the Encoder Cable.	Use the Encoder Cable within the specified specifications.	-
A.C90: Encoder Commu-	One of the following has occurred: corrosion caused by improper temperature, humidity, or gas, a short-circuit caused by entry of water drops or cutting oil, or faulty contact in connector caused by vibration.	Check the operating environment.	Improve the operating environmental, and replace the cable. If the alarm still occurs, replace the SERVOPACK.	*1
nications Error	A malfunction was caused by noise.	_	Correct the wiring around the encoder by separating the Encoder Cable from the Servomotor Main Circuit Cable or by grounding the encoder.	*1
	A failure occurred in the SERVOPACK.	_	Connect the Servomotor to another SERVOPACK, and turn ON the control power supply. If no alarm occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
	A failure occurred in the encoder.	_	Connect the Servomotor to another SERVOPACK, and turn ON the control power supply. If the alarm occurs, the Servomotor may be faulty. Replace the Servomotor.	-
A.C91: Encoder Communications Position Data Acceleration Rate Error	Noise entered on the signal lines because the Encoder Cable is bent or the sheath is damaged.	Check the condition of the Encoder Cable and connectors.	Check the Encoder Cable to see if it is installed correctly.	*1
	The Encoder Cable is bundled with a high- current line or installed near a high- current line.	Check the installation condition of the Encoder Cable.	Confirm that there is no surge voltage on the Encoder Cable.	-
	There is variation in the FG potential because of the influ- ence of machines on the Servomotor side, such as a welder.	Check the installation condition of the Encoder Cable.	Properly ground the machine to separate it from the FG of the encoder.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	Noise entered on the signal line from the encoder.	_	Implement countermeasures against noise for the encoder wiring.	*1
	Excessive vibration or shock was applied to the encoder.	Check the operating conditions.	Reduce machine vibration. Correctly install the Servomotor.	-
A.C92: Encoder Communications Timer Error	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.CA0: Encoder Parameter Error	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
	The encoder is wired incorrectly or there is faulty contact.	Check the wiring of the encoder.	Make sure that the encoder is correctly wired.	*1
	The specifications of the Encoder Cable are not correct and noise entered on it.	-	Use a shielded twisted- pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm <sup>2</sup> .	-
	The Encoder Cable is too long and noise entered on it.	-	Rotary Servomotors: The Encoder Cable wiring distance must be 50 m max.	-
A.Cb0: Encoder Echo-	There is variation in the FG potential because of the influ- ence of machines on the Servomotor side, such as a welder.	Check the condition of the Encoder Cable and connectors.	Properly ground the machine to separate it from the FG of the encoder.	-
back Error	Excessive vibration or shock was applied to the encoder.	Check the operating conditions.	Reduce machine vibration. Correctly install the Servomotor.	-
	A failure occurred in the encoder.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the Servomotor may be faulty. Replace the Servomotor.	-
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.CC0: Multiturn Limit Disagreement	When using a Direct Drive Servomotor, the setting of Pn205 (Mul- titurn Limit Setting) does not agree with the encoder.	Check the setting of Pn205.	Correct the setting of Pn205 (0 to 65,535).	*1
	The multiturn limit of the encoder is different from that of the SERVOPACK. Or, the multiturn limit of the SERVOPACK has been changed.	Check the setting of Pn205 in the SERVO-PACK.	Change the setting if the alarm occurs.	*1
	A failure occurred in the SERVOPACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.CF1: Reception Failed Error in Feed-	The cable between the Serial Converter Unit and SERVOPACK is not wired correctly or there is a faulty contact.	Check the wiring of the external encoder.	Correctly wire the cable between the Serial Converter Unit and SERVO-PACK.	*1
	A specified cable is not being used between Serial Con- verter Unit and SER- VOPACK.	Check the wiring specifications of the external encoder.	Use a specified cable.	-
back Option Module Commu- nications	The cable between the Serial Converter Unit and SERVOPACK is too long.	Measure the length of the cable that connects the Serial Converter Unit.	The length of the cable between the Serial Converter Unit and SERVO-PACK must be 20 m or less.	-
	The sheath on cable between the Serial Converter Unit and SERVOPACK is broken.	Check the cable that connects the Serial Converter Unit.	Replace the cable between the Serial Converter Unit and SERVO-PACK.	-
A.CF2: Timer Stopped Error in Feed- back Option Module Commu- nications	Noise entered the cable between the Serial Converter Unit and SERVOPACK.	_	Correct the wiring around the Serial Converter Unit, e.g., separate I/O signal lines from the Main Circuit Cables or ground.	-
	A failure occurred in the Serial Converter Unit.	-	Replace the Serial Converter Unit.	-
	A failure occurred in the SERVOPACK.	-	Replace the SERVO- PACK.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.d00: Position Deviation Overflow (The setting of Pn520 (Excessive Position Deviation Alarm Level) was exceeded by the position deviation.)	The Servomotor U, V, and W wiring is not correct.	Check the wiring of the Servomotor's Main Circuit Cables.	Make sure that there are no faulty contacts in the wiring for the Servomotor and encoder.	-
	The position command speed is too fast.	Reduce the position command speed and try operating the SER-VOPACK.	Reduce the position reference speed or the reference acceleration rate, or reconsider the electronic gear ratio.	*1
	The acceleration of the position reference is too high.	Reduce the reference acceleration and try operating the SERVO-PACK.	Reduce the acceleration of the position reference with one of the following methods.  • Reduce the acceleration rate (ACC) and deceleration rate (DEC) in the program table.  • Reduce the settings of Pn63E (Acceleration Rate) and Pn640 (Deceleration Rate).	*1
	The setting of Pn520 (Excessive Position Deviation Alarm Level) is too low for the operating conditions.	Check Pn520 (Excessive Position Deviation Alarm Level) to see if it is set to an appropriate value.	Optimize the setting of Pn520.	*1
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.d01: Position Deviation Overflow Alarm at Servo ON	The servo was turned ON after the position deviation exceeded the setting of Pn526 (Excessive Position Deviation Alarm Level at Servo ON) while the servo was OFF.	Check the position deviation while the servo is OFF.	Optimize the setting of Pn526 (Excessive Position Deviation Alarm Level at Servo ON).	
A.d02: Position Deviation Overflow Alarm for Speed Limit at Servo ON	If position deviation remains in the deviation counter, the setting of Pn529 or Pn584 (Speed Limit Level at Servo ON) limits the speed when the servo is turned ON. This alarm occurs if a position reference is input and the setting of Pn520 (Excessive Position Deviation Alarm Level) is exceeded.	_	Optimize the setting of Pn520 (Excessive Position Deviation Alarm Level). Or, adjust the setting of Pn529 or Pn584 (Speed Limit Level at Servo ON).	*1

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.d10:  Motor-Load Position Deviation	The motor direction and external encoder installation orientation are backward.	Check the motor direction and the external encoder installation orientation.	Install the external encoder in the opposite direction, or change the setting of Pn002 = n.XDDD (External Encoder Usage) to reverse the direction.	*1
Overflow	There is an error in the connection between the load (e.g., stage) and external encoder coupling.	Check the coupling of the external encoder.	Check the mechanical coupling.	-
A.d30: Position Data Overflow	The position data exceeded ±1,879,048,192.	Check the input reference pulse counter.	Reconsider the operating specifications.	-
	The connection between the SERVO-PACK and the safety option module is faulty.	Check the connection between the SERVO-PACK and the safety option module.	Correctly connect the safety option module.	-
A.E71: Safety Option Module Detec- tion Failure	The safety option module was disconnected.	-	Execute Fn014 (Resetting configuration error of option module) using the digital operator or SigmaWin+ and turn the power supply OFF and then ON again.	*1
	A safety option module fault occurred.	_	Replace the safety option module.	_
	A failure occurred in the SERVOPACK.	_	Replace the SERVO-PACK.	-
	There is a faulty connection between the SERVOPACK and the Feedback Option Module.	Check the connection between the SERVO-PACK and the Feedback Option Module.	Correctly connect the Feedback Option Module.	-
A.E72: Feedback Option Module Detec- tion Failure	The Feedback Option Module was discon- nected.	_	Reset the Option Module configuration error and turn the power supply to the SERVOPACK OFF and ON again.	*1
	A failure occurred in the Feedback Option Module.	-	Replace the Feedback Option Module.	-
	A failure occurred in the SERVOPACK.	-	Replace the SERVO- PACK.	_
A.E74:	A safety option module fault occurred.	_	Replace the safety option module.	-
Unsupported Safety Option Module	A unsupported safety option module was connected.	_	Connect a compatible safety option module.	-
A.E75*3: Unsupported Feedback Option Module	A feedback option module fault occurred.	_	Replace the feedback option module.	-
	A unsupported feed- back option module was connected.	Refer to the catalog of the connected feed- back option module or the manual of the SER- VOPACK.	Connect a compatible feedback option module.	-

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Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
A.Eb1: Safety Function Signal Input Tim- ing Error	The delay between activation of the /HWBB1 and /HWBB2 input signals for the HWBB was ten second or longer.	Measure the time delay between the /HWBB1 and /HWBB2 signals.	The output signal circuits or devices for /HWBB1 and /HWBB2 or the SER-VOPACK input signal circuits may be faulty. Alternatively, the input signal cables may be disconnected. Check to see if any of these items are faulty or have been disconnected.	-
	A failure occurred in the SERVOPACK.	_	Replace the SERVO- PACK.	_
A.EC8: Gate Drive Error 1 (An error occurred in the gate drive circuit.)  A.EC9: Gate Drive Error 2 (An error occurred in the gate drive circuit.)	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_
A.EF9: INDEXER Alarm	An alarm occurred in the INDEXER.	Use the SigmaWin+ to identify the INDEXER alarm.	Use the correction for the INDEXER alarm.	*1
	The three-phase power supply wiring is not correct.	Check the power supply wiring.	Make sure that the power supply is correctly wired.	*1
A.F10: Power Supply	The three-phase power supply is unbalanced.	Measure the voltage for each phase of the three-phase power supply.	Balance the power supply by changing phases.	_
Line Open Phase (The voltage was low for more than one second for phase R, S, or T when the main power supply was ON.)	A single-phase power supply was input without specifying a signal-phase AC power supply input (Pn00B = n.□1□□).	Check the power supply and the parameter setting.	Match the parameter setting to the power supply.	*1
	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
FL-1*5: System Alarm FL-2*5: System Alarm FL-3*5: System Alarm FL-4*5: System Alarm FL-5*5: System Alarm FL-6*5: System Alarm	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	_

Continued from previous page.

Alarm Number: Alarm Name	Possible Cause	Confirmation	Correction	Reference
CPF00: tact tal C SER Communications Error 1 A m	There is a faulty contact between the Digital Operator and the SERVOPACK.	Check the connector contact.	Disconnect the connector and insert it again. Or, replace the cable.	_
	A malfunction was caused by noise.	_	Keep the Digital Operator or the cable away from sources of noise.	_
CPF01: Digital Operator	A failure occurred in the Digital Operator.	-	Disconnect the Digital Operator and then connect it again. If an alarm still occurs, the Digital Operator may be faulty. Replace the Digital Operator.	-
Communications Error 2	A failure occurred in the SERVOPACK.	_	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-

\*1. Refer to the following manual for details.

Σ-7-Series Σ-7S SERVOPACK with Analog Voltage/Pulse Train References Product Manual (Manual No.: SIEP S800001 26)

\*2. Detection Conditions

If either of the following conditions is detected, an alarm will occur.

■ Pn533 [min<sup>-1</sup>] × 
$$\frac{\text{Encoder resolution}}{6 \times 10^5}$$
  $\leq \frac{\text{Pn20E}}{\text{Pn210}}$ 

• Maximum motor speed [min<sup>-1</sup>] 
$$\times$$
 Encoder resolution
Approx.  $3.66 \times 10^{12}$   $\geq$  Pn20E
Pn210

\*3. Detection Conditions

If either of the following conditions is detected, an alarm will occur.

• Rated motor speed [min<sup>-1</sup>] 
$$\times$$
 1/3  $\times$   $\frac{\text{Encoder resolution}}{6 \times 10^5} \le \frac{\text{Pn20E}}{\text{Pn210}}$ 

• Maximum motor speed [min<sup>-1</sup>] 
$$\times \frac{\text{Encoder resolution}}{\text{Approx. } 3.66 \times 10^{12}} \geq \frac{\text{Pn20E}}{\text{Pn210}}$$

\*4. Refer to the following manual for details.

Σ-7-Series AC Servo Drive Peripheral Device Selection Manual (Manual No.: SIEP S800001 32)

\*5. These alarms are not stored in the alarm history. They are only displayed on the panel display.

# 3.5.4 INDEXER Alarm Displays and Troubleshooting

INDEXER alarms and corrections for them are given in the following table.

Error Number	Alarm Number	Alarm Name	Meaning	Corrective Action	Servo- motor Stop Method	Alarm Reset
E12A	A.EF9	System Alarm	The firmware processing time was too long.	Upgrade the firm-ware version.     Reduce the number of functions being used.	Gr.1	N/A
E13A	A.EF9	Firmware Version Unmatched	The SERVOPACK does not support this function, because the software version do not match.	Upgrade the SER-VOPACK software version.     Use the SERVO-PACK that supports the corresponding function.     Use the SERVO-PACK with the function set disabled.	Gr.1	N/A
E14A	A.EF9	Parameter Checksum Alarm (Detected only when control power supply is turned ON.)	Incorrect or corrupted parameters are stored in EEPROM. (This alarm can occur if the control power supply is turned OFF while the parameters are being initialized or changed.)	Initialize the parameters. (Fn005) If the problem is not solved, correct the parameters.	Gr.1	N/A
E15A	A.EF9	Parameter Version Unmatched (Detected only when the control power supply is turned ON.)	The combination of the firmware version number and the parameter version number is wrong.	Change the firmware version. Change the parameter version to match the firmware version.	Gr.1	N/A
E16A	A.EF9	Parameter Out- of-range Alarm (Detected only when control power supply is turned ON.)	The origin position (Pn63C) exceeded the position range (Pn638 and Pn63A) for rotational coordinates (Pn637 not set to n.□□□0).	Correct the origin setting (Pn63C) or the position range (Pn638 and Pn63A).	Gr.1	N/A

Maintenance

Continued from previous page.

Error Number	Alarm Number	Alarm Name	Meaning	Corrective Action	Servo- motor Stop Method	Alarm Reset
E17A	A.C90 or A.040	Initial Communication Alarm between INDEXER Module and SERVO-PACK (Detected only when control power supply is turned ON.)	The INDEXER failed in parameter calculation during initial communications with the SERVOPACK when the control power was turned ON. This can happen in the following cases: When a parameter has been changed while the encoder is not connected When a parameter has been changed during occurrence of A.040 alarm	Connect the encoder and then change the parameter. Cancel the A.040 alarm and then change the parameter. (If the alarm display is other than A.E00, it can be reset by turning the power OFF and back ON.)	Gr.1	N/A
E19A	A.EF9	Program Table Checksum Alarm (Detected only when control power supply is turned ON.)	The program table stored in flash memory was not recorded properly. (This alarm can occur if the control power supply is turned OFF while the program table is being saved or initialized.)	<ul> <li>Initialize the program table. (Fn063)</li> <li>If the problem is not solved, correct the program table.</li> </ul>	Gr.1	Available*1
E1AA	A.EF9	Program Table Version Unmatched (Detected only when the control power is ON.)	The combination of the firmware version and the program table version is wrong.	Change the firm-ware version.     Change the program table version to match the firm-ware version.	Gr.1	Available*1
E1BA	A.EF9	Program Out- of-range Alarm (Detected only when control power supply is turned ON.)	A value set in the program table is not within the allowed setting range.	Change the firm-ware version.     Change the program table version to match the firm-ware version.	Gr.1	Available*1
E1CA	A.EF9	Zone Table Checksum Alarm (Detected only when control power supply is turned ON.)	The zone table stored in flash memory was not recorded properly. (This alarm can occur if the control power supply is turned OFF while the zone table is being saved or initialized.)	<ul> <li>Initialize the zone table. (Fn064)</li> <li>If the problem is not solved, correct the zone table.</li> </ul>	Gr.1	Available*2

#### 3.5.4 INDEXER Alarm Displays and Troubleshooting

Continued from previous page.

Error Number	Alarm Number	Alarm Name	Meaning	Corrective Action	Servo- motor Stop Method	Alarm Reset
E1DA	A.EF9	ZONE Table Version Unmatched (Detected only when the control power supply is turned ON.)	The combination of the firmware version and the ZONE table version is wrong.	Change the firmware version. Change the ZONE table version to match the firmware version.	Gr.1	Available*2
E1EA	A.EF9	Zone Table Out- of-range Alarm (Detected only when control power supply is turned ON.)	A value set in the zone table is not within the allowed setting range.	Change the firm-ware version.     Change the ZONE table version to match the firmware version.	Gr.1	Available*2
E1FA	A.EF9	JOG Speed Table Check- sum Alarm (Detected only when control power supply is turned ON.)	The JOG speed table stored in flash memory was not recorded properly. (This alarm can occur if the control power supply is turned OFF while the JOG speed table is being saved or initialized.)	<ul> <li>Initialize the JOG speed table. (Fn065)</li> <li>If the problem is not solved, correct the JOG speed table.</li> </ul>	Gr.1	Available*3
E21A	A.EF9	JOG Speed Table Version Unmatched (Detected only when the control power supply is turned ON.)	The combination of the firmware version and the JOG speed table version is wrong.	Change the firmware version. Change the JOG speed table version to match the firmware version.	Gr.1	Available*3
E22A	A.EF9	JOG Speed Table Out-of- range Alarm (Detected only when control power supply is turned ON.)	A value set in the JOG speed table is not within the allowed setting range.	Change the firmware version. Change the JOG speed table version to match the firmware version.	Gr.1	Available*3
E23A	A.EF9	Insufficient Registration Distance Alarm	The registration distance was shorter than the deceleration distance when the /RGRT signal went ON to start registration operation. (The current position will exceed the position specified by registration.)	Either increase the registration distance or reduce the deceleration distance (increase the deceleration rate). Registration distance: RDST in the program table Deceleration Rate: Pn640	Gr.1	Available

prevent excessive

position deviation.

3.5.4 INDEXER Alarm Displays and Troubleshooting

Error Number	Alarm Number	Alarm Name	Meaning	Corrective Action	Servo- motor Stop Method	Alarm Reset
E24A	A.9F9	Homing Failure	The torque limit was cleared after torque was increased to the torque limit or before homing completed during pressing homing.	Change the setting value of Pn652 (Pressing Time for Pressing Homing).	Gr.1	Available
E25A	A.9F9	Homing Over- speed	Excessive position deviation due to a mechanical cause	Fix the mechanical cause and implement countermeasures to prevent excessive	Gr.1	Available

Continued from previous page.

during homing.

<sup>\*1.</sup> These alarms can be reset, but a Canceled Program Table Error (E44E) will occur the next time you attempt to start program table operation, so program table operation will not be possible.

<sup>\*2.</sup> These alarms can be reset, but it is possible that the zone signals (POUT0 to POUT4) will be output incorrectly. When using the zone table, correct the zone table without resetting.

<sup>\*3.</sup> These alarms can be reset, but a Canceled JOG Speed Table Error (E46E) will occur the next time you attempt to start JOG speed table operation, so JOG speed table operation will not be possible.

3.5.5 Warning Displays

## 3.5.5 Warning Displays

Warnings are displayed to warn you before an alarm occurs. If a warning occurs in the SERVO-PACK, the status is displayed as described below.

#### Status Display

SERVOPACK Panel Display	The alarm number will be displayed. Refer to the following manual for details.  Σ-7-Series Σ-7S SERVOPACK with Analog Voltage/Pulse Train References Product Manual (Manual No.: SIEP S800001 26)		
Digital Operator	When a warning occurs, the warning code is displayed at the top left of the screen.		
ALM Signal	No change		
/WARN Signal	Turns ON.		

### 3.5.6 List of Warnings

This section gives the warning names, warning meanings, and warning code outputs in order of the warning numbers.

Warning	Warning Name	Meaning		Warning Code Output		
Number	warning warne	Wearing	/ALO1	/ALO2	/ALO3	
A.900	Position Deviation Overflow	The position deviation exceeded the percentage set with the following formula: $(Pn520 \times Pn51E/100)$	Н	Н	Н	
A.901	Position Deviation Overflow Alarm at Servo ON	The position deviation when the servo was turned ON exceeded the percentage set with the following formula: (Pn526 $\times$ Pn528/100)		11	П	
A.910	Overload	This warning occurs before an overload alarm (A.710 or A.720) occurs. If the warning is ignored and operation is continued, an alarm may occur.				
A.911	Vibration	Abnormal vibration was detected during motor operation. The detection level is the same as A.520. Set whether to output an alarm or a warning by setting Pn310 (Vibration Detection Switch).	L	Н	Н	
A.912	Internal Temperature Warning 1 (Control Board Temperature Error)	The surrounding temperature of the control PCB is abnormal.				
A.913	Internal Temperature Warning 2 (Power Board Temperature Error)	The surrounding temperature of the power PCB is abnormal.				
A.920	Regenerative Overload	This warning occurs before an A.320 alarm (Regenerative Overload) occurs. If the warning is ignored and operation is continued, an alarm may occur.	Н	L	Н	
A.921	Dynamic Brake Over- load	This warning occurs before an A.731 alarm (Dynamic Brake Overload) occurs. If the warning is ignored and operation is continued, an alarm may occur.				
A.923	SERVOPACK Built-in Fan Stopped	The fan inside the SERVOPACK stopped.				
A.930	Absolute Encoder Bat- tery Error	This warning occurs when the voltage of absolute encoder's battery is low.	L	L	Н	

Continued from previous page.

Warning	Warning Name	Meaning		Warning Code Output		
Number	warning Name	wieariing	/ALO1	/ALO2	/ALO3	
A.93B	Overheat Warning	The input voltage (temperature) for the overheat protection input (TH) signal exceeded the setting of Pn61C (Overheat Warning Level).	L	L	Н	
A.941	Change of Parameters Parameters have been changed that require the power supply to be turned OFF and ON again.		Н	Н	L	
A.942	Speed Ripple Compensation Information Disagreement	The speed ripple compensation information stored in the encoder does not agree with the speed ripple compensation information stored in the SERVO-PACK.	Н	Н	L	
A.971	Undervoltage	This warning occurs before an A.410 alarm (Undervoltage) occurs. If the warning is ignored and operation is continued, an alarm may occur.	L	L	L	
A.9A0	Overtravel Overtravel was detected while the servo was ON.		Н	L	L	
A.9b0	Preventative Mainte- nance Warning	One of the consumable parts has reached the end of its service life.	Н	L	Н	
A.9F9	INDEXER Warning	A warning occurred in the INDEXER.	L	Н	Н	

Note: 1. A warning code is not output unless you set Pn001 to n.1 \(\sigma\) (Output both alarm codes and warning codes).

2. Use Pn008 = n.□X□□ (Warning Detection Selection) to control warning detection.

However, the following warnings are not affected by the setting of Pn008 = n.□X□□ and other parameter settings are required in addition to Pn008 = n.□X□□.

Warning	Parameters That Must Be Set to Select Warning Detection	Reference
A.911	Pn310 = n.□□□X (Vibration Detection Setting)	_
A.930	Pn008 = n.□□□X (Low Battery Voltage Alarm/Warning Selection)	_
A.942	Pn423 = n.□□X□ (Speed Ripple Compensation Information Disagreement Warning Detection Selection)	_
A.971	Pn008 = n.□□□X (Low Battery Voltage Alarm/Warning Selection) (Not affected by the setting of Pn008 = n.□X□□.)	_
A.9A0	Pn00D = n.X□□□ (Overtravel Warning Detection Selection) (Not affected by the setting of Pn008 = n.□X□□.)	_
A.9b0	Pn00F = n.□□□X (Preventative Maintenance Selection)	_

## 3.5.7 Troubleshooting Warnings

The causes of and corrections for the warnings are given in the following table. Contact your Yaskawa representative if you cannot solve a problem with the correction given in the table.

Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	U, V, and W wiring	Check the wiring of the Servomotor's Main Circuit Cables.	Make sure that there are no faulty connections in the wiring for the Servomotor and encoder.	-
	A SERVOPACK gain is too low.	Check the SERVO- PACK gains.	Increase the servo gain, e.g., by using autotuning without a host reference.	_
A.900: Position Deviation Overflow	The acceleration of the position reference is too high.	Reduce the reference acceleration and try operating the SERVO-PACK.	Reduce the acceleration of the position reference with one of the following methods.  • Reduce the acceleration rate (ACC) and deceleration rate (DEC) in the program table.  • Reduce the settings of Pn63F (Acceleration Rate) and Pn640 (Deceleration Rate).	-
	The excessive position deviation alarm level (Pn520 × Pn51E/100) is too low for the operating conditions.	Check excessive position deviation alarm level (Pn520 × Pn51E/100) to see if it is set to an appropriate value.	Optimize the settings of Pn520 and Pn51E.	-
	A failure occurred in the SERVO-PACK.	-	Turn the power supply to the SERVOPACK OFF and ON again. If an alarm still occurs, the SERVOPACK may be faulty. Replace the SERVOPACK.	-
A.901: Position Deviation Overflow Alarm at Servo ON	The position deviation when the servo was turned ON exceeded the percentage set with the following formula: (Pn526 × Pn528/100)	_	Optimize the setting of Pn528 (Excessive Position Error Warning Level at Servo ON).	-

2

Continued from previous page.

Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The wiring is not correct or there is a faulty contact in the motor or encoder wiring.	Check the wiring.	Make sure that the Servo- motor and encoder are cor- rectly wired.	-
	Operation was performed that exceeded the overload protection characteristics.	Check the motor over- load characteristics and Run command.	Reconsider the load and operating conditions. Or, increase the motor capacity.	-
A.910: Overload (warning before an A.710 or A.720 alarm occurs)	An excessive load was applied during operation because the Servomotor was not driven because of mechanical problems.	Check the operation reference and motor speed.	Remove the mechanical problem.	-
	The overload warning level (Pn52B) is not suitable.	Check that the overload warning level (Pn52B) is suitable.	Set a suitable overload warning level (Pn52B).	_
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-
	Abnormal vibration was detected during motor operation.	Check for abnormal motor noise, and check the speed and torque waveforms during operation.	Reduce the motor speed. Or, reduce the servo gain with custom tuning.	-
A.911: Vibration	The setting of Pn103 (Moment of Inertia Ratio) is greater than the actual moment of inertia or was greatly changed.	Check the moment of inertia ratio or mass ratio.	Set Pn103 (Moment of Inertia Ratio) to an appropriate value.	-
	The vibration detection level (Pn312 or Pn384) is not suitable.	Check that the vibration detection level (Pn312 or Pn384) is suitable.	Set a suitable vibration detection level (Pn312 or Pn384).	_

#### 3.5.7 Troubleshooting Warnings

Continued from previous page.

Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVOPACK installation conditions.	-
	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
A.912: Internal Tempera- ture Warning 1 (Control Board Tem- perature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVO- PACK installation con- ditions.	Install the SERVOPACK according to specifications.	-
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	_
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat. Or, check the operating status with the SERVOPACK installation environment monitor.	Decrease the surrounding temperature by improving the SERVOPACK installation conditions.	-
	An overload alarm was reset by turning OFF the power supply too many times.	Check the alarm display to see if there is an overload alarm.	Change the method for resetting the alarm.	-
A.913: Internal Tempera- ture Warning 2 (Power Board Tem- perature Error)	There was an excessive load or operation was performed that exceeded the regenerative processing capacity.	Use the accumulated load ratio to check the load during operation, and use the regenerative load ratio to check the regenerative processing capacity.	Reconsider the load and operating conditions.	-
	The SERVOPACK installation orientation is not correct or there is insufficient space around the SERVOPACK.	Check the SERVO- PACK installation con- ditions.	Install the SERVOPACK according to specifications.	-
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-

2

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Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
A.920: Regenerative Overload (warning before an A.320 alarm occurs)	The power supply voltage exceeded the specified range.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
	There is insufficient external regenerative resistance, regenerative resistor capacity, or SER-VOPACK capacity, or there has been a continuous regeneration state.	Check the operating conditions or the capacity using the SigmaJunmaSize+ Capacity Selection Software or another means.	Change the regenerative resistance value, regenerative resistance capacity, or SERVOPACK capacity. Reconsider the operating conditions using the Sigma-JunmaSize+ Capacity Selection Software or other means.	-
	There was a continuous regeneration state because a negative load was continuously applied.	Check the load applied to the Servomotor during operation.	Reconsider the system including the servo, machine, and operating conditions.	-
A.921: Dynamic Brake Overload (warning before an A.731 alarm occurs)	The Servomotor was rotated by an external force.	Check the operation status.	Implement measures to ensure that the motor will not be rotated by an external force.	-
	When the Servo- motor was stopped with the dynamic brake, the rotational or linear kinetic energy exceeded the capacity of the dynamic brake resistor.	Check the power consumed by the DB resistor to see how frequently the DB is being used.	Reconsider the following:  Reduce the Servomotor command speed.  Decrease the moment of inertia or mass.  Reduce the frequency of stopping with the dynamic brake.	-
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-
A.923: SERVOPACK Built- in Fan Stopped	The fan inside the SERVOPACK stopped.	Check for foreign matter inside the SERVO-PACK.	Remove foreign matter from the SERVOPACK. If an alarm still occurs, the SER- VOPACK may be faulty. Replace the SERVOPACK.	-
A.930: Absolute Encoder Battery Error (The absolute encoder battery voltage was lower than the spec- ified level.) (Detected only when an abso-	The battery connection is faulty or a battery is not connected.	Check the battery connection.	Correct the battery connection.	_
	The battery voltage is lower than the specified value (2.7 V).	Measure the battery voltage.	Replace the battery.	-
lute encoder is connected.)	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	_

#### 3.5.7 Troubleshooting Warnings

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Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
	The surrounding temperature is too high.	Check the surrounding temperature using a thermostat.	Lower the surrounding temperature by improving the installation conditions of the machine.	-
A.93B:	Operation was performed under an excessive load.	Use the accumulated load ratio to check the load during operation.	Reconsider the load and operating conditions.	-
Overheat Warning	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-
	The sensor attached to the machine is faulty.	_	The sensor attached to the machine may be faulty. Repair the sensor attached to the machine.	-
A.941: Change of Parameters Requires Restart	Parameters have been changed that require the power supply to be turned OFF and ON again.	_	Turn the power supply to the SERVOPACK OFF and ON again.	-
	The speed ripple	_	Reset the speed ripple compensation value on the SigmaWin+.	-
A.942: Speed Ripple Compensation Information Disagreement	compensation information stored in the encoder does not agree with the speed ripple compensation information stored in the SER-VOPACK.	-	Set Pn423 to n.□□1□ (Do not detect A.942 alarms). However, changing the setting may increase the speed ripple.	-
tion bloagrooment		_	Set Pn423 to n. \(\subseteq \subseteq 0\) (Disable torque ripple compensation). However, changing the setting may increase the speed ripple.	-
	For a 200-V SER- VOPACK, the AC power supply volt- age dropped below 140 V.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
	For a 100-V SER- VOPACK, the AC power supply volt- age dropped below 60 V.	Measure the power supply voltage.	Set the power supply voltage within the specified range.	-
A.971: Undervoltage	The power supply voltage dropped during operation.	Measure the power supply voltage.	Increase the power supply capacity.	_
	A momentary power interruption occurred.	Measure the power supply voltage.	If you have changed the setting of Pn509 (Momentary Power Interruption Hold Time), decrease the setting.	-
	The SERVOPACK fuse is blown out.	_	Replace the SERVOPACK and connect a reactor.	_
	A failure occurred in the SERVO-PACK.	_	The SERVOPACK may be faulty. Replace the SERVO-PACK.	-

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Warning Number: Warning Name	Possible Cause	Confirmation	Correction	Reference
A.9A0: Overtravel (Overtravel status was detected.)	Overtravel was detected while the servo was ON.	Check the status of the overtravel signals on the input signal monitor.	Even if an overtravel signal is not shown by the input signal monitor, momentary overtravel may have been detected. Take the following precautions.  • Do not specify movements that would cause overtravel from the host controller.  • Check the wiring of the overtravel signals.  • Implement countermeasures against noise.	-
A.9b0: Preventative Mainte- nance Warning	One of the consumable parts has reached the end of its service life.	-	Replace the part. Contact your Yaskawa representative for replacement.	-
A.9F9: INDEXER Warning	A warning occurred in the INDEXER.	Use the SigmaWin+ to identify the INDEXER warning.	Use the correction for the INDEXER warning.	page 3-250

## 3.5.8 INDEXER Warning Displays and Troubleshooting

INDEXER warning displays and corrections for them are given in the following table.

Error No.	Alarm Number	Error Name	Meaning	Corrective Action
E41E	A.9F9	Program Table Save Failure Error	<ul> <li>While writing data to the flash memory, a failure occurred during one of the following operation.</li> <li>While saving a program table by using Fn060</li> <li>While initializing a program table by using Fn063</li> </ul>	Repair the hard- ware.
E42E	A.9F9	Zone Table Save Failure Error	<ul> <li>While writing data to the flash memory, a failure occurred during one of the following operation.</li> <li>While saving a zone table by using Fn061</li> <li>While initializing a zone table by using Fn064</li> </ul>	Repair the hard- ware.
E43E	A.9F9	JOG Speed Table Save Failure Error	<ul> <li>While writing data to the flash memory, a failure occurred during one of the following operation.</li> <li>While saving a JOG speed table by using Fn062</li> <li>While initializing a JOG speed table by using Fn065</li> </ul>	Repair the hard- ware.
E44E	A.9F9	Canceled Pro- gram Table Error	There was a request to start program table operation even though an E19A or E1BA alarm occurred when the control power supply was turned ON.	Remove the cause of the alarm.
E46E	A.9F9	Canceled JOG Speed Table Error	There was a request to start JOG speed table operation even though an E1FA or E22A alarm occurred when the control power supply was turned ON.	Remove the cause of the alarm.
E4BE	A.9F9	Moving Disabled Error due to P-OT	Travel in the forward direction was requested when P-OT was in effect. (Forward movement is disabled when P-OT (forward overtravel) is in effect.)	When P-OT is being used, move to a position where the P-OT is not in effect.      When P-OT is not being used, disable P-OT in the parameter.
E4CE	A.9F9	Moving Disabled Error due to N-OT	Travel in the reverse direction was requested when N-OT was in effect. (Reverse movement is disabled when N-OT (reverse overtravel) is in effect.)	<ul> <li>When N-OT is being used, move to a position where the N-OT is not in effect.</li> <li>When N-OT is not being used, disable N-OT in the parameter.</li> </ul>

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Error No.	Alarm Number	Error Name	Meaning	Corrective Action	
E4DE	A.9F9	Moving Disabled Error due to P-LS	The specified target position exceeds the position reference of forward software limit set in Pn638.	Check the target position specification.     Check the forward software limit in Pn638.     Check the Moving Mode (rotational/linear coordinates) (Pn637= n.□□□X)     If the software limits are not being used, select rotational coordinates with Pn637= n.□□□X (Moving Mode) or disable the software limits by setting Pn638 = Pn63A = 0.	
E4EE	A.9F9	Moving Disabled Error due to N-LS	The specified target position exceeds the position reference of reverse software limit set in Pn63A.	Check the target position specification.     Check the reverse software limit in Pn63A.     Check the setting of the Moving Mode (rotational/linear coordinates) (Pn637= n.□□□X).     If the software limits are not being used, select rotational coordinates for the (i.e., set Pn637 to n.□□□1) or disable the software limits by setting Pn638 = Pn63A = 0.	
E4FE	A.9F9	Position Reference Out-of-range Error	The Moving Mode is set to rotational coordinates (i.e., Pn637 is not set to n. \(\sigma\) \(\sigma\) and the target position designation exceeded the position range setting (Pn638 and Pn63A).	<ul> <li>Check the target position specification.</li> <li>Check the positioning range set with Pn638 and Pn63A.</li> <li>Check the setting of the Moving Mode (rotational/linear coordinates) (Pn637= n.□□□□X).</li> </ul>	

#### 3.5.8 INDEXER Warning Displays and Troubleshooting

Continued from previous page.

Error No.	Alarm Number	Error Name	Meaning	Corrective Action	
E53E	A.9F9	Move Reference Duplication Error	There was a new move reference requested even though the system was already moving in a positioning or other traveling operation.	Send the next move reference request only after the current movement is completed. Also, STOP can be specified in the target position specification (POS) with the program table.	
E54E	A.9F9	Servo ON Incomplete Error	The servo is not ON. There was a positioning request or other move reference request in servo OFF status. The servo went OFF during program table operation. (Program table operation will be interrupted while just the step that was being executed is canceled (If LOOP ≠ 1, the first LOOP is canceled.))	Request positioning and other operations after turning ON the servo by turning ON the /S-ON signal or setting the /S-ON signal to always be ON. Either just cancel the operation with the /PGMRES signal or turn ON the servo and restart with the /START-STOP signal.	
			An E23A alarm (Insufficient Registration Distance Alarm) occurred.	Increase the registration distance or shorten the deceleration distance (i.e., increase the deceleration rate). Registration distance: RDST in the program table Deceleration rate: Pn640	
E55E	A.9F9	Servo ON Failure Error	The servo could not be turned ON within 2 s of when the /S-ON signal turned ON.  The motor is rotating during servo ON execution.  The main power supply went OFF during servo ON execution.  Hard wire base block status (HWBB status)  If there was already an alarm when a servo ON request made by turning ON the /S-ON signal is received, an E5BE error will occur instead. If the main power supply was OFF, an E5CE error will occur.	Turn the servo ON when the motor is stopped. Check the main power supply. Turn ON the / HWBB1 and / HWBB2 signals. Then turn OFF the /S-ON signal to first turn OFF the servo and then turn ON the servo again.	
E58E	A.9F9	Data Out-of-range Error	The specified setting was incorrect in a parameter or program table write command.	Check the setting.	
E5DE	A.9F9	Origin Return Method Unspeci- fied Error	The origin return method is not specified. Starting an origin return operation was requested by turning ON the /HOME signal without setting the origin return method.	Specify the origin return method with Pn642 = n.□□□X.	

Continued from previous page.

Error No.	Alarm Number	Error Name	Meaning	Corrective Action	
E5EE	A.9F9	Execution Dis- abled during Pro- gram Table Operation Error	<ul> <li>There was a request to execute a process that is not allowed during program table operation while program table operation was in progress or on hold.</li> <li>There was an attempt to change the program table while program table operation was in progress or on hold.</li> </ul>	Request execution of the process again after canceling program table operation by turning the /PGMRES signal ON.	
E5FE	A.9F9	Session Conflict Error	There was a request that could not be executed at the same time as the function that was being executed.  Example: There was a request to start program table operation while the program table was being initialized.	Execute the operation again after the execution of the current function is completed.	
E63E	A.9F9	Continuous Stop Execution Dis- abled Error	An attempt was made to execute a continuous stop under conditions where it could not be executed.  Examples:  • The coordinates have been set to linear moving method.  • The immediately-preceding table target position is not ±INFINITE.  • The immediately-preceding table target position is ±INFINITE, but the registration distance is set.  • A value other than 1 has been set for the execution count.	Execute a continuous stop under conditions where it can be executed.	
E65E	A.9F9	Execution Error during Position Deviation Clear	Program table operation, JOG speed table operation, or homing was executed during position deviation clear.	Clear the status of position deviation clear.	

# 3.5.9 Troubleshooting Based on the Operation and Conditions of the Servomotor

This section provides troubleshooting based on the operation and conditions of the Servomotor, including causes and corrections.

Problem	Possible Cause	Confirmation	Correction	Reference
Servomotor Does Not Start	The control power supply is not turned ON.	Measure the voltage between control power supply terminals.	Turn OFF the power supply to the servo system. Correct the wiring so that the control power supply is turned ON.	-
	The main circuit power supply is not turned ON.	Measure the voltage across the main circuit power input terminals.	Turn OFF the power supply to the servo system. Correct the wiring so that the main circuit power supply is turned ON.	-
	The I/O signal connector (CN1) pins are not wired correctly or are disconnected.	Turn OFF the power supply to the servo system. Check the wiring condition of the I/O signal connector (CN1) pins.	Correct the wiring of the I/O signal connector (CN1) pins.	-
	The wiring for the Servomotor Main Circuit Cables or Encoder Cable is disconnected.	Check the wiring conditions.	Turn OFF the power supply to the servo system. Wire the cable correctly.	-
	There is an overload on the Servomotor.	Operate the Servomotor with no load and check the load status.	Turn OFF the power supply to the servo system. Reduce the load or replace the Servomotor with a Servomotor with a larger capacity.	-
	The type of encoder that is being used does not agree with the setting of Pn002 = n. \(\Pi\)X\(\Pi\) (Encoder Usage).	Check the type of the encoder that is being used and the setting of Pn002 = n.□X□□.	Set Pn002 = n. \(\Pi\)X\(\Pi\) according to the type of the encoder that is being used.	-
	Settings for input signals Pn630 to Pn64D are incor- rect.	Check settings of input signals Pn630 to Pn64D.	Correct the settings of input signals Pn630 to Pn64D.	-
	The /S-ON (Servo ON) signal was not received.	Check the commands sent from the host controller.	Turn ON the /S-ON signal from the host controller.	-
	The P-OT (Forward Drive Prohibit) or N-OT (Reverse Drive Prohibit) signal is still OFF.	Check the P-OT and N-OT signals.	Turn ON the P-OT and N-OT signals.	-
	The current position of the servomotor is outside the software limit setting range.	Check for INDEXER errors.	Check the motor position and software limit setting (Pn638 and Pn63A), then move the servomotor into the software limit setting range.	-
	There is no position reference, or it is incorrect.	Check for INDEXER errors.	Set the program table correctly.	-

3.5.9 Troubleshooting Based on the Operation and Conditions of the Servomotor

Problem	Possible Cause	Confirmation	Continued from pre	Reference
1 TODIGITI	i ossibie oduse	Commination	Turn ON the /HWBB1	TOTOTOTICE
Servomotor Does Not Start	The safety input signals (/HWBB1 or /HWBB2) were not turned ON.	Check the /HWBB1 and /HWBB2 input signals.	and /HWBB2 input sig- nals. If you are not using the safety func- tion, connect the Safety Jumper Connector (provided as an acces- sory) to CN8.	-
	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-
Servomotor Moves Instanta-	There is a mistake in the Servomotor wiring.	Turn OFF the power supply to the servo system. Check the wiring.	Wire the Servomotor correctly.	_
neously, and Then Stops	There is a mistake in the wiring of the encoder or Serial Converter Unit.	Turn OFF the power supply to the servo system. Check the wiring.	Wire the Serial Converter Unit correctly.	_
Servomotor Speed Is Unstable	There is a faulty connection in the Servomotor wiring.	Turn OFF the power supply to the servo system. The connector connections for the power line (U, V, and W phases) and the encoder or Serial Converter Unit may be unstable. Check the wiring.	Tighten any loose terminals or connectors and correct the wiring.	_
Servomotor Moves with- out a Refer- ence Input	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-
	The setting of Pn001 = n.□□□X (Servo OFF or Alarm Group 1 Stopping Method) is not suitable.	Check the setting of Pn001 = n.□□□X.	Set Pn001 = n.□□□X correctly.	-
Dynamic Brake Does Not Operate	The dynamic brake resistor is disconnected.	Check the moment of inertia, motor speed, and dynamic brake frequency of use. If the moment of inertia, motor speed, or dynamic brake frequency of use is excessive, the dynamic brake resistance may be disconnected.	Turn OFF the power supply to the servo system. Replace the SERVO-PACK. To prevent disconnection, reduce the load.	_
	There was a failure in the dynamic brake drive circuit.	_	Turn OFF the power supply to the servo system. There is a defective component in the dynamic brake circuit. Replace the SERVO-PACK.	-

## 3.5.9 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

Problem	Possible Cause	Confirmation	Continued from pre	Reference	
Froblem	Fossible Gause	Commitmation	Reduce the load so	neierence	
	The Servomotor vibrated considerably while performing the tuning-less function with the default settings.	Check the waveform of the motor speed.	that the moment of inertia ratio or mass ratio is within the allowable value, or increase the load level or reduce the rigidity level in the tuning-less level settings.	-	
		Turn OFF the power supply to the servo system. Check to see if there are any loose mounting screws.	Tighten the mounting screws.	-	
	The machine mounting is not secure.	Turn OFF the power supply to the servo system. Check to see if there is misalignment in the coupling.	Align the coupling.	-	
		Turn OFF the power supply to the servo system. Check to see if the coupling is balanced.	Balance the coupling.	-	
	The bearings are defective.	Turn OFF the power supply to the servo system. Check for noise and vibration around the bearings.	Replace the Servomotor.	-	
Abnormal Noise from Servomotor	There is a vibration source at the driven machine.	Turn OFF the power supply to the servo system. Check for any foreign matter, damage, or deformation in the machine's moving parts.	Consult with the machine manufacturer.	-	
	Noise interference occurred because of incorrect I/O signal cable specifications.	Turn OFF the power supply to the servo system. Check the I/O signal cables to see if they satisfy specifications. Use shielded twisted-pair wire cables or screened twisted-pair cables with conductors of at least 0.12 mm <sup>2</sup> .	Use cables that satisfy the specifications.	-	
	Noise interference occurred because an I/O signal cable is too long.	Turn OFF the power supply to the servo system. Check the lengths of the I/O signal cables.	The I/O signal cables must be no longer than 3 m.	-	
	Noise interference occurred because of incorrect Encoder Cable specifications.	Turn OFF the power supply to the servo system. Make sure that the rotary or Linear Encoder Cable satisfies the specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with a conductors of at least 0.12 mm <sup>2</sup> .	Use cables that satisfy the specifications.	-	
	Noise interference occurred because the Encoder Cable is too long.	Turn OFF the power supply to the servo system. Check the length of the Encoder Cable.	Rotary Servomotors: The Encoder Cable length must be 50 m max.	-	

3.5.9 Troubleshooting Based on the Operation and Conditions of the Servomotor

Problem	Possible Cause	Confirmation	Correction	Reference
	Noise interference occurred because the Encoder Cable is damaged.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it is pinched or the sheath is damaged.	Replace the Encoder Cable and correct the cable installation envi- ronment.	-
Abnormal Noise from Servomotor	The Encoder Cable was subjected to excessive noise interference.	Turn OFF the power supply to the servo system. Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-current line.	Correct the cable lay- out so that no surge is applied by high-current lines.	-
	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Turn OFF the power supply to the servo system. Check to see if the machines are correctly grounded.	Properly ground the machines to separate them from the FG of the encoder.	-
	There is a SERVOPACK pulse counting error due to noise.	Check to see if there is noise interference on the signal line from the encoder.	Turn OFF the power supply to the servo system. Implement countermeasures against noise for the encoder wiring.	-
	The encoder was subjected to excessive vibration or shock.	Turn OFF the power supply to the servo system. Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting surface precision, securing state, and alignment).	Reduce machine vibration. Improve the mounting conditions of the Servomotor.	-
	A failure occurred in the encoder.	_	Turn OFF the power supply to the servo system. Replace the Servomotor.	-

### 3.5.9 Troubleshooting Based on the Operation and Conditions of the Servomotor

Continued from previous page.

Problem	Possible Cause	Confirmation	Correction	Reference
	The servo gains are not balanced.	Check to see if the servo gains have been correctly tuned.	Perform autotuning without a host reference.	-
Comromotor	The setting of Pn100 (Speed Loop Gain) is too high.	Check the setting of Pn100. The default setting is Kv = 40.0 Hz.	Set Pn100 to an appropriate value.	-
Servomotor Vibrates at Frequency of Approx. 200 to 400 Hz.	The setting of Pn102 (Position Loop Gain) is too high.	Check the setting of Pn102. The default setting is Kp = 40.0/s.	Set Pn102 to an appropriate value.	-
	The setting of Pn101 (Speed Loop Integral Time Constant) is not appropriate.	Check the setting of Pn101. The default setting is Ti = 20.0 ms.	Set Pn101 to an appropriate value.	-
	The setting of Pn103 (Moment of Inertia Ratio or Mass Ratio) is not appropri- ate.	Check the setting of Pn103.	Set Pn103 to an appropriate value.	-
	The servo gains are not balanced.	Check to see if the servo gains have been correctly tuned.	Perform autotuning without a host reference.	-
	The setting of Pn100 (Speed Loop Gain) is too high.	Check the setting of Pn100. The default setting is Kv = 40.0 Hz.	Set Pn100 to an appropriate value.	-
Large Motor Speed	The setting of Pn102 (Position Loop Gain) is too high.	Check the setting of Pn102. The default setting is Kp = 40.0/s.	Set Pn102 to an appropriate value.	_
Overshoot on Starting and Stop- ping	The setting of Pn101 (Speed Loop Integral Time Constant) is not appropriate.	Check the setting of Pn101. The default setting is Ti = 20.0 ms.	Set Pn101 to an appropriate value.	-
	The setting of Pn103 (Moment of Inertia Ratio or Mass Ratio) is not appropri- ate.	Check the setting of Pn103.	Set Pn103 to an appropriate value.	-
	The torque reference is saturated.	Check the waveform of the torque reference.	Use the mode switch.	-
	The force limits (Pn483 and Pn484) are set to the default values.	The default values of the force limits and Pn483 = 30% and Pn484 = 30%.	Set Pn483 and Pn484 to appropriate values.	-

3.5.9 Troubleshooting Based on the Operation and Conditions of the Servomotor

Problem	Possible Cause	Confirmation	Correction	Reference
	Noise interference occurred because of incorrect Encoder Cable specifications.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it satisfies specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm <sup>2</sup> .	Use cables that satisfy the specifications.	-
	Noise interference occurred because the Encoder Cable is too long.	Turn OFF the power supply to the servo system. Check the length of the Encoder Cable.	Rotary Servomotors: The Encoder Cable length must be 50 m max.	-
	Noise interference occurred because the Encoder Cable is damaged.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it is pinched or the sheath is damaged.	Replace the Encoder Cable and correct the cable installation envi- ronment.	-
Absolute Encoder Position Deviation Error (The position	Noise interference occurred because the Encoder Cable is damaged.	Turn OFF the power supply to the servo system. Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-current line.	Correct the cable lay- out so that no surge is applied by high-current lines.	-
that was saved in the host con- troller when the power was turned	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Turn OFF the power supply to the servo system. Check to see if the machines are correctly grounded.	Properly ground the machines to separate them from the FG of the encoder.	-
OFF is dif- ferent from the posi- tion when the power was next turned ON.)	There is a SERVOPACK pulse counting error due to noise.	Turn OFF the power supply to the servo system. Check to see if there is noise interference on the I/O signal line from the encoder or Serial Converter Unit.	Implement counter- measures against noise for the encoder or Serial Converter Unit wiring.	-
turned Giv.)	The encoder was subjected to excessive vibration or shock.	Turn OFF the power supply to the servo system. Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting surface precision, securing state, and alignment).	Reduce machine vibration. Or, improve the mounting conditions of the Servomotor.	-
	A failure occurred in the encoder.	_	Turn OFF the power supply to the servo system. Replace the Servomotor.	-
	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-

## 3.5.9 Troubleshooting Based on the Operation and Conditions of the Servomotor

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Drabless	Degathle Court	Confirment	Continued from pre	
Problem	Possible Cause	Confirmation	Correction	Reference
		Check the external power supply (+24 V) voltage for the input signals.	Correct the external power supply (+24 V) voltage for the input signals.	-
	The P-OT/N-OT (Forward Drive Prohibit or Reverse Drive Prohibit) signal was	Check the operating condition of the overtravel limit switches.	Make sure that the overtravel limit switches operate correctly.	-
	input.	Check the wiring of the overtravel limit switches.	Correct the wiring of the overtravel limit switches.	-
		Check the settings of PnB0F and PnB10.	Set the parameters to correct values.	_
Overtravel Occurred		Check for fluctuation in the external power supply (+24 V) voltage for the input signals.	Eliminate fluctuation from the external power supply (+24 V) voltage for the input signals.	_
	The P-OT/N-OT (Forward Drive Prohibit or Reverse Drive Prohibit) signal mal-	Check to see if the operation of the overtravel limit switches is unstable.	Stabilize the operating condition of the over-travel limit switches.	_
	functioned.	Check the wiring of the overtravel limit switches (e.g., check for cable damage and loose screws).	Correct the wiring of the overtravel limit switches.	-
	The selection of the Servo- motor stopping method is not correct.	Check the servo OFF stopping method set in Pn001 = n.□□□X or PnB1F.	Select a Servomotor stopping method other than coasting to a stop.	_
Improper Stop Posi- tion for	The limit switch position and dog length are not appropriate.	_	Install the limit switch at the appropriate position.	-
Overtravel (OT) Signal	The overtravel limit switch position is too close for the coasting distance.	-	Install the overtravel limit switch at the appropriate position.	_
	Noise interference occurred because of incorrect Encoder Cable specifications.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if is satisfies specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm <sup>2</sup> .	Use cables that satisfy the specifications.	-
	Noise interference occurred because the Encoder Cable is too long.	Turn OFF the power supply to the servo system. Check the length of the Encoder Cable.	Rotary Servomotors: The Encoder Cable length must be 50 m max.	-
Position Deviation (without Alarm)	Noise interference occurred because the Encoder Cable is damaged.	Turn OFF the power supply to the servo system. Check the Encoder Cable to see if it is pinched or the sheath is damaged.	Replace the Encoder Cable and correct the cable installation envi- ronment.	-
	The Encoder Cable was subjected to excessive noise interference.	Turn OFF the power supply to the servo system. Check to see if the Encoder Cable is bundled with a high-current line or installed near a high-current line.	Correct the cable lay- out so that no surge is applied by high-current lines.	-
	There is variation in the FG potential because of the influence of machines on the Servomotor side, such as a welder.	Turn OFF the power supply to the servo system. Check to see if the machines are correctly grounded.	Properly ground the machines to separate them from the FG of the encoder.  Continued on	-

3.5.9 Troubleshooting Based on the Operation and Conditions of the Servomotor

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Problem	Possible Cause	Confirmation	Correction	Reference
	There is a SERVOPACK pulse counting error due to noise.	Turn OFF the power supply to the servo system. Check to see if there is noise interference on the I/O signal line from the encoder or Serial Converter Unit.	Implement counter- measures against noise for the encoder wiring or Serial Converter Unit wiring.	_
	The encoder was subjected to excessive vibration or shock.	Turn OFF the power supply to the servo system. Check to see if vibration from the machine occurred. Check the Servomotor installation (mounting surface precision, securing state, and alignment).	Reduce machine vibration. Or, improve the mounting conditions of the Servomotor.	-
Position	The coupling between the machine and Servomotor is not suitable.	Turn OFF the power supply to the servo system. Check to see if position offset occurs at the coupling between machine and Servomotor.	Correctly secure the coupling between the machine and Servomotor.	-
Deviation (without Alarm)	Noise interference occurred because of incorrect I/O signal cable specifications.	Turn OFF the power supply to the servo system. Check the I/O signal cables to see if they satisfy specifications. Use a shielded twisted-pair wire cable or a screened twisted-pair cable with conductors of at least 0.12 mm <sup>2</sup> .	Use cables that satisfy the specifications.	-
	Noise interference occurred because an I/O signal cable is too long.	Turn OFF the power supply to the servo system. Check the lengths of the I/O signal cables.	The I/O signal cables must be no longer than 3 m.	-
	An encoder fault occurred. (The pulse count does not change.)	_	Turn OFF the power supply to the servo system. Replace the Servomotor.	-
	A failure occurred in the SER-VOPACK.	_	Turn OFF the power supply to the servo system. Replace the SERVO-PACK.	-
	The surrounding air temperature is too high.	Measure the surrounding air temperature around the Servomotor.	Reduce the surrounding air temperature to 40°C or less.	_
	The surface of the Servomotor is dirty.	Turn OFF the power supply to the servo system. Visually check the surface for dirt.	Clean dirt, dust, and oil from the surface.	_
Servomotor Overheated	There is an overload on the Servomotor.	Check the load status with a monitor.	If the Servomotor is overloaded, reduce the load or replace the Servo Drive with a SERVOPACK and Servomotor with larger capacities.	-
	Polarity detection was not performed correctly.	Check to see if electrical angle 2 (electrical angle from polarity origin) at any position is between ±10°.	Correct the settings for the polarity detection-related parameters.	-
Estimating the moment of inertia failed.	The acceleration rate is low and travel distance is short.	Check the Condition Setting Dialog Box used to perform moment of inertia estimation.	Increase the acceleration rate and travel distance.	

3.5.9 Troubleshooting Based on the Operation and Conditions of the Servomotor

# **Parameter Lists**

This chapter provides information on the parameters.

4.1	FT82 SE	ERVOPACKs with Analog Voltage/Pulse Train References 4-2
4.2	FT82 SEI	RVOPACK with MECHATROLINK-II Communications References4-32
4.3	FT82 SEF	RVOPACK with MECHATROLINK-III Communications References 4-67
	4.3.1 4.3.2	List of Servo Parameters
		Parameters
4.4	Command	Option Attachable-type FT82 SERVOPACKs with INDEXER Modules4-110
4.5	FT83 SE	RVOPACKs with Analog Voltage/Pulse Train References 4-134

## FT82 SERVOPACKs with Analog Voltage/Pulse Train References

The following table lists the parameters.

- Note: Do not change the following parameters from their default settings.

   Reserved parameter

   Parameters not given in this manual

   Parameters that are not valid for the Servomotor that you are using, as given in the parameter table

Parameter No.	Size	N	Name		Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Basic Fund tions 0	ction Selec-	0000h to 10B1h	_	0000h	All	After restart	Setup	-	
			Rotation D	n Direction Selection					Refere	ence	
		n.□□□X	0 U	se CCW as the t	forward dir	rection.			*1		
			1 U	se CW as the fo	rward dire	ction. (Rev	erse Rotation	Mode)			
			Control Me	thod Selection					Refere	ence	
		n.□□X□	0 S	peed control wit	h analog r	eferences					
				osition control w	ith pulse t	rain referer	nces				
					orque control wit	h analog r	eferences				
			3 Ir	ternal set speed	control w	ith contact	commands				
				witching betwee nces and speed				ontact refer-			
Pn000				witching betwee				control with contact refer- rain references			
				witching betweences and torque				ontact refer-	*1		
				witching betwee beed control with			h pulse train r	eferences an	d		
				witching betwee orque control wit			h pulse train r	eferences an	d		
				witching betwee beed control with			analog refere	ences and			
			A S	witching betwee beed control with	n speed c n zero clar	ontrol with	analog refere	ences and			
				witching betwee osition control w				eferences an	d		
	n.□X□□ Reserved parameter (Do not change.)										
	n.X□□□ Reserved parameter (Do not change.)										
			-								

Parameter No.	Size	N	Name		Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Application Selections		0000h to 1142h	-	0000h	All	After restart	Setup	_	
			Motor Stop	lotor Stopping Method for Servo OFF and Group 1 Alarms						ence	
				op the motor by	11,	,					
		n.□□□X		Stop the motor by the applying dynamic brake and then release the dynamic brake.						*1	
			2 Co	ast the motor t	o a stop w	ithout the	dynamic brak	e.			
			Overtravel S	Stopping Metho	d				Refere	ence	
			0 Ap	ply the dynamic	brake or	coast the	motor to a sto	p.			
				Decelerate the motor to a stop using the torque set in Pn406 as the maximum torque and then servo-lock the motor.							
		n.□□X□	2 De	ecelerate the mo e maximum tord	otor to a st que and the	op using t en let the r	ne torque set notor coast.	in Pn406 as	*1		
			3 De Pr	ecelerate the mo 30A and then s	otor to a st ervo-lock	op using the motor.	ne deceleration	n time set in			
Pn001				ecelerate the mo 30A and then le			ne deceleratio	n time set in			
			Main Circuit Power Supply AC/DC Input Selection						Refere	ence	
		n. 🗆 X 🗆 🗆	O In	out AC power as d L3 terminals (	s the main	circuit pov	ver supply usi	ng the L1, L2			
			1 ar	out DC power a d $\ominus$ 2 terminal nverter or the s	s or the B	ı and ⊖ 2		-			
			Warning Co	de Output Sele	ction				Refere	ence	
				itput only alarm	codes on	the ALO1,	ALO2, and A	LO3 termi-			
		n.X□□□	1 an	atput both warn d ALO3 termina tput, the ALM (sal state).	ıls. Howev	er, while a	n warning cod	le is being	*1		

Parameter No.	Size	N	Name		Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer ence
	2	Application Selections		0000h to 4213h	_	0000h	-	After restart	Setup	_
			Sneed/Posi	tion Control Op	location)	Applicable	Refere	ance		
			-		<u> </u>	.i iliput Ai	location	Motors	Helele	SIICE
				not use T-REF			_			
		n.□□□X		se T-REF as an		<u> </u>	•	All	*1	
				se T-REF as a to	-	-		All	*1	
				se T-REF as an e -CL or /N-CL is		rque ilmit i	nput when		*1	
			Torque Control Option (V-REF Input Allocation)					Applicable Motors	Refere	ence
		n.□□X□	0 Do	not use V-REF		All	*1			
			1 Us	se V-REF as an	external sp	oeed limit i	nput.	All	1	
Pn002		n.□X□□	Encoder Usage					Applicable Motors	Refere	ence
				Use the encoder according to encoder specifications.				All		
			1 Us	1 Use the encoder as an incremental encoder.					*1	
				se the encoder a coder.	as a single	-turn abso	lute	Rotary		
			External En	coder Usage				Applicable Motors	Refere	ence
			0 Do	o not use an ext	ernal enco	oder.				
		n.X□□□	1 Th	ne external enco on for CCW mot	der moves or rotation	s in the for	ward direc-			
			2 R	eserved setting	(Do not us	e.)		Rotary	*1	
				ne external enco on for CCW mot			erse direc-			
			4 Re	eserved setting	(Do not us	e.)				

Applicable

Motors

Classi-Enabled fication ence

Continued from previous page.

When

	2	Application Selections			0000h to 105Fh	ı	0002h	All	Immedi- ately	Setup	*1		
			Analog Mo	nit	or 1 Signal Se	lection							
			00	Μ	lotor speed (1	V/1,000 m	nin <sup>-1</sup> )						
			01	S	Speed reference (1 V/1,000 min <sup>-1</sup> ) Torque reference (1 V/100% rated torque) Position deviation (0.05 V/reference unit) Position amplifier deviation (after electronic gear) (0.05 V/encoder pulse unit)								
			02	To									
			03	Р									
			04	Р									
			05	Р	Position reference speed (1 V/1,000 min <sup>-1</sup> )								
			06	R	eserved settinç	g (Do not ι	use.)						
			07	Lo	Load-motor position deviation (0.01 V/reference unit)								
Pn006		n.□□XX	08		ositioning com eted: 0 V)	pletion (po	sitioning c	completed: 5 \	V, positionino	g not com	-		
			09	S	peed feedforwa	ard (1 V/1,	,000 min <sup>-1</sup> )						
			0A	To	orque feedforw	ard (1 V/1	100% rated torque)						
			0B	Α	ctive gain (1st	gain: 1 V,	2nd gain: 2 V)						
			0C		ompletion of peted: 0 V)	osition ref	eference distribution (completed: 5 V,			not com-			
			0D	E:	xternal encode	r speed (1	V/1,000 n	nin <sup>-1</sup> : value at	the motor s	haft)			
			0E	R	eserved setting	g (Do not ι	ıse.)						
			0F	R	eserved setting	g (Do not ι	use.)						
			10	M	ain circuit DC	voltage							
			11 to 5F	R	eserved setting	gs (Do not	use.)						
		n.□X□□	Reserved	par	ameter (Do no	t change.	)						
		n.X□□□	Reserved	par	rameter (Do no	t change.	)						

Setting

Range

Setting

Unit

Default

Setting

Parameter

No.

Size

Name

Parameter No.	Size	N	Name		Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Application Selections	Function 7	0000h to 105Fh	-	0000h	All	Immedi- ately	Setup	*1		
			00	nitor 2 Signal Se Motor speed (1 Speed reference	V/1,000 m							
				Torque reference	,	,	rnue)					
				Position deviation								
				Position amplifie				0.05 V/enco	der pulse	unit)		
				Position referen				0.00 1/0/100	doi paloo	<u> </u>		
				Reserved setting			111111 )					
				Load-motor position deviation (0.01 V/reference unit)								
		n.□□XX		Positioning completion (positioning completed: 5 V, positioning not completed: 0 V)								
Pn007			09	Speed feedforw	ard (1 V/1	.000 min <sup>-1</sup>						
			OA Torque feedforward (1 V/100% rated torque)									
				Active gain (1st	•							
			00	Completion of position reference distribution (completed: 5 V, not completed: 0 V)								
			0D	External encode	r speed (1	V/1.000 r	min <sup>-1</sup> : value at	the motor s	haft)	<del></del> -		
			0E	Reserved setting	· ` `				- ,			
			OF	Reserved setting	g (Do not i	use.)				<del></del>		
			10	Main circuit DC	voltage					<del></del>		
			11 to 5F	Reserved setting	gs (Do not	use.)						
	n.□X□□ Reserved parameter (Do not change.)											
		n.X□□□	Reserved p	parameter (Do not change.)								
	2	Application Selections		0000h to 7121h	-	0000h	Rotary	After restart	Setup	-		
			1									
				y Voltage Alarm	ŭ		11		Refere	ence		
		n.□□□X		utput alarm (A.8					*1			
			1 0	utput warning (A	930) for I	ow battery	voltage.					
				election for Und o not detect und					Refere	ence		
Pn008		n.□□X□	<b>-</b>	etect undervolta			torque at hos	t controller				
			2 D	etect undervolta n425 (i.e., only ir	ge warning	g and limit	•		*1			
			Warning De	etection Selection	n				Refere	ence		
		n.□X□□		etect warnings.					*1			
				Ŭ								
		n.X□□□		arameter (Do no								
		,	5361 Vou p		c.iarigo.	,						
								0 "	d on nov			

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Application Selections		0000h to 0121h	_	0010h	All	After restart	Tuning	_	
	ı	n.□□□X	Reserved par	rameter (Do no	ot change.	)					
	Ī			rol Mode Sele					Refere	ence	
Pn009		n.□□X□	1 • Si -3 • Si 47	e current contro ERVOPACK Mo R8A, -5R5A, a ERVOPACK Mo 70A, -550A, -5 e current contro	odels SGD and -7R6A: odels SGD 90A, and -	Use curre 7S-120A,	ent control mo -180A, -200A	ode 1. ., -330A, -	*1		
	i		Speed Dates	tion Method S	oloction				Refere	nnoo	
		n. 🗆 X 🗆 🗆		speed detecti					neiele	ille	
				speed detecti					*1		
	Ī	n.X000	Reserved par	rameter (Do no	ot change.	)					
					_ · · · <b>J</b> · ·	,					
	2	Application Selections		0000h to 0044h	_	0001h	All	After restart	Setup	_	
			Motor Stopp	ing Method fo	r Group 2	Alarms			Refer	ence	
			O Ap	ply the dynami	c brake or	coast the		op (use the			
			De 1 the		otor to a si	top using t	op using the torque set in Pn406 as the setting of Pn001 = n.□□□X for the				
		n.□□□X	2 De	celerate the me maximum tore	otor to a si que and th	top using t en let the	the torque set motor coast.	in Pn406 as	*		
			3 Pn	celerate the mage 30A. Use the supping.	otor to a setting of P	top using t n001 = n.l	the deceleration	on time set ir e status after	1		
				celerate the mage and then I			he deceleration	on time set ir	1		
Pn00A			Stopping Me	thod for Force	ed Stops				Refer	ence	
				ply the dynami pping method				op (use the			
			1 the	celerate the me maximum tord tus after stopp	que. Use th						
		n.□□X□	2 De the	celerate the me maximum tore	otor to a s que and th	top using t en let the	the torque set motor coast.	in Pn406 as	*		
			3 Pn	celerate the mage and the suppling.	otor to a s etting of P	top using t n001 = n.l	the deceleration	on time set ir e status after	1		
				Decelerate the motor to a stop using the deceleration time set in Pn30A and then let the motor coast.							
		n.□X□□	Reserved pa	rameter (Do n	ot change	.)					
		n.XDDD	Reserved pa	rameter (Do n	ot change	.)					

Parameter   No.   Setting   Setting   Setting   Setting   Motors   Companies   Reference									Continued from	om previou	ıs page.
Pn008  Pn008    Comparator Parameter Display Selection		Size	N	lame	_						
Pn00B    N_DDD   Display only setup parameters.   1   Display all parameters.   2   Stephing method for Group 2 Alarms   0   Stop the motor by setting the speed reference to 0.   1   Apply the dynamic brake or coast the motor to a stop (use the stopping method set in Ph001 = n_DDDX.   2   Set the stopping method set in Ph001 = n_DDDX.   2   Set the stopping method set in Ph001 = n_DDDX.   2   Set the stopping method set in Ph001 = n_DDDX.   3   Set up   1   Set		2				_	0000h	All		Setup	-
Pn00B    Note   Stopping Method for Group 2 Alarms   Neference				Operator Para	ameter Display	/ Selection	1			Refere	nce
Photo   Notice   No			n.□□□X	0 Disp	olay only setup	paramete	rs.			*1	
Pn00B    Pn00B				1 Disp	olay all parame	ters.				*1	
Pn00B     1						•		oference to 0		Reference	
Prooce    Septiment	Pn00B		n.□□X□	4 App	oly the dynamic	brake or	coast the i	motor to a sto		*1	
Pn00C    The supply input				Stop						*1	
Pnooc   Dust a three-phase power supply input.   1   Use a three-phase power supply input as a single-phase power set at a supply input as a single-phase power set at a supply input as a single-phase power set at a supply input at a supply input as a single-phase power set at a supply input at a single-phase power set at a supply input at a single-phase power set at a supply input at a single-phase power set at a supply input at a single-phase power set at a supply input at a single-phase power set at a supply input at a single-phase power set at a single phas				Power Input 9							
Pn00C    1			- DVDD								
Pn00C    Pn00C			n.uxuu		Use a three-phase power supply input as a single-phase power						
Pn00C    Pn00C		i	n.X□□□	Reserved par	ameter (Do no	t change.)	)				
Pn00C   Pn0											
Pn00C    Disable tests without a motor.		2	Applicatio Selections	n Function s C		-	0000h	-		Setup	*1
Pn00C    Disable tests without a motor.											
Pn00C    Disable tests without a motor.   All				Function Sel	ection for Test	without a	Motor			Applical Motor	ole s
Pn00C    Pn00C			n.□□□X							All	
Pn00C    Description   Descrip				I Ella	adie tests with	out a moto	Γ.				
Pnooc    1				Encoder Resolution for Tests without a Motor							ole s
Pnood    Topic   Use 20 bits.   Rotary	Pn00C		п.□□Х□								
Pn00D    Selection for Tests without a Motor   Applicable Motors										Rotary	/
Pn00D    Encoder Type Selection for Tests without a Motor   Applicable Motors											
Pn00D    Control   Control				3 056	24 DIIS.						_
Pn00D    The proof of the proof			» UVUU	Encoder Type	e Selection for	Tests wit	hout a Mo	tor			
Pn00D  Reserved parameter (Do not change.)  2  Application Function			11.0700				•			All	
Pn00D    Application Function   0000h to 1001h   - 0000h   All   Immediately   Setup   *1				1 Use	e an absolute e	encoder.					
Pn00D    N.   D   D   D   D   D   D   D   D   D			n.X□□□	Reserved pa	rameter (Do no	ot change.	)				
Pn00D    n.□□X□   Reserved parameter (Do not change.)   n.□X□□   Reserved parameter (Do not change.)   Overtravel Warning Detection Selection   n.X□□□   0   Do not detect overtravel warnings.		2	Applicatio Selections	n Function s D		_	0000h	All		Setup	*1
Pn00D  n.□X□□ Reserved parameter (Do not change.)  Overtravel Warning Detection  n.X□□□ 0 Do not detect overtravel warnings.			n.□□□X	Reserved pa	rameter (Do no	ot change.	.)				
Pn00D  n.□X□□ Reserved parameter (Do not change.)  Overtravel Warning Detection  n.X□□□ 0 Do not detect overtravel warnings.			n.□□X□	Reserved pa	rameter (Do no	ot change.	.)				
n.X□□□ 0 Do not detect overtravel warnings.	Pn00D										
n.X□□□ 0 Do not detect overtravel warnings.				Overtravel W	arning Detecti	ion Select	ion				
			n.XDDD		ű						
					-						_

							(	Continued fro	om previou	us page.		
Parameter No.	Size	Na	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Application Selections I		0000h to 2011h	-	0000h	All	After restart	Setup	_		
			Preventative	Maintenance \	Narning S	election			Reference	ce		
		n.□□□X		ot detect preve					*1			
Pn00F			1 Dete	ect preventative	maintenar	nce warnir	ngs.					
		n.□□X□	Reserved pa	rameter (Do no	t change.	.)						
		n.□X□□	Reserved parameter (Do not change.)									
		n.X□□□	Reserved pa	rameter (Do no	t change.	.)						
Pn010	2		ss Selection ISB Commu-	0000h to 007Fh	_	0001h	All	After restart	Setup	-		
Pn021	2	Reserved particular not change	eserved parameter (Do ot change.)		_	0000h	All	_	-	_		
Pn022	2		Reserved parameter (Do not change.)		-	0000h	All	-	-	-		
Pn040	2	Reserved pa	arameter (Do .)	_	-	0000h	_	-	-	-		
	2	Application Selections 8	Function 81	0000h to 1111h	_	0000h	All	After restart	Setup	*1		
Pn081		n.000X  n.00X0  n.0X00	0 Ou 1 Ou Reserved pa	se Output Sele tput phase-C p tput phase-C p rameter (Do no rameter (Do no	ulses only ulses in bo ot change.	oth the for )			ns.			
			Tioodivoa pa	and the second	, containgo.							
Pn100	2	Speed Loop	p Gain	10 to 20,000	0.1 Hz	400	All	Immedi- ately	Tuning	*1		
Pn101	2	Speed Loop Time Const	p Integral ant	15 to 51,200	0.01 ms	2000	All	Immedi- ately	Tuning	*1		
Pn102	2	Position Lo	op Gain	10 to 20,000	0.1/s	400	All	Immedi- ately	Tuning	*1		
Pn103	2		Inertia Ratio	0 to 20,000	1%	100	All	Immedi- ately	Tuning	*1		
Pn104	2	Second Spe Gain	eed Loop	10 to 20,000	0.1 Hz	400	All	Immedi- ately	Tuning	*1		
Pn105	2	Second Spe Integral Tim	eed Loop ne Constant	15 to 51,200	0.01 ms	2000	All	Immedi- ately	Tuning	*1		
Pn106	2	Second Pos Gain	sition Loop	10 to 20,000	0.1/s	400	All	Immedi- ately	Tuning	*1		

2

2

Feedforward

Feedforward Filter Time Constant

Pn109

Pn10A

Tuning

\*1

\*1

Immedi-ately

Immedi-

ately

0

0

ΑII

ΑII

1%

0.01 ms

0 to 100

0 to 6,400

Parameter No.	Size	N	ame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Gain Applications	ation Selec	0-	0000h to 5334h	_	0000h	All	-	Setup	-
			Mode Sw	itchi	ing Selection				When Enable		ence
			U	(leve	the internal to el setting: Pn1	0Ċ).					
			1 -	ting	the speed ref : Pn10D).						
		n.□□□X		ting	the speed ref : Pn181).			,	Immedi	_	
			2	sett	ing: Pn10E).			condition (leve	ately	*1	
Pn10B					the accelerati ing: Pn182).	on referen	ce as the	condition (leve			
			3	ting	: Pn10F).			lition (level set-			
			4	Do ı	not use mode	switching.					
			Speed Lo	ор (	Control Metho	d			When Enable		ence
		n.□□X□			ontrol control				After	*1	
					erved settings	(Do not u	se.)		restart		
	Ī	n.□X□□	Reserved	par	ameter (Do no	ot change.	)				
	Ī	n.XDDD	Reserved	par	ameter (Do no	ot change.	)				
						-					
Pn10C	2	Mode Switt for Torque			0 to 800	1%	200	All	Immedi- ately	Tuning	*1
Pn10D	2	Mode Swite for Speed I			0 to 10,000	1 min <sup>-1</sup>	0	Rotary	Immedi- ately	Tuning	*1
Pn10E	2	Mode Swite for Acceler			0 to 30,000	1 min <sup>-1</sup> /s	0	Rotary	Immedi- ately	Tuning	*1
Pn10F	2	Mode Swite for Position	ching Level Deviation		0 to 10,000	1 refer- ence unit	0	All	Immedi- ately	Tuning	*1
Pn11F	2	Position Int Constant	egral Time		0 to 50,000	0.1 ms	0	All	Immedi- ately	Tuning	*1
Pn121	2	Friction Co Gain			10 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
Pn122	2	Second Fri pensation (	Gain		10 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
Pn123	2	Friction Co Coefficient			0 to 100	1%	0	All	Immedi- ately	Tuning	*1
Pn124	2	Friction Co Frequency	Correction		-10,000 to 10,000	0.1 Hz	0	All	Immedi- ately	Tuning	*1
Pn125	2	Friction Co Gain Corre		1	1 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
Pn131	2	Gain Switc	ning Time	1	0 to 65,535	1 ms	0	All	Immedi- ately	Tuning	*1
Pn132	2	Gain Switc			0 to 65,535	1 ms	0	All	Immedi- ately	Tuning	*1
Pn135	2	Gain Switc		•	0 to 65,535	1 ms	0	All	Immedi- ately	Tuning	*1
Pn136	2	Gain Switc Time 2	ning Waitin	g	0 to 65,535	1 ms	0	All	Immedi- ately Continue	Tuning	*1

Parameter No.	Size	N	ame		Setting Range	Setting Unit	Default Setting	Applicable Motors	Continued from When Enabled	Classi- fication	Refer- ence	
	2	Automatic ing Selection		ch-	0000h to 0052h	_	0000h	All	Immedi- ately	Tuning	*1	
Pn139		n.00X	0 1 2	Use The Res Use The sati tion /CC /NE	ng Selection e manual gain segment is switch served setting (segment is automatic gain e automatic e automa	ed manua Do not us n switchir 1 switch a settings 2 ied.  G Complet out) signal	e.) ng pattern nutomatical switch au ion Output ion Output turns ON.	1. ly to 2 when utomatically to ) signal turns ) signal turns	switching co	ndition A i		
	<u>.</u>		5		sition reference sition reference			l reference pu	ulse input is (	OFF.		
		n.□X□□	Reserved	d pa	rameter (Do no	t change	.)					
		n.X□□□	Reserved	d pa	rameter (Do no	t change	.)					
Pn13D	2	Current Ga	in Level	el 100 to 2,000 1% 2000 All Immediately Tunin								
	2	Model Folk trol-Related			0000h to 1121h	_	0100h	All	Immedi- ately	Tuning	_	
		п.ПППХ	0 [ 1 l	Do n Jse	ving Control Se ot use model fo model following opression Sele	ollowing c g control.	ontrol.			Referer		
		n.□□X□			ot perform vibr			-:f: - f		*1		
					orm vibration su orm vibration su	• •		· · · · · · · · · · · · · · · · · · ·	,	*1		
Pn140					opression Adju					Referer	nce	
		n.□X□□	0	tion	not adjust vibra of autotuning at reference, an	without a d custom	host refere tuning.	ence, autotun	ing with a	- *1		
			1	aut	ust vibration su otuning withou nce, and custo	t a host re						
			Speed Fe		orward (VFF)/7	•		, ,		Referer	ice	
		n.X□□□	0		not use model rd together.	following	control and	d speed/torqi	ue feedfor-	*1		
			1		e model followii ether.	ng control	and speed	d/torque feed	forward			
Pn141	2	Model Follo	owing Con	1-	10 to 20,000	0.1/s	500	All	Immedi- ately	Tuning	*1	
Pn142	2	Model Follo trol Gain C	owing Con orrection	1-	500 to 2,000	0.1%	1000	All	Immedi- ately	Tuning	*1	
Pn143	2	Model Folk trol Bias in Direction			0 to 10,000	0.1%	1000	All	Immedi- ately	Tuning	*1	

_							1	Continued fro		
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn144	2		owing Con- the Reverse	0 to 10,000	0.1%	1000	All	Immedi- ately	Tuning	*1
Pn145	2	Vibration S Frequency	suppression 1 A	10 to 2,500	0.1 Hz	500	All	Immedi- ately	Tuning	*1
Pn146	2	Vibration S Frequency	suppression 1 B	10 to 2,500	0.1 Hz	700	All	Immedi- ately	Tuning	*1
Pn147	2		owing Con- Feedforward tion	0 to 10,000	0.1%	1000	All	Immedi- ately	Tuning	*1
Pn148	2	Second Moing Control	odel Follow- I Gain	10 to 20,000	0.1/s	500	All	Immedi- ately	Tuning	*1
Pn149	2		odel Follow- I Gain Correc-	500 to 2,000	0.1%	1000	All	Immedi- ately	Tuning	*1
Pn14A	2	Vibration S Frequency	suppression 2	10 to 2,000	0.1 Hz	800	All	Immedi- ately	Tuning	*1
Pn14B	2	Vibration S Correction	suppression 2	10 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
	2	Control-Retions	lated Selec-	0000h to 0021h	-	0021h	All	After restart	Tuning	-
		Model Following Control Type Selection							Reference	
		n.□□□X 0 Use model following control type 1.							1.0.0.0	
		II.UUUX		e model followi	*1					
	-				9	31			Defens	
Pn14F				Type Selection					Refere	ence
		n.□□X□		e tuning-less ty						
				e tuning-less ty					*1	
			2 Use	e tuning-less ty	pe 3.					
		n.□X□□	Reserved pa	rameter (Do no	ot change	.)				
		n.X□□□	Reserved pa	rameter (Do no	ot change	.)				
	2		nance Con- d Selections	0000h to 0011h	-	0010h	All	Immedi- ately	Tuning	_
			Anti Posona	nce Control Se	loction				Refere	nnoo
		n.□□□X		not use anti-re		ontrol			neiere	ence
				e anti-resonanc					*1	
			Anti-Resonar	nce Control Ad	ljustment	Selection			Refere	ence
Pn160		n.□□X□	0 tion	not adjust anti-	without a	host refere				
		n.uuxu	Adj 1 aut	erence, and cust ust anti-resona otuning withou	nce contr t a host re	ol automat			*1	
				ce, and custom		,				
		n.□X□□	Reserved pa	rameter (Do no	ot change	.)				
		n.X□□□	Reserved pa	rameter (Do no	ot change.	.)				
Pn161	2	Anti-Resor	nance Fre-	10 to 20,000	0.1 Hz	1000	All	Immedi- ately	Tuning	*1
Pn162	2	Anti-Resor Correction		1 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
Pn163	2	Anti-Resor	nance Damp-	0 to 300	1%	0	All	Immedi- ately	Tuning	*1
	l	ing Gain 0 to 300 1 70 0 All ately  Continu						,	-l	

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				Continued from previous pag						
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn164	2	Anti-Reson Time Cons rection		-1,000 to 1,000	0.01 ms	0	All	Immedi- ately	Tuning	*1
Pn165	2	Anti-Resonance Filter Time Constant 2 Cor- rection		-1,000 to 1,000	0.01 ms	0	All	Immedi- ately	Tuning	*1
Pn166	2	Anti-Reson ing Gain 2	ance Damp	0 to 1,000	1%	0	All	Immedi- ately	Tuning	*1
	2	Tuning-less Related Se		0000h to 2711h	-	1401h	All	_	Setup	*1
			Tuning-les	s Selection						en led
		n.□□□X	0 [	Disable tuning-les	s function.				Afte	er
			1 E	Enable tuning-less	s function.				resta	art
			Speed Cor	ntrol Method					Whe Enab	
D : 470	n. 🗆 X 🗆 O Us				ntrol.				Afte	er
Pn170			1 l	Jse for speed cor	ntrol and u	se host co	ntroller for po	sition contro		
	•	n.□X□□	Rigidity Le	vel	le					

Set the load level for the tuning-less function.

Tuning-less Load Level

Set the rigidity level.

0 to 7

0 to 2

n.X□□□

Continued on next page.

Immedi-ately

When Enabled

Immedi-ately

								Continued fro	m previou	us pag
Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer ence
	2	Position C ence For S	ontrol Refer- Selections	0000h to 2236h	_	0000h	All	After restart	Setup	-
			Reference	Pulse Form					Refere	ence
			-	ign and pulse tra						
				W and CCW pul		'				
			2 p	wo-phase pulse hase B) ×1, posi	tive logic					
		n.□□□X		wo-phase pulse hase B) ×2, posi		90° phase	e differential (p	ohase A and	*1	
				wo-phase pulse hase B) ×4, posi		90° phase	e differential (p	ohase A and		
			5 S	ign and pulse tra	ain, negati	ve logic.				
			6 C	W and CCW pul	se trains,	negative lo	gic			
			Clear Signa	al Form					Refere	ence
Pn200			0 0	lear position dev	viation whe	en the sign	al is at high le	evel.		
111200		n.□□X□	-	lear position dev					*1	
				lear position dev						
			3 C	lear position dev	iation on t	the falling e	edge of the sig	gnal.		
			Clear Oper	ation					Refere	ence
	Clear position deviation at a base block (at servo OFF or when alarm occurs).									
		n.□X□□		o not clear posit eviation) signal).	ion error (	cleared onl	y with CLR (C	Clear Position	*1	
			2 C	lear position dev	viation whe	en an alarm	occurs.			
			Filter Selec	tion					Refere	ence
			0 L	se the reference	input filte	r for a line-	driver signal.	(1 Mpps max	(.)	
		n.X□□□	1 k	*1						
			2 L	se reference inp	ut filter 2 f	or a line-dr	river signal. (1	to 4 Mpps)		
		1						After		
Pn205	2	Multiturn L		0 to 65,535	1 rev	65535	Rotary	restart	Setup	*1
	2	tion Select	control Func- tions	0000h to 2210h	-	0000h	All	After restart	Setup	-
		n.□□□X	Reserved p	parameter (Do no	ot change	.)				
			Position Co	ontrol Option					Refere	ence
		n.□□X□	0 0	o not use V-REF					*1	
			1 L	se V-REF as a s	peed feed	back input				
		n.□X□□	Reserved p	arameter (Do no	ot change	.)				
Pn207			/COIN (Pos	sitioning Comple	tion Outp	ut) Signal	Output Timin	g	Refe	
			0 s	Output when the ame or less than Vidth).						
		n.X□□□	1 o	Output when the series than the send the reference	etting of P	n522 (Posi	tioning Comp	leted Width)	*1	
			2 o	Output when the seriess than the send the reference	etting of P	n522 (Posi				
									1	<del></del>

After restart

\*1

Setup

4

	Continued from previous page.								
Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn20A	4	Number of External Encoder Scale Pitches	4 to 1,048,576	1 scale pitch/ revolu- tion	32768	Rotary	After restart	Setup	*1
Pn20E	4	Electronic Gear Ratio (Numerator)	1 to 1,073,741,824	1	64	All	After restart	Setup	*1
Pn210	4	Electronic Gear Ratio (Denominator)	1 to 1,073,741,824	1	1	All	After restart	Setup	*1
Pn212	4	Number of Encoder Output Pulses	16 to 1,073,741,824	1 P/Rev	2048	Rotary	After restart	Setup	*1
Pn216	2	Position Reference Acceleration/Decelera- tion Time Constant	0 to 65,535	0.1 ms	0	All	Immedi- ately after the motor stops	Setup	*1
Pn217	2	Average Position Reference Movement Time	0 to 10,000	0.1 ms	0	All	Immedi- ately after the motor stops	Setup	*1
Pn218	2	Reference Pulse Input Multiplier	1 to 100	× 1	1	All	Immedi- ately	Setup	*1

0000h to 1003h

Fully-closed Control Selections

2

n.□□□X	Reserve	d parameter (Do not change.)								
n.□□X□	Reserve	d parameter (Do not change.)								
n.□X□□	Reserve	Reserved parameter (Do not change.)								
	Fully-closed Control Speed Feedback Selection									
n.X□□□	0	Use motor encoder speed.								
	1	Use external encoder speed.								

0000h

Rotary

Pn281	2	Encoder Output Resolution	1 to 4,096	1 edge/ pitch	20	All	After restart	Setup	*1
Pn300	2	Speed Reference Input Gain	150 to 3,000	0.01 V/ Rated motor speed	600	All	Immedi- ately	Setup	*1
Pn301	2	Internal Set Speed 1	0 to 10,000	Rotary: 1 min <sup>-1</sup> Direct Drive: 0.1 min <sup>-1</sup>	100	Rotary	Immedi- ately	Setup	*1
Pn302	2	Internal Set Speed 2	0 to 10,000	Rotary: 1 min <sup>-1</sup> Direct Drive: 0.1 min <sup>-1</sup>	200	Rotary	Immedi- ately	Setup	*1
Pn303	2	Internal Set Speed 3	0 to 10,000	Rotary: 1 min <sup>-1</sup> Direct Drive: 0.1 min <sup>-1</sup>	300	Rotary	Immedi- ately	Setup	*1
Pn304	2	Jogging Speed	0 to 10,000	Rotary: 1 min <sup>-1</sup> Direct Drive: 0.1 min <sup>-1</sup>	500	Rotary	Immedi- ately	Setup	*1
Pn305	2	Soft Start Acceleration Time	0 to 10,000	1 ms	0	All	Immedi- ately	Setup	*1
Pn306	2	Soft Start Deceleration Time	0 to 10,000	1 ms	0	All	Immedi- ately	Setup	*1

Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn307	2	Speed Reference Filter Time Constant	0 to 65,535	0.01 ms	40	All	Immedi- ately	Setup	*1
Pn308	2	Speed Feedback Filter Time Constant	0 to 65,535	0.01 ms	0	All	Immedi- ately	Setup	*1
Pn30A	2	Deceleration Time for Servo OFF and Forced Stops	0 to 10,000	1 ms	0	All	Immedi- ately	Setup	*1
Pn30C	2	Speed Feedforward Average Movement Time	0 to 5,100	0.1 ms	0	All	Immedi- ately	Setup	*1
	2	Vibration Detection Selections	0000h to 0002h	-	0000h	All	Immedi- ately	Setup	*1

Pn310

	Vibration Detection Selection								
п.ПППХ	0 Do not detect vibration.								
п.ШШХ	1 Output a warning (A.911) if vibration is detected.								
	2	Output an alarm (A.520) if vibration is detected.							
n.□□X□	Reserve	d parameter (Do not change.)							
n.□X□□	Reserved parameter (Do not change.)								

n.X□□□ Reserved parameter (Do not change.)

Pn311	2	Vibration Detection Sensitivity	50 to 500	1%	100	All	Immedi- ately	Tuning	*1
Pn312	2	Vibration Detection Level	0 to 5,000	1 min <sup>-1</sup>	50	Rotary	Immedi- ately	Tuning	*1
Pn316	2	Maximum Motor Speed	0 to 65,535	1 min <sup>-1</sup>	10000	Rotary	After restart	Setup	*1
Pn324	2	Moment of Inertia Cal- culation Starting Level	0 to 20,000	1%	300	All	Immedi- ately	Setup	*1
Pn400	2	Torque Reference Input Gain	10 to 100	0.1 V/ rated torque	30	All	Immedi- ately	Setup	*1
Pn401	2	First Stage First Torque Reference Filter Time Constant	0 to 65,535	0.01 ms	100	All	Immedi- ately	Tuning	*1
Pn402	2	Forward Torque Limit	0 to 800	1%*2	800	Rotary	Immedi- ately	Setup	*1
Pn403	2	Reverse Torque Limit	0 to 800	1%*2	800	Rotary	Immedi- ately	Setup	*1
Pn404	2	Forward External Torque Limit	0 to 800	1%*2	100	All	Immedi- ately	Setup	*1
Pn405	2	Reverse External Torque Limit	0 to 800	1%*2	100	All	Immedi- ately	Setup	*1
Pn406	2	Emergency Stop Torque	0 to 800	1%*2	800	All	Immedi- ately	Setup	*1
Pn407	2	Speed Limit during Torque Control	0 to 10,000	1 min <sup>-1</sup>	10000	Rotary	Immedi- ately	Setup	*1

Applicable

Motors

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Classi-

fication

Refer-

ence

When

Enabled

INO.	0)				Trange	Offic	Setting	MOLOIS	Lilabieu	ilcation	ence
	2	Torque-Retion Select		)-	0000h to 1111h	_	0000h	All	-	Setup	_
	li		Notch Fi	Iter S	Selection 1				When Enabled	Refere	ence
		n.□□□X	0	Dis	able first stage	notch filte	er.		Immedi	. *1	
			1	Ena	able first stage	notch filte	r.		ately	-1	
			Speed L	imit	Selection				When Enabled	Ratarana	
	Ш		0		e the smaller of ting of Pn407 a			speed and the	Э		
D= 400	Ш	n.□□X□	0		the smaller of ting of Pn480 a			speed and the	After	*1	
Pn408	Ш		1	spe	e the smaller of eed and the set	ting of Pn	407 as the	speed limit.	restart		
					e the smaller of eed and the set						
			Notch Fi	Iter S	Selection 2				When Enabled	Refere	ence
		n.□X□□	0		able second st	Immedi	*1				
	ļ ļ		1	Ena	able second sta	age notch	filter.		ately		
		» VППП	Friction	Com	pensation Fun	ction Sele	ection		When Enabled	Refere	ence
		n.X□□□	0		able friction co	•			Immedi	*1	
	L		1	Ena	able friction cor	mpensatio	n.		ately		
					T	Т				Т	1
Pn409	2	First Stage Frequency			50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn40A	2	First Stage Q Value			50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1
Pn40B	2	First Stage Depth			0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1
Pn40C	2	Second St ter Freque	ncy		50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn40D	2	Second St ter Q Value	age Notch	Fil-	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1
Pn40E	2	Second St ter Depth	age Notch	ı Fil-	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1
Pn40F	2	Second St Torque Ref Frequency	erence Fil		100 to 5,000	1 Hz	4000	All	Immedi- ately	Tuning	*1
Pn410	2	Second St Torque Ret Q Value			50 to 100	0.01	50	All	Immedi- ately	Tuning	*1
Pn412	2	First Stage Torque Ret Time Cons	erence Fil	ter	0 to 65,535	0.01 ms	100	All	Immedi- ately	Tuning	*1
		T-REF Filte							Immedi-		-

Setting

Range

Name

Setting

Unit

Default

Setting

Parameter

No.

	Continued from previous page.											
Parameter No.	Size	Na	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Torque-Rel tion Selecti		0000h to 1111h	-	0000h	All	Immedi- ately	Setup	*1		
							I.			<u>I</u>		
			Notch Filter S	Selection 3								
		n.□□□X	0 Disable third stage notch filter.									
			1 Ena	ble third stage	notch filte	er.						
			Notch Filter S	Selection 4								
Pn416		n.□□X□		able fourth stag								
				ble fourth stag	je noten iii	ter.						
		n.□X□□	Notch Filter S	Selection 5 able fifth stage	notch filte	ar.						
		n.X□□□	Reserved par	Enable fifth stage notch filter.								
	-		•			,						
Pn417	2	Third Stage Frequency	Notch Filter	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1		
Pn418	2	Third Stage Q Value	Notch Filter	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1		
Pn419	2	Third Stage Notch Filter Depth		0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1		
Pn41A	2	Fourth Stage Notch Filter Frequency		50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1		
Pn41B	2	Fourth Stage Notch Filter Q Value		50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1		
Pn41C	2	Fourth Stage Notch Filter Depth		0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1		
Pn41D	2	Frequency	Fifth Stage Notch Filter Frequency		1 Hz	5000	All	Immedi- ately	Tuning	*1		
Pn41E	2	Q Value	Notch Filter	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1		
Pn41F	2	Depth	Notch Filter	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1		
	2	Speed Ripp sation Sele	ole Compen- ctions	0000h to 1111h	_	0000h	Rotary	_	Setup	*1		
			Speed Ripple	Compensation	n Functio	n Selectio	n		Whe Enab			
		n.□□□X	0 Disa	able speed ripp	ole compe	nsation.			Imme			
			1 Ena	ıble speed ripp	le compei	nsation.			ate	y		
Pn423			Speed Ripple tion Selection	Compensation	on Informa	ition Disag	greement Wa	rning Detec-	- Whe			
111120		n.□□X□		ect A.942 alarr					Afte			
			1 Do	not detect A.9	42 alarms	•			resta	11t		
			Speed Ripple	Compensation	on Enable	Condition	Selection		Whe Enab			
		n.□X□□	0 Spe	ed reference					Afte	er		
			1 Mo	tor speed					resta	art		
		n.X□□□	Reserved par	rameter (Do no	ot change.	.)						
					1	<del> </del>	l	1	1			
Pn424	2	Torque Lim cuit Voltage	it at Main Cir- Drop	0 to 100	1%*2	50	All	Immedi- ately	Setup	*1		
	-			1	1	<u> </u>	I	,	ed on nex	t page.		

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,	When	Classi-	Refer-
	Enabled	fication	ence

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
Pn425	2	Release Tir Limit at Ma Voltage Dr		0 to 1,000	1 ms	100	All	Immedi- ately	Setup	*1	
Pn426	2	Torque Fee Average M Time		0 to 5,100	0.1 ms	0	All	Immedi- ately	Setup	*1	
Pn427	2	Speed Rip sation Ena	ple Compen- ble Speed	0 to 10,000	1 min <sup>-1</sup>	0	Rotary Ser- vomotor	Immedi- ately	Tuning	*1	
Pn456	2	Sweep Tor ence Ampl		1 to 800	1%	15	All	Immedi- ately	Tuning	*1	
	2	Notch Filte Selections	r Adjustment 1	0000h to 0101h	-	0101h	All	Immedi- ately	Tuning	*1	
		n.□□□X	Do	Adjustment Se not adjust the ting without a hing.	first stage						
				ust the first sta nout a host refe							
Pn460		n.□□X□	Reserved par	rameter (Do no	ot change.	)					
	Ī	Notch Filter Adjustment Selection 2									
		n.□X□□	Do not adjust the second stage notch filter automatically when the tuning-less function is enabled or during execution of autotuning without a host reference, autotuning with a host reference, and custom tuning.								
			1 tion	ust the second is enabled or otuning with a	during exe	ecution of a	autotuning wit	hout a host	ng-less fur reference,	nc-	
	Ī	n.XDDD	Reserved par	rameter (Do no	ot change.	.)					
	2	Gravity Co Related Se	mpensation- elections	0000h to 0001h	_	0000h	All	After restart	Setup	*1	
Pn475	n.□□□X Gravity Compensation Selection  0 Disable gravity compensation.  1 Enable gravity compensation.										
		n.□□X□		ameter (Do not							
		n. 🗆 X 🗆 🗆	'	arameter (Do not change.)							
	_	n.X□□□	Reserved par	ameter (Do not	change.)						
Pn476	2	Gravity Co Torque	mpensation	-1,000 to 1,000	0.1%	0	All	Immedi- ately	Tuning	*1	
Pn501	2	Zero Clam	ping Level	0 to 10,000	1 min <sup>-1</sup>	10	Rotary	Immedi- ately	Setup	*1	
Pn502	2	Rotation D	etection Level	1 to 10,000	1 min <sup>-1</sup>	20	Rotary	Immedi- ately	Setup	*1	
Pn503	2	Speed Coi Detection S Width	ncidence Signal Output	0 to 100	1 min <sup>-1</sup>	10	Rotary	Immedi- ately	Setup	*1	
Pn506	2	Brake Refe OFF Delay	erence-Servo Time	0 to 50	10 ms	0	All	Immedi- ately	Setup	*1	
Pn507	2	Brake Refe put Speed	erence Out- Level	0 to 10,000	1 min <sup>-1</sup>	100	Rotary	Immedi- ately	Setup	*1	
Pn508	2	Servo OFF mand Wait	-Brake Com- ing Time	10 to 100	10 ms	50	All	Immedi- ately	Setup	*1	
Pn509	2	Momentary ruption Ho	y Power Inter- ld Time	20 to 50,000	1 ms	20	All	Immedi- ately	Setup	*1	
					-			Continue	d on nex	t page.	

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Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	Continued fro When Enabled	Classi- fication	Refer ence					
INO.		Input Signa	al Selection					After		ence					
	2	1		FFF2h	_	2100h	All	restart	Setup	_					
			Input Sig	nal Allocation Mo	de				Refere	ence					
		n.□□□X	0	Use the sequence tions.	e input sigr	nal termina	als with the de	fault alloca-							
			1	Change the sequ			cations.		*1						
			2	Reserved setting	(Do not us	se.)									
			/S-ON (S	ervo ON) Signal A	Illocation				Refere	ence					
			0	Active when CN1	-40 input s	signal is Ol	N (closed).								
			1	Active when CN1	-41 input s	signal is Ol	N (closed).								
			2	Active when CN1	Active when CN1-42 input signal is ON (closed).										
			3	Active when CN1	-43 input s	signal is Ol	N (closed).								
			4	Active when CN1	-44 input s	signal is Ol	N (closed).								
			5	Active when CN1	-45 input s	signal is Ol	N (closed).								
			6	Active when CN1	-46 input s	signal is Ol	N (closed).								
		n.□□X□	7	The signal is alwa	ys active.				*1						
			8	The signal is alwa	ys inactive	).			- 1						
			9	Active when CN1											
			А	Active when CN1											
			В	Active when CN1											
		C Active when CN1-43 input signal is OFF (open).													
			D Active when CN1-44 input signal is OFF (open).												
Pn50A		E Active when CN1-45 input signal is OFF (open).													
			F	Active when CN1	-46 input s	signal is Ol	FF (open).								
		/P-CON (Proportional Control) Signal Allocation													
		n.□X□□	0 to F	The allocations are the same as the /S-ON (Servo ON) signal allocations.											
			P-OT (Fo	rward Drive Prohi	bit) Signal	Allocation	า		Refere	ence					
			0	Enable forward di	rive when (	CN1-40 in	put signal is C	N (closed).							
			1	Enable forward di	rive when (	CN1-41 in	put signal is C	N (closed).							
			2	Enable forward di	rive when (	CN1-42 in	put signal is C	N (closed).							
			3	Enable forward di	rive when (	CN1-43 in	put signal is C	N (closed).							
			4	Enable forward di	rive when (	CN1-44 in	put signal is C	N (closed).							
			5	Enable forward di	rive when (	CN1-45 in	put signal is C	N (closed).							
			6	Enable forward di	rive when (	CN1-46 in	put signal is C	N (closed).							
		n.X□□□	7	Set the signal to a	always pro	hibit forwa	ard drive.		*1						
			8	Set the signal to a	always ena	able forwar	d drive.		*1						
			9	Enable forward di	rive when (	CN1-40 in	put signal is C	FF (open).							
			А	Enable forward di	rive when (	CN1-41 in	put signal is C	FF (open).							
			В	Enable forward di	rive when (	CN1-42 in	put signal is C	FF (open).							
			С	Enable forward di	rive when (	CN1-43 in	put signal is C	OFF (open).							
			D	Enable forward di	rive when (	CN1-44 in	put signal is C	OFF (open).							
			Е	Enable forward di											
				Enable for ward a											
			F	Enable forward di											

Applicable

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Classi-

When

Refer-

Parameter No.	Size	N	ame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Input Signa 2	al Selection	าร	0000h to FFFFh	-	6543h	All	After restart	Setup	_
							<u>I</u>				1
			N-OT (Re	evers	se Drive Prohib	oit) Signal	Allocation	1		Refere	ence
			0	Ena	ble reverse dri	ve when C	N1-40 inp	ut signal is O	N (closed).		
			1		ble reverse dri						
			2		ble reverse dri						
			3		ble reverse dri		•		, ,		
			5		ble reverse dri				, ,		
			6		ble reverse dri		<u>'</u>		, ,		
		n.□□□X	7		the signal to a		· · · · · · · · ·		(0.000.)		
			8		the signal to a					*1	
			9	Ena	ble reverse dri	ve when C	N1-40 inp	out signal is O	FF (open).		
			А	Ena	ble reverse dri	ve when C	N1-41 inp	out signal is O	FF (open).		
			В		ble reverse dri				\ I /		
			С		ble reverse dri		<u> </u>		,		
			D		ble reverse dri		<u> </u>		,		
			E F		ble reverse dri		<u> </u>		,		
			Г	EHS	ble reverse dri	ve when C	7N 1 -40 INC	out signal is O	rr (open).		
					larm Reset) Si					Refere	ence
			0		ive on signal ed (open) to ON		CN1-40 in	put signal cha	anges from		
			1		ive on signal ed (open) to ON		CN1-41 in	put signal cha	anges from		
			2		ve on signal ed (open) to ON		CN1-42 in	put signal cha	anges from		
Pn50B			3		ive on signal ed (open) to ON		CN1-43 in	put signal cha	anges from		
			4 Active on signal edge when CN1-44 input signal changes from OFF (open) to ON (closed).								
			5		ve on signal ed (open) to ON		CN1-45 in	put signal cha	anges from		
			6		ve on signal ed (open) to ON		CN1-46 in	put signal cha	anges from		
		n.□□X□	7		erved setting (					*1	
			8		signal is alway					_	
			9	(clo	ive on signal ed sed) to OFF (o	pen).					
			А	(clo	ve on signal ed sed) to OFF (o	pen).					
			В	(clo	ve on signal ed sed) to OFF (o	pen).					
			С	(clo	ve on signal ed sed) to OFF (o	pen).					
			D Active on signal edge when CN1-44 input signal (closed) to OFF (open).								
			E	Active on signal edge when CN1-45 input signal changes from ON (closed) to OFF (open).  Active on signal edge when CN1-46 input signal changes from ON							
			F		sed) to OFF (o		UN 1-46 IN	out signai cha	nges from Of	N	
		п ПХПП	/P-CL (Fo	orwa	rd External To	rque Limi	t Input) Si	gnal Allocatio	n	Refere	ence
		0 to F The allocations are the same as the /S-ON (Servo ON) signal allocations.						8. *1			
	n.XDDD /N-CL (Reverse External Torque Limit Input) Signal Allocation							Refere			
			0 to F	The	allocations are t	the same a	s the /S-ON	I (Servo ON) siç	gnal allocation	3. *1	
	1										

Setting

Setting

Default

Parameter

Continued from previous page.

Parameter No.	Size	Name		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Input Signa 3	al Selection	S	0000h to FFFFh	-	8888h	All	After restart	Setup	-
	2	n.□□□X	/SPD-D (N 0 1 2 3 4 5 6 7 8 9 A B	Acti Acti Acti Acti Acti Acti The Acti Acti	or Direction) So we when CN1- signal is alway signal is alway we when CN1-	ignal Alloo 40 input s 41 input s 42 input s 43 input s 45 input s 46 input s ys active. ys inactive 40 input s 41 input s 42 input s	cation signal is ON	V (closed). FF (open). FF (open). FF (open).		Refere	
Pn50C			D E	Acti Acti	ve when CN1- ve when CN1- ve when CN1- ve when CN1-	44 input s 45 input s	signal is OF signal is OF	FF (open).			
			/SPD-A (II	PD-A (Internal Set Speed Selection Input) Signal Allocation						Refere	ence
		n.□□X□		0 to F The allocations are the same as the /SPD-D (Motor Direction) signal allocations.							
	Ī		/SPD-B (I	nter	nal Set Speed	Selection	n Input) Si	gnal Allocatio	n	Refere	ence
		n.□X□□			allocations are	e the same	e as the /S	PD-D (Motor	Direction) sig	*1	
	Ī		/C-SEL (C	ont	rol Selection I	nput) Sigr	nal Allocat	ion		Refere	ence
		n.X□□□			allocations are	e the same	e as the /S	PD-D (Motor	Direction) sig	- *1	
									d an nav		

Setting

Continued from previous page.

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer
	2	Input Signa	al Selections	0000h to FFFFh	-	8888h	-	After restart	Setup	_
Pn50D		n.□□□X	0	Active when CN1- The signal is alway The signal is alway Active when CN1-	40 input s 41 input s 42 input s 43 input s 44 input s 45 input s 46 input s 46 input s 47 input s 48 input s 49 input s 41 input s 42 input s 43 input s 44 input s 45 input s	signal is Official signal	N (closed). FF (open). FF (open). FF (open). FF (open). FF (open). FF (open).	Applicable Motors	Refere	
	-	n.□□X□	0 to E	Reference Pulse The allocations are Zero Clamping In	CLAMP	Applicable Motors	Refere			
		n.□X□□	/G-SEL (G	ain Selection Inp	ut) Signal	Allocation	1	Applicable Motors	Refere	ence
		п.пхпп		The allocations are Zero Clamping In				All	*1	
		n.X□□□	Reserved	parameter (Do no	t change	.)				

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Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Output Sig	gnal Selec-	0000h to 6666h	-	3211h	All	After restart	Setup	ı		
			<u> </u>	sitioning Comple	•	, ,			Refere	ence		
				Disabled (the abo		•		T. La contract				
				Output the signal Output the signal			· · · · · · · · · · · · · · · · · · ·					
		n.□□□X		Output the signal		*1						
				Output the signal	20							
			5	Output the signal								
Pn50E			6	Output the signal								
THOOL	Ī		/V-CMP (S	/V-CMP (Speed Coincidence Detection Output) Signal Allocation								
		n.□□X□		The allocations ar tion) signal allocat		e as the /C	OIN (Position	ing Comple-	*1			
	İ		/TGON (R	otation Detection	Output) S	Signal Allo	cation		Refere	ence		
		n.□X□□		The allocations are the same as the /COIN /Positioning Comple-								
	İ		/S-RDY (Servo Ready) Signal Allocation									
		n.X□□□		The allocations ar	*1							
	35.7 53.8 8.558.5167											
	2	Output Sig	gnal Selec-	0000h to 6666h	_	0000h	All	After restart	Setup	-		
	Ī											
			/CLT (Torc	ue Limit Detection	on Output)	Signal All	ocation		Refere	ence		
			+	ue Limit Detection	. ,				Refere	ence		
			0		ve signal c	utput is no	ot used).	ut terminal.	Refere	ence		
		n.□□□X	0 1 2	Disabled (the abo Output the signal Output the signal	ve signal confrom the Confrom the Confrom the Confronting Confront	output is no CN1-25 or CN1-27 or	ot used). CN1-26 outpo CN1-28 outpo	ut terminal.		ence		
		n.□□□X	0 1 2 3	Disabled (the abo Output the signal Output the signal Output the signal	ve signal confrom the Confront the Confront the	output is no CN1-25 or CN1-27 or CN1-29 or	ot used). CN1-26 outpi CN1-28 outpi CN1-30 outpi	ut terminal.	Refere	ence		
		n.□□□X	0 1 2 3 4	Disabled (the abo Output the signal Output the signal Output the signal Output the signal	ve signal of from the Country from the C	output is no CN1-25 or CN1-27 or CN1-29 or CN1-37 ou	ot used). CN1-26 outpo CN1-28 outpo CN1-30 outpo tput terminal.	ut terminal.		ence		
D <sub>0</sub> F0F		n.□□□X	0 1 2 3 4 5	Disabled (the abo Output the signal Output the signal Output the signal	ve signal of from the Confrom	EN1-25 or EN1-27 or EN1-29 or EN1-37 ou EN1-38 ou	ot used). CN1-26 outpi CN1-28 outpi CN1-30 outpi tput terminal. tput terminal.	ut terminal.		ence		
Pn50F		n.000X	0 1 2 3 4 5 6	Disabled (the abo Output the signal Output the signal Output the signal Output the signal Output the signal	ve signal co from the Co from the Co from the Co from the Co from the Co	output is not only in the control of	ot used). CN1-26 outpi CN1-28 outpi CN1-30 outpi tput terminal. tput terminal.	ut terminal.				
Pn50F		n.000X n.00X0	0 1 2 3 4 5 6 WLT (Spec	Disabled (the abo Output the signal Output the signal Output the signal Output the signal Output the signal Output the signal	ve signal of from the C from the C from the C from the C from the C from the C from the C from the C from the C from the C	output is not output is not output is not output is not output is not output in the control of the control output is not output in the control output is not output in the control output is not output in the control output is not output in the control output is not output in the control output is not output in the control output is not output in the control output in the control output is not output in the control o	ot used). CN1-26 outpi CN1-28 outpi CN1-30 outpi tput terminal. tput terminal. tput terminal.	ut terminal. ut terminal.	*1			
Pn50F			0 1 2 3 4 5 6 WLT (Specific of to 6 )	Disabled (the abo Output the signal Output the signal Output the signal Output the signal Output the signal Output the signal Output the signal	ve signal of from the C from the	output is not output is not output is not output is not output is not output in the control of the control output is not output in the control output is not output in the control output is not output in the control output is not output in the control output is not output in the control output is not output in the control output is not output in the control output in the control output is not output in the control o	ot used). CN1-26 outpi CN1-28 outpi CN1-30 outpi tput terminal. tput terminal. tput terminal.	ut terminal. ut terminal.	*1	ence		
Pn50F			0 1 2 3 4 5 6 WLT (Specific of to 6 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Disabled (the abo Output the signal Output the signal	ve signal of from the C from the	output is not output is not output is not output is not output is not output is not output in the control output is not output in the control output is not output in the control output is not output in the control output is not output in the control output is not output in the control output is not output in the control output is not output in the control output is not output in the control output is not output in the control output in the control output is not output in the control output in the cont	ot used). CN1-26 outpi CN1-28 outpi CN1-30 outpi tput terminal. tput terminal. tput terminal.	ut terminal.  ut terminal.	*1 Refere	ence		
Pn50F		n.00X0	0 1 2 3 4 5 6 VLT (Spee 0 to 6 7 6 VLT (Spee 0 to 6 7 6 VLT (Spee 0 to 6 7 6 VLT (Spee 0 to	Disabled (the abo Output the signal Output be signal Output be signal output be signal output) signal allocations ar Output) Signal	ve signal of from the C from the	output is not in its n	ot used). CN1-26 outpi CN1-28 outpi CN1-30 outpi tput terminal. tput terminal. tput terminal.	ut terminal.  ut terminal.	Refere	ence		

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							(	Continued fro	om previou	us page
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Output Sig tions 3	nal Selec-	0000h to 0666h	-	0000h	All	After restart	Setup	_
			/NEAR (Near	Output) Signa	I Allocatio	n			Refere	ence
				abled (the abov			· · · · · · · · · · · · · · · · · · ·			
				tput the signal						
		n.□□□X		tput the signal					*1	
				tput the signal tput the signal				ut terminai.		
Pn510				tput the signal			•			
1 11010				tput the signal			•			
		n.□□X□	Reserved parameter (Do not change.)							
		~ <b>U</b> VUU	/PSELA (Ref	erence Pulse Ir	nput Multi	plication S	Switching Out	tput) Signal	Refere	ence
		n.□X□□	0 to 6 The	e allocations are	e the same	e as the /N	IEAR (Near) si	gnal alloca-	*1	
		n.X□□□	Reserved pa	rameter (Do no	ot change	.)				
				·						
	2	Output Sig Settings	nal Inverse	0000h to 1111h	_	0000h	All	After restart	Setup	*1
			Output Signal Inversion for CN1-25 and CN1-26 Terminals							
		n.□□□X		e signal is not in		and ONT-2	.o reminais			
		1 The signal is inverted.								
			Output Signal Inversion for CN1-27 and CN1-28 Terminals							
		n.□□X□		e signal is not in		2110 0111 2	.0 101111111010			
Pn512			1 The	e signal is inver	ted.					
			Output Signa	Signal Inversion for CN1-29 and CN1-30 Terminals						
		n.□X□□		The signal is not inverted.						
			1 The	e signal is inver	ted.					
			Output Signa	al Inversion for	CN1-37	Terminal				
		n.X□□□		e signal is not ir						
			1 The	e signal is inver	ted.					
	2	Output Sig Settings 2	nal Inverse	0000h to 0011h	_	0000h	All	After restart	Setup	*1
			Outrast Circa	-1	ONIA OO T	Fa				
		n.□□□X		al Inversion for e signal is not in		ierminai				
				e signal is inver						
Pn513				-		Forms in a				
Pnois		n.□□X□		al Inversion for e signal is not in		Ierminai				
		п.ББА		e signal is not in e signal is inver						
		n.□X□□	Reserved pa	rameter (Do no	ot change.	.)				
		n.X□□□	Reserved pa	rameter (Do no	ot change.	.)				

Parameter No.	Size	Name		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Output Sig tions 4	nal Selec-	0000h to 0666h	-	0000h	All	After restart	Setup	_	
	n.□□□X Reserved parameter (Do not change.)										
	1	n.□□X□	Reserved parameter (Do not change.)								
			/PM (Preven	PM (Preventative Maintenance Output) Signal Allocation Reference							
		n.□X□□	0 Dis	Disabled (the above signal output is not used).							
Pn514			1 Ou	tput the signal	from the C	N1-25 or	CN1-26 outpu	ut terminal.			
			2 Ou	Output the signal from the CN1-27 or CN1-28 output terminal.							
			3 Ou	Output the signal from the CN1-29 or CN1-30 output terminal.							
			4 Ou	Output the signal from the CN1-37 output terminal.							
			5 Ou	tput the signal	from the C	N1-38 out	tput terminal.				
			6 Ou	tput the signal	from the C	N1-39 ou	tput terminal.				
	1	n.X000	Reserved pa	rameter (Do no	ot change.	.)					

Applicable

Default

Setting

Continued	from	previous	page

Classi-

Refer-

When

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Input Signa 6	al Selections	0000h to FFFFh	_	8888h	All	After restart	Setup	-
			SEN (Absol	ute Data Reque	st Input) S	Signal Allo	cation		Refere	ence
			0 A	ctive when CN1-	40 input s	ignal is ON	l (closed).			
			1 A	ctive when CN1-	41 input s	ignal is ON	l (closed).			
			2 A	Active when CN1-42 input signal is ON (closed).						
			3 A	Active when CN1-43 input signal is ON (closed).						
			4 A	Active when CN1-44 input signal is ON (closed).						
			5 A	ctive when CN1-						
			6 A	ctive when CN1-	46 input s	ignal is ON	V (closed).			
		n.□□□X	7 Th	ne signal is alway	ys active.				*1	
			8 Er	nable when 5 V i	s input to	CN1-4.				
			9 A	ctive when CN1-	40 input s	ignal is OF	F (open).			
			A A	ctive when CN1-	41 input s	ignal is OF	F (open).			
			B A	ctive when CN1-	42 input s	ignal is OF	F (open).			
			C A	ctive when CN1-	43 input s	ignal is OF	F (open).			
			D A	ctive when CN1-	44 input s	ignal is OF	F (open).			
			E A	ctive when CN1-	45 input s	ignal is OF	F (open).			
			F A	ctive when CN1-	46 input s	ignal is OF	F (open).			
15			/PSEL (Refe	erence Pulse Inp	out Multipl	lication Sv	vitching Input	t) Signal Allo	Refere	ence
			0 A	ctive when CN1-	40 input s	ignal is ON	l (closed).			
			1 A	ctive when CN1-	41 input s	ignal is ON	V (closed).			
			2 A	ctive when CN1-	42 input s	ignal is ON	V (closed).			
			3 A	Active when CN1-43 input signal is ON (closed).						
			4 A	ctive when CN1-	44 input s	ignal is ON	V (closed).			
			5 A	ctive when CN1-	45 input s	ignal is ON	l (closed).			
			6 A	ctive when CN1-	46 input s	ignal is ON	V (closed).			
		n.□□X□	7 Th	ne signal is alway	ys enabled	d.			*1	
			8 Th	ne signal is alway	ys inactive				- 1	
			9 A	ctive when CN1-	40 input s	ignal is OF	F (open).			
			A A	ctive when CN1-	41 input s	signal is OF	F (open).			
			B A	ctive when CN1-	42 input s	ignal is OF	F (open).			
			C A	ctive when CN1-	43 input s	ignal is OF	F (open).			
			D A	ctive when CN1-	44 input s	ignal is OF	F (open).			
			E A	ctive when CN1-	45 input s	ignal is OF	F (open).			
			F A	ctive when CN1-	46 input s	ignal is OF	F (open).			
		n.□X□□	Reserved p	arameter (Do no	ot change.	.)				
		n.X□□□	Reserved p	arameter (Do no	t change.	.)				
										_
	l							Cantinus	d a.aa.a.	

Setting

Parameter

Size

Parameter No.	Size	1	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Input Sigr	nal Selections	0000h to FFFFh	-	8888h	All	After restart	Setup	_	
	Ī		FSTP (Forced	Stop Input) Si	gnal Alloc	ation			Refere	ence	
				able drive wher			•				
				able drive wher							
			-	able drive wher			•				
			-	able drive wher		· ·	` `				
				able drive wher		· ·	` `				
			6 En	Enable drive when CN1-46 input signal is ON (closed).							
	Ш	n.□□□X	7 Se sto	t the signal to ap).	always pro	hibit drive	(always force	the motor to	*1		
Pn516				Set the signal to always enable drive (always disable forcing the motor to stop).							
				able drive wher		1 0	· · ·				
		A Enable drive when CN1-41 input signal is OFF (open).  B Enable drive when CN1-42 input signal is OFF (open).									
				able drive wher able drive wher				<i>'</i>			
				able drive wher							
							• • • • • • • • • • • • • • • • • • • •				
			F En	Enable drive when CN1-45 input signal is OFF (open).  Enable drive when CN1-46 input signal is OFF (open).							
		n.□□X□	Reserved para	arameter (Do not change.)							
		n.□X□□	Reserved para	parameter (Do not change.)							
	-	» VOOO	Pagaruad pare	served parameter (Do not change.)							
		n.X□□□	neserveu para	ameter (Do noi	change.)						
		Ot + O:	and Calan	00006 +-	I			A. £1			
	2	tions 5	gnal Selec-	0000h to 0666h	-	0654h	All	After restart	Setup	*1	
			ALO1 (Alarm Code Output) Signal Allocation								
				abled (the abov			ot used).				
			1 Out	put the signal	from the C	N1-25 or	CN1-26 outpu	ut terminal.			
		n.□□□X		put the signal							
				put the signal				ut terminal.			
				put the signal put the signal			•				
Pn517				put the signal			•				
							tput torrimium				
		n.□□X□	<u> </u>	Code Output)			O4 /Alawas Os		-:		
		11.00/0	0 to 6 tion	allocations are	e the same	e as the Al	LOT (Alarm Co	ode Output)	signai allo		
			ALO3 (Alarm	Code Output)	Signal All	location					
		n.□X□□		allocations are			_O1 (Alarm Co	ode Output)	signal allo	ca-	
			tion	S.							
		n.X□□□	Reserved par	rameter (Do no	ot change.	.)					
Pn518*3	_	Safety Mo	odule-Related	-	_	_	All	_	_	_	
		T didificte									
		•					-	Continue	d on nev	t nage	

(	Continued fro	m previou	ıs page.								
,	When	Classi-	Refer-								
	Enabled fication ence										

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn51B	4	Motor-Loa Deviation ( Detection	Overflow	0 to 1,073,741,824	1 refer- ence unit	1000	Rotary	Immedi- ately	Setup	*1
Pn51E	2	Position De flow Warni	eviation Over- ng Level	10 to 100	1%	100	All	Immedi- ately	Setup	*1
Pn520	4	Position Deflow Alarm	eviation Over- Level	1 to 1,073,741,823	1 refer- ence unit	524288 0	All	Immedi- ately	Setup	*1
Pn522	4	Positioning Width	g Completed	0 to 1,073,741,824	1 refer- ence unit	7	All	Immedi- ately	Setup	*1
Pn524	4	Near Signa	al Width	1 to 1,073,741,824	1 refer- ence unit	107374 1824	All	Immedi- ately	Setup	*1
Pn526	4	Position De flow Alarm Servo ON	eviation Over- Level at	1 to 1,073,741,823	1 refer- ence unit	524288 0	All	Immedi- ately	Setup	*1
Pn528	2		eviation Over- ng Level at	10 to 100	1%	100	All	Immedi- ately	Setup	*1
Pn529	2	Speed Lim Servo ON	it Level at	0 to 10,000	1 min <sup>-1</sup>	10000	Rotary	Immedi- ately	Setup	*1
Pn52A	2	Multiplier p	er Fully- tation	0 to 100	1%	20	Rotary	Immedi- ately	Tuning	*1
Pn52B	2		Varning Level	1 to 100	1%	20	All	Immedi- ately	Setup	*1
Pn52C	2	Base Curre at Motor C Detection	ent Derating Overload	10 to 100	1%	100	All	After restart	Setup	*1
Pn52F	2	Monitor Di Startup	splay at	0000h to 0FFFh	-	0FFFh	All	Immedi- ately	Setup	*1
	2	Program J Related Se		0000h to 0005h	-	0000h	All	Immedi- ately	Setup	*1
Pn530	-	n. □ □ □ X □ n. □ □ X □ □ N. □ □ X □ □	0 (W mc))))))))))))))))))))))))))	aging Operation aging time in Provements in	$1535 \rightarrow Fc$ $1536 \rightarrow Fc$ $1536 \rightarrow Fc$ $1535$	everse by the prward by the pr	travel distance travel distance travel distance travel distance travel distance in Pn531) ×	e in Pn531) > e in Pn531) > e in Pn531) > e in Pn531) > e in Pn531) > e in Pn531 — Number of n	Number Number Number Number Number Waiting to novements Waiting to the novements	of of of of of ime s in
		n.XDDD	Reserved pa	arameter (Do no	ot change.	.)				
Pn531	4	Program J Distance	Jogging Travel 1 to 1 reference ence unit 32768 All Immediately Si						Setup	*1

	Continued from previous page						us page.				
Parameter No.	Size	N	ame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn533	2	Program Joment Spee		ve-	1 to 10,000	Rotary: 1 min <sup>-1</sup> Direct Drive: 0.1 min <sup>-1</sup>	500	Rotary	Immedi- ately	Setup	*1
Pn534	2	Program Je eration/Dec Time		cel-	2 to 10,000	1 ms	100	All	Immedi- ately	Setup	*1
Pn535	2	Program Joing Time	ogging Wa	it-	0 to 10,000	1 ms	100	All	Immedi- ately	Setup	*1
Pn536	2	Program Jober of Mov		m-	0 to 1,000	Times	1	All	Immedi- ately	Setup	*1
Pn550	2	Analog Mo Voltage	nitor 1 Off	set	-10,000 to 10,000	0.1 V	0	All	Immedi- ately	Setup	*1
Pn551	2	Analog Mo Voltage	nitor 2 Off	set	-10,000 to 10,000	0.1 V	0	All	Immedi- ately	Setup	*1
Pn552	2	Analog Mo nification	nitor 1 Ma	g-	-10,000 to 10,000	× 0.01	100	All	Immedi- ately	Setup	*1
Pn553	2	Analog Mo nification		g-	-10,000 to 10,000	× 0.01	100	All	Immedi- ately	Setup	*1
Pn55A	2	Power Cor Monitor Ur	nsumption nit Time		1 to 1,440	1 min	1	All	Immedi- ately	Setup	_
Pn560	2	Residual V Detection V	Width		1 to 3,000	0.1%	400	All	Immedi- ately	Setup	*1
Pn561	2	Overshoot Level			0 to 100	1%	100	All	Immedi- ately	Setup	*1
Pn600	2	Regenerative Resistor Capacity*4		r	Depends on model.*5	10 W	0	All	Immedi- ately	Setup	*1
Pn601	2	Dynamic Brake Resistor Allowable Energy Consumption		S-	0 to 65,535	10 J	0	All	After restart	Setup	*6
Pn603	2	Regenerati tance	ive Resis-		0 to 65,535	10 mΩ	0	All	Immedi- ately	Setup	*1
Pn604	2	Dynamic B tance	Brake Resis	3-	0 to 65,535	10 mΩ	0	All	After restart	Setup	*6
	2	Overheat F Selections	Protection		0000h to 0003h	_	0000h	Linear	After restart	Setup	*1
	1	n.□□□X	1		ection Selection						
			0		able overheat p				. *7		
			2	Mor	overheat prot nitor a negative	e voltage ii				nachine ar	 nd
Pn61A			3	Mor	overheat prote nitor a positive	voltage in	put from a	sensor attac	hed to the m	achine an	
		n.00X0			overheat prote						
	_		-		,	<u> </u>					
		n.□X□□	Reserved	para	ameter (Do not	cnange.)					
	<u> </u>	n.X□□□	Reserved	para	ameter (Do not	change.)					
Pn61B *8	2	Overheat A	Alarm Leve	I	0 to 500	0.01 V	250	All	Immedi- ately	Setup	*1
Pn61C *8	2	Overheat V	Varning Le	vel	0 to 100	1%	100	All	Immedi- ately	Setup	*1
Pn61D *8	2	Overheat A	Alarm Filter		0 to 65,535	1 s	0	All	Immedi- ately	Setup	*1
Pn621 to Pn628*3	_			ed	-	-	-	All	-	_	-

- \*1. Refer to the following manual for details.
  - Σ-7-Series Σ-7S SERVOPACK with Analog Voltage/Pulse Train References Product Manual (Manual No.: SIEP S800001 26)
- \*2. Set a percentage of the motor rated torque.
- \*3. These parameters are for SERVOPACKs with a Safety Module. Refer to the following manual for details.
  - Σ-V-Series/Σ-V-Series for Large-Capacity Models/Σ-7-Series User's Manual Safety Module (Manual No.: SIEP C720829 06)
- \*4. Normally set this parameter to 0. If you use an External Regenerative Resistor, set the capacity (W) of the External Regenerative Resistor.
- \*5. The upper limit is the maximum output capacity (W) of the SERVOPACK.
- \*6. These parameters are for SERVOPACKs with the dynamic brake option. Refer to the following manual for details.
  - Σ-7-Series AC Servo Drive Σ-7S/Σ-7W SERVOPACK with Hardware Option Specifications Dynamic Brake Product Manual (Manual No.: SIEP S800001 73)
- \*7. The SGLFW2 is the only Yaskawa Linear Servomotor that supports this function.
- \*8. Enabled only when Pn61A is set to n.□□□2 or n.□□□3.

## FT82 SERVOPACK with MECHATROLINK-II Communications References

The following table lists the parameters.

- Note: Do not change the following parameters from their default settings.

   Reserved parameters

   Parameters not given in this manual

   Parameters that are not valid for the Servomotor that you are using, as given in the parameter table

Parameter No.	Size	N	lame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Basic Fund tions 0	ction Sele	0-	0000h to 10B1h	_	0000h	All	After restart	Setup	_
		n.□□□X	Rotation		ction Selection CCW as the f		raction			Refere	ence
D : 000		11.000	1		CW as the fo			erse Rotation	Mode)	*1	
Pn000		n.□□X□	Reserve	1	ameter (Do no		,				
		n. 🗆 X 🗆 🗆			rameter (Do no		,				
					,		,				
		n.X□□□	Reserve	d par	ameter (Do no	ot change.	.)				
	2	Application	n Function	1	0000h to		0000h	All	After	Setup	_
	_	Selections	1		1142h		000011	All	restart	Остар	
					ng Method for			<u> </u>		Refere	ence
		n.□□□X	0	ļ	p the motor by	,			than ralassa		
		-	1	the	dynamic brake	€.				*1	
			2	Coa	ast the motor to	o a stop w	ithout the	dynamic brak	æ.		
			Overtrav	1	Stopping Method						ence
			0		ly the dynamic						
			1	the	elerate the mo maximum toro	otor to a st Jue and the	op using t en servo-lo	he torque set ock the motor	in Pn406 as		
Pn001		n.□□X□	2		elerate the mo				in Pn406 as	*1	
			3		elerate the mo 30A and then s			he deceleration	on time set in		
			4		elerate the mo			he deceleration	on time set in		
			Main Cir	cuit F	Power Supply	AC/DC In	put Select	tion		Refere	ence
		n.□X□□	0		ut AC power as L3 terminals (				ng the L1, L2	.,	
		п.пхпп	1	Input DC power as the main circuit power supply using the B1/6							
		n.X□□□	Reserved parameter (Do not change.)								
		3.7									

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Application Selections	Function 2	0000h to 4213h	-	0000h	_	After restart	Setup	-
		n.□□□X	Option 0 1	ROLINK Comman Ignore the setting Use P_TLIM and I	s of P_TLII N_TLIM as	M, NTLIM,	and TFF.	Applicable Motors	Refere	
			2	Use TFF as a tord Use P_TLIM or N_ P_CL or N_CL in	_TLIM as tl	ne torque		All	*2	
			Torque Co	ontrol Option				Applicable Motors	Refere	ence
		n.□□X□	0	Ignore the setting trol (VLIM).		·	All	*2		
				Use the speed lim speed limit.	it for torqu	e control (	VLIM) as the	, w.		
Pn002		n. 🗆 X 🗆 🗆	Encoder l	Jsage	Applicable Motors	Refere	ence			
				Use the encoder a tions.	se the encoder according to encoder specifica-					
			1	Use the encoder a	as an incre	mental en	coder.		*1	
				Use the encoder a encoder.	as a single	-turn abso	lute	Rotary		
			External E	Encoder Usage				Applicable Motors	Refere	ence
			0	Do not use an ext	ernal enco	der.				
		n.X□□□		The external enco tion for CCW mot			ward direc-			
			2	Reserved setting	(Do not us	e.)		Rotary	*1	
				The external enco			erse direc-			
				tion for CCW mot	or rotation	•				
			3							

Parameter © N

Continued from previous page.

Default Applicable

Classi- Refer-

Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Application Selections	n Function 6	0000h to 105Fh	-	0002h	All	Immedi- ately	Setup	*1
			Analog Mo	nitor 1 Signal Se	election					
			00	Motor speed (1	V/1,000 m	nin <sup>-1</sup> )				
			01	Speed reference	e (1 V/1,00	00 min <sup>-1</sup> )				
			02	Torque reference	e (1 V/100	% rated to	rque)			
			03	Position deviation	on (0.05 V/	reference/	unit)			
			04	Position amplifie	er deviation	n (after ele	ctronic gear) (	0.05 V/enco	der pulse	unit)
			05	Position referen	ce speed (	(1 V/1,000	min <sup>-1</sup> )			
			06	Reserved setting	g (Do not ı	use.)				
			07	Load-motor pos	sition devia	ation (0.01	V/reference u	ınit)		
Pn006		n.□□XX	08	Positioning completed: 0 V)	pletion (po	ositioning o	completed: 5	V, positionino	g not com-	-
1 11000			09	Speed feedforw	ard (1 V/1	,000 min <sup>-1</sup>	)			
			0A	Torque feedforward (1 V/100% rated torque)						
			0B	Active gain (1st	-					
			0C	Completion of p pleted: 0 V)	osition ref	erence dis	tribution (com	pleted: 5 V,	not com-	
			0D	External encode	er speed (1	V/1,000 r	min <sup>-1</sup> : value at	the motor s	haft)	
			0E	Reserved setting	g (Do not ı	use.)				
			0F	Reserved setting	g (Do not ı	use.)				
			10	Main circuit DC						
			11 to 5F	Reserved setting	gs (Do not	use.)				
		n.□X□□	Reserved p	arameter (Do no	ot change.	.)				
		n.X□□□	Reserved p	arameter (Do no	ot change.	.)				

Setting

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer ence				
	2	Application Selections		0000h to 105Fh	_	0000h	All	Immedi- ately	Setup	*1				
				onitor 2 Signal Se										
			00	Motor speed (1	<u> </u>									
			01	Speed reference										
			02	Torque reference										
			03	Position deviation										
			04	Position amplifie				0.05 V/enco	der pulse	unit)				
			05	Position referen	•		min <sup>-1</sup> )							
			06	Reserved setting		· ·								
			07	Load-motor pos		•		•						
Pn007		n.□□XX	08	pleted: 0 V)	· · · · · · · · · · · · · · · · · · ·									
			09	Speed feedforw	,	·								
			0A	Torque feedforw	•									
			0B	Active gain (1st										
			0C	Completion of p pleted: 0 V)										
			0D	External encode	er speed (1	V/1,000 r	nin <sup>-1</sup> : value at	the motor s	haft)					
			0E	Reserved setting	g (Do not ı	use.)								
			0F	Reserved setting	g (Do not i	use.)								
			10	Main circuit DC	voltage									
			11 to 5F	Reserved setting	gs (Do not	use.)								
		n.□X□□	.□X□□ Reserved parameter (Do not change.)											
		n.XDDD	Reserved	parameter (Do no	ot change	)								
			11000.100	parameter (Do m	or onango	·/								
	2	Application Selections		0000h to 7121h	_	4000h	Rotary	After restart	Setup	-				
			Low Batte	ery Voltage Alarm	/Warning :	Selection			Refere	ence				
		n.□□□X	0	Output alarm (A.8	30) for low	battery vo	oltage.		*1					
			1	Output warning (A	1.930) for I	ow battery	voltage.							
			Function	Selection for Und	ervoltage				Refere	ence				
Pn008			0	Do not detect und	lervoltage.									
711006		n.□□X□	1	Detect undervolta	ge warning	g and limit	torque at hos	t controller.	*1					
			2	Detect undervolta Pn425 (i.e., only i	ge warning SERVOP	g and limit ACK).	torque with F	n424 and						
			Warning [	Detection Selection	on				Refere	ence				
			Warning Detection Selection Reference											
		n.□X□□	0	Detect warnings.  Do not detect warnings except for A.971.  *1										
		n.□X□□			nings exc	ept for A.9	71.		*1					
		n. 🗆 X 🗆 🗆	1				71.		*1					

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Application Selections		0000h to 0121h	_	0010h	All	After restart	Tuning	_
		n.□□□X	Reserved pa	arameter (Do no	ot change.	)				
			Current Con	trol Mode Sele	ction				Refere	ence
				se current contro			D004 4D0	A 000A		
Pn009		n.□□X□	1 .	SERVOPACK Mo 3R8A, -5R5A, a SERVOPACK Mo 170A, -550A, -5	ind -7R6A odels SGD	: Use curre 7S-120A,	ent control mo -180A, -200A	ode 1. ., -330A, -	*1	
			2 Us	se current contro	ol mode 2.					
			<u> </u>	ction Method S					Refere	ence
		n.□X□□		se speed detect					*1	
				•						
		n.X□□□	Reserved pa	arameter (Do no	ot change.	)				
	2	Application Selections		0000h to 0044h	_	0001h	All	After	Setup	_
		Selections	<u> </u>	004411				restart	•	
			1.4 . 0:		0 0	A.1			D (	
		n.□□□X		ping Method for pply the dynamic	•		motor to a st	op (use the	Refer	ence
			st	stopping method set in Pn001 = n.□□□X).						
			1 th	Decelerate the motor to a stop using the torque set in Pn406 as the maximum torque. Use the setting of Pn001 = n. \(\sigma \sigma \sigma \) for the status after stopping.						
				Decelerate the motor to a stop using the torque set in Pn406 as the maximum torque and then let the motor coast.						
			3 P	ecelerate the m n30A. Use the s opping.						
				ecelerate the m n30A and then I			the decelerati	on time set ir	1	
Pn00A			Stopping M	lethod for Force	ed Stops				Refer	ence
			0 A	pply the dynami opping method	c brake or set in Pn0	coast the	motor to a st □□X).	op (use the		
			1 th	ecelerate the maximum tordatus after stopp	que. Use tl					
		n.□□X□		ecelerate the m				in Pn406 as	*:	1
			3 P	ecelerate the m n30A. Use the s opping.						
				ecelerate the m n30A and then I			the decelerati	on time set ir	1	
		n.□X□□	Reserved p	arameter (Do n	ot change	·.)			ı	
	n.X□□□ Reserved parameter (Do not change.)									

						(	Continued fro	om previol	us page.
Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Application Function Selections B	0000h to 1121h	-	0000h	All	After restart	Setup	-

			Operato	r Para	ameter Display	Selection	า			Refere	nce
	n	n.□□□X	0		olay only setup						
			1	Disp	olay all paramet	ers.				*1	
				<u> </u>							
			Motor S	toppii	ng Method for	Group 2	Alarms			Refere	nce
			0	Sto	o the motor by	setting th	e speed re	ference to 0.			
Pn00B	n	n.□□X□	1		ly the dynamic oping method s				p (use the	*1	
			2 Set the stopping method with Pn00A = n.□□□X.								
			Power Ir	nput S	Selection for Th	ree-phas	e SERVOF	PACK		Refere	nce
	l ,	n. 🗆 X 🗆 🗆	0	Use	a three-phase	power su	pply input.				
			1		a three-phase oly input.	power su	pply input	as a single-pl	nase power	*1	
	n	n.X000	Reserve	d par	ameter (Do not	t change.)				·	
			•							-	
	2	Applicatio Selections		า	0000h to 0131h	-	0000h	-	After restart	Setup	*]

		Function	n Selection for Test without a Motor	Applicable Motors
	n.□□□X	0	Disable tests without a motor.	All
		1	Enable tests without a motor.	All
		Encode	r Resolution for Tests without a Motor	Applicable Motors
00C		0	Use 13 bits.	
1000	n.□□X□	1	Use 20 bits.	Datami
		2	Use 22 bits.	Rotary
		3	Use 24 bits.	
		Encode	r Type Selection for Tests without a Motor	Applicable Motors
	n.□X□□	0	Use an incremental encoder.	All
		1	Use an absolute encoder.	All
	n.X□□□	Reserve	ed parameter (Do not change.)	

Pn

Pn00D

2	Application Function Selections D	0000h to 1001h	-	0000h	All	Immedi- ately	Setup	*1

Reserved parameter (Do not change.)									
Reserve	Reserved parameter (Do not change.)								
Reserve	Reserved parameter (Do not change.)								
Overtrav	el Warning Detection Selection								
0	Do not detect overtravel warnings.								
1	Detect overtravel warnings.								
	Reserve								

Continued on next page.

_				_	_			Continued fro					
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence			
	2	Application Selections		0000h to 2011h	_	0000h	All	After restart	Setup	_			
			Preventative	Maintenance \	Narning S	election			Reference	ce			
		n.□□□X	0 Do n	ot detect preve	entative ma	aintenance	warnings.		*1	<del></del>			
Pn00F			1 Dete	ct preventative	maintena	nce warnir	igs.						
		n.□□X□	Reserved par	rameter (Do no	ot change.	)							
		n.□X□□	Reserved par	rameter (Do no	ot change.	)							
		n.X□□□	Reserved par	parameter (Do not change.)									
					<b>I</b>		1		1				
Pn021	2	not change	•	_	-	0000h	All	-	_	_			
Pn022	2	not change	•	_	_	0000h	All	_	-	_			
Pn040	2	Reserved p	parameter (Do e.)	-	_	0000h	-	-	_	_			
	2	Application Selections		0000h to 1111h	_	0000h	All	After restart	Setup	*1			
Pn081		n.000X	0 Out	se Output Selectors of the control o	ulses only ulses in bo	oth the for			าร.				
		n.□X□□	Reserved par	rameter (Do no	ot change.	)							
		n.XDDD	Reserved par	rameter (Do no	ot change	1							
		11.7000	neserveu par	ameter (DO no	n change.	•)							
Pn100	2	Speed Loc	p Gain	10 to 20,000	0.1 Hz	400	All	Immedi- ately	Tuning	*1			
Pn101	2	Speed Loc Time Cons		15 to 51,200	0.01 ms	2000	All	Immedi- ately	Tuning	*1			
Pn102	2	Position Lo	oop Gain	10 to 20,000	0.1/s	400	All	Immedi- ately	Tuning	*1			
Pn103	2	Moment of	f Inertia Ratio	0 to 20,000	1%	100	All	Immedi- ately	Tuning	*1			
Pn104	2	Second Sp Gain	peed Loop	10 to 20,000	0.1 Hz	400	All	Immedi- ately	Tuning	*1			
Pn105	2		ne Constant	15 to 51,200	0.01 ms	2000	All	Immedi- ately	Tuning	*1			
Pn106	2	Second Po Gain	sition Loop	10 to 20,000	0.1/s	400	All	Immedi- ately	Tuning	*1			
Pn109	2	Feedforwa		0 to 100	1%	0	All	Immedi- ately	Tuning	*1			
Pn10A	2	Feedforwa Constant	rd Filter Time	0 to 6,400	0.01 ms	0	All	Immedi- ately	Tuning	*1			

Applicable

Motors

Default

Setting

Continued from previous page.

Classi-

fication

ence

When

Enabled

140.	0,				riange	OTHE	Cotting	11101010	Lilabica	mounon	CITO
	2	Gain Appl tions	ication Sel	ec-	0000h to 5334h	-	0000h	All	-	Setup	-
			Mode S	witch	ing Selection				When	, Refere	ence
	Н		0	Use	e the internal to		ence as th	e condition	Enabled	3 1101010	
	Н			Use	ethe speed ref		the condit	ion (level set-			
	Н	- DDDV	1	Use	g: Pn10D). e the speed ref g: Pn181).						
	Н	n.□□□X		Use	the accelerati	on referen	ce as the	Immedi ately	- *1		
Pn10B	Н		2	Use	e the accelerati ting: Pn182).	el					
	Н		3		the position of: Pn10F).	-					
			4	Do	not use mode	switching.					
			Speed L	.oop	Control Metho	When Enabled	Refere	ence			
	ш	n.□□X□	0		control control				After	*1	
			2 to 3		served settings	(Do not u	se.)		restart	1	
		n.□X□□	Reserve	d pai	rameter (Do no	ot change.	.)				
	Ī	n.X□□□	Reserve	d pai	rameter (Do no	ot change.	.)				
Pn10C	2	Mode Swi	tching Lev		0 to 800	1%	200	All	Immedi- ately	Tuning	*1
Pn10D	2	Mode Swi	tching Lev Reference	el	0 to 10,000	1 min <sup>-1</sup>	0	Rotary	Immedi- ately	Tuning	*1
Pn10E	2	· ·	tching Lev		0 to 30,000	1 min <sup>-1</sup> /s	0	Rotary	Immedi- ately	Tuning	*1
Pn10F	2	Mode Swi for Positio	tching Lev n Deviatio	rel n	0 to 10,000	1 refer- ence unit	0	All	Immedi- ately	Tuning	*1
Pn11F	2	Position Ir Constant	ntegral Tim	ie	0 to 50,000	0.1 ms	0	All	Immedi- ately	Tuning	*1
Pn121	2	Friction Co Gain	ompensati	on	10 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
Pn122	2	Second Fi pensation	riction Cor Gain	n-	10 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
Pn123	2	Friction Co Coefficien		on	0 to 100	1%	0	All	Immedi- ately	Tuning	*1
Pn124	2	Friction Co Frequency	ompensati / Correctic	on	-10,000 to 10,000	0.1 Hz	0	All	Immedi- ately	Tuning	*1

Setting

Range

Setting

Unit

Size

Name

Friction Compensation

Gain Switching Time 1

Gain Switching Time 2

Gain Switching Waiting

Gain Switching Waiting

Gain Correction

1 to 1,000

0 to 65,535

0 to 65,535

0 to 65,535

0 to 65,535

1%

1 ms

1 ms

1 ms

1 ms

100

0

0

0

0

All

All

ΑII

ΑII

ΑII

Pn125

Pn131

Pn132

Pn135

Pn136

2

2

2

2

2

Time 1

Time 2

Parameter

No.

Tuning Continued on next page.

Tuning

Tuning

Tuning

Tuning

\*1

\*1

\*1

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Immedi-

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Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence			
	2	Automatic ing Selection	Gain Switch- ons 1	0000h to 0052h	-	0000h	All	Immedi- ately	Tuning	*1			
				-1		I				1			
			Gain Switch	ing Selection									
				se manual gain s ne gain is switch		lly with G	SEL in the Or	ntion field					
		n.□□□X		eserved setting (		, –	OLL III tilo Of	otion noid.					
			2 Th	se automatic gaine gain settings tisfied. The gain on A is not satisf	1 switch a settings 2	utomatical	ly to 2 when	switching co o 1 when swi	ndition A i tching cor	s ndi-			
Pn139			Gain Switch	ing Condition A	4								
			0 /0	OIN (Positioning	g Complet	ion Output	) signal turns	ON.					
				/COIN (Positioning Completion Output) signal turns OFF.									
		n.□□X□		EAR (Near Outp	, ,								
				EAR (Near Outp	, 0			ranga innut i	۰ ۵۲۲				
				osition reference	•		position refe	rence input i	S OFF.				
			J J F	osition reference	iliput is C	/IN.							
		n.□X□□	Reserved p	arameter (Do no	ot change.	.)							
		n.X□□□	Reserved p	arameter (Do no	ot change	)							
		+											
Pn13D	2	Current Ga	in Level	100 to 2,000	1%	2000	All	Immedi- ately	Tuning	*1			
	2		owing Con- d Selections	0000h to 1121h	-	0100h	All	Immedi- ately	Tuning	-			
			Model Follo	Referen	ice								
		n.□□□X		not use model fo		ontrol.			*1				
				model following						_			
				ippression Sele					Referen	ice			
		n.□□X□		not perform vibr form vibration su	- ' '		cific frequency		*1				
				form vibration su	• •		•						
Pn140			Vibration Su	ıppression Adju	stment Se	election			Referen	nce			
		n.□X□□	0 tic	o not adjust vibron of autotuning ost reference, an	ation supp without a	ression au host refere	tomatically duence, autotun	uring execu- ing with a					
			1 au	djust vibration su totuning withou ence, and custo	uppressior t a host re	automatio			*1				
			Speed Feed	Iforward (VFF)/1	Torque Fe	edforward	(TFF) Selecti	on	Referen	nce			
			0 D	not use model									
		n.X□□□	W	ard together. se model followi	na control	and speed	d/targua food	forward	*1				
				gether.	ng control	and speed	u/torque leed	lorwaru					
Pn141	2	Model Follotrol Gain	owing Con-	10 to 20,000	0.1/s	500	All	Immedi- ately	Tuning	*1			
Pn142	2	Model Follotrol Gain C	owing Con- orrection	500 to 2,000	0.1%	1000	All	Immedi- ately	Tuning	*1			
Pn143	2	Model Follotrol Bias in Direction	owing Con- the Forward	0 to 10,000	0.1%	1000	All	Immedi- ately	Tuning	*1			

Size	Name	Setting Range	Setting Unit	Default Setting	Applicable	When	Classi-	Refer- ence
2	Model Following Control Bias in the Reverse Direction	0 to 10,000	0.1%	1000	All	Immedi- ately	Tuning	*1
2	Vibration Suppression 1 Frequency A	10 to 2,500	0.1 Hz	500	All	Immedi- ately	Tuning	*1
2	Vibration Suppression 1 Frequency B	10 to 2,500	0.1 Hz	700	All	Immedi- ately	Tuning	*1
2	Model Following Control Speed Feedforward Compensation	0 to 10,000	0.1%	1000	All	Immedi- ately	Tuning	*1
2	Second Model Follow- ing Control Gain	10 to 20,000	0.1/s	500	All	Immedi- ately	Tuning	*1
2	Second Model Follow- ing Control Gain Correc- tion	500 to 2,000	0.1%	1000	All	Immedi- ately	Tuning	*1
2	Vibration Suppression 2 Frequency	10 to 2,000	0.1 Hz	800	All	Immedi- ately	Tuning	*1
2	Vibration Suppression 2 Correction	10 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
2	Control-Related Selections	0000h to 0021h	_	0021h	All	After restart	Tuning	_
ı	n.□□□X 0 Use	e model followir	ng control	type 1.			Refere	
Ī	Tuning-less	Type Selection					Refere	ence
r	1 Us	e tuning-less ty	pe 2.				*1	
r	n.□X□□ Reserved pa	rameter (Do no	t change.	.)				
r	n.XDDD Reserved pa	rameter (Do no	t change.	)				
2	Anti-Resonance Control-Related Selections	0000h to 0011h	-	0010h	All	Immedi- ately	Tuning	_
r	n.□□□X 0 Do	not use anti-re	sonance o	control.			Refere	
			•					ence
r	n.□□X□ 0 tion refe	n of autotuning erence, and cus	without a stom tunin	host refere g.	nce, autotunii	ng with a hos		
1 autotuning without a host reference, autotuning with a host reference, and custom tuning.								
r	n.□X□□ Reserved pa	rameter (Do no	t change.	)				
r	n.XDDD Reserved pa	rameter (Do no	ot change.	)				
2	Anti-Resonance Fre-	10 to 20 000	0.1 Hz	1000	All	Immedi-	Tunina	*1
_	quency Anti-Resonance Gain					ately Immedi-	0	
2	Correction	1 to 1,000	1%	100	All	ately	Tuning	*1
	2 2 2 2 2 2 2 2 2 1 1 1 1 1 1 1 1 1 1 1	Model Following Control Bias in the Reverse Direction  Vibration Suppression 1 Frequency A  Vibration Suppression 1 Frequency B  Model Following Control Speed Feedforward Compensation  Second Model Following Control Gain  Second Model Following Control Gain  Vibration Suppression 2 Frequency  Vibration Suppression 2 Frequency  Vibration Suppression 2 Correction  Model Follow O Us 1 Us 1 Us 2 Us  n.□□X□ Reserved pa  n.X□□ Reserved pa  Anti-Resona O Do 1 Us 1 Us  Anti-Resona  Anti-Resona  n.□□X□ Reserved pa  Reserved pa  Anti-Resona  Reserved pa   Model Following Control Bias in the Reverse Direction  Vibration Suppression 1	Model Following Control Type Selections    Model Following Control Selection	Name   Range   Unit   Setting	Name   Setting Range   Unit Setting Motors	Name   Range   Setting   Setting   Setting   Setting   Setting   Model Following Control Bias in the Reverse   Direction   Oto 10,000   O.1%   1000   All   Immediately   Model Following Control Type Selection   Model Following Control Bias in the Reverse   1 to 10,000   0.1 kg   1000   All   Immediately   Tuning		

Parameter No.	Size	Na	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn164	2	Anti-Reson Time Constrection		-1,000 to 1,000	0.01 ms	0	All	Immedi- ately	Tuning	*1
Pn165	2	Anti-Reson Time Constrection		-1,000 to 1,000	0.01 ms	0	All	Immedi- ately	Tuning	*1
Pn166	2	Anti-Reson ing Gain 2	ance Damp-	0 to 1,000	1%	0	All	Immedi- ately	Tuning	*1
	2	Tuning-less Related Se	Function- lections	0000h to 2711h	-	1401h	All	-	Setup	*1
Pn170	- - - - -	n.00X0	Speed Control  Use  Use  Rigidity Leve  O to 7 Set  Tuning-less L	able tuning-less able tuning-less ble tuning-less ble for speed cor e for speed cor the rigidity leve	e function.  Introl.  Introl and u	se host co		esition contro	Whe Enab  Afteresta  Whe Enab  Afteresta  Whe Enab  Immeratel  Whe Enab	er led er
Pn205	2	Multiturn Li	mit	0 to 65,535	1 rev	65535	Rotary	After restart	Setup	*1
	2	Position Co	ontrol Func- ons	0000h to 2210h	-	0010h	All	After restart	Setup	_
		n.000X n.00X0	Reserved par	rameter (Do no rameter (Do no rameter (Do no	ot change.	)				
Pn207			,	oning Comple	•		•		Refe	
	Output when the absolute value of the position deviation is the same or less than the setting of Pn522 (Positioning Completed Width).  Output when the absolute value of the position error is the same or less than the setting of Pn522 (Positioning Completed Width) and the reference after the position reference filter is 0.  Output when the absolute value of the position error is the same or less than the setting of Pn522 (Positioning Completed Width) and the reference input is 0.									
Pn20A	4	Number of Encoder So	External cale Pitches	4 to 1,048,576	1 scale pitch/ revolu- tion	32768	Rotary	After restart	Setup	*1
Pn20E	4	Electronic ( (Numerator	·)	1 to 1,073,741,824	1	64	All	After restart	Setup	*1
	1	Flectronic (	Gear Ratio	1 to	1	1	All	After	Setup	*1

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Parameter No.	Size	Name	•	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
Pn212	4	Number of Enc Output Pulses	oder	16 to 1,073,741,824	1 P/Rev	2048	Rotary	After restart	Setup	*1	
	2	Fully-closed Co Selections	ontrol	0000h to 1003h	_	0000h	Rotary	After restart	Setup	*1	
		n.□□□X Res	served par	rameter (Do no	ot change.	)					
Pn22A		n.□□X□ Res	served par	rameter (Do no	ot change.	)					
		n.□X□□ Res	Reserved parameter (Do not change.)								
		n.X□□□	0 Use	e motor encode e external enco	er speed.		n				
	2	Position Contro sion Function S		0000h to 0001h	-	0000h	All	After restart	Setup	*1	
Pn230		n.□□□X	0 Cor 1 Cor	mpensation Di mpensate forw mpensate rever rameter (Do no	ard referer	ces.					
		n.□X□□ Res	served par	rameter (Do no	ot change.	)					
		n.XDDD Res	served par	rameter (Do no	ot change.	)					
Pn231	4	Backlash Comp	pensation	-500,000 to 500,000	0.1 reference units	0	All	Immedi- ately	Setup	*1	
Pn233	2	Backlash Comp tion Time Cons	pensa- stant	0 to 65,535	0.01 ms	0	All	Immedi- ately	Setup	*1	
Pn281	2	Encoder Outpution	ıt Resolu-	1 to 4,096	1 edge/ pitch	20	All	After restart	Setup	*1	
Pn304	2	Jogging Speed	Jogging Speed		Rotary: 1 min <sup>-1</sup> Direct Drive: 0.1 min <sup>-1</sup>	500	Rotary	Immedi- ately	Setup	*1	
Pn305	2	Soft Start Acce Time	eleration	0 to 10,000	1 ms	0	All	Immedi- ately	Setup	*2	
Pn306	2	Soft Start Dece Time	eleration	0 to 10,000	1 ms	0	All	Immedi- ately	Setup	*2	
Pn308	2	Speed Feedbac Time Constant		0 to 65,535	0.01 ms	0	All	Immedi- ately	Setup	*1	
Pn30A	2	Deceleration Till Servo OFF and Stops		0 to 10,000	1 ms	0	All	Immedi- ately	Setup	*1	
Pn30C	2	Speed Feedford Average Moven Time		0 to 5,100	0.1 ms	0	All	Immedi- ately	Setup	*1	

		Continued from previous							us page.		
Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Vibration Detection Selections	0000h to 0002h	1	0000h	All	Immedi- ately	Setup	*1		
		Vibration De	tection Selecti	on							
		<b>n.□□□X</b> 0 Do	not detect vib	not detect vibration.							
D 010		1 0	ıtput a warning	(A.911) if	vibration is	detected.					
Pn310		2 Ot	tput an alarm (A.520) if vibration is detected.								
		n.□□X□ Reserved pa	arameter (Do no	ot change.	.)						
	]	n.□X□□ Reserved pa	arameter (Do no	ot change.	)						
		n.XDDD Reserved pa	arameter (Do no	ot change.	.)						
					,						
Pn311	2	Vibration Detection Sensitivity	50 to 500	1%	100	All	Immedi- ately	Tuning	*1		
Pn312	2	Vibration Detection Level	0 to 5,000	1 min <sup>-1</sup>	50	Rotary	Immedi- ately	Tuning	*1		
Pn316	2	Maximum Motor Speed	0 to 65,535	1 min <sup>-1</sup>	10000	Rotary	After restart	Setup	*1		
Pn324	2	Moment of Inertia Cal- culation Starting Level	0 to 20,000	1%	300	All	Immedi- ately	Setup	*1		
Pn401	2	First Stage First Torque Reference Filter Time Constant	0 to 65,535	0.01 ms	100	All	Immedi- ately	Tuning	*1		
Pn402	2	Forward Torque Limit	0 to 800	1%*3	800	Rotary	Immedi- ately	Setup	*1		
Pn403	2	Reverse Torque Limit	0 to 800	1%*3	800	Rotary	Immedi- ately	Setup	*1		
Pn404	2	Forward External Torque Limit	0 to 800	1%*3	100	All	Immedi- ately	Setup	*1		
Pn405	2	Reverse External Torque Limit	0 to 800	1%*3	100	All	Immedi- ately	Setup	*1		
Pn406	2	Emergency Stop Torque	0 to 800	1%*3	800	All	Immedi- ately	Setup	*1		
Pn407	2	Speed Limit during Torque Control	0 to 10,000	1 min <sup>-1</sup>	10000	Rotary	Immedi- ately	Setup	*1		

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Parameter No.	Size	N	ame		Setting Range	Setting Unit	Default Setting	Applicable Motors		When Enabled	Classi- fication	Refer- ence
	2	Torque-Re tion Select		>-	0000h to 1111h	_	0000h	All		-	Setup	_
	-											_
			Notch Fi	Iter S	Selection 1					When Enabled	Refere	ence
		n.□□□X	0	Dis	able first stage	notch filte	er.			Immedi-	*1	
			1	Enable first stage notch filter.						ately	-1	
			Speed L	imit :	Selection					When Enabled	Refere	ence
			0	set	e the smaller of ting of Pn407 a	s the spe	ed limit.					
Pn408		n.□□X□		set	e the smaller of ting of Pn480 a	s the spe	е	After	*1			
P114U6			1	spe	e the smaller of eed and the set	ting of Pn	407 as the	speed limit.		restart		
					Use the smaller of the overspeed alarm detection speed and the setting of Pn480 as the speed limit.							
			Notch Fi	ch Filter Selection 2						When Enabled	Refere	ence
		n.□X□□	0	Dis	able second st	age notch	filter.			Immedi-	*1	-
			1	Ena	able second sta	age notch	filter.			ately		
			Friction	Com	pensation Fun	ction Sele	ection			When Enabled	Refere	ence
		n.X□□□	0	Dis	able friction co	mpensatio	n.			Immedi-	*1	
		1 Enable friction compensation.								ately		
Pn409	2	First Stage Frequency	Notch Fil	ter	50 to 5,000	1 Hz	5000	All	Ir	mmedi- ately	Tuning	*1
Pn40A	2	First Stage Q Value			50 to 1,000	0.01	70	All	Ir	mmedi- ately	Tuning	*1
Pn40B	2	First Stage Depth	Notch Fil	ter	0 to 1,000	0.001	0	All	Ir	mmedi- ately	Tuning	*1

Second Stage Notch Fil-

Second Stage Notch Fil-

Second Stage Notch Filter Depth

Second Stage Second Torque Reference Filter Frequency

Second Stage Second Torque Reference Filter

Torque Reference Filter

First Stage Second

Time Constant

ter Frequency

ter Q Value

Q Value

50 to 5,000

50 to 1,000

0 to 1,000

100 to 5,000

50 to 100

0 to 65,535

1 Hz

0.01

0.001

1 Hz

0.01

0.01 ms

5000

70

0

4000

50

100

ΑII

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ΑII

Pn40C

Pn40D

Pn40E

Pn40F

Pn410

Pn412

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Tuning

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Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Torque-Rel tion Selecti		0000h to 1111h	-	0000h	All	Immedi- ately	Setup	*1
			Notch Filt	er Selection 3						
		n.□□□X		Disable third stag	e notch filt	er.				
			1	Enable third stage	notch filt	er.				
Pn416			Notch Filt	er Selection 4						
111410		n.□□X□		Disable fourth sta						
					ge noton n	itei.				_
		n.□X□□		er Selection 5 Disable fifth stage	notch filte	er.				
		^		Enable fifth stage						
		n.X□□□	Reserved	parameter (Do no	ot change	.)				
						·				
Pn417	2	Third Stage Frequency		50 10 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn418	2	Third Stage Q Value		50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1
Pn419	2	Third Stage Depth		0 10 1,000	0.001	0	All	Immedi- ately	Tuning	*1
Pn41A	2	Fourth Stag ter Frequer	ncy	30 10 3,000	1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn41B	2	Fourth Stag ter Q Value		il- 50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1
Pn41C	2	Fourth Stag ter Depth	ge Notch F	il- 0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1
Pn41D	2	Fifth Stage Frequency	Notch Filte	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn41E	2	Fifth Stage Q Value	Notch Filte	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1
Pn41F	2	Fifth Stage Depth	Notch Filte	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1
	2	Speed Ripp sation Sele		n- 0000h to 1111h	_	0000h	Rotary	_	Setup	*1
			Speed Rip	ople Compensation	on Function	on Selection	on		Whe Enab	
		n.□□□X	0	Disable speed rip	ple compe	ensation.			Imme	
			1	Enable speed ripp	ole compe	nsation.			ate	
D : 400			Speed Rip	ople Compensation	on Informa	ation Disaç	greement Wai	rning Detec-	Whe	
Pn423		n.□□X□	0	Detect A.942 alar	ms.				Afte	
			1	Do not detect A.9	142 alarms				resta	art ——
			Speed Rip	ople Compensation	on Enable	Condition	Selection		Whe Enab	
		n.□X□□		Speed reference Motor speed					Afte resta	
		n V000		·	at change	1				
		n.X□□□	neserved	parameter (Do no	or change	.)				
Pn424	2	Torque Lim		Dir- 0 to 100	1%*3	50	All	Immedi- ately	Setup	*1
Pn425	2	Release Tir Limit at Ma	me for Torq in Circuit	ue 0 to 1,000	1 ms	100	All	Immedi- ately	Setup	*1
		Voltage Dro	υþ					Continue	ed on nex	t nage

Tuning \*1

Continued from previous page.

Parameter Size Setting Setting Default Applicable When Classi-Refer-Name Range No. Unit Setting Motors Enabled fication ence Torque Feedforward Immedi-Pn426 2 Average Movement 0 to 5,100 0.1 ms 0 ΑII Setup \*1 ately Time Speed Ripple Compensation Enable Speed Rotary Ser-Immedi-2 Pn427 Tuning \*1 0 to 10,000 1 min<sup>-1</sup> 0 vomotor ately Sweep Torque Reference Amplitude Immedi-2 Pn456 1 to 800 1% 15 ΑII ately Notch Filter Adjustment 0000h to Immedi-2 0101h ΑII Tuning Selections 1 0101h ately

> Notch Filter Adjustment Selection 1 Do not adjust the first stage notch filter automatically during execution of auto-0 tuning without a host reference, autotuning with a host reference, and custom n.□□□X Adjust the first stage notch filter automatically during execution of autotuning without a host reference, autotuning with a host reference, and custom tuning. 1

 $n.\Box\Box X\Box$ Pn460 Reserved parameter (Do not change.)

	Notch Fi	Iter Adjustment Selection 2
n.□X□□	0	Do not adjust the second stage notch filter automatically when the tuning-less function is enabled or during execution of autotuning without a host reference, autotuning with a host reference, and custom tuning.
	1	Adjust the second stage notch filter automatically when the tuning-less function is enabled or during execution of autotuning without a host reference, autotuning with a host reference, and custom tuning.

n.X□□□ Reserved parameter (Do not change.)

2	Gravity Compensation- Related Selections	0000h to 0001h	_	0000h	All	After restart	Setup	*1
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Pn475

n.□□□X	Gravity Compensation Selection							
	0	Disable gravity compensation.						
1 Enable gravity compensation.								
n.□□X□	Reserved	Reserved parameter (Do not change.)						
n.□X□□	Reserved	Reserved parameter (Do not change.)						
n ХППП	Reserved	Reserved parameter (Do not change )						

Pn476	2	Gravity Compensation Torque	-1,000 to 1,000	0.1%	0	All	Immedi- ately	Tuning	*1
Pn502	2	Rotation Detection Level	1 to 10,000	1 min <sup>-1</sup>	20	Rotary	Immedi- ately	Setup	*1
Pn503	2	Speed Coincidence Detection Signal Output Width	0 to 100	1 min <sup>-1</sup>	10	Rotary	Immedi- ately	Setup	*1
Pn506	2	Brake Reference-Servo OFF Delay Time	0 to 50	10 ms	0	All	Immedi- ately	Setup	*1
Pn507	2	Brake Reference Output Speed Level	0 to 10,000	1 min <sup>-1</sup>	100	Rotary	Immedi- ately	Setup	*1
Pn508	2	Servo OFF-Brake Com- mand Waiting Time	10 to 100	10 ms	50	All	Immedi- ately	Setup	*1
Pn509	2	Momentary Power Inter- ruption Hold Time	20 to 50,000	1 ms	20	All	Immedi- ately	Setup	*1

Parameter No.	Size	N	Name		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence			
	2	Input Signa 1	al Sele	ctions	0000h to FFF2h	-	1881h	All	After restart	Setup	_			
	Ī	n.000X n.00X0	Rese	Reserved parameter (Do not change.) Reserved parameter (Do not change.) Reserved parameter (Do not change.)										
			P-OT	(Forwar	d Drive Prohib	oit) Signal	Allocation	1		Refere	ence			
			0	Enable	forward drive	when CN1	-13 input	signal is ON (d	closed).					
			1	Enable										
			2	Enable	forward drive	when CN1	-8 input si	ignal is ON (cl	osed).					
Pn50A			3	Enable	forward drive	when CN1	-9 input si	ignal is ON (cl	osed).					
FIISUA			4		forward drive		<u> </u>	· ·						
			5		forward drive			0 (	,					
			6		forward drive				closed).					
		n.X□□□	7		signal to alwa					*1				
			8		signal to alwa	•			, ,					
			9		forward drive									
			A		forward drive		- '	· ·	. ,					
			В		forward drive		- '	· ·	. ,					
			D		forward drive			0 (	. ,					
			E		forward drive				· · · /					
			F		forward drive			0	· · /					
	_						1- 0	<u> </u>	V 1 - 7					

Applicable

Motors

Default

Setting

Setting

Unit

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Enabled

n50B	1 10:											
2 Input Signal Selections 0000h to FFFFh - 8882h All After restart									-			
		N-OT (Rev	verse Drive Prohib	oit) Signal	Allocation			Refere	ence			
		0	Enable reverse dri	ve when C	N1-13 inp	ut signal is O	N (closed).					
		1	Enable reverse dri	ve when C	N1-7 inpu	t signal is ON	I (closed).					
		2	Enable reverse dri	ve when C	N1-8 inpu	t signal is ON	I (closed).					
		3	Enable reverse dri	ve when C	N1-9 inpu	t signal is ON	I (closed).					
		4	Enable reverse dri	ve when C	N1-10 inp	ut signal is O	N (closed).					
		5	Enable reverse dri	ve when C	N1-11 inp	ut signal is O	N (closed).					
		6	Enable reverse dri	ve when C	N1-12 inp	ut signal is O	N (closed).					
	n.□□□X	7	Set the signal to a	lways prol	hibit revers	e drive.		*1				
		8	Set the signal to a	lways ena	ble reverse	e drive.		- 1				
		9	Enable reverse dri	ve when C	N1-13 inp	ut signal is O	FF (open).					
	A Enable reverse drive when CN1-7 input signal is C											
		В	Enable reverse dri	ve when C	CN1-8 inpu	t signal is OF	F (open).					
		С	Enable reverse dri	ve when C	N1-9 inpu	t signal is OF	F (open).					
1		D	Enable reverse dri	ve when C	N1-10 inp	ut signal is O	FF (open).					
		E	Enable reverse dri	ve when C	N1-11 inp	ut signal is O	FF (open).					
		F	Enable reverse drive when CN1-12 input signal is OFF (open).									
		Reserved parameter (Do not change.)										
	n.□□X□	Reserved	parameter (Do no	t change.	.)							
	n.□□X□		parameter (Do no			gnal Allocatio	n	Refere	ence			
	n.□□X□	/P-CL (Fo	, ,	rque Limi	t Input) Sig		n	Refere	ence			
	n.□□X□	/P-CL (Fo	rward External To	rque Limi 13 input s	t Input) Signal is ON	l (closed).	n	Refere	ence			
	n.□□X□	/P-CL (Fo	rward External To Active when CN1-	rque Limi 13 input s 7 input siç	t Input) Signal is ON	V (closed).	n	Refere	ence			
	n.□□X□	/P-CL (Fo	rward External To Active when CN1- Active when CN1-	rque Limi 13 input s 7 input siç 8 input siç	t Input) Signal is ON gnal is ON	(closed).	n	Refere	ence			
	n.□□X□	/P-CL (Fo	rward External To Active when CN1- Active when CN1- Active when CN1-	rque Limi 13 input s 7 input si 8 input si 9 input si	t Input) Signal is ON gnal is ON gnal is ON gnal is ON	(closed). (closed). (closed).	n	Refere	ence			
	n.□□X□	/P-CL (Fo 0 1 2 3 4	rward External To Active when CN1- Active when CN1- Active when CN1- Active when CN1-	rque Limir 13 input siç 7 input siç 8 input siç 9 input siç 10 input s	t Input) Signal is ON gnal is ON	I (closed). (closed). (closed). (closed). I (closed).	on .	Refere	ence			
	n.□□X□	/P-CL (Fo 0 1 2 3 4 5	rward External To Active when CN1- Active when CN1- Active when CN1- Active when CN1- Active when CN1-	rque Limir 13 input s 7 input sig 8 input sig 9 input sig 10 input s	t Input) Signal is ON gnal is ON gnal is ON gnal is ON gnal is ON signal is ON signal is ON	V (closed). (closed). (closed). (closed). (closed). V (closed). V (closed).	vn	Refere	ence			
	n.□X□	/P-CL (Fo 0 1 2 3 4 5	rward External To Active when CN1- Active when CN1- Active when CN1- Active when CN1- Active when CN1- Active when CN1-	rque Limi 13 input si 7 input si 8 input si 9 input si 10 input s 11 input s	t Input) Signal is ON gnal is ON gnal is ON gnal is ON gnal is ON signal is ON signal is ON	V (closed). (closed). (closed). (closed). (closed). V (closed). V (closed).	on					
		/P-CL (Fo 0 1 2 3 4 5 6 7	rward External To Active when CN1- Active when CN1- Active when CN1- Active when CN1- Active when CN1- Active when CN1- Active when CN1-	rque Limi 13 input si 7 input si 8 input si 9 input si 10 input s 11 input s 12 input s /s active.	t Input) Signal is ON gnal is ON gnal is ON gnal is ON signal is ON	V (closed). (closed). (closed). (closed). (closed). V (closed). V (closed).	on	Refere				
		/P-CL (Fo	rward External To Active when CN1- Active when CN1- Active when CN1- Active when CN1- Active when CN1- Active when CN1- Active when CN1- Active when CN1- The signal is alway	rque Limi 13 input si 7 input si 8 input si 9 input si 10 input s 11 input s 12 input s /s active.	t Input) Signal is ON gnal is ON gnal is ON gnal is ON gnal is ON signal is ON	J (closed). (closed). (closed). (closed). J (closed). J (closed). J (closed). J (closed).	on .					
		/P-CL (Fo	rward External To Active when CN1- Active when CN1- Active when CN1- Active when CN1- Active when CN1- Active when CN1- Active when CN1- The signal is alway The signal is alway Active when CN1- Active when CN1- Active when CN1- Active when CN1- Active when CN1- Active when CN1-	rque Limi 13 input si 7 input si 8 input si 9 input si 10 input s 11 input s 12 input s /s active. /s inactive 13 input s 7 input si	t Input) Signal is ON gnal is ON gnal is ON gnal is ON gnal is ON signal is ON signal is ON signal is ON gnal is OF gnal is OFF	V (closed). (closed). (closed). (closed). V (closed). V (closed). V (closed). V (closed). V (closed). V (closed). V (closed). V (closed).	on .					
		/P-CL (Fo	rward External To Active when CN1- Active when CN1- Active when CN1- Active when CN1- Active when CN1- Active when CN1- Active when CN1- The signal is alway The signal is alway Active when CN1-	rque Limi 13 input si 7 input si 8 input si 9 input si 10 input s 11 input s 12 input s /s active. /s inactive 13 input s 7 input si	t Input) Signal is ON gnal is ON gnal is ON gnal is ON gnal is ON signal is ON signal is ON signal is ON gnal is OF gnal is OFF	V (closed). (closed). (closed). (closed). V (closed). V (closed). V (closed). V (closed). V (closed). V (closed). V (closed). V (closed).	on .					
		/P-CL (Fo	rward External To Active when CN1- Active when CN1- Active when CN1- Active when CN1- Active when CN1- Active when CN1- Active when CN1- The signal is alway The signal is alway Active when CN1- Active when CN1- Active when CN1- Active when CN1- Active when CN1- Active when CN1- Active when CN1- Active when CN1- Active when CN1-	rque Limi 13 input si 7 input si 8 input si 9 input si 10 input s 11 input s 12 input s /s active. /s inactive 13 input si 8 input si 9 input si 9 input si 9 input si	t Input) Signal is ON gnal is ON gnal is ON gnal is ON signal is ON signal is ON signal is ON signal is ON gnal is ON gnal is OF gnal is OFF gnal is OFF	I (closed). (closed). (closed). (closed). I (closed). I (closed). I (closed). I (closed). I (closed). I (closed). I (closed). I (closed). I (closed). I (closed). I (closed). I (closed). I (closed). I (closed). I (closed).	on					
		/P-CL (Fo	rward External To Active when CN1-	rque Limi 13 input sig 8 input sig 9 input sig 10 input sig 11 input s 12 input s 7 active 13 input sig 8 input sig 9 input sig 9 input sig 10 input sig	t Input) Signal is ON gnal is ON gnal is ON gnal is ON signal is ON signal is ON signal is ON gnal is ON gnal is OF gnal is OFF gnal is OFF gnal is OFF gnal is OFF gnal is OFF gnal is OFF gnal is OFF gnal is OFF gnal is OFF	J (closed). (closed). (closed). (closed). J (closed). J (closed). J (closed). J (closed). J (closed). J (closed). F (open). F (open). F (open). F (open). F (open).	on .					
		/P-CL (Fo	rward External To Active when CN1- Active when CN1- Active when CN1- Active when CN1- Active when CN1- Active when CN1- Active when CN1- The signal is alway The signal is alway Active when CN1- Active when CN1- Active when CN1- Active when CN1- Active when CN1- Active when CN1- Active when CN1- Active when CN1- Active when CN1-	rque Limi 13 input sig 8 input sig 9 input sig 10 input sig 11 input s 12 input s 7 active 13 input sig 8 input sig 9 input sig 9 input sig 10 input sig	t Input) Signal is ON gnal is ON gnal is ON gnal is ON signal is ON signal is ON signal is ON gnal is ON gnal is OF gnal is OFF gnal is OFF gnal is OFF gnal is OFF gnal is OFF gnal is OFF gnal is OFF gnal is OFF gnal is OFF	J (closed). (closed). (closed). (closed). J (closed). J (closed). J (closed). J (closed). J (closed). J (closed). F (open). F (open). F (open). F (open). F (open).	on .					
		/P-CL (Fo	rward External To Active when CN1-	rque Limi 13 input si 7 input si 8 input si 9 input si 10 input s 11 input s 12 input s 7 active 13 input si 8 input si 9 input si 10 input si 10 input si 11 input si 11 input s 11 input s	t Input) Signal is ON gnal is ON gnal is ON gnal is ON gnal is ON gignal is ON gignal is ON gignal is ON gnal is OF gnal is OF	I (closed). (closed). (closed). (closed). I (closed).	n					
		/P-CL (Fo	rward External To Active when CN1-	rque Limi 13 input si 7 input si 8 input si 9 input si 10 input s 11 input s 12 input s 7 s active 13 input si 9 input si 9 input si 10 input si 11 input si 11 input si 11 input si 11 input s 11 input s	t Input) Signal is ON gnal is ON gnal is ON gnal is ON gignal is ON gignal is ON gignal is ON gignal is OF gnal is OFF gnal is OFF gnal is OFF gnal is OFF gignal is OFF g	I (closed). (closed). (closed). (closed). I (closed).						

Parameter

No.

Size

Name

								Continued fro	m previou	ıs page.
Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Output Sig	gnal Selec-	0000h to 6666h	-	0000h	All	After restart	Setup	-
			/COIN (Posit	ioning Comple	tion Outp	ut) Signal	Allocation		Refere	ence
		n.□□□X  n.□□□X  n.□□X□  n.□□X□  n.□□X□  n.□□X□  n.□□X□  n.□□□  Output Sig tions 2	0 Dis	sabled (the abo	ve signal c	output is no	ot used).			
		n.□□□X	1 Ou	tput the signal	from the C	N1-1 or C	N1-2 output	terminal.		
			2 Ou	tput the signal	from the C	N1-23 or	CN1-24 outp	ut terminal.	*1	
			3 Ou	tput the signal	from the C	N1-25 or	CN1-26 outp	ut terminal.		
			4 to 6 Re	served setting	(Do not us	e.)				
Pn50E			/V-CMP (Spe	eed Coincidend	ce Detecti	on Output	) Signal Alloc	ation	Refere	ence
		n.□□X□	O to 6	e allocations ar n) signal allocat	e the same	•	, 0		*1	
			/TGON (Rota	ation Detection	Output) S	Signal Allo	cation		Refere	ence
		n.□X□□	O to 6 The	/TGON (Rotation Detection Output) Signal Allocation  0 to 6 The allocations are the same as the /COIN (Positioning Completion) signal allocations.						
			/S-RDY (Ser	vo Ready) Sigr	nal Allocat	ion			Refere	ence
		n.X□□□	O to 6 The	e allocations ar	e the same		OIN (Position	ing Comple-	*1	
			tion	n) signal allocat	ions.				1	
		Output Sid	anal Calaa	0000h to				After		
	2		griai Selec-	6666h	_	0100h	All	restart	Setup	-
							•			
			/CLT (Torque	Limit Detection	on Output)	Signal All	ocation		Refere	ence
			0 Dis	sabled (the abo	ve signal c	output is no	ot used).			
		n ПППХ	1 Ou	tput the signal	from the C	CN1-1 or C	N1-2 output	terminal.		
				tput the signal			· · · · · · · · · · · · · · · · · · ·		*1	
				tput the signal			CN1-26 outp	ut terminal.		
			4 to 6 Re	served setting	(Do not us	e.)				
Pn50F			/VLT (Speed Limit Detection) Signal Allocation						Refere	ence
		n.□□X□	0 to 6 The allocations are the same as the /CLT (Torque Limit Detection Output) signal allocations.						*1	
			/BK (Brake 0	/BK (Brake Output) Signal Allocation						
		n.□X□□		The allocations are the same as the /CLT (Torque Limit Detection						
			/WARN (War	ning Output) S	ignal Allo	cation			Refere	ence
		n.X□□□	+ ;	e allocations ar			LT (Torque Li	mit Detection		
			Ou	tput) signal allo	cations.				1	
		Out	anal Calss	00001- +-			1	Λ ft		
	2		gnai Seiec-	0000h to 0666h	-	0000h	All	After restart	Setup	-
		"			1	I.	II.			
			/NEAR (Near	Output) Signa	al Allocatio	on			Refere	ence
			<u> </u>	sabled (the abo			ot used).			
			1 Ou	tput the signal	from the C	 CN1-1 or C	N1-2 output	terminal.		
		n.□□□X	2 Ou	tput the signal	from the C	N1-23 or	CN1-24 outp	ut terminal.	*1	
Pn510			3 Ou	3 Output the signal from the CN1-25 or CN1-26 output terminal.						
			4 to 6 Reserved setting (Do not use.)							
		n.□□X□	Reserved pa	rameter (Do no	ot change.	.)				
		n.□X□□	Reserved pa	rameter (Do no	ot change.	.)				
		n.X□□□	□ Reserved parameter (Do not change.)							

Applicable

Motors

Default

Setting

Continued	from	provious	naga
Continueu	HOILI	previous	paye.

Classi-

fication

Refer-

ence

When

Enabled

	2	Input Signa 5	al Selection	าร	0000h to FFFFh	-	6543h	All	After restart	Setup	*1		
								I	I.				
	١.		/DEC (O::		Datama Danala		للبريديدا واجائ	Cianal Allaa	_4:				
					Return Decele			-	ation				
			0		ve when CN1-	•		-					
			2		ve when CN1-								
			3		ve when CN1- ve when CN1-			` '					
			4		ve when CN1-								
			5		ve when CN1-								
		n.□□X□	6		ve when CN1-		_						
			7		signal is alway		igriai io Oi	<b>v</b> (010000a).					
			8		The signal is always active.								
		Active when CN1-13 input signal is OFF (open).  A Active when CN1-7 input signal is OFF (open).											
				, , ,									
				Active when CN1-7 input signal is OFF (open).  Active when CN1-8 input signal is OFF (open).									
			С	Active when CN1-9 input signal is OFF (open).									
			Active when CN1-10 input signal is OFF (open).										
Pn511			Е	Acti	ve when CN1-	11 input s	ignal is OF	F (open).		I) signal allo-			
			F	Acti	ve when CN1-	12 input s	ignal is OF	F (open).					
			/EXT1 (Ex	kterr	al Latch Input	: 1) Signal	Allocation	1		setup *  Setup *  ut 1) signal allo-  ut 1) signal allo-			
			0 to 3	The	signal is alway	s inactive							
			4	Active when CN1-10 input signal is ON (closed).									
			5	Acti	ve when CN1-	11 input s	ignal is ON	l (closed).					
		n.□□X□	6	Acti	ve when CN1-	12 input s	ignal is ON	l (closed).					
			D	Acti	ve when CN1-	10 input s	ignal is OF	F (open).					
			Е	Acti	ve when CN1-	11 input s	ignal is OF	F (open).					
			F	Acti	ve when CN1-	12 input s	ignal is OF	F (open).					
			7 to C	The	signal is alway	s inactive							
			/EXT2 (Ex	kterr	al Latch Input	2) Signal	Allocation	1					
		n.□X□□	0 to F	The cati		the same	e as the /E	XT1 (External	Latch Input	1) signal a	allo-		
			/EXT3 (Ex	kterr	al Latch Input	3) Signal	Allocation	1					
		n.X□□□	0 to F		allocations are	the same	e as the /E	XT1 (External	Latch Input	1) signal a	allo-		

Setting

Range

Setting

Unit

Parameter

No.

Size

Name

Parameter No.	Size	N	ame	Setting	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
NO.	2		nal Inverse	0000h to 1111h	— — — — — — — — — — — — — — — — — — —	0000h	All	After restart	Setup	*1		
				1	1							
			Output Signa	al Inversion for	CN1-1 ar	nd CN1-2	Terminals					
		n.□□□X	0 The	e signal is not i	nverted.							
			1 The	e signal is inver	ted.							
<b>5</b> -40			Output Signal Inversion for CN1-23 and CN1-24 Terminals									
Pn512		$n.\Box\Box X\Box$	0 The	e signal is not i	nverted.							
			1 The	e signal is inver	ted.							
			Output Signa	al Inversion for	CN1-25 a	and CN1-2	6 Terminals					
		n.□X□□	0 The	e signal is not i	nverted.							
			1 The	1 The signal is inverted.								
		n.XDDD	Reserved pa	rameter (Do no	ot change.	.)						
	2	Output Sig tions 4	nal Selec-	0000h to 0666h	_	0000h	All	After restart	Setup	-		
		n.□□□X	Reserved pa	rameter (Do no	ot change.	.)						
		n.□□X□	Reserved pa	rameter (Do no	ot change.	.)						
			/PM (Prevent	tative Mainten	ance Outp	ut) Signal	Allocation		Refere	ence		
Pn514			0 Dis	abled (the abo	ve signal c	utput is no	ot used).					
		- DVDD	1 Ou	tput the signal	from the C	N1-1 or C	N1-2 output t	erminal.				
		n.□X□□	2 Ou	tput the signal	from the C	N1-23 or	CN1-24 outpu	ut terminal.	*1			
			3 Ou	tput the signal	from the C	N1-25 or	CN1-26 outpu	ut terminal.				
		4 to 6 Reserved setting (Do not use.)										
		n.X□□□	Reserved pa	rameter (Do no	ot change	.)						

Continued from previous page.

Parameter No.	Size	1	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Input Sigr 7	nal Selections	0000h to FFFFh	-	8888h	All	After restart	Setup	_
Pn516		1.00X	0 E 1 E 2 E 3 E 4 E 5 E 6 E 7 S 8 S 8 S 9 E A E B E C E E E F E	d Stop Input) Si nable drive where trameter (Do not	n CN1-13 n CN1-7 ir n CN1-8 ir n CN1-9 ir n CN1-10 n CN1-11 n CN1-12 always pro always ena n CN1-13 n CN1-7 ir n CN1-8 ir n CN1-9 ir n CN1-10 n CN1-11	input signal aput signal aput signal aput signal input signal input signal input signal input signal able drive ( input signal aput signal aput signal input signal	is ON (closed is ON (closed is ON (closed is ON (closed is ON (closed is ON (closed is ON (closed is ON (closed is ON (closed is ON (closed is OFF (open is OFF (	ed). d). d). ed). ed). ed). ed). the motor to e forcing the n). ). ). n).	Refere	ence
	r	n.□X□□	Reserved pa	rameter (Do not	change.)					
	n.X□□□ Reserved parameter (Do not change.)									

Pn518*4	_	Safety Module-Related Parameters	_	-	-	All	_	_	_
Pn51B	4	Motor-Load Position Deviation Overflow Detection Level	0 to 1,073,741,824	1 refer- ence unit	1000	Rotary	Immedi- ately	Setup	*1
Pn51E	2	Position Deviation Over- flow Warning Level	10 to 100	1%	100	All	Immedi- ately	Setup	*1
Pn520	4	Position Deviation Over- flow Alarm Level	1 to 1,073,741,823	1 refer- ence unit	524288 0	All	Immedi- ately	Setup	*1
Pn522	4	Positioning Completed Width	0 to 1,073,741,824	1 refer- ence unit	7	All	Immedi- ately	Setup	*1
Pn524	4	Near Signal Width	1 to 1,073,741,824	1 refer- ence unit	107374 1824	All	Immedi- ately	Setup	*1
Pn526	4	Position Deviation Over- flow Alarm Level at Servo ON	1 to 1,073,741,823	1 refer- ence unit	524288 0	All	Immedi- ately	Setup	*1
Pn528	2	Position Deviation Over- flow Warning Level at Servo ON	10 to 100	1%	100	All	Immedi- ately	Setup	*1
Pn529	2	Speed Limit Level at Servo ON	0 to 10,000	1 min <sup>-1</sup>	10000	Rotary	Immedi- ately	Setup	*1
Pn52A	2	Multiplier per Fully- closed Rotation	0 to 100	1%	20	Rotary	Immedi- ately	Tuning	*1
Pn52B	2	Overload Warning Level	1 to 100	1%	20	All	Immedi- ately	Setup	*1

						T		Continued fro	om previou	us page.
Parameter No.	Size		ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn52C	2	Base Curre at Motor Ov Detection		10 to 100	1%	100	All	After restart	Setup	*1
	2	Program Jo Related Sel	ogging- ections	0000h to 0005h	-	0000h	All	Immedi- ately	Setup	*1
	Ī		Program Jog	ging Operation	n Pattern					
				aiting time in Pr vements in Pna		orward by	travel distance	e in Pn531) >	< Number	of
				aiting time in Pr vements in Pns		everse by t	ravel distance	e in Pn531) >	Number	of
		•	2 mo	aiting time in Provements in Provents in P	536 n535 → Re	_		•		
Pn530		n.□□□X	3 mo	aiting time in Provements in Provents in P	536 n535 → Fo	,		,		
			4 in F	aiting time in Pr Pn535 → Rever 536	n535 → Fo rse by trav	orward by t rel distance	ravel distance in Pn531) ×	e in Pn531 — Number of n	Waiting to Waiting to	ime s in
			5 in F	aiting time in Pr Pn535 → Forwa 536						
		n.□□X□	Reserved pa	rameter (Do no	ot change.	.)				
		n.□X□□	Reserved pa	rameter (Do no	ot change	.)				
		n.X□□□	Reserved pa	rameter (Do no	ot change.	.)				
Pn531	4	Program Jo Distance	ogging Travel	1 to 1,073,741,824	1 refer- ence unit	32768	All	Immedi- ately	Setup	*1
Pn533	2	Program Joment Speed	ogging Move- d	1 to 10,000	Rotary: 1 min <sup>-1</sup> Direct Drive: 0.1 min <sup>-1</sup>	500	Rotary	Immedi- ately	Setup	*1
Pn534	2	Program Joeration/Dec	ogging Accel- eleration	2 to 10,000	1 ms	100	All	Immedi- ately	Setup	*1
Pn535	2	Program Joing Time	ogging Wait-	0 to 10,000	1 ms	100	All	Immedi- ately	Setup	*1
Pn536	2	Program Jober of Move	ogging Num- ements	0 to 1,000	Times	1	All	Immedi- ately	Setup	*1
Pn550	2	Analog Mor Voltage	nitor 1 Offset	-10,000 to 10,000	0.1 V	0	All	Immedi- ately	Setup	*1
Pn551	2	Analog Mor Voltage	nitor 2 Offset	-10,000 to 10,000	0.1 V	0	All	Immedi- ately	Setup	*1
Pn552	2	Analog Mor	nitor 1 Mag-	-10,000 to 10,000	× 0.01	100	All	Immedi- ately	Setup	*1
Pn553	2	Analog Mor nification	nitor 2 Mag-	-10,000 to 10,000	× 0.01	100	All	Immedi- ately	Setup	*1
Pn55A	2	Power Con Monitor Uni		1 to 1,440	1 min	1	All	Immedi- ately	Setup	_
Pn560	2	Residual Vil Detection V	bration Vidth	1 to 3,000	0.1%	400	All	Immedi- ately	Setup	*1
Pn561	2	Overshoot I Level	Detection	0 to 100	1%	100	All	Immedi- ately	Setup	*1
Pn600	2	Regenerativ Capacity*5	ve Resistor	Depends on model.*6	10 W	0	All	Immedi- ately	Setup	*1

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Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn601	2	Dynamic Brake Resistor Allowable Energy Consumption	0 to 65,535	10 J	0	All	After restart	Setup	*7
Pn603	2	Regenerative Resistance	0 to 65,535	10 mΩ	0	All	Immedi- ately	Setup	*1
Pn604	2	Dynamic Brake Resistance	0 to 65,535	10 mΩ	0	All	After restart	Setup	*7
	2	Overheat Protection Selections	0000h to 0003h	_	0000h	Linear	After restart	Setup	*1

	n.□□□X	Overhea	t Protection Selection
		0	Disable overheat protection.
		1	Use overheat protection in the Yaskawa Linear Servomotor.*8
Pn61A		2	Monitor a negative voltage input from a sensor attached to the machine and use overheat protection.
		3	Monitor a positive voltage input from a sensor attached to the machine and use overheat protection.
		I _	
	n.□□X□	Reserved	d parameter (Do not change.)
		D	L (D L. l )
	n.□X□□	Reserved	d parameter (Do not change.)
	~ VDDD	Dagamia	d nevermeter (De not change )
	n.X□□□	Reserved	d parameter (Do not change.)

Pn61B *9	2	Overheat Alarm Level	0 to 500	0.01 V	250	All	Immedi- ately	Setup	*1
Pn61C *9	2	Overheat Warning Level	0 to 100	1%	100	All	Immedi- ately	Setup	*1
Pn61D *9	2	Overheat Alarm Filter Time	0 to 65,535	1 s	0	All	Immedi- ately	Setup	*1
Pn621 to Pn628*4	-	Safety Module-Related Parameters	-	_	-	All	_	_	-
	2	Communications Controls	0000h to 0F73h	_	0040h	All	Immedi- ately	Setup	*2

MECHATROLINK Communications Check Mask for Debugging

Do not mask.

Pn800

n.□□□X	1	Ignore MECHATROLINK communications errors (A.E60).
	2	Ignore WDT errors (A.E50).
	3	Ignore both MECHATROLINK communications errors (A.E60) and WDT errors (A.E50).
	Warnii	ng Check Masks
	0	Do not mask.
	1	Ignore data setting warnings (A.94□).
	2	Ignore command warnings (A.95□).
$n.\Box\Box X\Box$	3	Ignore both A.94□ and A.95□ warnings.
	4	Ignore communications warnings (A.96□).
	5	Ignore both A.94□ and A.96□ warnings.
	6	Ignore both A.95□ and A.96□ warnings.
	7	Ignore A.94□, A.95□, and A.96□ warnings.
n.□X□□	Reserv	ved parameter (Do not change.)
n.X□□□	Reserv	ved parameter (Do not change.)

				•				Continued fro	om previoi	us page.
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Application Selections Limits)	n Function 6 (Software	0000h to 0103h	_	0003h	All	Immedi- ately	Setup	*1
Pn801		n.□□□X	1 Disak 2 Disak	nit Selection le both forward ble forward soft ble reverse soft ble both forward	ware limit ware limit.					[ - -
		n.□□X□	Reserved pa	rameter (Do no	t change.	.)				Ī
		n.□X□□	0 Do n	nit Check for Root perform software lin	ware limit	checks for				
		n.X□□□	Reserved pa	rameter (Do no	t change.	)				
Pn803	2	Origin Ran	ge	0 to 250	1 refer- ence unit	10	All	Immedi- ately	Setup	*2
Pn804	4	Forward So	oftware Limit	-1,073,741,823 to 1,073,741,823	1 refer- ence unit	107374 1823	All	Immedi- ately	Setup	*1
Pn806	4	Reverse So	oftware Limit	-1,073,741,823 to 1,073,741,823	1 refer- ence unit	-10737 41823	All	Immedi- ately	Setup	*1
Pn808	4	Absolute E Offset	ncoder Origin	-1,073,741,823 to 1,073,741,823	1 refer- ence unit	0	All	Immedi- ately *10	Setup	*1
Pn80A	2	First Stage eration Cor	Linear Accel- nstant	1 to 65,535	10,000 refer- ence units/s <sup>2</sup>	100	All	Immedi- ately *11	Setup	*2
Pn80B	2	Second Sta Acceleration	age Linear on Constant	1 to 65,535	10,000 refer- ence units/s <sup>2</sup>	100	All	Immedi- ately *11	Setup	*2
Pn80C	2	Acceleration Switching	on Constant Speed	0 to 65,535	100 reference units/s	0	All	Immedi- ately *11	Setup	*2
Pn80D	2	First Stage Deceleration	Linear on Constant	1 to 65,535	10,000 refer- ence units/s <sup>2</sup>	100	All	Immedi- ately *11	Setup	*2
Pn80E	2	Second Sta Deceleration	age Linear on Constant	1 to 65,535	10,000 refer- ence units/s <sup>2</sup>	100	All	Immedi- ately *11	Setup	*2
Pn80F	2	Deceleration Switching	on Constant Speed	0 to 65,535	100 reference units/s	0	All	Immedi- ately *11	Setup	*2
Pn810	2		al Accelera- eration Bias	0 to 65,535	100 reference units/s	0	All	Immedi- ately *12	Setup	*2
Pn811	2		al Accelera- eration Time	0 to 5,100	0.1 ms	0	All	Immedi- ately *12	Setup	*2
Pn812	2	Movement Time	Average	0 to 5,100	0.1 ms	0	All	Immedi- ately *12	Setup	*2
Pn814	4	External Po Final Trave	ositioning I Distance	-1,073,741,823 to 1,073,741,823	1 refer- ence unit	100	All	Immedi- ately	Setup	*2

			1
,	2	۱	ı

								(	Continued fro	om previo	us page.
Parameter No.	Size	N	ame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Origin Retu	ırn Mode	Set-	0000h to 0001h	-	0000h	All	Immedi- ately	Setup	*2
			Origin F	Returr	Direction						
		n.□□□X	0	Retur	n in forward di	rection.					_
Pn816			1	Retur	n in reverse di	rection.					_
		n.□□X□	Reserve	ed pai	rameter (Do no	ot change.	.)				
		n.□X□□	Reserve	ed pai	rameter (Do no	ot change.	.)				
	ļ	n.X□□□	Reserve	ed pai	rameter (Do no	ot change.	.)				1
											_
Pn817 *13	2	Origin App	roach Sp	eed	0 to 65,535	100 reference units/s	50	All	Immedi- ately *11	Setup	*2
Pn818 *14	2	Origin App	roach Sp	peed	0 to 65,535	100 reference units/s	5	All	Immedi- ately *11	Setup	*2
Pn819	4	Final Trave Origin Retu		e for	-1,073,741,823 to 1,073,741,823	1 refer- ence unit	100	All	Immedi- ately	Setup	*2
	2	Input Signa Selections	al Monito	r	0000h to AAAAh	-	0000h	All	Immedi- ately	Setup	*2
						ii.			I	1	
			IO12 Si	gnal N	Mapping						ı
			0	~	ot map.						-
			1	Moni	tor CN1-13 inp	ut termina	ıl.				_
			2	Moni	tor CN1-7 inpu	t terminal.					_
		n.□□□X	3	Moni	tor CN1-8 inpu	t terminal.					=
			4	Moni	tor CN1-9 inpu	t terminal.					_
Pn81E			5		tor CN1-10 inp						_
			6		tor CN1-11 inp						=
			7	Moni	tor CN1-12 inp	ut termina	ıl.				_
		n.□□X□			Mapping						
			0 to 7	The r	nappings are tl	he same a	s the IO12	signal mappi	ngs.		=

0 to 7 The mappings are the same as the IO12 signal mappings.

0 to 7 The mappings are the same as the IO12 signal mappings.

IO14 Signal Mapping

IO15 Signal Mapping

n.□X□□

 $n.X\square\square\square$ 

Parameter No.	Size	N	lame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Command tions	Data All	loca-	0000h to 1111h	_	0000h	All	After restart	Setup	*2	
			Option	Field	Allocation							
		n.□□□X	0	Disab	ole option field	allocation.						
			1	Enab	le option field a	allocation.						
Pn81F			Positio	n Con	trol Command TFF/TLIM Allocation							
		n.□□X□	0		le allocation.	TTT/TLIIV	Allocatio	11				
		11.0000	1								=	
			1	Enab	le allocation.						=	
		n.□X□□	Reserv	ed par	ameter (Do no	t change.	)				Ī	
		n.X000	Reserv	ed na	rameter (Do no	t change	1					
		11.7000	i tesei v	eu pai	ameter (DO no	it change.	,				1	
										I		
Pn820	4	Forward La	atching A	Area	-2,147,483,648 to 2,147,483,647	1 refer- ence unit	0	All	Immedi- ately	Setup	*2	
Pn822	4	Reverse La	atching A	Area	-2,147,483,648 to 2,147,483,647	1 refer- ence unit	0	All	Immedi- ately	Setup	*2	

Paramet No.		Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	2	Option Monitor 1 Selection	0000h to FFFFh	-	0000h	-	Immedi- ately	Setup	*2

Setting	Monitor	Applicable Mot
High-Spe	ed Monitor Region	
0000h	Motor speed [1000000h/overspeed detection speed]	All
0001h	Speed reference [1000000h/overspeed detection speed]	All
0002h	Torque [1000000h/maximum torque]	All
0003h	Position deviation (lower 32 bits) [reference units]	All
0004h	Position deviation (upper 32 bits) [reference units]	All
000Ah	Encoder count (lower 32 bits) [reference units]	All
000Bh	Encoder count (upper 32 bits) [reference units]	All
000Ch	FPG count (lower 32 bits) [reference units]	All
000Dh	FPG count (upper 32 bits) [reference units]	All
Low-Spe	ed Monitor Region	
0010h	Un000: Motor speed [min <sup>-1</sup> ]	All
0011h	Un001: Speed Reference [min <sup>-1</sup> ]	All
0012h	Un002: Torque Reference [%]	All
0013h	Un003: Rotational Angle 1 [encoder pulses]  Number of encoder pulses from encoder phase C displayed in decimal	All
0014h	Un004: Rotational Angle 2 [deg] Electrical angle from polarity origin	All
0015h	Un005: Input Signal Monitor	All
0016h	Un006: Output Signal Monitor	All
0017h	Un007: Input Reference Speed [min <sup>-1</sup> ]	All
0018h	Un008: Position Deviation [reference units]	All
0019h	Un009: Accumulated Load Ratio [%]	All
001Ah	Un00A: Regenerative Load Ratio [%]	All
001Bh	Un00B: Dynamic Brake Resistor Power Consumption [%]	All
001Ch	Un00C: Input Reference Pulse Counter [reference units]	All
001Dh	Un00D: Feedback Pulse Counter [encoder pulses]	All
001Eh	Un00E: Fully-closed Loop Feedback Pulse Counter [external encoder resolution]	Rotary
0023h	Initial multiturn data [Rev]	Rotary
0024h	Initial incremental data [pulses]	Rotary
0040h	Un025: SERVOPACK Installation Environment Monitor	All
0041h	Un026: Servomotor Installation Environment Monitor	All
0042h	Un027: Built-in Fan Remaining Life Ratio	All
0043h	Un028: Capacitor Remaining Life Ratio	All
0044h	Un029: Surge Prevention Circuit Remaining Life Ratio	All
0045h	Un02A: Dynamic Brake Circuit Remaining Life Ratio	All
0046h	Un032: Instantaneous Power	All
0047h	Un033: Power Consumption	All
0048h	Un034: Cumulative Power Consumption	All
Commun	cations Module Only	
0080h	Previous value of latched feedback position (LPOS) [encoder pulses]	All
All Areas		<b>'</b>
Other	Reserved settings (Do not use.)	All

					Continued from previ								
Parameter No.	Size	Name			Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Option Mo tion	Option Monitor 2 Selection			_	0000h	All	Immedi- ately	Setup	*2		
Pn825													
		0000h to 0080h	The s	The settings are the same as those for the Option Monitor 1 Selection.									
						10,000							
Pn827	2	Linear Dec Constant 1			1 to 65,535	refer- ence units/s <sup>2</sup>	100	All	Immedi- ately *11	Setup	*2		
Pn829	2	SVOFF Wa SVOFF at I to Stop)	iting Tim Decelera	e (for ition	0 to 65,535	10 ms	0	All	Immedi- ately *11	Setup	*2		
	2	Option Field Allocations			0000h to 1E1Eh	-	1813h	All	After restart	Setup	*2		
			ACCFI	L Alloc	ation (Option)								
			0	Alloca	ate bits 0 and	1 to ACCF	IL.				_		
			1	1 Allocate bits 1 and 2 to ACCFIL.									
			2 Allocate bits 2 and 3 to ACCFIL.										
			3										
			4										
			5	Allocate bits 5 and 6 to ACCFIL.									
		n.□□□X	6	Allocate bits 6 and 7 to ACCFIL.  Allocate bits 7 and 8 to ACCFIL.									
			7 8	Allocate bits 7 and 6 to ACCFIL.  Allocate bits 8 and 9 to ACCFIL.									
			9	Allocate bits 9 and 10 to ACCFIL.									
			A	Allocate bits 10 and 11 to ACCFIL.									
Pn82A			В	Allocate bits 11 and 12 to ACCFIL.									
			С	Allocate bits 12 and 13 to ACCFIL.							_		
			D	D Allocate bits 13 and 14 to ACCFIL.									
			E	Alloca	ate bits 14 and	15 to AC	CFIL.						
			ACCFI	CFIL Allocation Enable/Disable Selection									
		n.□□X□	0	Disab	ole ACCFIL allo	cation.					_		
			1	Enab	le ACCFIL alloc	cation.					_		
			0.051	Λ II ~ ·	ation (Oation)								
		n.□X□□			ation (Option) settings are the	0000000	for the AC	CEIL allegatio	no.				
			0 to E	THE S	settings are the	same as	IOI THE AC	OFTE AHOUALIO	115.		_		
			G_SEL	Alloca	ation Enable/D	isable Sel	ection						
		n. X□□□	0	Disab	ole G_SEL alloc	ation.					_		
			1	Enab	le G_SEL alloc	ation.					_		

Parameter No.	Size	1	Name		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence			
	2 Option Field Allocations 2				0000h to 1F1Fh	-	1D1Ch	All	After restart	Setup	*2			
				ļ					1001011					
	V_PPI Allocation (Option)													
			-											
					locate bit 1 to V_PPI.									
			2	Alloca	ate bit 2 to V_F	PPI.					=			
			3	Alloca	locate bit 3 to V_PPI.									
			4	Alloca	ocate bit 4 to V_PPI.									
			5	Alloca	locate bit 5 to V_PPI.									
					ate bit 6 to V_F						_			
		n.□□□X			ate bit 7 to V_F						=			
					ate bit 8 to V_F						_			
					ate bit 9 to V_F						=			
					ate bit 10 to V						_			
Pn82B					ate bit 11 to $V_{}$ ate bit 12 to $V_{}$						=			
					ate bit 12 to $V_1$						_			
					ate bit 14 to $V_{\perp}$						=			
					ate bit 15 to $V_{}$						_			
			V_PPI Allocation Enable/Disable Selection											
		n.□□X□	1		le V_PPI alloc						_			
			1	Enabl	e V_PPI alloca	ation.					<u> </u>			
											_			
		n.□X□□			R Allocation (Option)									
			0 to F The settings are the same as for the V_PPI allocations.											
			P_PI_CI	LR All	ocation Enabl	e/Disable	Selection							
		n.X□□□	0	Disable P_PI_CLR allocation.										
			1	Enabl	e P_PI_CLR a	llocation.					<u> </u>			
	2	Option Fi	eld Allocati	ions	0000h to	_	1F1Eh	All	After	Setup	*2			
	_	3			1F1Fh			7	restart	Cottap				
			I · · ·								_			
		n.□□□X		P_CL Allocation (Option)										
			0 to F The settings are the same as for the V_PPI allocations.											
			P_CL AI	llocati	on Enable/Dis	sable Sele	ction							
		n.□□X□	0	Disab	le P_CL alloca	ation.					_			
Pn82C			1	Enabl	e P_CL alloca	tion.					_			
											_			
		n.□X□□			ion (Option)									
			0 to F	The s	ettings are the	same as	for the V_F	PPI allocations	5.		_			
			N CL 1	lla = -/'	on Frankli /P'	achi- Cul	atio				-			
		» VDDD			on Enable/Dis		ction							
		n.X□□□			le N_CL alloca						_			
			1	⊏⊓abl	e N_CL alloca	uOH.					_			
									Continue	ed on nev	rt page			

Parameter No.	Size	Name			Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Option Fiel 4	Option Field Allocations 4			_	0000h	All	After restart	Setup	*2	
			BANK_SEL1 Allocation (Option)									
			0 AI	loca	te bits 0 to 3	to BANK_	SEL1.					
			1 AI	loca	ite bits 1 to 4	to BANK_	SEL1.				_	
			2 AI	loca	te bits 2 to 5	to BANK_	SEL1.				_	
			3 AI	loca	te bits 3 to 6	to BANK_	SEL1.				_	
			4 AI	loca	ite bits 4 to 7	to BANK_	SEL1.				_	
		n.□□□X		loca	te bits 5 to 8	to BANK_	SEL1.				_	
		II.LLLX		loca	te bits 6 to 9	to BANK_	SEL1.				_	
					ite bits 7 to 10						_	
					ite bits 8 to 11		_				_	
			9 AI	loca	ite bits 9 to 12	to BANK	_SEL1.				_	
Pn82D					ite bits 10 to 1						_	
					ite bits 11 to 1						_	
			C A	loca	ite bits 12 to 1	5 to BAN	K_SEL1.				_	
			DANIK OF		A.I: =	/5:					_	
		- DDVD			Allocation Ena			on				
		n.□□X□			le BANK_SEL						_	
			1 Ei	iadi	e BANK_SEL1	allocation	1.				_	
	Ī	=\/==	LT_DISABLE Allocation (Option)									
		n.□X□□	0 to F The settings are the same as for the V_PPI allocations.									
					Allocation Ena			on				
		n.X□□□	0 D	sab	le LT_DISABLI	E allocatio	n.				_	
			1 Er	nabl	e LT_DISABLE	allocation	٦.				_	

Parameter No.	Size	N	Name			Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence			
	2	Option Fie 5	eld Allocations 0000h to 1D1Fh			_	0000h	All	After restart	Setup	*2			
	_													
		n.□□□X	Reserve	d pai	rameter (Do no	ot change.	)							
		n.□□X□	Reserved parameter (Do not change.)											
	Ī		OUT_SIGNAL Allocation (Option)											
					ate bits 0 to 2						_			
				_										
				3 Allocate bits 3 to 5 to OUT_SIGNAL.  4 Allocate bits 4 to 6 to OUT_SIGNAL										
				4 Allocate bits 4 to 6 to OUT_SIGNAL.										
Pn82E		n.□X□□		=										
					ate bits 7 to 9						<del>_</del>			
			8 /	Alloca	ate bits 8 to 10	to OUT_9	SIGNAL.				_			
			9 /	Alloca	ate bits 9 to 11	to OUT_9	SIGNAL.				<del>_</del>			
			Α /											
					ate bits 11 to 1						_			
				C Allocate bits 12 to 14 to OUT_SIGNAL.										
			D /	Alloca	ate bits 13 to 1	5 to OUT_	_SIGNAL.				=			
			OUT_SIGNAL Allocation Enable/Disable Selection											
		n.X□□□	0											
			1 Enable OUT_SIGNAL allocation.											
	2	Motion Se	ttings		0000h to	_	0000h	All	After	Setup	*2			
					0001h				restart					
	Ī		Linear Acceleration/Deceleration Constant Selection											
				Use Pn80A to Pn80F and Pn827. (The settings of Pn834 to Pn840 are										
		n.□□□X	'	ignored.)							_			
Pn833				Use Pn834 to Pn840. (The settings of Pn80A to Pn80F and Pn827 are ignored.)										
		n.□□X□	Reserve	d parameter (Do not change.)										
		n.□X□□	Reserve	d pai	rameter (Do no	ot change.	)							
	1	n.X□□□	□□□ Reserved parameter (Do not change.)											
	_		, , , , , , , , , , , , , , , , , , , ,											
						10,000								
Pn834	4	First Stage	e Linear Ac	cel-	1 to	refer-	100	All	Immedi-	Setup	*2			
111004	-	eration Co	nstant 2		20,971,520	ence units/s <sup>2</sup>	100	7 (11	ately *11	Octup	_			
						10,000								
Pn836	4	Second Sa Acceleration			1 to 20,971,520	refer- ence	100	All	Immedi-	Setup	*2			
		Acceleration	on Consta	III Z	20,971,020	units/s <sup>2</sup>			ately *11	Cotup				
D=000	4	Accelerati	on Consta	nt	0 to	1 refer-		Δ	Immedi-	On!	*2			
Pn838	4	Switching		-	2,097,152,000	ence unit/s	0	All	ately *11	Setup	*2			
						10,000								
Pn83A	4	First Stage Decelerati	e Linear on Consta	nt 2	1 to 20,971,520	refer- ence	100	All	Immedi- ately *11	Setup	*2			
		2300/01411	Jonota		_5,57 1,020	units/s <sup>2</sup>			асоту					
									Continue	od on nov	t nago			

Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn83C	4	Second Stage Linear Deceleration Constant 2	1 to 20,971,520	10,000 refer- ence units/s <sup>2</sup>	100	All	Immedi- ately *11	Setup	*2
Pn83E	4	Deceleration Constant Switching Speed 2	0 to 2,097,152,000	1 refer- ence unit/s	0	All	Immedi- ately *11	Setup	*2
Pn840	4	Linear Deceleration Constant 2 for Stopping	1 to 20,971,520	10,000 refer- ence units/s <sup>2</sup>	100	All	Immedi- ately *11	Setup	*2
Pn842 *13	4	Second Origin Approach Speed 1	0 to 20,971,520	100 reference units/s	0	All	Immedi- ately *11	Setup	*2
Pn844 *14	4	Second Origin Approach Speed 2	0 to 20,971,520	100 reference units/s	0	All	Immedi- ately *11	Setup	*2
Pn850	2	Number of Latch Sequences	0 to 8	-	0	All	Immedi- ately	Setup	*2
Pn851	2	Continuous Latch Sequence Count	0 to 255	-	0	All	Immedi- ately	Setup	*2
	2	Latch Sequence 1 to 4 Settings	0000h to 3333h	ı	0000h	All	Immedi- ately	Setup	*2

		Latch S	Latch Sequence 1 Signal Selection							
		0	Phase C							
	n.□□□X	1	EXT1 signal							
		2	EXT2 signal							
		3	EXT3 signal							
Pn852		Latch Sequence 2 Signal Selection								
	n.□□X□	0 to 3 The settings are the same as those for the Latch Sequence 1 Signal tion.								
		Latch Sequence 3 Signal Selection								
	n.□X□□	0 to 3	The settings are the same as those for the Latch Sequence 1 Signal Selection.							
		Latch 9	Sequence 4 Signal Selection							
	n.X□□□	0 to 3	The settings are the same as those for the Latch Sequence 1 Signal Selection.							

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Parameter No.	Size	1	Name		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Latch Sed Settings	quence 5 to	8 0	0000h to 3333h	_	0000h	All	Immedi- ately	Setup	*2
			Latch Se	equer	nce 5 Signal S	election					
				Phase							=
		n.□□□X			signal signal						=
					signal						=
D 050	-		Latch Se	eauer	nce 6 Signal S	election					_
Pn853		n.□□X□	0 to 3		settings are the		those for t	he Latch Sequ	uence 5 Sigr	nal Selec-	_
	I		Latch Se	equer	nce 7 Signal S	election					1
		n.□X□□	1 (1) (0) .3	The s tion.	settings are the same as those for the Latch Sequence 5 Signal Selec-						
	l		Latch Se	equer	nce 8 Signal S	election					I
		n.X□□□		The s tion.	ettings are the	same as	those for t	he Latch Seq	uence 5 Sigr	nal Selec-	_
Pn880	2		ddress Mor aintenance		40h to 5Fh	_	-	All	-	Setup	_
Pn881	2	Count Mo	mission By onitor [byte enance, re	sl	17, 32	_	-	All	-	Setup	_
Pn882	2	ting Monit	sion Cyclestor (x 0.25 enance, re	usl	Oh to FFFFh	_	-	All	-	Setup	-
Pn883	2	Setting M mission c	cations Cy onitor [tran ycles] (for nce, read c	าร-	0 to 32	-	-	All	-	Setup	-
	2	Communi trols 2	cations Co	n-	0000h to 0001h	-	0000h	All	Immedi- ately	Setup	-
			MECHATI	ROLII	NK Communic	ations Err	or Holding	g Brake Signa	al Setting		
	n	.000X	0 N	1ainta 1FCH	in the status se ATROLINK cor	et by the E	BRK_ON o	r BRK_OFF co	ommand wh	en a	
Pn884					the holding bra				munications	error occu	urs.
	n	.DDXD	Reserved	para	ımeter (Do not	change.)					
	n	.0X00	Reserved	para	ımeter (Do not	change.)					
	n	.X000	Reserved	para	ımeter (Do not	change.)					
Pn88A	2	Monitor	ROLINK Error Count enance, re		0 to 65,535	_	0	All	Immedi- ately	Setup	_
Pn890 to Pn89E	4	tor during	d Data Mor Alarm/Wa enance, re	ırn-	Oh to FFFFFFFh	-	Oh	All	Immedi- ately	Setup	*2

Continued from previous page.

Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn8A0 to Pn8AE	4	Response Data Monitor during Alarm/Warning (for maintenance, read only)	Oh to FFFFFFFh	-	0h	All	lmmedi- ately	Setup	*2
Pn900	2	Number of Parameter Banks	0 to 16	-	0	All	After restart	Setup	*2
Pn901	2	Number of Parameter Bank Members	0 to 15	-	0	All	After restart	Setup	*2
Pn902 to Pn910	2	Parameter Bank Member Definition	0000h to 08FFh	-	0h	All	After restart	Setup	*2
Pn920 to Pn95F	2	Parameter Bank Data (Not saved in nonvolatile memory.)	0000h to FFFFh	-	Oh	All	Immedi- ately	Setup	*2

- \*1. Refer to the following manual for details.
  - Σ-7-Series Σ-7S SERVOPACK with MECHATROLINK-II Communications References Product Manual (Manual No.: SIEP S800001 27)
- \*2. Refer to the following manual for details.
  - Σ-7-Series AC Servo Drive MECHATROLINK-II Communications Command Manual (Manual No.: SIEP S800001 30)
- \*3. Set a percentage of the motor rated torque.
- \*4. These parameters are for SERVOPACKs with a Safety Module. Refer to the following manual for details.
  - Σ-V-Series/Σ-V-Series for Large-Capacity Models/Σ-7-Series User's Manual Safety Module (Manual No.: SIEP C720829 06)
- \*5. Normally set this parameter to 0. If you use an External Regenerative Resistor, set the capacity (W) of the External Regenerative Resistor.
- \*6. The upper limit is the maximum output capacity (W) of the SERVOPACK.
- \*7. These parameters are for SERVOPACKs with the dynamic brake option. Refer to the following manual for details.
  - $\Sigma$ -7-Series AC Servo Drive  $\Sigma$ -7S/ $\Sigma$ -7W SERVOPACK with Hardware Option Specifications Dynamic Brake Product Manual (Manual No.: SIEP S800001 73)
- \*8. The SGLFW2 is the only Yaskawa Linear Servomotor that supports this function.
- \*9. Enabled only when Pn61A is set to n.□□□2 or n.□□□3.
- \*10.The parameter setting is enabled after SENS\_ON command execution is completed.
- \*11. Change the setting when the reference is stopped (i.e., while DEN is set to 1). If you change the setting during operation, the reference output will be affected.
- \*12. The settings are updated only if the reference is stopped (i.e., only if DEN is set to 1).
- \*13. The setting of Pn842 is valid while Pn817 is set to 0.
- \*14. The setting of Pn844 is valid while Pn818 is set to 0.

# FT82 SERVOPACK with MECHATROLINK-III Communications References

The following table lists the parameters.

Note: Do not change the following parameters from their default settings.

- Reserved parameters
- Parameters not given in this manual
  Parameters that are not valid for the Servomotor that you are using, as given in the parameter table

#### **List of Servo Parameters** 4.3.1

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer	
	2	Basic Fund tions 0	ction Selec-	0000h to 10B1h	-	0000h	All	After restart	Setup	-	
			1	<u> </u>		'					
		n.□□□X		Direction Selection Use CCW as the		raction			Refere	ence	
		11.000		Use CW as the fo			erse Rotation	Mode)	*1		
Pn000											
		n.□□X□	Reserved	parameter (Do n	ot change	.)					
		n.□X□□	Reserved	parameter (Do n	ot change	.)					
		n.X□□□	Reserved	parameter (Do n	ot change	.)					
			•								
	2	Application Selections		0000h to 1142h	-	0000h	All	After restart	Setup	_	
	Selections 1 114211 lestait										
			Motor Sto	pping Method fo	r Servo Ol	FF and Gro	oup 1 Alarms		Refere	ence	
		n.□□□X		Stop the motor by	, 0						
		n.uuux	'	Stop the motor by the applying dynamic brake and then release the dynamic brake.  Coast the motor to a stop without the dynamic brake.							
			2	Coast the motor t	o a stop w	vithout the	dynamic brak	ie.			
			Overtravel Stopping Method						Refere	ence	
				Apply the dynamic brake or coast the motor to a stop.							
				Decelerate the motor to a stop using the torque set in Pn406 as the maximum torque and then servo-lock the motor.							
Pn001		n.□□X□		Decelerate the mo				in Pn406 as	*1		
				Decelerate the mo			he deceleration	on time set in			
				Decelerate the mo			he deceleration	on time set in			
			Main Circi	uit Power Supply	AC/DC In	put Select	tion		Refere	ence	
			0	Input AC power a	s the main	circuit pov	ver supply usi	ng the L1, L2			
		n.□X□□	1	and L3 terminals (do not use shared converter).  Input DC power as the main circuit power supply using the B1/⊕ and ⊖ 2 terminals or the B1 and ⊖ 2 terminals (use an external converter or the shared converter).							
		n.X□□□	Reserved	parameter (Do no	ot change	.)					
				,							

Continued from previous page.

No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer ence
Parameter No.	2	Application Selections	Function 2	0000h to 4213h	_	0011h	_	After restart	Setup	_
			MEQUATO	NI INIZ O	4 D '1'			A P la la		
			Option	LINK Comman	a Position	and Spee	ea Control	Applicable Motors	Refere	ence
		~ UUUV	0 R	eserved setting (	(Do not us	e.)				
		n.□□□X	1 U:	se TLIM as the t	orque limit			All	*2	
			<b>-</b>	eserved setting (	`			7		
			3 R							
			Torque Con	trol Option	Applicable Motors	Refere	ence			
	n.□□		0 R	Reserved setting (Do not use.)						
				se the speed lim beed limit.	All	*2				
Dn002			Encoder Us	age				Applicable Motors	Refere	ence
Pn002										
FIIOUZ		n.□X□□		se the encoder a	according	to encode	r specifica-	All		
FIIOUZ		n.□X□□	tic					All	*1	
FIIOUZ		n.0X00	1 U:	ns.	as an incre	emental en	coder.	All Rotary	*1	
FIIOUZ	- -	n.□X□□	1 U: 2 U: er	ons. se the encoder a se the encoder a acoder.	as an incre	emental en	coder.	Rotary		
FIIOUZ	-	n.□X□□	1 U: 2 U: er	ons. se the encoder a se the encoder a	as an incre	emental en	coder.			
FIIOUZ	-	n.□X□□	1 Us 2 Us er  External En 0 Do	se the encoder asset the encoder associated and the encoder associated and the encoder associated and the encoder usage on the encoder usage on the encoder usage on the encoder usage on the encoder usage on the encoder usage on the encoder usage on the encoder usage on the encoder usage on the encoder usage of the encoder as the encod	as an incre as a single ernal encc	emental en -turn abso	coder. lute	Rotary		
FIIOUZ	-	n.□X□□	1 Us 2 Us er  External En 0 Do 1 Th	ons. se the encoder asset the encoder accoder. coder Usage	ernal enco	emental en -turn abso oder. s in the for	coder. lute	Rotary		
FIIOUZ			1 Us 2 Us er  External En 0 Do 1 Tr tic	se the encoder asset the encoder and accoder.  coder Usage o not use an extender external encoder.	ernal enco	emental en- -turn abso oder. s in the for	coder. lute	Rotary		ence
FIIIUZ			1   Using   1   Using   2   Using   2   Using   2   Reference   2   Reference   3   The state   1   The state   2   Reference   3   The state   3   The stat	se the encoder asset the encoder asset the encoder asset the encoder asset the encoder.  coder Usage o not use an extense external encount for CCW motions.	ernal encoder moves or rotation	emental end- turn absorbeder.  s in the form.  e.) s in the rev	coder. lute	Rotary  Applicable Motors	Refere	ence
			1	se the encoder asset the encoder asset the encoder asset the encoder asset the encoder asset the external encoder for CCW motoeserved setting the external encoder external encoder external encoder encoder encoder for external encoder enco	ernal encoder moves or rotation (Do not us der moves or rotation rotation or rotation)	emental end- turn absorbeder.  s in the form e.) s in the rev	coder. lute	Rotary  Applicable Motors	Refere	ence

Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Application Function Selections 6	0000h to 105Fh	-	0002h	All	Immedi- ately	Setup	*1

		Analog Mo	onitor 1 Signal Selection
		00	Motor speed (1 V/1,000 min <sup>-1</sup> )
		01	Speed reference (1 V/1,000 min <sup>-1</sup> )
		02	Torque reference (1 V/100% rated torque)
		03	Position deviation (0.05 V/reference unit)
		04	Position amplifier deviation (after electronic gear) (0.05 V/encoder pulse unit)
		05	Position reference speed (1 V/1,000 min <sup>-1</sup> )
		06	Reserved setting (Do not use.)
		07	Load-motor position deviation (0.01 V/reference unit)
Pn006	n.□□XX	08	Positioning completion (positioning completed: 5 V, positioning not completed: 0 V)
1 11000		09	Speed feedforward (1 V/1,000 min <sup>-1</sup> )
		0A	Torque feedforward (1 V/100% rated torque)
		0B	Active gain (1st gain: 1 V, 2nd gain: 2 V)
		0C	Completion of position reference distribution (completed: 5 V, not completed: 0 V)
		0D	External encoder speed (1 V/1,000 min <sup>-1</sup> : value at the motor shaft)
		0E	Reserved setting (Do not use.)
		OF	Reserved setting (Do not use.)
		10	Main circuit DC voltage
		11 to 5F	Reserved settings (Do not use.)
	n.□X□□	Reserved	parameter (Do not change.)
	n.X□□□	Reserved	parameter (Do not change.)

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Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Application Selections	Function 7	0000h to 105Fh	-	0000h	All	Immedi- ately	Setup	*1
				•				I		
			Analog Moni	tor 2 Signal Se	election					
				Notor speed (1		nin <sup>-1</sup> )				
			01 §	Speed reference	e (1 V/1,00	00 min <sup>-1</sup> )				
			02 7	orque reference	e (1 V/100	% rated to	rque)			
			03 F	Position deviation	on (0.05 V	reference/	unit)			
			04 F	Position amplifie	er deviation	n (after ele	ctronic gear) (	0.05 V/enco	der pulse	unit)
				Position reference			min <sup>-1</sup> )			
			-	Reserved setting	· · · · · · · · · · · · · · · · · · ·	•				
				oad-motor pos		•		•		
Pn007		n.□□XX		Positioning com pleted: 0 V)	pietion (po	ositioning (	completed: 5	v, positioning	not com-	-
			-	Speed feedforw	•					
				orque feedforw	•					
				Active gain (1st gain: 1 V, 2nd gain: 2 V)  Completion of position reference distribution (completed: 5 V, not com-						
				oleted: 0 V)						
				External encoder speed (1 V/1,000 min <sup>-1</sup> : value at the motor shaft)  Reserved setting (Do not use.)						
					· .					
				Reserved setting (Do not use.)  Main circuit DC voltage						
				Reserved setting		1100 )				
			111031 1	ieserved settiri	use.)					
		n.□X□□ Reserved parameter (Do not change.)								
		n.X□□□	Reserved pa	rameter (Do no	ot change.	.)				
	2	Application Selections		0000h to 7121h	_	4000h	Rotary	After restart	Setup	-
								11		
			Law Battani	Valtage Alexes	Morning	Calcation			Defere	222
		n.□□□X		Voltage Alarmatput alarm (A.8			oltana		Referer	ice
		п.пп		tput warning (A	•	-			*1	
			F otion Col		,				Defere	
			-	not detect und					Referer	nce
Pn008		n.□□X□		tect undervolta			torque at hos	t controller		
			De	tect undervolta					*1	
			2 Pn	425 (i.e., only ir	SERVOP	ACK).				
			Warning Det	ection Selectio	n				Referer	nce
		n.□X□□	0 De	tect warnings.					*1	=
			1 Do	not detect war	nings exc	ept for A.9	71.			
		n.X□□□	Reserved pa	rameter (Do no	ot change.	.)				
	Continued on next page									

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Parameter No.	Size	N	ame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer-			
NO.	2	Application Selections			0000h to 0121h	— — — — — — — — — — — — — — — — — — —	0010h	All	After restart	Tuning	ence -			
	Ī	n.□□□X	Reserved	para	ameter (Do no	ot change.	)							
			Current Co	ontr	ol Mode Sele	ction				Refer	ence			
			0 (	Jse	current contro	ol mode 1.								
Pn009		n.□□X□	4	-3l SE	RVOPACK Mo R8A, -5R5A, a RVOPACK Mo 0A, -550A, -5	nd -7R6A odels SGD	Use curre 7S-120A,	ent control mo -180A, -200A	ode 1. ., -330A, -	*1				
			2 l	Jse	current contro	ol mode 2.								
	İ		Speed Det	peed Detection Method Selection							ence			
		n.□X□□			speed detecti					*1				
			1 l	Jse	speed detecti	on 2.								
		n.X□□□	Reserved	para	ameter (Do no	ter (Do not change.)								
	2	2 Application Function 0000h to Selections A 0044h - 0001h All After restart								Setup	_			
										ļ	4			
			Motor Sto	igge	ing Method fo	r Group 2	Alarms			Refe	rence			
		n.□□□X	0	App	oly the dynami oping method	c brake or	coast the		op (use the					
			1	the	celerate the maximum tord	que. Use tl	top using the setting of	the torque set of Pn001 = n.	t in Pn406 as □□□X for th	6 as or the				
					celerate the maximum tord				t in Pn406 as	3 *	·1			
			3	Pn3	celerate the management of the second contract									
					celerate the magnetic than 1			the decelerati	on time set i	n				
Pn00A			Stopping	Me	thod for Force	ed Stops				Refe	rence			
			0	App sto	oly the dynami oping method	c brake or set in Pn0	01 = n. <b>□</b> [	□□X).						
			1 1	the	celerate the me maximum tord tus after stopp	que. Use tl	top using the setting of	the torque set of Pn001 = n.	t in Pn406 as □□□X for th	ne				
		n.□□X□			celerate the maximum tor				t in Pn406 as	3 *	1			
			3	Pn3	celerate the management of the second									
					celerate the magnetic than 1			the decelerati	on time set i	n				
			I				,							

Reserved parameter (Do not change.)

Reserved parameter (Do not change.)

n.□X□□

n.X□□□

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Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Applicatio Selections	n Function B	0000h to 1121h	-	0000h	All	After restart	Setup	_
		1						1		
				ameter Displa	y Selection	1			Refere	nce
		n.□□□X		play only setup		rs.			*1	
			1 Dis	play all parame	ters.					
			Motor Stopp	ing Method for	Group 2	Alarms			Reference	
			0 Std	op the motor by	setting th	e speed re	eference to 0.			
Pn00B		n.□□X□	1 Ap	ply the dynamic	c brake or	coast the	motor to a sto	op (use the	*1	
			StC	pping method						
			2 Se	t the stopping r	method wit	:h Pn00A =	= n.□□□X.			
			Power Input	Selection for T	hree-phas	e SERVOI	PACK	Refere	nce	
		n.□X□□	0 Use	0 Use a three-phase power supply input.						
		11. LIVILL	1 Use	Llea a three-phase power supply input as a single-phase power						
	supply input.									
	l	n.X□□□	X□□□ Reserved parameter (Do not change.)							
	-			,						
	2	Applicatio	n Function	0000h to		0000h		After	Setup	*1
		Selections	s C	0131h		000011	_	restart	Setup	-1
			Function Se	lection for Test	t without a	Motor			Applica	ble
		n.□□□X							Motor	S
				sable tests with					All	
			1 En	able tests with	out a moto	ır.				
		Encoder Resolution for Tests without a Motor								ble s
Pn00C		n.□□X□	0 Use 13 bits.							
				2 Use 22 bits.						
			3 Us	3 Use 24 bits.						
			Encoder Typ	Encoder Type Selection for Tests without a Motor						
		n.□X□□	0 Us	e an increment	al encode	:			All	
			1 Us	e an absolute e	encoder.				\\ \tag{\pi}	
		n.X□□□	Reserved na	arameter (Do n	ot change	)				
					90	,				
	2	Applicatio	n Function	0000h to	_	0000h	All	Immedi-	Setup	*1
		Selections	ט פ	1001h		550011	7 111	ately	Cotup	
		n.□□□X	Reserved pa	arameter (Do n	ot change	)				
DnCOD		n.□□X□	Reserved pa	arameter (Do n	ot change	.)				
Pn00D		n.□X□□	Reserved pa	arameter (Do n	ot change	.)				
			·	•		,				
		\ <i>i</i> ==			ction Selection					
		n.X□□□	+	not detect over		rnings.				
			1 De	etect overtravel	warnings.					
								0 1'	od on nov	+

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Application Selections	Function	0000h to 2011h	-	0000h	All	After restart	Setup	_
			Preventative	Maintenance \	Warning S	election			Reference	е
		n.□□□X		ot detect preve					*1	
Pn00F			1 Dete	ct preventative	maintena	nce warnir	igs.			
		n.□□X□	Reserved pa	rameter (Do no	ot change.	.)				
		n.□X□□	Reserved pa	rameter (Do no	ot change.	)				
		n.X000	Reserved pa	rameter (Do no	ot change.	)				
		_		1	1	1	1	<del> </del>	1	
Pn021	2	Reserved p	parameter (Do e.)	-	-	0000h	All	-	-	_
Pn022	2	Reserved p	parameter (Do e.)	-	-	0000h	All	-	-	_
Pn040	2	Reserved p	parameter (Do e.)	_	-	0000h	_	_	-	-
	2	2 Application Function 0000h to Selections 81 - 0000h All							Setup	*1
			Phase-C Puls	se Output Sele	ection					
		n.□□□X		tput phase-C p						
Pn081	_		1 Out	tput phase-C p	ulses in b	oth the for	ward and reve	erse direction	ns.	
	n.□□X□ Reserved parameter (Do not change.)  n.□X□□ Reserved parameter (Do not change.)									
	Ī	n.X000	Reserved pa	rameter (Do no	ot change.	.)				
	_		1							
Pn100	2	Speed Loc	p Gain	10 to 20,000	0.1 Hz	400	All	Immedi- ately	Tuning	*1
Pn101	2	Speed Loc Time Cons	p Integral stant	15 to 51,200	0.01 ms	2000	All	Immedi- ately	Tuning	*1
Pn102	2	Position Lo	oop Gain	10 to 20,000	0.1/s	400	All	Immedi- ately	Tuning	*1
Pn103	2	Moment of	Inertia Ratio	0 to 20,000	1%	100	All	Immedi- ately	Tuning	*1
Pn104	2	Second Sp Gain		10 to 20,000	0.1 Hz	400	All	Immedi- ately	Tuning	*1
Pn105	2	Second Sp Integral Tir	peed Loop ne Constant	15 to 51,200	0.01 ms	2000	All	Immedi- ately	Tuning	*1
Pn106	2	Second Po Gain	sition Loop	10 to 20,000	0.1/s	400	All	Immedi- ately	Tuning	*1
Pn109	2	Feedforwa	rd	0 to 100	1%	0	All	Immedi- ately	Tuning	*1
Pn10A	2	Feedforwa Constant	rd Filter Time	0 to 6,400	0.01 ms	0	All	Immedi- ately	Tuning	*1
		Continued on next page.								

### 4.3.1 List of Servo Parameters

Continued from previous page.

Parameter No.	Size	N	ame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Gain Applications	cation Selec-				-	Setup	_		
			Mode Sv	vitch	ing Selection				When Enabled	Refere	ence
			0		e the internal to el setting: Pn1		ence as th	e condition			
	Use the speed reference as the ting: Pn10D).	the condit	ion (level set-								
		n.□□□X			e the speed ref g: Pn181).	erence as	the condit	ion (level set-			
			2		e the accelerati ting: Pn10E).	on referen	ce as the	condition (leve	lmmedi- ately	*1	
Pn10B			2		e the accelerati ting: Pn182).	on referen	ce as the	condition (leve	el		
			3		e the position on the transfer of the position of the transfer	leviation a	s the cond	ition (level set	-		
			4	Do	not use mode	switching.					
			Speed L	оор	Control Metho	d			When Enabled	Refere	ence
		n.□□X□	0	Plo	control						
			1	I-P	control				After restart	*1	
			2 to 3	Res	served settings	(Do not u	se.)				
		n.□X□□	Reserve	d pa	rameter (Do no	t change.	)				
	n.X□□□ Reserved parameter (Do not change.)										

Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn10C	2	Mode Switching Level for Torque Reference	0 to 800	1%	200	All	Immedi- ately	Tuning	*1
Pn10D	2	Mode Switching Level for Speed Reference	0 to 10,000	1 min <sup>-1</sup>	0	Rotary	Immedi- ately	Tuning	*1
Pn10E	2	Mode Switching Level for Acceleration	0 to 30,000	1 min <sup>-1</sup> /s	0	Rotary	Immedi- ately	Tuning	*1
Pn10F	2	Mode Switching Level for Position Deviation	0 to 10,000	1 refer- ence unit	0	All	Immedi- ately	Tuning	*1
Pn11F	2	Position Integral Time Constant	0 to 50,000	0.1 ms	0	All	Immedi- ately	Tuning	*1
Pn121	2	Friction Compensation Gain	10 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
Pn122	2	Second Friction Compensation Gain	10 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
Pn123	2	Friction Compensation Coefficient	0 to 100	1%	0	All	Immedi- ately	Tuning	*1
Pn124	2	Friction Compensation Frequency Correction	-10,000 to 10,000	0.1 Hz	0	All	Immedi- ately	Tuning	*1
Pn125	2	Friction Compensation Gain Correction	1 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
Pn131	2	Gain Switching Time 1	0 to 65,535	1 ms	0	All	Immedi- ately	Tuning	*1
Pn132	2	Gain Switching Time 2	0 to 65,535	1 ms	0	All	Immedi- ately	Tuning	*1
Pn135	2	Gain Switching Waiting Time 1	0 to 65,535	1 ms	0	All	Immedi- ately	Tuning	*1
Pn136	2	Gain Switching Waiting Time 2	0 to 65,535	1 ms	0	All	Immedi- ately	Tuning	*1
	2	Automatic Gain Switching Selections 1	0000h to 0052h	-	0000h	All	Immedi- ately	Tuning	*1
								•	

			Gain Swi	Use manual gain switching. The gain is switched manually with G-SEL in the servo command output signals (SVCMD_IO).  Reserved setting (Do not use.)  Use automatic gain switching pattern 1. The gain settings 1 switch automatically to 2 when switching condition A is satisfied. The gain settings 2 switch automatically to 1 when switching condition A is not satisfied.  itching Condition A  /COIN (Positioning Completion Output) signal turns ON.  /COIN (Positioning Completion Output) signal turns OFF.											
			0	The	gain is switche		lly with G-S	SEL in the ser	vo command	d output s	ig-				
	1	n.□□□X	1	Res	served setting (	Do not us	e.)								
			2	The sati	gain settings s sfied. The gain	1 switch a settings 2	utomatical	ly to 2 when s							
Pn139	Ī		Gain Swi	tchir	ching Condition A										
			on Output) signal turns ON.												
			1	/CC	OIN (Positioning	Completi	on Output)	signal turns	OFF.						
	ı	n.□□X□	2	/NE	AR (Near Outp	ut) signal	turns ON.	-							
			3	/NE	AR (Near Outp	ut) signal	turns OFF.								
			4	Pos	sition reference	filter outp	ut is 0 and	position refe	rence input i	s OFF.					
			5	Pos	sition reference	input is O	N.								
	1	n.□X□□	Reserved	d par	rameter (Do no	t change.	)								
	-		_		,										
	I	n.X□□□	Reserved	ed parameter (Do not change.)											
Pn13D	2	Current Ga	in Level		100 to 2,000	1%	2000	All	Immedi- ately	Tuning	*1				

Continued from previous page.

When Classi- Refer-

Parameter No.  No.  Name  Setting Range Unit  Setting Default Setting Unit  Setting Default Setting Notors  Onto Notors  Applicable Motors  1121h  Model Following Control Selection  No.  No.  Model Following Control Selection  Onto Do not use model following control.  Use model following control.  Vibration Suppression Selection	When Enabled Immedi- ately	Classification Tuning  Referer	Reference –				
n.□□□X    Model Following Control Selection   0   Do not use model following control.   1   Use model following control.		Referer	nce				
n.□□□X  0 Do not use model following control.  1 Use model following control.			nce				
n.□□□X  0 Do not use model following control.  1 Use model following control.			nce				
n.□□□X  0 Do not use model following control.  1 Use model following control.		*1					
		*1					
Vibration Suppression Selection							
		Reference					
0 Do not perform vibration suppression.							
n. DDXD 1 Perform vibration suppression for a specific frequency	y.	*1					
2 Perform vibration suppression for two specific frequen	ncies.	1					
Pn140 Vibration Suppression Adjustment Selection		Referer	nce				
Do not adjust vibration suppression automatically du tion of autotuning without a host reference, autotuni host reference, and custom tuning.	uring execu- ing with a	*1					
	Adjust vibration suppression automatically during execution of autotuning without a host reference, autotuning with a host ref-						
Speed Feedforward (VFF)/Torque Feedforward (TFF) Selection	on	Referer	nce				
n.XDDD Do not use model following control and speed/torque ward together.	ue feedfor-						
1 Use model following control and speed/torque feedf together.	forward	*1					
Pn1412Model Following Control Gain10 to 20,0000.1/s500All	Immedi- ately	Tuning	*1				
Pn142 2 Model Following Control Gain Correction 500 to 2,000 0.1% 1000 All	Immedi- ately	Tuning	*1				
Pn143 2 Model Following Control Bias in the Forward Direction 0 to 10,000 0.1% 1000 All	Immedi- ately	Tuning	*1				
Pn144 2 Model Following Control Bias in the Reverse Direction 0 to 10,000 0.1% 1000 All	Immedi- ately	Tuning	*1				
Pn145 2 Vibration Suppression 1 10 to 2,500 0.1 Hz 500 All	Immedi- ately	Tuning	*1				
Pn146 2 Vibration Suppression 1 10 to 2,500 0.1 Hz 700 All	Immedi- ately	Tuning	*1				
Pn147 2 Model Following Control Speed Feedforward Compensation 0 to 10,000 0.1% 1000 All	Immedi- ately	Tuning	*1				
Pn148 2 Second Model Follow- ing Control Gain 10 to 20,000 0.1/s 500 All	Immedi- ately	Tuning	*1				
Pn149 2 Second Model Following Control Gain Correction 500 to 2,000 0.1% 1000 All	Immedi- ately	Tuning	*1				
Pn14A 2 Vibration Suppression 2 10 to 2,000 0.1 Hz 800 All	Immedi- ately	Tuning	*1				
Pn14B 2 Vibration Suppression 2 10 to 1,000 1% 100 All	Immedi- ately	Tuning	*1				

Applicable

Motors

ΑII

ΑII

Default

Setting

0021h

0010h

Setting

Range

0000h to

0021h

Model Following Control Type Selection

Use tuning-less type 1.

Use tuning-less type 2.

Use tuning-less type 3.

Reserved parameter (Do not change.)

Reserved parameter (Do not change.)

0000h to

0011h

Do not use anti-resonance control.

Use anti-resonance control.

Anti-Resonance Control Adjustment Selection

Anti-Resonance Control Selection

Tuning-less Type Selection

Use model following control type 1.

Use model following control type 2.

Setting

Unit

Parameter

No.

Pn14F

Pn160

Size

2

tions

 $n.\Box\Box\Box X$ 

 $n.\Box\Box X\Box$ 

 $n.\square X \square \square$ 

 $n.X\square\square\square$ 

n.□□□X

Name

Control-Related Selec-

0

2

1

Anti-Resonance Con-

trol-Related Selections

Classi-

fication

Tuning

Reference

\*1

Reference

\*1

Tuning

Reference

Refer-

ence

When

Enabled

After

restart

Immedi-

ately

			*1		
			Refere	ence	
	during execung with a hos				
g ∈ ith	execution of a host refer	-	*1		
	Immedi- ately	Т	uning	*1	
	Immedi- ately	Т	uning	*1	
	Immedi- ately	Т	uning	*1	
	Immedi- ately	Т	uning	*1	
	Immedi- ately	Т	uning	*1	
	Immedi- ately	Т	uning	*1	
	ately Immedi-	Т	uning	*1	

n.□□X□	0	Do not adjust a tion of autotun reference, and	ng witho	ut a l	nost refere					
	1	ically during e utotuning with		-						
n.□X□□	Reserve	d parameter (Do	not cha	nge.	)					
n.X□□□	Reserve	d parameter (Do	not cha	nge.	)					
Anti-Resor	nance Fre-	10 to 20,0	00 0.1	Hz	1000	All	Immedi- ately	Tuning	*1	

Pn161	2	Anti-Resonance Frequency	10 to 20,000	0.1 Hz	1000	All	Immedi- ately	Tuning	*1
Pn162	2	Anti-Resonance Gain Correction	1 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
Pn163	2	Anti-Resonance Damping Gain	0 to 300	1%	0	All	Immedi- ately	Tuning	*1
Pn164	2	Anti-Resonance Filter Time Constant 1 Cor- rection	-1,000 to 1,000	0.01 ms	0	All	Immedi- ately	Tuning	*1
Pn165	2	Anti-Resonance Filter Time Constant 2 Cor- rection	-1,000 to 1,000	0.01 ms	0	All	Immedi- ately	Tuning	*1
Pn166	2	Anti-Resonance Damping Gain 2	0 to 1,000	1%	0	All	Immedi- ately	Tuning	*1

Continued from previous page.

Parameter	(D)			Setting	Setting	Default	Applicable	When	Classi-	Refer-	
No.	Size	N	ame	Range	Unit	Setting	Motors	Enabled	fication	ence	
	2	Tuning-less Related Se		0000h to 2711h	-	1401h	All	-	Setup	*1	
		1			1	1					
			Tuning-less	Selection					Whe Enab		
		n.□□□X		sable tuning-les					Afte		
			1 En	able tuning-less	s function.				resta	111	
			Speed Contr	rol Method					Whe Enab		
Pn170		n.□□X□		e for speed cor					Afte		
11170			1 Us	e for speed control and use host controller for position control.						art ——	
		~ DVDD	Rigidity Leve	el					Whe Enab		
		n.□X□□	0 to 7 Se	t the rigidity lev	el.				Imme atel		
		» VDDD	Tuning-less	g-less Load Level							
		n.X□□□	0 to 2 Se	Set the load level for the tuning-less function.						edi- y	
Pn205	2	Multiturn L	imit	it 0 to 65,535 1 rev 65535 Rotary After restart 5							
	2	Position Co	ontrol Func- ions	0000h to 2210h	_	0010h	All	After restart	Setup	_	
		n.□□□X	□□X Reserved parameter (Do not change.)								
		n.□□X□	Reserved parameter (Do not change.)								
		n.□X□□	Reserved parameter (Do not change.)								
Pn207			/COIN (Posit	ioning Comple	tion Outp	ut) Signal	Output Timin	g	Refe		
			0 sar	tput when the ame or less than dth).							
		n.X□□□	1 or	tput when the a less than the se d the reference	etting of Pr	1522 (Posi	tioning Comp	leted Width)			
			Ou 2 or	tput when the a less than the se d the reference	absolute verting of Pr	alue of the n522 (Posi	position erro	r is the same			
			and	a the releience	input is 0.						
Pn20A	4	Number of Encoder S	External cale Pitches	4 to 1,048,576	1 scale pitch/ revolu- tion	32768	Rotary	After restart	Setup	*1	
Pn20E	4	Electronic (Numerato		1 to 1,073,741,824	1	16	All	After restart	Setup	*1	
Pn210	4	Electronic (Denomina	Gear Ratio	1 to 1,073,741,824	1	1	All	After restart	Setup	*1	
Pn212	4	Number of Output Pul		16 to 1,073,741,824	1 P/Rev	2048	Rotary	After restart	Setup	*1	
								Continuo			

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Parameter No.	Size	Nam	ne	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Fully-closed ( Selections	Control	0000h to 1003h	_	0000h	Rotary	After restart	Setup	*1		
		n.□□□X R	eserved par	ameter (Do no	ot change.	)						
Pn22A		n.□□X□ R	eserved par	ameter (Do no	ot change.	)						
		n.□X□□ R	eserved par	ameter (Do no	ot change.	)						
Pn231		n.XDDD	0 Use	Control Speed motor encode external enco	er speed.		n					
	2	Position Cont sion Function	rol Expan- Selections	0000h to 0001h	-	0000h	All	After restart	Setup	*1		
Pn230	n.□□□X  Backlash Compensation Direction  Compensate forward references.  Compensate reverse references.											
		n.□□X□ Reserved parameter (Do not change.)  n.□X□□ Reserved parameter (Do not change.)  n.X□□□ Reserved parameter (Do not change.)										
	II.AUUU   Reserved parameter (Do not change.)											
Pn231	4	Backlash Cor	mpensation	-500,000 to 500,000	0.1 reference units	0	All	Immedi- ately	Setup	*1		
Pn233	2	Backlash Cor tion Time Cor		0 to 65,535	0.01 ms	0	All	Immedi- ately	Setup	*1		
Pn281	2	Encoder Outp	out Resolu-	1 to 4,096	1 edge/ pitch	20	All	After restart	Setup	*1		
Pn304	2	Jogging Spee	ed	0 to 10,000	Rotary: 1 min <sup>-1</sup> Direct Drive: 0.1 min <sup>-1</sup>	500	Rotary	Immedi- ately	Setup	*1		
Pn305	2	Soft Start Acc Time	celeration	0 to 10,000	1 ms	0	All	Immedi- ately	Setup	*2		
Pn306	2	Soft Start Dec Time	celeration	0 to 10,000	1 ms	0	All	Immedi- ately	Setup	*2		
Pn308	2	Speed Feedb Time Constar		0 to 65,535	0.01 ms	0	All	Immedi- ately	Setup	*1		
Pn30A	2	Deceleration Servo OFF an Stops		0 to 10,000	1 ms	0	All	Immedi- ately	Setup	*1		
Pn30C	2	Speed Feedfo Average Move Time		0 to 5,100	0.1 ms	0	All	Immedi- ately	Setup	*1		

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Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence			
	2	Vibration Detection Selections	0000h to 0002h	1	0000h	All	Immedi- ately	Setup	*1			
	_								_			
		Vibration De	tection Selecti	on								
		<b>n.□□□X</b> 0 Do	not detect vib	ration.								
D : 040		1 Ou	itput a warning	(A.911) if v	vibration is	detected.						
Pn310	2 Output an alarm (A.520) if vibration is detected.											
	n.□□X□ Reserved parameter (Do not change.)											
		n.□X□□ Reserved parameter (Do not change.)										
	1	n.X□□□ Reserved pa	□□□ Reserved parameter (Do not change.)									
	-											
Pn311	2	Vibration Detection Sensitivity	50 to 500	1%	100	All	Immedi- ately	Tuning	*1			
Pn312	2	Vibration Detection Level	0 to 5,000	1 min <sup>-1</sup>	50	Rotary	Immedi- ately	Tuning	*1			
Pn316	2	Maximum Motor Speed	0 to 65,535	1 min <sup>-1</sup>	10000	Rotary	After restart	Setup	*1			
Pn324	2	Moment of Inertia Cal- culation Starting Level	0 to 20,000	1%	300	All	Immedi- ately	Setup	*1			
Pn401	2	First Stage First Torque Reference Filter Time Constant	0 to 65,535	0.01 ms	100	All	Immedi- ately	Tuning	*1			
Pn402	2	Forward Torque Limit	0 to 800	1%*3	800	Rotary	Immedi- ately	Setup	*1			
Pn403	2	Reverse Torque Limit	0 to 800	1%*3	800	Rotary	Immedi- ately	Setup	*1			
Pn404	2	Forward External Torque Limit	0 to 800	1%*3	100	All	Immedi- ately	Setup	*1			
Pn405	2	Reverse External Torque Limit	0 to 800	1%*3	100	All	Immedi- ately	Setup	*1			
Pn406	2	Emergency Stop Torque	0 to 800	1%*3	800	All	Immedi- ately	Setup	*1			
Pn407	2	Speed Limit during Torque Control	0 to 10,000	1 min <sup>-1</sup>	10000	Rotary	Immedi- ately	Setup	*1			

Applicable

Motors

All

Default

Setting

0000h

Classi-

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Setup

Refer-

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When

Enabled

i	Iter Selection 1	When Enabled	Reference
	Disable first stage notch filter.	Immedi-	*1
	Enable first stage notch filter.	ately	- 1
i	mit Selection	When Enabled	Reference
	Use the smaller of the maximum motor speed and the setting of Pn407 as the speed limit.		
	Use the smaller of the maximum motor speed and the setting of Pn480 as the speed limit.	After	*1

Size

2

n. 🗆 🗆 🗆 X

Name

0

1

0

Torque-Related Function Selections

Parameter

No.

n.□□X□	0	Use the smaller of the maximum motor speed and the setting of Pn480 as the speed limit.	After	*1	
	1	Use the smaller of the overspeed alarm detection speed and the setting of Pn407 as the speed limit.	restart	1	
	ı	Use the smaller of the overspeed alarm detection speed and the setting of Pn480 as the speed limit.			
	Notch Fi	Iter Selection 2	When Enabled	Reference	
n.□X□□	0	Disable second stage notch filter.	Immedi-	*1	
	1	Enable second stage notch filter.	ately	1	
	Friction	Compensation Function Selection	When Enabled	Reference	
n.X□□□	0	Disable friction compensation.	Immedi-	*1	
	1	Enable friction compensation.	ately	1	

Setting

Unit

Setting

Range

0000h to

1111h

Notch Filter Selection 1

Speed Limit Selection

Pn409	2	First Stage Notch Filter Frequency	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn40A	2	First Stage Notch Filter Q Value	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1
Pn40B	2	First Stage Notch Filter Depth	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1
Pn40C	2	Second Stage Notch Filter Frequency	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn40D	2	Second Stage Notch Filter Q Value	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1
Pn40E	2	Second Stage Notch Filter Depth	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1
Pn40F	2	Second Stage Second Torque Reference Filter Frequency	100 to 5,000	1 Hz	4000	All	Immedi- ately	Tuning	*1
Pn410	2	Second Stage Second Torque Reference Filter Q Value	50 to 100	0.01	50	All	Immedi- ately	Tuning	*1
Pn412	2	First Stage Second Torque Reference Filter Time Constant	0 to 65,535	0.01 ms	100	All	Immedi- ately	Tuning	*1

								Continued from previous page				
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Torque-Rel	lated Func- ions 2	0000h to 1111h	_	0000h	All	Immedi- ately	Setup	*1		
									•			
	l		Notch Filter	Selection 3								
		n.□□□X	0 Dis	able third stage	e notch filt	er.				_		
			1 Ena	able third stage	notch filte	er.						
	Ī		Notch Filter	Selection 4								
Pn416		n.□□X□	+	able fourth stag								
			1 Enable fourth stage notch filter.									
			Notch Filter Selection 5									
		n.□X□□	Disable fifth stage notch filter.      Enable fifth stage notch filter.									
		n.X□□□	Reserved pa	rameter (Do no	ot change	.)						
						T	T					
Pn417	2	Third Stage Frequency	e Notch Filter	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1		
Pn418	2	Third Stage Q Value	e Notch Filter	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1		
Pn419	2	Depth	e Notch Filter	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1		
Pn41A	2	ter Frequer		50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1		
Pn41B	2	ter Q Value		50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1		
Pn41C	2	ter Depth	ge Notch Fil-	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1		
Pn41D	2	Fifth Stage Frequency	Notch Filter	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1		
Pn41E	2	Fifth Stage Q Value	Notch Filter	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1		
Pn41F	2	Fifth Stage Depth	Notch Filter	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1		
	2	Speed Rip sation Sele	ple Compen- ections	0000h to 1111h	-	0000h	Rotary	_	Setup	*1		
	ı		0	. 0		. 0.1			Whe	en		
		n.□□□X		e Compensatio			in		Enab	led		
				able speed rippable speed ripp					Imme atel			
					·					_		
Pn423			Speed Ripple tion Selection	e Compensation n	on Informa	ation Disag	reement Wa	rning Detec-	- Whe			
111420		n.□□X□	0 Det	tect A.942 alarr	ms.				Afte			
			1 Do	not detect A.9	42 alarms				resta	art ——		
	Ī		Speed Ripple	e Compensatio	on Enable	Condition	Selection		Whe Enab			
		n.□X□□	0 Spe	eed reference					Afte			
	ļ		1 Mo	tor speed					resta	ırt ——		
		n.X□□□	Reserved pa	rameter (Do no	ot change	.)						
Pn424	2	Torque Lim cuit Voltage	nit at Main Cir- e Drop	0 to 100	1%*3	50	All	Immedi- ately	Setup	*1		
	_		· · · · · · · · · · · · · · · · · · ·				· · · · · · · · · · · · · · · · · · ·	O 11	d on nov			

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Setting Setting Default Applicable When Classi- Refer-

Parameter												
No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
Pn425	2	Release Til Limit at Ma Voltage Dr		0 to 1,000	1 ms	100	All	Immedi- ately	Setup	*1		
Pn426	2	Torque Fee Average M Time		0 to 5,100	0.1 ms	0	All	Immedi- ately	Setup	*1		
Pn427	2	Speed Rip sation Ena	ple Compen- ble Speed	0 to 10,000	1 min <sup>-1</sup>	0	Rotary Ser- vomotor	Immedi- ately	Tuning	*1		
Pn456	2	Sweep Tor ence Ampl		1 to 800	1%	15	All	Immedi- ately	Tuning	*1		
	2	Notch Filte Selections	r Adjustment 1	0000h to 0101h	-	0101h	All	Immedi- ately	Tuning	*1		
		!		•								
	Ιī		Notch Filter	Adjustment Se	lection 1							
		n.□□□X	Do	not adjust the ing without a h	first stage							
			1 Adj	ust the first sta hout a host refe	ge notch ference, aut	ilter autom totuning w	natically during ith a host refe	g execution or rence, and c	of autotun custom tur	ng ing.		
Pn460		n.□□X□	Reserved pa	rameter (Do no	t change.	)						
			Notch Filter	Adjustment Se	lection 2							
		n.□X□□	0 fun	Do not adjust the second stage notch filter automatically when the tuning-less								
			1 tion	ust the second is enabled or otuning with a	during exe	ecution of a	autotuning wit	thout a host		nc-		
	-	V		. (5		`						
	4	n.X□□□	Reserved pa	rameter (Do no	t cnange.	)						
							I	1				
	2	Gravity Co Related Se	mpensation- elections	0000h to 0001h	-	0000h	All	After restart	Setup	*1		
	2				_	0000h	All		Setup	*1		
			elections		- tion	0000h	All		Setup	*1		
		Related Se	Gravity Comp  0 Dis	0001h  pensation Selection able gravity contacts	mpensatio	n.	All		Setup	*1		
Pn475		Related Se	Gravity Comp  0 Dis	0001h  pensation Selec	mpensatio	n.	All		Setup	*1		
Pn475		Related Se	Gravity Comp 0 Dis 1 Ena	0001h  pensation Selection able gravity contacts	mpensatio npensation	n.	All		Setup	*1		
Pn475		Related Se	Gravity Comp 0 Dis 1 Ena	oensation Selection able gravity contable gravity g	mpensation npensation change.)	n.	All		Setup	*1		
Pn475		Related Se	Gravity Comp  0 Dis  1 Ena  Reserved par	ooo1h  consation Select able gravity contable gravity gravity contable gravity	mpensation npensation change.) change.)	n.	All		Setup	*1		
Pn475		n.DDX	Gravity Comp  0 Dis  1 Ena  Reserved par	ooo1h  consation Select able gravity contable gravity contable gravity contable gravity contameter (Do not	mpensation npensation change.) change.)	n.	All		Setup	*1		
		n.□□X  n.□□X  n.□□X  Gravity Co Torque	Gravity Comp  0 Dis 1 Ena  Reserved par  Reserved par	ooo1h  consation Select able gravity contable gravity contable gravity contable gravity contameter (Do not ameter (Do not ameter (Do not ameter (Do not -1,000 to	mpensation npensation change.) change.)	n. n.		restart				
Pn476	2	Related Se	Gravity Comp  0 Dis 1 Ena Reserved par Reserved par Reserved par mpensation etection Level	ooo1h  Densation Select able gravity contable gravity con	change.)  change.)  change.)	n. n.	All	Immedi- ately Immedi-	Tuning	*1		
Pn476 Pn502	2 2	Related Se	Gravity Comp  0 Dis 1 Ena Reserved par Reserved par Reserved par mpensation etection Level ncidence Signal Output	ooonh  consation Select able gravity contable gravity con	change.)  change.)  change.)  1 min <sup>-1</sup>	n. n. 0 20	All	Immediately Immediately Immediately	Tuning	*1		
Pn476 Pn502 Pn503	2 2 2	Related Se	Gravity Comp  0 Dis 1 Ena Reserved par Reserved par Reserved par mpensation etection Level ncidence Signal Output erence-Servo Time erence Out-	on on one of the control of the cont	change.)  0.1%  1 min <sup>-1</sup>	0 20 10	All Rotary Rotary	Immediately Immediately Immediately Immediately Immediately	Tuning Setup Setup	*1		
Pn476 Pn502 Pn503 Pn506	2 2 2	Related Se	Gravity Comp  0 Dis 1 Ena Reserved par Reserved par Reserved par mpensation etection Level ncidence Signal Output erence-Servo Time erence Out- Level -Brake Com-	onouth  pensation Select able gravity contable gravity co	change.)  change.)  change.)  1 min <sup>-1</sup> 1 min <sup>-1</sup>	0 20 10	All Rotary Rotary All	Immediately Immediately Immediately Immediately Immediately Immediately	Tuning Setup Setup Setup	*1 *1 *1		

Continued from previous page.

Parameter No.	Size	N	lame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Input Sign	al Sele	ctions	0000h to FFF2h	-	1881h	All	After restart	Setup	_
		n.□□□X	Booo	niod por	rameter (Do no	at abanga	\				
		п.шшх	Rese	rveu par	ameter (Do no	ot change.	.)				
		n.□□X□	Rese	rved par	ameter (Do no	ot change.	.)				
		n.□X□□	Rese	rved par	ameter (Do no	ot change.	)				
			P-OT	(Forwa	rd Drive Prohib	oit) Signal	Allocation	1		Refere	ence
			0	Enable	forward drive	when CN1	-13 input	signal is ON (	closed).		
			1	1 Enable forward drive when CN1-7 input signal is ON (closed).							
			2	Enable	forward drive	when CN1	-8 input si	ignal is ON (cl	osed).		
			3	Enable	forward drive	when CN1	-9 input si	ignal is ON (cl	osed).		
Pn50A			4	Enable forward drive when CN1-10 input signal is ON (closed).							
			5	5 Enable forward drive when CN1-11 input signal is ON (closed).							
			6	6 Enable forward drive when CN1-12 input signal is ON (closed).							
		n.X□□□	7	Set the	signal to alwa	ys prohibi	t forward c	drive.		*1	
			8	Set the	signal to alwa	ys enable	forward di	rive.		- 1	
			9	Enable	forward drive	when CN1	-13 input	signal is OFF	(open).		
			Α	Enable	forward drive	when CN1	-7 input si	ignal is OFF (d	ppen).		
			В	Enable	forward drive	when CN1	-8 input si	gnal is OFF (c	ppen).		
			С	Enable	forward drive	when CN1	-9 input si	gnal is OFF (c	ppen).		
	D Enable forward drive when CN1-10 input signal is OFF (open).										
	E Enable forward drive when CN1-11 input signal is OFF (open).										
			F	Enable	forward drive	when CN1	-12 input	signal is OFF	(open).		

Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Input Signal Selections 2	0000h to FFFFh	_	8882h	All	After restart	Setup	_

	N-OT (F	Reverse Drive Prohibit) Signal Allocation	Reference
	0	Enable reverse drive when CN1-13 input signal is ON (closed).	
	1	Enable reverse drive when CN1-7 input signal is ON (closed).	
	2	Enable reverse drive when CN1-8 input signal is ON (closed).	
	3	Enable reverse drive when CN1-9 input signal is ON (closed).	
	4	Enable reverse drive when CN1-10 input signal is ON (closed).	
	5	Enable reverse drive when CN1-11 input signal is ON (closed).	
	6	Enable reverse drive when CN1-12 input signal is ON (closed).	
n.□□□X	7	Set the signal to always prohibit reverse drive.	
	8	Set the signal to always enable reverse drive.	*1
	9	Enable reverse drive when CN1-13 input signal is OFF (open).	
	А	Enable reverse drive when CN1-7 input signal is OFF (open).	
	В	Enable reverse drive when CN1-8 input signal is OFF (open).	
	С	Enable reverse drive when CN1-9 input signal is OFF (open).	
	D	Enable reverse drive when CN1-10 input signal is OFF (open).	
	E	Enable reverse drive when CN1-11 input signal is OFF (open).	
	F	Enable reverse drive when CN1-12 input signal is OFF (open).	
n.□□X□	Reserve	ed parameter (Do not change.)	
	/P-CL (F	Forward External Torque Limit Input) Signal Allocation	Reference
	0	Active when CN1-13 input signal is ON (closed).	
	1	Active when CN1-7 input signal is ON (closed).	
	1 2	Active when CN1-7 input signal is ON (closed).  Active when CN1-8 input signal is ON (closed).	
	2	Active when CN1-8 input signal is ON (closed).	
	2	Active when CN1-8 input signal is ON (closed).  Active when CN1-9 input signal is ON (closed).	
	2 3 4	Active when CN1-8 input signal is ON (closed).  Active when CN1-9 input signal is ON (closed).  Active when CN1-10 input signal is ON (closed).	
n.0X00	2 3 4 5	Active when CN1-8 input signal is ON (closed).  Active when CN1-9 input signal is ON (closed).  Active when CN1-10 input signal is ON (closed).  Active when CN1-11 input signal is ON (closed).	
n. 🗆 X 🗆 🗆	2 3 4 5 6	Active when CN1-8 input signal is ON (closed).  Active when CN1-9 input signal is ON (closed).  Active when CN1-10 input signal is ON (closed).  Active when CN1-11 input signal is ON (closed).  Active when CN1-12 input signal is ON (closed).	*1
n. 🗆 X 🗆 🗅	2 3 4 5 6 7	Active when CN1-8 input signal is ON (closed).  Active when CN1-9 input signal is ON (closed).  Active when CN1-10 input signal is ON (closed).  Active when CN1-11 input signal is ON (closed).  Active when CN1-12 input signal is ON (closed).  The signal is always active.	*1
n.□X□□	2 3 4 5 6 7 8	Active when CN1-8 input signal is ON (closed).  Active when CN1-9 input signal is ON (closed).  Active when CN1-10 input signal is ON (closed).  Active when CN1-11 input signal is ON (closed).  Active when CN1-12 input signal is ON (closed).  The signal is always active.  The signal is always inactive.	*1
n.□Х□□	2 3 4 5 6 7 8 9	Active when CN1-8 input signal is ON (closed).  Active when CN1-9 input signal is ON (closed).  Active when CN1-10 input signal is ON (closed).  Active when CN1-11 input signal is ON (closed).  Active when CN1-12 input signal is ON (closed).  The signal is always active.  The signal is always inactive.  Active when CN1-13 input signal is OFF (open).	*1
n. 🗆 X 🗆 🗆	2 3 4 5 6 7 8 9 A	Active when CN1-8 input signal is ON (closed).  Active when CN1-9 input signal is ON (closed).  Active when CN1-10 input signal is ON (closed).  Active when CN1-11 input signal is ON (closed).  Active when CN1-12 input signal is ON (closed).  The signal is always active.  The signal is always inactive.  Active when CN1-13 input signal is OFF (open).  Active when CN1-7 input signal is OFF (open).	*1
n. 🗆 X 🗆 🗆	2 3 4 5 6 7 8 9 A B	Active when CN1-8 input signal is ON (closed).  Active when CN1-9 input signal is ON (closed).  Active when CN1-10 input signal is ON (closed).  Active when CN1-11 input signal is ON (closed).  Active when CN1-12 input signal is ON (closed).  The signal is always active.  The signal is always inactive.  Active when CN1-13 input signal is OFF (open).  Active when CN1-7 input signal is OFF (open).	*1
n.□X□□	2 3 4 5 6 7 8 9 A B	Active when CN1-8 input signal is ON (closed).  Active when CN1-9 input signal is ON (closed).  Active when CN1-10 input signal is ON (closed).  Active when CN1-11 input signal is ON (closed).  Active when CN1-12 input signal is ON (closed).  The signal is always active.  The signal is always inactive.  Active when CN1-13 input signal is OFF (open).  Active when CN1-7 input signal is OFF (open).  Active when CN1-8 input signal is OFF (open).  Active when CN1-9 input signal is OFF (open).	*1
n.□X□□	2 3 4 5 6 7 8 9 A B C	Active when CN1-8 input signal is ON (closed).  Active when CN1-9 input signal is ON (closed).  Active when CN1-10 input signal is ON (closed).  Active when CN1-11 input signal is ON (closed).  Active when CN1-12 input signal is ON (closed).  The signal is always active.  The signal is always inactive.  Active when CN1-13 input signal is OFF (open).  Active when CN1-7 input signal is OFF (open).  Active when CN1-8 input signal is OFF (open).  Active when CN1-9 input signal is OFF (open).  Active when CN1-10 input signal is OFF (open).	*1
n.□X□□	2 3 4 5 6 7 8 9 A B C D	Active when CN1-8 input signal is ON (closed).  Active when CN1-9 input signal is ON (closed).  Active when CN1-10 input signal is ON (closed).  Active when CN1-11 input signal is ON (closed).  Active when CN1-12 input signal is ON (closed).  The signal is always active.  The signal is always inactive.  Active when CN1-13 input signal is OFF (open).  Active when CN1-7 input signal is OFF (open).  Active when CN1-8 input signal is OFF (open).  Active when CN1-9 input signal is OFF (open).  Active when CN1-10 input signal is OFF (open).  Active when CN1-11 input signal is OFF (open).	*1 Reference

Continued from previous page.

Parameter	a)			Setting	Setting	Default	Applicable	When	Classi-	Refer-
No.	Size	N	ame	Range	Unit	Setting	Motors	Enabled	fication	ence
	2	Output Sig tions 1	ınal Selec-	0000h to 6666h	-	0000h	All	After restart	Setup	_
			/COIN (Posit	ioning Comple	tion Outp	ut) Signal	Allocation		Refere	ence
				abled (the above						
		n.□□□X		tput the signal			•			
				tput the signal			· · · · · · · · · · · · · · · · · · ·		*1	
				tput the signal			CN1-26 outpu	ut terminal.		
			4 to 6 Re	served setting (	Do not us	e.)				
Pn50E			/V-CMP (Spe	ed Coincidend	e Detecti	on Output	) Signal Alloc	ation	Refere	ence
		n.□□X□		The allocations are the same as the /COIN (Positioning Completion) signal allocations.						
			/TGON (Rota	ation Detection	Output) S	Signal Allo	cation		Refere	ence
		n.□X□□		e allocations are n) signal allocat		e as the /C	OIN (Position	ing Comple-	*1	
			/S-RDY (Ser	vo Ready) Sigr	al Allocat	ion			Refere	ence
		n.X□□□	O to 6 The	The allocations are the same as the /COIN (Positioning Completion) signal allocations.						
	2	Output Sig	ınal Selec-	0000h to 6666h	-	0100h	All	After restart	Setup	-
				1						
			/CLT (Torque	Limit Detection	n Output)	Signal All	ocation		Refere	ence
			0 Dis	abled (the abo	ve signal c	utput is no	ot used).			
		n.□□□X	1 Ou	tput the signal	from the C	N1-1 or C	N1-2 output	terminal.		
				tput the signal					*1	
				tput the signal			CN1-26 outp	ut terminal.		
			4 to 6 Re	served setting (	Do not us	e.)				
Pn50F			/VLT (Speed	Limit Detection	n) Signal A	Allocation			Refere	nce
		n.□□X□		e allocations are tput) signal allo		e as the /C	CLT (Torque Li	mit Detectior	*1	
			/BK (Brake C	Output) Signal /	Allocation				Refere	ence
		n.□X□□	O to 6	e allocations are tput) signal allo	e the same	e as the /C	CLT (Torque Li	mit Detection		
			<b>.</b>	ning Output) S		cation			Refere	ence
		n.X□□□		e allocations are tput) signal allo		e as the /C				
			-						•	

Default Applicable

Classi- Refer-

When

Parameter No.	Size	N	ame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Output Sig tions 3	nal Selec-		0000h to 0666h	_	0000h	All	After restart	Setup	ı
			/NEAR (N	Vear	Output) Signa	I Allocatio	n			Refere	ence
			0	Disa	abled (the abov	ve signal o	utput is no	ot used).			
		- DDDV	1	Out	put the signal	from the C	N1-1 or C	N1-2 output t	erminal.		
	'	n.□□□X	2	Out	put the signal	from the C	N1-23 or (	CN1-24 outpu	ut terminal.	*1	
Pn510			3	Out	put the signal	from the C	N1-25 or (	CN1-26 outpu	ut terminal.		
			4 to 6	Res	served setting (	Do not us	e.)				
	ı	n.□□X□	Reserved	d par	rameter (Do no	ot change.	)				
	ı	n.0X00	Reserved	d par	rameter (Do no	t change.	)				
	ı	n.X000	Reserved	d par	rameter (Do no	t change.	)				

Setting

Setting

Parameter

ize

Continued from previous page.

Parameter No.	Size	N	ame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Input Signa	al Selection	าร	0000h to FFFFh	_	6543h	All	After restart	Setup	*1	
		] 3			111111				Testart			
	_											
			,		Return Decele		•		ation			
			0		ve when CN1-	•						
			1		ve when CN1-			· · · · · · · · · · · · · · · · · · ·				
			2		ve when CN1-			,				
			3		ve when CN1-			,				
			4		ve when CN1-	•						
			5		ve when CN1-			, ,				
			6		ve when CN1-		signal is ON	N (closed).				
		n.□□□X	7		signal is alway							
			8		signal is alway	·		/				
			9		ve when CN1-	•						
			A		ve when CN1-							
			В	Active when CN1-8 input signal is OFF (open).								
	C Active when CN1-9 input signal is OFF (open).											
_			D -									
Pn511			E	Active when CN1-11 input signal is OFF (open).								
			F	Acti	ve when CN1-	12 input s	ignal is OF	-F (open).				
			/EXT1 (E	xterr	al Latch Input	t 1) Signal	Allocation	า				
			0 to 3	The	signal is alway	s inactive						
			4	Acti	ve when CN1-	10 input s	ignal is ON	V (closed).				
			5	Acti	ve when CN1-	11 input s	ignal is ON	V (closed).				
		n.□□X□	6	Acti	ve when CN1-	12 input s	ignal is ON	V (closed).				
			D	Acti	ve when CN1-	10 input s	ignal is OF	F (open).				
			Е	Acti	ve when CN1-	11 input s	ignal is OF	F (open).				
			F	Acti	ve when CN1-	12 input s	ignal is OF	F (open).				
			7 to C	The	signal is alway	s inactive						
			/EXT2 (E	xterr	al Latch Input	2) Signal	Allocation	า				
		n.□X□□	0 to F		allocations are	e the same	e as the /E	XT1 (External	Latch Input	1) signal a	allo-	
			/EXT3 (E	xterr	al Latch Input	3) Signal	Allocation	า				
		n.X□□□	0 to F		allocations are	e the same	e as the /E	XT1 (External	Latch Input	1) signal a	allo-	

### Continued from previous page.

Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Output Sig Settings	gnal Inverse	0000h to 1111h	_	0000h	All	After restart	Setup	*1		
				al Inversion for		nd CN1-2	Terminals					
		n.□□□X		e signal is not i								
			1 Th	e signal is inver	ted.							
			Output Sign	al Inversion for	CN1-23 a	and CN1-2	24 Terminals					
Pn512		n.□□X□	0 Th	e signal is not i	nverted.					<del></del>		
			1 Th	e signal is inver	ted.							
		Output Signal Inversion for CN1-25 and CN1-26 Terminals										
	n.□X□□ 0 The signal is not inverted.											
			1 Th	e signal is inver	ted.							
		n.XDDD	Reserved na	rameter (Do no	ot change	)						
		,	110001100 pc	aniotor (Bo III	or oriange.	.,						
		1		T		T						
	2	Output Sig tions 4	gnal Selec-	0000h to 0666h	-	0000h	All	After restart	Setup	_		
		n.□□□X	Reserved pa	rameter (Do no	ot change.	.)						
		n.□□X□	Reserved na	rameter (Do no	ot change	)						
			-	`		,						
Pn514			` `	tative Mainten	•	, ,			Refere	ence		
P11514				sabled (the abo								
		n.□X□□		tput the signal					*1			
				tput the signal			•		*1			
				served setting			ON 1-20 Outpi	ut terriiriai.				
		n.X□□□	Reserved pa	rameter (Do no	ot change	.)						

Continued from previous page.

Setting Setting Default Applicable When Classi- Refer-

-	Continued from									
Parameter No.	Size		Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Input Sign 7	nal Selections	0000h to FFFFh	-	8888h	All	After restart	Setup	-
				,			,	,		
			FSTP (Force	ed Stop Input) Si	gnal Alloc	ation			Refere	ence
			0 E	nable drive wher	n CN1-13	input signa	al is ON (close	ed).		
			1 E	nable drive wher	n CN1-7 ir	nput signal	is ON (closed	d).		
			2 E	Enable drive wher	n CN1-8 ir	nput signal	is ON (closed	d).		
			-	nable drive wher			•			
				nable drive wher						
			-	nable drive wher			•	,		
			-	Enable drive wher			•			
	n	.000X	/	Set the signal to a to the signal to a set to be signal to a	always pro	mbit arive	(always force	the motor to		
Pn516				Set the signal to a notor to stop).	always ena	able drive (	always disabl	e forcing the	*1	
			9 E	Enable drive wher	n CN1-13	input signa	al is OFF (ope	n).		
			A E	nable drive wher	CN1-7 ir	nput signal	is OFF (open	).		
				nable drive wher			· · ·	,		
				nable drive wher			· · ·	,		
				nable drive wher		· ·				
				Enable drive when CN1-11 input signal is OFF (open).  Enable drive when CN1-12 input signal is OFF (open).						
							ai is OFF (Ope	:11).		
	n	.00X0		arameter (Do not						
	n	.0X00	Reserved pa	arameter (Do not	change.)					
	n	.X000	Reserved pa	arameter (Do not	change.)					
			•							
Pn518*4	_	Safety Mo Paramete	odule-Related rs	_	_	-	All	-	-	_
Pn51B	4	Motor-Loa Deviation Detection		0 to 1,073,741,824	1 refer- ence unit	1000	Rotary	Immedi- ately	Setup	*1
Pn51E	2	Position D	Deviation Over	- 10 to 100	1%	100	All	Immedi- ately	Setup	*1
Pn520	4		Deviation Over	1 to 1,073,741,823	1 refer- ence unit	524288 0	All	Immedi- ately	Setup	*1
Pn522	4	Positionin Width	g Completed	0 to 1,073,741,824	1 refer- ence unit	7	All	Immedi- ately	Setup	*1
Pn524	4	Near Sign	nal Width	1 to 1,073,741,824	1 refer- ence unit	107374 1824	All	Immedi- ately	Setup	*1
Pn526	4	Position D flow Alarn Servo ON		1 to 1,073,741,823	1 refer- ence unit	524288 0	All	Immedi- ately	Setup	*1
Pn528	2	flow Warn	Position Deviation Over- flow Warning Level at Servo ON		1%	100	All	Immedi- ately	Setup	*1
Pn529	2	Speed Lin Servo ON	mit Level at	0 to 10,000	1 min <sup>-1</sup>	10000	Rotary	Immedi- ately	Setup	*1
Pn52A	2	Multiplier closed Ro	per Fully- otation	0 to 100	1%	20	Rotary	Immedi- ately	Tuning	*1
Pn52B	2	Overload	Overload Warning Level		1%	20	All	Immedi- ately	Setup	*1
	-	1		1	1	1	1	Continue	d on nex	t page.

Applicable

Classi- Refer-

When

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No.	Siz	N	ame	Range	Unit	Setting	Motors	Enabled	fication	ence	
Pn52C	2	Base Curre at Motor O Detection		10 to 100	1%	100	All	After restart	Setup	*1	
	2	Program Jo Related Se		0000h to 0005h	-	0000h	All	Immedi- ately	Setup	*1	
	_										
			Program .	Jogging Operation	n Pattern						
				(Waiting time in P movements in Pr		orward by	travel distance	e in Pn531) >	< Number	of	
				(Waiting time in Pn535 $\rightarrow$ Reverse by travel distance in Pn531) $\times$ Number of movements in Pn536							
			2	(Waiting time in P movements in Pr (Waiting time in P movements in Pr	1536 1n535 → R	•		•			
Pn530	'	n.□□□X	3	(Waiting time in P movements in Pr (Waiting time in P movements in Pr	1536 2n535 → Fo	•		•			
			4	(Waiting time in P in Pn535 → Reve Pn536							
			5	(Waiting time in Pn535 → Reverse by travel distance in Pn531 → Waiting time							

Setting

Default

Setting

Reserved parameter (Do not change.)

Reserved parameter (Do not change.)

Reserved parameter (Do not change.)

Name

 $n.\Box\Box X\Box$ 

n.□X□□

 $n.X\square\square\square$ 

Parameter

Pn531	4	Program Jogging Travel Distance	1 to 1,073,741,824	1 refer- ence unit	32768	All	Immedi- ately	Setup	*1
Pn533	2	Program Jogging Move- ment Speed	1 to 10,000	Rotary: 1 min <sup>-1</sup> Direct Drive: 0.1 min <sup>-1</sup>	500	Rotary	Immedi- ately	Setup	*1
Pn534	2	Program Jogging Acceleration/Deceleration Time	2 to 10,000	1 ms	100	All	Immedi- ately	Setup	*1
Pn535	2	Program Jogging Wait- ing Time	0 to 10,000	1 ms	100	All	Immedi- ately	Setup	*1
Pn536	2	Program Jogging Number of Movements	0 to 1,000	Times	1	All	Immedi- ately	Setup	*1
Pn550	2	Analog Monitor 1 Offset Voltage	-10,000 to 10,000	0.1 V	0	All	Immedi- ately	Setup	*1
Pn551	2	Analog Monitor 2 Offset Voltage	-10,000 to 10,000	0.1 V	0	All	Immedi- ately	Setup	*1
Pn552	2	Analog Monitor 1 Mag- nification	-10,000 to 10,000	× 0.01	100	All	Immedi- ately	Setup	*1
Pn553	2	Analog Monitor 2 Mag- nification	-10,000 to 10,000	× 0.01	100	All	Immedi- ately	Setup	*1
Pn55A	2	Power Consumption Monitor Unit Time	1 to 1,440	1 min	1	All	Immedi- ately	Setup	_
Pn560	2	Residual Vibration Detection Width	1 to 3,000	0.1%	400	All	Immedi- ately	Setup	*1
Pn561	2	Overshoot Detection Level	0 to 100	1%	100	All	Immedi- ately	Setup	*1
Pn600	2	Regenerative Resistor Capacity*5	Depends on model.*6	10 W	0	All	Immedi- ately	Setup	*1

Continued from previous page.

Parameter No.	Size	N	ame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
Pn601	2	Dynamic E tor Allowak Consumpt	ole Energy		0 to 65,535	10 J	0	All	After restart	Setup	*7		
Pn603	2	Regenerati tance	ive Resis-		0 to 65,535	10 mΩ	0	All	Immedi- ately	Setup	*1		
Pn604	2	Dynamic B tance			0 to 65,535	10 mΩ	0	All	After restart	Setup	*7		
	2	Overheat F Selections	Overheat Protection Selections		0000h to 0003h	_	0000h	Linear	After restart	Setup	*1		
	ľ	0 D			tection Selectic								
			1		·			e Yaskawa Linear Servomotor.*8					
Pn61A			2	Мо	nitor a negative overheat prote	voltage ir				nachine ar	nd		
1 110 171			3		nitor a positive overheat prote		put from a	sensor attacl	ned to the m	achine an	d		
	ı	n.00X0	Reserved	par	ameter (Do not	change.)							
	1	n.□X□□	Reserved	par	ameter (Do not	change.)							
	ı	n.XDDD	Reserved	par	ameter (Do not	change.)							
	_												
Pn61B	2	Overheat A	Alarm Leve	I	0 to 500	0.01 V	250	All	Immedi- ately	Setup	*1		
Pn61C	2	Overheat V	Warning Le	vel	0 to 100	1%	100	All	Immedi- ately	Setup	*1		
Pn61D *9	2	Overheat A Time	verheat Alarm Filter ime		0 to 65,535	1 s	0	All	Immedi- ately	Setup	*1		
Pn621 to Pn628*4	-		Safety Module-Related Parameters		_	_	-	All	-	_	_		

Parameter Lists		
Parameter L	U.	
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Parameter No.	Size	N	Name		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Communic	cations C	on-	0000h to 1FF3h	-	1040h	All	Immedi- ately	Setup	_	
			MECHA	ATROL	INK Commun	ications C	heck Mas	k for Debugg	ing			
			0		ot mask.				<u> </u>		_	
		~ □□□V	1	Ignor	e MECHATRO	LINK com	nunication	s errors (A.E6	60).		=	
		n.□□□X	2	Ignor	e WDT errors (	A.E50).					=	
			3	_	e both MECHA s (A.E50).	ATROLINK	communic	cations errors	(A.E60) and	WDT	_	
			Warning 0	~	ck Masks ot mask.							
			1		e data setting	warnings (	Δ 94Π)				=	
			2		e command w						=	
			3		e both A.94	<u> </u>					_	
			4		e communicat						_	
			5		e both A.94		• •				_	
Pn800			6		e both A.95						=	
		n.□□X□	7		e A.94 <b>□</b> , A.95						_	
		11.00/0									_	
			8 Ignore data setting warnings (A.97A and A.97b). 9 Ignore A.94 , A.97A, and A.97b warnings.									
				A Ignore A.95□, A.97A, and A.97b warnings.								
			В		e A.94 <b>□</b> , A.95						_	
			С		e A.94 <b>□</b> , A.93 e A.96 <b>□</b> , A.97						_	
			D		e A.94 <b>□</b> , A.96						_	
			E		e A.95 <b>□</b> , A.96						_	
			F		e A.94 <b>□</b> , A.95				ninge		_	
	n.□X□□ Reserved parameter (Do not change.)										Ī	
		Automatic Warning Clear Selection for Debugging										
		n.X□□□	0									
			1	Automatically clear warnings (MECHATROLINK-III specification).							_	
			-		,,			'	,		_	
	2	Application Selections Limits)	n Functio 6 (Softw	n are	0000h to 0103h	_	0003h	All	Immedi- ately	Setup	*1	
			-		it Selection		<u> </u>				l	
			0		le both forward			re limits.			_	
		n.□□□X	1		le forward sof						_	
Pn801			2		ole reverse soft			12 - 24			_	
FIIOUI			3	Disab	le both forwar	d and reve	erse softwa	are limits.			=	
		$n.\Box\Box X\Box$	Reserve	ed par	rameter (Do no	ot change.	)					
			Softwar	ro Lim	it Check for R	oforonoos					1	
		n ПУПП	-					roforonoon				
		n.□X□□ 0 Do not perform software limit checks for references.  1 Perform software limit checks for references.								=		
			_ '	1 6110	IIII SUILWAIE III	IIII GIIEGKS	101 1616161				_ _	
	n.X□□□ Reserved parameter (Do not change.)											
Pn803	2	Origin Ran	ge		0 to 250	1 refer- ence unit	10	All	Immedi- ately	Setup	*2	
	<u> </u>					J			Continue	<u> </u>		

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Parameter	Φ		Setting	Setting	Default	Applicable	Continued from When	Classi-	Refer-
No.	Size	Name	Range	Unit	Setting	Motors	Enabled	fication	ence
Pn804	4	Forward Software Limit	-1,073,741,823 to 1,073,741,823	1 refer- ence unit	107374 1823	All	Immedi- ately	Setup	*1
Pn806	4	Reverse Software Limit	-1,073,741,823 to 1,073,741,823	1 refer- ence unit	-10737 41823	All	Immedi- ately	Setup	*1
Pn808	4	Absolute Encoder Origin Offset	-1,073,741,823 to 1,073,741,823	1 refer- ence unit	0	All	Immedi- ately *10	Setup	*1
Pn80A	2	First Stage Linear Acceleration Constant	1 to 65,535	10,000 refer- ence units/s <sup>2</sup>	100	All	Immedi- ately *11	Setup	*2
Pn80B	2	Second Stage Linear Acceleration Constant	1 to 65,535	10,000 refer- ence units/s <sup>2</sup>	100	All	Immedi- ately *11	Setup	*2
Pn80C	2	Acceleration Constant Switching Speed	0 to 65,535	100 reference units/s	0	All	Immedi- ately *11	Setup	*2
Pn80D	2	First Stage Linear Deceleration Constant	1 to 65,535	10,000 refer- ence units/s <sup>2</sup>	100	All	Immedi- ately *11	Setup	*2
Pn80E	2	Second Stage Linear Deceleration Constant	1 to 65,535	10,000 refer- ence units/s <sup>2</sup>	100	All	Immedi- ately *11	Setup	*2
Pn80F	2	Deceleration Constant Switching Speed	0 to 65,535	100 reference units/s	0	All	Immedi- ately *11	Setup	*2
Pn810	2	Exponential Accelera- tion/Deceleration Bias	0 to 65,535	100 reference units/s	0	All	Immedi- ately *12	Setup	*2
Pn811	2	Exponential Acceleration/Deceleration Time Constant	0 to 5,100	0.1 ms	0	All	Immedi- ately *12	Setup	*2
Pn812	2	Movement Average Time	0 to 5,100	0.1 ms	0	All	Immedi- ately *12	Setup	*2
Pn814	4	External Positioning Final Travel Distance	-1,073,741,823 to 1,073,741,823	1 refer- ence unit	100	All	Immedi- ately	Setup	*2
Pn816	2	Reserved parameters (Do not change.)	-	-	0000h	All	-	-	-
Pn817 *13	2	Origin Approach Speed	0 to 65,535	100 reference units/s	50	All	Immedi- ately *11	Setup	*2
Pn818 *14	2	Origin Approach Speed 2	0 to 65,535	100 reference units/s	5	All	Immedi- ately *11	Setup	*2
Pn819	4	Final Travel Distance for Origin Return	-1,073,741,823 to 1,073,741,823	1 refer- ence unit	100	All	Immedi- ately	Setup	*2
Pn81E	2	Reserved parameters (Do not change.)	_	_	0000h	All	-	-	_
Pn81F	2	Reserved parameters (Do not change.)	_	_	0010h	All	_	_	_
Pn820	4	Forward Latching Area	-2,147,483,648 to 2,147,483,647	1 refer- ence unit	0	All	Immedi- ately	Setup	*2
Pn822	4	Reverse Latching Area	-2,147,483,648 to 2,147,483,647	1 refer- ence unit	0	All	Immedi- ately	Setup	*2

Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Option Monitor 1 Selection	0000h to FFFFh	_	0000h	_	Immedi- ately	Setup	*2	_

Setting	Monitor	Applicable Mot
High-Spee	ed Monitor Region	
0000h	Motor speed [1000000h/overspeed detection speed]	All
0001h	Speed reference [1000000h/overspeed detection speed]	All
0002h	Torque [1000000h/maximum torque]	All
0003h	Position deviation (lower 32 bits) [reference units]	All
0004h	Position deviation (upper 32 bits) [reference units]	All
000Ah	Encoder count (lower 32 bits) [reference units]	All
000Bh	Encoder count (upper 32 bits) [reference units]	All
000Ch	FPG count (lower 32 bits) [reference units]	All
000Dh	FPG count (upper 32 bits) [reference units]	All
Low-Spee	d Monitor Region	
0010h	Un000: Motor speed [min <sup>-1</sup> ]	All
0011h	Un001: Speed Reference [min <sup>-1</sup> ]	All
0012h	Un002: Torque Reference [%]	All
0013h	Un003: Rotational Angle 1 [encoder pulses] Number of encoder pulses from encoder phase C displayed in decimal	All
0014h	Un004: Rotational Angle 2 [deg] Electrical angle from polarity origin	All
0015h	Un005: Input Signal Monitor	All
0016h	Un006: Output Signal Monitor	All
0017h	Un007: Input Reference Speed [min <sup>-1</sup> ]	All
0018h	Un008: Position Deviation [reference units]	All
0019h	Un009: Accumulated Load Ratio [%]	All
001Ah	Un00A: Regenerative Load Ratio [%]	All
001Bh	Un00B: Dynamic Brake Resistor Power Consumption [%]	All
001Ch	Un00C: Input Reference Pulse Counter [reference units]	All
001Dh	Un00D: Feedback Pulse Counter [encoder pulses]	All
001Eh	Un00E: Fully-closed Loop Feedback Pulse Counter [external encoder resolution]	Rotary
0023h	Initial multiturn data [Rev]	Rotary
0024h	Initial incremental data [pulses]	Rotary
0040h	Un025: SERVOPACK Installation Environment Monitor	All
0041h	Un026: Servomotor Installation Environment Monitor	All
0042h	Un027: Built-in Fan Remaining Life Ratio	All
0043h	Un028: Capacitor Remaining Life Ratio	All
0044h	Un029: Surge Prevention Circuit Remaining Life Ratio	All
0045h	Un02A: Dynamic Brake Circuit Remaining Life Ratio	All
0046h	Un032: Instantaneous Power	All
0047h	Un033: Power Consumption	All
0048h	Un034: Cumulative Power Consumption	All
Communic	cations Module Only	
0080h	Previous value of latched feedback position (LPOS1) [encoder pulses]	All
0081h	Previous value of latched feedback position (LPOS2) [encoder pulses]	All
0084h	Continuous Latch Status (EX STATUS)	All
All Areas		
Other values	Reserved settings (Do not use.)	All

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Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Option Mortion	nitor 2 Selec-	0000h to FFFFh	-	0000h	All	Immedi- ately	Setup	*2
Pn825		0000h to 0084h	The settings	are the same	as those f	or the Opti	on Monitor 1	Selection.		
Pn827	2	Linear Dec Constant 1	eleration for Stopping	1 to 65,535	10,000 refer- ence units/s <sup>2</sup>	100	All	Immedi- ately *11	Setup	*2
Pn829	2		iting Time (for Deceleration	0 to 65,535	10 ms	0	All	Immedi- ately *11	Setup	*2
Pn82A	2	Reserved parameters (Do not change.)		_	-	1813h	All	-	-	-
Pn82B	2	Reserved parameters (Do not change.)		_	-	1D1Ch	All	-	_	-
Pn82C	2	Reserved parameters (Do not change.)		_	-	1F1Eh	All	_	_	-
Pn82D	2	Reserved parameters (Do not change.)		_	-	0000h	All	_	_	-
Pn82E	2	Reserved p (Do not cha	Reserved parameters (Do not change.)		-	0000h	All	-	_	-
	2	Motion Set	tings	0000h to 0001h	-	0000h	All	After restart	Setup	*2
Pn833	n.□□□X 0 i		0 Use Fignor  1 Use Fignor	se Pn80A to Pn80F and Pn827. (The settings of Pn834 to Pn840 are nored.) se Pn834 to Pn840. (The settings of Pn80A to Pn80F and Pn827 are nored.) se Pn834 to Pn840. (The settings of Pn80A to Pn80F and Pn827 are nored.) separameter (Do not change.)						- - I
		n.□X□□	□X□□ Reserved parameter (Do not change.)							
		n.X000	Reserved par	rameter (Do no	ot change.	.)				
Pn834	4	First Stage eration Cor	Linear Accel- nstant 2	1 to 20,971,520	10,000 refer- ence units/s <sup>2</sup>	100	All	Immedi- ately *11	Setup	*2
Pn836	4	Second Sta Acceleration	age Linear on Constant 2	1 to 20,971,520	10,000 refer- ence units/s <sup>2</sup>	100	All	Immedi- ately *11	Setup	*2
Pn838	4	Acceleration Switching S	on Constant Speed 2	0 to 2,097,152,000	1 refer- ence unit/s	0	All	Immedi- ately *11	Setup	*2
Pn83A	4		First Stage Linear Deceleration Constant 2		10,000 refer- ence units/s <sup>2</sup>	100	All	Immedi- ately *11	Setup	*2
Pn83C	4		Second Stage Linear Deceleration Constant 2		10,000 refer- ence units/s <sup>2</sup>	100	All	Immedi- ately *11	Setup	*2
Pn83E	4	Deceleration Switching	on Constant Speed 2	0 to 2,097,152,000	1 refer- ence unit/s	0	All	Immedi- ately *11	Setup	*2

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Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn840	4	Linear Deceleration Constant 2 for Stopping	1 to 20,971,520	10,000 refer- ence units/s <sup>2</sup>	100	All	Immedi- ately *11	Setup	*2
Pn842 *13	4	Second Origin Approach Speed 1	0 to 20,971,520	100 reference units/s	0	All	Immedi- ately *11	Setup	*2
Pn844 *14	4	Second Origin Approach Speed 2	0 to 20,971,520	100 reference units/s	0	All	Immedi- ately *11	Setup	*2
Pn846	2	POSING Command Scurve Acceleration/ Deceleration Rate	0 to 50	1%	0	All	Immedi- ately *11	Setup	_
Pn850	2	Number of Latch Sequences	0 to 8	-	0	All	Immedi- ately	Setup	*2
Pn851	2	Continuous Latch Sequence Count	0 to 255	-	0	All	Immedi- ately	Setup	*2
	2	Latch Sequence 1 to 4 Settings	0000h to 3333h	_	0000h	All	Immedi- ately	Setup	*2

			Latch S	Sequer	nce 1 Signal S	election					
			0	0 Phase C							
	1	n.□□□X	1	1 EXT1 signal							
			2	EXT2	signal						=
			3	EXT3	signal						=
	_										_
Pn852			Latch S	Sequer	nce 2 Signal S	election					
	1	n.□□X□	0 to 3 The settings are the same as those for the Latch Sequence 1 Signal Selection.								
										_	
		n.□X□□	Latch Sequence 3 Signal Selection								
	1		0 to 3 The settings are the same as those for the Latch Sequence 1 Signal Selection.								
											_
			Latch S	Sequer	nce 4 Signal S	election					
	ı	n.X000	0 to 3	0 to 3 The settings are the same as those for the Latch Sequence 1 Signal Selection.							
											_
	2	Latch Sequ Settings	ience 5	to 8	0000h to 3333h	_	0000h	All	Immedi- ately	Setup	*2

	Latch Sequence 5 Signal Selection						
	0	Phase C					
n.□□□X	1	EXT1 signal					
	2	EXT2 signal					
	3	EXT3 signal					
	Latch S	Latch Sequence 6 Signal Selection					
n.□□X□	0 to 3	The settings are the same as those for the Latch Sequence 5 Signal Selection.					
	Latch 9	Latch Sequence 7 Signal Selection					
n.□X□□	0 to 3	The settings are the same as those for the Latch Sequence 5 Signal Selection.					
	Latch 9	Latch Sequence 8 Signal Selection					
n.X□□□	0 to 3	The settings are the same as those for the Latch Sequence 5 Signal Selection.					
	n. 🗆 X 🗆 🗆	n.□□□X					

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Parameter No.	Size	N	Name		Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	SVCMD_IC Monitor All	) Input Signa ocations 1	0000h to 1717h	-	0000h	All	Immedi- ately	Setup	*2	
			Input Signa	Monitor Alloca	tion for C	N1-13 (SV	CMD_IO)			Ī	
			0 Allo	cate bit 24 (IO_S	STS1) to C	N1-13 inp	ut signal mon	itor.		_	
			1 Allo	Allocate bit 25 (IO_STS2) to CN1-13 input signal monitor.							
				Allocate bit 26 (IO_STS3) to CN1-13 input signal monitor.							
		n.□□□X		cate bit 27 (IO_S						=	
				cate bit 28 (IO_S			_			_	
			-	cate bit 29 (IO_S						=	
D=000				cate bit 30 (IO_S						_	
Pn860			7 Allo	cate bit 31 (IO_S	S1S8) to C	3N1-13 inp	ut signal mon	itor.			
			CN1-13 Inp	ut Signal Monit	or Enable/	Disable S	election				
		n.□□X□	0 Dis	able allocation fo	or CN1-13	input signa	al monitor.			-	
			1 Enable allocation for CN1-13 input signal monitor.								
	Input Signal Monitor Allocation for CN1-7 (SVCMD_IO)										
		n.□X□□	0 to 7 The settings are the same as the CN1-13 allocations.								
										- -	
		n.X□□□	CN1-7 Input Signal Monitor Enable/Disable Selection							l	
			0 Disable allocation for CN1-7 input signal monitor.							=	
			1 Ena	ble allocation fo	r CN1-7 in	iput signal	monitor.				
		0.40145.46									
	2	SVCMD_IC Monitor All	) Input Signa ocations 2	0000h to 1717h	-	0000h	All	Immedi- ately	Setup	*2	
					1						
	Input Signal Monitor Allocation for CN1-8 (SVCMD_IO)										
			Input Signa	l Monitor Alloca	ition for C	N1-8 (SVC	MD IO)			ī	
		n.□□□X				•	,			I	
		n.□□□X		I Monitor Alloca settings are the		•	,			<u> </u>	
			0 to 7 The	settings are the	same as	the CN1-1 Disable Sel	3 allocations.			[ - [	
		n.□□□X	0 to 7 The CN1-8 Inpu	settings are the table allocation for	e same as r Enable/E or CN1-8 in	the CN1-1 Disable Sel	3 allocations.  ection monitor.			[ - [ -	
Pn861			0 to 7 The CN1-8 Inpu	settings are the	e same as r Enable/E or CN1-8 in	the CN1-1 Disable Sel	3 allocations.  ection monitor.			[ - [ -	
Pn861		n.□□X□	0 to 7 The CN1-8 Inpu 0 Dis 1 Ena	settings are the table allocation for	e same as r Enable/E or CN1-8 in r CN1-8 in	the CN1-1 Disable Sel Disable	3 allocations.  ection  monitor.  monitor.			[ - [ - -	
Pn861			O to 7 The  CN1-8 Inpu O Dis 1 Ena	settings are the table allocation for the allocation for the allocation for the table allocation	e same as r Enable/E or CN1-8 in r CN1-8 in ation for C	the CN1-1 Disable Sell Disable	3 allocations.  ection monitor. monitor.			[ - [ - -	
Pn861		n.□□X□	O to 7 The  CN1-8 Inpu O Dis 1 Ena  Input Signa O to 7 The	t Signal Monito able allocation fo ble allocation fo I Monitor Alloca settings are the	e same as  r Enable/E  pr CN1-8 in  r CN1-8 in  attion for C  same as	the CN1-1 Disable Sel Disable	3 allocations.  ection monitor. monitor.  EMD_IO) 3 allocations.			[ - - - - [	
Pn861		n.00X0	O to 7 The  CN1-8 Inpu O Dis 1 Ena  Input Signa O to 7 The  CN1-9 Inpu	t Signal Monito able allocation for ble allocation for I Monitor Alloca settings are the	r Enable/E or CN1-8 in r CN1-8 in tion for C a same as r Enable/E	the CN1-1 Disable Sel Disable Sel Disable Sel Disable Sel Disable Sel	3 allocations.  lection monitor. monitor.  MD_IO) 3 allocations.  lection			[ - - - - [	
Pn861		n.□□X□	0 to 7 The  CN1-8 Inpu  0 Dis  1 Ena  Input Signa  0 to 7 The  CN1-9 Inpu  0 Dis	t Signal Monito able allocation for ble allocation for I Monitor Alloca settings are the t Signal Monito able allocation for	r Enable/E or CN1-8 in r CN1-8 in tion for C e same as r Enable/E or CN1-9 in	the CN1-1 Disable Sel Disable Sel Disable Sel Disable Sel Disable Sel Disable Sel Disable Sel	3 allocations.  ection monitor. monitor.  MD_IO) 3 allocations.  ection monitor.			[ - - - - [ -	
Pn861		n.00X0	0 to 7 The  CN1-8 Inpu  0 Dis  1 Ena  Input Signa  0 to 7 The  CN1-9 Inpu  0 Dis	t Signal Monito able allocation for ble allocation for I Monitor Alloca settings are the	r Enable/E or CN1-8 in r CN1-8 in tion for C e same as r Enable/E or CN1-9 in	the CN1-1 Disable Sel Disable Sel Disable Sel Disable Sel Disable Sel Disable Sel Disable Sel Disable Sel	3 allocations.  ection monitor. monitor.  MD_IO) 3 allocations.  ection monitor.			[ - - - - [ -	

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Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	SVCMD_IC Monitor All	O Input Signal locations 3	0000h to 1717h	_	0000h	All	Immedi- ately	Setup	*2
			Input Signal Monitor Allocation for CN1-10 (SVCMD_IO)							1
		n. DDDX 0 to 7 The settings are the same as the CN1-13 allocations.								-
		CN1-10 Input Signal Monitor Enable/Disable Selection								
Pn862		n.□□X□	Disable allocation for CN1-10 input signal monitor.							-
			1 Enable allocation for CN1-10 input signal monitor.							
		n.□X□□	<u> </u>	Monitor Alloca settings are the		•	_ ,			<u> </u>
			CN1-11 Inpu	t Signal Monit	or Enable	/Disable S	election			
		n.X□□□		ole allocation fo						_
			1 Enak	le allocation fo	r CN1-11	input signa	ıl monitor.			_
	2	SVCMD_IC Monitor All	O Input Signal locations 4	0000h to 1717h	-	0000h	All	Immedi- ately	Setup	*2
			Input Signal	Monitor Alloca	tion for C	NI1 12 (Q\/	CMD IO)			
		n.□□□X		Monitor Alloca settings are the						
		0 to 7   The settings are the same as the CN1-13 allocations.  CN1-12 Input Signal Monitor Enable/Disable Selection								
Pn863		n.□□X□	0 Disable allocation for CN1-12 input signal monitor.							
			1 Enable allocation for CN1-12 input signal monitor.							
		n.□X□□	Reserved parameter (Do not change.)							
		n.XDDD	Reserved pa	rameter (Do no	ot change.	.)				
	2									
			Output Sig- r Allocations	0000h to 1717h	_	0000h	All	Immedi- ately	Setup	*2
		nal Monito	r Allocations		cation for			ately	Setup	*2
		nal Monito	Output Signa  O Allocations	al Monitor Allo	STS1) to C	CN1-1 and	d CN1-2 (SV	ately  CMD_IO)  Inal monitor.	Setup	*2
		nal Monito	Output Signa  O Alloc  Alloc  Alloc	1717h  al Monitor Allocate bit 24 (IO_sate bit 25 (IO_s	STS1) to C STS2) to C	CN1-1 and CN1-1/CN1 CN1-1/CN1	d CN1-2 (SV -2 output sig -2 output sig	ately  CMD_IO)  Inal monitor.  Inal monitor.	Setup	*2
	۷.	nal Monito	Output Signa  O Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc	al Monitor Allocate bit 25 (IO_sate bit 26 (IO	STS1) to C STS2) to C STS3) to C	CN1-1 and CN1-1/CN1	d CN1-2 (SV) -2 output sig -2 output sig -2 output sig	ately  CMD_IO)  nal monitor.  nal monitor.  nal monitor.	Setup	*2
	2	nal Monito	Output Signa O Alloc 1 Alloc 2 Alloc 3 Alloc	1717h  al Monitor Allocate bit 24 (IO_sate bit 25 (IO_s	STS1) to C STS2) to C STS3) to C STS4) to C	CN1-1 and CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1	d CN1-2 (SV) -2 output sig -2 output sig -2 output sig -2 output sig	cMD_IO)  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.	Setup	*2
	2	nal Monito	Output Signa  O Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc	ate bit 26 (IO_sate bit 27 (IO_sate bit 27 (IO_sate bit 28 (IO_sate bit 28 (IO_sate bit 28 (IO_sate bit 29 (IO	STS1) to C STS2) to C STS3) to C STS4) to C STS5) to C STS6) to C	CN1-1 and CN1-1/CN1-1/CN1-1/CN1-1/CN1CN1-1/CN1CN1-1/CN1CN1-1/CN1CN1-1/CN1	d CN1-2 (SV -2 output sig -2 output sig -2 output sig -2 output sig -2 output sig -2 output sig -2 output sig	ately  CMD_IO)  Inal monitor. Inal monitor. Inal monitor. Inal monitor. Inal monitor. Inal monitor. Inal monitor. Inal monitor. Inal monitor.	Setup	*2
Pn868	2	nal Monito	Output Signa  O Alloc  Alloc	ate bit 26 (IO_sate bit 27 (IO_sate bit 28 (IO_sate bit 28 (IO_sate bit 28 (IO_sate bit 29 (IO_sate bit 29 (IO_sate bit 30 (IO	STS1) to C STS2) to C STS3) to C STS4) to C STS5) to C STS6) to C STS7) to C	CN1-1 and CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1	d CN1-2 (SV -2 output sig -2 output sig	ately  CMD_IO)  mal monitor. mal monitor. mal monitor. mal monitor. mal monitor. mal monitor. mal monitor. mal monitor. mal monitor.	Setup	*2
Pn868	2	nal Monito	Output Signa  O Alloc  Alloc	ate bit 26 (IO_sate bit 27 (IO_sate bit 27 (IO_sate bit 28 (IO_sate bit 28 (IO_sate bit 28 (IO_sate bit 29 (IO	STS1) to C STS2) to C STS3) to C STS4) to C STS5) to C STS6) to C STS7) to C	CN1-1 and CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1	d CN1-2 (SV -2 output sig -2 output sig	ately  CMD_IO)  mal monitor. mal monitor. mal monitor. mal monitor. mal monitor. mal monitor. mal monitor. mal monitor. mal monitor.	Setup	*2
Pn868	2	nal Monito	Output Signa  O Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Nationary  Alloc  CN1-1/CN1-	al Monitor Allocate bit 24 (IO_5) ate bit 26 (IO_5) ate bit 27 (IO_5) ate bit 28 (IO_5) ate bit 29 (IO_5) ate bit 30 (IO_5) ate bit 31 (IO_5) ate bit 31 (IO_5) ate bit 31 (IO_5)	STS1) to C STS2) to C STS3) to C STS4) to C STS5) to C STS6) to C STS7) to C STS8) to C	CN1-1 and CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1	d CN1-2 (SV -2 output sig -2 output sig	ately  CMD_IO)  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.	Setup	*2
Pn868	2	nal Monito	Output Signa  O Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  CN1-1/CN1-  O Disal	at bit 26 (IO_sate bit 27 (IO_sate bit 28 (IO_sate bit 29 (IO_sate bit 29 (IO_sate bit 30 (IO_sate bit 30 (IO_sate bit 31 (IO_	STS1) to C STS2) to C STS3) to C STS4) to C STS5) to C STS6) to C STS7) to C STS8) to C STS8) to C	CN1-1 and CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1	d CN1-2 (SV -2 output sig -2 le Select out signal mo	ately  CMD_IO)  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.	Setup	*2
Pn868	2	nal Monito	Output Signa  O Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  CN1-1/CN1-  Disal  Enab	at Monitor Allocate bit 24 (IO_5) ate bit 26 (IO_5) ate bit 27 (IO_5) ate bit 28 (IO_5) ate bit 29 (IO_5) ate bit 30 (IO_5) ate bit 31 (IO	STS1) to C STS2) to C STS3) to C STS4) to C STS5) to C STS6) to C STS7) to C STS8) to C STS8) to C STS8) to C STS8) to C	CN1-1 and CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1	d CN1-2 (SV) -2 output sig -2 output sig -2 output sig -2 output sig -2 output sig -2 output sig -2 output sig -2 output sig -2 output sig -2 output sig sable Select out signal mout signal mout	ately  CMD_IO)  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.	Setup	*2
Pn868	2	nal Monito	Output Signa  O Alloc  1 Alloc  2 Alloc  3 Alloc  4 Alloc  5 Alloc  6 Alloc  7 Alloc  CN1-1/CN1-  0 Disal  1 Enab	al Monitor Allocate bit 24 (IO_sate bit 26 (IO_sate bit 27 (IO_sate bit 28 (IO_sate bit 28 (IO_sate bit 29 (IO_sate bit 30 (IO_sate bit 30 (IO_sate bit 31 (IO	STS1) to C STS2) to C STS3) to C STS4) to C STS5) to C STS6) to C STS7) to C STS8) to C STS8) to C al Monitor or CN1-1/C cation for	CN1-1 and CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1	d CN1-2 (SV -2 output sig -2 le Select out signal mout ut signal mout	ately  CMD_IO)  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.  Inal monitor.	Setup	*2
Pn868		nal Monito 1  n.□□□X  n.□□□X□	Output Signa  O Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  CN1-1/CN1-  Disal  Enab  Output Signa  O to 7 The	al Monitor Allocate bit 24 (IO_sate bit 26 (IO_sate bit 27 (IO_sate bit 28 (IO_sate bit 28 (IO_sate bit 29 (IO_sate bit 30 (IO_sate bit 31 (IO	STS1) to C STS2) to C STS3) to C STS4) to C STS5) to C STS6) to C STS7) to C STS8) to C STS8) to C Cal Monitor or CN1-1/C r CN1-1/C cation for	CN1-1 and CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-1/CN1 CN1-2 outp CN1-2 autp CN1-23 authe CN1-1	d CN1-2 (SV-2 output sig-2 output sig-2 output sig-2 output sig-2 output sig-2 output sig-2 output sig-2 output sig-2 output sig-2 output sig-2 output signal mout	ately  CMD_IO)  Inal monitor.  Inal	Setup	*2
Pn868		nal Monito	Output Signa  O Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  CN1-1/CN1-  Disal  Enab  Output Signa  O to 7 The	al Monitor Allocate bit 24 (IO_sate bit 26 (IO_sate bit 27 (IO_sate bit 27 (IO_sate bit 28 (IO_sate bit 28 (IO_sate bit 29 (IO_sate bit 30 (IO_sate bit 31 (IO	STS1) to C STS2) to C STS3) to C STS4) to C STS5) to C STS6) to C STS7) to C STS8) to C STS8) to C al Monitor or CN1-1/C cation for a same as	CN1-1 and CN1-1/CN1-1/CN1-1/CN1-1/CN1-1/CN1-1/CN1-1/CN1-1/CN1-1/CN1-1/CN1-1/CN1-1/CN1-1/CN1-2 outpoint CN1-2 outpoint CN1-2 author Enable.	d CN1-2 (SV -2 output sig -2 put signal mout to signal mout out signal mout out Signal mout out Signal mout out Signal mout out Signal mout out Signal mout out Signal mout out Signal mout Signal mout out Signal mout Sig	ately  CMD_IO)  Inal monitor.  Inal	Setup	*2
Pn868		nal Monito 1  n.□□□X  n.□□□X□	Output Signa  O Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  Alloc  CN1-1/CN1-  O Disal  Oto 7 The  CN1-23/CN1  O Disal	al Monitor Allocate bit 24 (IO_sate bit 26 (IO_sate bit 27 (IO_sate bit 28 (IO_sate bit 28 (IO_sate bit 29 (IO_sate bit 30 (IO_sate bit 31 (IO	STS1) to C STS2) to C STS3) to C STS4) to C STS5) to C STS6) to C STS7) to C STS8) to C STS8) to C STS8) to C STS8) to C STS1 to C STS1 to C STS1 to C STS1 to C STS1 to C STS3 to C STS4	CN1-1 and CN1-1/CN1-1/CN1-1/CN1-1/CN1-1/CN1-1/CN1-1/CN1-1/CN1-1/CN1-1/CN1-1/CN1-1/CN1-1/CN1-1/CN1-1/CN1-2 outpotent of the CN1-2 and the CN1-1 tor Enable /CN1-24 o	d CN1-2 (SV-2 output sig-2 output sig-2 output sig-2 output sig-2 output sig-2 output sig-2 output sig-2 output sig-2 output sig-2 output sig-2 output signal moutput signal moutput si	ately  CMD_IO)  Inal monitor.	Setup	*2

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Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence					
	2		O Output Sig- r Allocations	0000h to 1717h	_	0000h	All	Immedi- ately	Setup	*2					
		1			1			ı	1						
		n.□□□X		al Monitor Allo			•	<i>,</i>							
D. 000				0 to 7   The settings are the same as the CN1-1/CN1-2 allocations.  CN1-25/CN1-26 Output Signal Monitor Enable/Disable Selection											
Pn869		n.□□X□													
			1 Enable allocation for CN1-25/CN1-26 output signal monitor.							<del>-</del>					
		n.□X□□	Reserved parameter (Do not change.)												
		n.X□□□	Reserved parameter (Do not change.)												
		T		T			1	1		ı					
Pn880	2	Station Ad tor (for ma read only)	dress Moni- intenance,	03h to EFh	-	-	All	_	Setup	-					
Pn881	2	Count Mor	nission Byte nitor [bytes] nance, read	17, 32, 48	-	_	All	_	Setup	-					
Pn882	2	ting Monito	on Cycle Set- or [× 0.25 µs] enance, read	Oh to FFFFh	_	_	All	_	Setup	_					
Pn883	2	Setting Mo	cations Cycle onitor [trans- cles] (for ce, read only)	0 to 32	_	_	All	-	Setup	-					
	2	Communic trols 2	cations Con-	0000h to 0001h	-	0000h	All	Immedi- ately	Setup	*2					
	_														
			Mainta	NK Communic			<u> </u>		en a						
Pn884	n.	X	0 MECH	ATROLINK cor	mmunicati	ons error c	occurs.			ıre					
F11004	n	.00X0	117	ameter (Do not		I WILOTIAT	TIOLINI COIII	manications	C1101 0000	JI 5.					
				ameter (Do not											
			•	ameter (Do not	,										
	11.		neserveu para	ameter (Do not	criarige.)										
Pn88A	2	Monitor	OLINK ror Counter enance, read	0 to 65,535	-	0	All	Immedi- ately	Setup	-					
Pn890 to Pn8A6	4	tor during ing	Data Moni- Alarm/Warn- nance, read	Oh to FFFFFFFh	_	Oh	All	Immedi- ately	Setup	*2					
Pn8A8 to Pn8BE	4	during Alaı	Data Monitor rm/Warning nance, read	Oh to FFFFFFFh	_	Oh	All	Immedi- ately	Setup	*2					
Pn900	2	Number of Banks	Parameter	0 to 16	_	0	All	After restart	Setup	*2					
Pn901	2	Number of Bank Mem	Parameter	0 to 15	_	0	All	After restart	Setup	*2					
Pn902 to Pn910	2	Parameter ber Definiti	Bank Mem- ion	0000h to 08FFh	_	0h	All	After restart	Setup	*2					
								Continue	d on nav	t naga					

Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn920 to Pn95F	2	Parameter Bank Data (Not saved in nonvolatile memory.)	0000h to FFFFh	-	0h	All	Immedi- ately	Setup	*2

- \*1. Refer to the following manual for details.
  - Σ-7-Series Σ-7S SERVOPACK with MECHATROLINK-III Communications References Product Manual (Manual No.: SIEP S800001 28)
- \*2. Refer to the following manual for details.
  - Σ-7-Series AC Servo Drive MECHATROLINK-III Communications Standard Servo Profile Command Manual (Manual No.: SIEP S800001 31)
- \*3. Set a percentage of the motor rated torque.
- \*4. These parameters are for SERVOPACKs with a Safety Module. Refer to the following manual for details.
  - Σ-V-Series/Σ-V-Series for Large-Capacity Models/Σ-7-Series User's Manual Safety Module (Manual No.: SIEP C720829 06)
- \*5. Normally set this parameter to 0. If you use an External Regenerative Resistor, set the capacity (W) of the External Regenerative Resistor.
- \*6. The upper limit is the maximum output capacity (W) of the SERVOPACK.
- \*7. These parameters are for SERVOPACKs with the dynamic brake option. Refer to the following manual for details.
  - Σ-7-Series AC Servo Drive Σ-7S/Σ-7W SERVOPACK with Hardware Option Specifications Dynamic Brake Product Manual (Manual No.: SIEP S800001 73)
- \*8. The SGLFW2 is the only Yaskawa Linear Servomotor that supports this function.
- \*9. Enabled only when Pn61A is set to n.□□□2 or n.□□□3.
- \*10.The parameter setting is enabled after SENS\_ON command execution is completed.
- \*11. Change the setting when the reference is stopped (i.e., while DEN is set to 1). If you change the setting during operation, the reference output will be affected.
- \*12. The settings are updated only if the reference is stopped (i.e., only if DEN is set to 1).
- \*13. The setting of Pn842 is valid while Pn817 is set to 0.
- \*14. The setting of Pn844 is valid while Pn818 is set to 0.

## 4.3.2 List of MECHATROLINK-III Common Parameters

The following table lists the common MECHATROLINK-III parameters. These common parameters are used to make settings from the host controller via MECHATROLINK communications. Do not change the settings with the Digital Operator or any other device.

Parameter No.	Size	Nar	ne	Setting Range	Setting Unit [Resolution]	Default Setting	Applicable Motors	When Enabled	Classi- fication		
	4	Encoder Ty tion (read c	rpe Selec- only)	0h or 1h	_	-	All	-			
01											
PnA02		0000h	Absolute	encoder							
		0001h	Increment	tal encoder							
	4	Motor Type (read only)	Selection	0h or 1h	-	-	All	-			
02											
PnA04		0000h	Rotary Se	Servomotor							
		0001h	Linear Se	rvomotor							
	4	Semi-close closed Sele (read only)	ed/Fully- ection	Oh or 1h	-	-	All	_	ion		
03									mat		
PnA06		0000h	Semi-clos	sed					Device information		
		0001h	Fully-clos	ed					90		
									Dev		
04 PnA08	4	Rated Moto (read only)	or Speed	Oh to FFFFFFFh	x10^PnA0C min <sup>-1</sup>	-	All	_			
05 PnA0A	4	Maximum ( Speed (rea	Output d only)	Oh to FFFFFFFh	x10^PnA0C min <sup>-1</sup>	-	All	_			
06 PnA0C	4	Speed Muli (read only)	tiplier	-1,073,741,823 to 1,073,741,823	-	-	All	_			
07 PnA0E	4	Rated Torq (read only)	ue	Oh to FFFFFFFh	x10^PnA12 N·m	_	All	-			
08 PnA10	4	Maximum ( Torque (rea	Output ad only)	Oh to FFFFFFFh	x10^PnA12 N·m	-	All	_			
09 PnA12	4	Torque Multiplier (read only)		-1,073,741,823 to 1,073,741,823	_	-	All	_			
0A PnA14	4	Resolution (read only)		Oh to FFFFFFFh	1 pulse/rev	-	Rotary	_			

Parameter	Cizo	Nama		Satting Banga	Setting Unit	Default	Applicable	When	Classi-		
No.	Size	Name		Setting Range	[Resolution]	Setting	Motors	Enabled	fication		
21 PnA42	4	Electronic Gea (Numerator)	ar Ratio	1 to 1,073,741,824	_	16	All	After restart			
22 PnA44	4	Electronic Gea (Denominator)		1 to 1,073,741,824	_	1	All	After restart			
23 PnA46	4	Absolute Enco	oder	-1,073,741,823 to 1,073,741,823	1 reference unit	0	All	Immedi- ately*1			
24 PnA48	4	Multiturn Limit Setting	t	0 to 65,535	1 Rev	65535	Rotary	After restart	-		
	4	Limit Setting		0h to 33h	_	0000h	All	After restart			
		Bit 0	P-OT	(0: Enabled, 1: Di	isabled)				Suc		
		Bit 1	N-O7	(0: Enabled, 1: Di	isabled)				catic		
25		Bit 2	Rese	rved.					cific		
PnA4A		Bit 3	Rese	erved.							
		Bit 4	P-SC	T (0: Disabled, 1:	Enabled)				ne		
		Bit 5	N-SC	DT (0: Disabled, 1:	Enabled)				Machine specifications		
		Bits 6 to 31	Rese	•	,				Š		
26 PnA4C	4	Forward Software Limit		-1,073,741,823 to 1,073,741,823	1 reference unit	10737418 23	All	Immedi- ately			
27 PnA4E	4	Reserved parameter (Do not change.)		-	_	0	All	Immedi- ately			
28 PnA50	4	Reverse Softw Limit	vare	-1,073,741,823 to 1,073,741,823	1 reference unit	-1073741 823	All	Immedi- ately			
29 PnA52	4	Reserved para (Do not chang		_	_	0	All	Immedi- ately	-		
	4	Speed Unit Selection*2		0h to 4h	-	0h	All	After restart			
		0000h F	Reference	e units/s							
41		0001h F	Referenc	e units/min				<del></del>			
PnA82		0002h F	Percenta	ge (%) of rated spe	eed*3, *4						
		0003h n	nin <sup>-1</sup> *4								
		0004h N	/laximum	n motor speed/400	000000h*5						
				F					gs		
		<b>†</b>		<u> </u>	<b>†</b>	1		<b>†</b>	ttin		
		Speed Base L Selection*3, *4,	Jnit *5						Unit settings		
42		(Set the value	of n					After	Uni		
PnA84	4	from the follow formula: Spee		-3 to 3	_	0	All	restart			
		selection (41 PnA82)									
		× 10 <sup>n</sup> )	•								
	4	Position Unit Selection Oh -				Oh All After restart					
43											
PnA86		0000h R	Reference	e units							
									<u> </u>		

## 4.3.2 List of MECHATROLINK-III Common Parameters

Continued from previous page.

_								from previo			
Parameter No.	Size	Nam	е	Setting Range	Setting Unit [Resolution]	Default Setting	Applicable Motors	When Enabled	Classi		
44 PnA88	4	Position Bas Selection (Set the valu from the folk formula: Pos selection (43 × 10 <sup>n</sup> )	ie of n owing sition unit	0	-	0	All	After restart	noute		
	4	Acceleration Selection	Unit	0h	-	0h	All	After restart			
45 PnA8A		0000h Reference units/s <sup>2</sup>									
46 PnA8C	4	Acceleration Base Unit Selection (Set the value of n from the following formula: Acceleratio unit selection (45 PnA8A) × 10 <sup>n</sup> )		4 to 6	-	4	All	After restart	_		
	4	Torque Unit Selection		1h to 2h	-	1h	All	After restart			
47 PnA8E		0001h	Percentac	ge (%) of rated tord	711⊖*6						
PNASE			`	torque/40000000	•						
		000211	Maximan	1 1019407 4000000	"1						
48 PnA90	4	Torque Base Unit Selection*6,*7 (Set the value of n from the following formula: Torque unit selection (47 PnA8E) × 10°)		-5 to 0	-	0	All	After restart	Unit settings		
	4	Supported L tems (read c		-	_	0601011F h	All	_	- 5 		
49 PnA92		Speed Units Bit 0 Bit 1 Bit 2 Bit 3 Bit 4 Bits 5 to 7 Position Unit Bit 8 Bits 9 to 15 Acceleration Bit 16 Bit 17 Bits 18 to 23 Torque Units Bit 24 Bit 25 Bit 26 Bits 27 to 3	Re Re Re Re Re Re Re Re Re Re Re Re Re R	ference units/s (1: ference units/min (rcentage (%) of rat n <sup>-1</sup> (rpm) (1: Enable eximum motor special served (0: Disabled ference units (1: Eserved (0: Disabled ference units/s² (1: a (acceleration time served (0: Disabled ference units/s² (1: a (acceleration time served (0: Disabled ference units/s² (1: a (acceleration time served (0: Disabled ference units/s² (1: b (	(1: Enabled) ed speed (1: Eed) ed/4000000h (d).  chabled)	Enabled)  1: Enabled)  ach rated sp		bled)			

Parameter No.	Size	Name	Setting Range	Setting Unit [Resolution]	Default Setting	Applicable Motors	When Enabled	Classi- fication
61 PnAC2	4	Speed Loop Gain	1,000 to 2,000,000	0.001 Hz [0.1 Hz]	40000	All	Immedi- ately	
62 PnAC4	4	Speed Loop Integral Time Constant	150 to 512,000	1 μs [0.01 ms]	20000	All	Immedi- ately	
63 PnAC6	4	Position Loop Gain	1,000 to 2,000,000	0.001/s [0.1/s]	40000	All	Immedi- ately	
64 PnAC8	4	Feedforward Compensation	0 to 100	1%	0	All	Immedi- ately	
65 PnACA	4	Position Loop Integral Time Constant	0 to 5,000,000	1 μs [0.1 ms]	0	All	Immedi- ately	
66 PnACC	4	Positioning Completed Width	0 to 1,073,741,824	1 reference unit	7	All	Immedi- ately	
67 PnACE	4	Near Signal Width	1 to 1,073,741,824	1 reference unit	10737418 24	All	Immedi- ately	
81 PnB02	4	Exponential Acceleration/Deceleration Time Constant	0 to 510,000	1 μs [0.1 ms]	0	All	Immedi- ately*8	
82 PnB04	4	Average Movement Time	0 to 510,000	1 μs [0.1 ms]	0	All	Immedi- ately <sup>*8</sup>	
83 PnB06	4	External Positioning Final Travel Distance	-1,073,741,823 to 1,073,741,823	1 reference unit	100	All	Immedi- ately	
84 PnB08	4	Origin Approach Speed	0 to 1,073,741,823	10 <sup>-3</sup> min <sup>-1</sup>	× 5,000h reference units/s con- verted to 10 <sup>-3</sup> min <sup>-1</sup>	All	Immedi- ately	
85 PnB0A	4	Origin Return Creep Speed	0 to 1,073,741,823	10 <sup>-3</sup> min <sup>-1</sup>	× 500h reference units/s con- verted to 10 <sup>-3</sup> min <sup>-1</sup>	All	Immedi- ately	Tuning
86 PnB0C	4	Final Travel Distance for Origin Return	-1,073,741,823 to 1,073,741,823	1 reference unit	100	All	Immedi- ately	
	4	Fixed Monitor Selection 1	0 to 15	-	1h	All	Immedi- ately	
87 PnB0E		11 Reserved 12 CMN1 (c 13 CMN2 (c 14 OMN1 (c	d (undefined value). d (undefined value). ommon monitor 1) ommon monitor 2) optional monitor 2)					

## 4.3.2 List of MECHATROLINK-III Common Parameters

Continued from previous page.

Parameter No.	Size	Name		Setting Range	Setting Unit [Resolution]	Default Setting	Applicable Motors	When Enabled	Clas				
	4	Fixed Monit tion 2	tor Selec-	0 to 15	-	0h	All	Immedi- ately					
88													
PnB10		0 to 15 The settings are the same as those for Fixed Monitor Selection 1.											
	4	SEL_MON Monitor Sel	(CMN1) ection 1	0 to 9	_	0h	All	Immedi- ately					
			T										
		0	1		reference coordin								
		1		•	in reference coor								
		2 POS_OFFSET (offset set in POS_SET (Set Coordinate System) command)											
		3		rget speed)									
		4		SPD_LIM (speed limit)									
		5		(torque limit)	perating status)								
			00h: Ph 01h: Ph 02h: Ph 03h: Ph Byte 2: C 00h: Po 01h: Sp 02h: Tor Byte 3: R	Byte 1: Current communications phase  Oh: Phase 0  O1h: Phase 1  O2h: Phase 2  O3h: Phase 3  Byte 2: Current control mode  O0h: Position control mode  O1h: Speed control mode  O2h: Torque control mode  Byte 3: Reserved  Byte 4: Expansion signal monitor									
			Bit	Name	Description	n Valu	ue Settin	g	5				
		6	Bit 0	LT_RDY1	Processing statulation f	for	Latch dete not yet pro cessed.		omeran balana basaman				
89 PnB12				_	LT_REQ1 in SV0 D_CTRL region	CM- 1	Processing detection i progress.		7				
FIIDIZ			Bit 1	LT RDY1	Processing statulatch detection f	for	Latch dete not yet pro cessed.		Cor				
				21_11011	LT_REQ2 in SV0 D_CTRL region	CM- 1	Processing detection i progress.						
						0	Phase C						
			Bits 2			1	External in signal 1	put					
			and 3	LT_SEL1R	Latch signal	2	External in signal 2	put					
						3	External in signal 3	put					
						0	Phase C						
			Bits 4			1	External in signal 1	put					
			and 5	LT_SEL2R	Latch signal	2	External in signal 2	put					
						3	External in signal 3	put					
			Bit 6	Reserved (0	).								
		7	Reserved										
		8	INIT_PGF	POS (Low)			encoder position reference dat						
		9	INIT_PGPOS (High)  Upper 32 bits of initial encoder position converted to 64-bit position reference data										

Parameter	Size	No	ame	Setting Range	Setting Unit	Default	Applicable	When	Classi-	
No.	Size	INA	anie	Setting hange	[Resolution]	Setting	Motors	Enabled	fication	
	4	SEL_MON Monitor S	N (CMN2) election 2	0 to 9	_	0h	All	Immedi- ately		
0.4										
8A PnB14		0 to 9	The setting	ngs are the same as	those for SEL	_MON Moni	tor Selection	1.		
111014										
8B	4	Origin Det	tection	0.1 0.50	1 reference	40	A.II	Immedi-		
PnB16	4	Width		0 to 250	unit	10	All	ately		
8C PnB18	4	Forward T	orque Limi	t 0 to 800	1%	100	All	Immedi- ately		
8D PnB1A	4	Reverse T	orque Limi	t 0 to 800	1%	100	All	Immedi- ately		
8E PnB1C	4	Zero Spection Range		1,000 to 10,000,000	10 <sup>-3</sup> min <sup>-1</sup>	20000	All	Immedi- ately		
8F PnB1E	4	Speed Coincidence Signal Detection Width		0 to 100,000	10 <sup>-3</sup> min <sup>-1</sup>	10000	All	Immedi- ately	ameters	
	4	Servo Command Control Field Enable Disable Selections (read only)		_	-	0FFF3F3F h	All	_	Command-related parameters	
		II.			II.	1	l .	I	nd-r	
		Bit 0	(	CMD_PAUSE (1: Enabled)						
		Bit 1	(	CMD_CANCEL (1: E	nabled)				Son	
		Bits 2 and	3 8	STOP_MODE (1: En	abled)					
		Bits 4 and	d 5	ACCFIL (1: Enabled)						
		Bits 6 and	17 F	Reserved (0: Disable	ed).					
90		Bit 8	L	T_REQ1 (1: Enable	d)					
PnB20		Bit 9	L	T_REQ2 (1: Enable	d)					
		Bits 10 an	nd 11 L	T_SEL1 (1: Enabled	d)					
		Bits 12 an	nd 13 L	T_SEL2 (1: Enabled	d)					
		Bits 14 an	nd 15 F	Reserved (0: Disable	ed).					
	Bits 16 to 19		19 5	SEL_MON1 (1: Enab	oled)					
	Bits 20 to 23 SEL_MON2 (1: Enabled)									
		Bits 24 to	27	SEL_MON3 (1: Enabled)						
	Bits 28 to 31 Reserved (0: Disabled).									
		<del></del>								

## 4.3.2 List of MECHATROLINK-III Common Parameters

Continued from previous page

							d from previo			
Parameter No.	Size	Name	Setting Range	Setting Unit [Resolution]	Default Setting	Applicable Motors	When Enabled	Classi- fication		
	4	Servo Status Field Enable/Disable Selections (read only)	-	-	0FFF3F33 h	All	-			
		Bit 0	CMD_PAUSE_CMP	(1: Enabled)						
		Bit 1	CMD_CANCEL_CMI							
		Bit 2 and 3	Reserved (0: Disable	ed).						
		Bits 4 and 5	ACCFIL (1: Enabled)							
		Bits 6 and 7	Reserved (0: Disabled).							
		Bit 8	L_CMP1 (1: Enabled	d)						
91		Bit 9	L_CMP2 (1: Enabled	d)						
PnB22		Bit 10	POS_RDY (1: Enabled)							
		Bit 11	PON (1: Enabled)							
		Bit 12	M_RDY (1: Enabled)							
		Bit 13	SV_ON (1: Enabled)							
		Bits 14 and 15	Reserved (0: Disable	ed).				ers		
		Bits 16 to 19	SEL_MON1 (1: Enab	oled)				met		
	Bits 20 to 23 SEL_MON2 (1: Enabled)									
		Bits 24 to 27 SEL_MON3 (1: Enabled)								
		Bits 28 to 31	Reserved (0: Disable	ed).				late		
				1		1	1	Command-related parameters		
	4	Output Bit Enable/ Disable Selections (read only)	-	-	007F01F0 h	All	_	Comn		
		Bits 0 to 3	Reserved (0: Disable	ed).						
		Bit 4	V_PPI (1: Enabled)							
		Bit 5	P_PPI (1: Enabled)							
		Bit 6	P_CL (1: Enabled)							
92		Bit 7	N_CL (1: Enabled)							
PnB24		Bit 8	G_SEL (1: Enabled)							
		Bits 9 to 11	G_SEL (0: Disabled)							
	Bits 12 to 15 Reserved (0: Disabled).									
		Bits 16 to 19	BANK_SEL (1: Enab	oled)						
		Bits 20 to 22	SO1 to SO3 (1: Ena	bled)						
		Bit 23	Reserved (0: Disable	ed).						
		Bits 24 to 31	Reserved (0: Disable	ed).						

Default

Setting

**FFOFFEFE** 

h

Setting Unit

[Resolution]

Setting Range

Reserved (0: Disabled).

DEC (1: Enabled)

P-OT (1: Enabled)

N-OT (1: Enabled)

EXT1 (1: Enabled)

EXT2 (1: Enabled)

EXT3 (1: Enabled)

ESTP (1: Enabled)

Reserved (0: Disabled).

BRK\_ON (1: Enabled)

P-SOT (1: Enabled)

N-SOT (1: Enabled)

DEN (1: Enabled)

NEAR (1: Enabled)

PSET (1: Enabled)

T\_LIM (1: Enabled)

V\_LIM (1: Enabled)

V\_CMP (1: Enabled)

Reserved (0: Disabled).

I0\_STS1 to I0\_STS8 (1: Enabled)

ZSPD (1: Enabled)

ZPOINT (1: Enabled)

Applicable

Motors

ΑII

Enabled

Classi-

fication

- \*1. The parameter setting is enabled after SENS\_ON command execution is completed.
- \*2. When using fully-closed loop control, set the reference units/s.

Parameter

No

93

PnB26

Size

4

only)

Bit 0

Bit 1

Bit 2

Bit 3

Bit 4

Bit 5

Bit 6

Bit 7

Bit 8

Bit 9

Bit 10

Bit 11

Bit 12

Bit 13

Bit 14

Bit 15

Bit 16

Bit 17

Bit 18

Bit 19

Bits 20 to 23

Bits 24 to 31

Name

Input Bit Enable/Dis-

able Selections (read

- \*3. If you set the Speed Unit Selection (parameter 41: PnA82) to 0002h adjust the Speed Base Unit Selection (parameter 42: PnA84) to satisfy the following formula.

  Rotary Servomotor: 1.28 × Rated speed [min<sup>-1</sup>] × 10<sup>PnA84</sup> < Maximum speed [min<sup>-1</sup>] Linear Servomotor: 1.28 × Rated speed [mm/s] × 10<sup>PnA84</sup> < Maximum speed [mm/s]
- \*4. If you set the Speed Unit Selection (parameter 41: PnA82) to either 0002h or 0003h, set the Speed Base Unit Selection (parameter 42: PnA84) to a number between -3 and 0.
- \*5. If you set the Speed Unit Selection (parameter 41: PnA82) to 0004h, set the Speed Base Unit Selection (parameter 42: PnA84) to 0.
- \*6. If you set the Torque Unit Selection (parameter 47: PnA8E) to 0001h, adjust the Torque Base Unit Selection (parameter 48: PnA90) to satisfy the following formula.  $128 \times 10^{\text{PnA90}} < \text{Maximum torque } [\%]$
- \*7. If you set the Torque Unit Selection (parameter 47: PnA8E) to 0002h, set the Torque Base Unit Selection (parameter 48: PnA90) to 0.
- \*8. Change the setting when the reference is stopped (i.e., while DEN is set to 1). If you change the setting during operation, the reference output will be affected.

## Command Option Attachable-type FT82 SERVOPACKs with INDEXER Modules

The following table lists the parameters.

Note: Do not change the following parameters from their default settings.

- Reserved parameters
- Parameters not given in this manual
  Parameters that are not valid for the Servomotor that you are using, as given in the parameter table



- The following parameters will be set automatically when the INDEXER Module is mounted. Do not change the settings of these parameters.
  - Pn002 = n. □□□X, Pn205, Pn207 = n. X□□□, Pn50A to Pn512, Pn517, and Pn522
- Parameters that are unique to the INDEXER Module will be set automatically the first time the power supply is turned on after the INDEXER Module is mounted. Up to 10 s may be required for the SERVOPACK to start.

Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Basic Fund tions 0	ction Selec-	0000h to 10B1h	-	0000h	All	After restart	Setup	-	
			Rotation Dir	ection Selectio	n				Refere	nce	
		n.□□□X	0 Us	se CCW as the f	orward dir	ection.			*1		
Pn000			1 Us	se CW as the for	rward dire	ction. (Rev	erse Rotation	Mode)	*1		
	n.□□X□ Reserved parameter (Do not change.)										
		n.□X□□	Reserved parameter (Do not change.)								
		n.X□□□	Reserved pa	arameter (Do no	ot change.	)					
	2	Application Selections		0000h to 1142h	_	0000h	All	After restart	Setup	-	
				1							
			Motor Stop	oing Method for	Servo OF	F and Gro	oup 1 Alarms		Refere	nce	
			0 St	Stop the motor by applying the dynamic brake.							
		n.□□□X		Stop the motor by the applying dynamic brake and then release the dynamic brake.							
			2 Co	oast the motor to	o a stop w	ithout the	dynamic brak				
		n.□□X□	Reserved pa	arameter (Do no	ot change.	)					
Pn001			Main Circuit	Power Supply	AC/DC In	put Select	ion		Refere	ence	
		- 5755		out AC power as d L3 terminals (				ng the L1, L2	,		
		n.□X□□	1 ar	Input DC power as the main circuit power supply using the B1/⊕ and ⊕ 2 terminals or the B1 and ⊕ 2 terminals (use an external converter or the shared converter).							
			Warning Co	de Output Sele	ction				Refere	ence	
		~ VDDD	Output only alarm codes on the /ALO1 to /ALO3 terminals.								
		n.X□□□	4 Ot	utput both warni LO3 terminals. I	ing codes	and alarm	codes on the	/ALO1 to	*1		

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Application Selections		0000h to 4213h	_	0000h*2	_	After restart	Setup	_		
		n.□□□X	Reserved p	arameter (Do no	ot change.	)						
		n.□□X□	Reserved p	arameter (Do no	ot change.	)						
			Encoder Us	sage				Applicable Motors	Refere	nce		
		n.□X□□	. ()	se the encoder a	according :	to encoder	specifica-	All				
			1 U	se the encoder a	as an incre	mental end	oder.		*1			
Pn002				se the encoder ancoder.	as a single	-turn absol	ute	Rotary				
			External En	coder Usage				Applicable Motors	Refere	nce		
			0 D	o not use an ext	ernal enco	der.						
		n.X□□□	1 7 1	ne external enco on for CCW mot			vard direc-					
			2 R	eserved setting (	Do not us	e.)		Rotary	*1			
				ne external enco on for CCW mot			erse direc-					
			4 R	eserved setting (	Do not us	e.)						
	2	Application Selections		0000h to 105Fh	_	0002h	All	Immedi- ately	Setup	*1		
			Analog Mor	nitor 1 Signal Se	election							
			00	Motor speed (1	V/1,000 m	nin <sup>-1</sup> )						
			01	Speed reference	e (1 V/1,00	00 min <sup>-1</sup> )						
			02	Torque reference	e (1 V/100	% rated to	rque)					
			03	Position deviation	on (0.05 V/	reference ι	unit)					
			04	Position amplifie	er deviation	n (after elec	ctronic gear) (	0.05 V/enco	der pulse i	unit)		
			05	Position reference	ce speed (	1 V/1,000	min <sup>-1</sup> )					
			06	Reserved setting	g (Do not ı	use.)						
			07	Load-motor pos	ition devia	tion (0.01	V/reference u	nit)				
Pn006		n.□□XX	08	Positioning com pleted: 0 V)	pletion (po	sitioning c	ompleted: 5 \	/, positioning	not com-			
1 11000			09	Speed feedforw	ard (1 V/1	,000 min <sup>-1</sup> )						
			0A	Torque feedforw	· ·							
			0B	Active gain (1st								
			0C	Completion of p pleted: 0 V)	osition ref	erence dist	ribution (com	pleted: 5 V, r	not com-			
			0D	External encode	er speed (1	V/1,000 n	nin <sup>-1</sup> : value at	the motor s	naft)			
			0E	Reserved setting	g (Do not ı	use.)						
			0F	Reserved setting	g (Do not ι	use.)						
			10	Main circuit DC								
			11 to 5F	Reserved setting	gs (Do not	use.)						
		n.□X□□	Reserved p	arameter (Do no	ot change.	)						
		n.X□□□	Reserved p	arameter (Do no	ot change.	)						

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Application Selections	Function 7	0000h to 105Fh	_	0000h	All	Immedi- ately	Setup	*1		
			Analog Mon	itor 2 Signal Se	election							
			00	Motor speed (1	V/1,000 m	nin <sup>-1</sup> )						
			01 ;	Speed reference	e (1 V/1,00	00 min <sup>-1</sup> )						
			02	Torque referenc	e (1 V/100	% rated to	rque)					
			03	Position deviation	on (0.05 V/	reference i	unit)					
			_	Position amplifie		•		0.05 V/enco	der pulse	unit)		
				Position referen			min <sup>-1</sup> )					
				Reserved setting								
				Load-motor position deviation (0.01 V/reference unit)  Positioning completion (positioning completed: 5 V, positioning not com-								
Pn007		n.□□XX		Positioning com pleted: 0 V)	pletion (po	ositioning c	ompleted: 5 \	/, positioning	not com-	-		
				Speed feedforw								
				Torque feedforward (1 V/100% rated torque)								
				OB Active gain (1st gain: 1 V, 2nd gain: 2 V)  Completion of position reference distribution (completed: 5 V, not cor								
				Completion of p pleted: 0 V)	osition ref	erence dist	ribution (com	pleted: 5 V, i	not com-			
			0D	External encode	er speed (1	V/1,000 r	nin <sup>-1</sup> : value at	the motor s	haft)			
			0E I	Reserved setting	g (Do not ı	use.)						
			OF I	Reserved setting	g (Do not ı	use.)						
			$\vdash$	Main circuit DC								
		11 to 5F Reserved settings (Do not use.)										
		n.□X□□	Reserved pa	arameter (Do no	ot change.	)						
		n.X□□□	Reserved pa	arameter (Do no	ot change.	)						
				•		,						
	2	Application Selections		0000h to 7121h	_	4000h	Rotary	After restart	Setup	_		
					II.				1			
			Law Dattan	. \/= t====	////	2-1			Defere			
		n.□□□X		Voltage Alarm, utput alarm (A.8	•		oltage		Refere	ence		
		п.ппл		utput warning (A					*1			
					· · ·	on baccory	· onago:					
				lection for Und					Refere	ence		
Pn008		n.□□X□		not detect und etect undervolta			torque et boe	t controllor				
			Dr	etect undervolta	`		•		*1			
			2 Pr	1425 (i.e., only in	n SERVOP	ACK).	torquo wiii i	11424 4114				
			Warning De	tection Selection	n				Refere	ence		
		n.□X□□	0 De	etect warnings.					*1			
			1 Do	not detect war	nings exce	ept for A.9	71.		1			
		n.X□□□	Reserved pa	arameter (Do no	ot change.	)						
						,						
	_							0 1				

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efault	Applicable	When	Classi-	Refer-							
etting	Motors	Enabled	fication	ence							
		A 61									

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Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Application Selections		0000h to 0121h	_	0010h	All	After restart	Tuning	_
		n.000X	Current Co	parameter (Do no ontrol Mode Selection of the Control SERVOPACK MO	ction ol mode 1.	7S-R70A,	,	, ,	Refere	nce
Pn009	_	11.00		-3R8A, -5R5A, a SERVOPACK Mo -470A, -550A, -5 Jse current contro	odels SGD 590A, and	7S-120A, -780A: Us	-180A, -200A	, -330A,	*1	
	İ		Speed Det	ection Method S	election				Refere	nce
		n.□X□□	- 1	Jse speed detecti					*1	
			1 l	Jse speed detecti	on 2.					<u> </u>
		n.X□□□ Reserved parameter (Do not change.)								
	2	Application Selections		0000h to 0044h	-	0001h	All	After restart	Setup	_
					0 0	•			- In (	
			Motor Stopping Method for Group 2 Alarms  Apply the dynamic brake or coast the motor to a stop (use the						Refere	ence
				Apply the dynamion stopping method				op (use the		
			1 1	Decelerate the mo the maximum torc status after stopp	ue. Use th					
Pn00A		n.□□□X		Decelerate the mo				in Pn406 as	*1	
PNUUA			3	Decelerate the mo Pn30A. Use the s stopping.						
				Decelerate the mo Pn30A and then l			he deceleration	on time set ir	1	
		n.□□X□ Reserved parameter (Do not change.)								
		n.□□X□	Reserved	parameter (Do no	ot change	.)				
		n.□X□		parameter (Do no						
			Reserved	, ,	ot change	.)				

Parameter	ø				Setting	Setting	Default	Applicable	When	Classi-	Refer-
No.	Size		lame		Range	Unit	Setting	Motors	Enabled	fication	ence
	2	Application Selections	n Function B		0000h to 1121h	_	0000h	All	After restart	Setup	_
			Operator	Param	eter Display	Selection	1			Reference	
		n.□□□X	0	Display only setup parameters.						*1	
			1	Displa	y all parame	ters.					
			Motor Sto	Motor Stopping Method for Group 2 Alarms							
			0		the motor by						
Pn00B		n.□□X□	1		the dynamic ing method s			notor to a sto <sub>l</sub> □X).	p (use the	*1	
			2	Set th	e stopping n	nethod wit	h Pn00A =	n.□□□X.			
			Power Inp	out Se	lection for T	hree-phas	e SERVOF	ACK		Referen	nce
		n.□X□□	0	Use a	three-phase	power sup	oply input.				
					three-phase supply inpu		oply input a	and as a single	e-phase	*1	
	-	n.X□□□ Reserved parameter (Do not change.)									
	2	Application Selections	n Function		0000h to 0131h	_	0000h	_	After restart	Setup	*1
										Applicable	
			Function	Function Selection for Test without a Motor							oie S
		n.□□□X	0	Disab	le tests with	out a moto	or.			All	
			1	Enable tests without a motor.						7II	
			Encoder Resolution for Tests without a Motor							Applicat Motors	ole S
Pn00C			0	Use 1	3 bits.						
111000		n.□□X□	1 Use 20 bits.							Rotary	,
			'	030 2		Use 22 bits.					
			2	Use 2	22 bits.					riotary	
				Use 2						riotary	
			2 3	Use 2	22 bits.	Tests with	hout a Mot	or		Applicat Motors	ole
		n.□X□□	2 3	Use 2 Use 2 Type \$	22 bits. 24 bits.			or		Applicat Motors	ole
		n.ロXロロ	2 3 Encoder	Use 2 Use 2 Type 9 Use 2	22 bits. 24 bits. Selection for	al encoder		or		Applicat	ole
		n.0X00	2 3 Encoder 0 1	Use 2 Use 2 Type 5 Use 2 Use 2	22 bits. 24 bits. Selection for	al encoder ncoder.		or		Applicat Motors	ole

1

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Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Application Selections	n Function D	0000h to 1001h	-	0000h	All	Immedi- ately	Setup	*1		
								3,				
	i		Ctarrel alar	a Mada (Tast O	· · · · · · · · · · · · · · ·	\						
		n.□□□X		ne Mode (Test Op Enable connection			Option Modu	مار				
		11.000		Disable connection			<u> </u>					
Pn00D							option wood					
1 11000		n.□□X□	Reserved	parameter (Do no	ot cnange.	.)						
		n.□X□□	Reserved	parameter (Do no	ot change.	)						
				Overtravel Warning Detection Selection								
		n.X□□□		Do not detect overtravel warnings.								
			1 [	Detect overtravel	warnings.							
		1_						T	Т			
Pn00E	2	Reserved (Do not ch		-	-	0000	All	-	-	-		
	2	Application Selections	n Function	0000h to 2011h	-	0000h	All	After restart	Setup	_		
		Colocilorio		201111				rootart				
	Preventative Maintenance Warning Selection Reference											
		n.□□□X		Preventative Maintenance Warning Selection  0 Do not detect preventative maintenance warnings.								
Pn00F		II.UUUX		· · · · · · · · · · · · · · · · · · ·					*1			
1 11001	-	- 00/0		Detect preventative maintenance warnings.								
	n.□□X□ Reserved parameter (Do not change.)											
	-			parameter (20 m		<b>,</b>						
	-	n.□X□□		parameter (Do no		)						
			Reserved	` ` `	ot change.	•						
		n. 🗆 X 🗆 🗆	Reserved	parameter (Do no	ot change.	•						
Pn010		n. 🗆 X 🗆 🗆 n. X 🗆 🗆 Axis Addre	Reserved   Reserved   Reserved	parameter (Do no	ot change.	•	All	After restart	Setup	_		
Pn010 Pn021		n. 🗆 X 🗆 🗆 n. X 🗆 🗆 Axis Addre (For UART munication	Reserved   Reserved	parameter (Do no	ot change.	)	All All		Setup	-		
	2	n. IXIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	Reserved   Reserved	parameter (Do no parameter (Do no no no no no no no no no no no no no	ot change.	0001h			Setup -	- - -		
Pn021	2	n. I I I I I I I I I I I I I I I I I I I	Reserved   Reserved	parameter (Do no parameter (Do no 0000h to 007Fh	ot change.	0001h	All		Setup	- - -		
Pn021 Pn022	2 2	n. I I I I I I I I I I I I I I I I I I I	Reserved   Reserved	parameter (Do no parame	ot change.	0001h 0000h 0000h	All All -	restart  After	- -	- - - -		
Pn021 Pn022	2 2 2 2	n. DXDD  Axis Addre (For UART munication Reserved pot change Reserved pot change Reserved pot change Reserved pot change Reserved pot change Reserved pot change Reserved pot change Reserved pot change Reserved pot change	Reserved   Reserved	parameter (Do no parameter (Do no no no no no no no no no no no no no	ot change.	0001h 0000h 0000h	All	restart	Setup  Setup	*1		
Pn021 Pn022	2 2 2 2	n. I I I I I I I I I I I I I I I I I I I	Reserved   Reserved	parameter (Do no parame	ot change.	0001h 0000h 0000h	All All -	restart  After	- -	*1		
Pn021 Pn022	2 2 2 2	n. I I I I I I I I I I I I I I I I I I I	Reserved   Reserved	parameter (Do not parameter (D	ection	0001h 0000h 0000h 0000h	All All All	restart  After restart	- -	*1		
Pn021 Pn022 Pn040	2 2 2 2	n. I I I I I I I I I I I I I I I I I I I	Reserved   Reserved	parameter (Do no parame	ot change.  t change.	0001h 0000h 0000h 0000h	All All all	restart  After restart	- - Setup	+1		
Pn021 Pn022	2 2 2 2	n. I I I I I I I I I I I I I I I I I I I	Reserved   Reserved	parameter (Do no parame	ection  but change.	0001h 0000h 0000h 0000h in the forworth the forw	All All all	restart  After restart	- - Setup	- - - - *1		
Pn021 Pn022 Pn040	2 2 2 2	n.□X□□  Axis Addre (For UART munication Reserved not change not change Application Selections  n.□□□X  n.□□□X	Reserved   Reserved	parameter (Do no parame	ection  bulses only but change.	0001h 0000h 0000h 0000h in the forworth the forw	All All all	restart  After restart	- - Setup	*1		
Pn021 Pn022 Pn040	2 2 2 2	n.□X□□  Axis Addre (For UART munication Reserved prot changed Prot Cha	Reserved   Reserved   Reserved   Reserved   Reserved   Reserved   Reserved   Reserved   Reserved   Reserved   Reserved   Reserved   Reserved   Reserved   Reserved	parameter (Do no parame	ection out change.	0001h 0000h 0000h 0000h 0000h in the forworth the forw	All All all	restart  After restart	- - Setup	- - - - *1		
Pn021 Pn022 Pn040	2 2 2 2	n.□X□□  Axis Addre (For UART munication Reserved not change not change Application Selections  n.□□□X  n.□□□X	Reserved   Reserved   Reserved   Reserved   Reserved   Reserved   Reserved   Reserved   Reserved   Reserved   Reserved   Reserved   Reserved   Reserved   Reserved	parameter (Do no parame	ection out change.	0001h 0000h 0000h 0000h 0000h in the forworth the forw	All All all	restart  After restart	- - Setup	- - - - *1		
Pn021 Pn022 Pn040	2 2 2 2	n.□X□□  Axis Addre (For UART munication Reserved prot changed Prot Cha	Reserved   Reserved   Reserved   Reserved   Reserved   Reserved   Reserved   Reserved   Reserved   Reserved   Reserved   Reserved   Reserved   Reserved   Reserved	parameter (Do no parame	ection out change.	0001h 0000h 0000h 0000h 0000h in the forworth the forw	All All all	restart  After restart	- - Setup	- - - - *1		
Pn021 Pn022 Pn040	2 2 2 2	n.□X□□  Axis Addre (For UART munication Reserved protections)  Reserved protections  Reserved protections  Application Selections  n.□□X□  n.□□X□  n.□□X□  Speed Local Selections	Reserved   Reserved   Reserved   Reserved   Reserved   Reserved   Reserved   Reserved   Reserved   Reserved   Reserved   Reserved   Reserved   Reserved   Reserved   Reserved   Reserved	parameter (Do no parame	ection out change.	0001h 0000h 0000h 0000h 0000h in the forworth the forw	All All all	restart  After restart  erse direction  Immediately	- - Setup	*1 *1		
Pn021 Pn022 Pn040 Pn081	2 2 2 2	n.□X□□  Axis Addre (For UART munication Reserved pot change not change not change Application Selections  n.□□X□  n.□□X□  n.□□X□  n.□□X□  n.□□X□□	Reserved   Reserved	parameter (Do no parame	ection  bulses in but change.  ot change.	0001h 0000h 0000h 0000h 0000h in the forworth the forw	All  All  All  ard direction vard and reve	restart  After restart  erse direction	Setup			

Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
2	Moment of Inertia Ratio	0 to 20,000	1%	100	All	Immedi- ately	Tuning	*1
2	Second Speed Loop Gain	10 to 20,000	0.1 Hz	400	All	Immedi- ately	Tuning	*1
2	Second Speed Loop Integral Time Constant	15 to 51,200	0.01 ms	2000	All	Immedi- ately	Tuning	*1
2	Second Position Loop Gain	10 to 20,000	0.1/s	400	All	Immedi- ately	Tuning	*1
2	Feedforward	0 to 100	1%	0	All	Immedi- ately	Tuning	*1
2	Feedforward Filter Time Constant	0 to 6,400	0.01 ms	0	All	Immedi- ately	Tuning	*1
2	Gain Application Selections	0000h to 5334h	_	0000h	All	-	Setup	-
	2 2 2 2 2	Moment of Inertia Ratio  Second Speed Loop Gain  Second Speed Loop Integral Time Constant  Second Position Loop Gain  Feedforward  Feedforward Filter Time Constant  Gain Application Selec-	Moment of Inertia Ratio 0 to 20,000  Second Speed Loop 10 to 20,000  Second Speed Loop 15 to 51,200  Second Position Loop 10 to 20,000  Feedforward 0 to 100  Feedforward Filter Time Constant 0 to 6,400  Gain Application Selec- 0000h to	Moment of Inertia Ratio 0 to 20,000 1%  Second Speed Loop 10 to 20,000 0.1 Hz  Second Speed Loop 15 to 51,200 0.01 ms  Second Position Loop Gain 10 to 20,000 0.1/s  Feedforward 0 to 100 1%  Feedforward Filter Time Constant 0 to 6,400 0.01 ms  Gain Application Selec- 0000h to	Name         Range         Unit         Setting           2         Moment of Inertia Ratio         0 to 20,000         1%         100           2         Second Speed Loop Gain         10 to 20,000         0.1 Hz         400           2         Second Speed Loop Integral Time Constant         15 to 51,200         0.01 ms         2000           2         Second Position Loop Gain         10 to 20,000         0.1/s         400           2         Feedforward         0 to 100         1%         0           2         Feedforward Filter Time Constant         0 to 6,400         0.01 ms         0           3         Gain Application Selectory         0000h to         0000h	Name         Range         Unit         Setting         Motors           2         Moment of Inertia Ratio         0 to 20,000         1%         100         All           2         Second Speed Loop Gain         10 to 20,000         0.1 Hz         400         All           2         Second Speed Loop Integral Time Constant         15 to 51,200         0.01 ms         2000         All           2         Second Position Loop Gain         10 to 20,000         0.1/s         400         All           2         Feedforward         0 to 100         1%         0         All           2         Feedforward Filter Time Constant         0 to 6,400         0.01 ms         0         All           3         Gain Application Selectory         0000h to         0000h         0000h         All	NameRangeUnitSettingMotorsEnabled2Moment of Inertia Ratio0 to 20,0001%100AllImmediately2Second Speed Loop Gain10 to 20,0000.1 Hz400AllImmediately2Second Speed Loop Integral Time Constant15 to 51,2000.01 ms2000AllImmediately2Second Position Loop Gain10 to 20,0000.1/s400AllImmediately2Feedforward0 to 1001%0AllImmediately2Feedforward Filter Time Constant0 to 6,4000.01 ms0AllImmediately3Gain Application Selection00000h to00000hAll-00000hAll	NameRangeUnitSettingMotorsEnabledfication2Moment of Inertia Ratio0 to 20,0001%100AllImmediatelyTuning2Second Speed Loop Gain10 to 20,0000.1 Hz400AllImmediatelyTuning2Second Speed Loop Integral Time Constant15 to 51,2000.01 ms2000AllImmediatelyTuning2Second Position Loop Gain10 to 20,0000.1/s400AllImmediatelyTuning2Feedforward0 to 1001%0AllImmediatelyTuning2Feedforward Filter Time Constant0 to 6,4000.01 ms0AllImmediatelyTuning3Gain Application Selec- O000h to0000hAllSetup

Pn10B

n.□□□X	Mode Sv	witching Selection	When Enabled	Reference
	0	Use the internal torque reference as the condition (level setting: Pn10C).		
	4	Use the speed reference as the condition (level setting: Pn10D).		*1
	'	Use the speed reference as the condition (level setting: Pn181).	Immedi- ately	
	2	Use the acceleration reference as the condition (level setting: Pn10E).		
	2	Use the acceleration reference as the condition (level setting: Pn182).		
	3	Use the position deviation as the condition (level setting: Pn10F).		
	4	Do not use mode switching.		

n.□□X□	Speed L	oop Control Method	When Enabled	Reference	
	0	PI control		*1	
	1	I-P control	After restart		
	2 to 3	Reserved settings (Do not use.)	rootart		

n.□X□□	Reserved parameter (Do not change.)
n.X□□□	Reserved parameter (Do not change.)

Pn10C	2	Mode Switching Level for Torque Reference	0 to 800	1%	200	All	Immedi- ately	Tuning	*1
Pn10D	2	Mode Switching Level for Speed Reference	0 to 10,000	1 min <sup>-1</sup>	0	Rotary	Immedi- ately	Tuning	*1
Pn10E	2	Mode Switching Level for Acceleration	0 to 30,000	1 min <sup>-1</sup> /	0	Rotary	Immedi- ately	Tuning	*1
Pn10F	2	Mode Switching Level for Position Deviation	0 to 10,000	1 refer- ence unit	0	All	Immedi- ately	Tuning	*1
Pn11F	2	Position Integral Time Constant	0 to 50,000	0.1 ms	0	All	Immedi- ately	Tuning	*1
Pn121	2	Friction Compensation Gain	10 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
Pn122	2	Second Friction Compensation Gain	10 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
Pn123	2	Friction Compensation Coefficient	0 to 100	1%	0	All	Immedi- ately	Tuning	*1
Pn124	2	Friction Compensation Frequency Correction	-10,000 to 10,000	0.1 Hz	0	All	Immedi- ately	Tuning	*1
Pn125	2	Friction Compensation Gain Correction	1 to 1,000	1%	100	All	Immedi- ately	Tuning	*1

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Parameter No.	Size	N	Name			Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn131	2	Gain Switc	hing Time	1	0 to 65,535	1 ms	0	All	Immedi- ately	Tuning	*1
Pn132	2	Gain Switc	n Switching Time 2		0 to 65,535	1 ms	0	All	Immedi- ately	Tuning	*1
Pn135	2	Gain Switch Time 1	Gain Switching Waiting Time 1		0 to 65,535	1 ms	0	All	Immedi- ately	Tuning	*1
Pn136	2	Gain Switc Time 2	Gain Switching Waiting Time 2		0 to 65,535	1 ms	0	All	Immedi- ately	Tuning	*1
	2	Automatic ing Selection		ch-	0000h to 0052h	-	0000h	All	Immedi- ately	Tuning	*1
		n.□□□X	0 1 2	Disable automatic gain switching.  Reserved setting (Do not use.)  Enable automatic gain switching.							
			Gain Switching Condition A								
Pn139			0	/CC	IN (Positioning	Completi	on Output)	signal turns (	ON.		
			1		IN (Positioning		' '	signal turns (	OFF.		
		n.□□X□	2	/NE	AR (Near Outp	ut) signal	turns ON.				
			3	/NE	AR (Near Outp	ut) signal	turns OFF.				
			4	Pos	ition reference	filter outp	ut is 0 and	position refer	ence input is	OFF.	
			5	Pos	ition reference	input is O	N.				
		n.□X□□	Reserved	l par	ameter (Do no	t change.	)				
	Ι.										

Pn13D	2	Current Gain Level	100 to 2,000	1%	2000	All	Immedi- ately	Tuning	*1
	2	Model Following Control-Related Selections	0000h to 1121h	1	0100h	All	Immedi- ately	Tuning	-

Reserved parameter (Do not change.)

 $n.X\square\square\square$ 

Model Following Control Gain Correction

2

Pn142

			Model Fo	llowii	ng Control Sel	ection				Referen	ice
	n	n.□□□X	0	Do n	ot use model f	ollowing o	control.			*1	
			1	Use	model followin	g control.				*1	
	1		Vibration	Supp	pression Selec	tion				Referer	nce
	_	.ППХП	0	Do n	ot perform vib	ration sup	pression.				
	1	1	1	Perfo	orm vibration s	uppressio	n for a spe	cific frequenc	y.	*1	
Pn140			2								
	П		Vibration	Supp	pression Adjus	tment Se	lection			Referer	псе
	n	n.□X□□	0	Do not adjust vibration suppression automatically during execution of autotuning without a host reference, autotuning with a host reference, and custom tuning.  Adjust vibration suppression automatically during execution of autotuning without a host reference, autotuning with a host reference, and custom tuning.							
			1 1							*1	
	n	n.X000	Reserved	para	meter (Do not	change.)					
Pn141	2	Model Fol trol Gain	lowing Con	1-	10 to 20,000	0.1/s	500	All	Immedi- ately	Tuning	*

0.1%

1000

ΑII

500 to 2,000

Continued on next page.

Tuning

Immediately

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn143	2	Model Follo trol Bias in Direction	owing Con- the Forward	0 to 10,000	0.1%	1000	All	Immedi- ately	Tuning	*1
Pn144	2	Model Follo trol Bias in Direction	owing Con- the Reverse	0 to 10,000	0.1%	1000	All	Immedi- ately	Tuning	*1
Pn145	2	Vibration S Frequency	uppression 1 A	10 to 2,500	0.1 Hz	500	All	Immedi- ately	Tuning	*1
Pn146	2	Vibration S Frequency	uppression 1 B	10 to 2,500	0.1 Hz	700	All	Immedi- ately	Tuning	*1
Pn147	2	Model Follo trol Speed Compensa	Feedforward	0 to 10,000	0.1%	1000	All	Immedi- ately	Tuning	*1
Pn148	2	Second Moing Control	odel Follow- Gain	10 to 20,000	0.1/s	500	All	Immedi- ately	Tuning	*1
Pn149	2		odel Follow- Gain Correc-	500 to 2,000	0.1%	1000	All	Immedi- ately	Tuning	*1
Pn14A	2	Vibration S Frequency	uppression 2	10 to 2,000	0.1 Hz	800	All	Immedi- ately	Tuning	*1
Pn14B	2	Vibration S Correction	uppression 2	10 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
	2	Control-Re tions	lated Selec-	0000h to 0021h	_	0021h	All	After restart	Tuning	_
Pn14F		n.00X0 n.0X00 n.X000	1 Use tuning-less type 2. 2 Use tuning-less type 3.  □□ Reserved parameter (Do not change.)						Reference *1	
	2	Anti-Reson trol-Related	ance Con- d Selections	0000h to 0011h	-	0010h	All	Immedi- ately	Tuning	_
		n.□□□X	0 Do	nce Control Se not use anti-re a anti-resonance nce Control Ad	sonance o				Refere	
Pn160		n.□□X□	0 tion reference Adjust	not adjust anti- n of autotuning erence, and cus- ust anti-resona otuning withou- ce, and custom	without a latom tuning nce control to a host re	nost refere g. ol automati	nce, autotunir ically during e	ng with a hos xecution of	*1	
		n.□X□□	Reserved par	rameter (Do no	t change.	)				
	n.X□□□ Reserved parameter (Do not change.)									
Pn161	2	Anti-Reson	ance Fre-	10 to 20,000	0.1 Hz	1000	All	Immedi- ately	Tuning	*1
Pn162	2	Anti-Reson Correction	ance Gain	1 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
	I	1		II.	Ĭ	<u> </u>	I	Continue	d on nex	t nage

	ь	

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer
Pn163	2	Anti-Resor	nance Damp-	0 to 300	1%	0	All	Immedi- ately	Tuning	*1
Pn164	2	Anti-Resor Time Cons rection	nance Filter stant 1 Cor-	-1,000 to 1,000	0.01 ms	0	All	Immedi- ately	Tuning	*1
Pn165	2		nance Filter stant 2 Cor-	-1,000 to 1,000	0.01 ms	0	All	Immedi- ately	Tuning	*1
Pn166	2	Anti-Resor ing Gain 2	nance Damp-	0 to 1,000	1%	0	All	Immedi- ately	Tuning	*1
	2	Tuning-less Related Se	s Function- elections	0000h to 2711h	-	1401h	All	-	Setup	*1
n.□□□X			0 Dis	-less Selection  Disable tuning-less function.  Enable tuning-less function.  ed parameter (Do not change.)						
Pn170		n. 🗆 X 🗆 🗆	0 to 7 Se	Tuning-less Load Level						edi- ly en led
 Pn205	2	Multiturn L		t the load level	for the tun	65535*3	nction.	After	Imme atel	
Pn207	2	Reserved	oarameter	_	-	0010h*2	All	restart -		_
Pn20A	2	Number of Encoder S		4 to 1,048,576	1 scale pitch/ revolu- tion	32768	Rotary	After restart	Setup	*1
Pn20E	2	Electronic (Numerato	Gear Ratio r)	1 to 1,073,741,824	1	64	All	After restart	Setup	*1
Pn210	2	Electronic (Denomina	Gear Ratio tor)	1 to 1,073,741,824	1	1	All	After restart	Setup	*1
Pn212	2	Number of Output Pu		16 to 1,073,741,824	1 P/Rev	2048	Rotary	After restart	Setup	*1
Pn217	2	Average M Time of Po ence	ovement osition Refer-	0 to 10,000	0.1 ms	0	All	After the change and also after the motor has stopped	Setup	-
	2	Fully-close	d Control	0000h to		0000h	Rotary	After	Setup	*1

n.□□□X	Reserved parameter (Do not change.)									
n.□□X□	Reserve	Reserved parameter (Do not change.)								
$n.\Box X\Box\Box$	Reserved parameter (Do not change.)									
	Fully-clo	sed Control Speed Feedback Selection								
n.X□□□	0 Use motor encoder speed.									
	1 Use external encoder speed.									

Pn22A

								unueu nom	p. 0 1. 0 a.c	
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn230	2	Reserved p (Do not ch	oarameter ange.)	_	-	0000h	All	-	-	_
Pn231	2	Reserved p (Do not ch		_	-	0	All	_	-	_
Pn233	2	Reserved p (Do not ch	oarameter ange.)	_	_	0	All	-	-	_
Pn281	2	Encoder O tion	utput Resolu-	1 to 4,096	1 edge/ pitch	20	All	After restart	Setup	*1
Pn304	2	Jogging Sp	oeed	0 to 10,000	Rotary: 1 min <sup>-1</sup> Direct Drive: 0.1 min <sup>-1</sup>	500	Rotary	Immedi- ately	Setup	*1
Pn305	2	Soft Start /	Acceleration	0 to 10,000	1 ms	0	All	Immedi- ately	Setup	*1
Pn306	2	Soft Start I Time	Deceleration	0 to 10,000	1 ms	0	All	Immedi- ately	Setup	*1
Pn308	2	Speed Fee Time Cons	dback Filter stant	0 to 65,535	0.01 ms	0	All	Immedi- ately	Setup	*1
Pn30A	2		on Time for and Forced	0 to 10,000	1 ms	0	All	Immedi- ately	Setup	*1
Pn30C	2		eserved parameter (Do ot change.)		-	0	All	-	-	_
	2	Vibration D Selections		0000h to 0002h	-	0000h	All	Immedi- ately	Setup	*1
Pn310		n.000X n.00X0 n.0X00	1 Out 2 Out Reserved par	Do not detect vibration.  Output a warning (A.911) if vibration is detected.  Output an alarm (A.520) if vibration is detected.  ed parameter (Do not change.)  ed parameter (Do not change.)						
Pn311	2	Vibration D sitivity	etection Sen-	50 to 500	1%	100	All	Immedi- ately	Tuning	*1
Pn312	2	Vibration D Level	etection	0 to 5,000	1 min <sup>-1</sup>	50	Rotary	Immedi- ately	Tuning	*1
Pn316	2	Maximum	Motor Speed	0 to 65,535	1 min <sup>-1</sup>	10000	Rotary	After restart	Setup	
Pn324	2	Moment of culation St								*1
Pn401		Circt Ctore	Inertia Cal- arting Level	0 to 20,000	1%	300	All	Immedi- ately	Setup	*1
	2		Inertia Cal- arting Level First Torque Filter Time	0 to 20,000 0 to 65,535	1% 0.01 ms	300	All All		•	
Pn402	2	Reference Constant	arting Level First Torque					ately Immedi-	Setup	*1
Pn402 Pn403		Reference Constant Forward To	arting Level First Torque Filter Time	0 to 65,535	0.01 ms	100	All	ately Immediately Immediately	Setup	*1
	2	Reference Constant Forward To Reverse To Reserved pot change	arting Level First Torque Filter Time  orque Limit orque Limit orque Limit orque Limit orque Limit orque Limit	0 to 65,535 0 to 800	0.01 ms	100	All Rotary	Immediately Immediately Immediately Immediately	Setup Tuning Setup	*1 *1 *1
Pn403	2	Reference Constant Forward To Reverse To Reserved pot change	arting Level First Torque Filter Time  prque Limit prque Limit parameter (Do e.)	0 to 65,535 0 to 800	0.01 ms 1%*4 1%*4	100 800 800	All Rotary Rotary	Immediately Immediately Immediately Immediately	Setup Tuning Setup Setup	*1 *1 *1
Pn403 Pn404	2 2 2	Reference Constant  Forward To  Reverse To  Reserved pot change  Reserved pot change	arting Level First Torque Filter Time  prque Limit prque Limit parameter (Do e.)	0 to 65,535 0 to 800	0.01 ms  1%*4  1%*4	100 800 800 100	All Rotary Rotary All	Immediately Immediately Immediately Immediately	Setup Tuning Setup Setup -	*1 *1 *1

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Parameter No.	Size		ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Torque-Rel tion Select	ated Func- ions	0000h to 1111h	-	0000h	All	_	Setup	-
			Notch Filter	Selection 1				When Enabled	Refere	nce
		n.□□□X		able first stage able first stage				Immedi- ately	*1	
		n.□□X□	Reserved pa	rameter (Do no	ot change.	)			<u>'</u>	
Pn408			Notch Filter S	Selection 2				When Enabled	Refere	nce
		n.□X□□							*1	
			1 Ena	able second sta	age notch	filter.		ately		
			Friction Com	pensation Fun	ction Sele	ection		When Enabled	Refere	nce
		n.X□□□		able friction co				Immedi-	*1	
			1 Ena	able friction cor	npensatio	n.		ately		
Pn409	2	First Stage Frequency	Notch Filter	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn40A	2	, ,	Notch Filter	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1
Pn40B	2	First Stage Depth	Notch Filter	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1
Pn40C	2	Second Stater Frequer	age Notch Fil- ncy	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn40D	2	Second Stater Q Value	age Notch Fil-	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1
Pn40E	2	Second Stater Depth	age Notch Fil-	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1
Pn40F	2	Second Sta Torque Ref Frequency	age Second erence Filter	100 to 5,000	1 Hz	4000	All	Immedi- ately	Tuning	*1
Pn410	2	Second Sta Torque Ref Q Value	age Second erence Filter	50 to 100	0.01	50	All	Immedi- ately	Tuning	*1
Pn412	2	First Stage Torque Ref Time Cons	erence Filter	0 to 65,535	0.01 ms	100	All	Immedi- ately	Tuning	*1
	2	Torque-Rel tion Selecti	ated Func- ions 2	0000h to 1111h	_	0000h	All	Immedi- ately	Setup	*1
			Notch Filter							
		n.□□□X		able third stage						
					TIOTOTI IIILE	/I.				
Pn416		n.□□X□	Notch Filter S	Selection 4 able fourth stag	ge notch fi	Iter.				
				able fourth stag						
	İ		Notch Filter S	Selection 5						
		n.□X□□		able fifth stage						
			1 Enable fifth stage notch filter.							
		n.X□□□	Reserved pa	rameter (Do no	ot change.	)				
Pn417	2	Third Stage Frequency	e Notch Filter	50 to 5,000	1 Hz	5000	All	Immedi- ately Continued	Tuning	*1 t page.

Continued from previous page.

Parameter No.	Size	N	ame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn418	2	Third Stage Q Value	e Notch Fi	lter	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1
Pn419	2	Third Stage Depth	e Notch Fi	lter	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1
Pn41A	2	Fourth Stagter Frequer		Fil-	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn41B	2	Fourth Stagter Q Value		Fil-	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1
Pn41C	2	Fourth Stagter Depth	ge Notch	Fil-	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1
Pn41D	2	Fifth Stage Frequency	Notch Fil	ter	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1
Pn41E	2	Fifth Stage Q Value	Notch Fil	ter	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1
Pn41F	2	Fifth Stage Depth	Notch Fil	ter	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1
	2	Speed Ripp sation Sele		en-	0000h to 1111h	-	0000h	Rotary	-	Setup	*1
					e Compensatio	n Functio	n Selectio	n		Whe Enab	
	n.□□□X		0	Dis	able speed ripp	ole compe	nsation.			Imme	di-
			1	Ena	able speed ripp	le comper	nsation.			atel	У
Pn423			Speed R tion Sele			Compensation Information Disagreement Warning Detec-					
F11423		n.□□X□	0	Det	ect A.942 alarr	After					
			1	Do	not detect A.9		restart				
			Speed R	ipple	e Compensatio	Compensation Enable Condition Selection					
		n.□X□□	0	Spe	eed reference					Afte	
			1	Mo	tor speed					resta	rt ——
		n.X□□□	Reserve	d pai	rameter (Do no	ot change.	.)				
						1		1			
Pn424	2	Torque Lim cuit Voltage	it at Main e Drop	Cir-	0 to 100	1%*4	50	All	Immedi- ately	Setup	*1
Pn425	2	Release Tir Limit at Ma Voltage Dro	in Circuit	que	0 to 1,000	1 ms	100	All	Immedi- ately	Setup	*1
Pn426	2	Reserved p		(Do	_	-	0	All	_	_	_
Pn427	2	Speed Ripp sation Ena	ple Composite Speed	en-	0 to 10,000	1 min <sup>-1</sup>	0	Rotary Ser- vomotor	Immedi- ately	Tuning	*1
Pn456	2	Sweep Tore ence Ampl		-	1 to 800	1%	15	All	Immedi- ately	Tuning	*1
									Continue	d on nov	+ 5000

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Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence			
	2	Notch Filter Adjustmen Selections 1	t 0000h to 0101h	-	0101h	All	Immedi- ately	Tuning	*1			
			r Adjustment Se		notch filter	automatically	durina exec	cution of a	uto-			
	•	n.□□□X 0 ti	uning without a h uning.	ost referer	nce, autotu	ning with a ho	ost reference	, and cust	om			
			djust the first sta vithout a host refe									
Pn460	ı	n.□□X□ Reserved p	parameter (Do no	t change	.)							
			r Adjustment Se									
		O fu	Do not adjust the second stage notch filter automatically when the tuning-less function is enabled or during execution of autotuning without a host reference, autotuning with a host reference, and custom tuning.									
		1 ti	Adjust the second stage notch filter automatically when the tuning-less function is enabled or during execution of autotuning without a host reference, autotuning with a host reference, and custom tuning.									
	ı	n.X□□□ Reserved p	parameter (Do no	ot change	.)							
				1	ı	1	t	1				
	2	Gravity Compensation- Related Selections	0000h to 0001h	_	0000h	All	After restart	Setup	*1			
	1	n.□□□X Gravity Cor	npensation Selec	tion								
			isable gravity co									
Pn475	1 Enable gravity compensation.											
	n.□□X□ Reserved parameter (Do not change.)											
	I	n.□X□□ Reserved p	arameter (Do not	change.)								
	I	n.X□□□ Reserved p	arameter (Do not	change.)								
Pn476	2	Gravity Compensation Torque	-1,000 to 1,000	0.1%	0	All	Immedi- ately	Tuning	*1			
Pn502	2	Rotation Detection Lev	el 0 to 10,000	1 min <sup>-1</sup>	20	Rotary	Immedi- ately	Setup	*1			
Pn503	2	Reserved parameter (Donot change.)	_	-	10	Rotary	_	-	_			
Pn506	2	Brake Reference-Servo OFF Delay Time	0 to 50	10 ms	0	All	Immedi- ately	Setup	*1			
Pn507	2	Brake Reference Output Speed Level	0 to 10,000	1 min <sup>-1</sup>	100	Rotary	Immedi- ately	Setup	*1			
Pn508	2	Servo OFF-Brake Com mand Waiting Time	10 10 100	10 ms	50	All	Immedi- ately	Setup	*1			
Pn509	2	Momentary Power Inter ruption Hold Time	20 10 50,000	1 ms	20	All	Immedi- ately	Setup	*1			
Pn50A	2	Reserved parameter (Do not change.)	_	-	1881h*2	All	_	_	-			
Pn50B	2	Reserved parameter (Denot change.)	_	-	8882h*2	All	-	_	-			
Pn50E	2	Reserved parameter (Do not change.)	_	-	0000h*5	All	_	_	-			
Pn50F	2	Reserved parameter (Denot change.)	_	-	0100h*6	All	_	_	-			
Pn510	2	Reserved parameter (Denot change.)	_	-	0000h*1	All	_	_	-			
Pn511	2	Reserved parameter (Do not change.)	_	_	6543h* <sup>7</sup>	All	-	d on nov	_			

Parameter	Size	Name	Setting	Setting	Default	Applicable	When	Classi-	Refer-
No.	S	1330113	Range	Unit	Setting	Motors	Enabled	fication	ence
Pn512	2	Reserved parameter (Do not change.)	_	_	0000h*8	All	_	_	_
Pn514	2	Reserved parameter (Do not change.)	-	_	0000h	All	-	_	-
Pn516	2	Reserved parameter (Do not change.)	-	-	8888h	All	-	-	-
Pn517	2	Reserved parameter (Do not change.)	-	-	0000h*9	All	-	-	_
Pn518	2	Safety Module-Related Parameters	-	-	-	All	-	-	_
Pn51B	2	Motor-Load Position Deviation Overflow Detection Level	0 to 1,073,741,824	1 refer- ence unit	1000	Rotary	Immedi- ately	Setup	*1
Pn51E	2	Position Deviation Over- flow Warning Level	10 to 100	1%	100	All	Immedi- ately	Setup	*1
Pn520	2	Position Deviation Over- flow Alarm Level	1 to 1,073,741,823	1 refer- ence unit	5242880	All	Immedi- ately	Setup	*1
Pn522	2	Reserved parameter (Do not change.)	_	-	7*10	All	_	-	_
Pn524	2	Reserved parameter (Do not change.)	_	-	1073741824	All	-	-	-
Pn526	2	Position Deviation Over- flow Alarm Level at Servo ON	1 to 1,073,741,823	1 refer- ence unit	5242880	All	Immedi- ately	Setup	*1
Pn528	2	Position Deviation Over- flow Warning Level at Servo ON	10 to 100	1%	100	All	Immedi- ately	Setup	*1
Pn529	2	Speed Limit Level at Servo ON	0 to 10,000	1 min <sup>-1</sup>	10000	Rotary	Immedi- ately	Setup	*1
Pn52A	2	Multiplier per Fully- closed Rotation	0 to 100	1%	20	Rotary	Immedi- ately	Tuning	*1
Pn52B	2	Overload Warning Level	1 to 100	1%	20	All	Immedi- ately	Setup	*1
Pn52C	2	Base Current Derating at Motor Overload Detection	10 to 100	1%	100	All	After restart	Setup	*1
	2	Program Jogging- Related Selections	0000h to 0005h	_	0000h	All	Immedi- ately	Setup	*1

	Program	Jogging Operation Pattern
n.□□□X	0	(Waiting time in Pn535 $\rightarrow$ Forward by travel distance in Pn531) $\times$ Number of movements in Pn536
	1	(Waiting time in Pn535 $\rightarrow$ Reverse by travel distance in Pn531) $\times$ Number of movements in Pn536
	2	(Waiting time in Pn535 → Forward by travel distance in Pn531) × Number of movements in Pn536 (Waiting time in Pn535 → Reverse by travel distance in Pn531) × Number of movements in Pn536
	3	(Waiting time in Pn535 → Reverse by travel distance in Pn531) × Number of movements in Pn536 (Waiting time in Pn535 → Forward by travel distance in Pn531) × Number of movements in Pn536
	4	(Waiting time in Pn535 $\rightarrow$ Forward by travel distance in Pn531 $\rightarrow$ Waiting time in Pn535 $\rightarrow$ Reverse by travel distance in Pn531) $\times$ Number of movements in Pn536
	5	(Waiting time in Pn535 $\rightarrow$ Reverse by travel distance in Pn531 $\rightarrow$ Waiting time in Pn535 $\rightarrow$ Forward by travel distance in Pn531) $\times$ Number of movements in Pn536

Pn530

n.□□X□ Reserved parameter (Do not change.)

n.□X□□ Reserved parameter (Do not change.)

n.X□□□ Reserved parameter (Do not change.)

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Parameter	Size	N	ame		Setting	Setting	Default	Applicable	When	Classi-	Refer-
No.	<sub>O</sub>				Range	Unit	Setting	Motors	Enabled	fication	ence
Pn531	2	Program Jogging Travel Distance			1 to 073,741,824	1 refer- ence unit	32768	All	Immedi- ately	Setup	*1
Pn533	2	Program Jogging Move- ment Speed			to 10,000	Rotary: 1 min <sup>-1</sup> Direct Drive: 0.1 min <sup>-1</sup>	500	Rotary	Immedi- ately	Setup	*1
Pn534	2		Program Jogging Acceleration/Deceleration Time			1 ms	100	All	Immedi- ately	Setup	*1
Pn535	2	Program Jing Time	ogging Wa	ait- O	to 10,000	1 ms	100	All	Immedi- ately	Setup	*1
Pn536	2		Program Jogging Num- ber of Movements			Times	1	All	Immedi- ately	Setup	*1
Pn550	2	Analog Monitor 1 Offset Voltage			10,000 to 10,000	0.1 V	0	All	Immedi- ately	Setup	*1
Pn551	2	Analog Monitor 2 Offset Voltage			10,000 to 10,000	0.1 V	0	All	Immedi- ately	Setup	*1
Pn552	2	Analog Monitor 1 Mag- nification		ag	10,000 to 10,000	× 0.01	100	All	Immedi- ately	Setup	*1
Pn553	2	Analog Monitor 2 Mag- nification		ag	10,000 to 10,000	× 0.01	100	All	Immedi- ately	Setup	*1
Pn55A	2	Power Consumption Monitor Unit Time		1	to 1,440	1 min	1	All	Immedi- ately	Setup	_
Pn560	2	Residual V Detection V		1	to 3,000	0.1%	400	All	Immedi- ately	Setup	*1
Pn561	2	Overshoot Level	Detection	'	0 to 100	1%	100	All	Immedi- ately	Setup	*1
Pn600	2	Regenerati Capacity*1	ive Resisto		epends on model.*12	10 W	0	All	Immedi- ately	Setup	*1
Pn601	2	Dynamic B tor Allowak Consumpt	ole Energy		to 65,535	10 J	0	All	After restart	Setup	*13
Pn603	2	Regenerati tance	ive Resis-	0	to 65,535	10 mΩ	0	All	Immedi- ately	Setup	*1
Pn604	2	Dynamic B tance	Brake Resis	S- 0	to 65,535	10 mΩ	0	All	After restart	Setup	*13
	2	Overheat F Selections	Protection	(	0000h to 0003h	-	0000h	Linear	After restart	Setup	*1
				•							
	Ī	n.□□□X	Overheat	Protect	ion Selectio	n					
			0	Disable	e overheat p	protection.					
			1	Use ov	erheat prot	ection in t	he Yaskaw	a Linear Serv	omotor.*14		-
				Monito	r a negative	voltage ir	nout from a	a sensor attac	hed to the n	nachine ar	nd

Dn	c	4	۸

n.□□□X	Overheat	Overheat Protection Selection									
	0	Disable overheat protection.									
	1	Use overheat protection in the Yaskawa Linear Servomotor.*14									
	2	Monitor a negative voltage input from a sensor attached to the machine and use overheat protection.									
	3	Monitor a positive voltage input from a sensor attached to the machine and use overheat protection.									

n.□□X□	Reserved parameter (Do not change.)
n.□X□□	Reserved parameter (Do not change.)
n.X□□□	Reserved parameter (Do not change.)

Pn61B *15	2	Overheat Alarm Level	0 to 500	0.01 V	250	All	Immedi- ately	Setup	*1
Pn61C *15	2	Overheat Warning Level	0 to 100	1%	100	All	Immedi- ately	Setup	*1
Pn61D *15	2	Overheat Alarm Filter Time	0 to 65,535	1 s	0	All	Immedi- ately	Setup	*1

Parameter	Ф			Setting	Setting	Default	Applicable	When	Classi-	Refer-		
No.	Size	Na	ame	Range	Unit	Setting	Motors	Enabled	fication	ence		
	2	Serial Com Protocol	munication	0 to 9	_	1	All	After restart	Setup	*1		
		0	Full-duplex w	riring is used fo	r commur	nications m	ethod.					
		Full-duplex wiring is used for communications method. Echoback is performed character.								ach		
		2	Half-duplex v	viring is used fo	or commu	nications m	nethod. CR is	used as deli	imiter.			
		3		viring is used fo for each chara		nications m	nethod. CR is	used as deli	miter. Ech	oback		
PnB00		4		Half-duplex wiring is used for communications method. CR is used as delimiter. Echobs performed for each command.								
		5		viring is used fo								
		6	back is perfo	viring is used for med for each	character.							
		7		viring is used for rmed for each			nethod. CRLF	is used as c	delimiter. E	cho-		
		8, 9	Reserved par	rameter								
	2	Bit rate		0 to 2	_	0	All	After restart	Setup	*1		
D . D04		0 Sets bit rate at 9600 bps.										
PnB01		1 Sets bit rate at 19200 bps.										
		2	Sets bit rate	at 38400 bps.								
							T.					
	2	Response '	"OK"	0, 1	_	1	All	Immedi- ately	Setup	*1		
PnB02		0	Does not retu	ırn OK respons	se.							
1 11502		1	Returns OK r	esponse.								
	2	/MODE 0/1		0 to 3	-	0	All	After restart	Setup	*1		
		0	When innut sid	gnal is ON (clos	sed) mod	e is set to	Mode 0					
PnB03			· · · · · · · · · · · · · · · · · · ·	gnal is OFF (op	,·					<del></del>		
		2	Always Mode	0								
		3	Always Mode	1								
	2	/START-ST	OP; /HOME	0 to 3	-	0	All	After restart	Setup	*1		
Do DO 4		0	/START-STO STOP signal	DDE signal is ON (closed) (mode 0): Start program table operation when the TOP signal turns ON (closes). Stop program table operation when the /START-nal turns OFF (opens). DDE signal is OFF (open) (mode 1): Turn ON (close) the /HOME signal to start an								
PnB04		1	/START-STC STOP signal	DE signal is ON DP signal turns I turns ON (clos DE signal is OFF urn.	OFF (ope ses).	ns). Stop p	rogram table	operation wh	nen the /S	TART-		
		2, 3		E signal is ON E signal is OFF								

								linuea iron	promode	pago.		
Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	/PGMRES	; /JOGP	0 to 3	_	0	All	After restart	Setup	*1		
PnB05		0	reset and ca	DE signal is ON (closed) (mode 0): Turn ON (close) the /PGMRES signal to ancel program table operation. DE signal is OFF (open) (mode 1): Jog forward while the /JOGP signal is ON								
111200		1	reset and ca	When /MODE signal is ON (closed) (mode 0): Turn OFF (open) the /PGMRES signal to reset and cancel program table operation.  When /MODE signal is OFF (open) (mode 1): Jog forward while the /JOGP signal is OFF (open).								
		2, 3		E signal is ON (closed) (mode 0): Do not reset program table operation. E signal is OFF (open) (mode 1): Do not perform jogging.								
	2	/SEL0; /J0	OGN	0 to 3	-	0	All	After restart	Setup	*1		
	When /MODE signal is ON (closed) (mode 0): /SEL0 s     When /MODE signal is OFF (open) (mode 1): Jog in re (closed).								,	,		
PnB06		1		When /MODE signal is ON (closed) (mode 0): The /SEL0 signal is active when OFF (open). When /MODE signal is OFF (open) (mode 1): Jog in reverse while the /JOGN signal is OFF open).								
		2		E signal is ON E signal is OFF	, , ,	,	•	•	active.			
		3		DE signal is ON DE signal is OFI					inactive.			
	2	/SEL1; /JOG0		0 to 3	_	0	All	After restart	Setup	*1		
		0		•	. , .	(mode 0): /SEL1 signal is active when ON (closed). (mode 1): /JOG0 signal is active when ON (closed).						
PnB07		1		en /MODE signal is ON (closed) (mode 0): The /SEL1 signal is active when OFF (open). en /MODE signal is OFF (open) (mode 1): The /JOG0 signal is active when OFF (open).								
		2		DE signal is ON DE signal is OFI			-	-				
		3		DE signal is ON DE signal is OFF	, , ,	,	•	•				
	2	/SEL2; /J0	DG1	0 to 3	-	0	All	After restart	Setup	*1		
		0		DE signal is ON DE signal is OFf			-					
PnB08		1		E signal is ON E signal is OFF								
		2		DE signal is ON DE signal is OFF								
		3		DE signal is ON DE signal is OFI	, , ,	,	•	•				
		-	1	-		,						

Parameter   No.   S								Con	tinued from	previous	3 page.
PhB09		Size	١	lame	_	_					
PhB09		2	/SEL3; /J0	DG2	0 to 3	-	0	All		Setup	*1
PhB09			0	When /MOD	E signal is OFF	(open) (n	node 1): /J(	OG2 signal is	active when	ON (close	ed).
When /MODE signal is OFF (open) (mode 0): The /SEL3 signal is always active.	PnB09		1	When /MOD	E signal is OFF	(open) (n	node 1): Th	e /JOG2 sign	al is active w	hen OFF	
PhB0A   PhB0			2								
PRBOA			3		•	, , ,	,	•	•		
PRBOA									A ft -		
PnB0A		2	/SEL4; /J0	DG3	0 to 3	-	0	All		Setup	*1
- When /MODE signal is OFF (open) (mode 1): The /JOG3 signal is active when OFF (open).			0	When /MOD	E signal is OFF	(open) (n	node 1): /J(	OG3 signal is	active when	ON (close	ed).
PhBOE   When /MODE signal is OFF (open) (mode 1): The /JOG3 signal is always active.	PnB0A		1								
PnBOB  2			2								
Para			3		0	. , .	,	•	-		
Para											
PnB0B  1 The /SEL5 signal is active when OFF (open). 2 The /SEL5 signal is always active. 3 The /SEL5 signal is always inactive.  2 /SEL6  0 to 3 - 0 All After restart Setup *1  0 The /SEL6 signal is active when ON (closed). 1 The /SEL6 signal is active when OFF (open). 2 The /SEL6 signal is always active. 3 The /SEL6 signal is always inactive.  2 /SEL7  0 to 3 - 0 All After restart Setup *1  0 The /SEL6 signal is always inactive.  2 /SEL7  0 to 3 - 0 All After restart Setup *1  0 The /SEL7 signal is active when ON (closed). 1 The /SEL7 signal is active when OFF (open). 2 The /SEL7 signal is active when OFF (open). 2 The /SEL7 signal is always inactive.  2 /S-ON  0 to 3 - 0 All After restart Setup *1  0 The system changes to the SERVO ON state (power is supplied) and operation is enabled when the /S-ON signal turns OFF (opens). 2 The system changes to the SERVO ON state (power is supplied) and operation is enabled when the /S-ON signal turns OFF (opens). 2 The system changes to the SERVO ON state (power is supplied) and operation is enabled when the /S-ON signal turns OFF (opens). 2 The system is always in the SERVO ON state.		2	/SEL5		0 to 3	_	0	All		Setup	*1
PnB0B  1 The /SEL5 signal is active when OFF (open). 2 The /SEL5 signal is always active. 3 The /SEL5 signal is always inactive.  2 /SEL6  0 to 3 - 0 All After restart Setup *1  0 The /SEL6 signal is active when ON (closed). 1 The /SEL6 signal is active when OFF (open). 2 The /SEL6 signal is always active. 3 The /SEL6 signal is always inactive.  2 /SEL7  0 to 3 - 0 All After restart Setup *1  0 The /SEL6 signal is always inactive.  2 /SEL7  0 to 3 - 0 All After restart Setup *1  0 The /SEL7 signal is active when ON (closed). 1 The /SEL7 signal is active when OFF (open). 2 The /SEL7 signal is active when OFF (open). 2 The /SEL7 signal is always inactive.  2 /S-ON  0 to 3 - 0 All After restart Setup *1  0 The /SEL7 signal is always inactive.  1 The /SEL7 signal is always inactive.  2 /S-ON  0 to 3 - 0 All After restart Setup *1  The /SEL7 signal is always inactive.  1 The /SEL7 signal is always inactive.  1 The system changes to the SERVO ON state (power is supplied) and operation is enabled when the /S-ON signal turns OFF (opens). 2 The system changes to the SERVO ON state (power is supplied) and operation is enabled when the /S-ON signal turns OFF (opens). 2 The system is always in the SERVO ON state.			0	The /SEL5 sig	nal is active w	hen ON (c	losed).				
PRBOC  2 /SEL6	PnB0B		1	_							
PRBOC  2 /SEL6			2	-			. ,				
PnBOC    The /SEL6 signal is active when ON (closed).   The /SEL6 signal is active when OFF (open).   2   The /SEL6 signal is always active.   3   The /SEL6 signal is always inactive.   3   The /SEL6 signal is always inactive.   4   The /SEL7 signal is active when ON (closed).   1   The /SEL7 signal is active when ON (closed).   1   The /SEL7 signal is active when OFF (open).   2   The /SEL7 signal is always active.   3   The /SEL7 signal is always inactive.   3   The /SEL7 signal is always inactive.   4   The /SEL7 signal is always inactive.   5   The /SEL7 signal is always in			3								
PnBOC    The /SEL6 signal is active when ON (closed).									After		
PnBOC  1 The /SEL6 signal is active when OFF (open). 2 The /SEL6 signal is always active. 3 The /SEL6 signal is always inactive.  2 /SEL7  0 to 3 - 0 All After restart Setup *1  0 The /SEL7 signal is active when ON (closed). 1 The /SEL7 signal is active when OFF (open). 2 The /SEL7 signal is always active. 3 The /SEL7 signal is always inactive.  2 /S-ON  0 to 3 - 0 All After restart Setup *1  0 The system changes to the SERVO ON state (power is supplied) and operation is enabled when the /S-ON signal turns ON (closes).  1 The system changes to the SERVO ON state (power is supplied) and operation is enabled when the /S-ON signal turns OFF (opens). 2 The system is always in the SERVO ON state.		2	/SEL6		0 to 3	_	0	All		Setup	*1
PnB0D  2			0	The /SEL6 sig	nal is active w	hen ON (c	losed).				
PnB0D  2 /SEL7	PnB0C		1	The /SEL6 sig	nal is active w	hen OFF (	open).				
PnB0D  2 /SEL7			2	The /SEL6 sig	nal is always a	ctive.					
PnB0D    The /SEL7 signal is active when ON (closed).			3	The /SEL6 sig	nal is always ir	nactive.					
PnB0D  1 The /SEL7 signal is active when OFF (open). 2 The /SEL7 signal is always active. 3 The /SEL7 signal is always inactive.  2 /S-ON  0 to 3 - 0 All After restart Setup *1  0 The system changes to the SERVO ON state (power is supplied) and operation is enabled when the /S-ON signal turns ON (closes).  1 The system changes to the SERVO ON state (power is supplied) and operation is enabled when the /S-ON signal turns OFF (opens). 2 The system is always in the SERVO ON state.		2	/SEL7		0 to 3	-	0	All		Setup	*1
PnB0D  1 The /SEL7 signal is active when OFF (open). 2 The /SEL7 signal is always active. 3 The /SEL7 signal is always inactive.  2 /S-ON  0 to 3 - 0 All After restart Setup *1  0 The system changes to the SERVO ON state (power is supplied) and operation is enabled when the /S-ON signal turns ON (closes).  1 The system changes to the SERVO ON state (power is supplied) and operation is enabled when the /S-ON signal turns OFF (opens). 2 The system is always in the SERVO ON state.				The /SEL 7 sig	nal is active w	han ON (a	losed)				
PnB0E  2 The /SEL7 signal is always active.  2 /S-ON	PnB0D		-	Ŭ							
PnB0E  2 /S-ON							оропу. -				
PnB0E  2 /S-ON 0 to 3 - 0 All After restart Setup *1  0 The system changes to the SERVO ON state (power is supplied) and operation is enabled when the /S-ON signal turns ON (closes).  1 The system changes to the SERVO ON state (power is supplied) and operation is enabled when the /S-ON signal turns OFF (opens).  2 The system is always in the SERVO ON state.											
PnB0E    The system changes to the SERVO ON state (power is supplied) and operation is enabled when the /S-ON signal turns ON (closes).   The system changes to the SERVO ON state (power is supplied) and operation is enabled when the /S-ON signal turns OFF (opens).   The system is always in the SERVO ON state.					, <b>,</b> .						
PnB0E  when the /S-ON signal turns ON (closes).  The system changes to the SERVO ON state (power is supplied) and operation is enabled when the /S-ON signal turns OFF (opens).  The system is always in the SERVO ON state.		2	/S-ON		0 to 3	-	0	All		Setup	*1
The system changes to the SERVO ON state (power is supplied) and operation is enabled when the /S-ON signal turns OFF (opens).  The system is always in the SERVO ON state.	PnPAE		0	The system ch when the /S-C	nanges to the S ON signal turns	SERVO ON ON (close	N state (poves).	wer is supplie	d) and opera	ntion is ena	abled
	FIIDUE		1					wer is supplie	d) and opera	tion is en	abled
The system is always in the SERVO OFF state.			-								
			3	The system is	always in the S	SERVO OF	F state.				

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Parameter No.	Size	١	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	P-OT		0 to 3	_	0	All	After restart	Setup	*1		
		0	0 When input signal is OFF (open), forward run is prohibited (forward overtravel).									
PnB0F		1	When input sig	When input signal is ON (closed), forward run is prohibited (forward overtravel).								
		2	Forward run is always prohibited (forward overtravel).									
		3	Forward run is	always enable	ed. (P-OT	signal is no	ot used.)					
	2	N-OT		0 to 3	-	0	All	After restart	Setup	*1		
		0	When input sig	When input signal is OFF (open), reverse run is prohibited (reverse overtravel).								
PnB10		1	When input sig	gnal is ON (clo	sed), rever	se run is p	rohibited (rev	erse overtra	vel).			
		2	Reverse run is	Reverse run is always prohibited (reverse overtravel).								
		3										
	2	/DEC		0 to 3	_	0	All	After restart	Setup	*1		
		0	Starts deceler	ation in an oriç	gin return v	vhen input	signal is ON	(closed).				
PnB11		1	Starts deceler	Starts deceleration in an origin return when input signal is ON (closed).  Starts deceleration in an origin return when input signal is OFF (open).								
		2										
		3	Sets the origin	return limit sv	vitch alway	ys OFF.						
		T				ľ	I	1	T			
	2	/RGRT		0 to 3	-	0	All	After restart	Setup	*1		
		0	Starts registra	ation by switch	ning input s	signal from	OFF (open) to	o ON (closed	d).			
PnB12		2, 3	Starts registra  Does not star	ation by switch t registration.	ning input s	signal from	ON (close) to	OFF (open)				
	2	/INPOSITI	ON	0 to 3	-	0	All	After restart	Setup	*1		
		0	0 When positioning has been completed, photocoupler becomes ON (closed).									
PnB13		1	•	ning has been	-		•		-			
		2, 3	Reserved.									
	2	/POUT0		0, 1	-	0	All	After restart	Setup	*1		
PnB14		0	The /POUT0 s	ignal turns ON	l (opens) v	vhen progra	ammable out	put 0 is activ	⁄е.			
		1	The /POUT0 s	ignal turns OF	F (closes)	when prog	rammable ou	tput 0 is act	ive.			
	2	/POUT1		0, 1	_	0	All	After restart	Setup	*1		
PnB15		0	The /POUT1 s	ianal turns ON	l (opens) w	hen progr	ammable out	out 1 is activ	/e.			
		1	The /POUT1 s									
	2	/POUT2		0, 1	_	0	All	After restart	Setup	*1		
PnB16		0	The /POUT2 s	ignal turns ON	l (opens) v	hen progra	ammable out	put 2 is activ	re.			
		1	The /POUT2 s									

		1						tinued from	. p. o o a.		
Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	/POUT3		0, 1	_	0	All	After restart	Setup	*1	
PnB17		0	The /POUT3 s	ignal turns ON	(onens) w	hen progr	ammable outr	out 3 is activ	e		
		1									
								•			
	2	/POUT4		0, 1	_	0	All	After restart	Setup	*1	
PnB18		-	The /DOLUTA -	innal tomas ON	(						
TIIDIO		0	The /POUT4 s								
			THE /POUT4 S	signal turns or	r (Closes)	wrieri prog	rammable ou	tput 4 is acti	ve.		
					<b>i</b>			A.C.		1	
	2	/POUT5		0, 1	-	0	All	After restart	Setup	*1	
PnB19		0 The /POUT5 signal turns ON (opens) when programmable output 5 is active.									
		1	The /POUT5 s	signal turns OF	F (closes)	when prog	rammable ou	tput 5 is acti	ve.		
	2	/POUT6		0, 1	-	0	All	After restart	Setup	*1	
PnB1A		0	The /POUT6 s	ignal turna ON	(opopo) u	than progr	ommoble out	out 6 io ootiv			
TIDIA		1	The /POUT6 s								
			The /POUT6 s	ignal turns of	r (Closes)	when prog	rammable ou	tput 6 is acti	ve.		
								A.C.			
	2	/POUT7		0, 1	_	0	All	After restart	Setup	*1	
PnB1B		0	The /POUT7 s								
		1	The /POUT7 s	ignal turns OF	F (closes)	when prog	rammable ou	tput 7 is acti	ve.		
	2	/WARN		0, 1	_	0	All	After restart	Setup	*1	
PnB1C		0	The /WARN si (error/warning		(closes) w	hen the ou	itput when an	error or war	ning occu	rs	
		1	The /WARN si (error/warning		(opens) v	vhen the o	utput when ar	n error or wa	rning occı	ırs	
	2	/BK		0, 1	-	0	All	After restart	Setup	*1	
PnB1D		0	When braking	signal /BK is (	ON (closed	l), brake is	released.				
FIIDID		1	When braking	signal /BK is 0	OFF (open)	), brake is ı	released.				
								After			
	2	/S-RDY		0, 1	_	0	All	restart	Setup	*1	
D. D4E									'		
PnB1E		0	Turn ON (close								
		1	Turn OFF (ope	n) the /S-RDY	signal wh	en the serv	o is ready.				
					T			T	1	Т	
	2	Overtravel Method	(OT) Stop	0 to 2	_	0	All	After restart	Setup	*1	
		501150						. Jotair		L	
PnB1F		0	Stops the mot		me method	d as when	the servo is to	urned OFF (a	ccording t	o set-	
		1	Stops motor in		d then cha	anges mot	or state to se	rvo lock.			
		-		otor to a stop					changes r	notor	
		2	state to servo								

Parameter	d)		Setting	Setting	Default	Applicable	When	Classi-	Refer-		
No.	Size	Name	Range	Unit	Setting	Motors	Enabled	fication	ence		
	2	Moving Mode	0 to 3	_	0	All	After restart	Setup	*1		
		0 Sets coordinates to linear type.									
PnB20		Sets coordinates to initial type.  1 Sets coordinates to rotary type. Moving mode is set as shortest path.									
		2 Sets coordinates to rotary type. Moving mode is always set as forward.									
		3 Sets coordinates to rotary type. Moving mode is always set as reverse.									
		o octo ocorani	atoo to rotary ty	po. 14104111	9 111000 10 1	aivrayo oot ao	1010100.		<del></del>		
PnB21	4	Linear coordinates (PnB20 = 0000h): For- ward Software Limit (P- LS) Rotational coordinates (PnB20 ≠ 0000h): Last Rotational Coordinate	-99999999 to +99999999	1 refer- ence unit	+99999999	All	After restart	Setup	*1		
PnB23	4	Linear coordinates (PnB20 = 0000h): Reverse Software Limit (N-LS) Rotational coordinates (PnB20 ≠ 0000h): First Rotational Coordinate	-99999999 to +999999999 *16	1 refer- ence unit	-9999999	All	After restart	Setup	*1		
PnB25	4	When using an incremental encoder: Origin When using an absolute encoder: Absolute Encoder Offset	-99999999 to +99999999	1 refer- ence unit	0	All	After restart	Setup	*1		
PnB27	4	Positioning/Registration Speed	1 to 99999999* <sup>16</sup>	1000 Refer- ence units/ min	1000	All	After restart	Setup	*1		
PnB29	4	Acceleration rate	1 to 99999999* <sup>16</sup>	1000 (Refer- ence units/ min) /ms	1000	All	Immedi- ately	Setup	*1		
PnB2B	4	Deceleration rate	1 to 99999999*16	1000 (Reference units/ min) /ms	1000	All	Immedi- ately	Setup	*1		
PnB2D	4	/INPOSITION Width	1 to 99999	1 refer- ence unit	1	All	Immedi- ately	Setup	*1		
PnB2F	4	/NEAR Width	1 to 99999	1 refer- ence unit	1	All	Immedi- ately	Setup	*1		
	2	Origin Return Method	0 to 3	-	0	All	After restart	Setup	*1		
PnB31		O Origin returns are not executed.  1 /DEC and phase C are used for an origin return.  2 Only /DEC is used for an origin return.  3 Only phase C is used for an origin return.									
	2	Origin Return Direction	0, 1	_	0	All	Immedi- ately	Setup	*1		
PnB32		0 /HOME or ZF	RN command is	used for a	an origin re	turn in forwar	d direction				
			RN command is								
		. 71101012 01 21		2.000 101 (	39 10						
	l										

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Parameter No.	Size	1	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
PnB33	4	Origin Ret	turn Moving	1 to 99999999* <sup>16</sup>	1000 Refer- ence units/ min	1000	All	Immedi- ately	Setup	*1	
PnB35	4	Origin Rei Speed	Origin Return Approach Speed		1000 Refer- ence units/ min	1000	All	Immedi- ately	Setup	*1	
PnB37	4	Origin Rei Speed	Origin Return Creep Speed		1000 Refer- ence units/ min	1000	All	Immedi- ately	Setup	*1	
PnB39	4		Origin Return Final Move Distance		1 refer- ence unit	0	All	Immedi- ately	Setup	*1	
PnB3B to PnB4D	4	Reserved (Do not ch	parameters nange.)	_	_	0	All	_	Setup	_	
	2	ZONE Sig	ınal Setting	0000h, 0001h	-	0000h	All	After restart	Setup	*1	
PnB4F		0000h		trol power sup s are disabled.	ply is turn	ed ON or th	ne SERVOPA	CK is reset, t	he /POUT	0 to /	
		0001h	When control are the ZONE	power is turne signals.	d ON or S	ERVOPACI	K is reset, the	POUT0 to	/POUT7 s	ignals	
PnB50	2	Backlash Compensation		-1000 to +1000	1 refer- ence unit	0	All	Immedi- ately	Setup	*1	
	2	/ALO Output Selection		0 to 1	-	0	All	After restart	Setup	*1	
PnB51		0		out /ALO1 to /A							
		1	Outputs /ALO	1 to /ALO3. (/WARN, /BK, and /S-RDY are not output.)							
	2	/ALM-RS	Т	0 to 3	_	0	All	After restart	Setup	*1	
PnB52		0	Resets alarms by switching input signal from OFF (open) to ON (closed).								
			Resets alarms by switching input signal from ON (closed) to OFF (open).  Does not reset alarms. (Signal is ignored.)								
		2, 3			ar is ignore	eu.)					
	2	Input Signal Monitor IN1 0000h to Polarity Selection 00FFh - 0050h All After restart S							Setup	-	
		Bit 0	Input Signal M the data.)	onitor IN1 Bit	0 (/SVON)	(0: Do not	invert the dat	ta (default se	tting), 1: I	nvert	
		Bit 1	Input Signal Monitor IN1 Bit 1 (/ALM-RST) (0: Do not invert the data (default setting), 1: Invert the data.)								
		Bit 2	Input Signal M data.)	Ionitor IN1 Bit 2	2 (/P-OT) (	0: Do not ir	overt the data	(default setti	ng), 1: Inv	ert the	
PnB53		Bit 3	Input Signal M data.)	Ionitor IN1 Bit 3	3 (/N-OT) (	0: Do not ir	overt the data	(default setti	ng), 1: Inv	ert the	
		Bit 4	Input Signal M setting).)	onitor IN1 Bit	4 (/DEC) (	D: Do not ir	overt the data	, 1: Invert the	e data (de	fault	
		Bit 5	Input Signal M the data.)	onitor IN1 Bit	5 (not use	d) (0: Do no	ot invert the d	ata (default s	setting), 1:	Invert	
		Bit 6	Input Signal M setting).)	onitor IN1 Bit	6 (/RGRT)	(0: Do not	invert the dat	ta, 1: Invert t	he data (d	lefault	
		Bit 7	Input Signal M the data.)	Ionitor IN1 Bit	7 (not use	d) (0: Do no	ot invert the d	ata (default s	setting), 1:	Invert	
PnB54	2		sition Expan- tion Selection	0 or 1	_	0	All	After restart	Setup	_	
mt. Defeated	l			I .	l	İ	I .	I .	l	l	

<sup>\*</sup>I. Refer to the following manual for details.

Ω Σ-7-Series Σ-7S SERVOPACK Command Option Attachable Type with INDEXER Module Product Manual (Manual No.: SIEP S800001 64)

- Parameter Lists
- 1

- \*2. The following parameters are automatically set when the INDEXER Module is mounted to the SERVOPACK. Do not change the setting.
  - Pn002 = n.□□□0
  - Pn207 = n.1□□□
  - Pn50A = 8881h
  - Pn50B = 8888h
  - Pn510 = 0000h
- \*3. This parameter is automatically set to 0 if a single-turn absolute encoder is used and Pn002 is set to n.□0□□.
- \*4. Set a percentage of the motor rated torque.
- \*5. When the INDEXER Module is mounted to the SERVOPACK, Pn50E is set to 0000h or 3000h according to the setting of PnB51. Do not change the setting.
- \*6. When the INDEXER Module is mounted to the SERVOPACK, Pn50F is set to 0000h or 1200h according to the setting of PnB51. Do not change the setting.
- \*7. When the INDEXER Module is mounted to the SERVOPACK, this parameter is automatically set according to the settings of PnB11 and PnB12. (Pn511 = n.8□■8, where □ = 4, 8, or D and = 6, 8, or F) Do not change the setting.
- \*8. When the INDEXER Module is mounted to the SERVOPACK, this parameter is automatically set according to the settings of PnB1C, PnB1D, PnB1E, and PnB51. (Pn512 = n.0□□□, where □ = 0 or 1) Do not change the setting.
- \*9. When the INDEXER Module is mounted to the SERVOPACK, Pn517 is set to 0000h or 0321h according to the setting of PnB51. Do not change the setting.
- \*10. When the INDEXER Module is mounted to the SERVOPACK, this parameter is automatically set to between 0 and 99,999 according to the setting of PnB2D. Do not change the setting.
- \*11.Normally set this parameter to 0. If you use an External Regenerative Resistor, set the capacity (W) of the External Regenerative Resistor.
- \*12. The upper limit is the maximum output capacity (W) of the SERVOPACK.
- \*13.These parameters are for SERVOPACKs with the Dynamic Brake Hardware Option. Refer to the following manual for details.
  - Σ-7-Series Σ-7S/Σ-7W SERVOPACK with Dynamic Brake Hardware Option Specifications Product Manual (Manual No.: SIEP S800001 73)
- \*14.The SGLFW2 is the only Yaskawa Linear Servomotor that supports this function.
- \*15.Enabled only when Pn61A is set to n. \$\square\$0 or n. \$\square\$15.
- \*16.If you set PnB54 to 1 (Enable Expansion Mode), the following setting ranges will change.

Parameter No.	Name	Setting Range
PnB21	<ul> <li>Linear coordinates (PnB20 = 0000h): Forward Software Limit (P-LS)</li> <li>Rotational coordinates (PnB20 ≠ 0000h): Last Rotational Coordinate</li> </ul>	-536,870,911 to +536,870,911
PnB23	<ul> <li>Linear coordinates (PnB20 = 0000h): Reverse Software Limit (N-LS)</li> <li>Rotational coordinates (PnB20 ≠ 0000h): First Rotational Coordinate</li> </ul>	-536,870,911 to +536,870,911
PnB25	When using an incremental encoder: Origin     When using an absolute encoder: Absolute Encoder Offset	-1,073,741,823 to +1,073,741,823
PnB27	Positioning/Registration Speed	1 to 99,999,999
PnB29	Acceleration Rate	1 to 99,999,999
PnB2B	Deceleration Rate	1 to 99,999,999
PnB33	Origin Return Movement Speed	1 to 99,999,999
PnB35	Origin Approach Speed	1 to 99,999,999
PnB37	Origin Return Creep Speed	1 to 99,999,999
PnB39	Origin Return Final Travel Distance	-1,073,741,823 to +1,073,741,823

# FT83 SERVOPACKs with Analog Voltage/Pulse Train References

The following table lists the parameters.

Note: Do not change the following parameters from their default settings.

- Reserved parameters
- Parameters not given in this manual
  Parameters that are not valid for the Servomotor that you are using, as given in the parameter table

Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Basic Fund tions 0	ction Selec-	0000h to 10B1h	_	0010h	All	After restart	Setup	_	
				Rotation Direction Selection							
		n.□□□X		Ise CCW as the f	*1						
			1 L	lse CW as the fo	rward dire	ction. (Rev	erse Rotation	Mode)			
			Control Me	thod Selection					Refere	ence	
				witching betwee ram table operat		ontrol with	analog refere	nces and pr	0-		
		n.□□X□		witching betwee rogram table ope	d						
				witching betwee ram table operat	0-						
			3 lr	nternal set speed	control w	ith contact	commands				
Pn000				witching betwee nces and speed							
				witching betwee nces and positio							
				Switching between internal set speed control with contact references and torque control with analog references							
				witching betwee peed control with			h pulse train r	d			
				Switching between position control with pulse train references and torque control with analog references							
				witching betwee peed control with			analog refere				
				witching betwee peed control with			analog refere	nces and			
				witching betwee osition control w				eferences ar	ıd		
	n.□X□□ Reserved parameter (Do not change.)										
	-										

Continued from previous page.

When Classi- Refer-

Parameter No.	Size	Name		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence				
	2	Application Selections		0000h to 1142h	_	0000h	All	After restart	Setup	-				
			Motor Stopping Method for Servo OFF and Group 1 Alarms							ence				
			0 St	Stop the motor by applying the dynamic brake.										
		n.□□□X		Stop the motor by the applying dynamic brake and then release the dynamic brake.										
			2 Co	ast the motor to	o a stop w	ithout the	dynamic brak	e.						
	Ī		Overtravel S	Stopping Metho	d				Refere	ence				
			0 Ap	ply the dynamic	brake or	coast the	motor to a sto	p.						
		n.00X0		ecelerate the mo e maximum torq										
				ecelerate the mo e maximum tord				in Pn406 as	*1	*1				
				ecelerate the mo 30A and then s			ne deceleratio	on time set in						
Pn001				ecelerate the mo 130A and then le			ne deceleratio	on time set in						
			Main Circuit Power Supply AC/DC Input Selection							ence				
		n.□X□□	O In	out AC power as d L3 terminals (	the main	circuit pov	ver supply usi	ng the L1, L2						
			1 ar	out DC power as d $\ominus$ 2 terminals nverter or the s	s or the B	1 and ⊝ 2								
			Warning Co	de Output Sele	ction				Refere	ence				
				utput only alarm ls.	codes on	the ALO1,	ALO2, and A	LO3 termi-						
		n.X□□□	1 ar	utput both warni d ALO3 termina tput, the ALM (sal state).	ıls. Howev	er, while a	n warning cod	le is being	, *1					

Parameter No.	Size	N	Name		Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer		
	2	Application Selections		0000h to 4213h	-	0000h	-	After restart	Setup	-		
			I					A 1' 1-1 -				
			Speed/Po	sition Control O	Applicable Motors	Refere	ence					
			0 1	Do not use T-RE	F				_			
		n.□□□X		Jse T-REF as an	•		*1					
				Jse T-REF as a t		•		All				
				Jse T-REF as an 'P-CL or /N-CL i		rque limit i	nput when		*1			
			Torque Co	Applicable Motors	Refere	ence						
		n.□□X□	0 1	Do not use V-RE	F.			All	*1	*1		
			1 1	Jse V-REF as ar	external s	oeed limit i	nput.	7411				
Pn002		n.□X□□	Encoder U	Applicable Motors	Refere	ence						
				Use the encoder according to encoder specifications.								
			1 1	Jse the encoder	as an incre	emental en	coder.	*1				
				Jse the encoder encoder.	as a single	-turn abso	lute	Rotary				
			External E	ncoder Usage				Applicable Motors	Refere	ence		
			0 1	Do not use an ex	ternal enco	oder.						
		n.X000		The external enc ion for CCW mo			ward direc-					
			2 1	Reserved setting	(Do not us	e.)		Rotary	*1			
				The external encion for CCW mo			erse direc-					
			4	Reserved setting	(Do not us	e.)						

Continued from previous page. When Classi- Refer-Enabled fication ence

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence			
	2	Application Selections		0000h to 105Fh	-	0002h	All	Immedi- ately	Setup	*1			
	Ī		A 1 M -	-11	L P								
				nitor 1 Signal Se		. 4.							
			00	Motor speed (1		· ·							
			01	Speed reference (1 V/1,000 min <sup>-1</sup> )									
			02	'	orque reference (1 V/100% rated torque)								
			03	Position deviation (0.05 V/reference unit)									
			04	Position amplifier deviation (after electronic gear) (0.05 V/encoder pulse unit									
			05	Position reference speed (1 V/1,000 min <sup>-1</sup> )									
			06	Reserved setting	,								
			07	Load-motor pos									
Pn006		n.□□XX	08	Positioning com pleted: 0 V)	pletion (po	ositioning (	completed: 5 '	V, positionin	g not com	-			
			09	Speed feedforward (1 V/1,000 min <sup>-1</sup> )									
			0A	Torque feedforward (1 V/100% rated torque)									
			0B	Active gain (1st gain: 1 V, 2nd gain: 2 V)									
			0C	Completion of p pleted: 0 V)	osition ref	erence dis	tribution (com	pleted: 5 V,	not com-				
			0D	External encode	r speed (1	V/1,000 r	min <sup>-1</sup> : value at	the motor s	haft)				
			0E	Reserved setting	g (Do not ı	use.)							
			0F	Reserved setting	g (Do not ι	use.)							
			10	Main circuit DC	voltage								
			11 to 5F	Reserved setting	gs (Do not	use.)							
		n.□X□□ Reserved parameter (Do not change.)											
		n.XDDD	Reserved	oarameter (Do no	ot change.	.)							
	The state of the s												

Pn008   Pn0	Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
Pn008    Motor speed (1 V/1,000 min <sup>-1</sup> )   01   Speed reference (1 V/1,000 min <sup>-1</sup> )   02   Torque reference (1 V/1,000 min <sup>-1</sup> )   02   Torque reference (1 V/1,000 min <sup>-1</sup> )   03   Position amplifier deviation (after electronic gear) (0.05 V/encoder pulse un		2	Application Selections	Function 7		-	0000h	All		Setup	*1		
Pn008    Motor speed (1 V/1,000 min <sup>-1</sup> )   01   Speed reference (1 V/1,000 min <sup>-1</sup> )   02   Torque reference (1 V/1,000 min <sup>-1</sup> )   02   Torque reference (1 V/1,000 min <sup>-1</sup> )   03   Position amplifier deviation (after electronic gear) (0.05 V/encoder pulse un				Analog Mon	itor 2 Signal Se	election							
Pn007  O1 Speed reference (1 V/1,000 min <sup>-1</sup> ) O2 Torque reference (1 V/100% rated torque) O3 Position deviation (0.05 V/reference unit) O4 Position reference speed (1 V/1,000 min <sup>-1</sup> ) O5 Position reference speed (1 V/1,000 min <sup>-1</sup> ) O6 Reserved setting (Do not use.) O7 Load-motor position deviation (0.01 V/reference unit) O8 Positioning completion (positioning completed: 5 V, positioning not completed: 0 V) O9 Speed feedforward (1 V/1,000 min <sup>-1</sup> ) OA Torque feedforward (1 V/1,000 min <sup>-1</sup> ) OA Torque feedforward (1 V/1,000 min <sup>-1</sup> ) OC Completion of position reference distribution (completed: 5 V, not completed: 0 V) OD External encoder speed (1 V/1,000 min <sup>-1</sup> ): value at the motor shaft) OE Reserved setting (Do not use.) OF Reserved setting (Do not use.) OF Reserved setting (Do not use.) OF Reserved setting (Do not use.) OF Reserved setting (Do not use.)  I1 D Main circuit DC voltage O1 D Not change.)  Reserved parameter (Do not change.)  INCIDIO Reserved parameter (Do not change.)  INCIDIO Reserved parameter (Do not change.)  INCIDIO Reserved parameter (Do not change.)  ID Detect undervoltage varning and limit torque at host controller. O Detect undervoltage warning and limit torque at host controller. O Detect undervoltage warning and limit torque with Pn424 and							nin <sup>-1</sup> )						
Pn007    O2   Torque reference (1 V/100% rated torque)							· .						
Pn007  Position deviation (0.05 V/reference unit)  04 Position amplifier deviation (after electronic gear) (0.05 V/encoder pulse un 05 Position reference speed (1 V/1,000 min⁻¹)  06 Reserved setting (Do not use.)  07 Load-motor position deviation (0.01 V/reference unit)  08 Positioning completion (positioning completed: 5 V, positioning not completed: 0 V)  09 Speed feedforward (1 V/1,000 min⁻¹)  0A Torque feedforward (1 V/1,000 min⁻¹)  0A Active gain (1st gain: 1 V, 2nd gain: 2 V)  0C Completion of position reference distribution (completed: 5 V, not completed: 0 V)  0D External encoder speed (1 V/1,000 min⁻¹: value at the motor shaft)  0E Reserved setting (Do not use.)  0F Reserved setting (Do not use.)  10 Main circuit DC voltage  11 to 5F Reserved settings (Do not use.)  n.□□□□ Reserved parameter (Do not change.)  n.□□□□ Reserved parameter (Do not change.)  1 Coutput alarm (A.830) for low battery voltage.  1 Output warning (A.930) for low battery voltage.  1 Output warning (A.930) for low battery voltage.  Function Selection for Undervoltage  0 Do not detect undervoltage  1 Detect undervoltage warning and limit torque with Pn424 and					•			raue)					
Pn007  Position amplifier deviation (after electronic gear) (0.05 Wencoder pulse un 0.5 Position reference speed (1 W/1,000 min <sup>-1</sup> )  Reserved setting (Do not use.)  Dotad-motor position deviation (0.01 Wireference unit)  Positioning completion (positioning completed: 5 V, positioning not completed: 0 V)  Positioning completion (positioning completed: 5 V, positioning not completed: 0 V)  Positioning completion (positioning completed: 5 V, positioning not completed: 0 V)  Active gain (1st gain: 1 V, 2nd gain: 2 V)  Completion of position reference distribution (completed: 5 V, not completed: 0 V)  Desternal encoder speed (1 V/1,000 min <sup>-1</sup> : value at the motor shaft)  De Reserved setting (Do not use.)  Reserved setting (Do not use.)  In Main circuit DC voltage  11 to 5F Reserved settings (Do not use.)  In Reserved parameter (Do not change.)  In Reserved parameter (Do not change.)  Reserved parameter (Do not change.)  Defect undervoltage Matery voltage.  Function Selection for Undervoltage  Defect undervoltage warning and limit torque at host controller.  Detect undervoltage warning and limit torque with Pn424 and					· · · · · · · · · · · · · · · · · · ·								
Pn007  Pn007  Reserved setting (Do not use.)  7									0.05 V/enco	der pulse	unit)		
Pn007  Pn007  Pn007  Pn007  Reserved setting (Do not use.)  O7 Load-motor position deviation (0.01 V/reference unit)  O8 Positioning completion (positioning completed: 5 V, positioning not completed: 0 V)  O9 Speed feedforward (1 V/1,000 min <sup>-1</sup> )  OA Torque feedforward (1 V/1,000 min <sup>-1</sup> )  OA Completion of position reference distribution (completed: 5 V, not completed: 0 V)  OC Completion of position reference distribution (completed: 5 V, not completed: 0 V)  OD External encoder speed (1 V/1,000 min <sup>-1</sup> : value at the motor shaft)  OE Reserved setting (Do not use.)  OF Reserved setting (Do not use.)  OF Reserved setting (Do not use.)  10 Main circuit DC voltage  11 to 5F Reserved settings (Do not use.)  n.DDDD Reserved parameter (Do not change.)  n.DDDD Reserved parameter (Do not change.)  Do not change.)  Low Battery Voltage Alarm/Warning Selection  O Output alarm (A.830) for low battery voltage.  1 Output warning (A.930) for low battery voltage.  Function Selection for Undervoltage  O Do not detect undervoltage.  Pn008  Pn008  Pn008  Pn008  Reference  O Do not detect undervoltage  O Detect undervoltage warning and limit torque at host controller.  O Detect undervoltage warning and limit torque with Pn424 and				05	Position reference	ce speed (	1 V/1,000	min <sup>-1</sup> )			<del></del>		
Pn007    Pn007   Positioning completion (positioning completed: 5 V, positioning not completed: 0 V)   O9								•					
Pn007    Pn007   Pn007   Poletic   O V				07	Load-motor pos	sition devia	ation (0.01	V/reference u	nit)				
Detect undervoltage   Pho08   Speed feedforward (1 V/1,000 min <sup>-1</sup> )	Pn007		n.□□XX		Positioning completion (positioning completed: 5 V, positioning not com-								
OB	riioo <i>i</i>			09	Speed feedforw	ard (1 V/1	,000 min <sup>-1</sup> )	)					
OC   Completion of position reference distribution (completed: 5 V, not completed: 0 V)   OD   External encoder speed (1 V/1,000 min <sup>-1</sup> : value at the motor shaft)   OE   Reserved setting (Do not use.)   OF   Reserved setting (Do not use.)   10   Main circuit DC voltage   11 to 5F   Reserved settings (Do not use.)     N.XUIII   Reserved parameter (Do not change.)				0A	Torque feedforw	ard (1 V/1	00% rated	torque)					
Pn008    Decide													
DE Reserved setting (Do not use.)  OF Reserved setting (Do not use.)  10 Main circuit DC voltage  11 to 5F Reserved settings (Do not use.)  n.□X□□ Reserved parameter (Do not change.)  Reserved parameter (Do not change.)  2 Application Function 0000h to 7121h - 0000h Rotary After restart Setup Selections 8  Defections 8  Comparison of the parameter (Do not change.)    Detect undervoltage   Reference of the parameter (Do not change.)    Detect undervoltage warning and limit torque at host controller.					pleted: 0 V)								
Pn008  OF Reserved setting (Do not use.)  10 Main circuit DC voltage  11 to 5F Reserved settings (Do not use.)  n.□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□				0D									
10   Main circuit DC voltage   11 to 5F   Reserved settings (Do not use.)				0E	,								
The served settings (Do not use.)   N.   Reserved parameter (Do not change.)   N.   Reserved parameter (Do not change.)   N.   Reserved parameter (Do not change.)   Application Function   0000h to   7121h   - 0000h   Rotary   After restart   Setup     Selections 8			-			,	use.)						
n.□X□□ Reserved parameter (Do not change.)    n.X□□□ Reserved parameter (Do not change.)    2   Application Function Selection Function Selections 8   7121h   - 0000h Rotary   After restart   Setup													
Pn008  Reserved parameter (Do not change.)    Application Function   0000h to 7121h   - 0000h   Rotary   After restart   Setup													
Pn008    Application Function   0000h to 7121h   - 0000h   Rotary   After restart   Setup			n.□X□□	Reserved pa	arameter (Do no	ot change.	.)						
Pn008    Comparison of the controller of the con			n.X□□□	Reserved pa	parameter (Do not change.)								
Pn008    Comparison of the controller of the con													
Pn008    N.		2				_	0000h	Rotary		Setup	_		
Pn008    N.													
Pn008    The proof of the proof				Low Battery	Voltage Alarm	/Warning \$	Selection			Refere	ence		
Pn008    Function Selection for Undervoltage   Reference			n.□□□X							*1			
Pn008  n.□□X□  0 Do not detect undervoltage.  1 Detect undervoltage warning and limit torque at host controller.  2 Detect undervoltage warning and limit torque with Pn424 and				1 Oı	utput warning (A	930) for l	ow battery	voltage.					
n. Detect undervoltage warning and limit torque at host controller.  Detect undervoltage warning and limit torque with Pn424 and				Function Se	lection for Und	ervoltage				Refere	ence		
Detect undervoltage warning and limit torque at host controller.  1 Detect undervoltage warning and limit torque with Pn424 and	Pn008												
2 Detect undervoltage warning and limit torque with Pn424 and Pn425 (i.e., only in SERVOPACK).			n.⊔⊔X⊔			<u> </u>		•		*1			
				2 De	etect undervolta 1425 (i.e., only ir	ge warning n SERVOP	g and limit ACK).	torque with F	n424 and				
Warning Detection Selection Reference				Warning De	tection Selection	n				Refere	ence		
n.□X□□ 0 Detect warnings.			n.□X□□	0 De	etect warnings.								
1 Do not detect warnings except for A.971.				1 Do	not detect war	nings exc	ept for A.9	71.		*1			
n.X□□□ Reserved parameter (Do not change.)			n.XDDD	Reserved parameter (Do not change.)									

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Application Selections	Function 9	0000h to 0121h	-	0010h	All	After restart	Tuning	_	
		n.□□□X	Reserved n	arameter (Do no	ot change	1					
		11.0000		,		)			D. (		
				ntrol Mode Sele se current contro					Refere	ence	
Pn009		n.□□X□	1 • 5	SERVOPACK Mo 3R8A, -5R5A, a SERVOPACK Mo 470A, -550A, -3 se current contro	and -7R6A odels SGD 590A, and	Use curre 7S-120A,	ent control mo -180A, -200A	ode 1. ., -330A,	*1		
									Refere		
		n. 🗆 X 🗆 🗆	· ·	Speed Detection Method Selection							
		11.0/00									
		n.X□□□	Reserved n	Reserved parameter (Do not change.)							
			1.000.10u p	<u> </u>	,	/					
	0	Application	n Function	0000h to		00016	All	After	Catura		
	2	Selections	Α	0044h	_	0001h	All	restart	Setup	_	
			Motor Stop	ping Method fo	or Group 2	Alarms			Refer	ence	
				pply the dynami topping method				op (use the			
			1 th	ecelerate the m ne maximum tore tatus after stopp	que. Use tl						
		n.□□□X	2 D	ecelerate the m	otor to a s	top using t	the torque set motor coast.	t in Pn406 as	* 1		
			3 P	ecelerate the m n30A. Use the s topping.							
				ecelerate the m n30A and then			the decelerati	on time set ir	ı		
Pn00A			Stopping M	lethod for Force	ed Stops				Refer	ence	
				pply the dynami topping method				op (use the			
			1 th	ecelerate the maximum tordatus after stopp	que. Use tl						
		n.□□X□		ecelerate the m				t in Pn406 as	* 1		
			Decelerate the motor to a stop using the deceleration time set in Pn30A. Use the setting of Pn001 = n. \(\sigma \subseteq \sigma \) to the status after stopping.								
			4 D	ecelerate the m n30A and then	otor to a s let the mot	top using tor coast.	the decelerati	on time set ir	n		
		n.□X□□	Reserved p	arameter (Do n	ge.)						
		n.X□□□	Reserved p	arameter (Do n	ot change	.)					

	Continued from										
Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Application Selections	n Function B	0000h to 1121h	_	0000h	All	After restart	Setup	-	
			Operator Para	ameter Display	/ Selection	า			Refere	nce	
		n.□□□X	0 Disp	olay only setup	paramete	rs.			*1		
			1 Disp	olay all parame	ters.				1		
				ng Method for p the motor by	•		eference to 0.		Refere	nce	
Pn00B		n.□□X□	4 App	oly the dynamic	brake or	coast the r	motor to a sto	op (use the	*1		
			· · · · · ·	the stopping r							
	ı		Power Input Selection for Three-phase SERVOPACK							nce	
		~ U\UU		a three-phase					7707070		
		n.□X□□		a three-phase	power su	pply input	as a single-pl	nase power	*1		
		n.X000									
	-										
	2	Application Selections	After restart	Setup	*1						
			Function Sele	ection for Test	without a	Motor			Applical Motor	ble s	
		n.□□□X									
			1 Ena								
			Encoder Resolution for Tests without a Motor							ble s	
Pn00C		n.□□X□	0 Use								
		П.ППУП		e 20 bits.					Rotan	<b>V</b>	
				e 22 bits.						,	
			3 Use	e 24 bits.							
			Encoder Type	e Selection for	Tests wit	hout a Mo	tor		Applical Motor		
		n.□X□□	0 Use	e an increment	al encoder	:			All		
			1 Use	e an absolute e	encoder.				,		
		n.X□□□	Reserved par	rameter (Do no	ot change.	.)					
	2	Application Selections	n Function D	0000h to 1001h	-	0000h	All	Immedi- ately	Setup	*1	
		n.□□□X	Reserved par	rameter (Do no	ot change.	.)					
D. 625		n.□□X□	Reserved par	rameter (Do no	ot change	.)					
Pn00D		n.□X□□	Reserved par	rameter (Do no	ot change.	.)					
			Overtravel Warning Detection Selection								
		n.X□□□		not detect over							
			1 Det	tect overtravel	warnings.						

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Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Application Selections		0000h to 2011h	-	0000h	All	After restart	Setup	_		
	_											
			Preventati	ve Maintenance	Warning S	Selection			Reference	ce		
		n.□□□X	0 Do	o not detect preve	entative m	aintenance	warnings.		*1			
Pn00F			1 De	etect preventative	t preventative maintenance warnings.							
		n.□□X□ Reserved parameter (Do not change.)										
		n.□X□□	.□X□□ Reserved parameter (Do not change.)									
		n.X□□□	Reserved	parameter (Do no	ot change	.)						
	_											
Pn010	2		ss Selectior JSB Commi		_	0001h	All	After restart	Setup	-		
Pn021	2	Reserved p	oarameter (C e.)		-	0000h	All	-	-	_		
Pn022	2	Reserved p	oarameter (C e.)		_	0000h	All	_	_	-		
Pn040	2	Reserved p	oarameter (C e.)	)o _	-	0000h	-	-	_	-		
	2	Application Selections	Function 81	0000h to 1111h	-	0000h	All	After restart	Setup	*1		
			Phase-C F	Pulse Output Sele	ection							
		n.□□□X	0 (	Output phase-C pulses only in the forward direction.								
Pn081			1 (	Output phase-C pulses in both the forward and reverse directions.								

	Phase-C	Pulse Output Selection
n.□□□X	0	Output phase-C pulses only in the forward direction.
	1	Output phase-C pulses in both the forward and reverse directions.
n.□□X□	Reserve	d parameter (Do not change.)
$n.\Box X\Box\Box$	Reserve	d parameter (Do not change.)
n.X□□□	Reserve	d parameter (Do not change.)

Pn100	2	Speed Loop Gain	10 to 20,000	0.1 Hz	400	All	Immedi- ately	Tuning	*1
Pn101	2	Speed Loop Integral Time Constant	15 to 51,200	0.01 ms	2000	All	Immedi- ately	Tuning	*1
Pn102	2	Position Loop Gain	10 to 20,000	0.1/s	400	All	Immedi- ately	Tuning	*1
Pn103	2	Moment of Inertia Ratio	0 to 20,000	1%	100	All	Immedi- ately	Tuning	*1
Pn104	2	Second Speed Loop Gain	10 to 20,000	0.1 Hz	400	All	Immedi- ately	Tuning	*1
Pn105	2	Second Speed Loop Integral Time Constant	15 to 51,200	0.01 ms	2000	All	Immedi- ately	Tuning	*1
Pn106	2	Second Position Loop Gain	10 to 20,000	0.1/s	400	All	Immedi- ately	Tuning	*1
Pn109	2	Feedforward	0 to 100	1%	0	All	Immedi- ately	Tuning	*1
Pn10A	2	Feedforward Filter Time Constant	0 to 6,400	0.01 ms	0	All	Immedi- ately	Tuning	*1

Parameter No.	Size	N	ame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Gain Applications	ation Selec	0-	0000h to 5334h	_	0000h	All	-	Setup	-
			Mode Sw	itchi	ing Selection				When Enable		ence
			U	(leve	the internal to el setting: Pn1	0Ċ).					
			1 -	ting	the speed ref : Pn10D).						
		n.□□□X		ting	the speed ref : Pn181).	,	Immedi	_			
			2	Use the acceleration reference as the condition (lessetting: Pn10E).  Use the acceleration reference as the condition (lessetting).					ately	*1	
Pn10B					the accelerati ing: Pn182).	on referen	condition (leve				
			3	ting	the position on the property of the position of the property o						
			4	Do ı	not use mode	switching.					
			Speed Lo	ор (	Control Metho	d			When Enable		ence
		n.□□X□			ontrol control				After	*1	
					erved settings	(Do not u	se.)		restart		
	Ī	n.□X□□	Reserved	par	ameter (Do no	ot change.	)				
	Ī	n.XDDD	Reserved	par	ameter (Do no	ot change.	)				
						-					
Pn10C	2	Mode Switt for Torque			0 to 800	1%	200	All	Immedi- ately	Tuning	*1
Pn10D	2	Mode Swite for Speed I			0 to 10,000	1 min <sup>-1</sup>	0	Rotary	Immedi- ately	Tuning	*1
Pn10E	2	Mode Swite for Acceler			0 to 30,000	1 min <sup>-1</sup> /s	0	Rotary	Immedi- ately	Tuning	*1
Pn10F	2	Mode Swite for Position	ching Level Deviation		0 to 10,000	1 refer- ence unit	0	All	Immedi- ately	Tuning	*1
Pn11F	2	Position Int Constant	egral Time		0 to 50,000	0.1 ms	0	All	Immedi- ately	Tuning	*1
Pn121	2	Friction Co Gain			10 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
Pn122	2	Second Fri pensation (	Gain		10 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
Pn123	2	Friction Co Coefficient			0 to 100	1%	0	All	Immedi- ately	Tuning	*1
Pn124	2	Friction Co Frequency	Correction		-10,000 to 10,000	0.1 Hz	0	All	Immedi- ately	Tuning	*1
Pn125	2	Friction Co Gain Corre		1	1 to 1,000	1%	100	All	Immedi- ately	Tuning	*1
Pn131	2	Gain Switc	ning Time	1	0 to 65,535	1 ms	0	All	Immedi- ately	Tuning	*1
Pn132	2	Gain Switc			0 to 65,535	1 ms	0	All	Immedi- ately	Tuning	*1
Pn135	2	Gain Switc		•	0 to 65,535	1 ms	0	All	Immedi- ately	Tuning	*1
Pn136	2	Gain Switc Time 2	Gain Switching Waiting		0 to 65,535	1 ms	0	All	Immedi- ately Continue	Tuning	*1

Parameter No.	Size	N	ame		Setting Range	Setting Unit	Default Setting	Applicable Motors	Continued from When Enabled	Classi- fication	Refer- ence		
	2	Automatic ing Selection		ch-	0000h to 0052h	-	0000h	All	Immedi- ately	Tuning	*1		
							I				I		
			Gain Sw	itchi	ng Selection								
			0	Use The	e manual gain s e gain is switch	switching. ed manua	ılly with the	/G-SEL (Gai	n Selection)	signal.			
		n.□□□X	1		served setting (				· ·	-			
			2	The sati	e automatic gai e gain settings isfied. The gain n A is not satisf	1 switch a settings 2	utomatical	ly to 2 when	switching co o 1 when sw	ndition A i itching cor	s ndi-		
Pn139			Gain Sw	itchi	ng Condition A	<b>\</b>							
111100			0	т	DIN (Positioning		ion Output	) signal turns	ON.				
			1	/COIN (Positioning Completion Output) signal turns OFF.     /NEAR (Near Output) signal turns ON.									
		n.□□X□	3	/NE									
			4		sition reference	, ,			ılse input is (	OFF.			
			5	The second secon									
		n.□X□□	Reserve	eserved parameter (Do not change.) eserved parameter (Do not change.)									
		n.X□□□	Reserve	d pa									
Pn13D	2	Current Ga	ain Level	vel 100 to 2,000 1% 2000 All Immediately Tunin									
	2	Model Follo trol-Related			0000h to 1121h	-	0100h	All	Immedi- ately	Tuning	-		
		-				I	1		il.	1	I		
			Model Following Control Selection							Reference			
		n.□□□X	Do not use model following control.										
			1	Use	model following	g control.							
				•	opression Sele ot perform vibr		oroccion			Referen	nce		
		n.□□X□			or perioriti vibi orm vibration su			cific frequenc	y.	*1			
			2	Perfo	orm vibration su	uppression	n for two s	oecific freque	ncies.				
Pn140			Vibration	Sup	opression Adju	stment S	election			Referen	nce		
			0	tior	not adjust vibra of autotuning	without a	host refere						
		n.□X□□		-	st reference, an ust vibration su			cally during ex	recution of	*1			
			1	aut	otuning withou nce, and custo	t a host re							
			Speed F	1	orward (VFF)/7	•		, ,		Referen	nce		
		n.X□□□	0		not use model rd together.	following	control and	a speed/torqi	ue feedfor-	*1			
			1 Use model following control and speed/torque feedforward together.										
Pn141	2	Model Follo	owing Cor	า-	10 to 20,000	0.1/s	500	All	Immedi- ately	Tuning	*1		
Pn142	2	Model Follo trol Gain C	owing Cor	1-	500 to 2,000	0.1%	1000	All	Immedi- ately	Tuning	*1		

Continued on next page.

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
Pn144	2		owing Con- the Reverse	0 to 10,000	0.1%	1000	All	Immedi- ately	Tuning	*1	
Pn145	2	Vibration S Frequency	uppression 1 A	10 to 2,500	0.1 Hz	500	All	Immedi- ately	Tuning	*1	
Pn146	2	Vibration S Frequency	uppression 1 B	10 to 2,500	0.1 Hz	700	All	Immedi- ately	Tuning	*1	
Pn147	2	Model Follo trol Speed Compensa	owing Con- Feedforward tion	0 to 10,000	0.1%	1000	All	Immedi- ately	Tuning	*1	
Pn148	2	Second Moing Contro	odel Follow-   Gain	10 to 20,000	0.1/s	500	All	Immedi- ately	Tuning	*1	
Pn149	2		odel Follow- Gain Correc-	500 to 2,000	0.1%	1000	All	Immedi- ately	Tuning	*1	
Pn14A	2	Vibration S Frequency	uppression 2	10 to 2,000	0.1 Hz	800	All	Immedi- ately	Tuning	*1	
Pn14B	2	Vibration S Correction	uppression 2	10 to 1,000	1%	100	All	Immedi- ately	Tuning	*1	
	2	Control-Retions	lated Selec-	0000h to 0021h	-	0021h	All	After restart	Tuning	_	
Dn145		n.□□□X	Model Follow  0 Us  1 Us  Tuning-less	Refere							
Pn14F		n.□□X□	0 Us 1 Us	e tuning-less ty e tuning-less ty e tuning-less ty	pe 2.				*1		
		n. □ X □ □ Reserved parameter (Do not change.)  n. X □ □ Reserved parameter (Do not change.)									
	2		lance Cond d Selections	0000h to	t change.	0010h	All	Immedi- ately	Tuning	_	
			Anti-Resona	nce Control Se	lection				Refere	ence	
		n.□□□X		not use anti-re e anti-resonanc		control.			*1		
				nce Control Ad		Selection			Refere	ence	
Pn160		n.□□X□	0 Do	not adjust anti- n of autotuning erence, and cus	resonanc without a	e control a			-		
			1 aut	just anti-resona totuning withou ce, and custom	t a host re						
	n.□X□□ Reserved parameter (Do not change.)										
		n.X□□□	Reserved pa	rameter (Do no	ot change.	)					
Pn161	2	Anti-Resor quency	ance Fre-	10 to 20,000	0.1 Hz	1000	All	Immedi- ately	Tuning	*1	
Pn162	2	Anti-Resor Correction	ance Gain	1 to 1,000	1%	100	All	Immedi- ately	Tuning	*1	
Pn163	2	Anti-Resor	ance Damp-	0 to 300	1%	0	All	Immedi- ately	Tuning	*1	
									d on nex	t page.	

	Continued from previous page.									
Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
Pn164	2	Anti-Resonance Filter Time Constant 1 Cor- rection	-1,000 to 1,000	0.01 ms	0	All	Immedi- ately	Tuning	*1	
Pn165	2	Anti-Resonance Filter Time Constant 2 Cor- rection	-1,000 to 1,000	0.01 ms	0	All	Immedi- ately	Tuning	*1	
Pn166	2	Anti-Resonance Damping Gain 2	0 to 1,000	1%	0	All	Immedi- ately	Tuning	*1	
	2	Tuning-less Function- Related Selections	0000h to 2711h	-	1401h	All	-	Setup	*1	
	_			•						

	Tuning-less Selection					
n.□□□X	0	Disable tuning-less function.	After			
	1	Enable tuning-less function.	restart			
	Speed C	Control Method	When Enabled			
n.□□X□	0	Use for speed control.	After			
	1	Use for speed control and use host controller for position control.	restart			
n. 🗆 X 🗆 🗆	Rigidity Level					
11.0700	0 to 7	Set the rigidity level.	Immedi- ately			
п.ХППП	Tuning-le	Tuning-less Load Level				
п.хици	0 to 2	Set the load level for the tuning-less function.	Immedi- ately			

			Continued from									
Parameter No.	Size	N	lame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer ence		
	2	Position C ence For S	ontrol Refer- Selections	0000h to 2236h	-	0000h	All	After restart	Setup	-		
			Deference D	de Cerre					Defeue			
			Reference P	in and pulse tra	ain positiv	o logio			Reference			
				V and CCW pu			nic					
			Tw	o-phase pulse		'		hase A and				
		n.□□□X	<sup>2</sup> ph	ase B) ×1, posi o-phase pulse	tive logic	•						
			3 ph	ase B) ×2, posi o-phase pulse	tive logic	•			*1			
			4 ph	ase B) ×4, posi In and pulse tra	tive logic	•	o amororitar (p	Tidoo 71 dila				
			+ · ·	V and CCW pu			ngic					
				•	ise trairis,	riegative ic	igic					
			Clear Signal						Refere	ence		
Pn200				ear position dev								
		n.□□X□		ear position dev			0	<u>'</u>	*1			
				<ul> <li>Clear position deviation when the signal is at low level.</li> <li>Clear position deviation on the falling edge of the signal.</li> </ul>								
			3 Cle	ear position dev	lation on t	ne talling e	eage of the sig	gnai.				
			Clear Operation Re									
			O Clear position deviation at a base block (at servo OFF or when alarm occurs).									
		n.□X□□		not clear posit	ion error (	cleared on	ly with CLR (C	Clear Position	*1			
				ear position dev	viation whe	en an alarn	occurs.					
			Filter Selecti	on					Refere	ence		
			0 Us	e the reference	input filte	r for a line-	driver signal.	(1 Mpps max	.)			
		n.X□□□		e the reference os max.)	input filte	r for an op	en-collector s	ignal. (200	*1			
				e reference inp	ut filter 2 f	or a line-dı	river signal. (1	to 4 Mpps)				
Pn205	2	Multiturn L	_imit	0 to 65,535	1 rev	65535	Rotary	After restart	Setup	*1		
	2	Position C	control Func- tions	0000h to 2210h	-	2000h	All	After restart	Setup	-		
				П	П	1	1					
		. DDDV	D			`						
		n.□□□X	Reserved pa	rameter (Do n	ot change	.)						
			Position Cor	trol Option					Refere	ence		
		n.□□X□		not use V-REF	-				*1			
			1 Us	e V-REF as a s	peed feed	back input						
		n.□X□□	Reserved pa	rameter (Do n	ot change	.)						
Pn207			/COIN (Posit	ioning Comple	etion Outp	ut) Signal	Output Timin	g	Refe			
			0 sai	tput when the me or less than dth).								
		n.X□□□	1 or	tput when the less than the s d the reference	etting of P	n522 (Posi	tioning Comp	leted Width)	*1			
			2 or	tput when the less than the s d the reference	etting of P	n522 (Posi						
									u.			

Setup

Setup

\*1

\*1

Immedi-ately

After

restart

Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn20A	4	Number of External Encoder Scale Pitches	4 to 1,048,576	1 scale pitch/ revolu- tion	32768	Rotary	After restart	Setup	*1
Pn20E	4	Electronic Gear Ratio (Numerator)	1 to 1,073,741,824	1	64	All	After restart	Setup	*1
Pn210	4	Electronic Gear Ratio (Denominator)	1 to 1,073,741,824	1	1	All	After restart	Setup	*1
Pn212	4	Number of Encoder Output Pulses	16 to 1,073,741,824	1 P/Rev	2048	Rotary	After restart	Setup	*1
Pn216	2	Position Reference Acceleration/Decelera- tion Time Constant	0 to 65,535	0.1 ms	0	All	Immedi- ately after the motor stops	Setup	*1
Pn217	2	Average Position Reference Movement Time	0 to 10,000	0.1 ms	0	All	Immedi- ately after the motor stops	Setup	*1

× 1

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0000h

ΑII

Rotary

1 to 100

0000h to 1003h

Pn22A

Pn218

2

2

Reference Pulse Input Multiplier

Fully-closed Control Selections

n.□□□X	Reserve	Reserved parameter (Do not change.)								
n.□□X□	Reserve	Reserved parameter (Do not change.)								
n.□X□□	Reserve	Reserved parameter (Do not change.)								
	sed Control Speed Feedback Selection									
n.X□□□	0 Use motor encoder speed.									
	1 Use external encoder speed.									

Pn281	2	Encoder Output Resolution	1 to 4,096	1 edge/ pitch	20	All	After restart	Setup	*1
Pn300	2	Speed Reference Input Gain	150 to 3,000	0.01 V/ Rated motor speed	600	All	Immedi- ately	Setup	*1
Pn301	2	Internal Set Speed 1	0 to 10,000	Rotary: 1 min <sup>-1</sup> Direct Drive: 0.1 min <sup>-1</sup>	100	Rotary	Immedi- ately	Setup	*1
Pn302	2	Internal Set Speed 2	0 to 10,000	Rotary: 1 min <sup>-1</sup> Direct Drive: 0.1 min <sup>-1</sup>	200	Rotary	Immedi- ately	Setup	*1
Pn303	2	Internal Set Speed 3	0 to 10,000	Rotary: 1 min <sup>-1</sup> Direct Drive: 0.1 min <sup>-1</sup>	300	Rotary	Immedi- ately	Setup	*1
Pn304	2	Jogging Speed	0 to 10,000	Rotary: 1 min <sup>-1</sup> Direct Drive: 0.1 min <sup>-1</sup>	500	Rotary	Immedi- ately	Setup	*1
Pn305	2	Soft Start Acceleration Time	0 to 10,000	1 ms	0	All	Immedi- ately	Setup	*1
Pn306	2	Soft Start Deceleration Time	0 to 10,000	1 ms	0	All	Immedi- ately	Setup	*1
							Continue	d on nex	t page.

Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn307	2	Speed Reference Filter Time Constant	0 to 65,535	0.01 ms	40	All	Immedi- ately	Setup	*1
Pn308	2	Speed Feedback Filter Time Constant	0 to 65,535	0.01 ms	0	All	Immedi- ately	Setup	*1
Pn30A	2	Deceleration Time for Servo OFF and Forced Stops	0 to 10,000	1 ms	0	All	Immedi- ately	Setup	*1
Pn30C	2	Speed Feedforward Average Movement Time	0 to 5,100	0.1 ms	0	All	Immedi- ately	Setup	*1
	2	Vibration Detection Selections	0000h to 0002h	-	0000h	All	Immedi- ately	Setup	*1

Pn310

	Vibration	Vibration Detection Selection									
n.□□□X	0	Do not detect vibration.									
11.000	1	1 Output a warning (A.911) if vibration is detected.									
	2	Output an alarm (A.520) if vibration is detected.									
n.□□X□	Reserve	d parameter (Do not change.)									
-											
ה חעחח	NAL Becaused parameter (De not change)										

n ХППП	Reserved parameter (Do not change)

Pn311	2	Vibration Detection Sensitivity	50 to 500	1%	100	All	Immedi- ately	Tuning	*1
Pn312	2	Vibration Detection Level	0 to 5,000	1 min <sup>-1</sup>	50	Rotary	Immedi- ately	Tuning	*1
Pn316	2	Maximum Motor Speed	0 to 65,535	1 min <sup>-1</sup>	10000	Rotary	After restart	Setup	*1
Pn324	2	Moment of Inertia Cal- culation Starting Level	0 to 20,000	1%	300	All	Immedi- ately	Setup	*1
Pn400	2	Torque Reference Input Gain	10 to 100	0.1 V/ rated torque	30	All	Immedi- ately	Setup	*1
Pn401	2	First Stage First Torque Reference Filter Time Constant	0 to 65,535	0.01 ms	100	All	Immedi- ately	Tuning	*1
Pn402	2	Forward Torque Limit	0 to 800	1%*2	800	Rotary	Immedi- ately	Setup	*1
Pn403	2	Reverse Torque Limit	0 to 800	1%*2	800	Rotary	Immedi- ately	Setup	*1
Pn404	2	Forward External Torque Limit	0 to 800	1%*2	100	All	Immedi- ately	Setup	*1
Pn405	2	Reverse External Torque Limit	0 to 800	1%*2	100	All	Immedi- ately	Setup	*1
Pn406	2	Emergency Stop Torque	0 to 800	1%*2	800	All	Immedi- ately	Setup	*1
Pn407	2	Speed Limit during Torque Control	0 to 10,000	1 min <sup>-1</sup>	10000	Rotary	Immedi- ately	Setup	*1

Applicable

Motors

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Continued	from	previous	nage

Classi-

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When

Enabled

INO.	0)				Trange	Offic	Setting	MOLOIS	Lilabieu	ilcation	ence	
	2	Torque-Retion Select		)-	0000h to 1111h	_	0000h	All	-	Setup	_	
	li		Notch Fi	Iter S	Selection 1	When Enabled	Refere	ence				
		n.□□□X	0	Dis	able first stage	notch filte	er.		Immedi	. *1		
			1	Ena	able first stage	notch filte	ately	-1				
			Speed L	imit	Selection				When Enabled	Refere	ence	
	Ш	n.□□X□	0		e the smaller of ting of Pn407 a			speed and the	Э			
D= 400	Ш		0		the smaller of ting of Pn480 a			speed and the	After	*1		
Pn408	Ш		1	spe	e the smaller of eed and the set	ting of Pn	407 as the	speed limit.	restart			
					e the smaller of eed and the set							
			Notch Fi	Iter S	Selection 2				When Enabled	When Enabled Reference		
		n.□X□□	0		able second st	Immedi	*1					
	ļ ļ		1	Ena	able second sta	age notch	filter.		ately			
		» VППП	Friction	Com	pensation Fun	ction Sele	ection		When Enabled	Refere	ence	
					able friction co	•			Immedi	*1		
	L		1	Ena	able friction cor	mpensatio	n.		ately			
					T	Т				Т	1	
Pn409	2	First Stage Frequency			50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1	
Pn40A	2	First Stage Q Value			50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1	
Pn40B	2	First Stage Depth			0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1	
Pn40C	2	Second St ter Freque	ncy		50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1	
Pn40D	2	Second St ter Q Value	age Notch	Fil-	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1	
Pn40E	2	Second St ter Depth	age Notch	ı Fil-	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1	
Pn40F	2	Second St Torque Ref Frequency	erence Fil		100 to 5,000	1 Hz	4000	All	Immedi- ately	Tuning	*1	
Pn410	2	Second St Torque Ret Q Value			50 to 100	0.01	50	All	Immedi- ately	Tuning	*1	
Pn412	2	First Stage Torque Ret Time Cons	erence Fil	ter	0 to 65,535	0.01 ms	100	All	Immedi- ately	Tuning	*1	
		T-REF Filte							Immedi-		<del>-</del>	

Setting

Range

Setting

Unit

Default

Setting

Size

Name

Parameter

No.

	Continued from previous page 2								us page.		
Parameter No.	Size	Na	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Torque-Rel tion Selecti		0000h to 1111h	-	0000h	All	Immedi- ately	Setup	*1	
			Notch Filter Selection 3								
		n.□□□X		able third stage able third stage							
Pn416		n.□□X□	Notch Filter Selection 4  0 Disable fourth stage notch filter.  1 Enable fourth stage notch filter.								
		n.□X□□	Notch Filter Selection 5  0 Disable fifth stage notch filter.  1 Enable fifth stage notch filter.								
		n.X□□□	Reserved par	rameter (Do no	ot change.	)					
	-					,					
Pn417	2	Third Stage Frequency	Notch Filter	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1	
Pn418	2	Third Stage Q Value	Notch Filter	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1	
Pn419	2	Third Stage Depth	Notch Filter	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1	
Pn41A	2		Fourth Stage Notch Filter Frequency		1 Hz	5000	All	Immedi- ately	Tuning	*1	
Pn41B	2		Fourth Stage Notch Filter Q Value		0.01	70	All	Immedi- ately	Tuning	*1	
Pn41C	2	ter Depth	Fourth Stage Notch Filter Depth		0.001	0	All	Immedi- ately	Tuning	*1	
Pn41D	2	Frequency	Notch Filter	50 to 5,000	1 Hz	5000	All	Immedi- ately	Tuning	*1	
Pn41E	2	Q Value	Notch Filter	50 to 1,000	0.01	70	All	Immedi- ately	Tuning	*1	
Pn41F	2	Depth	Notch Filter	0 to 1,000	0.001	0	All	Immedi- ately	Tuning	*1	
	2	Speed Ripp sation Sele	ole Compen- ctions	0000h to 1111h	_	0000h	Rotary	_	Setup	*1	
			Speed Ripple	Compensation	n Functio	n Selectio	n		Whe Enab		
		n.□□□X		able speed ripp	<u>'</u>				Imme		
				able speed ripp	•			. 5.			
Pn423		n.□□X□	tion Selection			ition Disag	reement Wa	rning Detec-	Whe Enab		
				ect A.942 alarr not detect A.9					Afte		
	Ī	=>/==	Speed Ripple	e Compensation	on Enable	Condition	Selection		Whe		
		n.□X□□		eed reference tor speed					Afte resta		
		n.XDDD	Reserved par	rameter (Do no	ot change.	)					
		_		<del> </del>	<b>T</b>	<del></del>	<del> </del>	1	1	1	
Pn424	2	Torque Lim cuit Voltage	it at Main Cir- e Drop	0 to 100	1%*1	50	All	Immedi- ately	Setup	*1	
<del></del>		<del></del>	<del></del>	<del></del>			<del></del>	Continue	ed on nex	t page.	

Parameter	ø			Setting	Setting	Default	Applicable	Continued from When	Classi-	Refer
No.	Size		ame	Range	Unit	Setting	Motors	Enabled	fication	ence
Pn425	2	Release Tir Limit at Ma Voltage Dro		e 0 to 1,000	1 ms	100	All	Immedi- ately	Setup	*1
Pn426	2	Torque Fee Average M Time		0 to 5,100	0.1 ms	0	All	Immedi- ately	Setup	*1
Pn427	2	Speed Ripp sation Enal	ple Comper ble Speed	- 0 to 10,000	1 min <sup>-1</sup>	0	Rotary Ser- vomotor	Immedi- ately	Tuning	*1
Pn456	2	Sweep Tor- ence Ampl		1 to 800	1%	15	All	Immedi- ately	Tuning	*1
	2	Notch Filte Selections	r Adjustmer 1	0000h to 0101h	-	0101h	All	Immedi- ately	Tuning	*1
			Notch Filte	er Adjustment Se	lection 1					
		n.□□□X	0 t	Do not adjust the tuning without a houning.	first stage ost referer	notch filte nce, autotu	r automatically Ining with a ho	y during exe ost reference	cution of a e, and cus	uto- tom
				Adjust the first sta vithout a host refe						
Pn460		n.□□X□	Reserved	parameter (Do no	ot change.	.)				
			Notch Filte	er Adjustment Se	lection 2					
		n.□X□□	0 f	Do not adjust the sunction is enabled autotuning with a	second stand or during	execution	of autotuning	g without a h		
			1 t	Adjust the second ion is enabled or						
			6	autotuning with a						
		n.X□□□		outotuning with a	host refere	ence, and				
	2		Reserved	parameter (Do no	host refere	ence, and			Setup	*1
	2	Gravity Co	Reserved mpensation elections	parameter (Do no	host reference to the change.	ence, and	custom tuning	J. After		
	2	Gravity Col Related Se	Reserved mpensation lections Gravity Co	0000h to	host reference to the change.	0000h	custom tuning	J. After		
Pn475	2	Gravity Col Related Se	mpensation lections  Gravity Co	oarameter (Do no 0000h to 0001h mpensation Selec	host reference to the change.  — tion  mpensation	0000h	custom tuning	J. After		
Pn475	2	Gravity Col Related Se	mpensation elections  Gravity Co 0 [ 1 [	oarameter (Do no 0000h to 0001h pensation Selecibisable gravity col	tion mpensation	0000h	custom tuning	J. After		
Pn475	2	Gravity Con Related Se	mpensation elections  Gravity Co 0 [ 1 ] [ Reserved p	oarameter (Do no 0000h to 0001h pensation Selection Sele	tion mpensation change.)	0000h	custom tuning	J. After		
Pn475	2	Gravity Con Related Se	Reserved mpensation elections  Gravity Co 0 [ 1 ] Reserved p	Doarameter (Do not not not not not not not not not no	tion mpensatio change.)	0000h	custom tuning	J. After		
	2	Gravity Con Related Se	Reserved mpensation elections  Gravity Co 0 [ 1 ] Reserved p	Darameter (Do not one one one one one one one one one one	tion mpensatio change.)	0000h	custom tuning	J. After		
Pn476		Gravity Con Related Se  n.□□X  n.□□X□  n.□X□□  n.X□□□  Gravity Con	Reserved properties of the control o	Doarameter (Do not not not not not not not not not no	tion mpensation change.) change.)	0000h	All	After restart	Setup	*1
Pn476 Pn501	2	Gravity Con Related Se  n.□□X  n.□□X□  n.□X□□  n.X□□□  Gravity Con Torque  Zero Clamp	Reserved properties of the control o	Darameter (Do not 00001h continued on the continued on th	tion mpensation change.) change.) 0.1%	0 0000h	All	After restart  Immediately Immediately	Setup	*1
Pn475 Pn476 Pn501 Pn502 Pn503	2 2	Related Se  n.□□X  n.□□X  n.□X□□  n.X□□  Gravity Contorque  Zero Clamp  Rotation D  Speed Coin	Reserved properties of the control o	Doarameter (Do not 00001h  mpensation Select Disable gravity contained arameter (Do not parameter (Do not 1,000 0 to 10,000 are 1 to 10,000 are 1 to 10,000 are 1 to 10,000 arameter 1 to 10,000 are 1 to 10,000 are 1 to 10,000 arameter (Do not 1,000 are 1 to 10,000 are 1	tion mpensation change.) change.) 0.1% 1 min <sup>-1</sup>	0 10	All Rotary	Immediately Immediately Immediately	Setup  Tuning Setup	*1
Pn476 Pn501 Pn502	2 2 2	Related Se	Reserved properties of the control o	parameter (Do not 00001h  mpensation Select Disable gravity contral parameter (Do not parameter (Do not 1,000 0 to 10,000 of 1 to 10,000 of 1 to 100 of 100	tion mpensation change.) change.) change.) 1 min <sup>-1</sup>	0 10 20	All Rotary Rotary	Immediately Immediately Immediately Immediately Immediately Immediately	Setup  Tuning Setup  Setup	*1
Pn476 Pn501 Pn502 Pn503	2 2 2	Related Se  n.□□X  n.□□X□  n.□X□□  n.X□□□  Gravity Contorque  Zero Clamper Rotation Detection September Width  Brake Reference OFF Delay	Reserved properties of the control o	Doarameter (Do not 00001h on 0	tion mpensation change.) change.) 0.1% 1 min <sup>-1</sup> 1 min <sup>-1</sup>	0 10 20 10	All All Rotary Rotary Rotary	Immediately Immediately Immediately Immediately Immediately Immediately Immediately	Setup  Tuning Setup Setup Setup	*1
Pn476 Pn501 Pn502 Pn503 Pn506	2 2 2 2	Related Se  n.□□X  n.□□X□  n.□X□□  n.X□□□  Gravity Contorque  Zero Clamper Rotation Detection September Width  Brake Reference Put Speed  Brake Reference Put Speed	Reserved properties of the control o	Doarameter (Do not 0001h)  mpensation Select Disable gravity contarameter (Do not parameter (Do not 1,000	tion mpensation change.)  change.)  change.)  1 min <sup>-1</sup> 1 min <sup>-1</sup> 10 ms	0 10 20 10 0	All All Rotary Rotary All	Immediately Immediately Immediately Immediately Immediately Immediately Immediately Immediately	Setup  Tuning Setup  Setup  Setup  Setup	*1 *1 *1 *1 *1 *1

Classi- fication  Setup  Reference  *1	
Reference *1	
*1	
*1	
*1	
Refer	ence
Refer	ence
neiei	ence
*1	
Refere	ence
lo- *1	
Refere	ence
*1	

Continued from previous page.

Parameter No.	Size	N	ame	Setti Ran	•	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Input Signa	al Selection	ns 0000		-	8868h	All	After restart	Setup	-
							I.	1	1		
			N-OT (Re	verse Drive	Prohib	it) Signal	Allocation			Refere	ence
			0	Enable reve	erse driv	ve when C	N1-40 inp	ut signal is O	N (closed).		
			1	Enable reve	erse driv	ve when C	CN1-41 inp	ut signal is O	N (closed).		
			2				· ·	ut signal is O			
			3				<u>.</u>	ut signal is O	, ,		
			4				<u>.</u>	out signal is O	, ,		
			5 6				· ·	out signal is O out signal is O			
		n.□□□X	7	Set the sign			•		14 (CIOSEU).		
			8	Set the sign						*1	
			9					out signal is O	FF (open).		
			А	Enable reve	erse driv	ve when C	N1-41 inp	out signal is O	FF (open).		
			В	Enable reve	erse driv	ve when C	N1-42 inp	out signal is O	FF (open).		
			С					ut signal is O	,		
			D					ut signal is O	,		
			E					out signal is O			
			F	Enable reve	erse driv	ve when C	2N1-46 inp	out signal is O	FF (open).		
			/ALM-RS	T (Alarm Re	eset) Si	gnal Alloc	ation			Refere	ence
			0	Active on si OFF (open)			CN1-40 in	put signal cha	anges from		
			1	Active on si OFF (open)			CN1-41 in	put signal cha	anges from		
D . 50D			2	Active on si OFF (open)			CN1-42 in	put signal cha	anges from		
Pn50B			3	Active on si OFF (open)			CN1-43 in	put signal cha	anges from		
			4	Active on si OFF (open)			CN1-44 in	put signal cha	anges from		
			5	OFF (open)	to ON	(closed).		put signal cha			
			6	OFF (open)	to ON	(closed).		put signal cha	anges from		
		n.□□X□	7	Reserved se						*1	
			9		gnal ed	ge when		out signal cha	nges from O	N	
			A		gnal ed	ge when	CN1-41 inp	out signal cha	nges from O	7	
			В	(closed) to (	gnal ed	ge when	CN1-42 inp	out signal cha	nges from O	N	
			С	( )	gnal ed	ge when	CN1-43 inp	out signal cha	nges from O	N	
			D		gnal ed	ge when	CN1-44 inp	out signal cha	nges from O	V	
			Е	,	gnal ed	ge when	CN1-45 inp	out signal cha	nges from O	N	
			F	Active on signature (closed) to (			CN1-46 inp	out signal cha	nges from O	N	
			/P-CL (Fo	orward Exten	rnal To	raue I imi	t Input) Sid	gnal Allocatio	on	Refere	ence
		n.□X□□	0 to F				. , ,	I (Servo ON) si			
			/N C! /D						-		
		n.X□□□	0 to F			•	. , ,	gnal Allocation (Servo ON) side		Refere	
			UIOF	me allocatio	nis are ti	ie sallie a	5 (11tb / 10-UN	I (SELVO OIV) SI(	yı ıaı allocatlon	ð. 1	

Name

Parameter

Continued from previous page.

When

Classi- Refer-

Applicable

No.	Size	N	ame	Range	Unit	Setting	Motors	Enabled	fication	ence
	2	Input Signa	al Selections	0000h to FFFFh	-	8888h	All	After restart	Setup	_
			/SPD-D (N	lotor Direction) S	ignal Allo	cation			Refere	ence
			0 /	Active when CN1-	40 input s	signal is Of	V (closed).			
			1 /	Active when CN1-	41 input s	signal is Of	V (closed).			
			2 /	Active when CN1-	42 input s	signal is Of	V (closed).			
			3 /	Active when CN1-	43 input s	signal is Of	V (closed).			
			4	Active when CN1-	44 input s	signal is Of	V (closed).			
			5 /	Active when CN1-	45 input s	signal is Of	V (closed).			
			6 /	Active when CN1-	46 input s	signal is Of	V (closed).			
		n.□□□X	7	The signal is alway	ys active.				*1	
			8 -	The signal is alway	ys inactive	<b>)</b> .				
			9 ,	Active when CN1-	40 input s	signal is Of	F (open).			
			Α ,	Active when CN1-	41 input s	signal is Of	F (open).			
Pn50C			В	Active when CN1-	42 input s	signal is Of	F (open).			
			C	Active when CN1-	43 input s	signal is Of	F (open).			
			D ,	Active when CN1-	44 input s	signal is Of	F (open).			
			E /	Active when CN1-	45 input s	signal is Of	F (open).			
			F	Active when CN1-	46 input s	signal is Of	F (open).			
			/SPD-A (Ir	iternal Set Speed	l Selection	n Input) Si	gnal Allocatio	n	Refere	ence
		n.□□X□		The allocations are nal allocations.	e the same	e as the /S	PD-D (Motor	Direction) sig	y- *1	
			/SPD-B (Ir	nternal Set Speed	d Selection	n Input) Si	gnal Allocatio	n	Refere	ence
		n.□X□□		The allocations are nal allocations.	e the same	e as the /S	PD-D (Motor	Direction) sig	y- *1	
	l		/C-SEL (C	ontrol Selection I	nput) Sigr	nal Allocat	ion		Refere	ence
		n.X□□□	1 (110) -	The allocations are nal allocations.	e the same	e as the /S	PD-D (Motor	Direction) sig	y- *1	

Setting

Setting

Default

Parameter No.	Size		N	lame		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
140.	2	Inni	ut Sign:	al Selection	ns	0000h to	Offic	0888h	WOLOIS	After		-
		4				FFFFh	_	000011	_	restart	Setup	
				/ZCLAMI	P (Ze	ero Clamping	Input) Sigi	nal Allocat	ion	Applicable Motors	Refere	ence
				0	Act	ive when CN1	-40 input s	ignal is ON	V (closed).			
				1		ive when CN1			,			
				2		ive when CN1	•		,			
				3		ive when CN1						
				4		ive when CN1	- '		,			
				5		ive when CN1	•					
		n. 🗆 🗆	ιπх	6		ive when CN1		signal is ON	N (closed).			
				7		signal is alwa				All	*1	
				8		signal is alwa			T ()			
				9 A		ive when CN1						
Pn50D					A Active when CN1-41 input signal is OFF (open).  B Active when CN1-42 input signal is OFF (open).							
				С		ive when CN1	· ·	•	,			
				D		ive when CN1	-					
				E		ive when CN1			· · ·			
				F		ive when CN1	· ·	•	,			
									( ) ( ) ( )			
		n. 🗆 🗆	IVI	/INHIBIT	(Ref	erence Pulse	Inhibit Inp	ut) Signal	Allocation	Applicable Motors	Refere	ence
		11. LLL		0 to F	The allocations are the same as the /7CL AMP						*1	
				/G-SEL (	Gain	Selection Inp	out) Signal	Allocation	1	Applicable Motors	Refere	ence
		n.□X		0 to F		allocations ar o Clamping In				All	*1	
					(20.	o olamping in	par, org. ia	4	<u> </u>			
		n.X□		Reserved	d pai	rameter (Do no	ot change	.)				
	2	Out	put Sig	nal Selec-		0000h to 6666h	_	2011h	All	After	Setup	_
		tion	SI			000011				restart		
				(0.01) (0							·	
						oning Comple	•	, 0			Refere	ence
				0		abled (the abo				ut terminal		
				2		put the signal			·			
		n. 🗆 🗆	IЦХ	3		put the signal			· · · · · · · · · · · · · · · · · · ·		*1	
				4		put the signal			· · · · · · · · · · · · · · · · · · ·	at torrilliar.		
				5		put the signal			•			
D. 505				6		put the signal			•			
Pn50E				01.0140	<b>'</b> 0	10::1	5	0 1 1	\ O:   A		D (	
		n. 🗆 🗆	ıχΠ	/V-CMP	` '	ed Coinciden		•	, 0		Refere	ence
		11.00		0 to 6		allocations ar ) signal allocat		e as the /C	OIN (Position	ling Comple-	*1	
				/TGON (I	Rota	tion Detection	Output) S	Signal Allo	cation		Refere	ence
		n.□X	00	0 to 6		allocations ar		e as the /C	OIN (Position	ing Comple-	*1	
				/S-RDY (		o Ready) Sigr		ion			Refere	ence
		n.X□				allocations ar			OIN (Position	ing Comple-		
				0 to 6		) signal allocat			,	3 - 3	*1	

n.X□□□

Continued from previous page.

_								Jonilinuea ira		
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Output Sig tions 2	nal Selec-	0000h to 6666h	_	0300h	All	After restart	Setup	-
					1	l			I	
			/CLT (Torqu	e Limit Detection	n Output)	Signal All	ocation		Refere	ence
			0 Di	sabled (the abo	ve signal c	output is no	ot used).			
			1 Oı	utput the signal	from the C	N1-25 or	CN1-26 outp	ut terminal.		
		n.□□□X	2 Oı	utput the signal	from the C	N1-27 or	CN1-28 outp	ut terminal.		
		11.000	3 Ot	utput the signal	from the C	N1-29 or	CN1-30 outp	ut terminal.	*1	
			4 Ot	utput the signal	from the C	N1-37 ou	tput terminal.			
			5 Oı	utput the signal	from the C	N1-38 ou	tput terminal.			
Pn50F			6 Oı	utput the signal	from the C	N1-39 ou	tput terminal.			
			/VLT (Speed	Limit Detectio	n) Signal <i>i</i>	Allocation			Refere	ence
		n.□□X□		ne allocations are utput) signal allo		e as the /C	CLT (Torque Li	mit Detectior	*1	
			/BK (Brake	Output) Signal /	Allocation				Refere	ence
		n.□X□□		ne allocations are utput) signal allo		e as the /C	CLT (Torque Li	mit Detectior	*1	
			/WARN (Wa	rning Output) S	ignal Allo	cation			Refere	ence
		n.X□□□		ne allocations are utput) signal allo		e as the /C	CLT (Torque Li	mit Detectior	*1	
									"	
								Continue	d on nex	t page.
	2	Output Sig tions 3	nal Selec-	0000h to 0666h	_	0000h	All	After restart	Setup	-
			/NEAR (Nea	r Output) Signa	l Allocatio	n			Refere	ence
			0 Di	sabled (the abo	ve signal c	output is no	ot used).			
			1 Oı	utput the signal	from the C	N1-25 or	CN1-26 outp	ut terminal.		
		n.□□□X	2 Oı	utput the signal	from the C	N1-27 or	CN1-28 outp	ut terminal.		
		11.000X		utput the signal				ut terminal.	*1	
				utput the signal						
Pn510				utput the signal						
			6 Oi	utput the signal	from the C	N1-39 ou	tput terminal.			
		n.□□X□	Reserved pa	arameter (Do no	ot change	.)				
		» DVDD	/PSELA (Re Allocation	ference Pulse I	nput Multi	plication §	Switching Out	put) Signal	Refere	ence
		n.□X□□		ne allocations ar	e the same	e as the /N	IEAR (Near) si	gnal alloca-	*1	

Reserved parameter (Do not change.)

								Continued fro	Jili previot	is page		
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence		
	2	Output Sig Settings	ınal Inverse	0000h to 1111h	-	0000h	All	After restart	Setup	-		
				nal Inversion for		and CN1-2	26 Terminals					
		n.□□□X		he signal is not i								
			1 7	he signal is inver	ted.							
			Output Sig	nal Inversion for	CN1-27	and CN1-2	28 Terminals					
		n.□□X□		he signal is not i								
Pn512			1 7	he signal is inver	ted.							
			Output Sic	nal Inversion for	· CN1-29 :	and CN1-3	n Terminals					
		n.□X□□		he signal is not i		and Oivi c	o iciiiiiais					
				he signal is inver								
				nal Inversion for		Terminal						
		n.X□□□		he signal is not i								
			1 1	he signal is inver	ted.							
	0	Output Sic	nal Inverse	0000h to		00001-	AII	After	0.545			
	2	Settings 2	,	0011h	_	0000h	All	restart	Setup			
			Output Sic	nal Inversion for	· CN11 20 T	Forminal						
		n.□□□X		The signal is not i		reminai						
		11.000								<del></del>		
Pn513				nal Inversion for		Terminal						
		n.□□X□		he signal is not i								
			1 1	he signal is inver	ted.							
		n.□X□□	Reserved	parameter (Do n	ot change	.)						
		n.XDDD	Posoniod	parameter (Do no	ot change	١						
		11.7000	neserveu	Darameter (DO III	or change	.)						
	2	Output Sig	ınal Selec-	0000h to	_	0000h	All	After	Setup	_		
		tions 4		0666h		000011	7 (11	restart	Оотар			
		n.□□□X	Reserved	parameter (Do n	ot change	.)						
				` ` `								
		n.□□X□	Reserved	parameter (Do n	ot change	.)						
			/PM (Preve	entative Mainten	ance Outp	ut) Signal	Allocation		Refere	ence		
			0 [	Disabled (the abo	ve signal c	output is no	ot used).					
Pn514			1 (	Output the signal	from the C	N1-25 or	CN1-26 outp	ut terminal.				
		~ U\UU	2 (	Output the signal	from the C	N1-27 or	CN1-28 outp	ut terminal.				
		n.□X□□	3 (	Output the signal	from the C	N1-29 or	CN1-30 outp	ut terminal.	*1			
			4 (	Output the signal	from the C	N1-37 ou	tput terminal.					
			5 (	Output the signal	from the C	N1-38 ou	tput terminal.					
			6 (	Output the signal	from the C	N1-39 ou	tput terminal.					
		n.XDDD	Reserved	parameter (Do no	ot change	)						
		11.7000	i lesel veu	Jarameter (DO III	or change	.)						

No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refe
	2	Input Signa 6	al Selections	0000h to FFFFh	_	8888h	All	After restart	Setup	-
	١ .		SEN (Abso	olute Data Reque	st Innut) 9	Signal Allo	cation		Refere	ence
			<del></del>	Active when CN1-	. ,				Tiolord	,,,,,,
				Active when CN1-			, ,			
			_	Active when CN1-	•					
				Active when CN1-	<u> </u>		,			
			_	Active when CN1-			, ,			
				Active when CN1-						
			_	Active when CN1-			, ,			
		n.□□□X	7	The signal is alway	s active.		, ,			
			8 E	Enable when 5 V i	s input to	CN1-4.			*1	
				Active when CN1-	•		F (open).			
			_	Active when CN1-			,			
			В	Active when CN1-	42 input s	signal is Of	F (open).			
				Active when CN1-			· · · ·			
				Active when CN1-						
			_	Active when CN1-						
				Active when CN1-			,			
515			/PSEL (Re	ference Pulse Inp	out Multip	lication Sv	vitching Input	t) Signal Allo	Pefere	ence
			0 /	Active when CN1-	40 input s	signal is Ol	V (closed).			
			1 /	Active when CN1-	41 input s	signal is Of	V (closed).			
			2 A	Active when CN1-	42 input s	signal is Of				
				Active when CN1- Active when CN1-	· ·		V (closed).			
			3 4		43 input s	signal is ON	V (closed).			
			3 A	Active when CN1-	43 input s 44 input s	signal is ON signal is ON	N (closed). N (closed). N (closed).			
			3 A 4 A 5 A	Active when CN1- Active when CN1- Active when CN1-	43 input s 44 input s 45 input s	signal is ON signal is ON signal is ON	V (closed). V (closed). V (closed). V (closed).			
		n.00X0	3 /4 /4 /5 /6 /4	Active when CN1- Active when CN1-	43 input s 44 input s 45 input s 46 input s	signal is ON signal is ON signal is ON signal is ON	V (closed). V (closed). V (closed). V (closed).			
		n.□□X□	3 A 4 A 5 A 6 A 7	Active when CN1- Active when CN1- Active when CN1- Active when CN1-	43 input s 44 input s 45 input s 46 input s ys enabled	signal is ON signal is ON signal is ON signal is ON	V (closed). V (closed). V (closed). V (closed).		*1	
		n.□□X□	3	Active when CN1- Active when CN1- Active when CN1- Active when CN1- The signal is alway	43 input s 44 input s 45 input s 46 input s /s enabled /s inactive	signal is ON signal is ON signal is ON signal is ON	V (closed). V (closed). V (closed). V (closed). V (closed). V (closed).		*1	
		n.00X0	3	Active when CN1- Active when CN1- Active when CN1- Active when CN1- The signal is alway	43 input s 44 input s 45 input s 46 input s /s enabled /s inactive 40 input s	signal is Of signal is Of signal is Of signal is Of signal is Of d.	N (closed). N (closed). N (closed). N (closed). N (closed). N (closed).		*1	
		n.00X0	3	Active when CN1-Active when CN1-Active when CN1-Active when CN1-Fre signal is alway active when CN1-Fre signal is alway Active when CN1-Active	43 input s 44 input s 45 input s 46 input s /s enabled /s inactive 40 input s 41 input s	signal is ON signal is ON signal is ON signal is ON d. s. signal is OF signal is OF	N (closed). N (closed). N (closed). N (closed). N (closed). N (closed). FF (open).		*1	
		n.□□X□	3	Active when CN1- Active when CN1- Active when CN1- Active when CN1- The signal is alway The signal is alway Active when CN1- Active when CN1-	43 input s 44 input s 45 input s 46 input s 75 enabled 75 inactive 40 input s 41 input s 42 input s	signal is Of signal is Of signal is Of signal is Of d. signal is Of signal is Of signal is Of	N (closed). N (closed). N (closed). N (closed). N (closed). N (closed). FF (open). FF (open).		*1	
		n.□□X□	3	Active when CN1-Active when CN1-Active when CN1-Active when CN1-The signal is alway for signal is alway Active when CN1-Active	43 input s 44 input s 45 input s 46 input s 46 input s 46 input s 40 input s 41 input s 42 input s 43 input s	signal is Official signal is Official signal is Official signal is Official signal is Official signal is Official signal is Official signal is Official signal is Official signal is Official signal is Official signal is Official signal is Official signal is Official signal is Official signal is Official signal is Official signal is Official signal sig	N (closed). N (closed). N (closed). N (closed). N (closed). N (closed). FF (open). FF (open). FF (open). FF (open).		*1	
		n.00X0	3	Active when CN1- Active when CN1- Active when CN1- Active when CN1- The signal is alway The signal is alway Active when CN1- Active when CN1- Active when CN1-	43 input s 44 input s 45 input s 46 input s 46 input s 46 input s 40 input s 41 input s 42 input s 43 input s 44 input s	signal is ON signal is ON signal is ON signal is ON d. s. signal is OF signal is OF signal is OF signal is OF signal is OF	N (closed). N (closed). N (closed). N (closed). N (closed). N (closed). FF (open). FF (open). FF (open). FF (open). FF (open).		*1	
		n.00X0	3	Active when CN1-Active when CN1-Active when CN1-Active when CN1-The signal is alway The signal is alway Active when CN1-Active	43 input s 44 input s 45 input s 46 input s 46 input s 47 input s 48 input s 49 input s 41 input s 42 input s 44 input s 45 input s	signal is ON signal is ON signal is ON signal is ON signal is ON signal is ON signal is ON signal is ON signal is ON signal is ON signal is ON signal is ON signal is ON signal is ON signal is ON signal is ON signal is ON	N (closed). N (closed). N (closed). N (closed). N (closed). N (closed). FF (open). FF (open). FF (open). FF (open). FF (open). FF (open). FF (open).		*1	
		n.00X0	3	Active when CN1-Active when CN1-Active when CN1-Active when CN1-The signal is alway active when CN1-Active whe	43 input s 44 input s 45 input s 46 input s 75 enabled 75 inactive 40 input s 41 input s 42 input s 43 input s 44 input s 45 input s 46 input s	signal is Of signa	N (closed). N (closed). N (closed). N (closed). N (closed). N (closed). FF (open). FF (open). FF (open). FF (open). FF (open). FF (open). FF (open).		*1	

Continued from previous page.

Parameter	Size	N	Name	Setting	Setting	Default	Applicable	When	Classi-	Refer-			
No.		Input Sign	al Selection	Range ns 0000h to	Unit	Setting	Motors	Enabled After	fication	ence			
	2	7	iai Selectioi	FFFFh	_	8888h	All	restart	Setup	-			
			ECTD /For	ced Stop Input) S	ianal Allac	ation			Dofore	200			
			0	Enable drive who			al is ON (close	2d)	Refere	ille			
			1	Enable drive who			•						
			2	Enable drive whe			•						
			3	Enable drive whe		· ·	•	,					
			4	Enable drive whe	en CN1-44	input signa	al is ON (close	ed).					
			5	Enable drive whe	en CN1-45	input signa	al is ON (close	ed).					
			6	Enable drive who	en CN1-46	input signa	al is ON (close	ed).					
	r	n.000X	7	Set the signal to stop).					*1				
Pn516			8	Set the signal to motor to stop).		,							
			9	Enable drive whe									
			A	Enable drive who				,					
			B C	Enable drive who		' '	, ,	,					
			D	Enable drive who				•					
			E	Enable drive who									
			F	Enable drive whe									
	-		D		1 -1			,					
	r	1.00X0	Reserved	parameter (Do not change.)									
	r	n.0X00	Reserved	parameter (Do not change.)									
	r	n.X000	Reserved	ved parameter (Do not change.)									
	_				5- /								
		Output Sir	gnal Selec-	0000h to				After					
	2	tions 5	griai Ocico	0666h	_	0000h	All	restart	Setup	*1			
								L					
			AL O1 (AL		) Signal Al	location							
	Ī		`	arm Code Output	, 0		ot used).						
			ALO1 (Al	arm Code Output Disabled (the abo	ve signal o	output is no	•	ut terminal.					
			0	arm Code Output	ove signal of from the (	output is no ON1-25 or	CN1-26 outp						
		n.000X	0	arm Code Output Disabled (the abo Output the signa	ove signal of from the C	output is no DN1-25 or DN1-27 or	CN1-26 outp	ut terminal.					
		n.□□□X	0 1 2	arm Code Output Disabled (the abo Output the signa Output the signa	from the (from t	output is no DN1-25 or DN1-27 or DN1-29 or	CN1-26 outp CN1-28 outp CN1-30 outp	ut terminal.					
Pn517		n.000X	0 1 2 3 4 5	arm Code Output Disabled (the abo Output the signa Output the signa Output the signa Output the signa Output the signa Output the signa	from the (from t	output is no CN1-25 or CN1-27 or CN1-29 or CN1-37 out CN1-38 out	CN1-26 outp CN1-28 outp CN1-30 outp put terminal.	ut terminal.					
Pn517		n.□□□X	0 1 2 3 4	arm Code Output Disabled (the abo Output the signa Output the signa Output the signa Output the signa	from the (from t	output is no CN1-25 or CN1-27 or CN1-29 or CN1-37 out CN1-38 out	CN1-26 outp CN1-28 outp CN1-30 outp put terminal.	ut terminal.					
Pn517		n.000X	0 1 2 3 4 5 6	arm Code Output Disabled (the abo Output the signa Output the signa Output the signa Output the signa Output the signa Output the signa	from the C from the C from the C from the C from the C from the C	output is no CN1-25 or CN1-27 or CN1-29 or CN1-37 out CN1-38 out	CN1-26 outp CN1-28 outp CN1-30 outp put terminal.	ut terminal.					
Pn517	_	n.000X n.00X0	0 1 2 3 4 5 6	arm Code Output Disabled (the abo Output the signa Output the signa Output the signa Output the signa Output the signa Output the signa Output the signa Autput the signa Output the signa The allocations a	from the (from t	output is not continued by the continue of the	CN1-26 outp CN1-28 outp CN1-30 outp put terminal. put terminal. put terminal.	ut terminal. ut terminal.	signal allo	ca-			
Pn517	_		0 1 2 3 4 5 6	arm Code Output Disabled (the abo Output the signa Output the signa Output the signa Output the signa Output the signa Output the signa Output the signa Output the signa	from the (from t	output is not continued by the continue of the	CN1-26 outp CN1-28 outp CN1-30 outp put terminal. put terminal. put terminal.	ut terminal. ut terminal.	signal alloc	Ca-			
Pn517	_		0 1 2 3 4 5 6	arm Code Output Disabled (the abo Output the signa Output the signa Output the signa Output the signa Output the signa Output the signa Output the signa The allocations a	from the C from the C from the C from the C from the C from the C from the C	output is no CN1-25 or CN1-27 or CN1-29 or CN1-37 out CN1-38 out CN1-39 out	CN1-26 outp CN1-28 outp CN1-30 outp put terminal. put terminal. put terminal.	ut terminal. ut terminal.	signal alloc	Ca-			
Pn517			0 1 2 3 4 5 6 ALO2 (AI 0 to 6	arm Code Output Disabled (the abo Output the signa Output the signa Output the signa Output the signa Output the signa Output the signa Output the signa Autput the signa Output the signa The allocations a tions.	from the (from t	output is not continued by the continue of the	CN1-26 outp CN1-28 outp CN1-30 outp put terminal. put terminal. put terminal.	ut terminal. ut terminal. ode Output) s					
Pn517		n.00X0	0 1 2 3 4 5 6	arm Code Output Disabled (the abo Output the signa Output the signa Output the signa Output the signa Output the signa Output the signa Output the signa The allocations a tions.	from the (from t	output is not continued by the continue of the	CN1-26 outp CN1-28 outp CN1-30 outp put terminal. put terminal. put terminal.	ut terminal. ut terminal. ode Output) s					
Pn517		n.00X0	0 1 2 3 4 5 6 ALO2 (Al 0 to 6	arm Code Output Disabled (the abo Output the signa Output the signa Output the signa Output the signa Output the signa Output the signa Output the signa The allocations a tions.	from the (from t	output is no CN1-25 or CN1-27 or CN1-37 out CN1-38 out CN1-39 out location e as the AL location e as the AL	CN1-26 outp CN1-28 outp CN1-30 outp put terminal. put terminal. put terminal.	ut terminal. ut terminal. ode Output) s					
Pn517		n.00X0 n.0X00	0 1 2 3 4 5 6 ALO2 (Al 0 to 6	arm Code Output Disabled (the abo Output the signa Output the signa Output the signa Output the signa Output the signa Output the signa Output the signa Output the signa The allocations a tions.	from the (from t	output is no CN1-25 or CN1-27 or CN1-37 out CN1-38 out CN1-39 out location e as the AL location e as the AL	CN1-26 outp CN1-28 outp CN1-30 outp put terminal. put terminal. put terminal.	ut terminal. ut terminal. ode Output) s					
Pn517		n.00X0 n.0X00	0 1 2 3 4 5 6 ALO2 (Al 0 to 6	arm Code Output Disabled (the abo Output the signa Output the signa Output the signa Output the signa Output the signa Output the signa Output the signa Output the signa The allocations a tions.	from the (from t	output is no CN1-25 or CN1-27 or CN1-37 out CN1-38 out CN1-39 out location e as the AL location e as the AL	CN1-26 outp CN1-28 outp CN1-30 outp put terminal. put terminal. put terminal.	ut terminal. ut terminal. ode Output) s					
		n.□X□ n.□X□□ n.X□□□	0 1 2 3 4 5 6 ALO2 (Al 0 to 6 ALO3 (Al 0 to 6 Reserved	arm Code Output Disabled (the abo Output the signa Output the signa Output the signa Output the signa Output the signa Output the signa Output the signa Output the signa The allocations a tions.  I parameter (Do n	from the (from t	output is no CN1-25 or CN1-27 or CN1-37 out CN1-38 out CN1-39 out Iocation e as the AL	CN1-26 outp CN1-28 outp CN1-30 outp cput terminal. cput terminal. cput terminal.	ut terminal. ut terminal. ode Output) s					
Pn517		n.00X0 n.0X00 n.X000	0 1 2 3 4 5 6 ALO2 (Al 0 to 6 ALO3 (Al 0 to 6 Reserved	arm Code Output Disabled (the abo Output the signa Output the signa Output the signa Output the signa Output the signa Output the signa Output the signa Output the signa The allocations a tions.  I parameter (Do n	from the (from t	output is no CN1-25 or CN1-27 or CN1-37 out CN1-38 out CN1-39 out Iocation e as the AL	CN1-26 outp CN1-28 outp CN1-30 outp put terminal. put terminal. put terminal.	ut terminal. ut terminal. ode Output) s					

								Continued fro	om previoi	us page.
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn51B	4	Motor-Load Deviation C Detection L	Overflow	0 to 1,073,741,824	1 refer- ence unit	1000	Rotary	Immedi- ately	Setup	*1
Pn51E	2	Position De flow Warnin	eviation Over- ng Level	10 to 100	1%	100	All	Immedi- ately	Setup	*1
Pn520	4	Position De	eviation Over- Level	1 to 1,073,741,823	1 refer- ence unit	524288 0	All	Immedi- ately	Setup	*1
Pn522	4	Positioning Width	Completed	0 to 1,073,741,824	1 refer- ence unit	7	All	Immedi- ately	Setup	*1
Pn524	4	Near Signa	ıl Width	1 to 1,073,741,824	1 refer- ence unit	107374 1824	All	Immedi- ately	Setup	*1
Pn526	4	Position De flow Alarm Servo ON	eviation Over- Level at	1 to 1,073,741,823	1 refer- ence unit	524288 0	All	Immedi- ately	Setup	*1
Pn528	2	Position De flow Warnin Servo ON	eviation Over- ng Level at	10 to 100	1%	100	All	Immedi- ately	Setup	*1
Pn529	2	Speed Lim Servo ON	it Level at	0 to 10,000	1 min <sup>-1</sup>	10000	Rotary	Immedi- ately	Setup	*1
Pn52A	2	Multiplier p	er Fully- ation	0 to 100	1%	20	Rotary	Immedi- ately	Tuning	*1
Pn52B	2	Overload V	Varning Level	1 to 100	1%	20	All	Immedi- ately	Setup	*1
Pn52C	2	Base Curre at Motor O Detection	ent Derating verload	10 to 100	1%	100	All	After restart	Setup	*1
Pn52F	2	Monitor Dis Startup	splay at	0000h to 0FFFh	_	0FFFh	All	Immedi- ately	Setup	*1
	2	Program Jo Related Se	ogging- lections	0000h to 0005h	_	0000h	All	Immedi- ately	Setup	*1
Pn530		n.00X0 n.00X0 n.0X0	0 (Mm 1 (Mm 2 (Mm 3 (Wm 4 in Pr 5 in Pr	gging Operation  /aiting time in Provements in Proposed Pro	$1535 \rightarrow Fc$ $1536 \rightarrow Fc$ $1535$	everse by the prward by the pr	travel distance travel distance travel distance travel distance travel distance e in Pn531) ×	e in Pn531) > e in Pn531) > e in Pn531) > e in Pn531) > e in Pn531) > e in Pn531 — Number of n	Number Number Number Number Number Number Number Number	of of of of of ime s in
		n.X000		arameter (Do no						
				( ,		,				
Pn531	4	Program Jo Distance	ogging Travel	1 to 1,073,741,824	1 refer- ence unit	32768	All	Immedi- ately	Setup	*1

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Continued	from	provious	$n \circ \alpha \circ$

Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
Pn533	2	Program Jogging Move- ment Speed	1 to 10,000	Rotary: 1 min <sup>-1</sup> Direct Drive: 0.1 min <sup>-1</sup>	500	Rotary	Immedi- ately	Setup	*1
Pn534	2	Program Jogging Acceleration/Deceleration Time	2 to 10,000	1 ms	100	All	Immedi- ately	Setup	*1
Pn535	2	Program Jogging Wait- ing Time	0 to 10,000	1 ms	100	All	Immedi- ately	Setup	*1
Pn536	2	Program Jogging Number of Movements	0 to 1,000	Times	1	All	Immedi- ately	Setup	*1
Pn550	2	Analog Monitor 1 Offset Voltage	-10,000 to 10,000	0.1 V	0	All	Immedi- ately	Setup	*1
Pn551	2	Analog Monitor 2 Offset Voltage	-10,000 to 10,000	0.1 V	0	All	Immedi- ately	Setup	*1
Pn552	2	Analog Monitor 1 Mag- nification	-10,000 to 10,000	× 0.01	100	All	Immedi- ately	Setup	*1
Pn553	2	Analog Monitor 2 Mag- nification	-10,000 to 10,000	× 0.01	100	All	Immedi- ately	Setup	*1
Pn55A	2	Power Consumption Monitor Unit Time	1 to 1,440	1 min	1	All	Immedi- ately	Setup	_
Pn560	2	Residual Vibration Detection Width	1 to 3,000	0.1%	400	All	Immedi- ately	Setup	_
Pn561	2	Overshoot Detection Level	0 to 100	1%	100	All	Immedi- ately	Setup	_
Pn600	2	Regenerative Resistor Capacity*4	Depends on model.*5	10 W	0	All	Immedi- ately	Setup	_
Pn601	2	Dynamic Brake Resistor Allowable Energy Consumption	0 to 65,535	10 J	0	All	After restart	Setup	*6
Pn603	2	Regenerative Resistance	0 to 65,535	10 mΩ	0	All	Immedi- ately	Setup	_
Pn604	2	Dynamic Brake Resistance	0 to 65,535	10 mΩ	0	All	After restart	Setup	*6
	2	Overheat Protection Selections	0000h to 0003h	-	0000h	Linear	After restart	Setup	*1

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n.□□□X Overheat Protection Selection							
	0	Disable overheat protection.					
1 Use overheat protection in the Yaskawa Linear Servomotor.*7							
	2	Monitor a negative voltage input from a sensor attached to the machine and use overheat protection.					
	3	Monitor a positive voltage input from a sensor attached to the machine and use overheat protection.					

n.□□X□	Reserved parameter (Do not change.)
n.□X□□	Reserved parameter (Do not change.)
n.X□□□	Reserved parameter (Do not change.)

Pn61B *8	B 2 Overheat Alarm Level		0 to 500	0.01 V	250	All	Immedi- ately	Setup	*1
Pn61C *8	Overheat Warning Level		0 to 100	1%	100	All	Immedi- ately	Setup	*1
Pn61D *8	2	Overheat Alarm Filter Time	0 to 65,535	1 s	0	All	Immedi- ately	Setup	*1
Pn621 to Pn628*3	n621 to Safety Module-Related		-	_	-	All	-	_	_

Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Input Signa	al Selections	0000h to FFFFh	_	6221h	All	After restart	Setup	_
			/MODE 0/1	(1 (Mode Switch Input) Signal Allocation					Refere	nce
			0 Mo	de 0 is used wh	en CN1-40	) input sig	nal is ON (clo	sed).		
			1 Mod	de 0 is used wh	en CN1-4	1 input sig	nal is ON (clo	sed).		
				de 0 is used wh		1 0	,	,		
				de 0 is used wh						
				de 0 is used wh						
				de 0 is used wh de 0 is used wh			`	,		
		n.□□□X		signal always s			1101 13 014 (010)	30a).		
				signal always s	•				*9	
				de 0 is used wh	•		nal is OFF (op	en).		
			A Mo	de 0 is used wh	en CN1-4	1 input sig	nal is OFF (op	en).		
			В Мо	de 0 is used wh	en CN1-42	2 input sigi	nal is OFF (op	en).		
			C Mod	de 0 is used wh	en CN1-40	3 input sig	nal is OFF (op	en).		
			D Mo	de 0 is used wh	en CN1-4	4 input sig	nal is OFF (op	en).		
				de 0 is used wh						
			F Mo	de 0 is used wh	en CN1-46	3 input sig	nal is OFF (op	en).		
			/START-STO	P (Program Tal	ble Opera	tion Start-	Stop Input) S	Signal Alloca	Refere	nce
Pn630			0 Act	ve when CN1-4	0 input sig	gnal is ON	(closed).			
			1 Act	ve when CN1-4	1 input sią	gnal is ON	(closed).			
				ve when CN1-4			•			
				ve when CN1-4			, ,			
				ve when CN1-4						
				ve when CN1-4			•		_	
		n.□□X□		signal is always		griai is Oiv	(Closed).			
				signal is always					*9	
				ve when CN1-4		anal is OFF	(open).			
				ve when CN1-4	`		,			
			B Act	ve when CN1-4	2 input sig	gnal is OFF	(open).			
			C Act	ve when CN1-4	3 input sig	gnal is OFF	(open).			
			D Act	ve when CN1-4	4 input siç	gnal is OFF	(open).			
				ve when CN1-4	• •	,	` ' '			
			F Act	ve when CN1-4	6 input siç	gnal is OFF	(open).			
			/HOME (Ori	gin Return Inpu	t) Signal A	Allocation			Refere	nce
		n.□X□□		settings are the eration Start-Sto				ram Table	*9	
			/DGMDES /	Program Table (	Operation	Reset Inn	ut) Signal All	ocation	Refere	nce
		n.X□□□	Oto E The	settings are the eration Start-Sto	e same as	for /STAR	T-STOP (Prog		*9	1100
			Ορί	a.ion otan ot	, p ii pati O	.9.101/1100				

Continued from previous page. When Classi- Refer-

Parameter No.	Size		Name		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer ence
	2	Input Sign	nal Selectio	ns	0000h to FFFFh	_	8543h	All	After restart	Setup	_
			/SEL0 (Program Step Selection Input 0) Signal Allocation								
					•	•	· •			Refere	ence
					e when CN1-4 e when CN1-4	<u>'</u>		,			
					e when CN1-2		<u> </u>				
					e when CN1-4	· ·	<u> </u>	, ,			
					e when CN1-4		<u> </u>				
					e when CN1-4			· · · · · · · · · · · · · · · · · · ·			
					e when CN1-4		<u> </u>	,			
	r	n.000X	7		signal is alway	<u>'</u>	griai is Oi <b>v</b>	(ciosca).			
					signal is alway					*9	
					e when CN1-4			F (open).			
				Active when CN1-41 input signal is OFF (open).							
Pn631					e when CN1-4	•					
11001					e when CN1-4						
			D	Activ	e when CN1-4	14 input si	gnal is OFI	F (open).			
			Е	Activ	e when CN1-4	15 input si	gnal is OFI	F (open).			
			F	Activ	e when CN1-4	16 input si	gnal is OFI	F (open).			
			/SEL1 (Pr	ograi	m Step Select	ion Input	1) Signal A	Allocation		Refere	ence
	r	n.□□X□	0 to F		settings are the : 0) Signal Allo		for /SEL0	(Program Ste	ep Selection	*9	
			/SEL2 (Pr	ograi	m Step Select	ion Input	2) Signal A	Allocation		Refere	ence
	n. 🗆 X 🗆 🗆		0 to F		settings are the constant of t		for /SEL0	(Program Ste	ep Selection	*9	
			/SEL3 (Pr	ograi	m Step Select	ion Input	3) Signal A	Allocation		Refere	ence
	r	n.X000	0 to F	The s	settings are the 0) Signal Allo	e same as cation.	for /SEL0	(Program Ste	ep Selection	*9	

Parameter No.	Size	1	Name		Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Input Sigr 12	nal Selectio	ns	0000h to FFFFh	_	5438h	All	After restart	Setup	_	
	_											
			/SEL4 (Pr	/SEL4 (Program Step Selection Input 4) Signal Allocation								
			0		e when CN1-	•		,				
					e when CN1-	<u> </u>	<u> </u>	·				
					e when CN1-		-	· · · · · · · · · · · · · · · · · · ·				
					e when CN1-	•		,				
					e when CN1-	<u> </u>	<u> </u>	·				
			5		e when CN1-	<u> </u>	0	, ,				
					ve when CN1-4		gnal is ON	(closed).				
	r	n.□□□X			signal is alway					*9		
					signal is alway							
			9	Activ								
				Active when CN1-41 input signal is OFF (open).								
Pn632					e when CN1-	· •		,				
					e when CN1-	<u>'</u>		· · · /				
					e when CN1-	•	•	` ' '				
			Е	Active when CN1-45 input signal is OFF (open).								
			F	Active when CN1-46 input signal is OFF (open).								
			/JOGP (F	orwa	rd Jog Input)	Signal Allo	ocation			Refere	ence	
	r	n.□□X□			settings are th t 4) Signal Allo		for /SEL4	(Program Ste	p Selection	*9		
			/JOGN (F	lever	se Jog Input)	Signal Alle	ocation			Refere	ence	
	r	n.□X□□			settings are th t 4) Signal Allo		for /SEL4	(Program Ste	p Selection	*9		
			/JOG0 (Jo	og S <sub>l</sub>	oeed Table Se	lection In	out 0) Sigr	nal Allocation		Refere	ence	
	r	n.X000		The settings are the same as for /SEL4 (Program Step Selection Input 4) Signal Allocation.								
	_											

Parameter No.	Size	N	Name	Setting	Setting	Default	Applicable	Continued fro When	Classi-	Refe	
NO.	2	Input Sign	al Selectio		Unit	Setting 8888h	Motors	Enabled After	fication Setup	ence	
	_	13		FFFFh		000011	All	restart	Jetup		
			/JOG1 (	/JOG1 (Jog Speed Table Selection Input 1) Signal Allocation							
			0	Active when CN1			,				
			1	Active when CN1			,				
			2	Active when CN1							
			3	Active when CN1			,				
			5	Active when CN1			,				
			6	Active when CN1							
		n.□□□X	7	The signal is alwa		igriai is Or	(Closed).				
			8	The signal is alwa					*9		
			9	Active when CN1	•		F (open).				
n633			A	Active when CN1			,				
			В	Active when CN1	•	•	,				
			С	Active when CN1							
			D	Active when CN1	<u> </u>		,				
			Е	Active when CN1		_					
			F	Active when CN1	-46 input s	ignal is OF	F (open).				
			/JOG2 (c	Jog Speed Table S		. , ,			Refere	nce	
		n.□□X□	0 to F	to F The settings are the same as for /JOG1 (Jog Speed Table Selection Input 1) Signal Allocation.							
		n.□X□□	Reserve	d parameter (Do no	ot change.	)					
		n.X□□□	Reserve	d parameter (Do no	ot change.	)					
				•		,					
	2	Input Sign	al Selectic	ons 0000h to 0013h	_	0002h	All	After restart	Setup	-	
	2				-	0002h	All		Setup	nce	
	2			0013h	- n input sign			restart	· ·	nce	
	2	14	SI8 Sign	0013h		nal to CN1	-14 and CN1-	restart -15.	· ·	nce	
	2		SI8 Sign	al Selection  Do not allocate ar  Allocate the CLR	signal as tl	nal to CN1	-14 and CN1- gnal to CN1-1	restart -15. 4 and CN1-	Refere	_ nce	
Pn634	2	14	SI8 Sign 0	Do not allocate ar Allocate the CLR 15. Allocate the /DEC	signal as tl	nal to CN1 ne input sig the input s	-14 and CN1- gnal to CN1-1 ignal to CN1-	restart  -15. 4 and CN1- 14 and CN1-	Refere	nce	
Pn634	2	14	SI8 Sign 0 1 2 3	Do not allocate ar Allocate the CLR 15. Allocate the /DEC 15. Allocate the /RGF	signal as tl	nal to CN1 ne input sig the input s	-14 and CN1- gnal to CN1-1 ignal to CN1-	restart  -15. 4 and CN1- 14 and CN1-	Refere		
Pn634	2	14	SI8 Sign 0 1 2 3	Do not allocate an Allocate the CLR 15. Allocate the /DEC 15. Allocate the /RGF CN1-15.  al Selection Logic Active when CN1	signal as the signal as RT signal as -14 and CI	nal to CN1 ne input sign the input s s the input	-14 and CN1-gnal to CN1-1 ignal to CN1-signal to CN-	restart  15. 4 and CN1- 14 and CN1- 1-14 and	Refere		
<sup>2</sup> n634	2	n.□□□X	SI8 Sign 0 1 2 3 SI8 Sign	Do not allocate ar Allocate the CLR 15. Allocate the /DEC 15. Allocate the /RGF CN1-15.	signal as the signal as RT signal as -14 and CI	nal to CN1 ne input sign the input s s the input	-14 and CN1-gnal to CN1-1 ignal to CN1-signal to CN-	restart  15. 4 and CN1- 14 and CN1- 1-14 and	Refere *9		

n.X□□□

Reserved parameter (Do not change.)

Parameter	Φ			Setting	Setting	Default	Applicable	When	Classi-	Refer-	
No.	Size	N:	Name		Unit	Setting	Motors	Enabled	fication	ence	
	2	Output Sig tions 10	nal Selec-	0000h to 6666h	_	0654h	All	After restart	Setup	_	
			/POUT0 (P	rogrammable O	utput 0) Si	gnal Alloc	ation		Refere	nce	
			0 [	isabled (the abo	ve signal c	utput is no	ot used).			<del></del>	
			1 (	output the signal	from the C	N1-25 or	CN1-26 outp	ut terminal.			
		n.□□□X		Output the signal							
				Output the signal			•	ut terminal.	*9		
				Output the signal			•				
				Output the signal			•				
D 005			6 0	Output the signal	from the C	M1-39 ou	tput terminai.				
Pn635			/POUT1 (P	rogrammable Ou	utput 1) Si	gnal Alloc	ation		Refere	nce	
		n.□□X□		he settings are tl ) Signal Allocatio		s for /POU	T0 (Programn	nable Output	*9		
			/POUT2 (P	rogrammable Ou	ıtput 2) Si	gnal Alloc	ation		Refere	nce	
		n.□X□□		he settings are tl ) Signal Allocatio		s for /POU	T0 (Programn	nable Output	*9		
			/POUT3 (P	rogrammable Ou	utput 3) Si	anal Alloc	ation		Refere	nce	
		n.X□□□	O to 6	The settings are the same as for /POLITO (Programmable Output							
				, 0							
	2	Output Sig tions 11	nal Selec-	0000h to 0666h	_	0000h	All	After restart	Setup	_	
			/DOLIT4 /D	rogrammable Ou	itorit 4) Ci	anal Allaa	otion		Doforo	200	
			<u> </u>	Disabled (the abo					Refere	lice	
				Output the signal		<u> </u>	•	ut terminal.			
				Output the signal							
		n.□□□X		Output the signal					*9		
			4 (	Output the signal	from the C	N1-37 ou	tput terminal.				
			5 0	Output the signal	from the C	N1-38 ou	tput terminal.				
Pn636			6 0	output the signal	from the C	N1-39 ou	tput terminal.				
			/POSRDY	Origin Return C	ompleted	Output) S	ignal Allocation	on	Refere	nce	
		n.□□X□	O to 6	he settings are tl ) Signal Allocatio	ne same a						
			/DEN (Posi	tioning Reference	e Distribu	tion Outp	ut) Signal Allo	ocation	Refere	nce	
	n. IXIII 0 to 6 The settings are the same as for /POUT4 (Programmable Output 4) Signal Allocation.						*9				
		n.X□□□	Reserved	parameter (Do no	ot change.	.)					

						(	Continued fro	om previou	ıs page.
Parameter No.	Size	Name	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence
	2	Moving Mode	0000h to 0003h	-	0000h	All	After restart	Setup	_

		Moving	Mode	Reference					
		0	Use linear coordinates.						
	n.□□□X	1	Use rotational coordinates. Use the shortest path.	*9					
Pn637		2	Use rotational coordinates. Always move forward.						
F11037		3	Use rotational coordinates. Always move in reverse.						
	n.□□X□	Reserve	ed parameter (Do not change.)						
	n.□X□□	Reserve	ed parameter (Do not change.)						
	n.X□□□ Reserved parameter (Do not change.)								

Pn638	4	Forward Software Limit (P-LS)/End Point of Rotational Coordinates	-536,870,911 to +536,870,911	Refer- ence units	+536,870,911	All	After restart	Setup	*9
Pn63A	4	Reverse Software Limit (N-LS)/Starting Point of Rotational Coordinates	-536,870,911 to +536,870,911	Refer- ence units	-536,870,911	All	After restart	Setup	*9
Pn63C	4	Origin Position/Absolute Encoder Offset	-1,073,741,823 to +1,073,741,823	Refer- ence units	0	All	After restart	Setup	*9
Pn63E	4	Acceleration Rate	1 to 199,999,999	1,000/ ms (ref- erence units/ min)	1000	All	Immedi- ately	Setup	*9
Pn640	4	Deceleration Rate	1 to 199,999,999	1,000/ ms (ref- erence units/ min)	1000	All	Immedi- ately	Setup	*9
	2	Origin Return Method	0000h to 0004h	-	0000h	All	After restart	-	-

n.□□□X	Origin	Reference				
	0	Origin returns are not executed.				
	1	Use the /DEC signal and phase C for origin returns.				
	2	Use the /DEC signal for origin returns.	*9			
	3	Use phase C for origin returns.				
	4	Pressing homing is performed.*10				
n.□□X□	Reserved parameter (Do not change.)					
n ПУПП	Reserved parameter (Do not change )					

Pn642

		Continued from previous page							us page.		
Parameter No.	Size	N	ame	Setting Range	Setting Unit	Default Setting	Applicable Motors	When Enabled	Classi- fication	Refer- ence	
	2	Origin Retu	urn Direction 0000h to 0001h		-	0000h	All	Immedi- ately	_	-	
	İ	Origin Return Direction							Refere	Reference	
			0 Wh	When the /HOME signal turns ON, an origin return is performed							
		n.□□□X	in ti	he forward dire		ns ON an	oriain return i	s performed	*9		
Pn643				When the /HOME signal turns ON, an origin return is performed in the reverse direction.							
		n.□□X□	Reserved par	rameter (Do not change.)							
		n.□X□□	Reserved par	rameter (Do not change.)							
		n.X□□□	Reserved parameter (Do not change.)								
					1,000						
Pn644	4	Origin Retu Speed	rn Movement	1 to 199,999,999	refer- ence units/ min	1000	All	Immedi- ately	Setup	*9	
					1,000 refer-						
Pn646	4	Origin App	roach Speed	1 to 199,999,999		1000	All	Immedi- ately	Setup	*9	
					min						
Pn648	4	Origin Return Creep		1 to	1,000 refer- ence	1000	All	Immedi-	0 = 4	*9	
P11046		Speed	Speed		units/ min	1000	All	ately	Setup	*9	
		Origin Retu	rn Final	-1,073,741,823	Refer-			Immedi-			
Pn64A	4	Travel Dista		to +1,073,741,823	ence units	0	All	ately	Setup	*9	
	2	Zone Signa	al Setting	0000h to 0001h	-	0000h	All	After restart	Setup	-	
	ĺ		Zone Signal Setting						Refere	nce	
		n.□□□X	When the control power supply is turned ON or the SERVOPACK								
D=040			When the control power supply is turned ON or the SERVOPACK						*9	- *9	
Pn64C			is reset, the /POUT0 to /POUT2 signals are used as zone signals.								
		n.□□X□ Reserved parameter (Do not change.)									
		n.□X□□ Reserved parameter (Do not change.)									
		n.X□□□	n.X□□□ Reserved parameter (Do not change.)								
Pn64D	2		Reserved parameter (Do not change.)		ı	0000h	_	_	-	-	
Pn650	2	Pressing Torque for Pressing Homing		0 to 100	%	25	All	Immedi- ately	Setup	*9	
Pn651	2	Pressing D	Pressing Detection Time for Pressing Homing		ms	250	All	Immedi- ately	Setup	*9	
Pn652	2		Pressing Time for Pressing Homing		ms	250	All	Immedi- ately	Setup	*9	
Pn653	2	Overspeed Detection Level for Pressing Hom- ing		1 to 199,999,999	1,000 refer- ence units/ min	2,000	All	Immedi- ately	Setup	*9	
Pn655	2	2 Absolute Encoder Origin		-1,073,741,823 to	Refer- ence	0	All	After restart	Setup	*9	
				+1,073,741,823	units			iosiali			

<sup>\*1.</sup> Refer to the following manual for details.

Σ-7-Series Σ-7S SERVOPACK with Analog Voltage/Pulse Train References Product Manual (Manual No.: SIEP S800001 26)

<sup>\*2.</sup> Set a percentage of the rated motor torque.

- \*3. These parameters are for SERVOPACKs with a Safety Module. Refer to the following manual for details. Σ-V-Series/Σ-V-Series for Large-Capacity Models/Σ-7-Series User's Manual Safety Module
  - (Manual No.: SIEP C720829 06)
- \*4. Normally set this parameter to 0. If you use an External Regenerative Resistor, set the capacity (W) of the External Regenerative Resistor.
- \*5. The upper limit is the maximum output capacity (W) of the SERVOPACK.
- \*6. These parameters are for SERVOPACKs with the Dynamic Brake Option. Refer to the following manual for details.
  - Σ-7-Series AC Servo Drive Σ-7S/S-7W SERVOPACK with Dynamic Brake Hardware Option Specifications Product Manual (Manual No.: SIEP S800001 73)
- \*7. The SGLFW2 is the only Yaskawa Linear Servomotor that supports this function.
- \*8. Enabled only when Pn61A is set to n. \$\square\$000 or n. \$\square\$000 3.
- \*9. Refer to the following manual for details.

  Σ-7-Series Σ-7S SERVOPACK with FT/EX Specification for Indexing Application Product Manual (Manual No.: SIEP S800001 84)
- \*10.Pressing homing (Pn642 = n.□□□4) can be used with SERVOPACK software versions 0028F794 and higher.

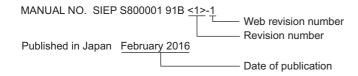
	list of parameters
((Index )	Command Option Attachable-type
	FT82 SERVOPACKs with INDEXER Modules 4-110
	FT82 SERVOPACK with MECHATROLINK-II
Α	Communications References 4-32
alarm code output	FT82 SERVOPACK with MECHATROLINK-III
Command Option Attachable-type	Communications References 4-67
FT82 SERVOPACKs with INDEXER Modules3-148	FT82 SERVOPACKs with Analog Voltage/
FT82 SERVOPACKs with Analog Voltage/	Pulse Train References
Pulse Train References 3-3	FT83 SERVOPACKs with Analog Voltage/
	Pulse Train References 4-134
FT83 SERVOPACKs with Analog Voltage/	list of warnings
Pulse Train References 3-208	Command Option Attachable-type
alarm reset possibility 3-50, 3-99	FT82 SERVOPACKs with INDEXER Modules 3-184
	FT82 SERVOPACK with MECHATROLINK-II
В	Communications References 3-81
base block (BB) XV	FT82 SERVOPACK with MECHATROLINK-III
, ,	Communications References 3-130
С	
coefficient of speed fluctuation	FT82 SERVOPACKs with Analog Voltage/
Command Option Attachable-type	Pulse Train References 3-34
FT82 SERVOPACKs with INDEXER Modules 2-15	FT83 SERVOPACKs with Analog Voltage/
FT82 SERVOPACK with MECHATROLINK-II	Pulse Train References 3-242
Communications References 2-9	
	M
FT82 SERVOPACK with MECHATROLINK-III Communications References 2-12	Main Circuit Cable xv
FT82 SERVOPACKs with Analog Voltage/	Р
Pulse Train References2-5	parameters
FT83 SERVOPACKs with Analog Voltage/	notation (numeric settings) xvi
Pulse Train References 2-19	notation (selecting functions) XVI
	Hotation (scientify functions)
l	R
INDEXER alarm displays and troubleshooting	ratings 2-2
FT83 SERVOPACKs with Analog Voltage/	ratings
Pulse Train References 3-238	•
INDEXER Module alarm displays and troubleshooting	S
Command Option Attachable-type	serial communications method 2-18
FT82 SERVOPACKs with INDEXER Modules3-180	Servo Drive xv
INDEXER Module error displays and troubleshooting	servo lock XV
Command Option Attachable-type	servo OFF XV
FT82 SERVOPACKs with INDEXER Modules3-192	
INDEXER warning displays and troubleshooting	servo ON xv
FT83 SERVOPACKs with Analog Voltage/	Servo System xv
Pulse Train References 3-250	Servomotor xv
7 4100 114117 1010101000	SERVOPACK xv
L	
list of alarms	SigmaWin+ XV
Command Option Attachable-type	specifications
FT82 SERVOPACKs with INDEXER Modules3-148	Command Option Attachable-type
	FT82 SERVOPACKs with INDEXER Modules 2-15
FT82 SERVOPACK with MECHATROLINK-II	FT82 SERVOPACK with MECHATROLINK-II
Communications References 3-50	Communications References 2-9
LIGORIAN CONTRACTOR AND CONTRACTOR A	Continuincations neterences 2-3
FT82 SERVOPACK with MECHATROLINK-III	FT82 SERVOPACK with MECHATROLINK-III
Communications References 3-99	
Communications References 3-99 FT82 SERVOPACKs with Analog Voltage/	FT82 SERVOPACK with MECHATROLINK-III
Communications References 3-99 FT82 SERVOPACKs with Analog Voltage/ Pulse Train References 3-3	FT82 SERVOPACK with MECHATROLINK-III Communications References 2-12 FT82 SERVOPACKs with Analog Voltage/
Communications References 3-99 FT82 SERVOPACKs with Analog Voltage/ Pulse Train References 3-3 FT83 SERVOPACKs with Analog Voltage/	FT82 SERVOPACK with MECHATROLINK-III Communications References 2-12 FT82 SERVOPACKs with Analog Voltage/ Pulse Train References 2-5
Communications References 3-99 FT82 SERVOPACKs with Analog Voltage/ Pulse Train References 3-3	FT82 SERVOPACK with MECHATROLINK-III Communications References 2-12 FT82 SERVOPACKs with Analog Voltage/

list of MECHATROLINK-III common parameters - - - - 4-102

storage humidity	troubleshooting warnings
Command Option Attachable-type	Command Option Attachable-type
FT82 SERVOPACKs with INDEXER Modules2-15	FT82 SERVOPACKs with INDEXER Modules 3-186
FT82 SERVOPACK with MECHATROLINK-II	FT82 SERVOPACK with MECHATROLINK-II
Communications References 2-9	Communications References 3-83
FT82 SERVOPACK with MECHATROLINK-III	FT82 SERVOPACK with MECHATROLINK-III
Communications References 2-12	Communications References 3-132
FT82 SERVOPACKs with Analog Voltage/	FT82 SERVOPACKs with Analog Voltage/
Pulse Train References 2-5	Pulse Train References 3-35
FT83 SERVOPACKs with Analog Voltage/	FT83 SERVOPACKs with Analog Voltage/
Pulse Train References 2-19	Pulse Train References 3-244
storage temperature	
Command Option Attachable-type	W
FT82 SERVOPACKs with INDEXER Modules2-15	warning code output
FT82 SERVOPACK with MECHATROLINK-II	Command Option Attachable-type
Communications References 2-9	FT82 SERVOPACKs with INDEXER Modules 3-184
FT82 SERVOPACK with MECHATROLINK-III	FT82 SERVOPACKs with Analog Voltage/
Communications References 2-12	Pulse Train References 3-34
FT82 SERVOPACKs with Analog Voltage/	FT83 SERVOPACKs with Analog Voltage/
Pulse Train References 2-5	Pulse Train References 3-242
FT83 SERVOPACKs with Analog Voltage/	
Pulse Train References 2-19	
surrounding air humidity	
Command Option Attachable-type	
FT82 SERVOPACKs with INDEXER Modules2-15	
FT82 SERVOPACK with MECHATROLINK-II	
Communications References 2-9	
FT82 SERVOPACK with MECHATROLINK-III	
Communications References	
FT82 SERVOPACKs with Analog Voltage/	
Pulse Train References 2-5	
FT83 SERVOPACKs with Analog Voltage/	
Pulse Train References 2-19	
surrounding air temperature	
Command Option Attachable-type	
FT82 SERVOPACKs with INDEXER Modules2-15	
FT82 SERVOPACK with MECHATROLINK-II	
Communications References 2-9	
FT82 SERVOPACK with MECHATROLINK-III	
Communications References 2-12	
FT82 SERVOPACKs with Analog Voltage/	
Pulse Train References 2-5	
FT83 SERVOPACKs with Analog Voltage/	
Pulse Train References 2-19	
Т	
troubleshooting alarms	
Command Option Attachable-type	
FT82 SERVOPACKs with INDEXER Modules 3-153	
FT82 SERVOPACK with MECHATROLINK-II	
Communications References	
FT82 SERVOPACK with MECHATROLINK-III	
Communications References 3-104	
FT82 SERVOPACKs with Analog Voltage/	
Pulse Train References 3-9	
FT83 SERVOPACKs with Analog Voltage/	
Pulse Train References3-213	

# **Revision History**

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			3.5.4	Addition: E24A, E25A
			3.5.6, 3.5.7	Addition: A.941
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			2.3	Addition: Information on overheat protection input
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			Chapter 4	Addition: Pn022, Pn475, Pn476, Pn61A, Pn61B, Pn61C, and Pn61D
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			Chapter 3	Addition: A.bF5, A.bF6, A.bF7, A.bF8, and FL-6
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## $\Sigma$ -7-Series AC Servo Drive

# Σ-7S SERVOPACK with FT/EX Specification for Application with Special Motor, SGM7D Motor Product Manual

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