

AC Servo systems

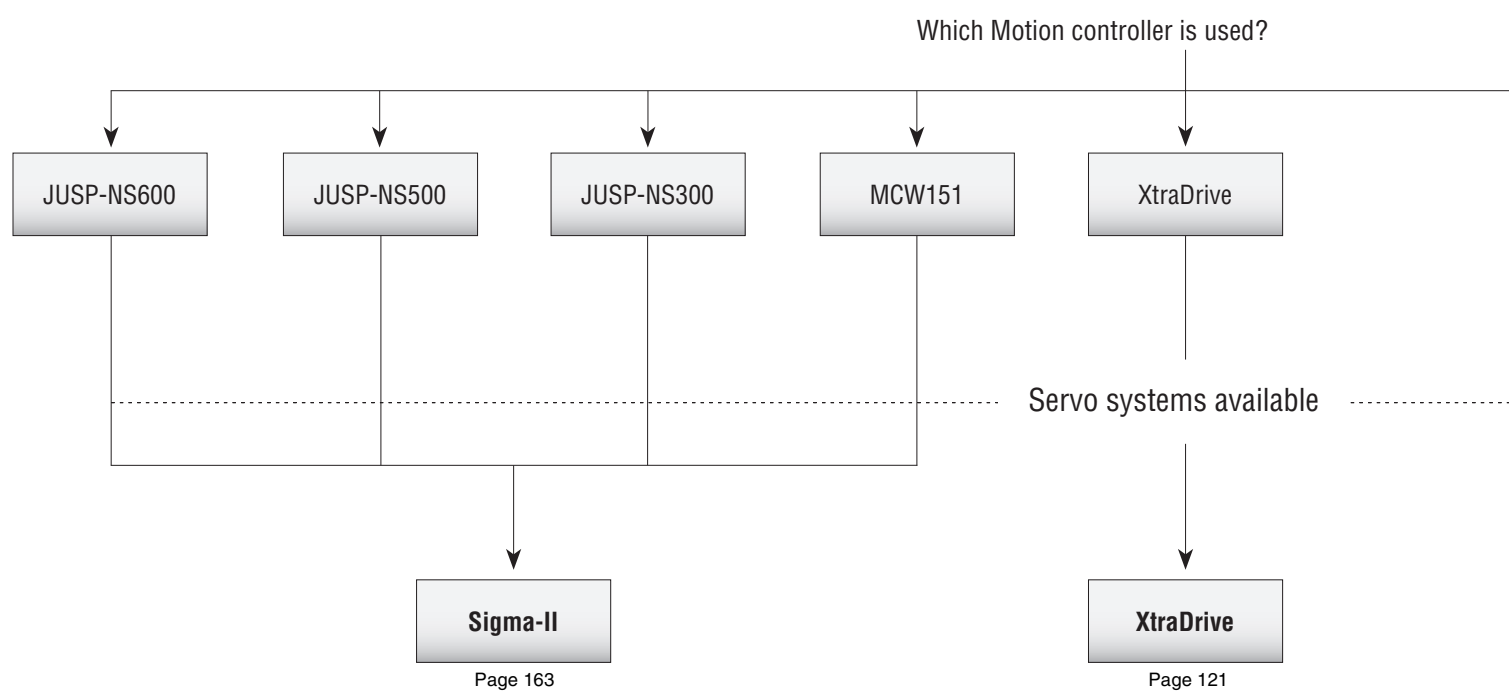
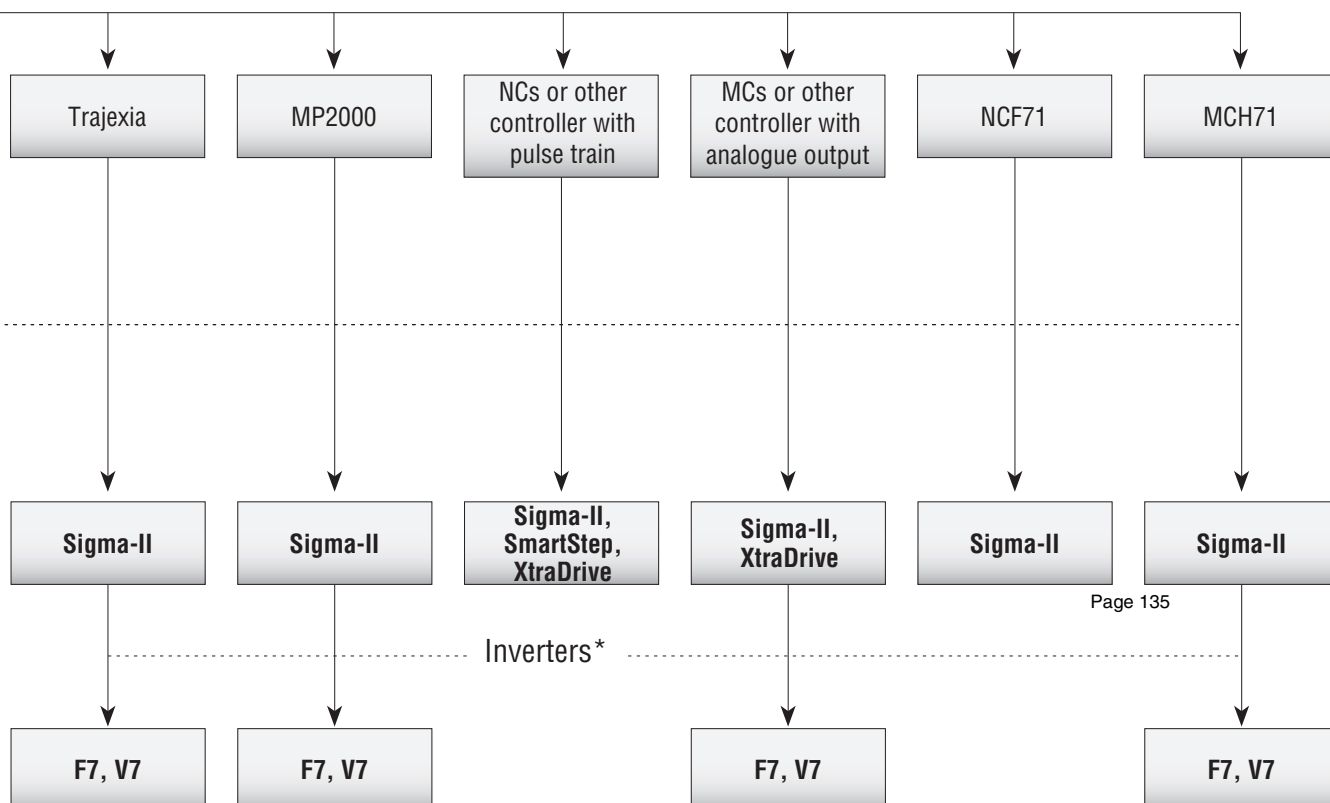


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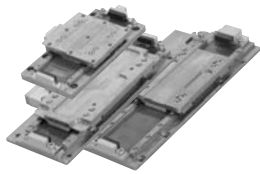


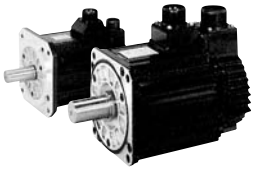
*see Inverter chapter

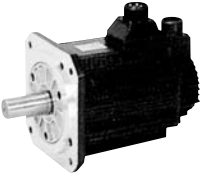
Selection table

Servo drives			
			
	XtraDrive	Sigma-II	SmartStep
	All in one! servo drive and motion controller integrated	Designed with ZERO compromise	Servo capability with stepper simplicity
Ratings 230 V single-phase	30 W to 1,500 W	30 W to 1,500 W	30 W to 800 W
Ratings 400 V single-phase	0.5 kW to 5 kW	0.5 kW to 55 kW	N/A
Motors applicable	Sigma linear motors, rotary Sigma-II and SmartStep motors	Rotary Sigma-II, rotary direct drives and Sigma linear motors	SmartStep motors
Positioning control	Internal program, pulse train input or via PROFIBUS	Pulse train input or via option unit	Pulse train input
Speed control	Internal program, analogue ± 10 V or via PROFIBUS	Analogue ± 10 V or via option unit	N/A
Torque control	Internal program, analogue ± 10 V or via PROFIBUS	Analogue ± 10 V or via option unit	N/A
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Sigma linear servo motors			
			
	SGLFW	SGLGW	SGLTW
	Iron-core Sigma linear motor, making the difference	Coreless GW linear motor construction results in zero attraction force	Iron-core TW linear motor with magnetic attraction cancellation
Rated force range	25 N to 2250 N	12.5 N to 325 N	300 N to 2000 N
Peak force range	86 N to 5400 N	40 N to 1300 N	600 N to 7500 N
Maximum speed	5 m/sec	5 m/sec	5 m/sec
Design type	Iron-core coil	Coreless coil	Iron-core coil
Magnetic attraction	314 N to 14600 N	zero	zero
Drives applicable	Sigma-II and XtraDrive	Sigma-II and XtraDrive	Sigma-II and XtraDrive
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Sigma linear servo motors		
		
	LETLA	SGTMM
	Linear axes ready to use	Flat construction for mounting at narrow spaces
Rated force range	80 N to 1120 N	3.5 N to 7 N
Peak force range	220 N to 2400 N	10 N to 25 N
Maximum speed	5 m/sec	1.5 m/sec
Design type	Iron-core coil	Moving magnet
Magnetic attraction	810 N to 6520 N	zero
Drives applicable	Sigma-II and XtraDrive	Sigma-II
Page	221	235

Sigma linear servo motors			
			
	SGMAH	SGMPH	SGMGH
	Sigma-II rotary motors (6 different motor families to cover all application needs)		
	Low-inertia design for high dynamics		High torque servo motors
	Rated speed	3000 rpm	1500 rpm
	Maximum speed	5000 rpm	3000 rpm
	Rated torque	0.095 Nm to 2.39 Nm	2.84 Nm to 95.4 Nm
	Sizes	30 to 750 W	0.45 to 15 kW
	Drives applicable	Sigma-II and XtraDrive	Sigma-II and XtraDrive
	Encoder resolution	13 bits-incremental / 16 bits-absolute	13 bits-incremental / 16 bits-absolute
	IP rating	IP55	IP55 (optional IP67)
	Page	163	IP67

Sigma linear servo motors			
			
	SGMSH	SGMUH	SGMBH
	Sigma-II rotary motors (6 different motor families to cover all application needs)		
	Low-inertia motors for high dynamics		High speed servo motors
	Rated speed	3000 rpm	1500 rpm
	Maximum speed	5000 rpm	2000 rpm
	Rated torque	3.18 Nm to 15.8 Nm	140 Nm to 350 Nm
	Sizes	1 to 5 kW	22 kW to 55 kW
	Drives applicable	Sigma-II and XtraDrive	Sigma-II
	Encoder resolution	17 bits-incremental and absolute	17 bits-incremental and absolute
	IP rating	IP67	IP44
	Page	163	

Sigma linear servo motors		
		
	SmartStep	SGMCS
	SmartStep motors	
	Ultra compact motor	
	Rated speed	150 / 200 rpm
	Maximum speed	500 rpm
	Rated torque	2 Nm to 80 Nm
	Sizes	42 to 1.5 kW
	Drives applicable	Sigma-II
	Encoder resolution	20 bits-absolute
	IP rating	IP42
	Page	189



XD-□, XD-□-E

XtraDrive

Intelligent servo drive. Integrated controller and network connectivity.

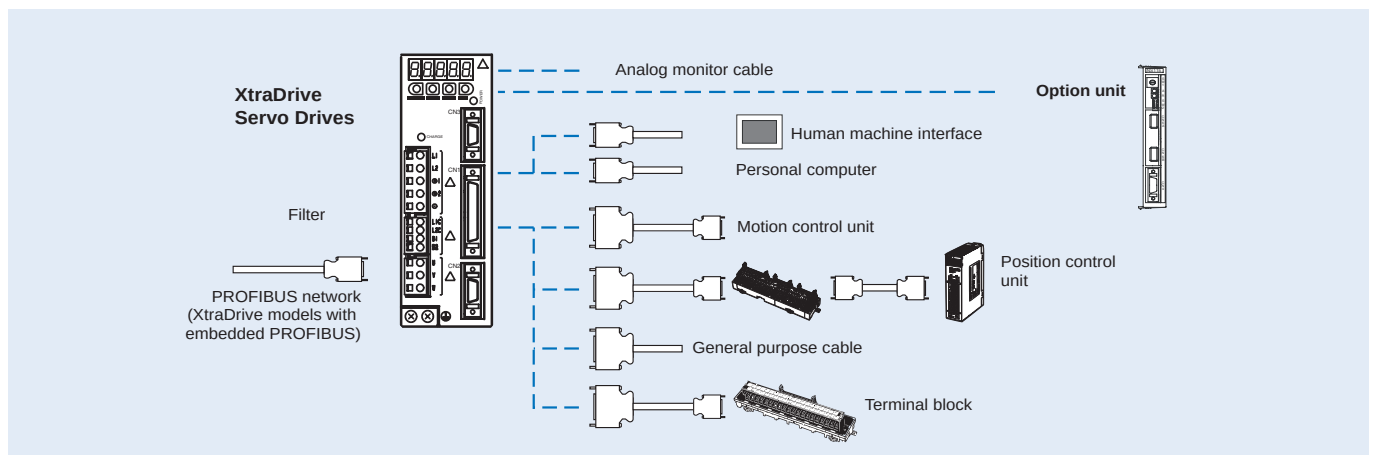
- NCT. Patented non-linear algorithm for tight control
- Very low tracking error with no overshoot and zero settling time
- Supports different servo motor encoder types
- PROFIBUS embedded in the drive available
- XtraDrive model available with electronic CAM
- The ideal drive for linear motor control
- Fast hardware registration input
- Intuitive text programming language
- Automatic tuning of servo parameters for optimal settling time
- Oscilloscope available via XtraWare software tool
- CompoWay/F is supported, it allows remote access to the drives through the PLC

Ratings

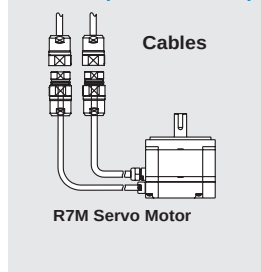
- 230 VAC single-phase 30 W to 1.5 kW (4.77 Nm)
- 400 VAC three-phase 0.5 kW to 5.0 kW (28.4 Nm)



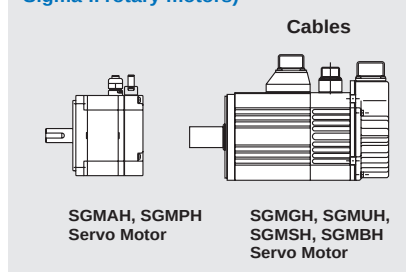
System configuration



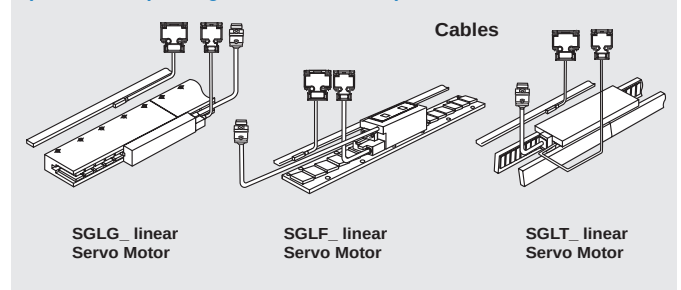
(Refer to chapter SmartStep servo motors)



(Refer to chapter Sigma-II rotary motors)



(Refer to chapter Sigma-II linear motors)



Servo motor / servo drive combination

Servo motor				Servo drive			
	Voltage	Rated torque	Capacity	230 V (1-phase)	230 V (1-phase) w PROFIBUS	400 V (3-phase)	400 V (3-phase) w PROFIBUS
Sigma-II series motors (refer to the Sigma-II rotary motors chapter for 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-□	-	-
	400 V	2.39 N.m	750 W	XD-08-MN□	XD-08-MSD0-□	-	-
		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-□	-	-
		4.77 N.m	1500 W	XD-15-MN□-□	-	-	-
	400 V	0.637 N.m	200 W	-	-	XD-05-TN□	XD-05-TSD0-□
		1.27 N.m	400 W	-	-	XD-05-TN□	XD-05-TSD0-□
		2.39 N.m	750 W	-	-	XD-10-TN□	XD-10-TSD0-□
4.77 N.m		1500 W	-	-	XD-15-TN□	XD-15-TSD0-□	
	400 V	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-□
		18.6 N.m	2.9 kW	-	-	XD-30-TN□	XD-30-TSD0-□
		28.4 N.m	4.4 kW	-	-	XD-50-TN□	-
	400 V	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-□
		9.80 N.m	3.0 kW	-	-	XD-30-TN□	XD-30-TSD0-□
		12.6 N.m	4.0 kW	-	-	XD-50-TN□	-
		15.8 N.m	5.0 kW	-	-	XD-50-TN□	-
	400 V	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-□
		6.3 N.m	4.0 kW	-	-	XD-50-TN□	-
SmartStep series motors (refer to the SmartStep servo motors chapter for 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 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

XD - 01 - MN 01-E

XtraDrive

Output capacity

P3	30 W	08	750 W
P5	50 W	10	1.0 kW
01	100 W	15	1.5 kW
02	200 W	20	2.0 kW
04	400 W	30	3.0 kW
05	500 W	50	5.0 kW

Electronic CAM enabled

Design version # (optional)

01: Design version

D0: Embedded PROFIBUS

Extended functionality

N: With CN10 connector for option units

S: No CN10 connector

Input voltage

M: 230 V

T: 400 V

Servo drive specifications

Single-phase, 230 V

Servo drive type			XD-P3-M□	XD-P5-M□	XD-01-M□	XD-02-M□	XD-04-M□	XD-08-M□	XD-15-M□		
Applicable servo motor	SGMAH-□	A3A□	A5A□	01A□	02A□	04A□	08A□	15A□			
	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	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%								
	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 humidity		90%RH or less (non-condensing)							
		Altitude		1000 m or less above sea level							
		Vibration/shock resistance		4.9 m/s ² / 19.6 m/s ²							
	Configuration		Base mounted								
	Approx. weight		Kg	0.8				1.1	1.7	3.8	

Three-phase, 400 V

Servo drive type		XD-05-T□	XD-10-T□	XD-15-T□	XD-20-T□	XD-30-T□	XD-50-T□		
Applicable servo motor	SGMAH-□	03D□	07D□	-	-	-	-		
	SGMPH-□	02D□, 04D□	08D□	15D□	-	-	-		
	SGMGH-□	05D□	09D□	13D□	20D□	30D□	44D□		
	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	
	Continuous output current Arms		1.9	3.5	5.4	8.4	11.9	16.5	
	Max. output current Arms		5.5	8.5	14	20	28	40.5	
	Input power	Main circuit	For three-phase, 380 to 480 VAC + 10 to -15% (50/60 Hz)						
	Supply	Control circuit	24 VDC+15%						
	Control method		Three 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 humidity		90%RH or less (non condensing)					
		Altitude		1000 m or less above sea level					
		Vibration/shock resistance		4.9 m/s ² / 19.6 m/s ²					
	Configuration		Base mounted						
	Approx. weight Kg		2.8			3.8		5.5	

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 ± 25 °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	± 6 VDC (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: ± 12 V
		Input impedance	Approx. 14 k Ω
		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
		Input impedance	Approx. 14 K Ω
		Circuit time constant	Approx. 47 μ s
	Contact speed reference	Rotation direction selection	With P control signal
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	Sign + pulse train, 90° phase displacement 2-phase pulse (A-phase+ B-phase) or CCW/CW pulse train
		Input pulse form	Line driver (+5 V level) , open collector (+5 V or +12 level)
		Input pulse frequency	0 to 500 Kpps (200 Kpps 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 from 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. CompoWay/F protocol is supported on firmware version "3.20C" and higher
		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		(Only models with PROFIBUS) PROFIBUS DP slave, node address 0-125 set by rotary switches, baud rate from 9.6 kbps 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)		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, 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 15 kW)

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	Servo motor connection terminal	Red
V		White
W		Blue
L1C, L2C	Control power input terminal	AC power input terminals for the control circuit.
⓪	Frame ground	Ground terminal. Ground to a maximum of 100 Ω . (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.
⓪1, ⓪2	DC reactor connection terminal for suppressing power supply harmonic waves	Normally, short ⓪1 and ⓪2. If a countermeasure against power supply harmonic waves is needed, connect a DC reactor between ⓪1 and ⓪2.
⓪	Main circuit DC output terminal (+)	Normally, not connected. This terminal exists on the servo drives with a capacity of 6.0 kW or higher only.
⓪	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)		SEN
21	Speed	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+	Servo alarm: Turns OFF when an error is detected.
32		ALM-	
27		/TGON+	Detection during servo motor rotation: detects when the servo motor is rotating at a speed higher than the motor speed setting. Detection speed can be set by using the parameters.
28		/TGON-	
29		/S-RDY+	Servo ready: ON if there is no servo alarm when the control/main circuit power supply is turned ON.
30		/S-RDY-	
33 (1)		PAO	Converted two-phase pulse (phases A and B) encoder output signal and zero-point pulse (phase C) signal: RS-422 or the equivalent (proper line receiver is SN75175 manufactured by Texas Instruments or the equivalent corresponding to MC3486.)
34		/PAO	
35		PBO	
36		/PBO	
19		PCO	Phase-C signal
20		/PCO	
48		PSO	Phase-S signal
49		/PSO	
37		ALO1	Alarm code output: Outputs 3-bit alarm codes. Open-collector: 30 V and 20 mA rating maximum
38		ALO2	
39 (1)		ALO3	
16	Speed	TMON	Analog monitor signal
17		VTG	Analog monitor signal
Shell		FG	Connected to frame ground if the shield wire of the I/O signal cable is connected to the connector shell.
25		/V-CMP+	Speed coincidence (output in speed control mode): Detects whether the motor speed is within the setting range and if it matches the reference speed value.
26		/V-CMP-	
25	Position	/COIN+	Positioning completed (output in position control mode): Turns ON when the number of positional error pulses reaches the value set. The setting is the number of positional error pulses set in reference units (input pulse units defined by the electronic gear).
26		/COIN-	
-	Reserved	/CLT	Reserved terminals 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.
		/VLT	
		/BK	
		/WARN	
		/NEAR	
23		-	Terminals not used Do not connect relays to these terminals.
24		-	
50		-	

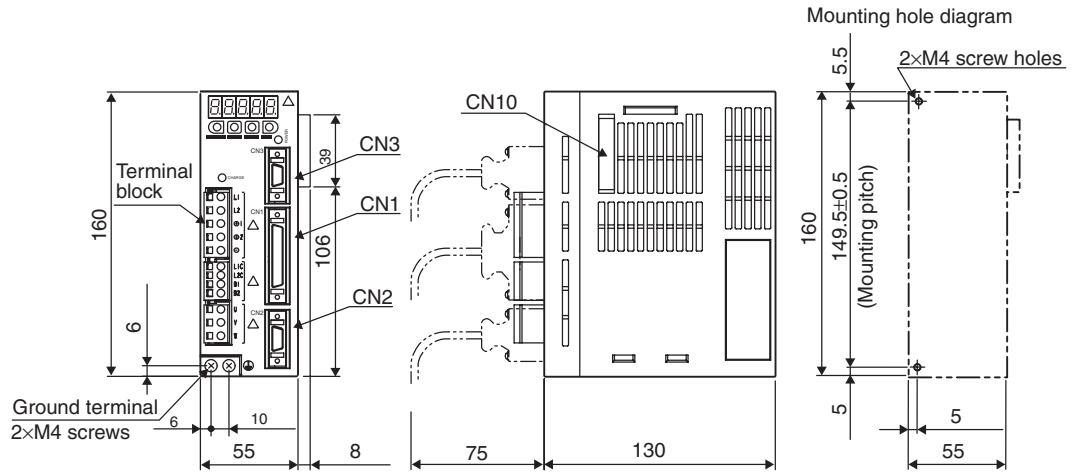
Note: 1. Pin numbers in parentheses () indicate signal grounds.

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.

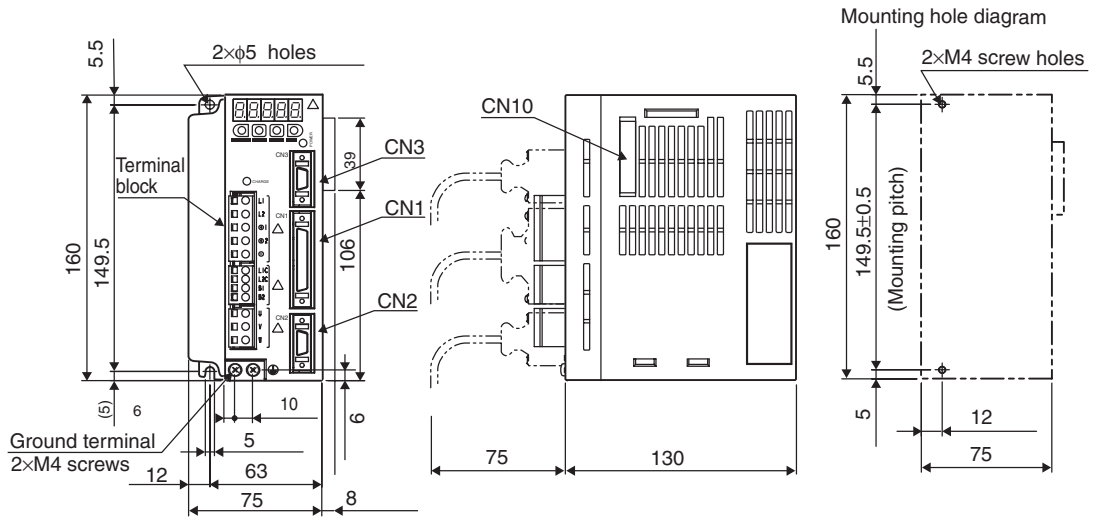
Dimensions

Servo drives

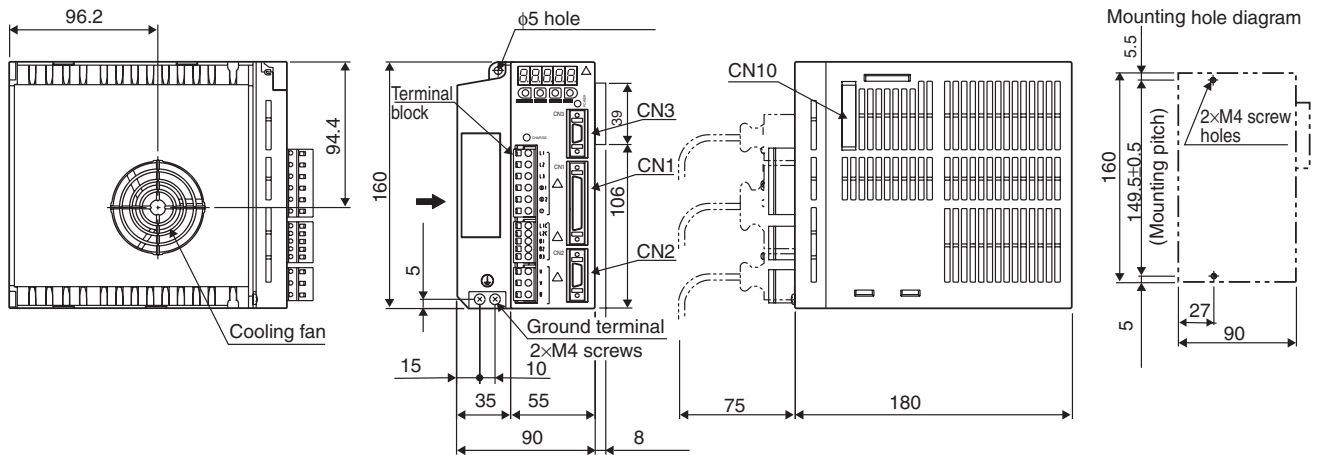
XD-P3-M□ to XD-02-M□ (230V, 30 to 200W)



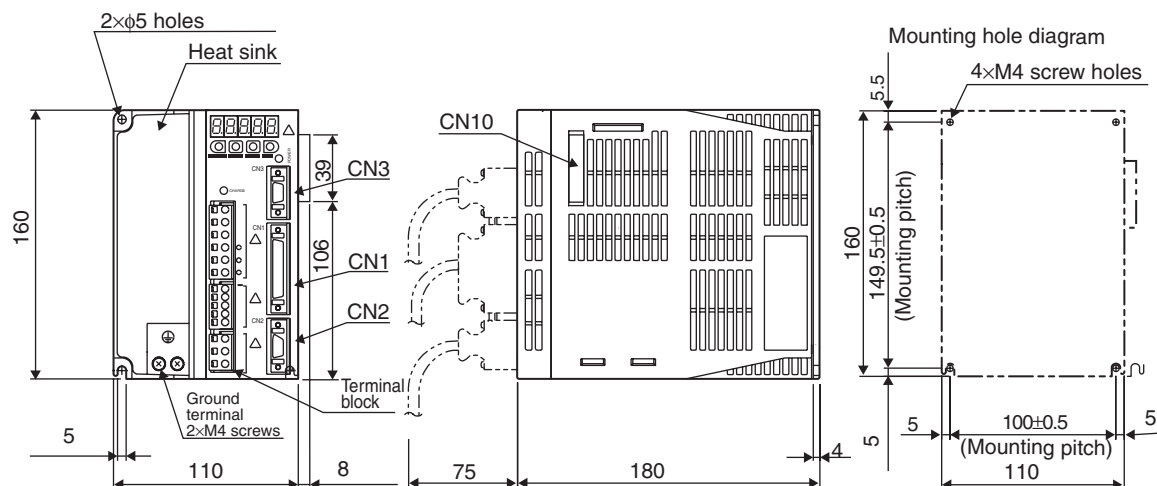
XD-04-M□ (230V, 400W)



XD-08-M□ (230V, 750W)

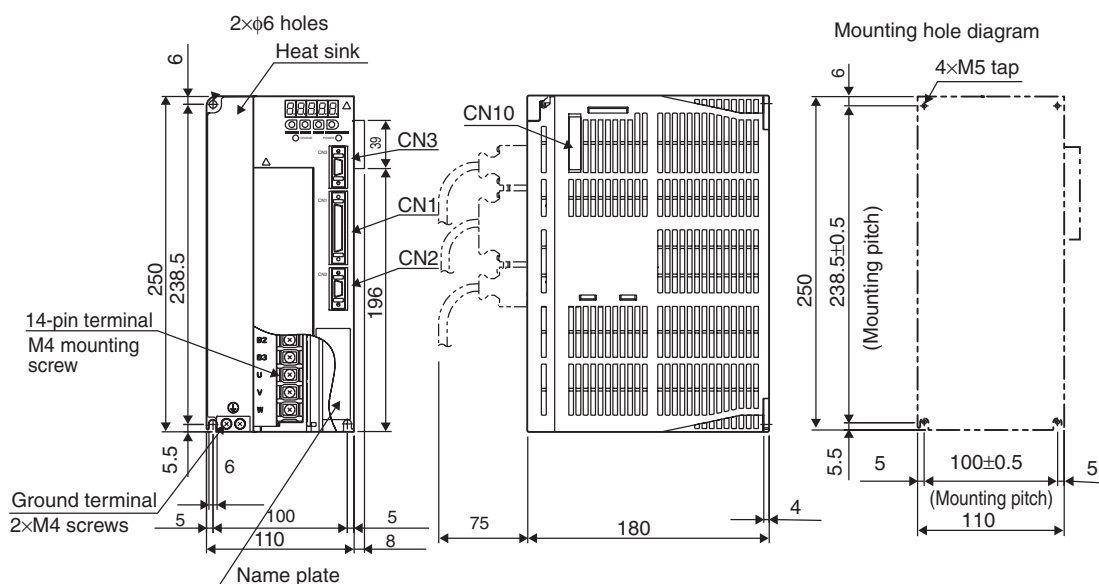


XD-05-T□ to -15-T□ (400V, 0.5 to 1.5kW)

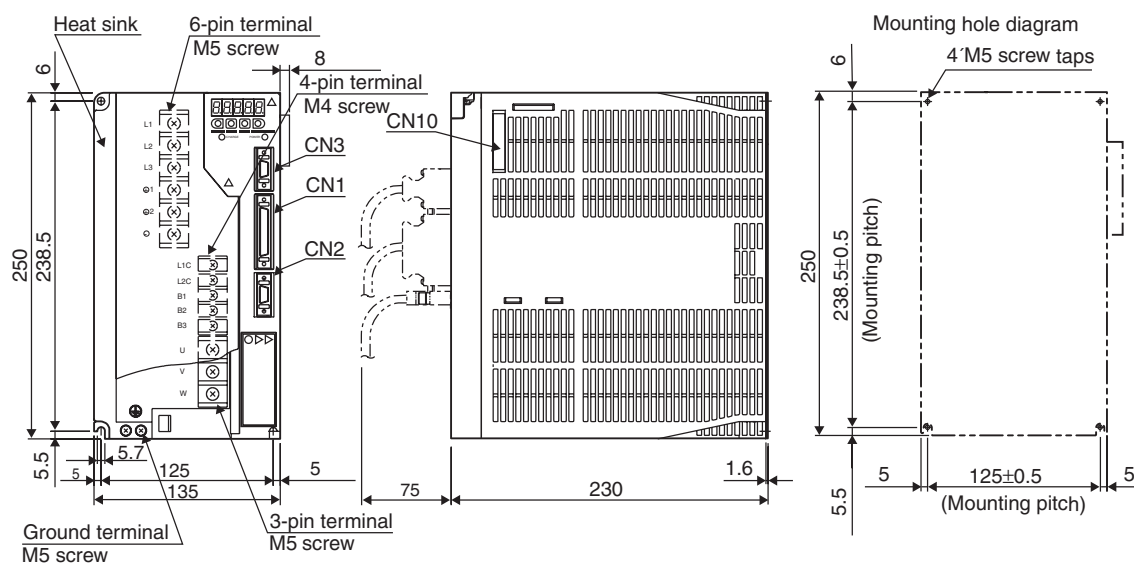


XD-15-M□ (230V, 1.5kW)

XD-20-T□, XD-30-T□ (400V, 2/3kW)

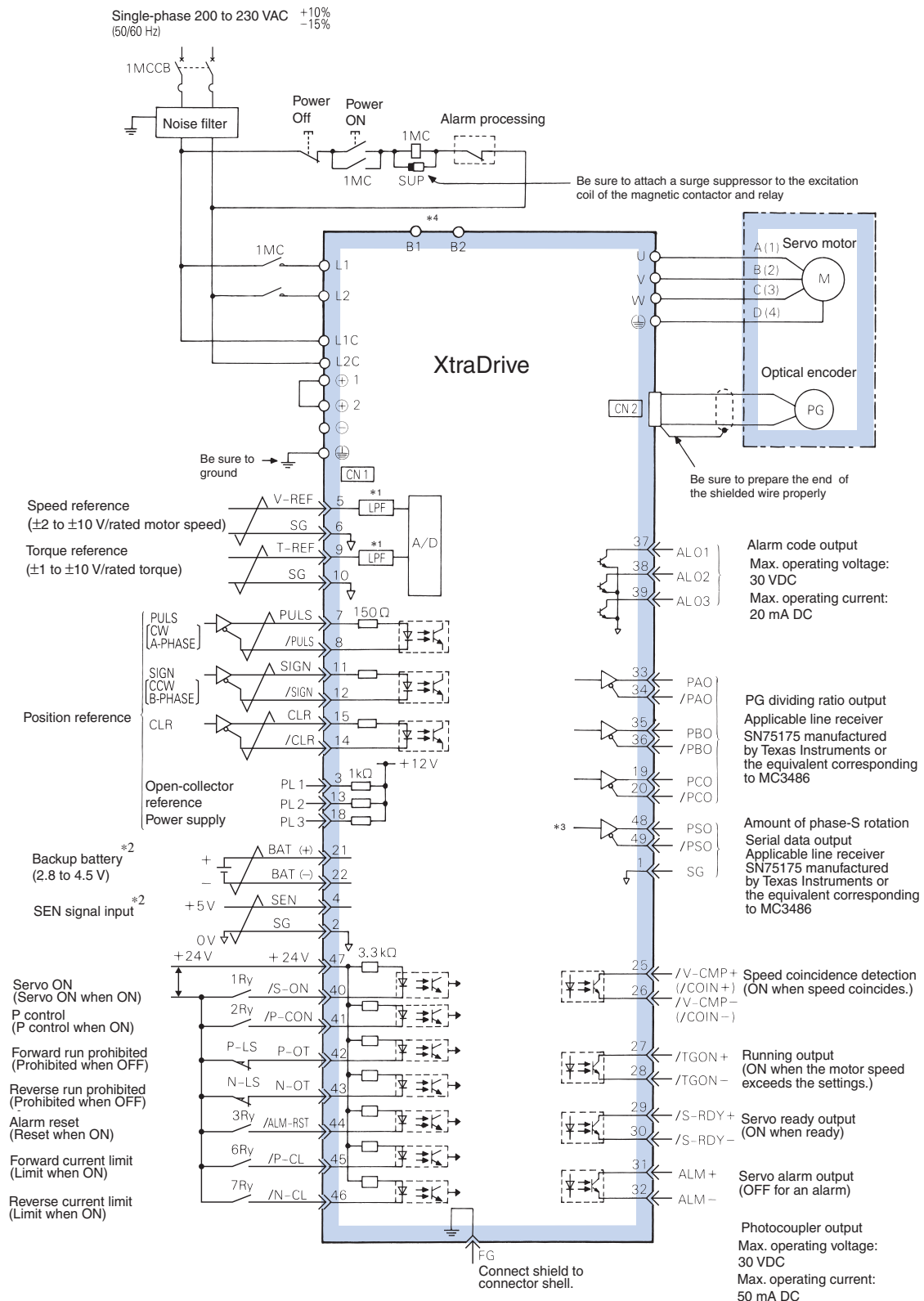


XD-50-T□ (400V, 5kW)



Installation

Single-phase, 230 VAC



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

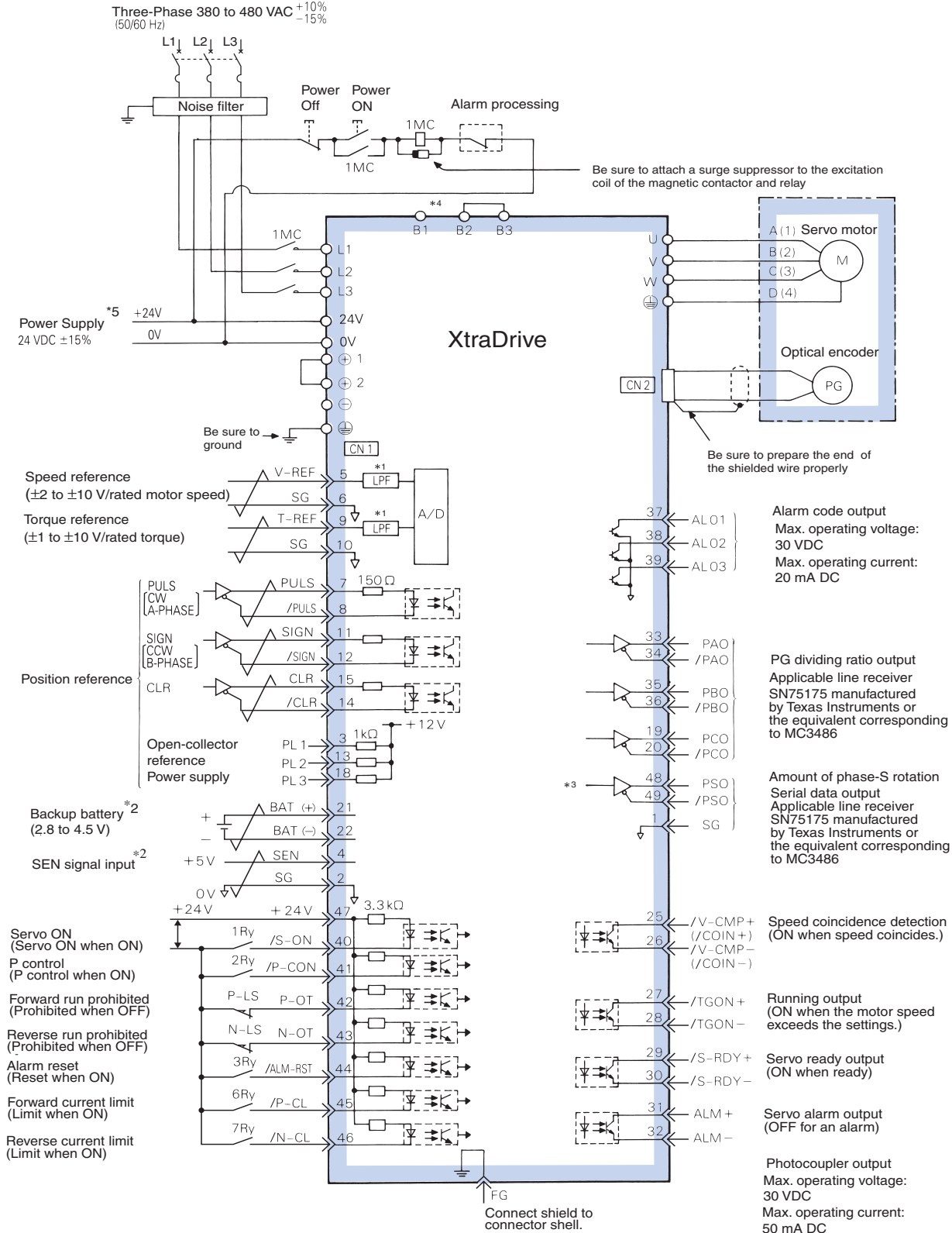
*2 Connect when using an absolute encoder.

*3 Used only with an absolute encoder.

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

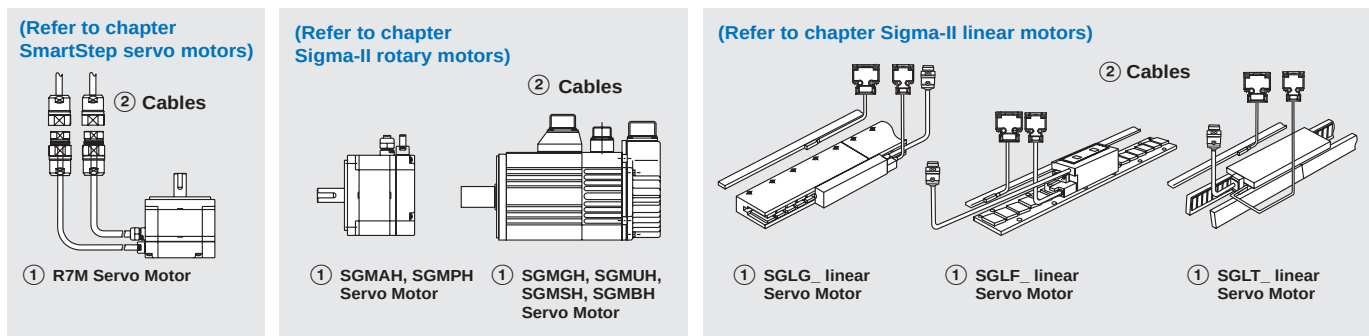
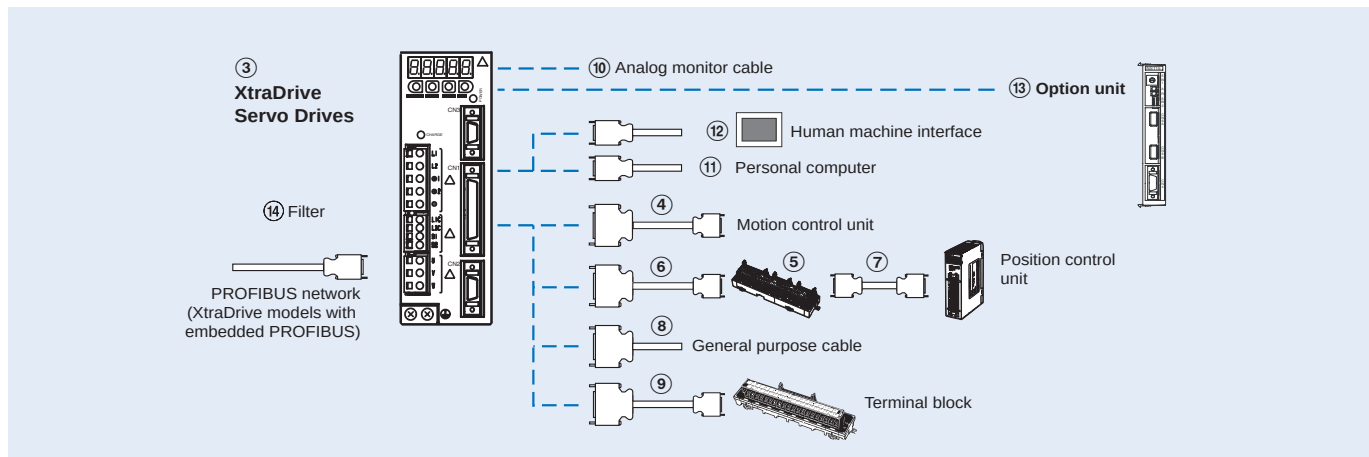
*6 TI stands for Texas Instruments Inc.

Three-phase, 400 VAC



- *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



Note: The symbols ①②③④⑤... show the recommended sequence to select the components for a servo system

Servo motors, power & encoder cables

Note: ①② Refer to the servo motors chapter for detailed motor specifications and selection

Servo Drives

Symol	Specifications		XtraDrive	XtraDrive-E with electronic CAM	XtraDrive-DP with PROFIBUS	XtraDrive-DP-E with PROFIBUS and electronic CAM	Compatible servo motors ①		
							Sigma-II rotary	SmartStep	Sigma linear motors
③	1 phase 200 VAC	30 W	XD-P3-MN01	XD-P3-MN01-E	XD-P3-MSD0	XD-P3-MSD0-E	SGMAH-A3A□	R7M-A03030-□	-
		50 W	XD-P5-MN01	XD-P5-MN01-E	XD-P5-MSD0	XD-P5-MSD0-E	SGMAH-A5D□	R7M-A05030-□	SGLGW-30A050□
		100 W	XD-01-MN01	XD-01-MN01-E	XD-01-MSD0	XD-01-MSD0-E	SGMAH-01A□, SGMPH-01A□	R7M-A10030-□, R7M-AP10030-□	SGLGW-30A080□, SGLGW-40A140□
		200 W	XD-02-MN01	XD-02-MN01-E	XD-02-MSD0	XD-02-MSD0-E	SGMAH-02A□, SGMPH-02A□	R7M-A20030-□, R7M-AP20030-□	SGLFW-20A□, SGLFW-35A120□, SGLGW-40A253A□, SGLGW-60A140□
		400 W	XD-04-MN01	XD-04-MN01-E	XD-04-MSD0	XD-04-MSD0-E	SGMAH-04A□, SGMPH-04A□	R7M-A40030-□, R7M-AP40030-□	SGLGW-40A365A□, SGLGW-60A253A□
		750 W	XD-08-MN	XD-08-MN00-E	XD-08-MSD0	XD-08-MSD0-E	SGMAH-08A□, SGMPH-08A□	R7M-A75030-□, R7M-AP75030-□	SGLFW-35A230□, SGLFW-50A200□, SGLGW-60A365A□
		1.5 kW	XD-15-MN	XD-15-MN00-E	-	-	SGMPH-15A□	-	SGLFW-50A380□, SGLFW-1ZA200□, SGLGW-90A200A□
	3 Phase 400 VAC	0.5 kW	XD-05-TN	XD-05-TN00-E	XD-05-TSD0	XD-05-TSD0-E	SGMGH-05D□, SGMAH-03D□, SGMPH-02D□/04D□	-	SGLFW-35D□
		1.0 kW	XD-10-TN	XD-10-TN00-E	XD-10-TSD0	XD-10-TSD0-E	SGMGH-09D□, SGMSH/UH-10D□, SGMAH-07D□, SGMPH-08D□	-	SGLFW-50D200□, SGLTW-35D170□, SGLTW-50D170□
		1.5 kW	XD-15-TN	XD-15-TN00-E	XD-15-TSD0	XD-15-TSD0-E	SGMGH-13D□, SGMSH/UH-15D□, SGMPH-15D□	-	SGLFW-50D380□, SGLFW-1ZD200□
		2.0 kW	XD-20-TN	XD-20-TN00-E	XD-20-TSD0	XD-20-TSD0-E	SGMGH-20D□, SGMSH-20D□	-	SGLFW-1ED380□, SGLTW-35D320□, SGLTW-50D320□
		3.0 kW	XD-30-TN	XD-30-TN00-E	XD-30-TSD0	XD-30-TSD0-E	SGMGH-30D□, SGMSH/UH-30D□	-	SGLFW-1ZD380□, SGLFW-1ED560□, SGLTW-40D400□
		5.0 kW	XD-50-TN	XD-50-TN00-E	-	-	SGMGH-44D□, SGMSH/UH-40D□, SGMSH-50D□	-	SGLTW-40D600□, SGLTW-80D400□

Note: SGLGW-□ linear motor combination is made considering the use of standard magnets. Refer to the linear motors chapter for details

Control cables (for CN1)

Symbol	Description	Connect to	Len	Model
④	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
	Servo drive 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
⑤	Servo relay unit	CS1W-NC1□3, CJ1W-NC1□3, or C200HW-NC113		XW2B-20J6-1B (1 axis)
		Position control unit CS1W-NC2□3/4□3, CJ1W-NC2□3/4□3, or C200HW-NC213/413		XW2B-40J6-2B (2 axes)
		Position control unit CQM1H-PLB21 CQM1-CPU43		XW2B-20J6-3B (1 axis)
		CJ1M-CPU22/23		XW2B-20J6-8A (1 axis) XW2B-40J6-9A (2 axes)
			1 m	XW2Z-100J-B4
			2 m	XW2Z-200J-B4
		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
⑦	Position control unit connecting cable	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
⑧	Control cable	For general purpose controllers	0.5 m	XW2Z-050J-A14
			1 m	XW2Z-100J-A14
			0.5 m	XW2Z-050J-A15
			1 m	XW2Z-100J-A15
			0.5 m	XW2Z-050J-A18
			1 m	XW2Z-100J-A18
			0.5 m	XW2Z-050J-A19
			1 m	XW2Z-100J-A19
			0.5 m	XW2Z-050J-A27
			1 m	XW2Z-100J-A27
⑨	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
⑩	Analog monitor cable	R88A-CMW001S or DE9404559

Options (for CN3)

Symbol	Name	Model
⑪	Computer connecting cable	R88A-CCW002P2 or JZSP-CMS02

Human machine interface

Symbol	Name	Model
⑫	4.1" HMI monochrome	NT3S-ST126B-E

Option units (for CN10)

Symbol	Name	Model
⑬	IO card, 8 inputs / 8 outputs	XDIO-08

Filters

Symbol	Applicable servo drive	Filter model	Rated current	Rated voltage
⑭	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	7A	
	XD-08-M□	R88A-FIW115-SE	15 A	
	XD-15-M□	R88A-FIW125-SE	25 A	
	XD-05-T□, XD-10-T□, XD-15-T□	R88A-FIW4006-SE	6 A	400 VAC three-phase
	XD-20-T□, XD-30-T□	R88A-FIW4010-SE	10 A	
	XD-50-T□	R88A-FIW4020-SE	20 A	

Battery backup for absolute encoder

Name	Model
Battery (required for servo motors with absolute encoder)	JZSP-BA01 ER6VC3 (3.6V)

Connectors

Specification	Model
Control I/O connector (for CN1)	R88A-CNU11C or JZSP-CKI9
XtraDrive 200 V connector kit (for 200 V motors SGMAH/PH-□□□□□□D-OY and R7M-A□-D)	Connectors included DE9406973 SPOC-17H-FRON169 SPOC-06K-FSDN169
XtraDrive 400 V connector kit. (for 400 V 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, 200 V. (for 200 V motors SGMAH/PH-□□□□□□□□D-OY and R7M-A□-D)	SPOC-06K-FSDN169
Hypertac power connector IP67, 400 V. (for 400 V Motors SGMAH/PH-□□□□□□□□D-OY)	LPRA-06B-FRBN170
Military encoder connector IP67 (for Motors SGMGH-□, SGMUH-□)	MS3108E20-29S
Military power connector IP67 (for 400 V motors SGMGH-(05/10/13)D□, SGMSH-(10/15/20)D□, SGMUH-(10/15)D□)	MS3108E18-10S
Military power connector IP67 (for 400 V motors SGMGH-(20/30/44)D□, SGMSH-(30/40/50)D□, SGMUH-(30/40)D□)	MS3108E22-22S
Military brake connector IP67 (for 400 V servo motors SGMGH-□, SGMSH-□, SGMUH-□)	MS3108E10SL-3S

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.

SGDH-□

Sigma-II servo drive

The ideal servo family for motion control. Fast response, high speed, and high accuracy.

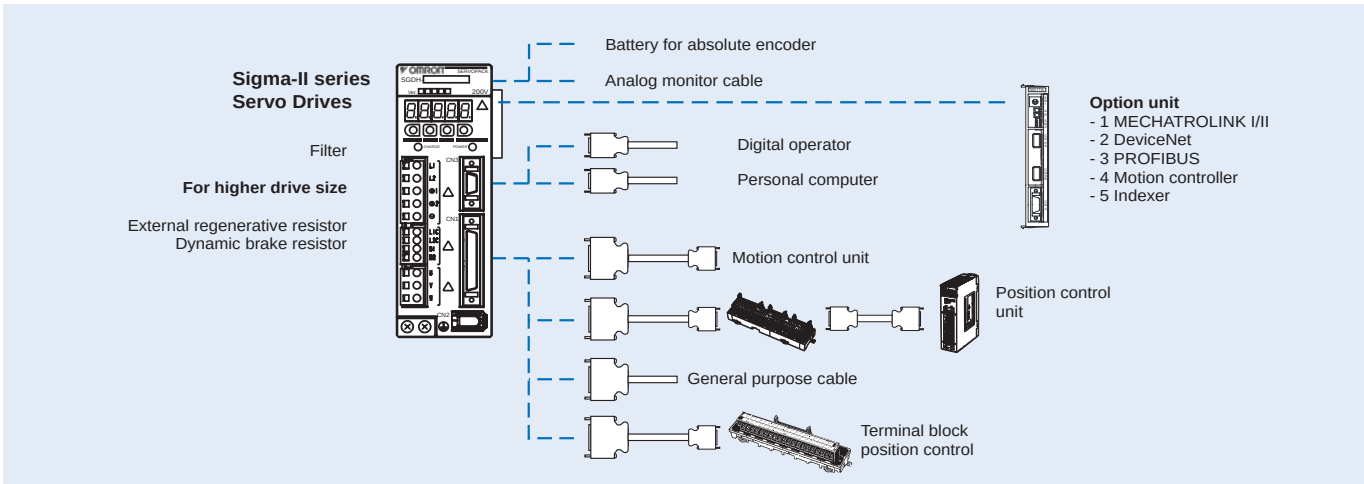
- Online autotuning with 10 levels of rigidity
- Peak torque 300% of nominal during 3 seconds
- Automatic motor recognition
- Analogue control for speed and torque
- Pulse train control for positioning
- Optional units offer network connectivity and flexible system architecture
- Smooth operation
- Oscilloscope available via software tool
- Windows based configuration and commissioning software

Ratings

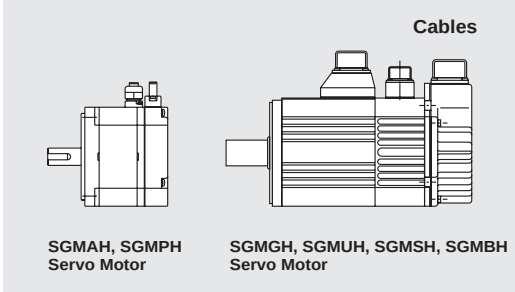
- 230 VAC Single-phase 30 W to 1.5 kW (4.77 Nm)
- 400 VAC Three-phase 450 W to 55 kW (350 Nm)



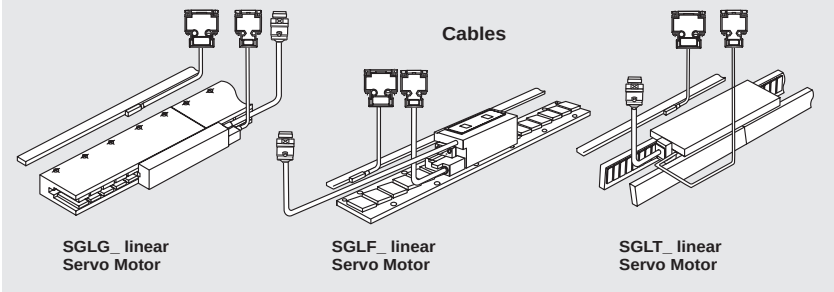
System configuration



(Refer to chapter Sigma-II rotary motors)



(Refer to chapter Sigma-II linear motors)



Servo motor supported

Servo motor			
Family	Voltage	Models rated torque	Remarks
SGMAH (3000 min ⁻¹) 	230 V	0.0955 Nm to 2.39 Nm	Refer to the Sigma-II rotary motors chapter for details
	400 V	0.955 Nm to 2.07 Nm	
SGMPH (3000 min ⁻¹) 	230 V	0.318 Nm to 4.77 Nm	Refer to the Sigma-II rotary motors chapter for details
	400 V	0.637 Nm to 4.77 Nm	
SGMGH (1500 min ⁻¹) 	400 V	2.84 Nm to 95.4 Nm	Refer to the Sigma-II Rotary motors chapter for details
SGMSH (3000 min ⁻¹) 	400 V	3.18 Nm to 15.8 Nm	Refer to the Sigma-II Rotary motors chapter for details
SGMUH (6000 min ⁻¹) 	400 V	1.59 Nm to 6.3 Nm	Refer to the Sigma-II rotary motors chapter for details
SGMBH (1500 min ⁻¹) 	400 V	140 Nm to 350 Nm	Refer to the Sigma-II rotary motors chapter for details
SGLGW Linear motors 	230 V	12.5 N to 325 N	Refer to the Sigma linear motors chapter for details
SGLFW Linear motors 	230 V	25 N to 560 N	Refer to the Sigma linear motors chapter for details
	400 V	80 N to 2250 N	
SGLTW Linear motors 	400 V	300 N to 2000 N	Refer to the Sigma linear motors chapter for details

Type designation

Servo drive

Sigma-II servo drive

SGDH - 04 A E - S - OY

Capacity

A3	30 W	15	1.5 kW	2B	22 kW
A5	50 W	20	2.0 kW	3Z	30 kW
01	100 W	30	3.0 kW	3G	37 kW
02	200 W	50	5.0 kW	4E	45 kW
04	400 W	60	6.0 kW	5E	55 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 55kW) Single-phase (30 to 400W)
S	Single-phase (750W/1.5kW)

Model

E: speed, torque, position

Source voltage

A: 230 V
D: 400 V

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		SGMAH-□	A3A□	A5A□	01A□	02A□	04A□	08A□	-		
servo motor		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% (50/60 Hz)		
	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 humidity		90%RH or less (non-condensing)							
		Altitude		1000m or less above sea level							
		Vibration/shock resistance		4.9 m/s ² / 19.6 m/s ²							
	Configuration		Base mounted								
	Approx. weight		Kg	0.8				1.1	1.7	3.8	

Three-phase, 400 V (up to 15 kW)

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 servo motor		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	24 VDC+ 15%									
	Control method		Three phase full-wave rectification / IGBT / PWM / sine-wave current drive method									
	Feedback		Serial encoder (incremental/absolute)									
	Conditions		0 to +55 °C / -20 to +85 °C									
	Usage/storage temperature		90%RH or less (non-condensing)									
	Usage/storage humidity		1000 m or less above sea level									
	Altitude		4.9 m/s ² / 19.6 m/s ²									
	Vibration/shock resistance		Base mounted									
	Configuration											
	Approx. weight	Kg	2.8		3.8		5.5	13.5		22		

Three-phase, 400 V (from 22 kW to 55 kW)

Servo drive type		SGDH-□	2BDE	3ZDE	3GDE	4EDE	5EDE
Applicable servo motor		SGMBH-□	2BD□A	3ZD□A	3GD□A	4ED□A	5ED□A
Basic specifications	Max. applicable motor capacity	kW	22	30	37	45	55
	Continuous output current	Arms	58	80	100	127	150
	Max. output current	Arms	120	170	210	260	310
	Input power	Main circuit	For three-phase, 380 to 480 VAC + 10 to -15% (50/60 Hz)				
	Supply	Control circuit	24 VDC+ 15%				
	Control method		Three phase full-wave rectification / IGBT / PWM / sine-wave current drive method				
	Feedback		Serial encoder (incremental/absolute)				
	Conditions		0 to +55 °C / -20 to +85 °C				
	Usage/storage temperature		90%RH or less (non-condensing)				
	Usage/storage humidity		1000 m or less above sea level				
	Altitude		4.9 m/s ² / 19.6 m/s ²				
	Vibration/shock resistance		Base mounted				
	Configuration						
	Approx. weight	Kg	40		60	65	

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	400 Hz (at J _L = J _M up to 15 kW drives), 100 Hz (at J _L = J _M from 22 kW to 55 kW drives)
	Input signal	Torque control accuracy (reproducibility)	±2%
		Soft start time setting	0 to 10 s (acceleration, deceleration can each be set.)
		Speed reference input	Reference voltage ±6 VDC (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: ±12 V
			Input impedance Approx. 14 kΩ
			Circuit time constant Approx. 47 μs
	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
			Input impedance Approx. 14 KΩ
			Circuit time constant Approx. 47 μs

Position control mode	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 (+5 V level) , open collector (+5 V or +12 level)
		Input pulse frequency	0 to 500 Kpps (200 Kpps 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 signal form incl.: 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
	Automatic load inertia detection		Automatic motor parameter setting. One parameter rigidity setting.
	Dynamic brake (DB)		Operates during main power OFF, servo alarm, servo OFF or overtravel
	Regenerative processing		Internal resistor included in models from 500 W to 5 kW. 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 15 kW)

I/O specifications

I/O signals (CN1) - input signals

Pin No.	Signal name	Function		
40	Common	/S-ON	Servo ON: Turns ON the servo motor 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	Forward run prohibited
43		N-OT	Reverse run prohibited	
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	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)		SEN	Initial data request signal when using an absolute encoder.	
21	BAT (+)	Connecting pin for the absolute encoder backup battery.		
22	BAT (-)	Do not connect when a battery is connected to the host controller.		
5 (6)	Speed	V-REF	Speed reference 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	Reference pulse input for line driver only	Input mode is set from the following pulses. Sign + pulse string CCW/CW pulse Two-phase pulse (90° phase differential)
8		/PULS		
11		SIGN		
12		/SIGN		
15		CLR	Positional error pulse clear input: clears the positional error pulse during position control.	
14		/CLR		
3		PL1	+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		PL2		
18		PL3		

- Note:**
- Pin numbers in parentheses () indicate signal grounds.
 - 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.
 - 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	Speed	/V-CMP+ /V-CMP-
25 26	Position	/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 (all drives)

Symbol	Name	Function
L1, L2 or L1, L2, L3 or L1/R, L2/S, L3/T	Main circuit AC input terminal	AC power input terminals for the main circuit
U V W	Servo motor connection terminal	Red
		White
		Blue
L1C, L2C	Control power input terminal	AC power input terminals for the control circuit.
⓪	Frame ground	Ground terminal. Ground to a maximum of 100 Ω. (class 3)
B1, B2 or B1, B2, B3	Main circuit DC output terminal	Up to 5 kW: Connect an external regenerative resistor if regenerative energy is high. From 5.5 kW to 55 kW: There is no internal regenerative resistor. Be sure to connect an external regenerative resistor unit.
⓪1, ⓪2	DC reactor connection terminal for suppressing power supply harmonic waves	Normally, short ⓪1 and ⓪2. If a countermeasure against power supply harmonic waves is needed, connect a DC reactor between ⓪1 and ⓪2.
⓪	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.
⓪	Main circuit DC output terminal (negative)	Normally, not connected.

Terminal specifications (from 22 kW to 55 kW)

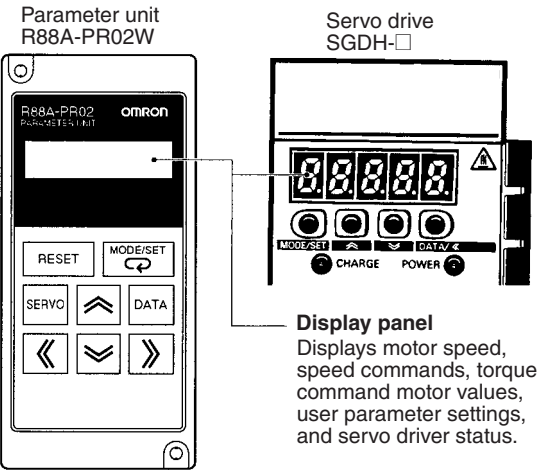
Symbol	Name	Function
DC24P, DC24N	Control power supply input terminal	24 VDC
DU, DV, DW	DB resistor unit, DB contactor connection terminal	Connects DB resistor unit or DB contactor.
DBON, DB24	DB resistor unit connection terminal	For 37 to 55 kW, connects to DBON and DB24 terminals or DB resistor unit.
480 V, 460 V, 440 V, 400 V, 380 V, 0 V	Control power Supply input Terminal	Connect to the terminal whose voltage is close to the power supply voltage.

Encoder connector (CN2)

Pin No.	Signal Name	Function
1	E5V	Encoder power supply + 5 V
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

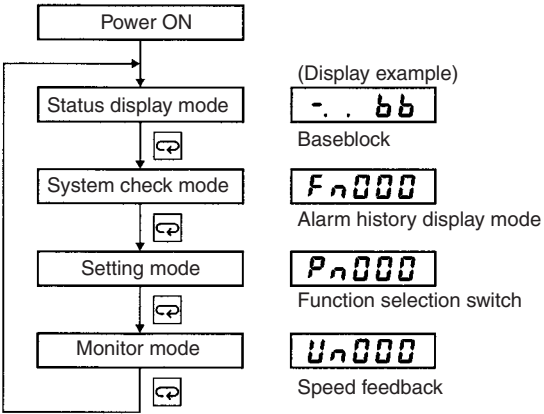
Operation

Operating functions

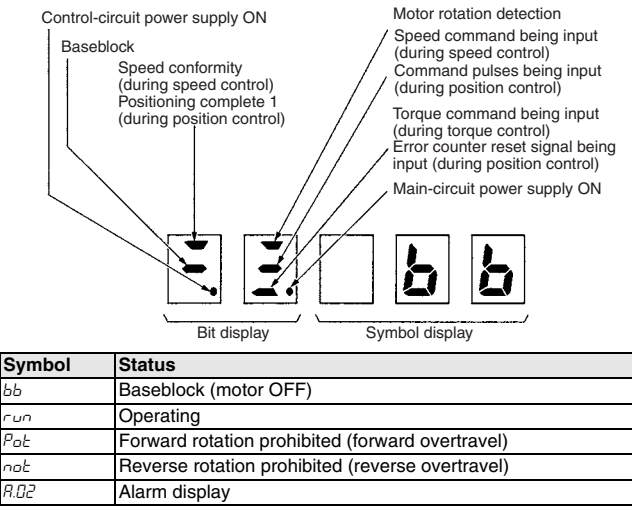


Changing modes

To change modes, press the MODE/SET key.



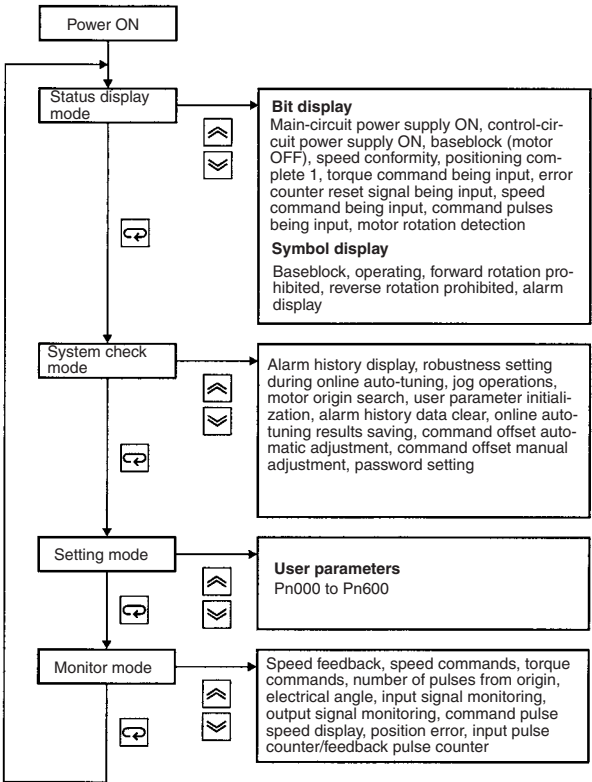
Status display mode



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 the servo ON or OFF 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.

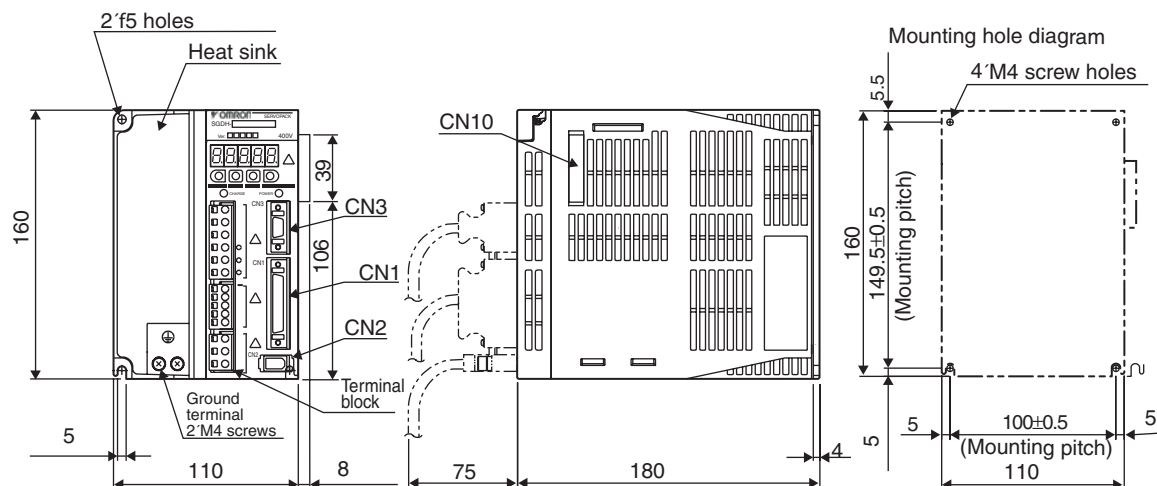
Mode details



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

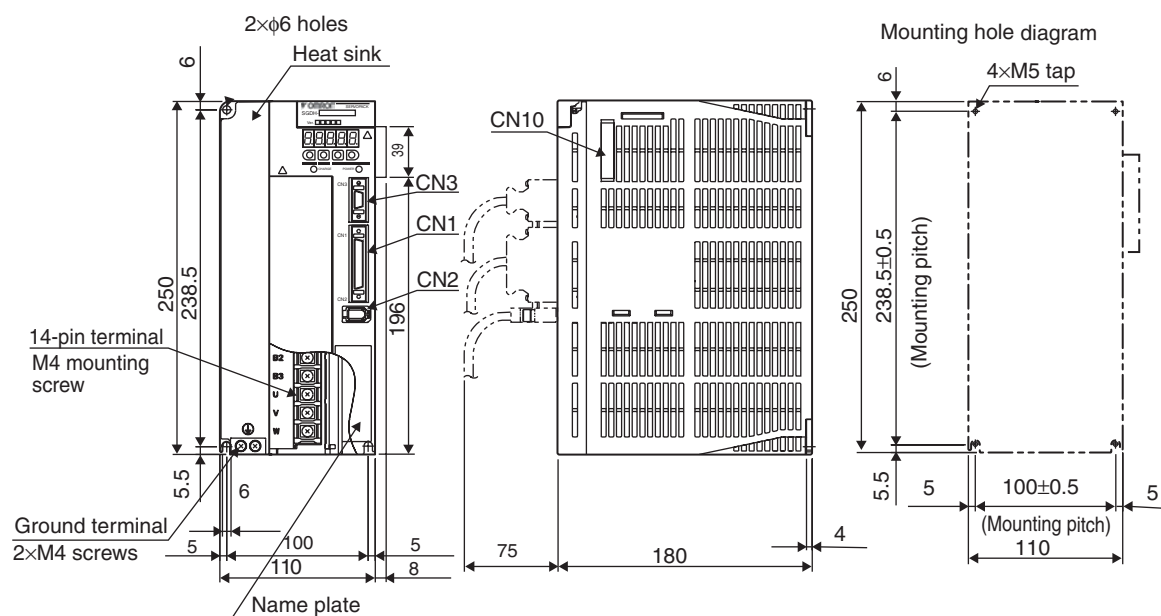


SGDH-05DE-OY to -15DE-OY (400 V, 0.5 to 1.5 kW)



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

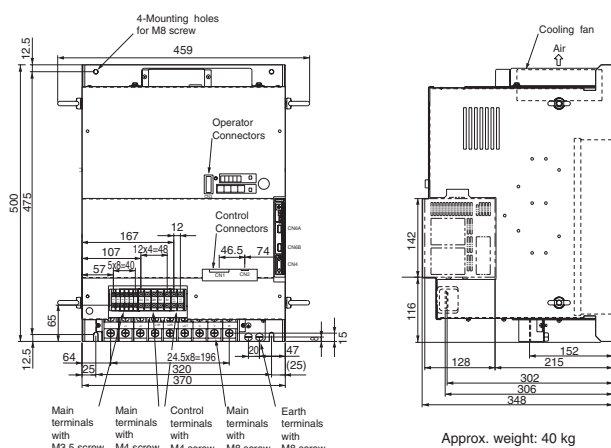
SGDH-20/30DE-OY (400 V, 2/3 kW)



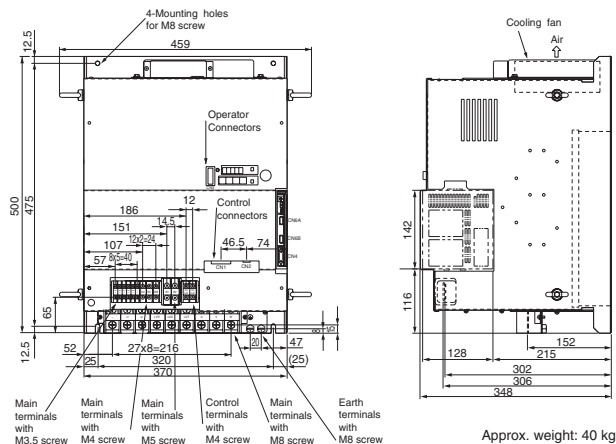
SGDH-60/75DE-OY (400 V, 6/7.5 kW)



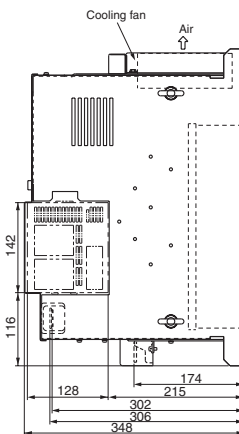
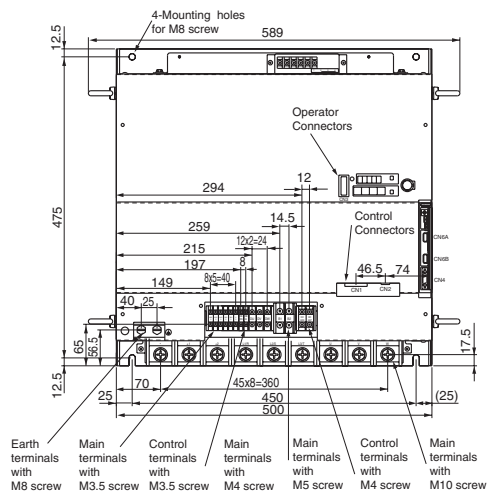
SGDH-2BDE (400 V, 22 kW)



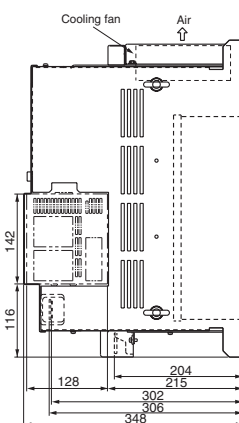
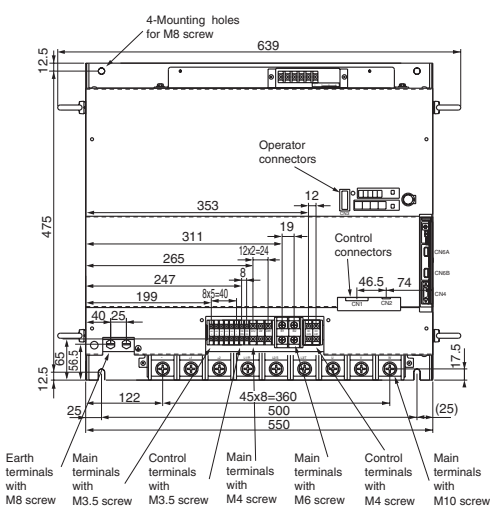
SGDH-3ZDE (400 V, 30 kW)



SGDH-3GDE (400 V, 37 kW)

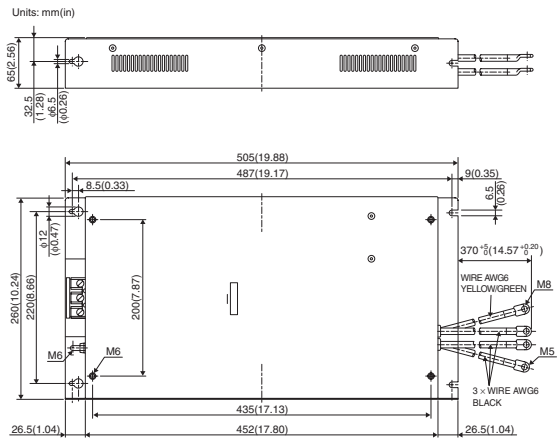


SGDH-4EDE / -5EDE (400 V, 45/55 kW)

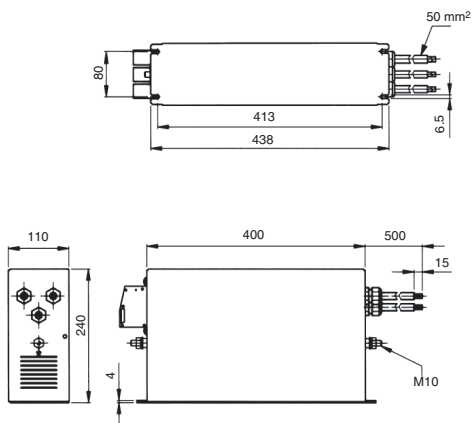


Filters

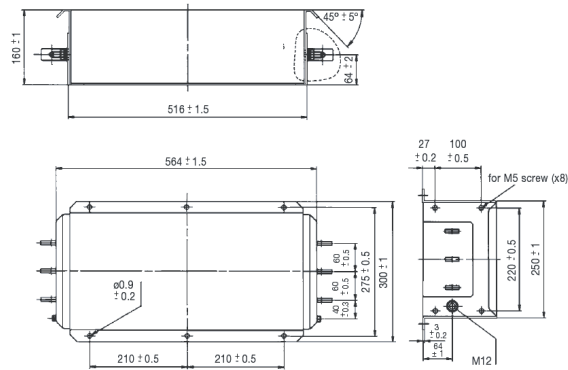
R88A-FIW4055-SE



FN258-180-07

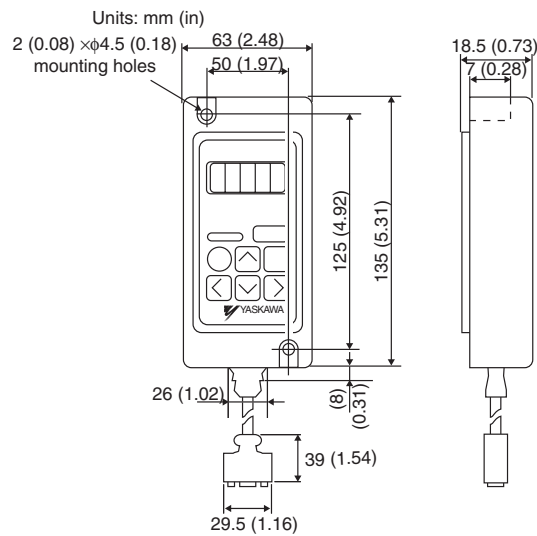


FN359-250-99



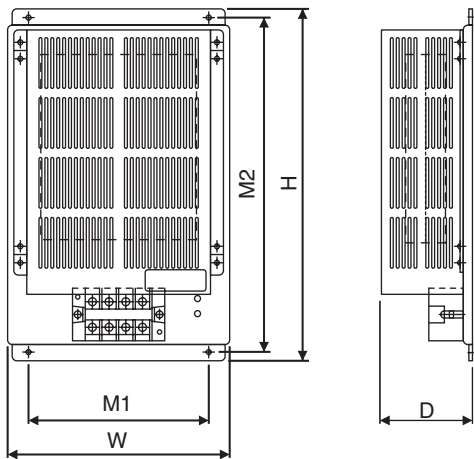
Digital operator

JUSP-OP02A-2



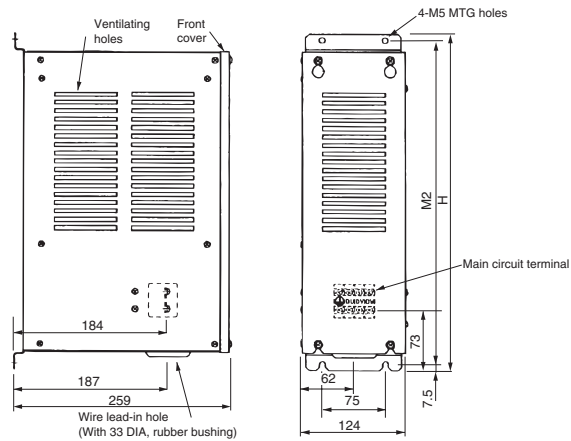
Regenerative resistor units

Model	W	H	D	M1	M2	Approx. weight kg
JUSP-RA18	220	350	92	180	335	4
JUSP-RA19	300	350	95	250	335	7
JUSP-RA12	259	500	348	200	485	14
JUSP-RA13	259	500	348	200	485	14
JUSP-RA14	484	500	348	425	485	20
JUSP-RA15	484	500	348	425	485	21.5
JUSP-RA16	484	500	348	425	485	23.5

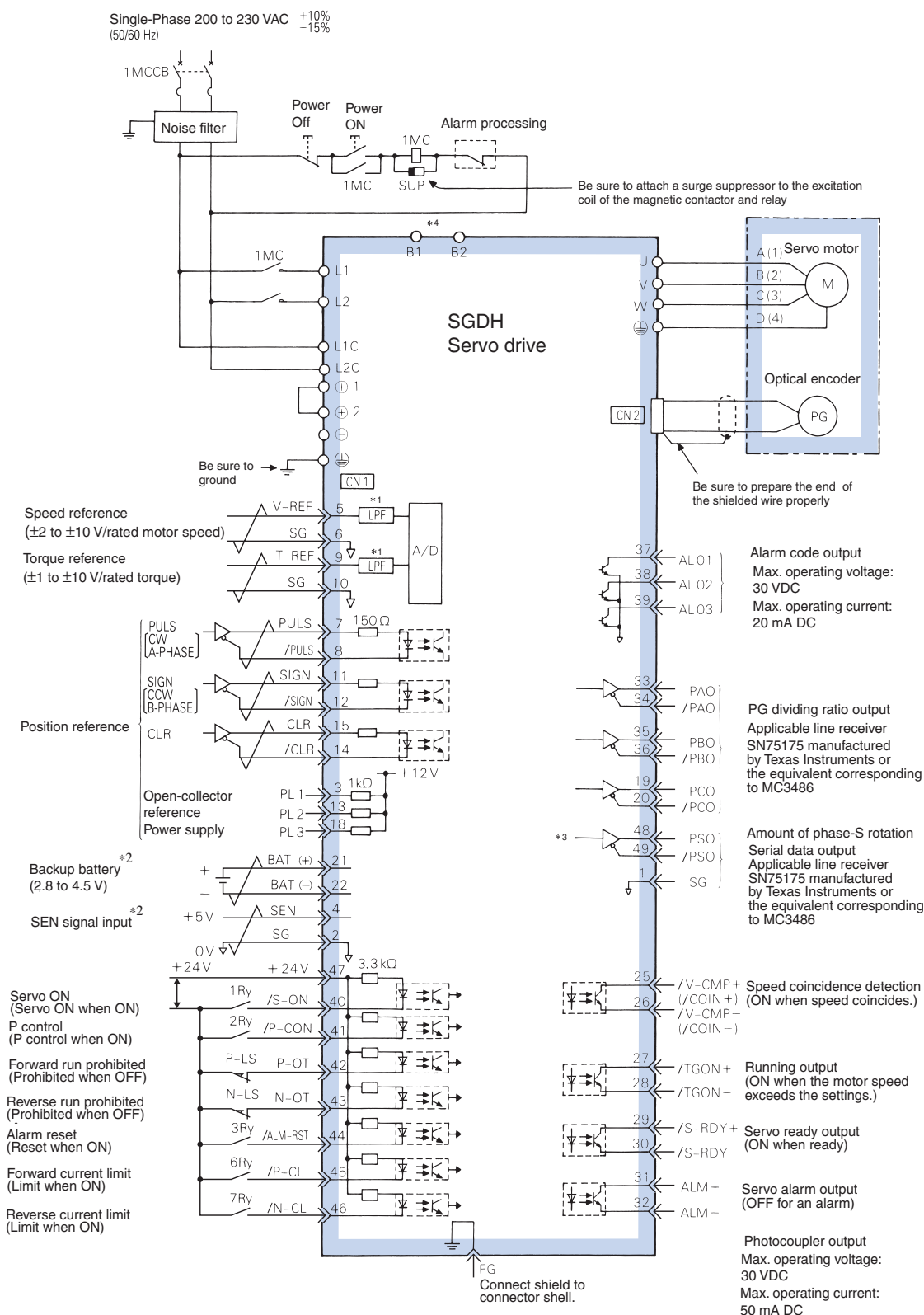


DB resistor units

Model	H	M2	Approx. weight kg
JUSP-DB03	400	385	5
JUSP-DB04	400	385	6
JUSP-DB05	400	385	6
JUSP-DB06	490	475	7



Single-phase, 230 VAC



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

*2 Connect when using an absolute encoder.

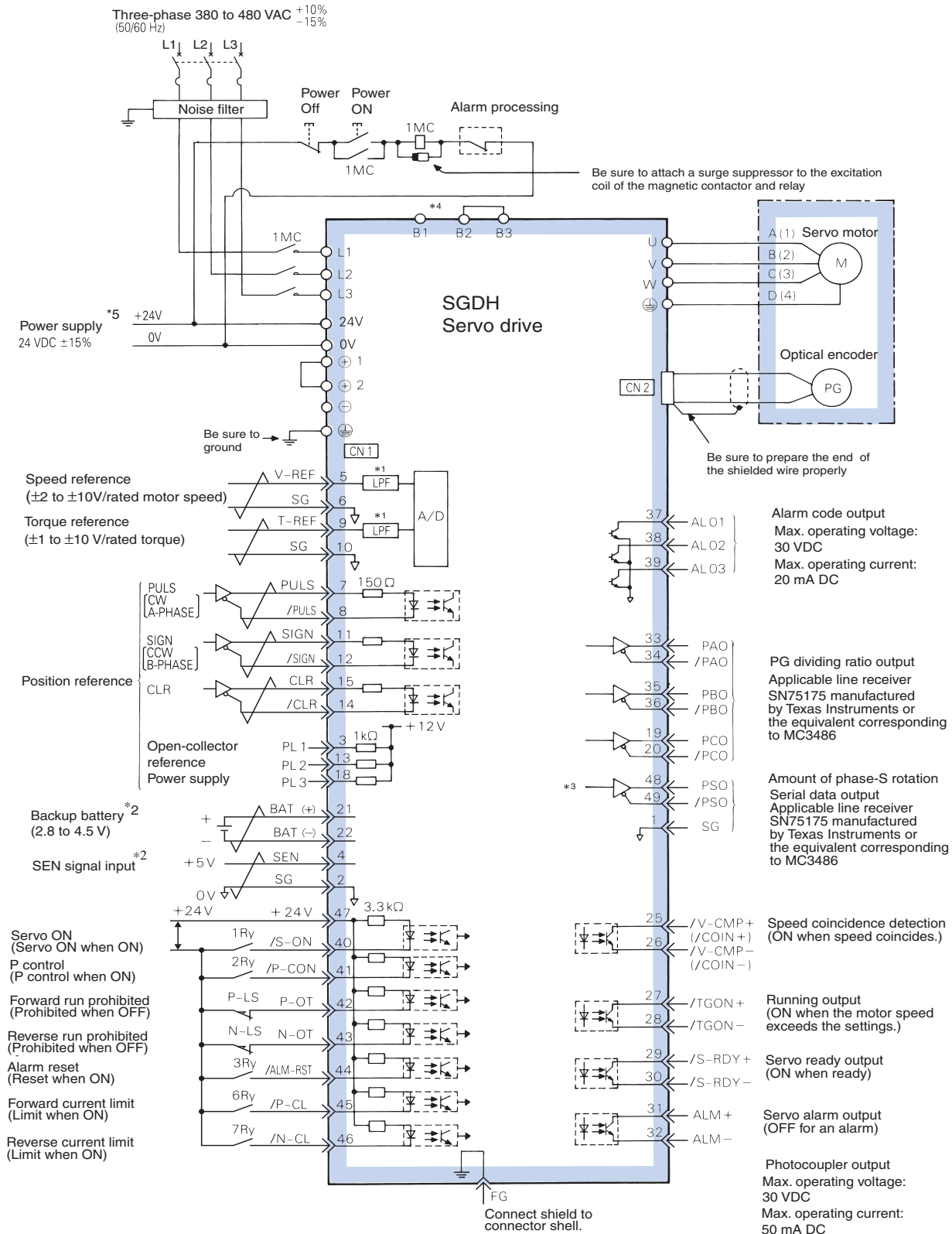
*3 Used only with an absolute encoder.

*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%).

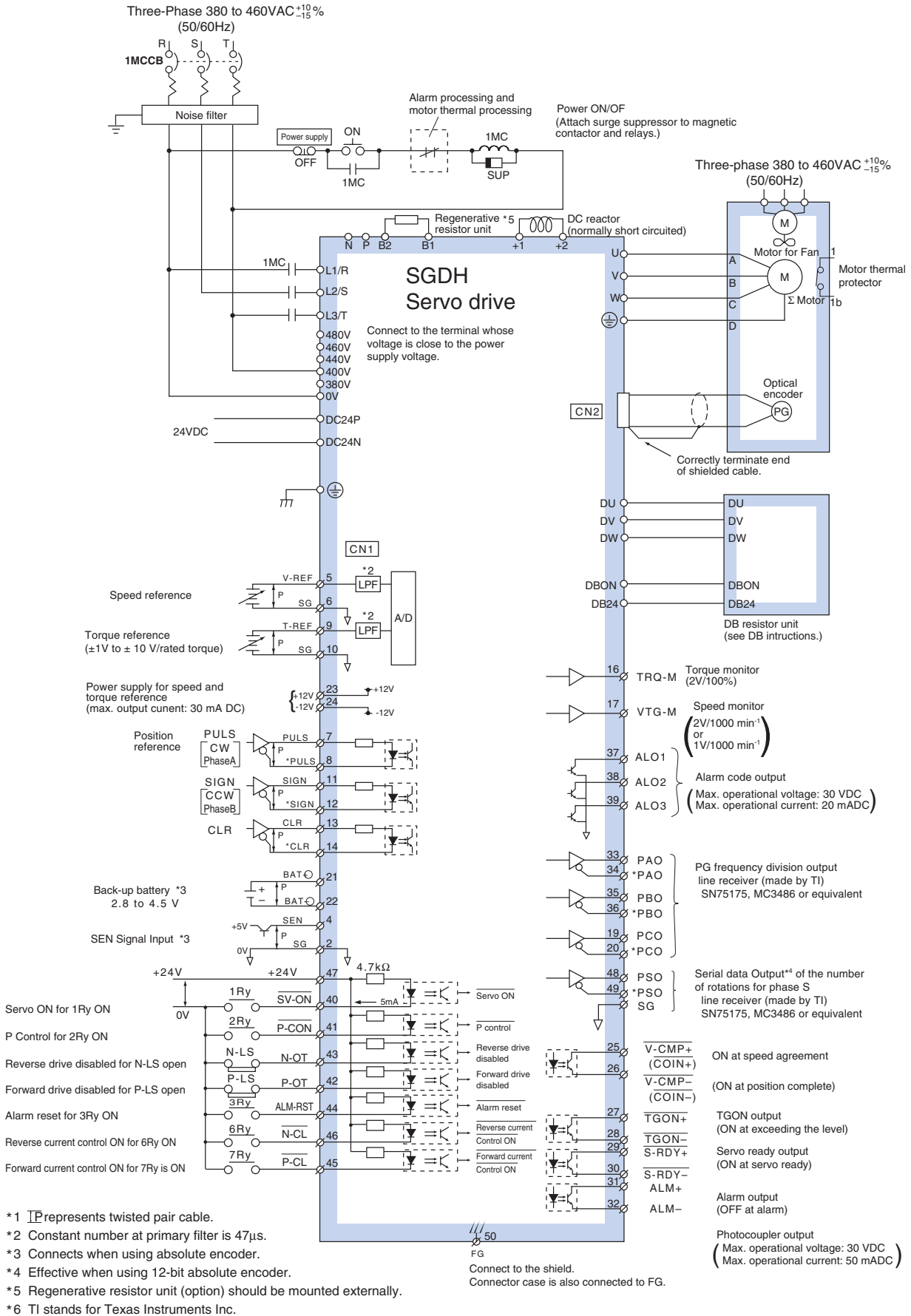
*6 TI stands for Texas Instruments Inc.

Three-phase, 400 VAC (up to 15 kW)

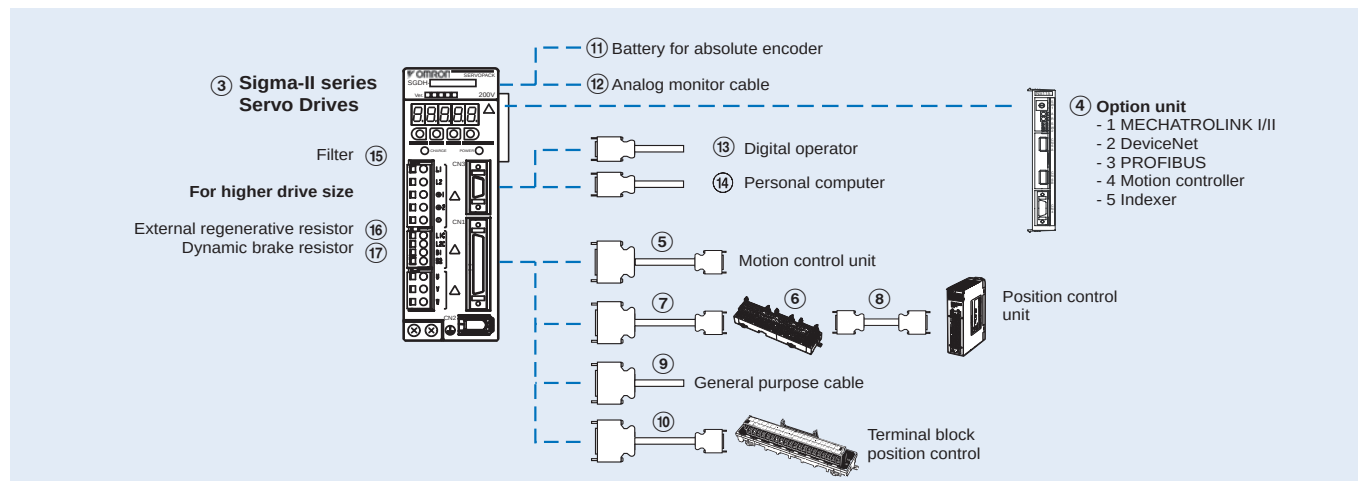


- *1 The time constant for the primary filter is 47 μs .
- *2 Connect when using an absolute encoder.
- *3 Used only with an absolute encoder.
- *4 For using an external regenerative resistor, connect it between B1 and B2.
(Be sure to connect a regenerative resistor unit to Servo Drive of 6/7.5/11/15 kW)
- *5 It is the user's responsibility to obtain 24 VDC power supply.
- *6 TI stands for Texas Instruments Inc.

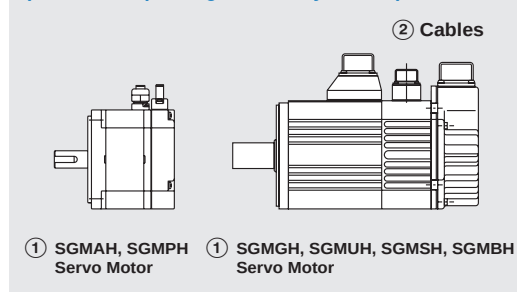
Three-phase, 400 VAC (from 22 kW to 55 kW)



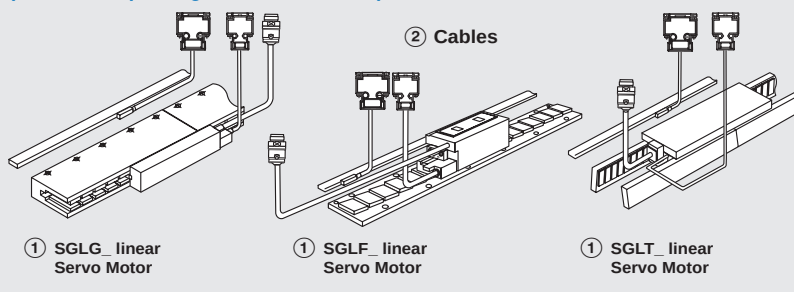
Ordering information



(Refer to chapter Sigma-II rotary motors)



(Refer to chapter Sigma-II linear motors)



Note: The symbols ①②③④⑤... show the recommended sequence to select the components in a Sigma-II servo system

Servo motors, power & encoder cables

Note: ①② Refer to the servo motors chapter for detailed motor specifications and selection

Servo drives

Symbol	Specifications	Model	Compatible rotary servo motors ①	Compatible linear motors ①
③	1 phase 200 VAC	30 W	SGDH-A3AE-OY	SGMAH-A3A□
		50 W	SGDH-A5AE-OY	SGMAH-A5D□
		100 W	SGDH-01AE-OY	SGMAH-01A□, SGMPH-01A□
		200 W	SGDH-02AE-OY	SGMAH-02A□, SGMPH-02A□
		400 W	SGDH-04AE-OY	SGMAH-04A□, SGMPH-04A□
		750 W	SGDH-08AE-S-OY	SGMAH-08A□, SGMPH-08A□
		1500 W	SGDH-15AE-S-OY	SGMPH-15A□
				SGLGW-30A050□
	3 phase 400 VAC	0.5 kW	SGDH-05DE-OY	SGMGH-05D□, SGMAH-03D□, SGMPH-02D□/04D□
		1.0 kW	SGDH-10DE-OY	SGMGH-09D□, SGMSh/UH-10D□, SGMAH-07D□, SGMPH-08D□
		1.5 kW	SGDH-15DE-OY	SGMGH-13D□, SGMSh/UH-15D□, SGMPH-15D□
		2 kW	SGDH-20DE-OY	SGMGH-20D□, SGMSh-20D□
		3 kW	SGDH-30DE-OY	SGMGH-30D□, SGMSh/UH-30D□
		5 kW	SGDH-50DE-OY	SGMGH-44D□, SGMSh/UH-40D□, SGMSh-50D□
		6 kW	SGDH-60DE-OY	SGMGH-55D□
		7.5 kW	SGDH-75DE-OY	SGMGH-75D□
		11 kW	SGDH-1ADE-OY	SGMGH-1AD□
		15 kW	SGDH-1EDE-OY	SGMGH-1ED□
		22 kW	SGDH-2BDE	SGMBH-2BD□
		30 kW	SGDH-3ZDE	SGMBH-3ZD□
		37 kW	SGDH-3GDE	SGMBH-3GD□
		45 kW	SGDH-4EDE	SGMBH-4ED□
		55 kW	SGDH-5EDE	SGMBH-5ED□
				SGLFW-50D200□, SGLTW-35D170□, SGLTW-50D170□
				SGLFW-50D380□, SGLFW-1ZD200□
				SGLFW-1ED380□, SGLTW-35D320□, SGLTW-50D320□
				SGLFW-1ZD380□, SGLFW-1ED560□, SGLTW-40D400□
				SGLTW-40D60□, SGLTW-80D400□
				-
				SGLTW-80D600□
				-
				-
				-
				-
				-
				-

Option units (for CN10)

Symbol	Name	Model
④	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

Note: ④ Refer to the servo drive option unit chapter for detailed specifications and selection

Control cables (for CN1)

Symbol	Description	Connect to		Model
⑤	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
	Servo drive 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	
⑥	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)
⑦	Cable to servo drive	Servo relay units XW2B-□0J6-□B	1 m	XW2Z-100J-B4
			2 m	XW2Z-200J-B4
⑧	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
⑨	Control cable	For general purpose controllers	1 m	R88A-CPW001S or JZSP-CKI01-1
			2 m	R88A-CPW002S or JZSP-CKI01-1
⑩	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
⑪	Battery for 30 W to 5 kW drives	JZSP-BA01
	Battery for 6 kW to 15 kW drives	JZSP-BA01-1

Cable (for CN5)

Symbol	Name	Model
⑫	Analog monitor cable	R88A-CMW001S or DE9404559

Filters

Symbol	Applicable servo drive	Filter model	Rated current	Rated voltage
⑮	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-1ADE-OY, SGDH-1EDE-OY	R88A-FIW4055-SE	55 A	
	SGDH-2BDE, SGDH-3ZDE, SGDH-3GDE	FN258-180-07	180 A	
	SGDH-4EDE, SGDH-5EDE	FN359-250-99	250 A	

External regenerative resistor

Symbol	Applicable servo drive	Regenerative resistor unit model	Specifications
⑯	SGDH-60DE-OY to -75DE-OY	JUSP-RA18	18 Ω , 880 W
	SGDH-1ADE-OY to -1EDE-OY	JUSP-RA19	14.25 Ω , 1760 W
	SGDH-2BDE	JUSP-RA12	9 Ω , 3600 W
	SGDH-3ZDE	JUSP-RA13	6.7 Ω , 3600 W
	SGDH-3GDE	JUSP-RA14	5 Ω , 4800 W
	SGDH-4EDE	JUSP-RA15	4 Ω , 6000 W
	SGDH-5EDE	JUSP-RA16	3.8 Ω , 7200 W

Options (for CN3)

Symbol	Name	Model
⑬	Parameter unit with cable	JUSP-OP02A-2 or R88A-PR02W
⑭	Computer connecting cable	R88A-CCW002P2 or JZSP-CMS02

DB resistor units

Symbol	Servo drive model	Regenerative resistor unit model	Specifications. Star wiring
⑰	SGDH-2BDE, SGDH-3ZDE	JUSP-DB03	180 W, 0.8 Ω
	SGDH-3GDE	JUSP-DB04	180 W, 0.8 Ω
	SGDH-4EDE	JUSP-DB05	180 W, 0.8 Ω
	SGDH-5EDE	JUSP-DB06	300 W, 0.8 Ω

Connectors

Specification	Model
Control I/O connector (for CN1)	R88A-CNU11C or JZSP-CKI9
Sigma-II drive encoder connector (for CN2)	JZSP-CMP9-1
Communications connector (for CN3)	R7A-CNA01R
Hypertac power connector IP67 (for 200 V motors SGMAH/PH-□□A□□□□D-OY)	SPOC-06K-FSDN169
Hypertac power connector IP67 (for 400 V 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 400 V motors SGMGH-(05/10/13)D□, SGMSh-(10/15/20)D□, SGMUH-(10/15)D□)) (for SGMbH-□ fan)	MS3108E18-10S
Military power connector IP67 (for 400 V motors SGMGH-(20/30/44)D□, SGMSh-(30/40/50)D□, SGMUH-(30/40)D□)	MS3108E22-22S
Military power connector IP67 (for 400 V motors SGMGH-(55/75/1A/1E)D□)	MS3108E32-17S
Military brake connector IP67 (for 400 V servo motors SGMGH-□, SGMSh-□, SGMUH-□)	MS3108E10SL-3S
Military encoder connector IP67 (for motors SGMGH-□, SGMSh-□, SGMUH-□, SGMbH-□)	MS3108E20-29S

Computer software

Specifications	Model
Configuration and monitoring software tool for servo drives and inverters. (CX-drive version 1.11 or higher)	CX-drive
Complete OMRON software package including CX-drive. (CX-One version 1.1 or higher)	CX-One

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

R7D-AP□

SmartStep servo drive

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 CX-Drive software (CX-One)
- Windows based configuration and commissioning software

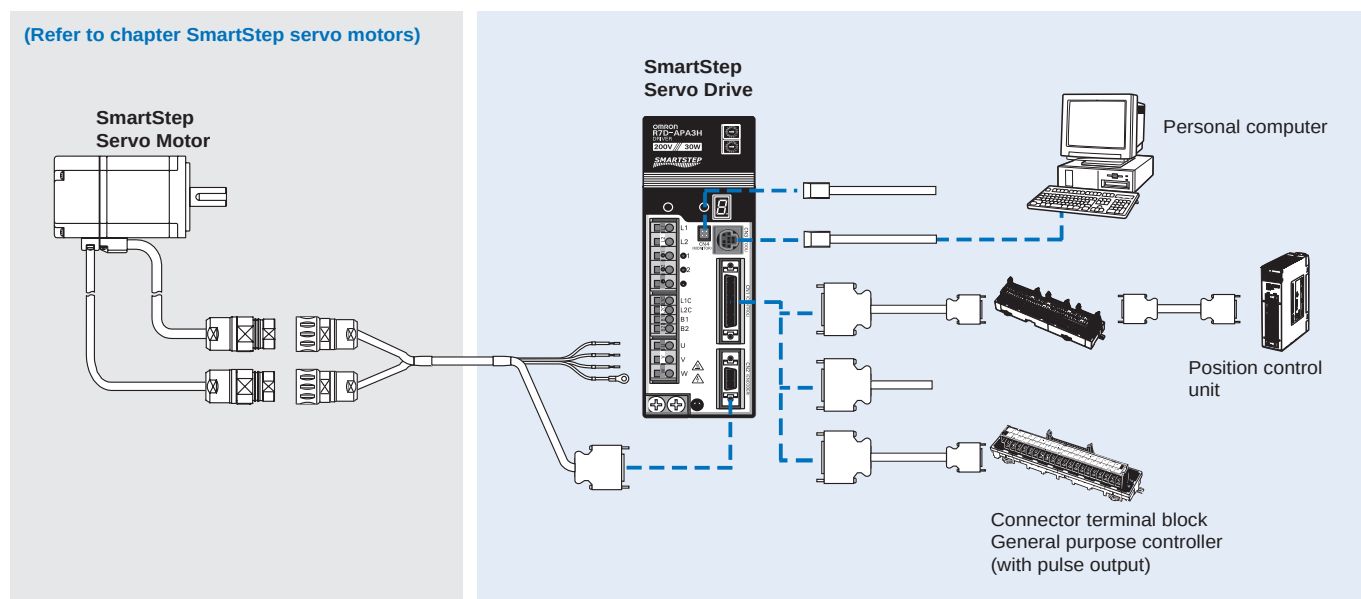
Ratings

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



System configuration

(Refer to chapter SmartStep servo motors)



Servo motor supported

Servo motor			
Family	Voltage	Models rated torque	Remarks
R7M-A (3000 min ⁻¹) 	230 V	0.095 Nm to 2.39 Nm	Refer to the SmartStep servo motors chapter for details
R7M-AP(3000 min ⁻¹) 	230 V	0.318 Nm to 2.39 Nm	Refer to the SmartStep servo motors chapter for details

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 VDC)
Dielectric strength	Between power line terminals and case: 1,500 VAC for 1 min at 50/60 Hz Between each control signal and case: 500 VAC 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 VAC (170 to 253 V) 50/60 Hz					
Main-circuit power supply	Single-phase 200/230 VAC (170 to 253 V) 50/60 Hz (three-phase 200/230 VAC 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 servo motor (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	Servo motor 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
2	-PULS/CW/A		Input impedance: 200 Ω
3	+SIGN/CCW/B	Direction signal, forward pulses, or 90° phase difference pulses (B phase)	Maximum response frequency: 250 kpps Position control is performed based on the pulses that have been input.
4	-SIGN/CCW/B		
5	+ECRST	Deviation counter reset	Line-driver input: 7 mA at 3 V
6	-ECRST		Open-collector input: 16 mA at 5 V Input impedance: 200 Ω ON: resets deviation counter.
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	+24 VDC power input for control	Power supply input (+24 VDC) for pins 14 and 18.
14	RUN	RUN command input	ON: servo ON (starts power to servo motor)
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+	RS-422A transmission data	
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.
33	ZCOM		Open-collector output: 20 mA max. at 30 VDC
34	ALM	Alarm output	Output goes OFF when alarm is detected.
35	ALMCOM		Open-collector output: 50 mA max. at 30 VDC
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 output for encoder
4, 5, 6	E5V	Encoder power supply +5 V	
8	S+	Encoder + phase-S input	
9	S-	Encoder - phase-S input	Line driver input (conforms to EIA-RS422A) (Input impedance: 220 Ω ± 5%)
10	A+	Encoder + phase-A input	Line driver input (conforms to EIA-RS422A)
11	A-	Encoder - phase-A input	(Input impedance: 220 Ω ± 5%)
12	B+	Encoder + phase-B input	Line driver input (conforms to EIA-RS422A)
13	B-	Encoder - phase-B input	(Input impedance: 220 Ω ± 5%)
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	

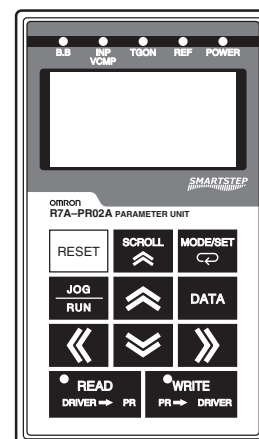
Digital operator specifications

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

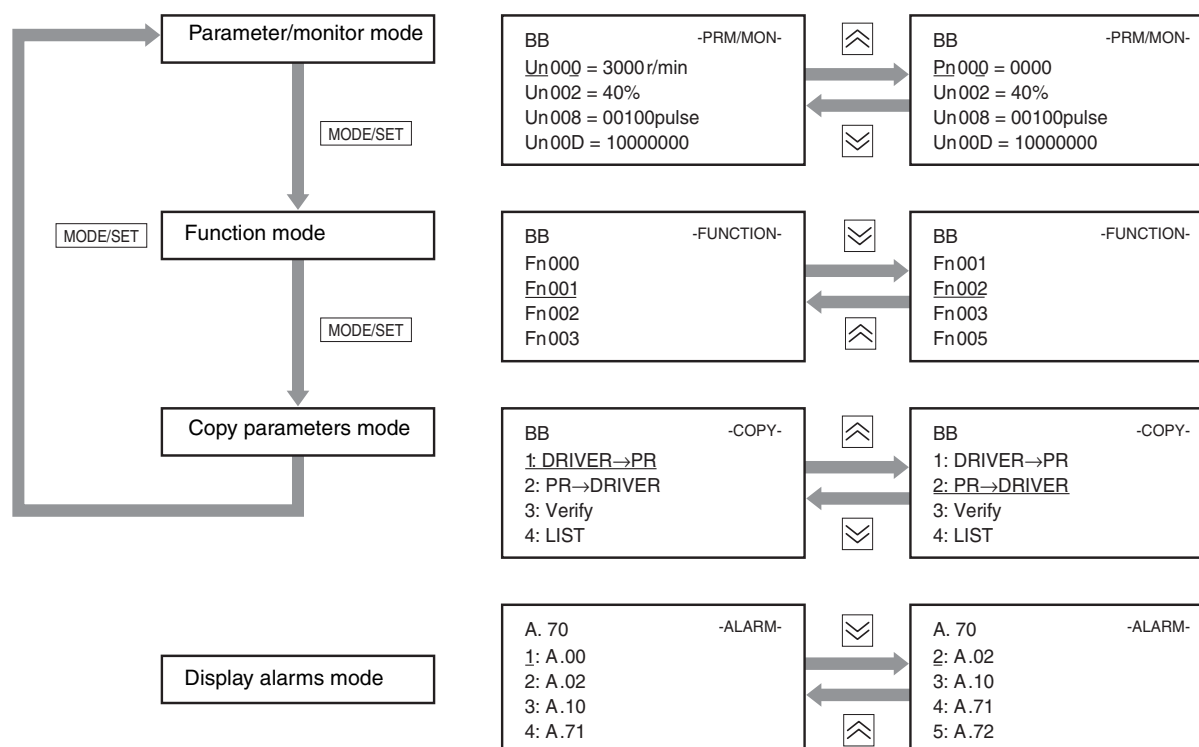
Item	Function
Setting mode	Display or change parameter settings.
Monitor mode	Display monitor values.
Execute function mode	Execute each function mode.
Display alarms	Display alarms that have occurred.
Copy parameters	Read or save parameters from the servo drive. Write parameters to the servo drive. Compare parameters in the servo drive with parameters in the parameter unit.



R7A-PR02A

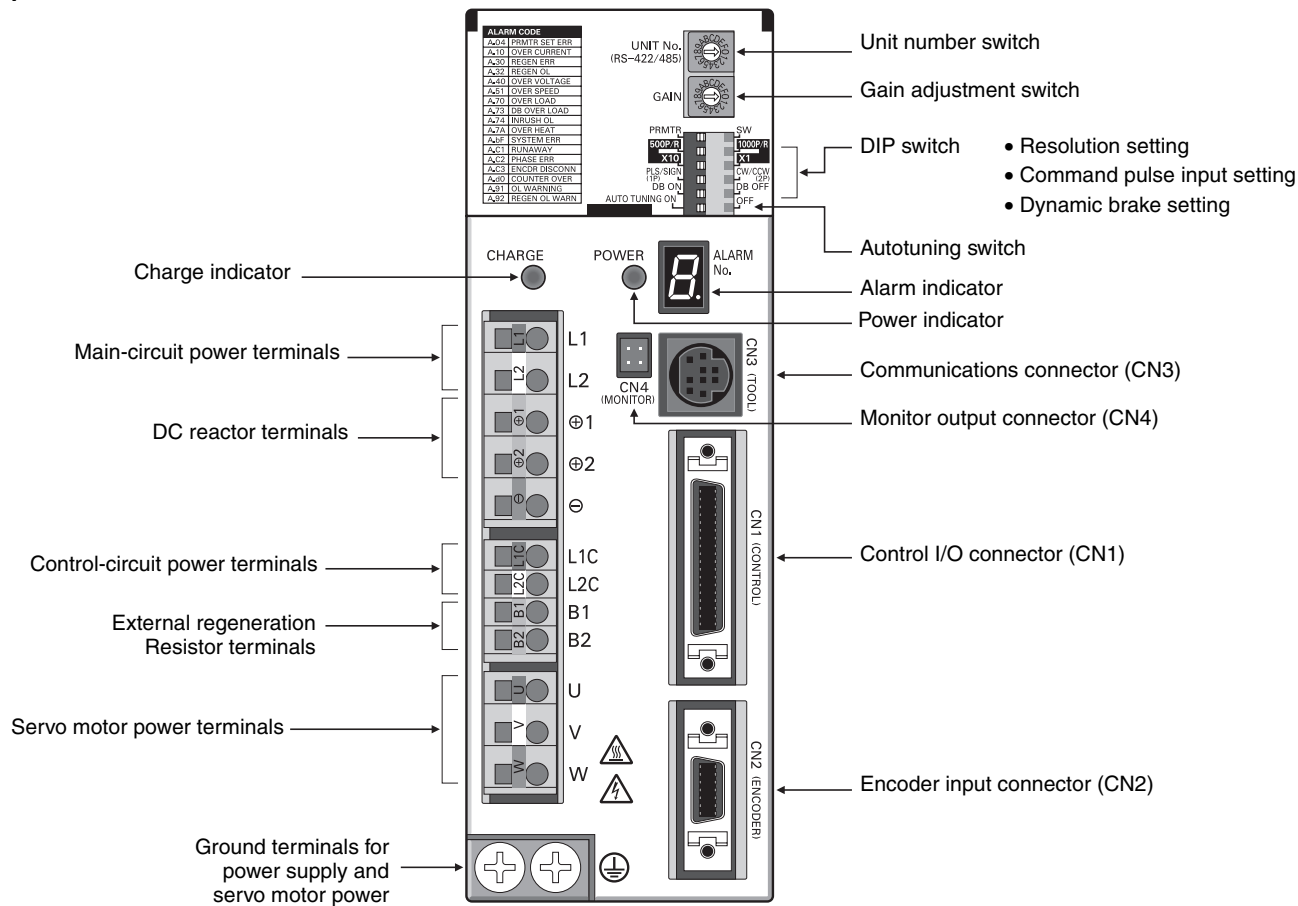
Mode change specifications

Power ON



Operation

Components



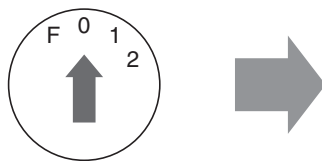
Switch operations

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.



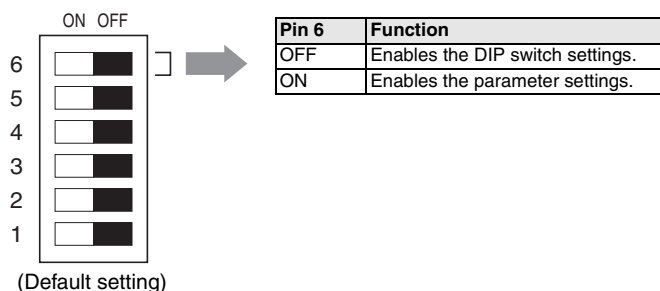
Decrease the switch setting to lower the motor's responsiveness (i.e., so that it moves more smoothly).

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

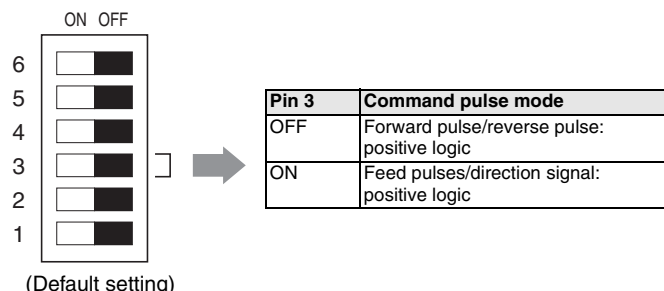
Enable switch/parameter setting

Pin 6 of the DIP switch selects whether the servo drive operates according to the DIP switch settings or parameter settings.



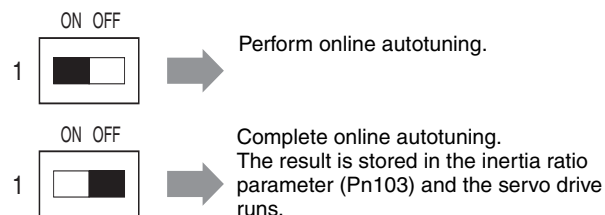
Command pulse input setting

Pin 3 selects the command pulse mode. Select "Forward pulse/reverse pulse: positive logic" or "feed pulses/direction signal: positive logic."



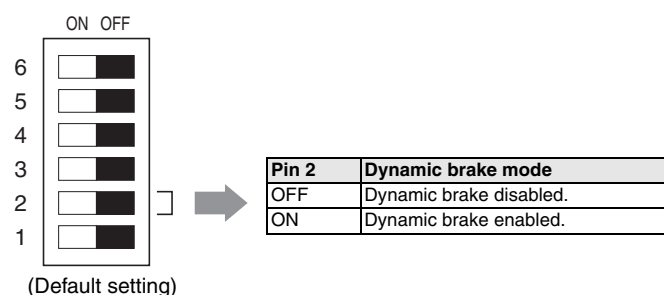
Online autotuning setting

The autotuning switch selects whether the gain will be adjusted automatically during operation.



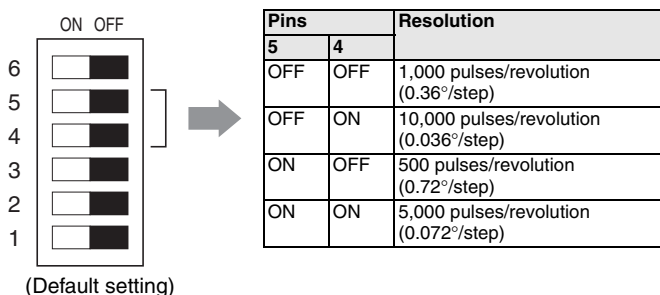
Dynamic brake setting

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.



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.



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

Note: 1. These parameters are read when the power is turned ON. Parameter Pn110.2 is valid when online.

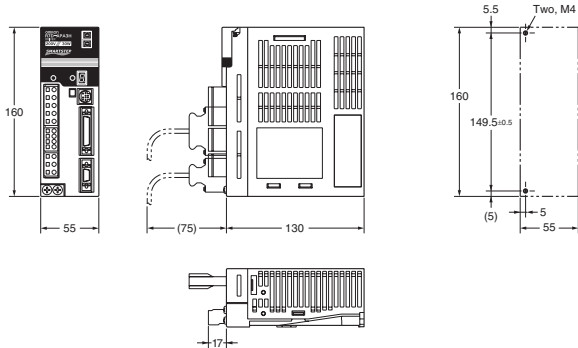
2. When using a regeneration resistor, set the resistor's capacity when the temperature has risen to 120 °C. Set this parameter to 0 if a regeneration resistor is not being used.

Dimensions

Servo drives

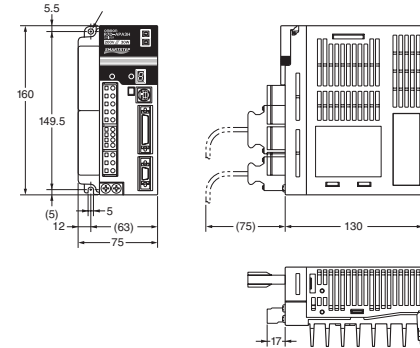
R7D-APA3H/APA5H/AP01H/AP02H (230 V, 30 to 200 W)

Mounting dimensions

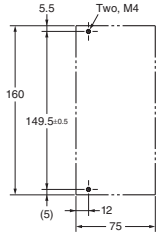


R7D-AP04H (230 V, 400 W)

5 dia. hole

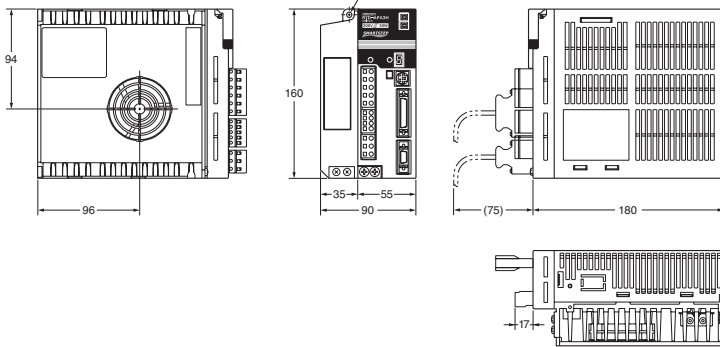


Mounting dimensions

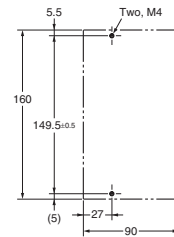


R7D-AP08H (230 V, 750 W)

5 dia. hole

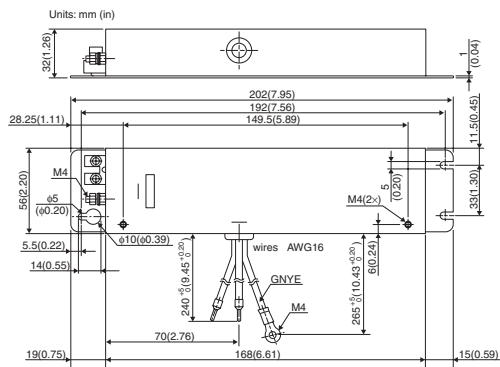


Mounting dimensions



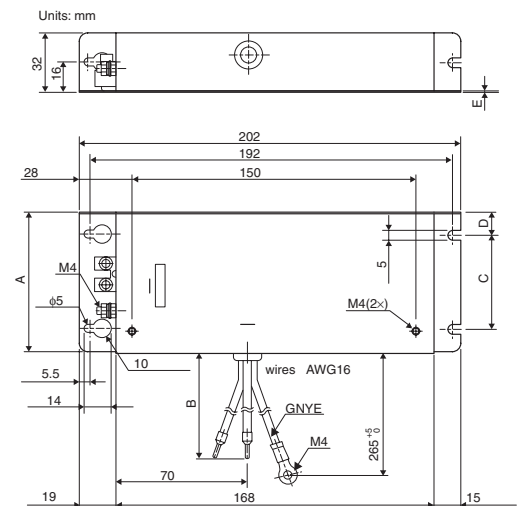
Filters

R88A-FIW104-SE



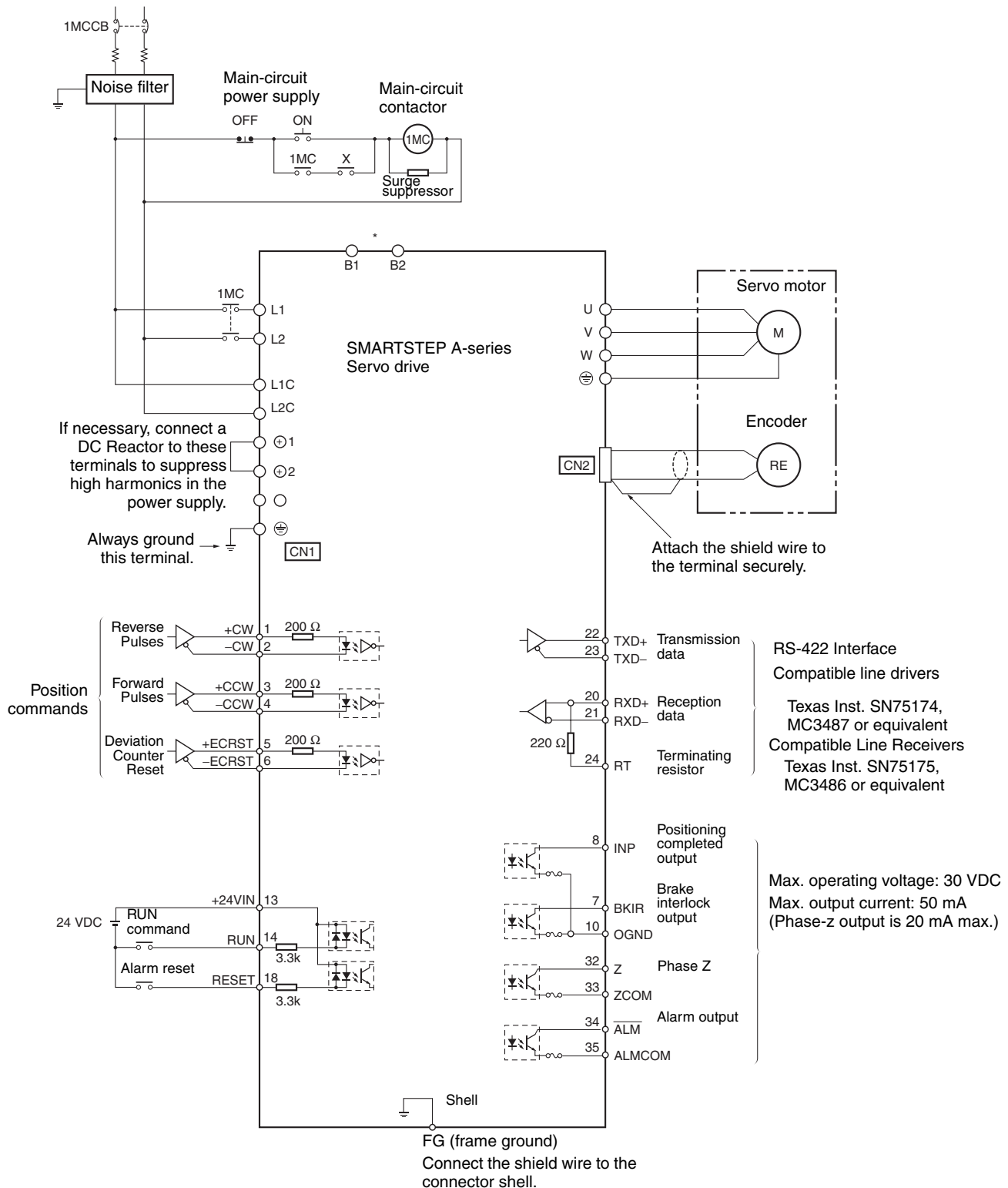
R88A-FIW107-SE, R88A-FIW115-SE

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

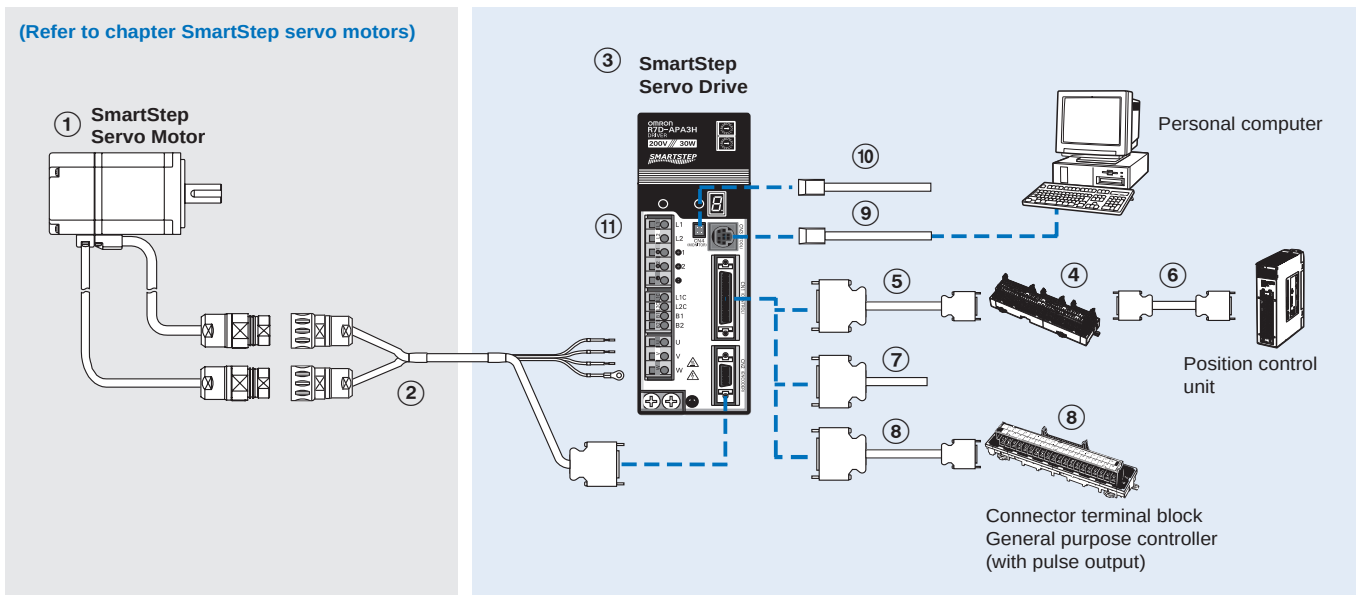
Single-phase 200 to 230 VAC +10%/-15% (50/60 Hz)
(the 750 W servo drives can input three-phase 200 to 230 VAC.)



Note: * A regeneration resistor can be connected across the B1 and B2 terminals with 400 W and 750 W servo drives. When using an external regeneration resistor with a 400 W servo drive, just connect it across the B1 and B2 terminals. When using an external regeneration resistor with a 750 W servo drive, remove the jumper bar from the B2 and B3 terminals and then connect the regeneration resistor across the B1 and B2 terminals.

Ordering information

(Refer to chapter SmartStep servo motors)



Note: The symbols ①②③④⑤... show the recommended sequence to select the components in a SmartStep servo system

Servo motors

Note: ① Refer to the SmartStep servo motor chapter for detailed motor specifications and selection

Servo drives

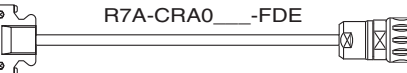
Symbol	Specifications		SmartStep drive model	Compatible servo motors ①	
				Cylindrical type	Flat type
③	200 VAC	30 W	R7D-APA3H	R7M-A03030-□	-
		50 W	R7D-APA5H	R7M-A05030-□	-
		100 W	R7D-AP01H	R7M-A10030-□	R7M-AP10030-□
		200 W	R7D-AP02H	R7M-A20030-□	R7M-AP20030-□
		400 W	R7D-AP04H	R7M-A40030-□	R7M-AP40030-□
		750 W	R7D-AP08H	R7M-A75030-□	R7M-AP75030-□

Servo motor cables (for CN2)

Standard cable (power + encoder)

Symbol	Drive	Specifications	Power cable model	Encoder cable model	Appearance
②	SmartStep	For servo motors 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 servo motors 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 (power + encoder)

Symbol	Drive	Specifications		Power cable model	Encoder cable model	Appearance
②	SmartStep	For servo motors without brake R7M-A(P)□□□30-S1-D	3 m	R88A-CAWA003S-DE	R7A-CRA003-FDE	 R7A-CRA0___-FDE R88A-CAWA0___-DE Only for brake models
			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 servo motors 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-40J6-4A (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□□□IN	---
	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

Filters

Symbol	Applicable servo drive	Filter model	Rated current	Rated voltage
⑪	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	

Connectors

Specifications	Model
Control I/O connector (for CN1)	R88A-CNU01C
SmartStep connectors kit.	R7A-CNA00K-DE
SmartStep encoder connector (for CN2)	
Hypertac power connector female	
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

Parameter unit & computer software

Specifications	Model
Parameter copy unit (with cable)	R7A-PR02A
Configuration and monitoring software tool for servo drives and inverters. (CX-drive version 1.11 or higher)	CX-drive
Complete OMRON software package including CX-drive. (CX-One version 1.1 or higher)	CX-One

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

SGMAH-□, SGMPH-□, SGMGH-□,SGMSH-□,SGMUH-□,SGMBH-□

Sigma-II rotary servo motors

The ideal servo family for motion control.
Fast response, high speed, and high accuracy.

- 6 different designs provide a complete range of servo motors to meet the power, speed and performance required per each application.
- Peak torque 300% of nominal during 3 seconds
- Automatic motor recognition by servo drive
- IP67 and shaft oil seal available
- High resolution encoders
- Absolute multiturn encoder solution
- Compact design and robust construction

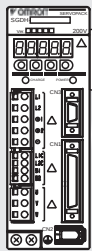
Ratings

- 230 VAC from 30 W to 1.5k W
(rated torque from 0.09 to 4.77 Nm)
- 400 VAC from 300 W to 55 kW
(rated torque from 0.95 Nm to 350 Nm)



System configuration

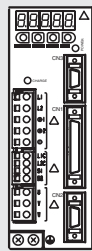
(Refer to servo drive chapter)



Servo drive with option boards for flexible system configuration

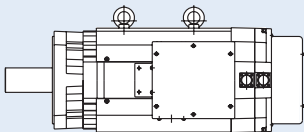
Sigma-II Servo Drive

Drive options

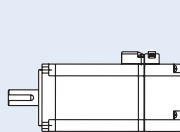
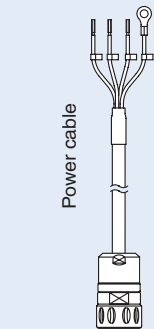


Intelligent Servo Drive

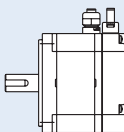
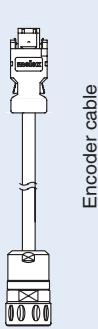
XtraDrive



SGMBH
Servo Motor
1500 rpm
(22 kW-55 kW)

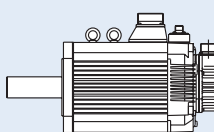
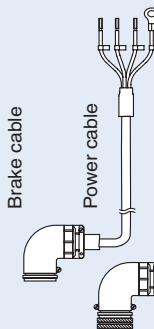


SGMAH
Servo Motor
3000 rpm
(30-750 W)

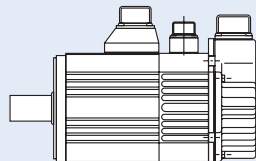


SGMPH
Servo Motor
3000 rpm
(100-1500 W)

Power and encoder cables



SGMGH
Servo Motor
1500 rpm
(450W-15 kW)



SGMUH
Servo Motor
3000 rpm
(1-5 kW)

SGMSH
Servo Motor
6000 rpm
(1-4 kW)

Servo motor / servo drive combination

	Sigma-II rotary servo motor				Sigma-II servo drive		XtraDrive servo drive	
	Voltage	Rated torque	Capacity	Model	230 V (1-phase)	400 V (3-phase)	230 V (1-phase)	400 V (3-phase)
SGMAH (3000 min ⁻¹) 	230 V	0.0955 N.m	30 W	SGMAH-A3A□	SGDH-A3AE-OY	-	XD-P3-MN01	-
		0.159 N.m	50 W	SGMAH-A5A□	SGDH-A5AE-OY	-	XD-P5-MN01	-
		0.318 N.m	100 W	SGMAH-01A□	SGDH-01AE-OY	-	XD-01-MN01	-
		0.637 N.m	200 W	SGMAH-02A□	SGDH-02AE-OY	-	XD-02-MN01	-
		1.27 N.m	400 W	SGMAH-04A□	SGDH-04AE-OY	-	XD-04-MN01	-
	400 V	2.39 N.m	750 W	SGMAH-08A□	SGDH-08AE-S-OY	-	XD-08-MN	-
		0.955 N.m	300 W	SGMAH-03D□	-	SGDH-05DE-OY	-	XD-05-TN
		2.07 N.m	650 W	SGMAH-07D□	-	SGDH-10DE-OY	-	XD-10-TN
SGMPH (3000 min ⁻¹) 	230 V	0.318 N.m	100 W	SGMPH-01A□	SGDH-01AE-OY	-	XD-01-MN01	-
		0.637 N.m	200 W	SGMPH-02A□	SGDH-02AE-OY	-	XD-02-MN01	-
		1.27 N.m	400 W	SGMPH-04A□	SGDH-04AE-OY	-	XD-04-MN01	-
		2.39 N.m	750 W	SGMPH-08A□	SGDH-08AE-S-OY	-	XD-08-MN	-
		4.77 N.m	1500 W	SGMPH-15A□	SGDH-15AE-S-OY	-	XD-15-MN	-
	400 V	0.637 N.m	200 W	SGMPH-02D□	-	SGDH-05DE-OY	-	XD-05-TN
		1.27 N.m	400 W	SGMPH-04D□	-	SGDH-05DE-OY	-	XD-05-TN
		2.39 N.m	750 W	SGMPH-08D□	-	SGDH-10DE-OY	-	XD-10-TN
SGMGH (1500 min ⁻¹) 	400 V	4.77 N.m	1500 W	SGMPH-15D□	-	SGDH-15DE-OY	-	XD-15-TN
		2.84 N.m	0.45 kW	SGMGH-05D□	-	SGDH-05DE-OY	-	XD-05-TN
		5.39 N.m	0.85 kW	SGMGH-09D□	-	SGDH-10DE-OY	-	XD-10-TN
		8.34 N.m	1.3 kW	SGMGH-13D□	-	SGDH-15DE-OY	-	XD-15-TN
		11.5 N.m	1.8 kW	SGMGH-20D□	-	SGDH-20DE-OY	-	XD-20-TN
		18.6 N.m	2.9 kW	SGMGH-30D□	-	SGDH-30DE-OY	-	XD-30-TN
		28.4 N.m	4.4 kW	SGMGH-44D□	-	SGDH-50DE-OY	-	XD-50-TN
		35.0 N.m	5.5 kW	SGMGH-55D□	-	SGDH-60DE-OY	-	-
SGMSH (3000 min ⁻¹) 	400 V	48.0 N.m	7.5 kW	SGMGH-75D□	-	SGDH-75DE-OY	-	-
		70.0 N.m	11 kW	SGMGH-1AD□	-	SGDH-1ADE-OY	-	-
		95.4 N.m	15 kW	SGMGH-1ED□	-	SGDH-1EDE-OY	-	-
		3.18 N.m	1.0 kW	SGMSH-10D□	-	SGDH-10DE-OY	-	XD-10-TN
		4.90 N.m	1.5 kW	SGMSH-15D□	-	SGDH-15DE-OY	-	XD-15-TN
		6.36 N.m	2.0 kW	SGMSH-20D□	-	SGDH-20DE-OY	-	XD-20-TN
SGMUH (6000 min ⁻¹) 	400 V	9.80 N.m	3.0 kW	SGMSH-30D□	-	SGDH-30DE-OY	-	XD-30-TN
		12.6 N.m	4.0 kW	SGMSH-40D□	-	SGDH-50DE-OY	-	XD-50-TN
		15.8 N.m	5.0 kW	SGMSH-50D□	-	SGDH-50DE-OY	-	XD-50-TN
		1.59 N.m	1.0 kW	SGMUH-10D□	-	SGDH-10DE-OY	-	XD-10-TN
SGMBH (1500 min ⁻¹) 	400 V	2.45 N.m	1.5 kW	SGMUH-15D□	-	SGDH-15DE-OY	-	XD-15-TN
		4.9 N.m	3.0 kW	SGMUH-30D□	-	SGDH-30DE-OY	-	XD-30-TN
		6.3 N.m	4.0 kW	SGMUH-40D□	-	SGDH-50DE-OY	-	XD-50-TN
		140 Nm	22 kW	SGMBH-2BD□	-	SGDH-2BDE	-	-
		191 Nm	30 kW	SGMBH-3ZD□	-	SGDH-3ZDE	-	-
	400 V	236 Nm	37 kW	SGMBH-3GD□	-	SGDH-3GDE	-	-
		286 Nm	45 kW	SGMBH-4ED□	-	SGDH-4EDE	-	-
		350 Nm	55 kW	SGMBH-5ED□	-	SGDH-5EDE	-	-

Note: 1. For servo motor and cables part numbers refer to ordering information at the end of this chapter
2. Refer to the servo drive chapter for drive options selection and detailed specifications

Type designation

Servo motor

SGMAH - 01 A 1 A 6 S D - OY

Sigma-II servo motor 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

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		

Voltage

A: 230 V
 D: 400 V

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	90 V brake
C	24 V brake
D	Oil seal + 90 DC brake
E	Oil seal + 24 VDC brake
F	Dust seal
G	Dust seal + 90 VDC brake
H	Dust seal + 24 VDC brake

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

SGMBH - 2 B D 2 A □ □

Sigma-II series large

Type : SGMBH

Motor output

2B: 22 kW 4E: 45 kW
 3Z: 30 kW 5E: 55 kW
 3G: 37 kW

Voltage

D:400 V

Encoder specifications

2:17-bit absolute (standard)
 C:17-bit incremental (standard)
 3: 20-bit absolute (option)

Design revision

A: Max. torque 200%

Option

1: Oil seal (V type)
 B: Oil seal (V type) and holding brake (90 VDC)
 C: Oil seal (V type) and holding brake (24 VDC)
 S: Oil seal (S type)
 D: Oil seal (S type) and holding brake (90 VDC)
 E: Oil seal (S type) and holding brake (24 VDC)
 Note : Options are not available for 55 kW motors.

Motor specifications

2: Flange, straight shaft } For 45 kW or less
 6: Flange, straight shaft (with key and tap)
 K: Foot mount, straight shaft } For 37 kW or more
 L: Foot mount, straight shaft (with key and tap)

Servo motor specifications

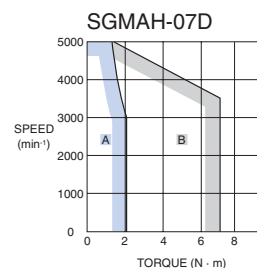
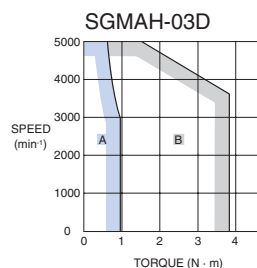
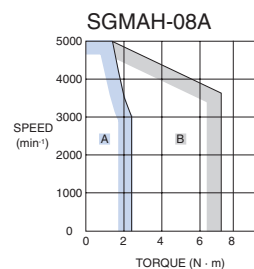
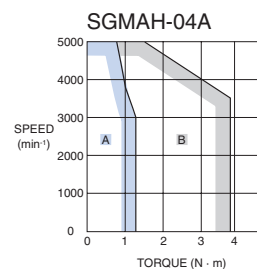
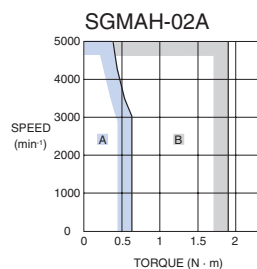
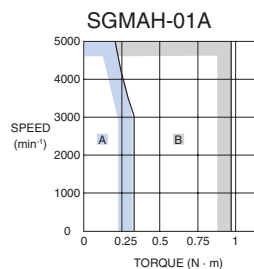
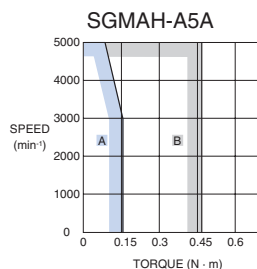
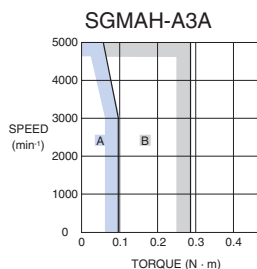
Type SGMAH, 230 V/400 V

Ratings and specifications

Applied voltage		230 V						400 V	
Servo motor 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 ×10 ⁻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
Applicable encoder	Standard	Incremental encoder (13 bits)							
	Option	Incremental/absolute encoder (16 bits)							
Holding brake moment of inertia J	kg·m ² ×10 ⁻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	15 μm or below							
	Enclosure	Totally-enclosed, self-cooled, IP55 (excluding shaft opening)							
	Vibration resistance	Vibration acceleration 49 m/s2							
	Mounting	Flange-mounted							

Torque-speed characteristics

(A : Continuous duty zone B : Intermittent duty zone)



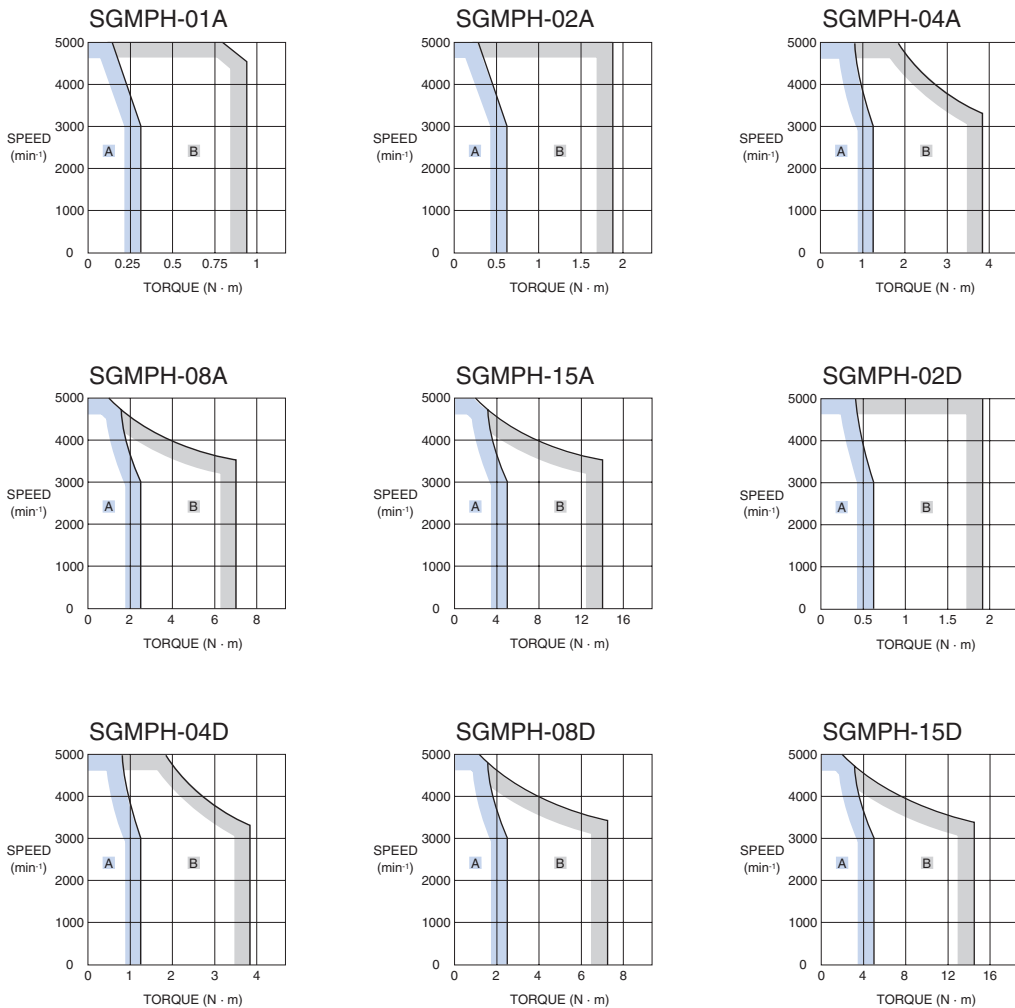
Type SGMPH, 230 V/400 V

Ratings and specifications

Applied voltage		230 V					400 V			
Servo motor 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
Applicable encoder	Standard	Incremental encoder (13 bits)								
	Option	Incremental/absolute encoder (16 bits)								
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		15 μm or below							
	Enclosure		Totally-enclosed, self-cooled, IP55 (excluding shaft opening)							
	Vibration resistance		Vibration acceleration 49 m/s2							
	Mounting		Flange-mounted							

Torque-speed charecteristics

(A : Continuous duty zone B : Intermittent duty zone)



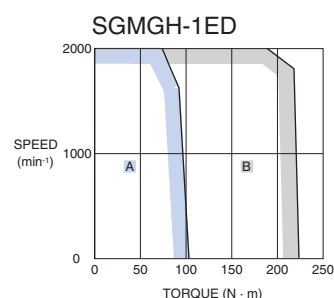
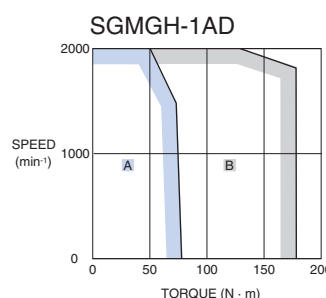
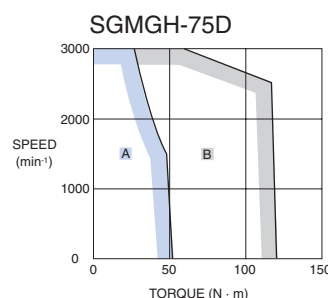
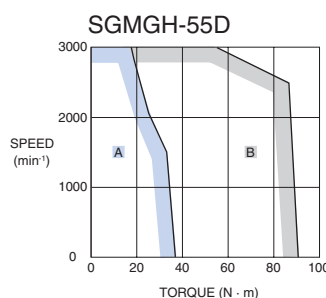
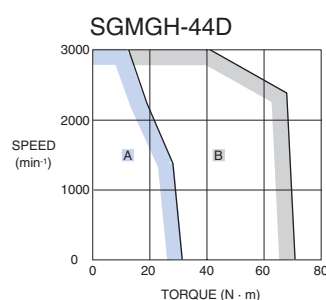
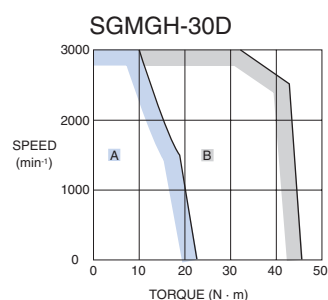
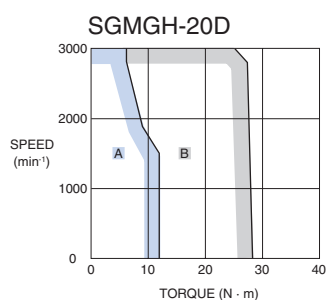
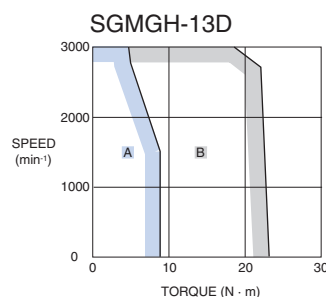
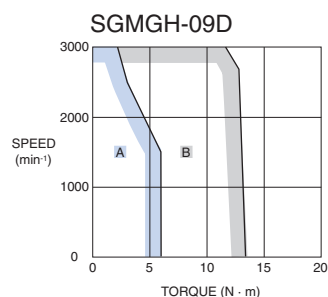
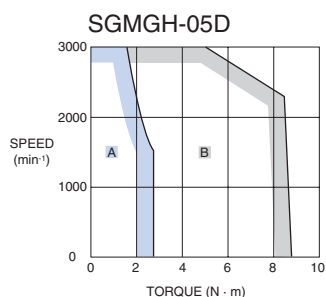
Type SGMGH, 400 V

Ratings and specifications

Applied voltage		400 V									
Servo motor 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
Applicable encoder	Standard	Incremental encoder (17 bits)									
	Option	Absolute encoder (17 bits)									
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	15 μm or below									
	Enclosure	Totally-enclosed, self-cooled, IP67 (excluding shaft opening)									
	Vibration resistance	Vibration acceleration 24.5 m/s2									
	Mounting	Flange-mounted									

Torque-speed characteristics

(A : Continuous duty zone B : Intermittent duty zone)



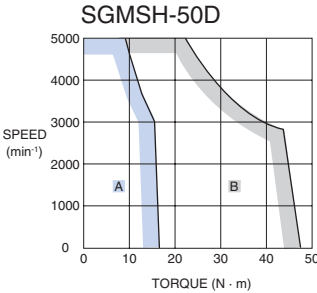
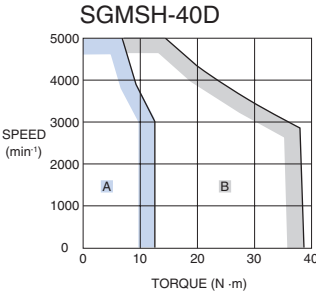
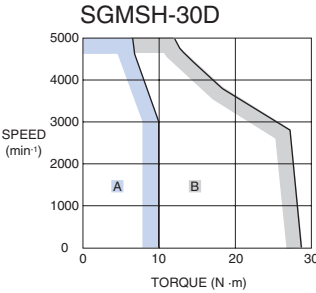
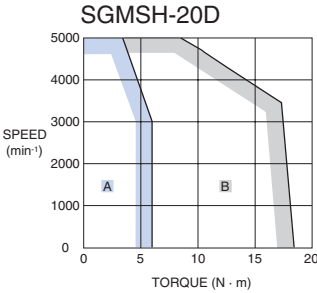
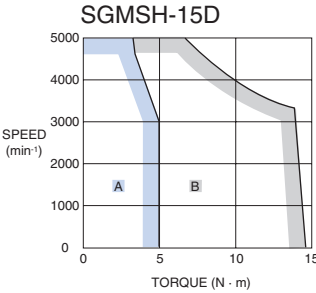
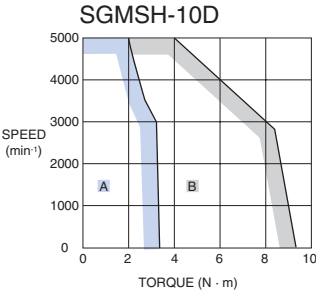
Type SGMSH, 400 V

Ratings and specifications

Applied voltage		400 V							
Servo motor 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		
Applicable encoder	Standard	Incremental encoder (17 bits)							
	Option	Absolute encoder (17 bits)							
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		15 μm or below						
	Enclosure		Totally-enclosed, self-cooled, IP67 (excluding shaft opening)						
	Vibration resistance		Vibration acceleration 24.5 m/s2						
	Mounting		Flange-mounted						

Torque-speed charecteristics

(A : Continuous duty zone B : Intermittent duty zone)



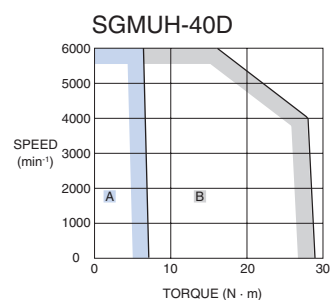
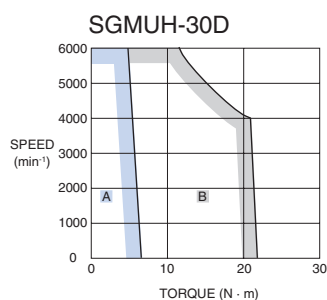
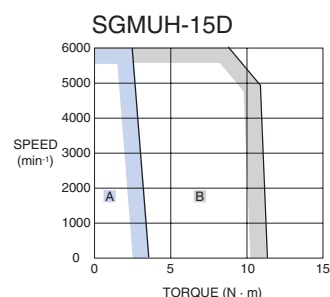
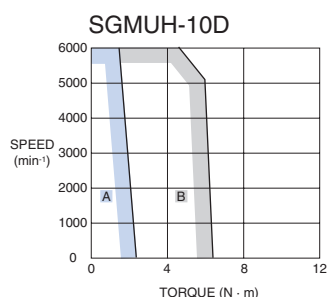
Type SGMUH, 400V

Ratings and specifications

Applied voltage		400 V			
Servo motor 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 ×10 ⁻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
Applicable encoder	Standard	Incremental encoder (17 bits)			
	Option	-			
Holding brake moment of inertia J	kg·m ² ×10 ⁻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	15 μm or below			
	Enclosure	Totally-enclosed, self-cooled, IP67 (excluding shaft opening)			
	Vibration resistance	Vibration acceleration 24.5 m/s2			
	Mounting	Flange-mounted			

Torque-speed characteristics

(A : Continuous duty zone B : Intermittent duty zone)



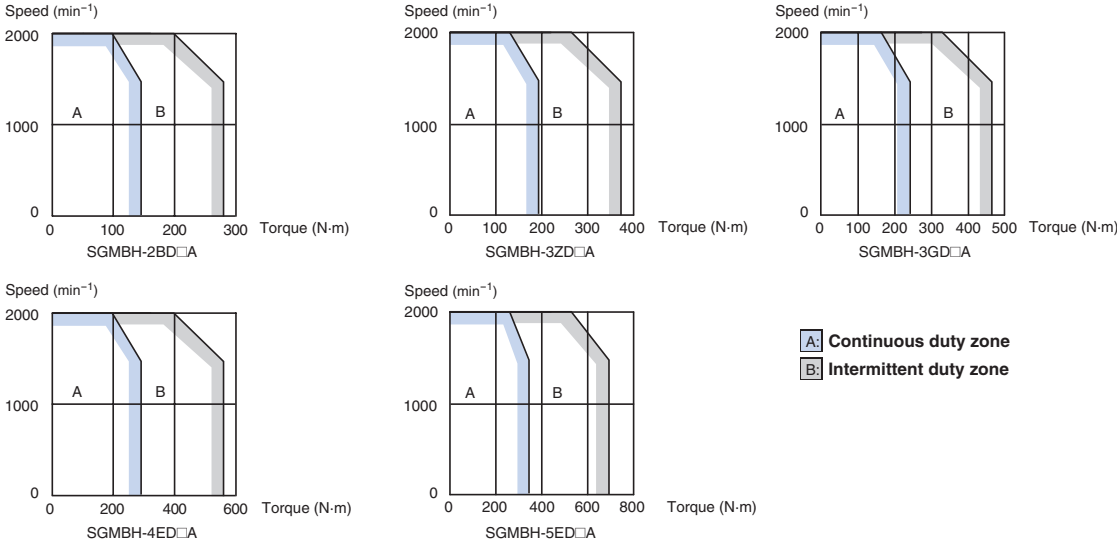
Type SGMBH, 400 V

Ratings and specifications

Type	SGMBH-□		2BD□A	3ZD□A	3GD□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				
		Option	Absolute: 20 bits				
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.

Torque-speed characteristics

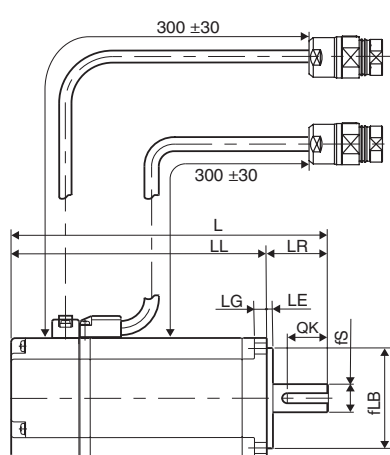


Dimensions

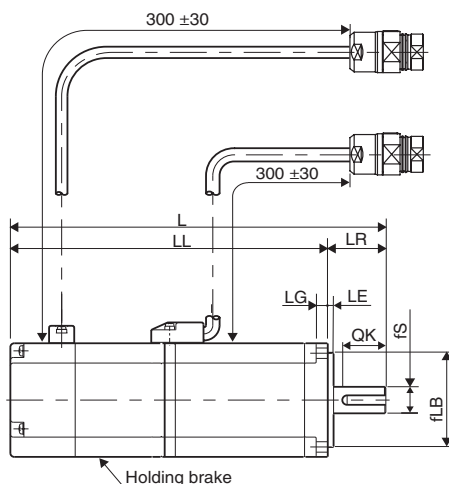
Servo motors

Type SGMAH (230/400 V)

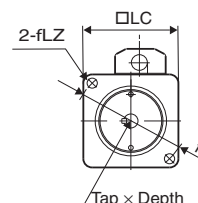
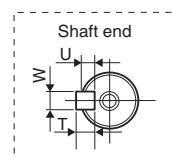
Dimensions (mm)	Without brake		With brake		LR	Flange surface						Shaft end						Aprox. Mass (Kg)	
Model	L	LL	L	LL		LA	LB	LC	LE	LG	LZ	S	QK	W	T	U	Tap × depth	Without brake	With brake
SGMAH-A3A□A6□D-OY	94.5	69.5	126	101	25	46	30 ^{h7}	40	2.5	5	4.3	6 ^{h6}	14	2	2	1.2	M2.5 x 5L	0.3	0.6
SGMAH-A5A□A6□D-OY	102.0	77	133.5	108.5														0.4	0.7
SGMAH-01A□A6□D-OY	119.5	94.5	160	135								8 ^{h6}		3	3	1.8	M3 x 6L	0.5	0.8
SGMAH-02A□A6□D-OY	126.5	96.5	166	136	30	70	50 ^{h7}	60	3	6	5.5	14 ^{h6}	20	5	5	3	M5 x 8L	1.1	1.6
SGMAH-03D□A6□D-OY	154.5	124.5	194	164														1.7	2.2
SGMAH-04A□A6□D-OY																		1.7	2.2
SGMAH-07D□A6□D-OY	185	145	229.5	189.5	40	90	70 ^{h7}	80	3	8	7	16 ^{h6}	30					3.4	4.3
SGMAH-08A□A6□D-OY																		3.4	4.3



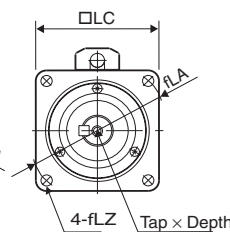
Models without brake



Models with brake



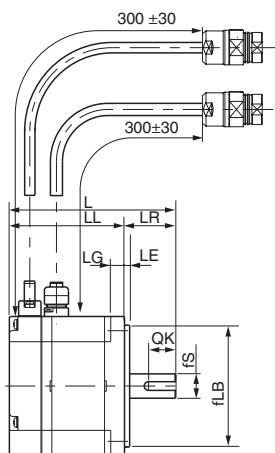
SGMAH-A3, -A5, -01



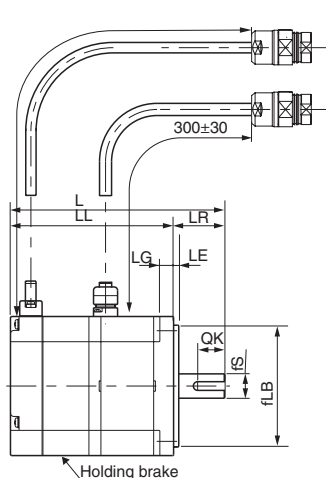
SGMAH-02 to -08

Type SGMPH (230/400 V)

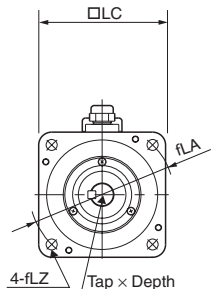
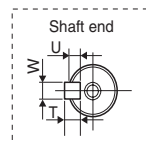
Dimensions (mm)	Without brake		With brake		LR	Flange surface						Shaft end						Aprox. Mass (Kg)	
Model	L	LL	L	LL		LA	LB	LC	LE	LG	LZ	S	QK	W	T	U	Tap × depth	Without brake	With brake
SGMPH-01□□□6□D-OY	87	62	116	91	25	70	50 ^{h7}	60	3	6	5.5	8 ^{h6}	14	3	3	1.8	M3x6L	0.7	0.9
SGMPH-02□□□6□D-OY	97	67	128.5	98.5	30	90	70 ^{h7}	80	3	8	7	14 ^{h6}	16	5	5	3	M5x8L	1.4	1.9
SGMPH-04□□□6□D-OY	117	87	148.5	118.5	40	145	110 ^{h7}	120	3.5	10	10	16 ^{h6}	22					2.1	2.6
SGMPH-08□□□6□D-OY	126.5	86.5	160	120								19 ^{h6}						4.2	5.7
SGMPH-15□□□6□D-OY	154.5	114.5	188	148										6	6	3.5	M6x10L	6.6	8.1



Models without brake

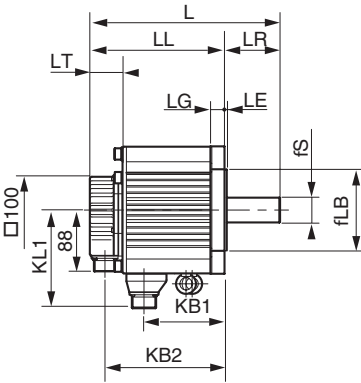


Models with brake

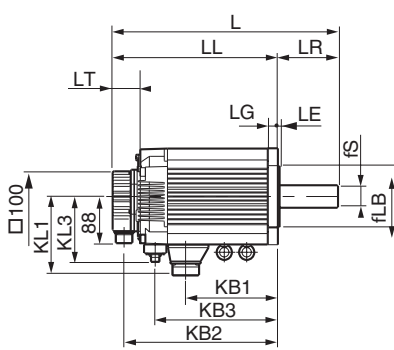


Type SGMGH (400 V)

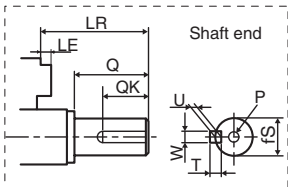
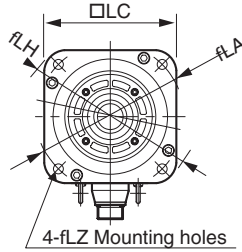
Dimensions (mm)	Without brake			With brake				KL3	LR	LT	KB1	KL1	Flange surface							Shaft end							Aprox. Mass (Kg)	
Model	L	LL	KB2	L	LL	KB2	KB3						LA	LB	LC	LE	LG	LH	LZ	S	Q	QK	W	T	U	P	With-out brake	With brake
SGMGH-05D□A6□-OY	196	138	117	234	176	154	109	98	58	46	65	109	145	110	130	6	12	165	9	19	40	25	5	5	3	M5 x 12L	5.5	7.5
SGMGH-09D□A6□-OY	219	161	140	257	199	177	132				88																7.6	9.6
SGMGH-13D□A6□-OY	243	185	164	281	223	201	156				112									22			6	6	3.5		9.6	12
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	M12 x 25L	14	19
SGMGH-30D□A6□-OY	271	192	170	322	243	221	163				115																18	23.5
SGMGH-44D□A6□-OY	305	226	204	356	277	255	197				149																23	28.5
SGMGH-55D□A6□-OY	373	260	238	424	311	289	231		113		174	150								42	110	90	12			M16 x 32L	30	35
SGMGH-75D□A6□-OY	447	334	312	498	385	363	305				248																40	45.5
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	M16 x 32L	57.5	65
SGMGH-1ED□A6□-OY	573	457	435	635	519	497	415			48	343						20			55			16	10	6	M20 x 40L	86	100



Models without brake

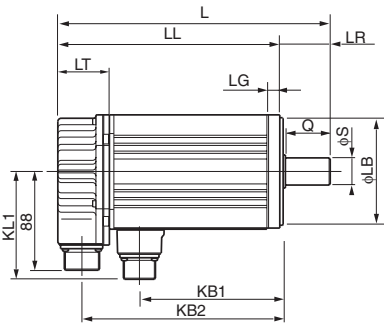


Models with brake

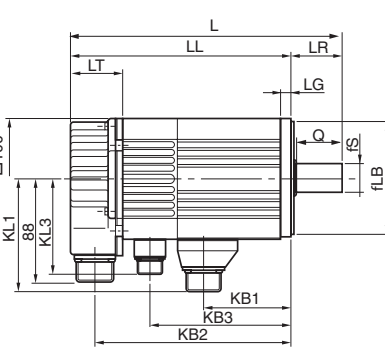


Type SGMSH (400 V)

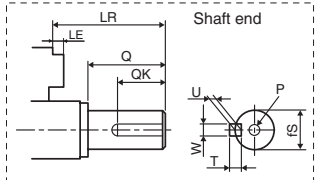
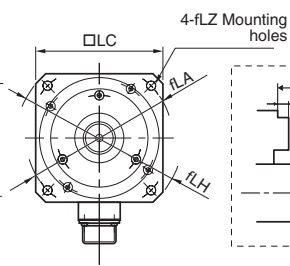
Dimensions (mm)	Without brake			With brake				KL3	LR	LT	KB1	KL1	Flange surface							Shaft end							Aprox. Mass (Kg)	
Model	L	LL	KB2	L	LL	KB2	KB3						LA	LB	LC	LE	LG	LH	LZ	S	Q	QK	W	T	U	P	With-out brake	With brake
SGMSH-10D□A6□-OY	194	149	128	238	193	171	120	85	45	46	76	96	115	95 ^{h1}	100	3	10	130	7	24 ^{h6}	40	32	8	7	4	M8 x 16L	4.6	6.0
SGMSH-15D□A6□-OY	220	175	154	264	219	197	146				102																5.8	7.5
SGMSH-20D□A6□-OY	243	198	177	287	242	220	169				125																7.0	8.5
SGMSH-30D□A6□-OY	262	199	178	300	237	216	170	98	63		124	114	145	110 ^{h7}	130	6	12	165	9	28 ^{h6}	55	50					11	14
SGMSH-40D□A6□-OY	299	236	215	337	274	253	207				161																14	17
SGMSH-50D□A6□-OY	339	276	255	377	314	293	247				201																17	20



Models without brake

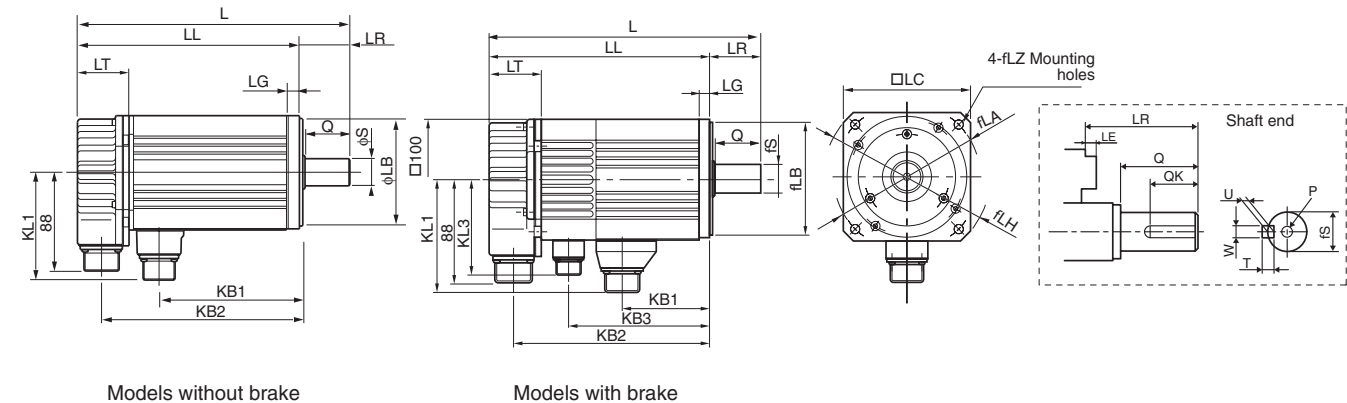


Models with brake



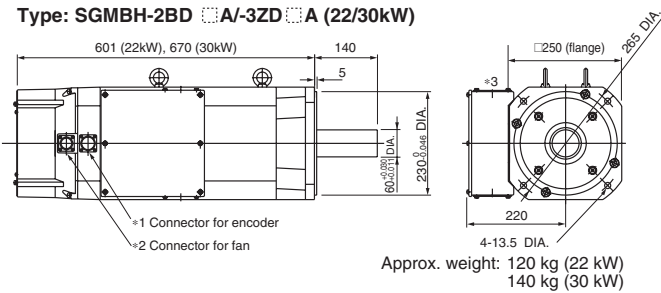
Type SGMUH (400 V)

Dimensions (mm)	Without brake			With brake					LR	LT	KB1	KL1	Flange surface								Shaft end								Aprox. Mass (Kg)	
Model	L	LL	KB2	L	LL	KB2	KB3	KL3					LA	LB	LC	LE	LG	LH	LZ	S	Q	QK	W	T	U	P	Without brake	With brake		
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	M8	4.8	6.2		
SGMUH-15D□A6□-OY	220	175	154	264	219	197	146				102														16L	6.0	7.7			
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					11.5	14.5		
SGMUH-40D□A6□-OY	327	269	245	362	302	281	210			71	164																15	18		

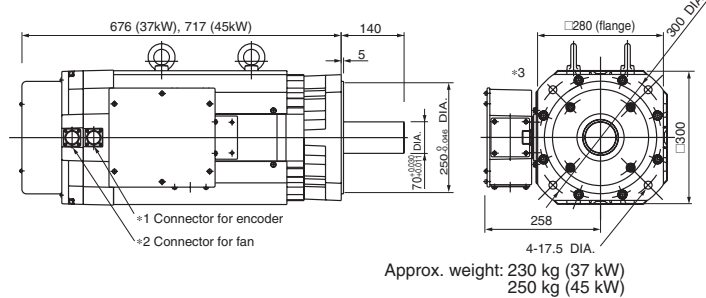


Type SGBBH (400 V)

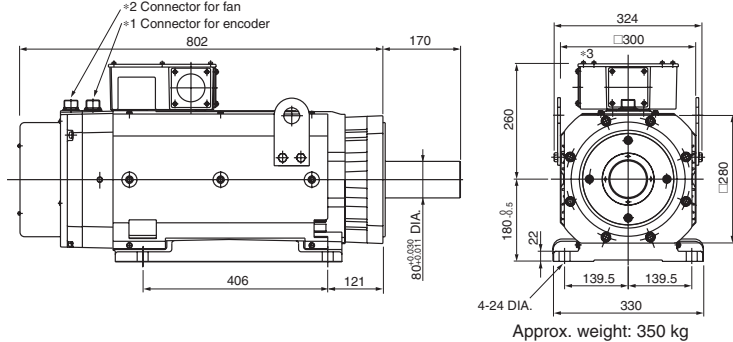
Type: SGBBH-2BD □A/-3ZD □A (22/30kW)



Type: SGBBH-3GD □A /-4E □A37/45kW

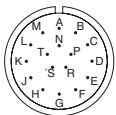


Type: SGBBH-5ED □A (55kW)

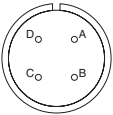


*1 Connector for encoder

*2 Connector for fan



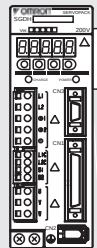
Receptacle: 97F-3102E20-29P
Plug IP67 (L-shape): MS3108E20-29S



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

Ordering information

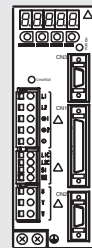
(Refer to servo drive chapter)



Servo drive with option boards for flexible system configuration

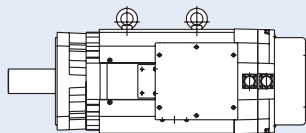
② Sigma-II Servo Drive

Drive options

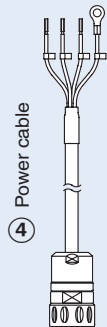


Intelligent servo drive

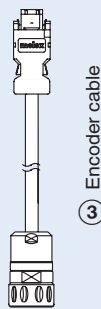
② XtraDrive



① SGMBH Servo Motor
1500 rpm
(22 kW-55 kW)

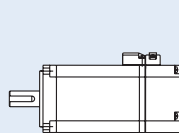


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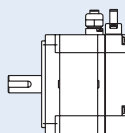


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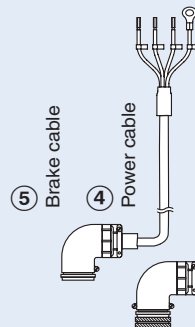
Power and encoder cables



① SGMAH Servo Motor
3000 rpm
(30-750 W)



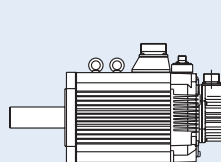
① SGMPH Servo Motor
3000 rpm
(100-1500 W)



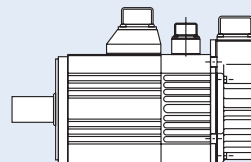
⑤

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① SGMGH Servo Motor
1500 rpm
(450W-15 kW)



① SGMUH Servo Motor
3000 rpm
(1-5 kW)

① SGMSH Servo Motor
6000 rpm
(1-4 kW)

Note: The symbols ①②③... show the recommended sequence to select the servo motor and cables

Servo motor

① Select motor from families SGMAH, SGMPH, SGMGH, SGMUH, SGMSH, SGMBH using motor tables in next pages.

Servo drive

Note: Choosing Sigma-II drive or XtraDrive affects to the encoder cable needed.

② Refer to Sigma-II servo drive or XtraDrive chapter for detailed drive specifications and selection of drive accessories.

SGMAH - cylindrical servo motors 3000 r/min (30 - 750 W)

Symbol	Specifications				Servo motor model	Compatible servo drives ②		
	Voltage	Encoder and design		Rated torque		Capacity	Sigma-II	XtraDrive
① 	230 V	Incremental encoder (13 bit) Straight shaft with key & tap	Without brake	0.096 Nm	30 W	SGMAH-A3AAA61D-OY	SGDH-A3AE-OY	XD-P3-MN01
				0.159 Nm	50 W	SGMAH-A5AAA61D-OY	SGDH-A5AE-OY	XD-P5-MN01
				0.318 Nm	100 W	SGMAH-01AAA61D-OY	SGDH-01AE-OY	XD-01-MN01
				0.637 Nm	200 W	SGMAH-02AAA61D-OY	SGDH-02AE-OY	XD-02-MN01
				1.27 Nm	400 W	SGMAH-04AAA61D-OY	SGDH-04AE-OY	XD-04-MN01
				2.39 Nm	750 W	SGMAH-08AAA61D-OY	SGDH-08AE-S-OY	XD-08-MN
			With brake	0.096 Nm	30 W	SGMAH-A3AAA6CD-OY	SGDH-A3AE-OY	XD-P3-MN01
				0.159 Nm	50 W	SGMAH-A5AAA6CD-OY	SGDH-A5AE-OY	XD-P5-MN01
				0.318 Nm	100 W	SGMAH-01AAA6CD-OY	SGDH-01AE-OY	XD-01-MN01
				0.637 Nm	200 W	SGMAH-02AAA6CD-OY	SGDH-02AE-OY	XD-02-MN01
				1.27 Nm	400 W	SGMAH-04AAA6CD-OY	SGDH-04AE-OY	XD-04-MN01
				2.39 Nm	750 W	SGMAH-08AAA6CD-OY	SGDH-08AE-S-OY	XD-08-MN
		Absolute encoder (16 bit) Straight shaft with key & tap	Without brake	0.096 Nm	30 W	SGMAH-A3A1A61D-OY	SGDH-A3AE-OY	XD-P3-MN01
				0.159 Nm	50 W	SGMAH-A5A1A61D-OY	SGDH-A5AE-OY	XD-P5-MN01
				0.318 Nm	100 W	SGMAH-01A1A61D-OY	SGDH-01AE-OY	XD-01-MN01
				0.637 Nm	200 W	SGMAH-02A1A61D-OY	SGDH-02AE-OY	XD-02-MN01
				1.27 Nm	400 W	SGMAH-04A1A61D-OY	SGDH-04AE-OY	XD-04-MN01
				2.39 Nm	750 W	SGMAH-08A1A61D-OY	SGDH-08AE-S-OY	XD-08-MN
			With brake	0.096 Nm	30 W	SGMAH-A3A1A6CD-OY	SGDH-A3AE-OY	XD-P3-MN01
				0.159 Nm	50 W	SGMAH-A5A1A6CD-OY	SGDH-A5AE-OY	XD-P5-MN01
				0.318 Nm	100 W	SGMAH-01A1A6CD-OY	SGDH-01AE-OY	XD-01-MN01
				0.637 Nm	200 W	SGMAH-02A1A6CD-OY	SGDH-02AE-OY	XD-02-MN01
				1.27 Nm	400 W	SGMAH-04A1A6CD-OY	SGDH-04AE-OY	XD-04-MN01
				2.39 Nm	750 W	SGMAH-08A1A6CD-OY	SGDH-08AE-S-OY	XD-08-MN
	400 V	Incremental encoder (13 bit) Straight shaft with key	Without brake	0.955 Nm	300 W	SGMAH-03DAA61D-OY	SGDH-05DE-OY	XD-05-TN
				2.07 Nm	650 W	SGMAH-07DAA61D-OY	SGDH-10DE-OY	XD-10-TN
			With brake	0.955 Nm	300 W	SGMAH-03DAA6CD-OY	SGDH-05DE-OY	XD-05-TN
				2.07 Nm	650 W	SGMAH-07DAA6CD-OY	SGDH-10DE-OY	XD-10-TN
		Absolute encoder (16 bit) Straight shaft with key	Without brake	0.955 Nm	300 W	SGMAH-03D1A61D-OY	SGDH-05DE-OY	XD-05-TN
				2.07 Nm	650 W	SGMAH-07D1A61D-OY	SGDH-10DE-OY	XD-10-TN
			With brake	0.955 Nm	300 W	SGMAH-03D1A6CD-OY	SGDH-05DE-OY	XD-05-TN
				2.07 Nm	650 W	SGMAH-07D1A6CD-OY	SGDH-10DE-OY	XD-10-TN

SGMPH - flat type servo motors 3000 r/min (100 - 1500 W)

Symbol	Specifications				Servo motor model	Compatible servo drives ②		
	Voltage	Encoder and design		Rated torque		Capacity	Sigma-II	XtraDrive
 ①	230 V	Incremental encoder (13 bit)	Without brake	0.318 Nm	100 W	SGMPH-01AAA61D-OY	SGDH-01AE-OY	XD-01-MN01
				0.637 Nm	200 W	SGMPH-02AAA61D-OY	SGDH-02AE-OY	XD-02-MN01
				1.27 Nm	400 W	SGMPH-04AAA61D-OY	SGDH-04AE-OY	XD-04-MN01
				2.39 Nm	750 W	SGMPH-08AAA61D-OY	SGDH-08AE-S-OY	XD-08-MN
				4.77 Nm	1500 W	SGMPH-15AAA61D-OY	SGDH-15AE-S-OY	XD-15-MN
			With brake	0.318 Nm	100 W	SGMPH-01AAA6CD-OY	SGDH-01AE-OY	XD-01-MN01
				0.637 Nm	200 W	SGMPH-02AAA6CD-OY	SGDH-02AE-OY	XD-02-MN01
				1.27 Nm	400 W	SGMPH-04AAA6CD-OY	SGDH-04AE-OY	XD-04-MN01
				2.39 Nm	750 W	SGMPH-08AAA6CD-OY	SGDH-08AE-S-OY	XD-08-MN
				4.77 Nm	1500 W	SGMPH-15AAA6CD-OY	SGDH-15AE-S-OY	XD-15-MN
		Absolute encoder (16 bit)	Without brake	0.318 Nm	100 W	SGMPH-01A1A61D-OY	SGDH-01AE-OY	XD-01-MN01
				0.637 Nm	200 W	SGMPH-02A1A61D-OY	SGDH-02AE-OY	XD-02-MN01
				1.27 Nm	400 W	SGMPH-04A1A61D-OY	SGDH-04AE-OY	XD-04-MN01
				2.39 Nm	750 W	SGMPH-08A1A61D-OY	SGDH-08AE-S-OY	XD-08-MN
				4.77 Nm	1500 W	SGMPH-15A1A61D-OY	SGDH-15AE-S-OY	XD-15-MN
			With brake	0.318 Nm	100 W	SGMPH-01A1A6CD-OY	SGDH-01AE-OY	XD-01-MN01
				0.637 Nm	200 W	SGMPH-02A1A6CD-OY	SGDH-02AE-OY	XD-02-MN01
				1.27 Nm	400 W	SGMPH-04A1A6CD-OY	SGDH-04AE-OY	XD-04-MN01
				2.39 Nm	750 W	SGMPH-08A1A6CD-OY	SGDH-08AE-S-OY	XD-08-MN
				4.77 Nm	1500 W	SGMPH-15A1A6CD-OY	SGDH-15AE-S-OY	XD-15-MN
	400 V	Incremental encoder (13 bit)	Without brake	0.637 Nm	200 W	SGMPH-02DAA61D-OY	SGDH-05DE-OY	XD-05-TN
				1.27 Nm	400 W	SGMPH-04DAA61D-OY	SGDH-05DE-OY	XD-05-TN
				2.39 Nm	750 W	SGMPH-08DAA61D-OY	SGDH-10DE-OY	XD-10-TN
				4.77 Nm	1500 W	SGMPH-15DAA61D-OY	SGDH-15DE-OY	XD-15-TN
			With brake	0.637 Nm	200 W	SGMPH-02DAA6CD-OY	SGDH-05DE-OY	XD-05-TN
				1.27 Nm	400 W	SGMPH-04DAA6CD-OY	SGDH-05DE-OY	XD-05-TN
				2.39 Nm	750 W	SGMPH-08DAA6CD-OY	SGDH-10DE-OY	XD-10-TN
				4.77 Nm	1500 W	SGMPH-15DAA6CD-OY	SGDH-15DE-OY	XD-15-TN
		Absolute encoder (16 bit)	Without brake	0.637 Nm	200 W	SGMPH-02D1A61D-OY	SGDH-05DE-OY	XD-05-TN
				1.27 Nm	400 W	SGMPH-04D1A61D-OY	SGDH-05DE-OY	XD-05-TN
				2.39 Nm	750 W	SGMPH-08D1A61D-OY	SGDH-10DE-OY	XD-10-TN
				4.77 Nm	1500 W	SGMPH-15D1A61D-OY	SGDH-15DE-OY	XD-15-TN
			With brake	0.637 Nm	200 W	SGMPH-02D1A6CD-OY	SGDH-05DE-OY	XD-05-TN
				1.27 Nm	400 W	SGMPH-04D1A6CD-OY	SGDH-05DE-OY	XD-05-TN
				2.39 Nm	750 W	SGMPH-08D1A6CD-OY	SGDH-10DE-OY	XD-10-TN
				4.77 Nm	1500 W	SGMPH-15D1A6CD-OY	SGDH-15DE-OY	XD-15-TN

SGMGH - servo motors 1500 r/min (0.45 - 15 kW)

Symbol	Specifications				Servo motor model		Compatible servo drives (2)	
	Voltage	Encoder and design		Rated torque	Capacity		Sigma-II	XtraDrive
	400 V	Incremental encoder (17 bit) Straight shaft with key & tap	Without brake	2.84 Nm	0.45 kW	SGMGH-05DCA6F-OY	SGDH-05DE-OY	XD-05-TN
				5.39 Nm	0.85 kW	SGMGH-09DCA6F-OY	SGDH-10DE-OY	XD-10-TN
				8.34 Nm	1.3 kW	SGMGH-13DCA6F-OY	SGDH-15DE-OY	XD-15-TN
				11.5 Nm	1.8 kW	SGMGH-20DCA6F-OY	SGDH-20DE-OY	XD-20-TN
				18.6 Nm	2.9 kW	SGMGH-30DCA6F-OY	SGDH-30DE-OY	XD-30-TN
				28.4 Nm	4.4 kW	SGMGH-44DCA6F-OY	SGDH-50DE-OY	XD-50-TN
				35.0 Nm	5.5 kW	SGMGH-55DCA6F-OY	SGDH-60DE-OY	-
				48.0 Nm	7.5 kW	SGMGH-75DCA6F-OY	SGDH-75DE-OY	-
				70.0 Nm	11.5 kW	SGMGH-1ADCA6F-OY	SGDH-1ADE-OY	-
				95.4 Nm	15.0 kW	SGMGH-1EDCA6F-OY	SGDH-1EDE-OY	-
			With brake	2.84 Nm	0.45 kW	SGMGH-05DCA6H-OY	SGDH-05DE-OY	XD-05-TN
				5.39 Nm	0.85 kW	SGMGH-09DCA6H-OY	SGDH-10DE-OY	XD-10-TN
				8.34 Nm	1.3 kW	SGMGH-13DCA6H-OY	SGDH-15DE-OY	XD-15-TN
				11.5 Nm	1.8 kW	SGMGH-20DCA6H-OY	SGDH-20DE-OY	XD-20-TN
				18.6 Nm	2.9 kW	SGMGH-30DCA6H-OY	SGDH-30DE-OY	XD-30-TN
				28.4 Nm	4.4 kW	SGMGH-44DCA6H-OY	SGDH-50DE-OY	XD-50-TN
				35.0 Nm	5.5 kW	SGMGH-55DCA6H-OY	SGDH-60DE-OY	-
				48.0 Nm	7.5 kW	SGMGH-75DCA6H-OY	SGDH-75DE-OY	-
				70.0 Nm	11.5 kW	SGMGH-1ADCA6H-OY	SGDH-1ADE-OY	-
				95.4 Nm	15.0 kW	SGMGH-1EDCA6H-OY	SGDH-1EDE-OY	-
		Absolute encoder (17 bit) Straight shaft with key & tap	Without brake	2.84 Nm	0.45 kW	SGMGH-05D2A6F-OY	SGDH-05DE-OY	XD-05-TN
				5.39 Nm	0.85 kW	SGMGH-09D2A6F-OY	SGDH-10DE-OY	XD-10-TN
				8.34 Nm	1.3 kW	SGMGH-13D2A6F-OY	SGDH-15DE-OY	XD-15-TN
				11.5 Nm	1.8 kW	SGMGH-20D2A6F-OY	SGDH-20DE-OY	XD-20-TN
				18.6 Nm	2.9 kW	SGMGH-30D2A6F-OY	SGDH-30DE-OY	XD-30-TN
				28.4 Nm	4.4 kW	SGMGH-44D2A6F-OY	SGDH-50DE-OY	XD-50-TN
				35.0 Nm	5.5 kW	SGMGH-55D2A6F-OY	SGDH-60DE-OY	-
				48.0 Nm	7.5 kW	SGMGH-75D2A6F-OY	SGDH-75DE-OY	-
				70.0 Nm	11.5 kW	SGMGH-1AD2A6F-OY	SGDH-1ADE-OY	-
				95.4 Nm	15.0 kW	SGMGH-1ED2A6F-OY	SGDH-1EDE-OY	-
			With brake	2.84 Nm	0.45 kW	SGMGH-05D2A6H-OY	SGDH-05DE-OY	XD-05-TN
				5.39 Nm	0.85 kW	SGMGH-09D2A6H-OY	SGDH-10DE-OY	XD-10-TN
				8.34 Nm	1.3 kW	SGMGH-13D2A6H-OY	SGDH-15DE-OY	XD-15-TN
				11.5 Nm	1.8 kW	SGMGH-20D2A6H-OY	SGDH-20DE-OY	XD-20-TN
				18.6 Nm	2.9 kW	SGMGH-30D2A6H-OY	SGDH-30DE-OY	XD-30-TN
				28.4 Nm	4.4 kW	SGMGH-44D2A6H-OY	SGDH-50DE-OY	XD-50-TN
				35.0 Nm	5.5 kW	SGMGH-55D2A6H-OY	SGDH-60DE-OY	-
				48.0 Nm	7.5 kW	SGMGH-75D2A6H-OY	SGDH-75DE-OY	-
				70.0 Nm	11.5 kW	SGMGH-1AD2A6H-OY	SGDH-1ADE-OY	-
				95.4 Nm	15.0 kW	SGMGH-1ED2A6H-OY	SGDH-1EDE-OY	-

SGMSH - servo motors 3000 r/min (1 - 5 kW)

Symbol	Specifications				Servo motor model		Compatible servo drives (2)	
	Voltage	Encoder and design		Rated torque	Capacity		Sigma-II	XtraDrive
	400 V	Incremental encoder (17 bit) Straight shaft with key & tap	Without brake	3.18 Nm	1.0 kW	SGMSH-10DCA6F-OY	SGDH-10DE-OY	XD-10-TN
				4.9 Nm	1.5 kW	SGMSH-15DCA6F-OY	SGDH-15DE-OY	XD-15-TN
				6.36 Nm	2.0 kW	SGMSH-20DCA6F-OY	SGDH-20DE-OY	XD-20-TN
				9.8 Nm	3.0 kW	SGMSH-30DCA6F-OY	SGDH-30DE-OY	XD-30-TN
				12.6 Nm	4.0 kW	SGMSH-40DCA6F-OY	SGDH-50DE-OY	XD-50-TN
				15.8 Nm	5.0 kW	SGMSH-50DCA6F-OY	SGDH-50DE-OY	XD-50-TN
			With brake	3.18 Nm	1.0 kW	SGMSH-10DCA6H-OY	SGDH-10DE-OY	XD-10-TN
				4.9 Nm	1.5 kW	SGMSH-15DCA6H-OY	SGDH-15DE-OY	XD-15-TN
				6.36 Nm	2.0 kW	SGMSH-20DCA6H-OY	SGDH-20DE-OY	XD-20-TN
				9.8 Nm	3.0 kW	SGMSH-30DCA6H-OY	SGDH-30DE-OY	XD-30-TN
				12.6 Nm	4.0 kW	SGMSH-40DCA6H-OY	SGDH-50DE-OY	XD-50-TN
		Absolute encoder (17 bit) Straight shaft with key & tap	Without brake	3.18 Nm	1.0 kW	SGMSH-10D2A6F-OY	SGDH-10DE-OY	XD-10-TN
				4.9 Nm	1.5 kW	SGMSH-15D2A6F-OY	SGDH-15DE-OY	XD-15-TN
				6.36 Nm	2.0 kW	SGMSH-20D2A6F-OY	SGDH-20DE-OY	XD-20-TN
				9.8 Nm	3.0 kW	SGMSH-30D2A6F-OY	SGDH-30DE-OY	XD-30-TN
				12.6 Nm	4.0 kW	SGMSH-40D2A6F-OY	SGDH-50DE-OY	XD-50-TN
				15.8 Nm	5.0 kW	SGMSH-50D2A6F-OY	SGDH-50DE-OY	XD-50-TN
			With brake	3.18 Nm	1.0 kW	SGMSH-10D2A6H-OY	SGDH-10DE-OY	XD-10-TN
				4.9 Nm	1.5 kW	SGMSH-15D2A6H-OY	SGDH-15DE-OY	XD-15-TN
				6.36 Nm	2.0 kW	SGMSH-20D2A6H-OY	SGDH-20DE-OY	XD-20-TN
				9.8 Nm	3.0 kW	SGMSH-30D2A6H-OY	SGDH-30DE-OY	XD-30-TN
				12.6 Nm	4.0 kW	SGMSH-40D2A6H-OY	SGDH-50DE-OY	XD-50-TN
				15.8 Nm	5.0 kW	SGMSH-50D2A6H-OY	SGDH-50DE-OY	XD-50-TN

SGMUH - servo motors 6000 r/min (1 - 4 kW)

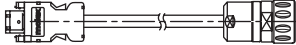
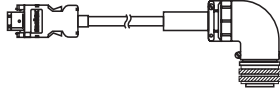
Symbol	Specifications				Servo motor model	Compatible servo drives ②		
	Voltage	Encoder and design		Rated torque		Capacity	Sigma-II	XtraDrive
	400 V	Incremental encoder (17 bit) Straight shaft with key	Without brake	1.59 Nm	1.0 kW	SGMUH-10DCA61-OY	SGDH-10DE-OY	XD-10-TN
				2.45 Nm	1.5 kW	SGMUH-15DCA61-OY	SGDH-15DE-OY	XD-15-TN
				4.9 Nm	3.0 kW	SGMUH-30DCA61OY	SGDH-30DE-OY	XD-30-TN
				6.3 Nm	4.0 kW	SGMUH-40DCA61-OY	SGDH-50DE-OY	XD-50-TN
			With brake	1.59 Nm	1.0 kW	SGMUH-10DCA6C-OY	SGDH-10DE-OY	XD-10-TN
				2.45 Nm	1.5 kW	SGMUH-15DCA6C-OY	SGDH-15DE-OY	XD-15-TN
				4.9 Nm	3.0 kW	SGMUH-30DCA6C-OY	SGDH-30DE-OY	XD-30-TN
				6.3 Nm	4.0 kW	SGMUH-40DCA6C-OY	SGDH-50DE-OY	XD-50-TN

SGMBH - servo motors 1500 r/min (22 - 55 kW)

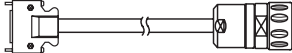
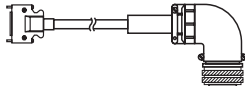
Symbol	Specifications				Servo motor model	Compatible drives ②	
	Voltage	Encoder and design		Rated torque	Capacity	Sigma-II	
① 	400 V	Incremental encoder (17 bit) Straight shaft with key & tap	Without brake Flange mount	140 Nm	22 kW	SGMBH-2BDCA61	SGDH-2BDE
				191 Nm	30 kW	SGMBH-3ZDCA61	SGDH-3ZDE
				236 Nm	37 kW	SGMBH-3GDCA61	SGDH-3GDE
				286 Nm	45 kW	SGMBH-4EDCA61	SGDH-4EDE
			Without brake Foot mount	236 Nm	37 kW	SGMBH-3GDCAL1	SGDH-3GDE
				286 Nm	45 kW	SGMBH-4EDCAL1	SGDH-4EDE
				350 Nm	55 kW	SGMBH-5EDCAL1	SGDH-5EDE
			With brake Flange mount	140 Nm	22 kW	SGMBH-2BDCA6C	SGDH-2BDE
				191 Nm	30 kW	SGMBH-3ZDCA6C	SGDH-3ZDE
			With brake Foot mount	236 Nm	37 kW	SGMBH-3GDCA6C	SGDH-3GDE
				286 Nm	45 kW	SGMBH-4EDCA6C	SGDH-4EDE
		Absolute encoder (17 bit) Straight shaft with key & tap	Without brake Flange mount	140 Nm	22 kW	SGMBH-2BD2A61	SGDH-2BDE
				191 Nm	30 kW	SGMBH-3ZD2A61	SGDH-3ZDE
				236 Nm	37 kW	SGMBH-3GD2A61	SGDH-3GDE
				286 Nm	45 kW	SGMBH-4ED2A61	SGDH-4EDE
			Without brake Foot mount	236 Nm	37 kW	SGMBH-3GD2AL1	SGDH-3GDE
				286 Nm	45 kW	SGMBH-4ED2AL1	SGDH-4EDE
				350 Nm	55 kW	SGMBH-5ED2AL1	SGDH-5EDE
			With brake Flange mount	140 Nm	22 kW	SGMBH-2BD2A6C	SGDH-2BDE
				191 Nm	30 kW	SGMBH-3ZD2A6C	SGDH-3ZDE
			With brake Foot mount	236 Nm	37 kW	SGMBH-3GD2ALC	SGDH-3GDE
				286 Nm	45 kW	SGMBH-4ED2ALC	SGDH-4EDE

Encoder Cables

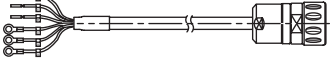
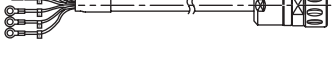
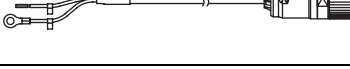
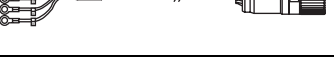
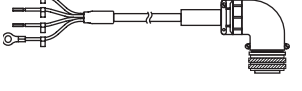
for sigma-II servo drive

Symbol	Specifications	Model	Appearance
③	Sigma-II encoder cable for SGMAH/PH Servo motors SGMAH-□□□□□□□□D-OY SGMPH-□□□□□□□□D-OY	3 m	
		5 m	
		10 m	
		15 m	
		20 m	
	Sigma-II encoder cable for SGMGH/SH/UH Servo motors SGMGH-□ SGMSH-□ SGMUH-□, SGMBH-□	3 m	
		5 m	
		10 m	
		15 m	
		20 m	

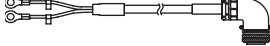
for XtraDrive servo drive

Symbol	Specifications	Model	Appearance
③	XtraDrive encoder cable for Sigma-II (SGMAH/PH) Servo motors SGMAH-□□□□□□□□D-OY SGMPH-□□□□□□□□D-OY	3 m	
		5 m	
		10 m	
		15 m	
		20 m	
	XtraDrive encoder cable for Sigma-II (SGMGH/SH/UH/BH) Servo motors SGMGH-□ SGMSH-□ SGMUH-□	3 m	
		5 m	
		10 m	
		15 m	
		20 m	

Power cables

Symbol	Specifications	Model	Appearance
④	For 200 V servo motors 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 200 V servo motors 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 200 V servo motors 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 200 V servo motors 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 400 V servo motors 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 400 V servo motors 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 400 V servo motors 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 400 V servo motors 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 400 V servo motors 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 400 V servo motors 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 400 V servo motors 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 400 V servo motors 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 (for SGMGH/SH/UH Motors)

Symbol	Specifications	Model	Appearance
⑤	Brake cable only. For 400 V servo motors 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	

Connectors

Specification	Model
Hypertac power connector IP67 (for 200 V motors SGMAH/PH-□□A□□□□D-OY)	SPOC-06K-FSDN169
Hypertac power connector IP67 (for 400 V 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 400 V motors SGMGH-(05/10/13)D□, SGMSH-(10/15/20)D□, SGMUH-(10/15)D□) (for SGMBH-□ fan)	MS3108E18-10S
Military power connector IP67 (for 400 V motors SGMGH-(20/30/44)D□, SGMSH-(30/40/50)D□, SGMUH-(30/40)D□)	MS3108E22-22S
Military power connector IP67 (for 400 V motors SGMGH-(55/75/1A/1E)D□)	MS3108E32-17S
Military brake connector IP67 (for 400 V servo motors SGMGH-□, SGMSH-□, SGMUH-□)	MS3108E10SL-3S
Military encoder connector IP67 (for motors SGMGH-□, SGMSH-□, SGMUH-□, SGMBH-□)	MS3108E20-29S
Spare part, hypertac power connector male (connector included with the motor for 200 V models SGMAH/PH-□□A□□□□D-OY)	SRUC-06J-MSCN236
Spare part, hypertac power connector male (connector included with the motor for 400 V motors SGMAH/PH-□□D□□□□D-OY)	LRRA-06A-MRPN182
Spare part, hypertac encoder connector male (connector included with the motor for motors SGMAH/PH-□□□□□□□D-OY)	SRUC-17G-MRWN087

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

R7M-A□, R7M-AP□

SmartStep servo motors

The smart alternative to stepper motors

- SmartStep motors can be controlled by SmartStep drive and XtraDrive
- Cylindrical and flat servo motor types are available
- Easy to setup, easy to operate. SmartStep is as easy to use as a stepper motor
- Front-panel switches in the SmartStep drive make settings easy and eliminate the need for time-consuming parameter settings
- Extended features and embedded in drive control can be provided using intelligent XtraDrive
- Models with brake available
- Easy to connect to the drive using prebuilt cables

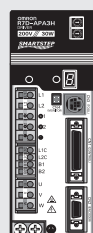
Ratings

- 230 VAC from 30 W to 750 W
(0.095 Nm to 2.39 Nm)



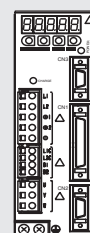
System configuration

(Refer to servo drive chapter)



Servo Drive controlled by pulses

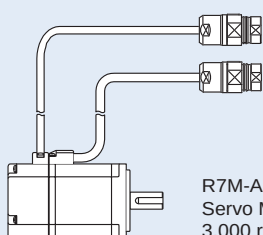
**SmartStep
Servo Drive**



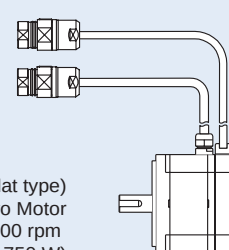
Intelligent
Servo Drive
XtraDrive

Drive options

Power and encoder cables



**R7M-A (cylindrical type)
Servo Motor
3,000 rpm
(30-750 W)**



**R7M-AP (flat type)
Servo Motor
3,000 rpm
(100-750 W)**

Servo motor / servo drive combination

SmarStep servo motor					SmartStep servo drive	XtraDrive servo drive
	Voltage	Rated torque	Capacity	Model	230 V (1-phase)	230 V (1-phase)
 R7M-A (3000 min ⁻¹)	230 V	0.095 Nm	30 W	R7M-A03030-□	R7D-APA3H	XD-P3-MN01
		0.159 Nm	50 W	R7M-A05030-□	R7D-APA5H	XD-P5-MN01
		0.318 Nm	100 W	R7M-A10030-□	R7D-AP01H	XD-01-MN01
		0.637 Nm	200 W	R7M-A20030-□	R7D-AP02H	XD-02-MN01
		1.27 Nm	400 W	R7M-A40030-□	R7D-AP04H	XD-04-MN01
		2.39 Nm	750 W	R7M-A75030-□	R7D-AP08H	XD-08-MN
 R7M-AP (3000 min ⁻¹)	230 V	0.318 Nm	100 W	R7M-AP10030-□	R7D-AP01H	XD-01-MN01
		0.637 Nm	200 W	R7M-AP20030-□	R7D-AP02H	XD-02-MN01
		1.27 Nm	400 W	R7M-AP40030-□	R7D-AP04H	XD-04-MN01
		2.39 Nm	750 W	R7M-AP75030-□	R7D-AP08H	XD-08-MN

Note: 1. For servo motor and cable part numbers, refer to ordering information at the end of this chapter.
2. Refer to the servo drive chapter for drive options selection and detailed specifications.

Servo motor 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 VDC)
Dielectric strength	Between power line terminals and FG: 1,500 VAC 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 servo motors
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 servo motors

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
	With brake	0.9 kg	1.9 kg	2.6 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
	Excitation voltage	24 VDC ±10%		
	Power consumption (at 20 °C)	7.5 W	7.6 W	8.2 W
	Current consumption (at 20 °C)	0.31 A	0.32 A	0.34 A
	Static friction torque	0.4 N·m min.	0.9 N·m min.	1.9 N·m min.
	Attraction time	60 ms max.	40 ms max.	60 ms max.
	Release time	20 ms max.	20 ms max.	20 ms max.
	Backlash	1°	1°	1°
	Rating	Continuous	Continuous	Continuous
	Insulation grade	Type F	Type F	Type F
Applicable servo driver (R7D-)	AP01H	AP02H	AP04H	AP08H

Cylindrical servo motors

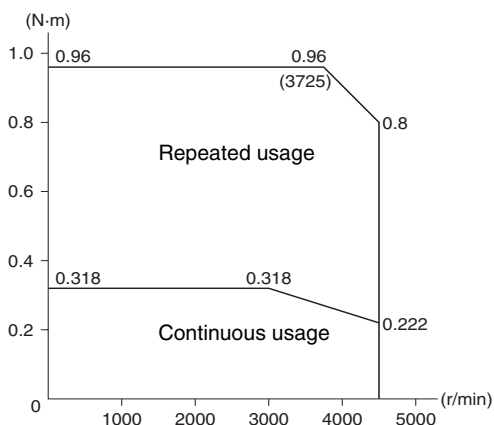
Item		R7M-A03030-□	R7M-A05030-□	R7M-A10030-□	R7M-A20030-□	R7M-A40030-□	R7M-A75030-□
Rated output		30 W	50 W	100 W	200 W	400 W	750 W
Rated torque		0.095 N·m	0.159 N·m	0.318 N·m	0.637 N·m	1.27 N·m	2.39 N·m
Rated rotation speed		3,000 r/min	3,000 r/min	3,000 r/min	3,000 r/min	3,000 r/min	3,000 r/min
Momentary 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 X 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 VDC $\pm$ 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

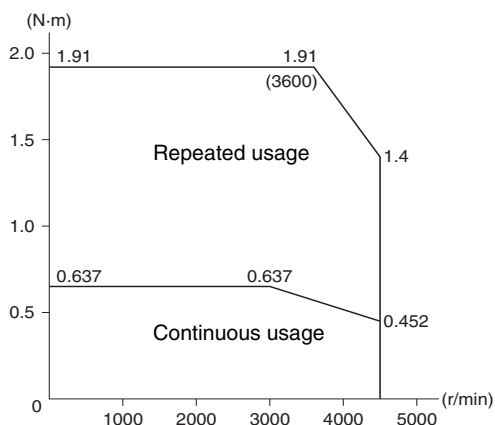
Flat servo motors

The following graphs show the characteristics with a 3 m standard cable and R7D-AP□H servo driver (200 VAC input)

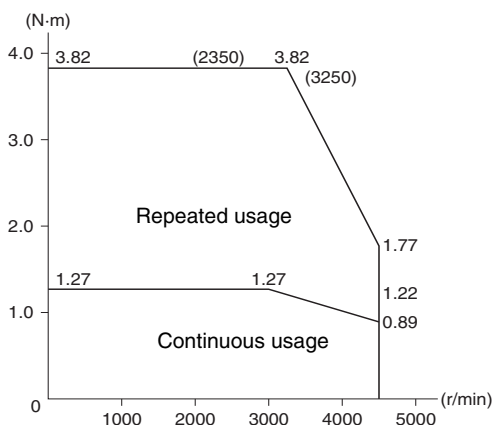
R7M-AP10030 (100 W)



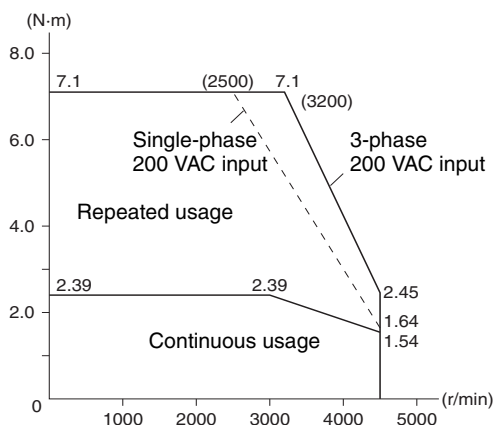
R7M-AP20030 (200 W)



R7M-AP40030 (400 W)



R7M-AP75030 (750 W)

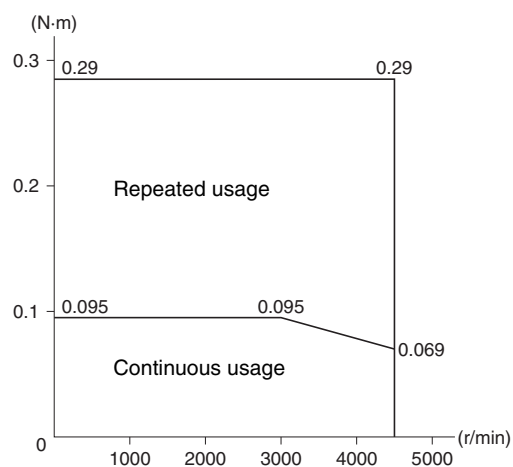


Torque and rotation speed characteristics

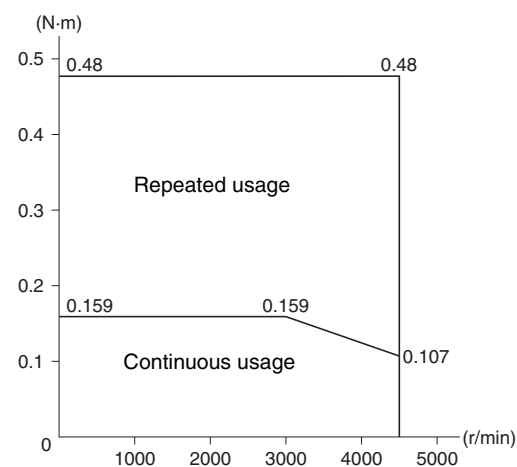
Cylindrical servo motors

The following graphs show the characteristics with a 3 m standard cable and an R7D-AP□H servo driver (200 VAC input.)

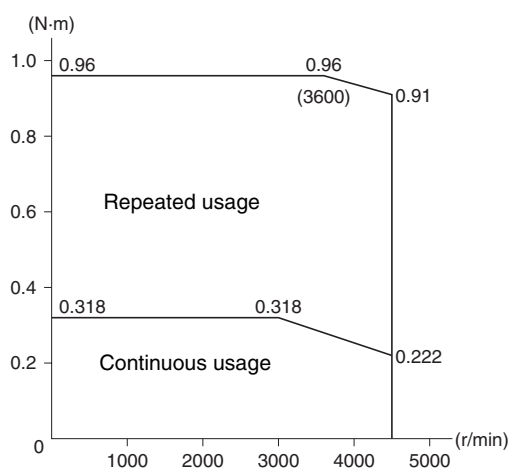
R7M-A03030 (30 W)



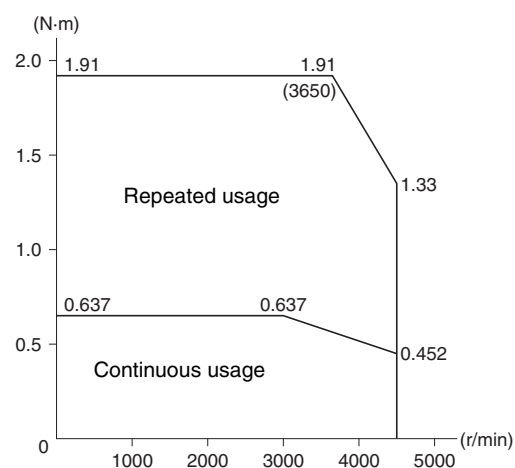
R7M-A05030 (50 W)



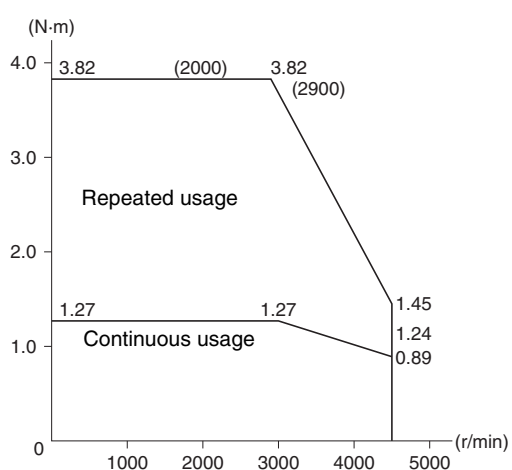
R7M-A10030 (100 W)



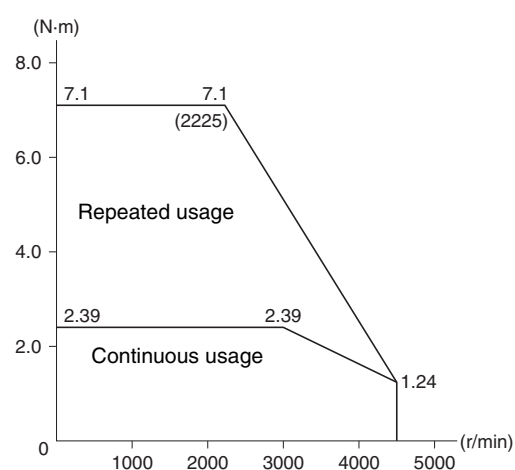
R7M-A20030 (200 W)



R7M-A40030 (400 W)



R7M-A75030 (750 W)



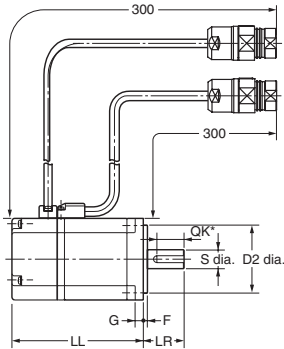
Dimensions

Cylindrical servo motors (3,000 r/min)
200 VAC: 30W/50W/100W/200W/400W/750W

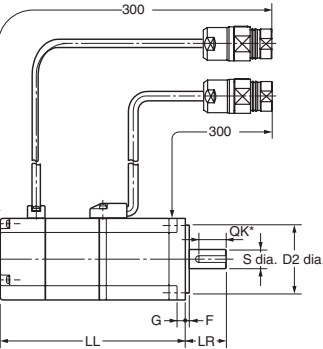
Without brake: R7M-A03030-S1-D/A05030-S1-D/A10030-S1-D/A20030-S1-D/A40030-S1-D/A75030-S1-D
With brake: R7M-A03030-BS1-D/A05030-BS1-D/A10030-BS1-D/A20030-BS1-D/A40030-BS1-D/A75030-BS1-D

Model	Dimensions (mm)		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												
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												
R7M-A75030□	145	189.5	40	80	90	70h7	3	8	Four, 7 dia.	16h6	30			

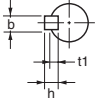
R7M-A□□□30-S1-D (Without brake)



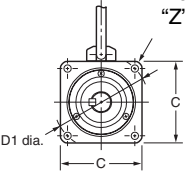
R7M-A□□□30-BS1-D (With brake)



Axis end dimensions



Hole with "Z" mark

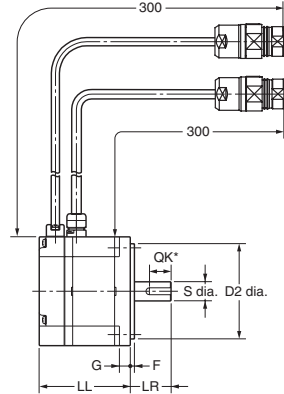


Flat servo motors (3,000 r/min)
200 VAC: 100W/200W/400W/750W

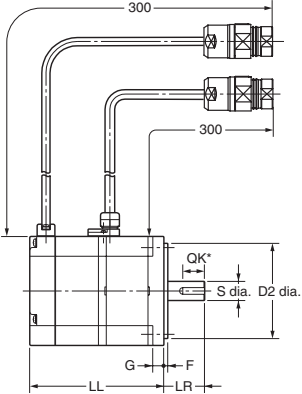
Without brake: R7M-AP10030-S1-D/AP20030-S1-D/AP40030-S1-D/AP75030-S1-D
With brake: R7M-AP10030-BS1-D/AP20030-BS1-D/AP40030-BS1-D/AP75030-BS1-D

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												
R7M-AP75030□	86.5	120	40	120	145	110h7	3.5	10	10	16h6	22			

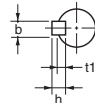
R7M-AP□□□30-S1-D (Without brake)



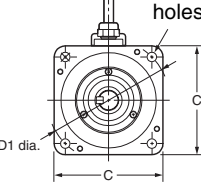
R7M-AP□□□30-BS1-D (With brake)



Axis end dimensions

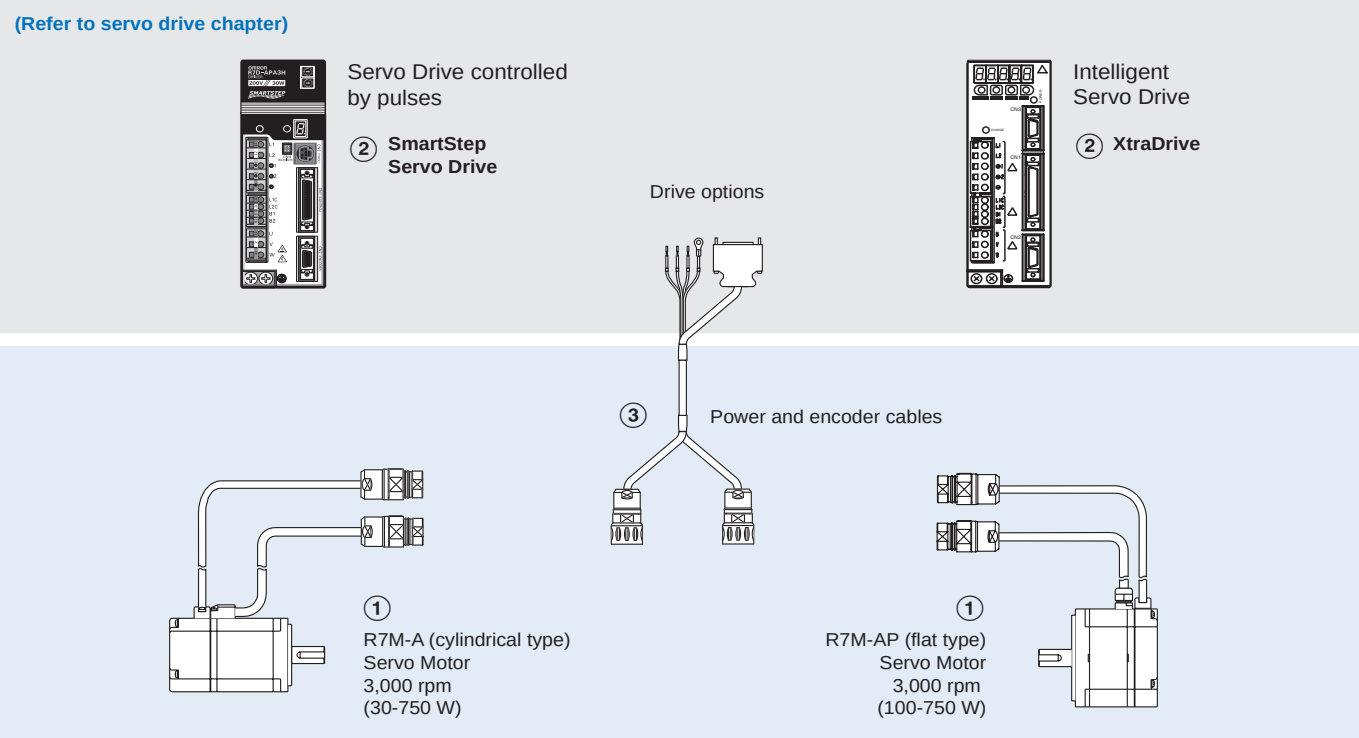


Four, Z-dia. mounting holes



Ordering information

(Refer to servo drive chapter)



Note: The symbols ①②③... show the recommended sequence to select the servo motor and cables.

Servo motor

Cylindrical servo motors (3,000-r/min)

Symbol	Specifications		Rated torque	Capacity	Servo motor model	Compatible servo drives ②	
	Design					SmartStep	XtraDrive
①	Cylindrical servo motors (3,000-r/min) Straight shaft with key	Without brake	0.095 Nm	30 W	R7M-A03030-S1-D	R7D-APA3H	XD-P3-MN01
			0.159 Nm	50 W	R7M-A05030-S1-D	R7D-APA5H	XD-P5-MN01
			0.318 Nm	100 W	R7M-A10030-S1-D	R7D-AP01H	XD-01-MN01
			0.637 Nm	200 W	R7M-A20030-S1-D	R7D-AP02H	XD-02-MN01
			1.27 Nm	400 W	R7M-A40030-S1-D	R7D-AP04H	XD-04-MN01
			2.39 Nm	750 W	R7M-A75030-S1-D	R7D-AP08H	XD-08-MN
		With brake	0.095 Nm	30 W	R7M-A03030-BS1-D	R7D-APA3H	XD-P3-MN01
			0.159 Nm	50 W	R7M-A05030-BS1-D	R7D-APA5H	XD-P5-MN01
			0.318 Nm	100 W	R7M-A10030-BS1-D	R7D-AP01H	XD-01-MN01
			0.637 Nm	200 W	R7M-A20030-BS1-D	R7D-AP02H	XD-02-MN01
			1.27 Nm	400 W	R7M-A40030-BS1-D	R7D-AP04H	XD-04-MN01
			2.39 Nm	750 W	R7M-A75030-BS1-D	R7D-AP08H	XD-08-MN

Flat servo motors (3,000-r/min)

Symbol	Specifications		Rated torque	Capacity	Servo motor model	Compatible servo drives ②	
	Design					SmartStep	XtraDrive
①	Flat servo motors (3,000-r/min) Straight shaft with key	Without brake	0.318 Nm	100 W	R7M-AP10030-S1-D	R7D-AP01H	XD-01-MN01
			0.637 Nm	200 W	R7M-AP20030-S1-D	R7D-AP02H	XD-02-MN01
			1.27 Nm	400 W	R7M-AP40030-S1-D	R7D-AP04H	XD-04-MN01
			2.39 Nm	750 W	R7M-AP75030-S1-D	R7D-AP08H	XD-08-MN
		With brake	0.318 Nm	100 W	R7M-AP10030-BS1-D	R7D-AP01H	XD-01-MN01
			0.637 Nm	200 W	R7M-AP20030-BS1-D	R7D-AP02H	XD-02-MN01
			1.27 Nm	400 W	R7M-AP40030-BS1-D	R7D-AP04H	XD-04-MN01
			2.39 Nm	750 W	R7M-AP75030-BS1-D	R7D-AP08H	XD-08-MN

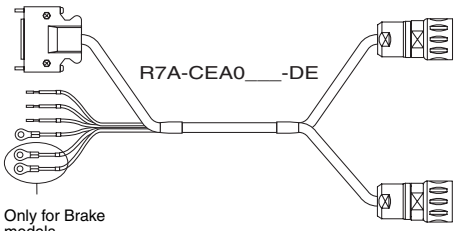
Servo drive

Note: Choosing SmartStep drive or XtraDrive affects to the encoder cable needed.

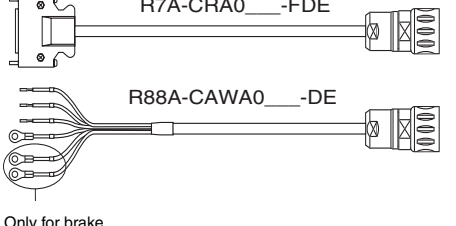
② Refer to SmartStep servo drive or XtraDrive chapter for detailed drive specifications and selection of drive accessories.

Servo motor cables for SmartStep drive

Standard cable (power + encoder)

Symbol	Drive	Specifications	Power cable model	Encoder cable model	Appearance
③	SmartStep	For servo motors 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 servo motors 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 (power + encoder)

Symbol	Drive	Specifications	Power cable model	Encoder cable model	Appearance
③	SmartStep	For servo motors without brake 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 servo motors with brake 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	

Servo motor cables for XtraDrive Drive

Flexible cables (power + encoder)

Symbol	Drive	Specifications	Power cable model	Encoder cable model	Appearance
③	XtraDrive	For servo motors without brake 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 servo motors with brake 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	

Connectors

Specifications	Model
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

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

SGMCS-□

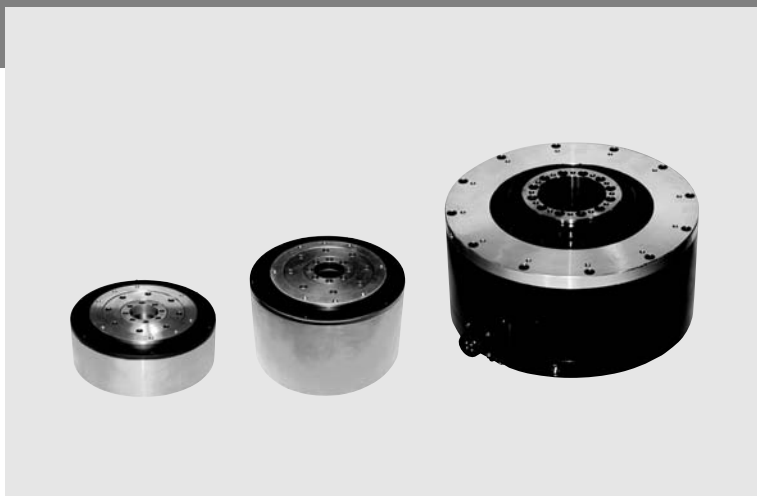
Sigma direct drive motors

High torque motor for direct coupling to load

- High dynamic performance
- Gearless. Reduction of mechanic components
- Improved positioning accuracy
- No maintenance for lubrication
- Backlash free operation
- Automatic motor recognition by servo drive
- Peak torque 300% of nominal during 3 seconds
- Hollow structure construction
- High-precision. Resolution of 1,000,000 points per revolution
- Absolute encoder as standard

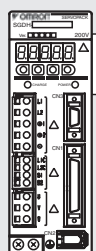
Ratings

- 230 VAC from 42 W to 1260 W
(Rated torque from 2.00 to 80 Nm)

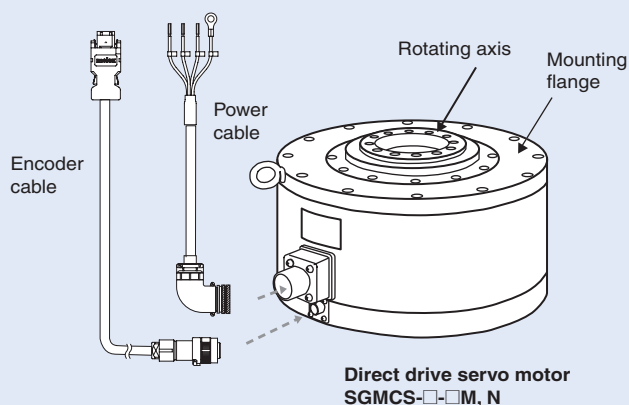
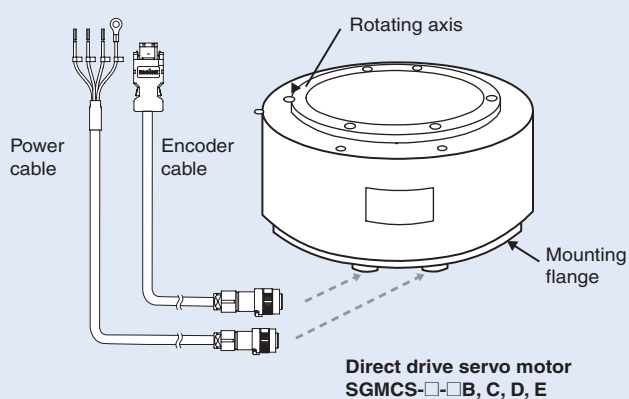


System configuration

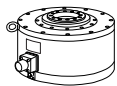
(Refer to Servo Drive chapter)



Sigma-II Servo Drive



Servomotor / servo drive combination

Sigma-II rotary servo motor					Sigma-II servo drive
	Voltage	Rated torque	Capacity	Model	230 V (1-phase)
	230 V	2.00 Nm	42 W	SGMCS-02B□	SGDH-02AE-OY
		5.00 Nm	105 W	SGMCS-05B□	SGDH-02AE-OY
		7.00 Nm	147 W	SGMCS-07B□	SGDH-02AE-OY
		4.00 Nm	84 W	SGMCS-04C□	SGDH-04AE-OY
		10.0 Nm	209 W	SGMCS-10C□	SGDH-04AE-OY
		14.0 Nm	293 W	SGMCS-14C□	SGDH-04AE-OY
		8.00 Nm	168 W	SGMCS-08D□	SGDH-04AE-OY
		17.0 Nm	356 W	SGMCS-17D□	SGDH-04AE-OY
		25.0 Nm	393 W	SGMCS-25D□	SGDH-04AE-OY
		16.0 Nm	335 W	SGMCS-16E□	SGDH-08AE-S-OY
		35.0 Nm	550 W	SGMCS-35E□	SGDH-08AE-S-OY
				45.0 Nm	707 W
80.0 Nm	1260 W			SGMCS-80M□	SGDH-15AE-S-OY
80.0 Nm	1260 W			SGMCS-80N□	SGDH-15AE-S-OY

Type designation

Servo motor

SGMCS—02 B 3 B 1 1

Σ Series SGMCS servo motor

Rated torque (N·m)		Motor outer diameter (mm)					
Code	Specifications	B (φ135)	C (φ175)	D (φ230)	E (φ290)	M (φ280)	N (φ360)
02	2.0	○					
04	4.0		○				
05	5.0	○					
07	7.0	○					
08	8.0			○			
10	10.0		○				
14	14.0		○				
16	16.0				○		
17	17.0			○			
25	25.0			○			
35	35.0				○		
45	45.0					○	
80	80.0					○	○

Brake specifications	
Code	Specifications
1	Without brake

Flange specifications	
Code	Specifications
1	C face

Design revision order	
Code	Specifications
A	45 to 80 N·m
B	2 to 35 N·m

Serial encoder specifications		
Code	Specifications	Remarks
3	20-bit absolute (without multiturn data)	Standard
D	20-bit incremental	Option

Specifications

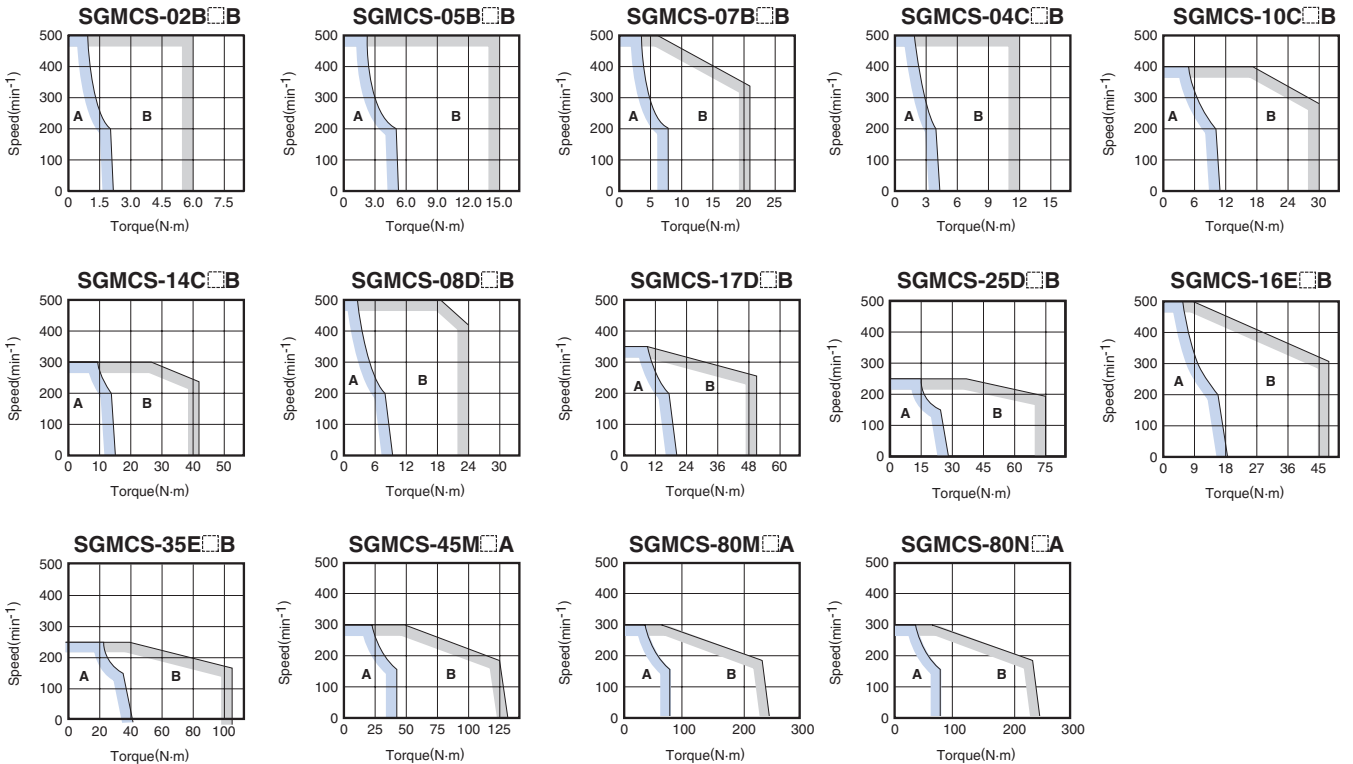
Ratings and specifications

Applied voltage		230 V													
Servomotor model SGMCS- □		02B□□	05B□□	07B□□	04C□□	10C□□	14C□□	08D□□	17D□□	25D□□	16E□□	35E□□	45M□□	80M□□	80N□□
Rated output ^{*1}	W	42	105	147	84	209	293	168	356	393	335	550	707	1260	1260
Rated torque ^{*1, *2}	N·m	2.00	5.00	7.00	4.00	10.0	14.0	8.00	17.0	25.0	16.0	35.0	45	80	80
Instantaneous peak torque ^{*1}	N·m	6.00	15.0	21.0	12.0	30.0	42.0	24.0	51.0	75.0	48.0	105	135	240	240
Stall torque ^{*1}	N·m	2.05	5.15	7.32	4.15	10.4	14.9	8.64	19.2	27.2	17.6	38.3	45	80	80
Rated current ^{*1}	A _{rms}	1.8	1.8	1.4	2.1	2.0	2.0	2.0	2.3	2.7	3.3	3.5	5.80	9.74	9.35
Instantaneous max. current ^{*1}	A _{rms}	5.1	5.1	4.1	6.0	5.8	5.9	5.9	6.6	7.9	9.4	10.0	17	28	28
Rated speed ^{*1}	min ⁻¹	200			200			200			150			150	
Max. speed ^{*1}	min ⁻¹	500			500			400		300		500		350	
Torque constant	N·m/A _{rms}	1.28	3.12	5.51	2.16	5.56	7.60	4.46	8.28	10.3	5.58	11.1	8.39	8.91	9.08
Rotor moment of inertia	kg·m ² ×10 ⁻⁴	25.0	51.0	77.0	77.0	140	220	285	510	750	930	1430	388	627	1360
Rated power rate ^{*1}	KW/s	1.60	4.90	6.36	2.08	7.14	8.91	2.25	5.67	8.33	2.75	8.57	52.2	102	47.1
Rated angular acceleration ^{*1}	rad/s ²	800	980	910	520	710	640	280	330	330	170	240	1160	1280	588
Absolute accuracy	second	±15			±15			±15			±15			±15	
Repeatability	second	±1.3			±1.3			±1.3			±1.3			±1.3	
Aplicable encoder	Standard	Absolute encoder (20 bits)													
	Option	Incremental encoder (20 bits)													
Basic specifications	Time rating	Continuous													
	Thermal class	Class A											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													
		IP42											IP44		
	Mounting	Flange-mounted													

- Note:** 1. The items marked with an *1 and the torque/speed characteristics listed here are representative of the values obtained when the motor is driven from the servo drive and the coil temperature is at 100 °C (20 °C for servo motors SGMCS-45M to 80 N). All others are for a coil temperature of 20 °C.
 2. The values marked with an *2 for rated torques are continuous allowable torque with the following heatsinks at an ambient temperature of 40 °C.
 Heatsink dimensions : 350x350x12 mm : SGMCS-□□B 450x450x12 mm : SGMCS-□□C 550x550x12 mm : SGMCS-□□D
 650x650x12 mm : SGMCS-□□E 750x750x45 mm : SGMCS-□□M/N

Torque-speed characteristics

(A : Continuous duty zone B : Intermittent duty zone)

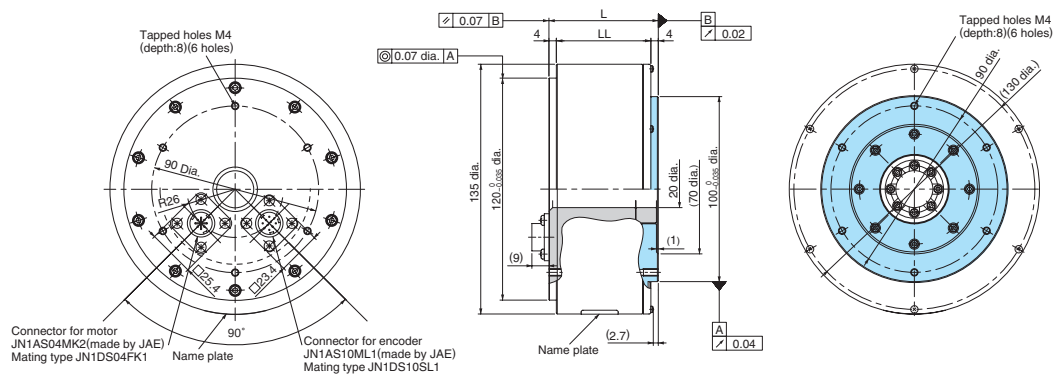


Dimensions

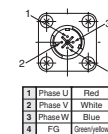
SGMCS-02/05/07B□B11 (Ø135 models)

Model	Dimensions (mm)		Approx. mass (kg)
	L	LL	
SGMCS-02B□B11	59	51	5.0
SGMCS-05B□B11	88	80	6.2
SGMCS-07B□B11	128	120	8.6

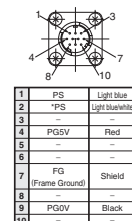
Rotating part: Non rotating part:



Motor connector



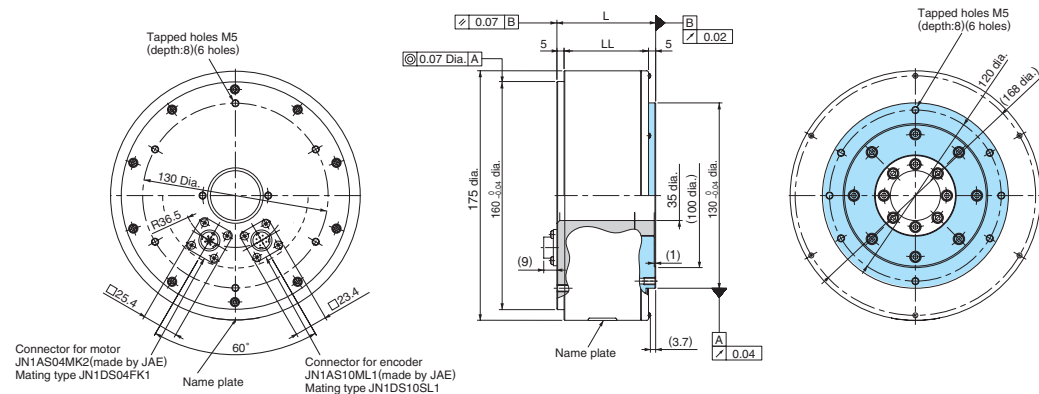
Encoder connector



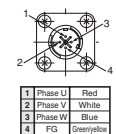
SGMCS-04/10/14C□B11 (Ø175 models)

Model	Dimensions (mm)		Approx. mass (kg)
	L	LL	
SGMCS-04C□B11	69	59	7.2
SGMCS-10C□B11	90	80	10.2
SGMCS-14C□B11	130	120	14.2

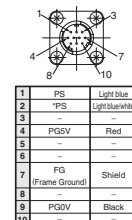
Rotating part: Non rotating part:



Motor connector



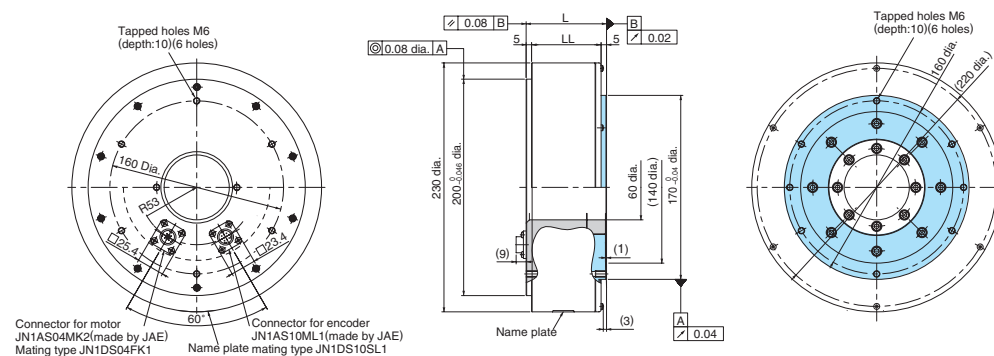
Encoder connector



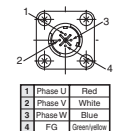
SGMCS-08/17/25D□B11 (Ø230 models)

Model	Dimensions (mm)		Approx. mass (kg)
	L	LL	
SGMCS-08D□B11	74	64	14.0
SGMCS-17D□B11	110	100	22.0
SGMCS-25D□B11	160	150	29.7

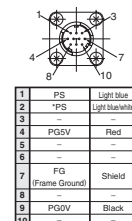
Rotating part: Non rotating part:



Motor connector



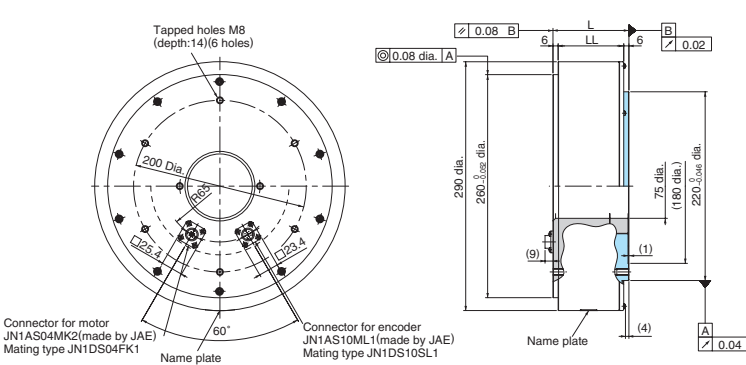
Encoder connector



SGMCS-16/35E□B11 (Ø290 models)

Model	Dimensions (mm)		Approx. mass (kg)
	L	LL	
SGMCS-16E□B11	88	76	26.0
SGMCS-35E□B11	112	100	34.0

Rotating part: Non rotating part:



Motor connector

1	Phase U	Red
2	Phase V	White
3	Phase W	Blue
4	FG	Green/Yellow

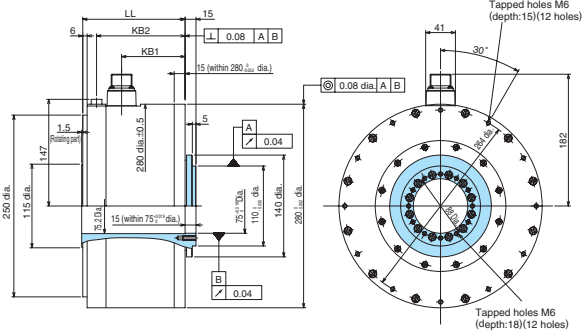
Encoder connector

1	PS	Light Blue
2	*PS	Light Blue/White
3	-	-
4	PGSV	Red
5	-	-
6	-	-
7	FG	Shield
8	-	-
9	PGV	Black
10	-	-

SGMCS-45/80M□A11 (Ø280 models)

Model	Dimensions (mm)			Approx. mass (kg)
	L	KB1	KB2	
SGMCS-45M□A11	141	87.5	122	38
SGMCS-80M□A11	191	137.5	172	45

Rotating part:



Motor connector
Model: CE05-2A18-10PD
(made by DDK Electronics, Inc.)

A	Phase U
B	Phase V
C	Phase W
D	FG (Frame Ground)

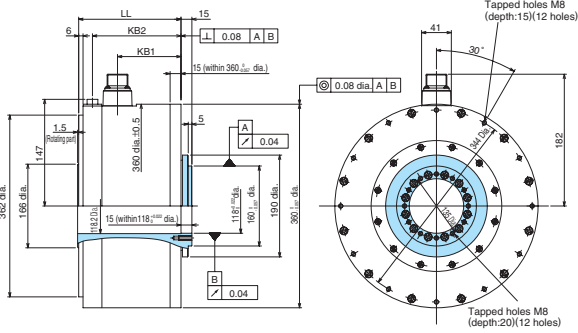
Encoder connector
Model: JN1AS10ML1
(made by Japan Aviation Electronics Industry, Ltd.)

1	PS
2	*PS
3	-
4	PGSV
5	-
6	-
7	FG
8	-
9	PGV
10	-

SGMCS-80N□A11 (Ø360 models)

Model	Dimensions (mm)			Approx. mass (kg)
	L	KB1	KB2	
SGMCS-80N□A11	151	98	132	50

Rotating part:



Motor connector
Model: CE05-2A18-10PD
(made by DDK Electronics, Inc.)

A	Phase U
B	Phase V
C	Phase W
D	FG (Frame Ground)

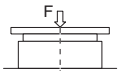
Encoder connector
Model: JN1AS10ML1
(made by Japan Aviation Electronics Industry, Ltd.)

1	PS
2	*PS
3	-
4	PGSV
5	-
6	-
7	FG
8	-
9	PGV
10	-

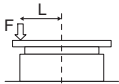
Load capacity

The following figures show the load capacity during motor operation.

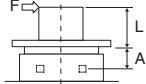
Design motors so as not to exceed the values in the table for thrust and moment loading.



Force: F
Thrust loading: $F_a = F + \text{Load's mass}$
Moment loading: $M = 0$



Force: F
Thrust loading: $F_a = F + \text{Load's mass}$
Moment loading: $M = F \times L$



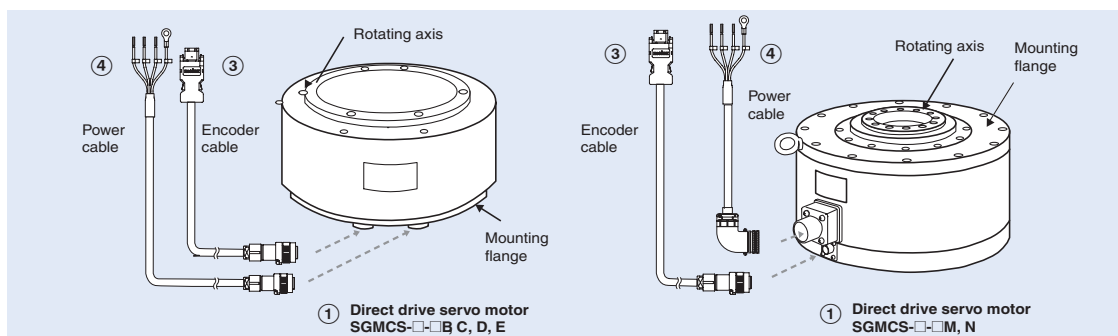
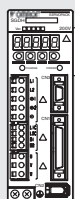
Force: F
Thrust loading: $F_a = \text{Load's mass}$
Moment loading: $M = F \times (L + A)$

Servomotor model SGMCS- □	02B□B	05B□B	07B□B	04C□B	10C□B	14C□B	08D□B	17D□B	25D□B	16E□B	35E□B	45M□A	80M□A	80N□A
Dimension of "A"	mm	0	0	0	0	0	0	0	0	0	0	33	33	37.5
Allowable moment load F_a	N	1500			3300			4000			11000	9000		
Allowable thrust load M	N·m	40	50	64	70	75	90	93	103	135	250	320	180	350

Ordering information

(Refer to Servo Drive chapter)

② Sigma-II Servo Drive



Symbol	Specifications				Servo motor model	Compatible servo drive ②
	Voltage	Encoder and design	Rated torque	Capacity		
①	230 V	Absolute encoder (20 bit)	2.00 Nm	42 W	SGMCS-02B3B11	SGDH-02AE-OY
			5.00 Nm	105 W	SGMCS-05B3B11	SGDH-02AE-OY
			7.00 Nm	147 W	SGMCS-07B3B11	SGDH-02AE-OY
			4.00 Nm	84 W	SGMCS-04C3B11	SGDH-04AE-OY
			10.0 Nm	209 W	SGMCS-10C3B11	SGDH-04AE-OY
			14.0 Nm	293 W	SGMCS-14C3B11	SGDH-04AE-OY
			8.00 Nm	168 W	SGMCS-08D3B11	SGDH-04AE-OY
			17.0 Nm	356 W	SGMCS-17D3B11	SGDH-04AE-OY
			25.0 Nm	393 W	SGMCS-25D3B11	SGDH-04AE-OY
			16.0 Nm	335 W	SGMCS-16E3B11	SGDH-08AE-S-OY
			35.0 Nm	550 W	SGMCS-35E3B11	SGDH-08AE-S-OY
		Incremental encoder (20 bit)	2.00 Nm	42 W	SGMCS-02BDB11	SGDH-02AE-OY
			5.00 Nm	105 W	SGMCS-05BDB11	SGDH-02AE-OY
			7.00 Nm	147 W	SGMCS-07BDB11	SGDH-02AE-OY
			4.00 Nm	84 W	SGMCS-04CDB11	SGDH-04AE-OY
			10.0 Nm	209 W	SGMCS-10CDB11	SGDH-04AE-OY
			14.0 Nm	293 W	SGMCS-14CDB11	SGDH-04AE-OY
			8.00 Nm	168 W	SGMCS-08DDB11	SGDH-04AE-OY
			17.0 Nm	356 W	SGMCS-17DDB11	SGDH-04AE-OY
			25.0 Nm	393 W	SGMCS-25DDB11	SGDH-04AE-OY
			16.0 Nm	335 W	SGMCS-16EDB11	SGDH-08AE-S-OY
			35.0 Nm	550 W	SGMCS-35EDB11	SGDH-08AE-S-OY
		Absolute encoder (20 bit)	45.0 Nm	707 W	SGMCS-45M3A11	SGDH-15AE-S-OY
			80.0 Nm	1260 W	SGMCS-80M3A11	SGDH-15AE-S-OY
			80.0 Nm	1260 W	SGMCS-80N3A11	SGDH-15AE-S-OY
		Incremental encoder (20 bit)	45.0 Nm	707 W	SGMCS-45MDA11	SGDH-15AE-S-OY
			80.0 Nm	1260 W	SGMCS-80MDA11	SGDH-15AE-S-OY
			80.0 Nm	1260 W	SGMCS-80NDA11	SGDH-15AE-S-OY

Encoder cables

Symbol	Specifications	Model	Appearance
③	Encoder cable for SGMCS-direct drive servo motors	3 m JZSP-CMP60-03	
		5 m JZSP-CMP60-05	
		10 m JZSP-CMP60-10	
		15 m JZSP-CMP60-15	
		20 m JZSP-CMP60-20	
④	Power cable for servo motors SGMCS-□□B/-□□C/-□□D/-□□E	3 m JZSP-CMM60-03	
		5 m JZSP-CMM60-05	
		10 m JZSP-CMM60-10	
		15 m JZSP-CMM60-15	
		20 m JZSP-CMM60-20	
	Power cable for servo motors SGMCS-□□M/-□□N	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	

Servo drive

② Refer to Sigma-II servo drive chapter for detailed drive specifications and selection of drive accessories.

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□

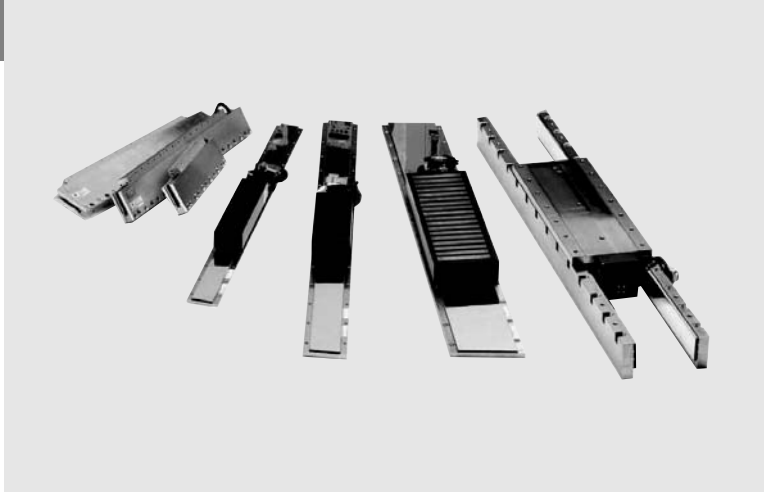
Sigma linear motors

Direct drive linear servo motors 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 peak force regions
- Extremely energy efficient, due to its optimized magnetic circuitry design and high-density windings
- Can reach speeds as high as 5 meters per second.
- Coreless and iron core types available

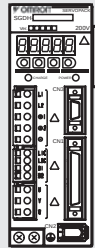
Ratings

- 230 VAC Single-phase 12.5 to 560 N (1200 N Peak)
- 400 VAC Three-phase 80 to 2250 N (7500 N Peak)



System configuration

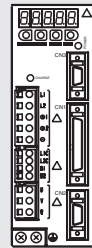
(Refer to servo drive chapter)



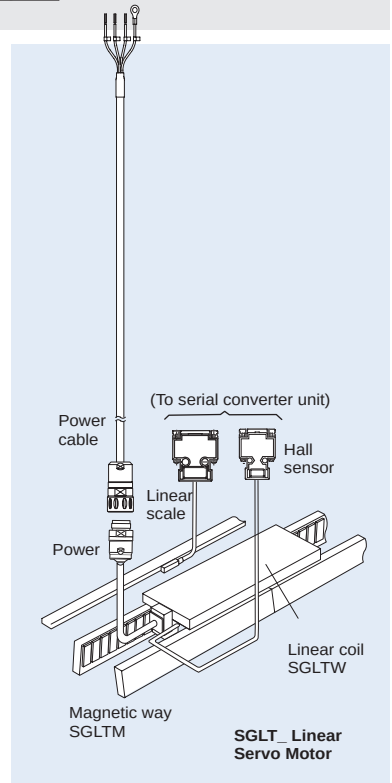
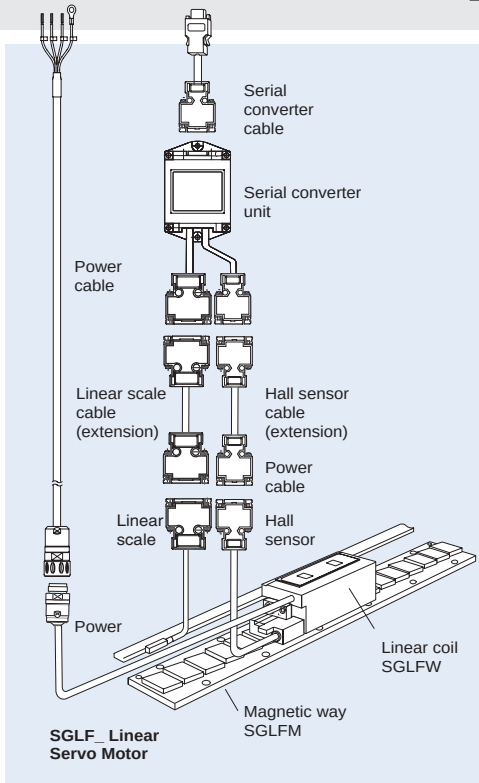
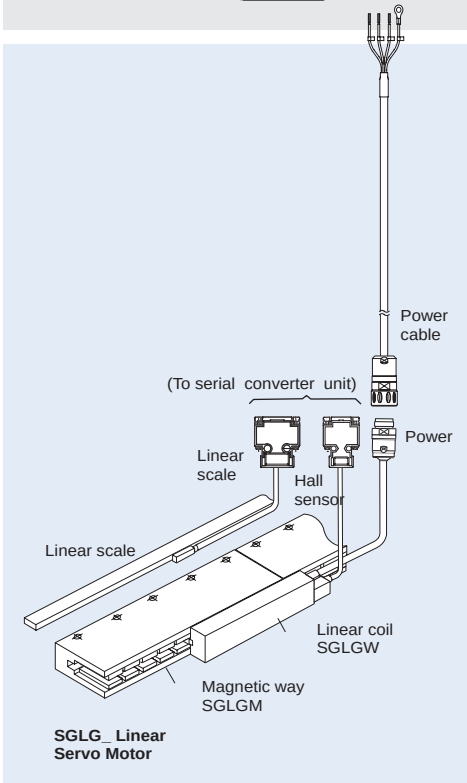
Servo Drive with option boards for flexible system configuration

Sigma-II Servo Drive

Drive options



Intelligent Servo Drive
XtraDrive

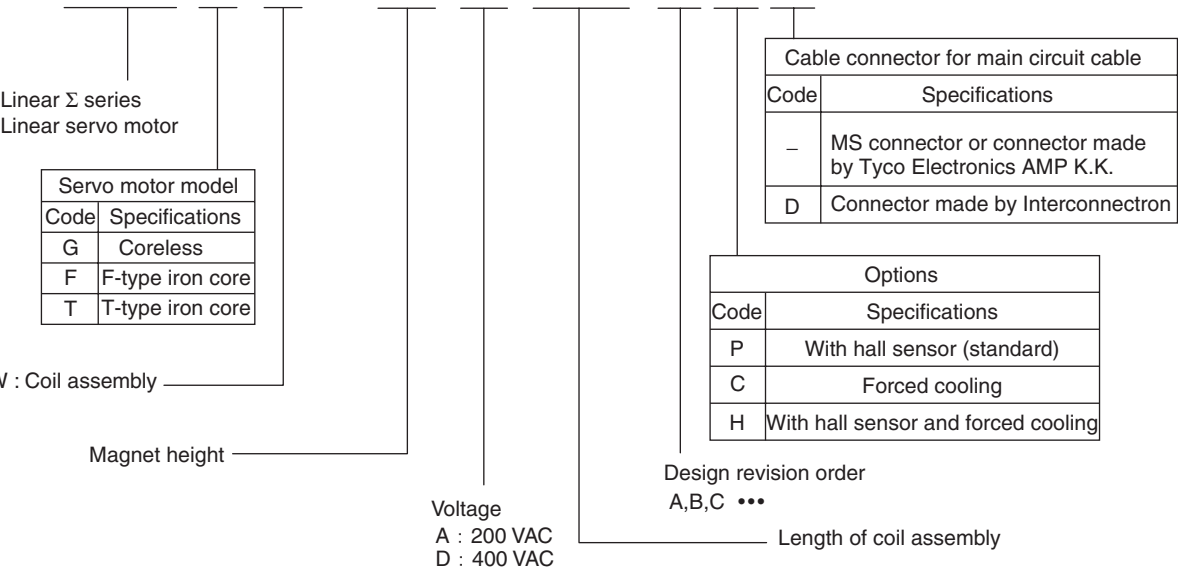


Servo Motor / Servo Drive Combination

Sigma series linear servo motor					Serial converter		Servo drive			
					JZDP-□008-[code]		Sigma-II series		XtraDrive	
Type	Voltage	Rated force	Peak force	Model	code for Rev A, B	code for Rev C	230 V (1-phase)	400 V (3-phase)	230 V (1-phase)	400 V (3-phase)
	230 V	12.5 N	40 N	30A050 [B / C]	158	250	SGDH-A5AE-OY	-	XD-P5-MN01	-
		25 N	80 N	30A080 [B / C]	156	251	SGDH-01AE-OY	-	XD-01-MN01	-
		47 N	140 N	40A140 [B / C]	001	252	SGDH-01AE-OY	-	XD-01-MN01	-
		70 N	220 N	60A140 [B / C]	004	258	SGDH-02AE-OY	-	XD-02-MN01	-
		93 N	280 N	40A253 [B / C]	002	253	SGDH-02AE-OY	-	XD-02-MN01	-
		140 N	420 N	40A365 [B / C]	003	254	SGDH-04AE-OY	-	XD-04-MN01	-
		140 N	440 N	60A253 [B / C]	005	259	SGDH-04AE-OY	-	XD-04-MN01	-
		210 N	660 N	60A365 [B / C]	006	260	SGDH-08AE-S-OY	-	XD-08-MN	-
		325 N	1300 N	90A200 [A / C]	101	264	SGDH-15AE-S-OY	-	XD-15-MN	-
	230 V	57 N	230 N	40A140 [B / C]	059	255	SGDH-02AE-OY	-	XD-02-MN01	-
		114 N	460 N	40A253 [B / C]	060	256	SGDH-04AE-OY	-	XD-04-MN01	-
		171 N	690 N	40A365 [B / C]	061	257	SGDH-08AE-S-OY	-	XD-08-MN	-
		85 N	360 N	60A140 [B / C]	062	261	SGDH-02AE-OY	-	XD-02-MN01	-
		170 N	720 N	60A253 [B / C]	063	262	SGDH-08AE-S-OY	-	XD-08-MN	-
		255 N	1080 N	60A365 [B / C]	047	263	SGDH-15AE-S-OY	-	XD-15-MN	-
Type	Voltage	Rated force	Peak force	Model	code		230 V (1-phase)	400 V (3-phase)	230 V (1-phase)	400 V (3-phase)
	230 V	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	
		560 N	1200 N	50A380B	182		SGDH-15AE-S-OY	-	XD-15-MN	
		560 N	1200 N	1ZA200B	183		SGDH-15AE-S-OY		XD-15-MN	
	400 V	80 N	220 N	35D120A	211		-	SGDH-05DE-OY	-	XD-05-TN
		160 N	440 N	35D230A	212		-	SGDH-05DE-OY	-	XD-05-TN
		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
		1500 N	3600 N	1ED380B	333		-	SGDH-20DE-OY	-	XD-20-TN
	400 V	2250 N	5400 N	1ED560B	334		-	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	-	XD-50-TN
		1300 N	5000 N	80D400B	199		-	SGDH-50DE-OY	-	XD-50-TN
		2000 N	7500 N	80D600B	200		-	SGDH-75DE-OY	-	-

Motor coil

SGL F W - 35 D 120 A P D



Magnetic way

SGL F M – 35 324 A C

Linear Σ series
Linear servo motor

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

M : Magnetic way

Magnet width

Length of magnetic way

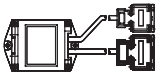
Options		
Code	Specifications	Remarks
C	With magnet cover	For iron-core types - SGLFM - SGLTM
-Y	With base and magnet cover	For SGLTM type
	Mounting type 1	For SGLGM type
-M	Mounting type 1 & high thrust force	
T-	Mounting type 2	
T-M	Mounting type 2 & high thrust force	

Design revision order
A,B,C ...

Serial converter unit

JZDP – D008 – 001

Design revision order
A,B,C ...

Serial converter unit model			
Symbol	Appearance	Applicable linear scale	Hall sensor
A008 D008		Made by Renishaw or (Heidenhain *)	Yes

Note: * When using a linear scale made by Heidenhain an extension cable is required

Applicable linear servo motor							
Servo motor model		Symbol	Model	Symbol	Servo motor model	Symbol	
SGLGW- (coreless)	30A050B	158	30A050C	250	SGLTW- (Iron core, T-type)	20A170A	011
	30A080B	156	30A080C	251		20A320A	012
	40A140B	001	40A140C	252		20A460A	013
	40A253B	002	40A253C	253		35A170A	014
	40A365B	003	40A365C	254		35A320A	015
	60A140B	004	60A140C	258		35A460A	016
	60A253B	005	60A253C	259		35A170H	105
	60A365B	006	60A365C	260		35A320H	106
	90A200A	101	90A200C	264		50A170H	108
	90A370A	102	90A370C	265		50A320H	109
90A535A	103	90A535C	266	40A400B		185	
SGLGW- + SGLGM- -M (coreless)	40A140B	059	40A140C	255		40A600B	186
	40A253B	060	40A253C	256		80A400B	187
	40A365B	061	40A365C	257		80A600B	188
	60A140B	062	60A140C	261		35D170H	193
SGLFW- (Iron core, F-type)	60A253B	063	60A253C	262		35D320H	194
	60A365B	047	60A365C	263		50D170H	195
	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						
1ED380B	333						
1ED560B	334						

Servo motor specifications

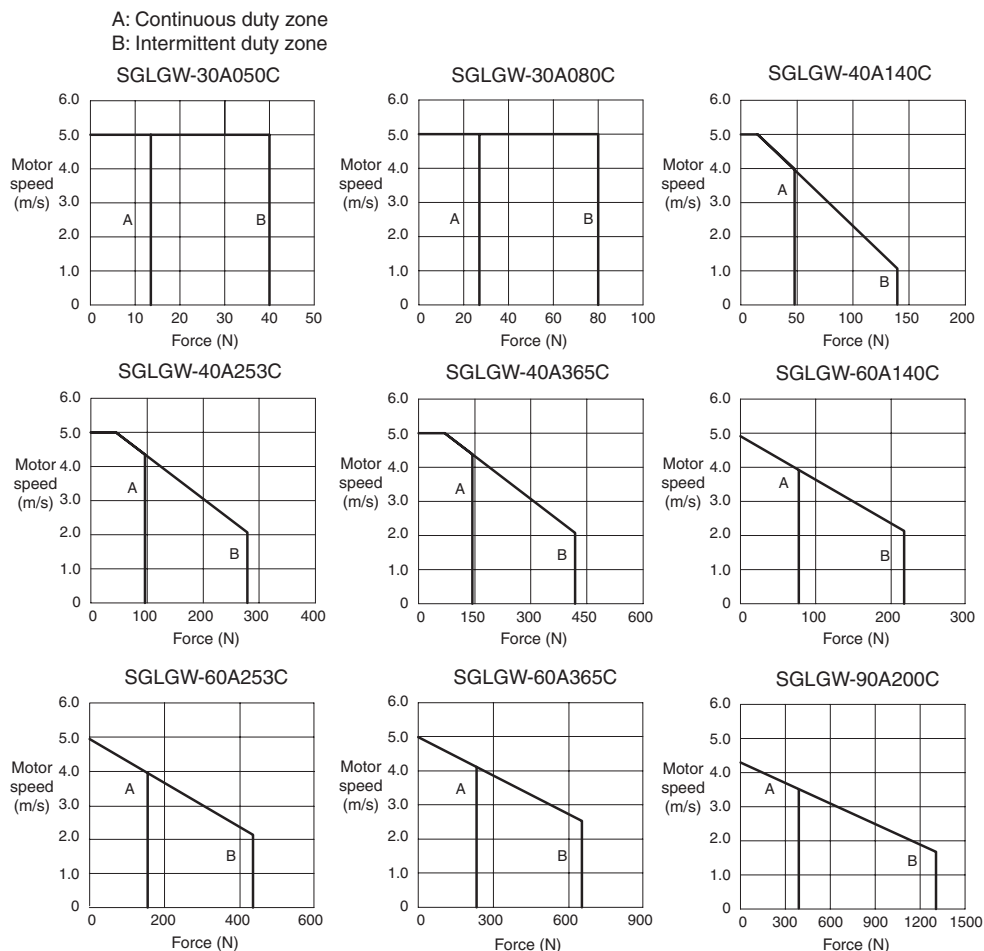
Coreless SGLGW/SGLGM - (with standard-force magnetic ways)

Voltage		230 V								
Linear servo motor model SGLGW-		30A		40A			60A			90A
		050C	080C	140C	253C	365C	140C	253C	365C	200C
Rated force*	N	12.5	25	47	93	140	70	140	210	325
Rated current*	Arms	0,51	0,79	0,8	1,6	2,4	1,16	2,2	3,3	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 weight	kg	0.14	0.19	0.40	0.66	0.93	0.48	0.82	1.16	2.2
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 / $\sqrt{W}$	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	5,19	3,11	1,67	0,87	0,58	1,56	0,77	0,51	0,39
Thermal resistance (without heat sink)	K / W	-	-	3,02	1,80	1,23	2,59	1,48	1,15	1,09
Magnetic attraction	N	0	0	0	0	0	0	0	0	0
Heat 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 M Ω 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 servo drive. 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 standard-force magnetic ways)



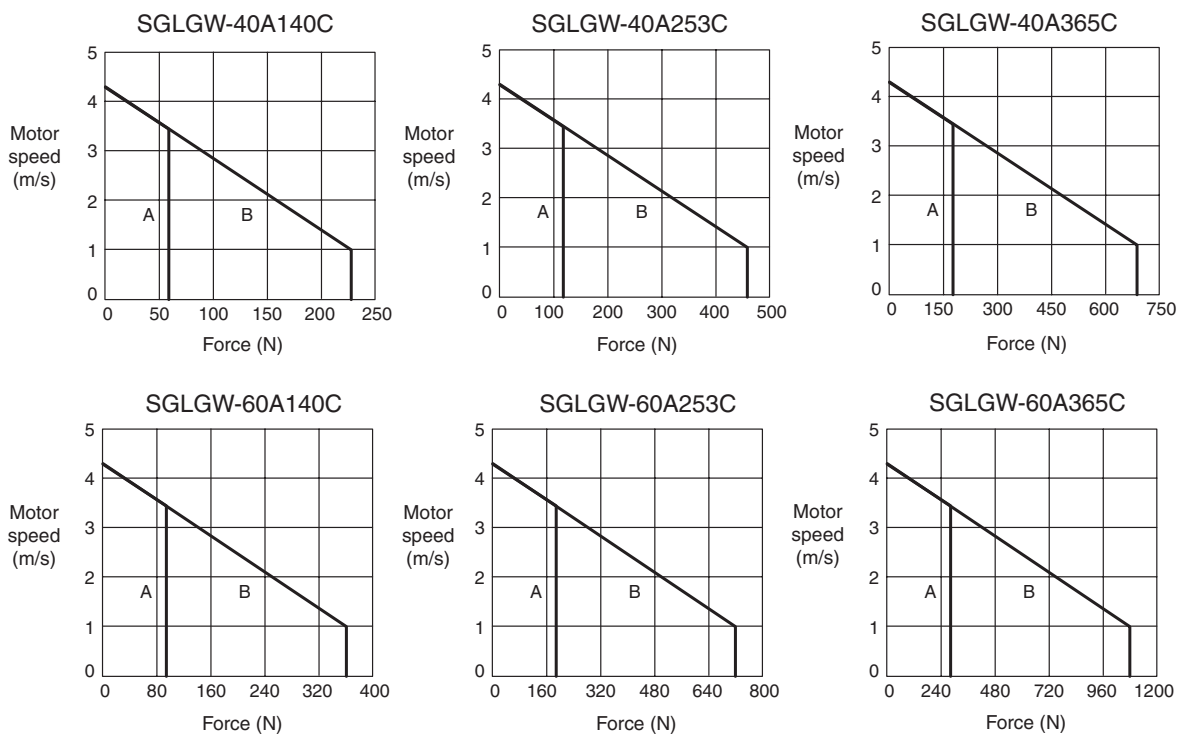
Coreless SGLGW/SGLGM - (with high-force magnetic ways)

Voltage		230 V					
Linear servo motor model SGLGW-		40A			60A		
		140C	253C	365C	140C	253C	365C
Rated force*	N	57	114	171	85	170	255
Rated current*	Arms	0.8	1.6	2.4	1.2	2.2	3.3
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 weight	kg	0.40	0.66	0.93	0.48	0.82	1.16
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	1.67	0.87	0.58	1.56	0.77	0.51
Thermal resistance (without heat sink)	K / W	3.02	1.80	1.23	2.59	1.48	1.15
Magnetic attraction	N	0	0	0	0	0	0
Heat 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 M Ω 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 servo drive. 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 (200 V)

Voltage		230 V						
Linear servo motor 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 weight	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 / √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
Heat 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						

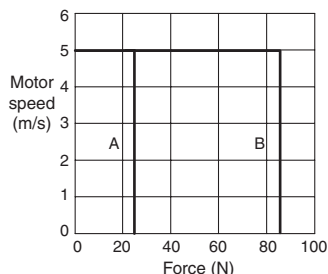
- Note:** 1. The items marked with an * and "force and speed characteristics" are the values at a motor winding temperature of 100 °C during operation in combination with a servo drive. The others are at 20 °C (68°F).
2. The above specifications show the values under the cooling condition when a heat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

Force-speed characteristics (200 V)

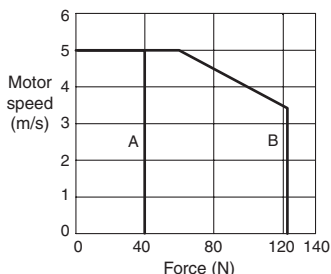
A: Continuous duty zone

B: Intermittent duty zone

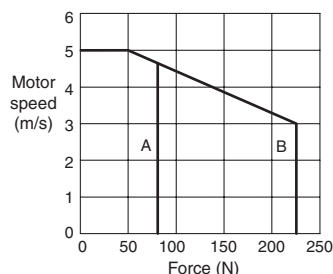
SGLFW-20A090A



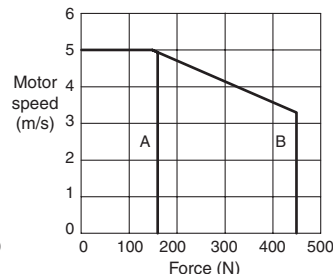
SGLFW-20A120A



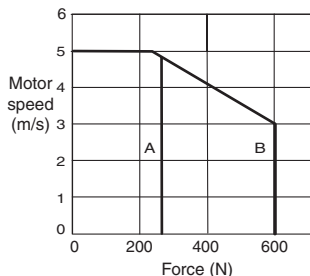
SGLFW-35A120A



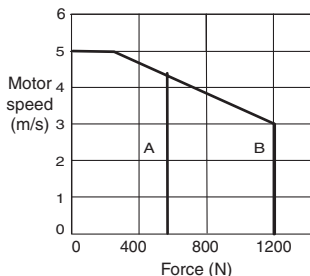
SGLFW-35A230A



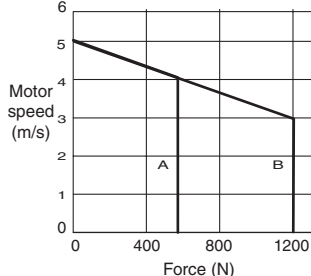
SGLFW-50A200B



SGLFW-50A380B



SGLFW-1ZA200B



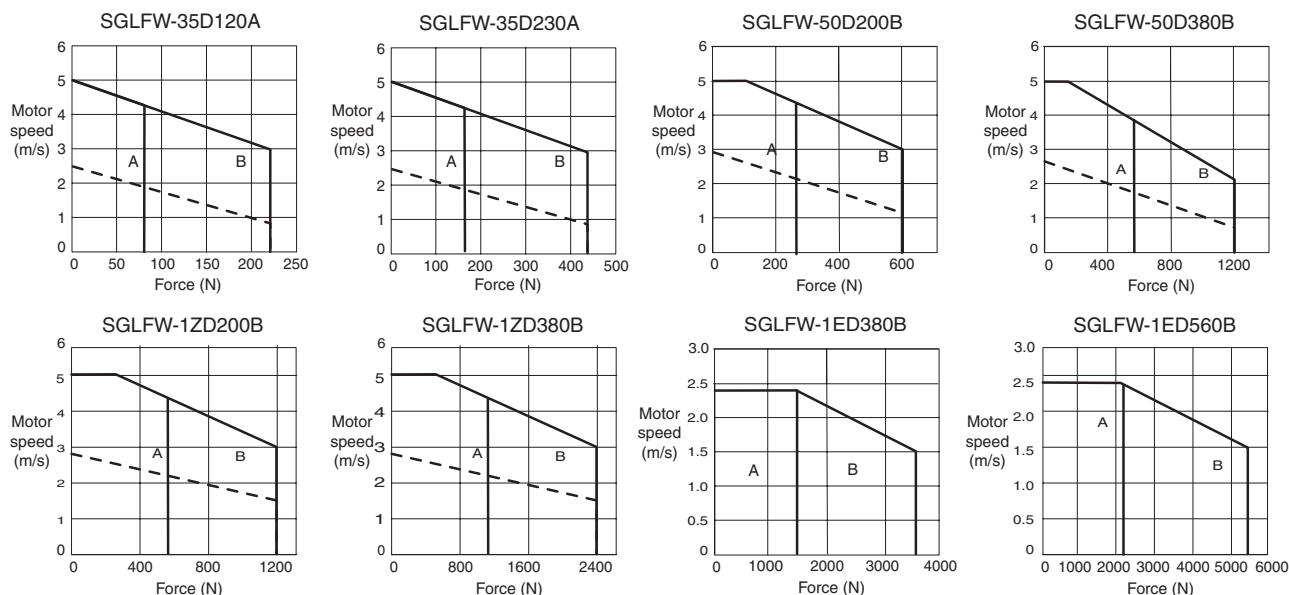
Iron-core SGLFW/SGLFM (400 V)

Voltage		400 V							
Linear servo motor model SGLFW-		35D		50D		1ZD		1ED	
		120A	230A	200B	380B	200B	380B	380B	560B
Rated force*	N	80	160	280	560	560	1120	1500	2250
Rated current*	Arms	0.7	1.4	2.3	4.5	4.9	9.8	6.4	9.6
Instantaneous peak force*	N	220	440	600	1200	1200	2400	3600	5400
Instantaneous peak current*	Arms	2.3	4.6	5.6	11.0	12.3	24.6	18.1	27.2
Coil assembly weight	kg	1.3	2.3	3.5	6.9	6.4	11.5	22	33
Force constant	N / Arms	120.2	120.2	134.7	134.7	122.6	122.6	250	250
BEMF constant	V / (m / s)	40.1	40.1	44.9	44.9	40.9	40.9	83.2	83.2
Motor constant	N / $\sqrt{W}$	13.8	19.5	33.4	47.2	51.0	72.1	95.4	117
Electrical time constant	ms	3.5	3.5	15.0	15.0	17.4	17.2	19.7	19.6
Mechanical time constant	ms	5.5	5.5	3.2	3.2	2.5	2.2	1.8	1.8
Thermal resistance (with heat sink)	K / W	1.57	0.96	0.82	0.32	0.6	0.28	0.21	0.13
Thermal resistance (without heat sink)	K / W	4.1	1.94	1.48	0.74	0.92	0.55	0.50	0.35
Magnetic attraction	N	810	1590	1650	3260	3300	6520	9780	14600
Heat sink size	mm	254 x 254 x 25			400 x 500 x 40	254 x 254 x 25	400 x 500 x 40	609 x 762 x 50	762 x 1270 x 64
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 servo drive. 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 servo motor 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		400 V							
Linear servo motor model SGLTW-		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 weight	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
Heat 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 resulting 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.

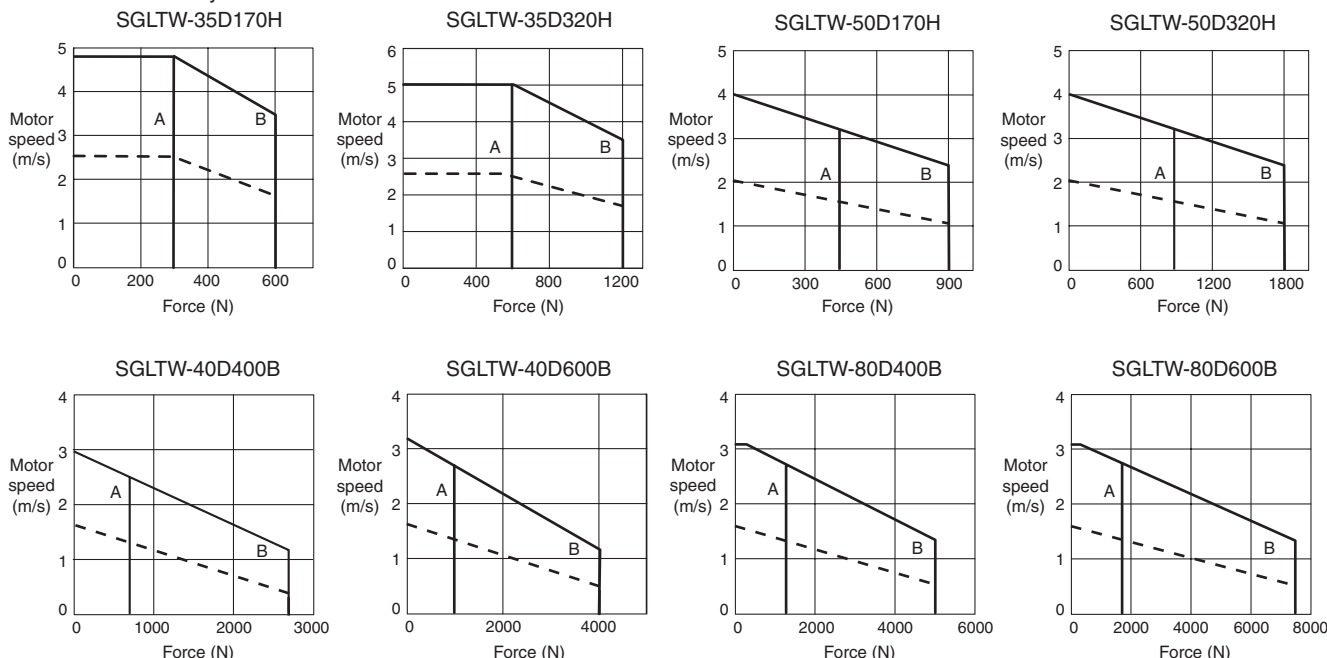
Note: 1. The items marked with an * and "force and speed characteristics" are the values at a motor winding temperature of 100 °C during operation in combination with a servo drive. The others are at 20 °C (68 °F).

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



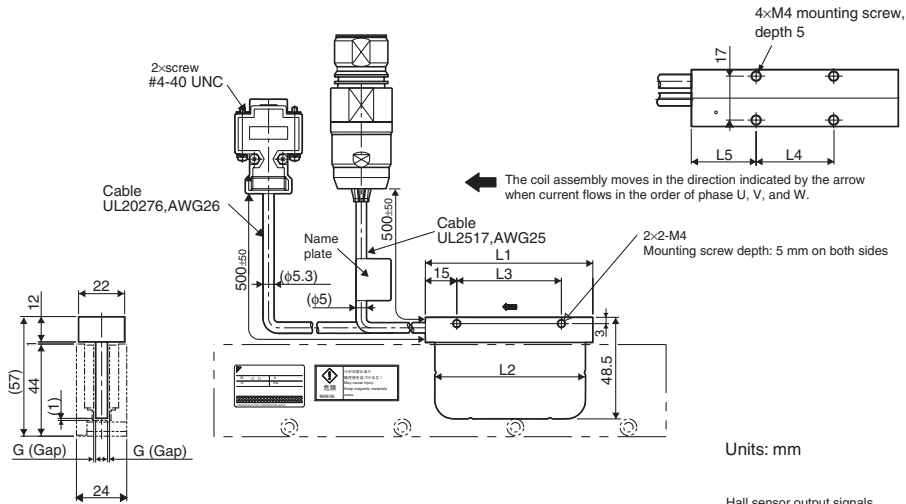
Note: The dotted line indicates characteristics when the linear servo motor for 400 VAC is used with an input power supply for 200 VAC. In this case, the serial converter should be changed. Contact your OMRON Yaskawa representatives.

Dimensions

Coreless SGLG□-30

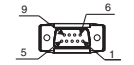
Coil assembly: SGLGW-30A□□□□□D

Coil assembly model SGLGW-	L1	L2	L3	L4	L5	G(Gap)	Approx. weight* kg	
30A050□□D	50	48	30	20	20	0.85	0.14	*The value indicates the weight of coil assembly with a hall sensor unit.
30A080□□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 servo motor
Connector specifications



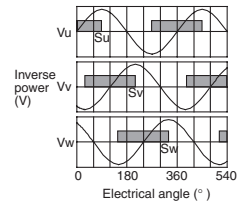
Extension: SPOC06JMSCN169
Pin type: 021.423.1020 made by Interconnectron

The mating connector
Plug type: SPOC06KFSND169

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	—

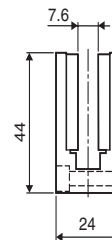
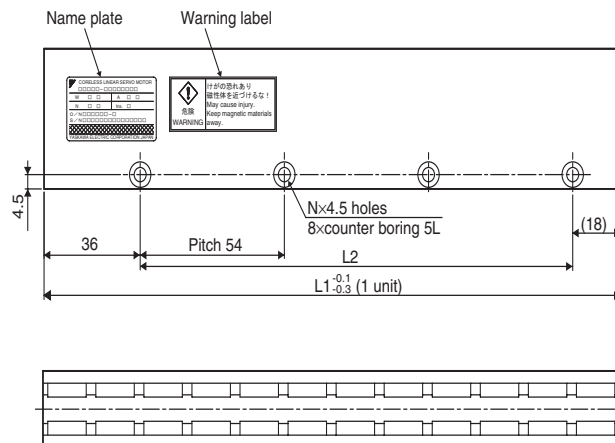
Hall sensor output signals

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. weight kg
30108A	108	54	2	0.6
30216A	216	162	4	1.1
30432A	432	378	8	2.3

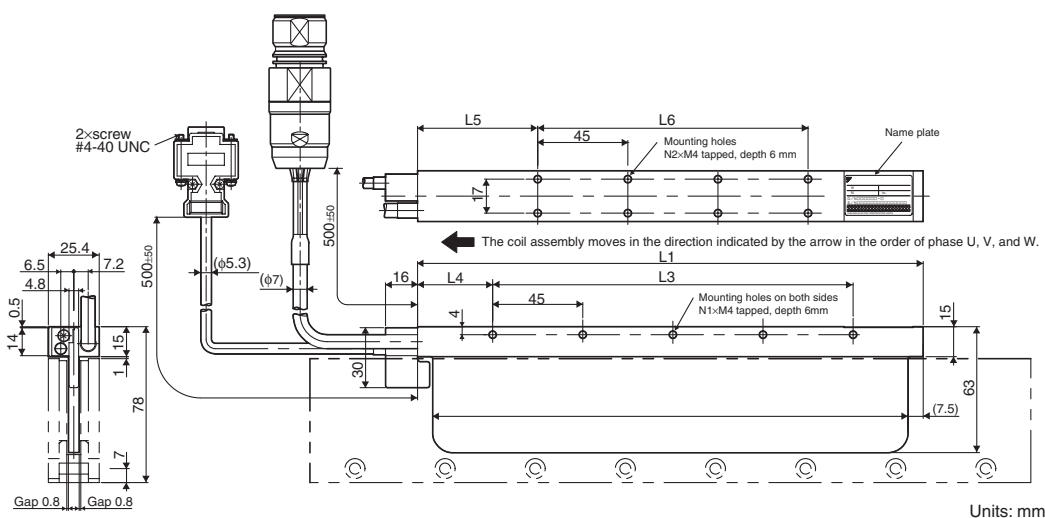


Units: mm

Coreless SGLG□-40

Coil assembly: SGLGW-40A□□□□D

Coil assembly model SGLGW-	L1	L2	L3	L4	L5	L6	N1	N2	Approx. weight* kg	
40A140□□D	140	125	90	30	52.5	45	3	4	0.40	*The value indicates the weight of coil assembly with a hall sensor unit.
40A253□□D	252.5	237.5	180	37.5	60	135	5	8	0.66	
40A365□□D	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
17L-002C

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 servo motor connector specifications



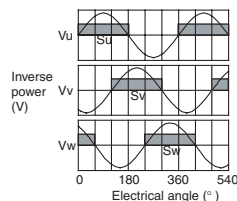
Extension: SROC06JMSCN169
Pin type: 021.423.1020
made by Interconnectron

Plug type: SPOC06KESDN169

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.

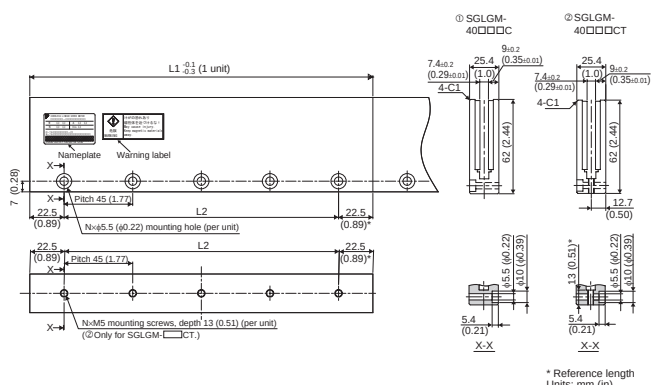


Standard-force magnetic way: SGLGM-40□□□C□

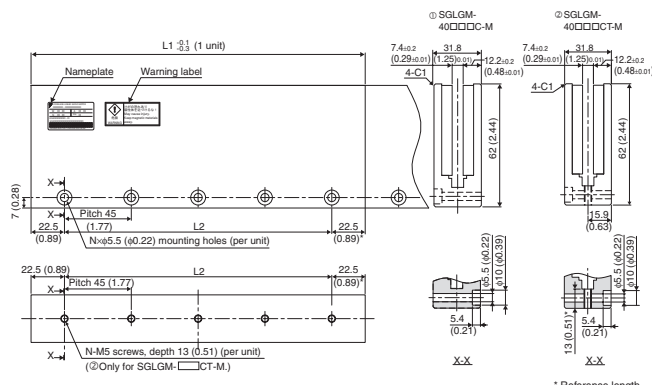
Standard-force magnetic way model SGLGM-		L1 mm	L2 mm	N	Approx. weight kg
Mounting type 1	Mounting type 2				
40090C	40090CT	90	45	2	0.8
40225C	40225CT	225	180	5	2.0
40360C	40360CT	360	315	8	3.1
40405C	40405CT	405	360	9	3.5
40450C	40450CT	450	405	10	3.9

High-force magnetic way: SGLGM-40□□□C□-M

High-force magnetic way model SGLGM-		L1 mm	L2 mm	N	Approx. weight kg
Mounting type 1	Mounting type 2				
40090C-M	40090CT-M	90	45	2	1.0
40225C-M	40225CT-M	225	180	5	2.6
40360C-M	40360CT-M	360	315	8	4.1
40405C-M	40405CT-M	405	360	9	4.6
40450C-M	40450CT-M	450	405	10	5.1



* Reference length
Units: mm (in)



* Reference length
Units: mm (in)

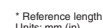
Note: Mounting dimensions of magnets revision B are equivalent to magnets revision C mounting type 2

Coil assembly: SGLGW-60A□□□□□D



*The value indicates the weight of coil assembly with a hall sensor unit.

High-force magnetic way model SGLGM-		L1 mm	L2 mm	N	Approx. weight kg
Mounting type 1	Mounting type 2				
60090C-M	60090CT-M	90	45	2	1.3
60225C-M	60225CT-M	225	180	5	3.3
60360C-M	60360CT-M	360	315	8	5.2
60405C-M	60405CT-M	405	360	9	5.9
60450C-M	60450CT-M	450	405	10	6.6

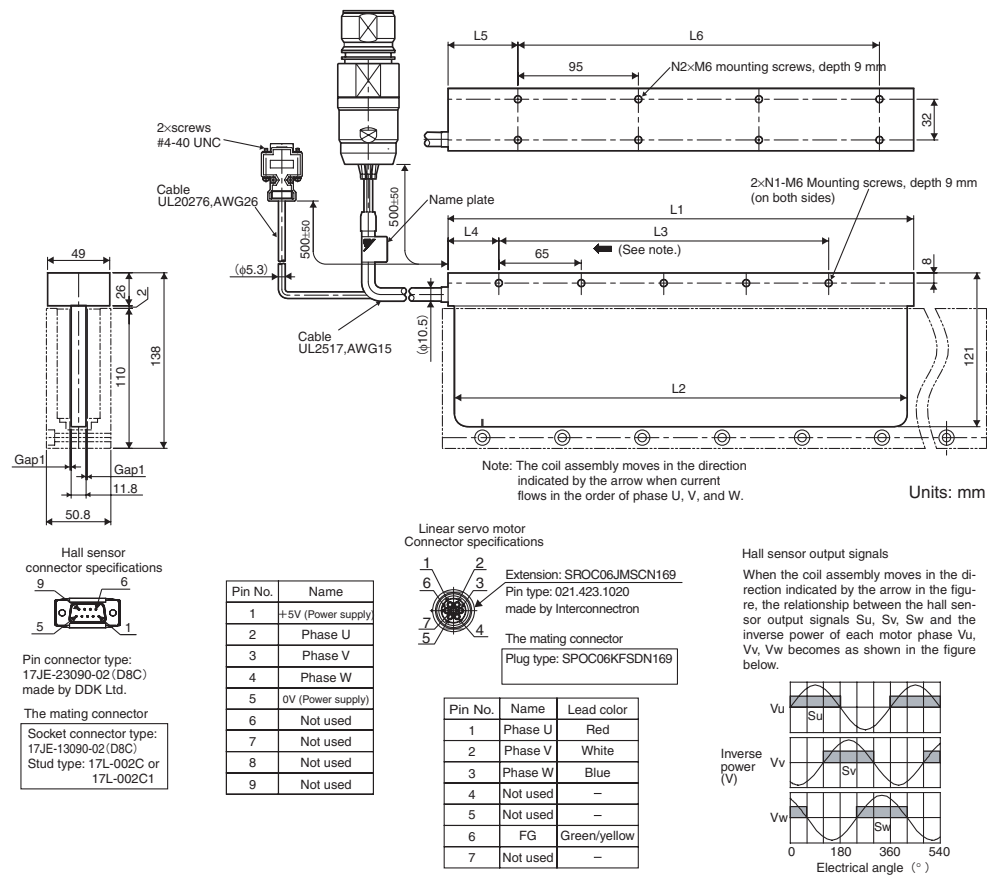


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Coreless SGLG□-90

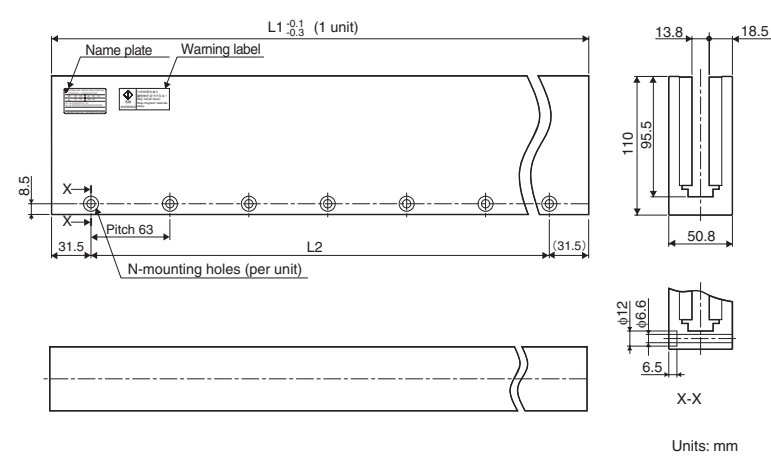
Coil assembly: SGLGW-90A200□□D

Coil assembly model SGLGW-	L1	L2	L3	L4	L5	L6	N1	N2	Approx. weight* kg	
90A200□□D	199	189	130	40	60	95	3	4	2.2	*The value indicates the weight of coil assembly with a hall sensor unit.



Magnetic way: SGLGM-90□□□A

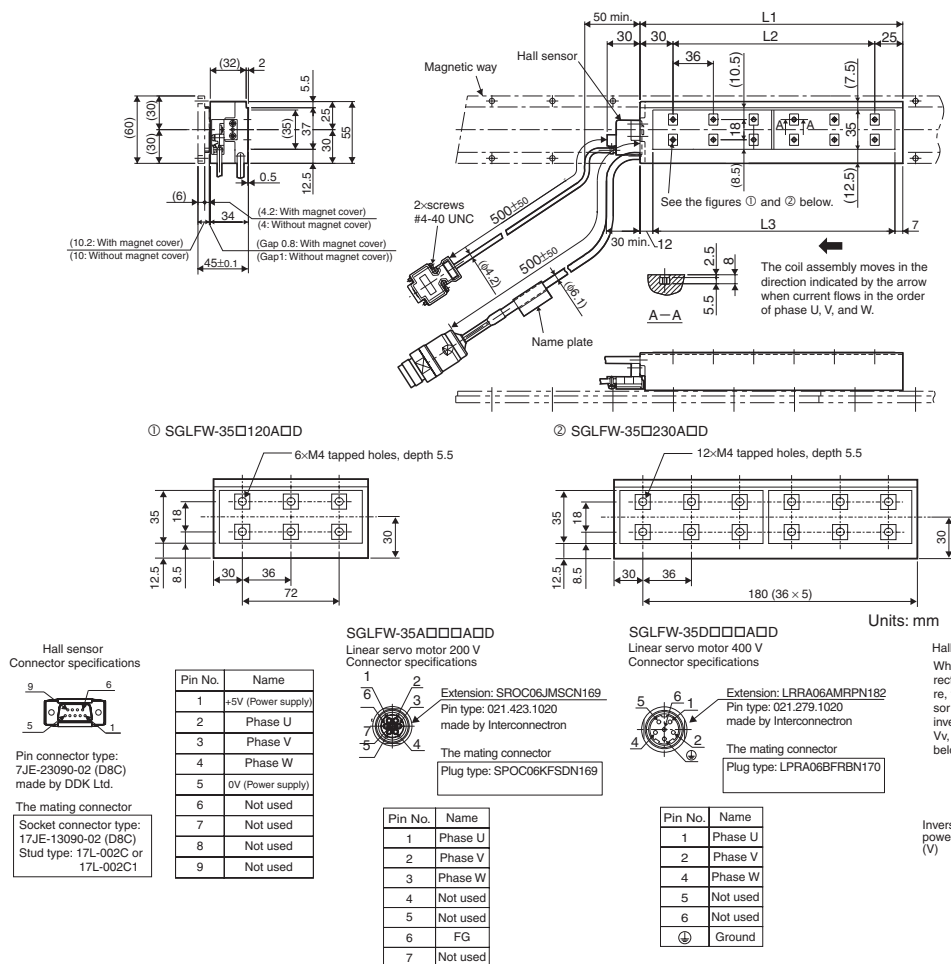
Magnetic way model SGLGM-	L1 mm	L2 mm	N	Approx. weight kg
90252A	252	189	4	7.3
90504A	504	441	8	14.7



Iron-core SGLF□-35

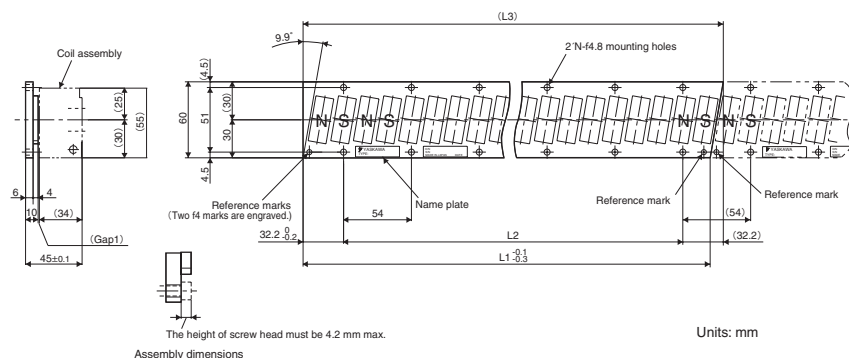
Coil assembly: SGLFW-35**A****D**

Coil assembly model SGLFW-	L1	L2	L3	N	Approx. weight kg
35□120A□D	127	72	108	6	1.3
35□230A□D	235	180	216	12	2.3



Magnetic way: SGLFM-35□□□A□

Magnetic way model SGLFM-	L1 ^{-0.1} -0.3	L2	(L3)	N	Approx. weight kg
35324A□	324	270 (54 × 5)	(334.4)	6	1.2
35540A□	540	486 (54 × 9)	(550.4)	10	2
35756A□	756	702 (54 × 13)	(766.4)	14	2.9

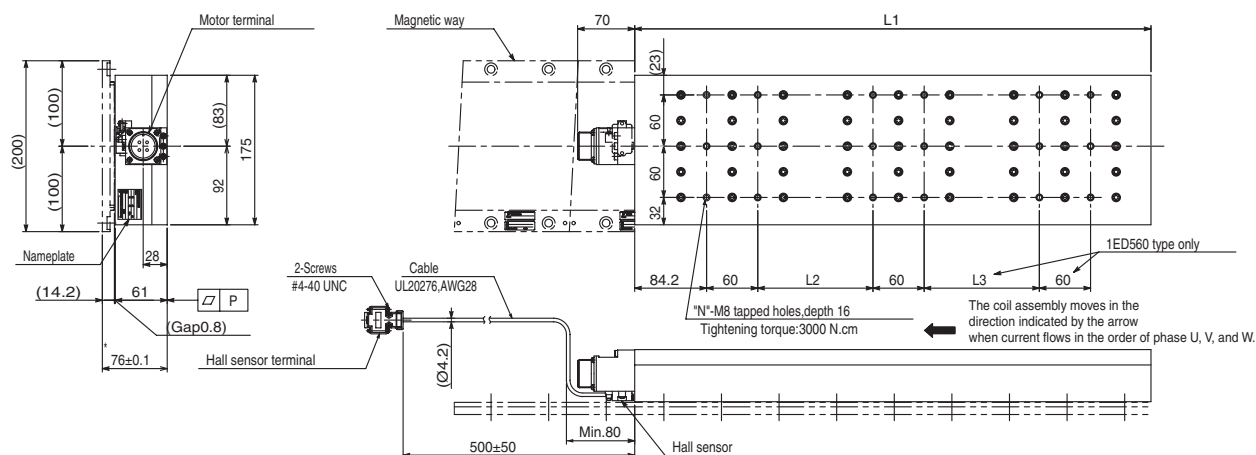


- Note:**
1. Multiple SGLFM-35□□□A magnetic ways can be connected. Connect magnetic ways so that the reference marks match one on the other in the same direction as shown in the figure.
 2. The magnetic way may affect pacemakers. Keep a minimum distance of 200 mm from the magnetic way.

Iron-core SGLF□-1E

Coil assembly: SGLFW-1ED□□□B□

Coil assembly model SGLFW-	L1	L2	L3	N	P	Approx. weight kg
1ED380B□	395	120	-	12	0.3	22
1ED560B□	605	135	135	18	0.5	33



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 servo motor Connector Specifications



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

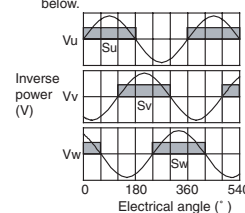
The mating connector

L-shaped plug type: MS3108E22-22S

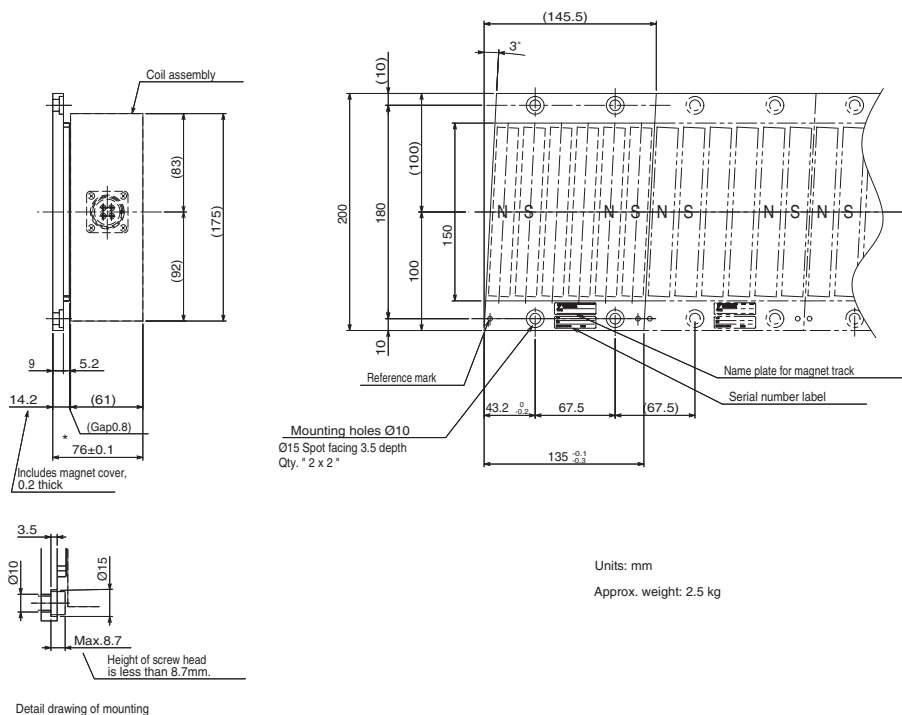
Pin No.	Name
A	Phase U
B	Phase V
C	Phase W
D	Ground

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 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.



Magnetic way: SGLFM-1E135A ☐



Units: mm

Approx. weight: 2.5 kg

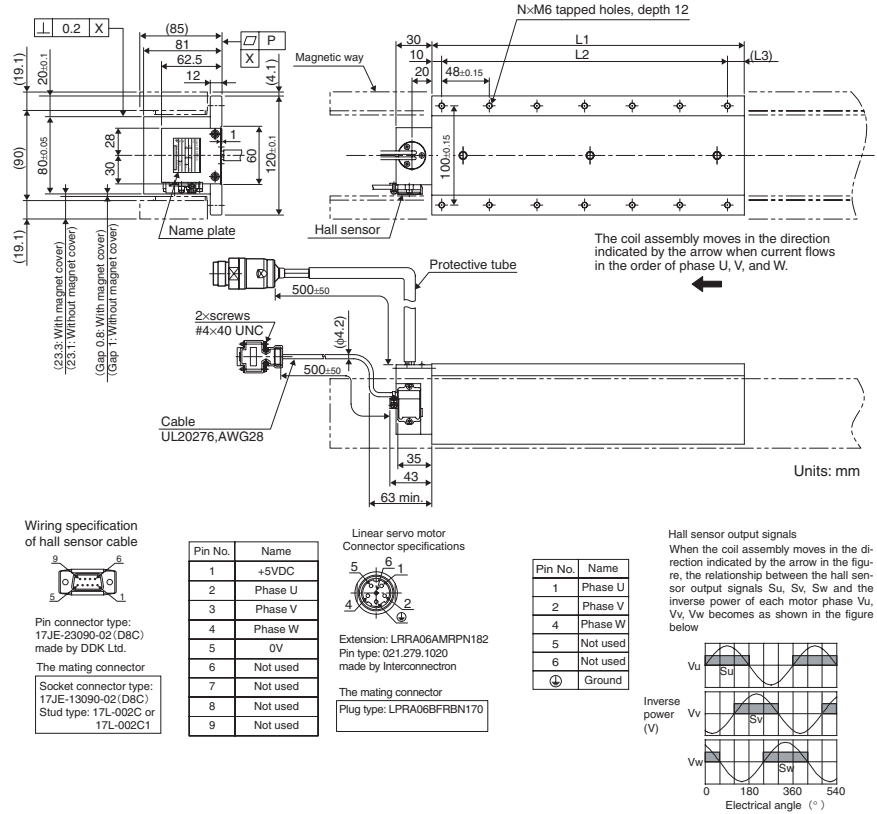
Note: 1. Multiple SGLFM-1E□□□A magnetic ways can be connected. Connect magnetic ways so that the reference marks match one on the other in the same direction as shown in the figure.

2. The magnetic way may affect pacemakers. Keep a minimum distance of 200 mm from the magnetic way

Iron-core SGLT□-50

Coil assembly: SGLTW-50D□□□H□D

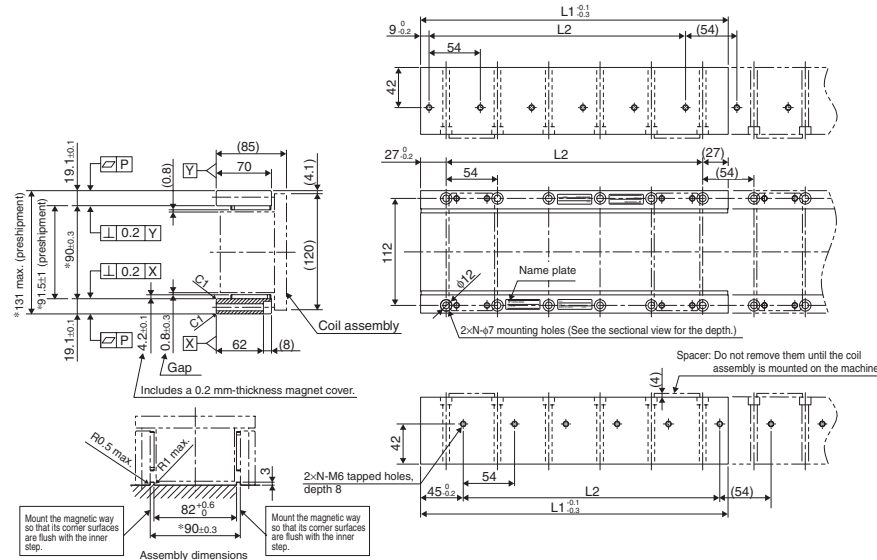
Coil assembly model SGLTW-	L1	L2	(L3)	N	Approx. weight kg
50D170H□D	170	144 (48 × 3)	(16)	8	6
50D320H□D	315	288 (48 × 6)	(17)	14	11



Magnetic way: SGLTM-50□□□H

Magnetic way model SGLTM-	L1 ^{-0.1} / _{-0.3}	L2	N	Approx. weight kg
50324H	324	270 (54 × 5)	6	8
50540H	540	486 (54 × 9)	10	13
50756H	756	702 (54 × 13)	14	18

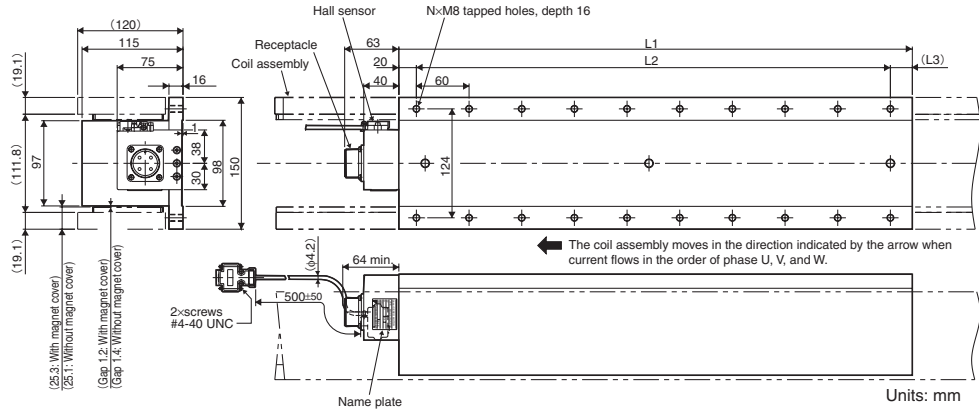
- Note:**
- Two magnetic ways for both ends of coil assembly make one set. Spacers are mounted on magnetic ways for safety during transportation. Do not remove the spacers until the coil assembly is mounted on a machine.
 - The magnetic way may affect pacemakers. Keep a minimum distance of 200 mm from 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.



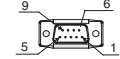
Iron-core SGLT□-80

Coil assembly: SGLTW-80D□□□B□

Coil assembly model SGLTW-	L1	L2	(L3)	N	Approx. weight kg
80D400B□	395	360 (60 × 6)	(15)	14	25
80D600B□	585	540 (60 × 9)	(25)	20	36



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	+5VDC
2	Phase U
3	Phase V
4	Phase W
5	0V
6	Not used
7	Not used
8	Not used
9	Not used

Linear servo motor
Connector specifications



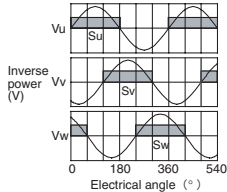
Receptacle type: MS3102A-22-22P
made by DDK Ltd.

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

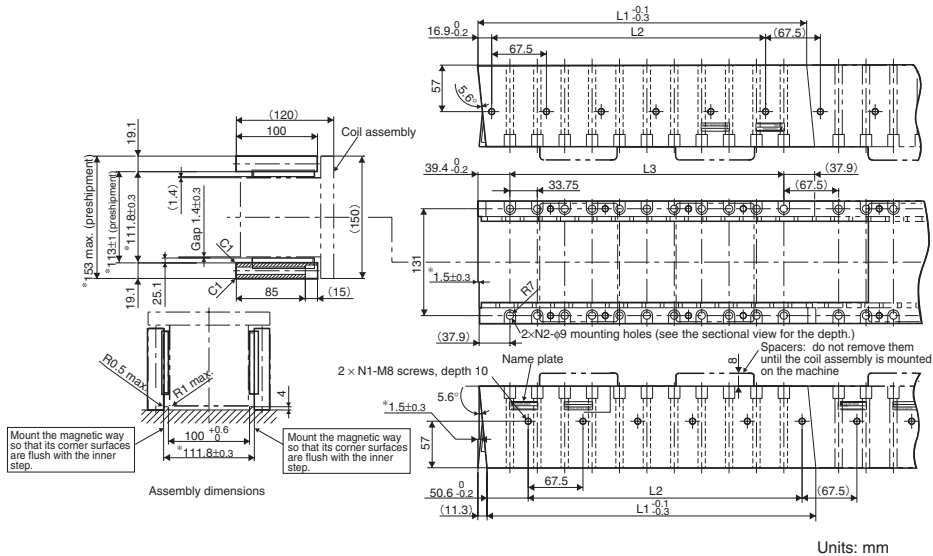
When the coil assembly moves in the direction indicated by the arrow in the figure, the relationship between the hall sensor output signals Su, Sv, Sw and the inverse power of each motor phase Vu, Vv, Vw becomes as shown in the figure below



Magnetic way: SGLTM-80□□□A

Magnetic way model SGLTM-	L1 -0.1 -0.3	L2	L3	N1	N2	Approx. weight 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

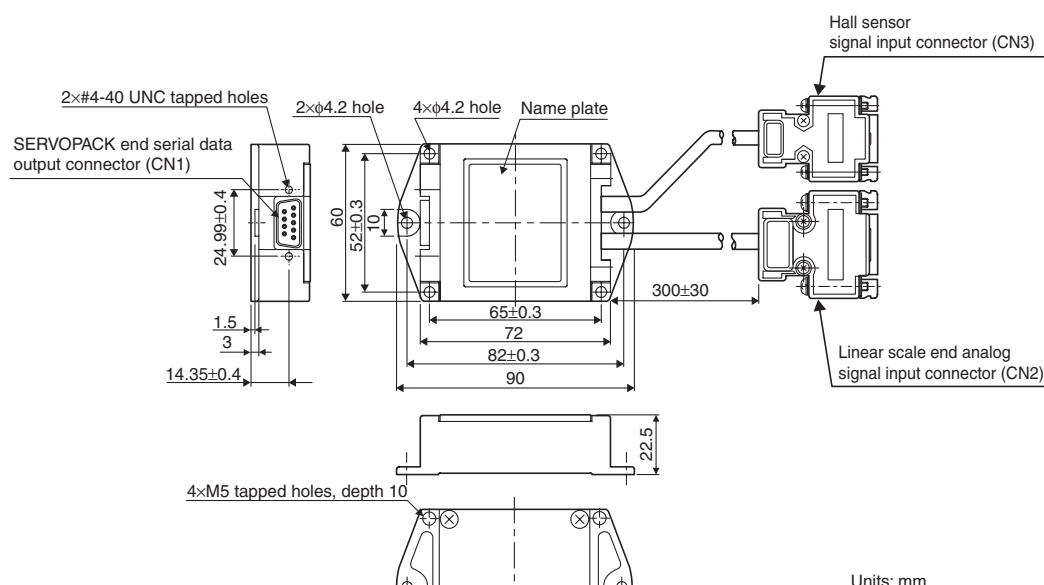
- Note:**
- Two magnetic ways for both ends of coil assembly make one set. Spacers are mounted on magnetic ways for safety during transportation. Do not remove the spacers until the coil assembly is mounted on a machine.
 - The magnetic way may affect pacemakers. Keep a minimum distance of 200 mm from 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.



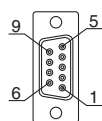
Serial converter unit

JZDP-[A/D]008-□□□

Items	Specifications
Electrical characteristics	Power supply voltage
	+5.0 V $\pm$ 5%, ripple content 5% max.
	Current consumption
	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 1.2 V input signal level: 1.5 V to 3.5 V
	Pole sensor input signal
	CMOS level
	Output signals
	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 μ s
Environmental conditions	Output circuit
	Balanced transceiver (SN75LBC176 or the equivalent) Internal terminal resistance: 120 Ω
	Approx. weight
	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)

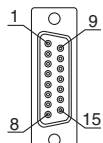


CN1
SERVOPACK end
serial data output



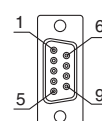
Pin No.	Signal
1	+5V
2	S-phase output
3	Empty
4	Empty
5	0V
6	/S-phase output
7	Empty
8	Empty
9	Empty
Case	Shield

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 shield
Case	Shield

CN3
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

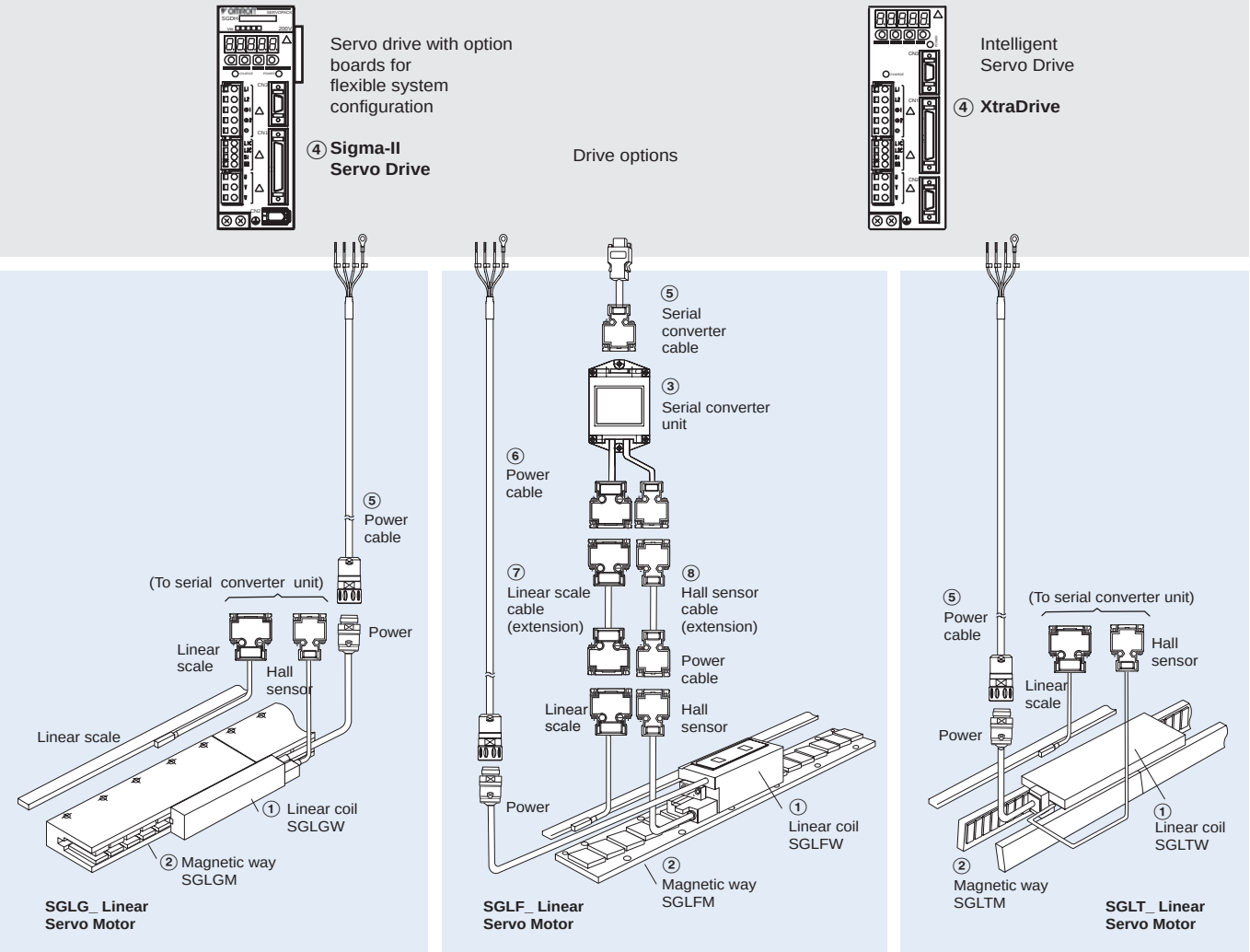
Note: 1. Do not use empty pins.

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

(Refer to servo drive chapter)



Note: The symbols ①②③... show the recommended sequence to select the servo motor, cables and serial converter for a linear motor system

Servo motor

SGLGW / SGLGM coreless type (200 V)

With standard-force magnetic ways - 230 VAC single phase

Symbol	Specifications		Model				
	Rated force	Peak force	① Linear coil	② Magnetic way	③ Serial converter	④ Servo drive	
①②③④	12.5 N	40 N	SGLGW-30A050CPD	SGLGM-30108A	JZDP-D008-250	Sigma-II series	XtraDrive
	25 N	80 N	SGLGW-30A080CPD	SGLGM-30216A	JZDP-D008-251	SGDH-A5AE-OY	XD-P5-MN01
	47 N	140 N	SGLGW-40A140CPD	SGLGM-30432A	JZDP-D008-252	SGDH-01AE-OY	XD-01-MN01
	93 N	280 N	SGLGW-40A253CPD	SGLGM-40090CT	JZDP-D008-253	SGDH-01AE-OY	XD-01-MN01
	140 N	420 N	SGLGW-40A365CPD	SGLGM-40225CT	JZDP-D008-254	SGDH-02AE-OY	XD-02-MN01
				SGLGM-40360CT	JZDP-D008-258	SGDH-04AE-OY	XD-04-MN01
	70 N	220 N	SGLGW-60A140CPD	SGLGM-40405CT	JZDP-D008-259	SGDH-04AE-OY	XD-04-MN01
	140 N	440 N	SGLGW-60A253CPD	SGLGM-40450CT	JZDP-D008-260	SGDH-08AE-S-OY	XD-08-MN
	210 N	660 N	SGLGW-60A365CPD	SGLGM-60090CT			
	325 N	1300 N	SGLGW-90A200CPD	SGLGM-60225CT	JZDP-D008-264	SGDH-15AE-S-OY	XD-15-MN

Note: 1. Linear coils with design revision C replace the previous versions A and B. The serial converter required for revision C coil has changed from previous version, select it according to the table above
 2. Magnetic ways with design revision CT and revision B can be combined

With high-force magnetic ways - 230 VAC single phase

Symbol	Specifications		Model				
	Rated force	Peak force	① Linear coil	② Magnetic way	③ Serial converter	④ Servo drive	
	57 N	230 N	SGLGW-40A140CPD	SGLGM-40090CT-M	JZDP-D008-255	SGDH-02AE-OY	XD-02-MN01
	114 N	460 N	SGLGW-40A253CPD	SGLGM-40225CT-M	JZDP-D008-256	SGDH-04AE-OY	XD-04-MN01
	171 N	690 N	SGLGW-40A365CPD	SGLGM-40360CT-M	JZDP-D008-257	SGDH-08AE-S-OY	XD-08-MN
				SGLGM-40405CT-M			
	85 N	360 N	SGLGW-60A140CPD	SGLGM-60090CT-M	JZDP-D008-261	SGDH-02AE-OY	XD-02-MN01
	170 N	720 N	SGLGW-60A253CPD	SGLGM-60225CT-M	JZDP-D008-262	SGDH-08AE-S-OY	XD-08-MN
	255 N	1080 N	SGLGW-60A365CPD	SGLGM-60360CT-M	JZDP-D008-263	SGDH-15AE-S-OY	XD-15-MN
				SGLGM-60405CT-M			
				SGLGM-60450CT-M			

Note: 1. Linear coils with design revision C replace the previous versions A and B. The serial converter required for revision C coil has changed from previous version, select it according to the table above
2. Magnetic ways with design revision CT and revision B can be combined

SGLFW / SGLFM iron-core type

230 VAC single phase

Symbol	Specifications		Model				
	Rated force	Peak force	① Linear coil	② Magnetic way	③ Serial converter	④ Servo drive	
	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
				SGLFM-20756AC			
	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
				SGLFM-35756AC			
	280 N	600 N	SGLFW-50A200BPD	SGLFM-50135AC	JZDP-A008-181	SGDH-08AE-S-OY	XD-08-MN
	560 N	1200 N	SGLFW-50A380BPD	SGLFM-50405AC	JZDP-A008-182	SGDH-15AE-S-OY	XD-15-MN
				SGLFM-50675AC			
				SGLFM-50945AC			
	560 N	1200 N	SGLFW-1ZA200BPD	SGLFM-1Z135AC	JZDP-A008-183	SGDH-15AE-S-OY	XD-15-MN
				SGLFM-1Z405AC			
				SGLFM-1Z675AC			
				SGLFM-1Z945AC			

Note: Serial converters with design revision A (JZDP-A008-xxx) will be replaced by revision D (JZDP-D008-xxx), both models are fully compatible

400 VAC three phase

Symbol	Specifications		Model				
	Rated force	Peak force	① Linear coil	② Magnetic way	③ Serial converter	④ Servo drive	
	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
				SGLFM-35756AC			
	280 N	600 N	SGLFW-50D200BPD	SGLFM-50135AC	JZDP-A008-189	SGDH-10DE-OY	XD-10-TN
	560 N	1200 N	SGLFW-50D380BPD	SGLFM-50405AC	JZDP-A008-190	SGDH-15DE-OY	XD-15-TN
				SGLFM-50675AC			
				SGLFM-50945AC			
	560 N	1200 N	SGLFW-1ZD200BPD	SGLFM-1Z135AC	JZDP-A008-191	SGDH-15DE-OY	XD-15-TN
	1120 N	2400 N	SGLFW-1ZD380BPD	SGLFM-1Z405AC	JZDP-A008-192	SGDH-30DE-OY	XD-30-TN
				SGLFM-1Z675AC			
				SGLFM-1Z945AC			
	1500 N	3600 N	SGLFW-1ED380BP	SGLFM-1E135AC	JZDP-D008-333	SGDH-20DE-OY	XD-20-TN
	2250 N	5400 N	SGLFW-1ED560BP		JZDP-D008-334	SGDH-30DE-OY	XD-30-TN

Note: Serial converters with design revision A (JZDP-A008-xxx) will be replaced by revision D (JZDP-D008-xxx), both models are fully compatible

SGLTW / SGLTM iron-core type

400 VAC three phase

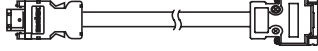
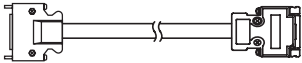
Symbol	Specifications		Model				
	Rated force	Peak force	① Linear coil	② Magnetic way	③ Serial converter	④ Servo drive	
	300 N	600 N	SGLTW-35D170HPD	SGLTM-35324HC	JZDP-D008-193	SGDH-10DE-OY	XD-10-TN
	600 N	1200 N	SGLTW-35D320HPD	SGLTM-35540HC	JZDP-D008-194	SGDH-20DE-OY	XD-20-TN
				SGLTM-35756HC			
	450 N	900 N	SGLTW-50D170HPD	SGLTM-50324HC	JZDP-D008-195	SGDH-10DE-OY	XD-10-TN
	900 N	1800 N	SGLTW-50D320HPD	SGLTM-50540HC	JZDP-D008-196	SGDH-20DE-OY	XD-20-TN
				SGLTM-50756HC			
	670 N	2600 N	SGLTW-40D400BP	SGLTM-40405AC	JZDP-D008-197	SGDH-30DE-OY	XD-30-TN
	1000 N	4000 N	SGLTW-40D600BP	SGLTM-40675AC	JZDP-D008-198	SGDH-50DE-OY	XD-50-TN
				SGLTM-40945AC			
	1300 N	5000 N	SGLTW-80D400BP	SGLTM-80405AC	JZDP-D008-199	SGDH-50DE-OY	XD-50-TN
	2000 N	7500 N	SGLTW-80D600BP	SGLTM-80675AC	JZDP-D008-200	SGDH-75DE-OY	-
				SGLTM-80945AC			

Servo drive

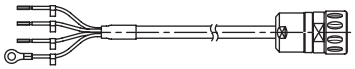
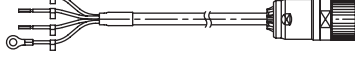
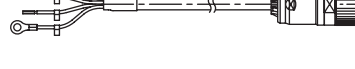
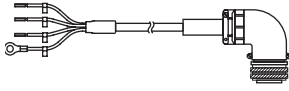
Note: Choosing Sigma-II drive or XtraDrive affects to the serial converter cable needed.

④ Refer to Sigma-II servo drive or XtraDrive chapter for detailed drive specifications and selection of drive accessories.

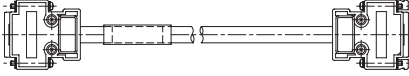
Serial converter cable to servo drive

Symbol	Specifications	Model	Appearance
⑤	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	

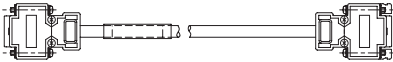
Power cables

Symbol	Specifications	Model	Appearance
⑥	For 200 V servo motors SGLGW-30A□□□□□□D SGLGW-40A□□□□□□D SGLGW-60A□□□□□□D SGLFW-20A□□□□□□D SGLFW-35A□□□□□□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 200 V servo motors SGLGW-90A200□□□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 400 V servo motors SGLFW-35D□□□□□□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 400 V servo motors 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 400 V servo motors SGLFW-1ED□□□□□□B□ 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	

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
Hypertac power connector IP67 (for 200 V motor coils SGL□W-□□A□□□□□D)	SPOC-06K-FSDN169
Hypertac power connector IP67 (for 400 V motor coils SGL□W-□□D□□□□□□D)	LPRA-06B-FRBN170
Military power connector IP67 (for motor coils SGLTW-40□/80□ and SGLFW-1ED□)	MS3108E22-22S

Dimensioning software

Specifications	Model
SigmaSize	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.

LETLA-□-F□

Sigma linear axis

Linear servo axis ready to use

- Highly enclosed construction avoids falling parts into the magnets and bearings area
- Plug and drive, shorten start-up time
- Long durability, reliable and constant performance after years of use
- Designed for an easy servicing
- Direct control of the axis using XtraDrive and Sigma-II drives
- Extremely energy efficient, due to its optimised magnetic circuitry design and high-density winding
- For special lengths, special specifications and XY systems contact your OMRON sales office

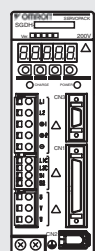


Ratings

- 230 VAC Single-phase 80 to 560 N (1200 N peak)
- 400 VAC Three-phase 80 to 1200 N (2400 N peak)

System configuration

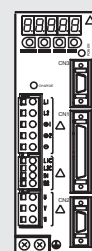
(Refer to Servo Drive chapter)



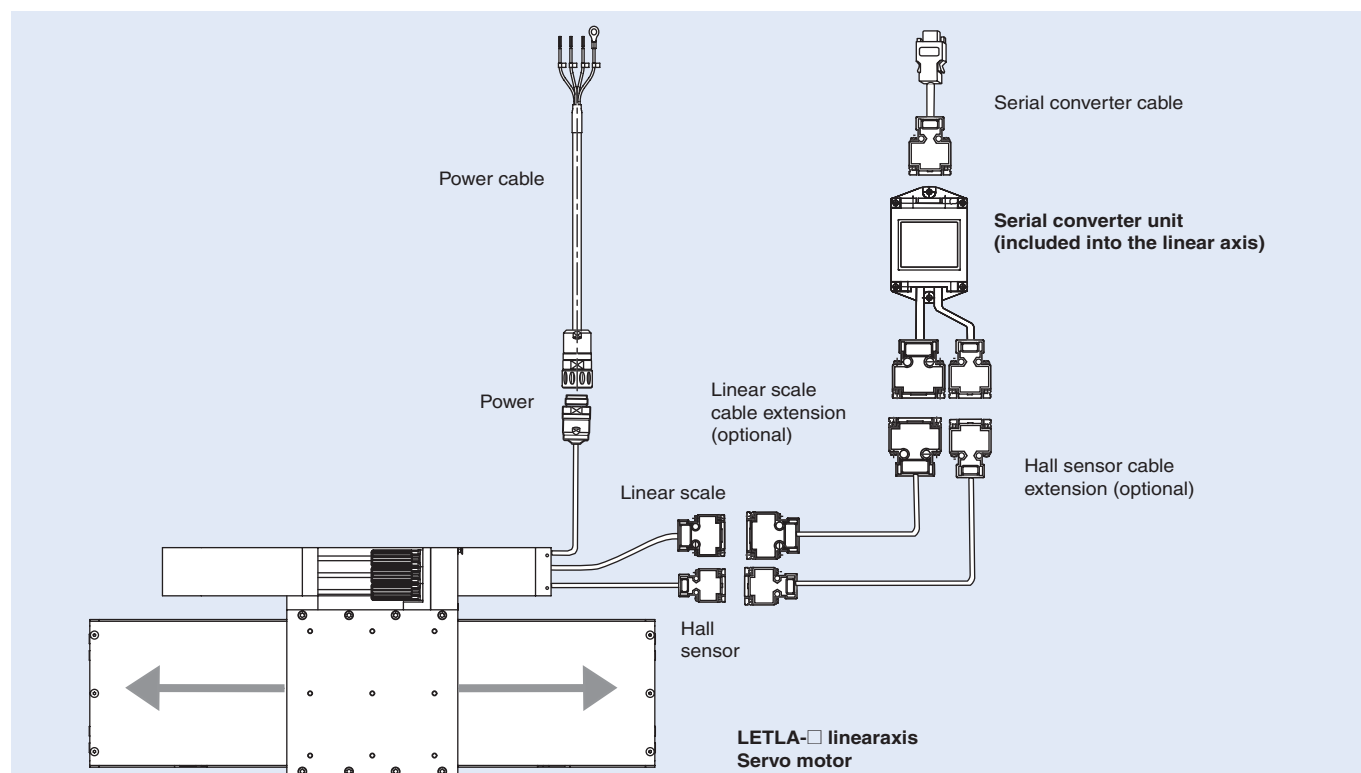
Servo Drive with option boards for flexible system configuration

Sigma-II
Servo Drive

Drive options



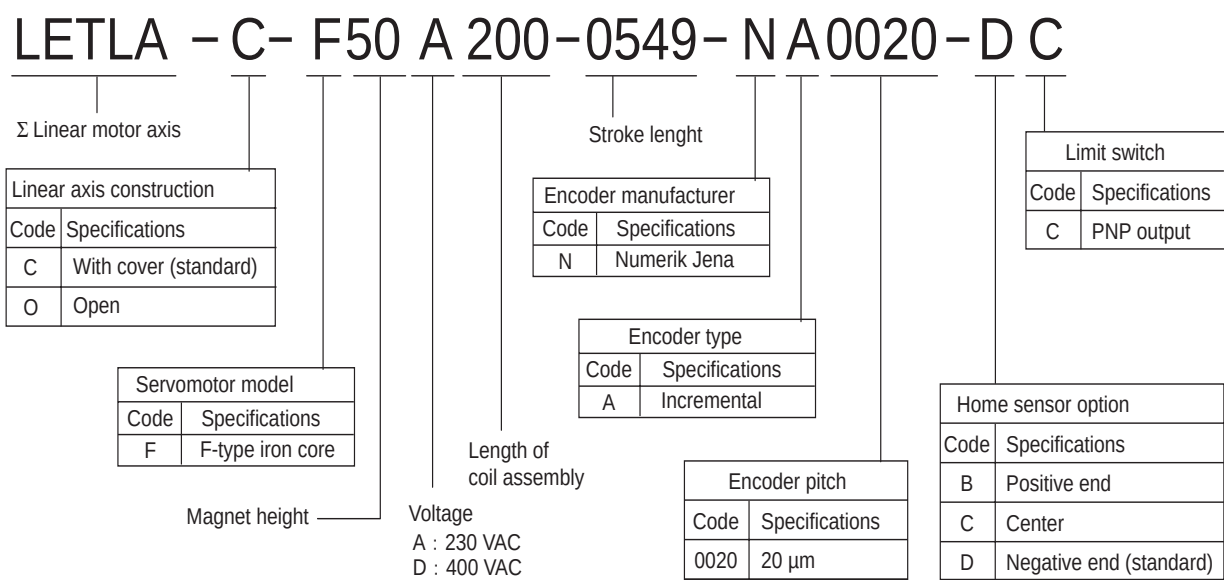
**Intelligent
Servo Drive**



Sigma series linear axis					Serial converter (included in LETLA)	Servo drive			
Type	Voltage	Rated force	Peak force	Model	Model JZDP-□008-	Sigma-II series		XtraDrive	
						230 V (1-phase)	400 V (3-phase)	230 V (1-phase)	400 V (3-phase)
LETLA-□- Linear motor axes	230 V	80 N	220 N	LETLA-□-F35A120-□	019	SGDH-02AE-OY	-	XD-02-MN01	-
		160 N	440 N	LETLA-□-F35A230-□	020	SGDH-08AE-S-OY	-	XD-08-MN	-
		280 N	600 N	LETLA-□-F50A200-□	181	SGDH-08AE-S-OY	-	XD-08-MN	-
		560 N	1200 N	LETLA-□-F50A380-□	182	SGDH-15AE-S-OY	-	XD-15-MN	-
		560 N	1200 N	LETLA-□-F1ZA200-□	183	SGDH-15AE-S-OY	-	XD-15-MN	-
	400 V	80 N	220 N	LETLA-□-F35D120-□	211	-	SGDH-05DE-OY	-	XD-05-TN
		160 N	440 N	LETLA-□-F35D230-□	212	-	SGDH-05DE-OY	-	XD-05-TN
		280 N	600 N	LETLA-□-F50D200-□	189	-	SGDH-10DE-OY	-	XD-10-TN
		560 N	1200 N	LETLA-□-F50D380-□	190	-	SGDH-15DE-OY	-	XD-15-TN
		560 N	1200 N	LETLA-□-F1ZD200-□	191	-	SGDH-15DE-OY	-	XD-15-TN
		1120 N	2400 N	LETLA-□-F1ZD380-□	192	-	SGDH-30DE-OY	-	XD-30-TN

Type designation

Linear axis



Servomotor specifications

Linear axis LETLA-□-F□□A (200 V)

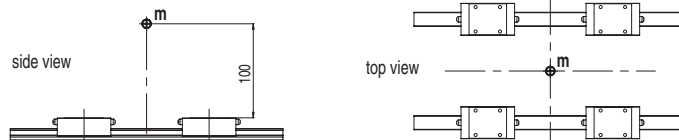
Voltage		230V					
Linear axis model		LETLA-□-	F35A120-□-NA0020	F35A230-□-NA0020	F50A200□-NA0020	F50A380□-NA0020	F1ZA200□-NA0020
Motor coil specifications	Linear servo motor coil used	SGLFW-	35A120A	35A230A	50A200B	50A380B	1ZA200B
	Rated force ^{*1}	N	80	160	280	560	560
	Instantaneous peak force ^{*1}	N	220	440	600	1200	1200
	Rated current ^{*1}	Arms	1.4	2.8	5.0	10.0	8.7
	Instantaneous peak current ^{*1}	Arms	4.4	8.8	12.4	25.0	21.6
	Force constant	N / Arms	62.4	62.4	60.2	60.2	69.0
	BEMF constant	V / (m / s)	20.8	20.8	20.1	20.1	23.0
	Motor constant	N / √W	14.4	20.4	34.3	48.5	52.4
	Electrical time constant	ms	3.6	3.6	15.9	15.8	18.3
	Mechanical time constant	ms	6.2	5.5	3.0	2.9	2.3
Axis specifications	Position accuracy repeatability ^{*2}	μm	+/-1				
	Absolute position accuracy ^{*2}	μm/100mm	+/-5				
	Linear encoder resolution	μm	0.078μm = 20μm / 256 (8bit)				
	Static friction of the axis ^{*3}	N	20	25	30	35	50
	Maximum load ^{*3}	kg	60	60	80	80	150
	Bearings model used	THK	SSR 15	SSR 15	SSR 15	SSR 15	SSR 25
	Linear measuring head used	Numerik Jena	LIA20-C001-KZ				
Basic specifications	Linear measuring scale used		MV5340□□□□				
	Available lengths	m	Standard length up to 2.5 m (see dimensions section) / for lengths up to 5 m contact your OMRON sales office				
	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 *1 and "Force and speed characteristics" are the values at a motor winding temperature of 100 °C during operation in combination with a servo drive. The others are at 20 °C (68°F).

*2. With stable environmental conditions and motor temperature unchanged.

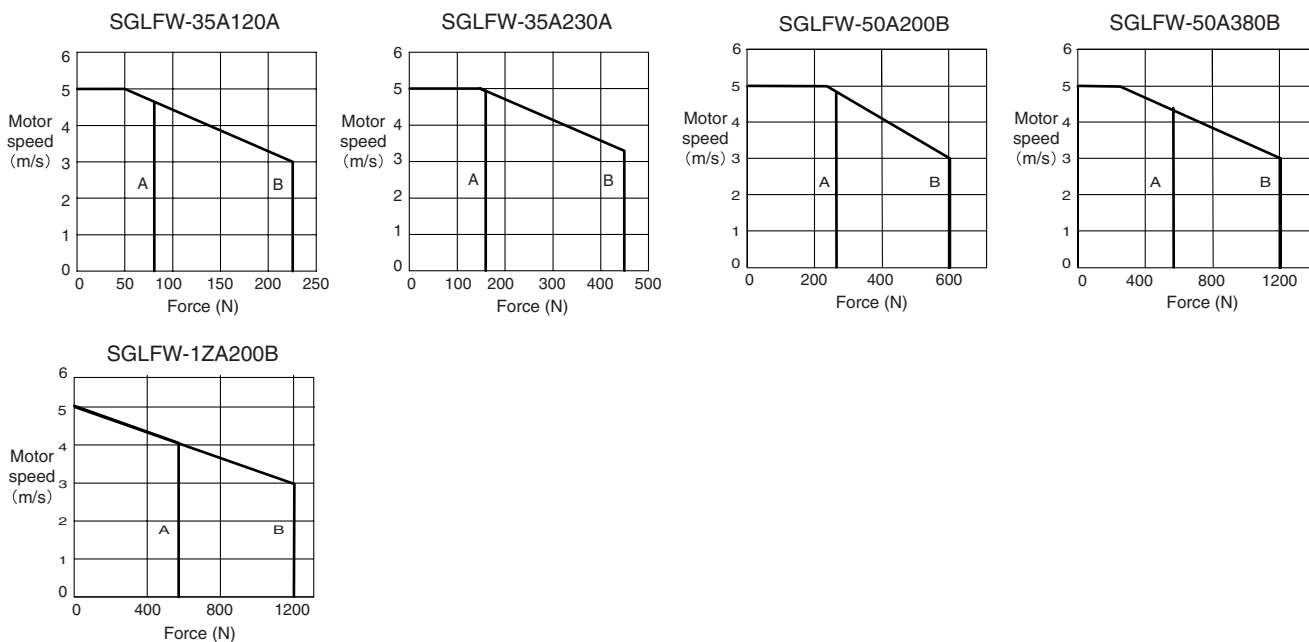
*3. Items calculated with load position like in figure below.

Centre of mass position



Force-speed characteristics (200 V)

A: Continuous duty zone B: Intermittent duty zone



Linear axis LETLA-□-F□□D(400V)

Voltage		400V						
Linear axis model		LETLA-□-	F35D120-□-NA0020	F35D230-□-NA0020	F50D20□-NA0020	F50D380□-NA0020	F1ZD200□-NA0020	F1ZD380□-NA0020
Motor coil specifications	Linear Servomotor coil used	SGLFW-	35D120A	35D230A	50D200B	50D380B	1ZD200B	1ZD380B
	Rated force* ¹	N	80	160	280	560	560	1120
	Instantaneous peak force* ¹	N	220	440	600	1200	1200	2400
	Rated current* ¹	A _{rms}	0.7	1.4	2.3	4.5	4.9	9.8
	Instantaneous peak current* ¹	A _{rms}	2.3	4.6	5.6	11.0	12.3	24.6
	Force constant	N / A _{rms}	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 / √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
Axis specifications	Position accuracy repeitibility* ²	μm	+/-1					
	Absolute position accuracy* ²	μm/100mm	+/-5					
	Linear encoder resolution	μm	0.078 μm = 20 μm / 256 (8 bit)					
	Static friction of the axis* ³	N	20	25	30	35	50	60
	Maximum load* ³	kg	60	60	80	80	150	150
	Bearings model used	THK	SSR 15	SSR 15	SSR 15	SSR 15	SSR 25	SSR 25
	Linear measuring head used	Numerik	LIA20-C001-KZ					
	Linear measuring scale used	Jena	MV5340□□□□					
Available lengths	m	Standard lenght up to 2.5 m (see dimensions section) / for lengths up to 5m contact you OMRON sales office						
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 *1 and "Force and speed characteristics" are the values at a motor winding temperature of 100 °C during operation in combination with a servo drive. The others are at 20 °C (68°F)

*2. With stable environmental conditions and motor temperature unchanged

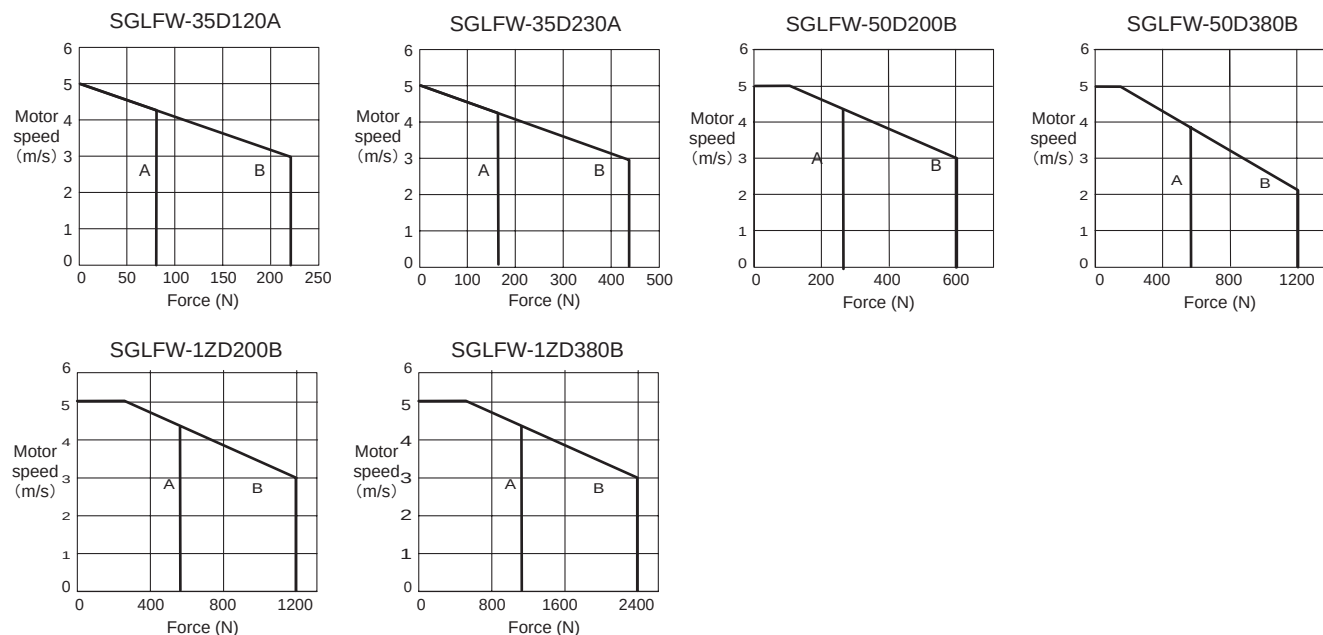
*3. Items calculated with load position like in figure below

Centre of mass position



Force-speed characteristics (400 V)

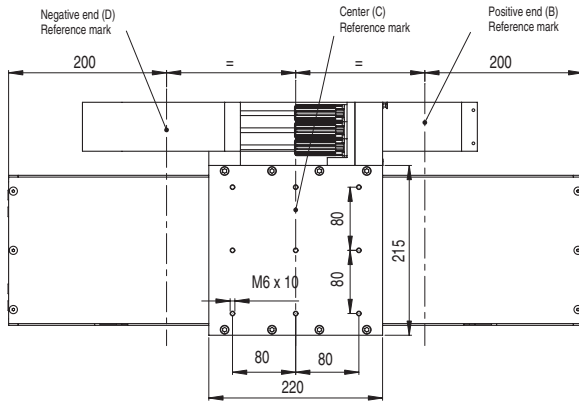
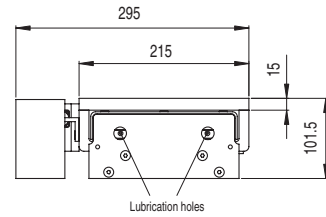
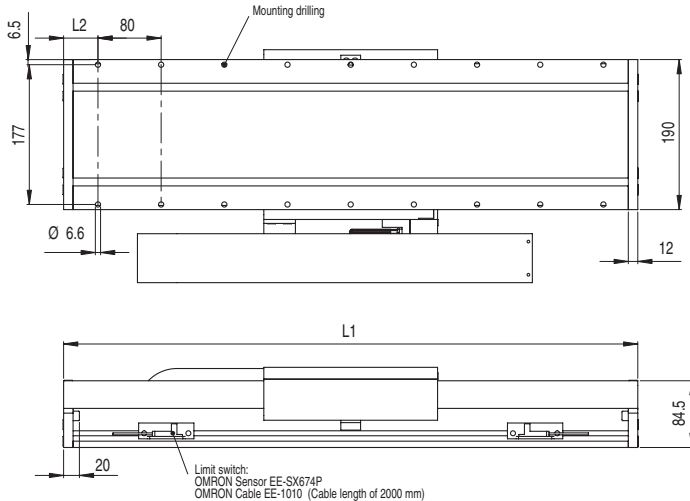
A: Continuous duty zone B: Intermittent duty zone



Dimensions

LETLA-C-F35□120-□

Linear axis model	Effective stroke in mm	L1 in mm	L2 in mm	Weight of moving table including motor coil (kg)	Weight of the complete axis (kg)
LETLA-C-F35□120-0103-NA0020-□C	103	403	29.5	7.6	16
LETLA-C-F35□120-0319-NA0020-□C	319	619	17.5	7.6	19
LETLA-C-F35□120-0427-NA0020-□C	427	727	31.5	7.6	21
LETLA-C-F35□120-0535-NA0020-□C	535	835	45.5	7.6	23
LETLA-C-F35□120-0643-NA0020-□C	643	943	19.5	7.6	25
LETLA-C-F35□120-0751-NA0020-□C	751	1051	33.5	7.6	27
LETLA-C-F35□120-0859-NA0020-□C	859	1159	47.5	7.6	29
LETLA-C-F35□120-0967-NA0020-□C	967	1267	21.5	7.6	31
LETLA-C-F35□120-1075-NA0020-□C	1075	1375	35.5	7.6	33
LETLA-C-F35□120-1183-NA0020-□C	1183	1483	49.5	7.6	35
LETLA-C-F35□120-1291-NA0020-□C	1291	1591	23.5	7.6	36
LETLA-C-F35□120-1399-NA0020-□C	1399	1699	37.5	7.6	38
LETLA-C-F35□120-1507-NA0020-□C	1507	1807	13.5	7.6	40
LETLA-C-F35□120-1615-NA0020-□C	1615	1915	25.5	7.6	42
LETLA-C-F35□120-1723-NA0020-□C	1723	2023	41.5	7.6	44
LETLA-C-F35□120-1831-NA0020-□C	1831	2131	13.5	7.6	46
LETLA-C-F35□120-1939-NA0020-□C	1939	2239	29.5	7.6	48
LETLA-C-F35□120-2047-NA0020-□C	2047	2347	41.5	7.6	50
LETLA-C-F35□120-2155-NA0020-□C	2155	2455	17.5	7.6	52



Units: mm

Hall sensor connector

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

Pin connector type:
7JF-23090-02 (DRC)
made by DDK Ltd.

Linear scale connector

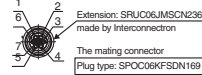
Pin No.	Signal
1	cos input (V1-)
2	/sin input (V2-)
3	Ref input (V0+)
4	+5 V
5	5 Vs
6	Empty
7	Empty
8	Empty
9	cos input (V1+)
10	sin input (V2+)
11	/Ref input (V0-)
12	0 V
13	0 Vs
14	Empty
15	Inner
Case	Shield

LET adapter type:
MA-15BL-15SL

Linear servo motor 200V

Connector specifications

LETLA-□-F35A120□

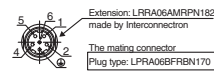


Pin No.	Name
1	Phase U
2	Phase V
3	Phase W
4	Not used
5	Not used
6	FG
7	Not used

Linear servo motor 400V

Connector specifications

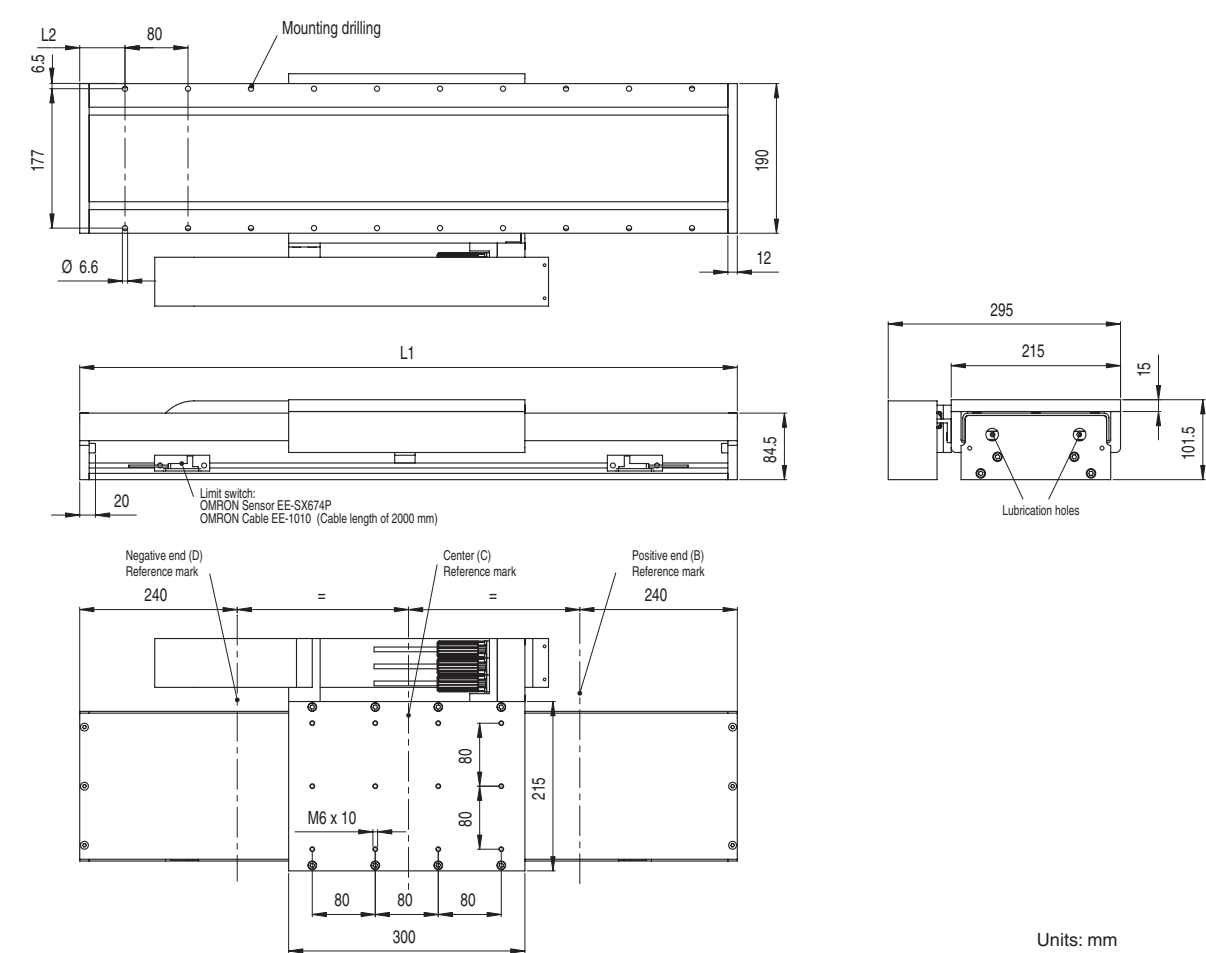
LETLA-□-F35D120□



Pin No.	Name
1	Phase U
2	Phase V
3	Phase W
4	Not used
5	Not used
6	Not used
7	Ground

LETLA-C-F35□230-□

Linear axis model	Effective stroke in mm	L1 in mm	L2 in mm	Weigth of moving table including motor coil (kg)	Weigth of the complete axis (kg)
LETLA-C-F35□230-0239-NA0020-□C	239	619	17.5	11.5	23
LETLA-C-F35□230-0347-NA0020-□C	347	727	31.5	11.5	25
LETLA-C-F35□230-0455-NA0020-□C	455	835	45.5	11.5	27
LETLA-C-F35□230-0563-NA0020-□C	563	943	19.5	11.5	28
LETLA-C-F35□230-0671-NA0020-□C	671	1051	33.5	11.5	30
LETLA-C-F35□230-0779-NA0020-□C	779	1159	47.5	11.5	32
LETLA-C-F35□230-0887-NA0020-□C	887	1267	21.5	11.5	34
LETLA-C-F35□230-0995-NA0020-□C	995	1375	35.5	11.5	36
LETLA-C-F35□230-1103-NA0020-□C	1103	1483	49.5	11.5	38
LETLA-C-F35□230-1211-NA0020-□C	1211	1591	23.5	11.5	40
LETLA-C-F35□230-1319-NA0020-□C	1319	1699	37.5	11.5	42
LETLA-C-F35□230-1427-NA0020-□C	1427	1807	13.5	11.5	44
LETLA-C-F35□230-1535-NA0020-□C	1535	1915	25.5	11.5	45
LETLA-C-F35□230-1643-NA0020-□C	1643	2023	41.5	11.5	47
LETLA-C-F35□230-1751-NA0020-□C	1751	2131	13.5	11.5	49
LETLA-C-F35□230-1859-NA0020-□C	1859	2239	29.5	11.5	51
LETLA-C-F35□230-1967-NA0020-□C	1967	2347	41.5	11.5	53
LETLA-C-F35□230-2075-NA0020-□C	2075	2455	17.5	11.5	55
LETLA-C-F35□230-2183-NA0020-□C	2183	2563	29.5	11.5	57



Units: mm

Hall sensor connector



Pin connector type:
7JE-23090-02 (D&C)
made by DDK Ltd.

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

Linear scale connector



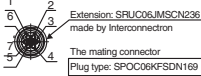
LET adapter type:
MA-15BL-15SL

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

Linear servo motor 200 V

Connector specifications

LETLA-□-F35A230□

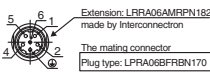


Pin No.	Name
1	Phase U
2	Phase V
3	Phase W
4	Not used
5	Not used
6	FG
7	Not used

Linear servo motor 400 V

Connector specifications

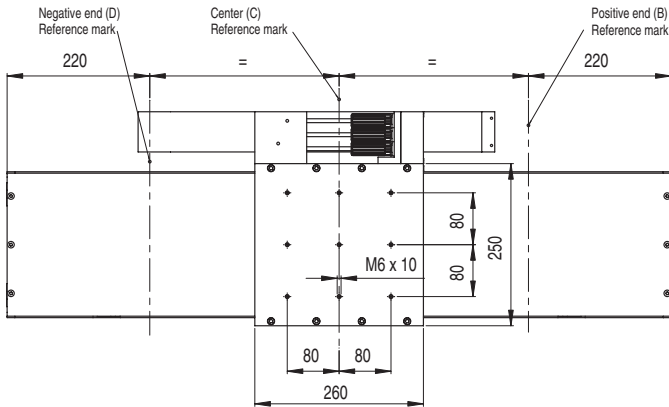
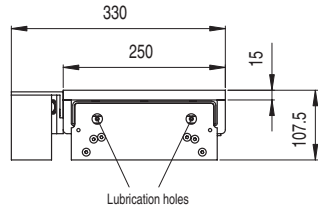
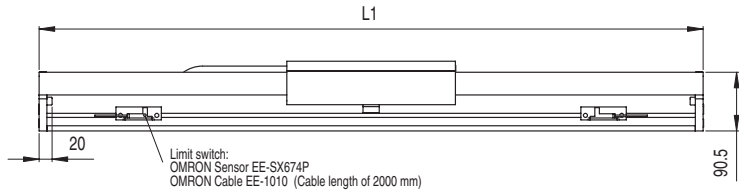
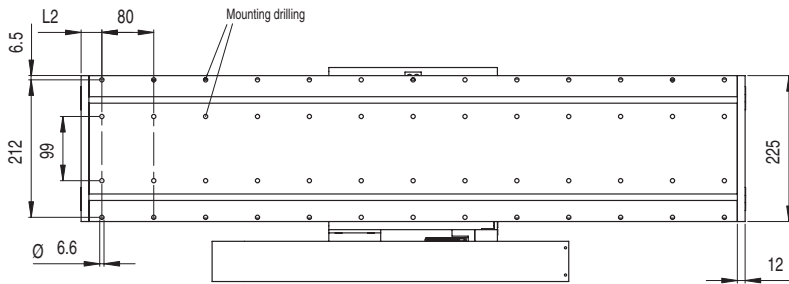
LETLA-□-F35D230□



Pin No.	Name
1	Phase U
2	Phase V
3	Phase W
4	Phase W
5	Not used
6	Not used
4	Ground

LETLA-C-F50□200-□

Linear axis model	Effective stroke in mm	L1 in mm	L2 in mm	Weight of moving table including motor coil (kg)	Weight of the complete axis (kg)
LETLA-C-F50□200-0144-NA0020-□C	144	484	30.0	11.2	25
LETLA-C-F50□200-0414-NA0020-□C	414	754	45.0	11.2	31
LETLA-C-F50□200-0549-NA0020-□C	549	889	32.5	11.2	34
LETLA-C-F50□200-0684-NA0020-□C	684	1024	20.0	11.2	37
LETLA-C-F50□200-0819-NA0020-□C	819	1159	47.5	11.2	40
LETLA-C-F50□200-0954-NA0020-□C	954	1294	35.0	11.2	43
LETLA-C-F50□200-1089-NA0020-□C	1089	1429	22.5	11.2	46
LETLA-C-F50□200-1224-NA0020-□C	1224	1564	50.0	11.2	49
LETLA-C-F50□200-1359-NA0020-□C	1359	1699	37.5	11.2	52
LETLA-C-F50□200-1494-NA0020-□C	1494	1834	25.0	11.2	55
LETLA-C-F50□200-1629-NA0020-□C	1629	1969	12.5	11.2	58
LETLA-C-F50□200-1764-NA0020-□C	1764	2104	40.0	11.2	61
LETLA-C-F50□200-1899-NA0020-□C	1899	2239	27.5	11.2	64
LETLA-C-F50□200-2034-NA0020-□C	2034	2374	15.0	11.2	67
LETLA-C-F50□200-2169-NA0020-□C	2169	2509	42.5	11.2	70



Units: mm

Hall sensor connector



Pin connector type: 7JE-23090-02 (D8C) made by DDK Ltd.

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

Linear scale connector



LET adapter type: MA-15BL-15SL

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

Linear servo motor 200 V
Connector specifications
LETLA-□-F50A200□



Extension: SRUC06JMSCN236 made by Interconnectron
The mating connector
Plug type: SPOC06KFSN169

Pin No.	Name
1	Phase U
2	Phase V
3	Phase W
4	Not used
5	Not used
6	FG
7	Not used

Linear servo motor 400 V
Connector specifications
LETLA-□-F50D200□

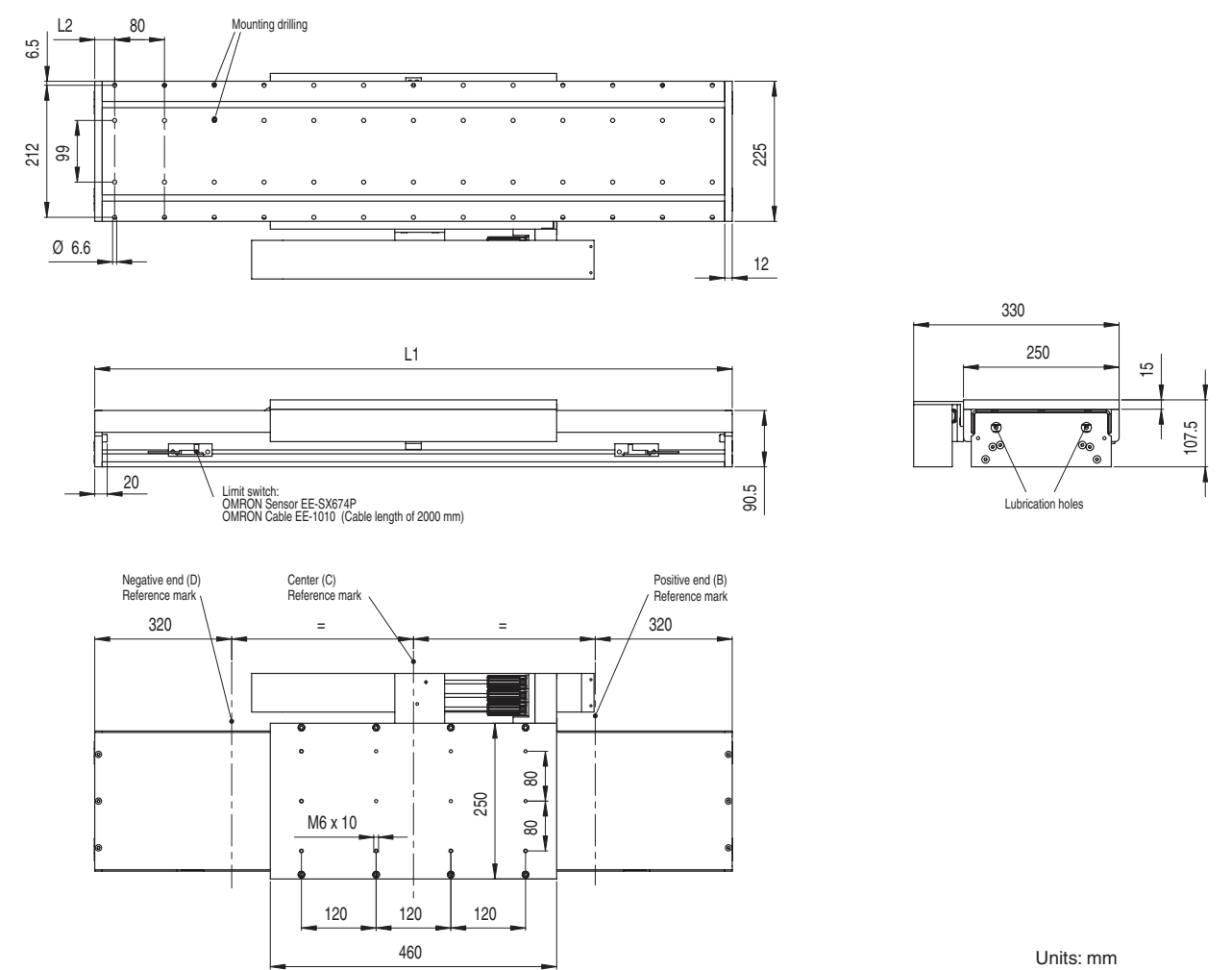


Extension: LPPA06AMPN182 made by Interconnectron
The mating connector
Plug type: LPPA06FRBN170

Pin No.	Name
1	Phase U
2	Phase V
3	Phase W
4	Not used
5	Not used
6	Not used
Ground	

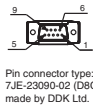
LETLA-C-F50□380-□

Linear axis model	Effective stroke in mm	L1 in mm	L2 in mm	Weight of moving table including motor coil (kg)	Weight of the complete axis (kg)
LETLA-C-F50□380-0214-NA0020-□C	214	754	45.0	22.5	40
LETLA-C-F50□380-0349-NA0020-□C	349	889	32.5	22.5	43
LETLA-C-F50□380-0484-NA0020-□C	484	1024	20.0	22.5	46
LETLA-C-F50□380-0619-NA0020-□C	619	1159	47.5	22.5	49
LETLA-C-F50□380-0754-NA0020-□C	754	1294	35.0	22.5	52
LETLA-C-F50□380-0889-NA0020-□C	889	1429	22.5	22.5	55
LETLA-C-F50□380-1024-NA0020-□C	1024	1564	50.0	22.5	58
LETLA-C-F50□380-1159-NA0020-□C	1159	1699	37.5	22.5	61
LETLA-C-F50□380-1294-NA0020-□C	1294	1834	25.0	22.5	64
LETLA-C-F50□380-1429-NA0020-□C	1429	1969	12.5	22.5	67
LETLA-C-F50□380-1564-NA0020-□C	1564	2104	40.0	22.5	70
LETLA-C-F50□380-1699-NA0020-□C	1699	2239	27.5	22.5	74
LETLA-C-F50□380-1834-NA0020-□C	1834	2374	15.0	22.5	77
LETLA-C-F50□380-1969-NA0020-□C	1969	2509	42.5	22.5	80
LETLA-C-F50□380-2104-NA0020-□C	2104	2644	30.0	22.5	83



Units: mm

Hall sensor connector



Pin connector type:
7JE-23090-02 (DBC)
made by DDK Ltd.

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

Linear scale connector



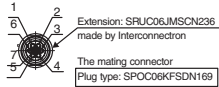
LET adapter type:
MA-15BL-15SL

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

Linear servo motor 200 V

Connector specifications

LETLA-□-F50A380□

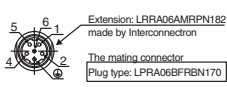


Pin No.	Name
1	Phase U
2	Phase V
3	Phase W
4	Not used
5	Not used
6	FG
7	Not used

Linear servo motor 400 V

Connector specifications

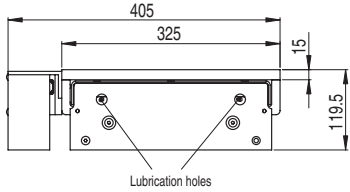
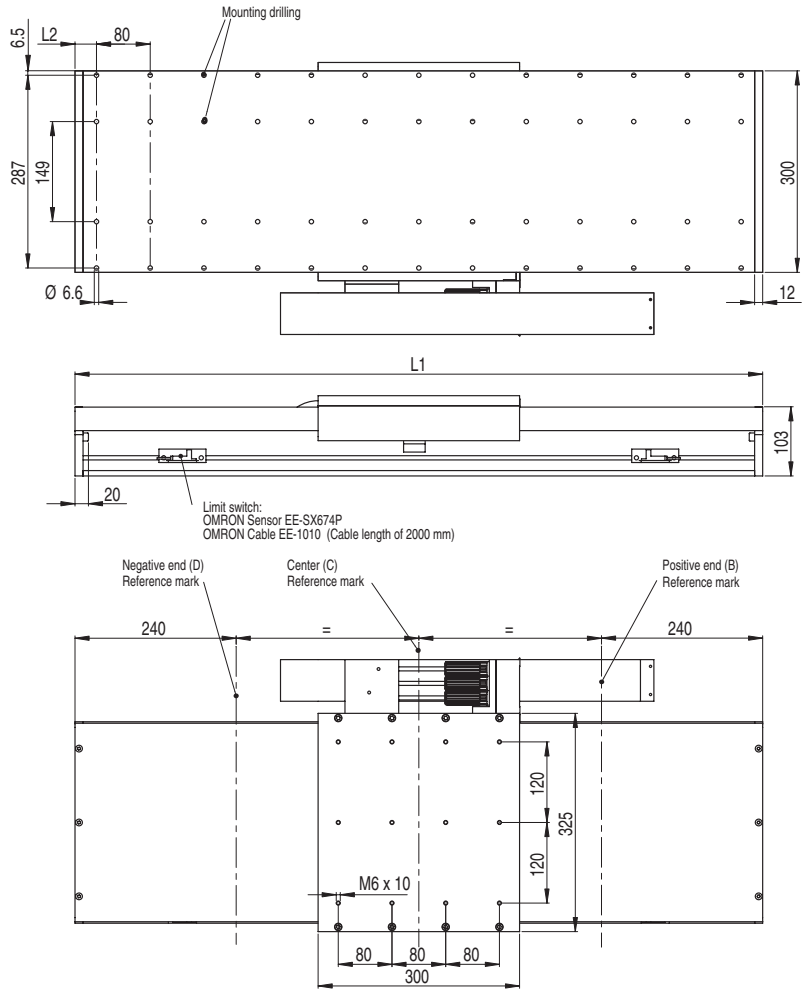
LETLA-□-F50D380□



Pin No.	Name
1	Phase U
2	Phase V
3	Phase W
4	Not used
5	Not used
6	Not used
⊕	Ground

LETLA-C-F1Z□200-□

Linear axis model	Effective stroke in mm	L1 in mm	L2 in mm	Weight of moving table including motor coil (kg)	Weight of the complete axis (kg)
LETLA-C-F1Z□200-0104-NA0020-□C	104	484	30.0	18	37
LETLA-C-F1Z□200-0374-NA0020-□C	374	754	45.0	18	47
LETLA-C-F1Z□200-0509-NA0020-□C	509	889	32.5	18	52
LETLA-C-F1Z□200-0644-NA0020-□C	644	1024	20.0	18	57
LETLA-C-F1Z□200-0779-NA0020-□C	779	1159	47.5	18	62
LETLA-C-F1Z□200-0914-NA0020-□C	914	1294	35.0	18	67
LETLA-C-F1Z□200-1049-NA0020-□C	1049	1429	22.5	18	72
LETLA-C-F1Z□200-1184-NA0020-□C	1184	1564	50.0	18	77
LETLA-C-F1Z□200-1319-NA0020-□C	1319	1699	37.5	18	82
LETLA-C-F1Z□200-1454-NA0020-□C	1454	1834	25.0	18	87
LETLA-C-F1Z□200-1589-NA0020-□C	1589	1969	12.5	18	92
LETLA-C-F1Z□200-1724-NA0020-□C	1724	2104	40.0	18	97
LETLA-C-F1Z□200-1859-NA0020-□C	1859	2239	27.5	18	102
LETLA-C-F1Z□200-1994-NA0020-□C	1994	2374	15.0	18	107
LETLA-C-F1Z□200-2129-NA0020-□C	2129	2509	42.5	18	111



Units: mm

Hall sensor connector



Pin connector type: 7JE-23090-02 (D8C) made by DDK Ltd.

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

Linear scale connector



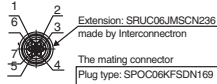
LET adapter type: MA-15BL-15SL

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

Linear servo motor 200 V

Connector specifications

LETLA-□-F1ZA200□

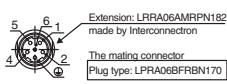


Pin No.	Name
1	Phase U
2	Phase V
3	Phase W
4	Not used
5	Not used
6	FG
7	Not used

Linear servo motor 400 V

Connector specifications

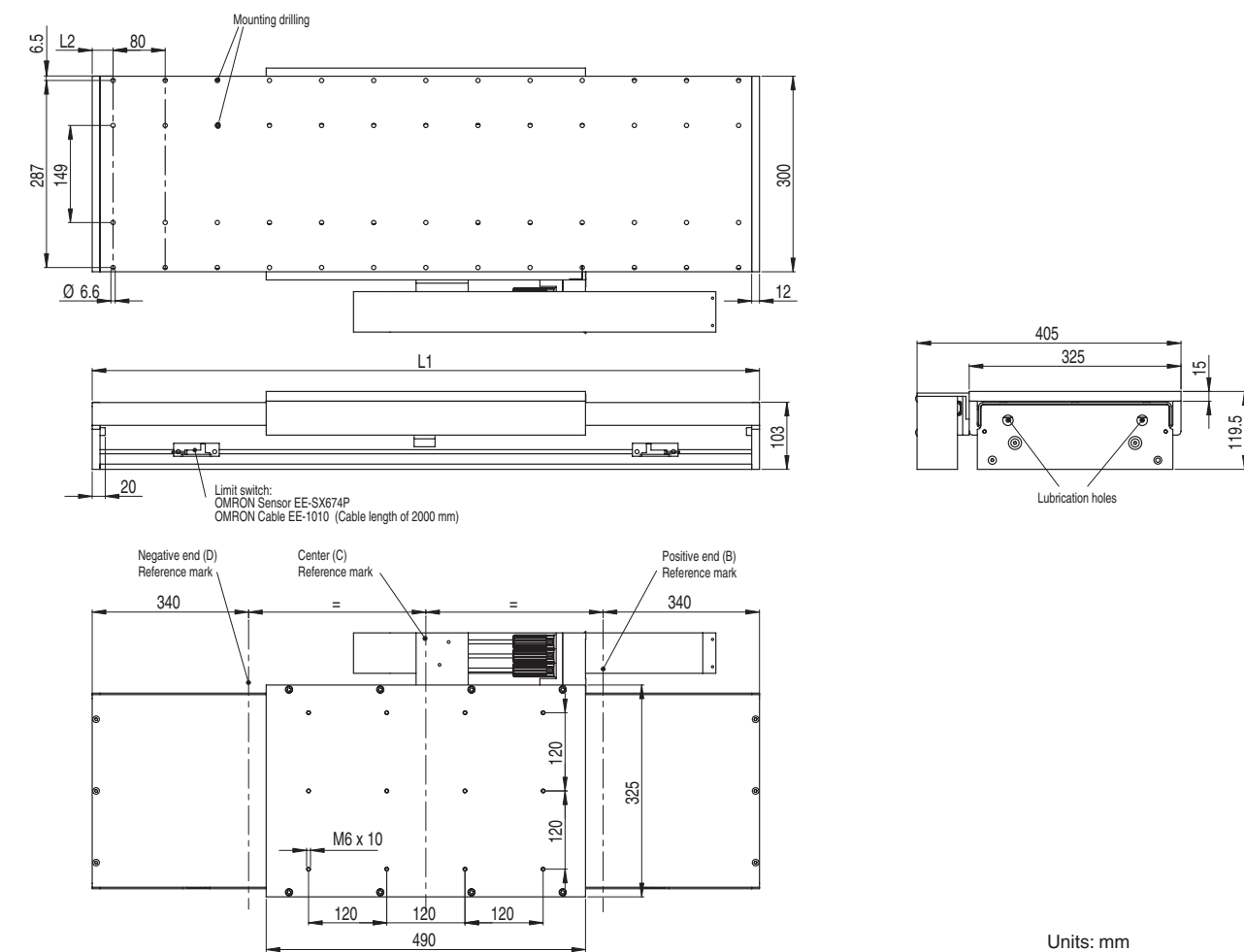
LETLA-□-F1ZD200□



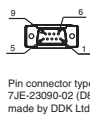
Pin No.	Name
1	Phase U
2	Phase V
3	Phase W
4	Not used
5	Not used
6	Ground

LETLA-C-F1ZD380-□

Linear axis model	Effective stroke in mm	L1 in mm	L2 in mm	Weight of moving table including motor coil (kg)	Weight of the complete axis (kg)
LETLA-C-F1ZD380-0184-NA0020-□C	184	754	45.0	31	60
LETLA-C-F1ZD380-0319-NA0020-□C	319	889	32.5	31	65
LETLA-C-F1ZD380-0454-NA0020-□C	454	1024	20.0	31	70
LETLA-C-F1ZD380-0589-NA0020-□C	589	1159	47.5	31	75
LETLA-C-F1ZD380-0724-NA0020-□C	724	1294	35.0	31	80
LETLA-C-F1ZD380-0859-NA0020-□C	859	1429	22.5	31	84
LETLA-C-F1ZD380-0994-NA0020-□C	994	1564	50.0	31	89
LETLA-C-F1ZD380-1129-NA0020-□C	1129	1699	37.5	31	94
LETLA-C-F1ZD380-1264-NA0020-□C	1264	1834	25.0	31	99
LETLA-C-F1ZD380-1399-NA0020-□C	1399	1969	12.5	31	104
LETLA-C-F1ZD380-1534-NA0020-□C	1534	2104	40.0	31	109
LETLA-C-F1ZD380-1669-NA0020-□C	1669	2239	27.5	31	114
LETLA-C-F1ZD380-1804-NA0020-□C	1804	2374	15.0	31	119
LETLA-C-F1ZD380-1939-NA0020-□C	1939	2509	42.5	31	124
LETLA-C-F1ZD380-2074-NA0020-□C	2074	2644	30.0	31	129



Hall sensor connector



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

Linear scale connector

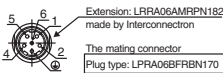


LET adapter type: MA-15BL-15SL

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

Linear servo motor 400 V
Connector specifications

LETLA-□-F1ZD380□

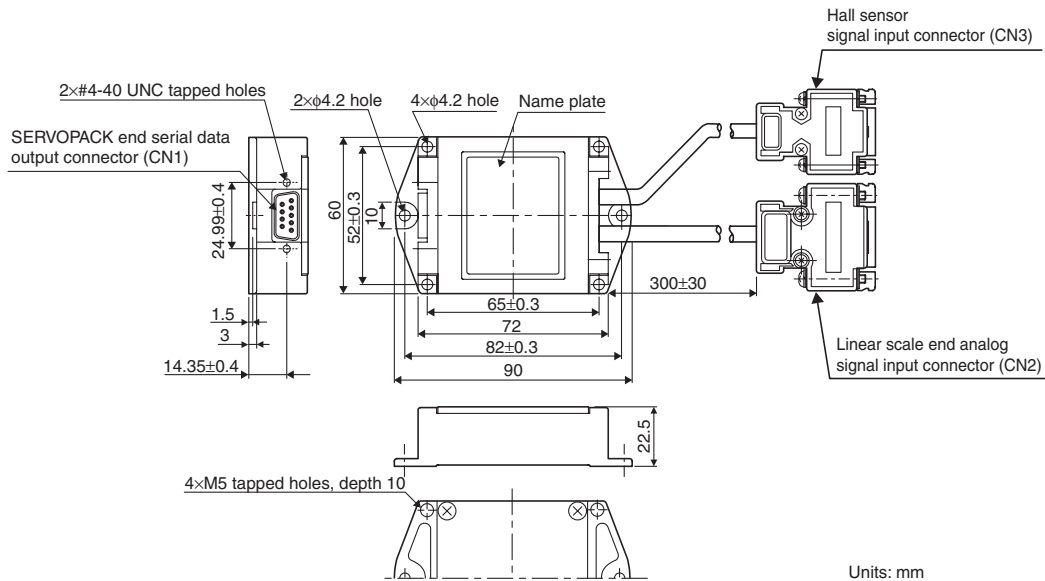


Pin No.	Name
1	Phase U
2	Phase V
4	Phase W
5	Not used
6	Not used
④	Ground

Serial converter unit

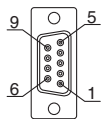
JZDP-[A/D]008-□□□

Items	Specifications
Electrical characteristics	Power supply voltage
	+5.0 V $\pm 5\%$, ripple content 5% max.
	Current consumption
	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 1.2 V Input signal level: 1.5 V to 3.5 V
	Pole sensor input signal
	CMOS level
	Output signals
	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 μ s
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

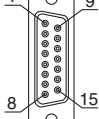
SERVOPACK end serial data output



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

CN2

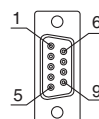
Linear scale end Analog signal input



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

CN3

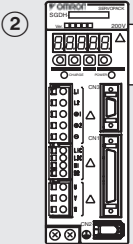
Hall sensor signal input



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

Ordering information

(Refer to Servo Drive chapter)

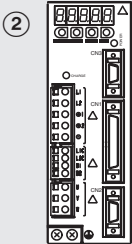


②

Servo Drive with option boards for flexible system configuration

Sigma-II Servo Drive

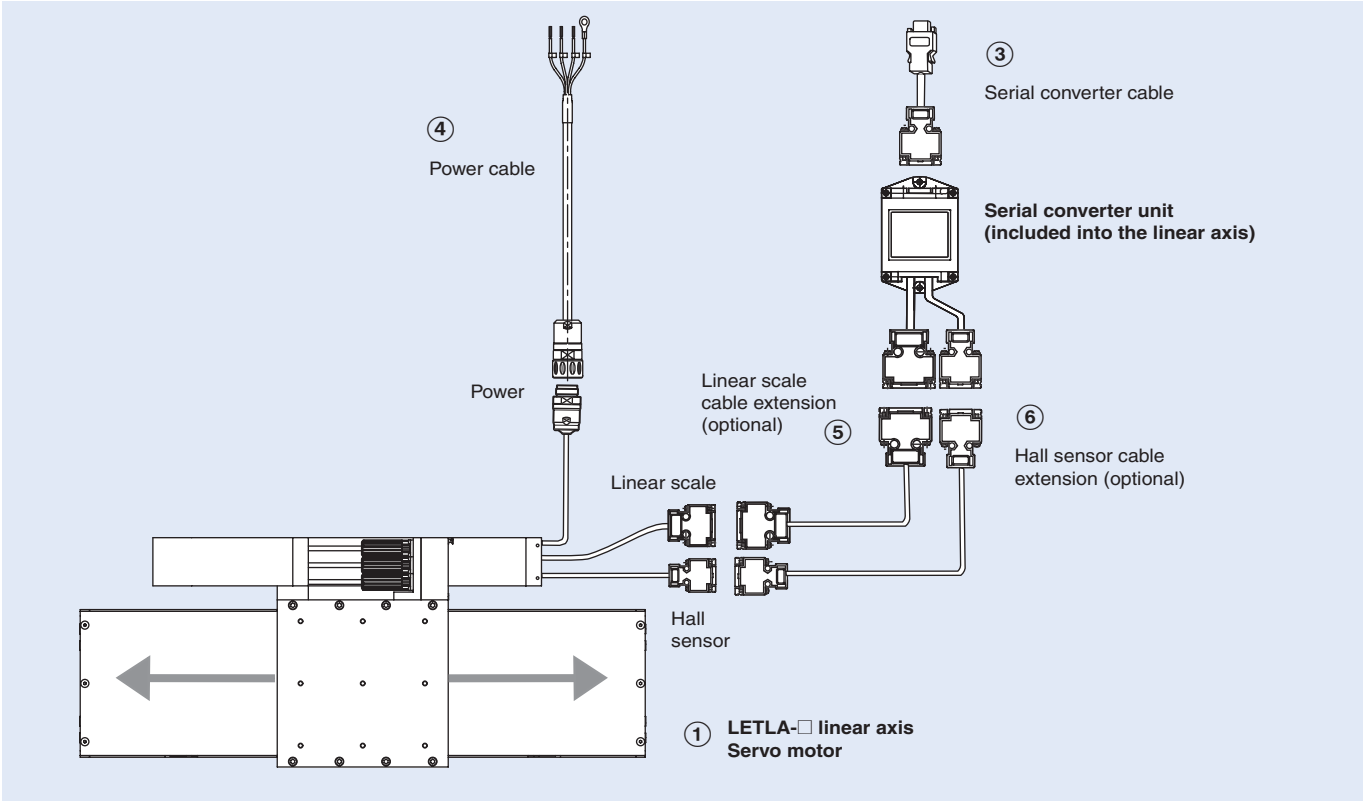
Drive options



②

Intelligent Servo Drive

XtraDrive



Note: The symbols ①②③... show the recommended sequence to select the servomotor, cables and serial converter for a linear motors system.

Linear motor axis

LETLA-C-F

230 VAC single phase

Symbol	Specifications		Model		
	Rated force	Peak force	① Linear axis model	② Servo drive	
				Sigma-II series	XtraDrive
①②	80 N	220 N	LETLA-C-F35A120-[stroke]-NA0020-DC	SGDH-02AE-OY	XD-02-MN01
	160 N	440 N	LET-A-C-F35A230-[stroke]-NA0020-DC	SGDH-08AE-S-OY	XD-08-MN
	280 N	600 N	LETLA-C-F50A200-[stroke]-NA0020-DC	SGDH-08AE-S-OY	XD-08-MN
	560 N	1200 N	LETLA-C-F50A380-[stroke]-NA0020-DC	SGDH-15AE-S-OY	XD-15-MN
	560 N	1200 N	LETLA-C-F1ZA200-[stroke]-NA0020-DC	SGDH-15AE-S-OY	XD-15-MN

Note: For effective stroke distances available see dimensions section.

400 VAC three phase

Symbol	Specifications		Model		
	Rated force	Peak force	① Linear axis model	② Servo drive	
				Sigma-II series	XtraDrive
①②	80 N	220 N	LETLA-C-F35D120-[stroke]-NA0020-DC	SGDH-05DE-OY	XD-05-TN
	160 N	440 N	LETLA-C-F35D230-[stroke]-NA0020-DC	SGDH-05DE-OY	XD-05-TN
	280 N	600 N	LETLA-C-F50D200-[stroke]-NA0020-DC	SGDH-10DE-OY	XD-10-TN
	560 N	1200 N	LETLA-C-F50D380-[stroke]-NA0020-DC	SGDH-15DE-OY	XD-15-TN
	560 N	1200 N	LETLA-C-F1ZD200-[stroke]-NA0020-DC	SGDH-15DE-OY	XD-15-TN
	1120 N	2400 N	LETLA-C-F1ZD380-[stroke]-NA0020-DC	SGDH-30DE-OY	XD-30-TN

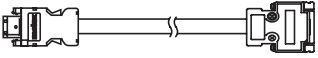
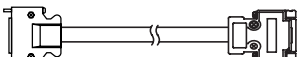
Note: For effective stroke distances available see dimensions section.

Servo drive

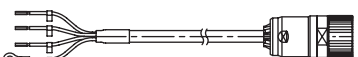
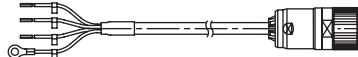
Note: Choosing sigma-II drive or XtraDrive affects to the serial converter cable needed.

② Refer to sigma-II servo drive or XtraDrive chapter for detailed drive specifications and selection of drive accessories.

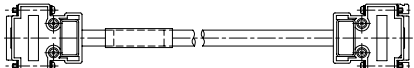
Serial converter cable to servo drive

Symbol	Specifications	Model	Appearance
③	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	

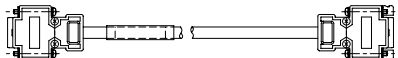
Power cables

Symbol	Specifications	Model	Appearance
④	For 200 V servo motors LETLA-□-F35A□	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 200 V servo motors LETLA-□-F50A□ LETLA-□-F1ZA200□	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 400 V servo motors LETLA-□-F35D□ LETLA-□-F50D200D□	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 400 V servo motors LETLA-□-F50D380□ LETLA-□-F1ZD□	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	

Linear scale cable to serial converter

Symbol	Specifications	Model	Appearance
⑤	Extension cable 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	

Hall sensor cable to serial converter

Symbol	Specifications	Model	Appearance
⑥	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
Hypertac power connector IP67 (for 200 V motors)	SPOC-06K-FSDN169
Hypertac power connector IP67 (for 400 V motors)	LPRA-06B-FRBN170

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.

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

SGTMM01-□, SGTMM03-□

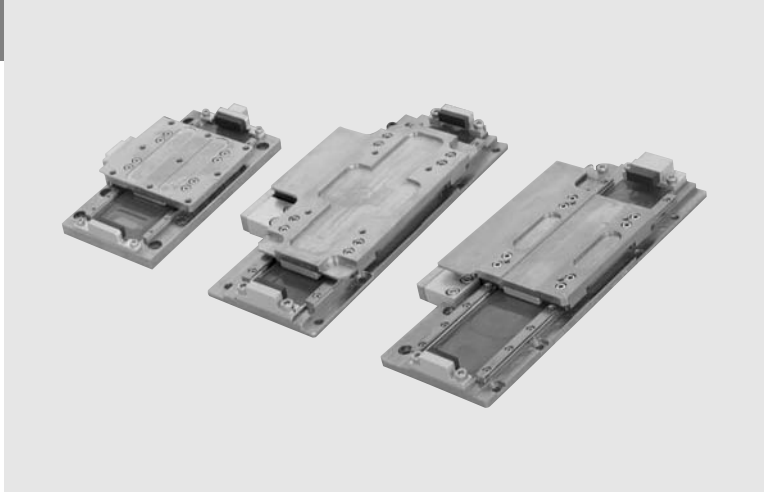
Linear sigma trac-micro

Direct drive linear servomotor axis for mounting at narrow spaces

- Compact, high-thrust and high-speed movement
- Flat construction for mounting at narrow spaces
- Plug and drive, shorten start-up time
- Easy operation and high reliability
- Moving magnet construction avoids moving cables
- Resolution of 78 nm
- Direct control of the axis using XtraDrive and Sigma-II drives

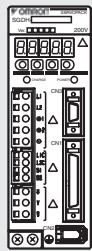
Ratings

- 230 VAC single-phase 3.5 N and 7 N (25 N peak)



System configuration

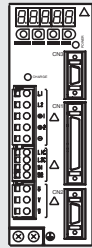
(Refer to servo drive chapter)



Servo drive with option boards for flexible system configuration

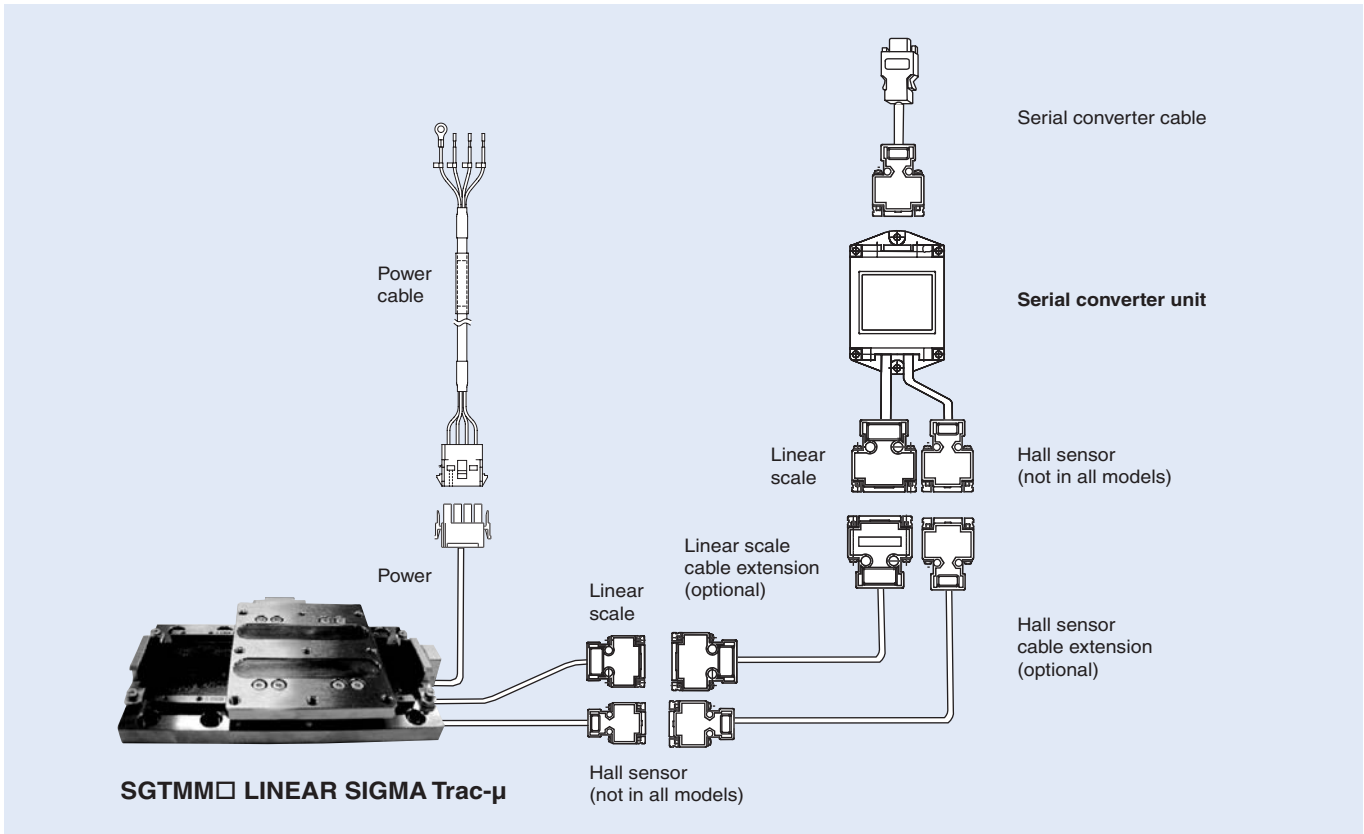
Sigma-II servo drive

Drive options



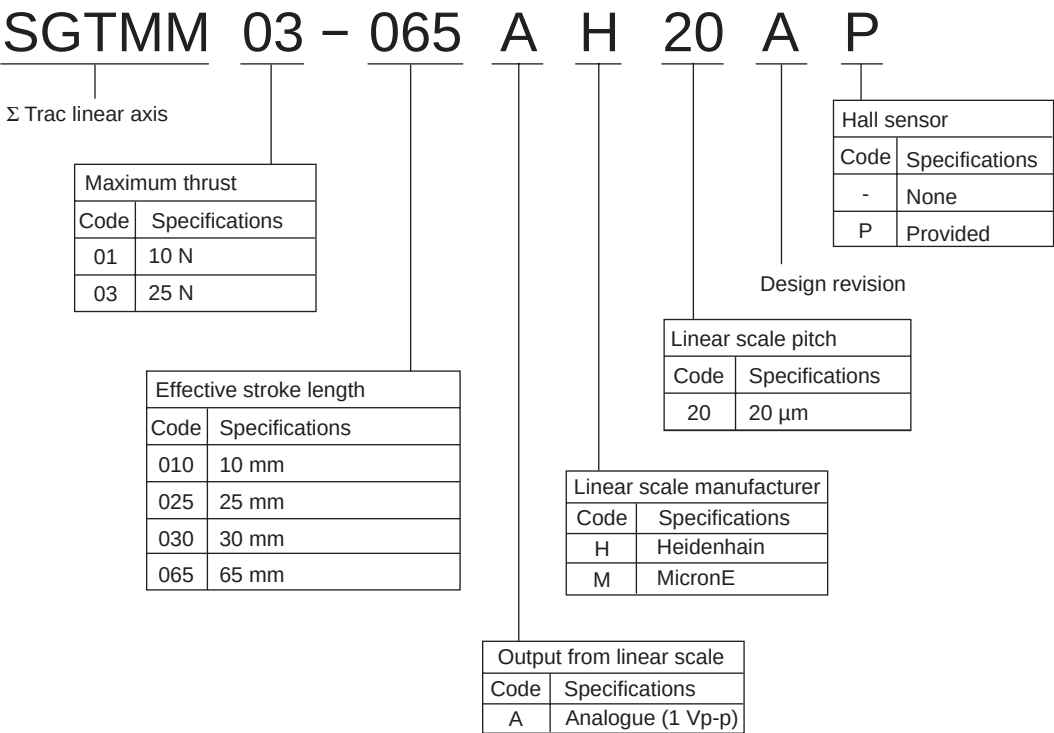
Intelligent servo drive

XtraDrive



Servo motor / servo drive combination

Sigma trac-μ



Servomotor specifications

Sigma trac-μ

Voltage		230V			
Linear axis model		SGTMM01-010AM20A	SGTMM01-030AM20A	SGTMM03-025AH20AP	SGTMM03-065AH20AP
Rated force	N	3.5	3.5	7.5	7.5
Instantaneous peak force	N	10	10	25	25
Force constant	N / A _{rms}	9	9	13.2	12.3
Motor constant	N / √w	1.2	1.2	2.29	1.58
Maximum load *1	kg	1	1	3	3
Effective stroke length	mm	10	30	25	65
Linear scale resolution	μm	0.078μm = 20μm / 256 (8bit)			
Linear scale model number		M1020 (MicroE)		LIDA487/LIF181 (Heidenhain)	
Hall sensor		None	None	Yes	Yes
Weight of moving part	kg	0.1	0.1	0.215	0.24
Total weight of micro trac	kg	0.31	0.35	0.62	0.71
Position accuracy repeatability *2	μm	+/- 0.5	+/- 0.5	+/- 0.5	+/- 0.5
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 maximum load is calculated for an acceleration of 4.9 m/s².

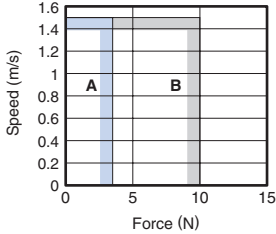
*2 With stable environmental conditions and motor temperature unchanged.

Characteristics

Force-speed

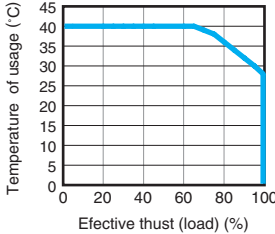
A : Continuous duty zone
B : Intermittent duty zone

SGTMM01-□

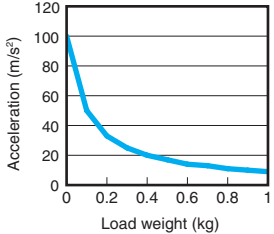


Effective thrust-ambient temperature

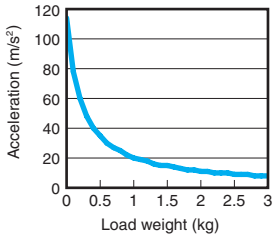
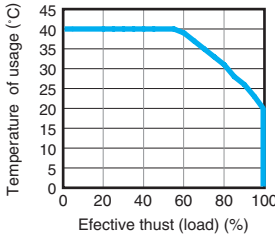
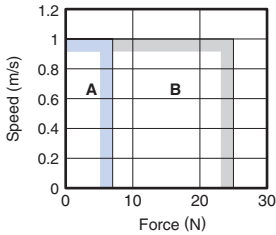
Sensor head temperature is below 50 °C
— Ambient temperature



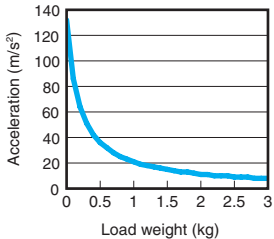
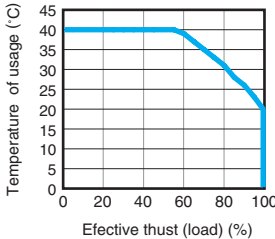
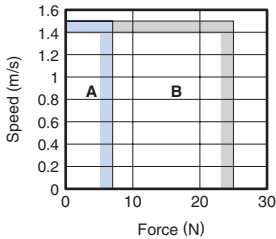
Load-acceleration



SGTMM03-025□



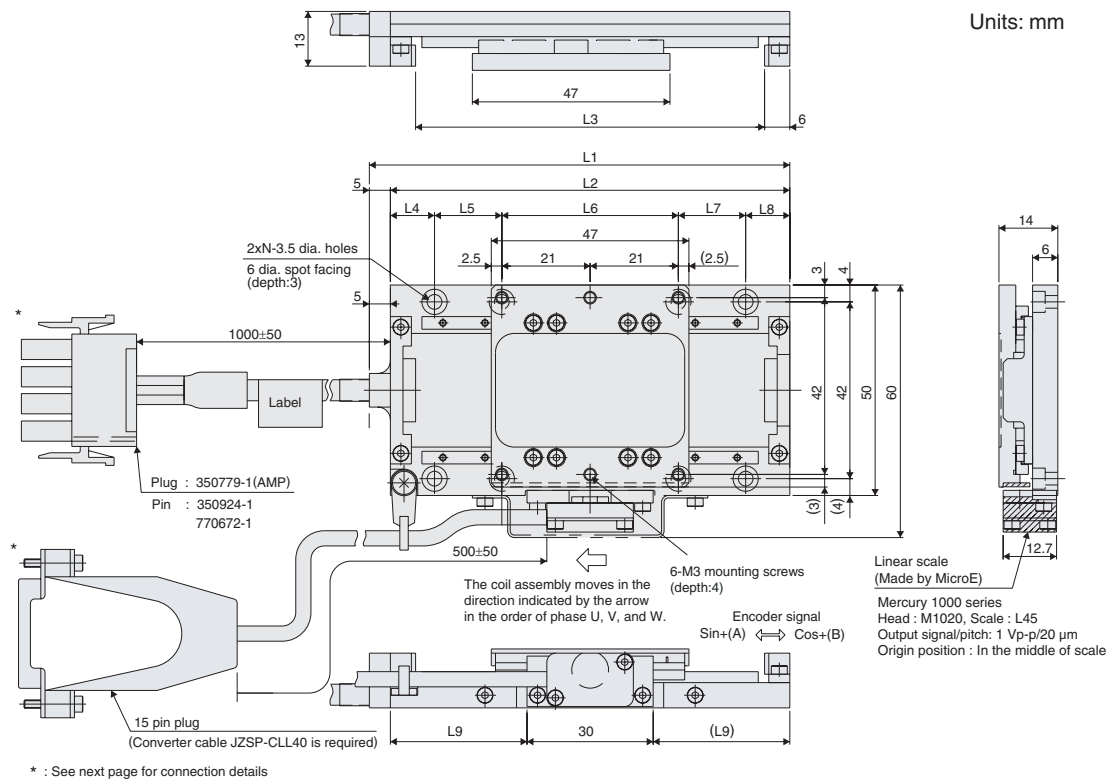
SGTMM03-065□



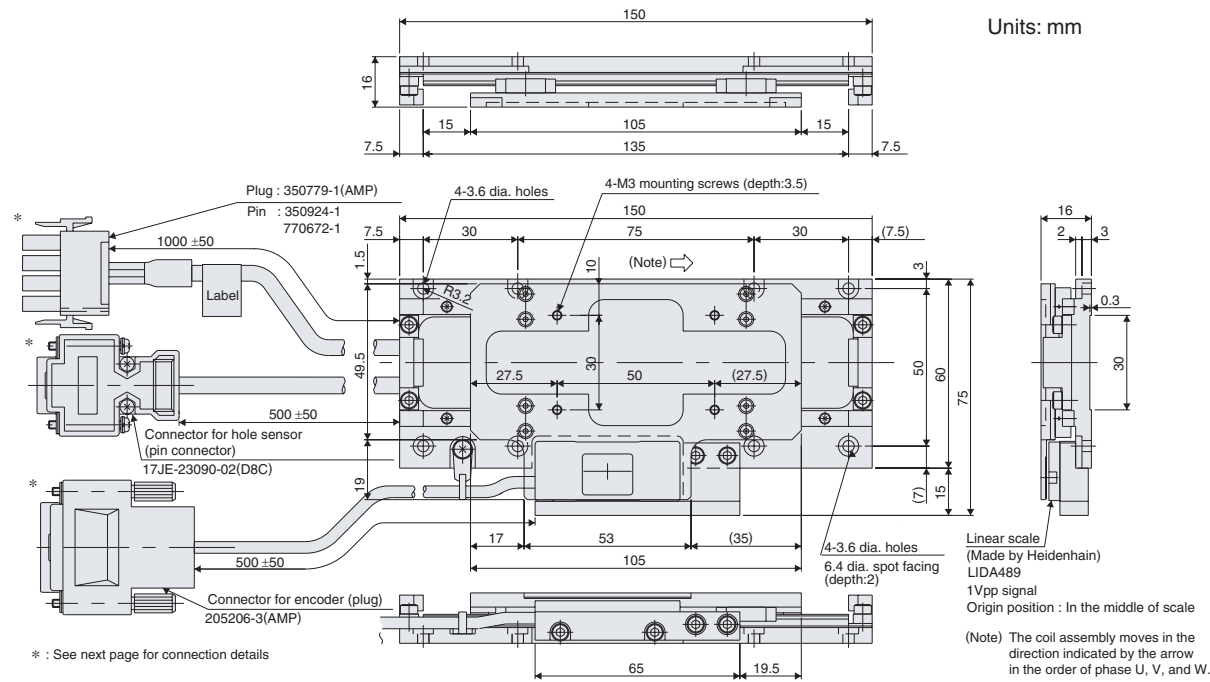
Dimensions

SGTMM01-□

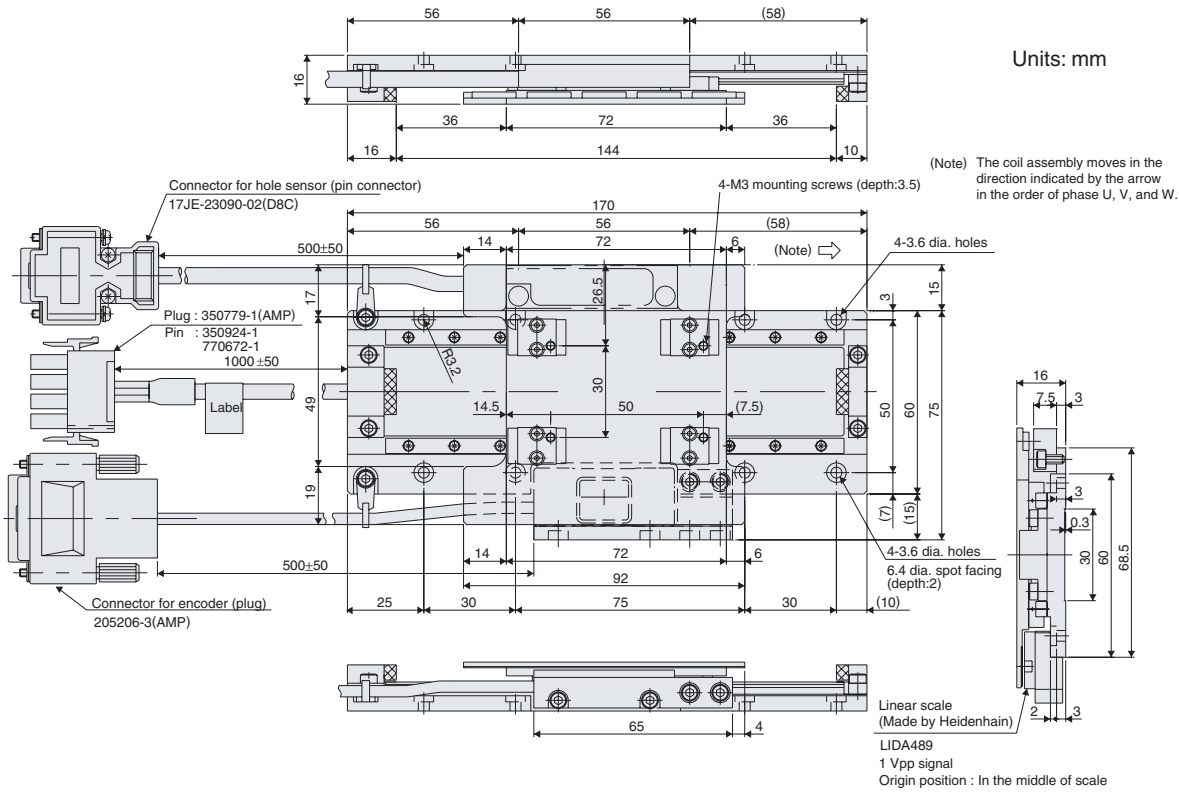
Micro trac model	L1 mm	L2 mm	L3 mm	L4 mm	L5 mm	L6 mm	L7 mm	L8 mm	L9 mm	N
SGTMM01-010AM20A	80	75	63	14	42	8	-	11	22.5	3
SGTMM01-030AM20A	100	95	83	10.5	16	42	16	10.5	32.5	4



SGTMM03-025AH20AP



SGTMM03-065AH20AP



Sigma trac-μ connections

SGTMM01-□

Linear servo motor
Power connector

Pin No.	Name
1	Phase U
2	Phase V
3	Phase W
4	FG

Linear scale connector
(Signal converter cable
JZSP-CLL40 is required)

Pin No.	Signal
1	IW-
2	IW+
3	RESERVED
4	RESERVED
5	RESERVED
6	RESERVED
7	COS+
8	SIN+
9	N/C
10	N/C
11	N/C
12	+5 V
13	GND
14	COS-
15	SIN-
Case	Shield

SGTMM03-□

Linear servo motor
Power connector

Pin No.	Name
1	Phase U
2	Phase V
3	Phase W
4	FG

Linear scale connector

Pin No.	Signal
1	cos (A+)
2	0 V
3	sin (B+)
4	+5V
5	Empty
6	Empty
7	/Ref (R-)
8	Empty
9	/cos (A-)
10	0V sensor
11	/sin (B-)
12	5 V sensor
13	Empty
14	Ref (R+)
15	Empty
Case	Shield

Hall sensor connector

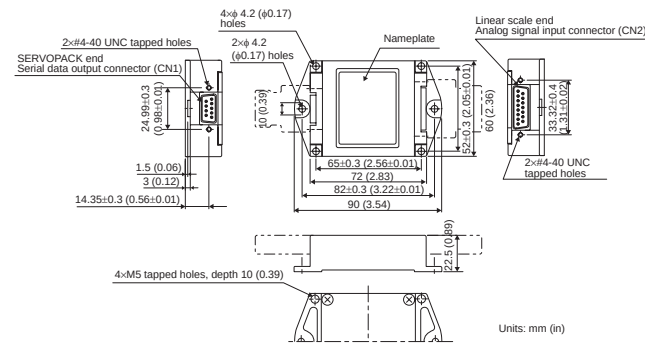
Pin No.	Name
1	+5 V (Power supply)
2	Phase U
3	Phase V
4	Phase W
5	0 V (Power supply)
6	Not used
7	Not used
8	Not used
9	Not used

Serial converter unit

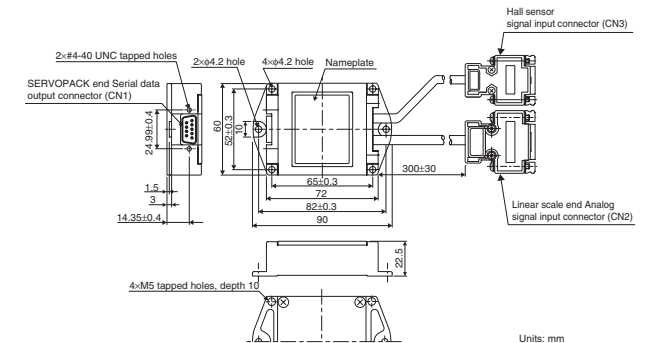
JZDP-D00□-□□□□

Items	Specifications
Electrical characteristics	Power supply voltage
	+5.0 V ±5%, ripple content 5% max.
	Current consumption
	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)
	Differential input amplitude: 0.4 V to 1.2 V Input signal level: 1.5 V to 3.5 V
Mechanical characteristics	Pole sensor input signal
	CMOS level
	Output signals
	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)

JZDP-D003-□□□□



JZDP-D006-□□□□



JZDP-D003-□□□□
JZDP-D006-□□□□

[CN1] SERVOPACK end serial data output	Pin No.	Signal
	1	+5 V
	2	S-phase output
	3	Empty
	4	Empty
	5	0 V
	6	/S-phase output
	7	Empty
	8	Empty
	9	Empty
	Case	Shield

JZDP-D003-□□□□
JZDP-D006-□□□□

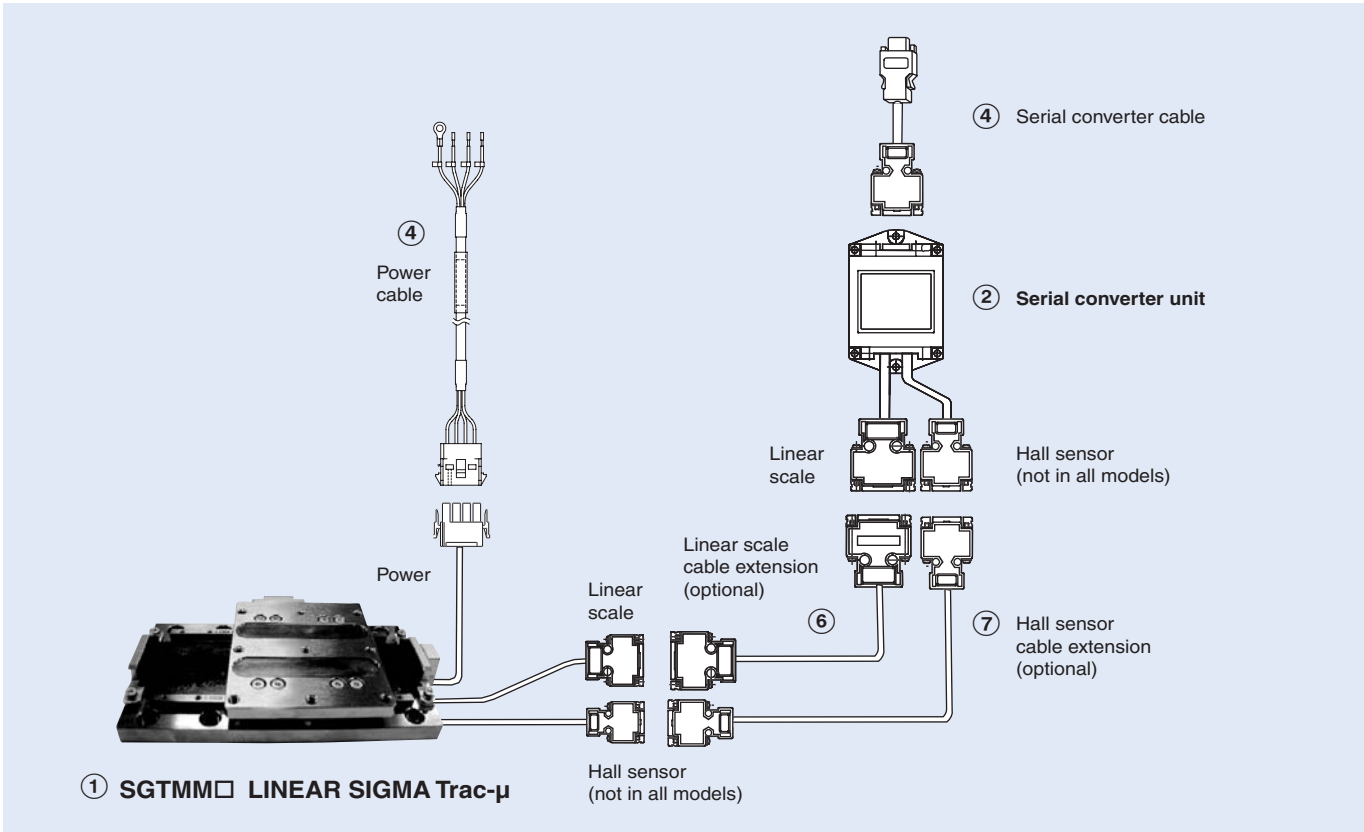
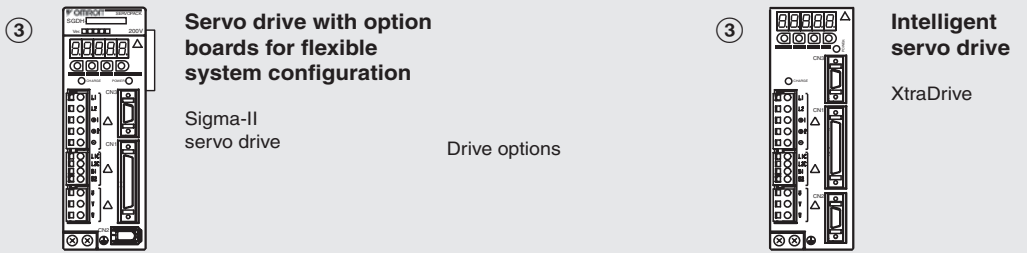
[CN2] Linear scale end Analog signal input	Pin No.	Signal
	1	cos input (A+)
	2	0 V
	3	sin input (B+)
	4	+5 V
	5	Empty
	6	Empty
	7	/Ref input (R-)
	8	Empty
	9	/cos input (A-)
	10	0 V sensor
	11	/sin input (B-)
	12	5 V sensor
	13	Empty
	14	Ref input (R+)
	15	Empty
	Case	Shield

JZDP-D006-□□□□

[CN3] Hall sensor signal input	Pin No.	Signal
	1	+5 V
	2	U-phase input
	3	V-phase input
	4	W-phase input
	5	0 V
	6	Empty
	7	Empty
	8	Empty
	9	Empty
	Case	Shield

Ordering Information

(Refer to servo drive chapter)



Note: The symbols ①②③... show the recommended sequence to select the servo motor, cables and serial converter for a linear motors system

Sigma trac-μ

Symbol	Specifications		Model			
	Rated force	Peak force	① Linear axis model	② Serial converter	③ Servo drive	
①②③	3.5 N	10 N	SGTMM01-010AM20A	JZDP-D003-242 ^{*1}	SGDH-A5AE-OY	XD-P5MN01
	3.5 N	10 N	SGTMM01-030AM20A	JZDP-D003-242 ^{*1}	SGDH-A5AE-OY	XD-P5MN01
	7 N	25 N	SGTMM03-025AH20AP	JZDP-D006-221	SGDH-01AE-OY	XD-01MN01
	7 N	25 N	SGTMM03-065AH20AP	JZDP-D006-220	SGDH-01AE-OY	XD-01MN01

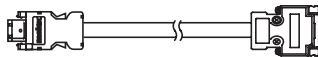
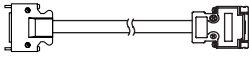
Note: *1. For the SGTMM01-□ motor the signal converter cable **JZSP-CLL40** (0.2 m length) is required.

Servo drive

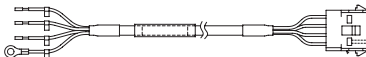
Note: Choosing Sigma-II drive or XtraDrive affects to the serial converter cable needed

③ Refer to Sigma-II or XtraDrive servo drive chapter for detailed drive specifications and selection of drive accessories

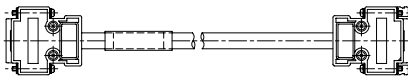
Serial converter cable to servo drive

Symbol	Specifications		Model	Appearance
④	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 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	

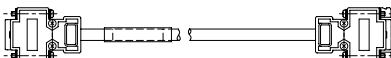
Power cables

Symbol	Specifications		Model	Appearance
⑤	Power cable for sigma trac micro	3 m	R7A-CAA003S-FE	
		5 m	R7A-CAA005S-FE	
		10 m	R7A-CAA010S-FE	
		15 m	R7A-CAA015S-FE	
		20 m	R7A-CAA020S-FE	

Linear scale cable to serial converter

Symbol	Specifications		Model	Appearance
⑥	Extension cable linear scale to serial converter (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	

Hall sensor cable to serial converter

Symbol	Specifications		Model	Appearance
⑦	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	

ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.