

SIGMA II Indexer - Configurable Single-Axis Servo Positioning



Sigma II with Indexer Application Module

Used for a wide variety of functions, including:

- **Point-to-Point Positioning**
- **Precise Velocity Control**
- **Conditional Profile Execution in response to a registration input**

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*Sigma II Servo System Product Catalog Supplement G-MI#99001x-Sigma II

Design Features

1. Easy to Use

- Single-axis positioning or network multi-axis indexing applications
- Versatile: network or stored program function
- Fifteen inputs/thirteen 24V_{DC} outputs, including five settable outputs and a high speed input for registration capability

2. Simple to Set Up and Configure

- IndexWorks™ Software simple Windows®-based setup software
 - Fill-in-the-blank style settings
 - No programming language requirements
- Memory table contains up to 128 moves that may be linked for sequential execution
- Easy interfacing with PLCs, operator interfaces, and industrial computers
 - Accepts economical digital I/O signals to activate preconfigured index moves
 - Alternative ASCII RS232/422/485 serial commands (configure, monitor, and control up to 16 indexers per serial link)

3. Compact

Hardware: any Yaskawa Sigma II amplifier with a field installable add-on option card

4. Affordable

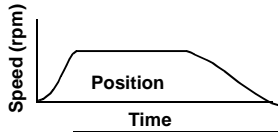
5. Application Emphasis

- Feed-to-length applications including:
 - Roll feeding
 - Bag making
 - Press feed
- High speed, accurate indexing
- Packaging and labeling
- Linear motors, linear slides, indexing conveyors and rotary tables
- Replacement for mechanical index tables, clutch brake systems
- Cut-to-length
- Pick and place systems

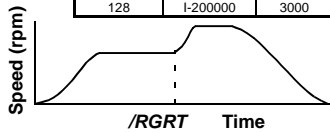
6. UL, cUL, and CE compliance

Sigma II Indexer Functional Features and Capabilities

Preset Index Moves: Program Steps (PGMSTEP)



PGMSTEP	POS	SPD
0	I+200000	3000
1	I-100000	2500
2	A+200000	1500
n	—	1500
128	I-200000	3000



PGMSTEP	POS	SPD	RDST	RSPD
0	I+200000	1500	20000	2000
1	I-100000	3000	60000	1000
2	A+200000	1500	15000	1000
n	—	1500	—	1000
128	I-200000	3000	—	1000

One hundred twenty eight directly addressable PGMSTEPS

- PGMSTEPS are stored in non-volatile memory
- Specify either: I = incremental or A = absolute moves: Positioning range: $\pm 99,999,999$ reference units
Absolute: Reference units from the home position
- Compatible with absolute encoders
- Separately settable acceleration and deceleration

Index moves with Registration

- Supported with high speed input (/RGRT)
- Distance (RDST)
- Speed (RSPD)

Choice of Three Styles of Homing Routines

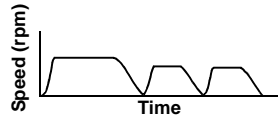
Optional: Up to 16 Preset Bi-Directional Speed Settings

JUSP-NS600 Indexer

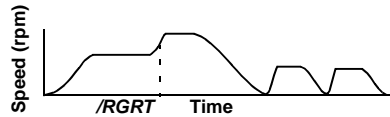
Looping and Linking

LOOP command

Up to 99,999 times (to facilitate selectable batch counting)



PGMSTEP	POS	SPD	LOOP
0	I+200000	3000	1
1	I+100000	2500	2
2	A+200000	1500	1
n	—	—	—
128	I-200000	3000	1



Linking program steps

NEXT = Go to and start PGMSTEP

PGMSTEP	POS	SPD	RDST	RSPD	LOOP	NEXT
0	I+200000	3000	20000	4000	1	1
1	I+200000	2500	60000	1000	2	End
2	A+200000	1500	15000	1000	1	3
n	—	—	—	—	—	—
128	I-200000	3000	—	1000	1	5

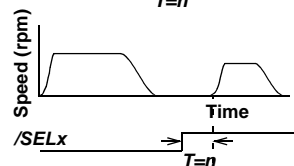
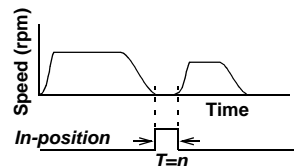
Linking Index Moves with a Combination of Events

In-Position + Time Delay

Time Delay Range: n = 0 to 99,999ms

Input /SELX + Time Delay

/SELX = choice of seven selectable hardware inputs (/SEL0, /SEL1, etc.)

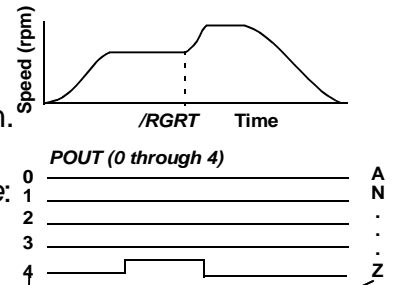


PGMSTEP	POS	SPD	RDST	RSPD	EVENT	LOOP	NEXT
0	I+200000	1500	20000	1000	SEL1T0	1	1
1	I+200000	3000	60000	1000	SEL3T100	1	End
2	A+200000	1500	15000	1000	IT0	1	3
n	—	—	—	—	—	—	—
128	I-200000	3000	—	1000	NT0	1	5

Setting Outputs

Two ways to set five adjustable outputs

- Set conditions of outputs at the **start** of a PGMSTEP action.
 - Set conditions of outputs at the **end** of a PGMSTEP action.
- Example: reserve the next PGMSTEP for P OUT only. See: PGMSTEP Number 127 in the table).



Setting Terminology	
Setting	Description
A	Active
N	Non-Active
:	No change from previous state
Z	Zone (PLS-style function)

PGMSTEP	POS	SPD	RDST	RDSP	/POUT	EVENT	LOOP	NEXT
0	I+200000	1500	200000	2000	Z::NA	SEL1, T0	1	1
1	I-200000	3000	60000	1000	INA::Z	SEL1, T100	2	End
2	A+200000	1500	15000	1000	::NZZ	---	1	3
n	---	---	---	---	---	---	---	---
127	---	1000	---	1000	NZZZZ	IT0	1	End
128	I-200000	3000	---	1000	ZZZZZ	DT1000	1	5

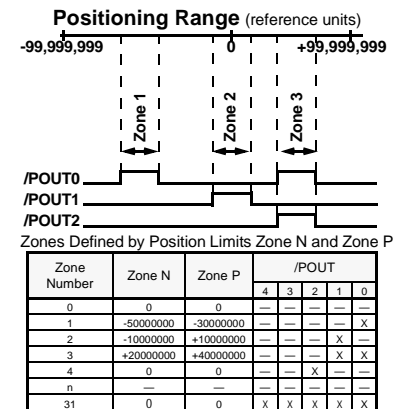
Output Zones

Zone Signal Outputs up to 32 definable zones

Zone Table Example

- IF there is a PGMSTEP that:
 - Indexes in Zone 2 (defined in the table as -10,000,000 to +10,000,000)
- AND
 - Defines /POUT number 1 as Z-output type
- THEN
 - /POUT1 is active within the range -10,000,000 to +10,000,000 (as specified in the table)

Zone 2 = 00010₂ (binary) defining active outputs /POUT0 - /POUT4



Built-in Routines for Single-Axis Applications

Definable software limits

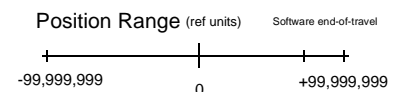
Hardware limit switch stopping routines

- Coasting
- Decelerating
- Applying dynamic brake

Power loss or alarm stopping routines

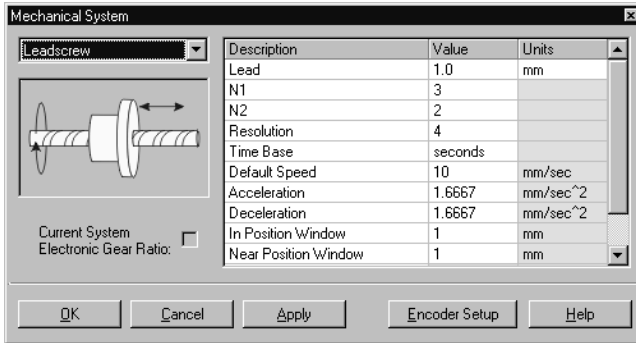
- Coasting
- Dynamic braking

Adjustable Holding Brake actuation for vertical loads



Index Works™ Utility Software Features

Time Saving Indexer Configuration Utility



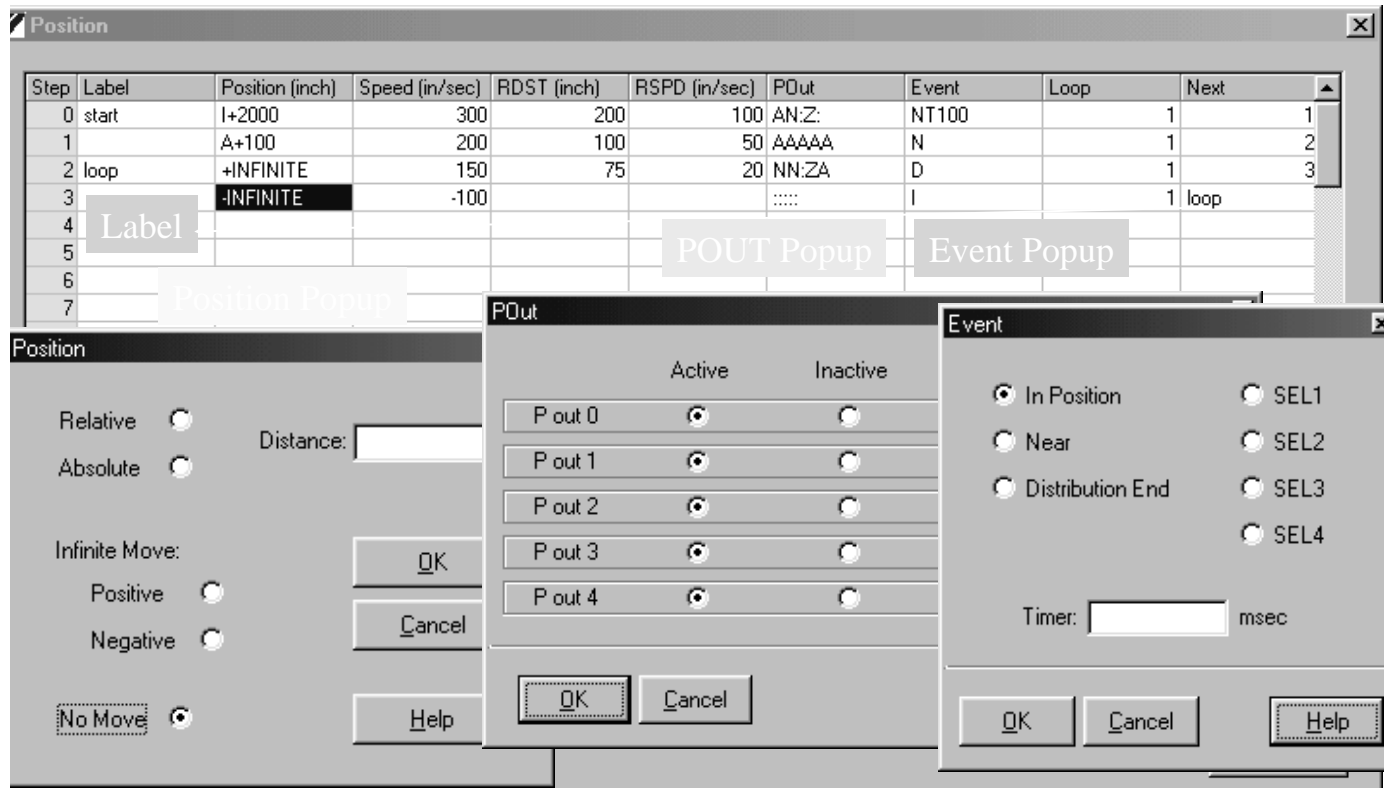
Fill-in-the-blank settings

- Machine setups, reference units
- The smallest definable increment of movement is based on the encoder count

No programming language requirements

Includes on-line monitoring and off-line setup capabilities

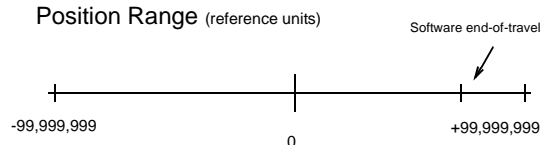
Position Programming



Zone Tables

ID	Lower (mm)	Upper (mm)	P0ut4	P0ut3	P0ut2	P0ut1	P0ut0
0	25.0000	50.0000	Inactive	Inactive	Inactive	Inactive	Inactive
1			Inactive	Inactive	Inactive	Inactive	Active
2			Inactive	Inactive	Inactive	Active	Inactive
3			Inactive	Inactive	Inactive	Active	Active
4			Inactive	Inactive	Active	Inactive	Inactive
5			Inactive	Inactive	Active	Active	Active
6			Inactive	Inactive	Active	Active	Inactive
7			Inactive	Inactive	Active	Active	Active
8			Inactive	Active	Inactive	Inactive	Inactive
9			Inactive	Active	Inactive	Inactive	Active

Overtravel Configuration



Pn	Description	Value
Pn819	OT Stop Method	Servo OFF
Pn81A	Motion Method	Linear
Pn81B	Forward Position Reference Limit (cm)	9999
Pn81C	Reverse Position Reference Limit (cm)	-9999

Settings and Parameter Editor

Pn	Description	Value
Pn100	Speed Loop Gain (Hz)	50
Pn101	Speed Loop Integral Time Constant (0.01ms)	2001
Pn102	Position Loop Gain (1/s)	40
Pn103	Inertia Ratio (%)	0
Pn107	Bias (r/min)	0
Pn108	Bias Width Addition (Reference Unit)	7
Pn109	Feed-forward (%)	0
Pn10A	Feed-forward Filter Time Constant (0.01ms)	0
Pn110	Online Autotuning Switches	16
Pn401	Torque Reference Filter Time Constant (0.01ms)	100

Enable Notch-Filter Notch-Filter Frequency Hz

Homing Routines

Pn	Description	Value
Pn823	Zero Point Return Method	DEC and C-Phase
Pn81D	Zero Point Position (cm)	0
Pn824	Zero Point Return Direction	Forward
Pn825	Zero Point Return Run Speed (cm/sec)	10.0000
Pn826	Zero Point Return Approach Speed (cm/sec)	10
Pn827	Zero Point Return Creep Speed (cm/sec)	10
Pn828	Zero Point Return Final Run Distance (cm)	0

Motion Diagnosis

Monitoring

Alarm

Poll for Alarms

Current Alarm

Reset Alarm System Reset

Panel Display: **BB**

Status Code: **BB**

Alarm History

Alarm	Status Code	Panel Display
1	NONE	NONE
2	NONE	NONE
3	NONE	NONE
4	NONE	NONE
5	NONE	NONE
6	NONE	NONE
7	NONE	NONE
8	NONE	NONE
9	NONE	NONE
10	NONE	NONE

Stop Monitor Polling Time seconds Exit Help

Monitoring

Alarm

Input Status

SGDH NS600

Output Status

SGDH NS600

Motion & Status

Status Flags

Encoder Counts Current Position: 0 cm

Machine Units Current Motor Position: 0 cm

In Position Following Error: 0 cm

Near Target Position: 0 cm

Reference Position Complete Distance to Target: 0 cm

Free Hold Registration Position: 0 cm

Program Operation Distance to Registration: 0 cm

Current Limit Active Motor Speed: 0 cm/sec

Main Power On Speed Reference: 0 cm/sec

Torque: 0 % of rated torque

Stop Monitor Polling Time seconds Exit Help

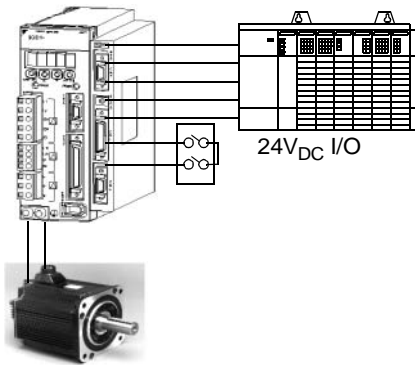
JUSP-NS600
Indexer

Control System Architecture

The Sigma II Indexer is a compact, cost-effective solution for the needs of both the machine OEM and the end user. All servo loops and positioning functions are included in a self-contained servo amplifier/indexer package. This eliminates the requirement for both a higher cost host controller axis module and the traditional analog elements of a servo amplifier command reference. Machine controller to servo axis interfacing simplifies to either lower cost digital I/O modules or serial communications wiring.

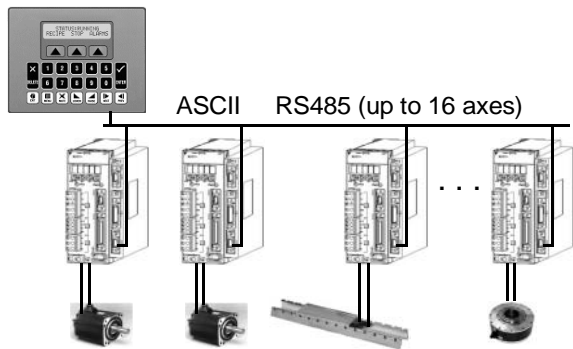
JUSP-NS600
Indexer

Peripheral to a PLC



An Indexer's I/O is used by a machine controller for addressing and initiating one or more set(s) of pre-programmed positioning moves or velocity commands. For sequencing the servo axis from a machine controller, use such I/O signals as: start-stop, feed hold, homing, in-position signals, conditional input events, programmable indexer outputs, etc.

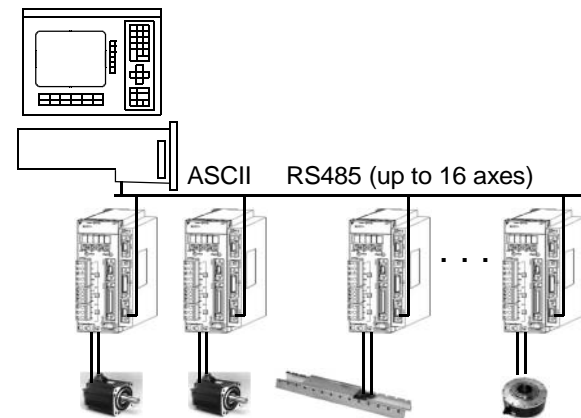
Peripheral to an HMI or Personal Computer



All indexer setup parameters, system alarms and monitors, and program configurations are read/write accessible through the serial network. The indexer can easily be set for various network transmission speeds (i.e., 9.6kbaud, 19.2kbaud, or 38.4kbaud).

Examples:

- Initiate point-to-point positioning with a global start command
- Individually communicate positions, speeds, and start commands to each indexer
- Easily change batch counts and machine setups

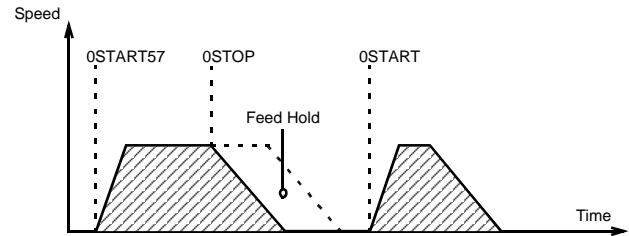


Serial Commands and Examples

Motion Commands n= axis address (0 to F)	Description	Setting Range	Reference Units (RU)
nSPDx	Speed Setting	x = 1 to 99999999	×1000 RU/min
nACCx	Acceleration	x = 1 to 99999999	×1000 RU/min/ms
nDECx	Deceleration	x = 1 to 99999999	×1000 RU/min/ms
nPOS+x	Absolute Position Setting	-99999999 ≤ x ≤ +99999999	RU
nPOSI+x	Relative Position Setting	-99999999 ≤ x ≤ +99999999	RU
nST	Positioning Start	—	—
nJOGPx	JOG Forward	x = 1 to 99999999	×1000 RU/min
nJOGNx	JOG Reverse	x = 1 to 99999999	×1000 RU/min
nZRN	Zero Point Return (Homing)	3 homing routines	—
nRDSTx	Registration Distance Setting	x = 0 to 99999999	RU
nRSPDx	Registration Speed Setting	x = 1 to 99999999	×1000 RU/min
nPOUTxxxx	Programmable Output Settings	x = active, non-active, previous, or zone	—
and others			
Command Type	Summary	Command Function Description	
Parameter Operation	4 commands	Parameter read, write, temporary write, and initialization.	
Program Table Setup	29 commands	Program table, jog speed table, and zone table read, write, save, and initialization.	
Program Table Operation	4 commands	Program start, program stop, and program reset.	
Monitor and Function	46 commands	Alarms, errors, inputs, outputs, position, speed, torque, regenerative load, program status, product type, rigidity, absolute encoder setup, and more.	

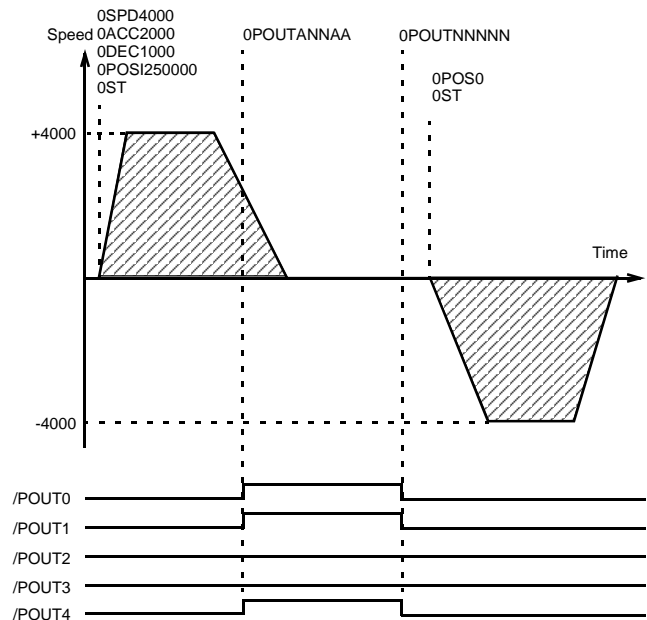
Example 1: Commanding Preset Index Moves Serially

Command	Description
0START57	Starts program step 57 of the preset program table.
0STOP	Stops and holds program step 57.
0START	Resumes positioning.



Example 2: Commanding Positions and Output Settings Serially

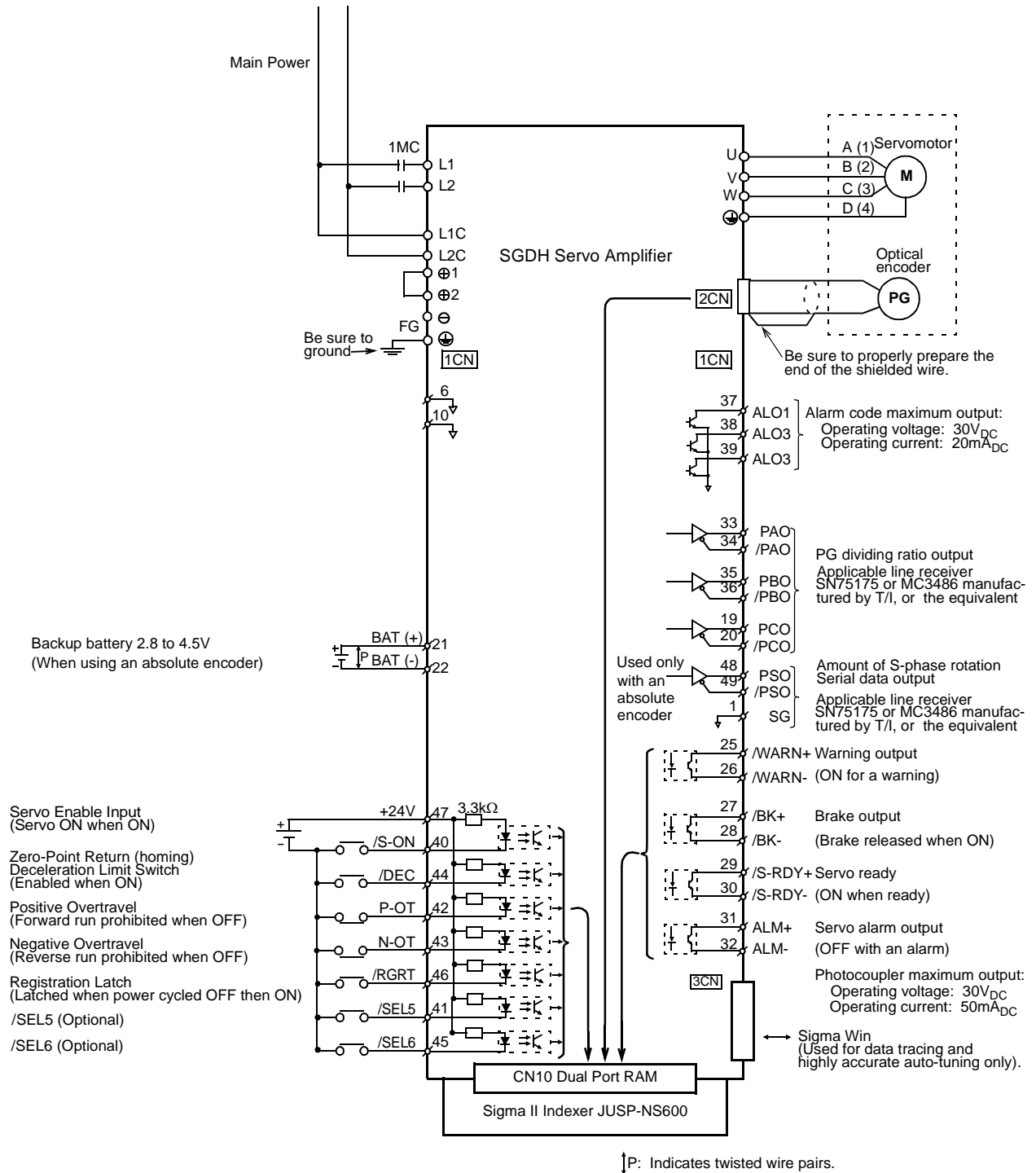
Command	Description
0SPD4000	Sets speed.
0ACC2000	Sets acceleration.
0DEC1000	Sets deceleration.
0POSI250000	Sets relative position.
0ST	Starts positioning.
0POUTANNAA	Sets programmable outputs.
0POUTNNNNN	Sets programmable outputs.
0POS0	Sets absolute position.
0ST	Starts positioning.



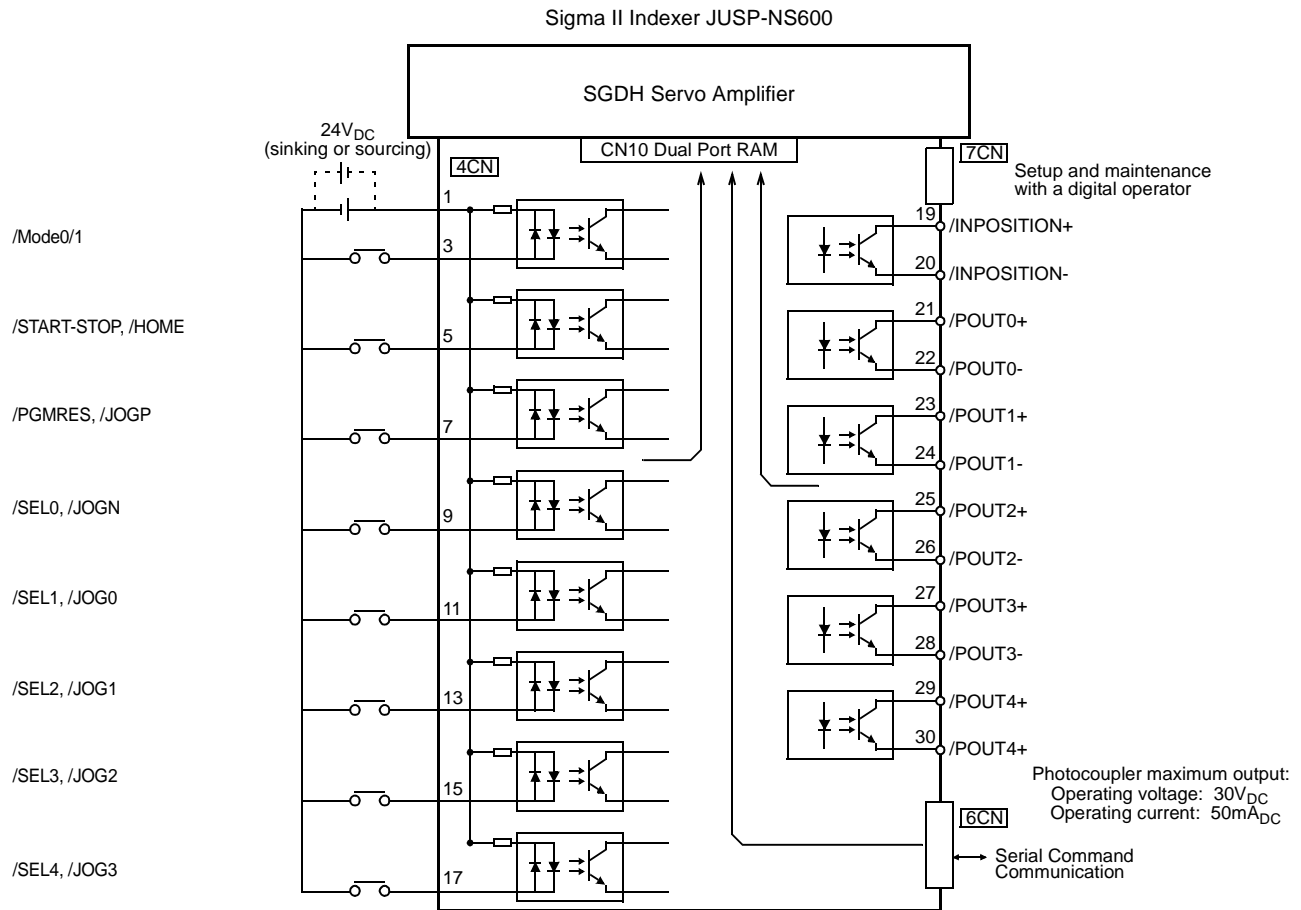
I/O Connections

Example of I/O Signal Connector (CN1, CN4)

JUSP-NS600
Indexer



Sigma II Indexer Application Module I/O

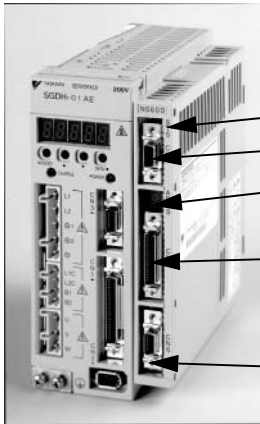


JUSP-NS600 Indexer

Sigma II Indexer JUSP-NS600	
Mode	Activates Input Functions
0	/START-STOP, /PGMRES, /SEL0, /SEL1, /SEL2, /SEL3, /SEL4, /SEL5*, and SEL6*
1	/HOME, /JOGP, /JOGN, /JOG0, /JOG1, /JOG2, and /JOG3

* Located on 1CN of SGDH amp. The amp automatically configures for NS600 functionality on power-up sequence.

Indexer Ratings and Specifications



Add-on Indexer Hardware

Indexer Green/Red status LED

CN7: Setting up, commissioning, and monitoring port

Rotary address switch (default 0)

Up to 16 addresses

CN4: Indexer digital I/O connector

- Fifteen optically isolated inputs
- Thirteen outputs (including five programmable)

CN6: Network and setup port (RS232, 422, 485)

JUSP-NS600
Indexer

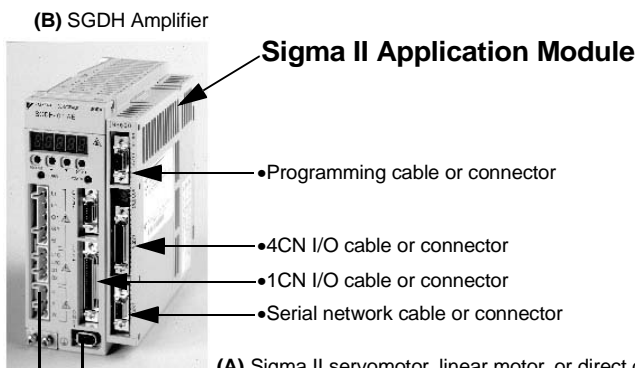
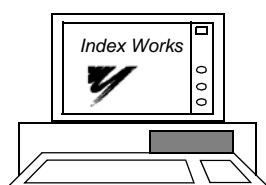
Specifications	
Serial Command Mode	With registration and separate acceleration and deceleration setting.
Serial Port Operating Modes	RS232/422/485 multiple indexer addressing up to 16 units Baud Rate setting range: 9600 to 38,400
Stored Motion Program	Linked index table with 128 configurable Indices
— Acceleration ≠ Deceleration	Acceleration and deceleration are defined in separate parameters
— Batch count	99,999
— Dwell	Yes with event processing, I/O signals, in position, etc.
— Registration	Standard
— Index Link	Standard
Inputs and Outputs (Combined with the Amplifier's I/O)	
Digital Inputs	15 optically isolated 24V _{DC} inputs: Servo-ON, registration latch, mode select, start, home switch, program reset, forward overtravel, reverse overtravel, and 7 preset select inputs.
Digital Outputs	13 optically isolated 24V _{DC} outputs: alarm out, servo-ready, servo warning, holding brake, in-position, 3 alarm codes, and 5 settable outputs. Also included: a scalable encoder position output.
Servo System Specifications	
Motor feedback resolution / standard	13-bit incremental encoder (8,192PPR) for motors below 1hp
	17-bit incremental encoder (16,384PPR) for motors above 1hp
Motor feedback resolution / optional	16-bit absolute encoder for motors below 1hp
	17-bit incremental/absolute for motors above 1hp
Linear motor feedback resolution / standard	0.078 micron (using 20 micron linear scale pitch)
Amplifier sizes	115 V _{ac} single-phase, 30 to 200W
	230 V _{ac} single-phase, 30W to 1.5kW
	230 V _{ac} three-phase, 500W to 15kW
	480 V _{ac} three-phase, 500W to 55kW
Environmental	
Ambient/Storage Temperature	0° to 55°C / -20° to 85°C
Global Safety Certifications	UL, CUL, CE, TUV

Selecting Your Sigma II Indexer System

Specify part number JUSP-NS600, the indexer add-on application module.

Use the tables beginning on the following page to specify choice of indexer interface cables, mating connectors only, set-up and monitoring tools, and software.

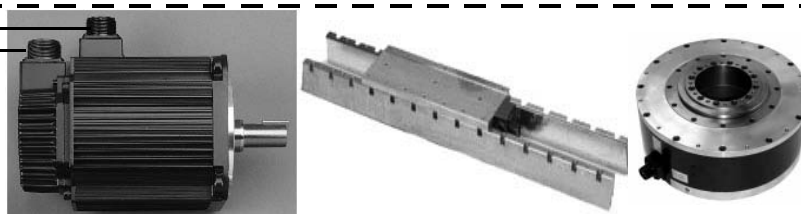
System Configuration



(A) Sigma II servomotor, linear motor, or direct drive motor.

Power Components

- (E) Additional regeneration resistor capacity (if necessary), optional DC reactor, etc.
- (C) Pre-wired power and feedback cables or
- (D) Connector kits for local cable assembly



Specify a technical manual, if it is needed, on your servo system purchase order:
Users Manual, Sigma II Indexer: YEA-SIA-S800-32.11
Users Manual, Linear Motor: YEA-SIA-S800-39.11
 (Manuals provided at no charge with a purchase order, but must be requested).

JUSP-NS600 Indexer

Power Components

(motor, amplifier, and connections for power and feedback)

Select the required power components (servomotor, power and feedback connectors or pre-wired cables, amplifier, regenerative packs, etc.) from the following catalog pages.

Use this table or the Yaskawa publication referenced below to determine which catalog section describes the best servomotor for the application.

Application Requirements (Maximum)			Number of Motor Sizes	System Voltage and Sigma II Servomotor Series				Selection Guide for Power Components Page Number *
Speed (rpm)	Rated Torque oz • in [lb • in]	Peak Torque oz • in [lb • in]		100V _{ac} Single-phase	200V _{ac} Single-phase	200V _{ac} Three-phase	480V _{ac} Three-phase	
5000	338	1010	6	SGMAH	SGMAH	—	—	11
5000	676	2027	5	SGMPH	SGMPH	—	—	29
3000	[845]	[1988]	10	—	—	SGMGH	—	57
5000	[140]	[422]	6	—	—	SGMSH	—	85
3000	[845]	[1988]	10	—	—	—	SGMGH	127
5000	[140]	[422]	6	—	—	—	SGMSH	139
6000	[43]	[190]	2	—	—	—	SGMUH	139
2000	[1240]	[6120]	5	—	—	—	SGMBH	165

* Yaskawa publication: *Sigma II Servo System Product Catalog Supplement G-MI#99001x-Sigma II, Linear Motor Catalog KAE-S800-39.10, Direct Drive Motor Catalog YEA-KAA-DDM-1.*

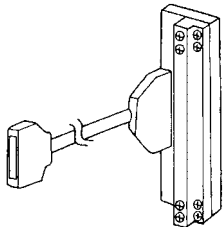
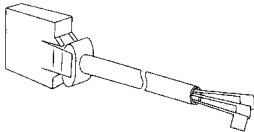
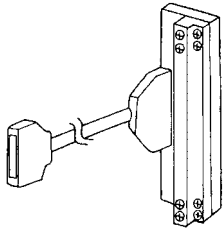
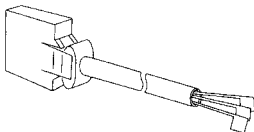
Sigma II Indexer Selection

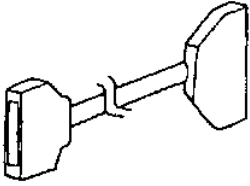
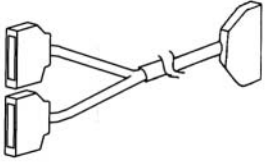
Use the servomotor and amplifier selection of this catalog for specification and selection of Sigma II servomotor and servo amplifier.

Component Description	Part Number	Comments	Item Class
Sigma II Add-on Indexer Application Module	JUSP-NS600	Mounting hardware requirements: one ground strap mounting screw. (See supplementary information on the next page.)	Stock

Use the Sigma II Application Module Mounting Dimensions on pages 75 to 82 for determining overall indexer panel space requirements. For 480VAC large capacity amplifiers (22 - 55kW), refer to the Sigma II catalog for amp dimensions.

Indexer I/O Interface Cable Selection



Component Description (E)	Part Number	Comments	Item Class
Input/Output 1CN Cable & Transition Terminal Block 	JUSP-TA50P	35mm DIN rail mountable; the cable length is 0.5m.	Stock
Input/Output 1CN Cable with Pigtail Leads 	JZSP-CKI01-□(A)*	Use the following key to specify required cable length (last digit of the part number): 1: 1m (standard) 2: 2m 3: 3m	
Input/Output 4CN Cable & Transition Terminal Block 	JUSP-TA36P	35mm DIN rail mountable; the cable length is 0.5m.	
Input/Output 4CN Cable with Pigtail Leads 	CKI-NS600-□□	Use the following key to specify required cable length (last two digits of the part number): 01: 1m (standard) 02: 2m 03: 3m	

Input/Output 1CN Cable Cable with Female D-Sub output Connector		JZSP-CKI0D- □□**	Use the following key to specify required cable length (last two digits of the part number): D50: 0.5m 01: 1m (standard) 02: 2m 03: 3m	
Input/Output 1CN+4CN Cable with Female D-Sub output Connector* Applicable only for SGDH-1E (15 kW) and below.		CKI-NS600D- □□** (for use with NS600 Indexer)	Use the following key to specify required cable length (last two digits of the part number): D50: 0.5m 01: 1m (standard) 02: 2m 03: 3m	

* The "(A)" at the end of the cable part number indicates the revision level. Revision level may be subject to change prior to this catalog reprinting.

** 50 Pin Female D-Sub output connector mates to customer supplied third party terminal block. (e.g., Wago #289-449, Weidmuller #919658, Phoenix #2283647, Amphenol/Sine #20-51039, and many others.

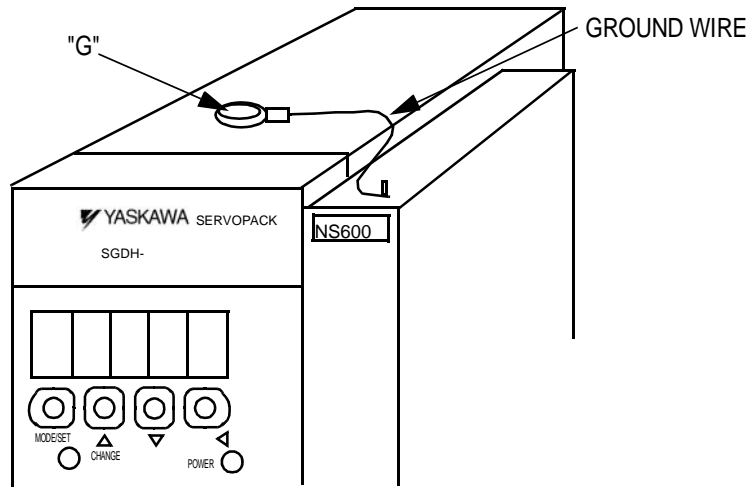
Mating Connector Selection

Component Description (E)	Part Number	Comments	Item Class
1CN Mating Connector <div style="text-align: center; margin-top: 10px;">  </div>	JZSP-CKI9	for SGDH I/O 50-pin	Stock
4CN Mating Connector <div style="text-align: center; margin-top: 10px;">  </div>	DP-9420007	Solder type with cover	
3CN, 6CN, and 7CN Peripheral Mating Connector <div style="text-align: center; margin-top: 10px;"> — </div>	YSC-1	—	
5CN Analog Monitor Connector <div style="text-align: center; margin-top: 10px;"> — </div>	DE9404559	—	

Supplementary Information

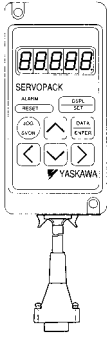
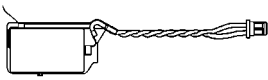
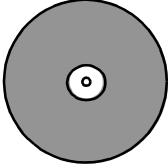
For grounding, connect the ground wire of the Sigma II Indexer application module to the point marked "G" on the SGDH servo amplifier. Refer to the following table for the proper screw size.

Servo Amplifier	"G" Screw	Comments
SGDH-A3-02BE SGDH-A3-10AE	M3 x 10 (round head phillips with split lock washer and flat washer)	One supplied with NS600
SGDH-15-50AE SGDH-15-50DE	M4 x 10 (round head phillips with split lock washer and flat washer)	One supplied with NS600
SGDH-60-1EAE SGDH-60-1EDE	M4 x 8 (round head phillips with split lock washer and flat washer)	One supplied with NS600 Use front panel side screw hole.



Example: For SGDH (30W to 5.0kW)

Peripheral Device Selection

Component Description (E)	Part Number	Comments	Item Class
Hand-held Digital Operator Panel	 <p>A hand-held digital operator panel with a numeric keypad, function keys, and a small display. The YASKAWA logo is visible at the bottom.</p>	JUSP-OP02A-1 and JZSP-CMS00-1	Portable unit with 1m adapter cable for Sigma II Indexer
Absolute Encoder Battery	 <p>A small rectangular battery with a cable attached to one end.</p>	JZSP-BA01	3.6V, 1000mAh (lithium battery)
Software Interface Cable for 3CN, 6CN, or 7CN	—	YS-12	Pre-wired 2.0m cable with 9-pin connector (RS232)
IndexWorks™ Software	 <p>A standard CD-ROM disc.</p>	NS600-GUI or JZSP-WP0001	Monitoring and set-up software for Windows 95, Windows 98, and Windows NT on a CD-ROM.

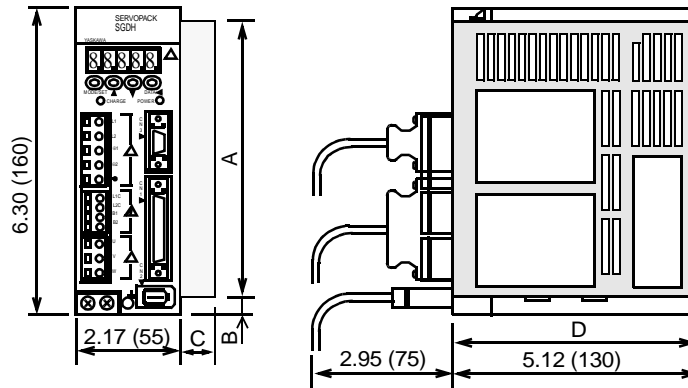
NOTES

JUSP-NS600
Indexer

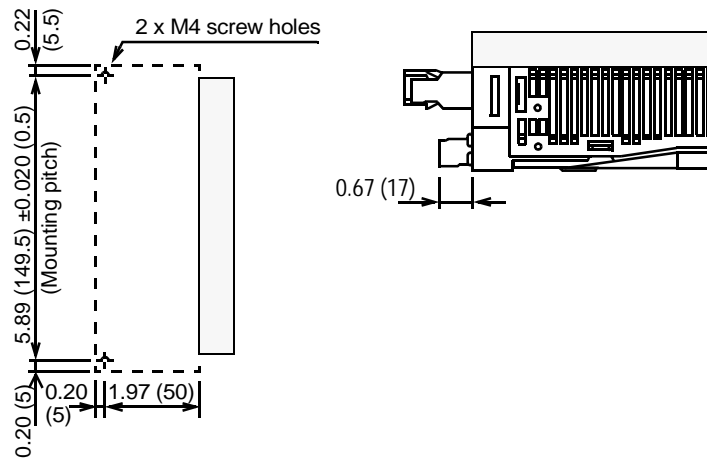
Dimensions in inches (mm)

SGDH Servo Amplifier/Application Modules

- SGDH-A3AE to -02AE (200V Single-phase, 30 to 200W) and
- SGDH-A3BE to -01BE (100V Single-phase, 30 to 100W)



Mounting Hole Diagram



Part Number	SGDH Option Description	A	B	C	D	Approximate Mass** lb (kg)
JUSP-NS100	Mechatrolink	5.59 (142)	0.35 (9)	0.79 (20)	5.08 (129)	0.44 (0.2)
JUSP-NS300	Indexer with DeviceNet™				5.24 (133)**	0.7 (0.32)
JUSP-NS310	Indexer with DeviceNet™	5.59 (142)	0.35 (9)		5.08 (129)	0.44 (0.2)
JUSP-NS500	Profibus	5.59 (142)	0.35 (9)	1.22 (31)***	5.08 (129)	0.44 (0.2)
JUSP-NS600	Indexer					
JUSP-FC100	Full Closed Loop					
MP940	Single Axis Control					0.89 (0.40)

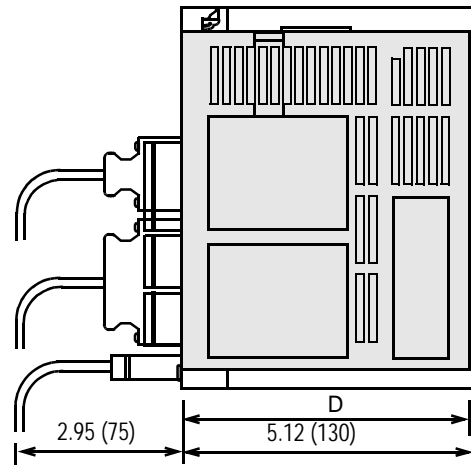
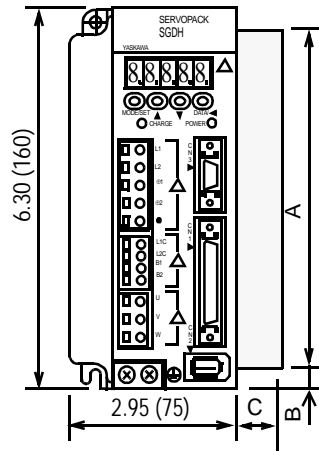
* Option card only.

** Add 0.75in (19mm) to front end of card for micro connector.

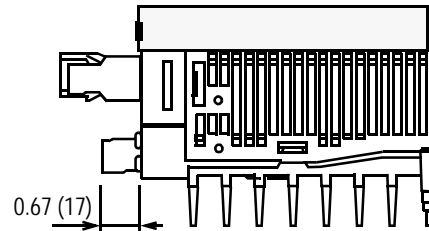
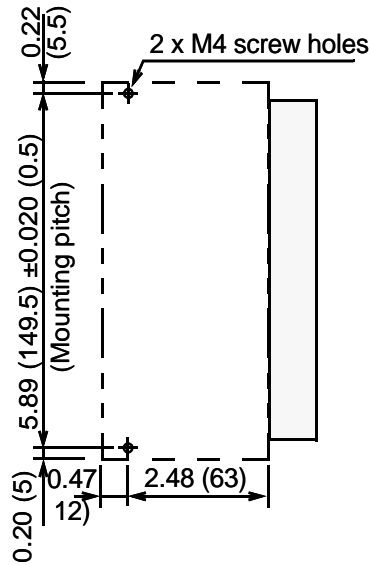
*** Add approx. 0.75in (19mm) for optional back-up battery.

Sigma II Application Modules

- SGDH-04AE (200V Single-phase, 400W),
- SGDH-02BE (100V Single-phase, 200W) and
- SGDH-04FE (100V Single-phase, 400W)



Mounting Hole Diagram



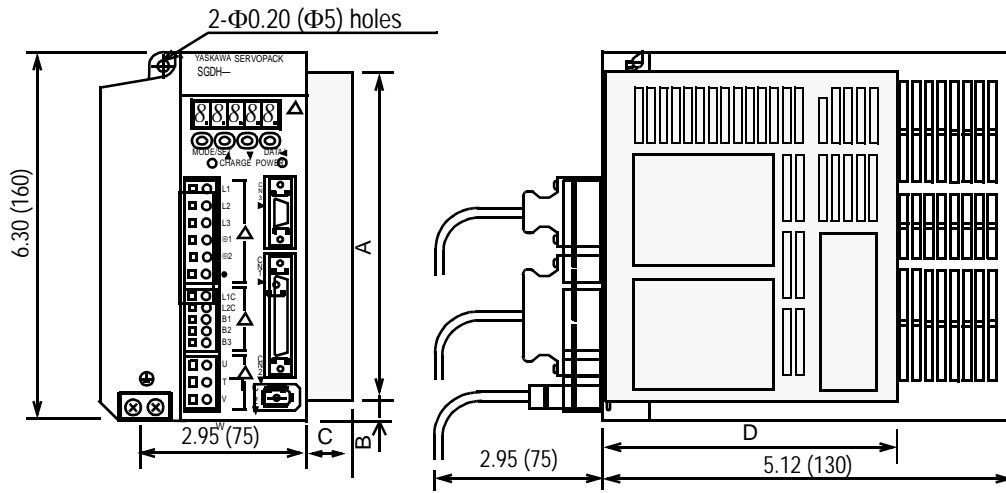
Part Number	SGDH Option Description	A	B	C	D	Approximate Mass** lb (kg)
JJSP-NS100	Mechatrolink	5.59 (142)	0.35 (9)	0.79 (20)	5.08 (129)	0.44 (0.2)
JJSP-NS300	Indexer with DeviceNet™				5.24 (133)**	
JJSP-NS310	Indexer with DeviceNet™				5.24 (133)**	
JJSP-NS500	Profibus	5.59 (142)	0.35 (9)	0.79 (20)	5.08 (129)	0.44 (0.2)
JJSP-NS600	Indexer					
JJSP-FC100	Full Closed Loop					
MP940	Single Axis Control			1.22 (31)***		0.89 (0.40)

* Option card only.

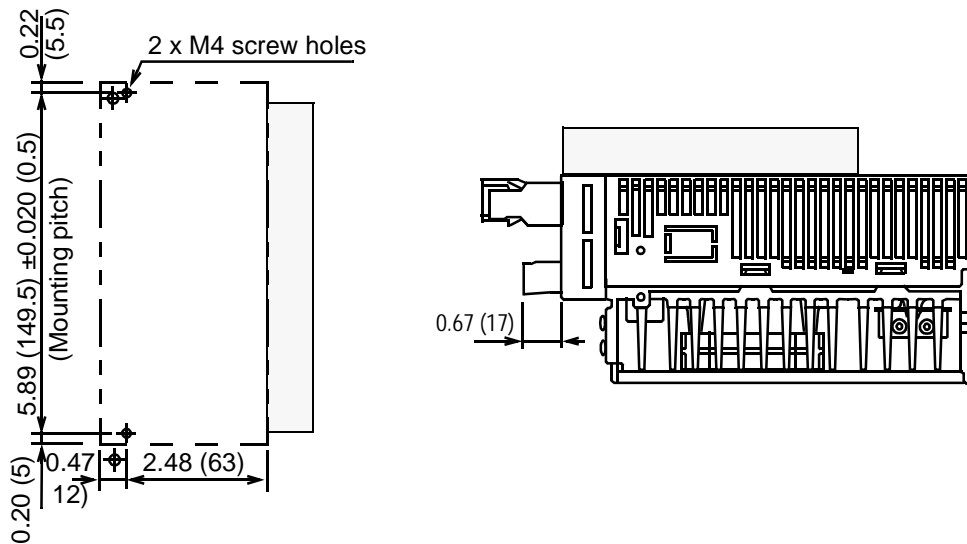
** Add 0.75in (19mm) to front end of card for micro connector.

*** Add approx. 0.75in (19mm) for optional back-up battery.

- SGDH-05AE to -10AE (200V Three-phase, 0.5 to 1.0kW)
- SGDH-08AE-S (200V* Single-phase, 750W)



Mounting Hole Diagram



Part Number	SGDH Option Description	A	B	C	D	Approximate Mass* lb (kg)
JJSP-NS100	Mechatrolink	5.59 (142)	0.35 (9)	0.79 (20)	5.08 (129)	0.44 (0.2)
JJSP-NS300	Indexer with DeviceNet™				5.24 (133)**	0.7 (0.32)
JJSP-NS310	Indexer with DeviceNet™	5.67 (144)	0.32 (8)		5.08 (129)	0.44 (0.2)
JJSP-NS500	Profibus	5.59 (142)	0.35 (9)			
JJSP-NS600	Indexer					
JJSP-FC100	Full Closed Loop			1.22 (31)***	0.89 (0.40)	
MP940	Single Axis Control					

* Option card only.

** Add 0.75in (19mm) to front end of card for micro connector.

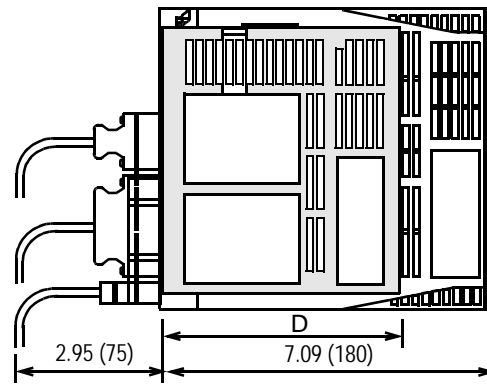
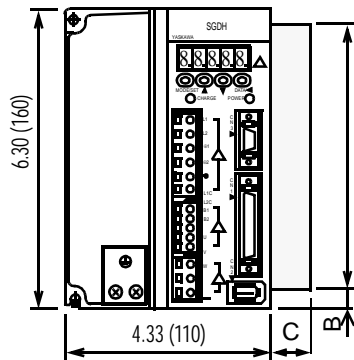
*** Add approx. 0.75in (19mm) for optional back-up battery.

* Rating 200 to 230V_{ac} +10% -5%

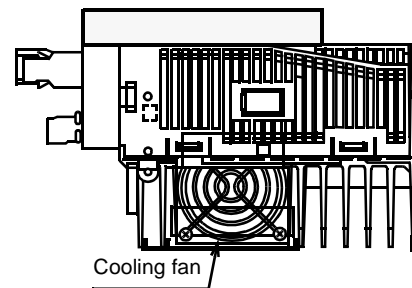
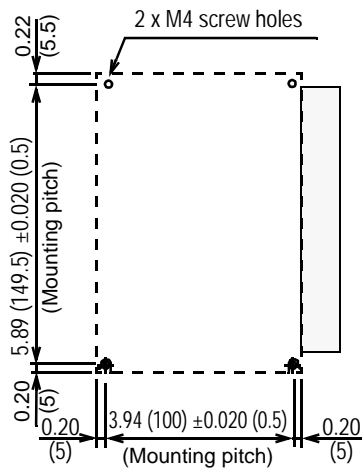
Sigma II Application Modules

- SGDH-15AE (200V Three-phase, 1.5kW)
- SGDH-05DE (400V Three-phase, 0.5kW to 1.5kW)

Sigma II
Modules



Mounting Hole Diagram



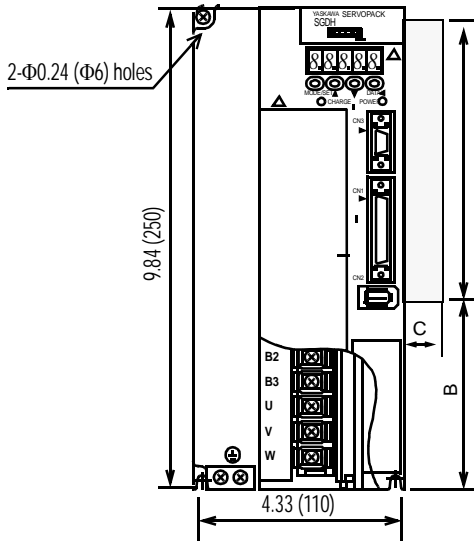
Part Number	SGDH Option Description	A	B	C	D	Approximate Mass** lb (kg)
JUSP-NS100	Mechatrolink	5.59 (142)	0.35 (9)	0.79 (20)	5.08 (129)	0.44 (0.2)
JUSP-NS300	Indexer with DeviceNet™					
JUSP-NS310	Indexer with DeviceNet™					
JUSP-NS500	Profibus					
JUSP-NS600	Indexer					
JUSP-FC100	Full Closed Loop					
MP940	Single Axis Control	1.22 (31)***			0.89 (0.40)	

* Option card only.

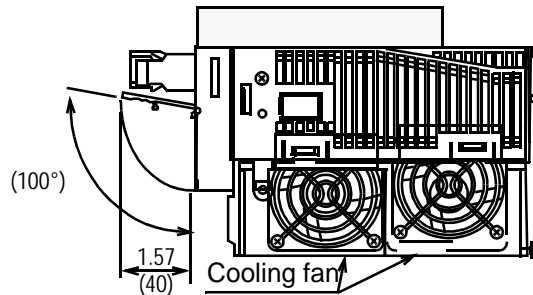
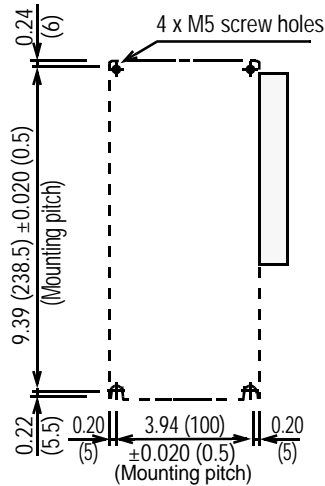
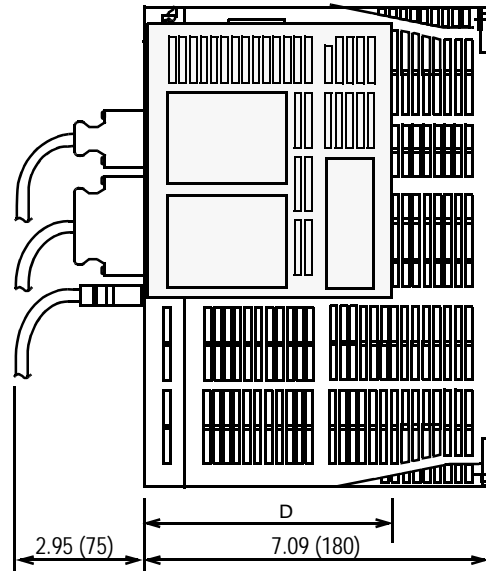
** Add 0.75in (19mm) to front end of card for micro connector.

*** Add approx. 0.75in (19mm) for optional back-up battery.

- SGDH-20AE, 30AE (200V Three-phase, 2.0kW, 3.0kW)
- SGDH-15AE-S (200V Single-phase, 1.5 kW)*
- SGDH-20DE, 30DE (400V Three-phase, 2.0kW, 3.0kW)



Mounting Hole Diagram



Part Number	SGDHG Option Description	A	B	C	D	Approximate Mass** lb (kg)
JUSP-NS100	Mechatrolink	5.59 (142)	3.9 (99)	0.79 (20)	5.08 (129)	0.44 (0.2)
JUSP-NS300	Indexer with DeviceNet™				5.24 (133)**	
JUSP-NS310	Indexer with DeviceNet™	5.67 (144)	3.86 (98)		5.08 (129)	0.7 (0.32)
JUSP-NS500	Profibus	5.59 (142)	3.9 (99)	1.22 (31)***	5.08 (129)	0.44 (0.2)
JUSP-NS600	Indexer					
JUSP-FC100	Full Closed Loop					
MP940	Single Axis Control					0.89 (0.40)

* Option card only.

** Add 0.75in (19mm) to front end of card for micro connector.

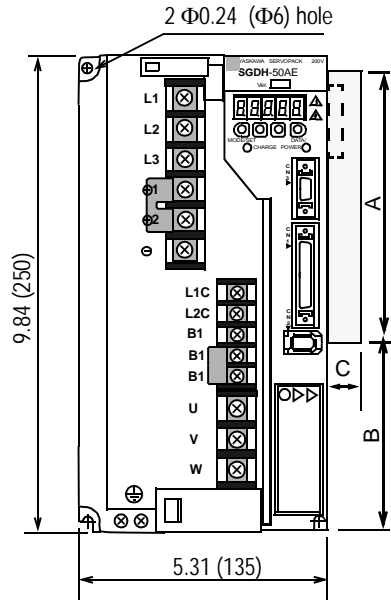
*** Add approx. 0.75in (19mm) for optional back-up battery.

* Rating: 200 to 230V_{ac} +10%, -5%

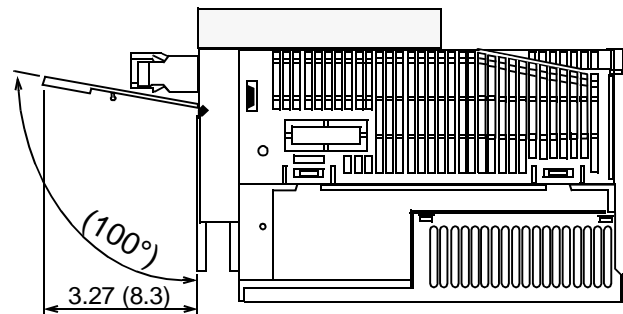
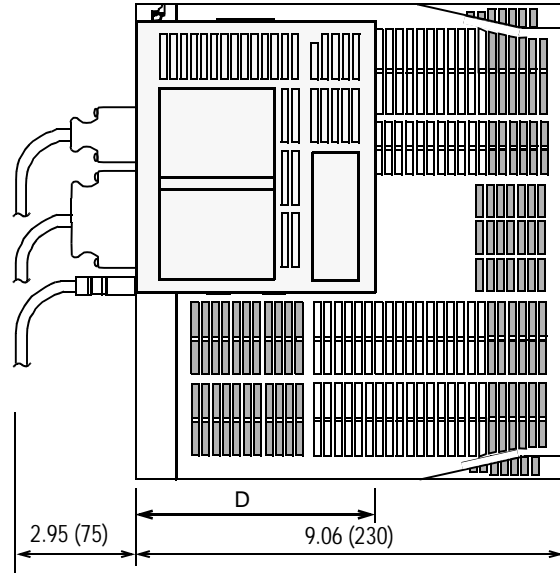
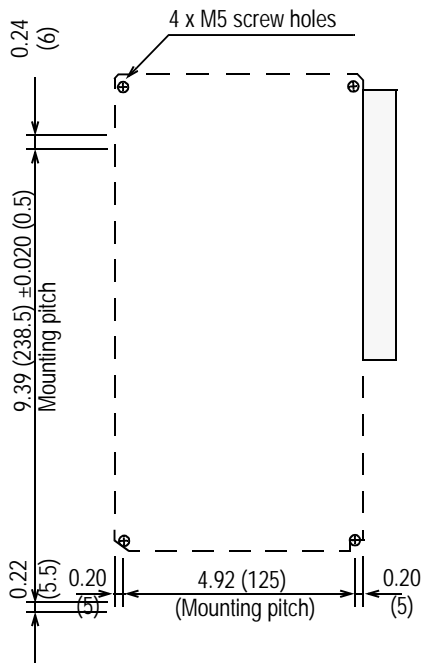
Sigma II Application Modules

- SGDH-50AE (200V Three-phase, 5.0kW)
- SGDH-50DE (400V Three-phase, 5.0kW to 1.5kW)

Sigma II
Modules



Mounting Hole Diagram



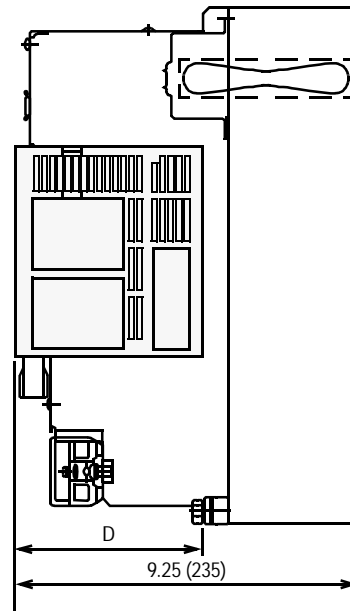
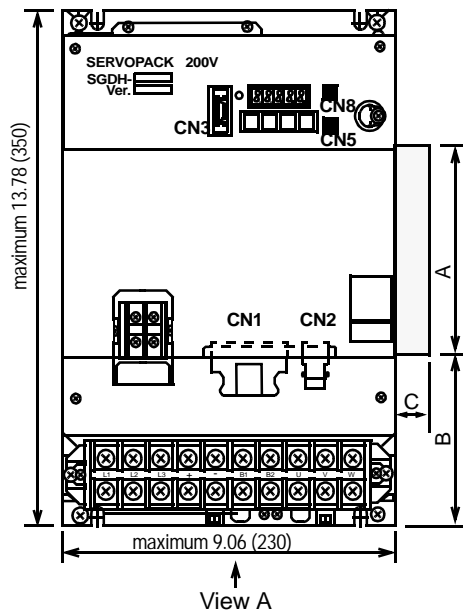
Part Number	Description	A	B	C	D	Approximate Mass** lb (kg)
JUSP-NS100	Mechatrolink	5.59 (142)	3.9 (99)	0.79 (20)	5.08 (129)	0.44 (0.2)
JUSP-NS300	Indexer with DeviceNet™				5.24 (133)**	0.7 (0.32)
JUSP-NS310	Indexer with DeviceNet™					
JUSP-NS500	Profibus	5.59 (142)	3.9 (99)	0.79 (20)	5.08 (129)	0.44 (0.2)
JUSP-NS600	Indexer					
JUSP-FC100	Full Closed Loop					
MP940	Single Axis Control			1.22 (31)***		0.89 (0.40)

** Option card only.

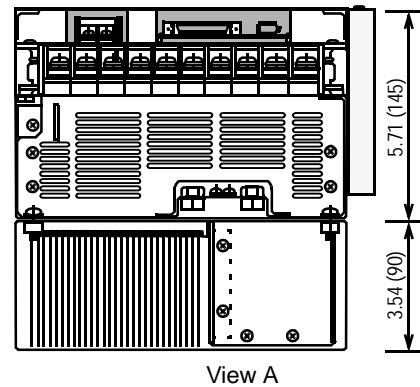
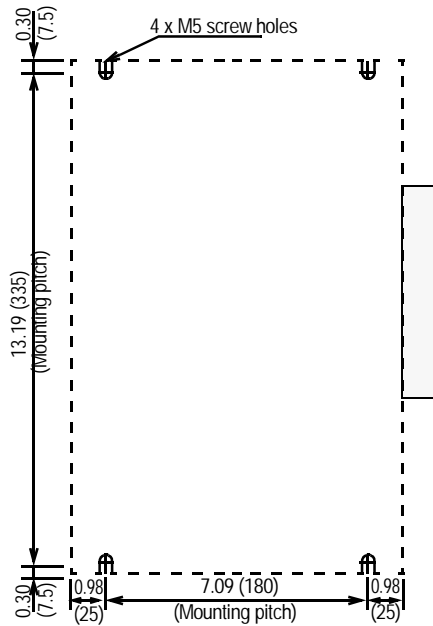
** Add 0.75in (19mm) to front end of card for micro connector.

*** Add approx. 0.75in (19mm) for optional back-up battery.

- SGDH-60AE, SGDH-75AE (200V Three-phase, 6.0kW, 7.5kW)
- SGDH-60DE, SGDH-75DE (400V Three-phase, 6.0kW, 7.5kW)



Mounting Hole Diagram



Part Number	SGDH Option Description	A	B	C	D	Approximate Mass* lb (kg)
JJSP-NS100	Mechatrolink	5.59 (142)	4.5 (114.5)	0.79 (20)	5.08 (129)	0.44 (0.2)
JJSP-NS300	Indexer with DeviceNet™				5.24 (133)**	0.7 (0.32)
JJSP-NS310	Indexer with DeviceNet™	5.67 (144)	4.47 (113.5)		5.08 (129)	0.44 (0.2)
JJSP-NS500	Profibus	5.59 (142)	4.5 (114.5)			
JJSP-NS600	Indexer					
JJSP-FC100	Full Closed Loop					
MP940	Single Axis Control					

* Option card only.

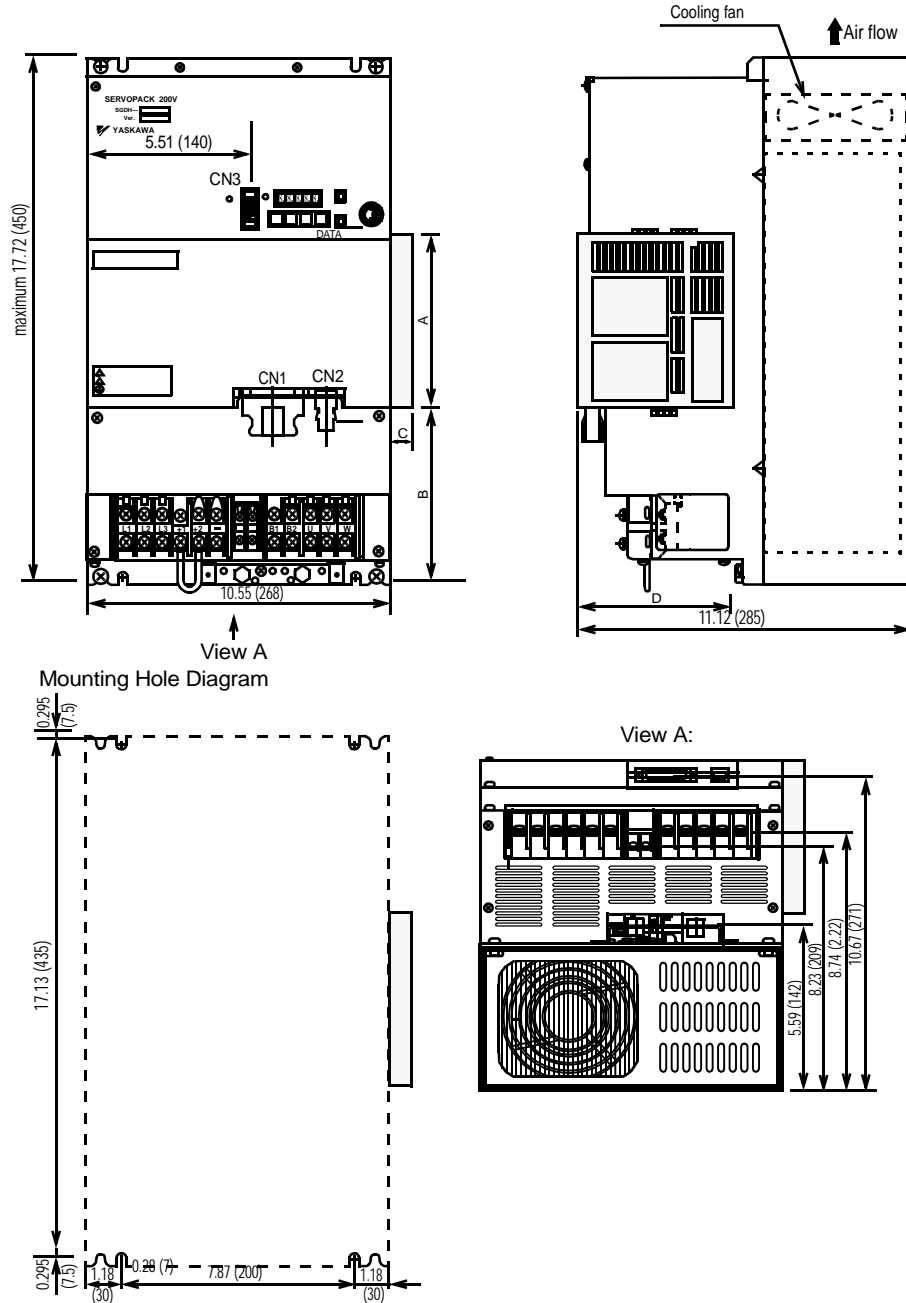
** Add 0.75in (19mm) to front end of card for micro connector.

*** Add approx. 0.75in (19mm) for optional back-up battery.

Sigma II Application Modules

- SGDH-1AAE, SGDH-1EAE (200V Three-phase, 11.0kW, 15.0kW)
- SGDH-1ADE, SGDH-1EDE (400V Three-phase, 11.0kW, 15.0kW)

Sigma II Modules



Part Number	SGDH Option Description	A	B	C	D	Approximate Mass* lb (kg)
JUSP-NS100	Mechatrolink	5.59 (142)	4.5 (114.5)	0.79 (20)	5.08 (129)	0.44 (0.2)
JUSP-NS300	Indexer with DeviceNet™					
JUSP-NS310	Indexer with DeviceNet™				5.24 (133)**	0.7 (0.32)
JUSP-NS500	Profibus	5.59 (142)	4.5 (114.5)	0.79 (20)	5.08 (129)	0.44 (0.2)
JUSP-NS600	Indexer					
JUSP-FC100	Full Closed Loop				1.22 (31)***	0.89 (0.40)
MP940	Single Axis Control					


* Option card only.

** Add 0.75in (19mm) to front end of card for micro connector.

*** Add approx. 0.75in (19mm) for optional back-up battery.



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