



GENERAL CATALOGUE 2004

Motion & Drives



- Motion Controllers
- Servo Systems
- Frequency Inverters
- Software

Advanced Industrial Automation

Cat. No. Y203-EN2-01 DRIVES

OMRON

AC Servo Systems

SmartStep Series	77
Sigma-II Series	95
Sigma-II Large Capacity	129
Sigma Linear Motors	143
XtraDrive	169

R7D-AP□, R7M-A□

SmartStep Series

A new concept in Servo Systems

The Smart alternative to Stepper motors

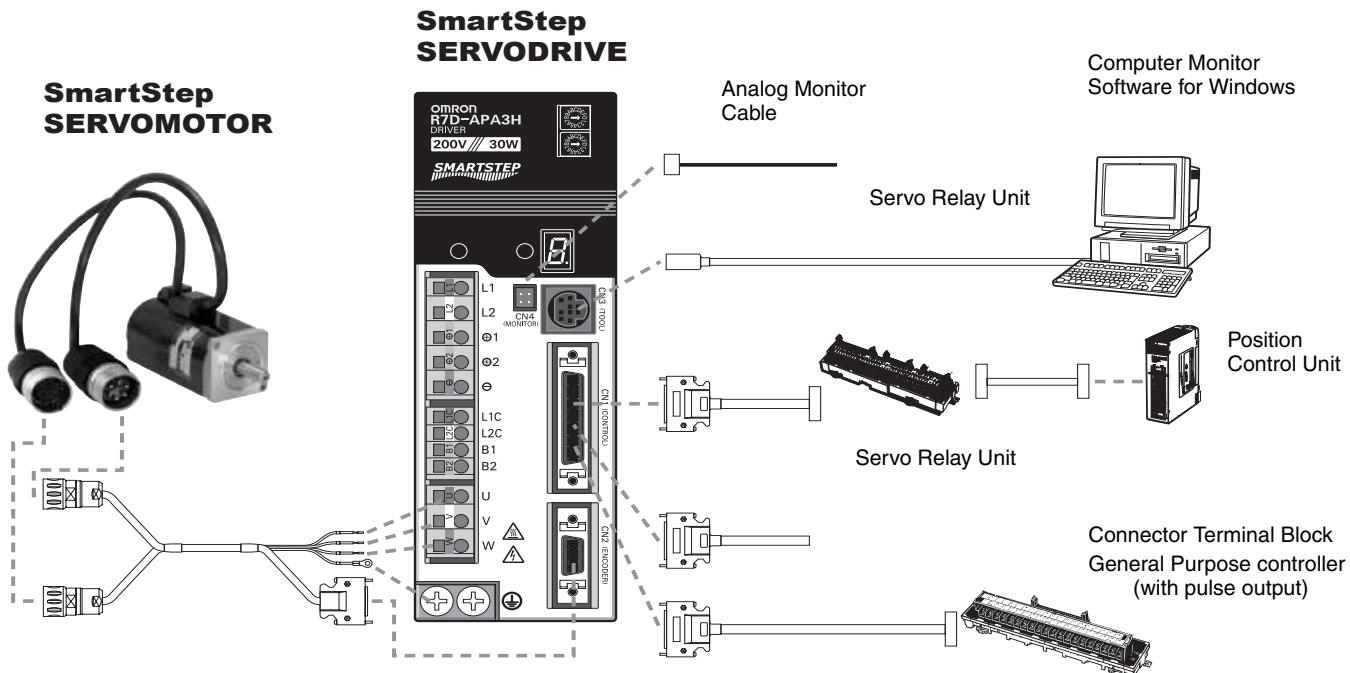
- Easy to setup, easy to operate. SmartStep is as easy to use as a stepper motor
- Front-panel switches make settings easy and eliminate the need for time-consuming parameter settings
- Auto-tuning On-line mode, dynamic brake setting, alarm display, high torque performance
- Easy to wire with prebuilt cables
- Oscilloscope available via SigmaWin tool
- Windows based Configuration and commissioning software

Ratings

- 230VAC Single-phase 30 W to 750W (2.39 Nm)



System Configuration



Servomotor Specifications

General Specifications

Item	Specification
Ambient operating temperature	0 to 40°C
Ambient operating humidity	20% to 80% (with no condensation)
Ambient storage temperature	-20 to 60°C
Ambient storage humidity	20% to 80% (with no condensation)
Storage/operating atmosphere	No corrosive gases.
Vibration resistance	10 to 2,500 Hz in X, Y, and Z directions with 0.2-mm double amplitude or acceleration of 24.5 m/s ² max., whichever is smaller
Impact resistance	Acceleration 98 m/s ² max., in a vertical direction, two times
Insulation resistance	Between power line terminals and FG: 10 MΩ min. (at 500 V DC)
Dielectric strength	Between power line terminals and FG: 1,500 V AC for 1 min at 50/60 Hz
Run position	Any direction
Insulation grade	Type B
Structure	Totally-enclosed self-cooling
Protective structure	IP55 for both the Cylindrical and Flat Servomotors
Vibration grade	V-15
Mounting method	Flange-mounting
International standards	Approval obtained for UL, cUL, and EN (EMC directive and low-voltage directive)

Performance Specifications

Flat Servomotors

Item		R7M-AP10030	R7M-AP20030	R7M-AP40030	R7M-AP75030
Rated output		100 W	200 W	400 W	750 W
Rated torque		0.318 N-m	0.637 N-m	1.27 N-m	2.39 N-m
Rated rotation speed		3,000 r/min	3,000 r/min	3,000 r/min	3,000 r/min
Momentary maximum rotation speed		4,500 r/min	4,500 r/min	4,500 r/min	4,500 r/min
Momentary maximum torque		0.96 N-m	1.91 N-m	3.82 N-m	7.1 N-m
Rated current		0.89 A (rms)	2.0 A (rms)	2.6 A (rms)	4.1 A (rms)
Momentary maximum current		2.8 A (rms)	6.0 A (rms)	8.0 A (rms)	13.9 A (rms)
Rotor inertia		6.5×10^{-6} kg-m ²	2.09×10^{-5} kg-m ²	3.47×10^{-5} kg-m ²	2.11×10^{-4} kg-m ²
Power rate		15.7 kW/s	19.4 kW/s	46.8 kW/s	26.9 kW/s
Allowable radial load		78 N	245 N	245 N	392 N
Allowable thrust load		49 N	68 N	68 N	147 N
Weight	Without brake	0.7 kg	1.4 kg	2.1 kg	4.2 kg
	With brake	0.9 kg	1.9 kg	2.6 kg	5.7 kg
Encoder resolution		2,000 pulses/revolution for phase-A and phase-B, 1 pulse/revolution for phase-Z			
Radiation shield dimensions		t6 × 250 mm square			t12 × 300 mm square
Brake Specifications	Brake inertia	3.1×10^{-6} kg-m ²	1.52×10^{-5} kg-m ²	1.52×10^{-5} kg-m ²	8.75×10^{-5} kg-m ²
	Excitation voltage	24 V DC ±10%			
	Power consumption (at 20°C)	7.5 W	7.6 W	8.2 W	7.5 W
	Current consumption (at 20°C)	0.31 A	0.32 A	0.34 A	0.31 A
	Static friction torque	0.4 N-m min.	0.9 N-m min.	1.9 N-m min.	3.5 N-m min.
	Attraction time	60 ms max.	40 ms max.	60 ms max.	20 ms max.
	Release time	20 ms max.	20 ms max.	20 ms max.	40 ms max.
	Backlash	1°	1°	1°	1°
	Rating	Continuous	Continuous	Continuous	Continuous
	Insulation grade	Type F	Type F	Type F	Type F
Applicable Servo Driver (R7D-)		AP01H	AP02H	AP04H	AP08H

Cylindrical Servomotors

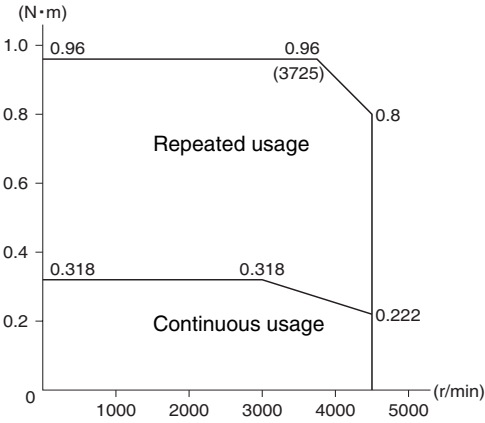
Item		R7M-A03030	R7M-A05030	R7M-A10030	R7M-A20030	R7M-A40030	R7M-A75030
Rated output		30 W	50 W	100 W	200 W	400 W	750 W
Rated torque		0.095 N·m	0.159 N·m	0.318 N·m	0.637 N·m	1.27 N·m	2.39 N·m
Rated rotation speed		3,000 r/min	3,000 r/min	3,000 r/min	3,000 r/min	3,000 r/min	3,000 r/min
Momentary maximum rotation speed		4,500 r/min	4,500 r/min	4,500 r/min	4,500 r/min	4,500 r/min	4,500 r/min
Momentary maximum torque		0.29 N·m	0.48 N·m	0.96 N·m	1.91 N·m	3.82 N·m	7.1 N·m
Rated current		0.42 A (rms)	0.6 A (rms)	0.87 A (rms)	2.0 A (rms)	2.6 A (rms)	4.4 A (rms)
Momentary maximum current		1.3 A (rms)	1.9 A (rms)	2.8 A (rms)	6.0 A (rms)	8.0 A (rms)	13.9 A (rms)
Rotor inertia		1.7×10^{-6} kg·m ²	2.2×10^{-6} kg·m ²	3.6×10^{-6} kg·m ²	1.19×10^{-5} kg·m ²	1.87×10^{-5} kg·m ²	6.67×10^{-5} kg·m ²
Power rate		5.31 kW/s	11.5 kW/s	28.1 kW/s	34.1 kW/s	86.3 kW/s	85.6 kW/s
Allowable radial load		68 N	68 N	78 N	245 N	245 N	392 N
Allowable thrust load		54 N	54 N	54 N	74 N	74 N	147 N
Weight	Without brake	0.3 kg	0.4 kg	0.5 kg	1.1 kg	1.7 kg	3.4 kg
	With brake	0.6 kg	0.7 kg	0.8 kg	1.6 kg	2.2 kg	4.3 kg
Encoder resolution		2,000 pulses/revolution for phase-A and phase-B, 1 pulse/revolution for phase-Z					
Radiation shield dimensions		t6 × 250 mm square					
Brake Specifications	Brake inertia	0.85×10^{-6} kg·m ²	0.85×10^{-6} kg·m ²	0.85×10^{-6} kg·m ²	6.4×10^{-6} kg·m ²	6.4×10^{-6} kg·m ²	1.7×10^{-5} kg·m ²
	Excitation voltage	24 V DC ±10% V					
	Power consumption (at 20°C)	6 W	6 W	6 W	7 W	7 W	7.7 W
	Current consumption (at 20°C)	0.25 A	0.25 A	0.25 A	0.29 A	0.29 A	0.32 A
	Static friction torque	0.2 N·m min.	0.2 N·m min.	0.34 N·m min.	1.47 N·m min.	1.47 N·m min.	2.45 N·m min.
	Attraction time	30 ms max.	30 ms max.	30 ms max.	60 ms max.	60 ms max.	60 ms max.
	Release time	60 ms max.	60 ms max.	60 ms max.	20 ms max.	20 ms max.	20 ms max.
	Backlash	1°	1°	1°	1°	1°	1°
	Rating	Continuous	Continuous	Continuous	Continuous	Continuous	Continuous
Insulation grade		Type F	Type F	Type F	Type F	Type F	Type F
Applicable Servo Driver (R7D-)		APA3H	APA5H	AP01H	AP02H	AP04H	AP08H

Torque and Rotation Speed Characteristics

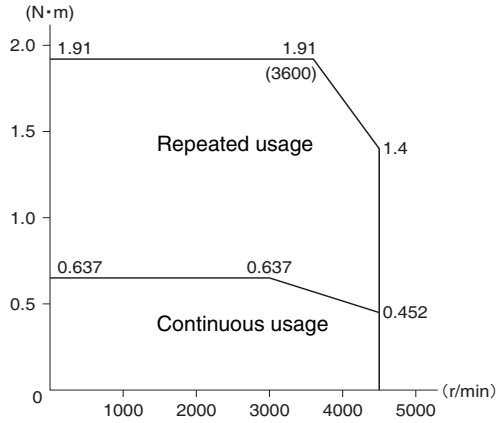
Flat Servomotors

The following graphs show the characteristics with a 3-m standard cable and R7D-AP@H Servo Driver (200-V AC input)

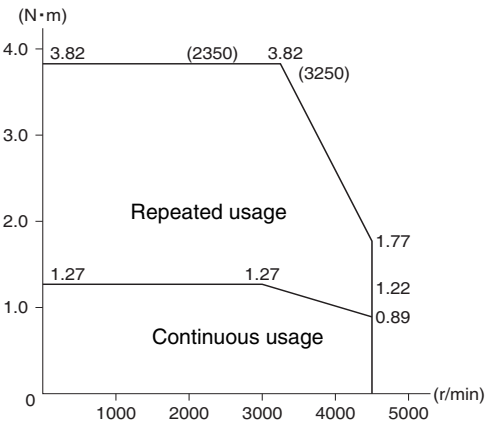
R7M-AP10030 (100 W)



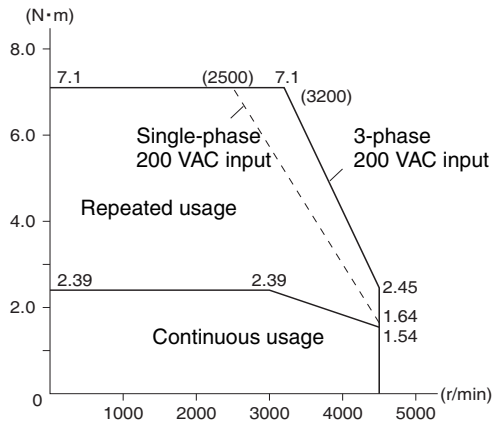
R7M-AP20030 (200 W)



R7M-AP40030 (400 W)



R7M-AP75030 (750 W)

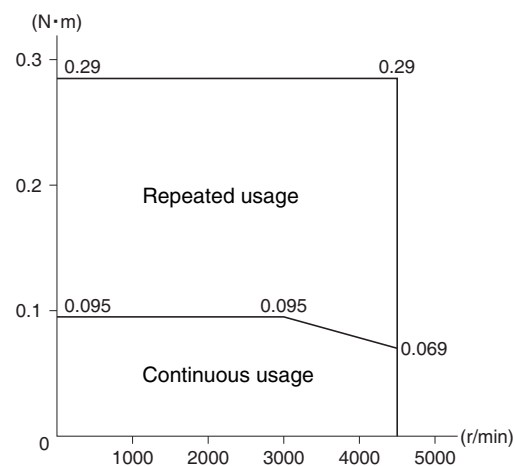


Torque and Rotation Speed Characteristics

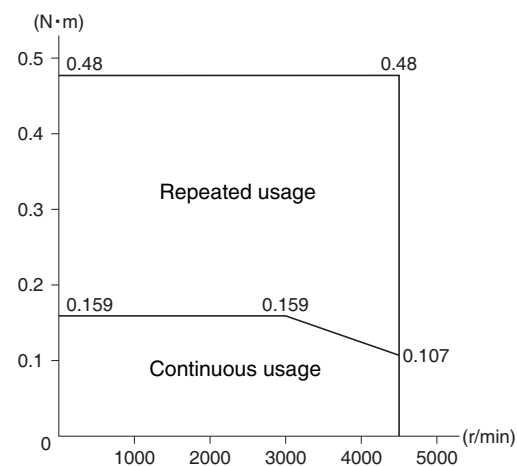
Cylindrical Servomotors

The following graphs show the characteristics with a 3-m standard cable and an R7D-AP□H Servo Driver (200-V AC input.)

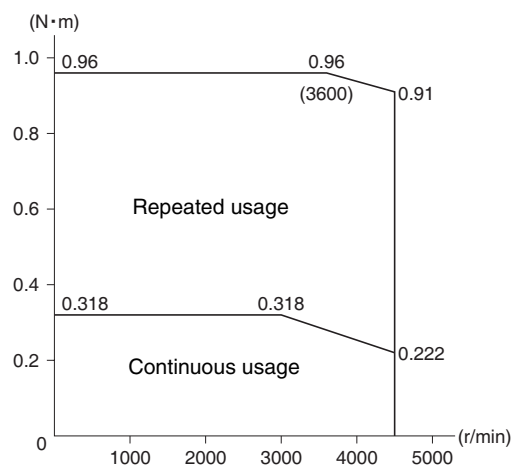
R7M-A03030 (30 W)



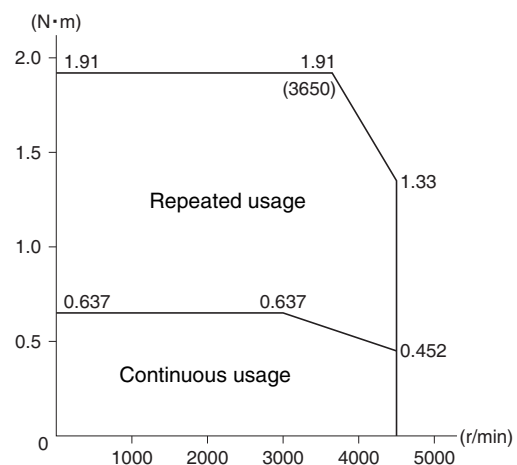
R7M-A05030 (50 W)



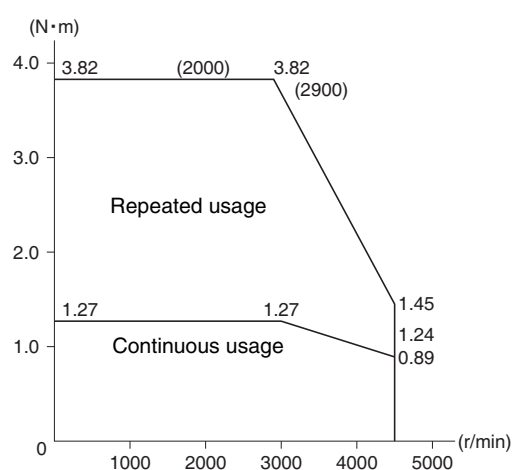
R7M-A10030 (100 W)



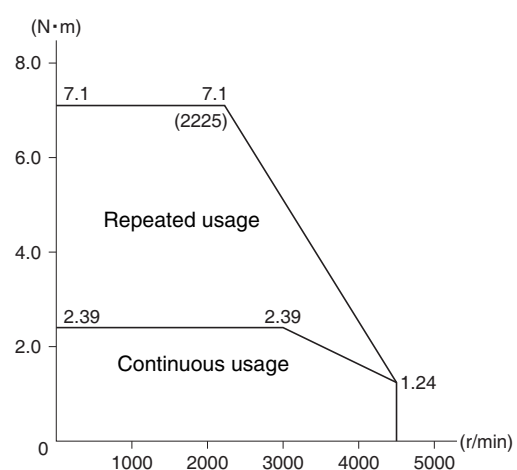
R7M-A20030 (200 W)



R7M-A40030 (400 W)



R7M-A75030 (750 W)



Servo Drive Specifications

General Specifications

Item	Specification
Ambient operating temperature	0 to 55°C
Ambient operating humidity	90% max. (with no condensation)
Ambient storage temperature	-20 to 85°C
Ambient storage humidity	90% max. (with no condensation)
Storage/operating atmosphere	No corrosive gases.
Vibration resistance	10 to 55 Hz in X, Y, and Z directions with 0.1-mm double amplitude or acceleration of 4.9 m/s ² max., whichever is smaller
Impact resistance	Acceleration 19.6 m/s ² max., in X, Y, and Z directions, three times
Insulation resistance	Between power line terminals and case: 0.5 MΩ min. (at 500 V DC)
Dielectric strength	Between power line terminals and case: 1,500 V AC for 1 min at 50/60 Hz Between each control signal and case: 500 V AC for 1 min
Protective structure	Built into panel (IP10).
International standards	Approval obtained for UL, cUL, and EN (EMC directive and low-voltage directive)

Performance Specifications

Item	200 VAC Input Type					
	30 W	50 W	100 W	200 W	400 W	750 W
	R7D-APA3H	R7D-APA5H	R7D-AP01H	R7D-AP02H	R7D-AP04H	R7D-AP08H
Continuous output current (rms)	0.42	0.6	0.89	2.0	2.6	4.4
Momentary maximum output current (rms)	1.3	1.9	2.8	6.0	8.0	13.9
Control power supply	Single-phase 200/230 V AC (170 to 253 V) 50/60 Hz					
Main-circuit power supply	Single-phase 200/230 V AC (170 to 253 V) 50/60 Hz (Three-phase 200/230 V AC can be used with the 750-W model.)					
Control method	All-digital servo					
Speed feedback	2,000 pulses/revolution Incremental Encoder					
Inverter method	PWM method based on IGBT					
PWM frequency	11.7 kHz					
Weight	0.8	0.8	0.8	0.8	1.1	1.7
Compatible motor voltage	200 V					
Compatible motor capacity	30 W	50 W	100 W	200 W	400 W	750 W
Command pulse response	250 kHz					
Applicable Servomotor (R7M-)	A03030	A05030	A10030 AP10030	A20030 AP20030	A40030 AP40030	A75030 AP75030

I/O Specifications

Terminal Specifications

Symbol	Name	Function
L1 and L2 or L1, L2, and L3	Main-circuit Power Supply Terminals	These are the input terminals for the main-circuit power supply.
⊕1	DC Reactor Terminals	Normally short-circuit between +1 and +2. If harmonic control measures are required, connect a DC Reactor between +1 and +2.
⊕2		
⊖	Main-circuit DC Output	Do not connect anything to this terminal.
L1C L2C	Control Circuit Power Supply Terminals	These are the input terminals for the control power supply.
B1 and B2 or B1, B2, and B3	External Regeneration Resistance Terminals	Connect an External Regeneration Resistor to these terminals if the regenerative capacity of the internal capacitor is exceeded. (An External Regeneration Resistor cannot be connected to the 30 to 200-W models.)
U	Servomotor Terminals	Red
V		White
W		Blue
⊕	Frame ground	This is the ground terminal.

Control I/O (CN1) Specifications

Pin	Symbol	Name	Function
1	+PULS/CW/A	Feed pulses, reverse pulses, or 90° phase difference pulses (A phase)	Line-driver input: 7 mA at 3 V Open-collector input Input impedance: 200 Ω Maximum response frequency: 250 kpps Position control is performed based on the pulses that have been input.
2	-PULS/CW/A		
3	+SIGN/CCW/B	Direction signal, forward pulses, or 90° phase difference pulses (B phase)	
4	-SIGN/CCW/B		
5	+ECRST	Deviation counter reset	Line-driver input: 7 mA at 3 V Open-collector input: 16 mA at 5 V Input impedance: 200 Ω ON: Resets deviation counter.
6	-ECRST		
7	BKIR	Brake interlock output	Outputs holding brake timing signals.
8	INP	Positioning completed output	ON when the position error is within the positioning completed range.
10	OGND	Output ground common	Ground common for output signals (pins 7 and 8).
13	+24V	+24V DC power input for control	Power supply input (+24 V DC) for pins 14 and 18.
14	RUN	RUN command input	ON: Servo ON (Starts power to Servomotor.)
18	RESET	Alarm reset input	ON: Servo alarm status is reset.
19	GND	RS-422A ground	Ground for RS-422A
20	RXD+	RS-422A reception data	Interface for RS-422A data transfers
21	RXD-		
22	TXD+		
23	TXD-		
24	RT	Termination resistance terminal	Connect to RXD- (pin 21) in the Unit at the end of the line.
32	Z	Encoder phase-Z open-collector output	Output goes ON when the encoder's phase-Z signal (1 pulse/revolution) is detected. Open-collector output: 20 mA max. at 30 V DC
33	ZCOM		
34	ALM	Alarm output	Output goes OFF when alarm is detected. Open-collector output: 50 mA max. at 30 V DC
35	ALMCOM		
Shell	FG	Cable shield ground	Ground for cable's shield wire.

Encoder Connector (CN2) Specifications

Pin	Symbol	Name	Function
1, 2, 3	E0V	Encoder power supply GND	Power supply outlet for encoder
4, 5, 6	E5V	Encoder power supply +5 V	
8	S+	Encoder + phase-S input	Line driver input (conforms to EIA-RS422A) (Input impedance: 220 $\Omega \pm 5\%$)
9	S-	Encoder - phase-S input	
10	A+	Encoder + phase-A input	Line driver input (conforms to EIA-RS422A) (Input impedance: 220 $\Omega \pm 5\%$)
11	A-	Encoder - phase-A input	
12	B+	Encoder + phase-B input	Line driver input (conforms to EIA-RS422A) (Input impedance: 220 $\Omega \pm 5\%$)
13	B-	Encoder - phase-B input	
Shell	FG	Cable shield ground	Ground for cable's shield wire.

Communications Connector (CN3) Specifications

Pin	Symbol	Name	Function
1	/TXD	Transmission data	Transmission data: RS-232C output
2	/RXD	Reception data	Reception data: RS-232C input
3	PRMU	Unit switching	Switching terminal for a Parameter Unit
7	+5V	+5 V output	This is the +5 V power supply output to the Parameter Unit.
8	GND	Ground	
Shell	FG	Cable shield ground	Ground for cable's shield wire.

Monitor Output (CN4) Specifications

Pin	Symbol	Name	Function
1	NM	Speed monitor	Speed monitor output: 1 V per 1,000 r/min
2	AM	Current monitor	Current monitor: 1 V / rated torque
3	GND	Ground	Grounds for monitor output
4	GND	Ground	

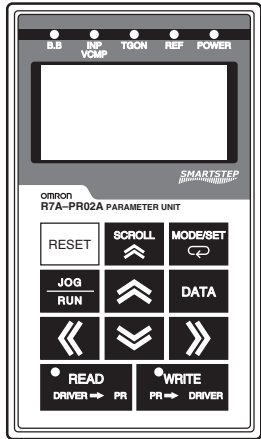
Digital Operator Specifications

General Specifications

Item	Specification
Ambient operating temperature	0 to 55°C
Ambient operating humidity	90% max. (with no condensation)
Ambient storage temperature	-20 to 85°C
Ambient storage humidity	90% max. (with no condensation)
Storage/operating atmosphere	No corrosive gases.
Vibration resistance	10 to 55 Hz in X, Y, and Z directions with 0.1-mm double amplitude or acceleration of 9.8 m/s ² max., whichever is smaller
Impact resistance	Acceleration 19.6 m/s ² max., in X, Y, and Z directions, three times

Function Specifications

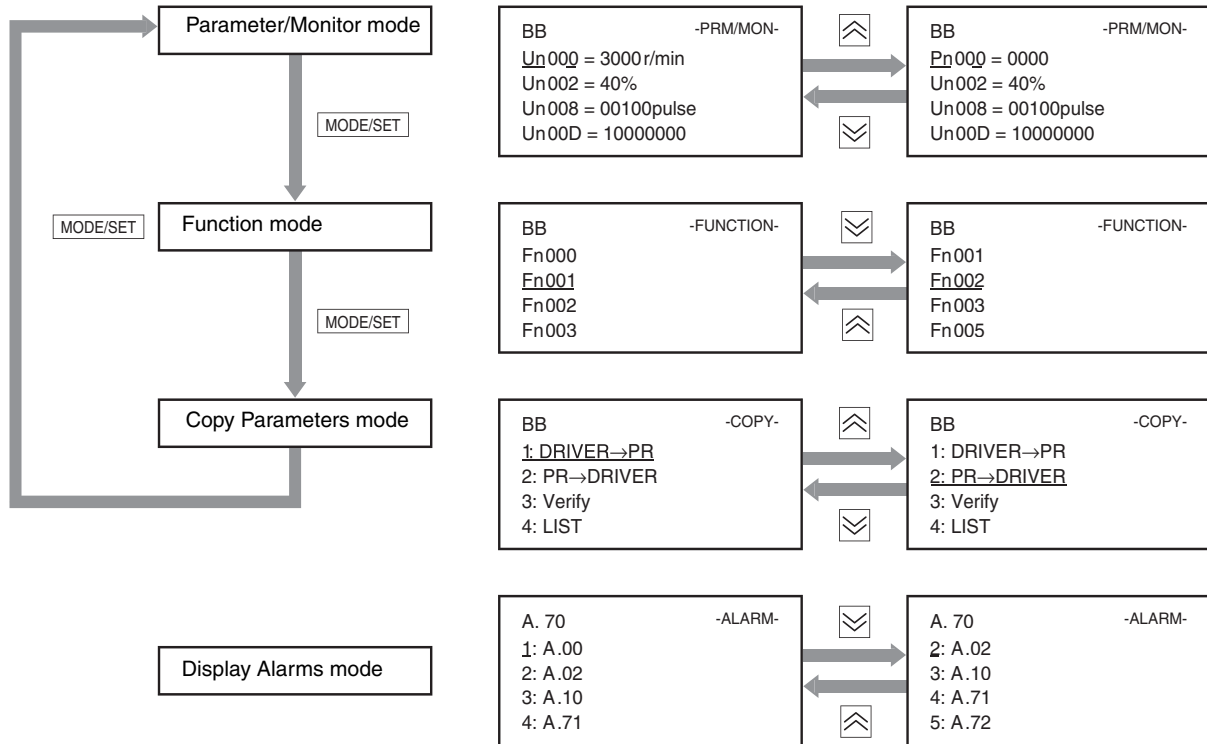
Item	Function
Setting mode	Display or change parameter settings.
Monitor mode	Display monitor values.
Execute Function mode	Execute each function mode.
Display Alarms	Display alarms that have occurred.
Copy Parameters	Read or save parameters from the Servo Driver. Write parameters to the Servo Driver. Compare parameters in the Servo Driver with parameters in the Parameter Unit.



R7A-PR02A

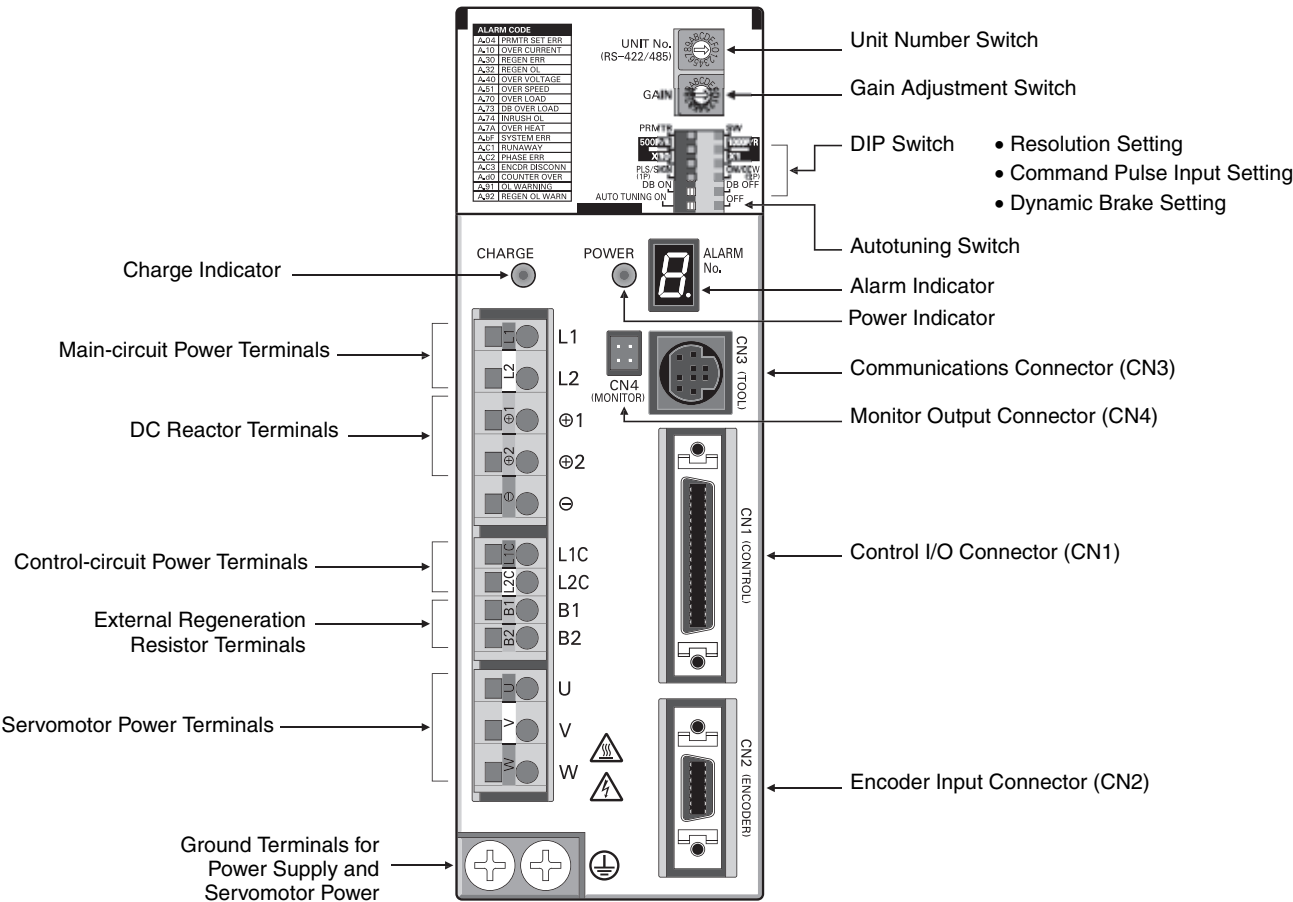
Mode Change Specifications

Power ON



Operation

Components



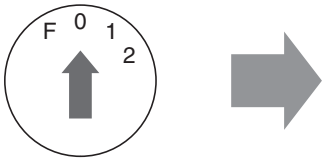
Switch Operations

Gain Adjustment Switch

Adjusts the motor's responsiveness.

When this switch is set to 0, the Unit will operate according to the settings in the internal parameters (Pn100, Pn101, Pn102, and Pn401).

When this switch is set to 1 through F, the Unit will operate according to the rotary switch's setting.



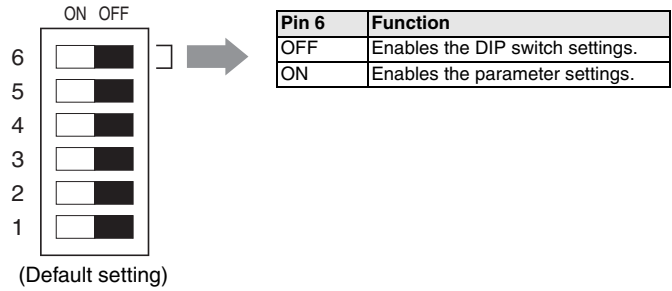
Decrease the switch setting to lower the motor's responsiveness (i.e., so that it moves more smoothly).

Increase the switch setting to raise the motor's responsiveness (i.e., so that it moves faster).

Setting	Position Loop Gain	Speed Loop Gain	Speed Loop Integral Constant	Torque Command Filter Time Constant
0	Enables parameter settings (including settings other than gain settings).			
1	15	15	4,000	250
2	20	20	3,500	200
3	30	30	3,000	150
4	40	40	2,000	100
5	60	60	1,500	70
6	85	85	1,000	50
7	120	120	800	30
8	160	160	600	20
9	200	200	500	15
A	250	250	400	10
B	250	250	400	10
C	250	250	400	10
D	250	250	400	10
E	250	250	400	10
F	250	250	400	10

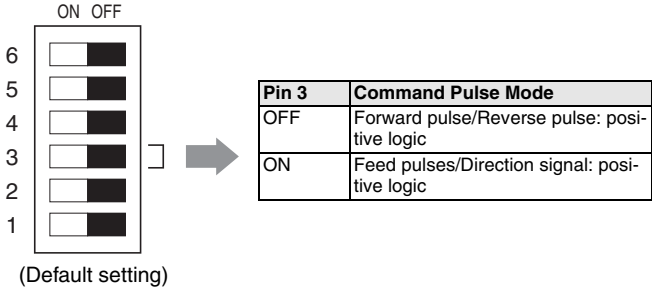
Enable Switch/Parameter Setting

Pin 6 of the DIP switch selects whether the Servo Driver operates according to the DIP switch settings or parameter settings.



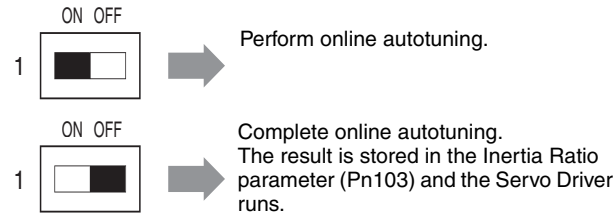
Command Pulse Input Setting

Pin 3 selects the command pulse mode. Select "Forward pulse/Reverse pulse: positive logic" or "Feed pulses/Direction signal: positive logic."



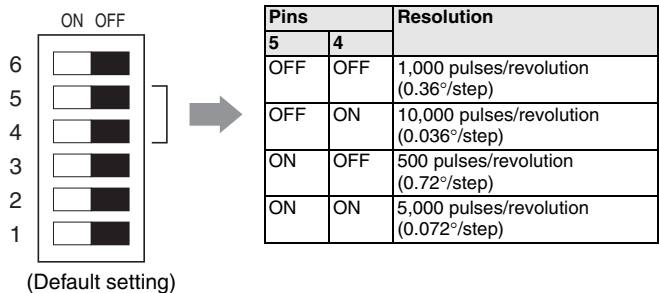
Online Autotuning Setting

The Autotuning Switch selects whether the gain will be adjusted automatically during operation.



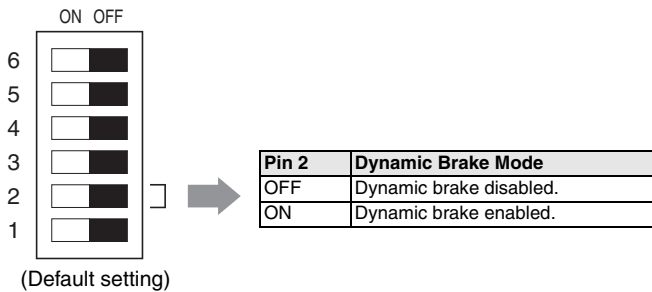
Resolution Setting

Pins 4 and 5 select the positioning resolution. If the resolution is set to 1,000 (the default setting), the motor makes one revolution for every 1,000 pulses input.



Dynamic Brake Setting

Pin 2 enables or disables dynamic brake operation. If the dynamic brake is enabled, the motor can be brought to an emergency stop when the RUN command goes OFF or an alarm occurs.



Alarm Table

Display	ALM output	Error detection function
A.04*	OFF	Parameter setting error
A.10*	OFF	Overcurrent
A.30	OFF	Regeneration error
A.32	OFF	Regeneration overload
A.40	OFF	Overvoltage/Undervoltage
A.51	OFF	Overspeed
A.70	OFF	Overload
A.73	OFF	Dynamic brake overload
A.74	OFF	Inrush resistance overload

Display	ALM output	Error detection function
A.7A	OFF	Overheat
A.bF*	OFF	System error
A.C1	OFF	Runaway detected
A.C2*	OFF	Phase not detected
A.C3*	OFF	Encoder disconnect detected
A.d0	OFF	Deviation counter overflow
CPF00	---	Parameter Unit transmission error 1
CPF01	---	Parameter Unit transmission error 2
A.91	---	Overload warning
A.92	---	Regeneration overload warning

Parameters

Parameter Details

Parameter number	Parameter name	Digit	Name	Setting	Explanation	Default setting	Unit	Setting range
Pn000	Function selection basic switch 1 (See note 1.)	0	Reverse rotation	0	CCW direction is taken for positive command	0010	---	---
		1	Control mode	1	Position control by pulse train command			
		2 to 3	Not used.	---	---			
Pn001	Function selection basic switch 2 (See note 1.)	0	Select stop method if an alarm occurs when Servomotor is OFF	0	Servomotor stopped by dynamic brake.	1002	---	---
				1	Stop by dynamic brake and release brake after Servomotor stops.			
				2	Servomotor stopped with free run			
		1 to 3	Not used.	---	---			
Pn100	Speed loop gain	Adjusts speed loop's responsiveness.				80	Hz	1 to 2,000
Pn101	Speed loop integral constant	Speed loop integral time constant				2,000	0.01 ms	15 to 51,200
Pn102	Position loop gain	Adjusts position loop's responsiveness.				40	1/s	1 to 2,000
Pn103	Inertia ratio	Set using the ratio between the machine system inertia and the Servomotor rotor inertia.				300	%	0 to 10,000
Pn109	Feed-forward amount	Position control feed-forward compensation value				0	%	0 to 100
Pn10A	Feed-forward command filter	Sets position control feed-forward command filter.				0	0.01 ms	0 to 6,400
Pn110	Online autotuning setting (See note 1.)	0	Selects online auto-tuning	0	Auto-tunes initial operations only after power is turned ON.	0012	---	---
				1	Always auto-tunes.			
				2	No auto-tuning			
		1	Not used.	---	---			
		2	Selects adhesive friction compensation function	0	Friction compensation: OFF			
				1	Friction compensation: rated torque ratio small			
				2	Friction compensation: rated torque ratio large			
		3	Not used.	---	---			
		Pn200	Position control setting 1 (See note 1.)	0	Command pulse mode			
1	Forward pulse/Reverse pulse: Positive logic							
2	90° phase difference (A/B phase) signal (x1): Positive logic							
3	90° phase difference (A/B phase) signal (x2): Positive logic							
4	90° phase difference (A/B phase) signal (x4): Positive logic							
5	Feed pulses/Direction signal: Negative logic							
6	Forward pulse/Reverse pulse: Negative logic							
7	90° phase difference (A/B phase) signal (x1): Negative logic							
8	90° phase difference (A/B phase) signal (x2): Negative logic							
9	90° phase difference (A/B phase) signal (x4): Negative logic							
1	Deviation counter reset			0	High level signal			
				1	Rising signal (low to high)			
				2	Low level signal			
				3	Falling signal (high to low)			
2	Deviation counter reset if an alarm occurs when the Servomotor is OFF			0	Deviation counter reset if an alarm occurs when Servomotor is OFF.			
				1	Deviation counter not reset if an alarm occurs when Servomotor is OFF.			
				2	Deviation counter reset only if alarm occurs.			
3	Not used.			---	---			
Pn202	Electronic gear ratio G1 (numerator) (See note 1.)			Sets the pulse rate for the command pulses and Servo Servomotor travel distance. Setting range: 0.01 £ G1/G2 £ 100				4
Pn203	Electronic gear ratio G2 (denominator) (See note 1.)	1	---					1 to 65,535
Pn204	Position command filter time constant 1 (primary filter)	Sets soft start for command pulse. (Soft start characteristics are for the primary filter.)				0	0.01 ms	0 to 6,400
Pn207	Position control setting 2 (See note 1.)	0	Selects position command filter.	0	Primary filter (Pn204)	0000	---	---
				1	Linear acceleration and deceleration (Pn208)			
		1 to 3	Not used.	---	---			
Pn208	Position command filter time constant 2 (linear acceleration and deceleration) (See note 1.)	Sets soft start for command pulse. (soft start characteristics are for the linear acceleration and deceleration.)				0	0.01 ms	0 to 6,400
Pn304	Jog speed	Sets rotation speed during jog operation.				500	r/min	0 to 10,000

Parameter number	Parameter name	Digit	Name	Setting	Explanation	Default setting	Unit	Setting range
Pn401	Torque command filter time constant				Sets the constant when filtering the internal torque command.	40	0.01 ms	0 to 65,535
Pn402	Forward torque limit				Forward rotation output torque limit (percentage of rated torque ratio).	350	%	0 to 800
Pn403	Reverse torque limit				Reverse rotation output torque limit (percentage of rated torque ratio).	350	%	0 to 800
Pn500	Positioning completion range				Sets the range of positioning completed output signal	3	Command units	0 to 250
Pn505	Deviation counter overflow level				Sets the detection level for the deviation counter over alarm.	1,024	×256 command units	1 to 32767
Pn600	Regeneration resistor capacity (See note 2).				Setting for regeneration resistance load ratio monitoring calculations.	0	10 W	See model specs.

- Note:**
1. These parameters are read when the power is turned ON. Parameter Pn110.2 is valid when online.
 2. When using a Regeneration Resistor, set the resistor's capacity when the temperature has risen to 120°C. Set this parameter to 0 if a Regeneration Resistor is not being used.

Function Mode Details

Number	Name	Explanation
Fn000	Alarm history display	Displays up to 10 alarm entries.
Fn001	Rigidity setting during online auto-tuning	Sets the control target during online auto-tuning.
Fn002	Jog operation	Makes the Servomotor rotate using key operations from the Parameter Unit.
Fn003	Servomotor origin search	Makes the Servomotor rotate using key operations from the Parameter Unit and fixes the position of phase Z after phase Z is detected.
Fn005	User parameter initialization	Restores user parameters to their default settings.
Fn006	Alarm history data clear	Clears the data stored in the alarm history.
Fn007	Store online auto-tuning results	Writes the load data calculated using online auto-tuning to Pn103 (inertia ratio).
Fn00C	Analog monitor output offset manual adjustment	Manually adjusts the analog output monitor offset.
Fn00D	Analog monitor output scaling	Changes the analog monitor output scaling (output voltage adjustment).
Fn00E	Servomotor current detection offset automatic adjustment	Automatically adjusts the offset for Servomotor current detection.
Fn00F	Servomotor current detection offset manual adjustment	Manually adjusts the offset for Servomotor current detection.
Fn010	Password setting	You can permit or prohibit writing to user parameters.
Fn012	Version check	Check the Servo Driver's version information.

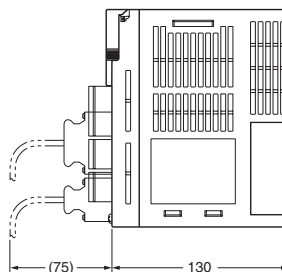
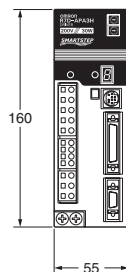
Monitor Mode Details

Number	Contents	Units	Explanation
Un000	Speed feedback	r/min	Displays actual rotation speed of Servomotor.
Un002	Torque command	%	Displays command values to current loop (rated torque = 100%).
Un003	Number of pulses from phase-Z edge	Pulses	Displays rotation position from phase-Z edge (4X calculation).
Un004	Electrical angle	°	Displays the electrical angle of the Servomotor.
Un005	Input signal monitor	---	Displays the control input signal (CN1) status using ON/OFF bits.
Un006	Output signal monitor	---	Displays the control output signal (CN1) status using ON/OFF bits.
Un007	Command pulse speed display	r/min	Calculates and displays command pulse frequency in r/min.
Un008	Position deviation (deviation counter)	Command units	Displays number of residual pulses in deviation counter (input pulse standard).
Un009	Cumulative load ratio	%	Displays effective torque (rated torque = 100%, 10-s cycle)
Un00A	Regeneration load ratio	%	Displays regeneration absorption power due to regeneration resistance (calculates internal resistance capacity or Pn600 setting as 100% in 10-s cycles).
Un00B	Dynamic brake resistance load ratio	%	Displays power consumption during dynamic brake operation (calculates tolerance power consumption as 100% in 10-s cycles).
Un00C	Input pulse counter	Command units	Counts and displays input pulses (displayed in hexadecimal).
Un00D	Feedback pulse counter	Pulses	Counts and displays feedback pulses (4X calculation, displayed in hexadecimal).

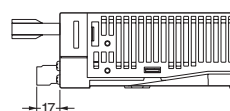
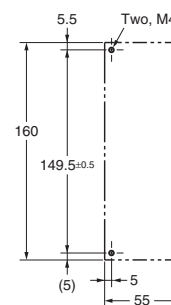
Dimensions

Servo Drivers

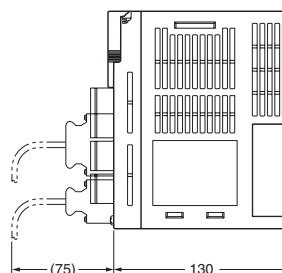
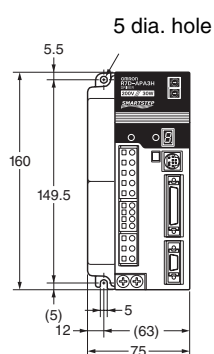
200 V AC: 30 W/50 W/100 W/200 W (R7D-APA3H/APA5H/AP01H/AP02H)



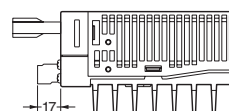
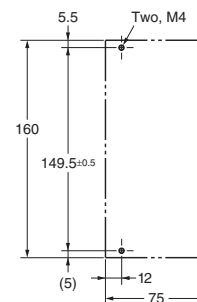
Mounting dimensions



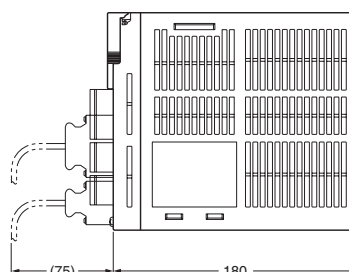
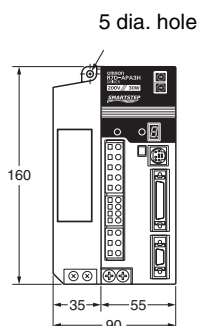
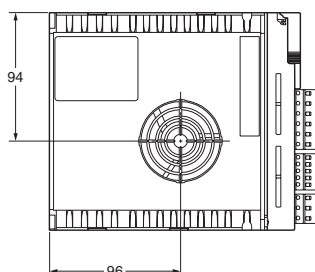
200 V AC: 400 W (R7D-AP04H)



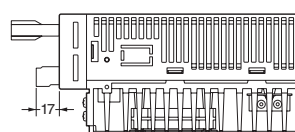
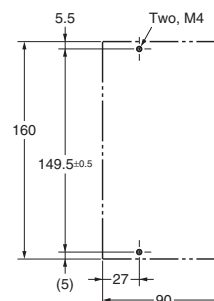
Mounting dimensions



200 V AC: 750 W (R7D-AP08H)



Mounting dimensions



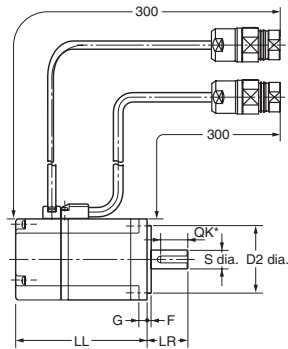
Servomotors

Cylindrical Servomotors (3,000 r/min)
200 V AC: 30 W/50 W/100 W/200 W/400 W/750 W

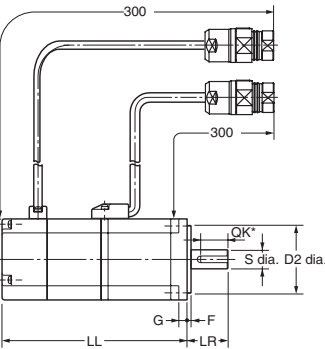
Without Brake: R7M-A03030-S1-D/A05030-S1-D/A10030-S1-D/A20030-S1-D/A40030-S1-D/A75030-S1-D
With Brake: R7M-A03030-BS1-D/A05030-BS1-D/A10030-BS1-D/A20030-BS1-D/A40030-BS1-D/A75030-BS1-D

Model	Dimensions (mm)																
	LL		LR	Flange surface							Axis end						
	Without Brake	With Brake		C	D1	D2	F	G	Z	S	QK	b	h	t1			
R7M-A03030□	69.5	101	25	40	46	30h7	2.5	5	Two, 4.3 dia.	6h6	14	2	2	1.2			
R7M-A05030□	77	108.5		8h6	3	3	1.8										
R7M-A10030□	94.5	135						8h6	3	3	1.8						
R7M-A20030□	96.5	136	30	60	70	50h7	3	6	Four, 5.5 dia.	14h6	20	5	5	3			
R7M-A40030□	124.5	164								16h6							
R7M-A75030□	145	189.5															

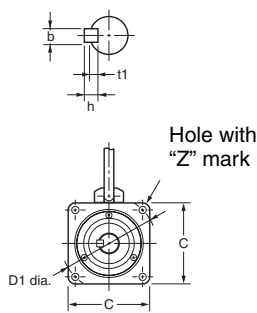
R7M-A□□□30-S1-D (Without Brake)



R7M-A□□□30-BS1-D (With Brake)



Axis end dimensions

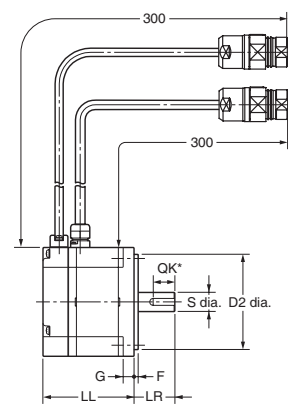


Flat Servomotors (3,000 r/min)
200 V AC: 100 W/200 W/400 W/750 W

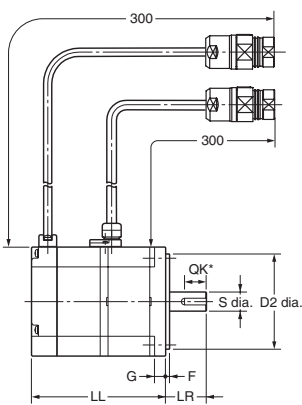
Without Brake: R7M-AP10030-S1-D/AP20030-S1-D/AP40030-S1-D/AP75030-S1-D
With Brake: R7M-AP10030-BS1-D/AP20030-BS1-D/AP40030-BS1-D/AP75030-BS1-D

Model	Dimensions (mm)		LR	Flange surface						Axis end				
	Without Brake	With Brake		C	D1	D2	F	G	Z	S	QK	b	h	t1
R7M-AP10030□	62	91	25	60	70	50h7	3	6	5.5	8h6	14	3	3	1.8
R7M-AP20030□	67	98.5	30	80	90	70h7	3	8	7	14h6	16	5	5	3
R7M-AP40030□	87	118.5	40	120	145	110h7	3.5	10	10	16h6	22			
R7M-AP75030□	86.5	120												

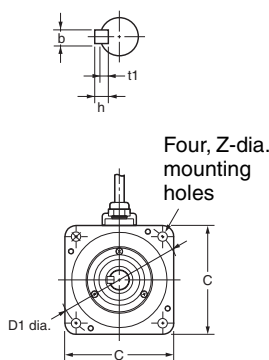
R7M-AP□□□30-S1-D (Without Brake)



R7M-AP□□□30-BS1-D (With Brake)

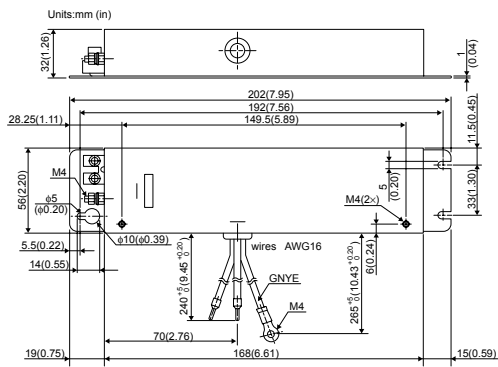


Axis end dimensions



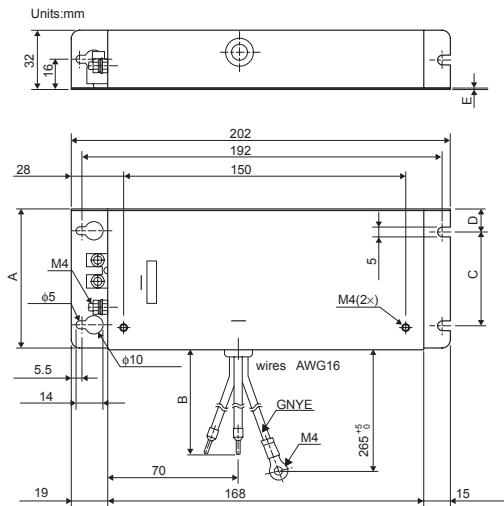
Filters

R88A-FIW104-SE



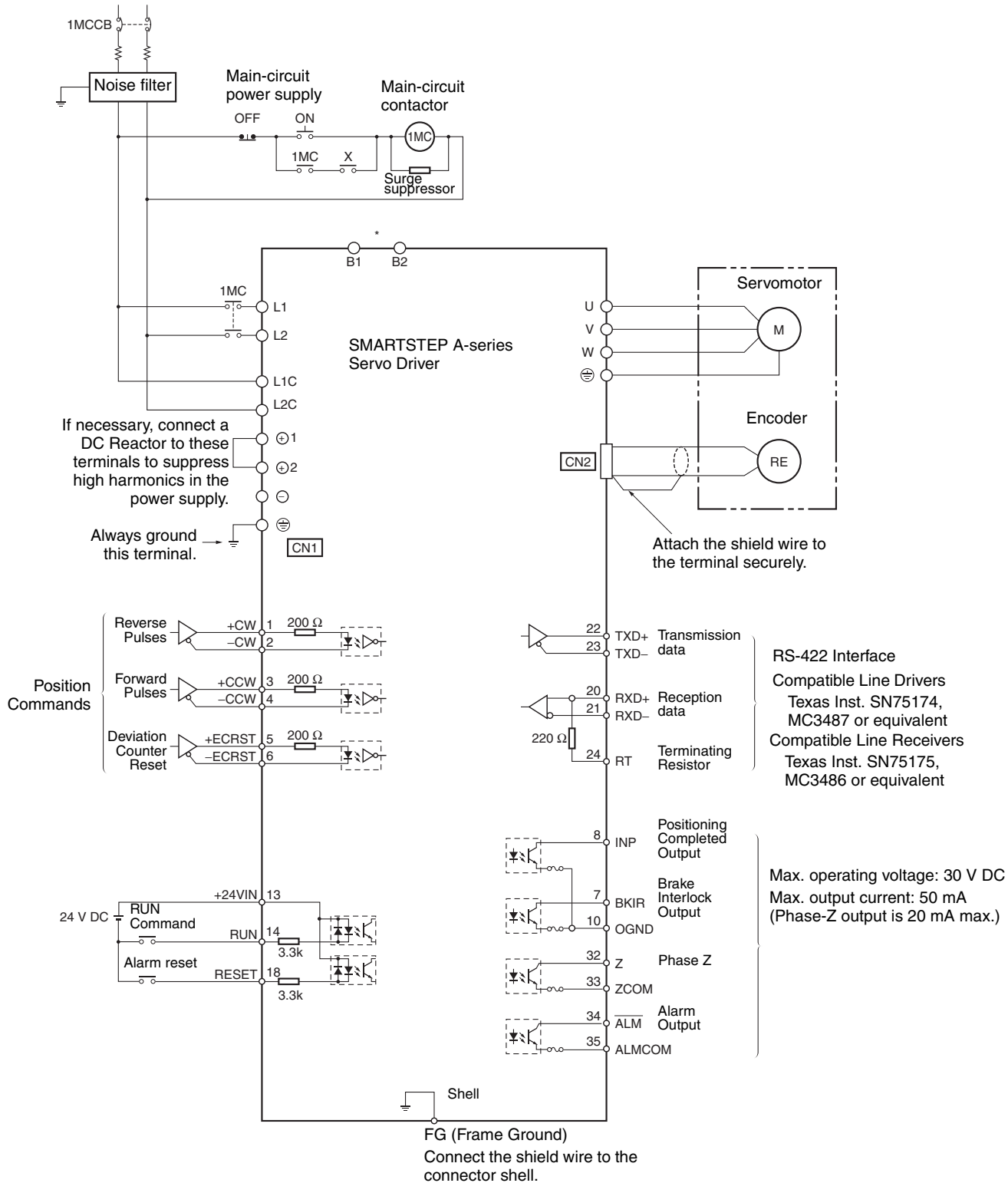
R88A-FIW107-SE, R88A-FIW115-SE

Model		R88A-FIW107-SE	R88A-FIW115-SE
Dimensions in mm	A	75	90
	B	240 ⁺⁵	300 ⁺⁵
	C	50	60
	D	12	15
	E	1	1.2



Installation

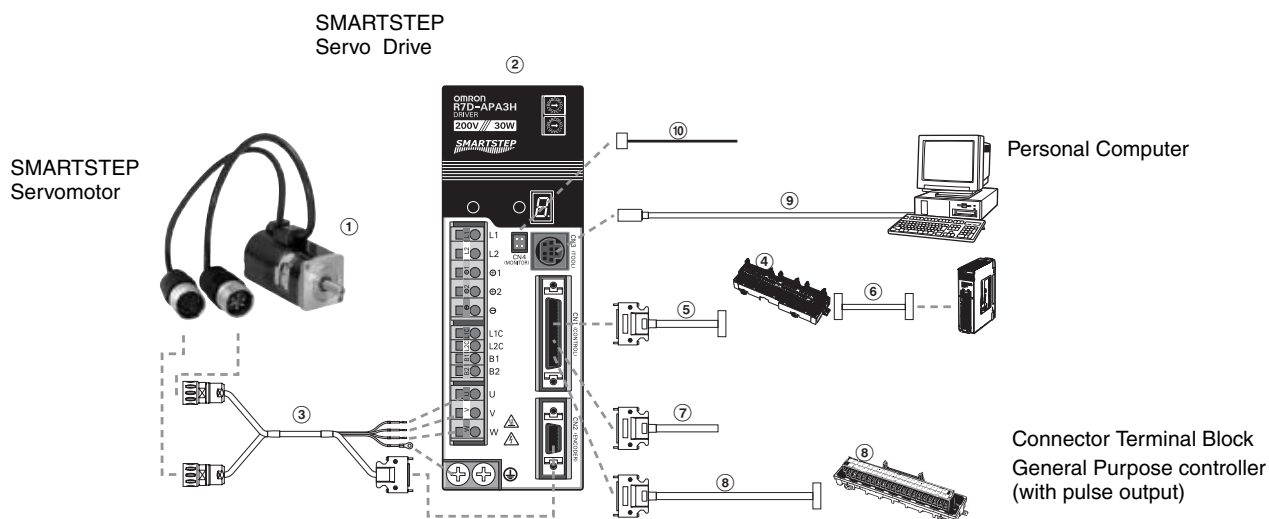
Single-phase 200 to 230 V AC +10%/–15% (50/60 Hz)
(The 750-W Servo Drivers can input three-phase 200 to 230 V AC.)



Note: * A Regeneration Resistor can be connected across the B1 and B2 terminals with 400-W and 750-W Servo Drivers. When using an external Regeneration Resistor with a 400-W Servo Driver, just connect it across the B1 and B2 terminals. When using an external Regeneration Resistor with a 750-W Servo Driver, remove the jumper bar from the B2 and B3 terminals and then connect the Regeneration Resistor across the B1 and B2 terminals.

Ordering Information

System Configuration



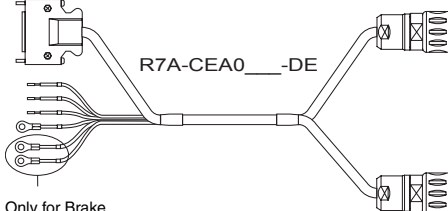
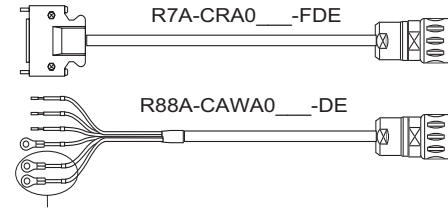
Servomotors

Symbol	Specifications				Model
①	Cylindrical Servomotors (3,000-r/min)	Without brake	0.095 Nm	30 W	R7M-A03030-S1-D
			0.159 Nm	50 W	R7M-A05030-S1-D
			0.318 Nm	100 W	R7M-A10030-S1-D
			0.637 Nm	200 W	R7M-A20030-S1-D
			1.27 Nm	400 W	R7M-A40030-S1-D
		With brake	2.39 Nm	750 W	R7M-A75030-S1-D
			0.095 Nm	30 W	R7M-A03030-BS1-D
			0.159 Nm	50 W	R7M-A05030-BS1-D
			0.318 Nm	100 W	R7M-A10030-BS1-D
			0.637 Nm	200 W	R7M-A20030-BS1-D
	Flat Servomotors (3,000-r/min)	Without brake	0.318 Nm	100 W	R7M-AP10030-S1-D
			0.637 Nm	200 W	R7M-AP20030-S1-D
		With brake	1.27 Nm	400 W	R7M-AP40030-S1-D
			2.39 Nm	750 W	R7M-AP75030-S1-D

Servo Drives

Symbol	Specifications	Model
②	200 V AC	30 W
		50 W
		100 W
		200 W
		400 W
		750 W

Servomotor Cables (For CN2)

Symbol		Specifications		Power Cable Model	Encoder Cable Model	Appearance
③	Standard Cables	For Servomotors without brake R7M-A(P)□□□30-S1-D	3 m		R7A-CEA003S-DE	
			5 m		R7A-CEA005S-DE	
			10 m		R7A-CEA010S-DE	
			15 m		R7A-CEA015S-DE	
			20 m		R7A-CEA020S-DE	
		For Servomotors with brake R7M-A(P)□□□30-BS1-D	3 m		R7A-CEA003B-DE	
			5 m		R7A-CEA005B-DE	
			10 m		R7A-CEA010B-DE	
			15 m		R7A-CEA015B-DE	
			20 m		R7A-CEA020B-DE	
	Flexible cables for applications where cable is frequently in motion	For Servomotors without brake R7M-A(P)□□□30-S1-D	3 m	R88A-CAWA003S-DE	R7A-CRA003-FDE	
			5 m	R88A-CAWA005S-DE	R7A-CRA005-FDE	
			10 m	R88A-CAWA010S-DE	R7A-CRA010-FDE	
			15 m	R88A-CAWA015S-DE	R7A-CRA015-FDE	
			20 m	R88A-CAWA020S-DE	R7A-CRA020-FDE	
		For Servomotors with brake R7M-A(P)□□□30-BS1-D	3 m	R88A-CAWA003B-DE	R7A-CRA003-FDE	
			5 m	R88A-CAWA005B-DE	R7A-CRA005-FDE	
			10 m	R88A-CAWA010B-DE	R7A-CRA010-FDE	
15 m			R88A-CAWA015B-DE	R7A-CRA015-FDE		
20 m			R88A-CAWA020B-DE	R7A-CRA020-FDE		

Control Cables (For CN1)

Symbol	Name	Compatible Units	Model	Available lengths
④	Servo Relay Unit	Use with Position Control Units (Doesn't support communications functions.) Units: CS1W-NC113/133, CJ1W-NC113/133, C200HW-NC113, and C200H-NC112	XW2B-20J6-1B (1 axis)	---
		Use with Position Control Units (Doesn't support communications functions.) Units: CS1W-NC213/233/413/433, CJ1W-NC213/233/413/433, C200HW-NC213/413, C500-NC113/211, and C200H-NC211	XW2B-40J6-2B (2 axes)	
		Use with Position Control Units (Doesn't support communications functions.) Units: CQM1H-PLB21, and CQM1-CPU43-V1	XW2B-20J6-3B (1 axis)	
		Use with Position Control Units (Supports communications functions.) Units: CS1W-NC213/233/413/433, CJ1W-NC213/233/413/433	XW2B-40J6-4B (2 axes)	
		Use with CJ1M-CPU22/23 (Doesn't support communications functions.)	XW2B-20J6-8A (1 axis) XW2B-40J6-9A (2 axes)	
⑤	Cable to Servo Drive	Doesn't support communications functions. (For the XW2B-□□J6-□B)	XW2Z-□□□J-B5	1 m or 2 m (The cable length goes in the empty boxes.)
		Supports communications functions. (For the XW2B-□□J6-4B)	XW2Z-□□□J-B7	
⑥	Cable to Position Control Unit	CQM1H-PLB21 and CQM1-CPU43-V1	XW2Z-□□□J-A3	0.5 m or 1 m (The cable length goes in the empty boxes.)
		C200H-NC112	XW2Z-□□□J-A4	
		C200H-NC211 and C500-NC113/211	XW2Z-□□□J-A5	
		CS1W-NC113 and C200HW-NC113	XW2Z-□□□J-A8	
		CS1W-NC213/413 and C200HW-NC213/413	XW2Z-□□□J-A9	
		CS1W-NC133	XW2Z-□□□J-A12	
		CS1W-NC233/433	XW2Z-□□□J-A13	
		CJ1W-NC113	XW2Z-□□□J-A16	
		CJ1W-NC213/413	XW2Z-□□□J-A17	
		CJ1W-NC133	XW2Z-□□□J-A20	
		CS1W-NC233/433	XW2Z-□□□J-A21	
		CJ1M-CPU22/23	XW2Z-□□□J-A26	
⑦	Control Cable	For general-purpose Controllers	R88A-CPU□□□S	1 m or 2 m (The cable length goes in the empty boxes.)
⑧	Connector Terminal Block Cable	For general-purpose Controllers	R88A-CTU□□□N	---
	Connector Terminal Block		XW2B-40F5-P	

Cable for CN3

Symbol	Name	Model
⑨	Computer Monitor Cable	R7A-CCA002P2

Cable for CN4

Symbol	Name	Model
⑩	Analog Monitor Cable	R88A-CMW001S

Connectors

Specifications	Model
Control I/O Connector (For CN1)	R88A-CNU01C
SmartStep Connectors Kit.	Models Included in kit
SmartStep Encoder Connector (For CN2)	R7A-CNA01R
Hypertac Power Connector female	SPOC-06K-FSDN169
Hypertac Encoder Connector female	SPOC-17H-FRON169
Hypertac Power Connector male (Used in the motor)	SRUC-06J-MSCN236
Hypertac Encoder Connector male (Used in the motor)	SRUC-17G-MRWN087

External Regeneration Resistor

Specification	Model
220 W, 47 Ω	R88A-RR22047S

Filters

Specifications (applicable Servo Drive)	Model	Rated Current	Rated Voltage
R7D-APA3H, R7D-APA5H R7D-AP01H, R7D-AP02H	R88A-FIW104-E	4A	250 VAC Single Phase
R7D-AP04H	R88A-FIW107-E	7A	
R7D-AP08H	R88A-FIW115-E	15A	

Parameter Unit & Computer Software

Specifications	Model
Parameter Copy Unit (with cable)	R7A-PR02A
Sigma Win	MOTION TOOLS CD
WMON Win Version 2.0	

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

SGDH-□, SGM□H-□

Sigma-II Series

**The Ideal servo family for motion control.
Fast Response, High Speed, and High Accuracy.**

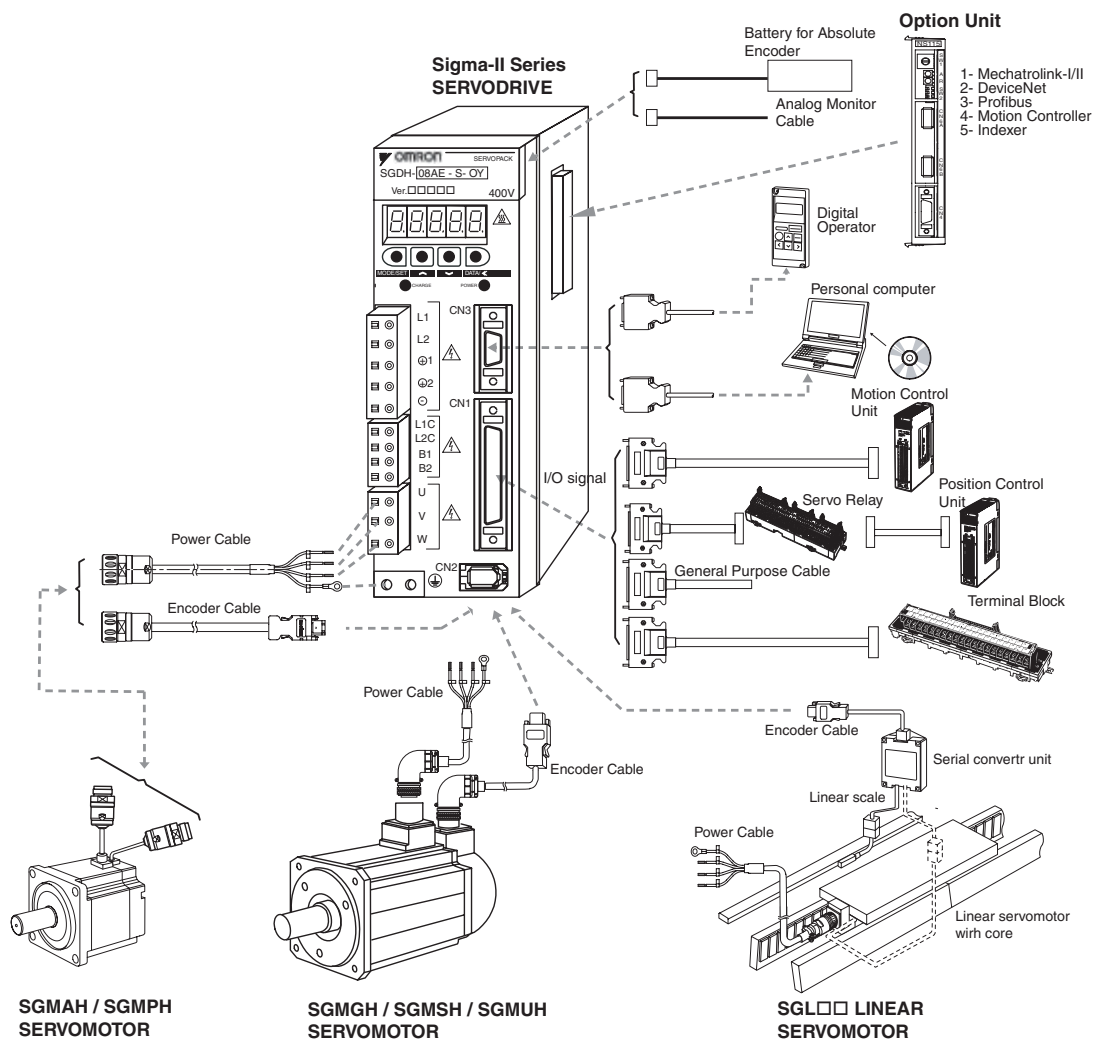
- Online autotuning with 10 levels of rigidity
- Peak torque 300% of nominal
- Automatic motor recognition
- Analogue control for speed and torque
- Pulse train control for positioning
- Optional Units for system flexibility and network connectivity
- Smooth operation
- Oscilloscope available via SigmaWin tool
- Windows based Configuration and commissioning software

Ratings

- 230VAC Single-phase 30 W to 1.5kW (4.77 Nm)
- 400VAC Three-phase 450 W to 15 kW (95.4 Nm)



System Configuration



Servomotor / Servo Drive Combination

Σ - II



Servomotor				Servo Drive	
	Voltage	Rated Torque	Capacity	230 V (1-phase)	400 V (3-phase)
SGMAH (3000 min ⁻¹) 	230 V	0.0955 N.m	30 W	SGDH-A3AE-OY	-
		0.159 N.m	50 W	SGDH-A5AE-OY	-
		0.318 N.m	100 W	SGDH-01AE-OY	-
		0.637 N.m	200 W	SGDH-02AE-OY	-
		1.27 N.m	400 W	SGDH-04AE-OY	-
		2.39 N.m	750 W	SGDH-08AE-S-OY	-
	400 V	0.955 N.m	300 W	-	SGDH-05DE-OY
		2.07 N.m	650 W	-	SGDH-10DE-OY
SGMMPH (3000 min ⁻¹) 	230 V	0.318 N.m	100 W	SGDH-01AE-OY	-
		0.637 N.m	200 W	SGDH-02AE-OY	-
		1.27 N.m	400 W	SGDH-04AE-OY	-
		2.39 N.m	750 W	SGDH-08AE-S-OY	-
		4.77 N.m	1500 W	SGDH-15AE-S-OY	-
	400 V	0.637 N.m	200 W	-	SGDH-05DE-OY
		1.27 N.m	400 W	-	SGDH-05DE-OY
		2.39 N.m	750 W	-	SGDH-10DE-OY
SGMGH (1500 min ⁻¹) 	400 V	4.77 N.m	1500 W	-	SGDH-15DE-OY
		2.84 N.m	0.45 kW	-	SGDH-05DE-OY
		5.39 N.m	0.85 kW	-	SGDH-10DE-OY
		8.34 N.m	1.3 kW	-	SGDH-15DE-OY
		11.5 N.m	1.8 kW	-	SGDH-20DE-OY
		18.6 N.m	2.9 kW	-	SGDH-30DE-OY
		28.4 N.m	4.4 kW	-	SGDH-50DE-OY
		35.0 N.m	5.5 kW	-	SGDH-60DE-OY
		48.0 N.m	7.5 kW	-	SGDH-75DE-OY
		70.0 N.m	11 kW	-	SGDH-1ADE-OY
SGMMSH (3000 min ⁻¹) 	400 V	95.4 N.m	15 kW	-	SGDH-1EDE-OY
		3.18 N.m	1.0 kW	-	SGDH-10DE-OY
		4.90 N.m	1.5 kW	-	SGDH-15DE-OY
		6.36 N.m	2.0 kW	-	SGDH-20DE-OY
		9.80 N.m	3.0 kW	-	SGDH-30DE-OY
		12.6 N.m	4.0 kW	-	SGDH-50DE-OY
SGMUH (6000 min ⁻¹) 	400 V	15.8 N.m	5.0 kW	-	SGDH-50DE-OY
		1.59 N.m	1.0 kW	-	SGDH-10DE-OY
		2.45 N.m	1.5 kW	-	SGDH-15DE-OY
		4.9 N.m	3.0 kW	-	SGDH-30DE-OY
SGLGW Linear Motors 	230 V	6.3 N.m	4.0 kW	-	SGDH-50DE-OY
SGLFW Linear Motors 	230 V, 400 V				
SGLTW Linear Motors 	400 V				

Type Designation

Servomotor

SGMAH - 01 A 1 A 6 S D - OY

Sigma-II Servomotor Type

SGMAH: Super High Power Rate Type
SGMPH: Cube Type
SGMGH: High-speed Feed Type
SGMSH: Super High Power Rate Type
SGMUH: High Speed Type

Connector Specifications

Blank	No option
D	Hypertac Connector (SGMAH,SGMPH)

Brake, Oil Seal Specifications

1	No Brake, No Oil/Dust Seal
S	Oil Seal
B	90V Brake
C	24V Brake
D	Oil Seal + 90VDC Brake
E	Oil Seal + 24VDC Brake
F	Dust Seal
G	Dust Seal + 90VDC Brake
H	Dust Seal + 24VDC Brake

Capacity (kW)

Code	SGMAH 3000 min ⁻¹	SGMPH 3000 min ⁻¹	SGMGH 1500 min ⁻¹	SGMSH 3000 min ⁻¹	SGMUH 6000 min ⁻¹
A3	0.03				
A5	0.05				
01	0.1	0.1			
02	0.2	0.2			
03	0.3				
04	0.4	0.4			
05			0.45		
06					
07	0.65				
08	0.75	0.75			
09			0.85		
10				1.0	1.0
12					
13			1.3		
15		1.5		1.5	1.5
20			1.8	2.0	
22					
30			2.9	3.0	3.0
32					
40				4.0	4.0
44			4.4		
50				5.0	
55			5.5		
60					
75			7.5		
1A			11		
1E			15		

Shaft End Specifications

Code	Shaft End	Type				
		SGMAH	SGMPH	SGMGH	SGMSH	SGMUH
2	Straight, No key	○	○	○	○	
4	Straight, Key	○	○			
6	Straight, Key, Tapped	●	●	●	●	●
8	Straight, Tapped	○	○			

●: Standard ○: Option

Design Procedure:

A: Standard
E: SGMPH (IP67)
F: SGMAH (prepared for oil seal mounting)

Serial Encoder Specifications

Code	Encoder	Type				
		SGMAH	SGMPH	SGMGH	SGMSH	SGMUH
1	16-bit Absolute	○	○			
2	17-bit Absolute			○	○	
A	13-bit Incremental	●	●			
B	16-bit Incremental	○	○			
C	17-bit Incremental			●	●	●

●: Standard ○: Option

Voltage

A: 230 V
D: 400 V

Servo Drive

SGDH - 04 A E - S - OY

Sigma-II Servo Drive

Capacity

A3	30 W	15	1.5 kW
A5	50 W	20	2.0 kW
01	100 W	30	3.0 kW
02	200 W	50	5.0 kW
04	400 W	60	6.0 kW
05	500 W	75	7.5 kW
08	750 W	1A	11 kW
10	1.0 kW	1E	15 kW

Phase

Blank	Three-phase (0.5 to 15kW) Single-phase (30 to 400W)
S	Single-phase (750W/1.5kW)

Model

E: Speed, Torque, Position

Source Voltage

A: 230V
D: 400V

Servomotor Specifications

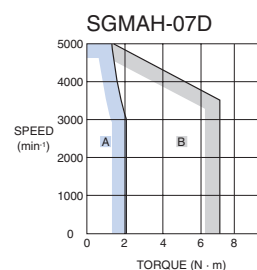
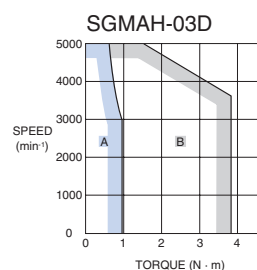
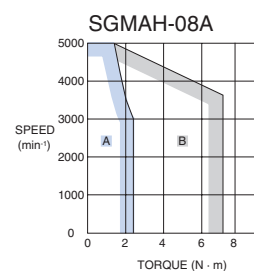
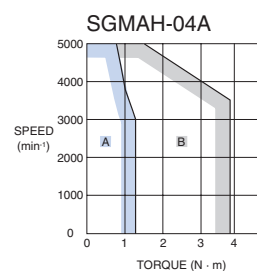
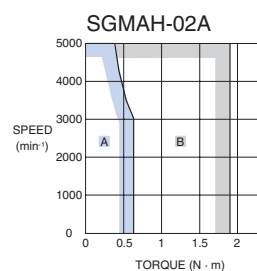
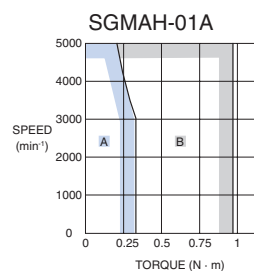
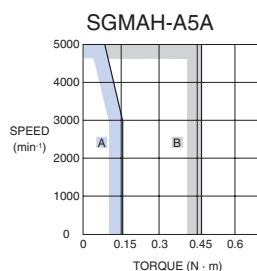
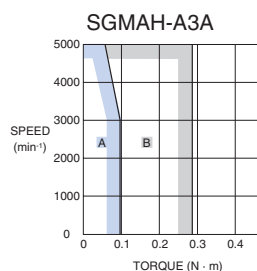
Type SGMAH, 230V/400V

Ratings and Specifications

Applied Voltage		230 V						400 V	
Servomotor Model SGMAH- □		A3A□	A5A□	01A□	02A□	04A□	08A□	03D□	07D□
Rated Output	W	30	50	100	200	400	750	300	650
Rated Torque	N·m	0.096	0.159	0.318	0.637	1.27	2.39	0.955	2.07
Instantaneous Peak Torque	N·m	0.286	0.477	0.955	1.91	3.82	7.16	3.82	7.16
Rated Current	A (rms)	0.44	0.64	0.91	2.1	2.8	4.4	1.3	2.2
Instantaneous Max. Current	A (rms)	1.3	2.0	2.8	6.5	8.5	13.4	5.1	7.7
Rated Speed	min ⁻¹	3000							
Max. Speed	min ⁻¹	5000							
Torque Constant	N·m/A (rms)	0.238	0.268	0.378	0.327	0.498	0.590	0.837	1.02
Rotor Moment of Inertia (JM)	kg·m ² x10 ⁻⁴	0.017	0.022	0.036	0.106	0.173	0.672	0.173	0.672
Allowable Load Moment of Inertia (JL)	Multiple of (JM)	30				20			
Rated Power Rate	kW/s	5.49	11.5	27.8	38.2	93.7	84.8	52.9	63.8
Rated Angular Acceleration	rad/s ²	57500	72300	87400	60100	73600	35500	55300	30800
Aplicable Encoder	Standard	Incremental Encoder (13 bits: 2048P/R)							
	Option	Incremental/Absolute Encoder (16 bits: 16384P/R)							
Holding Brake Moment of Inertia J	kg·m ² x10 ⁻⁴	0.0085			0.058		0.14	0.058	0.14
Basic Specifications	Time Rating	Continuous							
	Insulation Class	Class B							
	Ambient Temperature	0 to +40° C							
	Ambient Humidity	20 to 80% (non-condensing)							
	Vibration Class	15µm or below							
	Enclosure	Totally-enclosed, self-cooled, IP55 (excluding shaft opening)							
	Vibration Resistance	Vibration acceleration 49m/s2							
Mounting	Flange-mounted								

Torque-Speed Charecteristics

(A : Continuous Duty Zone B : Intermittent Duty Zone)



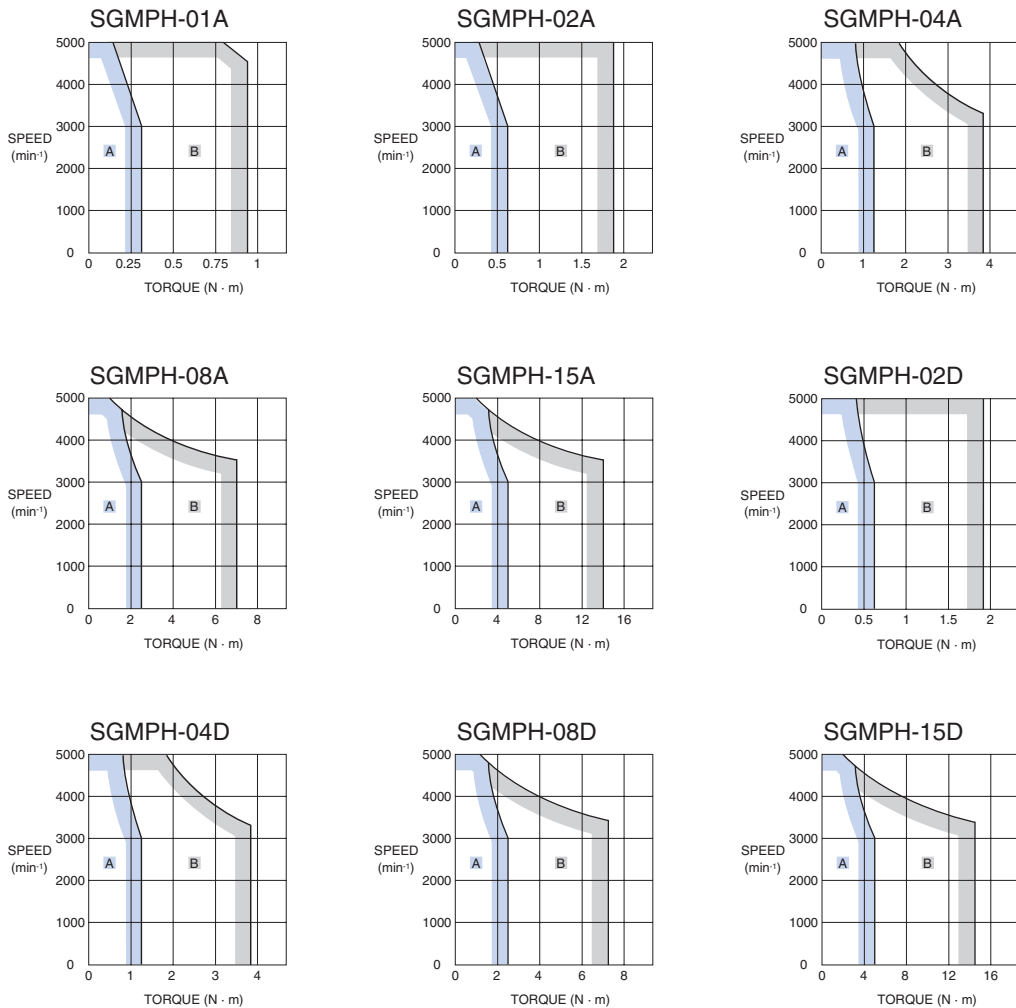
Type SGMPH, 230V/400V

Ratings and Specifications

Applied Voltage		230 V					400 V			
Servomotor Model SGMPH- □		01A□	02A□	04A□	08A□	15A□	02D□	04D□	08D□	15D□
Rated Output	W	100	200	400	750	1500	200	400	750	1500
Rated Torque	N·m	0.318	0.637	1.27	2.39	4.77	0.637	1.27	2.39	4.77
Instantaneous Peak Torque	N·m	0.955	1.91	3.82	7.16	14.3	1.91	3.82	7.16	14.3
Rated Current	A (rms)	0.89	2.0	2.6	4.1	7.5	1.4	1.4	2.6	4.5
Instantaneous Max. Current	A (rms)	2.8	6.0	8.0	13.9	23.0	4.6	4.4	7.8	13.7
Rated Speed	min ⁻¹	3000								
Max. Speed	min ⁻¹	5000								
Torque Constant	N·m/A (rms)	0.392	0.349	0.535	0.641	0.687	0.481	0.963	0.994	1.14
Rotor Moment of Inertia (JM)	kg·m ² x10 ⁻⁴	0.0491	0.193	0.331	2.10	4.02	0.193	0.331	2.10	4.02
Allowable Load Moment of Inertia (JL)	Multiple of (JM)	25	15	7	5		15	7	5	
Rated Power Rate	kW/s	20.6	21.0	49.0	27.1	56.7	21.0	49.0	27.1	56.7
Rated Angular Acceleration	rad/s ²	64800	33000	38500	11400	11900	33000	38500	11400	11900
Aplicable Encoder	Standard	Incremental Encoder (13 bits: 2048P/R)								
	Option	Incremental/Absolute Encoder (16 bits: 16384P/R)								
Holding Brake Moment of Inertia J		kg·m ² x10 ⁻⁴	0.029	0.109		0.875		0.109		0.875
Basic Specifications	Time Rating		Continuous							
	Insulation Class		Class B							
	Ambient Temperature		0 to +40° C							
	Ambient Humidity		20 to 80% (non-condensing)							
	Vibration Class		15µm or below							
	Enclosure		Totally-enclosed, self-cooled, IP55 (excluding shaft opening)							
	Vibration Resistance		Vibration acceleration 49m/s2							
	Mounting		Flange-mounted							

Torque-Speed Charecteristics

(A : Continuous Duty Zone B : Intermittent Duty Zone)



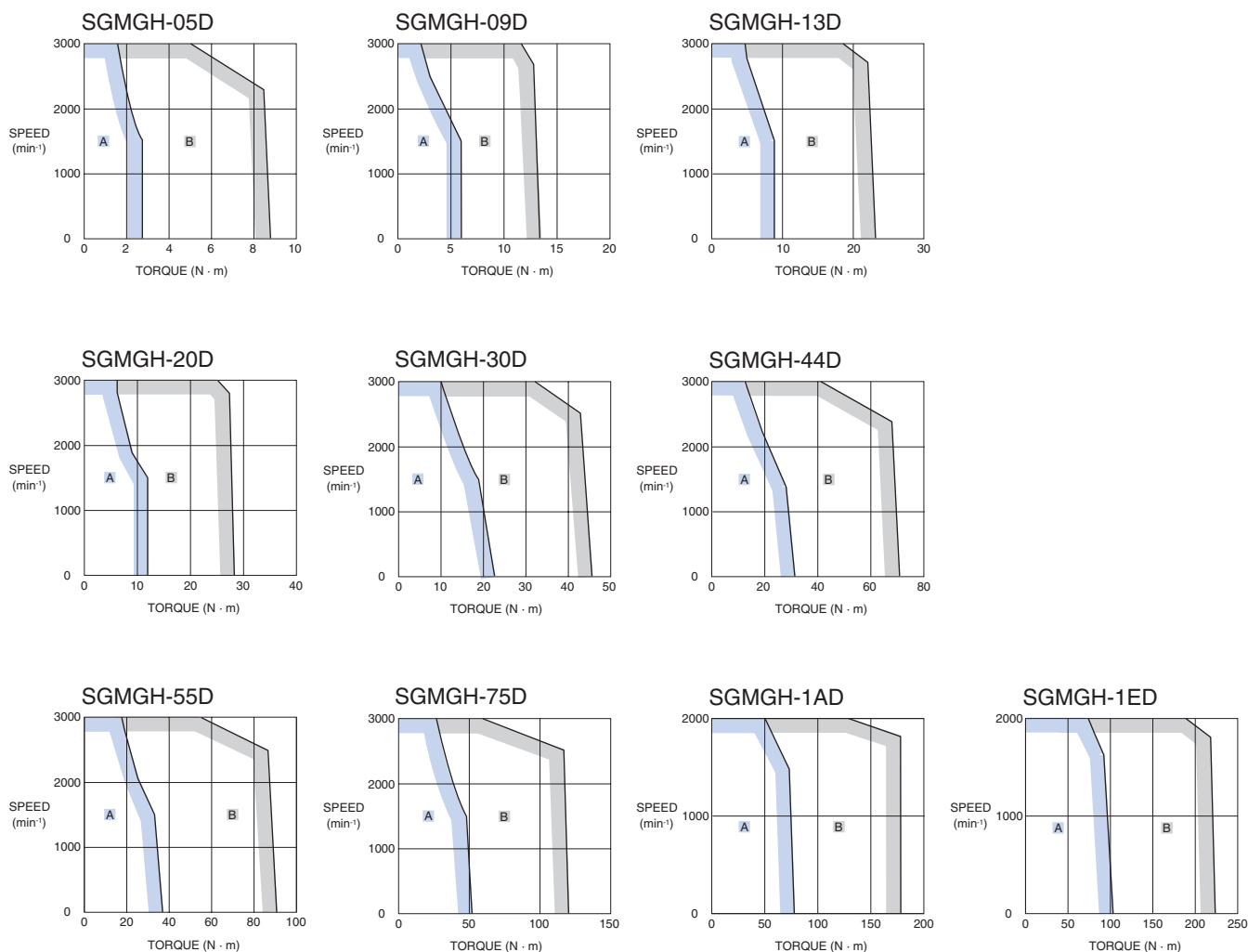
Type SGMGH, 400V

Ratings and Specifications

Applied Voltage		400 V									
Servomotor Model SGMGH-□		05D□	09D□	13D□	20D□	30D□	44D□	55D□	75D□	1AD□	1ED□
Rated Output	kW	0.45	0.85	1.3	1.8	2.9	4.4	5.5	7.5	11	15
Rated Torque	N·m	2.84	5.39	8.34	11.5	18.6	28.4	35.0	48.0	70.0	95.4
Instantaneous Peak Torque	N·m	8.92	13.8	23.3	28.7	45.1	71.1	90.7	123	175	221
Rated Current	A (rms)	1.9	3.5	5.4	8.4	11.9	16.5	20.8	25.4	28.1	37.2
Instantaneous Max. Current	A (rms)	5.5	8.5	14	20	28	40.5	55	65	70	85
Rated Speed	min ⁻¹	1500									
Max. Speed	min ⁻¹	3000								2000	
Torque Constant	N·m/A (rms)	1.64	1.65	1.68	1.46	1.66	1.82	1.74	2.0	2.56	2.64
Rotor Moment of Inertia (JM)	kg·m ² ×10 ⁻⁴	7.24	13.9	20.5	31.7	46.0	67.5	89.0	125	281	315
Allowable Load Moment of Inertia (JL)	Multiple of (JM)	5									
Rated Power Rate	kW/s	11.2	20.9	33.8	41.5	75.3	120	137	184	174	289
Rated Angular Acceleration	rad/s ²	3930	3880	4060	3620	4050	4210	3930	3850	2490	3030
Aplicable Encoder	Standard	Incremental Encoder (17 bits: 16384P/R)									
	Option	Absolute Encoder (17 bits: 16384P/R)									
Holding Brake Moment of Inertia J	kg·m ² ×10 ⁻⁴	2.10				8.50				18.8	37.5
Basic Specifications	Time Rating	Continuous									
	Insulation Class	Class F									
	Ambient Temperature	0 to +40° C									
	Ambient Humidity	20 to 80% (non-condensing)									
	Vibration Class	15µm or below									
	Enclosure	Totally-enclosed, self-cooled, IP67 (excluding shaft opening)									
	Vibration Resistance	Vibration acceleration 24.5m/s2									
	Mounting	Flange-mounted									

Torque-Speed Charecteristics

(A : Continuous Duty Zone B : Intermittent Duty Zone)



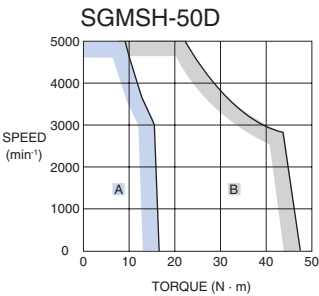
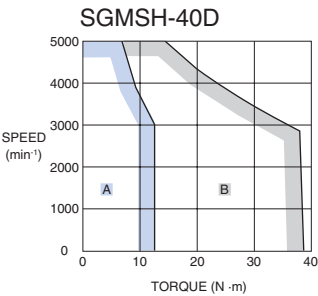
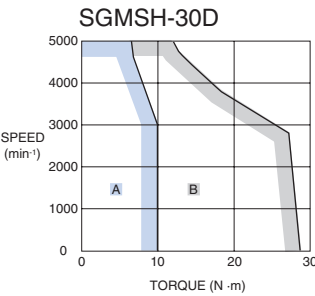
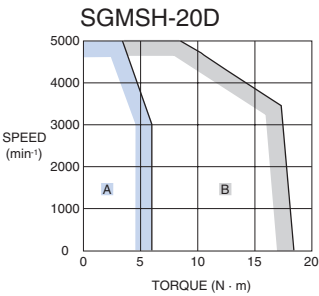
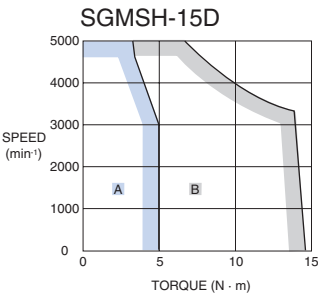
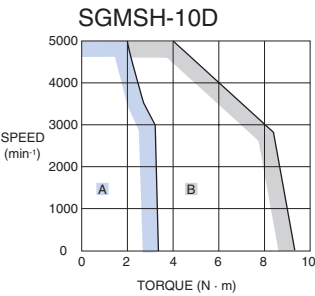
Type SGMSH, 400V

Ratings and Specifications

Applied Voltage		400 V					
Servomotor Model SGMSH- □		10D□	15D□	20D□	30D□	40D□	50D□
Rated Output	kW	1.0	1.5	2.0	3.0	4.0	5.0
Rated Torque	N·m	3.18	4.9	6.36	9.8	12.6	15.8
Instantaneous Peak Torque	N·m	9.54	14.7	19.1	29.4	37.8	47.6
Rated Current	A (rms)	2.8	4.7	6.2	8.9	12.5	13.8
Instantaneous Max. Current	A (rms)	8.5	14	19.5	28	38	42
Rated Speed	min ⁻¹	3000					
Max. Speed	min ⁻¹	5000					
Torque Constant	N·m/A (rms)	1.27	1.15	1.12	1.19	1.07	1.24
Rotor Moment of Inertia (JM)	kg·m ² x10 ⁻⁴	1.74	2.47	3.19	7.0	9.60	12.3
Allowable Load Moment of Inertia (JL)	Multiple of (JM)	5					
Rated Power Rate	kW/s	57.9	97.2	127	137	166	202
Rated Angular Acceleration	rad/s ²	18250	19840	19970	14000	13160	12780
Aplicable Encoder	Standard	Incremental Encoder (17 bits: 16384P/R)					
	Option	Absolute Encoder (17 bits: 16384P/R)					
Holding Brake Moment of Inertia J		kg·m ² x10 ⁻⁴ 0.325			2.10		
Basic Specifications	Time Rating		Continuous				
	Insulation Class		Class F				
	Ambient Temperature		0 to +40° C				
	Ambient Humidity		20 to 80% (non-condensing)				
	Vibration Class		15µm or below				
	Enclosure		Totally-enclosed, self-cooled, IP67 (excluding shaft opening)				
	Vibration Resistance		Vibration acceleration 24.5m/s2				
	Mounting		Flange-mounted				

Torque-Speed Charecteristics

(A : Continuous Duty Zone B : Intermittent Duty Zone)



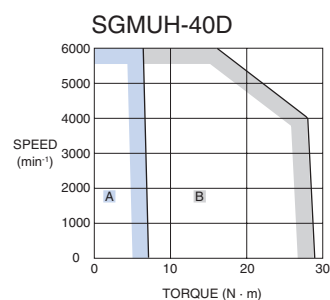
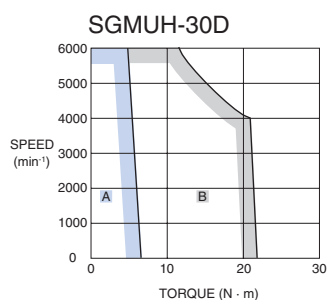
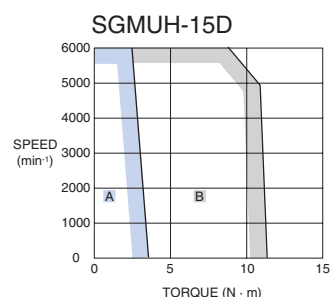
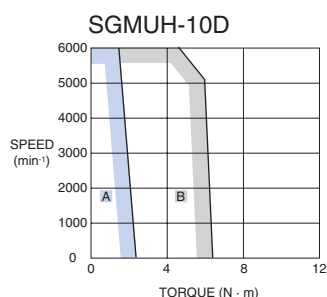
Type SGMUH, 400V

Ratings and Specifications

Applied Voltage		400 V			
Servomotor Model SGMUH- □		10D□	15D□	30D□	40D□
Rated Output	kW	1.0	1.5	3.0	4.0
Rated Torque	N·m	1.59	2.45	4.9	6.3
Instantaneous Peak Torque	N·m	6.5	11	21.5	29
Rated Current	A (rms)	2.7	4.1	8.1	9.6
Instantaneous Max. Current	A (rms)	8.5	14	28	38.5
Rated Speed	min ⁻¹	6000			
Max. Speed	min ⁻¹	6000			
Torque Constant	N·m/A (rms)	0.81	0.83	0.81	0.80
Rotor Moment of Inertia (JM)	kg·m ² x10 ⁻⁴	1.74	2.47	7.0	9.6
Allowable Load Moment of Inertia (JL)	Multiple of (JM)	5			
Rated Power Rate	kW/s	14.5	24.3	34.3	41.3
Rated Angular Acceleration	rad/s ²	9130	9910	7000	6550
Aplicable Encoder	Standard	Incremental Encoder (17 bits: 16384P/R)			
	Option	-			
Holding Brake Moment of Inertia J	kg·m ² x10 ⁻⁴	0.25		2.10	
Basic Specifications	Time Rating	Continuous			
	Insulation Class	Class F			
	Ambient Temperature	0 to +40° C			
	Ambient Humidity	20 to 80% (non-condensing)			
	Vibration Class	15µm or below			
	Enclosure	Totally-enclosed, self-cooled, IP67 (excluding shaft opening)			
	Vibration Resistance	Vibration acceleration 24.5m/s2			
	Mounting	Flange-mounted			

Torque-Speed Characteristics

(A : Continuous Duty Zone B : Intermittent Duty Zone)



Servo Drive Specifications

Single-Phase, 230 V

Servo Drive Type		SGDH-□	A3AE-OY	A5AE-OY	01AE-OY	02AE-OY	04AE-OY	08AE-S-OY	15AE-S-OY		
Applicable Servomotor		SGMAH-□	A3A□	A5A□	01A□	02A□	04A□	08A□	-		
		SGMPH-□	-	-	01A□	02A□	04A□	08A□	15A□		
Basic Specifications	Max. Applicable Motor capacity		W	30	50	100	200	400	750	1500	
	Continuous Output Current		Arms	0.44	0.64	0.91	2.1	2.8	5.7	11.6	
	Max. Output Current		Arms	1.3	2.0	2.8	6.5	8.5	13.9	28	
	Input Power		Main Circuit	For single-phase, 200 to 230 VAC + 10 to -15%					220 to 230 VAC		
	Supply		Control Circuit	For single-phase, 200 to 230 VAC + 10 to -15%					+10 to -15% (50/60Hz)		
	Control Method		Single phase full-wave rectification / IGBT / PWM / sine-wave current drive method								
	Feedback		Serial encoder (incremental/absolute value)								
	Conditions	Usage /storage Temperature		0 to +55° C / -20 to 85° C							
		Usage /storage Humidit		90%RH or less (non-condensing)							
		Altitude		1000m or less above sea level							
		Vibration/Shock Resistance		4.9m/s ² / 19.6m/s ²							
	Configuration		Base mounted								
	Approx. Mass		Kg	0.8				1.1	1.7	3.8	

Three-Phase, 400 V

Servo Drive Type		SGDH-□	05DE-OY	10DE-OY	15DE-OY	20DE-OY	30DE-OY	50DE-OY	60DE-OY	75DE-OY	1ADE-OY	1EDE-OY
Applicable Servomotor	SGMGH-□	05D□	09D□	13D□	20D□	30D□	44D□	55D□	75D□	1AD□	1ED□	
	SGMSH-□	-	10D□	15D□	20D□	30D□	40D□/50D□	-	-	-	-	-
	SGMUH-□	-	10D□	15D□	-	30D□	40D□	-	-	-	-	-
Basic Specifications	Max. Applicable Motor capacity	kW	0.45	1.0	1.5	2.0	3.0	5.0	6.0	7.5	11	15
	Continuous Output Current	Arms	1.9	3.5	5.4	8.4	11.9	16.5	20.8	25.4	28.1	37.2
	Max. Output Current	Arms	5.5	8.5	14	20	28	40.5	55	65	70	85
	Input Power	Main Circuit	For three-phase, 380 to 480 VAC + 10 to -15% (50/60Hz)									
	Supply	Control Circuit	24VDC+ 15%									
	Control Method		Single phase full-wave rectification / IGBT / PWM / sine-wave current drive method									
	Feedback		Serial encoder (incremental/absolute value)									
	Conditions	Usage /storage Temperature	0 to +55° C / -20 to +85 C									
		Usage /storage Humidit	90%RH or less (non-condensing)									
		Altitude	1000m or less above sea level									
		Vibration/Shock Resistance	4.9m/s ² / 19.6m/s ²									
	Configuration		Base mounted									
	Approx. Mass	Kg	2.8			3.8		5.5	15		22	

General Specifications

Speed/Torque Control Mode	Performance	Speed Control Range		1:5000		
		Speed Variance	Load Variance	During 0 to 100% load ±0.01% max. (at rated speed)		
			Voltage Variance	Rated voltage ±10%:0% (at rated speed)		
			Temperature Variance	25 ±25° C: ±0.1 % max (at rated speed)		
		Frequency characteristics		400Hz (at J _L = J _M)		
		Torque Control Accuracy (Reproducibility)		±2%		
Soft Start Time Setting		0 to 10s (Acceleration, deceleration can each be set.)				
Input Signal	Speed Reference Input	Reference Voltage	±6VDC (forward motor rotation if positive reference) at rated speed: Set at delivery Variable setting range: ±2 to ±10 VDC at rated speed/ max. input voltage: ±12V			
		Input Empedance	Approx. 14 kΩ			
		Circuit Time Constant	-			
	Torque Reference Input	Reference Voltage	±3 VDC (forward rotation if positive reference) at rated speed: Set at delivery Variable setting range ±1 to ±10 VDC at rated torque reference			
		Imput Impedance	Approx. 14 KΩ			
		Circuit Time Constant	Approx. 47μ s			
Position Control Mode	Performance	Bias Setting		0 to 450 min ⁻¹ (setting resolution: 1 min ⁻¹)		
		Feed Forward Compensation		0 to 100 % (setting resolution: 1%)		
		Position Completed Width Setting		0 to 250 command units (Setting resolution: 1 command unit)		
	Input Signal	Command Pulse	Input pulse Type	Sign + pulse train, 90° phase displacement 2-phase pulse (A-phase+ B-phase) or CCW/CW pulse train		
			Input Pulse Form	Line driver (+5V level) , open collector (+5V or +12 level)		
			Input Pulse Frequency	0 to 500 Kpps (200Kpps max. at open collector)		
		Control Signal		Clear Signal (input pulse is same as reference pulse)		
	I/O Signal	Position Signal Output		A-phase, B.phase, C-phase, (S-phase): Line driver output S-phase is for absolute encoder only.		
		Sequence Input Signal		Servo ON, P control (or control mode switching, zero clamp, command pulse inhibit), forward/reverse run prohibit, alarm reset, forward/ reverse current limit (or internal speed switching)		
Sequence Output Signal		Servo alarm, alarm codes (3-bit output): CN1 output terminal is fixed It is possible to output three types of signals form among: positioning complete (speed agree), motor rotation, servo ready, current limit, speed limit, brake release, warning, NEAR, and zero point pulse signal				

Integrated Functions	Communications	Interface	Digital operator (hand-held type), RS-422 port for PCs, etc. (RS-232C ports under some conditions)
		1:N Communications	N may equal up to 14 when an RS-422A port is used
		Axis Address Setting	Set by user setting
		Functions	Status display, user constant setting monitor display, alarm traceback display, JOG run /autotuning operations, and graphing functions for speed/torque command signal, etc
	Auto Tuning Function		Position speed loop gain and integral time constant can be automatically set.
	Dynamic Brake (DB)		Operates during main power OFF, servo alarm, servo OFF or overtravel
	Regenerative Processing		Regenerative resistor externally mounted (option)
	Overtravel (OT) Prevention Function		DB stop, deceleration stop or coast to stop during P-OT, N-OT operation
	Encoder Divider Function		Optional division possible
	Electronic Gearing		0.01 < A/B < 100
	Internal Speed Setting Function		3 speeds may be set internally
	Protective Functions		Overcurrent, overvoltage, insufficient voltage, overload, main circuit sensor error, heatsink overheat, power phase loss, overflow, overspeed, encoder error, runaway, CPU error, parameter error, etc.
	Analog Monitor Functions for Supervision		Integrates analog monitor connectors for supervision of the speed and torque reference signals, etc.
	Display Functions		CHARGE, POWER, 7-segments LEDx5 (Integrated digital operator function)
	Others		Reverse connection, zero search, automatic motor discrimination function, and DC reactor connection terminal for high frequency power suppression function (except: 6 to 15kW)

I/O Specifications

I/O Signals (CN1) - Input signals

Pin No.	Signal Name	Function			
40	Common	/S-ON	Servo ON: Turns ON the servomotor when the gate block in the inverter is released.		
41		/P-CON	Function selected by parameter.		
			Proportional control reference	Switches the speed control loop from PI (proportional/ integral) to P (proportional) control when ON.	
			Direction reference	With the internal set speed selected: Switch the rotation direction.	
			Control mode switching	Position ↔ speed Position ↔ torque Torque ↔ speed	Enables control mode switching
			Zero-clamp reference	Speed control with zero-clamp function: Reference speed is zero when ON.	
			Reference pulse block	Position control with reference pulse stop: Stops reference pulse input when ON.	
42	P-OT N-OT	Forward run prohibited Reverse run prohibited	Overtravel prohibited: Stops servomotor when movable part travels beyond the allowable range of motion.		
43					
45	/P-CL /N-CL	Function selected by parameter.			
46		Forward external torque limit ON Reverse external torque limit ON	Current limit function enabled when ON.		
		Internal speed switching	With the internal set speed selected: Switches the internal speed settings.		
44		/ALM-RST	Alarm reset: Releases the servo alarm state.		
47	+24VIN SEN BAT (+) BAT (-)	Control power supply input for sequence signals: Users must provide the +24 V power supply. Allowable voltage fluctuation range: 11 to 25 V			
4 (2)		Initial data request signal when using an absolute encoder.			
21		Connecting pin for the absolute encoder backup battery.			
22		Do not connect when a battery is connected to the host controller.			
5 (6)	Speed	V-REF	Speed reference speed input: ±2 to ±10 V/rated motor speed (Input gain can be modified using a parameter.)		
9 (10)	Torque	T-REF	Torque reference input: ±1 to ±10 V/rated motor torque (Input gain can be modified using a parameter.)		
7	Position	PULS /PULS SIGN /SIGN	Reference pulse input for only line driver	Input mode is set from the following pulses. Sign + pulse string CCW/CW pulse Two-phase pulse (90° phase differential)	
8					
11					
12					
15	CLR /CLR	Positional error pulse clear input: Clears the positional error pulse during position control.			
14					
3		PL1 PL2 PL3	+12 V pull-up power is supplied when PULS, SIGN, and CLR reference signals are open-collector outputs (+12 V power supply is built into the SERVOPACK).		
13					
18					

Note: 1. Pin numbers in parentheses () indicate signal grounds.

2. The functions allocated to /S-ON, /P-CON, P-OT, N-OT, /ALM-RST, /P-CL, and /N-CL input signals can be changed by using the parameters.

3. The voltage input range for speed and torque references is a maximum of ± 12 V.

I/O Signals (CN1) - Output signals

Pin No.	Signal Name	Function
31 32	Common	ALM+ ALM-
27 28		/TGON+ /TGON-
29 30		/S-RDY+ /S-RDY-
33 (1) 34		PAO /PAO
35 36		PBO /PBO
19 20		PCO /PCO
48 49		PSO /PSO
37 38 39 (1)		ALO1 ALO2 ALO3
Shell		FG
25 26		/V-CMP+ /V-CMP-
25 26		/COIN+ /COIN-
-	Reserved	/CLT /VLT /BK /WARN /NEAR
16 17 23 24 50		-

Note: 1. Pin numbers in parentheses () indicate signal grounds.

2. The functions allocated to /TGON, /S-RDY, and /V-CMP (/COIN) can be changed by using the parameters. /CLT, /VLT, /BK, /WARN, and /NEAR signals can also be changed.

Terminal Specifications

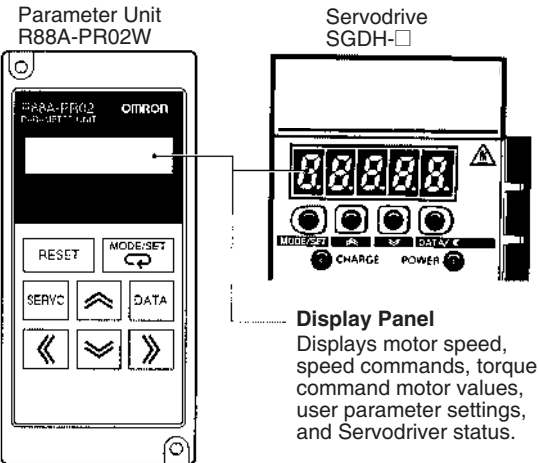
Symbol	Name	Function
L1, L2 or L1, L2, L3	Main circuit AC input terminal	AC power input terminals for the main circuit
U V W	Servomotor connection terminal	Red White Blue
L1C, L2C		AC power input terminals for the control circuit.
⊕	Frame ground	Ground terminal. Ground to a maximum of 100Ω. (class 3)
B1, B2 or B1, B2, B3	Main circuit DC output terminal	5 kW or less: Connect an external regenerative resistor if regenerative energy is high. 5.5 kW: There is no internal regenerative resistor. Be sure to connect an external Regenerative Resistor Unit.
⊕1, ⊕2	DC reactor connection terminal for suppressing power supply harmonic waves	Normally, short ⊕1 and ⊕2. If a countermeasure against power supply harmonic waves is needed, connect a DC reactor between ⊕1 and ⊕2.
⊕	Main circuit DC output terminal (positive)	Normally, not connected. This terminal exists on the Servo Drives with a capacity of 6.0 kW or higher only.
⊖	Main circuit DC output terminal (negative)	Normally, not connected.

Encoder Connector (CN2)

Pin No.	Signal Name	Function
1	E5V	Encoder power supply + 5V
2	E0V	Encoder power supply ground
3	BAT+	Battery + (used only with absolute encoder)
4	BAT-	Battery - (used only with absolute encoder)
5	S+	Encoder serial signal input
6	S-	Encoder serial signal input

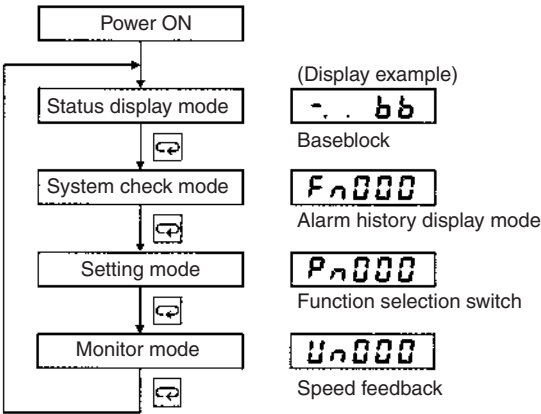
Operation

Operating Functions

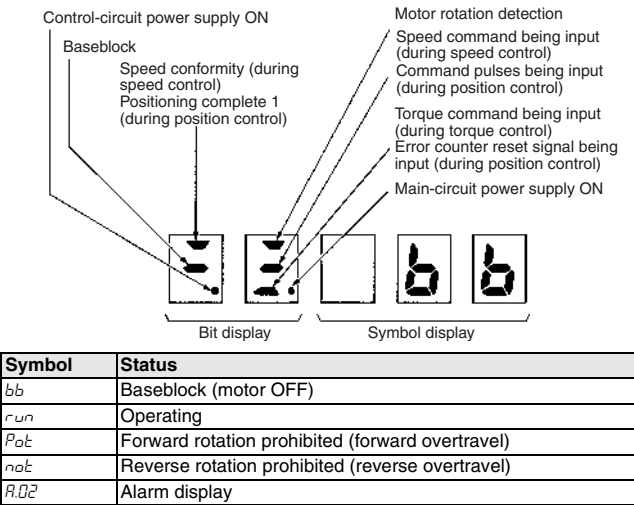


Changing Modes

To change modes, press the MODE/SET Key.



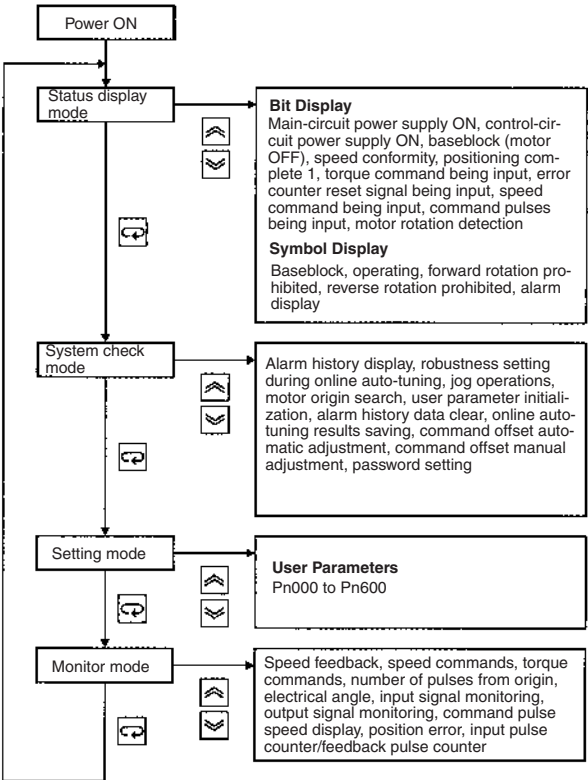
Status Display Mode



Unit Keys

R88A-PR02W	SGDH-□	Function
RESET		Resets an alarm.
MODE/SET		Switches between status display mode, system check mode, setting mode, and monitor mode. Used as a data setting key while in setting mode.
SERVO		Turns ON or OFF the Servo while jog operations are being performed.
DATA		Switches between parameter display and data display, and records data.
↑		Increments parameter settings. Used as a forward rotation start key during jog operation.
↓		Decrements parameter settings. Used as a reverse rotation start key during jog operation.
←		Selects the digit whose setting is to be changed. When selected, the digit flashes.
→		

Mode Details



Parameters

Parameter No.	Name	Setting Range	Units	Factory Setting	Setting Validation
Pn000	Function Selection Basic Switches	-	-	0000	After restart
	Digit Function name Setting Explanation				
	0 Direction Selection	0			Sets CCW as forward direction
		1			Sets CW as forward direction (Reserve Rotation Mode)
		2 and 3			Reserved (Do not change.)
	1 Control Method Selection	0			Speed control (analog reference)
		1			Position control (pulse train reference)
		2			Torque control (analog reference)
		3			Internal set speed control (contact reference)
		4			Internal set speed control (contact reference)<->Speed control (analog reference)
		5			Internal set speed control reference<->Position control (pulse train reference)
		6			Internal set speed control (contact reference)<->Torque control (analog reference)
		7			Position control (pulse train reference)<->Speed control (analog reference)
		8			Position control (pulse train reference)<->Torque control (analog reference)
		9			Torque control (analog reference)<->Speed control (analog reference)
		A			Speed control (analog reference)<->Zero clamp
		B			Position control (pulse train reference)<->Position control (Inhibit)
	2 Axis Address	0 to F			Sets ServoDrive axis address (Function supported by PC software SigmaWin 100/200).
	3 Rotation Type/Linear Type Startup Selection	0			Starts up as rotation type.
		1			Starts up as linear type.
Pn001	Function Selection Application Switches 1	-	-	0000	After restart
	Digit Function name Setting Explanation				
	0 Servo OFF or Alarm Stop Mode	0			Stops the motor by applying dynamic brake (DB)
		1			Stops the motor by applying dynamic brake (DB) and then releases DB
		2			Makes the motor coast to a stop state without using the dynamic brake (DB)
	1 Overtravel (OT) Stop Mode	0			Same setting as Pn001.0 (Stops the motor by applying DB or by coasting)
		1			Sets the torque of Pn406 to the maximum value, decelerate the motor to a stop, and then set it to servolock state
		2			Sets the torque of Pn406 to the maximum value. decelerates the motor to a stop, and then sets it to coasting state
	2 AC/DC Power Input Selection	0			Not applicable to DC power input: Input AC power supply through L1, L2 (,and L3) terminals
		1			Applicable to DC power input: Input DC power supply between (+1) and (-)
	3 Warning Code Output Selection	0			ALO1, ALO2, and ALO3 output only alarm codes.
		1			ALO1, ALO2, and ALO3 output both alarms codes and warning codes. While warning codes are output, ALM signal output remains ON (normal state).
Pn002	Function Selection Application Switches 2	-	-	0000	After restart
	Digit Function name Setting Explanation				
	0 Speed Control Option	0			N/A
		1			Uses T-REF as an extended
		2			Uses T-REF as an external torque limit input when P-CL and N-CL are ON.
	1 Torque Control Option	0			N/A
		1			Uses V-REF as an external speed limit input.
	2 Absolute Encoder Usage	0			Uses absolute encoder as an absolute encoder
		1			Uses absolute encoder as an incremental encoder
	3 Reserved (Do not change)				
Pn003	Function Selection Application Switches 3	-	-	0002	After restart
	Digit Function name Setting Explanation				
	0 Analog Monitor 1 Torque Reference Monitor	0			Motor speed: 1V/1000 min ⁻¹
		1			Speed reference: 1V/1000 min ⁻¹
		2			Torque reference: 1 V/100%
		3			Position error: 0,05 V/1 reference unit
		4			Position error:0,05 V/100 reference units
		5			Reference pulse frequency (converted to min ⁻¹ : 1V/1000 min ⁻¹
		6			Motor Speed x 4: 1V/250 min ⁻¹
		7			Motor Speed x 8: 1V/250 min ⁻¹
		8 to F			Reserved (Do not change)
	1 Analog Monitor 2 Speed Reference Monitor	0 to F			Same as Analog Monitor 1 Torque Reference Monitor
	2 Reserved (Do not change)				
	3 Reserved (Do not change)				
Pn004	Reserved (Do not change)	-	-	0000	Immediately
Pn005	Reserved (Do not change)	-	-	0000	Immediately
Pn100	Speed Loop Gain	1 to 2000 Hz	1 Hz	40 Hz	Immediately
Pn101	Speed Loop Integral Time Constant	0.15 to 512.00 ms	0.01 ms	20.00 ms	Immediately
Pn102	Position Loop Gain	1 to 2000/s	1/s	40/s	Immediately
Pn103	Moment of Inertia Ratio	0 to 20000%	1%	0%	Immediately
Pn104	2nd Speed Loop Gain	1 to 2000 Hz	1 Hz	40 Hz	Immediately
Pn105	2nd Speed Loop Integral Time Constant	0.15 to 512.00 ms	0.01 ms	20.00 ms	Immediately
Pn106	2nd Position Loop Gain	1 to 2000/s	1/s	40/s	Immediately
Pn107	Bias	0 to 450 min ⁻¹	1 min ⁻¹	0 min ⁻¹	Immediately

Parameter No.	Name	Setting Range	Units	Factory Setting	Setting Validation
Pn108	Bias Width Addition	0 to 250 reference units	Reference unit	7 reference units	Immediately
Pn109	Feed-forward	0 to 100%	1%	0%	Immediately
Pn10A	Feed-forward Filter Time Constant	0.00 to 64.00 ms	0.01 ms	0.00 ms	Immediately
Pn10B	Gain-related Application Switches	-	-	0000	-
	Digit Function name Setting Explanation Setting Validation				
	0 Mode Switch Selection	0	Uses internal torque reference as the condition (Level setting: Pn10C)		Immediately
		1	Uses speed reference as the condition (Level setting: Pn10D)		
		2	Uses acceleration as the condition (Level setting: Pn10E)		
		3	Uses position error pulse as the condition (Level setting: P10F)		
		4	No mode switch function available		
	1 Speed Loop Control Method	0	PI control		After restart
		1	IP control		
		2 and 3	Reserved (Do not change)		
	2 Automatic Gain Switching Selection	0	Automatic Gain Switching Disabled		After restart
		1	Position Reference		
		2	Position error		
		3	Position Reference and Position Error		
	3 Reserved (Do not change)				
Pn10C	Mode Switch Torque Reference	0 to 800%	1%	200%	Immediately
Pn10D	Mode Switch Speed Reference	0 to 10000 min ⁻¹	1 min ⁻¹	0 min ⁻¹	Immediately
Pn10E	Mode Switch Acceleration	0 to 3000 min ⁻¹ /s	1 min ⁻¹ /s	0 min ⁻¹ /s	Immediately
Pn10F	Mode Switch Error Pulse	0 to 10000 reference units	1 reference unit	0 reference unit	Immediately
Pn110	Online Autotuning Switches *1	-	-	0010	-
	Digit Function name Setting Explanation Setting Validation				
	0 Online Autotuning Method	0	Tunes only at the beginning operation		After restart
		1	Always tunes.		
		2	Does not perform autotuning.		
	1 Speed feedback Compensation Selection	0	Applicable		Immediately
		1	N/A		
	2 Friction Compensation Selection	0	Friction compensation: Disabled		Immediately
		1	Friction compensation: Small		
		2	Friction compensation: Large		
	3 Reserved (Do not change)				
Pn111	Speed Feedback Compensation *2	1 to 500%	1%	100%	Immediately
Pn112	Reserved (Do not change)	-	-	100%	-
Pn113				1000	
Pn114				200	
Pn115				32	
Pn116				16	
Pn117				100%	
Pn118				100%	
Pn119				50 /s	
Pn11A				1000%	
Pn11B				50 Hz	
Pn11C				70 Hz	
Pn11D				100%	
Pn11E				100%	
Pn11F				0 ms	
Pn120				0 ms	
Pn121				50 Hz	
Pn122				0 Hz	
Pn123				0%	
Pn124	Automatic Gain Switching Timer	1 to 10000 ms	1 ms	100 ms	Immediately
Pn125	Automatic Gain Switching Width	1 to 250 reference units	1 reference	7 reference units	Immediately

Parameter No.	Name		Setting Range	Units	Factory Setting	Setting Validation
Pn200	Position Control References Selection Switches		-	-	0000	After restart
	Digit	Function Name	Setting	Explanation		
	0	Reference Pulse Form	0	Sign + Pulse, positive logic		
			1	CW + CCW, positive logic		
			2	Phase A + Phase B (x 1), positive logic		
			3	Phase A + Phase B (x 2), positive logic		
			4	Phase A + Phase B (x 4), positive logic		
			5	Sign + Pulse, negative logic		
			6	CW + CWW, negative logic		
			7	Phase A + Phase B (x 1), negative logic		
			8	Phase A + Phase B (x 2), negative logic		
			9	Phase A + Phase B (x 4), negative logic		
	1	Error Counter Clear	0	Clears error counter when the signal is at H level		
			1	Clears error counter at the rising edge of the signal		
			2	Clears error counter when the signal is at L level.		
			3	Clears error counter at the falling edge of the signal		
	2	Clear Operation	0	Clear error counter at the baseblock		
			1	Does not clear error counter (Only possible to clear error counter with CLR signal)		
			2	Clears error counter when an alarm occurs.		
	3	Filter Selection	0	Reference input filter for line driver signals		
			1	Reference input filter for open collector signals		
Pn201	PG Dividing Pulse (16bit or less)		16 to 16384 P/rev	1 P/rev	16384 P/rev	After restart
Pn202	Electronic Gear Ratio (Numerator)		1 to 65535	-	4	After restart
Pn203	Electronic Gear Ratio (Denominator)		1 to 65535	-	1	After restart
Pn204	Position Reference Accel/Decel Time Constant		0.00 to 64.00 ms	0.01 ms	0.00 ms	Immediately
Pn205	Multiturn Limit Setting *		0 to 65535 rev	rev	65535 rev	After restart
Pn206	Reserved (Do not change)		-	-	16384 P/rev	-
Pn207	Position Control Function Switches				0000	After restart
	Digit	Function Name	Setting	Explanation		
	0	Position Reference Filter selection	0	Acceleration/deceleration filter		
			1	Average movement filter		
	1	Position Control Option	0	N/A		
			1	Uses V-REF as a speed feed-forward input		
	2	Dividing Pulse Parameter Selection	0	Use Pn201 (16-bit or less)		
			1	Use Pn212 (17-bit or more)		
	3	Reserved (Do not change)				
Pn208	Position Reference Movement Averaging Time		0.00 to 64.00 ms	0.01 ms	0.00 ms	After restart
Pn212	PG Dividing Pulse (17 bit or more)*		16 to 1073741824 P/rev	1 P/rev	2048P/rev	After restart
Pn217	Reference Pulse Input Multiplication		×1 to ×99	× 1	×1	Immediately
Pn218	Reference Pulse Multiplication Function Selection		-	-	0000	After restart
	Digit	Function Name	Setting	Explanation		
	0	Reference Pulse Multiplication Function Selection	0	Disabled		
			1	Enabled		
	1	Reserved (Do not change)				
	2	Reserved (Do not change)				
	3	Reserved (Do not change)				
Pn300	Speed Reference Input Gain		1.50 to 30.00 V/ rated speed	0.01V/ rated speed	6.00 V/ rated speed	Immediately
Pn301	Speed 1		0 to 10000 min ⁻¹	1 min ⁻¹	100 min ⁻¹	Immediately
Pn302	Speed 2		0 to 10000 min ⁻¹	1 min ⁻¹	200 min ⁻¹	Immediately
Pn303	Speed 3		0 to 10000 min ⁻¹	1 min ⁻¹	300 min ⁻¹	Immediately
Pn304	JOG Speed		0 to 10000 min ⁻¹	1 min ⁻¹	500 min ⁻¹	Immediately
Pn305	Soft Start Acceleration Time		0 to 10000 ms	1 ms	0 ms	Immediately
Pn306	Soft Start Deceleration Time		0 to 10000 ms	1 ms	0 ms	Immediately
Pn307	Speed Reference Filter Time Constant		0.00 to 655.35 ms	0.01 ms	0.40 ms	Immediately
Pn308	Speed Feedback Filter Time Constant		0.00 to 655.35 ms	0.01 ms	0.00 ms	Immediately
Pn309	Reserved (Do not change)		0 - 500 min ⁻¹	1 min ⁻¹	60 min ⁻¹	Immediately
Pn400	Torque Reference Input Gain		1.0 to 10.0 V/rated torque	0.1 V/rated torque	3.0 V/ rated torque	Immediately
Pn401	Torque Reference Filter Time Constant		0.00 to 655.35 ms	0.01 ms	1.00 ms	Immediately
Pn402	Forward Torque Limit		0 to 800%	1%	800%	Immediately
Pn403	Reverse Torque Limit		0 to 800%	1%	800%	Immediately
Pn404	Forward External Torque Limit		0 to 800%	1%	100%	Immediately
Pn405	Reverse External Torque Limit		0 to 800%	1%	100%	Immediately
Pn406	Emergency Stop Torque		0 to 800%	1%	800%	Immediately
Pn407	Speed Limit during Torque Control		0 to 10000 min ⁻¹	1 min ⁻¹	10000 min ⁻¹	Immediately
Pn408	Torque Function Switches		-	-	0000	Immediately
	Digit	Function Name	Setting	Explanation		
	0	Notch Filter Selection	0	N/A		
			1	Uses a notch filter for torque reference		
	1	Reserved (Do not Change)				
	2	2nd Notch Filter Selection	0	Disabled		
			1	Enabled		
	3	Reserved (Do not Change)				

Parameter No.	Name	Setting Range	Units	Factory Setting	Setting Validation
Pn409	Notch Filter Frequency	50 to 2000 Hz	1 Hz	2000 Hz	Immediately
Pn40A	Notch Filter Q Value	50 to 400(0.50 to 4.00)	0.01	70(0.70)	Immediately
Pn40B	2nd Notch Filter Frequency	50 to 2000 Hz	1 Hz	2000 Hz	Immediately
Pn40C	2nd Notch Filter Q Value	50 to 400 (0.50 to 4.00)	0.01	70(0.70)	Immediately
Pn500	Positioning Completed Width	0 to 250 reference units	1 reference unit	7 reference units	Immediately
Pn501	Zero Clamp Level	0 to 10000 min ⁻¹	1 min ⁻¹	10 min ⁻¹	Immediately
Pn502	Rotation Detection Level	1 to 10000 min ⁻¹	1 min ⁻¹	20 min ⁻¹	Immediately
Pn503	Speed Coincidence Signal Output Width	0 to 100 min ⁻¹	1 min ⁻¹	10 min ⁻¹	Immediately
Pn504	NEAR Signal Width	1 to 250 reference units	1 reference unit	7 reference units	Immediately
Pn505	Overflow Level	1 to 32767reference units	256 reference unit	1024 reference units	Immediately
Pn506	Brake Reference - Servo OFF Delay Time	1 to 50 (10 to 500 ms)	10 ms	10 ms	Immediately
Pn507	Brake Reference Output Speed Level	0 to 10000 min ⁻¹	1 min ⁻¹	100 min ⁻¹	Immediately
Pn508	Timing for Brake Reference Output during Motor Operation	10 to 100 (100 to 1000 ms)	10 ms	500 ms	Immediately
Pn509	Momentary Hold time	20 to 1000 ms	1 ms	20 ms	Immediately
Pn50A	Input Signal Selections 1	-	-	2100	After restart
	Digit	Function Name	Setting	Explanation	
	0	Input Signal Allocation Mode	0	Uses the sequence input signal terminals with standard allocation	
			1	Changes the sequence input signal allocation for each signal	
	1	/S-ON Signal Mapping Signal Polarity:Normal:Servo ON when ON Signal Polarity:Reverse: Servo ON when OFF	0	ON when CN1-40 input signals is ON (L-level).	
			1	ON when CN1-41 input signals is ON (L-level)	
			2	ON when CN1-42 input signals is ON (L-level)	
			3	ON when CN1-43 input signals is ON (L-level)	
			4	ON when CN1-44 input signals is ON (L-level)	
			5	ON when CN1-45 input signals is ON (L-level)	
			6	ON when CN1-46 input signals is ON (L-level)	
			7	Sets signal ON	
			8	Sets signal OFF	
			9	OFF when CN1-40 input signals is OFF (H-level)	
			A	OFF when CN1-41 input signals is OFF (H-level)	
			B	OFF when CN1-42 input signals is OFF (H-level)	
			C	OFF when CN1-43 input signals is OFF (H-level)	
			D	OFF when CN1-44 input signals is OFF (H-level)	
			E	OFF when CN1-45 input signals is OFF (H-level)	
			F	OFF when CN1-46 input signals is OFF (H-level)	
	2	/P-CON Signal Mapping (P control when ON(L-level)	0 to F	Same as /S-ON	
	3	/P-OT Signal Mapping(Overtravel when OFF(H-level)	0	Forward run allowed when CN1-40 input signal is ON (L-level)	
			1	Forward run allowed when CN1-41 input signal is ON (L-level)	
			2	Forward run allowed when CN1-42 input signal is ON (L-level)	
			3	Forward run allowed when CN1-43 input signal is ON (L-level)	
			4	Forward run allowed when CN1-44 input signal is ON (L-level)	
			5	Forward run allowed when CN1-45 input signal is ON (L-level)	
			6	Forward run allowed when CN1-46 input signal is ON (L-level)	
			7	Forward run prohibited.	
			8	Forward run allowed.	
			9	Forward run allowed when CN1-40 input signals is OFF (H-level)	
			A	Forward run allowed when CN1-41 input signals is OFF (H-level)	
			B	Forward run allowed when CN1-42 input signals is OFF (H-level)	
			C	Forward run allowed when CN1-43 input signals is OFF (H-level)	
			D	Forward run allowed when CN1-44 input signals is OFF (H-level)	
			E	Forward run allowed when CN1-45 input signals is OFF (H-level)	
			F	Forward run allowed when CN1-46 input signals is OFF (H-level)	

Parameter No.	Name		Setting Range	Units	Factory Setting	Setting Validation
Pn50B	Input Signal Selections 2		-	-	6543	After restart
	Digit	Function Name	Setting	Explanation		
	0	N-OT Signal Mapping (Overtravel when OFF (H-level))	0	Reserve run allowed when CN1-40 input signals is ON (L-level).		
			1	Reserve run allowed when CN1-41 input signals is ON (L-level).		
			2	Reserve run allowed when CN1-42 input signals is ON (L-level)		
			3	Reserve run allowed when CN1-43 input signals is ON (L-level)		
			4	Reserve run allowed when CN1-44 input signals is ON (L-level)		
			5	Reserve run allowed when CN1-45 input signals is ON (L-level)		
			6	Reserve run allowed when CN1-46 input signals is ON (L-level)		
			7	Reserve run prohibited.		
			8	Reserve run allowed		
			9	Reserve run allowed when CN1-40 input signals is OFF (H-level)		
			A	Reserve run allowed when CN1-41 input signals is OFF (H-level)		
			B	Reserve run allowed when CN1-42 input signals is OFF (H-level)		
			C	Reserve run allowed when CN1-43 input signals is OFF (H-level)		
			D	Reserve run allowed when CN1-44 input signals is OFF (H-level)		
			E	Reserve run allowed when CN1-45 input signals is OFF (H-level)		
			F	Reserve run allowed when CN1-46 input signals is OFF (H-level)		
	1	/ALM-RST Signal Mapping (Alarm Reset when ON(L-level))	0 to F	Same as N-OT		
	2	/P-CL Signal Mapping(Torque Limit when ON(L-level))	0 to F	Same as S-ON, the setting of Pn50A.1		
	3	/N-CL Signal Mapping(Torque Limit when ON(L-level))	0 to F	Same as S-ON, the setting of Pn50A.1		
Pn50C	Input Signal Selections 3		-	-	8888	After restart
	Digit	Function Name	Setting	Explanation		
	0	/SPD-D Signal Mapping	0	ON when CN1-40 input signal is ON (L-level).		
			1	ON when CN1-41 input signal is ON (L-level).		
			2	ON when CN1-42 input signal is ON (L-level).		
			3	ON when CN1-43 input signal is ON (L-level).		
			4	ON when CN1-44 input signal is ON (L-level).		
			5	ON when CN1-45 input signal is ON (L-level).		
			6	ON when CN1-46 input signal is ON (L-level).		
			7	Set signal ON.		
			8	Set signal OFF.		
			9	ON when CN1-40 input signal is OFF (H-level).		
			A	ON when CN1-41 input signal is OFF (H-level).		
			B	ON when CN1-42 input signal is OFF (H-level).		
			C	ON when CN1-43 input signal is OFF (H-level).		
			D	ON when CN1-44 input signal is OFF (H-level).		
			E	ON when CN1-45 input signal is OFF (H-level).		
			F	ON when CN1-46 input signal is OFF (H-level).		
	1	/SPD-A Signal Mapping	0 to F	Same as SPD-D		
	2	/SPD-B Signal Mapping	0 to F	Same as SPD-D		
	3	/C-SEL Signal Mapping (Control mode change when ON (L-level))	0 to F	Same as SPD-D		
Pn50D	Input Signal Selections 4		-	-	8888	After restart
	Digit	Function Name	Setting	Explanation		
	0	/ZCLAMP Signal Mapping (Zero clamp when ON (L-level))	0	ON when CN1-40 input signal is ON (L-level).		
			1	ON when CN1-41 input signal is ON (L-level).		
			2	ON when CN1-42 input signal is ON (L-level).		
			3	ON when CN1-43 input signal is ON (L-level).		
			4	ON when CN1-44 input signal is ON (L-level).		
			5	ON when CN1-45 input signal is ON (L-level).		
			6	ON when CN1-46 input signal is ON (L-level).		
			7	Set signal ON.		
			8	Set signal OFF.		
			9	ON when CN1-40 input signal is OFF (H-level).		
			A	ON when CN1-41 input signal is OFF (H-level).		
			B	ON when CN1-42 input signal is OFF (H-level).		
			C	ON when CN1-43 input signal is OFF (H-level).		
			D	ON when CN1-44 input signal is OFF (H-level).		
			E	ON when CN1-45 input signal is OFF (H-level).		
			F	ON when CN1-46 input signal is OFF (H-level).		
	1	/INHIBIT Signal Mapping (Reference pulse inhibit when ON (L-level))	0 to F	Same as /Z CLAMP		
	2	/G-SEL Signal Mapping (Gain change when ON (L-level))	0 to F	Same as /Z CLAMP		
	3	Reserved (Do not Change)				

Parameter No.	Name	Setting Range	Units	Factory Setting	Setting Validation
Pn50E	Output Signal Selections 1	-	-	3211	After restart
	Digit Function Name Setting Explanation				
	0 Positioning Completion Signal Mapping (/COIN)	0	Disabled (the above signal is not used)		
		1	Outputs the signal from CN1-25, 26 output terminal		
		2	Outputs the signal from CN1-27, 28 output terminal		
		3	Outputs the signal from CN1-29, 30 output terminal		
	1 Speed Coincidence Detection Signal Mapping (/V-CMP)	0 to 3	Same as /COIN		
	2 Speed Coincidence Detection Signal Mapping (/V-CMP)	0 to 3	Same as /COIN		
	3 Speed Coincidence Detection Signal Mapping (/V-CMP)	0 to 3	Same as /COIN		
Pn50F	Output Signal Selections 2	-	-	0000	After restart
	Digit Function Name Setting Explanation				
	0 Torque Limit Detection Signal Mapping (/CLT)	0	Disabled (the above signal is not used)		
		1	Outputs the signal from CN1-25, 26 output terminal		
		2	Outputs the signal from CN1-27, 28 output terminal		
		3	Outputs the signal from CN1-29, 30 output terminal		
	1 Speed Limit Detection Signal Mapping (/VLT)	0 to 3	Same as /CLT		
	2 Brake Interlock Signal Mapping (/BK)	0 to 3	Same as /CLT		
	3 Warning Signal Mapping (/WARN)	0 to 3	Same as /CLT		
Pn510	Output Signal Selections 3	-	-	0000	After restart
	Digit Function Name Setting Explanation				
	0 Near Signal Mapping (/NEAR)	0	Disabled (the above signal is not used)		
		1	Outputs the signal from CN1-25 or -26 output terminal		
		2	Outputs the signal from CN1-27 or -28 output terminal		
		3	Outputs the signal from CN1-29 or -30 output terminal		
	1 Reserved (Do not Change)				
	2 Reference Pulse Input Multiplication Selection Signal Mapping (/PSELA)	0	Disabled (the above signal is not used)		
		1	Outputs the signal from CN1-25 or -26 output terminal		
		2	Outputs the signal from CN1-27 or -28 output terminal		
		3	Outputs the signal from CN1-29 or -30 output terminal		
	3 Reserved (Do not Change)				
Pn511	Reserved (Do not change)	-	-	8888	Immediately
Pn512	Output Signal Reversal Settings	-	-	0000	After restart
	Digit Function Name Setting Explanation				
	0 Output Signal Reversal for CN1-25 or -26 Terminals	0	Output signal is not reversed		
		1	Output signal is reversed		
	1 Output Signal Reversal for CN1-27 or -28 Terminals	0	Output signal is not reversed		
		1	Output signal is reversed		
	2 Output Signal Reversal for CN1-29 or -30 Terminals	0	Output signal is not reversed		
		1	Output signal is reversed		
	3 Reserved (Do not Change)				
Pn513	Input Signal Selections 5	-	-	0088	After restart
	Digit Function Name Setting Explanation				
	0 /PSEL Signal Mapping (Reference pulse input multiplication when ON (L-level))	0	ON when CN1-40 input signal is ON (L-level).		
		1	ON when CN1-41 input signal is ON (L-level).		
		2	ON when CN1-42 input signal is ON (L-level).		
		3	ON when CN1-43 input signal is ON (L-level).		
		4	ON when CN1-44 input signal is ON (L-level).		
		5	ON when CN1-45 input signal is ON (L-level).		
		6	ON when CN1-46 input signal is ON (L-level).		
		7	Set signal ON.		
		8	Set signal OFF.		
		9	ON when CN1-40 input signal is OFF (H-level).		
		A	ON when CN1-41 input signal is OFF (H-level).		
		B	ON when CN1-42 input signal is OFF (H-level).		
		C	ON when CN1-43 input signal is OFF (H-level).		
		D	ON when CN1-44 input signal is OFF (H-level).		
		E	ON when CN1-45 input signal is OFF (H-level).		
		F	ON when CN1-46 input signal is OFF (H-level).		
	1 Reserved (Do not change)	-			
	2 Reserved (Do not change)	-			
	3 Reserved (Do not change)	-			
Pn51A	Position Error Level Between Motor and Load	0 - 32767 Reference Unit	1 Reference Unit	0	Immediately
Pn51B	Reserved (Do not Change)	1 - 32767	256	100	Immediately
Pn51C	Reserved (Do not Change)	0 - 10000 min ⁻¹	1 min ⁻¹	450 min ⁻¹	Immediately
Pn51E	Excessive Position Error Warning Level	0 to 100%	1%	0%	Immediately
Pn600	Regenerative Resistor Capacity	Depends on ServoDrive Capacity	10 W	0 W	Immediately
Pn601	Reserved (Do not change)	Depends on Servo Drive-Capacity	-	0 W	Immediately

Monitor Mode Details

Monitor No.	Monitor item	Unit	Explanation
Un000	Speed Feedback	min ⁻¹	Displays the actual motor speed.
Un001	Speed Command	min ⁻¹	Displays the speed command value or internally set speed value during speed control. 0 is displayed during pulse-train input control.
Un002	Torque Command	%	Displays the command value for a current loop that is expressed by treating the rated torque as 100%.
Un003	Number of Pulses from Z-Phase	Pulses	Displays the number of pulses from Z-Phase in encoder resolution units (times 4).
Un004	Electrical Angle	degrees	Displays the motor electrical angle.
Un005	Input Signal Monitor	---	Displays driver I/O signal status by turning ON or OFF each signal bit.
Un006	Output Signal Monitor	---	
Un007	Command Pulse Speed Display	min ⁻¹	Displays command pulse frequency converted in r/min.
Un008	Position Deviation (Error Counter)	Reference units	Displays the number of pulses accumulated in the error counter (Position Deviation) that are converted in reference units (input pulse references).
Un009	Motor Load Rate	%	Displays effective torque at intervals of 10 s that is expressed by treating the rated torque as 100%.
Un00A	Regeneration Load Rate	%	Displays the amount of regeneration energy absorbed at intervals of 10 s that is expressed by treating the Pn600 setting (Regenerative Resistor Capacity) as 100%.
Un00B	Dynamic Brake Resistance Load Rate	%	Displays the resistance load factor at intervals of 10 s that is expressed by treating the rated load factor as 100%.
Un00C	Input Pulse Counter	Reference units	Displays the number of counted input pulses in hexadecimal notation.
Un00D	Feedback Pulse Counter	Pulses	Displays the number of counted encoder feedback pulses in hexadecimal notation (multiplied by 4).

List of Function Modes

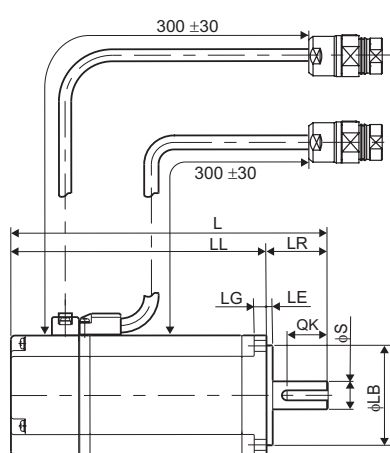
Parameter No.	Function
Fn000	Alarm traceback data display
Fn001	Rigidity setting during online autotuning
Fn002	JOG mode operation
Fn003	Zero-point search mode
Fn004	Fixed parameter
Fn005	Parameter setting initialization
Fn006	Alarm traceback data clear
Fn007	Writing to EEPROM moment of inertia ratio data obtained from online autotuning
Fn008	Absolute encoder multiturn reset and encoder alarm reset
Fn009	Automatic tuning of analog (speed, torque) reference offset
Fn00A	Manual adjustment of speed reference offset
Fn00B	Manual adjustment of torque reference offset
Fn00C	Manual zero-adjustment of analog monitor output
Fn00D	Manual gain-adjustment of analog monitor output
Fn00E	Automatic offset-adjustment of motor current detection signal
Fn00F	Manual offset-adjustment of motor current detection signal
Fn010	Password setting (protects parameters from being changed)
Fn011	Motor models display
Fn012	Software version display
Fn013	Multiturn limit setting change when a Multiturn Limit Disagreement Alarm (A.CC) occurs
Fn014	Application module detection results clear

Dimensions

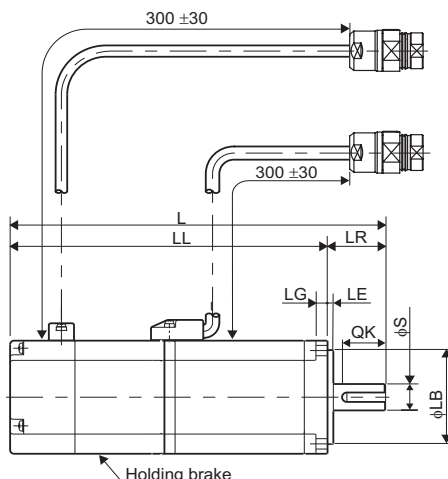
Servomotors

Type SGMAH (230/400V)

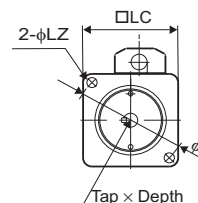
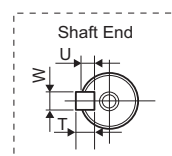
Dimensions (mm)	Without Brake		With Brake		LR	Flange surface						Shaft end					
Model	L	LL	L	LL		LA	LB	LC	LE	LG	LZ	S	QK	W	T	U	Tap × Depth
SGMAH-A3A□A6□D-OY	94.5	69.5	126	101	25	46	30 ^{h7}	40	2.5	5	4.3	6 ^{h6}	14	2	2	1.2	M2.5 x 5L
SGMAH-A5A□A6□D-OY	102.0	77	133.5	108.5	30	70	50 ^{h7}	60	3	6	5.5	8 ^{h6}	20	5	5	3	M3 x 6L
SGMAH-01A□A6□D-OY	119.5	94.5	160	135								14 ^{h6}					
SGMAH-02A□A6□D-OY	126.5	96.5	166	136								14 ^{h6}					
SGMAH-03D□A6□D-OY	154.5	124.5	194	164	40	90	70 ^{h7}	80	3	8	7	16 ^{h6}	30				M5 x8L
SGMAH-04A□A6□D-OY	185	145															
SGMAH-07D□A6□D-OY			229.5	189.5													
SGMAH-08A□A6□D-OY																	



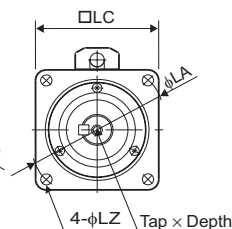
Models without Brake



Models with Brake



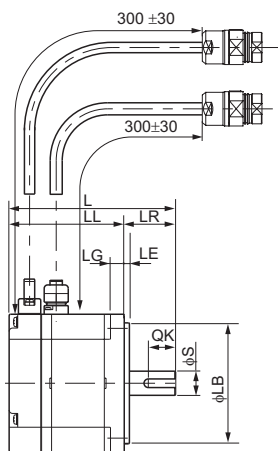
SGMAH-A3, -A5, -01



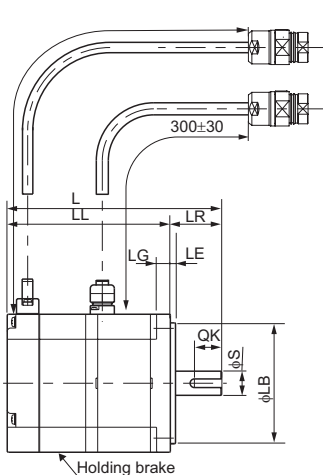
SGMAH-02 to -08

Type SGMPH (230/400V)

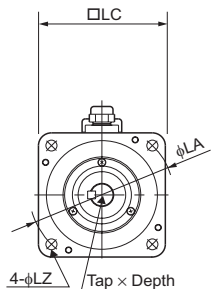
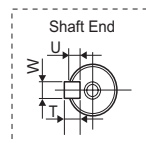
Dimensions (mm)	Without Brake		With Brake		LR	Flange surface						Shaft end					
Model	L	LL	L	LL		LA	LB	LC	LE	LG	LZ	S	QK	W	T	U	Tap × Depth
SGMPH-01□□□6□D-OY	87	62	116	91	25	70	50 ^{h7}	60	3	6	5.5	8 ^{h6}	14	3	3	1.8	M3x6L
SGMPH-02□□□6□D-OY	97	67	128.5	98.5	30	90	70 ^{h7}	80	3	8	7	14 ^{h6}	16	5	5	3	M5x8L
SGMPH-04□□□6□D-OY	117	87	148.5	118.5	40	145	110 ^{h7}	120	3.5	10	10	16 ^{h6}	22	6	6	3.5	M6x10L
SGMPH-08□□□6□D-OY	126.5	86.5	160	120								19 ^{h6}					
SGMPH-15□□□6□D-OY	154.5	114.5	188	148								19 ^{h6}					



Models without Brake

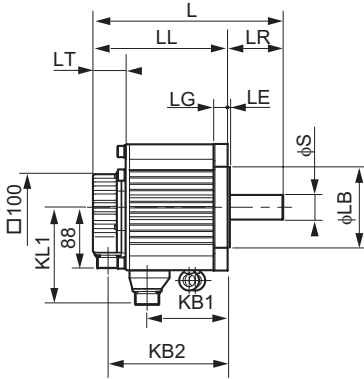


Models with Brake

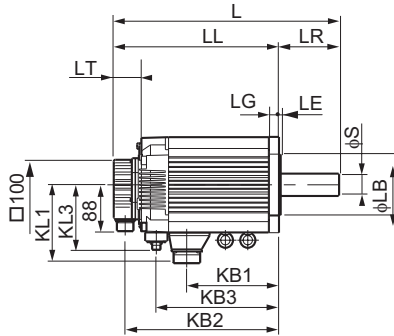


Type SGMGH (400V)

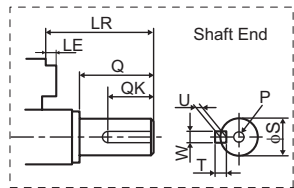
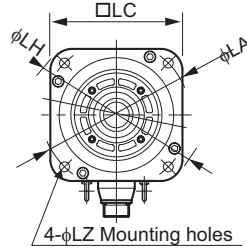
Dimensions (mm)	Without Brake			With Brake					LR	LT	KB1	KL1	Flange surface							Shaft end						
Model	L	LL	KB2	L	LL	KB2	KB3	KL3					LA	LB	LC	LE	LG	LH	LZ	S	Q	QK	W	T	U	P
SGMGH-05D□A6□-OY	196	138	117	234	176	154	109	98	58	46	65	109	145	110	130	6	12	165	9	19	40	25	5	5	3	M5x12L
SGMGH-09D□A6□-OY	219	161	140	257	199	177	132				88															
SGMGH-13D□A6□-OY	243	185	164	281	223	201	156				112									22			6	6	3.5	
SGMGH-20D□A6□-OY	245	166	144	296	217	195	137	123	79	47	89	140	200	114.3	180	3.2	18	230	13.5	35	76	60	10	8	5	M12x25L
SGMGH-30D□A6□-OY	271	192	170	322	243	221	163				115															
SGMGH-44D□A6□-OY	305	226	204	356	277	255	197				149															
SGMGH-55D□A6□-OY	373	260	238	424	311	289	231		113		174	150								42	110	90	12			M16x32L
SGMGH-75D□A6□-OY	447	334	312	498	385	363	305				248															
SGMGH-1AD□A6□-OY	454	338	316	499	383	362	315	142	116	47	251	168	235	200	220	4	18	270	13.5	42	110	90	12	8	5	M16x32L
SGMGH-1ED□A6□-OY	573	457	435	635	519	497	415			48	343						20			55			16	10	6	M20x40L



Models without Brake

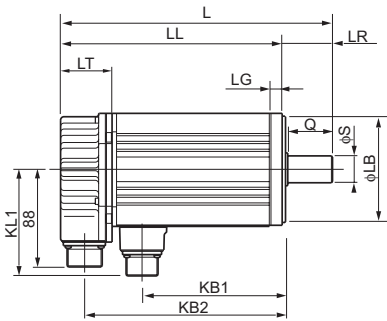


Models with Brake

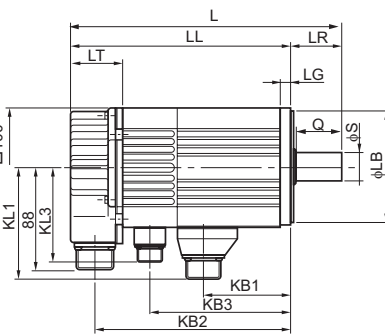


Type SGMSH (400V)

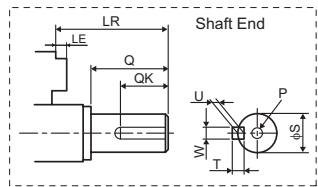
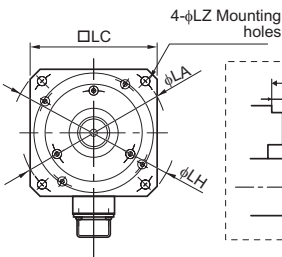
Dimensions (mm)	Without Brake			With Brake				LR	LT	KB1	KL1	Flange surface							Shaft end							
Model	L	LL	KB2	L	LL	KB2	KB3	KL3				LA	LB	LC	LE	LG	LH	LZ	S	Q	QK	W	T	U	P	
SGMSH-10D□A6□-OY	194	149	128	238	193	171	120	85	45	46	76	96	115	95 ^{n/}	100	3	10	130	7	24 ^{h6}	40	32	8	7	4	M8x16L
SGMSH-15D□A6□-OY	220	175	154	264	219	197	146				102															
SGMSH-20D□A6□-OY	243	198	177	287	242	220	169				125															
SGMSH-30D□A6□-OY	262	199	178	300	237	216	170	98	63		124	114	145	110 ^{n/}	130	6	12	165	9	28 ^{h6}	55	50				
SGMSH-40D□A6□-OY	299	236	215	337	274	253	207				161															
SGMSH-50D□A6□-OY	339	276	255	377	314	293	247				201															



Models without Brake

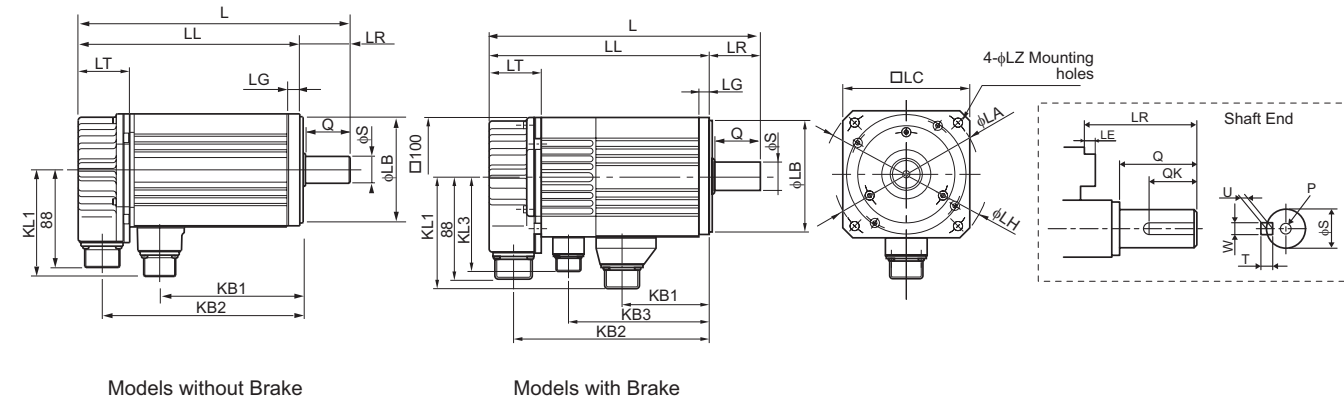


Models with Brake



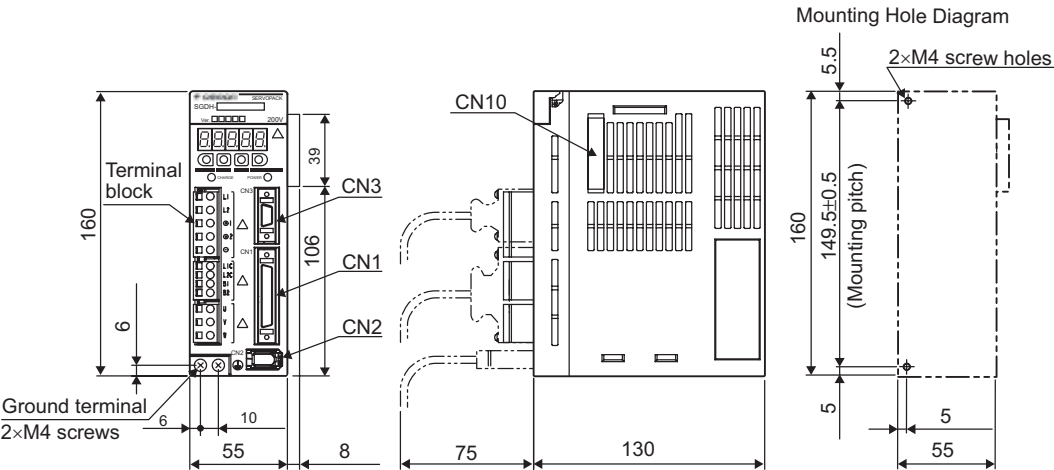
Type SGMUH (400V)

Dimensions (mm)	Without Brake			With Brake					LR	LT	KB1	KL1	Flange surface								Shaft end							
Model	L	LL	KB2	L	LL	KB2	KB3	KL3					LA	LB	LC	LE	LG	LH	LZ	S	Q	QK	W	T	U	P		
SGMUH-10D□A6□-OY	194	149	128	238	193	171	120	85	45	46	76	96	130	110	116	3.5	10	150	9	24 ^{h6}	40	32	8	7	4	M8x16L		
SGMUH-15D□A6□-OY	220	175	154	264	219	197	146				102																	
SGMUH-30D□A6□-OY	262	202	181	300	237	219	173	98	60		127	114	165	130	155		12	190	11	28 ^{h6}	55	50						
SGMUH-40D□A6□-OY	327	269	245	362	302	281	210			71	164																	

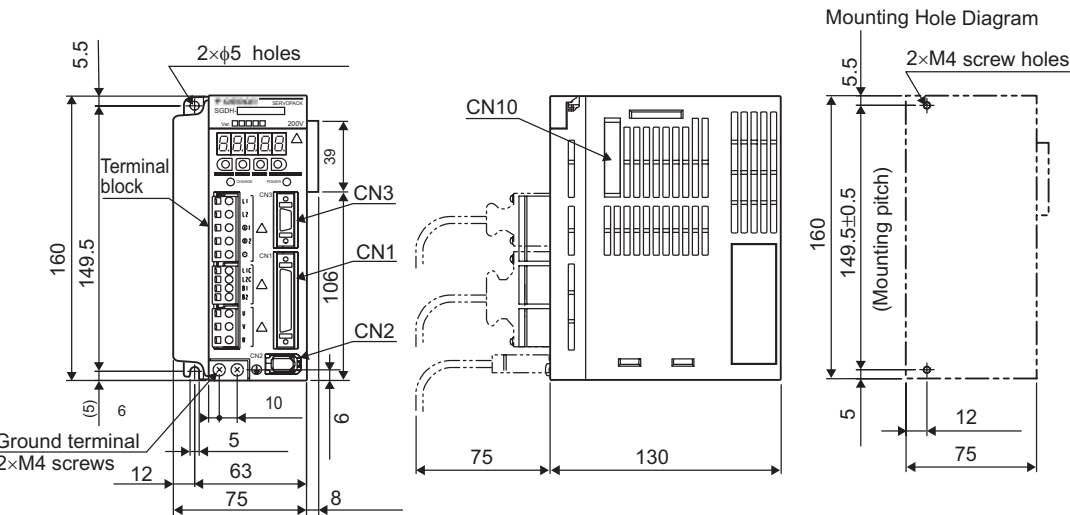


Servodrives

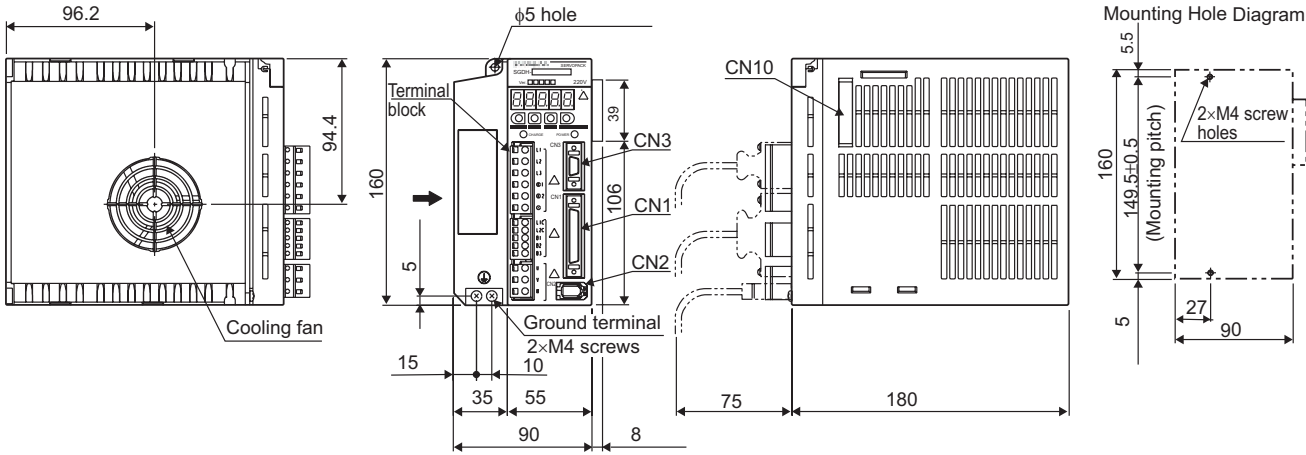
SGDH-A3AE-OY to -02AE-OY (230V, 30 to 200W)



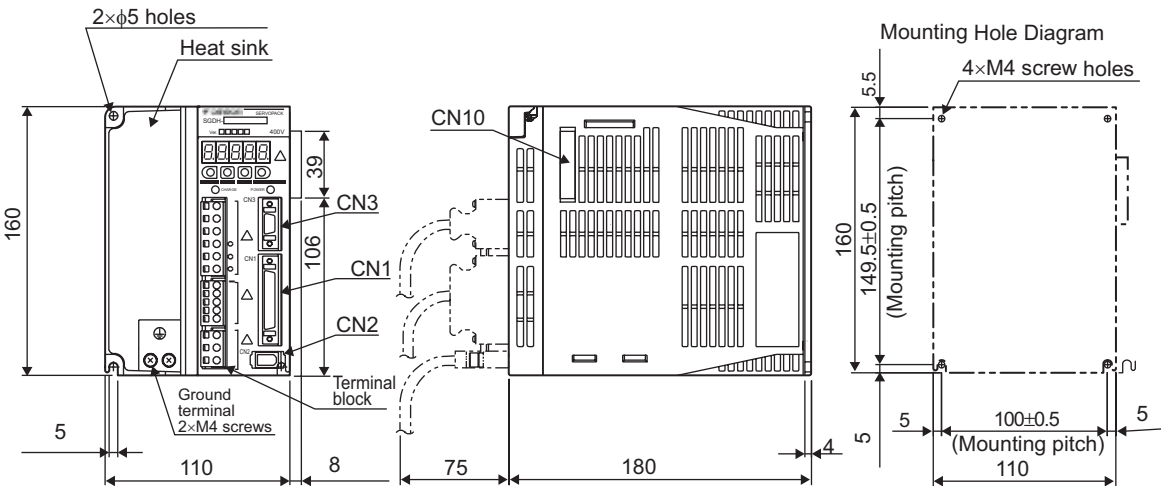
SGDH-04AE-OY (230V, 400W)



SGDH-08AE-S-OY (230V, 750W)

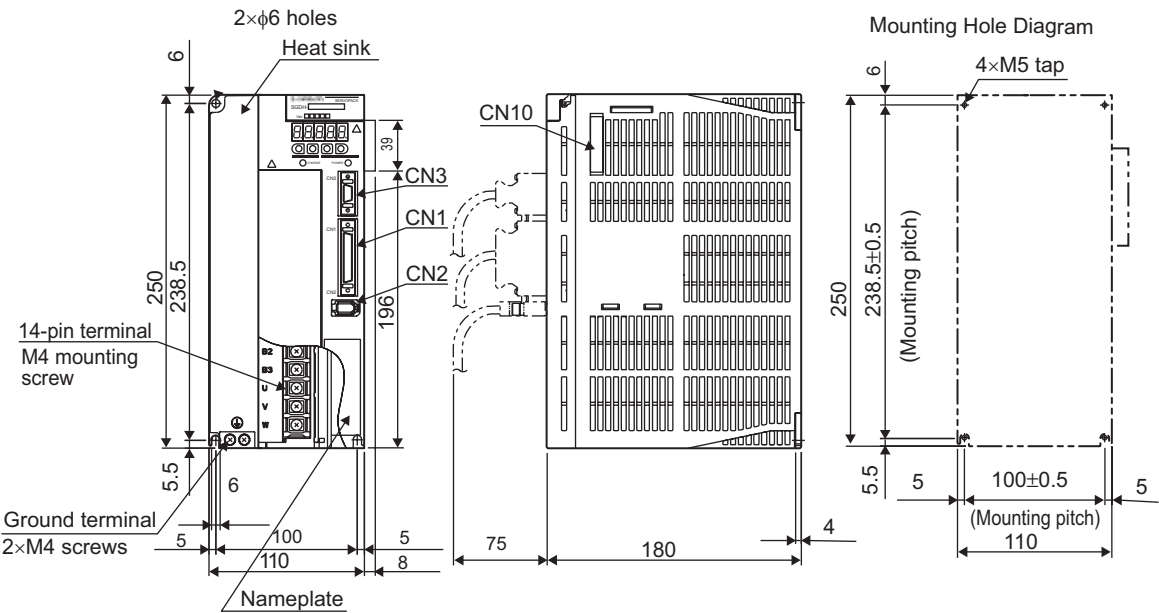


SGDH-05DE-OY to -15DE-OY (400V, 0.5 to 1.5kW)

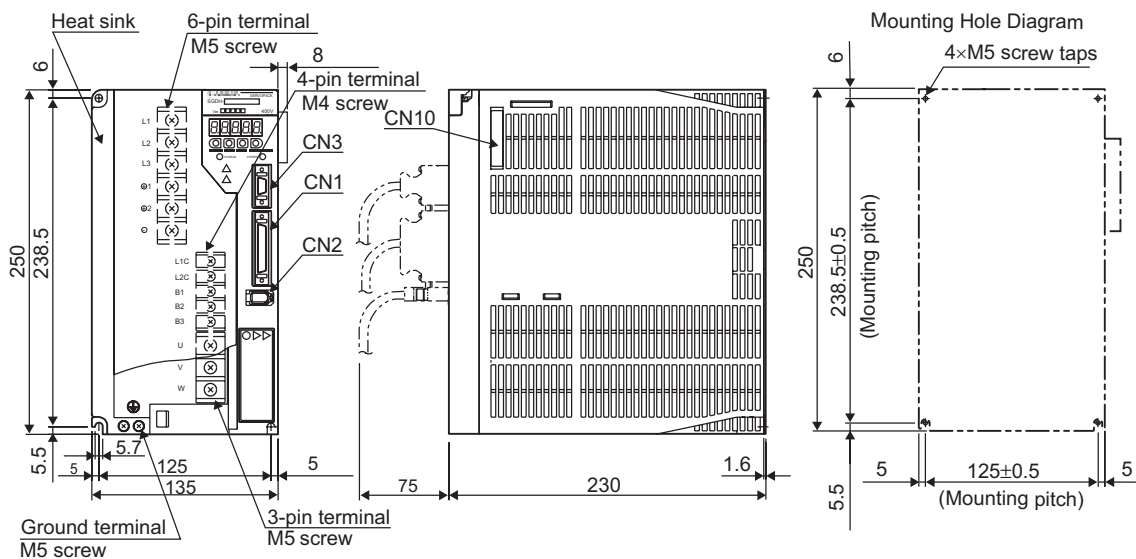


SGDH-15AE-S (230V, 1.5 kW)

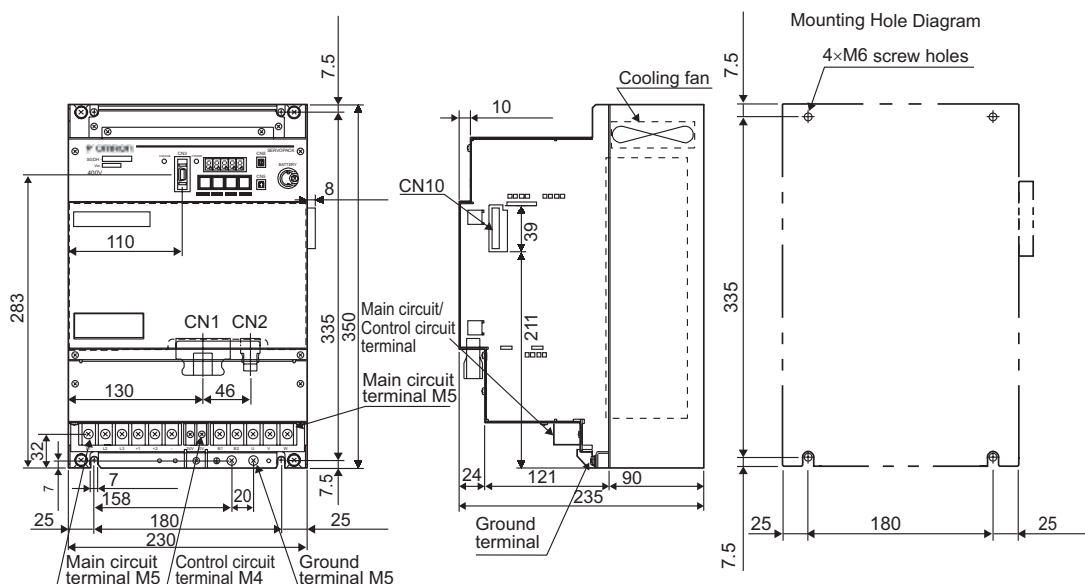
SGDH-20/30DE-OY (400V, 2/3kW)



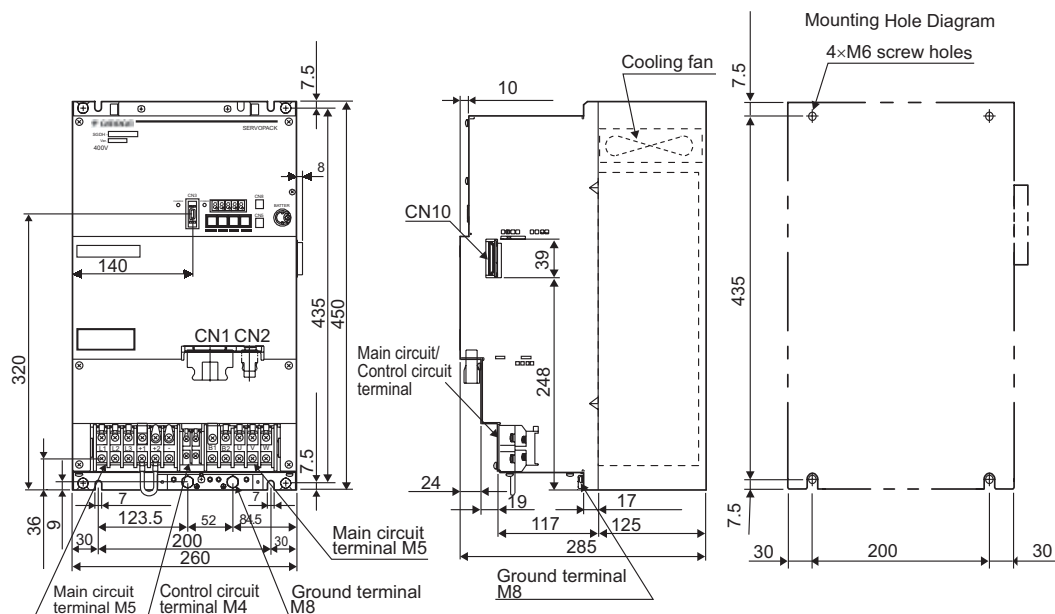
SGDH-50DE-OY (400V, 5kW)



SGDH-60/75DE-OY (400V, 6/7.5kW)

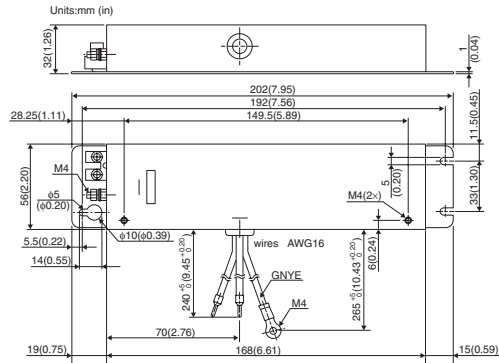


SGDH-1A/1EDE-OY (400V, 11/15kW)



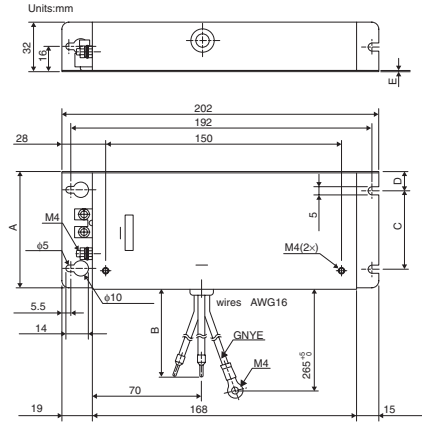
Filters

R88A-FIW104-SE

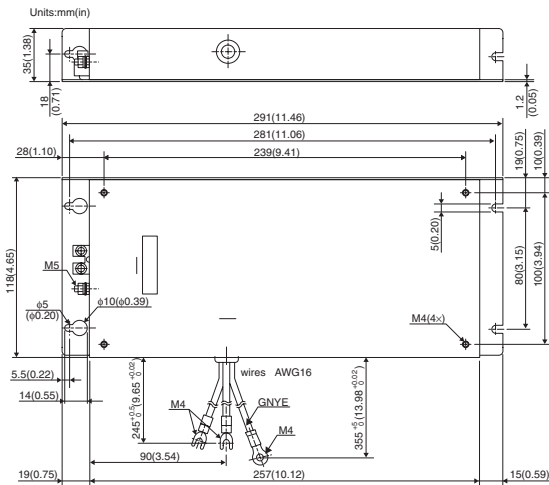


R88A-FIW107-SE, R88A-FIW115-SE

Model	R88A-FIW107-SE	R88A-FIW115-SE
Dimensions in mm		
A	75	90
B	240 ⁺⁵	300 ⁺⁵
C	50	60
D	12	15
E	1	1.2

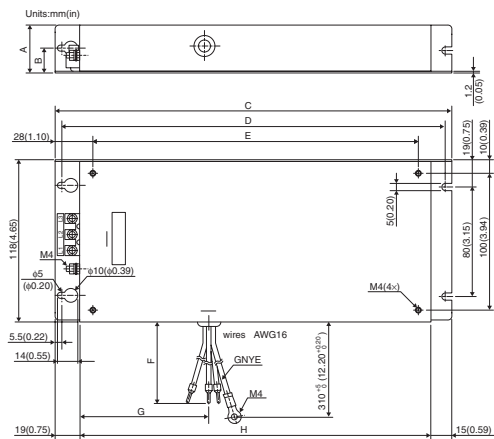


R88A-FIW125-SE

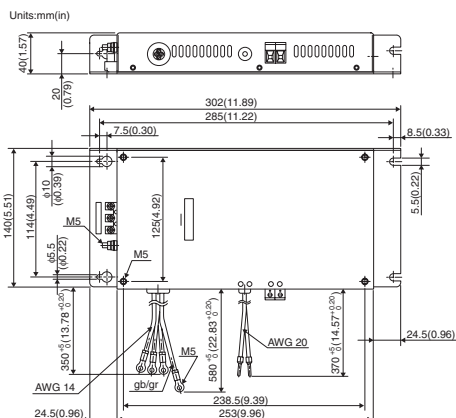


R88A-FIW4006-SE, R88A-FIW4010-SE

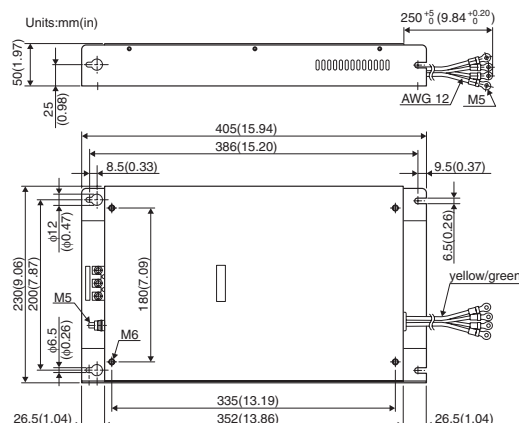
Model	R88A-FIW4006-SE	R88A-FIW4010-SE
Dimensions in mm (in)		
A	32 (1.26)	35 (1.38)
B	16 (0.63)	18 (0.71)
C	202 (7.95)	291 (11.46)
D	192 (7.56)	281 (11.06)
E	150 (5.91)	239 (9.41)
F	300 (11.81)	270 (10.63)
G	70 (2.76)	90 (3.54)
H	168 (6.61)	257 (10.12)



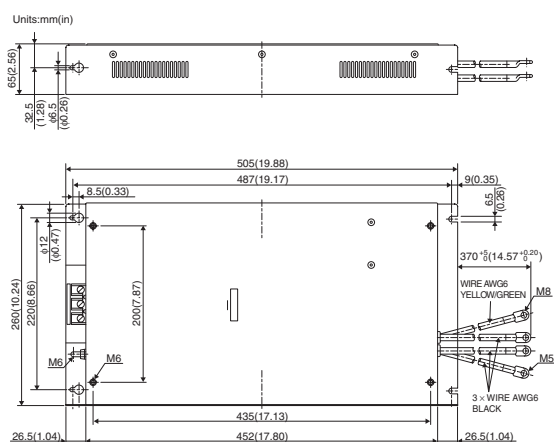
R88A-FIW4020-SE



R88A-FIW4030-SE

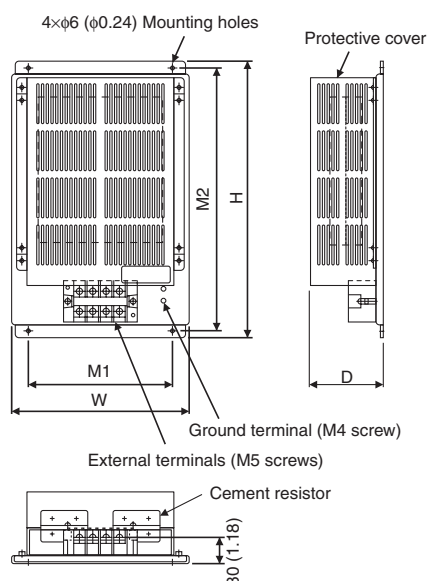


R88A-FIW4055-SE



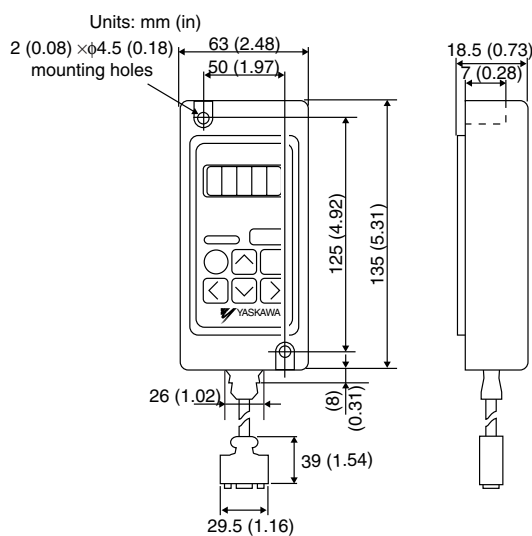
Regenerative Resistor Units

Model	W	H	D	M1	M2	Approx. Mass kg
JUSP-RA18	220	350	92	180	335	4
JUSP-RA19	300	350	95	250	335	7



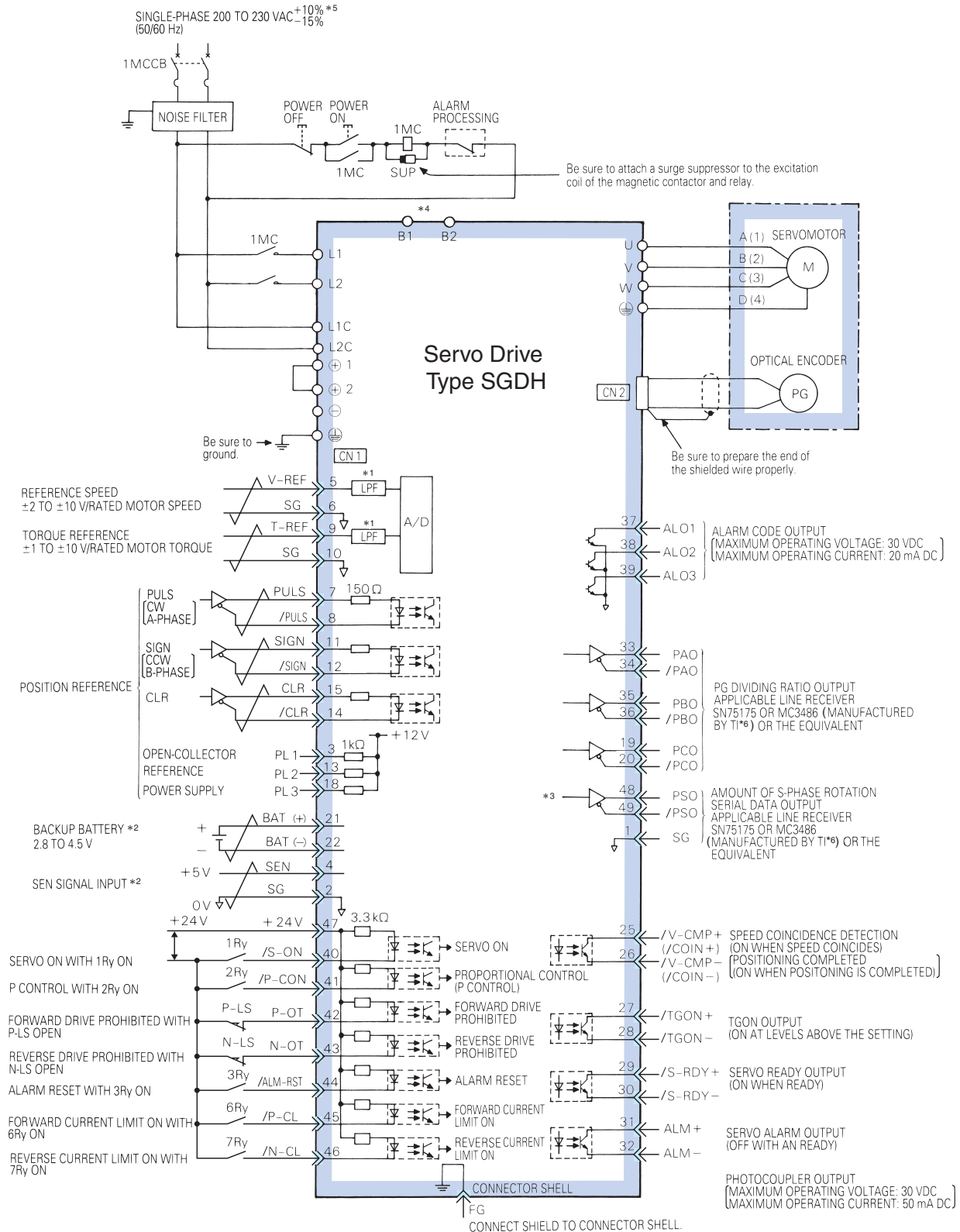
Digital Operator

JUSP-OP02A-2



Installation

Single-phase, 230VAC



*1 The time constant for the primary filter is 47 μ s.

*2 Connect when using an absolute encoder.

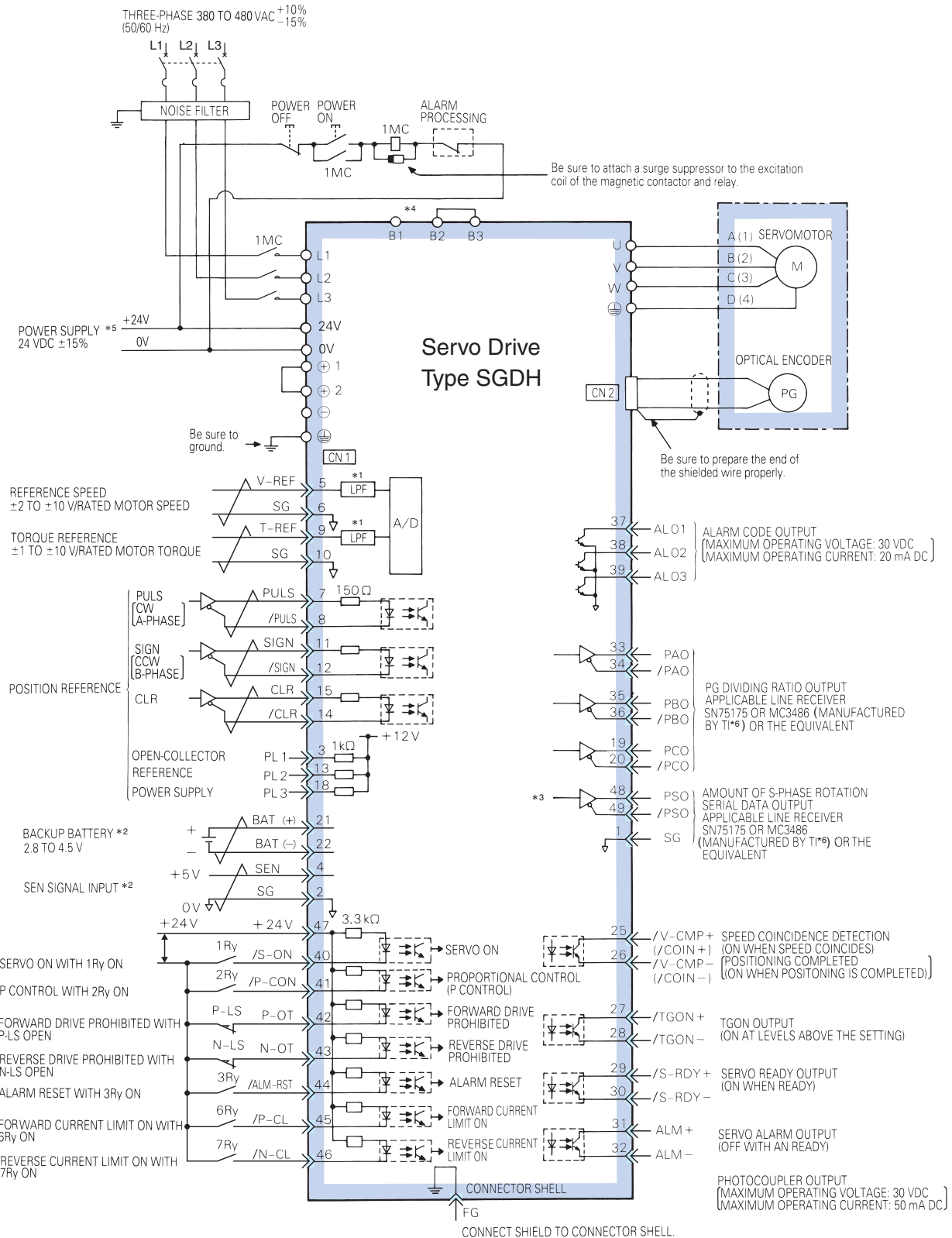
*3 Used only with an absolute encoder.

*4 Regenerative resistor can be connected between B1 and B2.

*5 For types SGDH-08AE-S-OY and SGDH-15AE-S-OY, voltage is 220 to 230 VAC (+10% -15%).

*6 TI stands for Texas Instruments Inc.

Three-phase, 400VAC



*1 The time constant for the primary filter is 47 μs.

*2 Connect when using an absolute encoder.

*3 Used only with an absolute encoder.

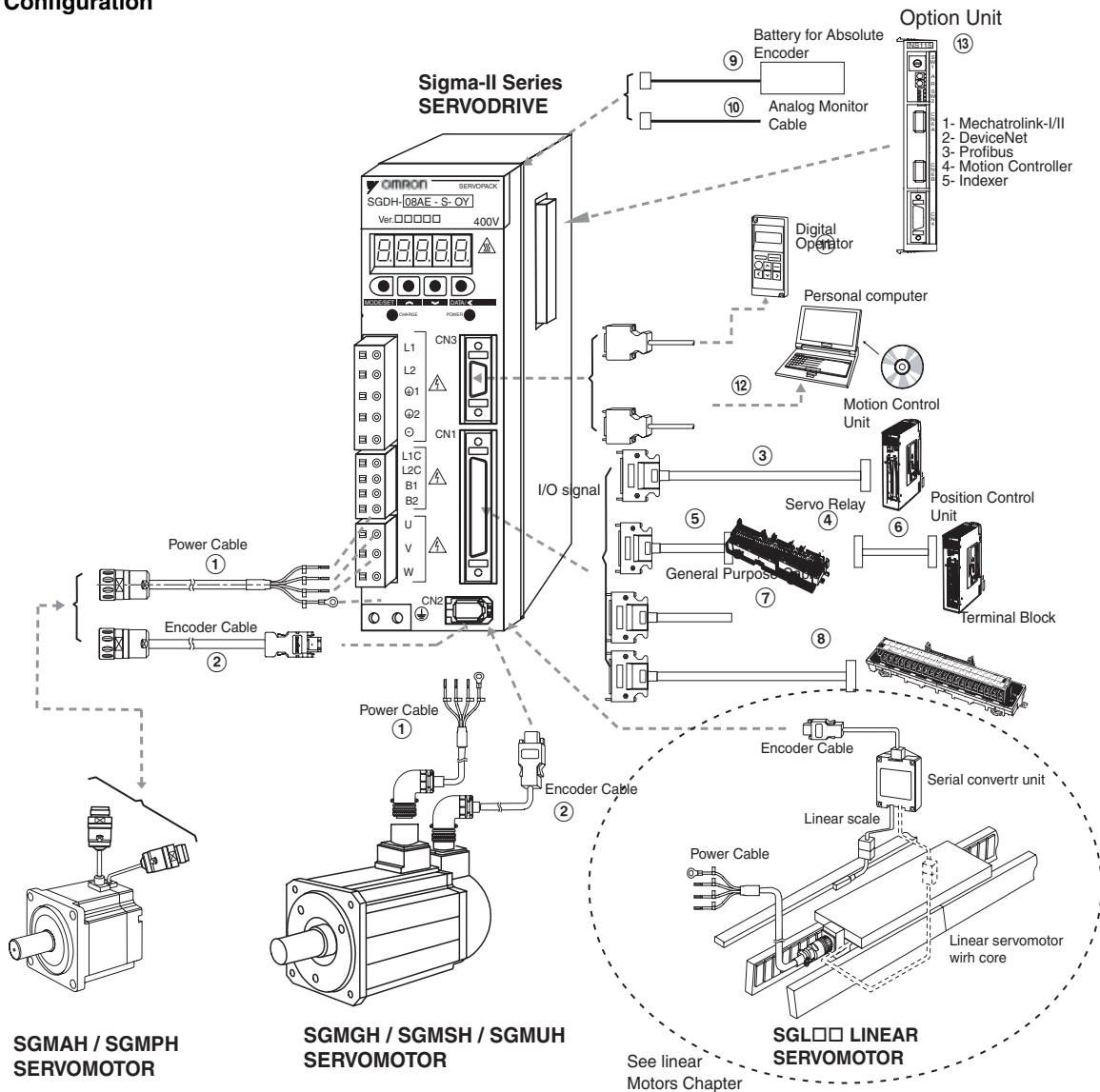
*4 For using an external regenerative resistor, connect it between B1 and B2.
(Be sure to connect a regenerative resistor unit to ServoDrive of 6/7.5/11/15kW)

*5 It is the user's responsibility to obtain 24VDC power supply.

*6 TI stands for Texas Instruments Inc.

Ordering Information

System Configuration



Servo Drives

Specifications	Model	Compatible Servomotors	Linear Motors
1 Phase 200 V AC	30 W SGDHA3AE-OY	SGMAH-A3A□	-
	50 W SGDHA5AE-OY	SGMAH-A5D□	SGLGW-30A050□
	100 W SGDHO1AE-OY	SGMAH-01A□, SGMPH-01A□	SGLGW-30A080□, SGLGW-40A140□
	200 W SGDHO2AE-OY	SGMAH-02A□, SGMPH-02A□	SGLFW-20A□, SGLFW-35A120□, SGLGW-40A253A□, SGLGW-60A140□
	400 W SGDHO4AE-OY	SGMAH-04A□, SGMPH-04A□	SGLGW-40A365A□, SGLGW-60A253A□
	750 W SGDHO8AE-S-OY	SGMAH-08A□, SGMPH-08A□	SGLFW-35A230□, SGLFW-50A200□, SGLGW-60A365A□
	1500 W SGDHO15AE-S-OY	SGMPH-15A□	SGLFW-50A380□, SGLFW-1ZA200□, SGLGW-90A200A□
3 Phase 400 V AC	0.5 kW SGDHO5DE-OY	SGMGH-05D□, SGMAH-03D□, SGMPH-02D□/04D□	SGLFW-35D□
	1.0 kW SGDHO10DE-OY	SGMGH-09D□, SGMSh/UH-10D□, SGMAH-07D□, SGMPH-08D□	SGLFW-50D200□, SGLTW-35D170□, SGLTW-50D170□
	1.5 kW SGDHO15DE-OY	SGMGH-13D□, SGMSh/UH-15D□, SGMPH-15D□	SGLFW-50D380□, SGLFW-1ZD200□
	2.0 kW SGDHO20DE-OY	SGMGH-20D□, SGMSh-20D□	SGLTW-35D320□, SGLTW-50D320□
	3.0 kW SGDHO30DE-OY	SGMGH-30D□, SGMSh/UH-30D□	SGLFW-1ZD380□, SGLTW-40D400□
	5.0 kW SGDHO50DE-OY	SGMGH-44D□, SGMSh/UH-40D□, SGMSh-50D□	SGLTW-40D60□, SGLTW-80D400□
	6.0 kW SGDHO60DE-OY	SGMGH-55D□	
	7.5 kW SGDHO75DE-OY	SGMGH-75D□	SGLTW-80D600□
	11.0 kW SGDHO1ADE-OY	SGMGH-1AD□	
	15.0 kW SGDHO1EDE-OY	SGMGH-1ED□	

Note: SGLGW-□ Linear motor combination is made considering the use of Standard Magnets. Refer to the Linear motors chapter for details.

200 V Servomotors

SGMAH - Cylindrical Servomotors 3000 r/min (30 - 750 W)



Specifications				Model
Incremental Encoder (13 bit) Straight shaft with key & Tap	Without brake	0.096 Nm	30 W	SGMAH-A3AAA61D-OY
		0.159 Nm	50 W	SGMAH-A5AAA61D-OY
		0.318 Nm	100 W	SGMAH-01AAA61D-OY
		0.637 Nm	200 W	SGMAH-02AAA61D-OY
		1.27 Nm	400 W	SGMAH-04AAA61D-OY
		2.39 Nm	750 W	SGMAH-08AAA61D-OY
	With brake	0.096 Nm	30 W	SGMAH-A3AAA6CD-OY
		0.159 Nm	50 W	SGMAH-A5AAA6CD-OY
		0.318 Nm	100 W	SGMAH-01AAA6CD-OY
		0.637 Nm	200 W	SGMAH-02AAA6CD-OY
		1.27 Nm	400 W	SGMAH-04AAA6CD-OY
		2.39 Nm	750 W	SGMAH-08AAA6CD-OY
Absolute Encoder (16 bit) Straight shaft with key & Tap	Without brake	0.096 Nm	30 W	SGMAH-A3A1A61D-OY
		0.159 Nm	50 W	SGMAH-A5A1A61D-OY
		0.318 Nm	100 W	SGMAH-01A1A61D-OY
		0.637 Nm	200 W	SGMAH-02A1A61D-OY
		1.27 Nm	400 W	SGMAH-04A1A61D-OY
		2.39 Nm	750 W	SGMAH-08A1A61D-OY
	With brake	0.096 Nm	30 W	SGMAH-A3A1A6CD-OY
		0.159 Nm	50 W	SGMAH-A5A1A6CD-OY
		0.318 Nm	100 W	SGMAH-01A1A6CD-OY
		0.637 Nm	200 W	SGMAH-02A1A6CD-OY
		1.27 Nm	400 W	SGMAH-04A1A6CD-OY
		2.39 Nm	750 W	SGMAH-08A1A6CD-OY

SGMPH - Flat Type Servomotors 3000 r/min (100 - 1500 W)



Specifications				Model
Incremental Encoder (13 bit) Straight shaft with key & Tap	Without brake	0.318 Nm	100 W	SGMPH-01AAA61D-OY
		0.637 Nm	200 W	SGMPH-02AAA61D-OY
		1.27 Nm	400 W	SGMPH-04AAA61D-OY
		2.39 Nm	750 W	SGMPH-08AAA61D-OY
		4.77 Nm	1500 W	SGMPH-15AAA61D-OY
		0.318 Nm	100 W	SGMPH-01AAA6CD-OY
	With brake	0.637 Nm	200 W	SGMPH-02AAA6CD-OY
		1.27 Nm	400 W	SGMPH-04AAA6CD-OY
		2.39 Nm	750 W	SGMPH-08AAA6CD-OY
		4.77 Nm	1500 W	SGMPH-15AAA6CD-OY
Absolute Encoder (16 bit) Straight shaft with key & Tap	Without brake	0.318 Nm	100 W	SGMPH-01A1A61D-OY
		0.637 Nm	200 W	SGMPH-02A1A61D-OY
		1.27 Nm	400 W	SGMPH-04A1A61D-OY
		2.39 Nm	750 W	SGMPH-08A1A61D-OY
		4.77 Nm	1500 W	SGMPH-15A1A61D-OY
	With brake	0.318 Nm	100 W	SGMPH-01A1A6CD-OY
		0.637 Nm	200 W	SGMPH-02A1A6CD-OY
		1.27 Nm	400 W	SGMPH-04A1A6CD-OY
		2.39 Nm	750 W	SGMPH-08A1A6CD-OY
		4.77 Nm	1500 W	SGMPH-15A1A6CD-OY

400 V Servomotors

SGMAH - Cyl. Servomotors 3000 r/min (300 - 650 W)



Specifications				Model
Incremental Encoder (13 bit) Straight shaft with key	Without brake	0.955 Nm	300 W	SGMAH-03DAA61D-OY
		2.07 Nm	650 W	SGMAH-07DAA61D-OY
	With brake	0.955 Nm	300 W	SGMAH-03DAA6CD-OY
		2.07 Nm	650 W	SGMAH-07DAA6CD-OY
Absolute Encoder (16 bit) Straight shaft with key	Without brake	0.955 Nm	300 W	SGMAH-03D1A61D-OY
		2.07 Nm	650 W	SGMAH-07D1A61D-OY
	With brake	0.955 Nm	300 W	SGMAH-03D1A6CD-OY
		2.07 Nm	650 W	SGMAH-07D1A6CD-OY

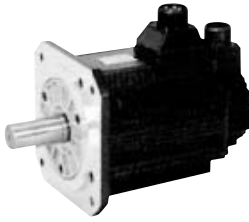
SGMPH - Flat Type Servomotors 3000 r/min (0.2 - 1.5 kW)



Specifications				Model
Incremental Encoder (13 bit) Straight shaft with key	Without brake	0.637 Nm	200 W	SGMPH-02DAA61D-OY
		1.27 Nm	400 W	SGMPH-04DAA61D-OY
		2.39 Nm	750 W	SGMPH-08DAA61D-OY
		4.77 Nm	1500 W	SGMPH-15DAA61D-OY
	With brake	0.637 Nm	200 W	SGMPH-02DAA6CD-OY
		1.27 Nm	400 W	SGMPH-04DAA6CD-OY
		2.39 Nm	750 W	SGMPH-08DAA6CD-OY
		4.77 Nm	1500 W	SGMPH-15DAA6CD-OY
Absolute Encoder (16 bit) Straight shaft with key	Without brake	0.637 Nm	200 W	SGMPH-02D1A61D-OY
		1.27 Nm	400 W	SGMPH-04D1A61D-OY
		2.39 Nm	750 W	SGMPH-08D1A61D-OY
		4.77 Nm	1500 W	SGMPH-15D1A61D-OY
	With brake	0.637 Nm	200 W	SGMPH-02D1A6CD-OY
		1.27 Nm	400 W	SGMPH-04D1A6CD-OY
		2.39 Nm	750 W	SGMPH-08D1A6CD-OY
		4.77 Nm	1500 W	SGMPH-15D1A6CD-OY

400V Servomotors

SGMGH - Servomotors 1500 r/min (0.45 - 15 kW)



Specifications				Model
Incremental Encoder (17 bit)	Without brake	2.84 Nm	0.45 kW	SGMGH-05DCA6F-OY
		5.39 Nm	0.85 kW	SGMGH-09DCA6F-OY
		8.34 Nm	1.3 kW	SGMGH-13DCA6F-OY
		11.5 Nm	1.8 kW	SGMGH-20DCA6F-OY
		18.6 Nm	2.9 kW	SGMGH-30DCA6F-OY
		28.4 Nm	4.4 kW	SGMGH-44DCA6F-OY
		35.0 Nm	5.5 kW	SGMGH-55DCA6F-OY
		48.0 Nm	7.5 kW	SGMGH-75DCA6F-OY
		70.0 Nm	11.5 kW	SGMGH-1ADCA6F-OY
		95.4 Nm	15.0 kW	SGMGH-1EDCA6F-OY
	With brake	2.84 Nm	0.45 kW	SGMGH-05DCA6H-OY
		5.39 Nm	0.85 kW	SGMGH-09DCA6H-OY
		8.34 Nm	1.3 kW	SGMGH-13DCA6H-OY
		11.5 Nm	1.8 kW	SGMGH-20DCA6H-OY
		18.6 Nm	2.9 kW	SGMGH-30DCA6H-OY
		28.4 Nm	4.4 kW	SGMGH-44DCA6H-OY
Absolute Encoder (17 bit)	Without brake	2.84 Nm	0.45 kW	SGMGH-05D2A6F-OY
		5.39 Nm	0.85 kW	SGMGH-09D2A6F-OY
		8.34 Nm	1.3 kW	SGMGH-13D2A6F-OY
		11.5 Nm	1.8 kW	SGMGH-20D2A6F-OY
		18.6 Nm	2.9 kW	SGMGH-30D2A6F-OY
		28.4 Nm	4.4 kW	SGMGH-44D2A6F-OY
		35.0 Nm	5.5 kW	SGMGH-55D2A6F-OY
		48.0 Nm	7.5 kW	SGMGH-75D2A6F-OY
		70.0 Nm	11.5 kW	SGMGH-1AD2A6F-OY
		95.4 Nm	15.0 kW	SGMGH-1ED2A6F-OY
	With brake	2.84 Nm	0.45 kW	SGMGH-05D2A6H-OY
		5.39 Nm	0.85 kW	SGMGH-09D2A6H-OY
		8.34 Nm	1.3 kW	SGMGH-13D2A6H-OY
		11.5 Nm	1.8 kW	SGMGH-20D2A6H-OY
		18.6 Nm	2.9 kW	SGMGH-30D2A6H-OY
		28.4 Nm	4.4 kW	SGMGH-44D2A6H-OY

SGMSH - Servomotors 3000 r/min (1 - 5 KW)



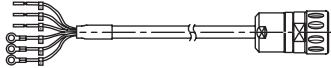
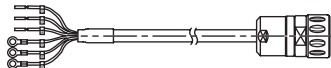
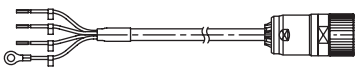
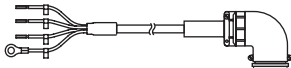
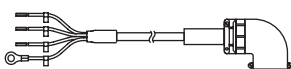
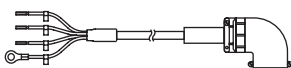
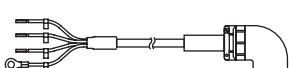
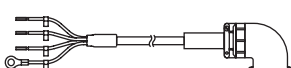
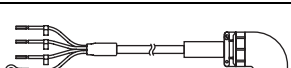
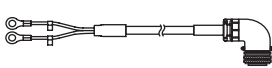
Specifications				Model
Incremental Encoder (17 bit)	Without brake	3.18 Nm	1.0 kW	SGMSH-10DCA6F-OY
		4.9 Nm	1.5 kW	SGMSH-15DCA6F-OY
		6.36 Nm	2.0 kW	SGMSH-20DCA6F-OY
		9.8 Nm	3.0 kW	SGMSH-30DCA6F-OY
		12.6 Nm	4.0 kW	SGMSH-40DCA6F-OY
		15.8 Nm	5.0 kW	SGMSH-50DCA6F-OY
	With brake	3.18 Nm	1.0 kW	SGMSH-10DCA6H-OY
		4.9 Nm	1.5 kW	SGMSH-15DCA6H-OY
		6.36 Nm	2.0 kW	SGMSH-20DCA6H-OY
		9.8 Nm	3.0 kW	SGMSH-30DCA6H-OY
		12.6 Nm	4.0 kW	SGMSH-40DCA6H-OY
		15.8 Nm	5.0 kW	SGMSH-50DCA6H-OY
Absolute Encoder (17 bit)	Without brake	3.18 Nm	1.0 kW	SGMSH-10D2A6F-OY
		4.9 Nm	1.5 kW	SGMSH-15D2A6F-OY
		6.36 Nm	2.0 kW	SGMSH-20D2A6F-OY
		9.8 Nm	3.0 kW	SGMSH-30D2A6F-OY
		12.6 Nm	4.0 kW	SGMSH-40D2A6F-OY
		15.8 Nm	5.0 kW	SGMSH-50D2A6F-OY
	With brake	3.18 Nm	1.0 kW	SGMSH-10D2A6H-OY
		4.9 Nm	1.5 kW	SGMSH-15D2A6H-OY
		6.36 Nm	2.0 kW	SGMSH-20D2A6H-OY
		9.8 Nm	3.0 kW	SGMSH-30D2A6H-OY
		12.6 Nm	4.0 kW	SGMSH-40D2A6H-OY
		15.8 Nm	5.0 kW	SGMSH-50D2A6H-OY

SGMUH - Servomotors 6000 r/min (1 - 4 kW)

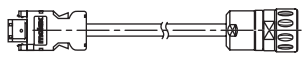
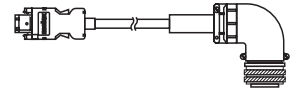


Specifications				Model
Incremental Encoder (17 bit)	Without brake	1.59 Nm	1.0 kW	SGMUH-10DCA61-OY
		2.45 Nm	1.5 kW	SGMUH-15DCA61-OY
		4.9 Nm	3.0 kW	SGMUH-30DCA61-OY
	With brake	6.3 Nm	4.0 kW	SGMUH-40DCA61-OY
		1.59 Nm	1.0 kW	SGMUH-10DCA6C-OY
		2.45 Nm	1.5 kW	SGMUH-15DCA6C-OY
Straight shaft with key		4.9 Nm	3.0 kW	SGMUH-30DCA6C-OY
		6.3 Nm	4.0 kW	SGMUH-40DCA6C-OY

Power Cables

Symbol	Specifications	Model	Appearance
A	For 200V Servomotors without brake SGMAH-□□A□□□1D-OY SGMPH-(01/02/04/08)A□□41D-OY	3 m R88A-CAWA003S-DE	
		5 m R88A-CAWA005S-DE	
		10 m R88A-CAWA010S-DE	
		15 m R88A-CAWA015S-DE	
		20 m R88A-CAWA020S-DE	
	For 200V Servomotors with brake SGMAH-□□A□□□CD-OY SGMPH-(01/02/04/08)A□□4CD-OY	3 m R88A-CAWA003B-DE	
		5 m R88A-CAWA005B-DE	
		10 m R88A-CAWA010B-DE	
		15 m R88A-CAWA015B-DE	
		20 m R88A-CAWA020B-DE	
	For 200V Servomotors without brake SGMPH-15A□□□1D-OY	3 m R88A-CAWB003S-DE	
		5 m R88A-CAWB005S-DE	
		10 m R88A-CAWB010S-DE	
		15 m R88A-CAWB015S-DE	
		20 m R88A-CAWB020S-DE	
	For 200V Servomotors with brake SGMPH-15A□□□CD-OY	3 m R88A-CAWB003B-DE	
		5 m R88A-CAWB005B-DE	
		10 m R88A-CAWB010B-DE	
		15 m R88A-CAWB015B-DE	
		20 m R88A-CAWB020B-DE	
	For 400V Servomotors without brake SGMAH-□□D□□□1D-OY SGMPH-□□D□□□1D-OY	3 m R88A-CAWK003S-DE	
		5 m R88A-CAWK005S-DE	
		10 m R88A-CAWK010S-DE	
		15 m R88A-CAWK015S-DE	
		20 m R88A-CAWK020S-DE	
	For 400V Servomotors with brake SGMAH-□□D□□□CD-OY SGMPH-□□D□□□CD-OY	3 m R88A-CAWK003B-DE	
		5 m R88A-CAWK005B-DE	
		10 m R88A-CAWK010B-DE	
		15 m R88A-CAWK015B-DE	
		20 m R88A-CAWK020B-DE	
	For 400V Servomotors SGMGH-(05/09/13)D□ SGMSH-(10/15/20)D□ SGMUH-(10/15)D□ For servomotors with Brake a separate cable (R88A-CAWC0□□B-E) is needed	3 m R88A-CAWC003S-E	
		5 m R88A-CAWC005S-E	
		10 m R88A-CAWC010S-E	
		15 m R88A-CAWC015S-E	
		20 m R88A-CAWC020S-E	
	For 400V Servomotors SGMGH-(20/30)D□ SGMSH-(30/40/50)D□ SGMUH-(30/40)D□ For servomotors with Brake a separate cable (R88A-CAWC0□□B-E) is needed	3 m R88A-CAWD003S-E	
		5 m R88A-CAWD005S-E	
		10 m R88A-CAWD010S-E	
		15 m R88A-CAWD015S-E	
		20 m R88A-CAWD020S-E	
	For 400V Servomotors SGMGH-44D□ For servomotors with Brake a separate cable (R88A-CAWC0□□B-E) is needed	3 m R88A-CAWG003S-E	
		5 m R88A-CAWG005S-E	
		10 m R88A-CAWG010S-E	
		15 m R88A-CAWG015S-E	
		20 m R88A-CAWG020S-E	
	For 400V Servomotors SGMGH-55D□ For servomotors with Brake a separate cable (R88A-CAWC0□□B-E) is needed	3 m R88A-CAWF003S-E	
		5 m R88A-CAWF005S-E	
		10 m R88A-CAWF010S-E	
		15 m R88A-CAWF015S-E	
		20 m R88A-CAWF020S-E	
	For 400V Servomotors SGMGH-(75/1A)D□ For servomotors with Brake a separate cable (R88A-CAWC0□□B-E) is needed	3 m R88A-CAWH003S-E	
		5 m R88A-CAWH005S-E	
		10 m R88A-CAWH010S-E	
		15 m R88A-CAWH015S-E	
		20 m R88A-CAWH020S-E	
	For 400V Servomotors SGMGH-1ED□ For servomotors with Brake a separate cable (R88A-CAWC0□□B-E) is needed	3 m R88A-CAWJ003S-E	
		5 m R88A-CAWJ005S-E	
		10 m R88A-CAWJ010S-E	
		15 m R88A-CAWJ015S-E	
		20 m R88A-CAWJ020S-E	
	Brake Cable only. For 400V Servomotors with Brake SGMGH-□□D□ SGMSH-□□D□ SGMUH-□□D□	3 m R88A-CAWC003B-E	
		5 m R88A-CAWC005B-E	
		10 m R88A-CAWC010B-E	
		15 m R88A-CAWC015B-E	
		20 m R88A-CAWC020B-E	

Encoder Cables (for CN2)

Symbol	Specifications	Model	Appearance
B	Encoder cable for SGMH/PH Servomotors SGMAH-□□□□□□□□D-OY SGMPH-□□□□□□□□D-OY	3 m	
		5 m	
		10 m	
		15 m	
		20 m	
	Encoder cable for SGMGH/SH/UH Servomotors SGMGH-□ SGMSH-□ SGMUH-□	3 m	
		5 m	
		10 m	
		15 m	
		20 m	

Control Cables (for CN1)

Symbol	Description	Connect to		Model
③	Control Cable (1 Axis)	Motion Control Units CS1W-MC221 CS1W-MC421 C200H-MC221	1 m	R88A-CPW001M1
			2 m	R88A-CPW002M1
			3 m	R88A-CPW003M1
			5 m	R88A-CPW005M1
	Control Cable (2 Axis)	Motion Control Units CS1W-MC221 CS1W-MC421 C200H-MC221	1 m	R88A-CPW001M2
			2 m	R88A-CPW002M2
			3 m	R88A-CPW003M2
			5 m	R88A-CPW005M2
	Terminal Block (4 Axes)	Motion Control Unit C200HW-MC402-E	-	R88A-TC04-E
	Servodrive connecting Cable (1 Axis)		1 M	R88A-CMUK001J3-E2
PLC Unit Control Cables (4 Axes)	1 m		R88A-CMX001S-E	
		1 m	R88A-CMX001J1-E	
④	Servo Relay Unit	CS1W-NC1□3, CJ1W-NC1□3, or C200HW-NC113 Position Control Unit		XW2B-20J6-1B (1 axis)
		CS1W-NC2□3/4□3, CJ1W-NC2□3/4□3, or C200HW-NC213/413 Position Control Unit		XW2B-40J6-2B (2 axes)
		CQM1H-PLB21 CQM1-CPU43		XW2B-20J6-3B (1 axis)
		CJ1M-CPU22/23		XW2B-20J6-8A (1 axis) XW2B-40J6-9A (2 axes)
⑤	Cable to Servo drive	Servo Relay Units XW2B-□0J6-□B	1 m	XW2Z-100J-B4
			2 m	XW2Z-200J-B4
⑥	Position Control Unit Connecting Cable	C200H-NC112	0.5 m	XW2Z-050J-A1
			1 m	XW2Z-100J-A1
		C200H-NC211	0.5 m	XW2Z-050J-A2
			1 m	XW2Z-100J-A2
		CQM1-CPU43-V1 and CQM1H-PLB21	0.5 m	XW2Z-050J-A3
			1 m	XW2Z-100J-A3
		CS1W-NC113 and C200HW-NC113	0.5 m	XW2Z-050J-A6
			1 m	XW2Z-100J-A6
		CS1W-NC213/413 and C200HW-NC213/413	0.5 m	XW2Z-050J-A7
			1 m	XW2Z-100J-A7
		CS1W-NC133	0.5 m	XW2Z-050J-A10
			1 m	XW2Z-100J-A10
		CS1W-NC233/433	0.5 m	XW2Z-050J-A11
			1 m	XW2Z-100J-A11
		CJ1W-NC113	0.5 m	XW2Z-050J-A14
			1 m	XW2Z-100J-A14
		CJ1W-NC213/413	0.5 m	XW2Z-050J-A15
			1 m	XW2Z-100J-A15
		CJ1W-NC133	0.5 m	XW2Z-050J-A18
			1 m	XW2Z-100J-A18
CJ1W-NC233/433	0.5 m	XW2Z-050J-A19		
	1 m	XW2Z-100J-A19		
CJ1M-CPU22/23	0.5 m	XW2Z-050J-A27		
		1 m	XW2Z-100J-A27	
⑦	Control Cable	For General purpose Controllers	1 m	R88A-CPW001S or JZSP-CKI01-1
			2 m	R88A-CPW002S or JZSP-CKI01-1
⑧	Relay Terminal Block Cable	General-purpose Controller	1 m	R88A-CTW001N
			2 m	R88A-CTW002N
	Relay Terminal Block		-	XW2B-50G5

Battery Backup for absolute encoder (for CN8)

Symbol	Name	Model
I	Battery for 30W to 5 kW Drives	JZSP-BA01
	Battery for 6kW to 15 kW Drives	JZSP-BA01-1

Cable (for CN5)

Symbol	Name	Model
J	Analog Monitor Cable	R88A-CMW001S or DE9404559

Options (for CN3)

Symbol	Name	Model
(11)	Parameter Unit with Cable	JUSP-OP02A-2 or R88A-PR02W
(12)	Computer Connecting Cable	R88A-CCW002P2 or JZSP-CMS02

Option Units (for CN10)

Symbol	Name	Model
(13)	1.5 axis Advanced Motion Controller with Host Link Interface	R88A-MCW151-E
	1.5 axis Advanced Motion Controller with DeviceNet Interface	R88A-MCW151-DRT-E
	Mechatrolink-I Interface unit	JUSP-NS100
	Mechatrolink-II Interface unit	JUSP-NS115
	DeviceNet Interface unit with Positioning Functionality	JUSP-NS300
	PROFIBUS-DP Interface unit with Positioning Functionality	JUSP-NS500
	Indexer Unit. Versatile Point to Point Positioning	JUSP-NS600

Connectors

Specification	Model
Control I/O connector (For CN1)	R88A-CNU11C or JZSP-CKI9
Sigma-II Drive Encoder connector (For CN2)	JZSP-CMP9-1
Hypertac Power Connector IP67 (For 200V Motors SGMAH/PH-□□A□□□□D-OY)	SPOC-06K-FSDN169
Hypertac Power Connector IP67 (For 400V Motors SGMAH/PH-□□D□□□□D-OY)	LPRA-06B-FRBN170
Hypertac Encoder Connector IP67 (For Motors SGMAH/PH-□□□□□□□D-OY)	SPOC-17H-FRON169
Military Power connector IP67 (For 400V Motors SGMGH-(05/10/13)D□, SGMH-(10/15/20)D□, SGMUH-(10/15)D□)	MS3108E18-10S
Military Power connector IP67 (For 400V Motors SGMGH-(20/30/44)D□, SGMH-(30/40/50)D□, SGMUH-(30/40)D□)	MS3108E22-22S
Military Power connector IP67 (For 400V Motors SGMGH-(55/75/1A/1E)D□)	MS3108E32-17S
Military Brake connector IP67 (For 400V ServoMotors SGMGH-□, SGMH-□, SGMUH-□)	MS3108E10SL-3S
Military Encoder connector IP67 (For Motors SGMGH-□, SGMH-□, SGMUH-□)	MS3108E20-29S

Filters

Specifications (applicable Servo Drive)	Model	Rated Current	Rated Voltage
SGDH-A3AE-OY, SGDH-A5AE-OY, SGDH-01AE-OY, SGDH-02AE-OY	R88A-FIW104-SE	4 A	250 VAC Single-Phase
SGDH-04AE-OY	R88A-FIW107-SE	7A	
SGDH-08AE-S-OY	R88A-FIW115-SE	15 A	
SGDH-15AE-S-OY	R88A-FIW125-SE	25 A	
SGDH-05DE-OY, SGDH-10DE-OY, SGDH-15DE-OY	R88A-FIW4006-SE	6 A	400 VAC Three-Phase
SGDH-20DE-OY, SGDH-30DE-OY	R88A-FIW4010-SE	10 A	
SGDH-50DE-OY	R88A-FIW4020-SE	20 A	
SGDH-60DE-OY, SGDH-75DE-OY	R88A-FIW4030-SE	30 A	
SGDH-1AE-OY, SGDH-1EDE-OY	R88A-FIW4055-SE	55 A	

External Regenerative Resistor

Servo Drive Model	Regenerative Resistor Unit Model	Specifications	Allowable Power Loss
SGDH-60DE-OY to -75DE-OY	JUSP-RA18	18 Ω, 880 W	180 W
SGDH-1AE-OY to -1EDE-OY	JUSP-RA19	14.25 Ω, 1760 W	350 W

Computer Software

Specifications	Model
SigmaWin	MOTION TOOLS
WMON Win Version 2.0	

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

SGDH-□, SGMBH-□

Sigma-II Large Capacity

Large Capacity Sigma-II series. Great power as well as High Speed, and High Accuracy.

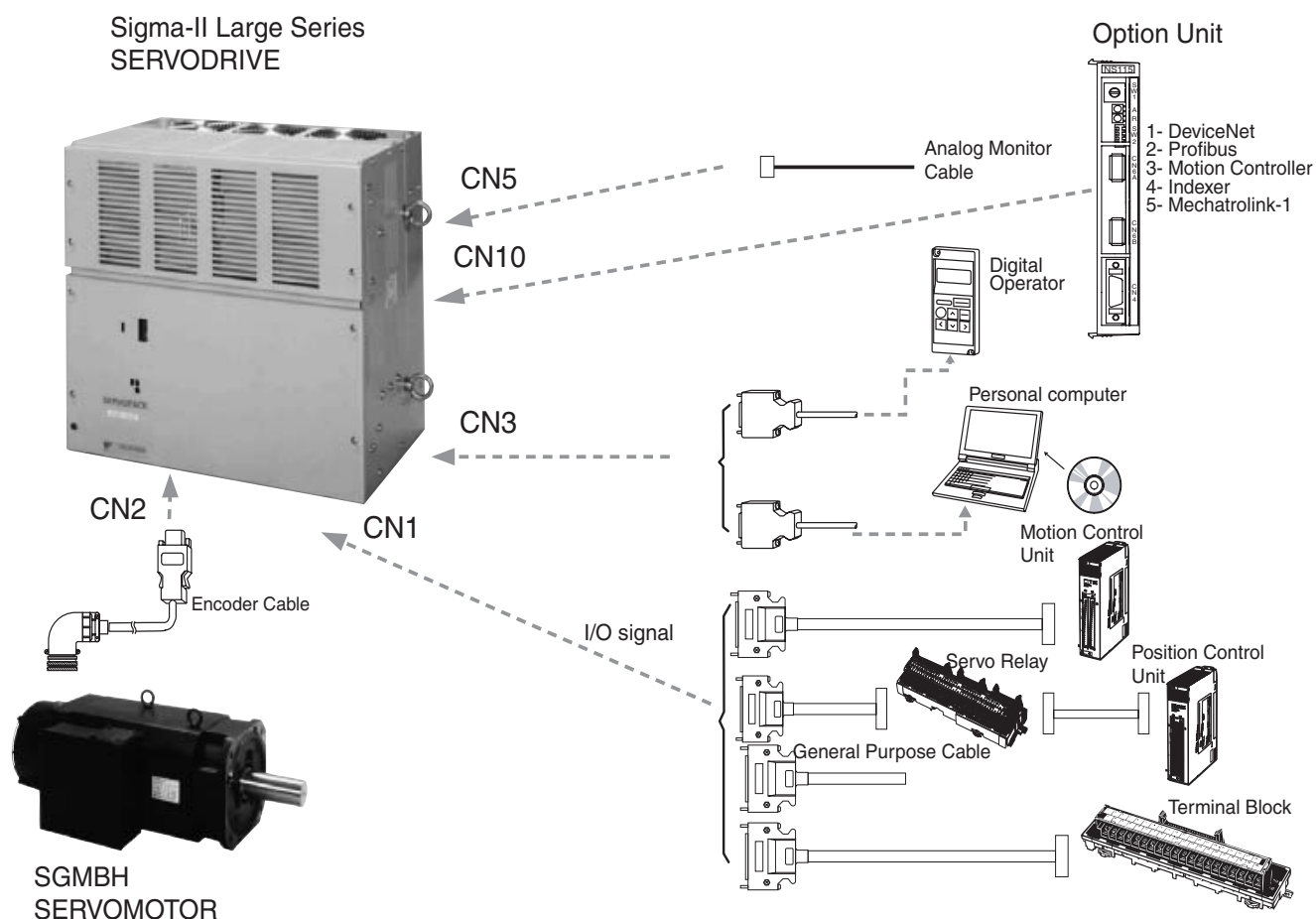
- Easy setup and maintenance
- Optional Units for system flexibility and connectivity
- Automatic motor recognition
- Analogue control for speed and torque
- Pulse train control for positioning
- Oscilloscope available via SigmaWin tool
- Windows based Configuration and commissioning software

Ratings

- 400 VAC, 22 kW (140 Nm) to 55 kW (350 Nm)

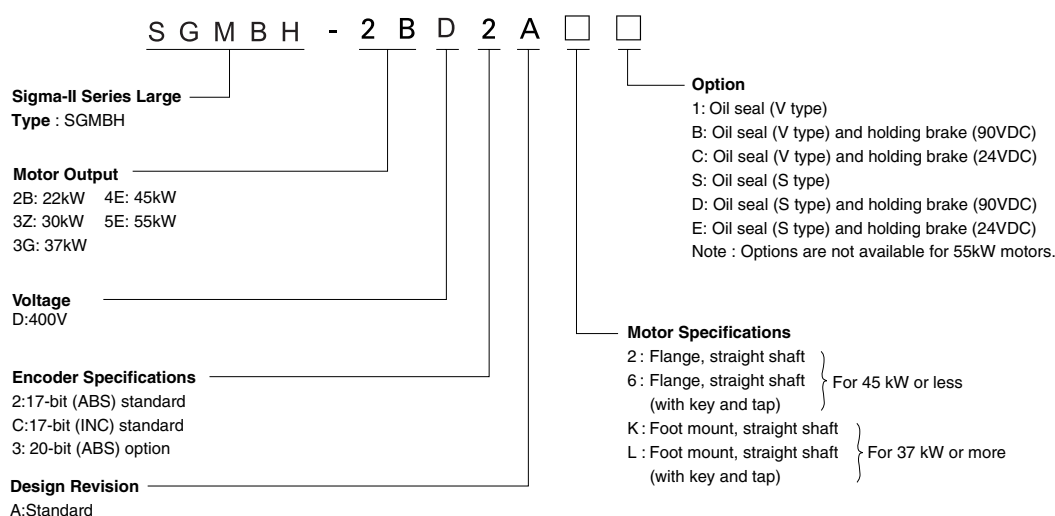


System Configuration



Servomotor Specifications

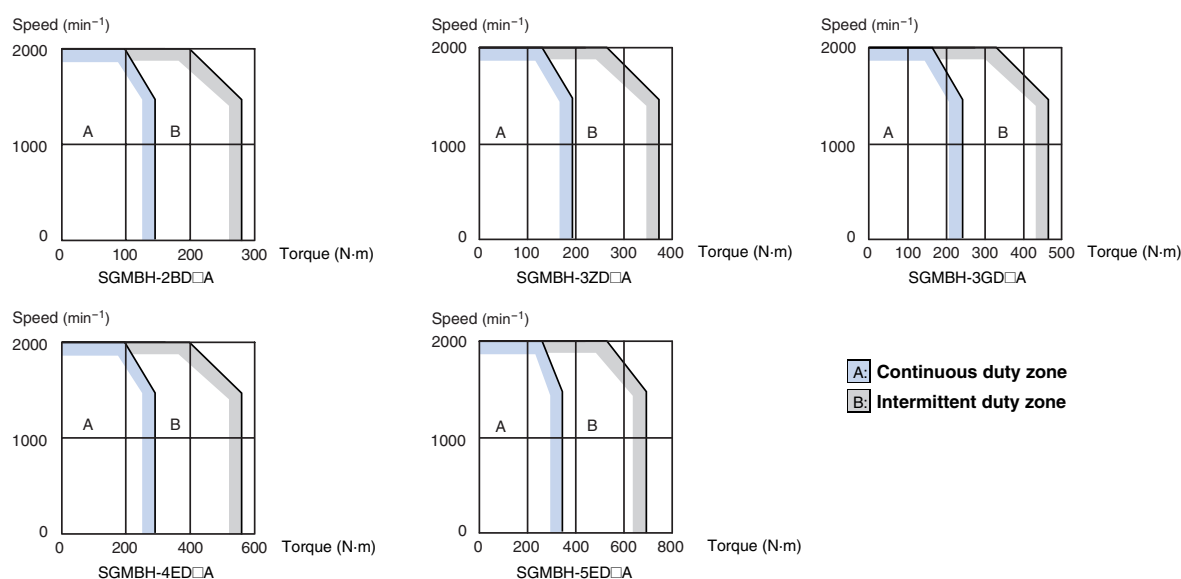
Type Designation



Type	SGMBH-□		2BD□A	3ZD□A	3GS□A	4ED□A	5ED□A
Performance	Rated Output	kW	22	30	37	45	55
	Rated Torque	N·m	140	191	236	286	350
	Stalling Torque	N·m	140	191	236	286	350
	Instantaneous Peak Torque	N·m	280	382	471	572	700
	Rated Current	A(rms)	58	80	100	127	150
	Innstantaneous Max. Current	A(rms)	120	170	210	260	310
	Rated/Max. Speed	min ⁻¹	1500/2000				
	Rotor Inertia	kg·m ²	0.0592	0.0773	0.139	0.151	0.197
Structure	Protective Enclosure		IP44				
	Mounting Method		Flange		Flange Foot mount ¹		Foot mount
Encoder		Standard	Incremental, absolute: 17 bits 16384P/R or equivalent ²				
		Option	Absolute: 20 bits 16384P/R or equivalent				
Usage Temperature			0 to 40°C				
Usage Humidity			20 to 80% (non-condensing)				

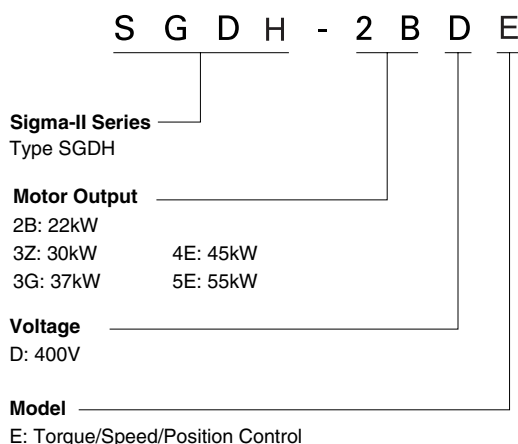
Note: 1. 37 kW and 45 kW motors with brakes are foot mount type
 2. The number of output pulses of SERVOPACK is 16384P/R for both 17-bit and 20-bit encoders (no dividing).

Torque/Speed Characteristics



Servo Drive Specifications

Type Designation



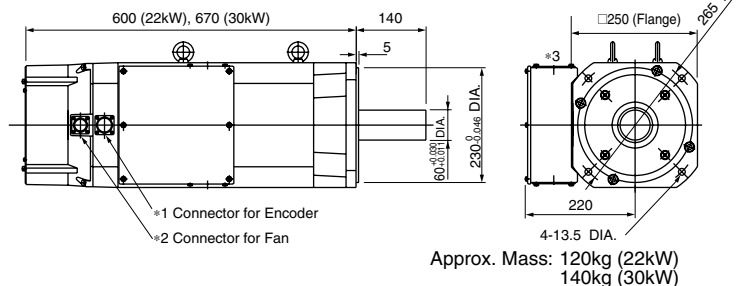
Type		SGDH-□	2BDE	3ZDE	3GDE	4EDE	5EDE	
Applicable SERVOMOTOR Type		SGMBH-□	2BD□A	3ZD□A	3GD□A	4ED□A	5ED□A	
Continuous Output		kW	22	30	37	45	55	
Allowable Load Inertia		kg · m ² x 10	0.296	0.3865	0.695	0.840	0.985	
Basic Specifications	Power Supply	Main Circuit		Three-phase 380 to 480VAC/+10 to - 15%, 50/60Hz				
		Main Circuit Power Capacity kVA		36.7	50.1	61.8	75.2	91.9
		Control Circuit		24VDC±10%				
		Control Circuit Power Capacity		150VA				
	Control method		Three-phase, full-wave rectification IGBT-PWM					
	Feedback		17-bit serial encoder (incremental/absolute)					
	Usage/Storage Temperature		SERVOPACK: 0 to 55°C / -20 to 85°C Digital operator: 0 to 55°C / -20 to 70°C					
	Usage/Storage Humidity		90%RH or less (non-condensing)					
	Control Method	Speed Control		±2 to ±10VDC at 155r/min				
		Torquer Control		±1 to ±10VDC at rated output				
		Position Control		Input form: Sign + pulse train, CD + CCW pulse train, 90° phase difference 2-phase pulse Input frequency: 500/200kpps (line driver/open collector output)				
	I/O Signals	Position Control	Output Form	Phase A, phase B, phase C: (line driver output)				
Frequency Dividing Ratio			(16 to N) N: encoder pulse number					
Sequence Input Signal		Servo ON, forward rotation prohibited (P-OT), reverse rotation prohibited (N-OT), forward rotation current limit, reverse rotation current limit, alarm reset, P control						
Sequence Output Signal		Servo alarm, 3-bit alarm code						
		Select three signals from servo ready, current limit detection, TGON, positioning complete (speed agreement), brake release, overload, warning, overload detected						
Functions/Performance	Frequency Response		100Hz (motor inertia = load inertia)					
	DB		Built-in (External resistor is required)		External DB contactor and DB resistor are required.			
	Regeneration		Built-in (External resistor is required.)					
	Protection		Overcurrent, overload, regenerative error, main circuit voltage error, heatsink overheat, power open phase, overspeed, encoder error, encoder disconnected, overrun, CPU error, overflow, parameter error					
	Display		POWER, ALARM, CHARGE display LED 5-figure, 7-segment LED on digital operator					
	Others		Zero-clamp, soft start/stop. Reverse rotation connection, brake interlock signal output, JOG run					
	Digital Operator Type		JUSP-OP02A-2					
Mounting Method			Base mounted					

Note: DB means an automatic dynamic brake, which operates at main power OFF, servo alarm, servo OFF, and overtravel.

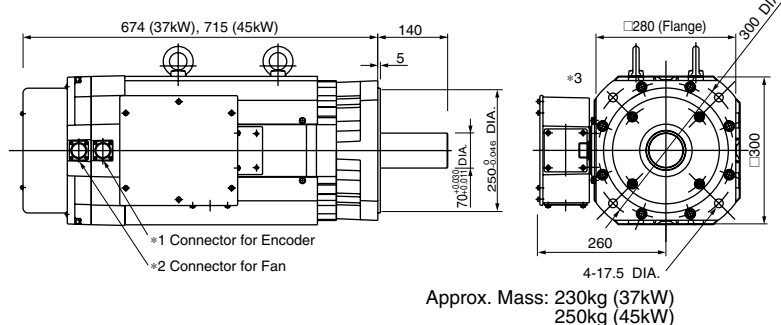
Dimensions

Servomotors

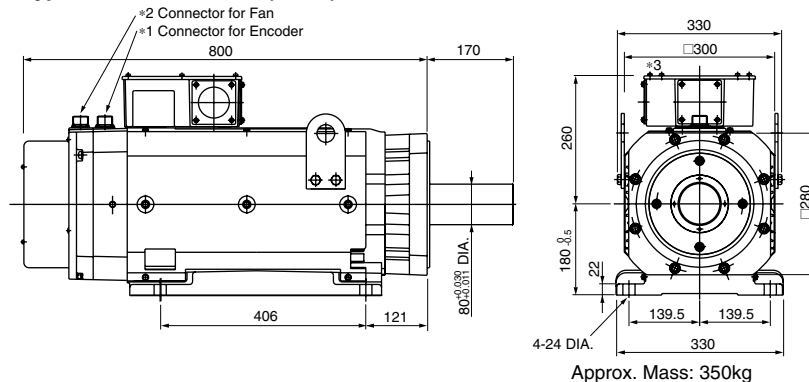
Type: SGMBH-2BD □A/-3ZD □A (22/30kW)



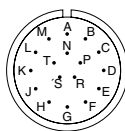
Type: SGMBH-3GD □A /-4E □A37/45kW



Type: SGMBH-5ED □A (55kW)

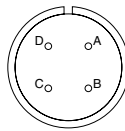


*1 Connector for Encoder



Receptacle: 97F-3102E20-29P
Plug IP67 (L-shape): MS3108E20-29S

*2 Connector for Fan



Receptacle: CE05-2A18-10PD-B
Plug IP67 (L-shape): MS3108E18-10S

● Absolute Encoder

A	—	K	—
B	—	L	—
C	DATA+	M	—
D	DATA-	N	—
E	—	P	—
F	—	R	—
G	0V	S	BATT-
H	+5VDC	T	BATT +
J	FG(Frame Ground)		

● Incremental Encoder

A	—	K	—
B	—	L	—
C	DATA+	M	—
D	DATA-	N	—
E	—	P	—
F	—	R	—
G	0V	S	—
H	+5VDC	T	—
J	FG(Frame Ground)		

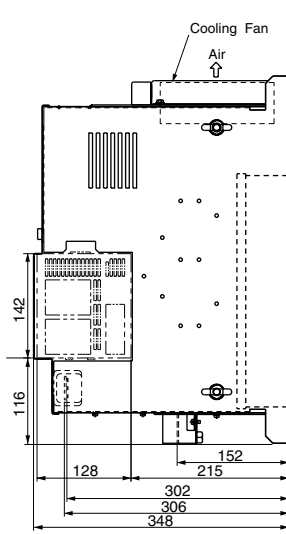
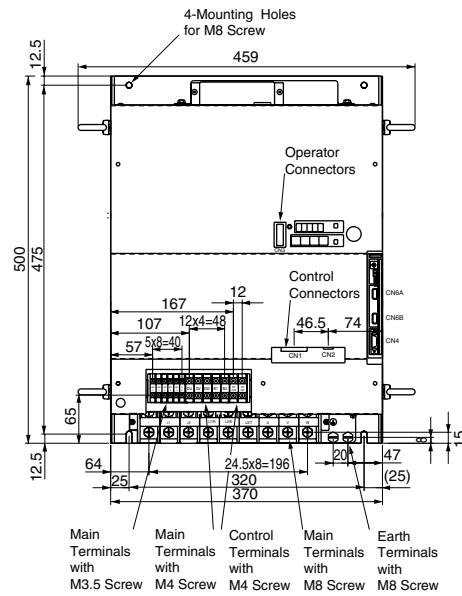
A	Fan Terminal (U)
B	Fan Terminal (V)
C	Fan Terminal (W)
D	

*3 Terminal Box

U, V, W,	Motor terminal	M10
⊕	Earth terminal	M10
1, 1b	Thermostat	M4

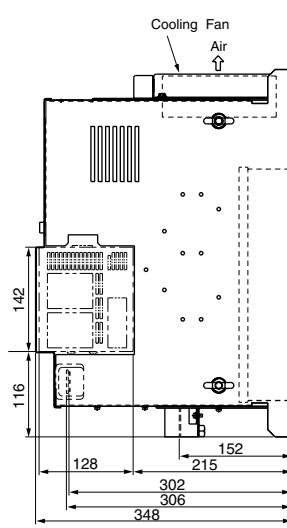
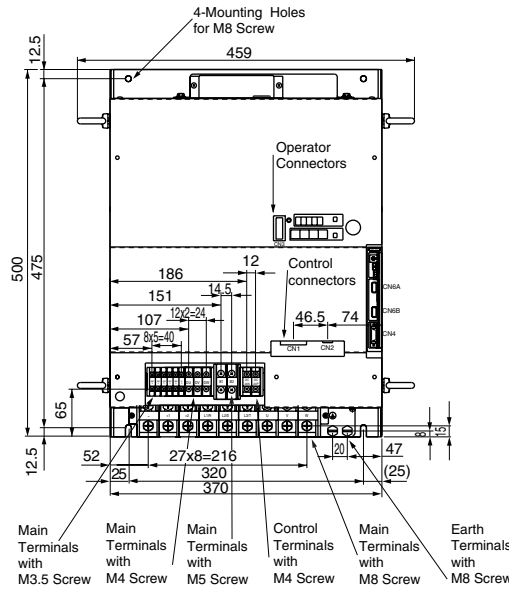
Servo Drives

Type: SGDH-2BDE (22kW)



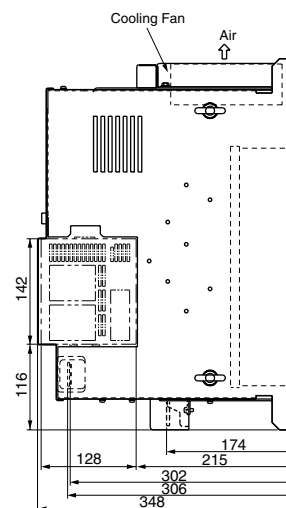
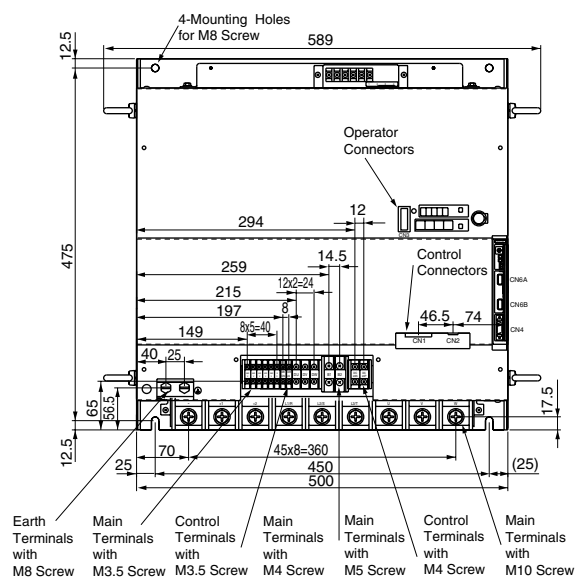
Approx. Mass: 40kg

Type: SGDH-3ZDE (30kW)



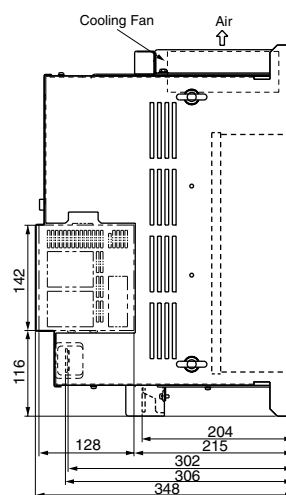
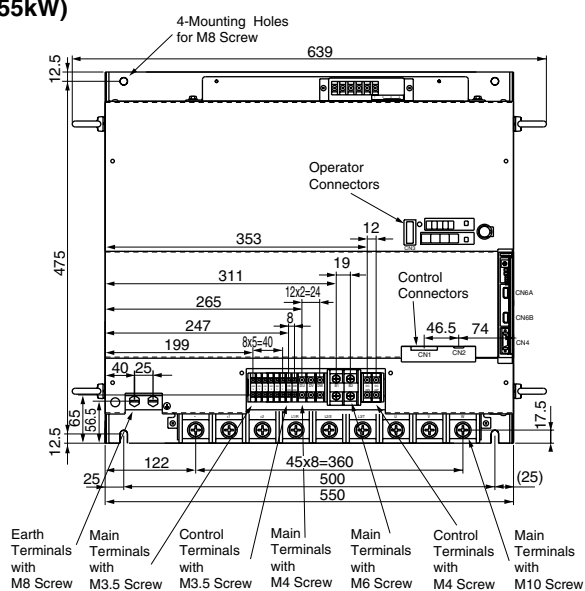
Approx. Mass: 40kg

Type: SGDH-3GDE (37kW)



Approx. Mass: 60kg

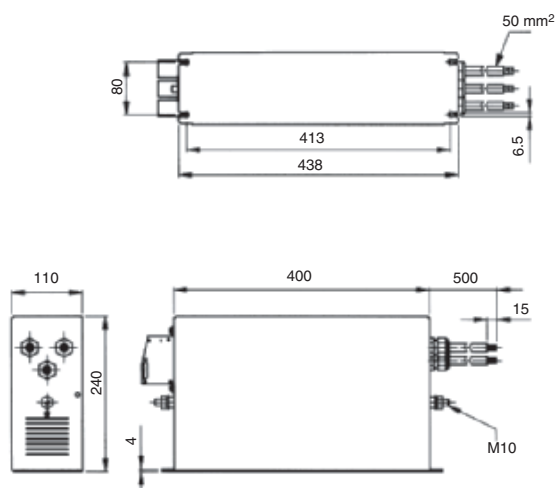
Type: SGDH-4EDE/-5EDE (45/55kW)



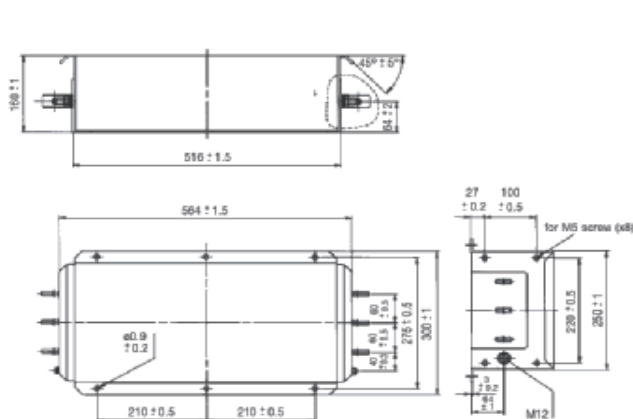
Approx. Mass: 65kg

Filters

FN258-180-07

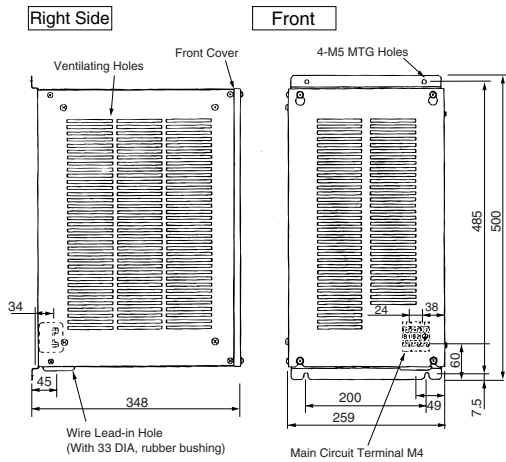


FN359-250-99



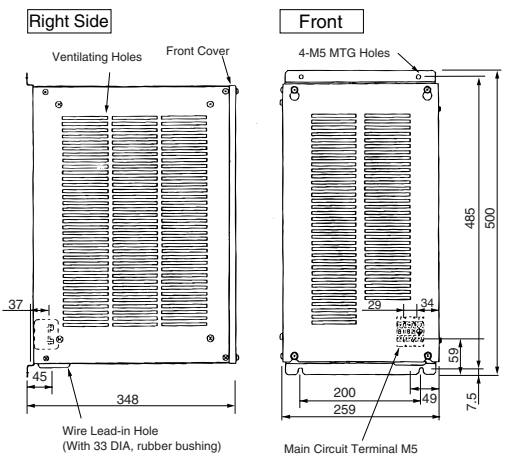
Regenerative Resistor Unit

Type: JUSP-RA12 (for 22kW)



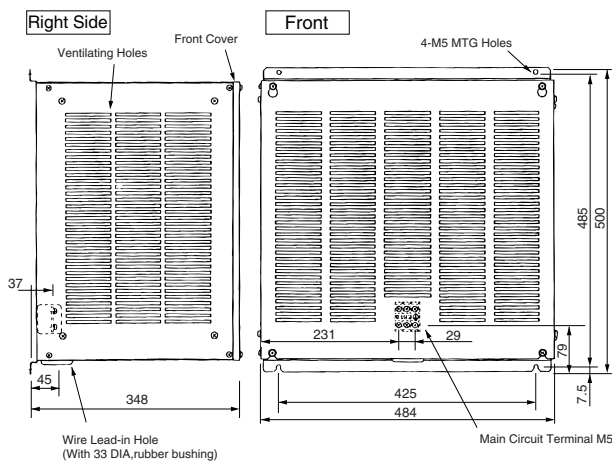
Approx. Mass: 14.0kg

Type: JUSP-RA13 (for 30kW)



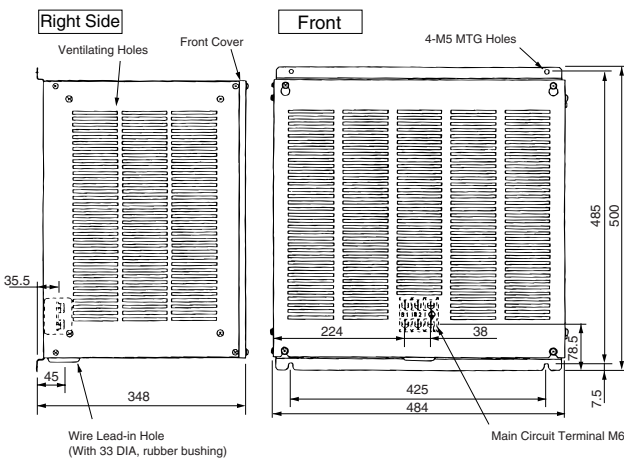
Approx. Mass: 14.0kg

Type: JUSP-RA14 (for 37kW)



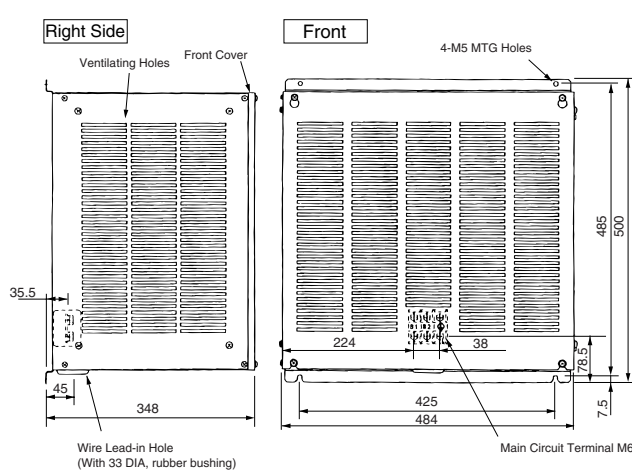
Approx. Mass: 20.0kg

Type: JUSP-RA15 for 45kW



Approx. Mass: 21.5kg

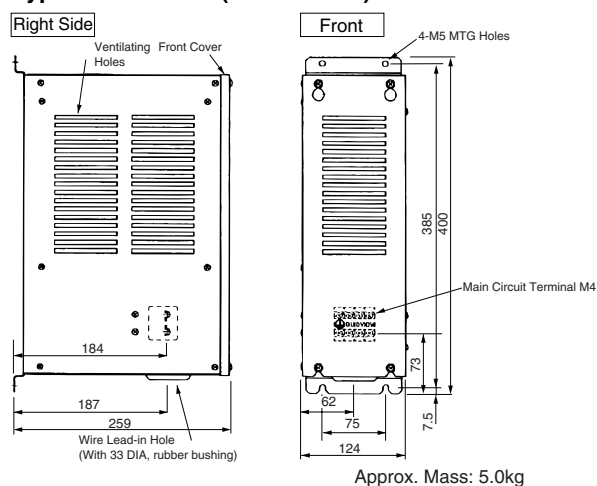
Type: JUSP-RA16 (for 55kW)



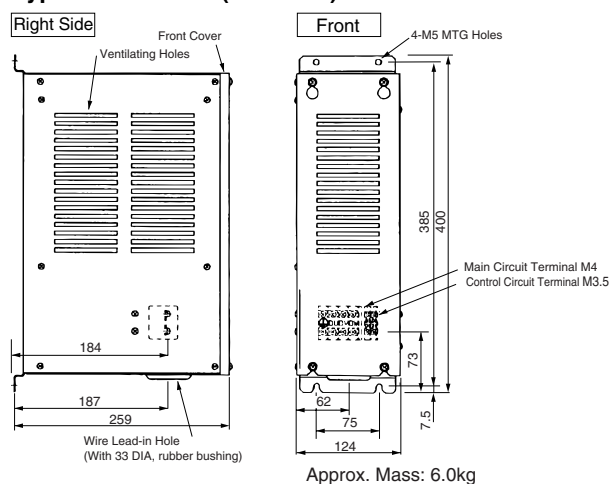
Approx. Mass: 23.5kg

DB Resistor Unit

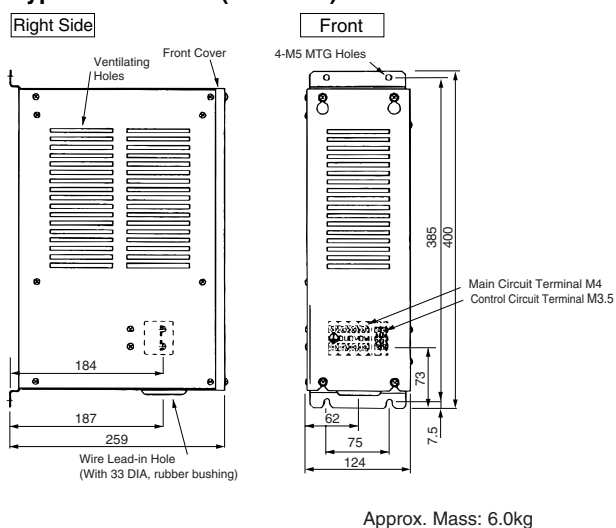
Type: JUSP-DB03 (for 22/30kW)



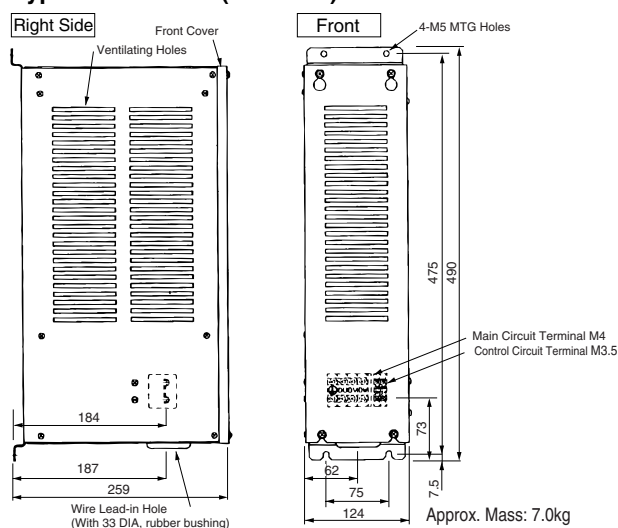
Type: JUSP-DB04 (for 37kW)



Type: JUSP-DB05 (for 45kW)

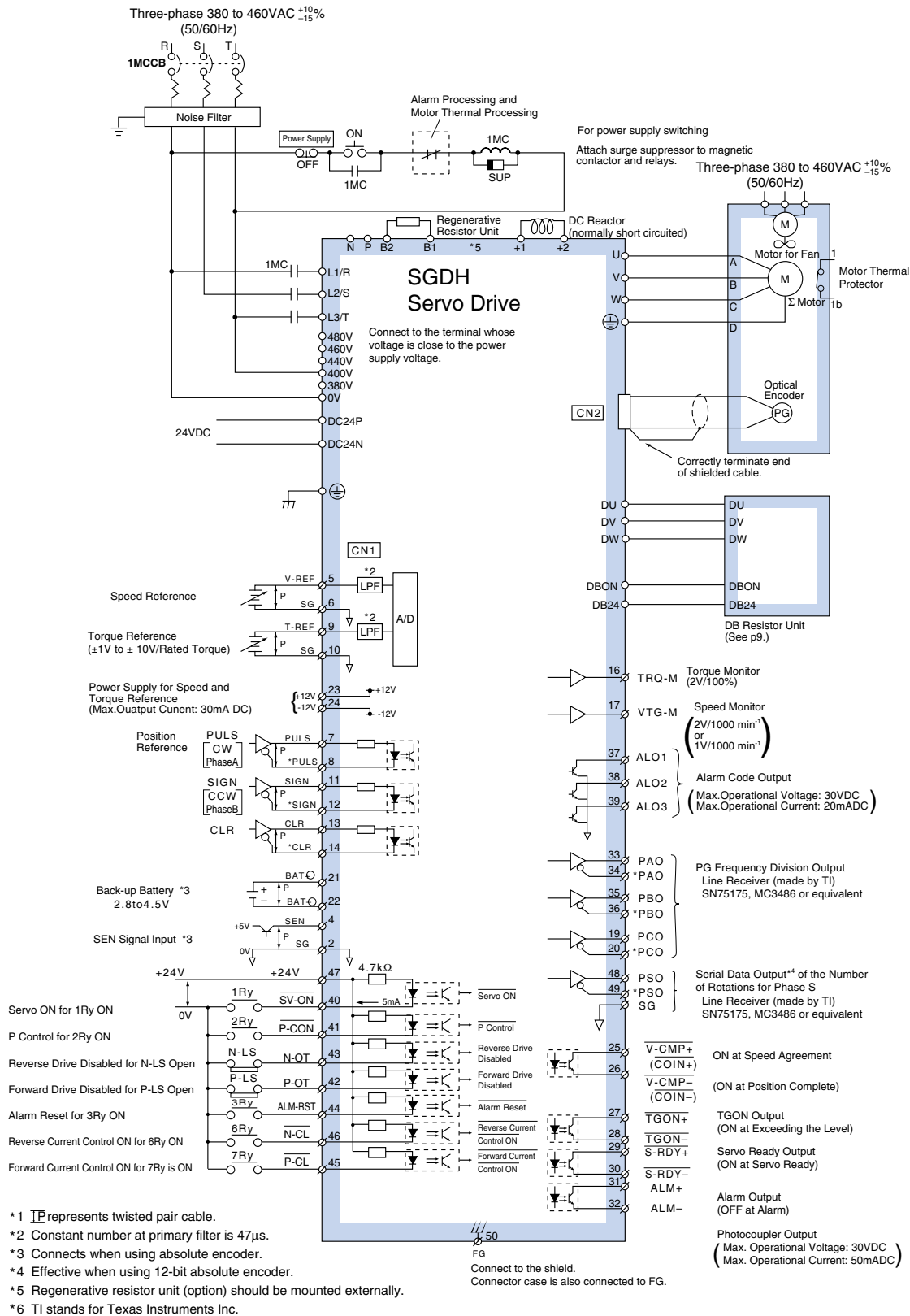


Type: JUSP-DB06 (for 55kW)

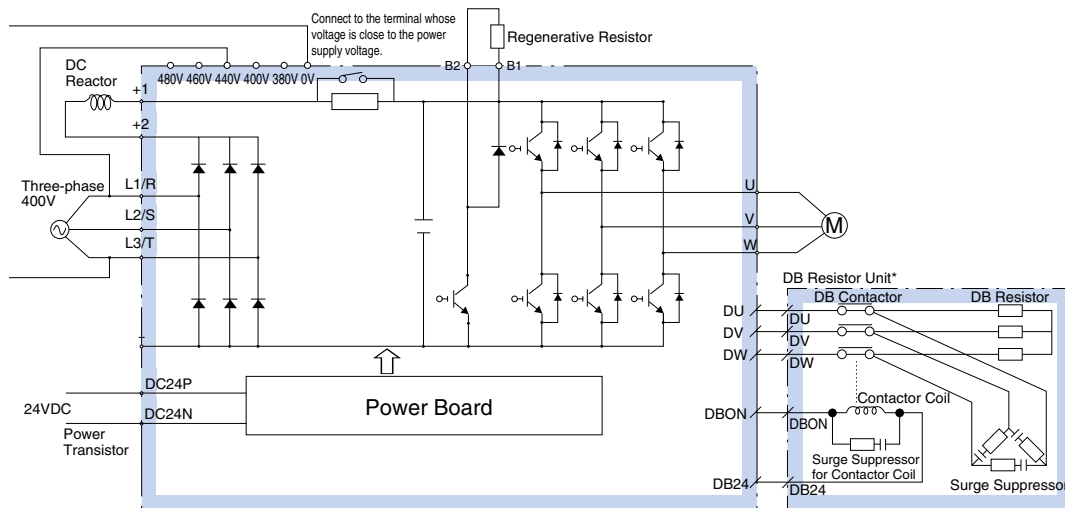


Installation

Standard Connections



Main Circuit Connection



* This diagram is an example of a DB resistor unit with a built-in DB contactor and a surge suppressor for 37 to 55kW. A unit for 22/30kW consists of the resistor only.

Main Circuit Terminal Description

Terminal Symbol	Name	Description	Terminal Symbol	Name	Description
L1/R, L2/S, L3/T	Main Circuit Power Supply Input Terminal	Three-phase 380 to 460 VAC, +10 to -15%, 50/60 Hz	B1, B2	Regenerative Resistor	Connects regenerative resistor
DC24P	Control Power Supply Input Terminal	24VDC	—	Main Circuit Negative Side Terminal	(Normally external connection is not necessary).
DC24N			DU, DV, DW	DB Resistor Unit, DB Contactor Connection Terminal	Connects DB resistor unit or DB contactor.
U, V, W	Motor Connection Terminal	Connect with motor	DBON, DB24	DB Resistor Unit Connection Terminal	For 37 to 55kW, connects to DBON and DB24 terminals or DB resistor unit.
⏏ (X2)	Earth Terminal	Grounded (for power supply earth and motor earth).	480V, 460V, 440 V, 400 V, 380 V, 0V	Control Power Supply Input Terminal	Connect to the terminal whose voltage is close to the power supply voltage.
+1, +2	DC Reactor Connection Terminal	Connect DC reactor for suppressing high-harmonic wave. If not necessary, shorten the terminals.			

Control Circuit Terminal Description

CN1 (Connector I/O) Terminal Layout

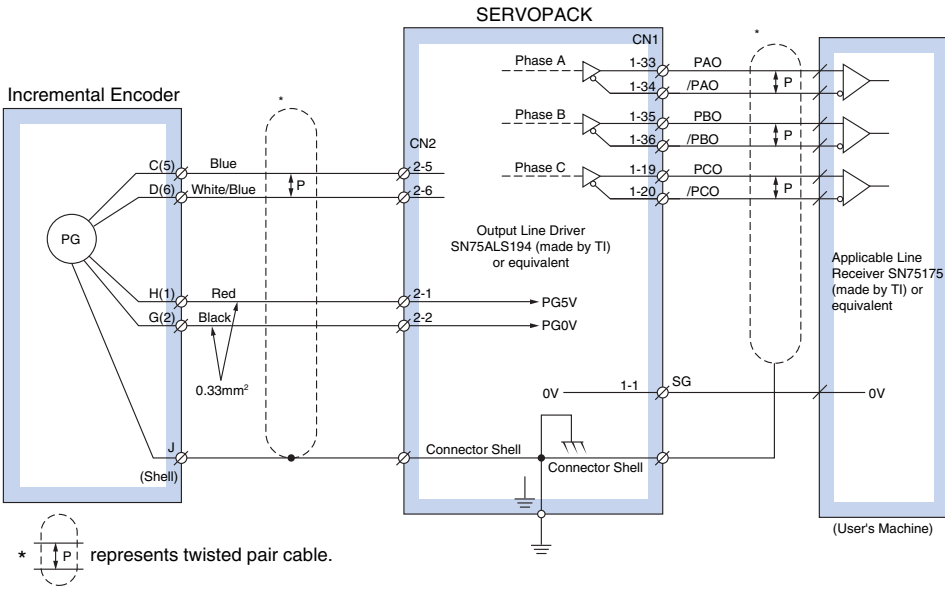
2	SG	GND	1	SG	GND	26	/V-CMP (VCOIN-)	Speed agreement signal output
4	SEN	SEN signal input	3	PL1	Power supply for open collector ref.	27	/TGON+	TGON output signal
6	SG	GND	5	V-REF	Speed ref. input	29	/S-RDY+	Servo ready output
8	/PULS	Ref. pulse input	7	PULS	Ref. pulse input	31	ALM+	Servo alarm output
10	SG	GND	9	T-REF	Torque ref. input	33	PAO	PG dividing output phase A
12	/SIGN	Ref. code input	11	SIGN	Ref. code input	35	PBO	PG dividing output phase B
14	/CLR	Clear input	13	PL2	Power supply for open collector ref.	37	ALO1	Alarm code output
16	—	—	15	CLR	Clear input	39	ALO3	(Open collector)
18	PL3	Power supply for open collector ref.	17	—	—	41	/P-CON	P control input
20	/PCO	PG dividing output phase C	19	PCO	PG dividing output phase C	43	N-OT	Rev. side overtravel input
22	BAT (-)	Battery (-)	21	BAT (+)	Battery (+)	45	/P-CL	Fwd. current limit ON input
24	—	—	23	—	—	47	+24V IN	External input power supply
			25	/V-CMP (VCOIN+)	Speed agreement signal output	49	/PSO	Phase S signal output

CN2 (Encoder Connection) Terminal Layout

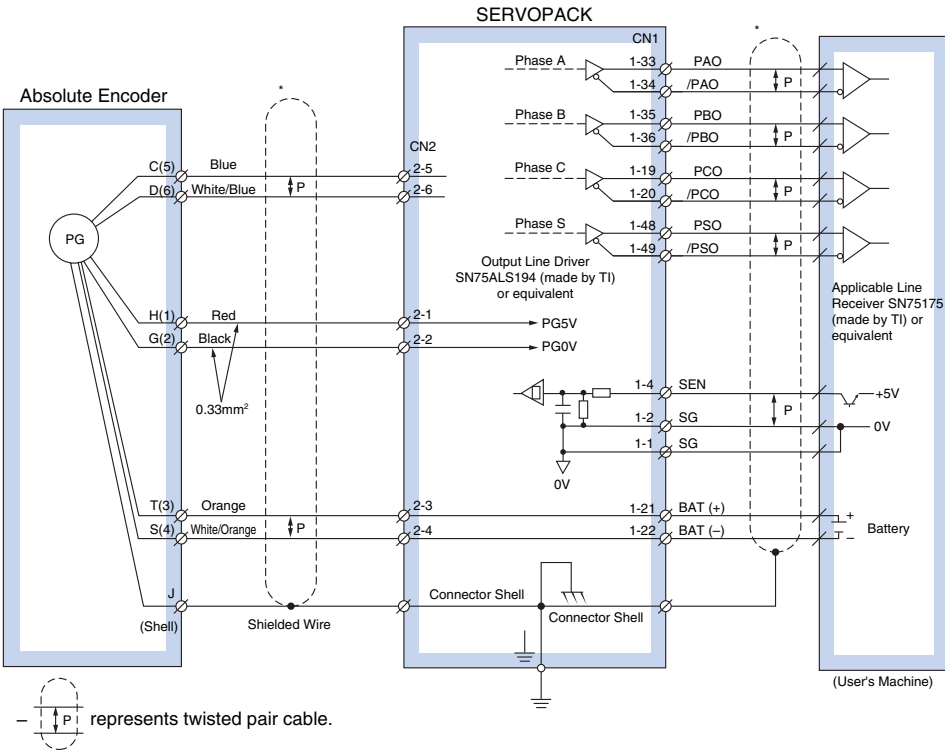
1	PG5V	PG power supply+5V	2	PG 0V	PG power supply 0V
3	BAT(+)	Battery(+) (absolute encoder only)	4	BAT(-)	Battery(-) (absolute encoder only)
5	PS	PG serial signal input	6	/PS	PG serial signal input

Encoder Connections

Incremental Encoder



Absolute Encoder

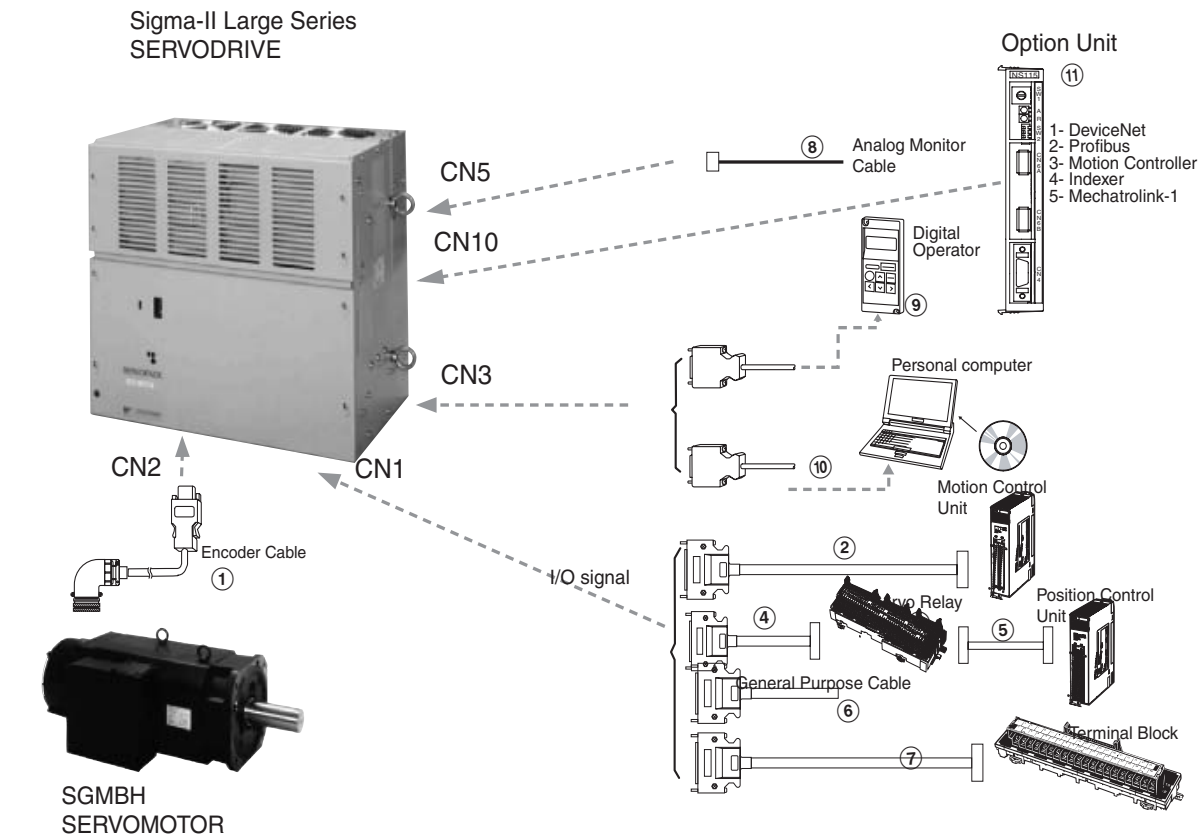


System Configuration Example

Large-capacity AC servo drive configurations are illustrated below.
Connectors and operators are not provided with servomotors and Servo Drives.
Order what you need separately.

Ordering Information

System Configuration



Servomotors

SGMBH - Servomotors 1500 r/min (22 - 55 kW)



Specifications				Model
Incremental Encoder (17 bit) Straight shaft with key & Tap	Without brake Flange Mount	140 Nm	22 kW	SGMBH-2BDCA61
		191 Nm	30 kW	SGMBH-3ZDCA61
		236 Nm	37 kW	SGMBH-3GDCA61
		286 Nm	45 kW	SGMBH-4EDCA61
	Without brake Foot mount	236 Nm	37 kW	SGMBH-3GDCAL1
		286 Nm	45 kW	SGMBH-4EDCAL1
		350 Nm	55 kW	SGMBH-5EDCAL1
		350 Nm	55 kW	SGMBH-5EDCAL1
	With brake Flange Mount	140 Nm	22 kW	SGMBH-2BDCA6C
		191 Nm	30 kW	SGMBH-3ZDCA6C
		236 Nm	37 kW	SGMBH-3GDCA6C
		286 Nm	45 kW	SGMBH-4EDCA6C
Absolute Encoder (17 bit) Straight shaft with key & Tap	Without brake Flange Mount	140 Nm	22 kW	SGMBH-2BD2A61
		191 Nm	30 kW	SGMBH-3ZD2A61
		236 Nm	37 kW	SGMBH-3GD2A61
		286 Nm	45 kW	SGMBH-4ED2A61
	Without brake Foot mount	236 Nm	37 kW	SGMBH-3GD2AL1
		286 Nm	45 kW	SGMBH-4ED2AL1
		350 Nm	55 kW	SGMBH-5ED2AL1
		350 Nm	55 kW	SGMBH-5ED2AL1
	With brake Flange Mount	140 Nm	22 kW	SGMBH-2BD2A6C
		191 Nm	30 kW	SGMBH-3ZD2A6C
		236 Nm	37 kW	SGMBH-3GD2A6C
		286 Nm	45 kW	SGMBH-4ED2A6C
	With brake Foot mount	236 Nm	37 kW	SGMBH-3GD2ALC
		286 Nm	45 kW	SGMBH-4ED2ALC
		286 Nm	45 kW	SGMBH-4ED2ALC
		286 Nm	45 kW	SGMBH-4ED2ALC

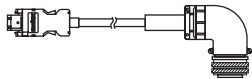
Servo Drives

SGDH - Servo Drives (22 - 55 kW)



Specifications		Model	Compatible Servomotors
3 Phase 400 V AC	22.0 kW	SGDH-2BDE	SGMBH-2BD□
	30.0 kW	SGDH-3ZDE	SGMBH-3ZD□
	37.0 kW	SGDH-3GDE	SGMBH-3GD□
	45.0 kW	SGDH-4EDE	SGMBH-4ED□
	55.0 kW	SGDH-5EDE	SGMBH-5ED□

Encoder Cables (for CN2)



Symbol	Specifications	Model	
①	Encoder cable (for motors SGMBH-□)	3 m	R88A-CRWB003N-E
		5 m	R88A-CRWB005N-E
		10 m	R88A-CRWB010N-E
		15 m	R88A-CRWB015N-E
		20 m	R88A-CRWB020N-E

Control Cables (for CN1)

Symbol	Description	Connect to	Model
②	Control Cable (1 Axis)	Motion Control Units	1 m R88A-CPW001M1
		CS1W-MC221	2 m R88A-CPW002M1
		CS1W-MC421	3 m R88A-CPW003M1
		C200H-MC221	5 m R88A-CPW005M1
	Control Cable (2 Axis)	Motion Control Units	1 m R88A-CPW001M2
		CS1W-MC221	2 m R88A-CPW002M2
		CS1W-MC421	3 m R88A-CPW003M2
		C200H-MC221	5 m R88A-CPW005M2
	Terminal Block (4 Axes)	Motion Control Unit C200HW-MC402-E	- R88A-TC04-E
	Servodrive connecting Cable (1 Axis)		1 M R88A-CMUK001J3-E2
③	Servo Relay Unit	CS1W-NC1□3, CJ1W-NC1□3, or C200HW-NC113 Position Control Unit	XW2B-20J6-1B (1 axis)
			XW2B-40J6-2B (2 axes)
			XW2B-20J6-3B (1 axis)
			XW2B-20J6-8A (1 axis)
		CQM1H-PLB21 CQM1-CPU43 CJ1M-CPU22/23	XW2B-40J6-9A (2 axes)
④	Cable to Servo drive	Servo Relay Units XW2B-□J6-□B	1 m XW2Z-100J-B4
			2 m XW2Z-200J-B4
⑤	Position Control Unit Connecting Cable	C200H-NC112	0.5 m XW2Z-050J-A1
			1 m XW2Z-100J-A1
		C200H-NC211	0.5 m XW2Z-050J-A2
			1 m XW2Z-100J-A2
		CQM1-CPU43-V1 and CQM1H-PLB21	0.5 m XW2Z-050J-A3
			1 m XW2Z-100J-A3
		CS1W-NC113 and C200HW-NC113	0.5 m XW2Z-050J-A6
			1 m XW2Z-100J-A6
		CS1W-NC213/413 and C200HW-NC213/413	0.5 m XW2Z-050J-A7
			1 m XW2Z-100J-A7
		CS1W-NC133	0.5 m XW2Z-050J-A10
			1 m XW2Z-100J-A10
		CS1W-NC233/433	0.5 m XW2Z-050J-A11
			1 m XW2Z-100J-A11
		CJ1W-NC113	0.5 m XW2Z-050J-A14
			1 m XW2Z-100J-A14
		CJ1W-NC213/413	0.5 m XW2Z-050J-A15
			1 m XW2Z-100J-A15
		CJ1W-NC133	0.5 m XW2Z-050J-A18
			1 m XW2Z-100J-A18
		CJ1W-NC233/433	0.5 m XW2Z-050J-A19
			1 m XW2Z-100J-A19
		CJ1M-CPU22/23	0.5 m XW2Z-050J-A27
			1 m XW2Z-100J-A27
⑥	Control Cable	For General purpose Controllers	1 m R88A-CPW001S or JZSP-CKI01-1
			2 m R88A-CPW002S or JZSP-CKI01-1
⑦	Relay Terminal Block Cable	General-purpose Controller	1 m R88A-CTW001N
			2 m R88A-CTW002N
	Relay Terminal Block		- XW2B-50G5

Battery Backup for absolute encoder

Name	Model
Battery (Required for servomotors with absolute encoder)	JZSP-BA01 or ER6VC3 (3.6V)

Cable (for CN5)

Symbol	Name	Model
⑧	Analog Monitor Cable	R88A-CMW001S or DE9404559

Options (for CN3)

Symbol	Name	Model
⑨	Parameter Unit with Cable	JUSP-OP02A-2 or R88A-PR02W
⑩	Computer Connecting Cable	R88A-CCW002P2 or JZSP-CMS02

Option Units (for CN10)

Symbol	Name	Model
⑪	1.5 axis Advanced Motion Controller with Host Link Interface	R88A-MCW151-E
	1.5 axis Advanced Motion Controller with DeviceNet Interface	R88A-MCW151-DRT-E
	Mechatrolink-I Interface unit	JUSP-NS100
	DeviceNet Interface unit with Positioning Functionality	JUSP-NS300
	PROFIBUS-DP Interface unit with Positioning Functionality	JUSP-NS500
	Indexer Unit. Versatile Point to Point Positioning	JUSP-NS600

Connectors

Specification	Model
Control I/O connector (For CN1)	R88A-CNU11C or JZSP-CKI9
Sigma-II Drive Encoder connector (For CN2)	JZSP-CMP9-1
Military Connector for Encoder, IP67 (For Motors SGMBH-□)	MS3108E20-29S
Military Connector for Fan, IP67 (For Motors SGMBH-□)	MS3108E18-10S

Filters

Specifications (applicable Servo Drive)	Model	Rated Current
SGDH-2BDE, SGDH-3ZDE, SGDH-3GDE	FN258-180-07	180 A
SGDH-4EDE, SGDH-5EDE	FN359-250-99	250 A

Regenerative Resistor Units

Servo Drive Model	Regenerative Resistor Unit Model	Specifications
SGDH-2BDE	JUSP-RA12	9Ω, 3600 W
SGDH-3ZDE	JUSP-RA13	6.7Ω, 3600 W
SGDH-3GDE	JUSP-RA14	5Ω, 4800 W
SGDH-4EDE	JUSP-RA15	4Ω, 6000 W
SGDH-5EDE	JUSP-RA16	3.8Ω, 7200 W

DB Resistor units

Servo Drive Model	Regenerative Resistor Unit Model	Specifications. Star Wiring
SGDH-2BDE, SGDH-3ZDE	JUSP-DB03	180 W, 0.8Ω
SGDH-3GDE	JUSP-DB04	180 W, 0.8Ω
SGDH-4EDE	JUSP-DB05	180 W, 0.8Ω
SGDH-5EDE	JUSP-DB06	300 W, 0.8Ω

Computer Software

Specifications	Model
SigmaWin	MOTION TOOLS CD

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

SGLG□, SGLF□, SGLT□

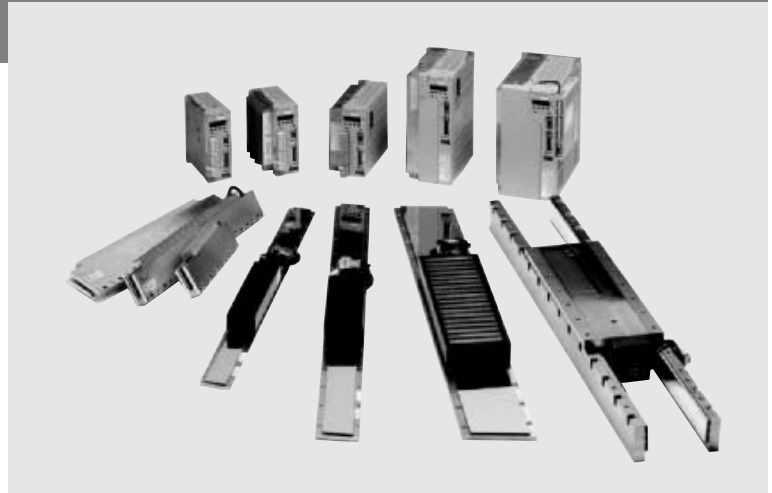
Sigma Linear Motors

Direct drive linear servomotors for faster machine cycles.

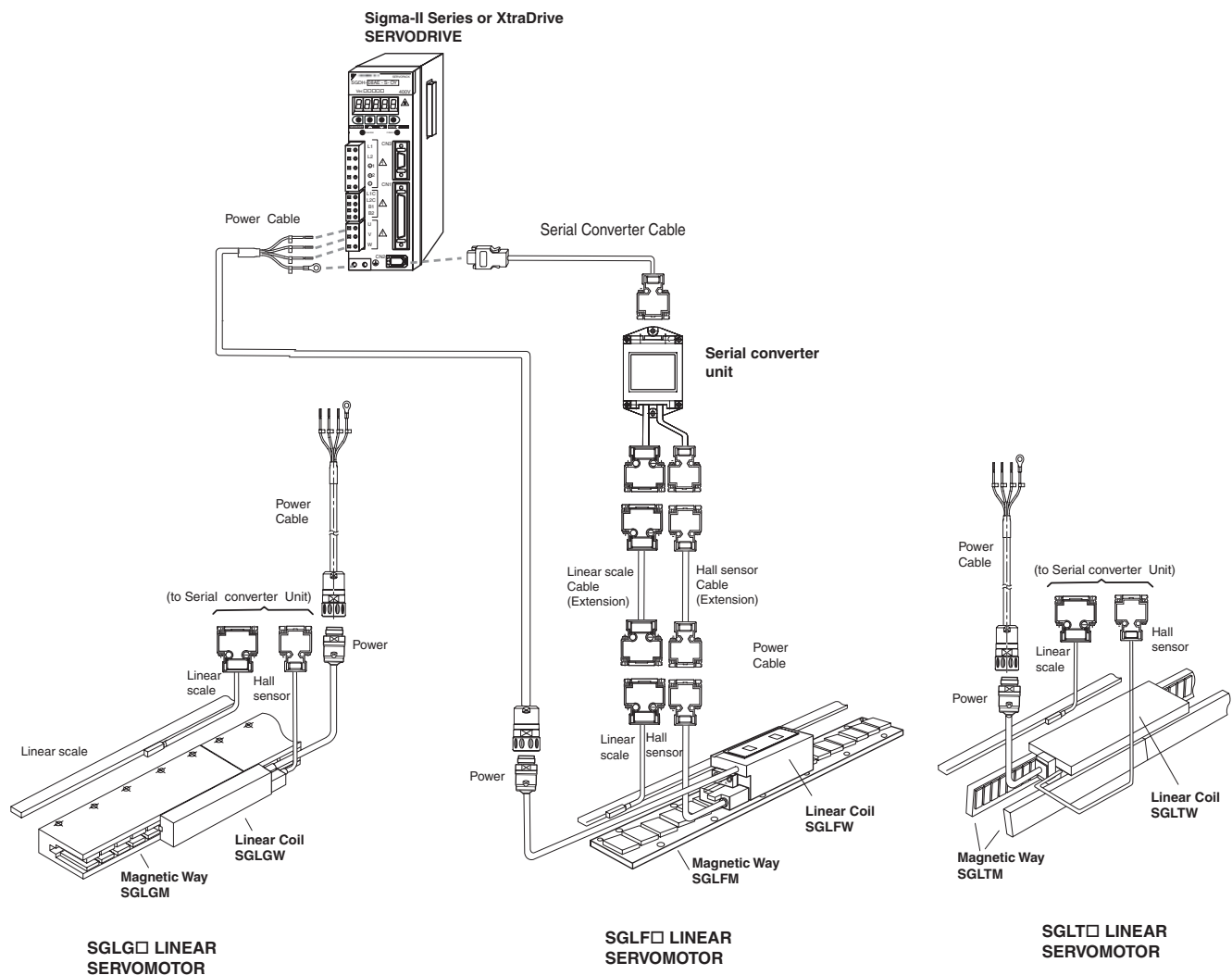
- Direct control of the motors using XtraDrive and Sigma-II drives
- Improved machine performance
- Easy of operation & high reliability
- Designed for high force density in compact packages
- Exhibit exceptional Force Linearity even at near the peak force regions
- Extremely energy efficient. Due to its optimised magnetic circuitry design and high-density windings
- Can reach speeds as high as 5 meters per second.
- Coreless and Iron core types available

Ratings

- 230VAC Single-phase 13,5 to 560 N (1200 N Peak)
- 400VAC Three-phase 80 to 2000 N (7500 N Peak)



System Configuration



Servomotor / Servo Drive Combination

Sigma Series Linear Servomotor					Serial Converter	Servo Drive			
Type	Voltage	Rated Force	Peak Force	Model		Sigma-II Series		XtraDrive	
	230 V	13,5 N	40 N	30A050B	158	SGDH-A5AE-OY	-	XD-P5-MN01	-
		27 N	80 N	30A080B	156	SGDH-01AE-OY	-	XD-01-MN01	-
		47 N	140 N	40A140B	001	SGDH-01AE-OY	-	XD-01-MN01	-
		73 N	220 N	60A140B	004	SGDH-02AE-OY	-	XD-02-MN01	-
		93 N	280 N	40A253B	002	SGDH-02AE-OY	-	XD-02-MN01	-
		140 N	420 N	40A365B	003	SGDH-04AE-OY	-	XD-04-MN01	-
		147 N	440 N	60A253B	005	SGDH-04AE-OY	-	XD-04-MN01	-
		220 N	660 N	60A365B	006	SGDH-08AE-S-OY	-	XD-08-MN	-
	230 V	325 N	1300 N	90A200A	101	SGDH-15AE-S-OY	-	-	-
		57 N	230 N	40A140B	063	SGDH-02AE-OY	-	XD-02-MN01	-
		114 N	460N	40A253B	059	SGDH-04AE-OY	-	XD-04-MN01	-
		171 N	690 N	40A365B	060	SGDH-08AE-S-OY	-	XD-08-MN	-
		89 N	360N	60A140B	061	SGDH-02AE-OY	-	XD-02-MN01	-
		178 N	720 N	60A253B	062	SGDH-08AE-S-OY	-	XD-08-MN	-
	230 V	267 N	1080 N	60A365B	047	SGDH-15AE-S-OY	-	-	-
		25 N	86 N	20A090A	017	SGDH-02AE-OY	-	XD-02-MN01	
		40 N	125 N	20A120A	018	SGDH-02AE-OY	-	XD-02-MN01	
		80 N	220 N	35A120A	019	SGDH-02AE-OY	-	XD-02-MN01	
		160 N	440 N	35A230A	020	SGDH-08AE-S-OY	-	XD-08-MN01	
		280 N	600 N	50A200B	181	SGDH-08AE-S-OY	-	XD-08-MN	
	400 V	560 N	1200 N	50A380B	182	SGDH-15AE-S-OY	-	-	
		560 N	1200 N	1ZA200B	183	SGDH-15AE-S-OY	-	-	
		80 N	220 N	35D120A	211	-	SGDH-05DE-OY	-	XD-05-TN
		160 N	440 N	35D230A	212	-	SGDH-05DE-OY	-	XD-05-TN
	400 V	280 N	600 N	50D200B	189	-	SGDH-10DE-OY	-	XD-10-TN
		560 N	1200 N	50D380B	190	-	SGDH-15DE-OY	-	XD-15-TN
		560 N	1200 N	1ZD200B	191	-	SGDH-15DE-OY	-	XD-15-TN
		1120 N	2400 N	1ZD380B	192	-	SGDH-30DE-OY	-	XD-30-TN
		300 N	600 N	35D170H	193	-	SGDH-10DE-OY	-	XD-10-TN
		600 N	1200 N	35D320H	194	-	SGDH-20DE-OY	-	XD-20-TN
		450 N	900 N	50D170H	195	-	SGDH-10DE-OY	-	XD-10-TN
		900 N	1800 N	50D320H	196	-	SGDH-20DE-OY	-	XD-20-TN
		670 N	2600 N	40D400B	197	-	SGDH-30DE-OY	-	XD-30-TN
		1000 N	4000 N	40D600B	198	-	SGDH-50DE-OY	-	-
		1300 N	5000 N	80D400B	199	-	SGDH-50DE-OY	-	-
		2000 N	7500 N	80D600B	200	-	SGDH-75DE-OY	-	-

Motor Coil

SGL F W — 35 D 120 A P D

Linear Σ Series
Linear servomotor

Servomotor Model	
Code	Specifications
G	Coreless
F	F-type iron core
T	T-type iron core

W : Coil assembly

Magnet height

Voltage
A : 200 VAC
D : 400 VAC

Cable Connector for Main Circuit Cable	
Code	Specifications
—	MS connector or connector made by Tyco Electronics AMP K.K.
D	Connector made by Interconnectron

Options	
Code	Specifications
P	With hall sensor (Standard)
C	Forced cooling
H	With hall sensor and forced cooling

Design revision order
A,B,C ...

Length of coil assembly

Magnetic Way

SGL F M — 35 324 A C

Linear Σ Series
Linear servomotor

Model	
Code	Specifications
G	Coreless
F	F-type iron core
T	T-type iron core

M : Magnetic way

Magnet width

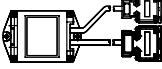
Length of magnetic way

Options		
Code	Specifications	Remarks
C	With magnet cover	Only for iron-core types - SGLFM - SGLTM
- M	High thrust force	Only for coreless types
- Y	With base and magnet cover	Only for T-type iron-core types

Design revision order
A,B,C ...

Serial Converter Unit

JZDP — A008 — 001

Serial Converter Unit Model			
Symbol	Appearance	Applicable Linear Scale	Hall Sensor
A008		Made by Renishaw or (Heidenhain *)	Yes

Note: * When using a Linear Scale made by Heidenhain an extension cable is required

Applicable Linear Servomotor					
Servomotor Model			Servomotor Model		
		Symbol		Symbol	
SGLGW- (Coreless)	30A050B	158	SGLTW- (Iron core, T-type)	20A170A	011
	30A080B	156		20A320A	012
	40A140B	001		20A460A	013
	40A253B	002		35A170A	014
	40A365B	003		35A320A	015
	60A140B	004		35A460A	016
	60A253B	005		35A170H	105
	60A365B	006		35A320H	106
	90A200A	101		50A170H	108
	90A370A	102		50A320H	109
	90A535A	103		40A400B	185
	40A140B	063		40A600B	186
40A253B	059	80A400B		187	
40A365B	060	80A600B		188	
60A140B	061	35D170H		193	
60A253B	062	35D320H		194	
60A365B	047	50D170H		195	
SGLGW- + SGLGM- — -M (Coreless)	20A090A	017		50D320H	196
	20A120A	018		40D400B	197
	35A120A	019		40D600B	198
	35A230A	020		80D400B	199
	50A200B	181		80D600B	200
	50A380B	182			
	1ZA200B	183			
	1ZA380B	184			
	35D120A	211			
	35D230A	212			
	50D200B	189			
	50D380B	190			
1ZD200B	191				
1ZD380B	192				

Servomotor Specifications

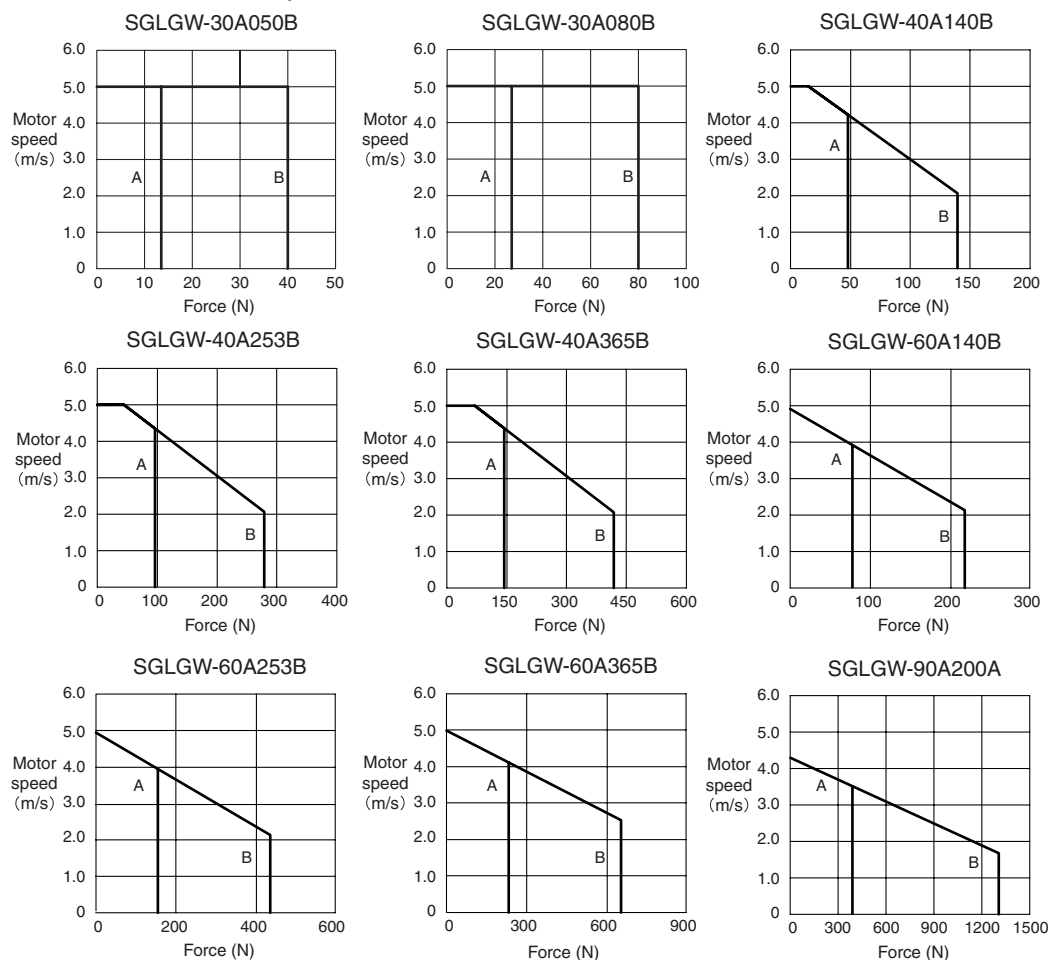
Coreless SGLGW/SGLGM - (With Standard-force Magnetic Ways)

Voltage		230V								
Linear Servomotor Model SGLGW-		30A		40A			60A			90A
		050B	080B	140B	253B	365B	140B	253B	365B	200A
Rated Force*	N	13.5	27	47	93	140	73	147	220	325
Rated Current*	Arms	0.55	0.85	0.8	1.6	2.4	1.2	2.3	3.5	4.4
Instantaneous Peak Force*	N	40	80	140	280	420	220	440	660	1300
Instantaneous Peak Current*	Arms	1.62	2.53	2.4	4.9	7.3	3.5	7.0	10.5	17.6
Coil Assembly Mass	kg	0.10	0.15	0.34	0.60	0.87	0.42	0.76	1.10	2.15
Force Constant	N / Arms	26.4	33.9	61.5	61.5	61.5	66.6	66.6	66.6	78
BEMF Constant	V /(m / s)	8.8	11.3	20.5	20.5	20.5	22.2	22.2	22.2	26.0
Motor Constant	N / √w	3.7	5.6	7.8	11.0	13.5	11.1	15.7	19.2	26.0
Electrical Time Constant	ms	0.2	0.4	0.4	0.4	0.4	0.5	0.5	0.5	1.4
Mechanical Time Constant	ms	7.30	4.78	5.59	4.96	4.77	3.41	3.08	2.98	3.18
Thermal Resistance (With Heat Sink)	K / W	4.89	2.93	1.87	0.98	0.65	1.62	0.80	0.53	0.44
Thermal Resistance (Without Heat Sink)	K / W	-	-	3.39	2.02	1.38	2.69	1.54	1.20	-
Magnetic Attraction	N	0	0	0	0	0	0	0	0	0
Head Sink Size	mm	200 x 300 x 12			300 x 400 x 12	400 x 500 x 12	200 x 300 x 12	300 x 400 x 12	400 x 500 x 12	800 x 900 x 12
Basic Specifications	Time Rating		Continuous							
	Insulation Class		Class B							
	Ambient Temperature		0 to +40 °C							
	Ambient Humidity		20 to 80% (non-condensing)							
	Insulation Resistance		500 VDC, 10 MΩ min.							
	Excitation		Permanent magnet							
	Dielectric Strength		1500 VAC for 1 minute							
	Protection Methods		Self-cooled, air-cooling							
Allowable Winding Temperature		130 °C								

Force-Speed Characteristics - (With Standard-force Magnetic Ways)

A: Continuous duty zone

B: Intermittent duty zone



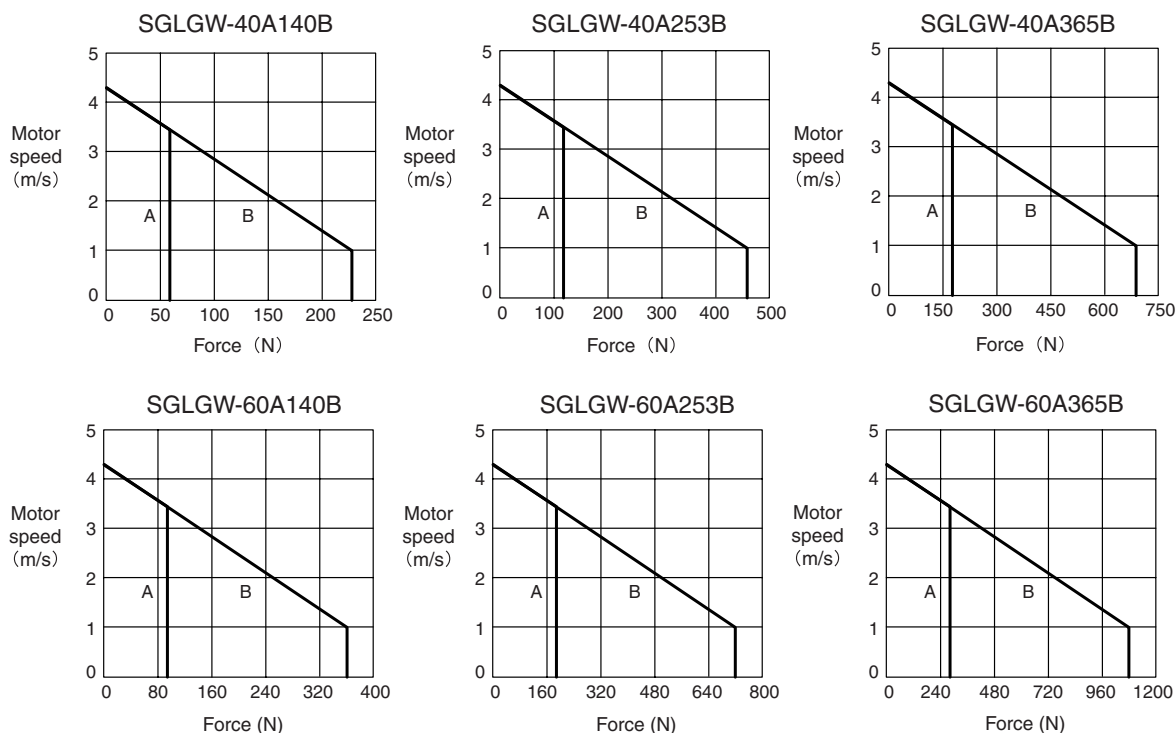
Coreless SGLGW/SGLGM - (With High-force Magnetic Ways)

Voltage		230V					
Linear Servomotor Model SGLGW-		40A			60A		
		140B	253B	365B	140B	253B	365B
Rated Force*	N	57	114	171	89	178	267
Rated Current*	Arms	0.8	1.6	2.4	1.2	2.3	3.5
Instantaneous Peak Force*	N	230	460	690	360	720	1080
Instantaneous Peak Current*	Arms	3.2	6.5	9.7	5.0	10.0	14.9
Coil Assembly Mass	kg	0.34	0.60	0.87	0.42	0.76	1.10
Force Constant	N / Arms	76.0	76.0	76.0	77.4	77.4	77.4
BEMF Constant	V / (m / s)	25.3	25.3	25.3	25.8	25.8	25.8
Motor Constant	N / $\sqrt{W}$	9.6	13.6	16.7	12.9	18.2	22.3
Electrical Time Constant	ms	0.4	0.4	0.4	0.5	0.5	0.5
Mechanical Time Constant	ms	3.69	3.24	3.12	2.52	2.29	2.21
Thermal Resistance (With Heat Sink)	K / W	1.87	0.98	0.65	1.62	0.80	0.53
Thermal Resistance (Without Heat Sink)	K / W	3.39	2.02	1.38	2.69	1.54	1.20
Magnetic Attraction	N	0	0	0	0	0	0
Head Sink Size	mm	200 x 300 x 12	300 x 400 x 12	400 x 500 x 12	200 x 300 x 12	300 x 400 x 12	400 x 500 x 12
Basic Specifications	Time Rating	Continuous					
	Insulation Class	Class B					
	Ambient Temperature	0 to +40 °C					
	Ambient Humidity	20 to 80% (non-condensing)					
	Insulation Resistance	500 VDC, 10 MΩ min.					
	Excitation	Permanent magnet					
	Dielectric Strength	1500 VAC for 1 minute					
	Protection Methods	Self-cooled, air-cooling					
	Allowable Winding Temperature	130 °C					

- Note:** 1. The items marked with an * and "Force and Speed Characteristics" are the values at a motor winding temperature of 100 °C during operation in combination with a SERVODRIVE. The others are at 20 °C (68°F).
2. The above specifications show the values under the cooling condition when a heat sink (aluminium board) listed in the following table is mounted on the coil assembly.

Force-Speed Characteristics - (With High-force Magnetic Ways)

A: Continuous duty zone
B: Intermittent duty zone



Iron-core SGLFW/SGLFM (200V)

Voltage		230V						
Linear Servomotor Model SGLFW-		20A		35A		50A		1ZA
		090A	120A	120A	230A	200B	380B	200B
Rated Force*	N	25	40	80	160	280	560	560
Rated Current*	Arms	0.7	0.8	1.4	2.8	5.0	10.0	8.7
Instantaneous Peak Force*	N	86	125	220	440	600	1200	1200
Instantaneous Peak Current*	Arms	3.0	2.9	4.4	8.8	12.4	25.0	21.6
Coil Assembly Mass	kg	0.7	0.9	1.3	2.3	3.5	6.9	6.4
Force Constant	N / Arms	36.0	54.0	62.4	62.4	60.2	60.2	69.0
BEMF Constant	V / (m / s)	12.0	18.0	20.8	20.8	20.1	20.1	23.0
Motor Constant	N / $\sqrt{W}$	7.9	9.8	14.4	20.4	34.3	48.5	52.4
Electrical Time Constant	ms	3.2	3.3	3.6	3.6	15.9	15.8	18.3
Mechanical Time Constant	ms	11.0	9.3	6.2	5.5	3.0	2.9	2.3
Thermal Resistance (With Heat Sink)	K / W	4.35	3.19	1.57	0.96	0.82	0.32	0.6
Thermal Resistance (Without Heat Sink)	K / W	7.69	5.02	4.10	1.94	1.48	0.74	0.92
Magnetic Attraction	N	314	462	809	1586	1650	3260	3300
Head Sink Size	mm	125 x 125 x 13		254 x 254 x 25			400 x 500 x 40	254 x 254 x 25
Basic Specifications	Time Rating	Continuous						
	Insulation Class	Class B						
	Ambient Temperature	0 to +40 °C						
	Ambient Humidity	20 to 80% (non-condensing)						
	Insulation Resistance	500 VDC, 10 MΩ min.						
	Excitation	Permanent magnet						
	Dielectric Strength	1500 VAC for 1 minute						
	Protection Methods	Self-cooled						
	Allowable Winding Temperature	130 °C						

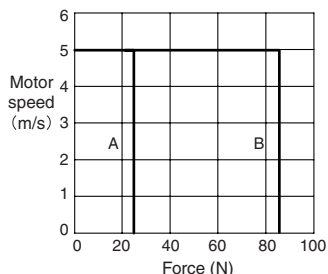
- Note:** 1. The items marked with an * and "Force and Speed Characteristics" are the values at a motor winding temperature of 100 °C during operation in combination with a SERVODRIVE. The others are at 20 °C (68°F).
2. The above specifications show the values under the cooling condition when a heat sink (aluminium board) listed in the following table is mounted on the coil assembly.

Force-Speed Characteristics (200 V)

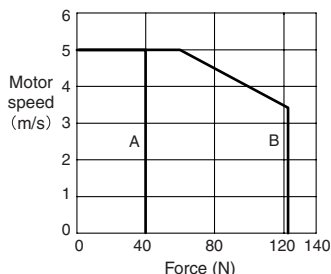
A: Continuous duty zone

B: Intermittent duty zone

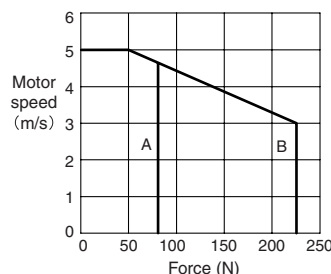
SGLFW-20A090A



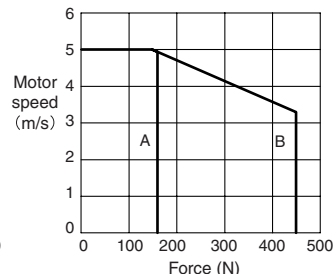
SGLFW-20A120A



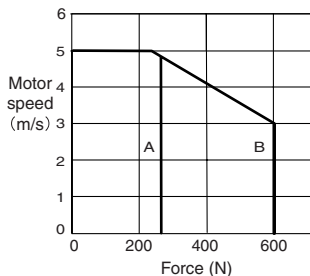
SGLFW-35A120A



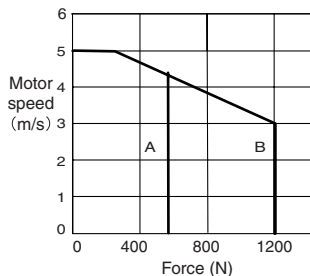
SGLFW-35A230A



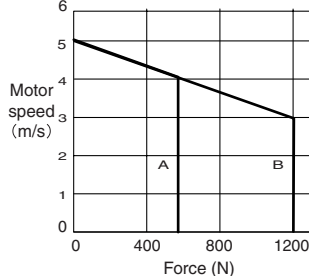
SGLFW-50A200B



SGLFW-50A380B



SGLFW-1ZA200B



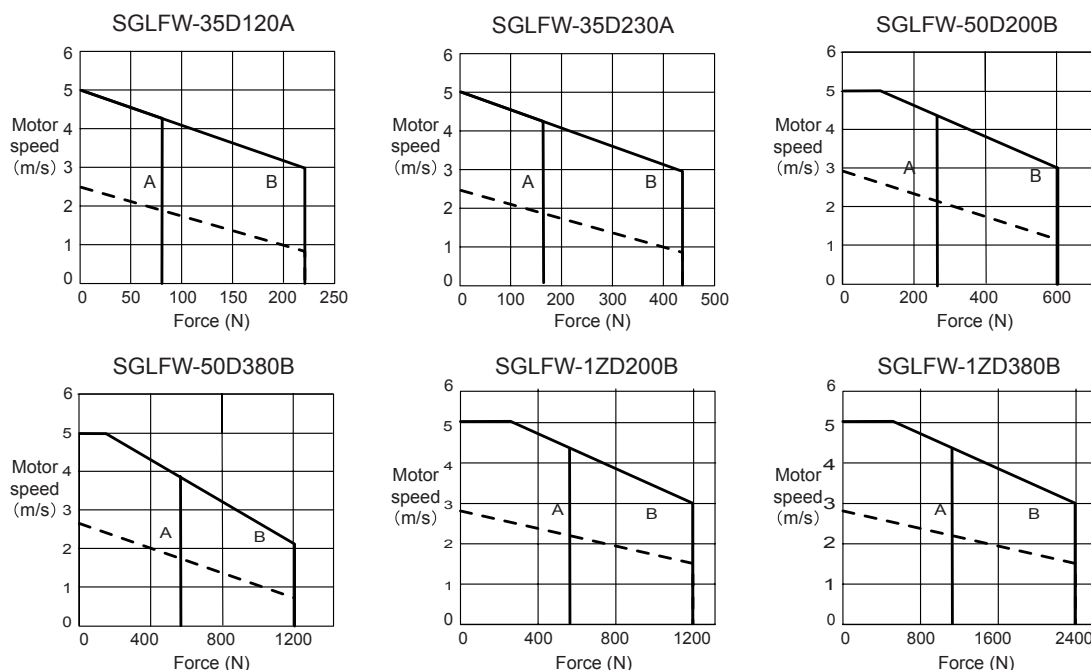
Iron-core SGLFW/SGLFM (400V)

Voltage		400V					
Linear Servomotor Model SGLFW-		35D		50D		1ZD	
		120A	230A	200B	380B	200B	380B
Rated Force*	N	80	160	280	560	560	1120
Rated Current*	Arms	0.7	1.4	2.3	4.5	4.9	9.8
Instantaneous Peak Force*	N	220	440	600	1200	1200	2400
Instantaneous Peak Current*	Arms	2.3	4.6	5.6	11.0	12.3	24.6
Coil Assembly Mass	kg	1.3	2.3	3.5	6.9	6.4	11.5
Force Constant	N / Arms	120.2	120.2	134.7	134.7	122.6	122.6
BEMF Constant	V / (m / s)	40.1	40.1	44.9	44.9	40.9	40.9
Motor Constant	N / $\sqrt{W}$	13.8	19.5	33.4	47.2	51.0	72.1
Electrical Time Constant	ms	3.5	3.5	15.0	15.0	17.4	17.2
Mechanical Time Constant	ms	5.5	5.5	3.2	3.2	2.5	2.2
Thermal Resistance (With Heat Sink)	K / W	1.57	0.96	0.82	0.32	0.6	0.28
Thermal Resistance (Without Heat Sink)	K / W	4.1	1.94	1.48	0.74	0.92	0.55
Magnetic Attraction	N	810	1590	1650	3260	3300	6520
Head Sink Size	mm	254 x 254 x 25			400 x 500 x 40	254 x 254 x 25	400 x 500 x 40
Basic Specifications	Time Rating	Continuous					
	Insulation Class	Class B					
	Ambient Temperature	0 to +40° C					
	Ambient Humidity	20 to 80% (non-condensing)					
	Insulation Resistance	500 VDC, 10 M Ω min.					
	Excitation	Permanent magnet					
	Dielectric Strength	1500 VAC for 1 minute					
	Protection Methods	Self-cooled					
	Allowable Winding Temperature	130 °C					

- Note:** 1. The items marked with an * and "Force and Speed Characteristics" are the values at a motor winding temperature of 100 °C during operation in combination with a SERVODRIVE. The others are at 20 °C (68°F).
2. The above specifications show the values under the cooling condition when a heat sink (aluminium board) listed in the following table is mounted on the coil assembly.

Force-Speed Characteristics (400 V)

A: Continuous duty zone
B: Intermittent duty zone



Note: The dotted line indicates characteristics when the linear servomotor for 400 VAC is used with an input power supply for 200 VAC. In this case, the serial converter should be changed. Contact your Omron-Yaskawa representatives.

Iron-core SGLTW/SGLTM (400 V)

Voltage		400V							
Linear Servomotor Model SGLFW-		35D		50D		40D		80D	
		170H	320H	170H	320H	400B	600B	400B	600B
Rated Force*	N	300	600	450	900	670	1000	1300	2000
Rated Current*	Arms	3.2	6.5	3.2	6.3	3.7	5.5	7.2	11.1
Instantaneous Peak Force*	N	600	1200	900	1800	2600	4000	5000	7500
Instantaneous Peak Current*	Arms	7.5	15.1	7.3	14.6	20.7	30.6	37.6	56.4
Coil Assembly Mass	kg	4.7	8.8	6	11	15	23	25	36
Force Constant	N / Arms	99.6	99.6	153.3	153.3	196.1	196.1	194.4	194.4
BEMF Constant	V / (m / s)	33.2	33.2	51.1	51.1	65.4	65.4	64.8	64.8
Motor Constant	N / $\sqrt{W}$	36.3	51.4	48.9	69.1	59.6	73	85.9	105.2
Electrical Time Constant	ms	14.3	14.3	15.6	15.6	14.4	14.4	15.4	15.4
Mechanical Time Constant	ms	3.5	3.5	2.5	2.5	4.2	4.2	3.2	3.2
Thermal Resistance (With Heat Sink)	K / W	0.76	0.4	0.61	0.3	0.24	0.2	0.22	0.18
Thermal Resistance (Without Heat Sink)	K / W	1.26	0.83	0.97	0.8	0.57	0.4	0.47	0.33
Magnetic Attraction* ¹	N	0	0	0	0	0	0	0	0
Magnetic Attraction* ²	N	1400	2780	2000	3980	3950	5890	7650	11400
Head Sink Size	mm	400 x 500 x 40				609 x 762 x 50			
Basic Specifications	Time Rating	Continuous							
	Insulation Class	Class B							
	Ambient Temperature	0 to +40 °C							
	Ambient Humidity	20 to 80% (non-condensing)							
	Insulation Resistance	500 VDC, 10 MW min.							
	Excitation	Permanent magnet							
	Dielectric Strength	1500 VAC for 1 minute							
	Protection Methods	Self-cooled							
Allowable Winding Temperature		130 °C							

*1. The unbalanced magnetic gap resulted from the coil assembly installation condition causes a magnetic attraction on the coil assembly.

*2. The value indicates the magnetic attraction generated on one side of the magnetic way.

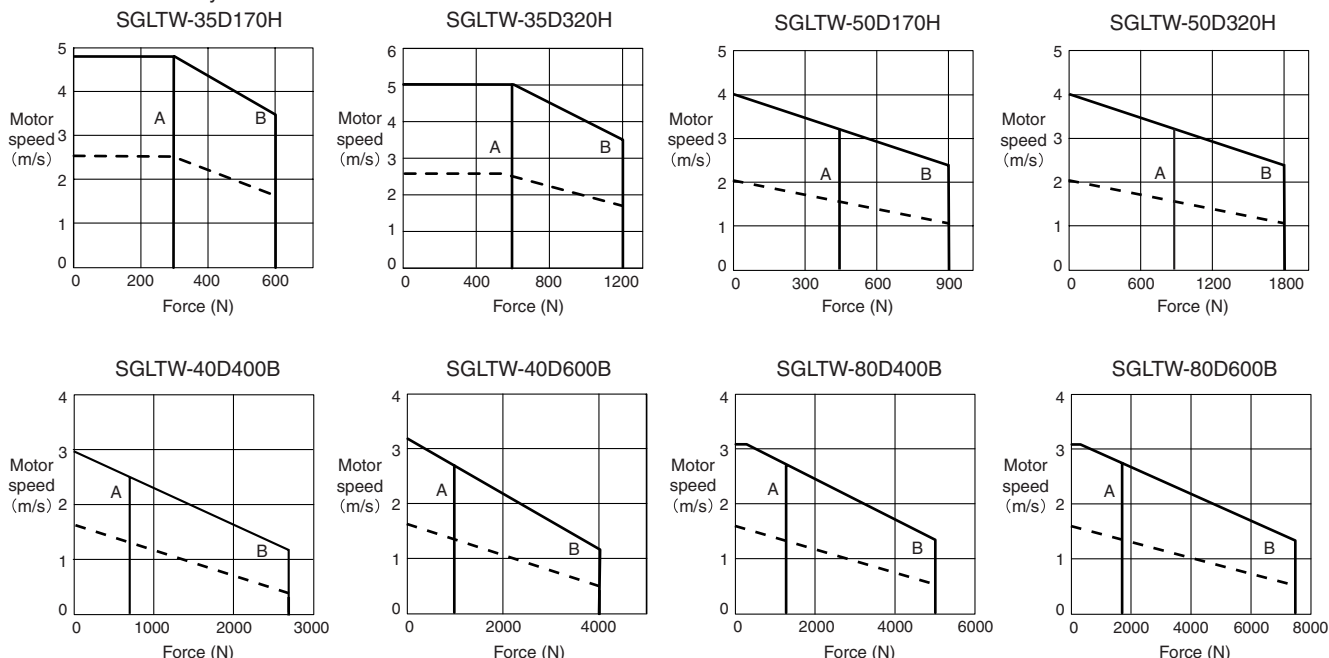
Note: 1. The items marked with an * and "Force and Speed Characteristics" are the values at a motor winding temperature of 100 °C during operation in combination with a SERVODRIVE. The others are at 20 °C (68 °F).

2. The above specifications show the values under the cooling condition when a heat sink (aluminium board) listed in the following table is mounted on the coil assembly.

Force-Speed Characteristics (400 V)

A: Continuous duty zone

B: Intermittent duty zone

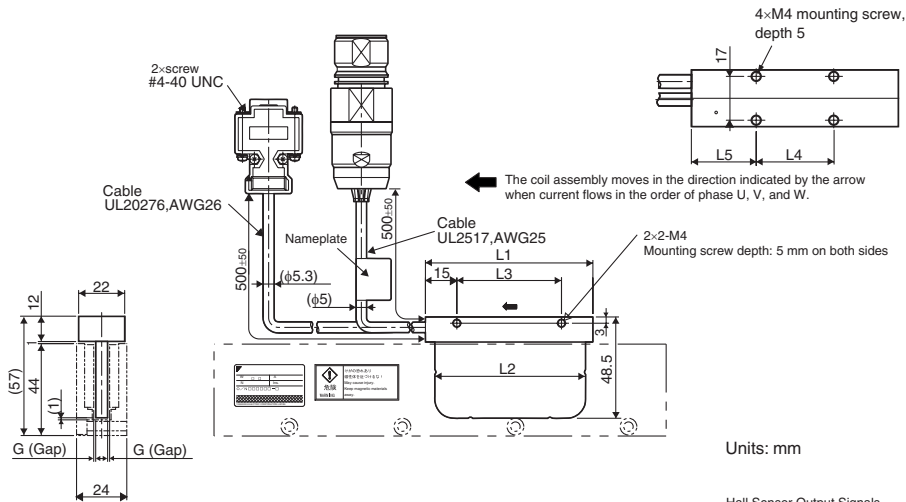


Dimensions

Coreless SGLG□-30

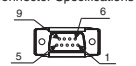
Coil Assembly: SGLGW-30A□□□B□D

Coil Assembly Model SGLGW-	L1	L2	L3	L4	L5	G(Gap)	Approx. Mass* kg	
30A050B□D	50	48	30	20	20	0.85	0.14	*The value indicates the mass of coil assembly with a hall sensor unit.
30A080B□D	80	72	50	30	25	0.95	0.19	



Units: mm

Hall Sensor Connector Specifications



Pin connector type: 17JE-23090-02 (D8C) made by DDK Ltd.

The mating connector
Socket connector type: 17JE-13090-02 (D8C)
Stud type: 17L-002C or 17L-002C1

Pin No.	Name
1	+5V (Power supply)
2	Phase U
3	Phase V
4	Phase W
5	0V (Power supply)
6	Not used
7	Not used
8	Not used
9	Not used

Linear Servomotor Connector Specifications

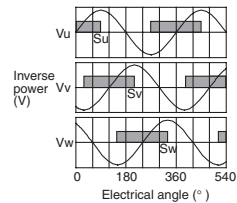
Extension: SROC06JMSCN169
Pin type: 021.421.1020 made by Interconnection

The mating connector
Plug type: SPOC06KFSDN169

Pin No.	Name	Lead Color
1	Phase U	Red
2	Phase V	White
3	Phase W	Blue
4	Not used	—
5	Not used	—
6	FG	Green/Yellow
7	Not used	—

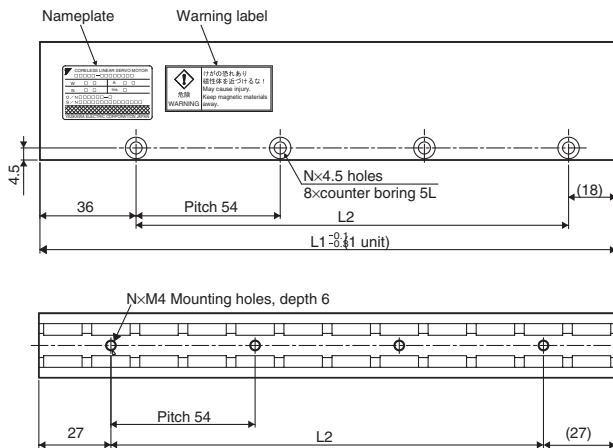
Hall Sensor Output Signals

When the coil assembly moves in the direction indicated by the arrow in the figure, the relationship between the hall sensor output signals Su, Sv, Sw and the inverse power of each motor phase Vu, Vv, Vw becomes as shown in the following figure.



Magnetic Way: SGLGM-30□□□A

Magnetic Way Model SGLGM-	L1 mm	L2 mm	N	Approx. Mass kg
30108A	108	54	2	0.6
30216A	216	162	4	1.1
30432A	432	378	8	2.3

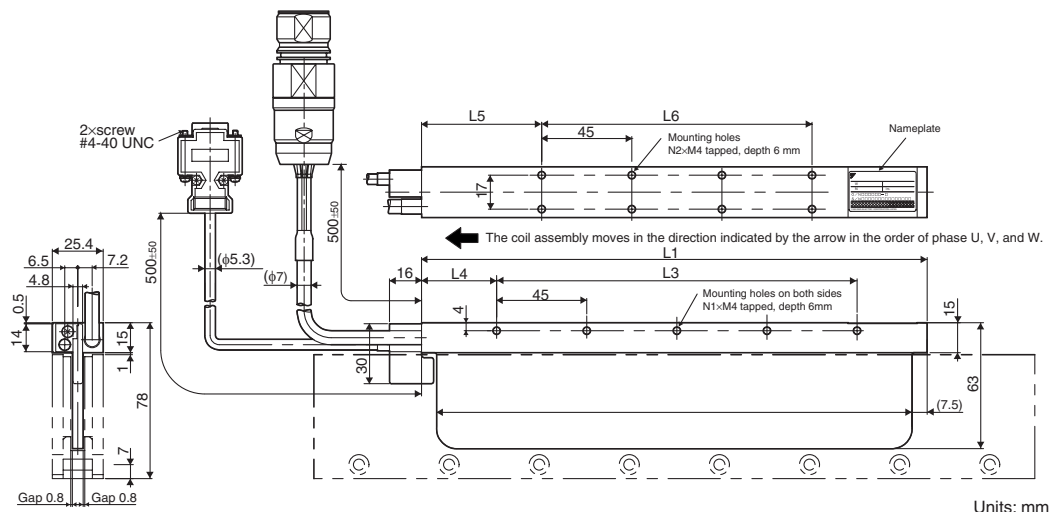


Units: mm

Coreless SGLG□-40

Coil Assembly: SGLGW-40A□□□B□D

Coil Assembly Model SGLGW-	L1	L2	L3	L4	L5	L6	N1	N2	Approx. Mass* kg	
40A140B□□	140	125	90	30	52.5	45	3	4	0.40	*The value indicates the mass of coil assembly with a hall sensor unit.
40A253B□□	252.5	237.5	180	37.5	60	135	5	8	0.66	
40A365B□□	365	350	315	30	52.5	270	8	14	0.93	



Units: mm

Hall Sensor Connector Specifications



Pin connector type:
17JE-23090-02 (D8C)
made by DDK Ltd.

The mating connector

Socket connector type: 17JE-13090-02 (D8C) Stud type: 17L-002C or 17L-002C1
--

Pin No.	Name
1	+5V (Power supply)
2	Phase U
3	Phase V
4	Phase W
5	0V (Power supply)
6	Not used
7	Not used
8	Not used
9	Not used

Linear Servomotor Connector Specifications



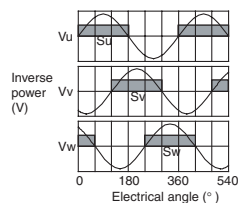
Extension: SROC06JMSCN169
Pin type: 021.421.1020
made by Interconnectron

The mating connector
Plug type: SPOC06KFSDN169

Pin No.	Name	Lead Color
1	Phase U	Red
2	Phase V	White
3	Phase W	Blue
4	Not used	—
5	Not used	—
6	FG	Green/Yellow
7	Not used	—

Hall Sensor Output Signals

When the coil assembly moves in the direction indicated by the arrow in the figure, the relationship between the hall sensor output signals S_u , S_v , S_w and the inverse power of each motor phase V_u , V_v , V_w becomes as shown in the figure below.

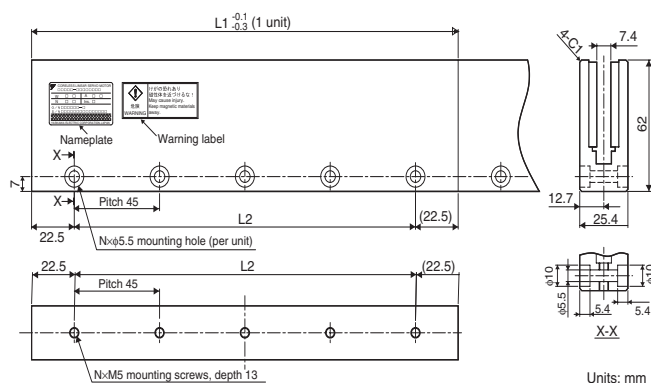


Standard-Force Magnetic Way: SGLGM-40□□□B

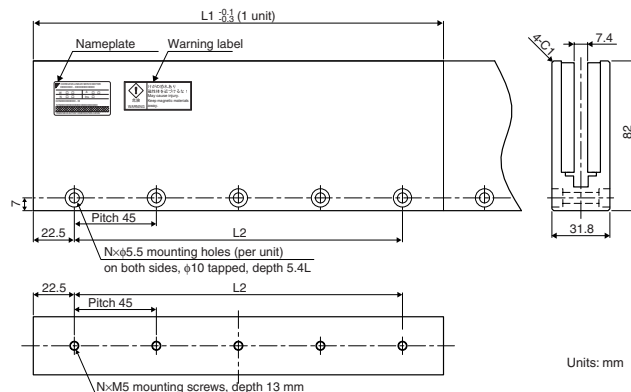
Standard-force Magnetic Way Model SGLGM-	L1 mm	L2 mm	N	Approx. Mass kg
40090B	90	45	2	0.8
40225B	225	180	5	2.0
40360B	360	315	8	3.1
40405B	405	360	9	3.5
40450B	450	405	10	3.9

High-Force Magnetic Way: SGLGM-40□□□B-M

Standard-force Magnetic Way Model SGLGM-	L1 mm	L2 mm	N	Approx. Mass kg
40090B-M	90	45	2	1.0
40225B-M	225	180	5	2.6
40360B-M	360	315	8	4.1
40405B-M	405	360	9	4.6
40450B-M	450	405	10	5.1



Units: mm

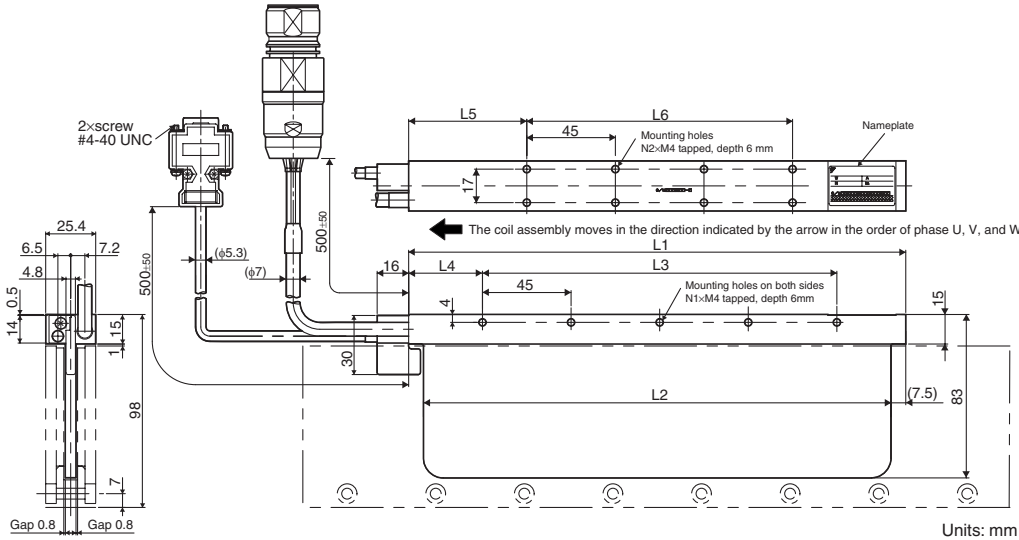


Units: mm

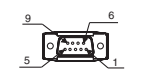
Coreless SGLG□-60

Coil Assembly: SGLGW-60A□□□B□D

Coil Assembly Model SGLGW-	L1	L2	L3	L4	L5	L6	N1	N2	Approx. Mass* kg	
60A140B□D	140	125	90	30	52.5	45	3	4	0.48	*The value indicates the mass of coil assembly with a hall sensor unit.
60A253B□D	252.5	237.5	180	37.5	60	135	5	8	0.82	
60A365B□D	365	350	315	30	52.5	270	8	14	1.16	



Hall Sensor Connector Specifications



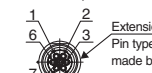
Pin connector type: 17JE-23090-02 (D8C) made by DDK Ltd.

The mating connector

Socket connector type: 17JE-13090-02 (D8C) Stud type: 17L-002C or 17L-002C1

Pin No.	Name
1	+5V (Power supply)
2	Phase U
3	Phase V
4	Phase W
5	0V (Power supply)
6	Not used
7	Not used
8	Not used
9	Not used

Linear Servomotor Connector Specifications



Extension: SROC06JMSCN169 Pin type: 021.421.1020 made by Interconnectron

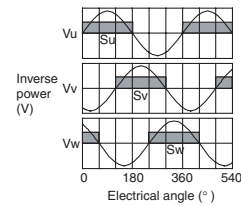
The mating connector

Plug type: SPOC06KFSDN169

Pin No.	Name	Lead Color
1	Phase U	Red
2	Phase V	White
3	Phase W	Blue
4	Not used	—
5	Not used	—
6	FG	Green/Yellow
7	Not used	—

Hall Sensor Output Signals

When the coil assembly moves in the direction indicated by the arrow in the figure, the relationship between the hall sensor output signals Su, Sv, Sw and the inverse power of each motor phase Vu, Vv, Vw becomes as shown in the figure below.

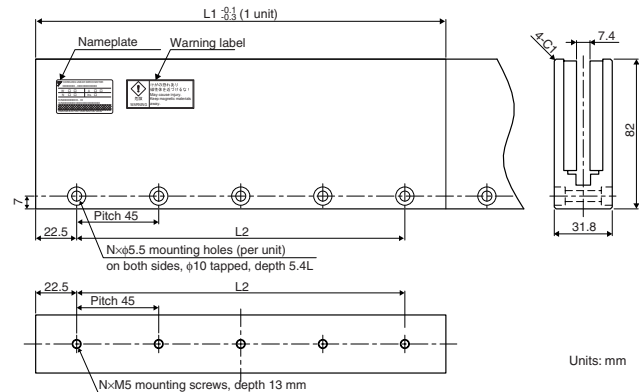
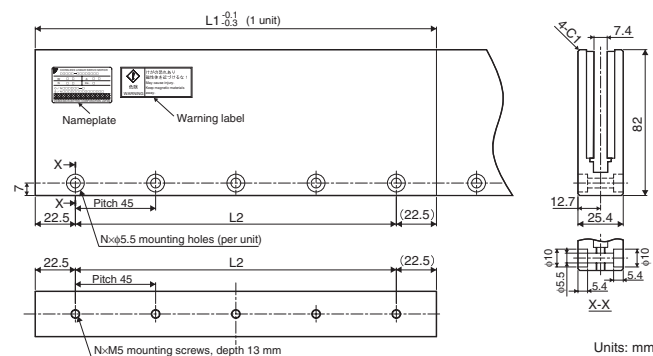


Standard-Force Magnetic Way: SGLGM-60□□□B

Standard-force Magnetic Way Model SGLGM-	L1 mm	L2 mm	N	Approx. Mass kg
60090B	90	45	2	1.1
60225B	225	180	5	2.6
60360B	360	315	8	4.1
60405B	405	360	9	4.6
60450B	450	405	10	5.1

High-Force Magnetic Way: SGLGM-60□□□B-M

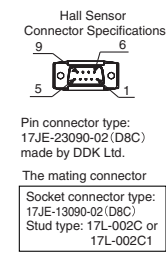
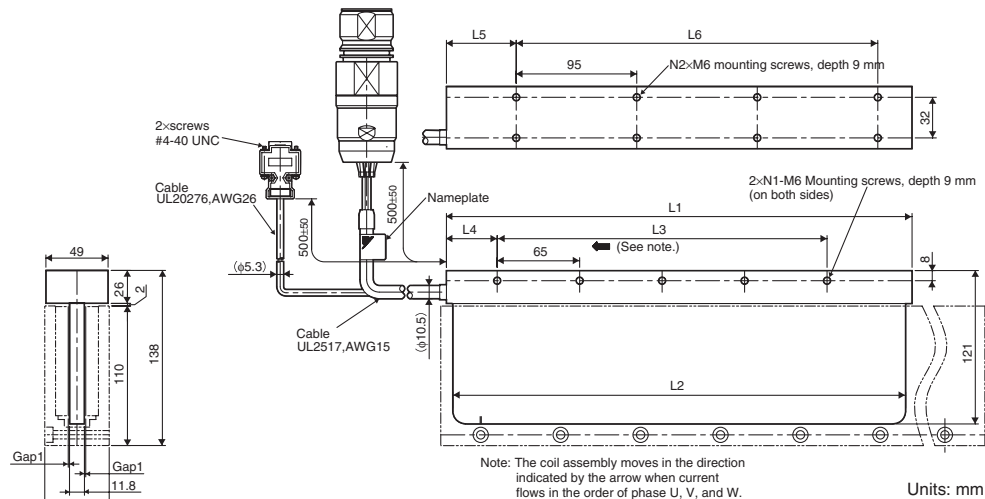
Standard-force Magnetic Way Model SGLGM-	L1 mm	L2 mm	N	Approx. Mass kg
60090B-M	90	45	2	1.3
60225B-M	225	180	5	3.3
60360B-M	360	315	8	5.2
60405B-M	405	360	9	5.9
60450B-M	450	405	10	6.6



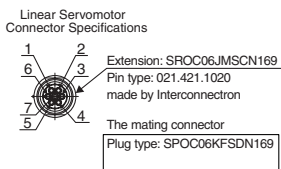
Coreless SGLG□-90

Coil Assembly: SGLGW-90A200A□D

Coil Assembly Model SGLGW-	L1	L2	L3	L4	L5	L6	N1	N2	Approx. Mass*	
90A200A□	199	189	130	40	60	95	3	4	2.2	*The value indicates the mass of coil assembly with a hall sensor unit.



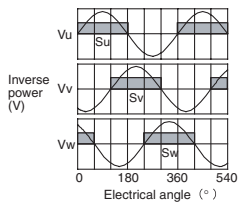
Pin No.	Name
1	+5V (Power supply)
2	Phase U
3	Phase V
4	Phase W
5	0V (Power supply)
6	Not used
7	Not used
8	Not used
9	Not used



Pin No.	Name	Lead Color
1	Phase U	Red
2	Phase V	White
3	Phase W	Blue
4	Not used	-
5	Not used	-
6	FG	Green/Yellow
7	Not used	-

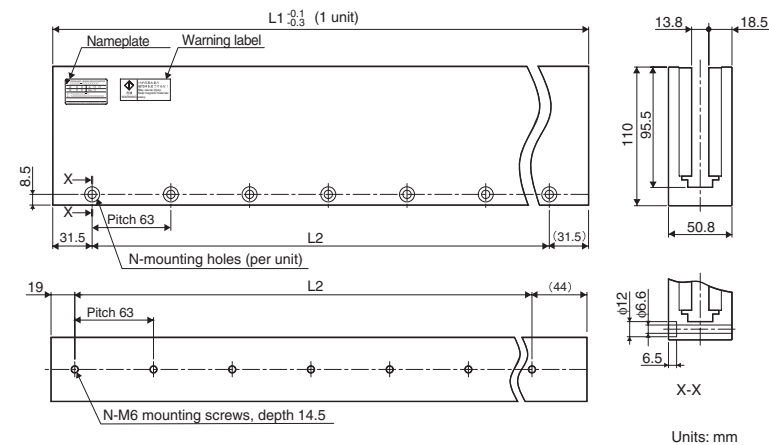
Hall Sensor Output Signals

When the coil assembly moves in the direction indicated by the arrow in the figure, the relationship between the hall sensor output signals Su, Sv, Sw and the inverse power of each motor phase Vu, Vv, Vw becomes as shown in the figure below.



Magnetic Way: SGLGM-90□□□A

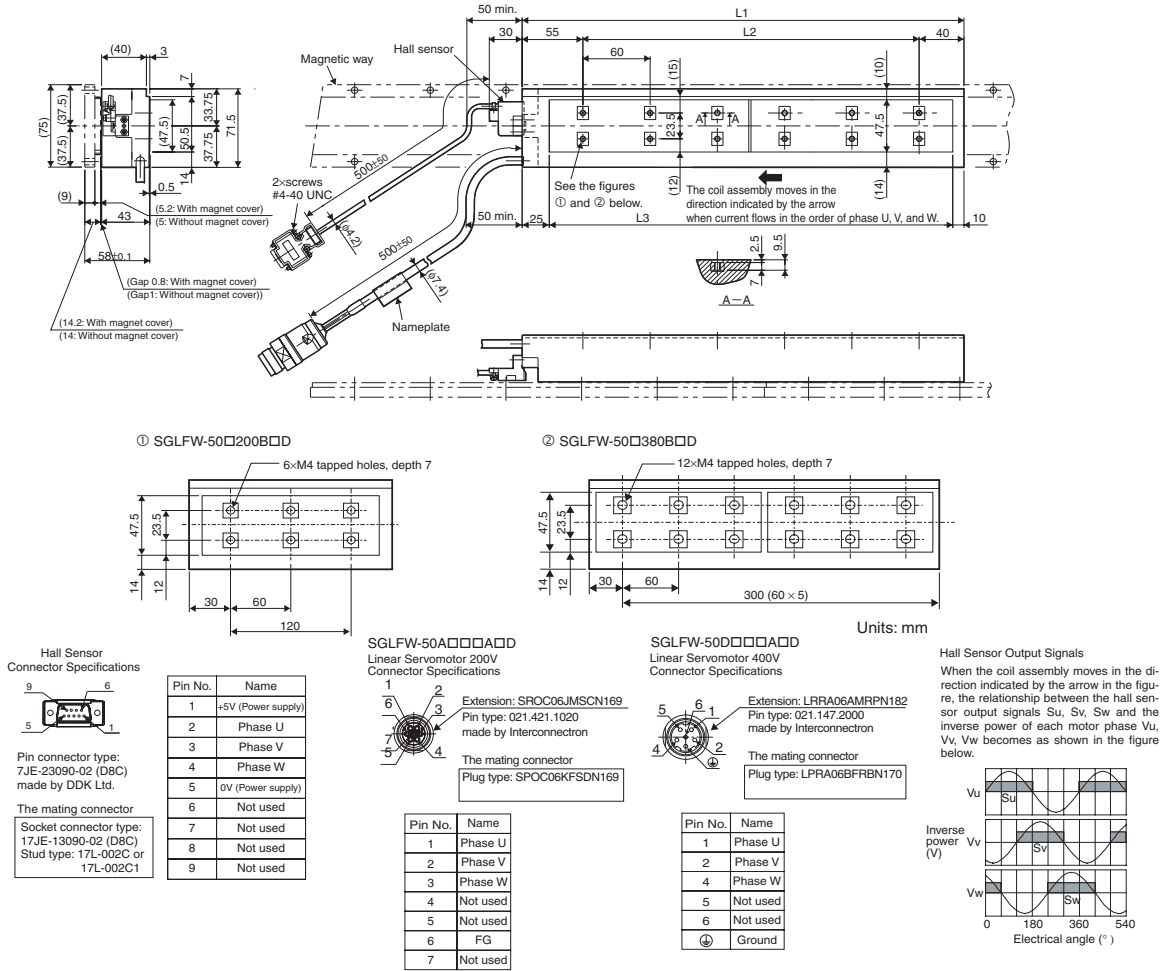
Magnetic Way Model SGLGM-	L1 mm	L2 mm	N	Approx. Mass kg
90252A	252	189	4	7.3
90504A	504	441	8	14.7



Iron-core SGLF□-50

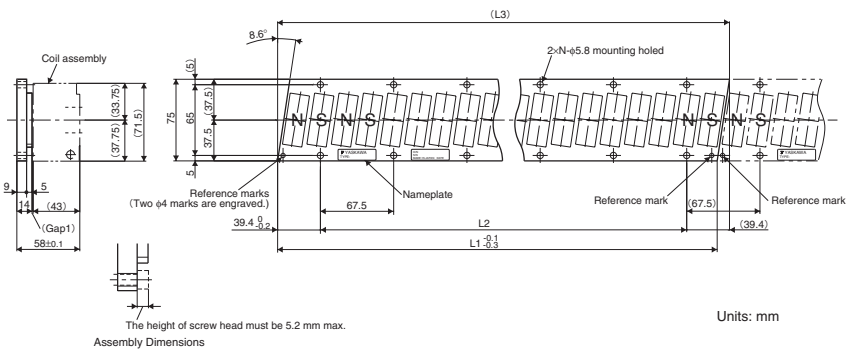
Coil Assembly: SGLFW-50□□□□B□D

Coil Assembly Model SGLFW-	L1	L2	L3	N	Approx. Mass kg
50□200B□D	215	120	180	6	3.5
50□380B□D	395	300	360	12	6.9



Magnetic Way: SGLFM-50□□□A

Magnetic Way Model SGLFM-	L1 -0.1 -0.3	L2	(L3)	N	Approx. Mass kg
50405A	405	337.5 (67.5 × 5)	(416.3)	6	2.8
50675A	675	607.5 (67.5 × 9)	(686.3)	10	4.6
50945A	945	877.5 (67.5 × 13)	(956.3)	14	6.5

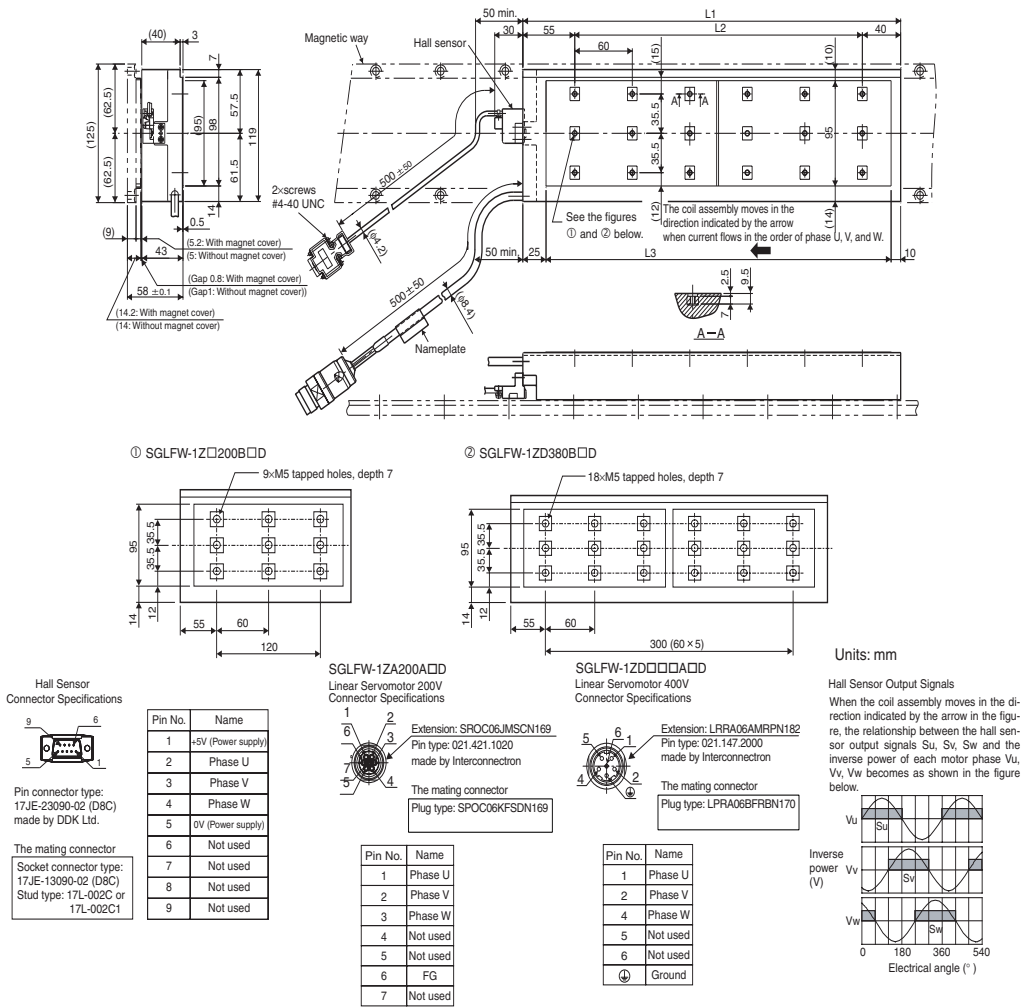


- Note:**
- Multiple SGLFM-50□□□A magnetic ways can be connected. Connect magnetic ways so that the reference marks match one on the other in the same direction as shown in the figure.
 - The magnetic way may affect pacemakers. Keep a minimum distance of 200 mm from the magnetic way

Iron-core SGLF□-1Z

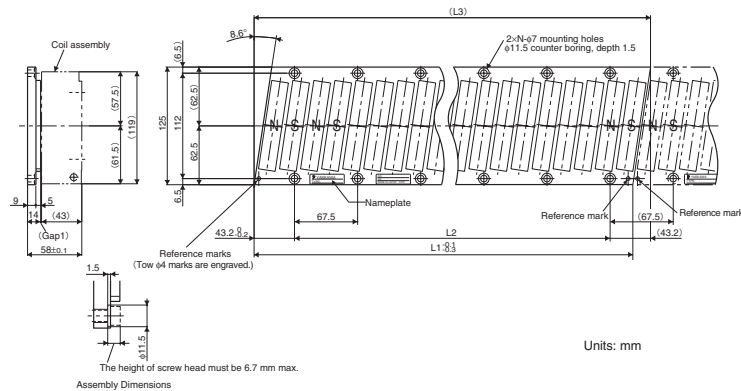
Coil Assembly: SGLFW-1Z□□□□B□D

Coil Assembly Model SGLFW-	L1	L2	L3	N	Approx. Mass kg
1Z□200B□D	215	120	180	8	6.4
1ZD380B□D	395	300	360	18	11.5



Magnetic Way: SGLFM-1Z□□□A

Magnetic Way Model SGLFM-	L1 -0.1 -0.3	L2	(L3)	N	Approx. Mass kg
1Z405A	405	337.5 (67.5 × 5)	(423.9)	6	7.3
1Z675A	675	607.5 (67.5 × 9)	(693.9)	10	12
1Z945A	945	877.5 (67.5 × 13)	(963.9)	14	17



- Note:**
- Multiple SGLFM-1Z□□□A magnetic ways can be connected. Connect magnetic ways so that the reference marks match one on the other in the same direction as shown in the figure.
 - The magnetic way may affect pacemakers. Keep a minimum distance of 200 mm from the magnetic way

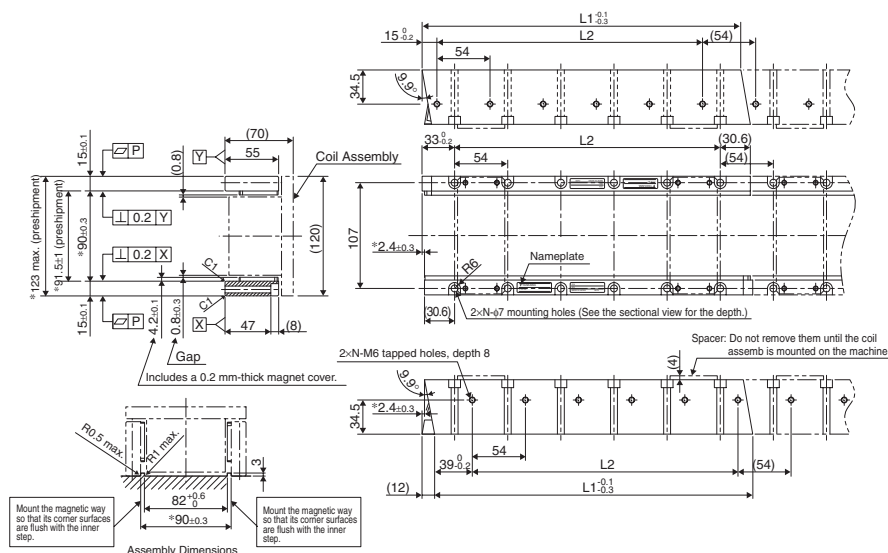
Coil Assembly: SGLTW-35D□□□H□D

Figure 1: Dimensions of the coil assembly. The figure includes three detailed drawings. The top-left drawing is a side view of the coil assembly with dimensions: (15) for the top section, 20±0.1 for the middle section, 80±0.05 for the bottom section, and (90) for the total height. It also shows a 30x30mm square area with a 12mm hole, a 66mm width, a 62.5mm width, and a 12mm hole. A nameplate is shown with dimensions 60 and 120±0.1. The top-right drawing is a top view of the coil assembly with dimensions: 30, 10, 20, 48±0.15, 10±0.15, and (L3). It shows N-M6 tapped holes with a depth of 12. The bottom drawing is a side view of the coil assembly with dimensions: 500±50, (φ4.2), 500±50, 35, 43, and 63 min. It shows a cable (UL20276, AWG28) and a protective tube. A note indicates the coil assembly moves in the direction of the arrow when current flows in the order of phase U, V, and W.

Magnetic Way Model SGLTM-	L1 ^{-0.1} -0.3	L2	N	Approx. Mass kg
35324H	324	270 (54 × 5)	6	4.8
35540H	540	486 (54 × 9)	10	8
35756H	756	702 (54 × 13)	14	11

Note:

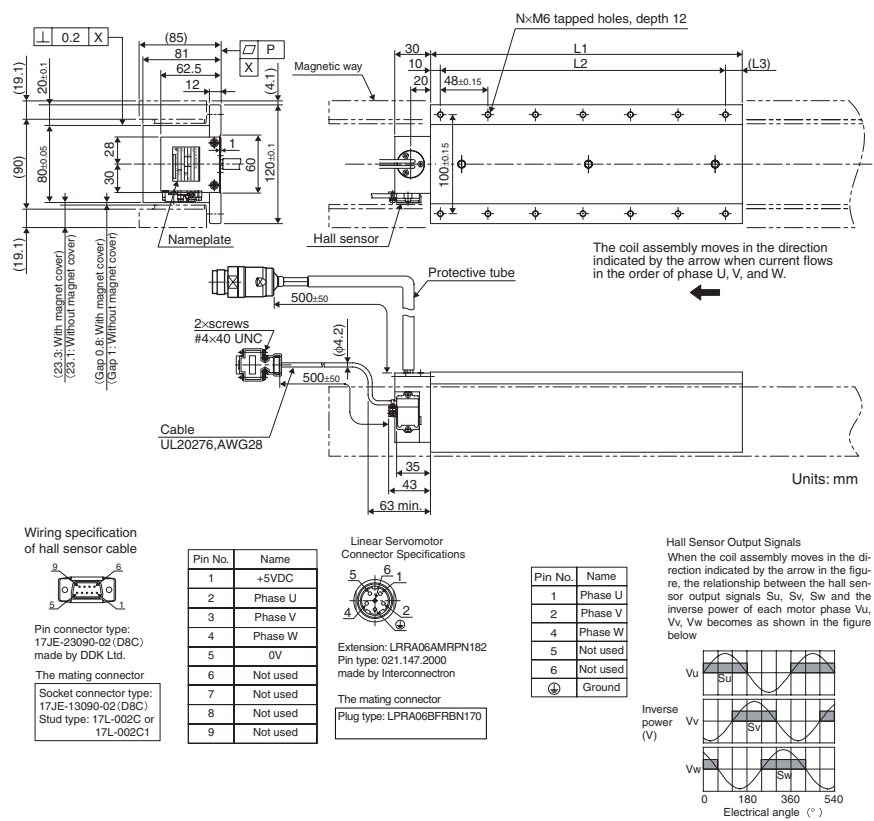
1. Two magnetic ways for both ends of coil assembly make one set. Spacers are mounted on magnetic ways for safety during transportation. Do not remove the spacers until the coil assembly is mounted on a machine.
2. The magnetic way may affect pacemakers. Keep a minimum distance of 200 mm from the magnetic way.
3. Two magnetic ways in a set can be connected to each other.
4. The dimensions marked with an * are the dimensions between the magnetic ways. Be sure to follow exactly the dimensions specified in the figure above. Mount magnetic ways as shown in Assembly Dimensions. The values with an * are the dimensions at preshipment.
5. Use socket headed screws of strength class 10.9 minimum for magnetic way mounting screws. Do not use stainless steel screws.



Iron-core SGLT□-50

Coil Assembly: SGLTW-50D□□□H□D

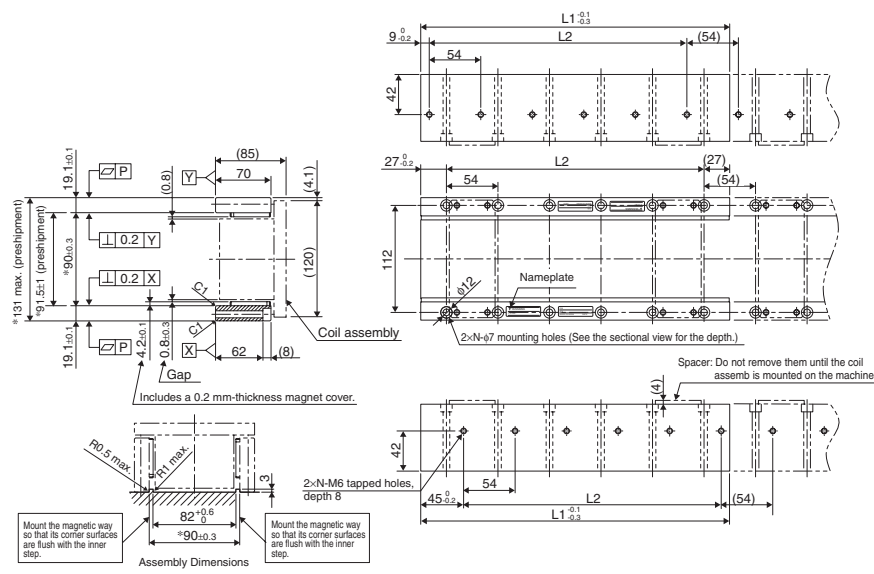
Coil Assembly Model SGLTW-	L1	L2	(L3)	N	Approx. Mass kg
50D170H□D	170	144 (48 × 3)	(16)	8	6
50D320H□D	315	288 (48 × 6)	(17)	14	11



Magnetic Way: SGLTM-50□□□H

Magnetic Way Model SGLTM-	L1 -0.1 -0.3	L2	N	Approx. Mass kg
50324H	324	270 (54 × 5)	6	8
50540H	540	486 (54 × 9)	10	13
50756H	756	702 (54 × 13)	14	18

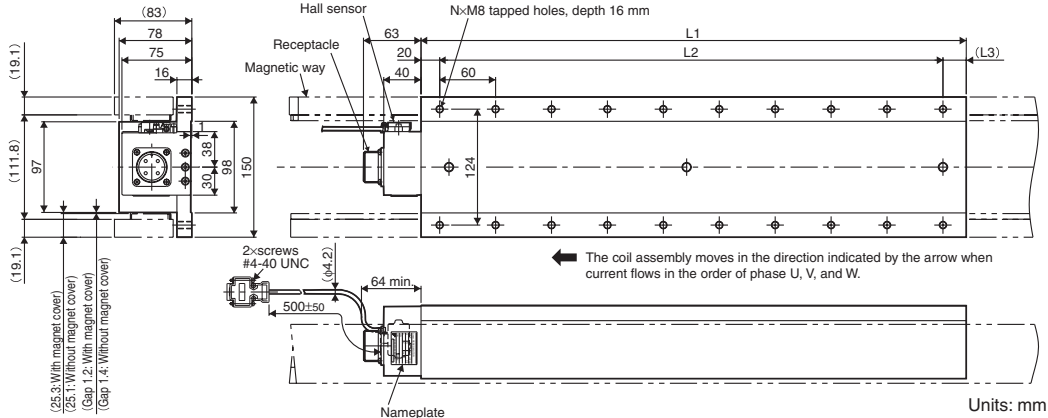
- Note:**
- Two magnetic ways for both ends of coil assembly make one set. Spacers are mounted on magnetic ways for safety during transportation. Do not remove the spacers until the coil assembly is mounted on a machine.
 - The magnetic way may affect pacemakers. Keep a minimum distance of 200 mm from the magnetic way.
 - Two magnetic ways in a set can be connected to each other.
 - The dimensions marked with an * are the dimensions between the magnetic ways. Be sure to follow exactly the dimensions specified in the figure above. Mount magnetic ways as shown in Assembly Dimensions. The values with an * are the dimensions at preshipment.
 - Use socket headed screws of strength class 10.9 minimum for magnetic way mounting screws. Do not use stainless steel screws.



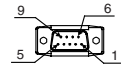
Iron-core SGLT□-40

Coil Assembly: SGLTW-40D□□□B□

Coil Assembly Model SGLTW-	L1	L2	(L3)	N	Approx. Mass kg
40D400B□	395	360 (60 × 6)	(15)	14	20
40D600B□	585	540 (60 × 9)	(25)	20	30



Hall Sensor Connector Specifications



Pin connector type: 17JE-23090-02 (D8C) made by DDK Ltd.

The mating connector
Socket connector type: 17JE-13090-02 (D8C)
Stud type: 17L-002C or 17L-002C1

Pin No.	Name
1	+5V (Power supply)
2	Phase U
3	Phase V
4	Phase W
5	0V (Power supply)
6	Not used
7	Not used
8	Not used
9	Not used

Linear Servomotor Connector Specifications



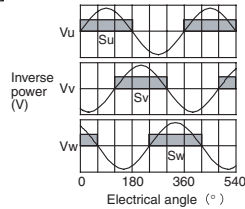
Receptacle type: MS3102A-22-22P made by DDK Ltd.

The mating connector
L-shaped plug type: MS3108E22-22S

Pin No.	Name
A	Phase U
B	Phase V
C	Phase W
D	Ground

Hall Sensor Output Signals

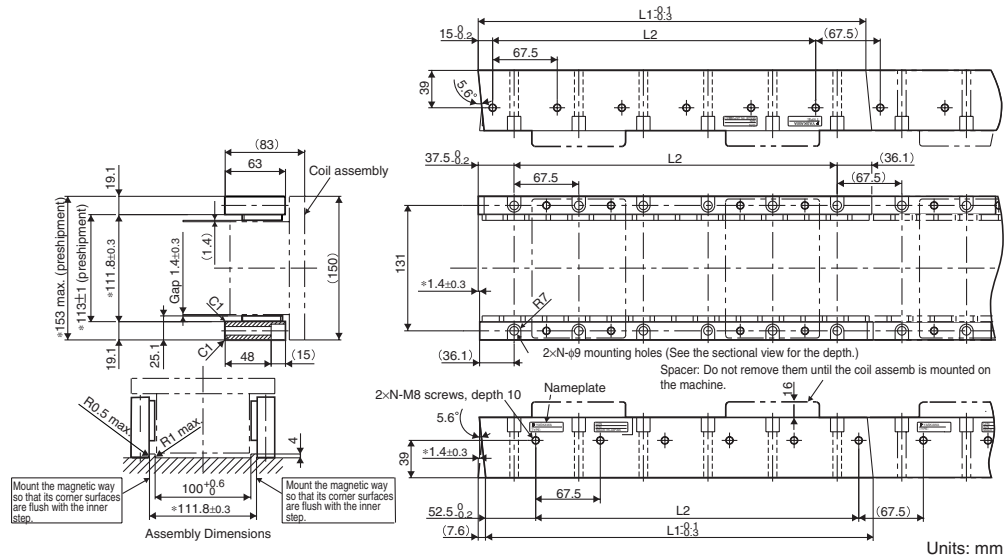
When the coil assembly moves in the direction indicated by the arrow in the figure, the relationship between the hall sensor output signals Su, Sv, Sw, and the inverse power of each motor phase Vu, Vv, Vw becomes as shown in the figure below.



Magnetic Way: SGLTM-40□□□A

Magnetic Way Model SGLTM-	L1 -0.1 -0.3	L2	N	Approx. Mass kg
40405A	405	337.5 (67.5 × 5)	6	9
40675A	675	607.5 (67.5 × 9)	10	15
40945A	945	877.5 (67.5 × 13)	14	21

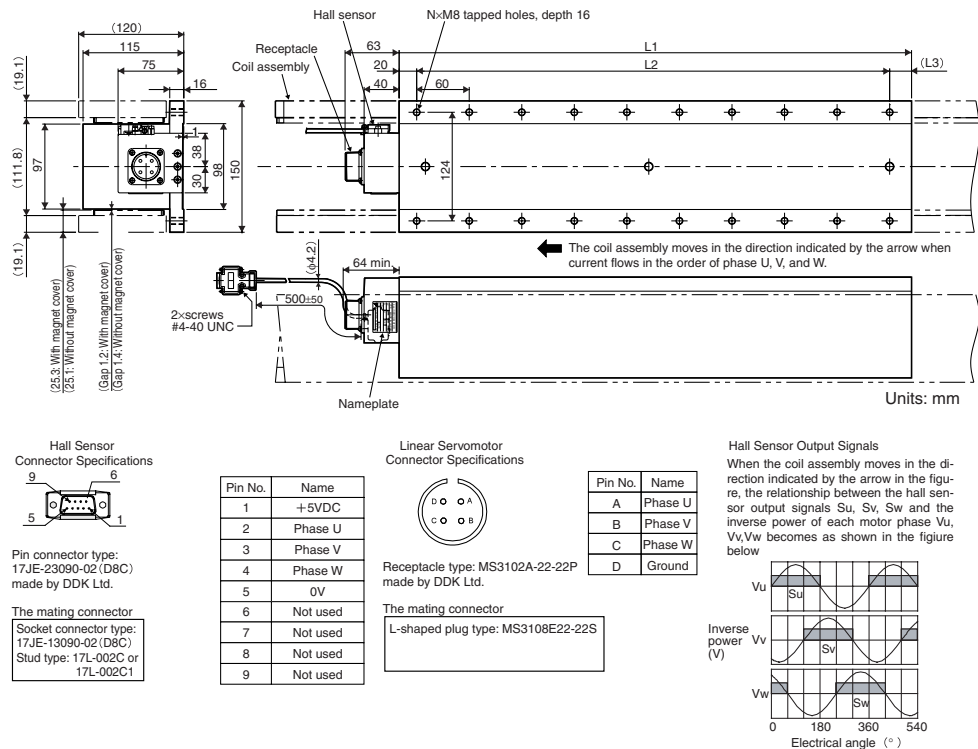
- Note:**
- Two magnetic ways for both ends of coil assembly make one set. Spacers are mounted on magnetic ways for safety during transportation. Do not remove the spacers until the coil assembly is mounted on a machine.
 - The magnetic way may affect pacemakers. Keep a minimum distance of 200 mm from the magnetic way.
 - Two magnetic ways in a set can be connected to each other.
 - The dimensions marked with an * are the dimensions between the magnetic ways. Be sure to follow exactly the dimensions specified in the figure above. Mount magnetic ways as shown in Assembly Dimensions. The values with an * are the dimensions at preshipment.
 - Use socket headed screws of strength class 10.9 minimum for magnetic way mounting screws. Do not use stainless steel screws.



Iron-core SGLT□-80

Coil Assembly: SGLTW-80□□□B□

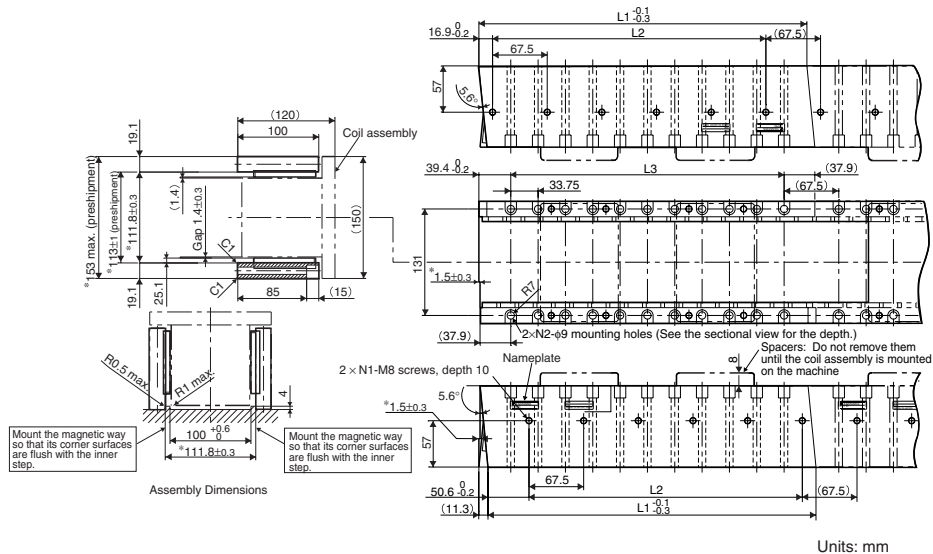
Coil Assembly Model SGLTW-	L1	L2	(L3)	N	Approx. Mass kg
80D400B□	395	360 (60 × 6)	(15)	14	30
80D600B□	585	540 (60 × 9)	(25)	20	43



Magnetic Way: SGLTM-80□□□A

Magnetic Way Model SGLTM-	L1 ^{-0.1 -0.3}	L2	L3	N1	N2	Approx. Mass kg
80405A	405	337.5 (67.5 × 5)	337.5 (33.75 × 10)	6	11	14
80675A	675	607.5 (67.5 × 9)	607.5 (33.75 × 18)	10	19	24
80945A	945	877.5 (67.5 × 13)	877.5 (33.75 × 26)	14	27	34

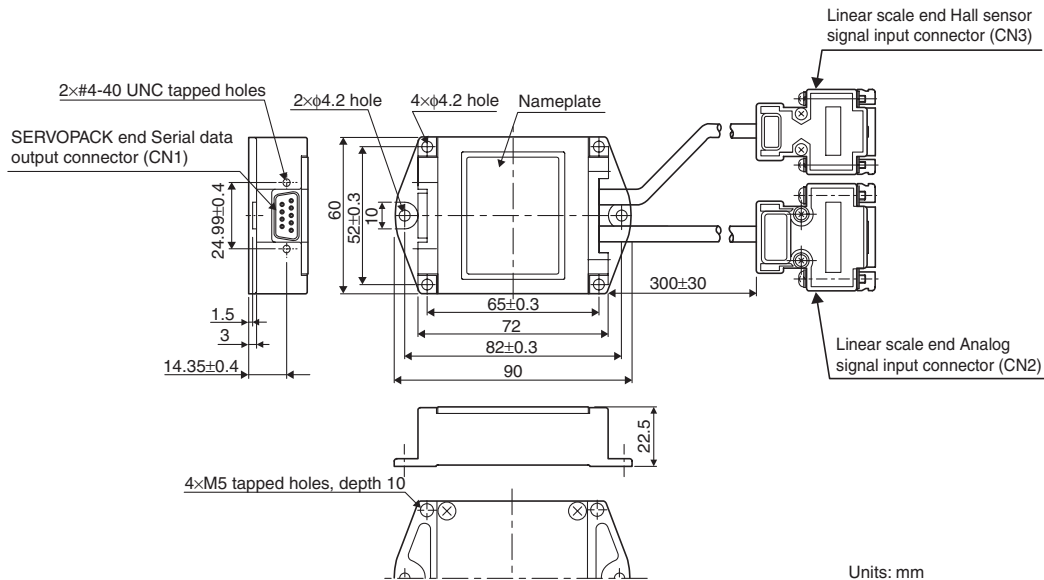
- Note:**
- Two magnetic ways for both ends of coil assembly make one set. Spacers are mounted on magnetic ways for safety during transportation. Do not remove the spacers until the coil assembly is mounted on a machine.
 - The magnetic way may affect pacemakers. Keep a minimum distance of 200 mm from the magnetic way.
 - Two magnetic ways in a set can be connected to each other.
 - The dimensions marked with an * are the dimensions between the magnetic ways. Be sure to follow exactly the dimensions specified in the figure above. Mount magnetic ways as shown in Assembly Dimensions. The values with an * are the dimensions at preshipment.
 - Use socket headed screws of strength class 10.9 minimum for magnetic way mounting screws. Do not use stainless steel screws.



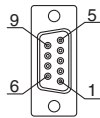
Serial Converter Unit

JZDP-A008-□□□

Items	Specifications
Electrical Characteristics	Power Supply Voltage
	+5.0V±5%, ripple content 5% max.
	Current Consumption*1
	120 mA Typ. 350 mA Max.
	Signal Resolution
	Input 2-phase sine wave: 1/256 pitch
	Max. Response Frequency
	250 kHz
	Analog Input Signals (cos, sin, Ref)
Mechanical Characteristics	Differential input amplitude: 0.4 V to 1.2V Input signal level: 1.5 V to 3.5V
	Pole Sensor Input Signal
	CMOS level
	Output Signals*3
	Position data, hall sensor information, and alarms
	Output Method
	Serial data transmission (HDLC (High-level Data Link Control) protocol format with Manchester codes)
	Transmission Cycle
	62.5 μs
Environmental Conditions	Output Circuit
	Balanced transceiver (SN75LBC176 or the equivalent) Internal terminal resistance: 120 Ω
	Approx. mass
	150 g
	Vibration Resistance
	98 m/s ² max. (1 to 2500 Hz) in three directions
	Shock Resistance
	980 m/s ² , (11 ms) two times in three directions
	Operating temperature
	0 °C to 55 °C (32 to 131 °F)
	Storage temperature
	-20 °C to +80 °C (-4 to +176 °F)
	Humidity
	20 % to 90 %RH (without condensation)

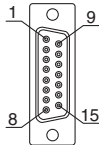


CN1
SERVOPACK end
serial data output



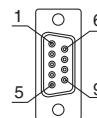
Pin No.	Signal
1	+5V
2	S-phase output
3	Empty
4	Empty
5	0V
6	/S-phase output
7	Empty
8	Empty
9	Empty
Case	Shield

CN2
Linear scale end
Analog signal input



Pin No.	Signal
1	/cos input (V1-)
2	/sin input (V2-)
3	Ref input (V0+)
4	+5V
5	5Vs
6	Empty
7	Empty
8	Empty
9	cos input (V1+)
10	sin input (V2+)
11	/Ref input (V0-)
12	0V
13	0Vs
14	Empty
15	Inner
Case	Shield

CN3
Linear scale end
Hall sensor signal input



Pin No.	Signal
1	+5V
2	U-phase input
3	V-phase input
4	W-phase input
5	0V
6	Empty
7	Empty
8	Empty
9	Empty
Case	Shield

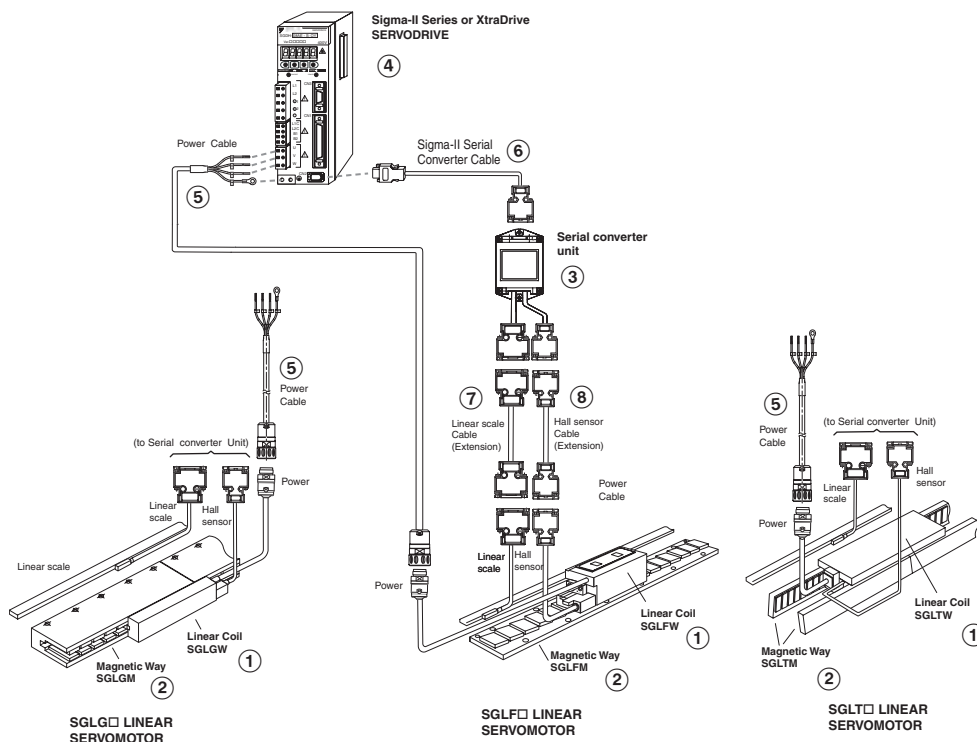
Note: 1. Do not use empty pins.

2. The linear scale (analog 1Vp-p output, D-sub 15-pin, male) by Renishaw Inc. can be directly connected. However, the BID and DIR signals are not connected.

3. Use the linear scale end connector to change the zero point specifications of the linear scale.

Ordering Information

System Configuration



SGLGW / SGLGM Coreless Type (200 V)



With Standard-force Magnetic Ways - 230V AC Single Phase

Symbol	Specifications		Model				
	Rated Force	Peak Force	① Linear Coil	② Magnetic Way	③ Serial Converter	④ Servo Drive	
①②③④	13.5 N	40 N	SGLGW-30A050BPD	SGLGM-30108A	JZDP-A008-158	SGDH-A5AE-OY	XD-P5-MN01
	27 N	80 N	SGLGW-30A080BPD	SGLGM-30216A SGLGM-30432A	JZDP-A008-156	SGDH-01AE-OY	XD-01-MN01
	47 N	140 N	SGLGW-40A140BPD	SGLGM-40090B	JZDP-A008-001	SGDH-01AE-OY	XD-01-MN01
	93 N	280 N	SGLGW-40A253BPD	SGLGM-40225B	JZDP-A008-002	SGDH-02AE-OY	XD-02-MN01
	140 N	420 N	SGLGW-40A365BPD	SGLGM-40360B SGLGM-40405B SGLGM-40450B	JZDP-A008-003	SGDH-04AE-OY	XD-04-MN01
	73 N	220 N	SGLGW-60A140BPD	SGLGM-60090B	JZDP-A008-004	SGDH-02AE-OY	XD-02-MN01
	147 N	440 N	SGLGW-60A253BPD	SGLGM-60225B	JZDP-A008-005	SGDH-04AE-OY	XD-04-MN01
	220 N	660 N	SGLGW-60A365BPD	SGLGM-60360B SGLGM-60405B SGLGM-60450B	JZDP-A008-006	SGDH-08AE-S-OY	XD-08-MN
①②③④	325 N	1300 N	SGLGW-90A200APD	SGLGM-90252A SGLGM-90504A	JZDP-A008-101	SGDH-15AE-S-OY	-

With High-force Magnetic Ways - 230V AC Single Phase

Symbol	Specifications		Model				
	Rated Force	Peak Force	① Linear Coil	② Magnetic Way	③ Serial Converter	④ Servo Drive	
①②③④	57 N	230 N	SGLGW-40A140BPD	SGLGM-40090B-M	JZDP-A008-063	SGDH-02AE-OY	XD-02-MN01
	114 N	460 N	SGLGW-40A253BPD	SGLGM-40225B-M	JZDP-A008-059	SGDH-04AE-OY	XD-04-MN01
	171 N	690 N	SGLGW-40A365BPD	SGLGM-40360B-M SGLGM-40405B-M SGLGM-40450B-M	JZDP-A008-060	SGDH-08AE-S-OY	XD-08-MN
	89 N	360 N	SGLGW-60A140BPD	SGLGM-60090B-M	JZDP-A008-061	SGDH-02AE-OY	XD-02-MN01
	178 N	720 N	SGLGW-60A253BPD	SGLGM-60225B-M	JZDP-A008-062	SGDH-08AE-S-OY	XD-08-MN
	267 N	1080 N	SGLGW-60A365BPD	SGLGM-60360B-M SGLGM-60405B-M SGLGM-60450B-M	JZDP-A008-047	SGDH-15AE-S-OY	-

SGLFW / SGLFM Iron-Core Type



230V AC Single Phase

Symbol	Specifications		Model				
	Rated Force	Peak Force	① Linear Coil	② Magnetic Way	③ Serial Converter	④ Servo Drive	
①②③④	25 N	86 N	SGLFW-20A090APD	SGLFM-20324AC	JZDP-A008-017	SGDH-02AE-OY	XD-02-MN01
	40 N	125 N	SGLFW-20A120APD	SGLFM-20540AC	JZDP-A008-018	SGDH-02AE-OY	XD-02-MN01
	80 N	220 N	SGLFW-35A120APD	SGLFM-35324AC	JZDP-A008-019	SGDH-02AE-OY	XD-02-MN01
	160 N	440 N	SGLFW-35A230APD	SGLFM-35540AC	JZDP-A008-020	SGDH-08AE-S-OY	XD-08-MN01
	280 N	600 N	SGLFW-50A200BPD	SGLFM-50405AC	JZDP-A008-181	SGDH-08AE-S-OY	XD-08-MN
	560 N	1200 N	SGLFW-50A380BPD	SGLFM-50675AC	JZDP-A008-182	SGDH-15AE-S-OY	-
	560 N	1200 N	SGLFW-1ZA200BPD	SGLFM-1Z405AC	JZDP-A008-183	SGDH-15AE-S-OY	-
				SGLFM-1Z675AC			
				SGLFM-1Z945AC			

400V AC Three Phase

Symbol	Specifications		Model				
	Rated Force	Peak Force	① Linear Coil	② Magnetic Way	③ Serial Converter	④ Servo Drive	
①②③④	80 N	220 N	SGLFW-35D120APD	SGLFM-35324AC	JZDP-A008-211	SGDH-05DE-OY	XD-05-TN
	160 N	440 N	SGLFW-35D230APD	SGLFM-35540AC	JZDP-A008-212	SGDH-05DE-OY	XD-05-TN
	280 N	600 N	SGLFW-50D200BPD	SGLFM-50405AC	JZDP-A008-189	SGDH-10DE-OY	XD-10-TN
	560 N	1200 N	SGLFW-50D380BPD	SGLFM-50675AC	JZDP-A008-190	SGDH-15DE-OY	XD-15-TN
	560 N	1200 N	SGLFW-1ZD200BPD	SGLFM-1Z405AC	JZDP-A008-191	SGDH-15DE-OY	XD-15-TN
	1120 N	2400 N	SGLFW-1ZD380BPD	SGLFM-1Z675AC	JZDP-A008-192	SGDH-30DE-OY	XD-30-TN
				SGLFM-1Z945AC			

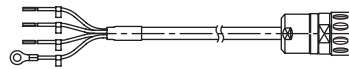
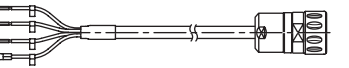
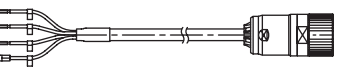
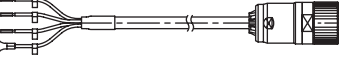
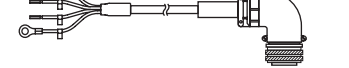
SGLTW / SGLTM Iron-Core Type



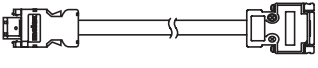
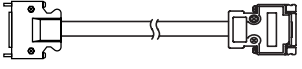
400V AC Three Phase

Symbol	Specifications		Model				
	Rated Force	Peak Force	① Linear Coil	② Magnetic Way	③ Serial Converter	④ Servo Drive	
①②③④	300 N	600 N	SGLTW-35D170HPD	SGLTM-35324HC	JZDP-A008-193	SGDH-10DE-OY	XD-10-TN
	600 N	1200 N	SGLTW-35D320HPD	SGLTM-35540HC	JZDP-A008-194	SGDH-20DE-OY	XD-20-TN
	450 N	900 N	SGLTW-50D170HPD	SGLTM-50324HC	JZDP-A008-195	SGDH-10DE-OY	XD-10-TN
	900 N	1800 N	SGLTW-50D320HPD	SGLTM-50540HC	JZDP-A008-196	SGDH-20DE-OY	XD-20-TN
	670 N	2600 N	SGLTW-40D400BP	SGLTM-40405AC	JZDP-A008-197	SGDH-30DE-OY	XD-30-TN
	1000 N	4000 N	SGLTW-40D600BP	SGLTM-40675AC	JZDP-A008-198	SGDH-50DE-OY	-
				SGLTM-40945AC			
	1300 N	5000 N	SGLTW-80D400BP	SGLTM-80405AC	JZDP-A008-199	SGDH-50DE-OY	-
	2000 N	7500 N	SGLTW-80D600BP	SGLTM-80675AC	JZDP-A008-200	SGDH-75DE-OY	-
				SGLTM-80945AC			

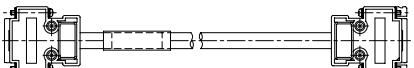
Power Cables

Symbol	Specifications		Model	Appearance
⑤	For 200V Servomotors SGLGW-30A□□□□B□D SGLGW-40A□□□□B□D SGLGW-60A□□□□B□D SGLFW-20A□□□□A□D SGLFW-35A□□□□A□D	3 m	R88A-CAWA003S-DE	
		5 m	R88A-CAWA005S-DE	
		10 m	R88A-CAWA010S-DE	
		15 m	R88A-CAWA015S-DE	
		20 m	R88A-CAWA020S-DE	
	For 200V Servomotors SGLGW-90A200B□D SGLFW-50A□□□□B□D SGLFW-1ZA200B□D	3 m	R88A-CAWB003S-DE	
		5 m	R88A-CAWB005S-DE	
		10 m	R88A-CAWB010S-DE	
		15 m	R88A-CAWB015S-DE	
		20 m	R88A-CAWB020S-DE	
	For 400V Servomotors SGLFW-35D□□□□A□D SGLFW-50D200□D SGLTW-35D170H□D SGLTW-50D170H□D	3 m	R88A-CAWK003S-DE	
		5 m	R88A-CAWK005S-DE	
		10 m	R88A-CAWK010S-DE	
		15 m	R88A-CAWK015S-DE	
		20 m	R88A-CAWK020S-DE	
	For 400V Servomotors SGLFW-50D380□D SGLFW-1ZD□□□□B□D SGLTW-35D320H□D SGLTW-50D320H□D	3 m	R88A-CAWL003S-DE	
		5 m	R88A-CAWL005S-DE	
		10 m	R88A-CAWL010S-DE	
		15 m	R88A-CAWL015S-DE	
		20 m	R88A-CAWL020S-DE	
	For 400V Servomotors SGLTW-40D□□□□B□ SGLTW-80D□□□□B□	3 m	R88A-CAWD003S-E	
		5 m	R88A-CAWD005S-E	
		10 m	R88A-CAWD010S-E	
		15 m	R88A-CAWD015S-E	
		20 m	R88A-CAWD020S-E	

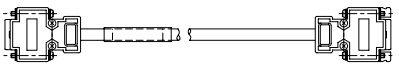
Serial converter Cable to Servo Drive

Symbol	Specifications		Model	Appearance
⑥	Sigma-II Drive to Serial Converter Cable	3 m	JZSP-CLP70-03-E	
		5 m	JZSP-CLP70-05-E	
		10 m	JZSP-CLP70-10-E	
		15 m	JZSP-CLP70-15-E	
		20 m	JZSP-CLP70-20-E	
	XtraDrive Drive to Serial Converter Cable	3 m	XD-CLP70-03-E	
		5 m	XD-CLP70-05-E	
		10 m	XD-CLP70-10-E	
		15 m	XD-CLP70-15-E	
		20 m	XD-CLP70-20-E	

Linear Scale Cable to Serial Converter

Symbol	Specifications	Model		Appearance
⑦	Extension cable for Renishaw Linear Scale to Serial converter. (Connector DB-15) (The extension cable is optional)	1 m	JZSP-CLL00-01-E	
		3 m	JZSP-CLL00-03-E	
		5 m	JZSP-CLL00-05-E	
		10 m	JZSP-CLL00-10-E	
		15 m	JZSP-CLL00-15-E	
	Extension cable for Heidenhain Linear Scale to Serial converter (Connector DB-15) (When a Heidenhain scale is used the extension cable is required)	1 m	JZSP-CLL20-01-E	
		3 m	JZSP-CLL20-03-E	
		5 m	JZSP-CLL20-05-E	
		10 m	JZSP-CLL20-10-E	
		15 m	JZSP-CLL20-15-E	

Hall Sensor Cable to Serial Converter

Symbol	Specifications	Model	Appearance	
⑧	Extension cable for Linear Scale to serial converter (The extension cable is optional)	1 m	JZSP-CLL10-01-E	
		3 m	JZSP-CLL10-03-E	
		5 m	JZSP-CLL10-05-E	
		10 m	JZSP-CLL10-10-E	
		15 m	JZSP-CLL10-15-E	

Connectors

Specification	Model
Control I/O connector (For CN1)	R88A-CNU11C or JZSP-CKI9
Sigma-II Drive Encoder connector (For CN2)	JZSP-CMP9-1
XtraDrive Encoder connector (For CN2)	DE9406973
Hypertac Power Connector IP67 (For 200V Motor Coils SGL□W-□□A□□□□□D)	SPOC-06K-FSDN169
Hypertac Power Connector IP67 (For 400V Motor coils SGL□W-□□D□□□□□D)	LPRA-06B-FRBN170
Military Power connector IP67 (For Motor coils SGLTW-40□/80□)	MS3108E22-22S

Dimensioning Software

Specifications	Model
SigmaSize	MOTION TOOLS CD

ServoDrive Accessories

Note: Refer to the Sigma-II ServoSystem or XtraDrive chapter for details.

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

XD-□

XtraDrive

Intelligent Servo Drive. Integrated controller and network connectivity.

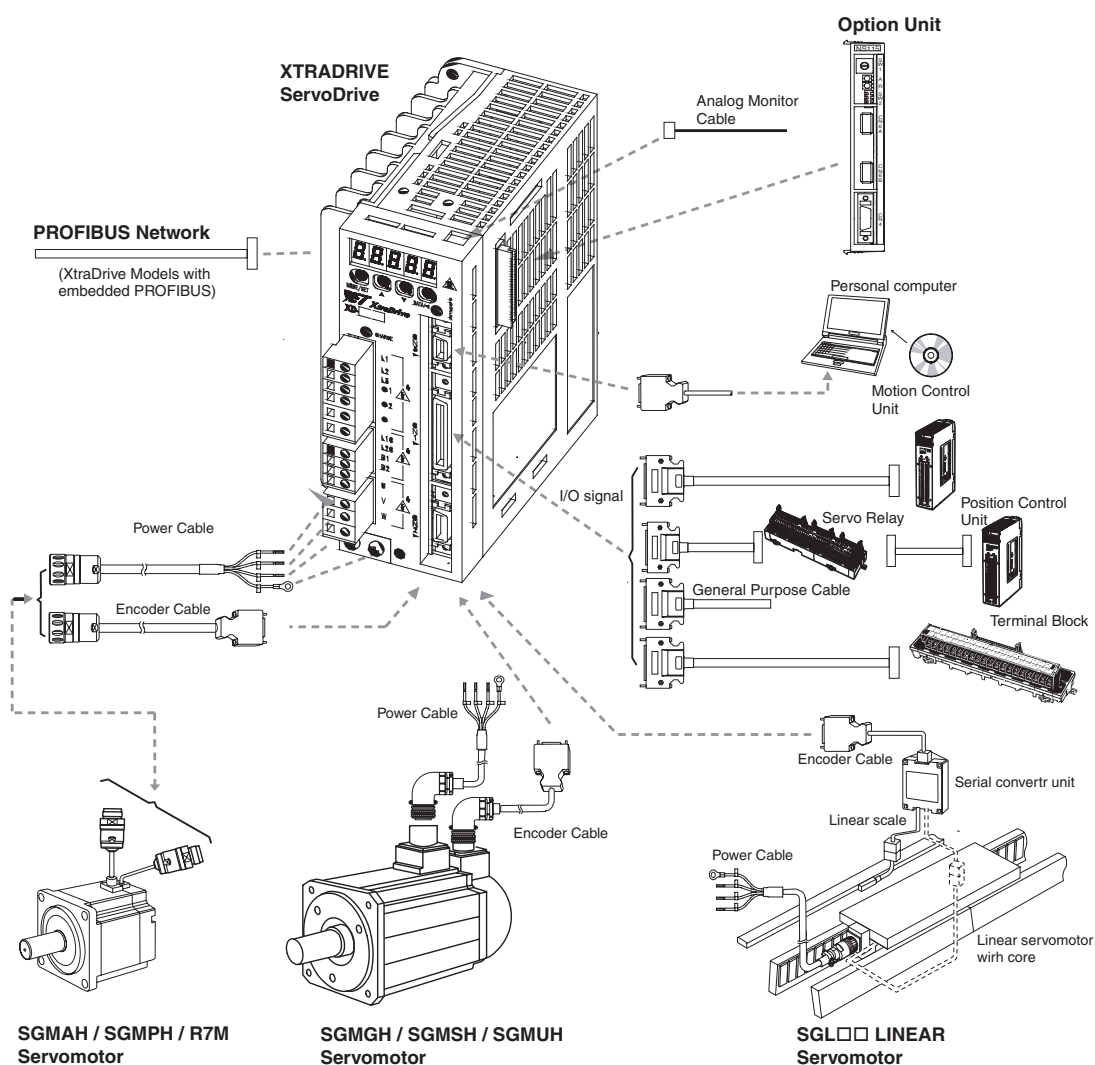
- NCT. Patented non-linear technique for tight control
- Very low tracking error with no overshoot and zero settling time
- Automatic tuning of servo parameters for optimal settling time
- OCA. Oscillation Cancelling Algorithm
- Profibus Embedded in the drive available
- Ideal drive for linear motors control
- Automatic motor recognition of Sigma-II motors
- Analogue control for speed and torque
- Pulse train control for positioning
- Oscilloscope available via XtraWare software tool

Ratings

- 230VAC Single-phase 30 W to 800W
- 400VAC Three-phase 0.5 KW to 3.0 kW



System Configuration

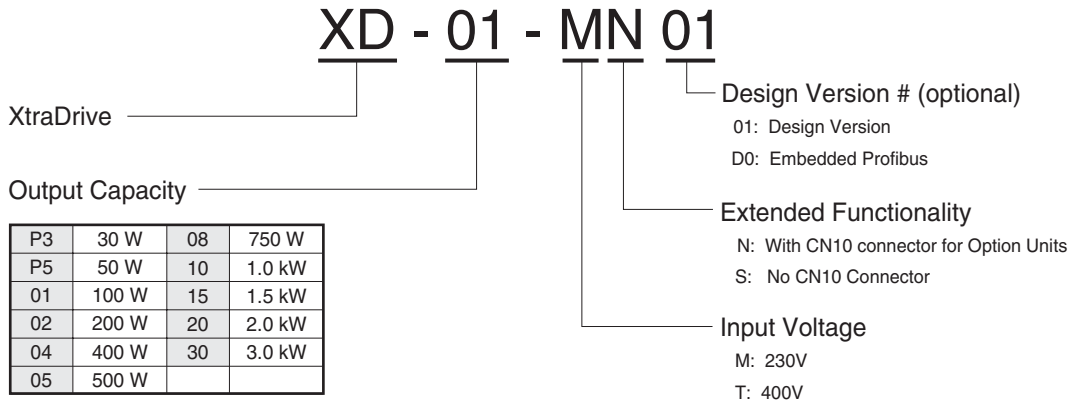


Servomotor / Servo Drive Combination

Servomotor				Servo Drive			
	Voltage	Rated Torque	Capacity	230 V (1-phase)	230 V (1-phase) w PROFIBUS	400V (3-phase)	400V (3-phase) w PROFIBUS
Sigma-II Series Motors (Refer to the Sigma-II chapter for Motor details)							
	230 V	0.0955 N.m	30 W	XD-P3-MN01	XD-P3-MSD0	-	-
		0.159 N.m	50 W	XD-P5-MN01	XD-P5-MSD0	-	-
		0.318 N.m	100 W	XD-01-MN01	XD-01-MSD0	-	-
		0.637 N.m	200 W	XD-02-MN01	XD-02-MSD0	-	-
		1.27 N.m	400 W	XD-04-MN01	XD-04-MSD0	-	-
		2.39 N.m	750 W	XD-08-MN	XD-08-MSD0	-	-
	400 V	0.955 N.m	300 W	-	-	XD-05-TN	XD-05-TSD0
2.07 N.m		650 W	-	-	XD-10-TN	XD-10-TSD0	
	230 V	0.318 N.m	100 W	XD-01-MN01	XD-01-MSD0	-	-
		0.637 N.m	200 W	XD-02-MN01	XD-02-MSD0	-	-
		1.27 N.m	400 W	XD-04-MN01	XD-04-MSD0	-	-
		2.39 N.m	750 W	XD-08-MN	XD-08-MSD0	-	-
	400 V	0.637 N.m	200 W	-	-	XD-05-TN	XD-05-TSD0
		1.27 N.m	400 W	-	-	XD-10-TN	XD-10-TSD0
		2.39 N.m	750 W	-	-	XD-10-TN	XD-10-TSD0
	400 V	4.77 N.m	1500 W	-	-	XD-15-TN	XD-15-TSD0
		2.84 N.m	0.45 kW	-	-	XD-05-TN	XD-05-TSD0
		5.39 N.m	0.85 kW	-	-	XD-10-TN	XD-10-TSD0
		8.34 N.m	1.3 kW	-	-	XD-15-TN	XD-15-TSD0
		11.5 N.m	1.8 kW	-	-	XD-20-TN	XD-20-TSD0
	400 V	18.6 N.m	2.9 kW	-	-	XD-30-TN	XD-30-TSD0
		3.18 N.m	1.0 kW	-	-	XD-10-TN	XD-10-TSD0
		4.90 N.m	1.5 kW	-	-	XD-15-TN	XD-15-TSD0
		6.36 N.m	2.0 kW	-	-	XD-20-TN	XD-20-TSD0
	400 V	9.80 N.m	3.0 kW	-	-	XD-30-TN	XD-30-TSD0
		1.59 N.m	1.0 kW	-	-	XD-10-TN	XD-10-TSD0
		2.45 N.m	1.5 kW	-	-	XD-15-TN	XD-15-TSD0
		4.9 N.m	3.0 kW	-	-	XD-30-TN	XD-30-TSD0
SmartStep Series Motors (Refer to the SmartStep chapter for Motor details)							
	230 V	0.0955 N.m	30 W	XD-P3-MN01	-	-	-
		0.159 N.m	50 W	XD-P5-MN01	-	-	-
		0.318 N.m	100 W	XD-01-MN01	XD-01-MSD0	-	-
		0.637 N.m	200 W	XD-02-MN01	XD-02-MSD0	-	-
		1.27 N.m	400 W	XD-04-MN01	XD-04-MSD0	-	-
		2.39 N.m	750 W	XD-08-MN	XD-08-MSD0	-	-
	230 V	0.318 N.m	100 W	XD-01-MN01	XD-01-MSD0	-	-
		0.637 N.m	200 W	XD-02-MN01	XD-02-MSD0	-	-
		1.27 N.m	400 W	XD-04-MN01	XD-04-MSD0	-	-
		2.39 N.m	750 W	XD-08-MN	XD-08-MSD0	-	-
Sigma Linear Motors (Refer to the Sigma Linear Motors chapter for Motor details)							
	230 V	Refer to the Linear Motors chapter for details					
	230 V, 400 V	Refer to the Linear Motors chapter for details					
	400 V	Refer to the Linear Motors chapter for details					

Type Designation

Drive



Servo Drive Specifications

Single-Phase, 230 V

Servo Drive Type			XD-P3-M□	XD-P3-M□	XD-01-M□	XD-02-M□	XD-04-M□	XD-08-M□		
Applicable Servomotor		SGMAH-□	A3A□	A5A□	01A□	02A□	04A□	08A□		
		SGMPH-□	-	-	01A□	02A□	04A□	08A□		
		R7M-□	A03030-□	A05030-□	A10030-□	A20030-□	A40030-□	A75030-□		
		R7M-□	-	-	AP10030-□	AP20030-□	AP40030-□	AP75030-□		
Basic Specifications	Max. Applicable Motor capacity		W	30	50	100	200	400	750	
	Continuous Output Current		Arms	0.44	0.64	0.91	2.1	2.8	5.7	
	Max. Output Current		Arms	1.3	2.0	2.8	6.5	8.5	13.9	
	Input Power	Main Circuit	For single-phase, 200 to 230 VAC + 10 to -15%							
	Supply	Control Circuit	For single-phase, 200 to 230 VAC + 10 to -15%							
	Control Method		Single phase full-wave rectification / IGBT / PWM / sine-wave current drive method							
	Feedback		Serial encoder (incremental/absolute value)							
	Conditions	Usage /storage Temperature		0 to +55° C / -20 to 85° C						
		Usage /storage Humidit		90%RH or less (non-condensing)						
		Altitude		1000m or less above sea level						
Vibration/Shock Resistance		4.9m/s ² / 19.6m/s ²								
Configuration		Base mounted								
Approx. Mass		Kg	0.8				1.1	1.7		

Three-Phase, 400 V

Servo Drive Type		XD-05-T□	XD-10-T□	XD-15-T□	XD-20-T□	XD-30-T□		
Applicable Servomotor	SGMAH-□	03D□	07D□	-	-	-		
	SGMAH-□	02D□, 04D□	08D□	15D□	-	-		
	SGMGH-□	05D□	09D□	13D□	20D□	30D□		
	SGMSH-□	-	10D□	15D□	20D□	30D□		
	SGMUH-□	-	10D□	15D□	-	30D□		
Basic Specifications	Max. Applicable Motor capacity kW		0.45	1.0	1.5	2.0	3.0	
	Continuous Output Current Arms		1.9	3.5	5.4	8.4	11.9	
	Max. Output Current Arms		5.5	8.5	14	20	28	
	Input Power	Main Circuit	For three-phase, 380 to 480 VAC + 10 to -15% (50/60Hz)					
	Supply	Control Circuit	24VDC+ 15%					
	Control Method		Single phase full-wave rectification / IGBT / PWM / sine-wave current drive method					
	Feedback		Serial encoder (incremental/absolute value)					
	Conditions	Usage /storage Temperature		0 to +55° C / -20 to +85 C				
		Usage /storage Humidit		90%RH or less (non-condensing)				
		Altitude		1000m or less above sea level				
		Vibration/Shock Resistance		4.9m/s ² / 19.6m/s ²				
	Configuration		Base mounted					
	Approx. Mass Kg		2.8			3.8		

General Specifications

Speed/Torque Control Mode	Speed Control Range		1:5000
	Speed Variance	Load Variance	During 0 to 100% load $\pm 0.01\%$ max. (at rated speed)
		Voltage Variance	Rated voltage $\pm 10\%:0\%$ (at rated speed)
		Temperature Variance	25 $\pm 25^{\circ}\text{C}$: $\pm 0.1\%$ max (at rated speed)
	Frequency characteristics		400Hz (at $J_L = J_M$)
	Torque Control Accuracy (Reproducibility)		$\pm 2\%$
	Soft Start Time Setting		0 to 10s (Acceleration, deceleration can each be set.)
	Speed Reference Input	Reference Voltage	$\pm 6\text{VDC}$ (forward motor rotation if positive reference) at rated speed: Set at delivery Variable setting range: ± 2 to $\pm 10\text{VDC}$ at rated speed/ max. input voltage: $\pm 12\text{V}$
		Input Impedance	Approx. 14 k Ω
		Circuit Time Constant	-
	Torque Reference Input	Reference Voltage	$\pm 3\text{VDC}$ (forward rotation if positive reference) at rated speed: Set at delivery Variable setting range ± 1 to $\pm 10\text{VDC}$ at rated torque reference
		Input Impedance	Approx. 14 K Ω
		Circuit Time Constant	Approx. 47 μs
	Contact Speed Reference	Rotation Direction Selection	With P control signal
Position Control Mode	Performance	Speed selection	With forward/reverse current limit signal (speed 1 to 3 selection), servomotor stops or another control method is used when both are OFF.
		Bias Setting	0 to 450 min^{-1} (setting resolution: 1 min^{-1})
		Feed Forward Compensation	0 to 100 % (setting resolution: 1%)
	Input Signal	Position Completed Width Setting	0 to 250 command units (Setting resolution: 1 command unit)
		Command Pulse	Sign + pulse train, 90° phase displacement 2-phase pulse (A-phase+ B-phase) or CCW/CW pulse train
		Input Pulse Form	Line driver (+5V level) , open collector (+5V or +12 level)
		Input Pulse Frequency	0 to 500 Kpps (200Kpps max. at open collector)
		Control Signal	Clear Signal (input pulse is same as reference pulse)
	I/O Signal	Position Signal Output	A-phase, B-phase, C-phase, (S-phase): Line driver output S-phase is for absolute encoder only.
		Sequence Input Signal	Servo ON, P control (or control mode switching, zero clamp, command pulse inhibit), forward/reverse run prohibit, alarm reset, forward/ reverse current limit (or internal speed switching)
Integrated Functions	Communications	Sequence Output Signal	Servo alarm, alarm codes (3-bit output): CN1 output terminal is fixed It is possible to output three types of signals from among: positioning complete (speed agree), motor rotation, servo ready, current limit, speed limit, brake release, warning, NEAR, and zero point pulse signal
		Interface	Digital operator (hand- held type), RS-422 port for PCs, etc. (RS-232C ports under some conditions)
		1:N Communications	N may equal up to 14 when an RS-422A port is used
		Axis Address Setting	Set by user setting
		Functions	Status display, user constant setting monitor display, alarm traceback display, JOG run /autotuning operations, and graphing functions for speed/torque command signal, etc
	Profibus	Profibus	(Only models with Profibus) Profibus DP Slave, Node address 0-125 set by rotary switches, Baud rate from 9.6Kbps to 12 Mbps. LED Indicators: Bus Failure and System Failure
		Auto Tuning Function	Position speed loop gain and integral time constant can be automatically set.
	Dynamic Brake (DB)	Dynamic Brake (DB)	Operates during main power OFF, servo alarm, servo OFF or overtravel
		Regenerative Processing	Regenerative resistor externally mounted (option)
	Overtravel (OT) Prevention Function	Overtravel (OT) Prevention Function	DB stop, deceleration stop or coast to stop during P-OT, N-OT operation
		Encoder Divider Function	Optional division possible
	Electronic Gearing	Electronic Gearing	0.01< A/B<100
		Internal Speed Setting Function	3 speeds may be set internally
	Protective Functions	Protective Functions	Overcurrent, overvoltage, insufficient voltage, overload, main circuit sensor error, heatsink overheat, power phase loss, overflow, overspeed, encoder error, runaway, CPU error, parameter error, etc.
		Analog Monitor Functions for Supervision	Integrates analog monitor connectors for supervision of the speed and torque reference signals, etc.
	Display Functions	Display Functions	CHARGE, POWER, 7-segments LEDx5 (Integrated digital operator function, not available in models with profibus)
		Others	Reverse connection, zero search, automatic motor discrimination function, and DC reactor connection terminal for high frequency power suppression function (except: 6 to 15kW)

I/O Specifications

Terminal Specifications

Symbol	Name	Function	
L1, L2 or L1, L2, L3	Main circuit AC input terminal	AC power input terminals for the main circuit	
U	Servomotor connection terminal	Red	Terminals for outputs to the Servomotor.
V		White	
W		Blue	
L1C, L2C	Control power input terminal	AC power input terminals for the control circuit.	
⊕	Frame ground	Ground terminal. Ground to a maximum of 100Ω. (class 3)	
B1, B2 or B1, B2, B3	Main circuit DC output terminal	5 kW or less: Connect an external regenerative resistor if regenerative energy is high. 5.5 kW: There is no internal regenerative resistor. Be sure to connect an external Regenerative Resistor Unit.	
⊕1, ⊕2	DC reactor connection terminal for suppressing power supply harmonic waves	Normally, short ⊕1 and ⊕2. If a countermeasure against power supply harmonic waves is needed, connect a DC reactor between ⊕1 and ⊕2.	
⊕	Main circuit DC output terminal (+)	Normally, not connected. This terminal exists on the Servo Drives with a capacity opf 6.0 kW or higher only.	
⊖	Main circuit DC output terminal (n-)	Normally, not connected.	

Encoder Connector (CN2)

Pin	Symbol	Function
1, 2, 3	PPG0V	Encoder power supply GND
4, 5, 6	PPG5V	Encoder power supply +5 V
7	-	-
8	PS+	Encoder serial signal input
9	PS-	Encoder serial signal input
10	SePG5V	Serial Encoder power supply +5 V (Sigma-II)
11	SePG0V	Serial Encoder power supply GND (Sigma-II)
12	BAT+	Battery + (used only with absolute encoder)
13	BAT-	Battery - (used only with absolute encoder)
14	PC+	Encoder + C-phase input
15	PC-	Encoder - C-phase input
16	A+	Encoder + A-phase input
17	A-	Encoder - A-phase input
18	B+	Encoder + B-phase input
19	B-	Encoder - B-phase input
20	-	-
Shell	FG	Cable shield ground

I/O Signals (CN1) - Input signals

Pin No.	Signal Name	Function
40	Common	/S-ON
41		/P-CON
		Proportional control reference
		Direction reference
		Control mode switching
		Zero-clamp reference
		Reference pulse block
42		P-OT
43		N-OT
45		/P-CL
46		/N-CL
		Internal speed switching
44		/ALM-RST
47		+24VIN
4 (2)	Speed	SEN
21		BAT (+)
22		BAT (-)
5 (6)		V-REF
9 (10)		T-REF
7	Position	PULS
8		/PULS
11		SIGN
12		/SIGN
15		CLR
14		/CLR
3		PL1
13		PL2
18		PL3

Note: 1. Pin numbers in parentheses () indicate signal grounds.

2. The functions allocated to /S-ON, /P-CON, P-OT, N-OT, /ALM-RST, /P-CL, and /N-CL input signals can be changed by using the parameters.

3. The voltage input range for speed and torque references is a maximum of ± 12 V.

I/O Signals (CN1) - Output signals

Pin No.	Signal Name	Function
31	Common	ALM+
32		ALM-
27		/TGON+
28		/TGON-
29		/S-RDY+
30		/S-RDY-
33 (1)		PAO
34		/PAO
35		PBO
36		/PBO
19		PCO
20		/PCO
48		PSO
49		/PSO
37	Speed	ALO1
38		ALO2
39 (1)		ALO3
16		TMON
17		VTG
Shell		FG
25		/V-CMP+
26		/V-CMP-
25	Position	/COIN+
26		/COIN-
-	Reserved	/CLT
		/VLT
		/BK
		/WARN
		/NEAR
23		-
24		-
50		-

Note: 1. Pin numbers in parentheses () indicate signal grounds.

2. The functions allocated to /TGON, /S-RDY, and /V-CMP (/COIN) can be changed by using the parameters. /CLT, /VLT, /BK, /WARN, and /NEAR signals can also be changed.

Parameters

Parameter No.	Name	Setting Range	Units	Factory Setting	Setting Validation
Pn000	Function Selection Basic Switches	-	-	00D0	After restart
Pn000	Digit Function name	Setting Description			
	0	Direction Selection	0	Sets CCW as forward direction	
			1	Sets CW as forward direction (Reserve Rotation Mode)	
			2 and 3	Reserved (Do not change.)	
	1	Control Method Selection	0	Speed control (analog reference)	
			1	Yaskawa OB	
			2	Torque control (analog reference)	
			3	Internal set speed control (contact reference)	
			4	Internal set speed control (contact reference) <> Speed control (analog reference)	
			5	Internal set speed control reference <> Position control (pulse train reference)	
			6	Internal set speed control (contact reference) <> Torque control (analog reference)	
			7	Position control (pulse train reference) <> Speed control (analog reference)	
			8	Position control (pulse train reference) <> Torque control (analog reference)	
			9	Torque control (analog reference) <> Speed control (analog reference)	
			A	Speed control (analog reference) <> Zero clamp	
			B	Position control (pulse train reference) <> Position control (Inhibit)	
			C	Position control (pulse train)	
			D	Serial communication command	
	2	Axis Address	0 to F	Sets servo amplifier axis address.	
	3	Reserved		-	
Pn001	Function Selection Application Switches 1	-	-	0000	After restart
Pn001	Digit Function name	Setting Explanation			
	0	Servo OFF or Alarm Stop Mode	0	Stops the motor by applying dynamic brake (DB)	
			1	Stops the motor by applying dynamic brake (DB) and then realeases DB	
			2	Makes the motor coast to a stop state without using the dynamic brake (DB)	
	1	Overtravel (OT) Stop Mode	0	Same setting as Pn001.0 (Stops the motor by applying DB or by coasting)	
			1	Sets the torque of Pn406 to the maximum value, decelerate the motor to a stop, and then set it to servolock state	
			2	Sets the torque of Pn406 to the maximum value. decelerates the motor to a stop, and then sets it to coasting state	
	2	AC/DC Power Input Selection	0	Not applicable to DC power input: Input AC power supply through L1, L2 (,and L3) terminals	
			1	Applicable to DC power input: Input DC power supply through (+)1 and (-) terminals.	
	3	Warning Code Output Selection	0	ALO1, ALO2, and ALO3 output only alarm codes.	
			1	ALO1, ALO2, and ALO3 output both alarms codes and warning codes. While warning codes are output, ALM signal output remains ON (normal state).	
			2	Uses absolute encoder as an absolute encoder. Uses multi-turn limit.	
Pn002	Function Selection Application Switches 2	-	-	0000	After restart
Pn002	Digit Function name	Setting Explanation			
	0	Speed Control Option	0	None	
			1	Uses T-REF as an external torque limit input	
			2	Uses T-REF as a torque feed-forward input	
			3	Uses T-REF when P-CL and N-CL are ON	
	1	Torque Control Option	0	None	
			1	Uses V-REF as an external speed limit input.	
	2	Absolute Encoder Usage	0	Uses absolute encoder as an absolute encoder	
			1	Uses absolute encoder as an incremental encoder	
			2	Uses absolute encoder aa an absolute encoder. Uses multi-turn limit.	
	3	Not used.	-		
Pn003	Function Selection Application Switches 3	-	-	0002	Immediately
Pn003	Digit Function name	Setting Explanation			
	0	Analog Monitor 1 Torque Reference Monitor	0	Motor speed: 1V/1000 min ⁻¹	
			1	Speed reference: 1V/1000 min ⁻¹	
			2	Torque reference: 1 V/100%	
			3	Position error: 0,05 V/1 reference unit	
			4	Position error:0,05 V/100 reference units	
			5	Reference pulse frequency (converted to min ⁻¹ : 1V/1000 min ⁻¹	
			6	Motor Speed x 4: 1V/250 min ⁻¹	
			7	Motor Speed x 8: 1V/250 min ⁻¹	
	1	Analog Monitor 2 Speed Reference Monitor	0 to 7	Same as Pn003.0 (see above)	
	2	Not used	-		
	3	Not used	-		
Pn004	Reserved (Do not change)	-	-	0000	-
Pn005		-	-	0000	-

Parameter No.	Name		Setting Range	Units	Factory Setting	Setting Validation
Pn006	Gain Application Switches		-	-	0000	Immediately
	Digit	Function name	Setting	Explanation		
	0	Analog Monitor 1.	0	Servo position error: 1V/10 encoder counts		
			1	Servo position error: 1V/5 user units		
			2	Target speed 1V/500 rpm.		
			3	Target speed after applying command smoothing 1V/500 rpm		
			4	Torque reference: 10V/Max Torque		
			5	Motor speed:1V/500 rpm		
			6	Target acceleration after applying command smoothing: 10V/ max acceleration allowed.		
	1	Analog monitor 1-selection of source parameter	0	Pn003.0 used for analog monitor 1.		
			1	Pn006.0 used for analog monitor 1.		
	2	Analog monitor 1-selection of source	0-4	0:x1, 1:x10, 2:x100, 3:x1/10, 4:x1/100		
	3	Not used	0	-		
			-	-	0000	Immediately
Pn007	Gain Application Switches		-	-	0000	Immediately
	Digit	Function name	Setting	Explanation		
	0	Analog Monitor 2	0	Servo position error: 1V/10 encoder counts		
			1	Servo position error: 1V/5 user units		
			2	Target speed 1V/500 rpm.		
			3	Target speed after applying command smoothing 1V/500 rpm		
			4	Torque reference: 10V/Max Torque		
			5	Motor speed:1V/500 rpm		
			6	Target acceleration after applying command smoothing: 10V/ max acceleration allowed.		
	1	Analog monitor 2-selection of source parameter	0	Pn003.0 used for analog monitor 2.		
			1	Pn007.0 used for analog monitor 2.		
	2	Analog monitor 2	0-4	0:x1, 1:x10, 2:x100, 3:x1/10, 4:x1/100		
	3	Not used	0	-		
			-	-	0011	After restart
			-	-	0011	After restart
Pn080 (Linear Motors Only)	Lineal Motor Commutation Switch		-	-	0011	After restart
	Digit	Function name	Setting	Explanation		
	0	Communication sensor switch	0	With commutation sensors		
			1	Without commutation sensors		
	1	Communication sensor order	0	UVW		
			1	UWV		
	2	Reserved	-	-		
	3	Reserved	-	-		
Pn100	Speed Loop Gain		1 to 2000 Hz	1 Hz	40 Hz	Immediately
Pn101	Speed Loop Integral Time Constant		0.15 to 512.00 ms	0.01 ms	20.00 ms	Immediately
Pn102	Position Loop Gain		1 to 2000/s	1/s	40/s	Immediately
Pn103	Moment of Inertia Ratio		0 to 10000%	1%	0%	Immediately
Pn104	2nd Speed Loop Gain		1 to 2000 Hz	1 Hz	40	Immediately
Pn105	2nd Speed Loop Integral Time Constant		0.15 to 512.00 ms	0.01 ms	20.00 ms	Immediately
Pn106	2nd Position Loop Gain		1 to 2000/s	1/s	40/s	Immediately
Pn107	Bias		0 to 450 min ⁻¹	1 min ⁻¹	0 min ⁻¹	Immediately
Pn108	Bias Width Addition		0 to 250 reference unit	Reference unit	7 reference unit	Immediately
Pn109	Feed-forward		0 to 100%	1%	0%	Immediately
Pn110	Online Autotuning Switches		-	-	0010	After restart
	Digit	Function name	Setting	Explanation		
	0	Online Autotuning Method	0	Tunes only at the beginning of operation		
			1	Always tunes.		
			2	Does not perform autotuning.		
	1	Speed feedback Compensation Selection	0	Enabled		
			1	Disabled		
	2	Friction Compensation Selection	0	Friction compensation: Disabled		
			1	Friction compensation: Small		
			2	Friction compensation: Large		
	3	Reserved	0 - 3	Reserved parameter (Do not change)		
Pn10A	Feed-forward Filter Time Constant		0.00 to 64.00 ms	0.01 ms	0.00 ms	Immediately
Pn10B	Pending!!!!		-	-	0000	-
Pn10C	Mode Switch Torque Reference		0 to 800%	1%	200%	Immediately
Pn10D	Mode Switch Speed Reference		0 to 10000 min ⁻¹	1 min ⁻¹	0 min ⁻¹	Immediately
Pn10E	Mode Switch Acceleration		0 to 3000 min ⁻¹ /s	1 min ⁻¹ /s	0 min ⁻¹ /s	Immediately
Pn10F	Mode Switch Error Pulse		0 to 10000 reference units	1 reference unit	0 reference unit	Immediately
Pn111	Speed Feedback Compensation		1 to 500%	1%	100%	Immediately

Parameter No.	Name	Setting Range	Units	Factory Setting	Setting Validation
Pn112	Reserved (Do not set)	-	-	100	-
Pn113				1000	
Pn114				200	
Pn115				32	
Pn116				16	
Pn117				100	
Pn118				100	
Pn119				50	
Pn11A				1000	
Pn11B				50	
Pn11C				70	
Pn11D	Reserved (Do not change)	-	-	100	-
Pn11E				100	
Pn11F				0	
Pn120				0	
Pn121				50	
Pn122				0	
Pn123				0	
Pn124				0	
Pn125				100	
Pn131				0	
Pn132				0	
Pn133				0	
Pn134				0	
Pn135				0	
Pn136				0	
Pn137				0	
Pn138				0	
Pn139				0	
Pn13A				0	
Pn140				200	
Pn141				800	
Pn142				0	
Pn143				0	
Pn144				1000	
Pn145				0	
Pn190	Motor selection Switches	-	-	0000	After restart
	Digit Function Name Setting Explanation				
	0 Motor model	0	Yaskawa A quad B model SGM		
		1	Yaskawa A quad B model SGMP		
		2	Non Yaskawa rotary motor		
		3	Non Yaskawa lineal motor		
	1 Encoder type	0	Incremental A quad B encoder		
		1	Yaskawa absolute A quad B encoder		
	2 Encoder selection	0	Yaskawa serial encoder		
		1	A quad B encoder		
		2	A quad B encoder with commutation sensors (U,V,W)		
		3	A quad B encoder with commutation sensors (U/V,W)		
	3 C-phase mask	0	C phase signal used		
		1	C phase signal mask		
Pn191	Motor selection Switches	-	-	1000	After restart
	Digit Function Name Setting Explanation				
	0 Motor phase order	0	Not defined		
		1	UVW		
		2	UWV		
	1-3 Not used	0	-		
Pn192	Pulses number of A quad B encoder (Low)	0-999 Pulses/rev	Pulses/rev	2048	After restart
Pn193	Pulses number of A quad B encoder (High)	0-419 Pulse*10000/Rev	Pulse*10000/Rev	0	After restart
Pn194	Reserved (Do not change)	-	-	2	-
Pn195				20	
Pn196				20	
Pn197				88	
Pn198				0	
Pn199	Encoder counts per Scale Pitch of linear motor	1-256 Counts/Scale pitch	Counts/Scale pitch	1	After restart
Pn1A0	Reserved (Do not change)	-	-	60	-
Pn1A1				60	
Pn1A2				40	
Pn1A3				40	
Pn1A4				20	
Pn1A5				0	
Pn1A6				40	

Parameter No.	Name			Setting Range	Units	Factory Setting	Setting Validation
Pn1A7	Motor selecection Switches			-	-	0001	Immediately
	Digit	Function Name	Setting	Explanation			
	0	Integral Mode	0	Disable clear integral function			
			1	Enable clear integral function			
	1-3	Not used	0	Not used			
Pn1A8	Reserved (Do not change)			-	-	0	-
Pn1A9						40	
Pn1AA						40	
Pn1AB						30	
Pn1AC						80	
Pn1AD						0	
Pn1AE						300	
Pn1AF						0	
Pn1B0	Reserved (Do not change)			-	-	40	-
Pn1B1						40	
Pn1B2						40	
Pn1B3						2000	
Pn1B4						0	
Pn1B5						160	
Pn1B6						150	
Pn1B7						20	
Pn1B8						100	
Pn1B9						600	
Pn1BA						0	
Pn1BB						2000	
Pn1BC						300	
Pn1BD						2000	
Pn1BE						0	
Pn1BF						3	
Pn1C0						0	
Pn1C1						3	
Pn1C2						0	
Pn200						Position Control References Selection Switches	
	Digit	Function Name	Setting	Explanation			
	0	Reference Pulse Form	0	Sign + Pulse, positive logic			
			1	CW + CCW, positive logic			
			2	Phase A + Phase B (x 1), positive logic			
			3	Phase A + Phase B (x 2), positive logic			
			4	Phase A + Phase B (x 4), positive logic			
			5	Sign + Pulse, negative logic			
			6	CW + CWW, negative logic			
			7	Phase A + Phase B (x 1), negative logic			
			8	Phase A + Phase B (x 2), negative logic			
	9	Phase A + Phase B (x 4), negative logic					
	1	Error Counter Clear Signal Form	0	Clears error counter when the signal is at H level			
			1	Clears error counter at the rising edge of the signal			
			2	Clears error counter when the signal is at L level.			
			3	Clears error counter at the falling edge of the signal			
	2	Clear Operation	0	Clear error counter at the baseblock			
1			Does not clear error counter (Possible to clear error counter only with CLR signal)				
2			Clears error counter when an alarm occurs.				
3			Clear signal ignore				
3	Filter Selection	0	Reference input filter for line driver signals				
		1	Reference input filter for open collector signals				
Pn201	PG Dividing Pulse (16bit or less)			0,17 to 65535 P/rev	1 P/rev	2048 P/rev	After restart
Pn202	Electronic Gear Ratio (Numerator)			1 to 65535	-	4	After restart
Pn203	Electronic Gear Ratio (Denominator)			1 to 65535	-	1	After restart
Pn204	Position Reference Accel/Decel Time Constant			0.00 to 64.00 ms	0.01 ms	0.00 ms	Immediately
Pn205	Multiturn Limit Setting			0 to 65535 rev	rev	65535 rev	After restart
Pn206	Reserved (Do not change)			-	-	16384	-
Pn207	Pending!!!!!!!!!!!!!!!!!!!!			-	-	0	-
Pn208	Position Reference Movement Averaging Time			0.00 to 64.00 ms	0.01 ms	0.00 ms	After restart
Pn209	Reserved (Do not change)			-	-	0	-
Pn216	Command smoothing			1 to 65535 ms	0.1 ms	0	Immediately
Pn281	Reserved (Linear Motors)			-	-	-	-

Parameter No.	Name	Setting Range	Units	Factory Setting	Setting Validation
Pn2A0	Reserved (Do not change)	-	-	16	-
Pn2A1				0	
Pn2A2				0	
Pn2A3				0	
Pn2A4				0	
Pn2A5				0	
Pn2A6				0	
Pn2A7				0	
Pn2A8				65535	
Pn2A9				256	
Pn2B0				1	
Pn2B1				0	
Pn2B2				1	
Pn2B3				0	
Pn2B4				1	
Pn2B5				0	
Pn2B6				1	
Pn2B7				0	
Pn2B8				1	
Pn2B9				0	
Pn2BA				1	
Pn2BB				0	
Pn2C0	Reserved (Do not change)	-	-	7	-
Pn2C1				24000	
Pn2C2				0	
Pn2C3				0	
Pn2C4				0	
Pn2C5				2	
Pn2C6	Communication Switch	-	-	0200	Immediately
	Digit	Function Name	Setting	Explanation	
	0	Check Sum	0	Doesn't use check sum	
			1	Use check sum	
	1	Not used.	-		
	2				
	3				
Pn2C7	Home Switches	-	-	0008	After restart
	Digit	Function Name	Setting	Explanation	
	0	Home switch input	0	Inputs from the SI0 (CN1-40). Input terminal	
			1	Inputs from the SI1 (CN1-41). Input terminal	
			2	Inputs from the SI2 (CN1-42). Input terminal	
			3	Inputs from the SI3 (CN1-43). Input terminal	
			4	Inputs from the SI4 (CN1-44). Input terminal	
			5	Inputs from the SI5 (CN1-45). Input terminal	
			6	Inputs from the SI6 (CN1-46). Input terminal	
			7	Sets signal ON	
			8	Sets signal OFF	
			9	Inputs the reverse signal from SI0 (CN1-40) input terminal	
			A	Inputs the reverse signal from SI1 (CN1-41) input terminal	
			B	Inputs the reverse signal from SI2 (CN1-42) input terminal	
			C	Inputs the reverse signal from SI3 (CN1-43) input terminal	
			D	Inputs the reverse signal from SI4 (CN1-44) input terminal	
			E	Inputs the reverse signal from SI5 (CN1-45) input terminal	
			F	Inputs the reverse signal from SI6 (CN1-46) input terminal	
	1	Reserved	-		
	2	Reserved	-		
	3	Reserved	-		
Pn2C8	Reserved (Do not change)	-	-	400	-
Pn2C9				50	
Pn2CA				50	
Pn2CB				50	
Pn2CC				0	
Pn2CC				0	
Pn2CD				0	
Pn2CE				60	
Pn2CF				0	
Pn2D0				8888	
Pn2D1	Extended input signal selection	-	-	0078	After restart
	Digit	Function Name	Setting	Explanation	
	0	Emergency input	0-F	Same as Pn2C7.0	
	1	New Mode Enable	0-F	Same as Pn2C7.0	
	2	Reserved	--		
	3	Reserved	--		

Parameter No.	Name			Setting Range	Units	Factory Setting	Setting Validation
Pn2D2	Extended Output Signal Selection			-	-	0000	After restart
	Digit	Function Name	Setting	Explanation			
	0	/COIN Signal Mapping	0	Disabled			
			1	Outputs from the SO1 (CN1-25, 26) output terminal			
			2	Outputs from the SO2 (CN1-27, 28) output terminal			
			3	Outputs from the SO3 (CN1-29, 30) output terminal			
	1	Not used	-				
2							
3							
Pn2D3	Reserved (Do not change)			-	-	2000	-
Pn2D4	Oscillation Cancelling Mode Switch			-	-	0001	Immediately
	Digit	Function Name	Setting	Explanation			
	0	Oscillation Cancelling Mode	0	OCA is not active			
			1	OCA is active			
	1	Not used	-				
	2						
3							
Pn300	Speed Reference Input Gain			1.50 to 30.00 V/ rated speed	0.01V/ rated speed	6.00 V/ rated speed	Immediately
Pn301	Speed 1 (rotary motor)			0 to 10000 min ⁻¹	1 min ⁻¹	100 min ⁻¹	Immediately
Pn302	Speed 2			0 to 10000 min ⁻¹	1 min ⁻¹	200 min ⁻¹	Immediately
Pn303	Speed 3			0 to 10000 min ⁻¹	1 min ⁻¹	300 min ⁻¹	Immediately
Pn304	JOG Speed			0 to 10000 min ⁻¹	1 min ⁻¹	500 min ⁻¹	Immediately
Pn305	Soft Start Acceleration Time			0 to 10000 ms	1 ms	0 ms	Immediately
Pn306	Soft Start Deceleration Time			0 to 10000 ms	1 ms	0 ms	Immediately
Pn307	Speed Reference Filter Time Constant			0.00 to 655.35 ms	0.01 ms	0.40 ms	Immediately
Pn308	Speed Feedback Filter Time Constant			0.00 to 655.35 ms	0.01 ms	0.00 ms	Immediately
Pn380	Linear Motor Speed 1 (Only for linear motors)			0-5000 mm/s	mm/s	10	Immediately
Pn381	Linear Motor Speed 2 (Only for linear motors)			0-5000 mm/s	mm/s	20	Immediately
Pn382	Linear Motor Speed 3 (Only for linear motors)			0-5000 mm/s	mm/s	30	Immediately
Pn383	Linear Motor JOG Speed (Only for linear motors)			0-5000 mm/s	mm/s	40	Immediately
Pn400	Torque Reference Input Gain			1.0 to10.0 V/rated torque	0.1 V/rated torque	3.0 V/ rated torque	Immediately
Pn401	Torque Reference Filter Time Constant			0.00 to 655.35 ms	0.01 ms	1.00 ms	Immediately
Pn402	Forward Torque Limit			0 to 800%	1%	800%	Immediately
Pn403	Reverse Torque Limit			0 to 800%	1%	800%	Immediately
Pn404	Forward External Torque Limit			0 to 800%	1%	100%	Immediately
Pn405	Reverse External Torque Limit			0 to 800%	1%	100%	Immediately
Pn406	Emergency Stop Torque			0 to 800%	1%	800%	Immediately
Pn407	Speed Limit during Torque Control			0 to 10000 min ⁻¹	1 min ⁻¹	10000 min ⁻¹	Immediately
Pn408	Torque Control Function Switches			-	-	0000	Immediately
	Digit	Function Name	Setting	Explanation			
	0	Notch Filter Selection	0	Disabled			
			1	Uses a notch filter for torque reference			
	1	Not used	-				
2							
3							
Pn409	Notch Filter Frequency			50 to 2000 Hz	1 Hz	2000 Hz	Immediately
Pn40A	Notch Filter width			70 to 1000 Hz	1 Hz	70(0.70)	Immediately
Pn40B	Reserved (Do not change)			-	-	1000	-
Pn40C						2000	
Pn40D						70	
Pn40E						1000	
Pn480	Reserved (Do not change) only available for linear motors			-	-	-	-
Pn483							
Pn484							
Pn500	Positioning Completed Width			0 to 250 reference units	1 reference unit	7 reference units	Immediately
Pn501	Zero Clamp Level			0 to 10000 min ⁻¹	1 min ⁻¹	10 min ⁻¹	Immediately
Pn502	Rotation Detection Level			1 to 10000 min ⁻¹	1 min ⁻¹	20 min ⁻¹	Immediately
Pn503	Speed Coincidence Signal Output Width			0 to 100 min ⁻¹	1 min ⁻¹	10 min ⁻¹	Immediately
Pn504	NEAR Signal Width			1 to 250 reference units	1 reference unit	7 reference units	Immediately
Pn505	Overflow Level			1 to 32767reference units	256 reference unit	1024 reference u	Immediately
Pn506	Brake Reference - Servo OFF Delay Time			0 to 50 (0 to 500 ms)	10 ms	0 ms	Immediately
Pn507	Brake Reference Output Speed Level			0 to 10000 min ⁻¹	1 min ⁻¹	100 min ⁻¹	Immediately
Pn508	Timing for Brake Reference Output during Motor Operation			10 to 100 (100 to 1000 ms)	10 ms	500 ms	Immediately
Pn509	Momentary Hold time			20 to 1000 ms	1 ms	20 ms	Immediately

Parameter No.	Name		Setting Range	Units	Factory Setting	Setting Validation
Pn50A	Input Signal Selections 1		-	-	2100	After restart
	Digit	Function Name	Setting	Explanation		
	0	Input Signal Allocation Mode	0	Sets the input signal allocation for the sequence to the same one as for the Yaskawa special servo amplifier		
			1	Possible to freely allocate the input signals		
	1	/S-ON Signal Mapping (Servo ON when low)	0	Inputs from the SI0 (CN1-40). Input terminal		
			1	Inputs from the SI1 (CN1-41). Input terminal		
			2	Inputs from the SI2 (CN1-42). Input terminal		
			3	Inputs from the SI3 (CN1-43). Input terminal		
			4	Inputs from the SI4 (CN1-44). Input terminal		
			5	Inputs from the SI5 (CN1-45). Input terminal		
			6	Inputs from the SI6 (CN1-46). Input terminal		
			7	Sets signal ON		
			8	Sets signal OFF		
			9	Inputs the reverse signal from SI0 (CN1-40) input terminal		
			A	Inputs the reverse signal from SI1 (CN1-41) input terminal		
			B	Inputs the reverse signal from SI2 (CN1-42) input terminal		
			C	Inputs the reverse signal from SI3 (CN1-43) input terminal		
			D	Inputs the reverse signal from SI4 (CN1-44) input terminal		
			E	Inputs the reverse signal from SI5 (CN1-45) input terminal		
			F	Inputs the reverse signal from SI6 (CN1-46) input terminal		
	2	/P-CON Signal Mapping (P control when low)	0 to F	Same as above		
	3	/P-OT Signal Mapping (Overtravel when high)	0 to F	Same as above		
Pn50B	Input Signal Selections 2		-	-	6543	After restart
	Digit	Function Name	Setting	Explanation		
	0	N-OT Signal Mapping (Overtravel when high)	0 to F	Same as Pn50A.1		
	1	/ALM-RST Signal Mapping (Alarm Reset when low.)	0 to F	Same as Pn50A.1		
	2	/P-CL Signal Mapping (Torque control when low.)	0 to F	Same as Pn50A.1		
	3	/N-CL Signal Mapping (Torque control when low.)	0 to 8	Same as Pn50A.1		
Pn50C	Input Signal Selections 3		-	-	8888	After restart
	Digit	Function Name	Setting	Explanation		
	0	/SPD-D Signal Mapping (Internal Set Speed Selection)	0 to F	Same as Pn50A.1		
	1	/SPD-A Signal Mapping (Internal Set Speed Selection)	0 to F	Same as Pn50A.1		
	2	/SPD-D Signal Mapping (Internal Set Speed Selection)	0 to F	Same as Pn50A.1		
	3	/C-SEL Signal Mapping (Control Mode Switching)	0 to F	Same as Pn50A.1		
Pn50D	Input Signal Selections 4		--		8888	After restart
	Digit	Function Name	Setting	Explanation		
	0	/ZCLAMP Signal Mapping (Zero clamping)	0 to F	Same as Pn50A.1		
	1	/INHIBIT Signal Mapping (Disabling Reference Pulse)	0 to F	Same as Pn50A.1		
	2	/G-SEL Signal Mapping (Gain Switching)	0 to F	Same as Pn50A.1		
	3	(Reserved)	0 to F	Same as Pn50A.1		
Pn50E	Output Signal Selections 1		-	-	3211	After restart
	Digit	Function Name	Setting	Explanation		
	0	/COIN Signal Mapping	0	Disabled		
			1	Outputs from the SO1 (CN1-25, 26) output terminal		
			2	Outputs from the SO2 (CN1-27, 28) output terminal		
			3	Outputs from the SO3 (CN1-29, 30) output terminal		
	1	/V-CMP Signal Mapping	0 to 3	Same as above		
	2	/TGON Signal Mapping	0 to 3	Same as above		
	3	/S-RDY Signal Mapping	0 to 3	Same as above		
Pn50F	Output Signal Selections 2		--		0000	After restart
	Digit	Function Name	Setting	Explanation		
	0	/CLT Signal Mapping	0 to 3	Same as Pn50E.0		
	1	Speed Limit Detection Signal Mapping (/VLT)	0 to 3	Same as Pn50E.0		
	2	Brake Interlock Signal Mapping (/BK)	0 to 3	Same as Pn50E.0		
	3	Warning Signal Mapping (/WARN)	0 to 3	Same as Pn50E.0		
Pn510	Output Signal Selections 3		-	-	0000	After restart
	Digit	Function Name	Setting	Explanation		
	0	Near Signal Mapping (/NEAR)	0 to 3	Same as Pn50E.0		
	1	Reserved (Do not Change)	0 to 3	Same as Pn50E.0		
	2	Not Used	0			
	3	Not Used	0			

Parameter No.	Name	Setting Range	Units	Factory Setting	Setting Validation
Pn511	Reserved (Do not change)	-	-	8888	-
Pn512				0000	
Pn51A				10	
Pn550				100	
Pn551				100	
Pn580	Reserved (Do not change) only available for linear motors	-	-	10	-
Pn581				20	
Pn582				10	
Pn583				100	
Pn600	Regenerative Resistor Capacity	Depends on SERVOPACK Capacity *2	10 W	0 W	Immediately
Pn601	Reserved (Do not change)	Depends on SERVOPACK Capacity *2	-	0 W	Immediately

Monitor Mode Details

Monitor No.	Monitor item	Unit	Explanation
Un000	Speed Feedback	min ⁻¹	Displays the actual motor speed.
Un001	Speed Command	min ⁻¹	Displays the speed command value or internally set speed value during speed control. 0 is displayed during pulse-train input control.
Un002	Torque Command	%	Displays the command value for a current loop that is expressed by treating the rated torque as 100%.
Un003	Number of Pulses from Z-Phase	Pulses	Displays the number of pulses from Z-Phase in encoder resolution units (times 4).
Un004	Electrical Angle	degrees	Displays the motor electrical angle.
Un005	Input Signal Monitor	---	Displays driver I/O signal status by turning ON or OFF each signal bit.
Un006	Output Signal Monitor	---	
Un007	Command Pulse Speed Display	r/min	Displays command pulse frequency converted in r/min.
Un008	Position Deviation (Error Counter)	Reference units	Displays the number of pulses accumulated in the error counter (Position Deviation) that are converted in reference units (input pulse references).
Un009	Motor Load Rate	%	Displays effective torque at intervals of 10 s that is expressed by treating the rated torque as 100%.
Un00A	Regeneration Load Rate	%	Displays the amount of regeneration energy absorbed at intervals of 10 s that is expressed by treating the Pn600 setting (Regenerative Resistor Capacity) as 100%.
Un00B	Dynamic Brake Resistance Load Rate	%	Displays the resistance load factor at intervals of 10 s that is expressed by treating the rated load factor as 100%.
Un00C	Input Pulse Counter	Reference units	Displays the number of counted input pulses in hexadecimal notation.
Un00D	Feedback Pulse Counter	Pulses	Displays the number of counted encoder feedback pulses in hexadecimal notation (multiplied by 4).

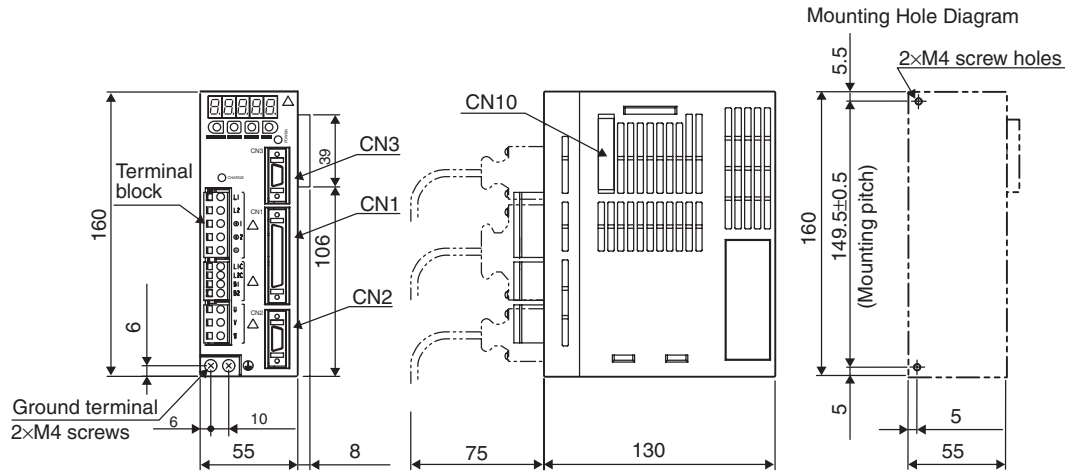
List of Function Modes

Parameter No.	Function
Fn000	Alarm traceback data display
Fn001	Rigidity setting during online autotuning
Fn002	JOG mode operation
Fn003	Zero-point search mode
Fn004	Fixed parameter
Fn005	Parameter setting initialization
Fn006	Alarm traceback data clear
Fn007	Writing to EEPROM moment of inertia ratio data obtained from online autotuning
Fn008	Absolute encoder multiturn reset and encoder alarm reset
Fn009	Automatic tuning of analog (speed, torque) reference offset
Fn00A	Manual adjustment of speed reference offset
Fn00B	Manual adjustment of torque reference offset
Fn00C	Manual zero-adjustment of analog monitor output
Fn00D	Manual gain-adjustment of analog monitor output
Fn00E	Automatic offset-adjustment of motor current detection signal
Fn00F	Manual offset-adjustment of motor current detection signal
Fn010	Password setting (protects parameters from being changed)
Fn011	Motor models display
Fn012	Software version display
Fn013	Multiturn limit setting change when a Multiturn Limit Disagreement Alarm (A.CC) occurs
Fn014	Application module detection results clear

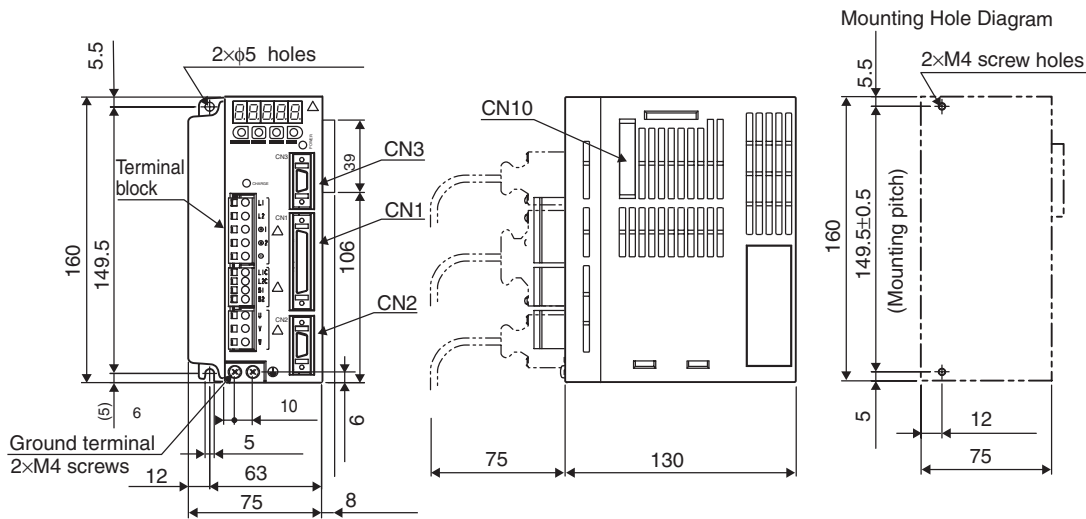
Dimensions

Servodrives

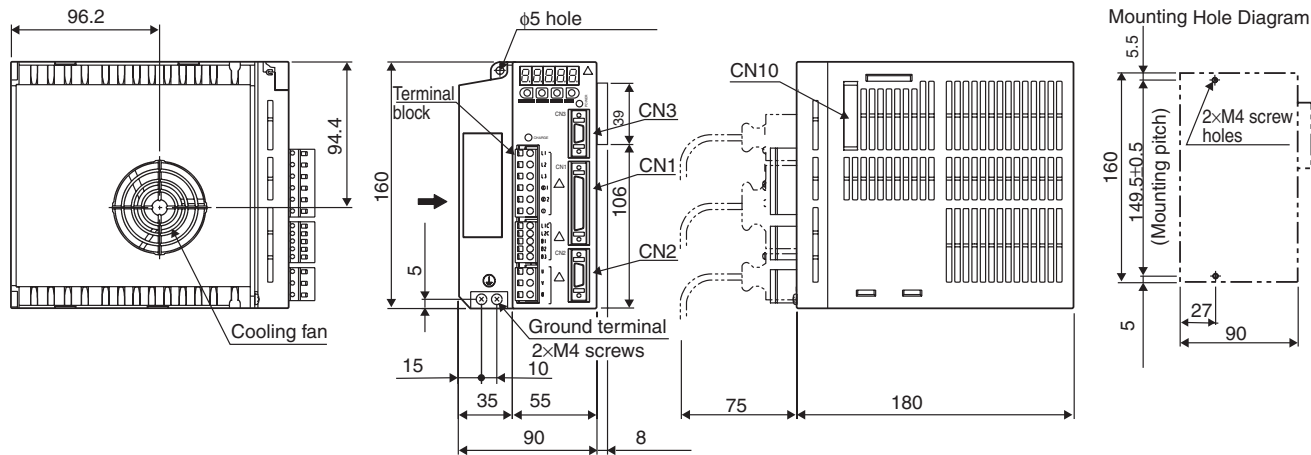
XD-P3-M□ to XD-02-M□ (230V, 30 to 200W)



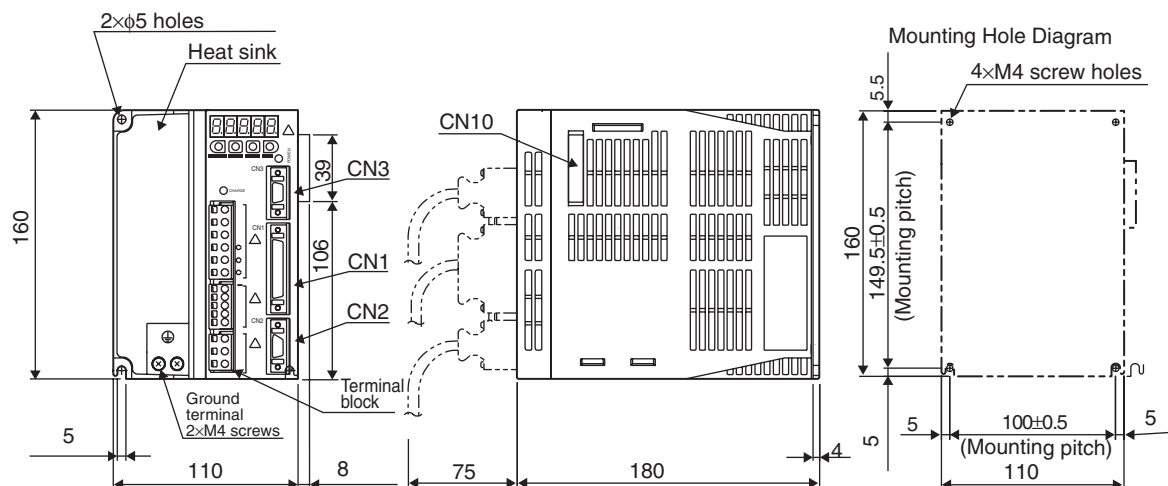
XD-04-M□ (230V, 400W)



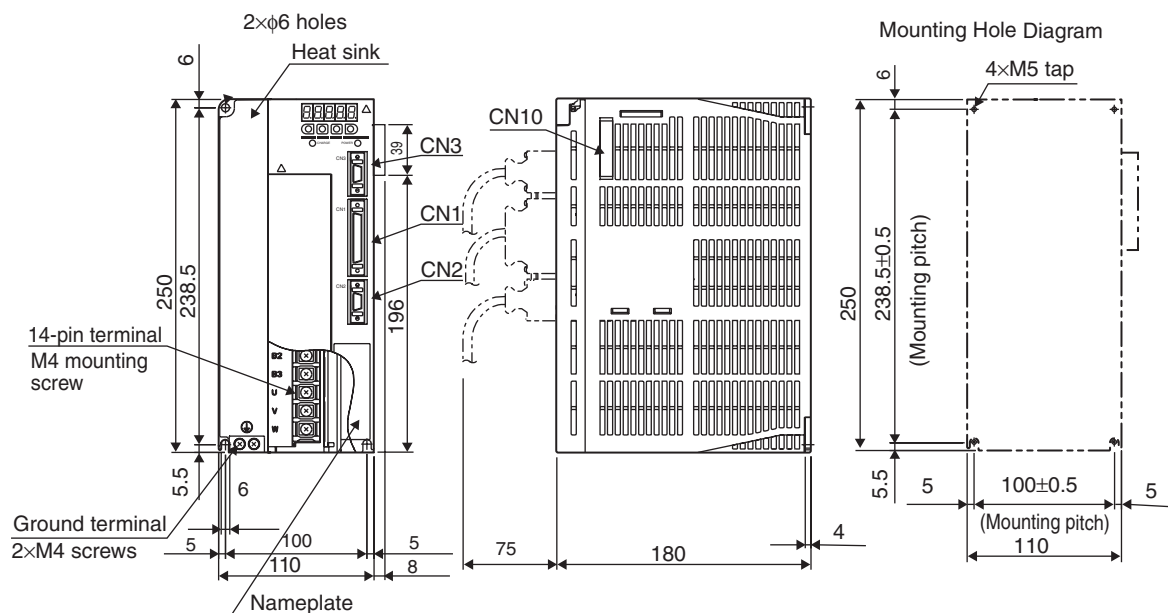
XD-08-M□ (230V, 750W)



XD-05-T□ to -15-T□ (400V, 0.5 to 1.5kW)

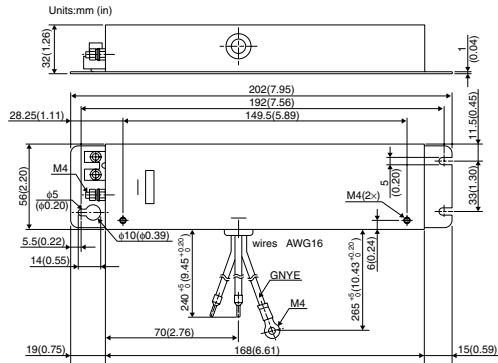


XD-20-T□, XD-30-T□ (400V, 2/3kW)



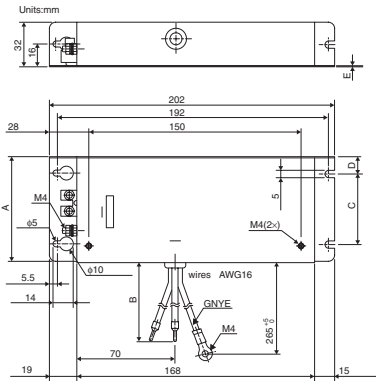
Filters

R88A-FIW104-SE



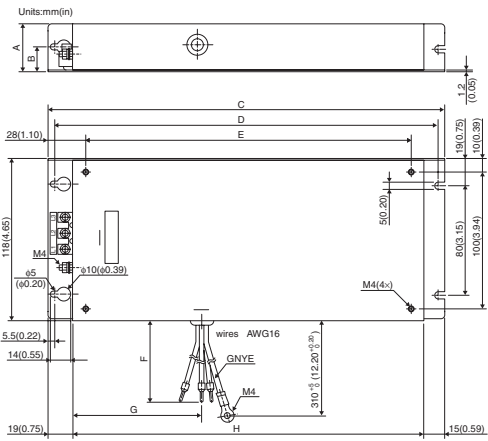
R88A-FIW107-SE, R88A-FIW115-SE

Model		R88A-FIW107-SE	R88A-FIW115-SE
Dimensions in mm	A	75	90
	B	240 ^{+b}	300 ^{+b}
	C	50	60
	D	12	15
	E	1	1.2



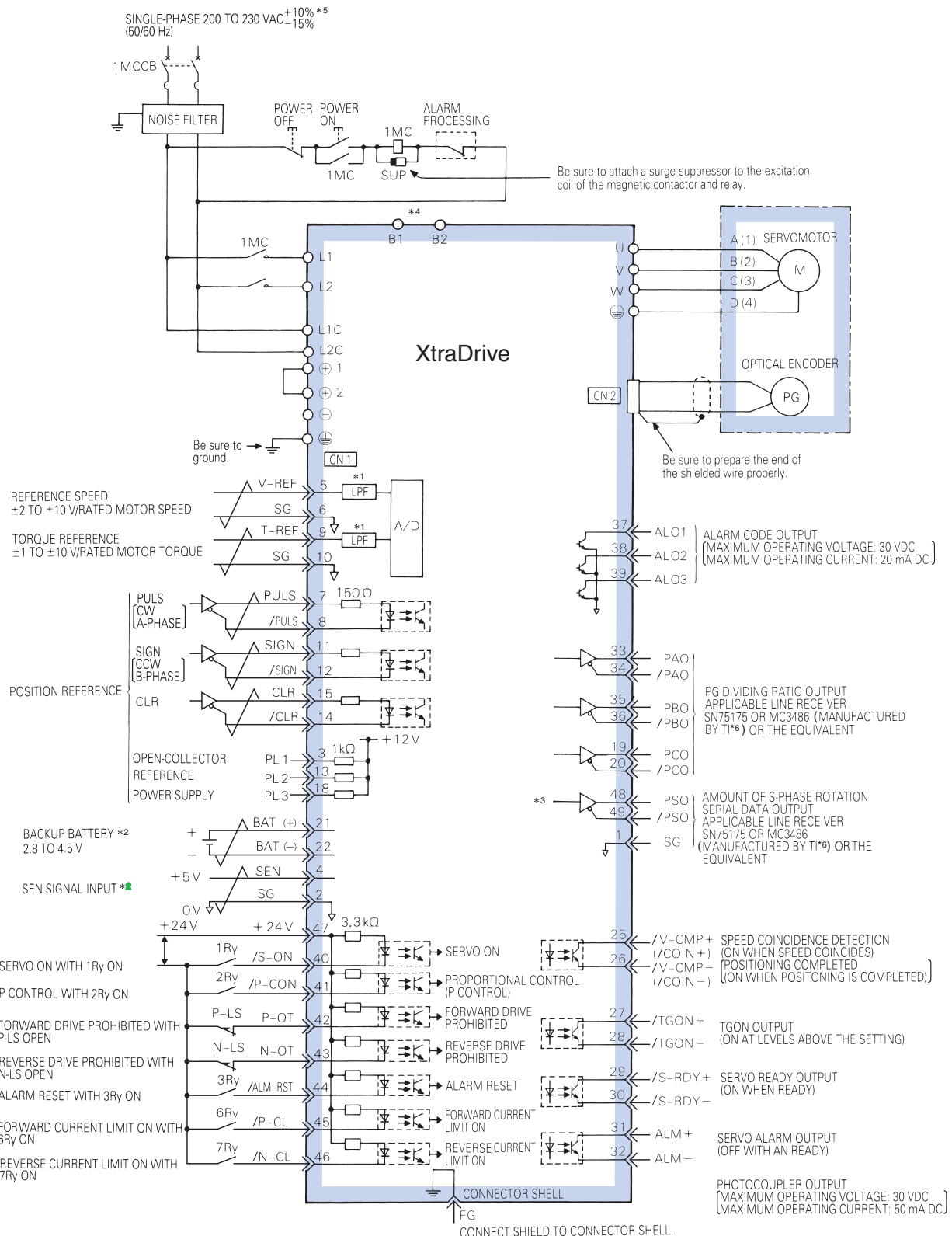
R88A-FIW4006-SE, R88A-FIW4010-SE

Model		R88A-FIW4006-SE	R88A-FIW4010-SE
Dimensions in mm (in)	A	32 (1.26)	35 (1.38)
	B	16 (0.63)	18 (0.71)
	C	202 (7.95)	291 (11.46)
	D	192 (7.56)	281 (11.06)
	E	150 (5.91)	239 (9.41)
	F	300 (11.81)	270 (10.63)
	G	70 (2.76)	90 (3.54)
	H	168 (6.61)	257 (10.12)



Installation

Single-phase, 230VAC



*1 The time constant for the primary filter is 47 μs.

*2 Connect when using an absolute encoder.

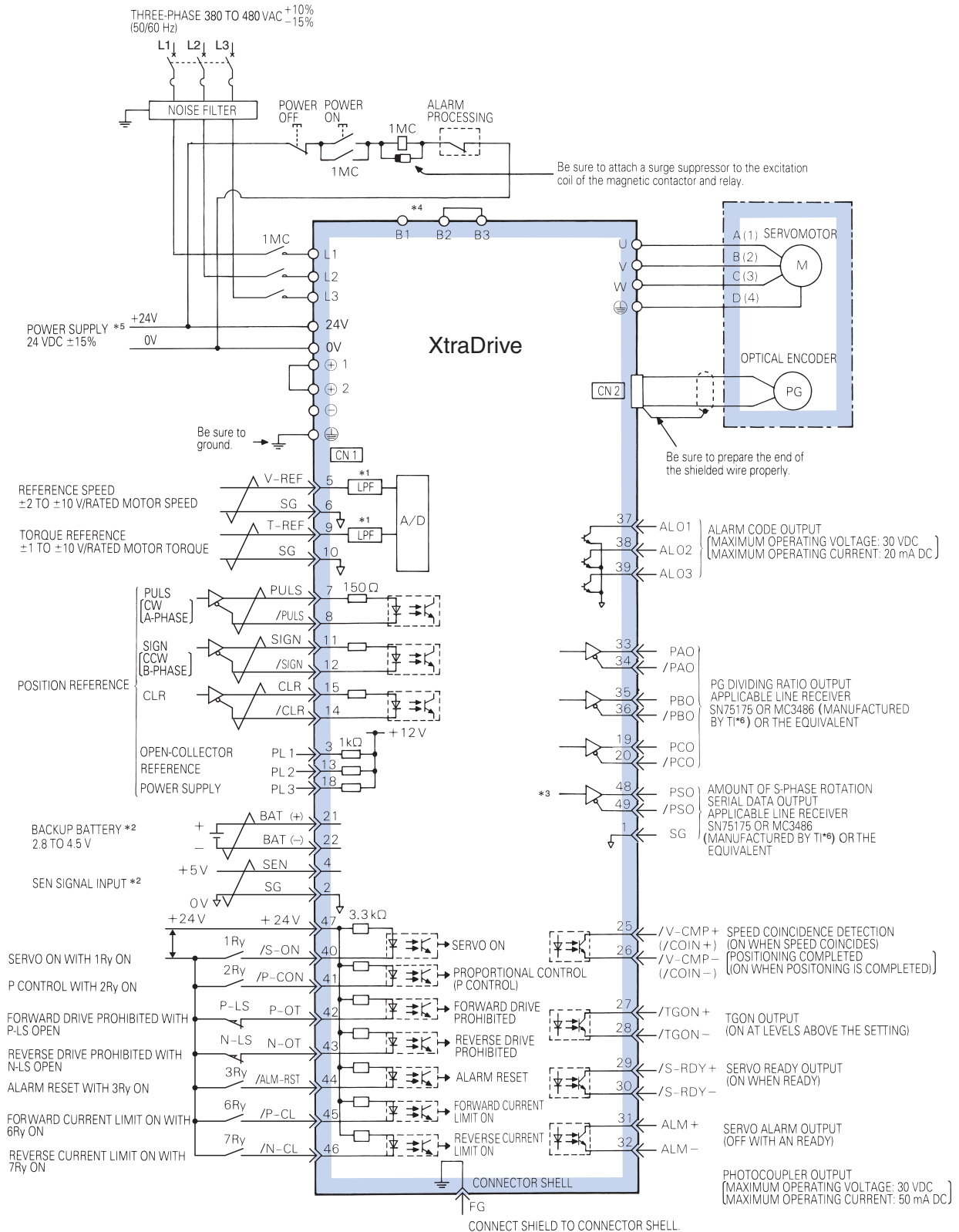
*3 Used only with an absolute encoder.

*4 Regenerative resistor can be connected between B1 and B2.

*5 For types XD-08-M□, voltage is 220 to 230 VAC (+10% -15%).

*6 TI stands for Texas Instruments Inc.

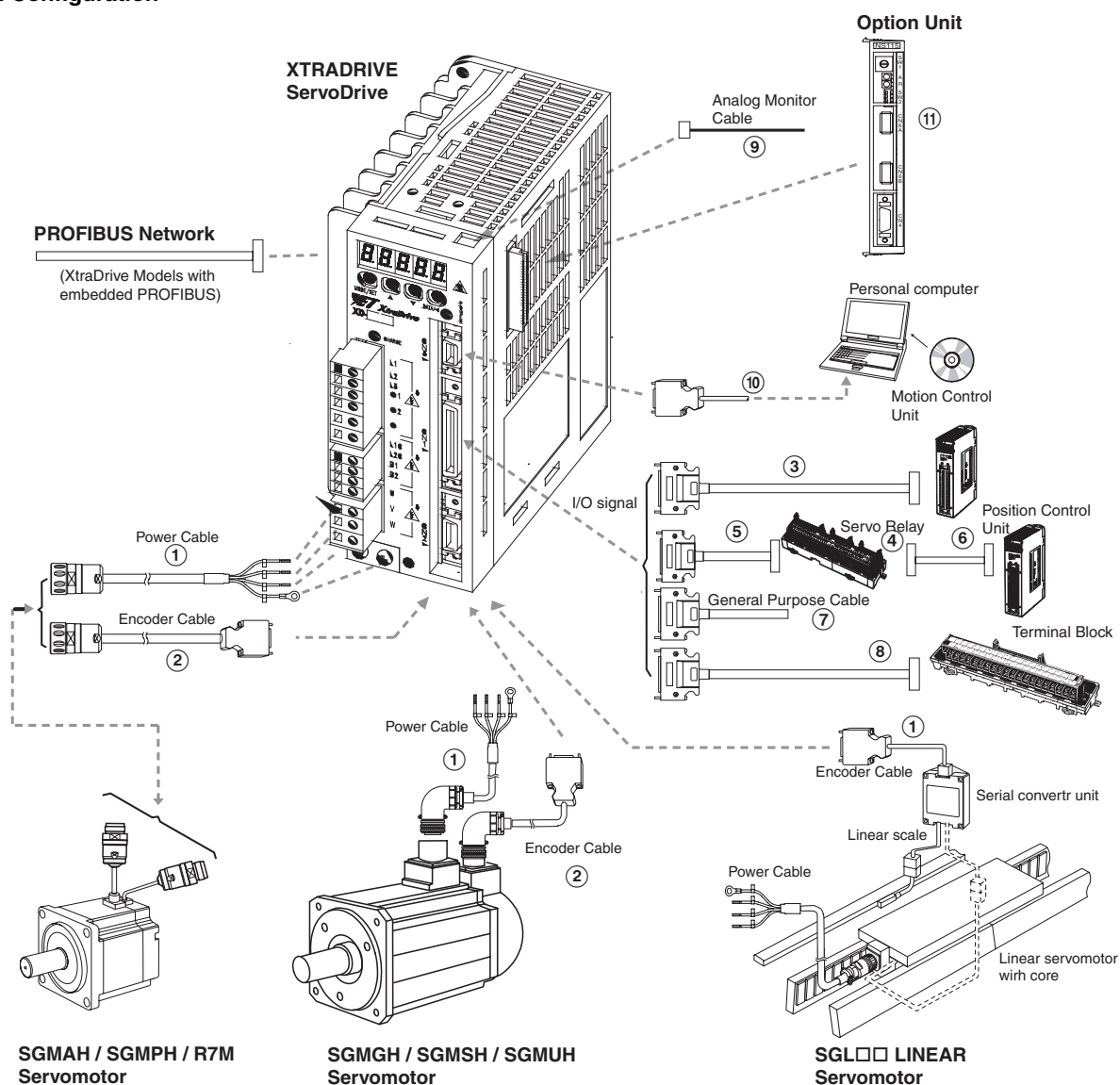
Three-phase, 400VAC



- *1 The time constant for the primary filter is 47 μ s.
- *2 Connect when using an absolute encoder.
- *3 Used only with an absolute encoder.
- *4 For using an external regenerative resistor, connect it between B1 and B2.
- *5 The 24VDC power is supplied by the user.
- *6 TI stands for Texas Instruments Inc.

Ordering Information

System Configuration



Servo Drives

Specifications		XtraDrive	XtraDrive-DP With PROFIBUS	Compatible Servomotors	SmartStep	Sigma Linear Motors
1 Phase 200 V AC	30 W	XD-P3-MN01	XD-P3-MSD0	SGMAH-A3A□	R7M-A03030-□	-
	50 W	XD-P5-MN01	XD-P5-MSD0	SGMAH-A5D□	R7M-A05030-□	SGLGW-30A050□
	100 W	XD-01-MN01	XD-01-MSD0	SGMAH-01A□, SGMPH-01A□	R7M-A10030-□, R7M-AP10030-□	SGLGW-30A080□, SGLGW-40A140□
	200 W	XD-02-MN01	XD-02-MSD0	SGMAH-02A□, SGMPH-02A□	R7M-A20030-□, R7M-AP20030-□	SGLFW-20A□, SGLFW-35A120□, SGLGW-40A253A□, SGLGW-60A140□
	400 W	XD-04-MN01	XD-04-MSD0	SGMAH-04A□, SGMPH-04A□	R7M-A40030-□, R7M-AP40030-□	SGLGW-40A365A□, SGLGW-60A253A□
	750 W	XD-08-MN	XD-08-MSD0	SGMAH-08A□, SGMPH-08A□	R7M-A75030-□, R7M-AP75030-□	SGLFW-35A230□, SGLFW-50A200□, SGLGW-60A365A□
3 Phase 400 V AC	0.5 kW	XD-05-TN	XD-05-TSD0	SGMGH-05D□, SGMAH-03D□, SGMPH-02D□/04D□	-	SGLFW-35D□
	1.0 kW	XD-10-TN	XD-10-TSD0	SGMGH-09D□, SGMSH/UH-10D□, SGMAH-07D□, SGMPH-08D□	-	SGLFW-50D200□, SGLTW-35D170□, SGLTW-50D170□
	1.5 kW	XD-15-TN	XD-15-TSD0	SGMGH-13D□, SGMSH/UH-15D□, SGMPH-15D□	-	SGLFW-50D380□, SGLFW-1ZD200□
	2.0 kW	XD-20-TN	XD-20-TSD0	SGMGH-20D□, SGMSH-20D□	-	SGLTW-35D320□, SGLTW-50D320□
	3.0 kW	XD-30-TN	XD-30-TSD0	SGMGH-30D□, SGMSH/UH-30D□	-	SGLFW-1ZD380□, SGLTW-40D400□

Note: SGLGW-□ Linear motor combination is made considering the use of Standard Magnets. Reffer to the Linear Motors chapter for details

Servomotors

Note: Reffer to the Servo System chapter for motor details.

Power Cables

Symbol	Specifications	Model	Appearance
A	For 200V Servomotors without brake SGMAH-□□A□□□1D-OY SGMPH-(01/02/04/08)A□□□1D-OY R7M-A(P)□□□30-S1-D	3 m R88A-CAWA003S-DE	
		5 m R88A-CAWA005S-DE	
		10 m R88A-CAWA010S-DE	
		15 m R88A-CAWA015S-DE	
		20 m R88A-CAWA020S-DE	
	For 200V Servomotors with brake SGMAH-□□A□□□CD-OY SGMPH-(01/02/04/08)A□□□CD-OY R7M-A(P)□□□30-BS1-D	3 m R88A-CAWA003B-DE	
		5 m R88A-CAWA005B-DE	
		10 m R88A-CAWA010B-DE	
		15 m R88A-CAWA015B-DE	
		20 m R88A-CAWA020B-DE	
	For 400V Servomotors without brake SGMAH-□□D□□□1D-OY SGMPH-□□D□□□1D-OY	3 m R88A-CAWK003S-DE	
		5 m R88A-CAWK005S-DE	
		10 m R88A-CAWK010S-DE	
		15 m R88A-CAWK015S-DE	
		20 m R88A-CAWK020S-DE	
	For 400V Servomotors with brake SGMAH-□□D□□□CD-OY SGMPH-□□D□□□CD-OY	3 m R88A-CAWK003B-DE	
		5 m R88A-CAWK005B-DE	
		10 m R88A-CAWK010B-DE	
		15 m R88A-CAWK015B-DE	
		20 m R88A-CAWK020B-DE	
	For 400V Servomotors SGMGH-(05/09/13)D□ SGMSH-(10/15/20)D□ SGMUH-(10/15)D□ For servomotors with Brake a separate cable (R88A-CAWC□□B-E) is needed	3 m R88A-CAWC003S-E	
		5 m R88A-CAWC005S-E	
		10 m R88A-CAWC010S-E	
		15 m R88A-CAWC015S-E	
		20 m R88A-CAWC020S-E	
	For 400V Servomotors SGMGH-(20/30)D□ SGMSH-30D□ SGMUH-30D□ For servomotors with Brake a separate cable (R88A-CAWC□□B-E) is needed	3 m R88A-CAWD003S-E	
		5 m R88A-CAWD005S-E	
		10 m R88A-CAWD010S-E	
		15 m R88A-CAWD015S-E	
		20 m R88A-CAWD020S-E	
	Brake Cable only. For 400V Servomotors with Brake SGMGH-□□D□ SGMSH-□□D□ SGMUH-□□D□	3 m R88A-CAWC003B-E	
		5 m R88A-CAWC005B-E	
		10 m R88A-CAWC010B-E	
		15 m R88A-CAWC015B-E	
		20 m R88A-CAWC020B-E	

Encoder Cables (for CN2)

Symbol	Specifications	Model	Appearance
B	Encoder cable for Sigma-II (SGMAH/PH) Servomotors SGMAH-□□□□□□D-OY SGMPH-□□□□□□D-OY	3 m XD-CRWA003-DE	
		5 m XD-CRWA005-DE	
		10 m XD-CRWA010-DE	
		15 m XD-CRWA015-DE	
		20 m XD-CRWA020-DE	
	Encoder cable for SmartStep Servomotors R7M-A(P)□□□30-S1-D	3 m XD-CRA003-DE	
		5 m XD-CRA005-DE	
		10 m XD-CRA010-DE	
		15 m XD-CRA015-DE	
		20 m XD-CRA020-DE	
	Encoder cable for Sigma-II (SGMGH/SH/UH/BH) Servomotors SGMGH-□ SGMSH-□ SGMUH-□	3 m XD-CRWB003N-E	
		5 m XD-CRWB005N-E	
		10 m XD-CRWB010N-E	
		15 m XD-CRWB015N-E	
		20 m XD-CRWB020N-E	
	Encoder cable to the serial converter of Sigma Linear Motors (Refer to the Linear motors chapter for more details)	3 m XD-CLP70-03-E	
		5 m XD-CLP70-05-E	
		10 m XD-CLP70-10-E	
		15 m XD-CLP70-15-E	
		20 m XD-CLP70-20-E	

Control Cables (for CN1)

Symbol	Description	Connect to		Model
③	Control Cable (1 Axis)	Motion Control Units CS1W-MC221 CS1W-MC421 C200H-MC221	1 m	R88A-CPW001M1
			2 m	R88A-CPW002M1
			3 m	R88A-CPW003M1
			5 m	R88A-CPW005M1
	Control Cable (2 Axis)	Motion Control Units CS1W-MC221 CS1W-MC421 C200H-MC221	1 m	R88A-CPW001M2
			2 m	R88A-CPW002M2
			3 m	R88A-CPW003M2
			5 m	R88A-CPW005M2
	Terminal Block (4 Axes)	Motion Control Unit C200HW-MC402-E	-	R88A-TC04-E
	Servodrive connecting Cable (1 Axis)		1 M	R88A-CMU001J3-E2
	PLC Unit Control Cables (4 Axes)		1 m	R88A-CMX001S-E
④	Servo Relay Unit	CS1W-NC1□3, CJ1W-NC1□3, or C200HW-NC113 Position Control Unit		XW2B-20J6-1B (1 axis)
				XW2B-40J6-2B (2 axes)
		CQM1H-PLB21 CQM1-CPU43 CJ1M-CPU22/23		XW2B-20J6-3B (1 axis)
				XW2B-20J6-8A (1 axis) XW2B-40J6-9A (2 axes)
		C200H-NC112	1 m	XW2Z-100J-B4
			2 m	XW2Z-200J-B4
		C200H-NC211	0.5 m	XW2Z-050J-A1
			1 m	XW2Z-100J-A1
		CQM1-CPU43-V1 and CQM1H-PLB21	0.5 m	XW2Z-050J-A2
			1 m	XW2Z-100J-A2
⑤	Cable to Servo drive	CS1W-NC113 and C200HW-NC113	0.5 m	XW2Z-050J-A3
			1 m	XW2Z-100J-A3
		CS1W-NC213/413 and C200HW-NC213/413	0.5 m	XW2Z-050J-A6
			1 m	XW2Z-100J-A6
		CS1W-NC213/413 and C200HW-NC213/413	0.5 m	XW2Z-050J-A7
			1 m	XW2Z-100J-A7
		CS1W-NC133	0.5 m	XW2Z-050J-A10
			1 m	XW2Z-100J-A10
		CS1W-NC233/433	0.5 m	XW2Z-050J-A11
			1 m	XW2Z-100J-A11
⑥	Position Control Unit Connecting Cable	CJ1W-NC113	0.5 m	XW2Z-050J-A14
			1 m	XW2Z-100J-A14
		CJ1W-NC213/413	0.5 m	XW2Z-050J-A15
			1 m	XW2Z-100J-A15
		CJ1W-NC133	0.5 m	XW2Z-050J-A18
			1 m	XW2Z-100J-A18
		CJ1W-NC233/433	0.5 m	XW2Z-050J-A19
			1 m	XW2Z-100J-A19
		CJ1M-CPU22/23	0.5 m	XW2Z-050J-A27
			1 m	XW2Z-100J-A27
⑦	Control Cable	For General purpose Controllers	1 m	R88A-CPW001S or JZSP-CKI01-1
			2 m	R88A-CPW002S or JZSP-CKI01-1
⑧	Relay Terminal Block Cable	General-purpose Controller	1 m	R88A-CTW001N
	Relay Terminal Block		2 m	R88A-CTW002N
			-	XW2B-50G5

Cable (for CN5)

Symbol	Name	Model
⑨	Analog Monitor Cable	R88A-CMW001S or DE9404559

Options (for CN3)

Symbol	Name	Model
⑩	Computer Connecting Cable	R88A-CCW002P2 or JZSP-CMS02

Option Units (for CN10)

Symbol	Name	Model
⑪	DeviceNet Interface unit with Positioning Functionality	JZSP-NS300

Battery Backup for absolute encoder

Name	Model
Battery (Required for servomotors with absolute encoder)	JZSP-BA01 ER6VC3 (3.6V)

Connectors

Specification	Model
Control I/O connector (For CN1)	R88A-CNU11C or JZSP-CKI9
XtraDrive 200V Connector Kit. (For 200V Motors SGMAH/PH-□□□□□□D-OY and R7M-A□-D)	Connectors included DE9406973 SPOC-17H-FRON169 SPOC-06K-FSDN169
XtraDrive 400V Connector Kit. (For 400V Motors SGMAH/PH-□□□□□□D-OY)	Connectors included DE9406973 SPOC-17H-FRON169 LPRA-06B-FRBN170
Sigma-II Drive Encoder connector (For CN2)	DE9406973 or R88A-CNU01R
Hypertac Encoder Connector IP67 (For Motors SGMAH/PH-□□□□□□□□D-OY and R7M-A□-D)	SPOC-17H-FRON169
Hypertac Power Connector IP67, 200V. (For 200V Motors SGMAH/PH-□□□□□□□□D-OY and R7M-A□-D)	SPOC-06K-FSDN169
Hypertac Power Connector IP67, 400V. (For 400V Motors SGMAH/PH-□□□□□□□□D-OY)	LPRA-06B-FRBN170
Military Encoder connector IP67 (For Motors SGMGH-□, SGMSH-□, SGMUH-□)	MS3108E20-29S
Military Power connector IP67 (For 400V Motors SGMGH-(05/10/13)D□, SGMSH-(10/15/20)D□, SGMUH-(10/15)D□)	MS3108E18-10S
Military Power connector IP67 (For 400V Motors SGMGH-(20/30)D□, SGMSH-30D□, SGMUH-30D□)	MS3108E22-22S
Military Brake connector IP67 (For 400V ServoMotors SGMGH-□, SGMSH-□, SGMUH-□)	MS3108E10SL-3S

Filters

Specifications (applicable Servo Drive)	Model	Rated Current	Rated Voltage
XD-P3-M□, XD-P5-M□, XD-01-M□, XD-02-M□	R88A-FIW104-SE	4 A	250 VAC Single- Phase
XD-04-M□	R88A-FIW107-SE	7 A	
XD-08-M□	R88A-FIW115-SE	15 A	400 VAC Three- Phase
XD-05-T□, XD-10-T□, XD-15-T□	R88A-FIW4006-SE	6 A	
XD-20-T□, XD-30-T□	R88A-FIW4010-SE	10 A	

Computer Software

Specifications	Model
XtraWare	MOTION TOOLS

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.