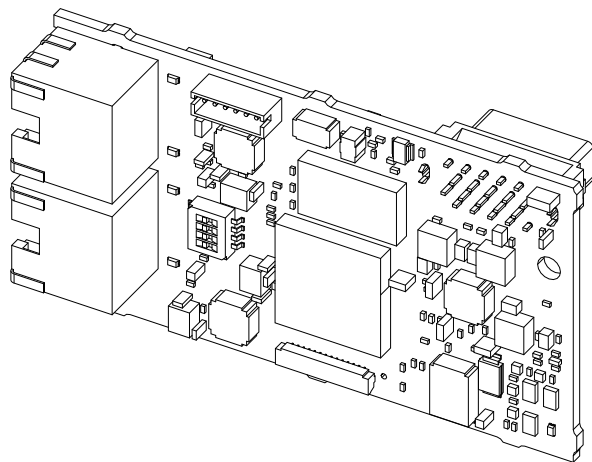# YASKAWA

YASKAWA AC Drive Option

EtherNet/IP
Technical Manual

Model   JOHB-SMP3

To correctly use the product, read this manual thoroughly and keep it for easy reference, inspection, and maintenance.
Make sure that the end user receives this manual.

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Table of Contents

1   Preface and Safety

YASKAWA Electric supplies component parts for use in a wide variety of industrial applications. The selection and application of YASKAWA products remain the responsibility of the equipment designer or end user.

YASKAWA accepts no responsibility for the way its products are incorporated into the final system design. Under no circumstances should any YASKAWA product be incorporated into any product or design as the exclusive or sole safety control. Without exception, all controls should be designed to detect faults dynamically and fail safely under all circumstances. All products designed to incorporate a component part manufactured by YASKAWA must be supplied to the end user with appropriate warnings and instructions as to the safe use and operation of that part. Any warnings provided by YASKAWA must be promptly provided to the end user. YASKAWA offers an express warranty only as to the quality of its products in conforming to standards and specifications published in the manual. NO OTHER WARRANTY, EXPRESS OR IMPLIED, IS OFFERED. YASKAWA assumes no liability for any personal injury, property damage, losses, or claims arising from misapplication of its products.

◆ Applicable Documentation

Document	Description
JOHB-SMP3 Multi-Protocol Ethernet Quick Installation Procedure Manual No.: TOBP C730600 0H	Read this manual first. The manual provides information about wiring, settings, functions, and troubleshooting. The manual is packaged together with the product.
YASKAWA AC Drive Option EtherNet/IP Technical Manual Manual No.: SIEP C730600 0J (This book)	The Technical Manual contains detailed information about the option. Access the following sites to obtain the Technical Manual: U.S.: https://www.yaskawa.com Europe: https://www.yaskawa.eu.com Japan: https://www.e-mechatronics.com Refer to the back cover of these documents for other locations. For questions, contact Yaskawa or a Yaskawa representative.
YASKAWA AC Drive Manuals	Refer to the drive manual to connect with the option. Drive manuals contain basic installation and wiring information in addition to detailed parameter setting, fault diagnostic, and maintenance information. The manuals also include important information about parameter settings and tuning the drive. The Quick Start Guides are packaged with the drive. The most recent versions of these manuals are available for download on our documentation websites: U.S.: https://www.yaskawa.com Europe: https://www.yaskawa.eu.com Japan: https://www.e-mechatronics.com Refer to the back cover of these documents for other locations. For questions, contact Yaskawa or a Yaskawa representative.

◆ Glossary

Terms	Definition
Option	YASKAWA AC Drive Option JOHB-SMP3 with DIP switches set for EtherNet/IP
Keypad	• HOA Operator • LCD Operator • LED Operator • HOA Keypad • LCD Keypad • LED Keypad
Hex. (Example: 900 (Hex.))	Identifies a unit for hexadecimal number format.

◆ Registered Trademarks

- EtherNet/IP is a registered trademark of Open DeviceNet Vendor Association, Inc. (ODVA).
- QR Code is a registered trademark of DENSO WAVE INCORPORATED.
- Ethernet is a registered trademark of FUJIFILM Business Innovation Corp.
- Trademarks are the property of their respective owners.

◆ Supplemental Safety Information

Read and understand this manual before installing, operating, or servicing this option. The option must be installed according to this manual and local codes.

The following conventions are used to indicate safety messages in this manual. Failure to heed these messages could result in serious or possibly even fatal injury or damage to the products or to related equipment and systems.

🛑 DANGER *This signal word identifies a hazard that will cause serious injury or death if you do not prevent it.*

⚠ WARNING *This signal word identifies a hazard that can cause death or serious injuries if you do not prevent it.*

⚠ CAUTION *This signal word identifies a hazard that can cause minor or moderate injuries if you do not prevent it.*

NOTICE *This signal word identifies a property damage message that is not related to personal injury.*

■ Section Safety

General Precautions
• The diagrams in this section may include options and drives without covers or safety shields to illustrate details. Be sure to reinstall covers or shields before operating any devices. The option should be used according to the instructions described in this manual.
• The diagrams in this manual are provided as examples only and may not pertain to all products covered by this manual.
• The products and specifications described in this manual or the content and presentation of the manual may be changed without notice to improve the product and/or the manual.
• Contact Yaskawa or a Yaskawa representative and provide the manual number shown on the front cover to order new copies of the manual.

🛑 DANGER *Do not ignore the safety messages in this manual. If you ignore the safety messages in this manual, it will cause serious injury or death. The manufacturer is not responsible for injuries or damage to equipment.*

⚠ WARNING *Electrical Shock Hazard. Do not modify the drive or option circuitry. Failure to obey can cause serious injury or death, or cause damage to the drive or option and will void warranty. Yaskawa is not responsible for modifications of the product made by the user.*

NOTICE *Damage to Equipment. Do not use steam or other disinfectants to fumigate wood for packaging the drive. Use alternative methods, for example heat treatment, before you package the components. Gas from wood packaging fumigated with halogen disinfectants, for example fluorine, chlorine, bromine, iodine or DOP gas (phthalic acid ester), can cause damage to the drive.*

2 Overview

This option provides a communications connection between the drive and an EtherNet/IP network. The option connects the drive to an EtherNet/IP network and facilitates the exchange of data.

EtherNet/IP is a communications link to connect industrial devices (for example smart motor controllers, operator interfaces, and variable frequency drives) and control devices (for example, programmable controllers and computers) to a network. EtherNet/IP is a simple networking solution. EtherNet/IP decreases the cost and time to wire and install factory automation devices, and it gives the option to interchange like components from other vendors.

EtherNet/IP is an open network standard.

Install the option on a drive to perform the following functions from an EtherNet/IP client:

• Operate the drive
• Monitor the drive operation status
• Change drive parameter settings

◆ Compatible Products

You can use the option with these products:

Table 2.1 Compatible Products

Product Series	Model(s)	Software Version */
A1000	CIMR-Ax2Axxxx	≥ 1020
	CIMR-Ax4A0002 - 4A0675	
	CIMR-Ax4A0930, 4A1200	≥ 3015
	CIMR-Ax5Axxxx	≥ 5040 ≥ 1017
D1000	CIMR-Dx2A0005 - 4A0370	≥ 2006

Product Series	Model(s)	Software Version *1
	CIMR-Dx4A0630	≥ 3014
R1000	CIMR-Rx2A03P5 - 4A0300	≥ 2102
U1000	CIMR-UxxAxxxx	≥ 1015
	CIMR-UxxExxxx	
	CIMR-UxxPxxxx	
	CIMR-UxxWxxxx	
Z1000	CIMR-ZxxAxxxx	≥ 1016
Z1000U	CIMR-ZxxUxxxx	≥ 6113
	CIMR-ZxxExxxx	
	CIMR-ZxxPxxxx	
	CIMR-ZxxWxxxx	
CR700	CIPR-CR70xxxxx	≥ 1012
CH700	CIPR-CH70xxxxx	1012 - 1020, ≥ 31000
GA500	CIPR-GA50xxxxx	≥ 1010
GA700	CIPR-GA70xxxxx	≥ 1010
GA800	CIPR-GA80xxxxx	≥ 9010
HV600	CIPR-HV60xxxxx	≥ 1011
FP605	CIPR-FP65xxxxx	≥ 1010

*1   Refer to "PRG" on the drive nameplate for the software version number.

Note:

Refer to *U6-97 [OPT SPARE 4]* to identify the option software version.

■ For Yaskawa Customers in the North or South America Regions

If your drive series is not shown in the "Compatible Products" section, refer to the web page below to confirm that your drive is compatible with this option. The web page shows a list of drives and compatible options, and also directs you to the correct installation manual and installation procedure for your drive.

Refer to the URL or scan QR code:

https://www.yaskawa.com/products/option-lookup

3   Receiving

After you receive the option package:
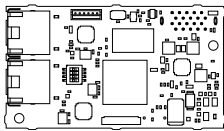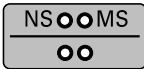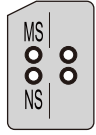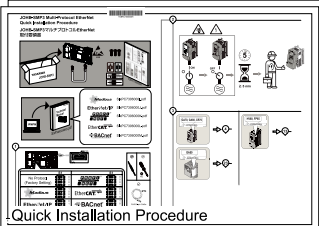
• Make sure that there is no damage to the option and no parts are missing.
The Yaskawa warranty does not include damage from shipping. If there is damage to the option or other parts, contact the shipping company immediately.

> **NOTICE**   *Damage to Equipment. Do not use damaged parts to connect the drive and the option. Failure to comply could damage the drive and option.*

• Make sure that the model number on the option nameplate and the model number on the purchase order are the same. Refer to Figure 4.1 for more information.

• Contact the distributor where you purchased the option or contact Yaskawa or a Yaskawa representative about any problems with the option.

◆ Option Package Contents

Table 3.1 Contents of Package

Option Contents			Quantity
Option			1
Ground Wire *1			1
Screws (M3)			3 *2
LED Labels *3	1000-Series, Z1000U		1
	GA500, GA700, GA800, CR700, CH700		1
	Z1000, HV600, FP605 *4		1
Quick Installation Procedure			1

*1   GA500, GA700, GA800, CR700, and CH700 drives do not use the ground wire.
*2   GA700, GA800, CR700, CH700, HV600, and FP605 drives use two screws only.
*3   LED labels are located on this label sheet.
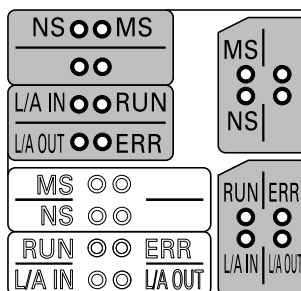
Figure 3.1 LED Label Sheet

*4   The LED label has transparent background and white letters. Please make sure that you use the correct label for Z1000, HV600, or FP605.

◆ Installation Tools

You can use these tools to install the option to the drive:

- A Phillips screwdriver or slotted screwdriver *1.
- Non-conductive tweezers or a tool with a tip width of approximately 0.5 mm (0.02 in) to set DIP switch S1.
- A pair of diagonal cutting pliers.
- A small file or medium-grit sandpaper.

*1   Phillips screw sizes are different for different drive capacities. Prepare different screwdrivers for different screw sizes.

4   Option Components

◆ Option PCB Components
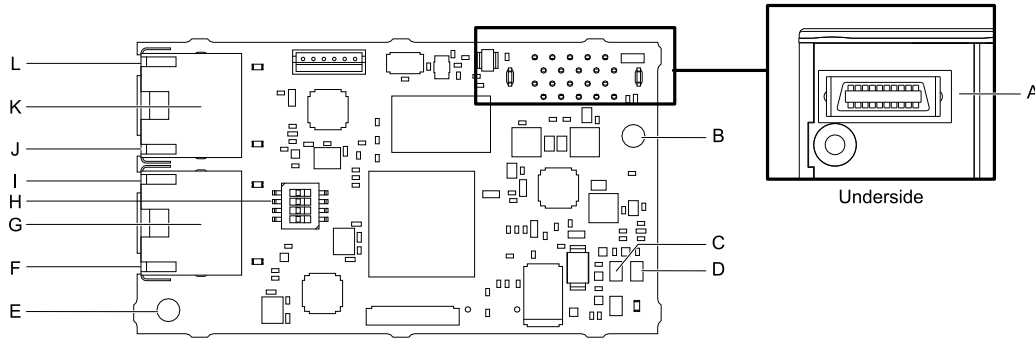
A - **Connector (CN5)**
B - **Installation hole**
C - **LED (NS)** *1*
D - **LED (MS)** *1*
E - **Ground terminal (FE) and installation hole** *2*
F - **Port 2 LED (10/100)** *1*

G - **Option modular connector CN1B (Port 2) (RJ45)**
H - **DIP switch S1**
I - **Port 2 LED (LINK/ACT)** *1*
J - **Port 1 LED (10/100)** *1*
K - **Option modular connector CN1A (Port 1) (RJ45)**
L - **Port 1 LED (LINK/ACT)** *1*

Figure 4.1 Option PCB Components

*1   Refer to *Option LED States on page 12* for more information about the LEDs.
*2   Connect the included ground wire during installation. The ground wire is not necessary for installation on GA700, GA800, CR700, and CH700 drives. For GA500 drives, connect the included ground wire to the separately-sold communication option case (model: JOHB-GA50).

◆ Communication Connector

Option connections CN1A (Port 1) and CN1B (Port 2) are connection points for customer-supplied EtherNet/IP network communication cables. These ports accept customer-supplied male 8-way ethernet modular RJ45 connectors.

Table 4.1 Male 8-way Ethernet Modular Connector (Customer-Supplied)

Male 8-way Ethernet Modular Connector	Pin	Description
	1 (Pair 2)	Transmit data (TXD) +
	2 (Pair 2)	Transmit data (TXD) -
	3 (Pair 3)	Receive data (RXD) +
	4 (Pair 1)	Not used
	5 (Pair 1)	Not used
	6 (Pair 3)	Receive data (RXD) -
	7 (Pair 4)	Not used
	8 (Pair 4)	Not used

◆ Option LED States
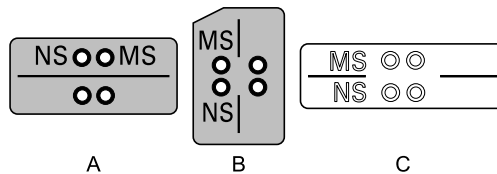
A - **1000-Series, Z1000U**
B - **GA500, GA700, GA800, CR700, CH700**
C - **Z1000, HV600, FP605** *1*

Figure 4.2 Option LED Labels

*1   LED label has transparent background and white letters. Please make sure that you use the correct label for Z1000, HV600, or FP605.

Wait 2 seconds minimum for the power-up diagnostic process to complete before you verify the LED states. Table 4.2 shows the operating status of the option LEDs after the power-up diagnostic LED sequence is complete.

Table 4.2 Option LED States

LED Name	Indication		Operating State	Description
	Color	Status		
MS (Module Status)	-	OFF	Power supply off	There is no power to the drive.
	Green	ON	Option operating	The option is operating normally.
	Green	Flashing	Option initializing	The option is configuring an IP address.
	Red	ON	Fatal error occurred	The option detected a fatal (unrecoverable) error.
	Red	Flashing	Non-fatal error occurred	The option detected an *EF0 [Option Card External Fault]* fault in the drive.
NS (Network Status)	-	OFF	Power supply OFF or Offline	-
	Green	ON	Online communications established	The option is online and has established connections.
	Green	Flashing	Online with IP address	The option is configured with an active link but does not have any control connections.
	Red	ON	Communications error (fatal)	The option detected a duplicate IP address or has a bad IP address configuration.
	Red	Flashing	Comm error	Control connection timeout, disconnection from controller during run, or loss of all physical links to device.
10/100 *1	-	OFF	10 Mbps is established	
	Green	ON	100 Mbps is established	-
LINK/ACT *1	-	OFF	Link is not established	
	Green	ON	Link is established	
	Green	Flashing	Link is established and there is network activity	

*1   To verify LED states, you must remove the drive front cover. Do not touch the drive main circuit terminal or circuit boards when you remove the drive front cover.

■ Power-Up Diagnostics

An LED test is performed each time the drive is powered up. The initial boot sequence can take several seconds. After the LEDs complete the diagnostic LED sequence, the option is successfully initialized. The LEDs then assume operational conditions as shown in Table 4.3.

Table 4.3 Power-Up Diagnostic LED Sequence

Sequence	Module Status (MS)	Network Status (NS)	Time (ms)
1	Green	OFF	250
2	Red	OFF	250
3	Green	OFF	-
4	Green	Green	250
5	Green	Red	250
6	Green	OFF	-

5   Installation Procedure

◆ Section Safety

⚠ DANGER   *Electrical Shock Hazard. Do not examine, connect, or disconnect wiring on an energized drive. Before servicing, disconnect all power to the equipment and wait for the time specified on the warning label at a minimum. The internal capacitor stays charged after the drive is de-energized. The charge indicator LED extinguishes when the DC bus voltage decreases below 50 Vdc. When all indicators are OFF, measure for dangerous voltages to make sure that the drive is safe. If you do work on the drive when it is energized, it will cause serious injury or death from electrical shock.*

⚠ WARNING   *Electrical Shock Hazard. Do not operate the drive when covers are missing. Replace covers and shields before you operate the drive. Use the drive only as specified by the instructions. Some figures in this section include drives without covers or safety shields to more clearly show the inside of the drive. If covers or safety shields are missing from the drive, it can cause serious injury or death.*

⚠ WARNING *Electrical Shock Hazard. Only let approved personnel install, wire, maintain, examine, replace parts, and repair the drive. If personnel are not approved, it can cause serious injury or death.*

⚠ WARNING *Electrical Shock Hazard. Do not remove covers or touch circuit boards while the drive is energized. If you touch the internal components of an energized drive, it can cause serious injury or death.*

⚠ WARNING *Electrical Shock Hazard. Do not use damaged wires, put too much force on the wiring, or cause damage to the wire insulation. Damaged wires can cause serious injury or death.*

⚠ WARNING *Fire Hazard. Tighten all terminal screws to the correct tightening torque. Connections that are too loose or too tight can cause incorrect operation and damage to the drive. Incorrect connections can also cause death or serious injury from fire.*

NOTICE *Damage to Equipment. When you touch the option, make sure that you observe correct electrostatic discharge (ESD) procedures. If you do not follow procedures, it can cause ESD damage to the drive circuitry.*

NOTICE *Damage to Equipment. Do not de-energize the drive while the drive is outputting voltage. Incorrect equipment sequencing can cause damage to the drive.*

NOTICE *Do not operate a drive or connected equipment that has damaged or missing parts. You can cause damage to the drive and connected equipment.*

NOTICE *Use Yaskawa connection cables or recommended cables only. Incorrect cables can cause the drive or option to function incorrectly.*

NOTICE *Damage to Equipment. Correctly connect the connectors. Incorrect connections can cause malfunction or damage to the equipment.*

NOTICE *Damage to Equipment. Make sure that all connections are correct after you install the drive and connecting peripheral devices. Incorrect connections can cause damage to the option.*

◆ Settings for the DIP Switch S1

Use the DIP switch S1 on the option to select the communication protocol.

Remove power and use non-conductive tweezers or a tool with a tip width of approximately 0.5 mm (0.02 in) to set DIP switch S1.

Figure 5.1 shows the default settings for the DIP switch S1.
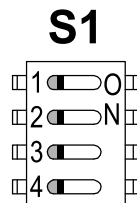
Figure 5.1 Default Settings for DIP Switch S1

When you use EtherNet/IP, set the DIP switch S1 as shown in Figure 5.2.
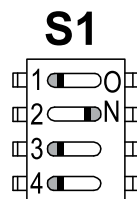
Figure 5.2 Settings for the DIP Switch S1

◆ Procedures to Install and Wire Options on a Drive

Procedures to install and wire the option are different for different drive models.

Refer to Table 5.1 to check the procedures to install and wire the option on a drive.

Table 5.1 Procedures to Install and Wire Options on a Drive

Product Series	Procedures to Install and Wire Options on a Drive	Page
A1000	Procedure A	15
D1000	Procedure A	15
R1000	Procedure A	15
U1000	Procedure A	15

Product Series	Procedures to Install and Wire Options on a Drive	Page
Z1000U	Procedure A	15
Z1000	Procedure B	16
GA500	*1	21
GA700	Procedure C	18
GA800	Procedure C	18
CR700	Procedure C	18
CH700	Procedure C	18
HV600	Procedure D	19
FP605	Procedure D	19

*1   To install the option on GA500 drives, use the option mounting kit (JOHB-GA50) and manual.

■ Procedure A

This section shows the procedure to install and wire the option on a 1000-series drive.

Prepare the Drive for the Option

Correctly wire the drive as specified by the manual packaged with the drive. Make sure that the drive functions correctly. Refer to the drive manuals for more information.

A - **Insertion point for CN5 connector**
B - **Option**
C - **Drive front cover**
D - **Keypad**
E - **LED label**
F - **Drive terminal cover**
G - **Removable tabs for wire routing**
H - **Included screws**

I - **Ground wire**
J - **Option modular connector CN1B (Port 2) (RJ45)**
K - **Option modular connector CN1A (Port 1) (RJ45)**
L - **Drive grounding terminal (FE)**
M - **Connector CN5-A**
N - **Connector CN5-B (Not available for communication option installation.)**
O - **Connector CN5-C (Not available for communication option installation.)**

Figure 5.3 Drive Components with Option

Install the Option

⚠ **DANGER**   *Electrical Shock Hazard. Do not examine, connect, or disconnect wiring on an energized drive. Before servicing, disconnect all power to the equipment and wait for the time specified on the warning label at a minimum. The internal capacitor stays charged after the drive is de-energized. The charge indicator LED extinguishes when the DC bus voltage decreases below 50 Vdc. When all indicators are OFF, measure for dangerous voltages to make sure that the drive is safe. If you do work on the drive when it is energized, it will cause serious injury or death from electrical shock.*

NOTICE   *Damage to Equipment. When you touch the option, make sure that you observe correct electrostatic discharge (ESD) procedures. If you do not follow procedures, it can cause ESD damage to the drive circuitry.*

Note:

You can only install this option into the CN5-A connector on the drive control board.

1. Shut off power to the drive and wait for the time specified on the drive warning label at a minimum.

    Make sure that the charge indicator LED is unlit, then remove the keypad and front cover. Refer to the drive manuals for more information.

2. Remove the keypad (D), front cover (C), and terminal cover (F).

3. Put the LED label (E) in the correct position on the drive front cover (C).

4. Install the option (B) into the CN5-A connector (M) on the drive and use the included screws (H) to put it in place.

5. Use one of the remaining included screws (H) to connect one end of the ground wire (I) to the ground terminal (L). Use the last remaining included screw (H) to connect the other end of the ground wire (I) to the remaining ground terminal and installation hole on the option (B).

    Tighten the screws to a correct tightening torque:

    • 0.5 N·m to 0.6 N·m (4.4 lbf·in to 5.3 lbf·in)

Note:

The drive has only two ground terminal screw holes. When you connect three options, two options will share one ground terminal.

6. Route the option wiring.

    Procedures to wire the option are different for different drive models.

    • You can route the option wiring through openings on the front cover of some models. Remove the perforated tabs on the left side of the front cover as shown in Figure 5.4-A to create the necessary openings on these models. To prevent damage to the cable from the cut end, treat the cut surface with sandpaper.

    • Route the option wiring inside the enclosure as shown in Figure 5.4-B.

    Refer to the drive manuals for more information.

Note:

Isolate communication cables from main circuit wiring and other electrical and power lines.
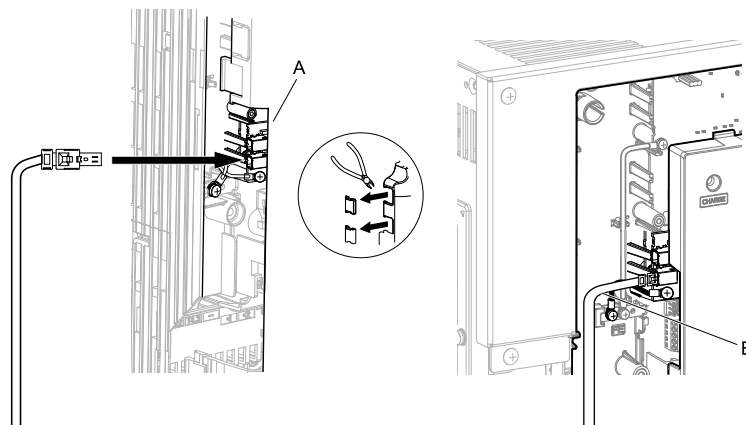
A - **Route wires through the openings provided on the left side of the front cover.** *1

B - **Use the open space provided inside the drive to route option wiring.**

Figure 5.4 Wire Routing Examples

*1   If there is wiring outside the enclosure, the drive will not meet Enclosed wall-mounted type (IP20/UL Type 1) requirements.

7. Firmly connect the Ethernet communication cables to CN1B (Port 2) (J), and/or CN1A (Port 1) (K).

    Isolate communication cables from main circuit wiring and other electrical and power lines. Make sure that you firmly connect the cable end. Refer to *Communication Cable Specifications on page 22* for more information.

8. Reattach the front cover (C), terminal cover (F), and keypad (D).

    Refer to the drive manuals for more information.

    | NOTICE | Do not pinch cables between the front covers and the drive. Failure to comply could cause erroneous operation.

9. Set drive parameters in *Related Drive Parameters on page 24* for correct option performance.

■ Procedure B

This section shows the procedure to install and wire the option on a Z1000 drive.

Prepare the Drive for the Option

Correctly wire the drive as specified by the manual packaged with the drive. Make sure that the drive functions correctly. Refer to the drive manuals for more information.

A - **Drive grounding terminal (FE)**
B - **Option**
C - **Included screws**
D - **Drive front cover**
E - **Keypad**
F - **LED label**

G - **Ground wire**
H - **Option modular connector CN1B (Port 2) (RJ45)**
I - **Option modular connector CN1A (Port 1) (RJ45)**
J - **Insertion point for CN5 connector**
K - **Connector CN5**

Figure 5.5 Drive Components with Option

Install the Option

⚠ DANGER *Electrical Shock Hazard. Do not examine, connect, or disconnect wiring on an energized drive. Before servicing, disconnect all power to the equipment and wait for the time specified on the warning label at a minimum. The internal capacitor stays charged after the drive is de-energized. The charge indicator LED extinguishes when the DC bus voltage decreases below 50 Vdc. When all indicators are OFF, measure for dangerous voltages to make sure that the drive is safe. If you do work on the drive when it is energized, it will cause serious injury or death from electrical shock.*

NOTICE *Damage to Equipment. When you touch the option, make sure that you observe correct electrostatic discharge (ESD) procedures. If you do not follow procedures, it can cause ESD damage to the drive circuitry.*

1. Shut off power to the drive and wait for the time specified on the drive warning label at a minimum.

   Make sure that the charge indicator LED is unlit, then remove the keypad and front cover. Refer to the drive manuals for more information.

2. Remove the keypad (E) and front cover (D).

3. Put the LED label (F) in the correct position on the drive front cover (D).

4. Install the option (B) into the CN5 connector (K) on the drive and use one of the included screws (C) to put it in place.

5. Use one of the remaining included screws (C) to connect one end of the ground wire (G) to the ground terminal (A). Use the last remaining included screw (C) to connect the other end of the ground wire (G) to the remaining ground terminal and installation hole on the option (B).

   Tighten the screws to a correct tightening torque:

   • 0.5 N·m to 0.6 N·m (4.4 lbf·in to 5.3 lbf·in)

6. Firmly connect the Ethernet communication cables to CN1B (Port 2) (H), and/or CN1A (Port 1) (I).

   Isolate communication cables from main circuit wiring and other electrical and power lines. Make sure that you firmly connect the cable end. Refer to *Communication Cable Specifications on page 22* for more information.

7. Reattach the drive front cover (D) and the keypad (E).

   Refer to the drive manuals for more information.

   NOTICE *Do not pinch cables between the front covers and the drive. Failure to comply could cause erroneous operation.*

8. Set drive parameters in *Related Drive Parameters on page 24* for correct option performance.

■ Procedure C

This section shows the procedure to install and wire the option on a GA700, GA800, CR700, or CH700 drive.

Prepare the Drive for the Option

Correctly wire the drive as specified by the manual packaged with the drive. Make sure that the drive functions correctly. Refer to the drive manuals for more information.

A - Insertion point for CN5 connector
B - Option
C - Included screws
D - Drive front cover
E - Keypad connector
F - Keypad connector tab
G - Holder
H - LED label

I - Keypad
J - LED Status Ring board temporary placement holes
K - Option modular connector CN1B (Port 2) (RJ45)
L - Option modular connector CN1A (Port 1) (RJ45)
M - LED Status Ring board
N - Connector CN5-A
O - Connector CN5-B (Not available for communication option installation.)
P - Connector CN5-C (Not available for communication option installation.)

Figure 5.6 Drive Components with Option

Install the Option

⚠ **DANGER** *Electrical Shock Hazard. Do not examine, connect, or disconnect wiring on an energized drive. Before servicing, disconnect all power to the equipment and wait for the time specified on the warning label at a minimum. The internal capacitor stays charged after the drive is de-energized. The charge indicator LED extinguishes when the DC bus voltage decreases below 50 Vdc. When all indicators are OFF, measure for dangerous voltages to make sure that the drive is safe. If you do work on the drive when it is energized, it will cause serious injury or death from electrical shock.*

NOTICE *Damage to Equipment. When you touch the option, make sure that you observe correct electrostatic discharge (ESD) procedures. If you do not follow procedures, it can cause ESD damage to the drive circuitry.*

Note:

You can only install this option into the CN5-A connector on the drive control board.

1. Put the LED label (H) in the correct position on the drive front cover (D).

2. Shut off power to the drive and wait for the time specified on the drive warning label at a minimum.

   Make sure that the charge indicator LED is unlit, then remove the keypad and front cover. Refer to the drive manuals for more information.

3. Remove the keypad (I) and front cover (D).

Note:

Remove the keypad, then move the keypad connector (E) to the holder (G) on the drive, then remove the front cover.

4. Carefully remove the LED Status Ring board (M) and put it in the temporary placement holes (J) on the right side of the drive.

Refer to the drive manuals for more information.

> **NOTICE** *Do not remove the LED Status Ring board cable connector. If you disconnect the LED Status Ring board, it can cause incorrect operation and damage to the drive.*

5. Install the option (B) into the CN5-A connector (N) on the drive and use the included screws (C) to put it in place.

Tighten the screws to a correct tightening torque:

• 0.5 N·m to 0.6 N·m (4.4 lbf·in to 5.3 lbf·in)

Note:

1. A ground wire is not necessary. Do not use the ground wire.
2. Only two screws are necessary to install the option on GA700, GA800, CR700, and CH700 drives.

6. Firmly connect the Ethernet communication cables to CN1B (Port 2) (K), and/or CN1A (Port 1) (L).

Isolate communication cables from main circuit wiring and other electrical and power lines. Make sure that you firmly connect the cable end. Refer to *Communication Cable Specifications on page 22* for more information.

Note:

Maximum transmission distance is 100 m (328 ft). Minimum wiring distance between stations is 0.2 m (7.9 in).

7. Reattach the LED Status Ring board (M), front cover (D), and keypad (I).

Refer to the drive manuals for more information.

> **NOTICE** *Do not pinch cables between the front cover or the LED Status Ring board and the drive. Failure to comply could cause erroneous operation.*

Note:
• Replace the keypad connector (E), then install the keypad.
• Put the keypad connector tab (F) into the holder when you install the keypad connector to the holder.

8. Set drive parameters in *Related Drive Parameters on page 24* for correct option performance.

■ Procedure D

This section shows the procedure to install and wire the option on HV600 and FP605 drives.

Prepare the Drive for the Option

Correctly wire the drive as specified by the manual packaged with the drive. Make sure that the drive functions correctly. Refer to the drive manuals for more information.

A - **Drive grounding terminal (FE)**

B - **Option**

C - **Included screws**

D - **Ground screw**

E - **Drive front cover**

F - **Keypad**

G - **LED label**

H - **Ground wire**

I - **Option modular connector CN1B (Port 2) (RJ45)**

J - **Option modular connector CN1A (Port 1) (RJ45)**

K - **Stud**

L - **Insertion point for CN5 connector (HV600: CN5, FP605: CN5-A)**

M - **Connector CN5 (HV600: CN5, FP605: CN5-A)**

Figure 5.7 Drive Components with Option

Install the Option

⚠ **DANGER**   *Electrical Shock Hazard. Do not examine, connect, or disconnect wiring on an energized drive. Before servicing, disconnect all power to the equipment and wait for the time specified on the warning label at a minimum. The internal capacitor stays charged after the drive is de-energized. The charge indicator LED extinguishes when the DC bus voltage decreases below 50 Vdc. When all indicators are OFF, measure for dangerous voltages to make sure that the drive is safe. If you do work on the drive when it is energized, it will cause serious injury or death from electrical shock.*

NOTICE   *Damage to Equipment. When you touch the option, make sure that you observe correct electrostatic discharge (ESD) procedures. If you do not follow procedures, it can cause ESD damage to the drive circuitry.*

1. Shut off power to the drive and wait for the time specified on the drive warning label at a minimum.

   Make sure that the charge indicator LED is unlit, then remove the keypad and front cover. Refer to the drive manuals for more information.

2. Remove the keypad (F) and front cover (E).

3. Put the LED label (G) in the correct position on the drive front cover (E).

4. Remove the screw (D) installed in the drive grounding terminal (A).

5. Use the screw (C) installed in the FE ground terminal of the drive (A) to connect one end of the included ground wire (H) to the ground terminal on the drive.
   Route ground wire on the right side of the stud (K).
   Tighten the screw to a correct tightening torque:
   • 0.5 N·m to 0.6 N·m (4.4 lbf·in to 5.3 lbf·in)

6. Install the option (B) into the CN5 connector (M) (HV600: CN5, FP605: CN5-A) on the drive and use one of the included screws (C) to put it in place.
   Tighten the screw to a correct tightening torque:
   • 0.5 N·m to 0.6 N·m (4.4 lbf·in to 5.3 lbf·in)

Note:

Only two screws are necessary to install the option on HV600 and FP605 drives.

7. Use one of the remaining included screws (C) to connect the ground wire (H) to the ground terminal and installation hole on the option (B).
   Refer to Figure 5.7 for instruction about crimp terminal orientation and wire routing.
   Tighten the screws to a correct tightening torque:
   • 0.5 N·m to 0.6 N·m (4.4 lbf·in to 5.3 lbf·in)

8. Firmly connect the Ethernet communication cables to CN1B (Port 2) (I), and/or CN1A (Port 1) (J).
   Isolate communication cables from main circuit wiring and other electrical and power lines. Make sure that you firmly connect the cable end. Refer to *Communication Cable Specifications on page 22* for more information.

9. Reattach the drive front cover (E) and the keypad (F).
   Refer to the drive manuals for more information.

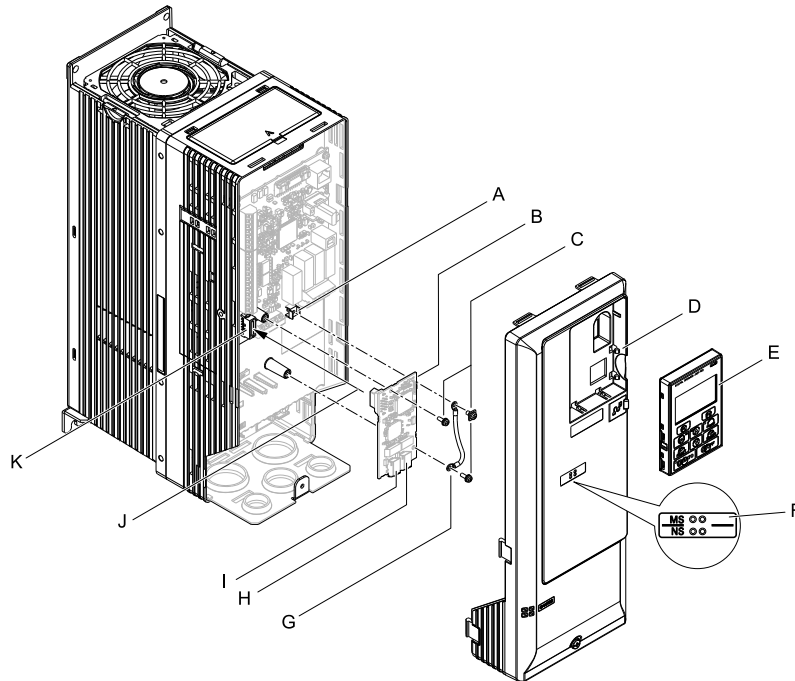   > **NOTICE** *Do not pinch cables between the front covers and the drive. Failure to comply could cause erroneous operation.*

10. Set drive parameters in *Related Drive Parameters on page 24* for correct option performance.

◆ Option Card Mounting Kit for GA500

An option card mounting kit is necessary to install the option on a GA500 drive. The option card mounting kit model is: JOHB-GA50. This kit is sold separately.

Refer to the option card mounting kit manual for more information about installation.

A - Option card mounting kit components (sold separately)
B - Option
C - Drive front cover
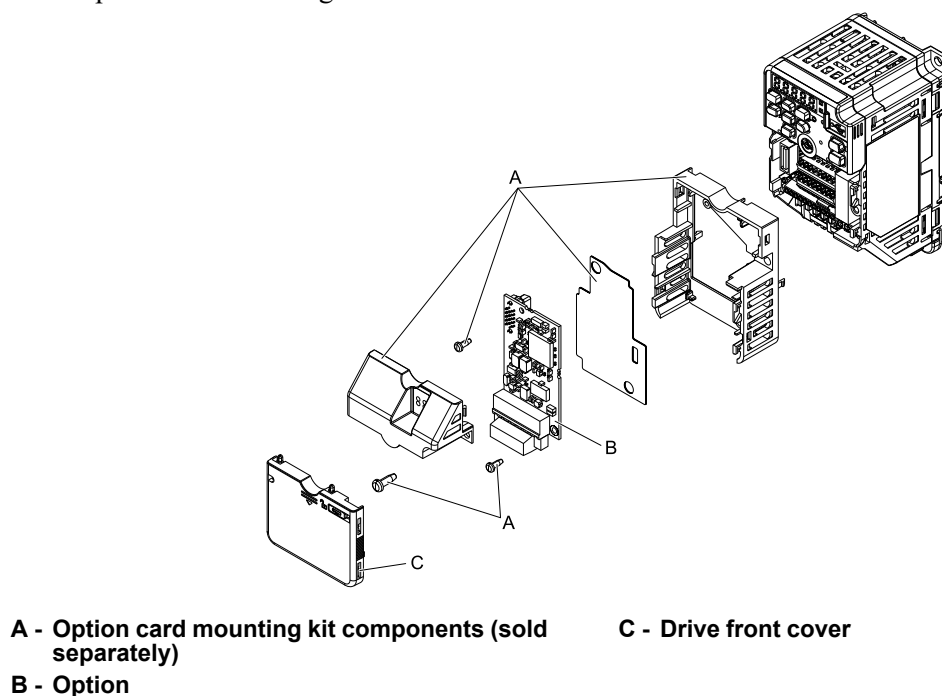
Figure 5.8 Option Card Mounting Kit (JOHB-GA50)

◆ IGMP Snooping

Switches implementing IGMP Snooping are strongly recommended. When IGMP Snooping is used, devices will only receive the multicast packets in which they are interested.

◆ Communication Cable Specifications

Yaskawa recommends using shielded Cat5e cable. The Yaskawa warranty does not cover other cable types.

■ **Option Connection Diagram**
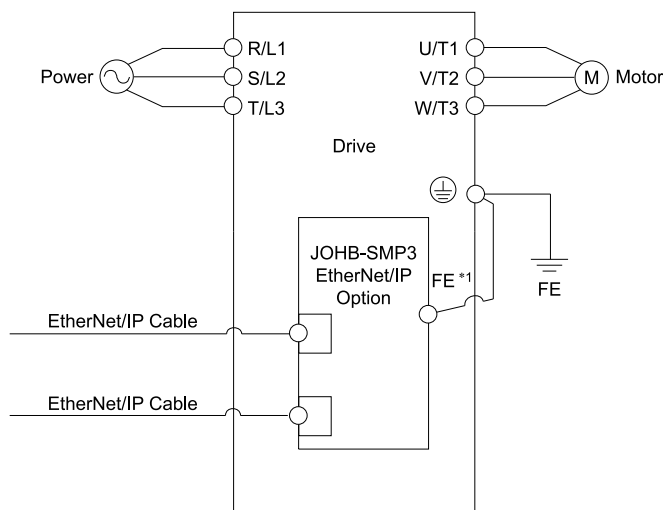
Figure 5.9 Option Connection Diagram

*1   Connect the specified ground wire for installations on 1000-series, GA500, HV600, and FP605 drives. The ground wire is not necessary for installation on GA700, GA800, CR700, or CH700 drives.

■ **Communication Topology Specifications**

Drives equipped with the JOHB-SMP3 option can be connected to network in a star, ring, or line topology.

• Star Topology
  Use either one of the communication connectors CN1A (Port 1) or CN1B (Port 2).
• Daisy-Chained Topology
  Use the communication connectors CN1A (Port 1) and CN1B (Port 2) at the same time. A switch is not necessary for this connection.
• Ring Topology
  Use both communication connectors CN1A (Port 1) and CN1B (Port 2) to create a ring. Ring topologies will use the DLR or RSTP protocol. Device Level Ring (DLR) is enabled by default.

> **Note:**
> •Ring Topology is compatible with option software versions PRG: 3003 and later. Refer to *U6-97 [OPT SPARE 4]* to check the option software version.
>
> •If use PRG: 3002 or earlier option and the link speed of Port 1 is different than the link speed of Port 2, it will trigger a *PA1 [PLC Alarm 1]* and the drive will not send data between the ports. To prevent this alarm, set *F7-14 = 1 [Duplex Mode Selection = Auto/Auto (Auto Negotiation/Auto Negotiation)]* and set the two connected ports to the same link speed, and make sure that *F7-15 ≠ 101 or 102 [Communication Speed Selection ≠ 10/100 Mbps (10 Mbps/100 Mbps) or 100/10 Mbps (100 Mbps/10 Mbps)]*. PRG: 3003 and later can send data between the ports, when the link speeds between the ports are different. Therefore, it will not trigger a PA1. Refer to *U6-97 [OPT SPARE 4]* to check the option software version.This will not trigger *PA1*. Refer to *U6-97 [OPT SPARE 4]* to check the option software version.
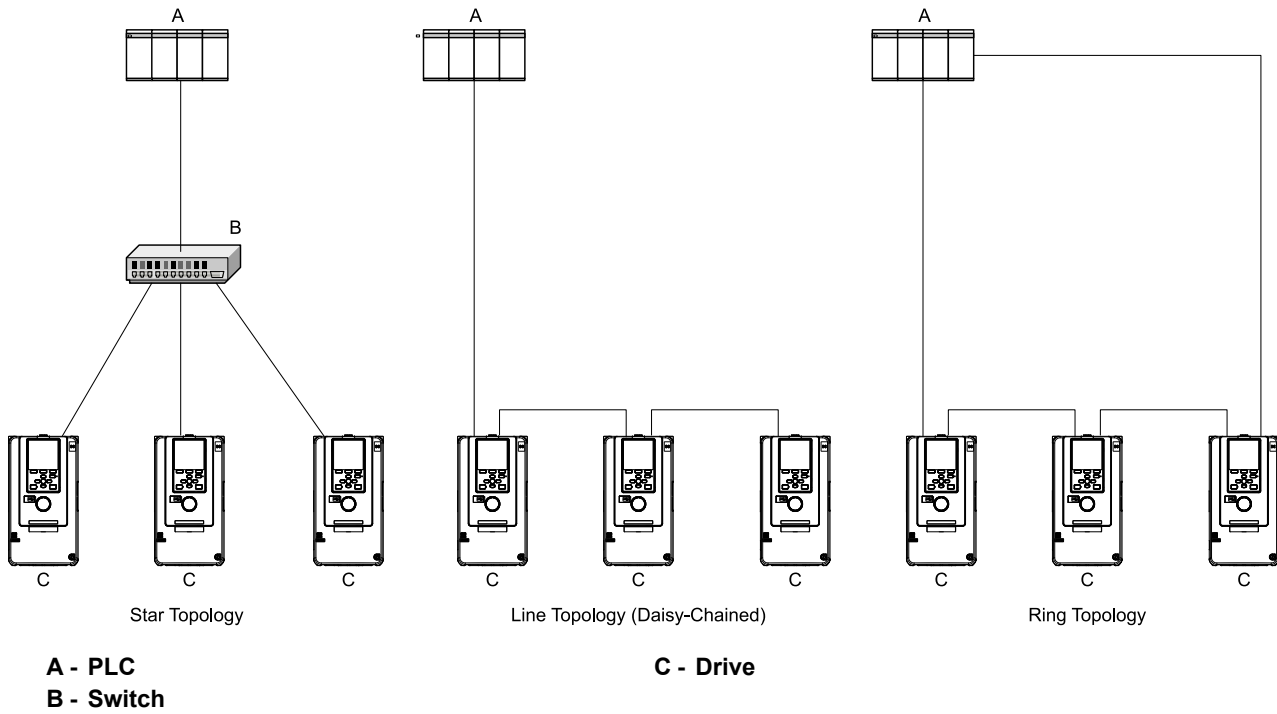
Figure 5.10 Communication Cable Wiring

A - PLC
B - Switch

C - Drive

Star Topology / Line Topology (Daisy-Chained) / Ring Topology

◆ EDS File

For easy network implementation of drives equipped with the option, please obtain the EDS file from the built-in web page on the option (Ethernet/IP Page) or from the Yaskawa website: Contact Yaskawa or your nearest sales representative for more information.

- Built-in web page on the option (Ethernet/IP Page)
  EtherNet/IP Page on page 115
- Yaskawa website

  – Japan: https://www.e-mechatronics.com

  – North or South America regions: https://www.yaskawa.com/MPE

  – Europe: https://www.yaskawa.eu.com

  – Other areas: Check the back cover of these manuals.

  Note:

  Download the EDS file for JOHB-SMP3 option. The correct EDS file is necessary to make the JOHB-SMP3 operate correctly as a device on the network.

6　Related Drive Parameters

These parameters set the drive for operation with the option. Make sure that the parameter settings in this table are correct before you start network communications.

Note:
- Hex.: MEMOBUS addresses that you can use to change parameters over network communication are represented in hexadecimal numbers.
- Expert: The parameter is available in Expert Mode only. When *A1-01 = 3 [Access Level Selection = Expert Level]*, Expert Mode parameters can be displayed on and set with the keypad.

No.(Hex.)	Name	Description	Default(Range)
b1-01(0180)	Frequency Reference Selection 1	Selects the input method for frequency reference. 0 : Keypad 1 : Analog Input 2 : Memobus/Modbus Communications 3 : Option PCB 4 : Pulse Train Input **Note:** • Set *b1-01 = 3* to use the client to control the frequency reference of the drive. • The default setting is different for different drives. Refer to the instruction manual of your specific drive for more information.	1(0 - 4)
b1-02(0181)	Run Command Selection 1	Sets the input method for the Run command. 0 : Keypad 1 : Digital Input 2 : Memobus/Modbus Communications 3 : Option PCB 7 : AUTO Command + Term Run 8 : AUTO Command + Serial Run 9 : AUTO Command + Option Run **Note:** • Set *b1-02 = 3 or 9* to start and stop the drive with the client using serial communications. • The setting range is different for different drives. Refer to the instruction manual of your specific drive for more information.	1(0 - 9)
F6-01(03A2)	Communication Error Selection	Selects drive response when the drive detects a *bUS [Option Communication Error]* error during communications with the option. 0 : Ramp to Stop 1 : Coast to Stop 2 : Fast Stop (Use C1-09) 3 : Alarm Only 4 : Alarm (Run at *d1-04*) 5 : Alarm - Ramp Stop **Note:** • When you set this parameter to *3* or *4*, the drive will continue operation after it detects a fault. Separately prepare safety protection equipment and systems, for example fast-stop switches. • Refer to the drive manual to know if settings *4* and *5* are available. • The setting range for 1000-Series drives is different for different software versions. Refer to the Peripheral Devices & Options section of the drive instruction manual for more information. • Changes to this parameter take effect immediately. It is not necessary to cycle power on the drive.	1(0 - 5)
F6-02(03A3)	Comm External Fault (EF0) Detect	Selects the conditions at which *EF0 [Option Card External Fault]* is detected. 0 : Always Detected 1 : Detected during RUN Only	0(0, 1)
F6-03(03A4)	Comm External Fault (EF0) Select	Selects the operation of the drive when *EF0 [Option Card External Fault]* is detected. 0 : Ramp to Stop 1 : Coast to Stop 2 : Fast Stop (Use C1-09) 3 : Alarm Only **Note:** When you set this parameter to *3*, the drive will continue operation after it detects a fault. Separately prepare safety protection equipment and systems, for example fast stop switches.	1(0 - 3)
F6-06(03A7)	Torque Reference/Limit by Comm	Selects whether to enable or disable the torque reference and torque limit received from the communication option. 0 : Disabled 1 : Enabled **Note:** • Control method availability of this parameter is different for different product series. −1000-Series Parameter is available when *A1-02 = 3, 6, 7 [Control Method Selection = Closed Loop Vector, PM Advanced Open Loop Vector, PM Closed Loop Vector]*. When you enable this parameter, *d5-01 [Torque Control Selection]* sets the drive to read the value as the Torque Limit value or the Torque Reference value. *d5-01 = 0 [Speed Control]*: Torque Limit *d5-01 = 1 [Torque Control]*: Torque Reference When *A1-02 = 6 [Control Method Selection = PM Advanced Open Loop Vector]*, the drive reads this value as the Torque Limit. −GA500 Parameter is available when *A1-02 = 2, 6, 8 [Control Method Selection = Open Loop Vector, PM Advanced Open Loop Vector, EZ Vector Control]*. The drive reads this value as the Torque Limit. −GA700, GA800, CH700 Parameter is available when *A1-02 = 2, 3, 4, 6, 7, 8 [Control Method Selection = Open Loop Vector, Closed Loop Vector, Advanced Open Loop Vector, PM Advanced Open Loop Vector, PM Closed Loop Vector, EZ Vector Control]*. When you enable this parameter, *d5-01 [Torque Control Selection]* sets the drive to read the value as the Torque Limit value or the Torque Reference value. *d5-01 = 0 [Speed Control]*: Torque Limit *d5-01 = 1 [Torque Control]*: Torque Reference	0(0, 1)
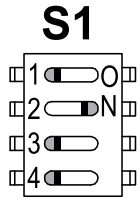
No. (Hex.)	Name	Description	Default (Range)
		When *A1-02 = 2, 8 [Control Method Selection = Open Loop Vector, EZ Vector Control]*, the drive reads this value as the Torque Limit. −CR700 Torque Limit is enabled when *A1-02 = 2, 3, 4 [Control Method Selection = Open Loop Vector, Closed Loop Vector, Advanced Open Loop Vector]*. −HV600, FP605 Torque Limit is enabled when *A1-02 = 8 [Control Method Selection = EZ Vector Control]*. • If the PLC does not supply a torque reference or torque limit when *F6-06 = 1 [Torque Reference/Limit by Comm = Enabled]*, the motor cannot rotate.	
F6-07 (03A8)	Multi-Step Ref @ NetRef/ComRef	0 : Disable Multi-Step References 1 : Enable Multi-Step References **Note:** Default setting of *F6-07* is *1* for GA500.	0 (0, 1)
F6-08 (036A)	Comm Parameter Reset @Initialize	Selects whether communication-related parameters *F6-xx* and *F7-xx* are set back to original default values when you use parameter *A1-03 [Initialize Parameters]* to initialize the drive. 0 : No Reset - Parameters Retained 1 : Reset - Back to Factory Default **Note:** When you set *F6-08* to *1* and you then use *A1-03* to initialize the drive, the drive will not change this setting value.	0 (0, 1)
F6-14 (03BB)	Bus Error Auto Reset	Enables and disables the automatic reset of a *bUS [Option Communication Error]* fault. 0 : Disabled 1 : Enabled **Note:** • This parameter is not available in all 1000-series drives. • Changes to this parameter take effect immediately. It is not necessary to cycle power on the drive.	0 (0, 1)
F6-15 (0B5B)	Comm. Option Parameters Reload	Sets when the drive will activate the *F6-xx/F7-xx* communications-related parameters that you changed. Use this parameter as an alternative to cycling power to the drive to active parameters. 0 : Reload at Next Power Cycle 1 : Reload Now 2 : Cancel Reload Request **Note:** • *F6-15* is reset to *0* after setting *1* or *2*. • This parameter is not available in all 1000-series drives. • Changes to this parameter take effect immediately. It is not necessary to cycle power on the drive.	0 (0 - 2)
F6-54 (03C5)	Net Idle Fault Detection	Sets the drive operation when communication is in Idle Mode. 0 : Enabled 1 : Disabled, No Fault Detection 2 : Vendor Specific 3 : RUN Forward 4 : RUN Reverse **Note:** • Change the parameter then cycle power on the drive. • When you set *F6-54 = 2*, use *F6-01* to select drive operation to stop or continue. • Contact Yaskawa or your nearest sales representative for more information about corresponding drives and the drive software versions.	0 (0 - 4)
F7-01 (03E5)	IP Address 1	Sets the static/fixed IP address. Sets the most significant octet. **Note:** • This parameter is only effective when *F7-13 = 0 [Address Mode at Startup = Static]*. • All IP Addresses must be unique. • You must cycle power to the drive for the changes to take effect. For non-1000 series drives, you can set *F6-15 = 1 [Comm. Option Parameters Reload = Reload Now]*.	192 (0 - 255)
F7-02 (03E6)	IP Address 2	Sets the static/fixed IP address. Sets the second most significant octet. **Note:** • This parameter is only effective when *F7-13 = 0 [Address Mode at Startup = Static]*. • All IP Addresses must be unique. • You must cycle power to the drive for the changes to take effect. For non-1000 series drives, you can set *F6-15 = 1 [Comm. Option Parameters Reload = Reload Now]*.	168 (0 - 255)
F7-03 (03E7)	IP Address 3	Sets the static/fixed IP address. Sets the third most significant octet. **Note:** • This parameter is only effective when *F7-13 = 0 [Address Mode at Startup = Static]*. • All IP Addresses must be unique. • You must cycle power to the drive for the changes to take effect. For non-1000 series drives, you can set *F6-15 = 1 [Comm. Option Parameters Reload = Reload Now]*.	1 (0 - 255)
F7-04 (03E8)	IP Address 4	Sets the static/fixed IP address. Sets the fourth most significant octet. **Note:** • This parameter is only effective when *F7-13 = 0 [Address Mode at Startup = Static]*. • All IP Addresses must be unique. • You must cycle power to the drive for the changes to take effect. For non-1000 series drives, you can set *F6-15 = 1 [Comm. Option Parameters Reload = Reload Now]*.	20 (0 - 255)
F7-05	Subnet Mask 1	Sets the static/fixed Subnet Mask. Sets the most significant octet.	255

No. (Hex.)	Name	Description	Default (Range)
(03E9)		**Note:** • This parameter is only effective when *F7-13 = 0 [Address Mode at Startup = Static]*. • All IP Addresses must be unique. • You must cycle power to the drive for the changes to take effect. For non-1000 series drives, you can set *F6-15 = 1 [Comm. Option Parameters Reload = Reload Now]*.	(0 - 255)
F7-06 (03EA)	Subnet Mask 2	Sets the static/fixed Subnet Mask. Sets the second most significant octet. **Note:** • This parameter is only effective when *F7-13 = 0 [Address Mode at Startup = Static]*. • All IP Addresses must be unique. • You must cycle power to the drive for the changes to take effect. For non-1000 series drives, you can set *F6-15 = 1 [Comm. Option Parameters Reload = Reload Now]*.	255 (0 - 255)
F7-07 (03EB)	Subnet Mask 3	Sets the static/fixed Subnet Mask. Sets the third most significant octet. **Note:** • This parameter is only effective when *F7-13 = 0 [Address Mode at Startup = Static]*. • All IP Addresses must be unique. • You must cycle power to the drive for the changes to take effect. For non-1000 series drives, you can set *F6-15 = 1 [Comm. Option Parameters Reload = Reload Now]*.	255 (0 - 255)
F7-08 (03EC)	Subnet Mask 4	Sets the static/fixed Subnet Mask. Parameter F7-08 sets the fourth most significant octet. **Note:** • This parameter is only effective when *F7-13 = 0 [Address Mode at Startup = Static]*. • All IP Addresses must be unique. • You must cycle power to the drive for the changes to take effect. For non-1000 series drives, you can set *F6-15 = 1 [Comm. Option Parameters Reload = Reload Now]*.	0 (0 - 255)
F7-09 (03ED)	Gateway Address 1	Sets the static/fixed Gateway address. Sets the most significant octet. **Note:** • This parameter is only effective when *F7-13 = 0 [Address Mode at Startup = Static]*. • All IP Addresses must be unique. • You must cycle power to the drive for the changes to take effect. For non-1000 series drives, you can set *F6-15 = 1 [Comm. Option Parameters Reload = Reload Now]*.	192 (0 - 255)
F7-10 (03EE)	Gateway Address 2	Sets the static/fixed Gateway address. Sets the second most significant octet. **Note:** • This parameter is only effective when *F7-13 = 0 [Address Mode at Startup = Static]*. • All IP Addresses must be unique. • You must cycle power to the drive for the changes to take effect. For non-1000 series drives, you can set *F6-15 = 1 [Comm. Option Parameters Reload = Reload Now]*.	168 (0 - 255)
F7-11 (03EF)	Gateway Address 3	Sets the static/fixed Gateway address. Sets the third most significant octet. **Note:** • This parameter is only effective when *F7-13 = 0 [Address Mode at Startup = Static]*. • All IP Addresses must be unique. • You must cycle power to the drive for the changes to take effect. For non-1000 series drives, you can set *F6-15 = 1 [Comm. Option Parameters Reload = Reload Now]*.	1 (0 - 255)
F7-12 (03F0)	Gateway Address 4	Sets the static/fixed Gateway address. Parameter F7-12 sets the fourth most significant octet. **Note:** • This parameter is only effective when *F7-13 = 0 [Address Mode at Startup = Static]*. • All IP Addresses must be unique. • You must cycle power to the drive for the changes to take effect. For non-1000 series drives, you can set *F6-15 = 1 [Comm. Option Parameters Reload = Reload Now]*.	1 (0 - 255)
F7-13 (03F1)	Address Startup Mode	Selects how the option address is set. 0 : Static (Use F7-01 to F7-12 to set.) 1 : BOOTP (Use network address.) 2 : DHCP (Use network address.) **Note:** You must cycle power to the drive for the changes to take effect. For non-1000 series drives, you can set *F6-15 = 1 [Comm. Option Parameters Reload = Reload Now]*.	2 (0 - 2)
F7-14 (03F2)	Duplex Mode Selection	Sets duplex mode settings (Port 1 (CN1A)/Port 2 (CN1B)). 0 : Half/Half (Half Duplex/Half Duplex) 1 : Auto/Auto (Auto Negotiation/Auto Negotiation) 2 : Full/Full (Full Duplex/Full Duplex) 3 : Half/Auto (Half Duplex/Auto Negotiation) 4 : Half/Full (Half Duplex/Full Duplex) 5 : Auto/Half (Auto Negotiation/Half Duplex) 6 : Auto/Full (Auto Negotiation/Full Duplex) 7 : Full/Half (Full Duplex/Half Duplex) 8 : Full/Auto (Full Duplex/Auto Negotiation) **Note:** You must cycle power to the drive for the changes to take effect. For non-1000 series drives, you can set *F6-15 = 1 [Comm. Option Parameters Reload = Reload Now]*.	1 (0 - 8)
F7-15 (03F3)	Communication Speed Selection	Sets the communications speed (Port 1 (CN1A)/Port 2 (CN1B)). 10 : 10/10 Mbps (10 Mbps/10 Mbps) 100 : 100/100 Mbps (100 Mbps/100 Mbps) 101 : [Not Used/No function] 10/100 Mbps (10 Mbps/100 Mbps)	10 (10 - 102)

No. (Hex.)	Name	Description	Default (Range)
		102 : [Not Used/No function] 100/10 Mbps (100 Mbps/10 Mbps) **Note:** • *F7-15* is only effective when the port is set to half or full duplex in *F7-14 [Duplex Mode Selection]*. • You must cycle power to the drive for the changes to take effect. For non-1000 series drives, you can set *F6-15 = 1 [Comm. Option Parameters Reload = Reload Now]*.	
F7-16 (03F4)	Timeout Value	Sets the detection time for a communications timeout. **Note:** • Set this parameter to *0.0* to disable the connection timeout function. • This parameter is not available in all 1000-series drives. • Changes to this parameter take effect immediately. It is not necessary to cycle power on the drive.	0.0 s (0.0 s - 30.0 s)
F7-17 (03F5)	EtherNet/IP Speed Scaling Factor	Sets the scaling factor for the speed monitor in EtherNet/IP Class ID 2A (Hex.) Object. **Note:** Changes to this parameter take effect immediately. It is not necessary to cycle power on the drive.	0 (-15 - 15)
F7-18 (03F6)	EtherNet/IP Current Scale Factor	Sets the scaling factor for the output current monitor in EtherNet/IP Class ID 2A (Hex.) Object. **Note:** Changes to this parameter take effect immediately. It is not necessary to cycle power on the drive.	0 (-15 - 15)
F7-19 (03F7)	EtherNet/IP Torque Scale Factor	Sets the scaling factor for the torque monitor in EtherNet/IP Class ID 2A (Hex.) Object. **Note:** Changes to this parameter take effect immediately. It is not necessary to cycle power on the drive.	0 (-15 - 15)
F7-20 (03F8)	EtherNet/IP Power Scaling Factor	Sets the scaling factor for the power monitor in EtherNet/IP Class ID 2A (Hex.) Object. **Note:** Changes to this parameter take effect immediately. It is not necessary to cycle power on the drive.	0 (-15 - 15)
F7-21 (03F9)	EtherNet/IP Voltage Scale Factor	Sets the scaling factor for the voltage monitor in EtherNet/IP Class ID 2A (Hex.) Object. **Note:** Changes to this parameter take effect immediately. It is not necessary to cycle power on the drive.	0 (-15 - 15)
F7-22 (03FA)	EtherNet/IP Time Scaling	Sets the scaling factor for the time monitor in EtherNet/IP Class ID 2A (Hex.) Object. **Note:** Changes to this parameter take effect immediately. It is not necessary to cycle power on the drive.	0 (-15 - 15)
F7-23 - F7-27 (03FB - 03FF) F7-28 - F7-32 (0370 - 0374)	Dynamic Output Assembly Parameters 1 to 10	Parameters used in Output Assemblies 116, 117, 118, 119, 120. Each parameter contains a MEMOBUS/Modbus address. The value received for the Output Assembly will be written to this corresponding MEMOBUS/Modbus address. A MEMOBUS/Modbus address value of 0 means that the value received for the Output Assembly will not be written to any MEMOBUS/Modbus register.	0 (-)
F7-33 - F7-42 (0375 to 037E)	Dynamic Input Assembly Parameters 1 to 10	Parameters used in Input Assemblies 166, 167, 168, 169, 170. Each parameter contains a MEMOBUS/Modbus address. The value sent for the Input Assembly will be read from this corresponding MEMOBUS/Modbus address. A MEMOBUS/Modbus address value of 0 means that the value sent for the Input Assembly is not defined by the user, therefore the option default register value will be returned. Refer to page 46 for definitions of the default MEMOBUS/Modbus registers.	0 (-)
F7-43 (1BCE)	PLC Cnxn Close Behavior@Run	Sets the operation when the Forward Close command (PLC communication disconnection command) is received from the network during run. Refer to page 30 for more information. 0 : Continue 1 : Clear RUN Command 2 : *bUS [Option Communication Error]* Fault (set by *F6-01 [Communication Error Selection]*) **Note:** • This parameter is compatible with option software versions PRG: 3003 and later. Refer to *U6-97 [OPT SPARE 4]* to check the option software version. • Contact Yaskawa or your nearest sales representative for more information about corresponding drives and the drive software versions.	0 (0 - 2)

Table 6.1 Option Monitor

No.	Name	Description	Range
U4-75	Communication OPT Protocol	Shows the setting of DIP switch S1. • 72 (Setting to use EtherNet/IP (1: OFF, 2: ON, 3: OFF, 4: OFF)) **S1** 1 ⊂O 2 ⊂N 3 4 • 00 to 71, 73 to FF (Setting to use other than EtherNet/IP) **Note:** EtherNet/IP will not operate with these setting values. **Note:** Contact Yaskawa or your nearest sales representative for more information about corresponding drives and the drive software versions.	00 - FF (Hex.)
U4-76 - U4-78	MAC Address 1	Shows the Main MAC Address. • *U4-76*: First octet, Second octet • *U4-77*: Third octet, Fourth octet • *U4-78*: Fifth octet, Sixth octet **Note:** Contact Yaskawa or your nearest sales representative for more information about corresponding drives and the drive software versions.	0000 - FFFF (Hex.)
U4-79 - U4-81 Expert	MAC Address 2	Shows the second MAC Address. • *U4-79*: First octet, Second octet • *U4-80*: Third octet, Fourth octet • *U4-81*: Fifth octet, Sixth octet **Note:** Contact Yaskawa or your nearest sales representative for more information about corresponding drives and the drive software versions.	0000 - FFFF (Hex.)
U4-82 - U4-84 Expert	MAC Address 3	Shows the third MAC Address. • *U4-82*: First octet, Second octet • *U4-83*: Third octet, Fourth octet • *U4-84*: Fifth octet, Sixth octet **Note:** Contact Yaskawa or your nearest sales representative for more information about corresponding drives and the drive software versions.	0000 - FFFF (Hex.)
U6-80 - U6-83	OPT IP Address 1 - 4	Shows the currently available local IP Address. • *U6-80*: First octet • *U6-81*: Second octet • *U6-82*: Third octet • *U6-83*: Fourth octet	0 - 255
U6-84 - U6-87	Online Subnet 1 - 4	Shows the currently available subnet mask. • *U6-84*: First octet • *U6-85*: Second octet • *U6-86*: Third octet • *U6-87*: Fourth octet	0 - 255
U6-88 - U6-91	Online Gateway 1 - 4	Shows the currently available gateway address. • *U6-88*: First octet • *U6-89*: Second octet • *U6-90*: Third octet • *U6-91*: Fourth octet	0 - 255
U6-92	Online Speed	Shows CN1A Port 1 link speed currently available.	10: 10 Mbps 100: 100 Mbps
U6-93	Online Duplex	Shows CN1A Port 1 duplex setting currently available.	0: Half/Half 1: Full/Full
U6-94	OPT SPARE 1	Shows CN1B Port 2 link speed currently available.	10: 10 Mbps 100: 100 Mbps
U6-95	OPT SPARE 2	Shows CN1B Port 2 duplex setting currently available.	0: Half/Half 1: Full/Full
U6-96	OPT SPARE 3	Shows RSTP Role and State of Port1 and Port2. Refer to page for more information.	0000 - 9292

No.	Name	Description	Range
		Note: This monitor is compatible with option software versions PRG: 3003 and later. Refer to *U6-97 [OPT SPARE 4]* to check the option software version.	
U6-97	OPT SPARE 4	Shows option software version.	-
U6-98	First Fault	Shows first option fault.	-
U6-99	Current Fault	Shows current option fault.	-

◆ Operation at PLC Forward Close Command

Use *F7-43 [PLC Cnxn Close Behavior@Run]* to set the operation when the Forward Close command is received from the network during run. If the software version of the drive in use is not compatible with *F7-43*, the operation at PLC communication disconnection can be set on the web page, and the setting values are saved in the option card.

- Set value 0: Continue (Default)
  This is the factory-set operation. When the Forward Close command is received during run, the operation continues at the current frequency reference.
- Set value 1: Clear RUN Command
  When the Forward Close command is received during run, turns off the Run command to the drive. To resume operation, send the Forward Open command from the PLC and input the Run command.
- Set value 2: *bUS [Option Communication Error]* Fault (set by *F6-01 [Communication Error Selection]*)
  When the Forward Close command is received during run, a *bUS [Option Communication Error]* occurs. If *bUS [Option Communication Error]* occurs, the drive stops or continues the operation of the motor according to *F6-01 [Communication Error Selection]*. *F7-16 [Timeout Value]* and *F6-14 [Bus Error Auto Reset]* operate in the same way as the normal *bUS [Option Communication Error]*.

  Note:
  - The operation at PLC communication disconnection is compatible with option software versions PRG: 3003 and later. Refer to *U6-97 [OPT SPARE 4]* to check the option software version.
  - If your drive is compatible with *F7-43*, the *F7-43* setting takes precedence over the setting on the Web page.

7 EtherNet/IP Configuring Messaging

This section provides information on methods used to control the drive and converter with the option installed.

◆ Drive Polled Configuration

The assemblies in Table 7.1 are available for polled I/O:

Note:

These assemblies are not available in D1000 and R1000.

Table 7.1 Supported Polled I/O Assemblies

Assembly Number (Hex.)	Description	Type	Bytes	Page
20 (14)	EtherNet/IP Basic Speed Control Output	Output	4	32
21 (15)	EtherNet/IP Extended Speed Control Output	Output	4	33
22 (16)	EtherNet/IP Speed and Torque Control Output	Output	6	33
23 (17)	EtherNet/IP Extended Speed and Torque Control Output	Output	6	34
70 (46)	EtherNet/IP Basic Speed Control Input	Input	4	46
71 (47)	EtherNet/IP Extended Speed Control Input	Input	4	46
72 (48)	EtherNet/IP Speed and Torque Control Input	Input	6	47
73 (49)	EtherNet/IP Extended Speed and Torque Control Input	Input	6	48
100 (64)	(Vendor Specific Yaskawa Electric (YE) Assy) MEMOBUS Message Output	Output	5	34
101 (65)	(Vendor Specific Yaskawa Electric (YE) Assy) Speed/Torque Control Output	Output	8	35
115 (73)	(Vendor Specific Yaskawa Electric (YE) Assy) Extended Speed/Torque Control Output	Output	40	36
116 (74)	(Vendor Specific Yaskawa Electric (YE) Assy) High Speed/Torque Control Output	Output	44	38
117 (75)	(Vendor Specific Yaskawa Electric (YE) Assy) 8-Byte Dynamic Output	Output	8	40
118 (76)	(Vendor Specific Yaskawa Electric (YE) Assy) 12-Byte Dynamic Output	Output	12	41
119 (77)	(Vendor Specific Yaskawa Electric (YE) Assy) 18-Byte Dynamic Output	Output	18	42
120 (78)	(Vendor Specific Yaskawa Electric (YE) Assy) 24-Byte Dynamic Output	Output	24	43
130 (82)	(Vendor Specific Yaskawa Electric (YE) Assy) Gateway Consume Assembly	Output	48	45
150 (96)	(Vendor Specific Yaskawa Electric (YE) Assy) MEMOBUS Message Input	Input	5	48
151 (97)	(Vendor Specific Yaskawa Electric (YE) Assy) Speed/Torque Status Input	Input	8	49
155 (9B)	(Vendor Specific Yaskawa Electric (YE) Assy) Extended Speed/Torque Status Input	Input	40	51
166 (A6)	(Vendor Specific Yaskawa Electric (YE) Assy) High Speed/Torque Status Input	Input	44	53
167 (A7)	(Vendor Specific Yaskawa Electric (YE) Assy) 8-Byte Dynamic Input	Input	8	56
168 (A8)	(Vendor Specific Yaskawa Electric (YE) Assy) 12-Byte Dynamic Input	Input	12	57
169 (A9)	(Vendor Specific Yaskawa Electric (YE) Assy) 18-Byte Dynamic Input	Input	18	59
170 (AA)	(Vendor Specific Yaskawa Electric (YE) Assy) 24-Byte Dynamic Input	Input	24	60
180 (B4)	(Vendor Specific Yaskawa Electric (YE) Assy) Gateway Produce Assembly	Input	48	61

◆ Converter Polled Configuration

The assemblies in Table 7.2 are available for polled I/O:

Note:

These assemblies apply to D1000/R1000 converters.

Table 7.2 Supported Polled I/O Assemblies

Assembly Number (Hex.)	Description	Type	Bytes	Page
20 (14)	EtherNet/IP Basic Speed Control Output	Output	4	63
21 (15)	EtherNet/IP Extended Speed Control Output	Output	4	63

Assembly Number (Hex.)	Description	Type	Bytes	Page
22 (16)	EtherNet/IP Speed and Torque Control Output	Output	6	64
23 (17)	EtherNet/IP Extended Speed and Torque Control Output	Output	6	64
70 (46)	EtherNet/IP Basic Speed Control Input	Input	4	75
71 (47)	EtherNet/IP Extended Speed Control Input	Input	4	75
72 (48)	EtherNet/IP Speed and Torque Control Input	Input	6	76
73 (49)	EtherNet/IP Extended Speed and Torque Control Input	Input	6	76
101 (65)	(Vendor Specific Yaskawa Electric (YE) Assy) Speed/Torque Control Output	Output	8	65
115 (73)	(Vendor Specific Yaskawa Electric (YE) Assy) Extended Speed/Torque Control Output	Output	40	66
116 (74)	(Vendor Specific Yaskawa Electric (YE) Assy) High Speed/Torque Control Output	Output	44	68
117 (75)	(Vendor Specific Yaskawa Electric (YE) Assy) 8-Byte Dynamic Output 2	Output	8	70
118 (76)	(Vendor Specific Yaskawa Electric (YE) Assy) 12-Byte Dynamic Output 4	Output	12	71
119 (77)	(Vendor Specific Yaskawa Electric (YE) Assy) 18-Byte Dynamic Output 7	Output	18	72
120 (78)	(Vendor Specific Yaskawa Electric (YE) Assy) 24-Byte Dynamic Output 10	Output	24	74
151 (97)	(Vendor Specific Yaskawa Electric (YE) Assy) Speed/Torque Status Input	Input	8	77
155 (9B)	(Vendor Specific Yaskawa Electric (YE) Assy) Extended Speed/Torque Status Input	Input	40	78
166 (A6)	(Vendor Specific Yaskawa Electric (YE) Assy) High Speed/Torque Status Input	Input	44	80
167 (A7)	(Vendor Specific Yaskawa Electric (YE) Assy) 8-Byte Dynamic Input 2	Input	8	83
168 (A8)	(Vendor Specific Yaskawa Electric (YE) Assy) 12-Byte Dynamic Input 4	Input	12	85
169 (A9)	(Vendor Specific Yaskawa Electric (YE) Assy) 18-Byte Dynamic Input 7	Input	18	86
170 (AA)	(Vendor Specific Yaskawa Electric (YE) Assy) 24-Byte Dynamic Input 10	Input	24	87

8   Output Assemblies (Drive Consumes)

Note:

The convention in this manual is from the PLC perspective. As such, an assembly is called an "Output Assembly" when outputted from the PLC and received by this node. This section details "Output Assemblies" that are "Consumed" by the drive.

◆ EtherNet/IP Basic Speed Control Output - 20 (0x14)

Output Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
20	0	0	-	-	-	-	-	Fault Reset	-	Run Fwd
		1	-							
	1	2	Speed Reference (Low Byte)							
		3	Speed Reference (High Byte)							

Name	Description
Run Fwd	Forward Run Command 0: Stop 1: Forward Run
Fault Reset	Fault Reset 0: - 1: Fault Reset
Speed Reference	Speed Command Sets drive speed reference. Speed reference data: Frequency reference/2^{SS} (SS: Speed scale) Setting range: 0 - FFFF (Hex.) For example, when setting a reference of 4096 with a speed scale of 2: Speed reference data = $4096/2^2$ = 1024 = 400 (Hex.) Unit depends on o1-03.

◆ EtherNet/IP Extended Speed Control Output - 21 (0x15)

Output Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
21	0	0	-	NetRef	NetCtrl	-	-	Fault Reset	Run Rev	Run Fwd
		1	-							
	1	2	Speed Reference (Low Byte)							
		3	Speed Reference (High Byte)							

Name	Description
Run Fwd	Forward Run Command 0: Stop 1: Forward Run
Run Rev	Reverse Run Command 0: Stop 1: Reverse Run
Fault Reset	Fault Reset 0: - 1: Fault Reset
NetCtrl	Run command from network 0: Depends on b1-02 1: Enables the Run command from network
NetRef	Speed reference from network 0: Depends on b1-01 1: Enables the speed reference from network
Speed Reference	Speed Command Sets drive speed reference. Speed reference data: Frequency reference/2^{SS} (SS: Speed scale) Setting range: 0 - FFFF (Hex.) For example, when setting a reference of 4096 with a speed scale of 2: Speed reference data = $4096/2^2$ = 1024 = 400 (Hex.) Unit depends on o1-03.

◆ EtherNet/IP Speed and Torque Control Output - 22 (0x16)

Output Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
22	0	0	-	-	-	-	-	Fault Reset	-	Run Fwd
		1	-							
	1	2	Speed Reference (Low Byte)							
		3	Speed Reference (High Byte)							
	2	4	Torque Reference/Torque Limit (Low Byte)							
		5	Torque Reference/Torque Limit (High Byte)							

Name	Description
Run Fwd	Forward Run Command 0: Stop 1: Forward Run
Fault Reset	Fault Reset 0: - 1: Fault Reset

Name	Description
Speed Reference	Speed Command Sets drive speed reference. Speed reference data: Frequency reference/2^{SS} (SS: Speed scale) Setting range: 0 - FFFF (Hex.) For example, when setting a reference of 4096 with a speed scale of 2: Speed reference data = $4096/2^2$ = 1024 = 400 (Hex.) Unit depends on o1-03.
Torque Reference/Torque Limit	Torque Reference/Torque Limit Sets the Torque Reference/Torque Limit. Sets in units of 0.1%. Sets the Torque Reference when using Torque Control [d5-01 = 1]. Sets the Torque Limit when using Speed Control [d5-01 = 0]. The Torque Reference/Torque Limit are disabled when F6-06 = 0.

◆ EtherNet/IP Extended Speed and Torque Control Output - 23 (0x17)

Output Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
23	0	0	-	NetRef	NetCtrl	-	-	Fault Reset	Run Rev	Run Fwd
		1	-							
	1	2	Speed Reference (Low Byte)							
		3	Speed Reference (High Byte)							
	2	4	Torque Reference/Torque Limit (Low Byte)							
		5	Torque Reference/Torque Limit (High Byte)							

Name	Description
Run Fwd	Forward Run Command 0: Stop 1: Forward Run
Run Rev	Reverse Run Command 0: Stop 1: Reverse Run
Fault Reset	Fault Reset 0: - 1: Fault Reset
NetCtrl	Run command is from network 0: Depends on b1-02 1: Run command is from network
NetRef	Speed reference is from network 0: Depends on b1-01 1: Speed reference is from network
Speed Reference	Sets drive speed reference. Speed reference data: Frequency reference x 2^{SS} (SS: Speed scale) Setting range: 0 - FFFF (Hex.) For example, when setting a reference of 4096 with a speed scale of 2: Speed reference data = $4096/2^2$ = 1024 = 400 (Hex.) Unit depends on o1-03.
Torque Reference/Torque Limit	Sets the Torque Reference/Torque Limit. Sets in units of 0.1%. Sets the Torque Reference when using Torque Control [d5-01 = 1]. Sets the Torque Limit when using Speed Control [d5-01 = 0]. The Torque Reference/Torque Limit are disabled when F6-06 = 0.

◆ MEMOBUS/Modbus Message Output (Vendor Specific Yaskawa Electric (YE) Assy) - 100 (0x64)

Output Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
100	0	0	Function Code							
		1	Register Number (High Byte)							
	1	2	Register Number (Low Byte)							
		3	Register Data (High Byte)							
	2	4	Register Data (Low Byte)							

Note:

This is a paired assembly (100/150).

Name	Description
Function Code	MEMOBUS/Modbus Function Code
Register Number	MEMOBUS/Modbus Register Number
Register Data	MEMOBUS/Modbus Register Data

Table 8.1 Function Code Decode Table

Function Code	MEMOBUS/Modbus Function
0x00	No Operation
0x03	Read Register
0x10	Write Register

Note:

Refer to the MEMOBUS/Modbus Data Table in Appendix C of the Technical Manual for a list of monitor data using the MEMOBUS/Modbus message area.

◆ (Vendor Specific Yaskawa Electric (YE) Assy) Speed/Torque Control Output - 101 (0x65)

Output Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
101	0	0	Multi-Function Input 8	Multi-Function Input 7	Multi-Function Input 6	Multi-Function Input 5	Multi-Function Input 4	Multi-Function Input 3	Run Rev	Run Fwd
		1	Multi-Function Digital Output 3	Multi-Function Digital Output 2	Multi-Function Digital Output 1	-	-	-	Fault Reset	External Fault
	1	2	Speed Reference (Low Byte)							
		3	Speed Reference (High Byte)							
	2	4	Torque Reference/Torque Limit (Low Byte)							
		5	Torque Reference/Torque Limit (High Byte)							
	3	6	Torque Compensation (Low Byte)							
		7	Torque Compensation (High Byte)							

Name	Description
Run Fwd	Forward Run Command 0: Stop 1: Forward Run
Run Rev	Reverse Run Command 0: Stop 1: Reverse Run
Multi-Function Input 3	Terminal S3 Function Input 0: Terminal S3 Function [H1-03] OFF 1: Terminal S3 Function [H1-03] ON
Multi-Function Input 4	Terminal S4 Function Input 0: Terminal S4 Function [H1-04] OFF 1: Terminal S4 Function [H1-04] ON
Multi-Function Input 5	Terminal S5 Function Input 0: Terminal S5 Function [H1-05] OFF 1: Terminal S5 Function [H1-05] ON
Multi-Function Input 6	Terminal S6 Function Input 0: Terminal S6 Function [H1-06] OFF 1: Terminal S6 Function [H1-06] ON
Multi-Function Input 7	Terminal S7 Function Input 0: Terminal S7 Function [H1-07] OFF 1: Terminal S7 Function [H1-07] ON
Multi-Function Input 8	Terminal S8 Function Input 0: Terminal S8 Function [H1-08] OFF 1: Terminal S8 Function [H1-08] ON

Name	Description
External Fault	External Fault EF0 0: - 1: External Fault [EF0]
Fault Reset	Fault Reset 0: - 1: Fault Reset
Multi-Function Digital Output 1	Terminal M1/M2 (varies by drive model) 0: M1/M2 OFF 1: M1/M2 ON This function is enabled only when H2-01 is set to F. **Note:** The names of the digital outputs are different for different drive series.
Multi-Function Digital Output 2	Terminal M3/M4 (varies by drive model) 0: M3/M4 OFF 1: M3/M4 ON This function is enabled only when H2-02 is set to F. **Note:** The names of the digital outputs are different for different drive series.
Multi-Function Digital Output 3	Terminal M5/M6 (varies by drive model) 0: M5/M6 OFF 1: M5/M6 ON This function is enabled only when H2-03 is set to F. **Note:** The names of the digital outputs are different for different drive series.
Speed Reference	Speed Command Sets drive speed reference. Unit depends on o1-03. Unit is not affected by Speed Scale SS.
Torque Reference/Torque Limit	Torque Reference/Torque Limit Sets the Torque Reference/Torque Limit. Sets in units of 0.1%. Sets the Torque Reference when using Torque Control [d5-01 = 1]. Sets the Torque Limit when using Speed Control [d5-01 = 0]. The Torque Reference/Torque Limit are disabled when F6-06 = 0.
Torque Compensation	Torque Compensation Sets the amount of Torque Compensation Sets in units of 0.1%.

◆ (Vendor Specific Yaskawa Electric (YE) Assy) Extended Speed/Torque Control Output - 115 (0x73)

Output Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
115	0	0	Multi-Function Input 8	Multi-Function Input 7	Multi-Function Input 6	Multi-Function Input 5	Multi-Function Input 4	Multi-Function Input 3	Run Rev	Run Fwd
		1	Multi-Function Digital Output 3	Multi-Function Digital Output 2	Multi-Function Digital Output 1	-	-	-	Fault Reset	External Fault
	1	2	Speed Reference (Low Byte)							
		3	Speed Reference (High Byte)							
	2	4	Torque Reference/Torque Limit (Low Byte)							
		5	Torque Reference/Torque Limit (High Byte)							
	3	6	Torque Compensation (Low Byte)							
		7	Torque Compensation (High Byte)							
	4 - 5	8 - 11	Reserved							
	6	12	Analog Output 1 (Low Byte)							
		13	Analog Output 1 (High Byte)							
	7	14	Analog Output 2 (Low Byte)							
		15	Analog Output 2 (High Byte)							
	8	16	Digital Outputs (Low Byte)							

Output Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
		17	Digital Outputs (High Byte)							
	9 - 19	18 - 39	Reserved							

Name	Description
Run Fwd	Forward Run Command 0: Stop 1: Forward Run
Run Rev	Reverse Run Command 0: Stop 1: Reverse Run
Multi-Function Input 3	Terminal S3 Function Input 0: Terminal S3 Function [H1-03] OFF 1: Terminal S3 Function [H1-03] ON
Multi-Function Input 4	Terminal S4 Function Input 0: Terminal S4 Function [H1-04] OFF 1: Terminal S4 Function [H1-04] ON
Multi-Function Input 5	Terminal S5 Function Input 0: Terminal S5 Function [H1-05] OFF 1: Terminal S5 Function [H1-05] ON
Multi-Function Input 6	Terminal S6 Function Input 0: Terminal S6 Function [H1-06] OFF 1: Terminal S6 Function [H1-06] ON
Multi-Function Input 7	Terminal S7 Function Input 0: Terminal S7 Function [H1-07] OFF 1: Terminal S7 Function [H1-07] ON
Multi-Function Input 8	Terminal S8 Function Input 0: Terminal S8 Function [H1-08] OFF 1: Terminal S8 Function [H1-08] ON
External Fault	External Fault EF0 0: - 1: External Fault [EF0]
Fault Reset	Fault Reset 0: - 1: Fault Reset
Multi-Function Digital Output 1	Terminal M1/M2 (varies by drive model) 0: M1/M2 OFF 1: M1/M2 ON This function is enabled only when H2-01 is set to F. **Note:** The names of the digital outputs are different for different drive series.
Multi-Function Digital Output 2	Terminal M3/M4 (varies by drive model) 0: M3/M4 OFF 1: M3/M4 ON This function is enabled only when H2-02 is set to F. **Note:** The names of the digital outputs are different for different drive series.
Multi-Function Digital Output 3	Terminal M5/M6 (varies by drive model) 0: M5/M6 OFF 1: M5/M6 ON This function is enabled only when H2-03 is set to F. **Note:** The names of the digital outputs are different for different drive series.
Speed Reference	Speed Command Sets drive speed reference. Unit is min^{-1} or determined by o1-03.
Torque Reference/Torque Limit	Torque Reference/Torque Limit Sets the Torque Reference/Torque Limit. Sets in units of 0.1%. Sets the Torque Reference when using Torque Control [d5-01 = 1]. Sets the Torque Limit when using Speed Control [d5-01 = 0]. The Torque Reference/Torque Limit are disabled when F6-06 = 0.
Torque Compensation	Torque Compensation Sets the amount of Torque Compensation Sets in units of 0.1%.

Name	Description
Analog Output 1	MEMOBUS/Modbus (0x0007)
Analog Output 2	MEMOBUS/Modbus (0x0008)
Digital Outputs	MEMOBUS/Modbus (0x0009) **Note:** These values are ORed with values in byte 1.

◆ (Vendor Specific Yaskawa Electric (YE) Assy)-High Speed/Torque Control Output - 116 (0x74)

The first 20 Bytes (0-19) are fixed and the next 20 Bytes can be configured using parameters *F7-23* to *F7-32*. If an error occurs while trying to write to the dynamic parameters, the appropriate error bit in Assembly 166 will be set. If more information is needed as to the nature of the error, the extended error status can be read explicitly through Class 4, Instance 0xA6, Attribute 0x64. This will return 20 Bytes with each dynamic parameter in Assembly 116 having a Byte dedicated to its extended error status.

Output Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
116	0	0	Multi-Function Input 8	Multi-Function Input 7	Multi-Function Input 6	Multi-Function Input 5	Multi-Function Input 4	Multi-Function Input 3	Run Rev	Run Fwd
		1	Multi-Function Digital Output 3	Multi-Function Digital Output 2	Multi-Function Digital Output 1	-	-	-	Fault Reset	External Fault
	1	2	Speed Reference (Low Byte)							
		3	Speed Reference (High Byte)							
	2	4	Torque Reference/Torque Limit (Low Byte)							
		5	Torque Reference/Torque Limit (High Byte)							
	3	6	Torque Compensation (Low Byte)							
		7	Torque Compensation (High Byte)							
	4	8	Reserved							
		9	-	-	-	-	Multi-Function Input 12	Multi-Function Input 11	Multi-Function Input 10	Multi-Function Input 9
	5	10	-	-	-	-	-	-	NetCtrl	NetRef
		11	-	-	-	-	-	-	-	-
	6	12	Analog Output 1 (Low Byte)							
		13	Analog Output 1 (High Byte)							
	7	14	Analog Output 2 (Low Byte)							
		15	Analog Output 2 (High Byte)							
	8	16	Digital Outputs (Low Byte)							
		17	Digital Outputs (High Byte)							
	9	18	Reserved							
		19	Reserved							
	10	20 - 21	Dynamic Output 1 [F7-23], Default: Not Used							
	11	22 - 23	Dynamic Output 2 [F7-24], Default: Not Used							
	12	24 - 25	Dynamic Output 3 [F7-25], Default: Not Used							
	13	26 - 27	Dynamic Output 4 [F7-26], Default: Not Used							
	14	28 - 29	Dynamic Output 5 [F7-27], Default: Not Used							
	15	30 - 31	Dynamic Output 6 [F7-28], Default: Not Used							
	16	32 - 33	Dynamic Output 7 [F7-29], Default: Not Used							
	17	34 - 35	Dynamic Output 8 [F7-30], Default: Not Used							
	18	36 - 37	Dynamic Output 9 [F7-31], Default: Not Used							
	19	38 - 39	Dynamic Output 10 [F7-32], Default: Not Used							

Output Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	20 - 21	40 - 43	Not Used							

Name	Description
Run Fwd	Forward Run Command 0: Stop 1: Forward Run
Run Rev	Reverse Run Command 0: Stop 1: Reverse Run
Multi-Function Input 3	Terminal S3 Function Input 0: Terminal S3 Function [H1-03] OFF 1: Terminal S3 Function [H1-03] ON
Multi-Function Input 4	Terminal S4 Function Input 0: Terminal S4 Function [H1-04] OFF 1: Terminal S4 Function [H1-04] ON
Multi-Function Input 5	Terminal S5 Function Input 0: Terminal S5 Function [H1-05] OFF 1: Terminal S5 Function [H1-05] ON
Multi-Function Input 6	Terminal S6 Function Input 0: Terminal S6 Function [H1-06] OFF 1: Terminal S6 Function [H1-06] ON
Multi-Function Input 7	Terminal S7 Function Input 0: Terminal S7 Function [H1-07] OFF 1: Terminal S7 Function [H1-07] ON
Multi-Function Input 8	Terminal S8 Function Input 0: Terminal S8 Function [H1-08] OFF 1: Terminal S8 Function [H1-08] ON
External Fault	External Fault EF0 0: - 1: External Fault [EF0]
Fault Reset	Fault Reset 0: - 1: Fault Reset
Multi-Function Digital Output 1	Terminal M1/M2 (varies by drive model) 0: M1/M2 OFF 1: M1/M2 ON This function is enabled only when H2-01 is set to F. **Note:** The names of the digital outputs are different for different drive series.
Multi-Function Digital Output 2	Terminal M3/M4 (varies by drive model) 0: M3/M4 OFF 1: M3/M4 ON This function is enabled only when H2-02 is set to F. **Note:** The names of the digital outputs are different for different drive series.
Multi-Function Digital Output 3	Terminal M5/M6 (varies by drive model) 0: M5/M6 OFF 1: M5/M6 ON This function is enabled only when H2-03 is set to F. **Note:** The names of the digital outputs are different for different drive series.
Speed Reference	Speed Command Sets drive speed reference. Unit is min^{-1} or determined by o1-03.
Torque Reference/Torque Limit	Torque Reference/Torque Limit Sets the Torque Reference/Torque Limit. Sets in units of 0.1%. Sets the Torque Reference when using Torque Control [d5-01 = 1]. Sets the Torque Limit when using Speed Control [d5-01 = 0]. The Torque Reference/Torque Limit are disabled when F6-06 = 0.
Torque Compensation	Torque Compensation Sets the amount of Torque Compensation Sets in units of 0.1%.
Digital Inputs	Sets digital inputs 9-12 if the drive supports them.

Name	Description
NetRef	Network sets reference
NetCtrl	Network sets control
Analog Output 1	MEMOBUS/Modbus (0x0007)
Analog Output 2	MEMOBUS/Modbus (0x0008)
Digital Outputs	MEMOBUS/Modbus (0x0009) **Note:** These values are ORed with values in byte 1.
Dynamic Outputs	Contains the data to be written to the MEMOBUS/Modbus address defined in the given parameter. A value of 0 in the given parameter means it is not used, therefore the value received for this given parameter will not be written to any MEMOBUS/Modbus register. If the PPA is Input Assembly 166, then any errors occurring during a write will be flagged. Refer to page 53 for more information.

◆ (Vendor Specific Yaskawa Electric (YE) Assy) 8 Byte Dynamic Output - 117 (0x75)

Output Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
117	0	0	Multi-Function Input 8	Multi-Function Input 7	Multi-Function Input 6	Multi-Function Input 5	Multi-Function Input 4	Multi-Function Input 3	Run Rev	Run Fwd
		1	Multi-Function Digital Output 3	Multi-Function Digital Output 2	Multi-Function Digital Output 1	-	-	-	Fault Reset	External Fault
	1	2	Speed Reference (Low Byte)							
		3	Speed Reference (High Byte)							
	2	4 - 5	Dynamic Output 1 [F7-23], Default: Not Used							
	3	6 - 7	Dynamic Output 2 [F7-24], Default: Not Used							

Name	Description
Run Fwd	Forward Run Command 0: Stop 1: Forward Run
Run Rev	Reverse Run Command 0: Stop 1: Reverse Run
Multi-Function Input 3	Terminal S3 Function Input 0: Terminal S3 Function [H1-03] OFF 1: Terminal S3 Function [H1-03] ON
Multi-Function Input 4	Terminal S4 Function Input 0: Terminal S4 Function [H1-04] OFF 1: Terminal S4 Function [H1-04] ON
Multi-Function Input 5	Terminal S5 Function Input 0: Terminal S5 Function [H1-05] OFF 1: Terminal S5 Function [H1-05] ON
Multi-Function Input 6	Terminal S6 Function Input 0: Terminal S6 Function [H1-06] OFF 1: Terminal S6 Function [H1-06] ON
Multi-Function Input 7	Terminal S7 Function Input 0: Terminal S7 Function [H1-07] OFF 1: Terminal S7 Function [H1-07] ON
Multi-Function Input 8	Terminal S8 Function Input 0: Terminal S8 Function [H1-08] OFF 1: Terminal S8 Function [H1-08] ON
External Fault	External Fault EF0 0: - 1: External Fault [EF0]
Fault Reset	Fault Reset 0: - 1: Fault Reset
Multi-Function Digital Output 1	Terminal M1/M2 (varies by drive model) 0: M1/M2 OFF

Name	Description
	1: M1/M2 ON This function is enabled only when H2-01 is set to F. **Note:** The names of the digital outputs are different for different drive series.
Multi-Function Digital Output 2	Terminal M3/M4 (varies by drive model) 0: M3/M4 OFF 1: M3/M4 ON This function is enabled only when H2-02 is set to F. **Note:** The names of the digital outputs are different for different drive series.
Multi-Function Digital Output 3	Terminal M5/M6 (varies by drive model) 0: M5/M6 OFF 1: M5/M6 ON This function is enabled only when H2-03 is set to F. **Note:** The names of the digital outputs are different for different drive series.
Speed Reference	Speed Command Sets drive speed reference. Unit is min^{-1} or determined by o1-03. Unit is not affected by Speed Scale SS.
Dynamic Outputs	Contains the data to be written to the MEMOBUS/Modbus address defined in the given parameter. A value of 0 in the given parameter means it is not used, therefore the value received for this given parameter will not be written to any MEMOBUS/Modbus register. If the PPA is Input Assembly 166, then any errors occurring during a write will be flagged. Refer to page 53 for more information.

◆ (Vendor Specific Yaskawa Electric (YE) Assy) 12 Byte Dynamic Output - 118 (0x76)

Output Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
118	0	0	Multi-Function Input 8	Multi-Function Input 7	Multi-Function Input 6	Multi-Function Input 5	Multi-Function Input 4	Multi-Function Input 3	Run Rev	Run Fwd
		1	Multi-Function Digital Output 3	Multi-Function Digital Output 2	Multi-Function Digital Output 1	-	-	-	Fault Reset	External Fault
	1	2	Speed Reference (Low Byte)							
		3	Speed Reference (High Byte)							
	2	4 - 5	Dynamic Output 1 [F7-23], Default: Not Used							
	3	6 - 7	Dynamic Output 2 [F7-24], Default: Not Used							
	4	8 - 9	Dynamic Output 3 [F7-25], Default: Not Used							
	5	10 - 11	Dynamic Output 4 [F7-26], Default: Not Used							

Name	Description
Run Fwd	Forward Run Command 0: Stop 1: Forward Run
Run Rev	Reverse Run Command 0: Stop 1: Reverse Run
Multi-Function Input 3	Terminal S3 Function Input 0: Terminal S3 Function [H1-03] OFF 1: Terminal S3 Function [H1-03] ON
Multi-Function Input 4	Terminal S4 Function Input 0: Terminal S4 Function [H1-04] OFF 1: Terminal S4 Function [H1-04] ON
Multi-Function Input 5	Terminal S5 Function Input 0: Terminal S5 Function [H1-05] OFF 1: Terminal S5 Function [H1-05] ON
Multi-Function Input 6	Terminal S6 Function Input 0: Terminal S6 Function [H1-06] OFF 1: Terminal S6 Function [H1-06] ON
Multi-Function Input 7	Terminal S7 Function Input

Name	Description
	0: Terminal S7 Function [H1-07] OFF 1: Terminal S7 Function [H1-07] ON
Multi-Function Input 8	Terminal S8 Function Input 0: Terminal S8 Function [H1-08] OFF 1: Terminal S8 Function [H1-08] ON
External Fault	External Fault EF0 0: - 1: External Fault [EF0]
Fault Reset	Fault Reset 0: - 1: Fault Reset
Multi-Function Digital Output 1	Terminal M1/M2 (varies by drive model) 0: M1/M2 OFF 1: M1/M2 ON This function is enabled only when H2-01 is set to F. **Note:** The names of the digital outputs are different for different drive series.
Multi-Function Digital Output 2	Terminal M3/M4 (varies by drive model) 0: M3/M4 OFF 1: M3/M4 ON This function is enabled only when H2-02 is set to F. **Note:** The names of the digital outputs are different for different drive series.
Multi-Function Digital Output 3	Terminal M5/M6 (varies by drive model) 0: M5/M6 OFF 1: M5/M6 ON This function is enabled only when H2-03 is set to F. **Note:** The names of the digital outputs are different for different drive series.
Speed Reference	Speed Command Sets drive speed reference. Unit is min^{-1} or determined by o1-03. Unit is not affected by Speed Scale SS.
Dynamic Outputs	Contains the data to be written to the MEMOBUS/Modbus address defined in the given parameter. A value of 0 in the given parameter means it is not used, therefore the value received for this given parameter will not be written to any MEMOBUS/Modbus register. If the PPA is Input Assembly 166, then any errors occurring during a write will be flagged. Refer to page 53 for more information.

◆ (Vendor Specific Yaskawa Electric (YE) Assy) 18 Byte Dynamic Output - 119 (0x77)

Output Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
119	0	0	Multi-Function Input 8	Multi-Function Input 7	Multi-Function Input 6	Multi-Function Input 5	Multi-Function Input 4	Multi-Function Input 3	Run Rev	Run Fwd
		1	Multi-Function Digital Output 3	Multi-Function Digital Output 2	Multi-Function Digital Output 1	-	-	-	Fault Reset	External Fault
	1	2	Speed Reference (Low Byte)							
		3	Speed Reference (High Byte)							
	2	4 - 5	Dynamic Output 1 [F7-23], Default: Not Used							
	3	6 - 7	Dynamic Output 2 [F7-24], Default: Not Used							
	4	8 - 9	Dynamic Output 3 [F7-25], Default: Not Used							
	5	10 - 11	Dynamic Output 4 [F7-26], Default: Not Used							
	6	12 - 13	Dynamic Output 5 [F7-27], Default: Not Used							
	7	14 - 15	Dynamic Output 6 [F7-28], Default: Not Used							
	8	16 - 17	Dynamic Output 7 [F7-29], Default: Not Used							

Name	Description
Run Fwd	Forward Run Command 0: Stop 1: Forward Run
Run Rev	Reverse Run Command 0: Stop 1: Reverse Run
Multi-Function Input 3	Terminal S3 Function Input 0: Terminal S3 Function [H1-03] OFF 1: Terminal S3 Function [H1-03] ON
Multi-Function Input 4	Terminal S4 Function Input 0: Terminal S4 Function [H1-04] OFF 1: Terminal S4 Function [H1-04] ON
Multi-Function Input 5	Terminal S5 Function Input 0: Terminal S5 Function [H1-05] OFF 1: Terminal S5 Function [H1-05] ON
Multi-Function Input 6	Terminal S6 Function Input 0: Terminal S6 Function [H1-06] OFF 1: Terminal S6 Function [H1-06] ON
Multi-Function Input 7	Terminal S7 Function Input 0: Terminal S7 Function [H1-07] OFF 1: Terminal S7 Function [H1-07] ON
Multi-Function Input 8	Terminal S8 Function Input 0: Terminal S8 Function [H1-08] OFF 1: Terminal S8 Function [H1-08] ON
External Fault	External Fault EF0 0: - 1: External Fault [EF0]
Fault Reset	Fault Reset 0: - 1: Fault Reset
Multi-Function Digital Output 1	Terminal M1/M2 (varies by drive model) 0: M1/M2 OFF 1: M1/M2 ON This function is enabled only when H2-01 is set to F. **Note:** The names of the digital outputs are different for different drive series.
Multi-Function Digital Output 2	Terminal M3/M4 (varies by drive model) 0: M3/M4 OFF 1: M3/M4 ON This function is enabled only when H2-02 is set to F. **Note:** The names of the digital outputs are different for different drive series.
Multi-Function Digital Output 3	Terminal M5/M6 (varies by drive model) 0: M5/M6 OFF 1: M5/M6 ON This function is enabled only when H2-03 is set to F. **Note:** The names of the digital outputs are different for different drive series.
Speed Reference	Speed Command Sets drive speed reference. Unit is min^{-1} or determined by o1-03. Unit is not affected by Speed Scale SS.
Dynamic Outputs	Contains the data to be written to the MEMOBUS/Modbus address defined in the given parameter. A value of 0 in the given parameter means it is not used, therefore the value received for this given parameter will not be written to any MEMOBUS/Modbus register. If the PPA is Input Assembly 166, then any errors occurring during a write will be flagged. Refer to page 53 for more information.

◆ (Vendor Specific Yaskawa Electric (YE) Assy) 24 Byte Dynamic Output - 120 (0x78)

Output Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
120	0	0	Multi-Function Input 8	Multi-Function Input 7	Multi-Function Input 6	Multi-Function Input 5	Multi-Function Input 4	Multi-Function Input 3	Run Rev	Run Fwd

Output Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
		1	Multi-Function Digital Output 3	Multi-Function Digital Output 2	Multi-Function Digital Output 1	-	-	-	Fault Reset	External Fault
	1	2	Speed Reference (Low Byte)							
		3	Speed Reference (High Byte)							
	2	4 - 5	Dynamic Output 1 [F7-23], Default: Not Used							
	3	6 - 7	Dynamic Output 2 [F7-24], Default: Not Used							
	4	8 - 9	Dynamic Output 3 [F7-25], Default: Not Used							
	5	10 - 11	Dynamic Output 4 [F7-26], Default: Not Used							
	6	12 - 13	Dynamic Output 5 [F7-27], Default: Not Used							
	7	14 - 15	Dynamic Output 6 [F7-28], Default: Not Used							
	8	16 - 17	Dynamic Output 7 [F7-29], Default: Not Used							
	9	18 - 19	Dynamic Output 8 [F7-30], Default: Not Used							
	10	20 - 21	Dynamic Output 9 [F7-31], Default: Not Used							
	11	22 - 23	Dynamic Output 10 [F7-32], Default: Not Used							

Name	Description
Run Fwd	Forward Run Command 0: Stop 1: Forward Run
Run Rev	Reverse Run Command 0: Stop 1: Reverse Run
Multi-Function Input 3	Terminal S3 Function Input 0: Terminal S3 Function [H1-03] OFF 1: Terminal S3 Function [H1-03] ON
Multi-Function Input 4	Terminal S4 Function Input 0: Terminal S4 Function [H1-04] OFF 1: Terminal S4 Function [H1-04] ON
Multi-Function Input 5	Terminal S5 Function Input 0: Terminal S5 Function [H1-05] OFF 1: Terminal S5 Function [H1-05] ON
Multi-Function Input 6	Terminal S6 Function Input 0: Terminal S6 Function [H1-06] OFF 1: Terminal S6 Function [H1-06] ON
Multi-Function Input 7	Terminal S7 Function Input 0: Terminal S7 Function [H1-07] OFF 1: Terminal S7 Function [H1-07] ON
Multi-Function Input 8	Terminal S8 Function Input 0: Terminal S8 Function [H1-08] OFF 1: Terminal S8 Function [H1-08] ON
External Fault	External Fault EF0 0: - 1: External Fault [EF0]
Fault Reset	Fault Reset 0: - 1: Fault Reset

Multi-Function Digital Output 1	Terminal M1/M2 (varies by drive model)
	0: M1/M2 OFF
	1: M1/M2 ON
	This function is enabled only when H2-01 is set to F.
	  Note:
	    The names of the digital outputs are different for different drive series.

Multi-Function Digital Output 2	Terminal M3/M4 (varies by drive model)
	0: M3/M4 OFF
	1: M3/M4 ON
	This function is enabled only when H2-02 is set to F.
	  Note:
	    The names of the digital outputs are different for different drive series.

Name	Description
Multi-Function Digital Output 3	Terminal M5/M6 (varies by drive model) 0: M5/M6 OFF 1: M5/M6 ON This function is enabled only when H2-03 is set to F. **Note:** The names of the digital outputs are different for different drive series.
Speed Reference	Speed Command Sets drive speed reference. Unit is min^{-1} or determined by o1-03. Unit is not affected by Speed Scale SS.
Dynamic Outputs	Contains the data to be written to the MEMOBUS/Modbus address defined in the given parameter. A value of 0 in the given parameter means it is not used, therefore the value received for this given parameter will not be written to any MEMOBUS/Modbus register. If the PPA is Input Assembly 166, then any errors occurring during a write will be flagged. Refer to page 53 for more information.

◆ (Vendor Specific Yaskawa Electric (YE) Assy) Gateway Consume Assembly - 130 (0x82)

Note:

This assembly will not work on drives or bypass units that do not support the gateway functionality. Refer to the instruction manual of your specific drive for more information.

The drive reads the values of parameters *F7-23 to F7-32 [Dynamic Out Param 1 to 10 for CommCard]* on power-up or after a reset. You must cycle power on the drive or reset the software on the option to change these parameter values.

The master drive control and frequency reference registers are written immediately. Slave drive registers 15C5 (Hex.) through 15D0 (Hex.) are written after the network data for these registers change. The maximum rate that it will write is every 250 ms.

Output Instance	Word	Byte	Modbus Address (Hex.)	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
130	0	0 - 1	0001	Control Word (Drive or Master)							
	1	2 - 3	0002	Frequency Reference (Drive or Master)							
	2	4 - 5	15C5	Source Update Register							
	3	6 - 7	15C6	Slave Drive 1 Control Word							
	4	8 - 9	15C7	Slave Drive 1 Frequency Reference							
	5	10 - 11	15C8	Slave Drive 2 Control Word							
	6	12 - 13	15C9	Slave Drive 2 Frequency Reference							
	7	14 - 15	15CA	Slave Drive 3 Control Word							
	8	16 - 17	15CB	Slave Drive 3 Frequency Reference							
	9	18 - 19	15CC	Slave Drive 4 Control Word							
	10	20 - 21	15CD	Slave Drive 4 Frequency Reference							
	11	22 - 23	15CE	Modbus Window Command							
				-	-	-	0: Read 1: Write	Drive Select 0: Broadcast 1: Drive 1 2: Drive 2 3: Drive 3 4: Drive 4 5: Run command and frequency reference broadcast			
	12	24 - 25	15CF	Modbus Window Register							
	13	26 - 27	15D0	Modbus Window Data							
	14	28 - 29	Configurable (F7-23)	Dynamic Output 1							
	15	30 - 31	Configurable (F7-24)	Dynamic Output 2							
	16	32 - 33	Configurable (F7-25)	Dynamic Output 3							

Output Instance	Word	Byte	Modbus Address (Hex.)	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	17	34 - 35	Configurable (F7-26)	Dynamic Output 4							
	18	36 - 37	Configurable (F7-27)	Dynamic Output 5							
	19	38 - 39	Configurable (F7-28)	Dynamic Output 6							
	20	40 - 41	Configurable (F7-29)	Dynamic Output 7							
	21	42 - 43	Configurable (F7-30)	Dynamic Output 8							
	22	44 - 45	Configurable (F7-31)	Dynamic Output 9							
	23	46 - 47	Configurable (F7-32)	Dynamic Output 10							

Name	Description
Dynamic Outputs	Contains the data to be written to the MEMOBUS/Modbus address defined in the given parameter. A value of 0 in the given parameter means it is not used, therefore the value received for this given parameter will not be written to any MEMOBUS/Modbus register. If the PPA is Input Assembly 166, then any errors occurring during a write will be flagged. Refer to page 53 for more information.

9 Input Assemblies (Drive Produces)

Note:

The convention in this manual is from the PLC perspective. An "Input Assembly" is outputted from this node and read by the PLC. This section details "Input Assemblies" that are "Produced" by the drive.

◆ EtherNet/IP Basic Speed Control Input - 70 (0x46)

Input Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
70	0	0	-	-	-	-	-	Running 1 (FWD)	-	Faulted
		1	-							
	1	2	Speed Actual (Low Byte)							
		3	Speed Actual (High Byte)							

Name	Description
Faulted	Faulted 0: No Fault 1: Fault
Running 1 (FWD)	Forward Running 0: Stop or Reverse Running 1: Forward Running
Speed Actual	Actual Drive Speed Monitors drive output frequency. Speed actual data: Output frequency x 2^{SS} (SS: Speed scale) Range: 0 - FFFF (Hex.) For example, when output frequency of 1024 with a speed scale of 2: Speed actual data = 1024 x 2^2 = 4096 = 1000 (Hex.) Unit depends on o1-03.

◆ EtherNet/IP Extended Speed Control Input - 71 (0x47)

Input Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
71	0	0	Speed Agree	NetRef	NetCtrl	Ready	Running 2 (REV)	Running 1 (FWD)	Alarm	Faulted
		1	State							
	1	2	Speed Actual (Low Byte)							
		3	Speed Actual (High Byte)							

Name	Description
Faulted	Faulted 0: No Fault 1: Fault
Alarm	Alarm 0: No Alarm 1: Alarm
Running 1 (FWD)	Forward Running 0: Stop or Reverse Running 1: Forward Running
Running 2 (REV)	Reverse Running 0: Stop or Forward Running 1: Reverse Running
Ready	Ready 0: Not Ready 1: Ready
NetCtrl	Run command is from network 0: Run command is not from network 1: Run command is from network
NetRef	Speed reference is from network 0: Speed reference is not from network 1: Speed reference is from network
Speed Agree	Speed Agree 0: - 1: Speed actual at speed reference
State	Contains the value from the Control Supervisor (Class 0x29) Instance 1 Attribute 6.
Speed Actual	Actual Drive Speed Monitors drive output frequency. Speed actual data: Output frequency x 2^{SS} (SS: Speed scale) Range: 0 - FFFF (Hex.) For example, when output frequency of 1024 with a speed scale of 2: Speed actual data = 1024 x 2^2 = 4096 = 0x1000 Unit depends on o1-03.

◆ EtherNet/IP Speed and Torque Control Input - 72 (0x48)

Input Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
72	0	0	-	-	-	-	-	Running 1 (FWD)	-	Faulted
		1	-							
	1	2	Speed Actual (Low Byte)							
		3	Speed Actual (High Byte)							
	2	4	Torque Actual (Low Byte)							
		5	Torque Actual (High Byte)							

Name	Description
Faulted	Faulted 0: No Fault 1: Fault
Running 1 (FWD)	Forward Running 0: Stop or Reverse Running 1: Forward Running
Speed Actual	Actual Drive Speed Monitors drive output frequency. Speed actual data: Output frequency x 2^{SS} (SS: Speed scale) Range: 0 - FFFF (Hex.) For example, when output frequency of 1024 with a speed scale of 2: Speed actual data = 1024 x 2^2 = 4096 = 1000 (Hex.) Unit depends on o1-03.
Torque Actual	Output Torque Shows the Torque Reference. Value displays in 0.1% units.

◆ EtherNet/IP Extended Speed and Torque Control Input - 73 (0x49)

Input Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
73	0	0	Speed Agree	NetRef	NetCtrl	Ready	Running 2 (REV)	Running 1 (FWD)	Alarm	Faulted
		1	State							
	1	2	Speed Actual (Low Byte)							
		3	Speed Actual (High Byte)							
	2	4	Torque Actual (Low Byte)							
		5	Torque Actual (High Byte)							

Name	Description
Faulted	Faulted 0: No Fault 1: Fault
Alarm	Alarm 0: No Alarm 1: Alarm
Running 1 (FWD)	Forward Running 0: Stop or Reverse Running 1: Forward Running
Running 2 (REV)	Reverse Running 0: Stop or Forward Running 1: Reverse Running
Ready	Ready 0: Not Ready 1: Ready
NetCtrl	Run command is from network 0: Run command is not from network 1: Run command is from network
NetRef	Speed reference is from network 0: Speed reference is not from network 1: Speed reference is from network
Speed Agree	Speed Agree 0: - 1: Speed actual at speed reference
State	Contains the value from the Control Supervisor (Class 0x29) Instance 1 Attribute 6.
Speed Actual	Actual Drive Speed Monitors drive output frequency. Speed actual data: Output frequency x 2^{SS} (SS: Speed scale) Range: 0 - FFFF (Hex.) For example, when output frequency of 1024 with a speed scale of 2: Speed actual data = 1024 x 2^2 = 4096 = 1000 (Hex.) Unit depends on o1-03.
Torque Actual	Output Torque Shows the Torque Reference. Value displays in 0.1% units.

◆ (Vendor Specific Yaskawa Electric (YE) Assy) MEMOBUS/Modbus Message Input - 150 (0x96)

Input Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
150	0	0	Function Code							
		1	Register Number (High Byte)							
	1	2	Register Number (Low Byte)							
		3	Register Data (High Byte)							
	2	4	Register Data (Low Byte)							

Note:

This is a paired assembly (100/150).

Table 9.1 Reply Mapping - 150

Byte	Write Success	Read Success	Write Failure	Read Failure	Invalid Function Code	Function Code Equals Zero
0	0x10	0x03	0x90	0x83	Function Code Or-ed with 0x80	0
1	Output Assembly Register Number (High Byte)	Output Assembly Register Number (High Byte)	Output Assembly Register Number (High Byte)	Output Assembly Register Number (High Byte)	Output Assembly Register Number (High Byte)	0
2	Output Assembly Register Number (Low Byte)	Output Assembly Register Number (Low Byte)	Output Assembly Register Number (Low Byte)	Output Assembly Register Number (Low Byte)	Output Assembly Register Number (Low Byte)	0
3	0	Read Data (High Byte)	0	0	0	0
4	0	Read Data (Low Byte)	Error Code	Error Code	1	0

Table 9.2 Error Replies - 150

Error Code	Description
0x01	Invalid Function Code
0x02	Invalid Register Number
0x21	Upper/Lower Limit Error
0x22	Write Mode Error Option generated busy event. The MEMOBUS/Modbus requested operation is in the process loop but the drive is not done yet. Writing "Enter" when drive is running. Attempt to write data that is read only. Attempt to write a parameter when drive is running. During a CPF03 event attempting to write to registers other than A1-00 to A1-05, E1-03, o2-04.
0x23	Writing Error during Undervoltage Attempting to write during a drive Uv [undervoltage] event.
0x24	Writing Error during Parameter Processing Attempting to write while the drive is storing data.

Note:

Refer to the MEMOBUS/Modbus Data Table in Appendix C of the drive Technical Manual for a list of monitor data using the MEMOBUS/Modbus message area.

◆ (Vendor Specific Yaskawa Electric (YE) Assy) Speed/Torque Status Input - 151 (0x97)

Input Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
151	0	0	Faulted	Alarm	Ready	Speed Agree	Reset	REV Running	ZSP	Running
		1	ZSV	-	Multi-Function Digital Output 3	Multi-Function Digital Output 2	Multi-Function Digital Output 1	LOCAL/ REMOTE	Uv	oPE
	1	2	Output Frequency (Low Byte)							
		3	Output Frequency (High Byte)							
	2	4	Torque Actual (Low Byte)							
		5	Torque Actual (High Byte)							
	3	6	Current Actual (Low Byte)							
		7	Current Actual (High Byte)							

Name	Description
Running	Running 0: Stop 1: Forward or Reverse Running
ZSP	Zero Speed 0: Running 1: Stop or DC Injection Braking
REV Running	Reverse Running 0: Not Reverse Running

Name	Description
	1: Reverse Running
Reset	Reset 0: - 1: Reset
Speed Agree	Speed Agree 0: - 1: Speed actual at speed reference
Ready	Ready 0: Not Ready 1: Ready
Alarm	Alarm 0: No Alarm 1: Alarm
Faulted	Faulted 0: No Fault 1: Fault
oPE	oPE 0: - 1: oPExx
Uv	Undervoltage 0: - 1: Undervoltage
LOCAL/REMOTE	Run command is from network 0: Run command is not from network 1: Run command is from network

Multi-Function Digital Output 1	Terminal M1/M2 (varies by drive model)
	0: M1/M2 OFF
	1: M1/M2 ON
	This function is enabled only when H2-01 is set to F.
	    Note:
	      The names of the digital outputs are different for different drive series.

Multi-Function Digital Output 2	Terminal M3/M4 (varies by drive model)
	0: M3/M4 OFF
	1: M3/M4 ON
	This function is enabled only when H2-02 is set to F.
	    Note:
	      The names of the digital outputs are different for different drive series.

Multi-Function Digital Output 3	Terminal M5/M6 (varies by drive model)
	0: M5/M6 OFF
	1: M5/M6 ON
	This function is enabled only when H2-03 is set to F.
	    Note:
	      The names of the digital outputs are different for different drive series.

ZSV	Zero Servo Completed 0: - 1: Zero Servo Completed
Output Frequency	Actual Drive Speed Monitors drive output frequency. Unit depends on o1-03. Unit is not affected by Speed Scale SS.
Torque Actual	Output Torque Shows the Torque Reference. Value displays in 0.1% units.
Current Actual	Actual Output Current Monitors drive output current. Unit: 0.1 A Unit is not affected by Current Scale CS.

◆ (Vendor Specific Yaskawa Electric (YE) Assy) Extended Speed/Torque Status Input - 155 (0x9B)

Input Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
155	0	0	Faulted	Alarm	Ready	Speed Agree	Fault Reset	REV Running	ZSP	Running
		1	ZSV	-	Multi-Function Digital Output 3	Multi-Function Digital Output 2	Multi-Function Digital Output 1	LOCAL/REMOTE	Uv	oPE
	1	2	Motor Speed (Low Byte)							
		3	Motor Speed (High Byte)							
	2	4	Torque Actual (Low Byte)							
		5	Torque Actual (High Byte)							
	3	6	PG Count Value (Low Byte)							
		7	PG Count Value (High Byte)							
	4	8	Frequency Command (Low Byte)							
		9	Frequency Command (High Byte)							
	5	10	Output Frequency (Low Byte)							
		11	Output Frequency (High Byte)							
	6	12	Output Current (Low Byte)							
		13	Output Current (High Byte)							
	7	14	Terminal A2 Input (Low Byte)							
		15	Terminal A2 Input (High Byte)							
	8	16	Main Circuit DC Voltage (Low Byte)							
		17	Main Circuit DC Voltage (High Byte)							
	9	18	Error Alarm Signal 1 (Low Byte)							
		19	Error Alarm Signal 1 (High Byte)							
	10	20	Error Alarm Signal 2 (Low Byte)							
		21	Error Alarm Signal 2 (High Byte)							
	11	22	Error Alarm Signal 3 (Low Byte)							
		23	Error Alarm Signal 3 (High Byte)							
	12	24	Terminal A3 Input (Low Byte)							
		25	Terminal A3 Input (High Byte)							
	13	26	Terminal S1 to S8 Input (Low Byte)							
		27	Terminal S1 to S8 Input (High Byte)							
	14	28	Terminal A1 Input (Low Byte)							
		29	Terminal A1 Input (High Byte)							
	15	30	PG Counter (Ch2) (Low Byte)							
		31	PG Counter (Ch2) (High Byte)							
	16 - 19	32 - 39	Reserved							

Name	Description
Running	Running 0: Stop 1: Forward or Reverse Running
ZSP	Zero Speed 0: Running 1: Stop or DC Injection Braking
REV Running	Reverse Running 0: Not Reverse Running 1: Reverse Running
Fault Reset	Fault Reset 0: -

Name	Description
	1: Fault Reset
Speed Agree	Speed Agree 0: - 1: Speed actual at speed reference
Ready	Ready 0: Not Ready 1: Ready
Alarm	Alarm 0: No Alarm 1: Alarm
Faulted	Faulted 0: No Fault 1: Fault
oPE	oPE 0: - 1: oPExx
Uv	Undervoltage 0: - 1: Undervoltage
LOCAL/REMOTE	Run command is from network 0: Run command is not from network 1: Run command is from network

Multi-Function Digital Output 1	Terminal M1/M2 (varies by drive model)
	0: M1/M2 OFF
	1: M1/M2 ON
	This function is enabled only when H2-01 is set to F.
	   Note:
	     The names of the digital outputs are different for different drive series.

Multi-Function Digital Output 2	Terminal M3/M4 (varies by drive model)
	0: M3/M4 OFF
	1: M3/M4 ON
	This function is enabled only when H2-02 is set to F.
	   Note:
	     The names of the digital outputs are different for different drive series.

Multi-Function Digital Output 3	Terminal M5/M6 (varies by drive model)
	0: M5/M6 OFF
	1: M5/M6 ON
	This function is enabled only when H2-03 is set to F.
	   Note:
	     The names of the digital outputs are different for different drive series.

ZSV	Zero Servo Completed 0: - 1: Zero Servo Completed
Motor Speed	Monitor parameter U1-05
Torque Actual	Output Torque Shows the torque reference. Value displays in 0.1% units.
PG Count Value	MEMOBUS/Modbus (0x7CD) PG1 Count value register U6-18
Frequency Command	Monitor parameter U1-01
Output Frequency	Actual Drive Speed Monitors drive output frequency. Unit depends on o1-03. Unit is not affected by Speed Scale SS.
Output Current	Actual Output Current Monitors drive output current. Unit: 0.01A Unit is not affected by Current Scale CS.
Terminal A2 Input	MEMOBUS/Modbus (0x4F) Monitor parameter U1-14
Main Circuit DC Voltage	Main Circuit DC Voltage Monitor parameter U1-07

Name	Description
Error Alarm Signal 1	Error Alarm Signal 1 MEMOBUS/Modbus (0xC8)
Error Alarm Signal 2	Error Alarm Signal 2 MEMOBUS/Modbus (0xC9)
Error Alarm Signal 3	Error Alarm Signal 3 MEMOBUS/Modbus (0xCA)
Terminal A3 Input	MEMOBUS/Modbus (0x50) Monitor parameter U1-15
Terminal S1 to S8 Input	MEMOBUS/Modbus (0x49) Monitor parameter U1-10
Terminal A1 Input	MEMOBUS/Modbus (0x46) Monitor parameter U1-13
PG Counter (Ch2)	MEMOBUS/Modbus (0x7E5) PG Pulse Count for Channel 2 U6-19

◆ (Vendor Specific Yaskawa Electric (YE) Assy) High Speed/Torque Status Input - 166 (0xA6)

If an error occurs while trying to read from the dynamic parameters, the appropriate error bit in Assembly 166 will be set. If more information about the nature of the error is needed, the extended error status can be read explicitly through Class 4, Instance 0xA6, Attribute 0x64. This will return 20 Bytes with each dynamic parameter in Assembly 166 having a Byte dedicated to its extended error status.

Input Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
166	0	0	Faulted	Alarm	Ready	Speed Agree	Fault Reset	REV Running	ZSP	Running
		1	ZSV	-	Multi-Function Digital Output 3	Multi-Function Digital Output 2	Multi-Function Digital Output 1	LOCAL/ REMOTE	Uv	oPE
	1	2	Motor Speed (Low Byte)							
		3	Motor Speed (High Byte)							
	2	4	Torque Actual (Low Byte)							
		5	Torque Actual (High Byte)							
	3	6	PG Count Value (Low Byte)							
		7	PG Count Value (High Byte)							
	4	8	Frequency Command (Low Byte)							
		9	Frequency Command (High Byte)							
	5	10	Output Frequency (Low Byte)							
		11	Output Frequency (High Byte)							
	6	12	Output Current (Low Byte)							
		13	Output Current (High Byte)							
	7	14	Terminal A1 Input (Low Byte)							
		15	Terminal A1 Input (High Byte)							
	8	16	Main Circuit DC Voltage (Low Byte)							
		17	Main Circuit DC Voltage (High Byte)							
	9	18	Error Code (Low Byte)							
		19	Error Code (High Byte)							
	10 *1	20 *1	Parameter [F7-33], Default: Alarm Code (Low Byte)							
		21 *1	Parameter [F7-33], Default: Alarm Code (High Byte)							
	11 *1	22 *1	Parameter [F7-34], Default: Output Power (Low Byte)							
		23 *1	Parameter [F7-34], Default: Output Power (High Byte)							
	12 *1	24 *1	Parameter [F7-35], Default: Terminal A2 Input (Low Byte)							
		25 *1	Parameter [F7-35], Default: Terminal A2 Input (High Byte)							

Input Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	13 *1	26 *1	Parameter [F7-36], Default: Terminal S1 to S8 Input (Low Byte)							
		27 *1	Parameter [F7-36], Default: Terminal S1 to S8 Input (High Byte)							
	14 *1	28 *1	Parameter [F7-37], Default: Terminal A3 Input (Low Byte)							
		29 *1	Parameter [F7-37], Default: Terminal A3 Input (High Byte)							
	15 *1	30 *1	Parameter [F7-38], Default: PG Counter (Ch2) (Low Byte)							
		31 *1	Parameter [F7-38], Default: PG Counter (Ch2) (High Byte)							
	16 *1	32 *1	Parameter [F7-39], Default: NetRef and NetCtrl (Low Byte)							
			-	-	-	-	-	-	NetCtrl	NetRef
		33 *1	Parameter [F7-39], Default: NetRef and NetCtrl (High Byte)							
	17 *1	34 *1	Parameter [F7-40], Default: Drive Software Version (Low Byte)							
		35 *1	Parameter [F7-40], Default: Drive Software Version (High Byte)							
	18 *1	36 *1	Parameter [F7-41] (Low Byte), Default: Not Used							
		37 *1	Parameter F7-41 (High Byte), Default: Not Used							
	19 *1	38 *1	Parameter [F7-42] (Low Byte), Default: Not Used							
		39 *1	Parameter F7-42 (High Byte), Default: Not Used							
	20	40	-	-	-	-	-	-	Assy. 116 F7-32 Error	Assy. 116 F7-31 Error
		41	Assy. 116 F7-30 Error	Assy. 116 F7-29 Error	Assy. 116 F7-28 Error	Assy. 116 F7-27 Error	Assy. 116 F7-26 Error	Assy. 116 F7-25 Error	Assy. 116 F7-24 Error	Assy. 116 F7-23 Error
	21	42	-	-	-	-	-	-	Assy. 166 F7-42 Error	Assy. 166 F7-41 Error
		43	Assy. 166 F7-40 Error	Assy. 166 F7-39 Error	Assy. 166 F7-38 Error	Assy. 166 F7-37 Error	Assy. 166 F7-36 Error	Assy. 166 F7-35 Error	Assy. 166 F7-34 Error	Assy. 166 F7-33 Error

*1   Selectable with F7-33 to F7-42.

Name	Description
Running	Running 0: Stop 1: Forward or Reverse Running
ZSP	Zero Speed 0: Running 1: Stop or DC Injection Braking
REV Running	Reverse Running 0: Not Reverse Running 1: Reverse Running
Fault Reset	Fault Reset 0: - 1: Fault Reset
Speed Agree	Speed Agree 0: - 1: Speed actual at speed reference
Ready	Ready 0: Not Ready 1: Ready
Alarm	Alarm 0: No Alarm 1: Alarm
Faulted	Faulted 0: No Fault 1: Fault
oPE	oPE 0: - 1: oPExx
Uv	Undervoltage 0: - 1: Undervoltage
LOCAL/REMOTE	Run command is from network

Name	Description
	0: Run command is not from network 1: Run command is from network
Multi-Function Digital Output 1	Terminal M1/M2 (varies by drive model) 0: M1/M2 OFF 1: M1/M2 ON This function is enabled only when H2-01 is set to F. **Note:** The names of the digital outputs are different for different drive series.
Multi-Function Digital Output 2	Terminal M3/M4 (varies by drive model) 0: M3/M4 OFF 1: M3/M4 ON This function is enabled only when H2-02 is set to F. **Note:** The names of the digital outputs are different for different drive series.
Multi-Function Digital Output 3	Terminal M5/M6 (varies by drive model) 0: M5/M6 OFF 1: M5/M6 ON This function is enabled only when H2-03 is set to F. **Note:** The names of the digital outputs are different for different drive series.
ZSV	Zero Servo Completed 0: - 1: Zero Servo Completed
Motor Speed	Monitor parameter U1-05
Torque Actual	Output Torque Shows the Torque Reference. Value displays in 0.1% units.
PG Count Value	Contained MEMOBUS/Modbus Address PG1 Count value register (0xF0)
Frequency Command	Monitor parameter U1-01
Output Frequency	Actual Drive Speed Monitors drive output frequency. Unit depends on o1-03. Unit is not affected by Speed Scale SS.
Output Current	Actual Output Current Monitors drive output current. Unit: 0.01A Unit is not affected by Current Scale CS.
Terminal A1 Input	MEMOBUS/Modbus (0x46) Monitor parameter U1-13
Main Circuit DC Voltage	Main Circuit DC Voltage Monitor parameter U1-07
Error Code	U2-01 converted using fault code table.
F7-33 Alarm Code	Programmable: MEMOBUS/Modbus (0x7F)
F7-34 Output Power	Programmable: MEMOBUS/Modbus (0x47) Monitor parameter U1-08
F7-35 Terminal A2 Input	Programmable: MEMOBUS/Modbus (0x4F) Monitor parameter U1-14
F7-36 Terminal S1 to S8	Programmable: MEMOBUS/Modbus (0x49) Monitor parameter U1-10
F7-37 Terminal A3 Input	Programmable: MEMOBUS/Modbus (0x50)
F7-38 PG Count Value (Ch2)	Programmable: MEMOBUS/Modbus (0x7E5) PG Pulse Count for Channel 2 U6-19
F7-39 NetRef (Status)	Speed reference is from network 0: Speed reference is not from network 1: Speed reference is from network
F7-40 Drive Software Version	Programmable: MEMOBUS/Modbus (0x4D) Monitor parameter U1-25

Possible extended error codes are listed in Table 9.3 and Table 9.4. If an error occurs, extended error code 0x02 (Register number failure) is usually set.

Table 9.3 Extended Error Codes for Assembly 116/166

Error Code	Description
0x00	No Fault
0x01	Sub function code failure
0x02	Register Number
0x21	Limit check error failure
0x22	Write Failure
0x23	Write failure at Uv
0x24	Write failure at busy

Table 9.4 Extended Error Codes in Class 0x04, Instance 0xA6, Attribute 0x64

Dynamic Parameter	Byte Containing Extended Error Code
F7-23	Byte 0
F7-24	Byte 1
F7-25	Byte 2
F7-26	Byte 3
F7-27	Byte 4
F7-28	Byte 5
F7-29	Byte 6
F7-30	Byte 7
F7-31	Byte 8
F7-32	Byte 9
F7-33	Byte 10
F7-34	Byte 11
F7-35	Byte 12
F7-36	Byte 13
F7-37	Byte 14
F7-38	Byte 15
F7-39	Byte 16
F7-40	Byte 17
F7-41	Byte 18
F7-42	Byte 19

◆ (Vendor Specific Yaskawa Electric (YE) Assy) 8-Byte Dynamic Input - 167 (0xA7)

Input Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
167	0	0	Faulted	Alarm	Ready	Speed Agree	Fault Reset	REV Running	ZSP	Running
		1	ZSV	-	Multi-Function Digital Output 3	Multi-Function Digital Output 2	Multi-Function Digital Output 1	LOCAL/REMOTE	Uv	oPE
	1	2	Output Frequency (Low Byte)							
		3	Output Frequency (High Byte)							
	2	4 - 5	Dynamic Input 1 [F7-33], Default: Alarm Code							
	3	6 - 7	Dynamic Input 2 [F7-34], Default: Output Power [U1-08]							

Name	Description
Running	Running 0: Stop 1: Forward or Reverse Running
ZSP	Zero Speed

Name	Description
	0: Running 1: Stop or DC Injection Braking
REV Running	Reverse Running 0: Not Reverse Running 1: Reverse Running
Fault Reset	Fault Reset 0: - 1: Fault Reset
Speed Agree	Speed Agree 0: - 1: Speed actual at speed reference
Ready	Ready 0: Not Ready 1: Ready
Alarm	Alarm 0: No Alarm 1: Alarm
Faulted	Faulted 0: No Fault 1: Fault
oPE	oPE 0: - 1: oPExx
Uv	Undervoltage 0: - 1: Undervoltage
LOCAL/REMOTE	Run command is from network 0: Run command is not from network 1: Run command is from network
Multi-Function Digital Output 1	Terminal M1/M2 (varies by drive model) 0: M1/M2 OFF 1: M1/M2 ON This function is enabled only when H2-01 is set to F. **Note:** The names of the digital outputs are different for different drive series.
Multi-Function Digital Output 2	Terminal M3/M4 (varies by drive model) 0: M3/M4 OFF 1: M3/M4 ON This function is enabled only when H2-02 is set to F. **Note:** The names of the digital outputs are different for different drive series.
Multi-Function Digital Output 3	Terminal M5/M6 (varies by drive model) 0: M5/M6 OFF 1: M5/M6 ON This function is enabled only when H2-03 is set to F. **Note:** The names of the digital outputs are different for different drive series.
Output Frequency	Actual Drive Speed Monitors drive output frequency. Unit depends on o1-03. Unit is not affected by Speed Scale SS.
Dynamic Inputs	Contains the data to be read from the MEMOBUS/Modbus address defined in the given parameter. A value of 0 in the given parameter means it will return the default data as defined in the table above.

◆ (Vendor Specific Yaskawa Electric (YE) Assy) 12-Byte Dynamic Input - 168 (0xA8)

Input Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
168	0	0	Faulted	Alarm	Ready	Speed Agree	Fault Reset	REV Running	ZSP	Running
		1	ZSV	-	Multi-Function Digital Output 3	Multi-Function Digital Output 2	Multi-Function Digital Output 1	LOCAL/REMOTE	Uv	oPE

Input Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	1	2	Output Frequency (Low Byte)							
		3	Output Frequency (High Byte)							
	2	4 - 5	Dynamic Input 1 [F7-33], Default: Alarm Code							
	3	6 - 7	Dynamic Input 2 [F7-34], Default: Output Power [U1-08]							
	4	8 - 9	Dynamic Input 3 [F7-35], Default: Analog Input 2							
	5	10 - 11	Dynamic Input 4 [F7-36], Default: Digital Input							

Name	Description
Running	Running 0: Stop 1: Forward or Reverse Running
ZSP	Zero Speed 0: Running 1: Stop or DC Injection Braking
REV Running	Reverse Running 0: Not Reverse Running 1: Reverse Running
Fault Reset	Fault Reset 0: - 1: Fault Reset
Speed Agree	Speed Agree 0: - 1: Speed actual at speed reference
Ready	Ready 0: Not Ready 1: Ready
Alarm	Alarm 0: No Alarm 1: Alarm
Faulted	Faulted 0: No Fault 1: Fault
oPE	oPE 0: - 1: oPExx
Uv	Undervoltage 0: - 1: Undervoltage
LOCAL/REMOTE	Run command is from network 0: Run command is not from network 1: Run command is from network

Multi-Function Digital Output 1	Terminal M1/M2 (varies by drive model)
	0: M1/M2 OFF
	1: M1/M2 ON
	This function is enabled only when H2-01 is set to F.
	    Note:
	      The names of the digital outputs are different for different drive series.

Multi-Function Digital Output 2	Terminal M3/M4 (varies by drive model)
	0: M3/M4 OFF
	1: M3/M4 ON
	This function is enabled only when H2-02 is set to F.
	    Note:
	      The names of the digital outputs are different for different drive series.

Multi-Function Digital Output 3	Terminal M5/M6 (varies by drive model)
	0: M5/M6 OFF
	1: M5/M6 ON
	This function is enabled only when H2-03 is set to F.
	    Note:
	      The names of the digital outputs are different for different drive series.

Name	Description
Output Frequency	Actual Drive Speed Monitors drive output frequency. Unit depends on o1-03. Unit is not affected by Speed Scale SS.
Dynamic Inputs	Contains the data to be read from the MEMOBUS/Modbus address defined in the given parameter. A value of 0 in the given parameter means it will return the default data as defined in the table above.

◆ (Vendor Specific Yaskawa Electric (YE) Assy) 18-Byte Dynamic Input - 169 (0xA9)

Input Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
169	0	0	Faulted	Alarm	Ready	Speed Agree	Fault Reset	REV Running	ZSP	Running
		1	ZSV	-	Multi-Function Digital Output 3	Multi-Function Digital Output 2	Multi-Function Digital Output 1	LOCAL/REMOTE	Uv	oPE
	1	2	Output Frequency (Low Byte)							
		3	Output Frequency (High Byte)							
	2	4 - 5	Dynamic Input 1 [F7-33], Default: Fault Code							
	3	6 - 7	Dynamic Input 2 [F7-34], Default: Output Power [U1-08]							
	4	8 - 9	Dynamic Input 3 [F7-35], Default: Analog Input 2							
	5	10 - 11	Dynamic Input 4 [F7-36], Default: Digital Input							
	6	12 - 13	Dynamic Input 5 [F7-37], Default: Analog Input 3							
	7	14 - 15	Dynamic Input 6 [F7-38], Default: PG 2 Counter							
	8	16 - 17	Dynamic Input 7 [F7-39], Default: Net Ref and Net Ctrl							

Name	Description
Running	Running 0: Stop 1: Forward or Reverse Running
ZSP	Zero Speed 0: Running 1: Stop or DC Injection Braking
REV Running	Reverse Running 0: Not Reverse Running 1: Reverse Running
Fault Reset	Fault Reset 0: - 1: Fault Reset
Speed Agree	Speed Agree 0: - 1: Speed actual at speed reference
Ready	Ready 0: Not Ready 1: Ready
Alarm	Alarm 0: No Alarm 1: Alarm
Faulted	Faulted 0: No Fault 1: Fault
oPE	oPE 0: - 1: oPExx
Uv	Undervoltage 0: - 1: Undervoltage
LOCAL/REMOTE	Run command is from network 0: Run command is not from network

Name	Description
	1: Run command is from network
Multi-Function Digital Output 1	Terminal M1/M2 (varies by drive model) 0: M1/M2 OFF 1: M1/M2 ON This function is enabled only when H2-01 is set to F. **Note:** The names of the digital outputs are different for different drive series.
Multi-Function Digital Output 2	Terminal M3/M4 (varies by drive model) 0: M3/M4 OFF 1: M3/M4 ON This function is enabled only when H2-02 is set to F. **Note:** The names of the digital outputs are different for different drive series.
Multi-Function Digital Output 3	Terminal M5/M6 (varies by drive model) 0: M5/M6 OFF 1: M5/M6 ON This function is enabled only when H2-03 is set to F. **Note:** The names of the digital outputs are different for different drive series.
Output Frequency	Actual Drive Speed Monitors drive output frequency. Unit depends on o1-03. Unit is not affected by Speed Scale SS.
Dynamic Inputs	Contains the data to be read from the MEMOBUS/Modbus address defined in the given parameter. A value of 0 in the given parameter means it will return the default data as defined in the table above.

◆ (Vendor Specific Yaskawa Electric (YE) Assy) 24-Byte Dynamic Input - 170 (0xAA)

Input Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
170	0	0	Faulted	Alarm	Ready	Speed Agree	Fault Reset	REV Running	ZSP	Running
		1	ZSV	-	Multi-Function Digital Output 3	Multi-Function Digital Output 2	Multi-Function Digital Output 1	LOCAL/REMOTE	Uv	oPE
	1	2	Output Frequency (Low Byte)							
		3	Output Frequency (High Byte)							
	2	4 - 5	Dynamic Input 1 [F7-33], Default: Fault Code							
	3	6 - 7	Dynamic Input 2 [F7-34], Default: Output Power [U1-08]							
	4	8 - 9	Dynamic Input 3 [F7-35], Default: Analog Input 2							
	5	10 - 11	Dynamic Input 4 [F7-36], Default: Digital Input							
	6	12 - 13	Dynamic Input 5 [F7-37], Default: Analog Input 3							
	7	14 - 15	Dynamic Input 6 [F7-38], Default: PG 2 Counter							
	8	16 - 17	Dynamic Input 7 [F7-39], Default: Net Ref and Net Ctrl							
	9	18 - 19	Dynamic Input 8 [F7-40], Default: Drive Software Version							
	10	20 - 21	Dynamic Input 9 [F7-41], Default: Not Used							
	11	22 - 23	Dynamic Input 10 [F7-42], Default: Not Used							

Name	Description
Running	Running 0: Stop 1: Forward or Reverse Running
ZSP	Zero Speed 0: Running 1: Stop or DC Injection Braking
REV Running	Reverse Running 0: Not Reverse Running 1: Reverse Running
Fault Reset	Fault Reset

Name	Description
	0: - 1: Fault Reset
Speed Agree	Speed Agree 0: - 1: Speed actual at speed reference
Ready	Ready 0: Not Ready 1: Ready
Alarm	Alarm 0: No Alarm 1: Alarm
Faulted	Faulted 0: No Fault 1: Fault
oPE	oPE 0: - 1: oPExx
Uv	Undervoltage 0: - 1: Undervoltage
LOCAL/REMOTE	Run command is from network 0: Run command is not from network 1: Run command is from network
Multi-Function Digital Output 1	Terminal M1/M2 (varies by drive model) 0: M1/M2 OFF 1: M1/M2 ON This function is enabled only when H2-01 is set to F. **Note:** The names of the digital outputs are different for different drive series.
Multi-Function Digital Output 2	Terminal M3/M4 (varies by drive model) 0: M3/M4 OFF 1: M3/M4 ON This function is enabled only when H2-02 is set to F. **Note:** The names of the digital outputs are different for different drive series.
Multi-Function Digital Output 3	Terminal M5/M6 (varies by drive model) 0: M5/M6 OFF 1: M5/M6 ON This function is enabled only when H2-03 is set to F. **Note:** The names of the digital outputs are different for different drive series.
Output Frequency	Actual Drive Speed Monitors drive output frequency. Unit depends on o1-03. Unit is not affected by Speed Scale SS.
Dynamic Inputs	Contains the data to be read from the MEMOBUS/Modbus address defined in the given parameter. A value of 0 in the given parameter means it will return the default data as defined in the table above.

◆ (Vendor Specific Yaskawa Electric (YE) Assy) Gateway Produce Assembly - 180 (0xB4)

Note:

This assembly will not work on drives or bypass units that do not support the gateway functionality. Refer to the instruction manual of your specific drive for more information.

The drive reads the values of parameters *F7-33 to F7-42 [Dynamic In Param 1 to 10 for CommCard]* on power-up or after a reset. You must cycle power on the drive or reset the software on the option to change these parameter values.

The option reads registers 15E7 (Hex.) through 15EE (Hex.) every 500 ms.

The option reads registers 15EF (Hex.) through 15F1 (Hex.) every 2 seconds.

Input Instance	Word	Byte	Modbus Address (Hex.)	Bit 10	Bit 9	Bit 8	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
180	0	0 - 1	004B	Drive (Master) Status										
	1	2 - 3	0041	Drive (Master) Output Frequency										
	2	4 - 5	15E7	Slave Drive 1 Status										
	3	6 - 7	15E8	Slave Drive 1 Output Frequency										
	4	8 - 9	15E9	Slave Drive 2 Status										
	5	10 - 11	15EA	Slave Drive 2 Output Frequency										
	6	12 - 13	15EB	Slave Drive 3 Status										
	7	14 - 15	15EC	Slave Drive 3 Output Frequency										
	8	16 - 17	15ED	Slave Drive 4 Status										
	9	18 - 19	15EE	Slave Drive 4 Output Frequency										
	10	20 - 21	15EF	Communication Status										
				Drive Number				Command Status						
	11	22 - 23	15F0	Target Register Address										
	12	24 - 25	15F1	Read or Write Data										
	13	26 - 27	Configurable (F7-33)	Dynamic Input 1										
	14	28 - 29	Configurable (F7-34)	Dynamic Input 2										
	15	30 - 31	Configurable (F7-35)	Dynamic Input 3										
	16	32 - 33	Configurable (F7-36)	Dynamic Input 4										
	17	34 - 35	Configurable (F7-37)	Dynamic Input 5										
	18	36 - 37	Configurable (F7-38)	Dynamic Input 6										
	19	38 - 39	Configurable (F7-39)	Dynamic Input 7										
	20	40 - 41	Configurable (F7-40)	Dynamic Input 8										
	21	42 - 43	Configurable (F7-41)	Dynamic Input 9										
	22	44 - 45	Configurable (F7-42)	Dynamic Input 10										
	23	46 - 47	Reserved	Reserved										

Name	Description
Output Frequency	Actual Drive Speed Monitors drive output frequency. Unit depends on o1-03. Unit is not affected by Speed Scale SS.
Dynamic Inputs	Contains the data to be read from the MEMOBUS/Modbus address defined in the given parameter. A value of 0 in the given parameter means it will return the default data as defined in the table above.

10   Output Assemblies (Converter Consumes)

Note:

The convention in this manual is from the PLC perspective. As such, an assembly is called an "Output Assembly" when outputted from the PLC and received by this node. This section details "Output Assemblies" that are "Consumed" by the converter.

◆ EtherNet/IP Basic Speed Control Output - 20 (0x14)

Output Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
20	0	0	-	-	-	-	-	Fault Reset	-	D1000: Run R1000: Auto Run
		1	-							
	1	2	D1000: Voltage Reference (Low Byte) R1000: -							
		3	D1000: Voltage Reference (High Byte) R1000: -							

Name	Description
D1000: Run R1000: Auto Run	D1000: Run converter 0: Stop 1: Run R1000: Run converter in auto 0: Stop 1: Auto Run
Fault Reset	Fault Reset 0: - 1: Fault Reset
D1000: Voltage Reference (High Byte) R1000: -	D1000: Voltage Reference Sets converter voltage reference. Voltage reference data: Voltage reference/2VS (VS: Voltage scale) Setting range: 0 - FFFF (Hex.) Example: setting a reference of 4096 with a voltage scale of 2: Voltage reference data = $4096/2^2$ = 1024 = 400 (Hex.) Unit depends on *o1-03*. R1000: -

◆ EtherNet/IP Extended Speed Control Output - 21 (0x15)

Output Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
21	0	0	-	D1000: NetRef R1000: -	NetCtrl	-	-	Fault Reset	D1000: - R1000: Forced Run	D1000: Run R1000: Auto Run
		1	-							
	1	2	D1000: Voltage Reference (Low Byte) R1000: -							
		3	D1000: Voltage Reference (High Byte) R1000: -							

Name	Description
D1000: Run R1000: Auto Run	D1000: Run converter 0: Stop 1: Run R1000: Run converter in auto 0: Stop 1: Auto Run
D1000: - R1000: Forced Run	D1000: - R1000: Force run converter 0: Stop 1: Force Run
Fault Reset	Fault Reset 0: - 1: Fault Reset
NetCtrl	Run command from network 0: Depends on *b1-02* 1: Run Command is from network

Name	Description
D1000: NetRef R1000: -	D1000: Voltage command from network 0: Depends on *b1-01* 1: Voltage command from network R1000: -
D1000: Voltage Reference R1000: -	D1000: Voltage Reference Sets converter voltage reference. Voltage reference data: Voltage reference/2VS (VS: Voltage scale) Setting range: 0 - FFFF (Hex.) Example: setting a reference of 4096 with a voltage scale of 2: Voltage reference data = $4096/2^2$ = 1024 = 400 (Hex.) Unit depends on *o1-03*. R1000: -

◆ EtherNet/IP Speed and Torque Control Output - 22 (0x16)

Output Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
22	0	0	-	-	-	-	-	Fault Reset	-	D1000: Run R1000: Auto Run
		1	-							
	1	2	D1000: Voltage Reference (Low Byte) R1000: -							
		3	D1000: Voltage Reference (High Byte) R1000: -							

Name	Description
D1000: Run R1000: Auto Run	D1000: Run converter 0: Stop 1: Run R1000: Run converter in auto 0: Stop 1: Auto Run
Fault Reset	Fault Reset 0: - 1: Fault Reset
D1000: Voltage Reference R1000: -	D1000: Voltage Reference Sets converter voltage reference. Voltage reference data: Voltage reference/2VS (VS: Voltage scale) Setting range: 0 - FFFF (Hex.) Example: setting a reference of 4096 with a voltage scale of 2: Voltage reference data = $4096/2^2$ = 1024 = 400 (Hex.) Unit depends on *o1-03*. R1000: -

◆ EtherNet/IP Extended Speed and Torque Control Output - 23 (0x17)

Output Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
23	0	0	-	D1000: NetRef R1000: -	NetCtrl	-	-	Fault Reset	D1000: - R1000: Forced Run	D1000: Run R1000: Auto Run
		1	-							
	1	2	D1000: Voltage Reference (Low Byte) R1000: -							
		3	D1000: Voltage Reference (High Byte) R1000: -							

Name	Description
D1000: Run R1000: Auto Run	D1000: Run converter 0: Stop 1: Run R1000: Run converter in auto 0: Stop 1: Auto Run
D1000: - R1000: Forced Run	D1000: - R1000: Force run converter
Fault Reset	Fault Reset 0: - 1: Fault Reset
NetCtrl	Run command from network 0: Depends on *b1-02* 1: Enables the run command from network
D1000: NetRef R1000: -	D1000: Voltage command from network 0: Depends on *b1-01* 1: Voltage command from network R1000: -
D1000: Voltage Reference R1000: -	D1000: Voltage Reference Sets converter voltage reference. Voltage reference data: Voltage reference/2VS (VS: Voltage scale) Setting range: 0 - FFFF (Hex.) Example: setting a reference of 4096 with a voltage scale of 2: Voltage reference data = $4096/2^2$ = 1024 = 400 (Hex.) Unit depends on *o1-03*. R1000: -

◆ (Vendor Specific Yaskawa Electric (YE) Assy) Speed/Torque Control Output - 101 (0x65)

Output Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
101	0	0	Multi-Function Input 8	Multi-Function Input 7	Multi-Function Input 6	Multi-Function Input 5	Multi-Function Input 4	Multi-Function Input 3	D1000: - R1000: Forced Run	D1000: Run R1000: Auto Run
		1	Multi-Function Digital Output 3	Multi-Function Digital Output 2	Multi-Function Digital Output 1	-	-	-	Fault Reset	External Fault
	1	2	D1000: Voltage Reference (Low Byte) R1000: -							
		3	D1000: Voltage Reference (High Byte) R1000: -							

Name	Description
D1000: Run R1000: Auto Run	D1000: Run converter 0: Stop 1: Run R1000: Run converter in auto 0: Stop 1: Auto Run
D1000: - R1000: Forced Run	D1000: - R1000: Force run converter 0: Stop 1: Force Run
Multi-Function Input 3	Terminal S3 Function Input 0: Terminal S3 Function [H1-03] OFF 1: Terminal S3 Function [H1-03] ON
Multi-Function Input 4	Terminal S4 Function Input 0: Terminal S4 Function [H1-04] OFF 1: Terminal S4 Function [H1-04] ON
Multi-Function Input 5	Terminal S5 Function Input 0: Terminal S5 Function [H1-05] OFF 1: Terminal S5 Function [H1-05] ON
Multi-Function Input 6	Terminal S6 Function Input

	0: Terminal S6 Function [H1-06] OFF 1: Terminal S6 Function [H1-06] ON
Multi-Function Input 7	Terminal S7 Function Input 0: Terminal S7 Function [H1-07] OFF 1: Terminal S7 Function [H1-07] ON
Multi-Function Input 8	Terminal S8 Function Input 0: Terminal S8 Function [H1-08] OFF 1: Terminal S8 Function [H1-08] ON
External Fault	External Fault EF0 0: - 1: External Fault [EF0]
Fault Reset	Fault Reset 0: - 1: Fault Reset
Multi-Function Digital Output 1	Terminal M1/M2 (varies by converter model) 0: M1/M2 OFF 1: M1/M2 ON This function is enabled only when H2-01 is set to F. **Note:** The names of the digital outputs are different for different converter series.
Multi-Function Digital Output 2	Terminals M3 and M4 0: M3/M4 OFF 1: M3/M4 ON This function is enabled only when H2-02 is set to F. **Note:** The names of the digital outputs are different for different converter series.
Multi-Function Digital Output 3	Terminals M5 and M6 0: M5/M6 OFF 1: M5/M6 ON This function is enabled only when H2-03 is set to F. **Note:** The names of the digital outputs are different for different converter series.
D1000: Voltage Reference R1000: -	D1000: Voltage Reference Sets converter voltage reference. R1000: -

◆ (Vendor Specific Yaskawa Electric (YE) Assy) Extended Speed/Torque Control Output - 115 (0x73)

Output Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
115	0	0	Multi-Function Input 8	Multi-Function Input 7	Multi-Function Input 6	Multi-Function Input 5	Multi-Function Input 4	Multi-Function Input 3	D1000: - R1000: Forced Run	D1000: Run R1000: Auto Run
		1	Multi-Function Digital Output 3	Multi-Function Digital Output 2	Multi-Function Digital Output 1	-	-	-	Fault Reset	External Fault
	1	2	D1000: Voltage Reference (Low Byte) R1000: -							
		3	D1000: Voltage Reference (High Byte) R1000: -							
	2	4	-							
		5	-							
	3	6	-							
		7	-							
	4 - 5	8 - 11	Reserved							
	6	12	Analog Output 1 (Low Byte)							
		13	Analog Output 1 (High Byte)							
	7	14	Analog Output 2 (Low Byte)							
		15	Analog Output 2 (High Byte)							
	8	16	Digital Outputs (Low Byte)							

Output Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
		17	Digital Outputs (High Byte)							
	9 - 19	18 - 39	Reserved							

Name	Description
D1000: Run R1000: Auto Run	D1000: Run converter 0: Stop 1: Run R1000: Run converter in auto 0: Stop 1: Auto Run
D1000: - R1000: Forced Run	D1000: - R1000: Force run converter 0: Stop 1: Force Run
Multi-Function Input 3	Terminal S3 Function Input 0: Terminal S3 Function [H1-03] OFF 1: Terminal S3 Function [H1-03] ON
Multi-Function Input 4	Terminal S4 Function Input 0: Terminal S4 Function [H1-04] OFF 1: Terminal S4 Function [H1-04] ON
Multi-Function Input 5	Terminal S5 Function Input 0: Terminal S5 Function [H1-05] OFF 1: Terminal S5 Function [H1-05] ON
Multi-Function Input 6	Terminal S6 Function Input 0: Terminal S6 Function [H1-06] OFF 1: Terminal S6 Function [H1-06] ON
Multi-Function Input 7	Terminal S7 Function Input 0: Terminal S7 Function [H1-07] OFF 1: Terminal S7 Function [H1-07] ON
Multi-Function Input 8	Terminal S8 Function Input 0: Terminal S8 Function [H1-08] OFF 1: Terminal S8 Function [H1-08] ON
External Fault	External Fault EF0 0: - 1: External Fault [EF0]
Fault Reset	Fault Reset 0: - 1: Fault Reset
Multi-Function Digital Output 1	Terminal M1/M2 (varies by converter model) 0: M1/M2 OFF 1: M1/M2 ON This function is enabled only when H2-01 is set to F. **Note:** The names of the digital outputs are different for different converter series.
Multi-Function Digital Output 2	Terminal M3/M4 (varies by converter model) 0: M3/M4 OFF 1: M3/M4 ON This function is enabled only when H2-02 is set to F. **Note:** The names of the digital outputs are different for different converter series.
Multi-Function Digital Output 3	Terminal M5/M6 (varies by converter model) 0: M5/M6 OFF 1: M5/M6 ON This function is enabled only when H2-03 is set to F. **Note:** The names of the digital outputs are different for different converter series.
D1000: Voltage Reference R1000: -	D1000: Voltage Reference Sets converter voltage reference. R1000: -
Analog Output 1	MEMOBUS/Modbus (0x0007)

Name	Description
Analog Output 2	MEMOBUS/Modbus (0x0008)
Digital Outputs	MEMOBUS/Modbus (0x0009) **Note:** Note: These values are ORed with values in byte 1.

◆ (Vendor Specific Yaskawa Electric (YE) Assy)-High Speed/Torque Control Output - 116 (0x74)

The first 20 Bytes (0-19) are fixed and the next 20 Bytes can be configured using parameters *F7-23* to *F7-32*. If an error occurs while trying to write to the dynamic parameters, the appropriate error bit in Assembly 166 will be set. If more information is needed as to the nature of the error, the extended error status can be read explicitly through Class 4, Instance 0xA6, Attribute 0x64. This will return 20 Bytes with each dynamic parameter in Assembly 116 having a Byte dedicated to its extended error status.

Output Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
116	0	0	Multi-Function Input 8	Multi-Function Input 7	Multi-Function Input 6	Multi-Function Input 5	Multi-Function Input 4	Multi-Function Input 3	D1000: - R1000: Forced Run	D1000: Run R1000: Auto Run
		1	Multi-Function Digital Output 3	Multi-Function Digital Output 2	Multi-Function Digital Output 1	-	-	-	Fault Reset	External Fault
	1	2	D1000: Voltage Reference (Low Byte) R1000: -							
		3	D1000: Voltage Reference (High Byte) R1000: -							
	2	4	-							
		5	-							
	3	6	-							
		7	-							
	4	8	Reserved							
		9	-	-	-	-	Multi-Function Input 12	Multi-Function Input 11	Multi-Function Input 10	Multi-Function Input 9
	5	10	-	-	-	-	-	-	NetCtrl	D1000: NetRef R1000: -
		11	Reserved							
	6	12	Analog Output 1 (Low Byte)							
		13	Analog Output 1 (High Byte)							
	7	14	Analog Output 2 (Low Byte)							
		15	Analog Output 2 (High Byte)							
	8	16	Digital Outputs (Low Byte)							
		17	Digital Outputs (High Byte)							
	9	18	Reserved							
		19	Reserved							
	10	20 - 21	Programmable Bytes [F7-23], Default: Not Used							
	11	22 - 23	Programmable Bytes [F7-24], Default: Not Used							
	12	24 - 25	Programmable Bytes [F7-25], Default: Not Used							
	13	26 - 27	Programmable Bytes [F7-26], Default: Not Used							
	14	28 - 29	Programmable Bytes [F7-27], Default: Not Used							
	15	30 - 31	Programmable Bytes [F7-28], Default: Not Used							
	16	32 - 33	Programmable Bytes [F7-29], Default: Not Used							
	17	34 - 35	Programmable Bytes [F7-30], Default: Not Used							
	18	36 - 37	Programmable Bytes [F7-31], Default: Not Used							

Output Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	19	38 - 39	Programmable Bytes [F7-32], Default: Not Used							
	20 - 21	40 - 43	Reserved							

Name	Description
D1000: Run R1000: Auto Run	D1000: Run converter 0: Stop 1: Run R1000: Run converter in auto 0: Stop 1: Auto Run
D1000: - R1000: Forced Run	D1000: - R1000: Force run converter 0: Stop 1: Force Run
Multi-Function Input 3	Terminal S3 Function Input 0: Terminal S3 Function [H1-03] OFF 1: Terminal S3 Function [H1-03] ON
Multi-Function Input 4	Terminal S4 Function Input 0: Terminal S4 Function [H1-04] OFF 1: Terminal S4 Function [H1-04] ON
Multi-Function Input 5	Terminal S5 Function Input 0: Terminal S5 Function [H1-05] OFF 1: Terminal S5 Function [H1-05] ON
Multi-Function Input 6	Terminal S6 Function Input 0: Terminal S6 Function [H1-06] OFF 1: Terminal S6 Function [H1-06] ON
Multi-Function Input 7	Terminal S7 Function Input 0: Terminal S7 Function [H1-07] OFF 1: Terminal S7 Function [H1-07] ON
Multi-Function Input 8	Terminal S8 Function Input 0: Terminal S8 Function [H1-08] OFF 1: Terminal S8 Function [H1-08] ON
External Fault	External Fault EF0 0: - 1: External Fault [EF0]
Fault Reset	Fault Reset 0: - 1: Fault Reset
Multi-Function Digital Output 1	Terminal M1/M2 (varies by converter model) 0: M1/M2 OFF 1: M1/M2 ON This function is enabled only when H2-01 is set to F. **Note:** The names of the digital outputs are different for different converter series.
Multi-Function Digital Output 2	Terminal M3/M4 (varies by converter model) 0: M3/M4 OFF 1: M3/M4 ON This function is enabled only when H2-02 is set to F. **Note:** The names of the digital outputs are different for different converter series.
Multi-Function Digital Output 3	Terminal M5/M6 (varies by converter model) 0: M5/M6 OFF 1: M5/M6 ON This function is enabled only when H2-03 is set to F. **Note:** The names of the digital outputs are different for different converter series.
D1000: Voltage Reference R1000: -	D1000: Voltage Reference Sets converter voltage reference. R1000: -
Digital Inputs	Sets digital inputs 9-12 if the drive supports them.
D1000: NetRef R1000: -	D1000: Voltage command from network R1000: -
NetCtrl	Run command from network

Name	Description
Analog Output 1	MEMOBUS/Modbus (0x0007)
Analog Output 2	MEMOBUS/Modbus (0x0008)
Digital Outputs	MEMOBUS/Modbus (0x0009) **Note:** These values are ORed with values in byte 1.
Programmable Bytes	Contains the data to be written to the MEMOBUS/Modbus address defined in the given parameter. A value of 0 in the given parameter means it is not used, therefore the value received for this given parameter will not be written to any MEMOBUS/Modbus register.

◆ (Vendor Specific Yaskawa Electric (YE) Assy) 8 Byte Dynamic 2 Output - 117 (0x75)

Output Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
117	0	0	Multi-Function Input 8	Multi-Function Input 7	Multi-Function Input 6	Multi-Function Input 5	Multi-Function Input 4	Multi-Function Input 3	D1000: - R1000: Forced Run	D1000: Run R1000: Auto Run
		1	Multi-Function Digital Output 3	Multi-Function Digital Output 2	Multi-Function Digital Output 1	-	-	-	Fault Reset	External Fault
	1	2	D1000: Voltage Reference (Low Byte) R1000: -							
		3	D1000: Voltage Reference (High Byte) R1000: -							
	2	4 -5	Programmable Bytes [F7-23], Default: Not Used							
	3	6 -7	Programmable Bytes [F7-24], Default: Not Used							

Name	Description
D1000: Run R1000: Auto Run	D1000: Run converter 0: Stop 1: Run R1000: Run converter in auto 0: Stop 1: Auto Run
D1000: - R1000: Forced Run	D1000: - R1000: Force run converter 0: Stop 1: Force Run
Multi-Function Input 3	Terminal S3 Function Input 0: Terminal S3 Function [H1-03] OFF 1: Terminal S3 Function [H1-03] ON
Multi-Function Input 4	Terminal S4 Function Input 0: Terminal S4 Function [H1-04] OFF 1: Terminal S4 Function [H1-04] ON
Multi-Function Input 5	Terminal S5 Function Input 0: Terminal S5 Function [H1-05] OFF 1: Terminal S5 Function [H1-05] ON
Multi-Function Input 6	Terminal S6 Function Input 0: Terminal S6 Function [H1-06] OFF 1: Terminal S6 Function [H1-06] ON
Multi-Function Input 7	Terminal S7 Function Input 0: Terminal S7 Function [H1-07] OFF 1: Terminal S7 Function [H1-07] ON
Multi-Function Input 8	Terminal S8 Function Input 0: Terminal S8 Function [H1-08] OFF 1: Terminal S8 Function [H1-08] ON
External Fault	External Fault EF0 0: - 1: External Fault [EF0]
Fault Reset	Fault Reset 0: - 1: Fault Reset

Name	Description
Multi-Function Digital Output 1	Terminal M1/M2 (varies by converter model) 0: M1/M2 OFF 1: M1/M2 ON This function is enabled only when H2-01 is set to F. **Note:** The names of the digital outputs are different for different converter series.
Multi-Function Digital Output 2	Terminal M3/M4 (varies by converter model) 0: M3/M4 OFF 1: M3/M4 ON This function is enabled only when H2-02 is set to F. **Note:** The names of the digital outputs are different for different converter series.
Multi-Function Digital Output 3	Terminal M5/M6 (varies by converter model) 0: M5/M6 OFF 1: M5/M6 ON This function is enabled only when H2-03 is set to F. **Note:** The names of the digital outputs are different for different converter series.
D1000: Voltage Reference R1000: -	D1000: Voltage Reference Sets converter voltage reference. R1000: -
Programmable Bytes	Contains the data to be written to the MEMOBUS/Modbus address defined in the given parameter. A value of 0 in the given parameter means it is not used, therefore the value received for this given parameter will not be written to any MEMOBUS/Modbus register.

◆ (Vendor Specific Yaskawa Electric (YE) Assy) 12 Byte Dynamic 4 Output - 118 (0x76)

Output Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
118	0	0	Multi-Function Input 8	Multi-Function Input 7	Multi-Function Input 6	Multi-Function Input 5	Multi-Function Input 4	Multi-Function Input 3	D1000: - R1000: Forced Run	D1000: Run R1000: Auto Run
		1	Multi-Function Digital Output 3	Multi-Function Digital Output 2	Multi-Function Digital Output 1	-	-	-	Fault Reset	External Fault
	1	2	D1000: Voltage Reference (Low Byte) R1000: -							
		3	D1000: Voltage Reference (High Byte) R1000: -							
	2	4 -5	Programmable Bytes [F7-23], Default: Not Used							
	3	6 -7	Programmable Bytes [F7-24], Default: Not Used							
	4	8 -9	Programmable Bytes [F7-25], Default: Not Used							
	5	10 -11	Programmable Bytes [F7-26], Default: Not Used							

Name	Description
D1000: Run R1000: Auto Run	D1000: Run converter 0: Stop 1: Run R1000: Run converter in auto 0: Stop 1: Auto Run
D1000: - R1000: Forced Run	D1000: - R1000: Force run converter 0: Stop 1: Force Run
Multi-Function Input 3	Terminal S3 Function Input 0: Terminal S3 Function [H1-03] OFF 1: Terminal S3 Function [H1-03] ON
Multi-Function Input 4	Terminal S4 Function Input 0: Terminal S4 Function [H1-04] OFF 1: Terminal S4 Function [H1-04] ON
Multi-Function Input 5	Terminal S5 Function Input

Name	Description
	0: Terminal S5 Function [H1-05] OFF 1: Terminal S5 Function [H1-05] ON
Multi-Function Input 6	Terminal S6 Function Input 0: Terminal S6 Function [H1-06] OFF 1: Terminal S6 Function [H1-06] ON
Multi-Function Input 7	Terminal S7 Function Input 0: Terminal S7 Function [H1-07] OFF 1: Terminal S7 Function [H1-07] ON
Multi-Function Input 8	Terminal S8 Function Input 0: Terminal S8 Function [H1-08] OFF 1: Terminal S8 Function [H1-08] ON
External Fault	External Fault EF0 0: - 1: External Fault [EF0]
Fault Reset	Fault Reset 0: - 1: Fault Reset
Multi-Function Digital Output 1	Terminal M1/M2 (varies by converter model) 0: M1/M2 OFF 1: M1/M2 ON This function is enabled only when H2-01 is set to F.
Multi-Function Digital Output 2	Terminals M3 and M4 0: M3/M4 OFF 1: M3/M4 ON This function is enabled only when H2-02 is set to F.
Multi-Function Digital Output 3	Terminals M5 and M6 0: M5/M6 OFF 1: M5/M6 ON This function is enabled only when H2-03 is set to F.
D1000: Voltage Reference R1000: -	D1000: Voltage Reference Sets converter voltage reference. R1000: -
Programmable Bytes	Contains the data to be written to the MEMOBUS/Modbus address defined in the given parameter. A value of 0 in the given parameter means it is not used, therefore the value received for this given parameter will not be written to any MEMOBUS/Modbus register.

◆ (Vendor Specific Yaskawa Electric (YE) Assy) 18 Byte Dynamic 7 Output - 119 (0x77)

Output Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
119	0	0	Multi-Function Input 8	Multi-Function Input 7	Multi-Function Input 6	Multi-Function Input 5	Multi-Function Input 4	Multi-Function Input 3	D1000: - R1000: Forced Run	D1000: Run R1000: Auto Run
		1	Multi-Function Digital Output 3	Multi-Function Digital Output 2	Multi-Function Digital Output 1	-	-	-	Fault Reset	External Fault
	1	2	D1000: Voltage Reference (Low Byte) R1000: -							
		3	D1000: Voltage Reference (High Byte) R1000: -							
	2	4 -5	Programmable Bytes [F7-23], Default: Not Used							
	3	6 -7	Programmable Bytes [F7-24], Default: Not Used							
	4	8 -9	Programmable Bytes [F7-25], Default: Not Used							
	5	10 -11	Programmable Bytes [F7-26], Default: Not Used							
	6	12 -13	Programmable Bytes [F7-27], Default: Not Used							
	7	14 -15	Programmable Bytes [F7-28], Default: Not Used							
	8	16 -17	Programmable Bytes [F7-29], Default: Not Used							

Name	Description
D1000: Run R1000: Auto Run	D1000: Run converter 0: Stop 1: Run R1000: Run converter in auto 0: Stop 1: Auto Run
D1000: - R1000: Forced Run	D1000: - R1000: Force run converter 0: Stop 1: Force Run
Multi-Function Input 3	Terminal S3 Function Input 0: Terminal S3 Function [H1-03] OFF 1: Terminal S3 Function [H1-03] ON
Multi-Function Input 4	Terminal S4 Function Input 0: Terminal S4 Function [H1-04] OFF 1: Terminal S4 Function [H1-04] ON
Multi-Function Input 5	Terminal S5 Function Input 0: Terminal S5 Function [H1-05] OFF 1: Terminal S5 Function [H1-05] ON
Multi-Function Input 6	Terminal S6 Function Input 0: Terminal S6 Function [H1-06] OFF 1: Terminal S6 Function [H1-06] ON
Multi-Function Input 7	Terminal S7 Function Input 0: Terminal S7 Function [H1-07] OFF 1: Terminal S7 Function [H1-07] ON
Multi-Function Input 8	Terminal S8 Function Input 0: Terminal S8 Function [H1-08] OFF 1: Terminal S8 Function [H1-08] ON
External Fault	External Fault EF0 0: - 1: External Fault [EF0]
Fault Reset	Fault Reset 0: - 1: Fault Reset

Multi-Function Digital Output 1	Terminal M1/M2 (varies by converter model)
	0: M1/M2 OFF
	1: M1/M2 ON
	This function is enabled only when H2-01 is set to F.
	   Note:
	      The names of the digital outputs are different for different converter series.

Multi-Function Digital Output 2	Terminal M3/M4 (varies by converter model)
	0: M3/M4 OFF
	1: M3/M4 ON
	This function is enabled only when H2-02 is set to F.
	   Note:
	      The names of the digital outputs are different for different converter series.

Multi-Function Digital Output 3	Terminal M5/M6 (varies by converter model)
	0: M5/M6 OFF
	1: M5/M6 ON
	This function is enabled only when H2-03 is set to F.
	   Note:
	      The names of the digital outputs are different for different converter series.

D1000: Voltage Reference R1000: -	D1000: Voltage Reference Sets converter voltage reference. R1000: -
Programmable Bytes	Contains the data to be written to the MEMOBUS/Modbus address defined in the given parameter. A value of 0 in the given parameter means it is not used, therefore the value received for this given parameter will not be written to any MEMOBUS/Modbus register.

◆ (Vendor Specific Yaskawa Electric (YE) Assy) 24 Byte Dynamic 10 Output - 120 (0x78)

Output Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
120	0	0	Multi-Function Input 8	Multi-Function Input 7	Multi-Function Input 6	Multi-Function Input 5	Multi-Function Input 4	Multi-Function Input 3	D1000: - R1000: Forced Run	D1000: Run R1000: Auto Run
		1	Multi-Function Digital Output 3	Multi-Function Digital Output 2	Multi-Function Digital Output 1	-	-	-	Fault Reset	External Fault
	1	2	D1000: Voltage Reference (Low Byte) R1000: -							
		3	D1000: Voltage Reference (High Byte) R1000: -							
	2	4 -5	Programmable Bytes [F7-23], Default: Not Used							
	3	6 -7	Programmable Bytes [F7-24], Default: Not Used							
	4	8 -9	Programmable Bytes [F7-25], Default: Not Used							
	5	10 -11	Programmable Bytes [F7-26], Default: Not Used							
	6	12 -13	Programmable Bytes [F7-27], Default: Not Used							
	7	14 -15	Programmable Bytes [F7-28], Default: Not Used							
	8	16 -17	Programmable Bytes [F7-29], Default: Not Used							
	9	18 -19	Programmable Bytes [F7-30], Default: Not Used							
	10	20 -21	Programmable Bytes [F7-31], Default: Not Used							
	11	22 -23	Programmable Bytes [F7-32], Default: Not Used							

Name	Description
D1000: Run R1000: Auto Run	D1000: Run converter 0: Stop 1: Run R1000: Run converter in auto 0: Stop 1: Auto Run
D1000: - R1000: Forced Run	D1000: - R1000: Force run converter 0: Stop 1: Force Run
Multi-Function Input 3	Terminal S3 Function Input 0: Terminal S3 Function [H1-03] OFF 1: Terminal S3 Function [H1-03] ON
Multi-Function Input 4	Terminal S4 Function Input 0: Terminal S4 Function [H1-04] OFF 1: Terminal S4 Function [H1-04] ON
Multi-Function Input 5	Terminal S5 Function Input 0: Terminal S5 Function [H1-05] OFF 1: Terminal S5 Function [H1-05] ON
Multi-Function Input 6	Terminal S6 Function Input 0: Terminal S6 Function [H1-06] OFF 1: Terminal S6 Function [H1-06] ON
Multi-Function Input 7	Terminal S7 Function Input 0: Terminal S7 Function [H1-07] OFF 1: Terminal S7 Function [H1-07] ON
Multi-Function Input 8	Terminal S8 Function Input 0: Terminal S8 Function [H1-08] OFF 1: Terminal S8 Function [H1-08] ON
External Fault	External Fault EF0 0: - 1: External Fault [EF0]
Fault Reset	Fault Reset 0: - 1: Fault Reset

Name	Description
Multi-Function Digital Output 1	Terminal M1/M2 (varies by converter model) 0: M1/M2 OFF 1: M1/M2 ON This function is enabled only when H2-01 is set to F. **Note:** The names of the digital outputs are different for different converter series.
Multi-Function Digital Output 2	Terminal M3/M4 (varies by converter model) 0: M3/M4 OFF 1: M3/M4 ON This function is enabled only when H2-02 is set to F. **Note:** The names of the digital outputs are different for different converter series.
Multi-Function Digital Output 3	Terminal M5/M6 (varies by converter model) 0: M5/M6 OFF 1: M5/M6 ON This function is enabled only when H2-03 is set to F. **Note:** The names of the digital outputs are different for different converter series.
D1000: Voltage Reference R1000: -	D1000: Voltage Reference Sets converter voltage reference. R1000: -
Programmable Bytes	Contains the data to be written to the MEMOBUS/Modbus address defined in the given parameter. A value of 0 in the given parameter means it is not used, therefore the value received for this given parameter will not be written to any MEMOBUS/Modbus register.

11 Input Assemblies (Converter Produces)

Note:

The convention in this manual is from the PLC perspective. An "Input Assembly" is outputted from this node and read by the PLC. This section details "Input Assemblies" that are "Produced" by the converter.

◆ EtherNet/IP Basic Speed Control Input - 70 (0x46)

Input Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
70	0	0	-	-	-	-	-	Faulted	-	Running
		1	-							
	1	2	Voltage Actual (Low Byte)							
		3	Voltage Actual (High Byte)							

Name	Description
Running	Running
Faulted	Faulted 0: No Fault 1: Fault
Voltage Actual	Actual Converter Voltage Monitors the converter output voltage. Voltage actual data: Output Voltage x 2VS (VS: Voltage scale) Setting range: 0 - FFFF (Hex.) For example, when output voltage of 1024 with a voltage scale of 2: Voltage actual data = 1024×2^2 = 4096 = 1000 (Hex.)

◆ EtherNet/IP Extended Speed Control Input - 71 (0x47)

Input Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
71	0	0	-	NetRef	NetCtrl	Ready	During Regenerative Operation	Running	Alarm	Faulted
		1	State							
	1	2	Voltage Actual (Low Byte)							
		3	Voltage Actual (High Byte)							

Name	Description
Faulted	Faulted 0: No Fault 1: Fault
Alarm	Alarm 0: No Alarm 1: Alarm
Running	Running
During Regenerative Operation	Converter in regenerative operation
Ready	Ready 0: Not Ready 1: Ready
NetCtrl	Run command is from network 0: Run command is not from network 1: Run command is from network
NetRef	Voltage command is from network 0: Voltage command is not from network 1: Voltage command is from network
State	Contains the value from the Control Supervisor (Class 0x29) Instance 1 Attribute 6.
Voltage Actual	Actual Converter Voltage Monitors the converter output voltage. Speed actual data: Output Voltage x 2VS (VS: Voltage scale) Setting range: 0 - FFFF (Hex.) For example, when output voltage of 1024 with a voltage scale of 2: Voltage actual data = 1024 x 2^2 = 4096 = 1000 (Hex.)

◆ EtherNet/IP Speed and Torque Control Input - 72 (0x48)

Input Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
72	0	0	-	-	-	-	-	Faulted	-	Running
		1	-							
	1	2	Voltage Actual (Low Byte)							
		3	Voltage Actual (High Byte)							

Name	Description
Running	Running
Faulted	Faulted 0: No Fault 1: Fault
Voltage Actual	Actual Converter Voltage Monitors the converter output voltage. Voltage actual data: Output Voltage x 2VS (VS: Voltage scale) Setting range: 0 - FFFF (Hex.) For example, when output voltage of 1024 with a voltage scale of 2: Voltage actual data = 1024×2^2 = 4096 = 1000 (Hex.)

◆ EtherNet/IP Extended Speed and Torque Control Input - 73 (0x49)

Input Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
73	0	0	-	NetRef	NetCtrl	Ready	During Regenerative Operation	Running	Alarm	Faulted
		1	State							
	1	2	Voltage Actual (Low Byte)							
		3	Voltage Actual (High Byte)							

Name	Description
Faulted	Faulted 0: No Fault 1: Fault
Alarm	Alarm 0: No Alarm 1: Alarm
Running	Running
During Regenerative Operation	During Regenerative Operation
Ready	Ready 0: Not Ready 1: Ready
NetCtrl	Run command is from network 0: Run command is not from network 1: Run command is from network
NetRef	Voltage command is from network 0: Voltage command is not from network 1: Voltage command is from network
State	Contains the value from the Control Supervisor (Class 0x29) Instance 1 Attribute 6.
Voltage Actual	Actual Converter Voltage Monitors the converter output voltage. Speed actual data: Output Voltage x 2VS (VS: Voltage scale) Setting range: 0 - FFFF (Hex.) For example, when output voltage of 1024 with a voltage scale of 2: Voltage actual data = 1024 x 2^2 = 4096 = 1000 (Hex.)

◆ (Vendor Specific Yaskawa Electric (YE) Assy) Speed/Torque Status Input - 151 (0x97)

Input Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
151	0	0	Faulted	Alarm	Ready	During Run - Operation Ready	Reset	During Regenerative Operation	-	Running
		1	-	-	Multi-Function Digital Output 3	Multi-Function Digital Output 2	Multi-Function Digital Output 1	LOCAL/REMOTE	Uv	oPE
	1	2	Output Voltage (Low Byte)							
		3	Output Voltage (High Byte)							
	2	4	-							
		5	-							
	3	6	D1000: Current Actual (Low Byte) R1000: -							
		7	D1000: Current Actual (High Byte) R1000: -							

Name	Description
Running	Running 0: Stop 1: Running
During Regenerative Operation	During Regenerative Operation 0: Converter not in regenerative operation 1: Converter in regenerative operation
Reset	Reset 0: - 1: Reset
During Run - Operation Ready	During Run - Operation Ready 0: Not Ready 1: Ready
Ready	Ready 0: Not Ready 1: Ready

Name	Description
Alarm	Alarm 0: No Alarm 1: Alarm
Faulted	Faulted 0: No Fault 1: Fault
oPE	oPE 0: - 1: oPExx
Uv	Undervoltage 0: - 1: Undervoltage
LOCAL/REMOTE	Run command is from network 0: Run command is not from network 1: Run command is from network
Multi-Function Digital Output 1	Terminal M1/M2 (varies by converter model) 0: M1/M2 OFF 1: M1/M2 ON This function is enabled only when H2-01 is set to F. **Note:** The names of the digital outputs are different for different converter series.
Multi-Function Digital Output 2	Terminal M3/M4 (varies by converter model) 0: M3/M4 OFF 1: M3/M4 ON This function is enabled only when H2-02 is set to F. **Note:** The names of the digital outputs are different for different converter series.
Multi-Function Digital Output 3	Terminal M5/M6 (varies by converter model) 0: M5/M6 OFF 1: M5/M6 ON This function is enabled only when H2-03 is set to F. **Note:** The names of the digital outputs are different for different converter series.
Output Voltage	Converter Output Voltage
D1000: Current Actual R1000: -	D1000: Actual Output Current Monitors the converter output current. Unit: 0.1 A Unit is not affected by Current Scale CS. R1000: -

◆ **(Vendor Specific Yaskawa Electric (YE) Assy) Extended Speed/Torque Status Input - 155 (0x9B)**

Input Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
155	0	0	Faulted	Alarm	Ready	During Run - Operation Ready	Reset	During Regenerative Operation	-	Running
		1	-	-	Multi-Function Digital Output 3	Multi-Function Digital Output 2	Multi-Function Digital Output 1	LOCAL/ REMOTE	Uv	oPE
	1	2	Output Voltage (Low Byte)							
		3	Output Voltage (High Byte)							
	2	4	-							
		5	-							
	3	6	-							
		7	-							
	4	8	D1000: Voltage Command (Low Byte) R1000: -							
		9	D1000: Voltage Command (High Byte) R1000: -							
	5	10	Output Voltage (Low Byte)							

Input Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
		11	Output Voltage (High Byte)							
	6	12	D1000: Output Current (Low Byte) R1000: -							
		13	D1000: Output Current (High Byte) R1000: -							
	7	14	Terminal A2 Input (Low Byte)							
		15	Terminal A2 Input (High Byte)							
	8	16	Main Circuit DC Voltage (Low Byte)							
		17	Main Circuit DC Voltage (High Byte)							
	9	18	Error Code (Low Byte)							
		19	Error Code (High Byte)							
	10	20	Alarm Code 2 (Low Byte)							
		21	Alarm Code 2 (High Byte)							
	11	22	Alarm Code 3 (Low Byte)							
		23	Alarm Code 3 (High Byte)							
	12	24	Terminal A3 Input (Low Byte)							
		25	Terminal A3 Input (High Byte)							
	13	26	Digital Input (Low Byte)							
		27	Digital Input (High Byte)							
	14	28	Terminal A1 Input (Low Byte)							
		29	Terminal A1 Input (High Byte)							
	15	30	-							
		31	-							
	16 - 19	32 - 39	Reserved							

Name	Description
Running	Running 0: Stop 1: Running
During Regenerative Operation	During Regenerative Operation 0: Converter not in regenerative operation 1: Converter in regenerative operation
Reset	Reset 0: - 1: Reset
During Run - Operation Ready	0: Not Ready 1: Ready
Ready	Ready 0: Not Ready 1: Ready
Alarm	Alarm 0: No Alarm 1: Alarm
Faulted	Faulted 0: No Fault 1: Fault
oPE	oPE 0: - 1: oPExx
Uv	Undervoltage 0: - 1: Undervoltage
LOCAL/REMOTE	Run command is from network 0: Run command is not from network 1: Run command is from network

Name	Description
Multi-Function Digital Output 1	Terminal M1/M2 (varies by converter model) 0: M1/M2 OFF 1: M1/M2 ON This function is enabled only when H2-01 is set to F. **Note:** The names of the digital outputs are different for different converter series.
Multi-Function Digital Output 2	Terminal M3/M4 (varies by converter model) 0: M3/M4 OFF 1: M3/M4 ON This function is enabled only when H2-02 is set to F. **Note:** The names of the digital outputs are different for different converter series.
Multi-Function Digital Output 3	Terminal M5/M6 (varies by converter model) 0: M5/M6 OFF 1: M5/M6 ON This function is enabled only when H2-03 is set to F. **Note:** The names of the digital outputs are different for different converter series.
Output Voltage	Converter Output Voltage
D1000: Voltage Command R1000: -	D1000: Converter Voltage Command R1000: -
D1000: Output Current R1000: -	D1000: Actual Output Current Monitors the converter output current. Unit: 0.01A Unit is not affected by Current Scale CS. R1000: -
Terminal A1 Input	MEMOBUS/Modbus (0x46) Monitor parameter U1-13
Terminal A2 Input	MEMOBUS/Modbus (0x4F) Monitor parameter U1-14
Terminal A3 Input	MEMOBUS/Modbus (0x50) Monitor parameter U1-15
Main Circuit DC Voltage	Main Circuit DC Voltage Monitor parameter U1-07
Error Code	U2-01 converted using fault code table.
Alarm Code 2	U2-01 converted using fault code table.
Alarm Code 3	U2-01 converted using fault code table.
Digital Inputs	Sets digital inputs 9-12 if the drive supports them.

◆ (Vendor Specific Yaskawa Electric (YE) Assy) High Speed/Torque Status Input - 166 (0xA6)

If an error occurs while trying to read from the dynamic parameters, the appropriate error bit in Assembly 166 will be set. If more information about the nature of the error is needed, the extended error status can be read explicitly through Class 4, Instance 0xA6, Attribute 0x64. This will return 20 Bytes with each dynamic parameter in Assembly 166 having a Byte dedicated to its extended error status.

*1   Selectable with F7-33 to F7-42.

Input Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
166	0	0	Faulted	Alarm	Ready	During Run - Operation Ready	Reset	During Regenerative Operation	-	Running
		1	-	-	Multi-Function Digital Output 3	Multi-Function Digital Output 2	Multi-Function Digital Output 1	LOCAL/ REMOTE	Uv	oPE
	1	2	Output Voltage (Low Byte)							
		3	Output Voltage (High Byte)							
	2	4	-							
		5	-							

Input Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	3	6	-							
		7	-							
	4	8	D1000: Voltage Command (Low Byte) R1000: -							
		9	D1000: Voltage Command (High Byte) R1000: -							
	5	10	Output Voltage (Low Byte)							
		11	Output Voltage (High Byte)							
	6	12	D1000: Output Current (Low Byte) R1000: -							
		13	D1000: Output Current (High Byte) R1000: -							
	7	14	Terminal A1 Input (Low Byte)							
		15	Terminal A1 Input (High Byte)							
	8	16	Main Circuit DC Voltage (Low Byte)							
		17	Main Circuit DC Voltage (High Byte)							
	9	18	Error Code (Low Byte)							
		19	Error Code (High Byte)							
	10	20 - 21	Parameter [F7-33], Default: Alarm Code							
	11	22 - 23	D1000: Parameter [F7-34], Default: Output Power R1000: Parameter [F7-34], Default: Not Used							
	12	24 - 25	Parameter [F7-35], Default: Terminal A2 Input							
	13	26 - 27	Parameter [F7-36], Default: Terminal S1 - S8 Input							
	14	28 - 29	Parameter [F7-37], Default: Terminal A3 Input							
	15	30 - 31	Parameter [F7-38], Default: Not Used							
	16	32	-	-	-	-	-	-	Parameter [F7-39] (Low Byte), Default: NetCtrl	Parameter [F7-39] (Low Byte), Default: NetRef
		33	Parameter F7-39 (High Byte), Default: Not Used							
	17	34 - 35	Parameter [F7-40], Default: Converter Software Version							
	18	36 - 37	Parameter [F7-41], Default: Not Used							
	19	38 - 39	Parameter [F7-42], Default: Not Used							
	20	40	-	-	-	-	-	-	Assy. 116 F7-32 Error	Assy. 116 F7-31 Error
		41	Assy. 116 F7-30 Error	Assy. 116 F7-29 Error	Assy. 116 F7-28 Error	Assy. 116 F7-27 Error	Assy. 116 F7-26 Error	Assy. 116 F7-25 Error	Assy. 116 F7-24 Error	Assy. 116 F7-23 Error
	21	42	-	-	-	-	-	-	Assy. 166 F7-42 Error	Assy. 166 F7-41 Error
		43	Assy. 166 F7-40 Error	Assy. 166 F7-39 Error	Assy. 166 F7-38 Error	Assy. 166 F7-37 Error	Assy. 166 F7-36 Error	Assy. 166 F7-35 Error	Assy. 166 F7-34 Error	Assy. 166 F7-33 Error

Name	Description
Running	Running 0: Stop 1: Running
During Regenerative Operation	During Regenerative Operation 0: Converter not in regenerative operation 1: Converter in regenerative operation
Reset	Reset 0: - 1: Reset
During Run - Operation Ready	During Run - Operation Ready 0: Not Ready 1: Ready
Ready	Ready

Name	Description
	0: Not Ready 1: Ready
Alarm	Alarm 0: No Alarm 1: Alarm
Faulted	Faulted 0: No Fault 1: Fault
oPE	oPE 0: - 1: oPExx
Uv	Undervoltage 0: - 1: Undervoltage
LOCAL/REMOTE	Run command is from network 0: Run command is not from network 1: Run command is from network
Multi-Function Digital Output 1	Terminal M1/M2 (varies by converter model) 0: M1/M2 OFF 1: M1/M2 ON This function is enabled only when H2-01 is set to F. **Note:** The names of the digital outputs are different for different converter series.
Multi-Function Digital Output 2	Terminal M3/M4 (varies by converter model) 0: M3/M4 OFF 1: M3/M4 ON This function is enabled only when H2-02 is set to F. **Note:** The names of the digital outputs are different for different converter series.
Multi-Function Digital Output 3	Terminal M5/M6 (varies by converter model) 0: M5/M6 OFF 1: M5/M6 ON This function is enabled only when H2-03 is set to F. **Note:** The names of the digital outputs are different for different converter series.
Output Voltage	Converter Output Voltage
Voltage Command	Converter Voltage Command
D1000: Output Current R1000: -	D1000: Actual Output Current Monitors the converter output current. Unit: 0.01A Unit is not affected by Current Scale CS. R1000: -
Terminal A1 Input	MEMOBUS/Modbus (0x46) Monitor parameter U1-13
Main Circuit DC Voltage	Main Circuit DC Voltage Monitor parameter U1-07
Error Code	U2-01 converted using fault code table.
F7-33 Alarm Code	Programmable: MEMOBUS/Modbus (0x7F)
D1000: F7-34 Output Power R1000: F7-34 Not Used	D1000: Programmable: MEMOBUS/Modbus (0x47) Monitor parameter U1-08 R1000: -
F7-35 Terminal A2 Input	Programmable: MEMOBUS/Modbus (0x4F) Monitor parameter U1-14
F7-36 Terminal S1 - S12	Programmable: MEMOBUS/Modbus (0x49) Monitor parameter U1-10
F7-37 Terminal A3 Input	Programmable: MEMOBUS/Modbus (0x50)
F7-38 Not Used	-
F7-39 NetRef (Status)	Voltage command is from network 0: Voltage command is not from network 1: Voltage command is from network
F7-39 Not Used	-

Name	Description
F7-40 Converter Software Version	Programmable: MEMOBUS/Modbus (0x4D) Monitor parameter U1-25
F7-41 Not Used	-
F7-42 Not Used	-

Possible extended error codes are listed in Table 11.1 and Table 11.2. If an error occurs, extended error code 0x02 (Register number failure) is usually set.

Table 11.1 Extended Error Codes for Assembly 116/166

Error Code	Description
0x00	No Fault
0x01	Sub function code failure
0x02	Register Number
0x21	Limit check error failure
0x22	Write Failure
0x23	Write failure at Uv
0x24	Write failure at busy

Table 11.2 Extended Error Codes in Class 0x04 Instance 0xA6 Attribute 0x64

Dynamic Parameter	Byte Containing Extended Error Code
F7-23	Byte 0
F7-24	Byte 1
F7-25	Byte 2
F7-26	Byte 3
F7-27	Byte 4
F7-28	Byte 5
F7-29	Byte 6
F7-30	Byte 7
F7-31	Byte 8
F7-32	Byte 9
F7-33	Byte 10
F7-34	Byte 11
F7-35	Byte 12
F7-36	Byte 13
F7-37	Byte 14
F7-38	Byte 15
F7-39	Byte 16
F7-40	Byte 17
F7-41	Byte 18
F7-42	Byte 19

◆ (Vendor Specific Yaskawa Electric (YE) Assy) 8-Byte Dynamic Input 2 - 167 (0xA7)

Input Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
167	0	0	Faulted	Alarm	Ready	During Run - Operation Ready	Reset	During Regenerative Operation	-	Running
		1	-	-	Multi-Function Digital Output 3	Multi-Function Digital Output 2	Multi-Function Digital Output 1	LOCAL/ REMOTE	Uv	oPE
	1	2	Output Voltage (Low Byte)							

Input Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
		3	Output Voltage (High Byte)							
	2	4 - 5	Parameter [F7-33], Default: Alarm Code							
	3	6 - 7	D1000: Parameter [F7-34], Default: Output Power R1000: Parameter [F7-34], Default: Not Used							

Name	Description
Running	Running 0: Stop 1: Running
During Regenerative Operation	During Regenerative Operation 0: Converter not in regenerative operation 1: Converter in regenerative operation
Reset	Reset 0: - 1: Reset
During Run - Operation Ready	During Run - Operation Ready 0: Not Ready 1: Ready
Ready	Ready 0: Not Ready 1: Ready
Alarm	Alarm 0: No Alarm 1: Alarm
Faulted	Faulted 0: No Fault 1: Fault
oPE	oPE 0: - 1: oPExx
Uv	Undervoltage 0: - 1: Undervoltage
LOCAL/REMOTE	Run command is from network 0: Run command is not from network 1: Run command is from network
Multi-Function Digital Output 1	Terminal M1/M2 (varies by converter model) 0: M1/M2 OFF 1: M1/M2 ON This function is enabled only when H2-01 is set to F. **Note:** The names of the digital outputs are different for different converter series.
Multi-Function Digital Output 2	Terminal M3/M4 (varies by converter model) 0: M3/M4 OFF 1: M3/M4 ON This function is enabled only when H2-02 is set to F. **Note:** The names of the digital outputs are different for different converter series.
Multi-Function Digital Output 3	Terminal M5/M6 (varies by converter model) 0: M5/M6 OFF 1: M5/M6 ON This function is enabled only when H2-03 is set to F. **Note:** The names of the digital outputs are different for different converter series.
Output Voltage	Converter Output Voltage
F7-33 Alarm Code	Programmable: MEMOBUS/Modbus (0x7F)
D1000: F7-34 Output Power R1000: F7-34 Not Used	D1000: Programmable: MEMOBUS/Modbus (0x47) Monitor parameter U1-08 R1000: -

◆ (Vendor Specific Yaskawa Electric (YE) Assy) 12-Byte Dynamic Input 4 - 168 (0xA8)

Input Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
168	0	0	Faulted	Alarm	Ready	During Run - Operation Ready	Reset	During Regenerative Operation	-	Running
		1	-	-	Multi-Function Digital Output 3	Multi-Function Digital Output 2	Multi-Function Digital Output 1	LOCAL/ REMOTE	Uv	oPE
	1	2	Output Voltage (Low Byte)							
		3	Output Voltage (High Byte)							
	2	4 - 5	Parameter [F7-33], Default: Alarm Code							
	3	6 - 7	D1000: Parameter [F7-34], Default: Output Power R1000: Parameter [F7-34], Default: Not Used							
	4	8 - 9	Parameter [F7-35], Default: Terminal A2 Input							
	5	10 - 11	Parameter [F7-36], Default: Terminal S1 - S8 Input							

Name	Description
Running	Running 0: Stop 1: Running
During Regenerative Operation	During Regenerative Operation 0: Converter not in regenerative operation 1: Converter in regenerative operation
Reset	Reset 0: - 1: Reset
During Run - Operation Ready	During Run - Operation Ready 0: Not Ready 1: Ready
Ready	Ready 0: Not Ready 1: Ready
Alarm	Alarm 0: No Alarm 1: Alarm
Faulted	Faulted 0: No Fault 1: Fault
oPE	oPE 0: - 1: oPExx
Uv	Undervoltage 0: - 1: Undervoltage
LOCAL/REMOTE	Run command is from network 0: Run command is not from network 1: Run command is from network
Multi-Function Digital Output 1	Terminal M1/M2 (varies by converter model) 0: M1/M2 OFF 1: M1/M2 ON This function is enabled only when H2-01 is set to F. **Note:** The names of the digital outputs are different for different converter series.
Multi-Function Digital Output 2	Terminal M3/M4 (varies by converter model) 0: M3/M4 OFF 1: M3/M4 ON This function is enabled only when H2-02 is set to F. **Note:** The names of the digital outputs are different for different converter series.
Multi-Function Digital Output 3	Terminal M5/M6 (varies by converter model)

Name	Description
	0: M5/M6 OFF 1: M5/M6 ON This function is enabled only when H2-03 is set to F. **Note:** The names of the digital outputs are different for different converter series.
Output Voltage	Converter Output Voltage
F7-33 Alarm Code	Programmable: MEMOBUS/Modbus (0x7F)
D1000: F7-34 Output Power R1000: F7-34 Not Used	D1000: Programmable: MEMOBUS/Modbus (0x47) Monitor parameter U1-08 R1000: -
F7-35 Terminal A2 Input	Programmable: MEMOBUS/Modbus (0x4F) Monitor parameter U1-14
F7-36 Terminal S1 - S12	Programmable: MEMOBUS/Modbus (0x49) Monitor parameter U1-10

◆ (Vendor Specific Yaskawa Electric (YE) Assy) 18-Byte Dynamic Input 7 - 169 (0xA9)

Input Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
169	0	0	Faulted	Alarm	Ready	During Run - Operation Ready	Reset	During Regenerative Operation	-	Running
		1	-	-	Multi-Function Digital Output 3	Multi-Function Digital Output 2	Multi-Function Digital Output 1	LOCAL/ REMOTE	Uv	oPE
	1	2	Output Voltage (Low Byte)							
		3	Output Voltage (High Byte)							
	2	4 - 5	Parameter [F7-33], Default: Alarm Code							
	3	6 - 7	D1000: Parameter [F7-34], Default: Output Power R1000: Parameter [F7-34], Default: Not Used							
	4	8 - 9	Parameter [F7-35], Default: Terminal A2 Input							
	5	10 - 11	Parameter [F7-36], Default: Terminal S1 - S8 Input							
	6	12 - 13	Parameter [F7-37], Default: Terminal A3 Input							
	7	14 - 15	Parameter [F7-38], Default: Not Used							
	8	16	-	-	-	-	-	-	Parameter [F7-39] (Low Byte), Default: Net Ctrl	Parameter [F7-39] (Low Byte), Default: Net Ref
		17	Parameter [F7-39] (High Byte), Default: Not Used							

Name	Description
Running	Running 0: Stop 1: Running
During Regenerative Operation	During Regenerative Operation 0: Converter not in regenerative operation 1: Converter in regenerative operation
Reset	Reset 0: - 1: Reset
During Run - Operation Ready	During Run - Operation Ready 0: Not Ready 1: Ready
Ready	Ready 0: Not Ready 1: Ready
Alarm	Alarm 0: No Alarm 1: Alarm

Name	Description
Faulted	Faulted 0: No Fault 1: Fault
oPE	oPE 0: - 1: oPExx
Uv	Undervoltage 0: - 1: Undervoltage
LOCAL/REMOTE	Run command is from network 0: Run command is not from network 1: Run command is from network
Multi-Function Digital Output 1	Terminal M1/M2 (varies by converter model) 0: M1/M2 OFF 1: M1/M2 ON This function is enabled only when H2-01 is set to F. **Note:** The names of the digital outputs are different for different converter series.
Multi-Function Digital Output 2	Terminal M3/M4 (varies by converter model) 0: M3/M4 OFF 1: M3/M4 ON This function is enabled only when H2-02 is set to F. **Note:** The names of the digital outputs are different for different converter series.
Multi-Function Digital Output 3	Terminal M5/M6 (varies by converter model) 0: M5/M6 OFF 1: M5/M6 ON This function is enabled only when H2-03 is set to F. **Note:** The names of the digital outputs are different for different converter series.
Output Voltage	Converter Output Voltage
F7-33 Alarm Code	Programmable: MEMOBUS/Modbus (0x7F)
D1000: F7-34 Output Power R1000: F7-34 Not Used	D1000: Programmable: MEMOBUS/Modbus (0x47) Monitor parameter U1-08 R1000: -
F7-35 Terminal A2 Input	Programmable: MEMOBUS/Modbus (0x4F) Monitor parameter U1-14
F7-36 Terminal S1 - S12	Programmable: MEMOBUS/Modbus (0x49) Monitor parameter U1-10
F7-37 Terminal A3 Input	Programmable: MEMOBUS/Modbus (0x50)
F7-38 Not Used	-
F7-39 NetRef (Status)	Voltage command is from network 0: Voltage command is not from network 1: Voltage command is from network
F7-39 NetCtrl	Run command is from network 0: Run command is not from network 1: Run command is from network
F7-39 Not Used	-

◆ (Vendor Specific Yaskawa Electric (YE) Assy) 24-Byte Dynamic Input 10 - 170 (0xAA)

Input Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
170	0	0	Faulted	Alarm	Ready	During Run - Operation Ready	Reset	During Regenerative Operation	-	Running
		1	-	-	Multi-Function Digital Output 3	Multi-Function Digital Output 2	Multi-Function Digital Output 1	LOCAL/ REMOTE	Uv	oPE
	1	2	Output Voltage (Low Byte)							
		3	Output Voltage (High Byte)							

Input Instance	Word	Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	2	4 -5	Parameter [F7-33], Default: Alarm Code							
	3	6 - 7	D1000: Parameter [F7-34], Default: Output Power R1000: Parameter [F7-34], Default: Not Used							
	4	8 - 9	Parameter [F7-35], Default: Terminal A2 Input							
	5	10 - 11	Parameter [F7-36], Default: Terminal S1 - S8 Input							
	6	12 - 13	Parameter [F7-37], Default: Terminal A3 Input							
	7	14 - 15	Parameter [F7-38], Default: Not Used							
8	8	16	-	-	-	-	-	-	Parameter [F7-39] (Low Byte), Default: Net Ctrl	Parameter [F7-39] (Low Byte), Default: Net Ref
		17	Parameter [F7-39], Default: Not Used (High Byte)							
	9	18 - 19	Parameter [F7-40], Default: Converter Software Version							
	10	20 - 21	Parameter [F7-41], Default: Not Used							
	11	22 - 23	Parameter [F7-42], Default: Not Used							

Name	Description
Running	Running 0: Stop 1: Running
During Regenerative Operation	During Regenerative Operation 0: Converter not in regenerative operation 1: Converter in regenerative operation
Reset	Reset 0: - 1: Reset
During Run - Operation Ready	During Run - Operation Ready 0: Not Ready 1: Ready
Ready	Ready 0: Not Ready 1: Ready
Alarm	Alarm 0: No Alarm 1: Alarm
Faulted	Faulted 0: No Fault 1: Fault
oPE	oPE 0: - 1: oPExx
Uv	Undervoltage 0: - 1: Undervoltage
LOCAL/REMOTE	Run command is from network 0: Run command is not from network 1: Run command is from network
Multi-Function Digital Output 1	Terminal M1/M2 (varies by converter model) 0: M1/M2 OFF 1: M1/M2 ON This function is enabled only when H2-01 is set to F. 　Note: 　　The names of the digital outputs are different for different converter series.
Multi-Function Digital Output 2	Terminal M3/M4 (varies by converter model) 0: M3/M4 OFF 1: M3/M4 ON This function is enabled only when H2-02 is set to F. 　Note: 　　The names of the digital outputs are different for different converter series.
Multi-Function Digital Output 3	Terminal M5/M6 (varies by converter model)

Name	Description
	0: M5/M6 OFF 1: M5/M6 ON This function is enabled only when H2-03 is set to F. **Note:** The names of the digital outputs are different for different converter series.
Output Voltage	Converter Output Voltage
F7-33 Alarm Code	Programmable: MEMOBUS/Modbus (0x7F)
D1000: F7-34 Output Power R1000: F7-34 Not Used	D1000: Programmable: MEMOBUS/Modbus (0x47) Monitor parameter U1-08 R1000: -
F7-35 Terminal A2 Input	Programmable: MEMOBUS/Modbus (0x4F) Monitor parameter U1-14
F7-36 Terminal S1 - S12	Programmable: MEMOBUS/Modbus (0x49) Monitor parameter U1-10
F7-37 Terminal A3 Input	Programmable: MEMOBUS/Modbus (0x50)
F7-38 Not Used	-
F7-39 NetRef (Status)	Voltage command is from network 0: Voltage command is not from network 1: Voltage command is from network
F7-39 NetCtrl	Run command is from network 0: Run command is not from network 1: Run command is from network
F7-39 Not Used	-
F7-40 Converter Software Version	Programmable: MEMOBUS/Modbus (0x4D) Monitor parameter U1-25
F7-41 Not Used	-
F7-42 Not Used	-

12   General Class Objects (Drive)

◆ Identity Object - 1 (Class 0x01)

■ Services Supported

Service Code No. (hex)	Service Name
01	Get Attribute All
05	Reset
0E	Get Attribute Single

■ Attributes Supported

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
0	1	Object Software Revision	Identity Object software revision	○	-	Word	-	1
1	1	Vendor ID	Manufacturer code. 44 (2C (Hex.)): Yaskawa Electric	○	-	Word	-	44
1	2	Device Type	Device profile. The profile for this product is an AC drive. 2: AC drive	○	-	Word	-	2
1	3	Product Code	Product codes determined by the manufacturer.	○	-	Word	-	*1
1	4	Revision	Software revision for the option.	○	-	Word	-	Depends on software
1	5	Status	Shows the communication status for the drive.	○	-	Word	-	0
1	6	Serial number	Option serial number.	○	-	Long	-	Each unit is unique

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
1	7	Product Name	Product Name	○	-	String	-	Product dependent (i.e., CIMR-AA2A0004)
1	8	State	Operation status of the drive. 3: Drive ready 4: Fault	○	-	Byte	-	3

*1   Product code is 2 Bytes. The first Byte is the drive type and the second Byte is the model number of the drive.

◆ Assembly Object - 4 (Class 0x04)

■ Services Supported

Service Code No. (hex)	Service Name
0E	Get Attribute Single
10	Set Attribute Single

■ Attributes Supported

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
0	1	Object Software Revision	Show the EtherNet Object software revision.	○	-	Word	-	2
20	3	Data	Same function as the Basic Speed Control (Output Assembly)	○	○	Array 4 Bytes	-	00 00 00 00
21	3	Data	Same function as the Extended Speed Control (Output Assembly)	○	○	Array 4 Bytes	-	00 00 00 00
22	3	Data	Same function as the Speed/Torque Control (Output Assembly)	○	○	Array 6 Bytes	-	00 00 00 00 00 00
23	3	Data	Same function as the Extended Speed and Torque Control (Output Assembly)	○	○	Array 6 Bytes	-	00 00 00 00 00 00
70	3	Data	Same function as the Basic Speed Control (Input Assembly)	○	-	Array 4 Bytes	-	00 00 00 00
71	3	Data	Same function as the Extended Speed Control (Input Assembly)	○	-	Array 4 Bytes	-	00 00 00 00
72	3	Data	Same function as the Speed/Torque Control (Input Assembly)	○	-	Array 6 Bytes	-	00 00 00 00 00 00
73	3	Data	Same function as the Extended Speed and Torque Control (Input Assembly)	○	-	Array 6 Bytes	-	00 00 00 00 00 00
100	3	Data	Same function as the MEMOBUS/Modbus Message Command (Output Assembly)	○	○	Array 5 Bytes	-	00 00 00 00 00
101	3	Data	Same function as the Speed/Torque Control (Output Assembly)	○	○	Array 8 Bytes	-	00 00 00 00 00 00 00 00
116	3	Data	Same function as the High Speed/Torque Control (Output Assembly)	○	○	Array 44 Bytes	-	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
117	3	Data	Same function as the 8 Byte Dynamic Output (Output Assembly)	○	○	Array 8 Bytes	-	00 00 00 00 00 00 00 00
118	3	Data	Same function as the 12 Byte Dynamic Output (Output Assembly)	○	○	Array 12 Bytes	-	00 00 00 00 00 00 00 00 00 00 00 00
119	3	Data	Same function as the 18 Byte Dynamic Output (Output Assembly)	○	○	Array 18 Bytes	-	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
120	3	Data	Same function as the 24 Byte Dynamic Output (Output Assembly)	○	○	Array 24 Bytes	-	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
130	3	Data	Gateway Consume Assembly	○	○	Array 48 Bytes	-	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
150	3	Data	Same function as the MEMOBUS/ Modbus Message Command (Input Assembly)	○	-	Array 5 Bytes	-	00 00 00 00 00
151	3	Data	Same function as the Speed/Torque Status (Input Assembly)	○	-	Array 8 Bytes	-	00 00 00 00 00 00 00 00
166	3	Data	Same function as the High Speed/ Torque Status (Input Assembly)	○	-	Array 44 Bytes	-	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
167	3	Data	Same function as the 8 Byte Dynamic Input (Input Assembly)	○	-	Array 8 Bytes	-	00 00 00 00 00 00 00 00
168	3	Data	Same function as the 12 Byte Dynamic Input (Input Assembly)	○	-	Array 12 Bytes	-	00 00 00 00 00 00 00 00 00 00 00 00
169	3	Data	Same function as the 18 Byte Dynamic Input (Input Assembly)	○	-	Array 18 Bytes	-	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
170	3	Data	Same function as the 24 Byte Dynamic Input (Input Assembly)	○	-	Array 24 Bytes	-	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
180	3	Data	Gateway Produce Assembly	○	-	Array 48 Bytes	-	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

◆ Motor Data Object - 40 (Class 0x28)

Note:

- This object is not available in D1000 and R1000. Refer to *Motor Data Object - 40 (Class 0x28) on page 108* or more information about this object compatible with D1000 and R1000.
- This object is only available for Motor 1. It is not available for Motor 2.

■ Services Supported

Service Code No. (hex)	Service Name
0E	Get Attribute Single
10	Set Attribute Single

■ Attributes Supported

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
0	1	Object Software Revision	Motor Data Object software revision.	○	-	Word	-	1
1	3	Motor Type	Type of motor used. 3: PM motor 7: IM motor The setting value of this parameter is different for different A1-02 [Control Method Selection] setting. When A1-02 = 5, 6, 7 [PM Open Loop Vector, PM Advanced Open Loop Vector, PM Closed Loop Vector], value becomes 3 [PM Motor]. When A1-02 = 0, 1, 2, 3 [V/f Control, V/f Control with Encoder, Open Loop Vector, Closed Loop Vector], value becomes 7 [IM Motor].	○	-	Byte	-	Depends on A1-02 [Control Method Selection].

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
			Note: On GA700, GA800, CR700, CH700, HV600, and FP605 when A1-02 = 8 [EZ Vector Control], this looks at E9-01 (E9-01 = 0 value becomes 7, E9-01 = 1 value becomes 3).					
1	6	Rated Current [0.1 A]	The setting value of this attribute depends on *A1-02 [Control Method Selection]*. • When *A1-02 = 0, 1, 2, 3, 4 [V/f Control, V/f Control with Encoder, Open Loop Vector, Closed Loop Vector, Advanced Open Loop Vector]*, the value is *E2-01 [Motor Rated Current (FLA)]* setting. • When *A1-02 = 5, 6, 7 [PM Open Loop Vector, PM Advanced Open Loop Vector, PM Closed Loop Vector]*, the value is *E5-03 [PM Motor Rated Current (FLA)]* setting. • When *A1-02 = 8 [EZ Vector Control]*, the value is *E9-06 [Motor Rated Current (FLA)]* setting. The set value depends on Current Scale (CS). **Note:** For the option software versions PRG: 3002 or earlier, the set value does not differ depending on A1-02. The value is set to *E2-01 [Motor Rated Current (FLA)]*. Refer to *U6-97 [OPT SPARE 4]* to check the option software version.	○	○	Byte	-	Depends on capacity
1	7	Rated Voltage [1V]	The setting value of this attribute depends on *A1-02 [Control Method Selection]*. • When *A1-02 = 0, 1, 2, 3, 4, 5, 6, 7 [V/f Control, V/f Control with Encoder, Open Loop Vector, Closed Loop Vector, Advanced Open Loop Vector, PM Advanced Open Loop Vector, PM Closed Loop Vector, PM Vector Control]*, the value is *E1-05 [Maximum Output Voltage]* setting. • When *A1-02 = 8 [EZ Vector Control]*, the value is *E9-05 [Motor Rated Voltage]* setting. The set value depends on Voltage Scale (VS). **Note:** For the option software versions PRG: 3002 or earlier, the set value does not differ depending on A1-02. The value is set to *E1-01 [Input AC Supply Voltage]*. Refer to *U6-97 [OPT SPARE 4]* to check the option software version.	○	○	Byte	-	Depends on capacity

◆ Control Supervisor Object - 41 (Class 0x29)

Note:

This information applies to all products except D1000/R1000 converters. For the D1000/R1000 data for this object, refer to .

■ Services Supported

Service Code No. (hex)	Service Name
0E	Get Attribute Single
10	Set Attribute Single
05	Reset

■ Attributes Supported

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
0	1	Object Software Revision	Revision number of the Control Supervisor Object.	○	-	Word	-	1
1	3	Run command 1 (FWD)	Forward Run Command 0: Stop 1: Forward Run	○	○	Byte	0, 1	0
1	4	Run command 2 (REV)	Reverse Run Command 0: Stop 1: Reverse Run	○	○	Byte	0, 1	0
1	5	NetCtrl (Command)	Run command is from network 0: Depends on b1-02 1: Run command is from network	○	○	Byte	0, 1	0
1	6	State	State 1: During Startup 2: Not Ready 3: Ready (Stopped) 4: Enabled (Run command present) 5: Deceleration to Stop 6: Fault Stop 7: Fault	○	-	Byte	-	3
1	7	Running 1 (FWD)	Forward Running 0: Stop or Reverse Running 1: Forward Running	○	-	Byte	-	0
1	8	Running 2 (REV)	Reverse Running 0: Stop or Forward Running 1: Reverse Running	○	-	Byte	-	0
1	9	Ready	Ready 0: Not Ready 1: Ready	○	-	Byte	-	1
1	10	Faulted	Faulted 0: No Fault 1: Fault	○	-	Byte	-	0
1	11	Alarm	Alarm 0: No Alarm 1: Alarm	○	-	Byte	-	0
1	12	Fault Reset	Fault Reset 0: - 1: Fault Reset	○	○	Byte	0, 1	0
1	13	Fault Code	Current Fault Refer to page 94 for more information.	○	-	Word	-	0000
1	15	NetCtrl (Status)	Run command is from network 0: Run command is not from network 1: Run command is from network	○	-	Byte	-	0
1	17	Force Fault	External Fault 0: - 1: External Fault [EF0] Triggered by the rising edge of the signal.	○	○	Byte	0, 1	0
1	18	Force Reset	External Fault status 0: - 1: External Fault [EF0] Triggered by the rising edge of the signal.	○	-	Byte	-	0
1	20	Net Idle Mode	Operation mode selection when communication is in Idle Mode. 0: Stop 1: Ignore 2: Stop if F6-01 is set to fault mode. 3: Forward Run 4: Reverse Run	○	○	-	0 - 4	

■ **Option Fault Code Conversion Table**

Drive Fault Code (Dec.) (MEMOBUS/Modbus 0080 (Hex.))	Option Fault Code (Hex.)	Description
0	0000	No Fault
2	3220	Uv1 [DC Bus Undervoltage]
3	5110	Uv2 [Control Power Undervoltage]
4	3222	Uv3 [Soft Charge Answerback Fault]
6	2120	GF [Ground Fault]
7	2300	oC [Overcurrent]
8	3210	ov [Overvoltage]
9	4200	oH [Heatsink Overheat]
10	4210	oH1 [Heatsink Overheat]
11	2220	oL1 [Motor Overload]
12	2200	oL2 [Drive Overload]
13	2221	oL3 [Overtorque Detection 1]
14	2222	oL4 [Overtorque Detection 2]
15	7110	rr [Dynamic Braking Transistor Fault]
16	7112	rH [Braking Resistor Overheat]
17	9000	EF3 [External Fault (Terminal S3)]
18	9000	EF4 [External Fault (Terminal S4)]
19	9000	EF5 [External Fault (Terminal S5)]
20	9000	EF6 [External Fault (Terminal S6)]
21	9000	EF7 [External Fault (Terminal S7)]
22	9000	EF8 [External Fault (Terminal S8)]
24	7310	oS [Overspeed]
25	7310	dEv [Speed Deviation]
26	7301	PGo [Encoder (PG) Feedback Loss]
27	3130	PF [Input Phase Loss]
28	3130	LF [Output Phase Loss]
29	5210	oH3 [Motor Overheat (PTC Input)]
30	5300	oPr [Keypad Connection Fault]
31	6320	Err [EEPROM Write Error]
32	0	oH4 [Motor Overheat Fault (PTC Input)]
33	7500	CE [Modbus Communication Error]
34	7500	bUS [Option Communication Error]
37	8321	CF [Control Fault]
38	8313	SvE [Zero Servo Fault]
39	9000	EF0 [Option Card External Fault]
40	8000	FbL [PID Feedback Loss]
41	8000	UL3 [Undertorque Detection 1]
42	8000	UL4 [Undertorque Detection 2]
43	8000	oL7 [High Slip Braking Overload]
50	8000	dv1 [Z Pulse Fault]
51	8000	dv2 [Z Pulse Noise Fault Detection]
52	8000	dv3 [Inversion Detection]
53	8000	dv4 [Inversion Prevention Detection]
54	8000	LF2 [Output Current Imbalance]

Drive Fault Code (Dec.) (MEMOBUS/Modbus 0080 (Hex.))	Option Fault Code (Hex.)	Description
55	8000	STo [Pull-Out Detection] **Note:** When using YASKAWA AC Drive GA500, GA700, GA800, CR700, CH700, HV600, or FP605, *STPo [Motor Step-Out Detected]* will be shown.
56	7000	PGoH [Encoder (PG) Hardware Fault]
59	1000	SEr [Speed Search Retries Exceeded]
65	8000	FbH [Excessive PID Feedback]
66	9000	EF1 [External Fault (Terminal S1)]
67	9000	EF2 [External Fault (Terminal S2)]
68	8000	oL5 [Mechanical Weakening Detection 1]
69	8000	UL5 [Mechanical Weakening Detection 2]
70	5000	CoF [Current Offset Fault]
73	8000	dWFL [DriveWorksEZ Fault]
77	5000	voF [Output Voltage Detection Fault]
78	7000	rF [Braking Resistor Fault]
79	7000	boL [BrakingTransistor Overload Fault]
-	1000	Other faults

◆ AC/DC Drive Object - 42 (Class 0x2A)

Note:

This object is not available in D1000 and R1000. Refer to *AC/DC Drive Object - 42 (Class 0x2A) on page 110* for more information about this object compatible with D1000 and R1000.

■ Services Supported

Service Code No. (hex)	Service Name
0E	Get Attribute Single
10	Set Attribute Single

■ Attributes Supported

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
0	1	Object Software Revision	Revision number of AC/DC drive object	○	-	Word	-	1
1	3	Speed Agree	Speed Agree 0: - 1: Speed actual at speed reference	○	-	Byte	-	0
1	4	NetRef (Command)	Speed reference is from network 0: Speed reference is not from network 1: Speed reference is from network	○	-	Byte	-	0
1	6	Drive Mode	Drive Control Mode 0: OLV 0: OLV for PM (Read only) 0: Advanced OLV for PM (Read only) 1: V/f 2: V/f with PG 3: CLV 3: CLV for PM (Read only) **Note:** On GA500, GA700, GA800, CR700, CH700, HV600, and FP605, setting 1 also includes EZOLV (Read only). 1: V/f Control, EZ Vector Control	○	○	Byte	0 - 3	0
1	7	Speed Actual	Actual Drive Speed Unit depends on o1-03.	○	-	Word	-	3

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
1	8	Speed Reference	Speed Reference Unit depends on o1-03.	○	○	Word	-	0
1	9	Current Actual	Actual Output Current Monitors drive output current. Unit is 0.01 A for drives set up to 11 kW in Heavy Duty or Normal Duty and 0.1 A for drives set up for 15 kW and above. The maximum applicable motor output varies depending on the setting of C6-01 [Normal / Heavy Duty Selection].	○	-	Word	-	0
1	11	Torque Actual	Drive Output Torque Unit is affected by Torque Scale (TS)	○	-	Word	-	0
1	12	Torque Reference/Torque Limit	Torque Reference/Torque Limit Sets the Torque Reference/Torque Limit. Unit is affected by Torque Scale (TS). Sets the Torque Reference when using Torque Control [d5-01 = 1]. Sets the Torque Limit when using Speed Control [d5-01 = 0]. The Torque Reference/Torque Limit are disabled when F6-06 = 0.	○	○	Word	-	0
1	15	Power Actual [W]	Drive Output Power Unit is affected by Power Scale (PS).	○	-	Word	-	0
1	16	Input Voltage [V]	Drive Input Voltage [E1-01] Unit is affected by Voltage Scale (VS).	○	-	Word	-	Depends on capacity
1	17	Output Voltage [V]	Drive Output Voltage Unit is affected by Voltage Scale (VS).	○	-	Word	-	0
1	18	Accel Time [ms]	Acceleration Time 1 [C1-01] Units set in parameter C1-10. Unit is affected by Time Scale (TS).	○	○	Word	-	2710 (Hex.)
1	19	Decel Time [ms]	Acceleration Time 1 [C1-02] Units set in parameter C1-10. Unit is affected by Time Scale (TS).	○	○	Word	-	2710 (Hex.)
1	20	Low Speed Limit Percent of Max Speed	Frequency Reference Lower Limit [d2-02]	○	○	Word	0 - 1100	0
1	21	High Speed Limit Percent of Max Speed	Frequency Reference Upper Limit [d2-01]	○	○	Word	0 - 1100	3E8 (Hex.)
1	22	Speed Scale (-15 - +15)	Scale of Units for Speed Related Data Sets or verifies *F7-17 [EtherNet/IP Speed Scaling Factor]*.	○	○	Byte	-15 - +15	0
1	23	Current Scale (-15 - +15)	Scale of Units for Current Related Data Sets or verifies *F7-18 [EtherNet/IP Current Scale Factor]*.	○	○	Byte	-15 - +15	0
1	24	Torque Scale (-15 - +15)	Scale of Units for Torque Related Data Sets or verifies *F7-19 [EtherNet/IP Torque Scale Factor]*.	○	○	Byte	-15 - +15	0
1	26	Power Scale (-15 - +15)	Scale of Units for Power Related Data Sets or verifies *F7-20 [EtherNet/IP Power Scaling Factor]*.	○	○	Byte	-15 - +15	0
1	27	Voltage Scale (-15 - +15)	Scale of Units for Voltage Related Data Sets or verifies *F7-21 [EtherNet/IP Voltage Scale Factor]*.	○	○	Byte	-15 - +15	0
1	28	Time Scale (-15 - +15)	Scale of Units for Time Related Data Sets or verifies *F7-22 [EtherNet/IP Time Scaling]*.	○	○	Byte	-15 - +15	0
1	29	NetRef (Status)	Speed reference is from network 0: Speed reference is not from network 1: Speed reference is from network	○	-	Byte	-	0

◆ DLR Object 71 (Class 0x47)

Note:

DLR is compatible with option software versions PRG: 3003 or later. Refer to *U6-97 [OPT SPARE 4]* to check the option software version.

Device Level Ring (DLR) is a layer 2 protocol allowing for redundancy in EtherNet/IP based ring topology networks. DLR allows devices to be placed in a ring to reduce the need for switch hardware and cabling and allow for the detection and recovery of faults in the ring. This option is a beacon-based ring node implementation.

To set up a DLR network, configure a supervisor on the network prior to connecting and powering on all devices in the ring. Establishing a ring without an active supervisor may cause a loss of communication to devices on the ring.

The supervisor precedence must be configured when setting up the supervisor. Typically, the default beacon rate is 400 µs, which should be set to an interval that allows for a shorter fault detection and recovery period without losing an I/O connection to the devices. When there are multiple supervisors in the same network, the supervisor with the higher supervisor priority becomes the supervisor. If the priorities are the same, the device with the larger MAC address becomes the supervisor and the other becomes the backup supervisor.

Yaskawa recommends that all devices in the ring be DLR capable. If non-DLR devices are connected in a ring, add to the ring through a DLR-capable device, such as a 3-port ETAP.

Ensure that non-DLR devices placed in the ring meet the following requirements:

• Disable MAC address learning
• Do not use multicast filtering
• Preserve VLAN tags.

Make sure that all switches in the ring are DLR-aware. Switches in the ring that are not DLR-aware may cause undesired behavior due to MAC address learning of the supervisor beacon packets being received on two different switch ports.

Be sure to set the RPI only as fast as needed to limit the network traffic. This product supports RPIs down to 10 ms. However, if a slower level of control is acceptable, a slower RPI setting will reduce network traffic.

Yaskawa also recommends setting up and configuring all devices prior to completing the ring by leaving one cable disconnected. Make the last connection after configuring the nodes and supervisor.

■ Services Supported

Service Code No. (hex)	Service Name
01	Get Attribute All
10	Set Attribute Single

■ Attributes Supported

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
0	1	Object Software Revision	DLR Object software revision.	○	-	Word	-	3
1	1	Network Topology	Current network topology 0: Linear 1: Ring	○	-	Byte	0, 1	0
1	2	Network Status	Current status of network 0: No fault 1: Ring fault 2: Unexpected loop detected 3: Partial network fault 4: Rapid fault/restore cycle	○	-	Byte	0 - 4	-
1	10	Supervisor IP Address	Supervisor IP address, Supervisor MAC address	○	-	Struct	-	-
1	12	Capability Flags	Describes DLR capabilities	○	-	Long	-	0x00000002

Note:

"Get Attributes All" Service shall report in attribute ascending order.

◆ QoS Object 72 (Class 0x48)

Note:

This object is compatible with option software versions PRG: 3003 or later. Refer to *U6-97 [OPT SPARE 4]* to check the option software version.

■ Services Supported

Service Code No. (hex)	Service Name
0E	Get Attribute Single
10	Set Attribute Single

■ Attributes Supported

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
0	1	Object Software Revision	QoS Object software revision.	○	-	Word	-	1
1	4	DCSP Urgent	DSCP value for CIP transport class 0/1 Urgent priority messages	○	○	Byte	0 - 63	55
1	5	DSCP Scheduled	DSCP value for CIP transport class 0/1 Scheduled priority messages	○	○	Byte	0 - 63	47
1	6	DSCP High	DSCP value for CIP transport class 0/1 High priority messages	○	○	Byte	0 - 63	43
1	7	DSCP Low	DSCP value for CIP transport class 0/1 Low priority messages	○	○	Byte	0 - 63	31
1	8	DSCP Explicit	DSCP value for CIP explicit messages and all other EtherNet/IP encapsulation messages	○	○	Byte	0 - 63	27

◆ Base Energy Object 78 (Class 0x4E)

Note:

This object is not available in D1000 and R1000. Refer to *Base Energy Object 78 (Class 0x4E) on page 111* for more information about this object compatible with D1000 and R1000.

■ Services Supported

Service Code No. (hex)	Service Name
0E	Get Attribute Single
10	Set Attribute Single

■ Attributes Supported

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
0	1	Base Energy Software Revision	Base Energy Object software revision	○	-	Word	-	2
1	1	Energy/Resource Type	Type of energy managed	○	-	Word	-	Always 1 (Electrical)
1	2	Base Energy Object Capabilities	Energy Capabilities of this device	○	-	Word	-	Always 0 (Measured)
1	3	Energy Accuracy	Specifies the accuracy of power and energy metering results.	○	-	Word	-	Always 1000 (10%)
1	7	Consumed Energy Odometer	Consumed energy read from *U4-10 [kWh, Lower 4 Digits]* and *U4-11 [kWh, Upper 5 Digits]* in units of kWh.	○	-	ODOMETER Array of 5 words	0 - 999,999,999,999.999	-
1	8	Generated Energy Odometer	Always returns 0	○	-	ODOMETER Array of 5 words	0 - 999,999,999,999.999	-
1	9	Net Energy Odometer	The difference between Consumed energy and Generated energy in units of kWh.	○	-	SIGNED ODOMETER Array of 5 signed Words	-999,999,999,999.999 - 999,999,999,999.999	-

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
1	10	Energy Transfer Rate	Output Power read from monitor *U1-08 [Output Power]* in units of 1kW. In IEEE 754 REAL format.	○	-	REAL	Depends on capacity	-
1	12	Energy Type Specific Object Path	EPATH to Electrical Energy Object	○	-	STRUCT of UINT Size Padded EPATH	-	Always 02 20 4F 24 01

◆ Electrical Energy Object 79 (Class 0x4F)

Note:

This object is not available in D1000 and R1000. Refer to *Electrical Energy Object 79 (Class 0x4F) on page 111* for more information about this object compatible with D1000 and R1000.

■ Services Supported

Service Code No. (hex)	Service Name
0E	Get Attribute Single
10	Set Attribute Single

■ Attributes Supported

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
0	1	Electrical Energy Software Revision	Electrical Energy Object software revision	○	-	Word	-	2
1	1	Consumed Energy Odometer	Consumed energy read from *U4-10 [kWh, Lower 4 Digits]* and *U4-11 [kWh, Upper 5 Digits]* in units of kWh.	○	-	ODOMETER Array of 5 words	0 - 999,999,999,999.999	-
1	2	Generated Energy Odometer	Always returns 0	○	-	ODOMETER Array of 5 words	0 - 999,999,999,999.999	-
1	3	Net Energy Odometer	The difference between Consumed energy and Generated energy in units of kWh.	○	-	SIGNED ODOMETER Array of 5 signed Words	-999,999,999,999.999 - 999,999,999,999.999	-
1	41	Energy Type Specific Object Path	EPATH to Base Energy Object	○	-	STRUCT of UINT Size Padded EPATH	-	Always 02 20 4E 24 01

◆ RSTP Bridge Object - 84 (Class 0x54)

Note:

This object is compatible with option software versions PRG: 3003 or later. Refer to *U6-97 [OPT SPARE 4]* to check the option software version.

■ Services Supported

Service Code No. (Hex.)	Service Name
01	Get Attribute All
0E	Get Attribute Single
10	Set Attribute Single

■ Attributes Supported

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
0	1	Object Software Revision	RSTP Bridge Object software revision.	○	-	Word	-	1
1	1	Bridge Object Identification	Shows the model name of the drive used.	○	-	STRING	-	-
1	2	Bridge Identifier Priority	Shows the root bridge priority.	○	-	UINT	0 - 61440	-
1	3	Transmit Hold Count	Limits the transmission rate.	○	-	UINT	1 - 10	10

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
1	4	Number of RSTP Ports	Shows the number of ports for this bridge.	○	-	UINT	2	2
1	5	List of RSTP Port Object References	Shows the list of the number of instances of the RSTP Bridge object, associated with the RSTP Port object.	○	-	Array of UINT	-	-
1	6	Force Protocol Version	STP or RSTP	○	-	UINT	0 = STP 2 = RSTP	2
1	7	Bridge Max Age	Shows the maximum duration of information sent by the bridge, when root bridging.	○	-	UINT	6 - 40	20
1	8	Bridge Hello Time	Shows the interval for sending Configuration Message by the designated port.	○	-	UINT	1 - 2	2
1	9	Bridge Forward Delay	Shows the delay that the STP bridge transit the route and designated port to the forwarding.	○	-	UINT	4 - 30	15
1	12	Designated Root	Shows the root bridge identifier of the spanning tree. This value is used as the route identifier parameter for BPDU sent by this node.	○	-	Array of USINT	-	-
1	13	Root Cost	Shows the path cost from this bridge to the route.	○	-	UINT	1 - 200,000,000	-
1	14	Root Port	Shows the port identifier that provides the lowest path cost from this bridge to the root bridge.	○	-	UINT	0x8000 - 0x80001	-
1	15	Max Age	Shows the maximum period of time that STP information learned by a port from the network will be discarded. This is the actual value currently used by this bridge.	○	-	UINT	6 - 40	-
1	16	Hello Time	Shows the interval at which this node sends BPDU, if this node is the root of STP or is transitioning to the root. This is the actual value currently used by the bridge.	○	-	UINT	1 - 2	-
1	17	Forward Delay	When transitioning to forwarding state, this time controls the speed at which the port changes spanning state. This is the value currently used by the bridge. In contrast, BridgeForwardDelay is the time at which this bridge and all other bridges become active if this bridge becomes root.	○	-	UINT	4 - 30	-

Note:

"Get Attributes All" Service shall report in attribute ascending order.

◆ RSTP Port Object 85 (Class 0x55)

Note:

This object is compatible with option software versions PRG: 3003 or later. Refer to *U6-97 [OPT SPARE 4]* to check the option software version.

■ Services Supported

Service Code No. (Hex.)	Service Name
01	Get Attribute All
0E	Get Attribute Single
10	Set Attribute Single

■ Attributes Supported

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
0	1	Object Software Revision	RSTP Port Object software revision.	○	-	Word	-	1
0	2	Max Instance	Shows number of option Instances.	○	-	UINT	-	2
0	3	Number of Instances	Shows number of option Instances.	○	-	UINT	-	2

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
1	1	Bridge Object Instance	Shows the number of instances of the RSTP Bridge object, associated with the RSTP Port object.	○	-	UINT	1	1
1	2	Ethernet Link Instance Number	Shows the number of instances of the Ethernet Link object, associated with the RSTP Port object.	○	-	UINT	1 - 2	-
1	3	Reference Bridge Identifier	Shows the identifier of the bridge, associated with the port.	○	-	Array of 8 USINTs	-	-
1	4	Port MAC Address	Shows the MAC address of the Port instance, with attribute 2.	○	-	Array of 6 USINTs	-	-
1	5	RSTP Port Enable	Shows port enable or disable status.	○	○	BOOL	0 - 1	1
1	6	Port Identifier Priority	Shows the management component of the Port identifier, called Port Priority.	○	-	UDINT	-	-
1	7	Oper Edge Port	The value of BOOL. Shows the value of the operEdgePort parameter, determined by the operation of the Bridge Detection state machine.	○	-	BOOL	0 - 1	1
1	8	Port State	Shows the current Port status, defined by STP.	○	-	UINT	1 - 6	1 = Disabled 2 = Blocking 3 = Listening 4 = Learning 5 = Forwarding 6 = Broken
1	9	mcheck	The value of BOOL. The administrator configures the Port Protocol Migration state machine to send RST BPDU during migration.	○	-	BOOL	0 - 1	0
1	10	Port Path Cost	Shows the administratively assigned value for the port's Contribution to the path cost to the Spanning Tree Root.	○	-	UDINT	0 - 200,000,000	200000
1	11	Port Admin Edge Port	Shows the managed value of edge port parameters. If the value is True, it becomes an edge port. If the value is False, it is not an edge port.	○	○	BOOL	0 - 1	0
1	13	Oper PointToPoint MAC	Shows the status of point-to-point operation of the LAN segment connected to this port.	○	-	UINT	0 - 1	0
1	14	Port Role	Sets the role of port.	○	-	UINT	0 - 6	0 = Unknown 1 = Alt Backup 2 = Root 3 = Designated 4 = Alternate 5 = Backup 6 = Disabled
1	15	Designated Root Bridge Identifier	Shows the bridge identifier that is recorded as the root in the Configuration BPDU sent by the designated bridge on the segment to which the port is connected.	○	-	Array of 8 USINTs	-	-
1	16	Designated Root Path Cost	Shows the path cost of the designated port on the segment connected to this port. This value is compared to the root path cost of the received BPDU.	○	-	UDINT	1 - 200,000,000	-
1	17	Designated Bridge Identifier	Shows the bridge identifier that considers this port to be the designated bridge for the segment.	○	-	Array of 8 USINTs	-	-
1	18	Designated Port	Shows the port identifier of the designated bridge for this port's segment.	○	-	UINT	0x8000 - 0x80001	-
2	1	Bridge Object Instance	Shows the number of instances of the RSTP Bridge object, associated with the RSTP Port object.	○	-	UINT	1	1
2	2	Ethernet Link Instance Number	Shows the number of instances of the Ethernet Link object, associated with the RSTP Port object.	○	-	UINT	1 - 2	-
2	3	Reference Bridge Identifier	Shows the identifier of the bridge, associated with the port.	○	-	Array of 8 USINTs	-	-

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
2	4	Port MAC Address	Shows the MAC address of the Port instance, with attribute 2.	○	-	Array of 6 USINTs	-	-
2	5	RSTP Port Enable	Shows port enable or disable status.	○	○	BOOL	0 - 1	1
2	6	Port Identifier Priority	Shows the management component of the Port identifier, called Port Priority.	○	-	UDINT	-	-
2	7	Oper Edge Port	The value of BOOL. Shows the value of the operEdgePort parameter, determined by the operation of the Bridge Detection state machine.	○	-	BOOL	0 - 1	1
2	8	Port State	Shows the current Port status, defined by STP.	○	-	UINT	1 - 6	1 = Disabled 2 = Blocking 3 = Listening 4 = Learning 5 = Forwarding 6 = Broken
2	9	mcheck	The value of BOOL. The administrator configures the Port Protocol Migration state machine to send RST BPDU during migration.	○	-	BOOL	0 - 1	0
2	10	Port Path Cost	Shows the administratively assigned value for the port's Contribution to the path cost to the Spanning Tree Root.	○	-	UDINT	0 - 200,000,000	200000
2	11	Port Admin Edge Port	Shows the managed value of edge port parameters. If the value is True, it becomes an edge port. If the value is False, it is not an edge port.	○	○	BOOL	0 - 1	0
2	13	Oper PointToPoint MAC	Shows the status of point-to-point operation of the LAN segment connected to this port.	○	-	UINT	0 - 1	0
2	14	Port Role	Sets the role of port.	○	-	UINT	0 - 6	0 = Unknown 1 = Alt Backup 2 = Root 3 = Designated 4 = Alternate 5 = Backup 6 = Disabled
2	15	Designated Root Bridge Identifier	Shows the bridge identifier that is recorded as the root in the Configuration BPDU sent by the designated bridge on the segment to which the port is connected.	○	-	Array of 8 USINTs	-	-
2	16	Designated Root Path Cost	Shows the path cost of the designated port on the segment connected to this port. This value is compared to the root path cost of the received BPDU.	○	-	UDINT	1 - 200,000,000	-
2	17	Designated Bridge Identifier	Shows the bridge identifier that considers this port to be the designated bridge for the segment.	○	-	Array of 8 USINTs	-	-
2	18	Designated Port	Shows the port identifier of the designated bridge for this port's segment.	○	-	UINT	0x8000 - 0x80001	-

Note:

"Get Attributes All" Service shall report in attribute ascending order.

◆ TCP/IP Object 245 (Class 0xF5)

■ Services Supported

Service Code No. (hex)	Service Name
01	Get Attribute All
0E	Get Attribute Single
10	Set Attribute Single

■ **Attributes Supported**

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
0	1	Object Software Revision	Revision number of the TCP/IP Object	○	-	Word	-	3
1	1	Status	Bits 0-3 = Interface Status 0: Interface has not been configured 1: Interface Configuration is valid, obtained from BOOTP, DHCP, or NVRAM 2: Interface Configuration is valid and obtained from hardware settings 3: Reserved Bit 4 = Multicast Pending Bits 5-31 = Reserved	○	-	DWord	-	-
1	2	Configuration Capability	Bit 0 = BOOTP Client Bit 1 = DNS Client Bit 2 = DHCP Client Bit 3 = DHCP-DNS Update Bit 4 = Configuration Settable Bits 5-31 = Reserved	○	-	DWord	-	-
1	3	Configuration Control	Bits 0-3 = Startup Configuration 0: NVRAM 1: BOOTP 2: DHCP 3: Reserved Bit 4 =DNS Enabled (not supported) Bits 5-31 = Reserved	○	○	DWord	-	-
1	4	Physical Link	Struct of: Path Size: First 2 bytes Path: Remaining bytes	○	-	Struct	-	02 00 20 F6 24 01
1	5	Interface Configuration	Struct of: IP Address: Long Subnet Mask: Long Gateway Address: Long Name Server1: Long Name Server2: Long Domain Name: STRING	○	○	Struct	-	-
1	6	Host Name	Host Name	○	○	String	64 Characters	Null
1	10	SelectACD	Activates the use of ACD	○	○	BOOL	0, 1	1
1	11	Last Conflict Detected	AcdActivity	○	○	USINT	0, 1, 2, 3	0
			RemoteMAC	○	○	Array of 6 bytes	00 00 00 00 00 00 FF FF FF FF FF FF	00 00 00 00 00 00
			ArpPdu	○	○	Array of 28 bytes	-	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
1	13	Encapsalation Inactivity Timeout	Number of seconds of inactivity before TCP connection is closed.	○	○	UINT	1 s - 3600 s	120 s

Note:

"Get Attributes All" Service shall report in attribute ascending order.

◆ **Ethernet Link Object 246 (Class 0xF6)**

■ **Services Supported**

Service Code No. (hex)	Service Name
01	Get Attribute All
0E	Get Attribute Single
10	Set Attribute Single

■ Attributes Supported

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
0	1	Object Software Revision	Revision number of the Ethernet Link Object	○	-	Word	-	3
0	2	Max Instance	Number of Option Instances	○	-	UINT	-	2
0	3	Number of Instances	Number of Option Instances	○	-	UINT	-	2
1	1	Interface Speed	Interface speed currently in use	○	-	UDINT	-	-
1	2	Interface Flags	Bit 0 = Link Status Bit 1 = Duplex (0: half duplex, 1: full duplex) Bits 2-4 = Negotiation Status 0: In progress 1: Auto-negotiate failed 2: Speed found, duplex not found Mode not detected 3: Successful 4: Not attempted Bit 5 = Manual Setting requires restart Bit 6 = Local hardware fault Bits 7-31 = Reserved	○	-	DWord	-	-
1	3	Physical Address (MAC)	MAC address	○	-	Array of 6 Bytes	-	-
1	4	Interface Counters (Port 1)	In Octets	○	-	UDINT	0 - 4294967295	0
			In Ucast Packets	○	-	UDINT	0 - 4294967295	0
			In NUcast Packets	○	-	UDINT	0 - 4294967295	0
			In Discards	○	-	UDINT	0 - 4294967295	0
			In Errors	○	-	UDINT	0 - 4294967295	0
			In Unknown Protos	○	-	UDINT	0 - 4294967295	0
			Out Octets	○	-	UDINT	0 - 4294967295	0
			Out Ucast Packets	○	-	UDINT	0 - 4294967295	0
			Out NUcast Packets	○	-	UDINT	0 - 4294967295	0
			Out Discards	○	-	UDINT	0 - 4294967295	0
			Out Errors	○	-	UDINT	0 - 4294967295	0
1	5	Media Counters (Port 1)	Alignment Errors	○	-	UDINT	0 - 4294967295	0
			FCS Errors	○	-	UDINT	0 - 4294967295	0
			Single Collisions	○	-	UDINT	0 - 4294967295	0
			Multiple Collisions	○	-	UDINT	0 - 4294967295	0
			SQE Test Errors	○	-	UDINT	0 - 4294967295	0
			Deferred Trans-missions	○	-	UDINT	0 - 4294967295	0
			Late Collisions	○	-	UDINT	0 - 4294967295	0
			Excessive Collisions	○	-	UDINT	0 - 4294967295	0
			MAC Transmit Errors	○	-	UDINT	0 - 4294967295	0
			Carrier Sense Errors	○	-	UDINT	0 - 4294967295	0
			Frame Too Large	○	-	UDINT	0 - 4294967295	0
			MAC Receive Errors	○	-	UDINT	0 - 4294967295	0
1	6	Interface Control	Struct of: Control Bits: Word Bit 0 = Auto-negotiate Bit 1 = Forced Duplex Mode Bits 2-15 = Reserved Forced Int Speed: Word	-	○	Struct	-	-
1	10	Interface Label (Port 1)	Human readable identification	○	-	STRING	-	Port 1
1	11	Interface Capability (Port 1)	Capability bits	○	-	DWORD	-	000F (Hex.)

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
			Array of Struct of Speed/Duplex Options Interface Speed Interface Duplex Mode	○	-	Array of Struct of UINT USINT	-	-
2	1	Interface Speed	Interface speed currently in use	○	-	UDINT	-	-
2	2	Interface Flags	Bit 0 = Link Status Bit 1 = Duplex (0: half duplex, 1: full duplex) Bits 2-4 = Negotiation Status 0: In progress 1: Auto-negotiate failed 2: Speed found, duplex not found Mode not detected 3: Successful 4: Not attempted Bit 5 = Manual Setting requires restart Bit 6 = Local hardware fault Bits 7-31 = Reserved	○	-	DWord	-	-
2	3	Physical Address (MAC)	MAC address	○	-	Array of 6 Bytes	-	-
2	4	Interface Counters (Port 2)	In Octets	○	-	UDINT	0 - 4294967295	0
			In Ucast Packets	○	-	UDINT	0 - 4294967295	0
			In NUcast Packets	○	-	UDINT	0 - 4294967295	0
			In Discards	○	-	UDINT	0 - 4294967295	0
			In Errors	○	-	UDINT	0 - 4294967295	0
			In Unknown Protos	○	-	UDINT	0 - 4294967295	0
			Out Octets	○	-	UDINT	0 - 4294967295	0
			Out Ucast Packets	○	-	UDINT	0 - 4294967295	0
			Out NUcast Packets	○	-	UDINT	0 - 4294967295	0
			Out Discards	○	-	UDINT	0 - 4294967295	0
			Out Errors	○	-	UDINT	0 - 4294967295	0
2	5	Media Counters (Port 2)	Alignment Errors	○	-	UDINT	0 - 4294967295	0
			FCS Errors	○	-	UDINT	0 - 4294967295	0
			Single Collisions	○	-	UDINT	0 - 4294967295	0
			Multiple Collisions	○	-	UDINT	0 - 4294967295	0
			SQE Test Errors	○	-	UDINT	0 - 4294967295	0
			Deferred Trans-missions	○	-	UDINT	0 - 4294967295	0
			Late Collisions	○	-	UDINT	0 - 4294967295	0
			Excessive Collisions	○	-	UDINT	0 - 4294967295	0
			MAC Transmit Errors	○	-	UDINT	0 - 4294967295	0
			Carrier Sense Errors	○	-	UDINT	0 - 4294967295	0
			Frame Too Large	○	-	UDINT	0 - 4294967295	0
			MAC Receive Errors	○	-	UDINT	0 - 4294967295	0
2	6	Interface Control	Struct of: Control Bits: Word Bit 0 = Auto-negotiate Bit 1 = Forced Duplex Mode Bits 2-15 = Reserved Forced Int Speed: Word	-	○	Struct	-	-
2	10	Interface Label (Port 2)	Human readable identification	○	-	STRING	-	Port 2
2	11	Interface Capability (Port 2)	Capability bits	○	-	DWORD	-	000F (Hex.)
			Array of Struct of Speed/Duplex Options Interface Speed Interface Duplex Mode	○	-	Array of Struct of UINT USINT	-	-

Note:

"Get Attributes All" Service shall report in attribute ascending order.

◆ LLDP Management Object - 265 (Class 0x109)

Note:

This object is compatible with option software versions PRG: 3003 or later. Refer to *U6-97 [OPT SPARE 4]* to check the option software version.

LLDP Management object contains the LLDP protocol management information.

■ Services Supported

Service Code No. (Hex.)	Service Name
0E	Get Attribute Single
10	Set Attribute Single

■ Attributes Supported

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
0	1	Object Software Revision	LLDP Management Object software revision.	○	-	WORD	-	1
1	1	LLDP Enable	-	○	○	STRUCT of	-	-
		LLDP Enable Array Length	Shows the number of elements in the array.			UINT	2	2
		LLDP Enable Array	Enables generation and reception of LLDP packets, globally or per port.			Array of BOOL	Bit No. 0: Enabled Globally 1 - N: Enabled per Port 0: LLDP Disabled 1: LLDP Enabled (Default)	0x07
1	2	msgTxInterval	Shows the interval in seconds at which LLDP frames are sent.	○	○	UINT	0 - 4: Reserved 5 – 32768: Transmission Interval 32769 - 65535: Reserved	30
1	3	msgTxHold	Shows the multiplier of msgTxInterval to determine the TLV value sent to adjacent devices.	○	○	USINT	0: Reserved 1 - 100: Message Transmission Multiplier for LLDP Frames 101-255: Reserved	4
1	4	LLDP DataStore	Shows how to search the LLDP database.	○	-	WORD	Bit No. 0: LLDP Data Table Object 1: SNMP 2: NETCONF YANG 3: RESTCONF YANG 4 - 15: Reserved	0
1	5	Last Change	Shows the number of seconds since the last change to the entry in LLDP database.	○	-	UDINT	The number of seconds since last change	-

◆ LLDP Data Table Object - 266 (Class 0x10A)

Note:

This object is compatible with option software versions PRG: 3003 or later. Refer to *U6-97 [OPT SPARE 4]* to check the option software version.

LLDP Data Table Object shows a record of all currently active adjacent LLDP implementation devices, according to the receive state machine of the LLDP protocol.

■ **Services Supported**

Service Code No. (Hex.)	Service Name
0E	Get Attribute Single
10	Set Attribute Single

■ **Attributes Supported**

Instance ID *1*	Attribute	Name	Description	Get	Set	Size	Range	Default
0	1	Object Software Revision	LLDP Data Table Object software revision.	○	-	Word	-	1
0	2	Max Instance	Shows the maximum number of instances of objects currently created at this class level of device.	○	-	UINT	The maximum number of instances of objects created at this class layer level	-
0	3	Number of Instances	Shows the maximum number of instances of objects currently created at this class level of device.	○	-	UINT	The number of instances of objects created at this class layer level	-
1	1	Ethernet Link Instance Number	Shows the local number of instances of the Ethernet Link object that matches the physical port on which the LLDP frame generating this instance was received.	○	-	UINT	0: Unknown 1 - 65535: The number of the Ethernet Link object	-
1	2	MAC Address	Shows the adjacent MAC address received from the CIP MAC address, Chassis ID, or Port ID.	○	-	ETH_MAC_ ADDR	Adjacent MAC address value	-
1	3	Interface Label	Shows the adjacent interface label received from the CIP interface label, Chassis ID, or Port ID TLV.	○	-	SHORT_ STRING	Maximum 64 characters	-
1	4	Time to Live	Shows the number of seconds the information is considered valid.	○	-	UINT	0: Reserved 1 - 6535: Period (Seconds)	-
1	5	System Capabilities TLV	The System Capability field contains a Capability bitmap that defines the main functions of the adjacent system.	○	-	STRUCT of	-	-
		System Capabilities	Shows the capabilities supported by adjacent devices based on the currently implemented software.			WORD	Bit 0: Other 1: Repeater 2: Bridge 3: Access Point 4: Router 5: Telephone 6: DOCSIS Cable Device 7: End Station 8: C-VLAN component 9: S-VLAN component 10: Two-port MAC Relay Component 11 - 15: Reserved by IEEE	-
		Enabled Capabilities	Shows the Capability currently enabled on the adjacent device.					
1	6	IPV4 Management Address	Shows the IPv4 management address of the adjacent device.	○	-	STRUCT of	-	
		Management Address Count	Shows the number of management addresses implemented.			USINT	0 - 255: The number of the management address TLV, received from this adjacent device	-
		Management Address	Shows the management address of the adjacent device.			Array of UDINT	IPv4 address	
1	7	CIP Identification	Shows the CIP identification TLV of the adjacent device, if present.	○	-	STRUCT of	Sets by the CIP identification TLV (TLV type = 127, subtype = 01), if present.	-
		Vendor ID				UINT		

Instance ID *1	Attribute	Name	Description	Get	Set	Size	Range	Default
		Device Type				UINT	In other cases, it will be 0.	
		Product Code				UINT		
		Major Revision				BYTE		
		Minor Revision				USINT		
		CIP Serial Number				UDINT		
1	8	Additional Ethernet Capabilities	Shows the TLV for Ethernet Preemption Support from the adjacent device.	○	-	STRUCT of	-	-
		Preemption Support	Link partners determine if they support preemption on their links.			BOOL	0: Not Supported 1: Supported	-
		Preemption Status	Link partners can determine if the preemption on a link is enabled.			BOOL	0: Disabled 1: Enabled	-
		Preemption Active	Link partners can determine if the preemption on a link passes embedded validation.			BOOL	0: Disabled 1: Enabled	-
		Additional Fragment Size	Shows the number of octets that must be sent the frame before preemption occurs.			USINT	0: 64 Octets 1: 128 Octets 2: 192 Octets 3: 256 Octets 4 - 255: Reserved	-
1	9	Last Change	Shows the number of seconds since the last change to this instance's attributes.	○	-	UDINT	The number of seconds since last change	-

*1   Instance number corresponds to the entry in the table for all of the LLDP entries.

Note:

"Get Attributes All" Service shall report in attribute ascending order.

13   General Class Objects (Converter)

◆ Motor Data Object - 40 (Class 0x28)

■ Services Supported

Service Code No. (Hex.)	Service Name
0E	Get Attribute Single
10	Set Attribute Single

■ Attributes Supported

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
0	1	Object Software Revision	Motor Data Object software revision.	○	-	Word	-	1
1	3	Motor Type	Type of motor used. 0: Other than standard motor	○	-	Byte	-	0

◆ Control Supervisor Object 41 (Class 0x29)

■ Services Supported

Service Code No. (Hex.)	Service Name
0E	Get Attribute Single
10	Set Attribute Single
05	Reset

■ **Attributes Supported**

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
0	1	Object Software Revision	Motor Data Object software revision	○	-	Word	-	1
1	3	Run 1 (Command)	D1000: 0: Stop 1: Run R1000: 0: Stop 1: Auto Run	○	○	Byte	0, 1	0
1	4	Run 2 (Command)	D1000: - R1000: 0: Stop 1: Force Run	○	○	Byte	0, 1	0
1	5	NetCtrl (Command)	Run command is from network 0: Depends on b1-02 1: Run command is from network	○	○	Byte	0, 1	0
1	6	State	State 1: During Startup 2: Not Ready 3: Ready (Stopped) 4: Enabled (Run command present) 5: Deceleration to Stop 6: Fault Stop 7: Fault	○	-	Byte	-	3
1	7	Running 1	D1000: 0: Stop 1: Running R1000: 0: Stop 1: Auto Run	○	-	Byte	-	0
1	8	Running 2	D1000: - R1000: 0: Stop 1: Force Run	○	-	Byte	-	0
1	9	Ready	Ready 0: Not Ready 1: Ready	○	-	Byte	-	1
1	10	Faulted	Fault 0: No Fault 1: Fault	○	-	Byte	-	0
1	11	Alarm	Alarm 0: No Alarm 1: Alarm	○	-	Byte	-	0
1	12	Fault Reset	Fault Reset 0: - 1: Fault Reset	○	○	Byte	0, 1	0
1	13	Fault Code	Current Fault Refer to page 94 for more information.	○	-	Word	-	0000
1	15	NetCtrl (Status)	Run command is from network 0: Run command is not from network 1: Run command is from network	○	-	Byte	-	0
1	17	Force Fault	External Fault 0: - 1: External Fault [EF0] Triggered by the rising edge of the signal.	○	○	Byte	0, 1	0

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
1	18	Force Reset	External Fault status 0: - 1: External Fault [EF0] Triggered by the rising edge of the signal.	○	-	Byte	-	0
1	20	Net Idle Mode	Operation mode selection when communication is in Idle Mode. 0: Stop 1: Ignore 2: Stop if F6-01 is set to fault mode. 3: Forward Run 4: Reverse Run	○	○	-	0 - 4	

◆ AC/DC Drive Object - 42 (Class 0x2A)

■ Services Supported

Service Code No. (Hex.)	Service Name
0E	Get Attribute Single
10	Set Attribute Single

■ Attributes Supported

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
0	1	Object Software Revision	Revision number of AC/DC drive object	○	-	Word	-	1
1	4	NetRef (Command)	Voltage command is from network 0: Voltage command is not from network 1: Voltage command is from network	○	-	Byte	-	0
1	6	Drive Mode	Control Mode 0: Vendor Specific Control Mode	○	○	Byte	0	0
1	7	Voltage Actual	Voltage read from *U1-52 [DC Bus DC Bus Voltage]*.	○	-	Word	-	-
1	8	Voltage Command	D1000: Sets with *d8-01 [DC Bus Voltage Reference]*. R1000: -	○	○	Word	-	-
1	9	Current Actual	D1000: Current read from *U1-53 [DC Bus Side Current]*. R1000: -	○	-	Word	-	0
1	15	Power Actual [W]	D1000: Output power read from *U1-56 [DC Bus Side Power]*. R1000: -	○	-	Word	-	0
1	17	Output Voltage [V]	Output voltage read from *U1-52 [DC Bus Voltage Feedback]*.	○	-	Word	-	0
1	22	Voltage Scale (-15 - +15)	Scale of Units for Voltage Related Data Sets or verifies *F7-21 [EtherNet/IP Voltage Scale Factor]*.	○	○	Byte	-15 - +15	0
1	23	Current Scale (-15 - +15)	Scale of Units for Current Related Data Sets or verifies *F7-18 [EtherNet/IP Current Scale Factor]*.	○	○	Byte	-15 - +15	0
1	24	Torque Scale (-15 - +15)	Scale of Units for Torque Related Data Sets or verifies *F7-19 [EtherNet/IP Torques Scale Factor]*.	○	○	Byte	-15 - +15	0
1	26	Power Scale (-15 - +15)	Scale of Units for Power Related Data Sets or verifies *F7-20 [EtherNet/IP Power Scaling Factor]*.	○	○	Byte	-15 - +15	0
1	27	Voltage Scale (-15 - +15)	Scale of Units for Voltage Related Data Sets or verifies *F7-21 [EtherNet/IP Voltage Scale Factor]*.	○	○	Byte	-15 - +15	0

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
1	28	Time Scale (-15 - +15)	Scale of Units for Time Related Data Sets or verifies *F7-22 [EtherNet/IP Time Scaling]*.	○	○	Byte	-15 - +15	0
1	29	NetRef (Status)	Voltage command is from network 0: Voltage command is not from network 1: Voltage command is from network	○	-	Byte	-	0

◆ Base Energy Object 78 (Class 0x4E)

■ Services Supported

Service Code No. (Hex.)	Service Name
0E	Get Attribute Single
10	Set Attribute Single

■ Attributes Supported

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
0	1	Base Energy Software Revision	Base Energy Object software revision	○	-	Word	-	2
1	1	Energy/Resource Type	Type of energy managed	○	-	Word	-	Always 1 (Electrical)
1	2	Base Energy Object Capabilities	Energy Capabilities of this device	○	-	Word	-	Always 0 (Measured)
1	3	Energy Accuracy	Specifies the accuracy of power and energy metering results.	○	-	Word	-	Always 1000 (0.01%)
1	7	Consumed Energy Odometer	D1000: Consumed energy read from *U9-01 [Electric Power (GWh)]* to *U9-03 [Electric Power (kWh)]*. R1000: Always 0	○	-	ODOMETER Array of 5 words	0 - 999,999,999,999.999	-
1	8	Generated Energy Odometer	Regenerative power read from *U9-04 [Regenerative Power (GWh)]* to *U9-06 [Regenerative Power (kWh)]*.	○	-	ODOMETER Array of 5 words	0 - 999,999,999,999.999	-
1	9	Net Energy Odometer	The difference between Consumed energy and Generated energy in units of kWh.	○	-	SIGNED ODOMETER Array of 5 signed Words	-999,999,999,999.999 - 999,999,999,999.999	-
1	10	Energy Transfer Rate	D1000: DC Bus power read from *U1-56 [DC Bus Side Power]* in units of 1kW. In IEEE 754 REAL format.	○	-	REAL	Depends on capacity	-
1	12	Energy Type Specific Object Path	EPATH to Electrical Energy Object	○	-	STRUCT of UINT Size Padded EPATH	-	Always 02 20 4F 24 01

◆ Electrical Energy Object 79 (Class 0x4F)

■ Services Supported

Service Code No. (Hex.)	Service Name
0E	Get Attribute Single
10	Set Attribute Single

■ Attributes Supported

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
0	1	Electrical Energy Software Revision	Electrical Energy Object software revision	○	-	Word	-	2
1	1	Consumed Energy Odometer	D1000: Consumed energy read from *U9-01 [Electric Power*	○	-	ODOMETER Array of 5 words	0 - 999,999,999,999.999	-

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
			(GWh)] to *U9-03 [Electric Power (kWh)]*. R1000: Always 0					
1	2	Generated Energy Odometer	Regenerative power read from *U9-04 [Regenerative Power (GWh)]* to *U9-06 [Regenerative Power (kWh)]*.	○	-	ODOMETER Array of 5 words	0 - 999,999,999,999.999	-
1	3	Net Energy Odometer	The difference between Consumed energy and Generated energy in units of kWh.	○	-	ODOMETER Array of 5 signed Words	-999,999,999,999.999 - 999,999,999,999.999	-
1	9	Line Frequency	Power supply frequency read from *U1-58 [Power Supply Frequency]*. In IEEE 754 REAL format.	○	-	REAL	-	0
1	13	Average Current	Power supply current read from *U1-55 [Power Supply Current]*. In IEEE 754 REAL format.	○	-	REAL	-	0
1	18	Average L-N Voltage	Power supply voltage read from *U1-54 [Power Supply Voltage]*. In IEEE 754 REAL format.	○	-	REAL	-	0
1	39	Three Phase True Power Factor	D1000: Power factor read from *U1-60 [Power Factor]*. In IEEE 754 REAL format.	○	-	REAL	-	0
1	41	Energy Type Specific Object Path	EPATH to Base Energy Object	○	-	STRUCT of UINT Size Padded EPATH	-	Always 02 20 4E 24 01

14 Vendor-Specific (Yaskawa) Class Objects

◆ Yaskawa Drive Parameters Object - 100 (Class 0x64)

■ Services Supported

Service Code No. (Hex.)	Service Name
0E	Get Attribute Single
10	Set Attribute Single

Yaskawa Drive Parameters object is related to the parameters or monitor of Yaskawa drives. Not compatible with EtherNet/IP compatible drives from a different company. With this Class object any drive parameter or monitor with a MEMOBUS/Modbus address greater than 0x00FF can be accessed. The mapping of Class Object instance/attribute to MEMOBUS/Modbus address is as follows.

Given a typical MEMOBUS/Modbus Address of 0xXXYY

The EtherNet/IP Instance value is equal to XX

The EtherNet/IP Attribute value is equal to YY

As an example, to access parameter *b5-12 [MEMOBUS/Modbus Address = 0x01B0]*

Class Object is 100 (0x64) (Always for this Class Object)

Instance = 0x01

Attribute = 0xB0

■ Storing Changed Parameters

Writing a zero to 0x0900 (Enter) stores changed parameters to the non-volatile memory of the drive. Writing a 0 to 0x0910 (Accept) allows the drive to use the changed parameters. Reading Enter Command 0x0900 or Accept Command 0x910 will always return a value of 0x0001.

Performing a RAM-ENTER to Store Register Data

Parameter *H5-11* is used to decide whether a RAM-ENTER will be done on the writes to registers in the drive. If *H5-11 = 1 [default]*, the option will issue the RAM-ENTER with the parameter writes. If *H5-11 = 0*, no RAM-ENTER is issued and an ENTER command must be explicitly sent by the user for the parameter to be activated after a write.

Explicit writes to RAM-ENTER (0x910) and ROM-ENTER (0x900) are handled as special cases. If a user writes a 0 to RAM-ENTER or ROM-ENTER, the command will be executed in the drive. If a user writes a 1 to those

registers, the command will not be executed but returns a success to the explicit write on the network. Writing a value other than 0 or 1 will result in an error response of Invalid Attribute Value on the network.

Note:

Performing the RAM-ENTER increases the processing time of the writes and increases the response time to explicit writes.

■ Attributes Supported

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
0	1	Object Software Revision	Yaskawa Drive Parameters object software revision	○	-	Word	-	1
1	00	MEMOBUS/Modbus Register 0x0100	Language selection	○	○	Word	0 - 12	1
1	01	MEMOBUS/Modbus Register 0x0101	Parameter access level	○	○	Word	0 - 2	2
1	YY	MEMOBUS/Modbus Registers 0x0100 - 0x01FF	MEMOBUS/Modbus Registers 0x0100 - 0x01FF	○	○	Word	-	-
2	YY	MEMOBUS/Modbus Registers 0x0200 - 0x02FF	MEMOBUS/Modbus Registers 0x0200 - 0x02FF	○	○	Word	-	-
..	..	..	..	-	○	Word	-	-
255	YY	MEMOBUS/Modbus Registers 0xFF00 - 0xFFFF	MEMOBUS/Modbus Registers 0xFF00 - 0xFFFF	○	○	Word	-	-

Note:

1. Refer to *Explicit Message Communications Errors on page 125* for error codes.
2. Refer to the MEMOBUS/Modbus Data Table in the MEMOBUS/Modbus Communications chapter of the drive manual for a list of monitor data using the MEMOBUS/Modbus message area.

◆ Yaskawa Monitor/Control Object - 125 (Class 0x7D)

■ Services Supported

Service Code No. (Hex.)	Service Name
0E	Get Attribute Single
10	Set Attribute Single

Yaskawa Monitor/Control object is related to the parameters or monitors of Yaskawa drives. Not compatible with the EtherNet/IP compatible drives from another company. With this Class object any parameter or monitor with a MEMOBUS/Modbus address less than 0x0100 can be accessed. In this class, the most significant byte of MEMOBUS/Modbus address is always zero and the Instance ID remains at 1. Other than that, it is the same as Yaskawa Drive Parameters object 100 (Class0x64).

Given a typical MEMOBUS/Modbus Address 0f 0x00YY

The EtherNet/IP Instance value is equal to 0x01

The EtherNet/IP Attribute value is equal to YY

As an example, to access Drive Status (MEMOBUS/Modbus Address = 0x002C)

Class Object is 125 (0x7D) (Always for this Class Object)

Instance = 0x01

Attribute = 0x2C

■ Attributes Supported

Instance ID	Attribute	Name	Description	Get	Set	Size	Range	Default
0	1	Object Software Revision	Shows Yaskawa Monitor/Control Object Software Revision.	○	-	Word	-	1
1	1	0x0001	Drive Command Bits	○	○	Word	-	0
1	2	0x0002	Frequency Instruction	○	○	Word	-	4
..	..	..	..	○	○	Word	-	-
1	255	0x00FF	Reserved	○	○	Word	-	-

Note:

1. Refer to *Explicit Message Communications Errors on page 125* for error codes.
2. Refer to the MEMOBUS/Modbus Data Table in the MEMOBUS/Modbus Communications chapter of the drive manual for a list of monitor data using the MEMOBUS/Modbus message area.

15　Web Interface

The option contains a series of web pages that let you use a standard web browser to view status and diagnostic information.

You can access the web page through a self-contained web server at port 80. Type the IP address of the option into a web browser to access the Home page.

Example: "http://192.168.1.20"

If you do not know the IP address, use monitors *U6-80 to U6-83 [Option IP Address 1 to 4]* on the keypad to read the IP address of the option. Refer to *Related Drive Parameters on page 24* for more information.

◆ Home Page

The Home page shows the status of the drive and the I/O. It also shows identifying information about the drive and the option.

Figure 15.1 Home Page View

When an fault or minor fault occurs in the drive, the details of the fault or minor fault are displayed on the Home page.

If an fault or minor fault occurs in the drive and only the fault or minor fault code is displayed on the Home page, refer to the Technical Manual for your drive for details on the fault or minor fault.

◆ EtherNet/IP Page

The EtherNet/IP page shows basic information about the protocol. A maximum of two simultaneous connections can be enabled. The assemblies and connection types used are displayed.

Change the PLC Connection Close Behavior at Run from the "Forward Close Behavior" field on this page. To change PLC Connection Close Behavior at Run, you must be logged in. Refer to ■ Security Login on *Settings Page on page 121* for login instructions. If your drive is compatible with *F7-43 [PLC Cnxn Close Behavior@Run]*, you cannot change the setting from this page. Change the setting from *F7-43*. Refer to *Operation at PLC Forward Close Command on page 30* for more information.

Download the EDS file used by the software to configure the PLC from the bottom of the page.

Note:

The operation at PLC communication disconnection is compatible with option software versions PRG: 3003 and later. Refer to *U6-97 [OPT SPARE 4]* to check the option software version.

Figure 15.2 EtherNet/IP Page View

◆ Network Page

The embedded network monitor page shows the status of the option network traffic and open I/O connections.

Figure 15.3 Network Page View

◆ Ring Page

Note:

The page is compatible with option software versions PRG: 3003 or later. Refer to *U6-97 [OPT SPARE 4]* to check the option software version.

The Ring page shows the status of the DLR or RSTP network. DLR or RSTP can be enabled from this page. To change the Ring Protocol, you will need to be logged into the page first.

Figure 15.4 Ring Page View

■ RSTP

Ring Protocol

After setting the setting value to [ENABLED], click [Save Changes] to enable RSTP.

Priority

The RSTP Priority controls which bridge in the network becomes the root bridge. A lower value in the [Priority] field indicates a higher priority. The [Priority] field ranges from 0 to 61440 in increments of 4096. The default value is 61440. Refer to Table 15.1 for information on [Priority] field setting.

Table 15.1 Priority Values

0	16384	32678	49152
4096	20480	36864	53248
8192	24576	40960	57344
12288	28672	45056	61440

To change the priority in [Priority] field, select the desired priority from the list Table 15.1 and click [Save Changes].

Root Bridge

This field displays the MAC address of the root bridge on the network.

Hello Time (secs)

This field displays and indicates how often the bridge packets will be sent out. This value is set by the root bridge.

Forward Delay (secs)

The Forward Delay is displayed in seconds. This value is set by the root bridge.

Max Age (secs)

The Max Age is displayed in seconds. This value is set by the root bridge and indicates how long a message can be passed along before being discarded.

■ Port_Information

Role

The Role field shows how the port is being used. Refer to Table 15.2 for the seven settings in the [Role] field.

Table 15.2 Port Role Values

Port Role	Description
Unknown	An unknown error has occurred within RSTP.
Root	This port leads to the root bridge.
Designated	This port leads away from the root bridge.

Port Role	Description
Alternate	This port is an alternate path to the root bridge.
Backup	This port is an alternate path away from the root bridge.
Disabled	This port does not have an active link.
RSTP is disabled.	RSTP is disabled.

State

The [State] field indicates if the port is accepting and sending messages. The four possible values for [State] field and the features of each state are shown in Table 15.3.

Table 15.3 State Values

State	Accept Packets	Forward Packets	Learn MAC Addresses
Discarding	NO	NO	NO
Learning	NO	NO	YES
Forwarding	YES	YES	YES
Disabled	RSTP is disabled.		

Version

In the [Version] field, when an STP-only node is detected on the network, this port operates in STP mode and displays [STP]. [RSTP] will be displayed in all other cases. RSTP supports normal RSTP mode or STP mode.

Port BPDU Rx Count

The [Port BPDU Rx Count] field shows the number of BPDU packets received on that port. In general, root ports receive far more BPDU packets than designated ports.

◆ Chart Page

The Chart page can be used to monitor one signal from a predefined list.

- Frequency Reference
- Output Frequency
- Output Current
- Motor Speed
- Torque Reference
- DC Bus Voltage
- Terminal Analog Input 1
- Terminal Analog Input 2
- Terminal Analog Input 3
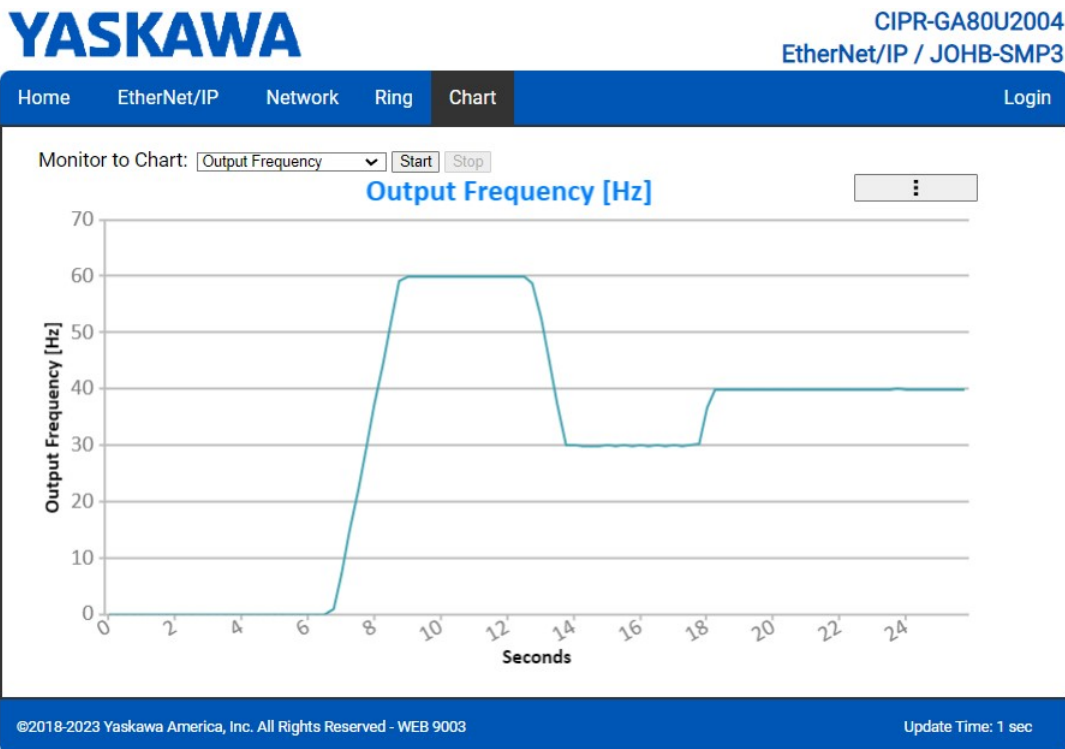
Figure 15.5 Chart Page View

◆ Email Alerts Page

The Email Alerts page allows the user to configure four Email Fault/Alarm conditions. When the condition is true, one email will be sent to the provided email address. Another email will not be sent until the condition becomes false and then true again.

A 30-second timer prevents emails from being sent when conditions reoccur immediately after being removed. The timer helps limit the amount of emails sent regarding the same intermittent condition and helps to reduce network traffic by reducing emails about reoccurring errors.

Click "Save Email Settings" when you save the entered information into the option.

You must be logged in to view this page. Refer to ■ Security Login on *Settings Page on page 121* for login instructions.

Figure 15.6 Email Alerts Page View

■ **Procedure: Conditional Email Set-up**

1. Click the "Enable" check box to enable the alert.
2. Define the condition that will trigger the email by selecting a monitor parameter, a comparator, and a value. Set the conditions to send alerts from the "Condition" drop-down selection. If choosing only one condition and no OR or AND are needed, set the "OR/AND" drop-down selection to "—".
3. Enter the email address where the alert will be sent.
4. Enter the message that will appear in the email contents.
5. Enter the email subject.

◆ **Parameter Access Page**

The Parameter Access page allows the user to read and write parameters from the drive. You must be logged in to view this page. Refer to ■ Security Login on *Settings Page on page 121* for login instructions.

Figure 15.7 Parameter Access Page View

The MEMOBUS/Modbus address for the drive parameter being accessed must be entered in hexadecimal.

Clicking "Read" will load and display the current value of the given MEMOBUS/Modbus Address.

Clicking "Set" will save the given value to the given MEMOBUS/Modbus address.

After a "Read" or "Set" command is given, Status will display "Waiting" while the action is being carried out, then "Read Successful" or "Write Successful" is displayed when finished.

◆ Settings Page

The Settings page sets web page behavior parameters. You must be logged in to view this page. For login instructions, refer to ■ Security Login below.

Figure 15.8 Settings Page View

■ Security Login

Click "Login" and enter a valid password. The button text will change to "Log out".

> **Note:**
>
> The default security password is "yaskawa". This password can be changed in the "Webpage Password" section of the page. Entering a valid password allows access to the settings in the Settings page, Email Alerts page, and the Parameter Access page.

■ Webpage Password

To change the password, enter the new password in the "New Password:" and "Confirm Password:" text boxes. Click "Save password".

■ Webpage Settings

The values displayed in the various tabs are refreshed at the rate defined in the "Data Update Time" select box.

The Data Update Time can be set to 250 ms, 500 ms, 1 second, 2 seconds, or 5 seconds.

■ Email Settings

The "Email Server IP Address" text box must contain the IP address of the email server. The subnet address is configured in monitors *U6-84* through *U6-87*. The configured email alerts will use the server at this address when sending emails.

Enter the email server port in the "Email Server Port" text box.

The value in the "From Email Address" text box identifies the origin of the email alerts to the recipient.

Click "Save Email Settings" to save the email settings to the option.

16   Rapid Spanning Tree Protocol (RSTP)

Rapid Spanning Tree Protocol (RSTP) is a mechanism that allows an Ethernet network to be configured as a ring or other topology that may have more than one pathway to each node. The RSTP protocol automatically determines the most efficient pathway to each node and disables any redundant pathways.

If one path fails, RSTP activates another pathway to keep the network traffic flowing. If the failed path is restored, RSTP disables any redundant paths without disrupting network traffic.

Note:

RSTP is compatible with option software versions PRG: 3003 or later. Refer to *U6-97 [OPT SPARE 4]* to check the option software version.

◆ Convergence Time

Convergence is the process that RSTP performs to identify the root node and which pathways to disable. Convergence occurs on power up and when the network changes (for example path failures and restorations).

Take special care when using parameter *F7-16 [Timeout Value]*, Communication Timeout Loss, and be sure to give RSTP enough time for convergence. When *F7-16* is set too short, convergence will not be able to complete before it expires. The complexity of the network and the number of drives on the network will both factor into the value of the timeout.

◆ Topology

The option is ideal for use in ring topologies. With RSTP enabled, a ring topology provides redundancy to the network. RSTP determines the fastest paths to each node on the network and virtually splits the ring by disabling one port on one node to prevent data from being transmitted endlessly around the ring. If a path on the ring fails, RSTP re-enables the disabled port and reconnects the split. All nodes on the network remain accessible without any interruptions.

◆ Enabling RSTP

RSTP is enabled from the webpage on the option.

1. Use the keypad to read the IP address values from monitors *U6-80*, *U6-81*, *U6-82*, and *U6-83*.
   The IP address of the option is necessary to access the webpage.
   Refer to Table 16.1 for example values of the monitors for an option IP address of 192.168.1.20.

Table 16.1 Example IP Address Monitor Values

Monitor	Value
U6-80	192
U6-81	168
U6-82	1
U6-83	20

2. Enter the IP address to address bar of your web browser (Ex. http://192.168.1.20) and press the Enter key.
   The Home page will be loaded. Refer to *Home Page on page 114* for more information about the Home page.

3. Click [Ring] tab on top of the webpage.
   The Ring page is displayed with the [Ring Protocol] label in the [RSTP] field set to [DISABLED].

4. After changing the setting value of the [Ring Protocol] label to [ENABLED], click [Save Changes].
   The Ring page is automatically updated and RSTP is enabled.
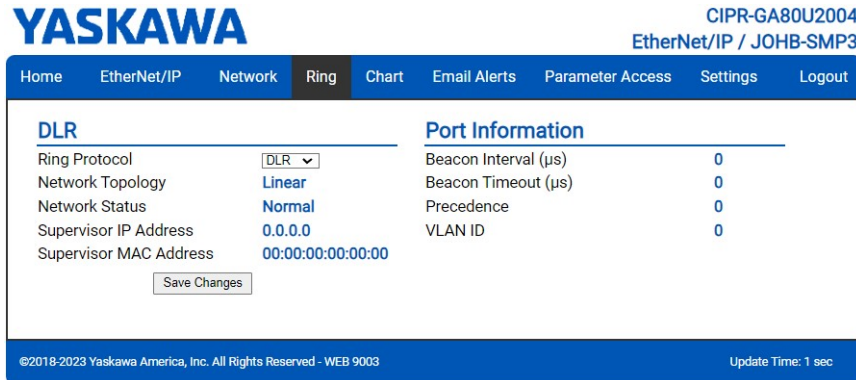
Figure 16.1 Ring Page View (When Logged in)

◆ **RSTP Monitor U6-96**

Monitor *U6-96* is dedicated to RSTP. Shows the role and state for each port.

The displayed value has four digits. The first two digits belong to port 1 and the last two digits belong to port 2. The first and third digits represent port role while the second and fourth digits represent port state.

The possible port role and state values are shown in Figure 16.2.

$$3\ 2\ 2\ 2$$

Port 1 Role		Port 1 State		Port 2 Role		Port 2 State	
0	Unknown	0	Discarding	0	Unknown	0	Discarding
2	Root	1	Learning	2	Root	1	Learning
3	Designated	2	Forwarding	3	Designated	2	Forwarding
4	Alternate			4	Alternate		
5	Backup			5	Backup		
6	Disabled			6	Disabled		
9	RSTP Disabled			9	RSTP Disabled		

Figure 16.2 U6-96 Monitor Values

Refer to Table 15.2 for descriptions of the port role values.

Refer to Table 15.3 for descriptions of the port state values.

Below are a few examples:

- 9292 = RSTP is disabled and both ports are forwarding.
- 3222 = Port 1 is forwarding and is the designated port. Port 2 is forwarding and is the root port.
- 2232 = Port 1 is forwarding and is the root port. Port 2 is forwarding and is the designated port.
- 3232 = Both ports are forwarding and are designated ports. This occurs when the option is the root bridge.
- 4022 = Port 1 is discarding and is the alternate port. Port 2 is forwarding and is the root port.
- 2260 = Port 1 is forwarding and is the root port. Port 2 is discarding and is the disabled port.

17 Troubleshooting

◆ **Drive-Side Error Codes**

Drive-side error codes appear on the drive keypad. *Faults on page 123* lists causes of the errors and possible corrective actions. Refer to the drive Technical Manual for additional error codes that may appear on the drive keypad.

■ **Faults**

Both *bUS [Option Communication Error]* and *EF0 [Option Card External Fault]* can appear as a fault. When a fault occurs, the keypad ALM LED stays lit. When an alarm occurs, the ALM LED flashes.

If communication stops while the drive is running, use these questions as a guide to help remove the fault:

- Is the communication line properly connected to the option? Is it loose?
- Is the option properly installed?
- Is the PLC program working? Is the controller/PLC CPU stopped?
- Did a momentary power loss interrupt communications?

Code	Name	Causes	Possible Solutions
bUS	Option Communication Error	The drive did not receive a signal from the controller.	• Check for wiring errors. • Correct the wiring.
		The communications cable wiring is incorrect.	
		An existing short circuit or communications disconnection	Check disconnected cables and ground circuits and repair as needed

Code	Name	Causes	Possible Solutions
		A data error occurred due to electric interference	• Prevent noise in the control circuit, main circuit, and ground wiring. • If you identify a magnetic contactor as a source of noise, install a surge absorber to the contactor coil. • Use only recommended cables or other shielded line. Ground the shield on the communication IO controller side or the drive input power side. • Separate all communication wiring from drive power lines. Install an EMC noise filter to the drive power supply input. • Decrease the effects of electrical interference from the controller.
		Option is damaged	If there are no problems with the wiring and the error continues to occur, replace the option.
		Connection Time-out	Check if the CPU of the controller is not stopped.
		PLC closed connection while the drive has an active Run command.	PLC closed connection while the drive has an active Run command. Parameter *F7-43 [PLC Cnxn Close Behavior@Run]* controls the drive response. Change *F7-43* or make sure that the PLC removes Run before it removes the connection.
		Duplicate IP Address found on network, or the IP address settings are incorrect.	Change to a different IP address. If *F7-13 = 0 [Address Mode at Startup = Static]*, change parameters *F7-01 to F7-12 [IP Address, Subnet Mask, Gateway Address]*. If *F7-13 = 1 or 2 [Address Startup Mode = BOOTP (Use network address.) or DHCP (Use network address.)]*, check the configuration of your BOOTP or DHCP server.
EF0	Option Card External Fault	The option received an external fault from the controller.	1. Find the device that caused the external fault and remove the caus. 2. Clear the external fault input from the controller.
		A programming error occurred on the controller side.	Examine the operation of the controller program.
oFA00	Option Not Compatible with Port	The option connected to connector CN5-A is not compatible.	Connect the option to the correct connector. • Use connector CN5-A when you connect the option. To use other options, refer to those option manuals.
		Invalid DIP switch S1 setting	Set the option DIP switch S1 as shown in Figure 5.1. Monitor, *U4-75 [Communication OPT Protocol]* will display the DIP switch S1 setting.
oFA01	Option Card Fault (CN5-A)	The option connected to option port CN5-A was changed during run.	1. De-energize the drive. 2. Connect the option to the correct option port.
oFA03, oFA04	Option Card Error (CN5-A)	A fault occurred in the option.	1. De-energize the drive. 2. Make sure that the option is correctly connected to the connector. 3. If the problem continues, replace the option.
oFA30 to oFA43	Option Card Connection Error (CN5-A)	A fault occurred in the option.	1. De-energize the drive. 2. Make sure that the option is correctly connected to the connector. 3. If the problem continues, replace the option.
oFb00	Option Not Compatible with Port	The option connected to connector CN5-B is not compatible.	Connect the option to the correct connector. • Use connector CN5-A when you connect the option. To use other options, refer to those option manuals.
oFb02	Option Fault	An option of the same type is already installed in option port CN5-A, CN5-B, or CN5-C.	Connect the option to the correct option port.
oFC00	Option Fault (CN5-B)	The option connected to connector CN5-C is not compatible.	Connect the option to the correct connector. • Use connector CN5-A when you connect the option. To use other options, refer to those option manuals.
oFC02	Option Fault	An option of the same type is already installed in option port CN5-A, CN5-B, or CN5-C.	Connect the option to the correct option port.
PSE	JOHB-SMP3 Protocol Set Error	Invalid DIP switch S1 setting	Set the option DIP switch S1 as shown in Figure 5.2. Monitor, *U4-75 [Communication OPT Protocol]* will display the DIP switch S1 setting.

■ Minor Faults and Alarms

Code	Name	Causes	Possible Solutions
CyPo	Cycle Power to Active Parameters	Comm. Option Parameter Not Upgraded	Re-energize the drive to update the communication option parameters.
PA1	PLC Alarm 1	Port 1 is at a link speed different from Port 2 (100 Mbps and 10 Mbps). Data will not be passed between the two ports in this condition.	Set *F7-14 = 1 [Duplex Mode Selection = Auto/Auto (Auto Negotiation/Auto Negotiation)]*, to set the two connected devices to the same link speed. When setting to *F7-14 ≠ 1 [Duplex Mode Selection ≠ Auto/Auto (Auto Negotiation/Auto Negotiation)]*, make sure that the *F7-15 [Communication Speed Selection]* is not *101 [[Not Used/No function] 10/100 Mbps (10 Mbps/100 Mbps)]* or *102 [[Not Used/No function] 100/10 Mbps (100 Mbps/10 Mbps)]*.

◆ bUS Fault Tolerance

■ bUS Fault Auto-Restart

Parameter *F6-14 [bUS Fault Auto Reset Select]* will appear when the option is installed.

Setting *F6-14 = 0 [Disabled]* or *F6-01 = 3 or greater (Alarm only)* will not affect standard default drive behavior.

Setting *F6-14 = 1 [Enabled]* AND *F6-01 ≠ 3 [Fault]* will cause the following operation:

1. The bUS fault occurs after the *F7-16 [Timeout Value]* delay and the Run command is removed from the drive.
2. Then the option throws a *bUS* fault to the drive.
3. When the condition is removed, the option commands a fault reset and returns control of the drive to the EtherNet/IP network.

   Note:

   The option will only read parameter *F6-01* and *F6-14* from the drive during power-up.

■ bUS Fault Delay

Parameter *F7-16 [Timeout Value]* will appear when the option is installed. The setting value of *F7-16* is the length of time that the option will delay sending the *bUS* fault to the drive. The status LEDs on the option are not affected by the delay time set in *F7-16*; the LEDs will indicate the *bUS* condition immediately.

   Note:

   The option will only read parameter *F7-16* from the drive during power-up.

◆ Explicit Message Communications Errors

When there is a problem with a request message sent from the client in explicit communications, the drive will return one of the error codes shown in Table 17.1.

Table 17.1 Communications Errors and Solutions

Error Code (Hex.)	Description	Cause	Possible Solutions
08	Service not supported	The service code is incorrect.	Correct the service code.
09	Invalid attribute value	The attribute is incorrect.	Correct the attribute.
0C	Object state conflict	Attempted to change a drive parameter that cannot be changed while the drive is running.	Stop the drive.
0E	Attribute not settable	Attempted to change a read-only attribute.	Correct the service code or attribute setting.
13	Not enough data	The data size is incorrect.	Correct the data size.
14	Attribute not supported	Attempted to execute a service not defined for the attribute.	Correct the service code or attribute setting.
15	Too much data	The data size is incorrect.	Correct the data size.
16	Object does not exist	An unsupported object was specified.	Correct the class or instance setting.
1F	Vendor-specific error	• Attempted to change a drive parameter that cannot be changed while the drive is running. • Attempted to change a drive parameter to a value outside the setting range.	• Stop the drive. • Specify a value within the setting range.
20	Invalid parameter	Attempted to change to a data value outside the setting range.	Specify a data value within the setting range.

◆ Option Error Codes

■ Option Fault Monitors *U6-98* and *U6-99*

The option can declare error/warning conditions via drive monitors on the drive keypad as shown in Table 17.2.

Table 17.2 Option Fault Monitor Descriptions

Status	Fault Declared	Status Value (U6-98/U6-99)	Description
No Faults	-	0	No Faults
Fatal error occurred	*EF0*	3	Network sent a message to force this node to the fault state.
Communications timeout (non-fatal)	*bUS*	1101	The node timer (Requested Packet Interval) timed out.
Duplicate IP Address	*bUS*	1102	This node and at least one other node have the same IP Address.

Status	Fault Declared	Status Value (U6-98/U6-99)	Description
Default MAC Address	-	1103	Factory default MAC Address programmed into the option. **Note:** Return the option to Yaskawa or your nearest sales representative and request the setting change.
Network Link Down	*bUS*	1104	Neither of the two network Ethernet ports has a link. This will only happen when a link is established, then lost.
Bad IP Configuration	*bUS*	1106	*F7-13 = 0 [Address Mode at Startup = Static]* is set and *F7-01 to F7-12 [IP Address 1 to 4, Subnet Mask 1 to 4, Gateway Address 1 to 4]* are set to an invalid configuration. If *F7-13 = 1 or 2 [Address Startup Mode = BOOTP (Use network address.) or DHCP (Use network address.)]*, your BOOTP or DHCP server is not configured correctly. Set the parameters to the correct values and cycle power on the drive.
Web Interface Setting Error	-	1110	Failure to read the web interface setting.
Forward Close Fault	*bUS*	1111	The PLC closed the IO connection while there was an active run to the drive.

Two drive monitors, *U6-98 [First Fault]* and *U6-99 [Current Fault]* assist the user in network troubleshooting.

• *U6-98* displays the first declared fault since the last power cycle. *U6-98* is only cleared upon drive power-up.

• *U6-99* displays the present option status. *U6-99* is cleared upon a network-issued fault reset and upon power-up.

If another fault occurs while the original fault is still active, *U6-98* retains the original fault value and *U6-99* stores the new fault status value.

◆ Communication Error

If there is no problem with the drive you are using, but you cannot communicate with other devices, take the following measures.

Status	Possible Solutions
The LINK/ACT LED will not illuminate.	Set to *F7-14 = 1 [Duplex Mode Selection = Auto/Auto (Auto Negotiation/Auto Negotiation)]*.

◆ Self RAM Check

Use these procedures to do a self RAM check for all areas including unused areas.

Note:
• The self RAM check completes in approximately 2.5 minutes.
• When you start the self RAM check, the drive will detect *oFA00 [Option Not Compatible with Port]*.

1. Set DIP switch S1 as shown in Figure 17.1.

Note:
Use non-conductive tweezers or a tool with a tip width of approximately 0.5 mm (0.02 in) to set DIP switch S1.
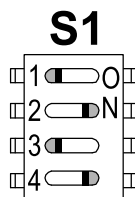
Figure 17.1 DIP Switch S1 Settings for the Self RAM Check

2. Apply power to the option.
This will start the self RAM check.

3. Look at the LEDs on the option to see the status of the self RAM check.
Refer to Table 17.3 for more information.

Table 17.3 LED States during Self RAM Check

Self RAM Check Status	LED States	
	MS	NS
Checking	Lit in green	OFF
Successful termination	Lit in green	Lit in green
Abnormal termination	Lit in red	Lit in red

18   European Standards

Figure 18.1 CE Mark

The CE mark indicates compliance with European safety and environmental regulations.

European standards include the Machinery Directive for machine manufacturers, the Low Voltage Directive for electronics manufacturers, and the EMC Directive for controlling noise.

It is required for engaging in business and commerce in Europe.

This option displays the CE mark based on the EMC Directive: 2014/30/EU.

Drives used in combination with this option and devices used in combination with the drive must also be CE certified and display the CE mark.

When using drives displaying the CE mark in combination with other devices, it is ultimately the responsibility of the user to ensure compliance with CE standards. Verify that conditions meet European standards after setting up the device.

◆ EMC Directive Compliance

This option is tested according to European standards EN 61800-3 and complies with EMC Directive. The CE marking is declared based on the harmonized standards.

■ Option Installation

Verify the following installation conditions to make sure that other devices and machinery used with this option and drive also comply with EMC Directive:

1. Use dedicated shield cable for the option and external device (encoder, I/O device, controller), or run the wiring through a metal conduit.

2. Keep wiring as short as possible and ground the largest possible surface area of the shield to the metal panel according to Figure 18.2, Figure 18.3, and Figure 18.4.
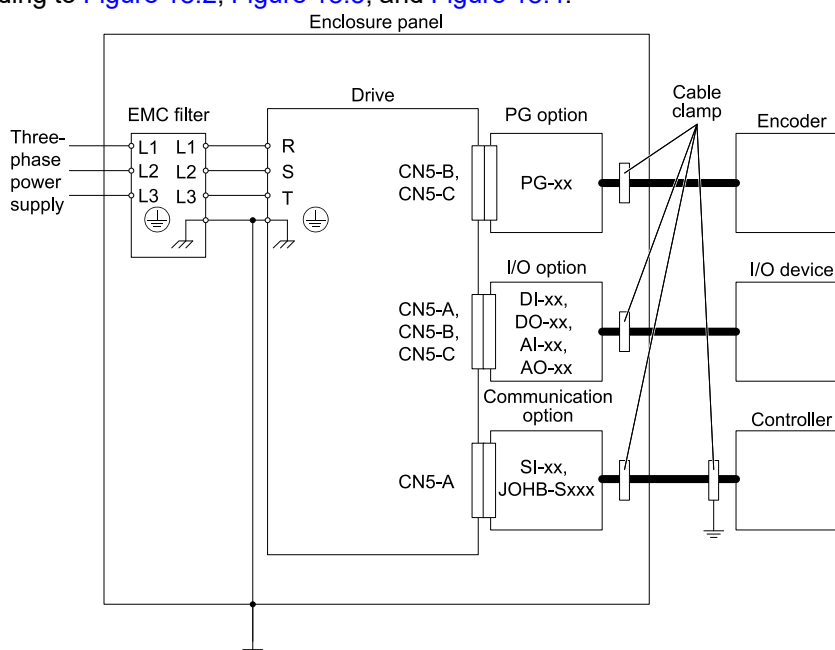
Figure 18.2 Option Installation for CE Compliance: 1000-Series, GA700, GA800, CR700, CH700
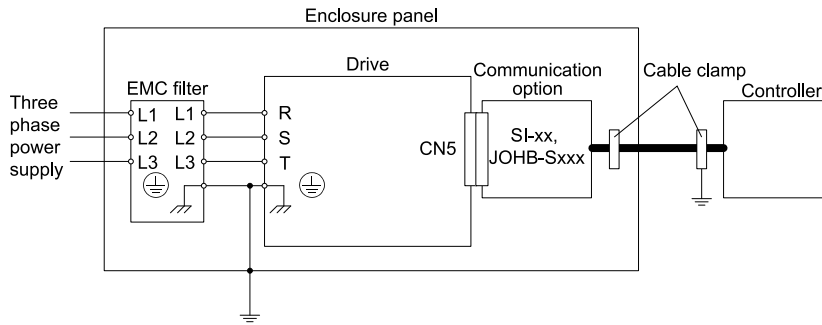
Figure 18.3 Option Installation for CE Compliance: GA500, HV600
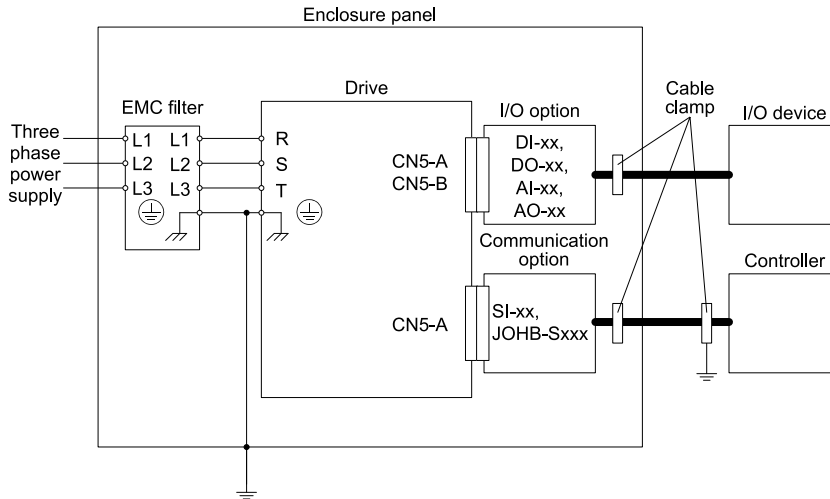
Figure 18.4 Option Installation for CE Compliance: FP605

3. Ground the largest possible surface area of the shield to the metal panel.
    Yaskawa recommends using cable clamps.
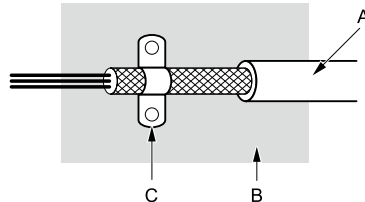
A - **Braided shield cable**   C - **Cable clamp (conductive)**
B - **Metal panel**

Figure 18.5 Ground Area

19 United Kingdom Conformity Assessed Marking

Figure 19.1 UKCA Mark

The UKCA mark indicates compliance with United Kingdom safety and environmental regulations.

It is required for engaging in business and commerce in the United Kingdom.

United Kingdom standards include the Supply of Machinery (Safety) Regulations (Machinery) for machine manufacturers, the Electrical Equipment (Safety) Regulations (Low voltage) for electronics manufacturers, and the Electromagnetic Compatibility Regulations (EMC) for controlling noise.

This product displays the UKCA mark in accordance with the EMC.

Table 19.1 Designated Standards

Statutory Instruments	Designated Standards
Electromagnetic Compatibility Regulations S.I. 2016 No. 1091	EN 61800-3 *1
Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations S.I. 2012 No. 3032	EN IEC 63000 *1

*1   Refer to the "UK Declaration of Conformity" for the year of the Designated Standards.

When using drives displaying the UKCA mark in combination with other devices, it is ultimately the responsibility of the user to ensure compliance with UKCA standards. Verify that conditions meet applicable United Kingdom standards after setting up the device.

20   Precautions for Korean Radio Waves Act

Figure 20.1 KC Mark

This product confirms to broadcast and communications equipment for business use (Class A) and are designed for use in locations other than in ordinary houses.

Drives that bear the Korea Certification (KC) mark conform to the Korean Radio Waves Act. Be careful when you use the drive in Korea under the following conditions.

Table 20.1 Precaution When You Use this Drive

Precautions
This equipment is evaluated for compatibility for use in a business environment and may cause radio interference in a domestic environment.

Note:

The user guide applies only to "Business Broadcasting Communication Equipment".

Comply with the EMC Directive to conform to the Korean Radio Act.

21   Specifications

◆ Specifications

Table 21.1 Option Specifications

Items	Specifications
Model	JOHB-SMP3
Supported Messages	• Explicit: Explicit Class 3, Unconnected • I/O: Class 1, Listen Only, Input Only
I/O Assembly Instance	• Input: 13 types (4 - 47 Bytes) • Output: 13 types (4 - 47 Bytes)
EtherNet/IP Specification	Conformance Level CT 17: Passed *1 Conformance Level CT 19: Passed *2
EtherNet/IP Profile	AC Drive
Recommended Connector Type	Shielded Cat5e cable
Physical Layer Type	Isolated Physical Layer Ethernet
IP Address Setting	Programmable from drive keypad or network
Communication Speed	Programmable from drive keypad or network: 10/100 Mbps, auto-negotiate
Number of Connections	• Explicit: 6 • I/O: 2
Duplex Mode	Half-forced, Auto-negotiate, Full-forced

Items	Specifications
Address Startup Mode	Static, BOOTP, DHCP
Ambient Temperature	-10 °C - +50 °C (14 °F - 122 °F)
Humidity	Up to 95% RH (non-condensing)
Storage Temperature	-20 °C - +60 °C (-4 °F - 140 °F) allowed for short-term transport of the product
Area of Use	Indoors and not near: • Oil mist, corrosive gas, flammable gas, or dust • Radioactive materials or flammable materials, including wood • Dangerous gases or fluids • Salt • Direct sunlight • Falling objects
Altitude	Up to 1000 m (3281 ft) **Note:** This option can be used at a maximum of 4000 m (13123 ft) depending on the model of the drive and the operating conditions. Refer to the drive manuals for more information.

*1   Obtained with option software versions PRG: 3000 to 3002.
*2   Obtained with option software versions PRG: 3003 and later. Refer to U6-97 [OPT SPARE 4] to check the option software version.

22   Disposal

◆ Disposal Instructions

Correctly dispose of the product and packing material as specified by applicable regional, local, and municipal laws and regulations.

◆ WEEE Directive
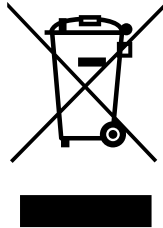
The wheelie bin symbol on this product, its manual, or its packaging identifies that you must recycle it at the end of its product life.

You must discard the product at an applicable collection point for electrical and electronic equipment (EEE). Do not discard the product with usual waste.

Revision History

Date of Publication	Revision Number	Section	Revised Content
November 2023	2	All	Revision: Reviewed and corrected entire documentation Addition: • Information on CH700 • Information on Operation at PLC Communication Disconnection • Information on Rapid Spanning Tree Protocol (RSTP) • Information on Device Level Ring (DLR) • Information on Quality of Service (Qos) • Information on Link Layer Discovery Protocol (LLDP) • Updated information on option software version VT908207(EtherNet/IP Ver3003)
		6	Addition: Information on Operation at PLC Forward Close Command
		16	Addition: Rapid Spanning Tree Protocol (RSTP)
		19	Addition: United Kingdom Conformity Assessed Marking
		20	Addition: Precautions for Korean Radio Waves Act
June 2022	1	All	Revision: Reviewed and corrected entire documentation Addition: Information on FP605
		2	Addition: For Yaskawa Customers in the North or South America Regions
		10	Deletion: EU Declaration of Conformity
April 2021	-	-	First Edition

YASKAWA AC Drive Option
EtherNet/IP
Technical Manual

YASKAWA

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