

XD-□

XtraDrive

Intelligent Servo Drive. Integrated controller and network connectivity.

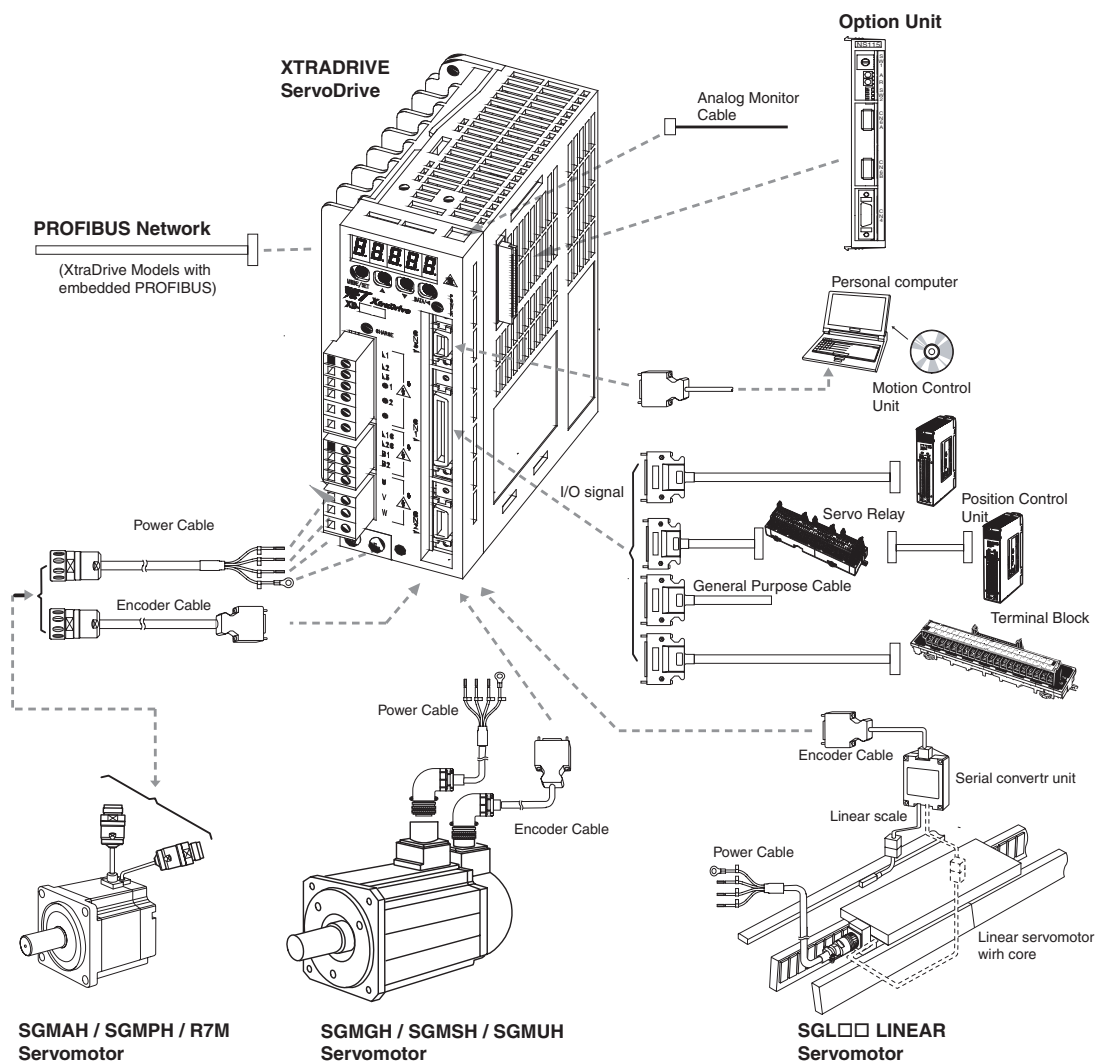
- NCT. Patented non-linear technique for tight control
- Very low tracking error with no overshoot and zero settling time
- Automatic tuning of servo parameters for optimal settling time
- OCA. Oscillation Cancelling Algorithm
- Profibus Embedded in the drive available
- Ideal drive for linear motors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

Ratings

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



System Configuration



Servomotor / Servo Drive Combination

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

Type Designation

Drive

XD - 01 - MN 01

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		

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: 230V
T: 400V

Servo Drive Specifications

Single-Phase, 230 V

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

Three-Phase, 400 V

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

General Specifications

Speed/Torque Control Mode	Performance	Speed Control Range	1:5000
		Speed Variance	Load Variance: During 0 to 100% load $\pm 0.01\%$ max. (at rated speed)
		Voltage Variance	Rated voltage $\pm 10\%$:0% (at rated speed)
		Temperature Variance	25 $\pm 25^\circ\text{C}$: $\pm 0.1\%$ max (at rated speed)
		Frequency characteristics	400Hz (at $J_L = J_M$)
	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: $\pm 6\text{VDC}$ (forward motor rotation if positive reference) at rated speed: Set at delivery Variable setting range: ± 2 to $\pm 10\text{VDC}$ at rated speed/ max. input voltage: $\pm 12\text{V}$
		Input Impedance	Approx. 14 k Ω
		Circuit Time Constant	-
Position Control Mode	Performance	Torque Reference Input	Reference Voltage: $\pm 3\text{VDC}$ (forward rotation if positive reference) at rated speed: Set at delivery Variable setting range ± 1 to $\pm 10\text{VDC}$ at rated torque reference
		Input Impedance	Approx. 14 K Ω
		Circuit Time Constant	Approx. 47 μs
		Contact Speed Reference	Rotation Direction Selection: With P control signal
		Speed selection	With forward/reverse current limit signal (speed 1 to 3 selection), servomotor stops or another control method is used when both are OFF.
	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 (+5V level) , open collector (+5V or +12 level) Input Pulse Frequency: 0 to 500 Kpps (200Kpps max. at open collector)
		Control Signal	Clear Signal (input pulse is same as reference pulse)
I/O Signal	Position Signal	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
		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 Profibus: (Only models with Profibus) Profibus DP Slave, Node address 0-125 set by rotary switches, Baud rate from 9.6kbps to 12 Mbps. LED Indicators: Bus Failure and System Failure
		Auto Tuning Function	Position speed loop gain and integral time constant can be automatically set.
	Integrated Functions	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
Integrated Functions	Internal Speed Setting Function	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 15kW)

I/O Specifications

Terminal Specifications

Symbol	Name	Function
L1, L2 or L1, L2, L3	Main circuit AC input terminal	AC power input terminals for the main circuit
U	Servomotor connection terminal	Red
V		White
W		Blue
L1C, L2C	Control power input terminal	AC power input terminals for the control circuit.
⊕	Frame ground	Ground terminal. Ground to a maximum of 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.
⊕1, ⊕2	DC reactor connection terminal for suppressing power supply harmonic waves	Normally, short ⊕1 and ⊕2. If a countermeasure against power supply harmonic waves is needed, connect a DC reactor between ⊕1 and ⊕2.
⊕	Main circuit DC output terminal (+)	Normally, not connected. This terminal exists on the Servo Drives with a capacity of 6.0 kW or higher only.
⊖	Main circuit DC output terminal (n-)	Normally, not connected.

Encoder Connector (CN2)

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

I/O Signals (CN1) - Input signals

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

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

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

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

I/O Signals (CN1) - Output signals

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

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

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

Parameters

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

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

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

Parameter No.	Name			Setting Range	Units	Factory Setting	Setting Validation
Pn1A7	Motor selecection Switches			-	-	0001	Immediately
	Digit	Function Name	Setting	Explanation			
	0	Integral Mode	0	Disable clear integral function			
			1	Enable clear integral function			
	1-3	Not used	0	Not used			
Pn1A8	Reserved (Do not change)			-	-	0	-
Pn1A9						40	
Pn1AA						40	
Pn1AB						30	
Pn1AC						80	
Pn1AD						0	
Pn1AE						300	
Pn1AF						0	
Pn1B0	Reserved (Do not change)			-	-	40	-
Pn1B1						40	
Pn1B2						40	
Pn1B3						2000	
Pn1B4						0	
Pn1B5						160	
Pn1B6						150	
Pn1B7						20	
Pn1B8						100	
Pn1B9						600	
Pn1BA						0	
Pn1BB						2000	
Pn1BC						300	
Pn1BD						2000	
Pn1BE						0	
Pn1BF						3	
Pn1C0						0	
Pn1C1						3	
Pn1C2						0	
Pn200						Position Control References Selection Switches	
	Digit	Function Name	Setting	Explanation			
	0	Reference Pulse Form	0	Sign + Pulse, positive logic			
			1	CW + CCW, positive logic			
			2	Phase A + Phase B (x 1), positive logic			
			3	Phase A + Phase B (x 2), positive logic			
			4	Phase A + Phase B (x 4), positive logic			
			5	Sign + Pulse, negative logic			
			6	CW + CWW, negative logic			
			7	Phase A + Phase B (x 1), negative logic			
			8	Phase A + Phase B (x 2), negative logic			
			9	Phase A + Phase B (x 4), negative logic			
	1	Error Counter Clear Signal Form	0	Clears error counter when the signal is at H level			
			1	Clears error counter at the rising edge of the signal			
			2	Clears error counter when the signal is at L level.			
			3	Clears error counter at the falling edge of the signal			
	2	Clear Operation	0	Clear error counter at the baseblock			
			1	Does not clear error counter (Possible to clear error counter only with CLR signal)			
			2	Clears error counter when an alarm occurs.			
			3	Clear signal ignore			
3	Filter Selection	0	Reference input filter for line driver signals				
		1	Reference input filter for open collector signals				
Pn201	PG Dividing Pulse (16bit or less)			0.17 to 65535 P/rev	1 P/rev	2048 P/rev	After restart
Pn202	Electronic Gear Ratio (Numerator)			1 to 65535	-	4	After restart
Pn203	Electronic Gear Ratio (Denominator)			1 to 65535	-	1	After restart
Pn204	Position Reference Accel/Decel Time Constant			0.00 to 64.00 ms	0.01 ms	0.00 ms	Immediately
Pn205	Multiturn Limit Setting			0 to 65535 rev	rev	65535 rev	After restart
Pn206	Reserved (Do not change)			-	-	16384	-
Pn207	Pending!!!!!!!!!!!!!!!!!!!!			-	-	0	-
Pn208	Position Reference Movement Averaging Time			0.00 to 64.00 ms	0.01 ms	0.00 ms	After restart
Pn209	Reserved (Do not change)			-	-	0	-
Pn216	Command smoothing			1 to 65535 ms	0.1 ms	0	Immediately
Pn281	Reserved (Linear Motors)			-	-	-	-

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

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

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

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

Monitor Mode Details

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

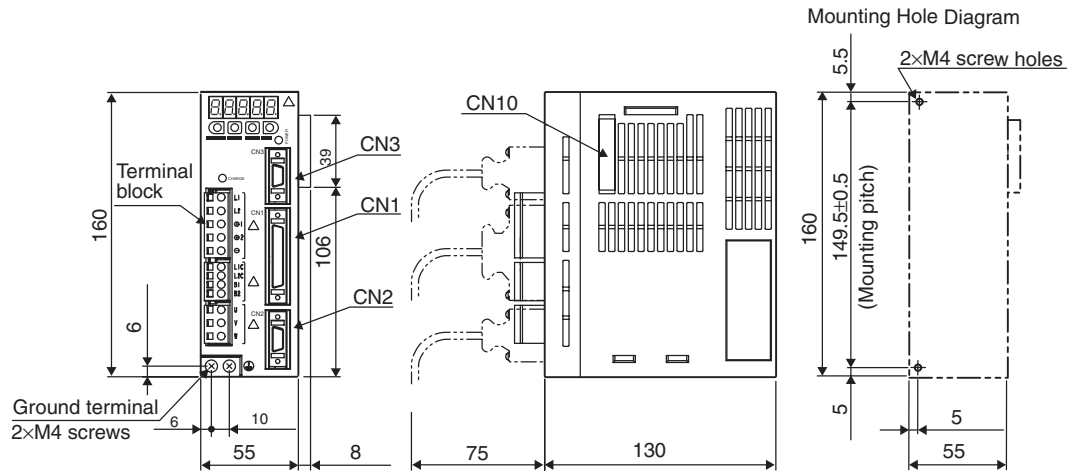
List of Function Modes

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

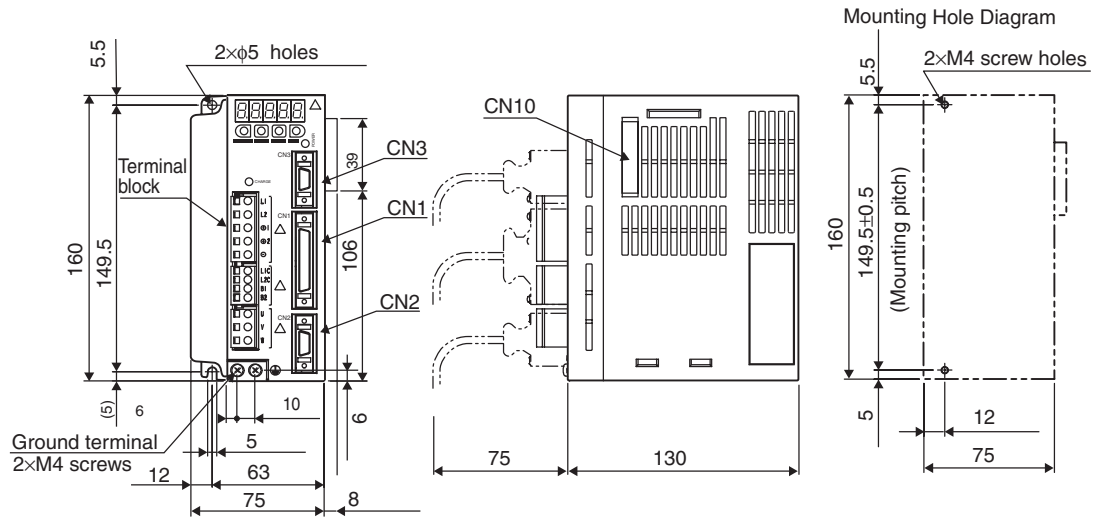
Dimensions

Servodrives

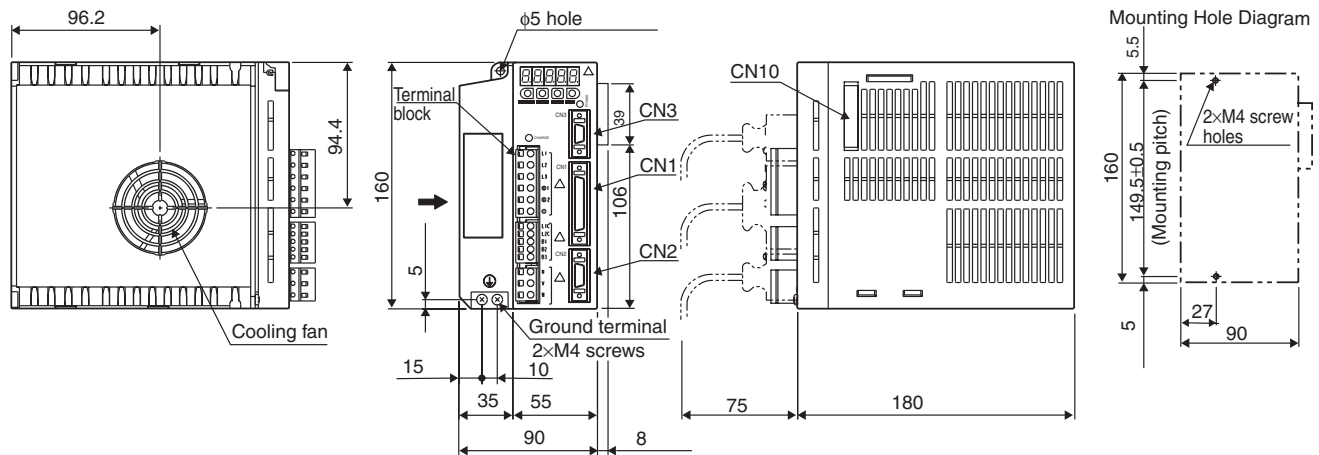
XD-P3-M□ to XD-02-M□ (230V, 30 to 200W)



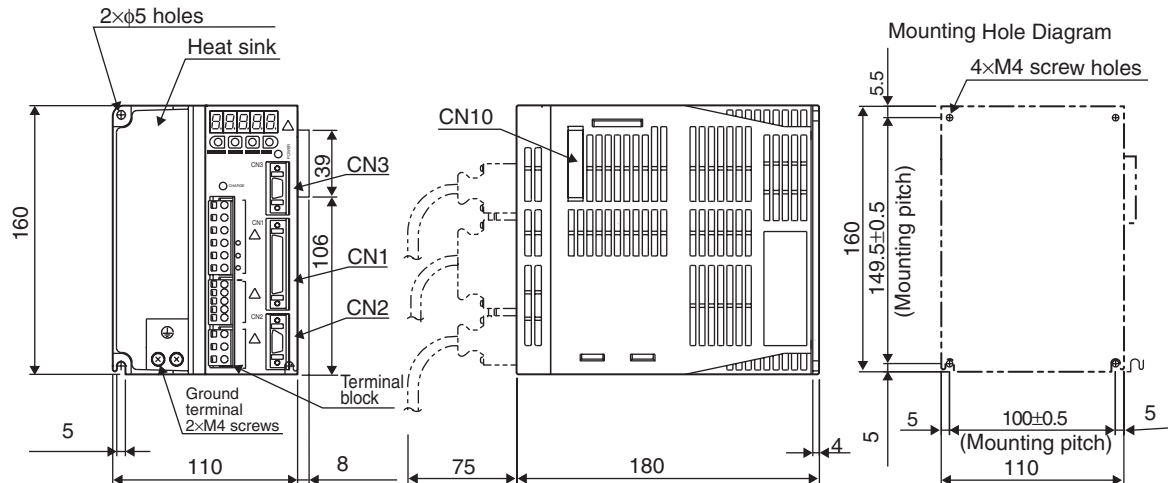
XD-04-M□ (230V, 400W)



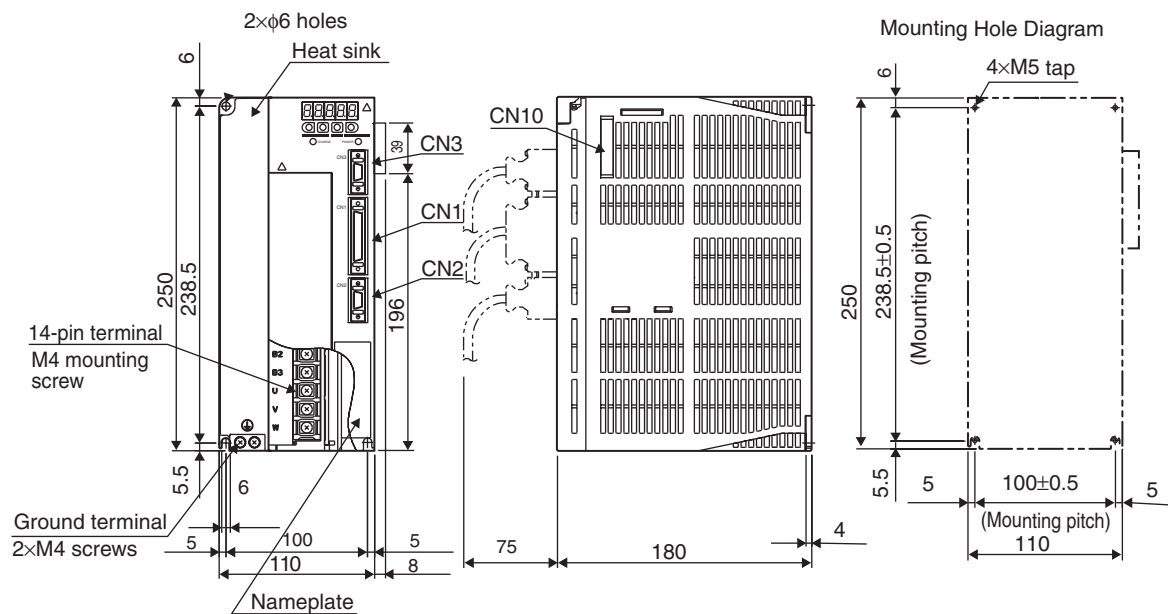
XD-08-M□ (230V, 750W)



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

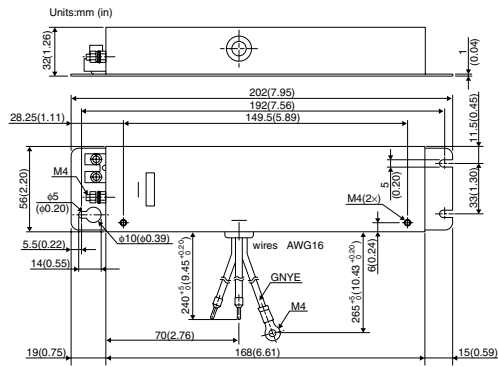


XD-20-T□, XD-30-T□ (400V, 2/3kW)



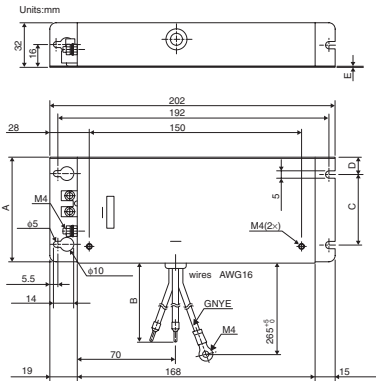
Filters

R88A-FIW104-SE



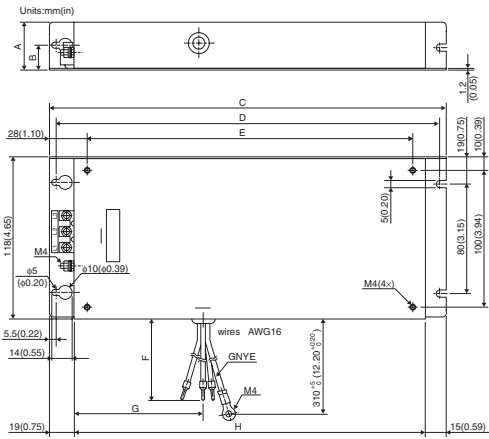
R88A-FIW107-SE, R88A-FIW115-SE

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



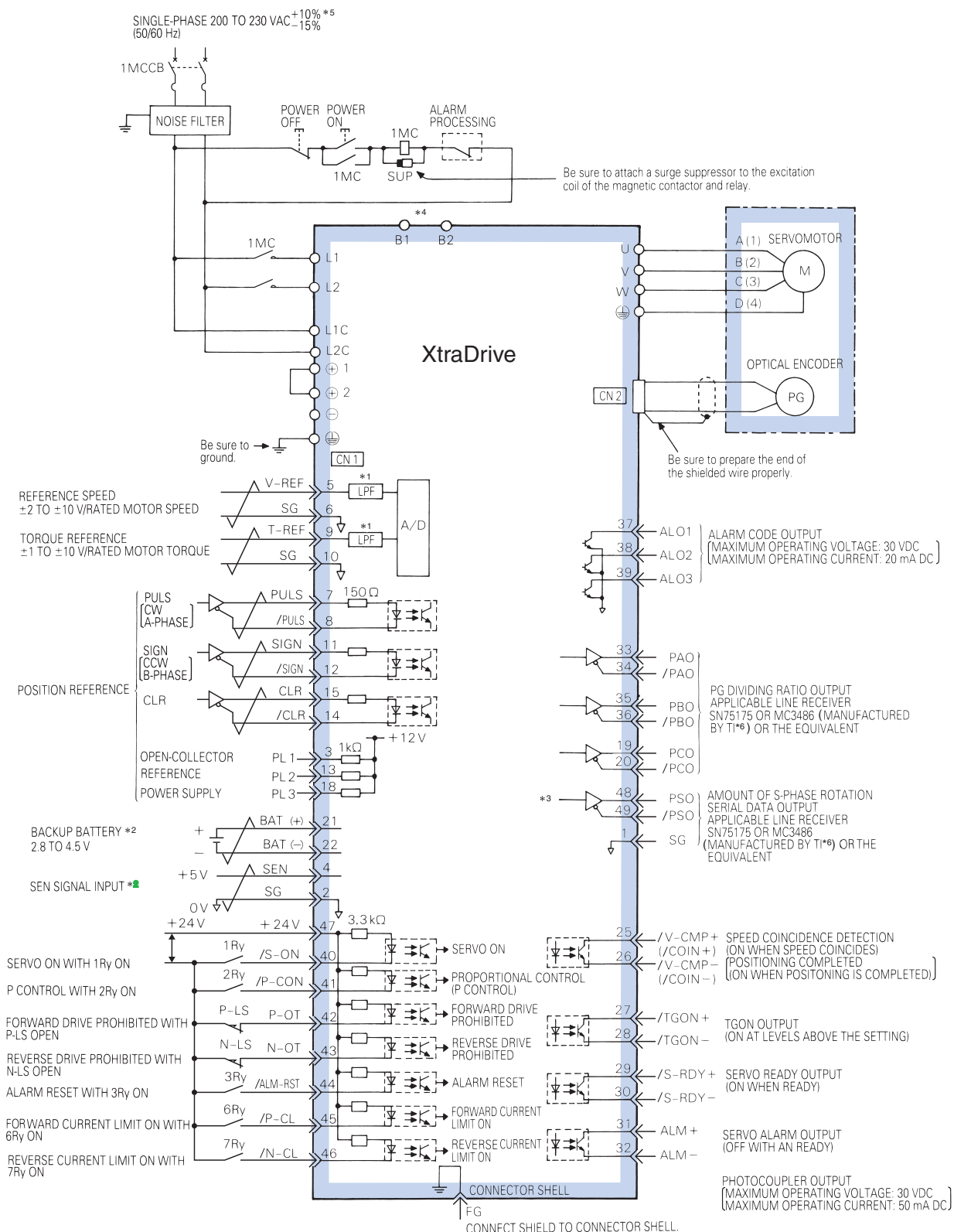
R88A-FIW4006-SE, R88A-FIW4010-SE

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



Installation

Single-phase, 230VAC



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

*2 Connect when using an absolute encoder.

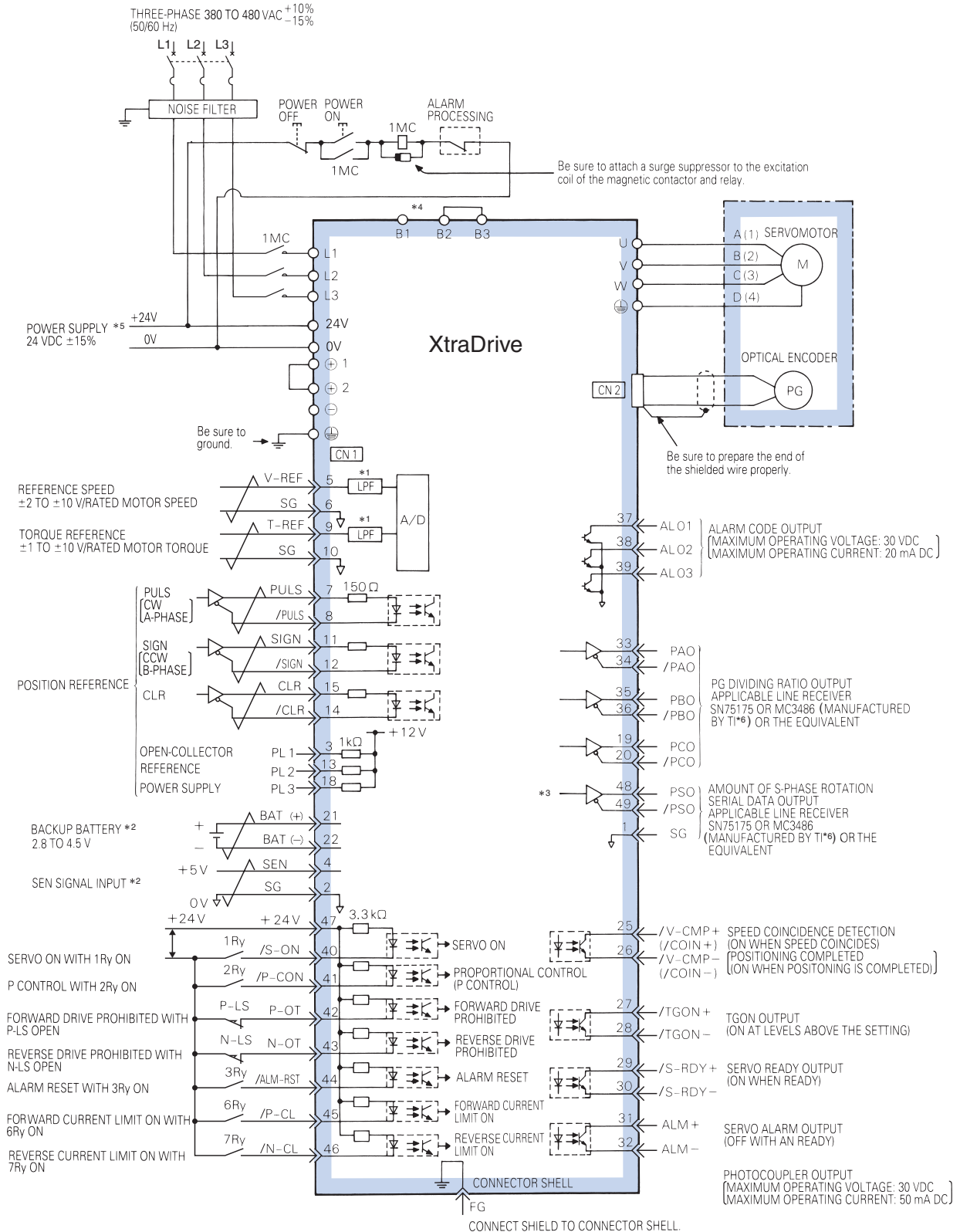
*3 Used only with an absolute encoder.

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

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

*6 TI stands for Texas Instruments Inc.

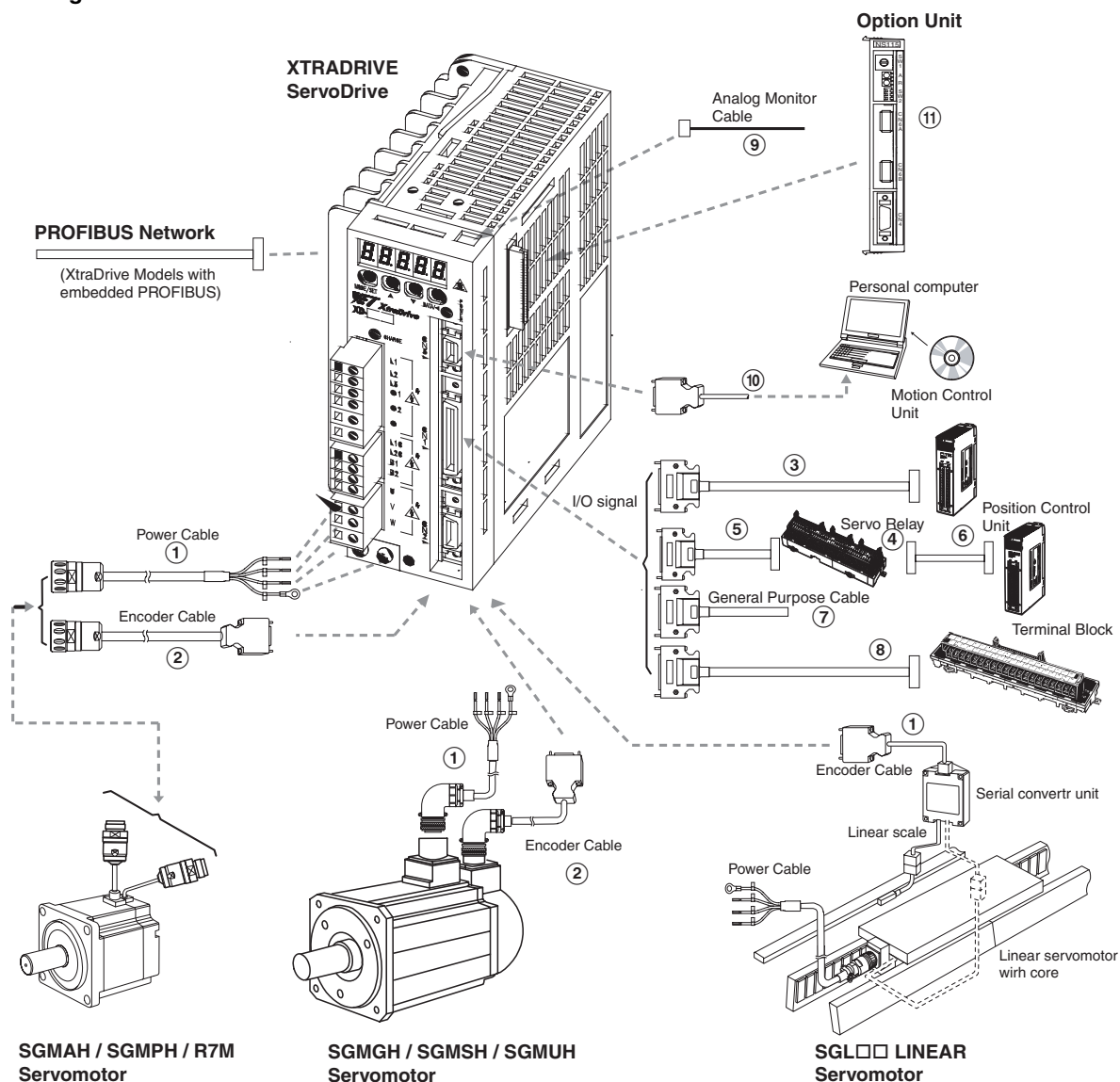
Three-phase, 400VAC



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

Ordering Information

System Configuration



Servo Drives

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

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

Servomotors

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

Power Cables

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

Encoder Cables (for CN2)

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

Control Cables (for CN1)

Symbol	Description	Connect to	Model
③	Control Cable (1 Axis)	Motion Control Units CS1W-MC221 CS1W-MC421 C200H-MC221	1 m R88A-CPW001M1 2 m R88A-CPW002M1 3 m R88A-CPW003M1 5 m R88A-CPW005M1
		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)	- R88A-TC04-E
		Servodrive connecting Cable (1 Axis)	1 M R88A-CMUK001J3-E2
	PLC Unit Control Cables (4 Axes)		1 m R88A-CMX001S-E
			1 m R88A-CMX001J1-E
	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)
		Servo Relay Units XW2B-□0J6-□B	1 m XW2Z-100J-B4 2 m XW2Z-200J-B4
	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
	Control Cable	For General purpose Controllers	1 m R88A-CPW001S or JZSP-CKI01-1 2 m R88A-CPW002S or JZSP-CKI01-1
	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
⑨	Analog Monitor Cable	R88A-CMW001S or DE9404559

Options (for CN3)

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

Option Units (for CN10)

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

Battery Backup for absolute encoder

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

Connectors

Specification	Model
Control I/O connector (For CN1)	R88A-CNU11C or JZSP-CKI9
XtraDrive 200V Connector Kit. (For 200V Motors SGMAH/PH-□□A□□□D-OY and R7M-A□-D)	Connectors included DE9406973 SPOC-17H-FRON169 SPOC-06K-FSDN169 XD-CN200K-DE
XtraDrive 400V Connector Kit. (For 400V Motors SGMAH/PH-□□D□□□D-OY)	Connectors included DE9406973 SPOC-17H-FRON169 LPRA-06B-FRBN170 XD-CN400K-DE
Sigma-II Drive Encoder connector (For CN2)	DE9406973 or R88A-CNU01R SPOC-17H-FRON169
Hypertac Encoder Connector IP67 (For Motors SGMAH/PH-□□□□□□D-OY and R7M-A□-D)	SPOC-06K-FSDN169
Hypertac Power Connector IP67, 200V. (For 200V Motors SGMAH/PH-□□A□□□D-OY and R7M-A□-D)	LPRA-06B-FRBN170
Hypertac Power Connector IP67, 400V. (For 400V Motors SGMAH/PH-□□D□□□D-OY)	MS3108E20-29S
Military Encoder connector IP67 (For Motors SGMGH-□, SGMSH-□, SGMUH-□)	MS3108E18-10S
Military Power connector IP67 (For 400V Motors SGMGH-(05/10/13)D□, SGMSH-(10/15/20)D□, SGMUH-(10/15)D□)	MS3108E22-22S
Military Power connector IP67 (For 400V Motors SGMGH-(20/30)D□, SGMSH-30D□, SGMUH-30D□)	MS3108E10SL-3S
Military Brake connector IP67 (For 400V ServoMotors SGMGH-□, SGMSH-□, SGMUH-□)	

Filters

Specifications (applicable Servo Drive)	Model	Rated Current	Rated Voltage
XD-P3-M□, XD-P5-M□, XD-01-M□, XD-02-M□	R88A-FIW104-SE	4 A	250 VAC Single-Phase
XD-04-M□	R88A-FIW107-SE	7 A	
XD-08-M□	R88A-FIW115-SE	15 A	
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	

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.