

XD-□, XD-□-E

XtraDrive

Intelligent servo drive. Integrated controller and network connectivity.

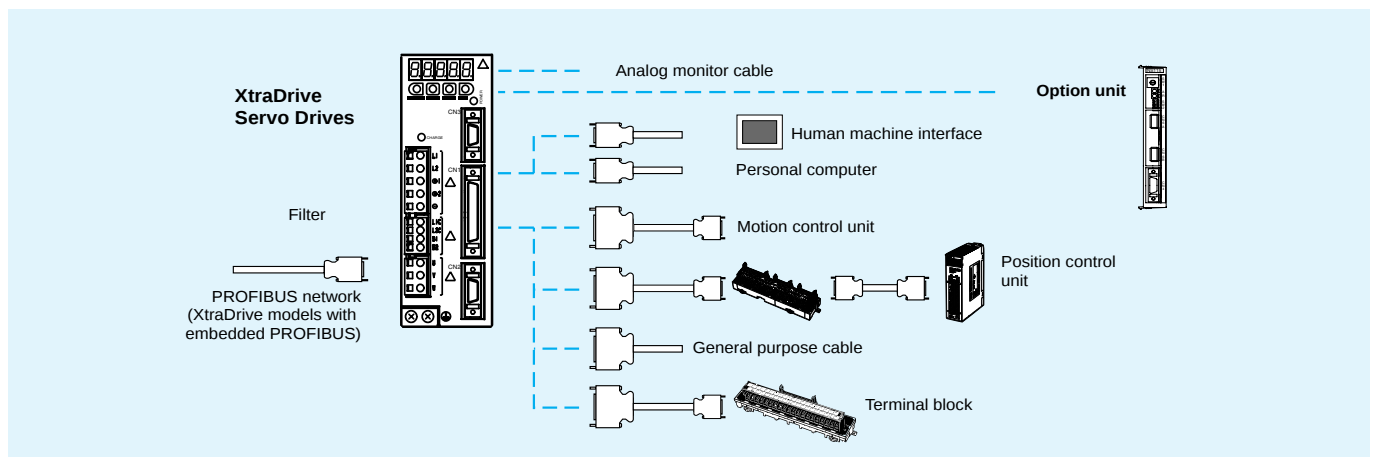
- NCT. Patented non-linear algorithm for tight control
- Very low tracking error with no overshoot and zero settling time
- Supports different servo motor encoder types
- PROFIBUS embedded in the drive available
- XtraDrive model available with electronic CAM
- The ideal drive for linear motor control
- 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)

Cables

R7M Servo Motor

(Refer to chapter Sigma-II rotary motors)

Cables

SGMAH, SGMPH Servo Motor

SGMGH, SGMUH, SGMSh, SGMbH Servo Motor

(Refer to chapter Sigma-II linear motors)

Cables

SGLG_linear Servo Motor

SGLF_linear Servo Motor

SGLT_linear Servo Motor

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-□	-	-
		2.39 N.m	750 W	XD-08-MN□	XD-08-MSD0-□	-	-
	400 V	0.955 N.m	300 W	-	-	XD-05-TN□	XD-05-TSD0-□
		2.07 N.m	650 W	-	-	XD-10-TN□	XD-10-TSD0-□
	230 V	0.318 N.m	100 W	XD-01-MN01-□	XD-01-MSD0-□	-	-
		0.637 N.m	200 W	XD-02-MN01-□	XD-02-MSD0-□	-	-
		1.27 N.m	400 W	XD-04-MN01-□	XD-04-MSD0-□	-	-
		2.39 N.m	750 W	XD-08-MN□-□	XD-08-MSD0-□	-	-
		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-□
	400 V	4.77 N.m	1500 W	-	-	XD-15-TN□	XD-15-TSD0-□
		2.84 N.m	0.45 kW	-	-	XD-05-TN□	XD-05-TSD0-□
		5.39 N.m	0.85 kW	-	-	XD-10-TN□	XD-10-TSD0-□
		8.34 N.m	1.3 kW	-	-	XD-15-TN□	XD-15-TSD0-□
		11.5 N.m	1.8 kW	-	-	XD-20-TN□	XD-20-TSD0-□
		18.6 N.m	2.9 kW	-	-	XD-30-TN□	XD-30-TSD0-□
	400 V	28.4 N.m	4.4 kW	-	-	XD-50-TN□	-
		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□	-
	400 V	15.8 N.m	5.0 kW	-	-	XD-50-TN□	-
		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-□
	230 V	6.3 N.m	4.0 kW	-	-	XD-50-TN□	-
		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-□	-	-
	230 V	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	Performance	Speed control range	1:5000
		Speed 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 $J_L = J_M$)
	Input signal	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	-
Position control mode	Performance	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
		Speed selection	With forward/reverse current limit signal (speed 1 to 3 selection), servo motor stops or another control method is used when both are OFF.
	Input signal	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)
		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	Position signal output	A-phase, B-phase, C-phase, (S-phase): line driver output S-phase is for absolute encoder only.
		Sequence input signal	Servo ON, P control (or control mode switching, zero clamp, command pulse inhibit), forward/reverse run prohibit, alarm reset, forward/ reverse current limit (or internal speed switching)
		Sequence output signal	Servo alarm, alarm codes (3-bit output): CN1 output terminal is fixed It is possible to output three types of signals form among: positioning complete (speed agree), motor rotation, servo ready, current limit, speed limit, brake release, warning, NEAR, and zero point pulse signal
		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
	Integrated functions	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)
Terminal specifications	Main circuit	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.
	Control circuit	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 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 } Enables control mode switching. Position ↔ torque } Torque ↔ speed }
		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 Function selected by parameter.
46		/N-CL Forward external torque limit ON Current limit function enabled when ON. Reverse external torque limit 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 speed input: ±2 to ±10 V/rated motor speed (input gain can be modified using a parameter.)
9 (10)	Torque	T-REF Torque reference input: ±1 to ±10 V/rated motor torque (input gain can be modified using a parameter.)
7	Position	PULS Reference pulse input for line driver only
8		/PULS Input mode is set from the following pulses. Sign + pulse string
11		SIGN CCW/CW pulse
12		/SIGN Two-phase pulse (90° phase differential)
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
13		PL2 (+12 V power supply is built into the SERVOPACK).
18		PL3

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

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

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

I/O signals (CN1) - output signals

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

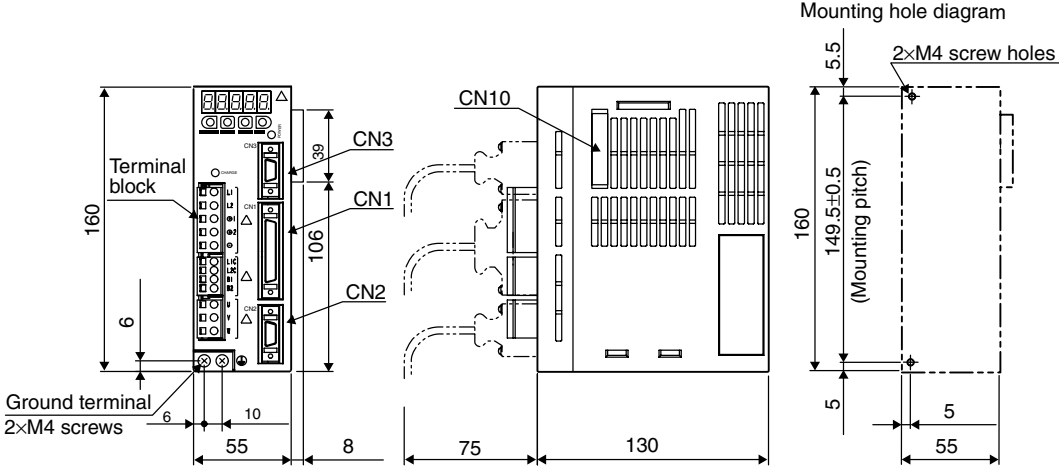
Note: 1. Pin numbers in parentheses () indicate signal grounds.

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

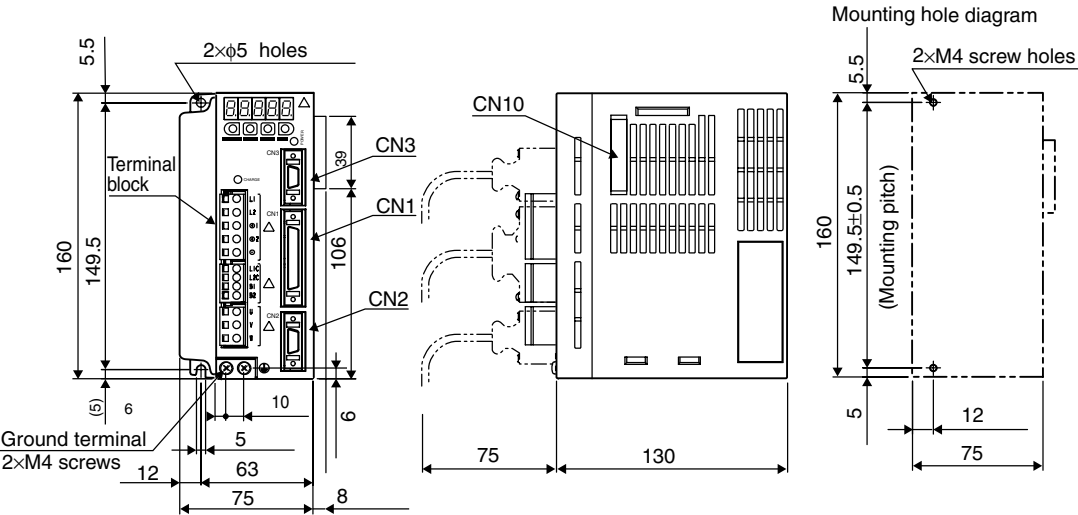
Dimensions

Servo drives

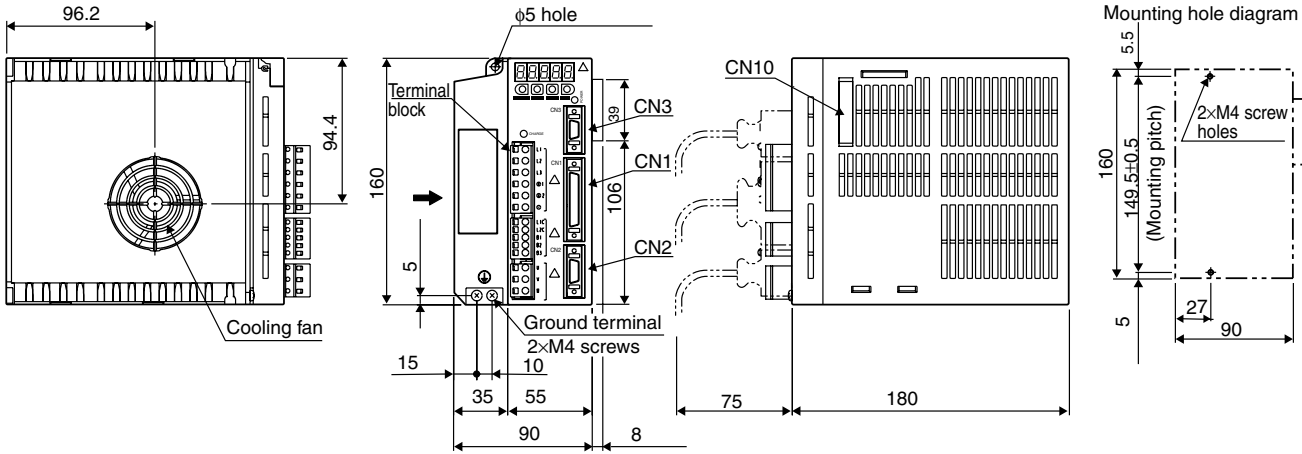
XD-P3-M□ to XD-02-M□ (230V, 30 to 200W)



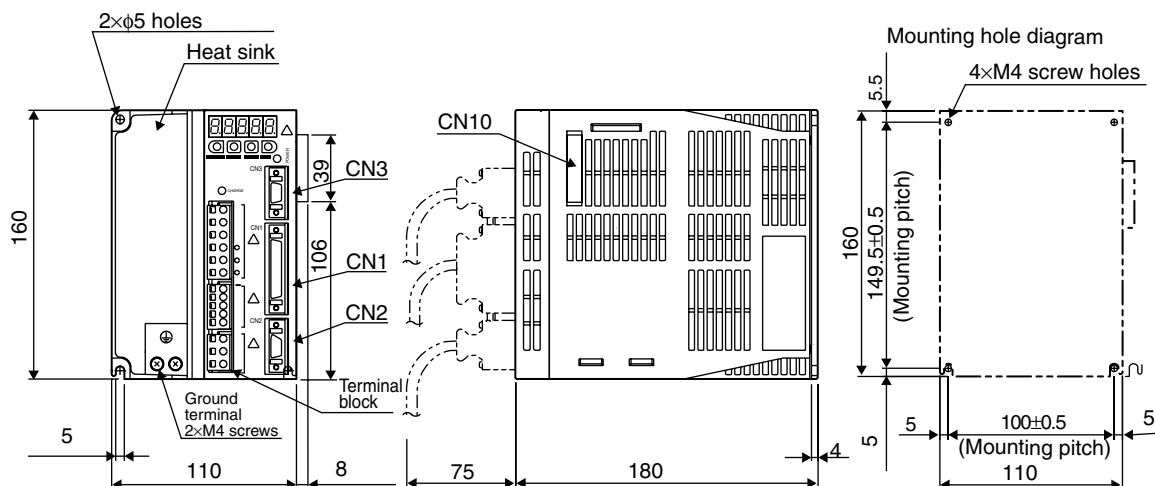
XD-04-M□ (230V, 400W)



XD-08-M□ (230V, 750W)

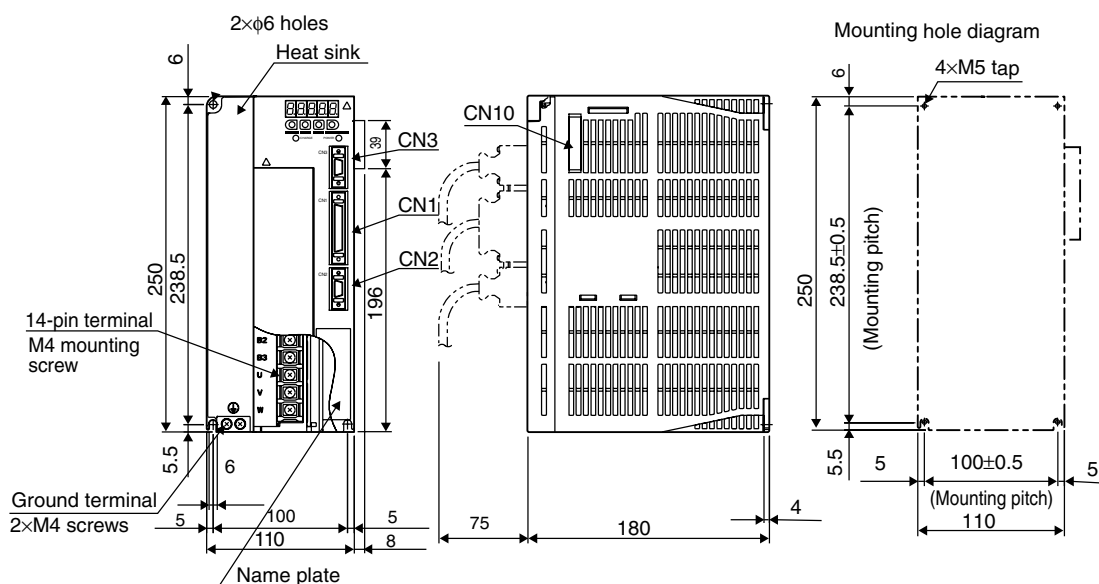


XD-05-T□ to -15-T□ (400V, 0.5 to 1.5kW)

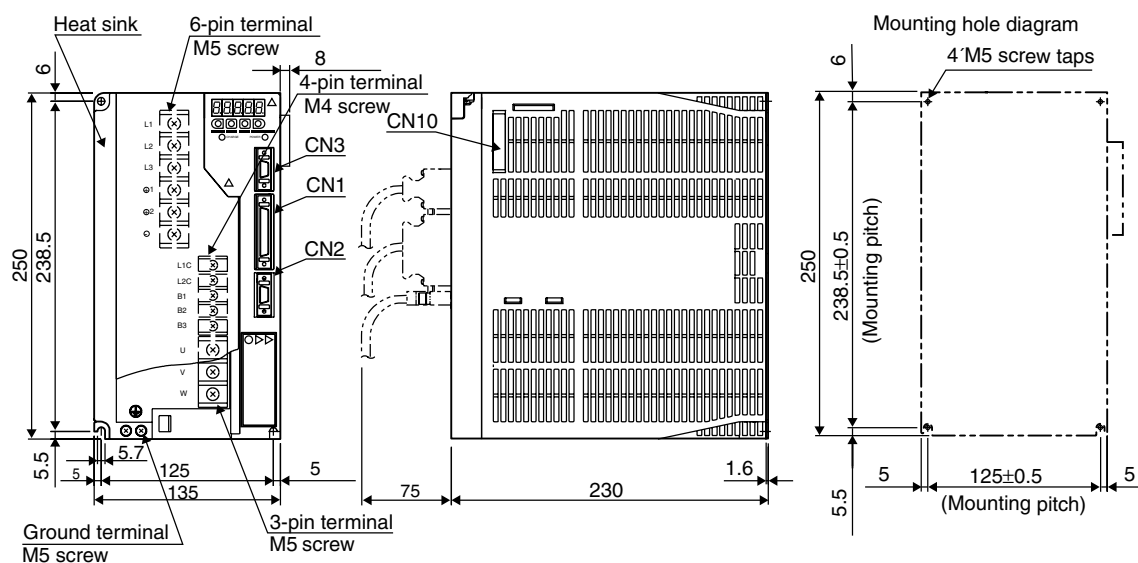


XD-15-M□ (230V, 1.5kW)

XD-20-T□, XD-30-T□ (400V, 2/3kW)

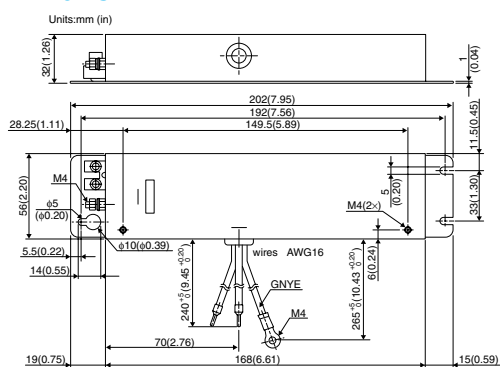


XD-50-T□ (400V, 5kW)



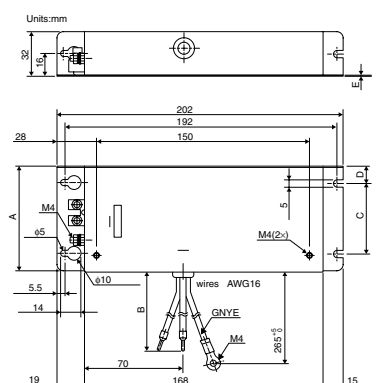
Filters

R88A-FIW104-SE

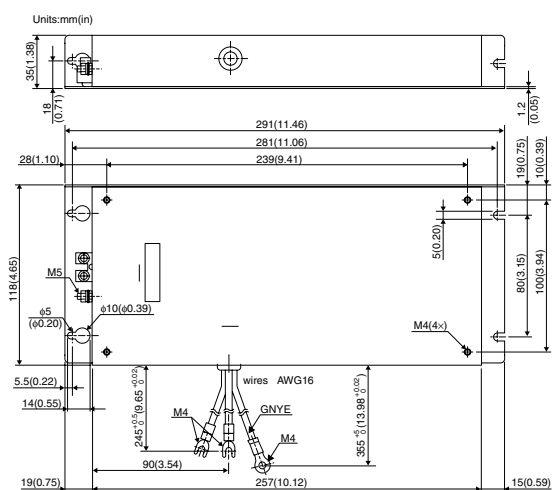


R88A-FIW107-SE, R88A-FIW115-SE

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

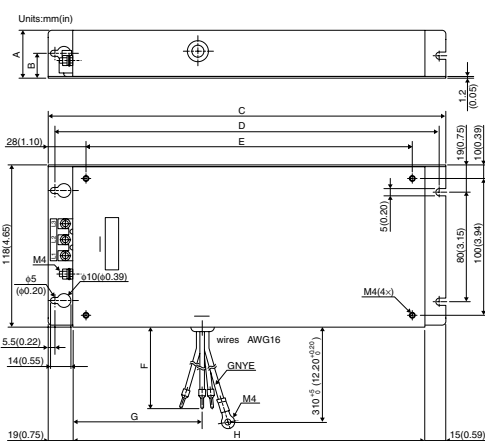


R88A-FIW125-SE

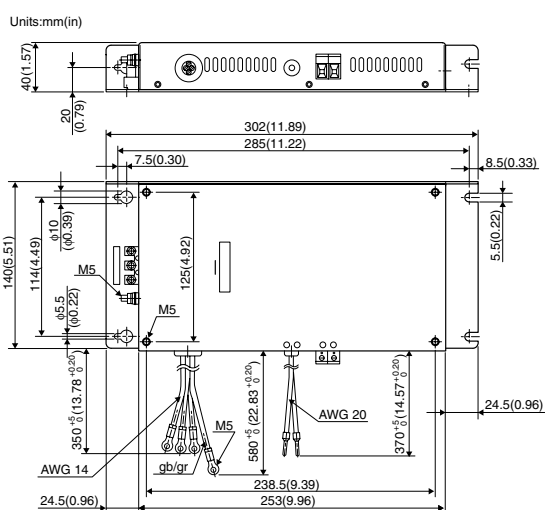


R88A-FIW4006-SE, R88A-FIW4010-SE

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

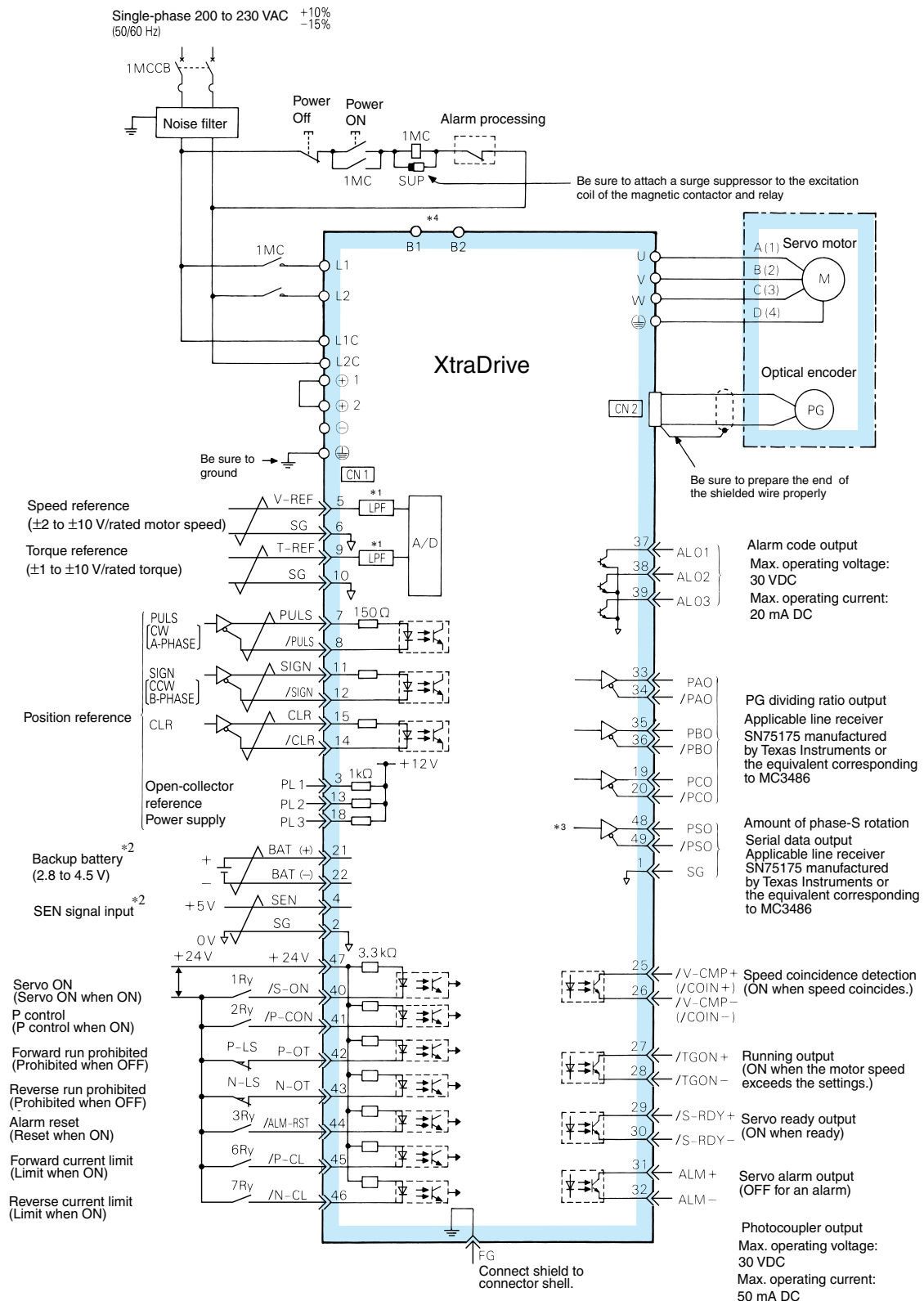


R88A-FIW4020-SE



Installation

Single-phase, 230 VAC



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

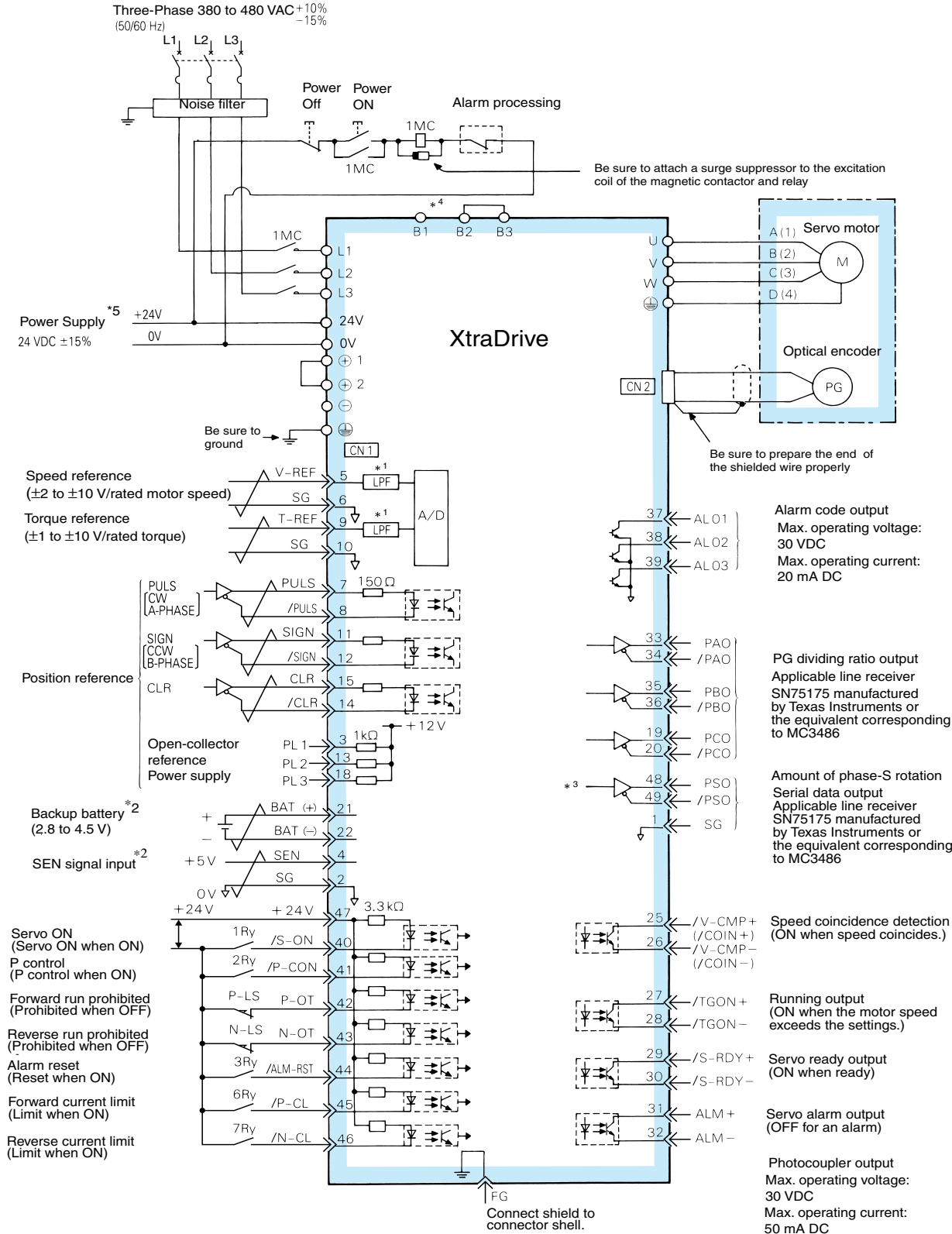
*2 Connect when using an absolute encoder.

*3 Used only with an absolute encoder.

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

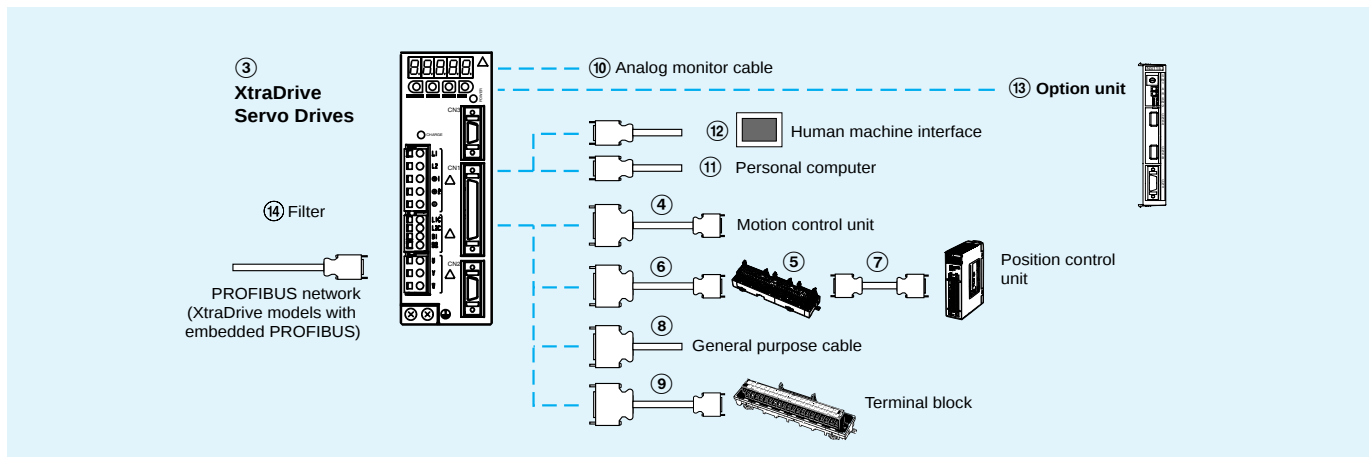
*6 TI stands for Texas Instruments Inc.

Three-phase, 400 VAC

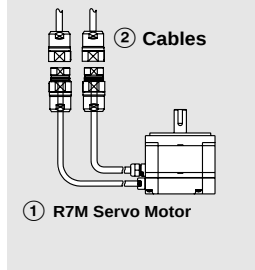


- *1 The time constant for the primary filter is 47 μs .
- *2 Connect when using an absolute encoder.
- *3 Used only with an absolute encoder.
- *4 For using an external regenerative resistor, connect it between B1 and B2.
- *5 The 24VDC power is supplied by the user.
- *6 TI stands for Texas Instruments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

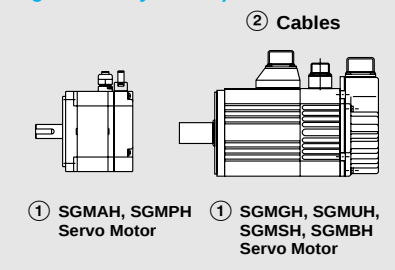
Ordering information



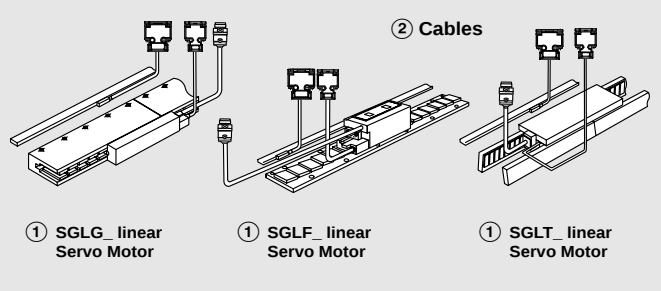
(Refer to chapter SmartStep servo motors)



(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 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□
	3 Phase 400 VAC	1.5 kW	XD-15-MN	XD-15-MN00-E	-	-	SGMPH-15A□	-	SGLFW-50A380□, SGLFW-1ZA200□, SGLGW-90A200A□
		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
⑤	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)
⑥	Cable to servo drive	Servo relay units XW2B-□0J6-□B	1 m	XW2Z-100J-B4
			2 m	XW2Z-200J-B4
⑦	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		
⑧	Control cable	For general purpose controllers	1 m	R88A-CPW001S or JZSP-CKI01-1
			2 m	R88A-CPW002S or JZSP-CKI01-2
⑨	Relay terminal block cable	General purpose controller	1 m	R88A-CTW001N
	2 m		R88A-CTW002N	
	Relay terminal block		-	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
		R88A-FIW107-SE	7A	
		R88A-FIW115-SE	15 A	
		R88A-FIW125-SE	25 A	
	XD-04-M□, XD-08-M□, XD-15-M□	R88A-FIW4006-SE	6 A	400 VAC three-phase
		R88A-FIW4010-SE	10 A	
		R88A-FIW4020-SE	20 A	
		R88A-FIW4020-SE	20 A	
	XD-05-T□, XD-10-T□, XD-15-T□	R88A-FIW4006-SE	6 A	
		R88A-FIW4010-SE	10 A	
	XD-20-T□, XD-30-T□	R88A-FIW4010-SE	10 A	
		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□, SGMUH-(10/15/20)D□, SGMUH-(10/15)D□)	MS3108E18-10S
Military power connector IP67 (for 400 V motors SGMGH-(20/30/44)D□, SGMUH-(30/40/50)D□, SGMUH-(30/40)D□)	MS3108E22-22S
Military brake connector IP67 (for 400 V servo motors SGMGH-□, SGMUH-□, 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.