

SMARTSTEP 2 SERVO SYSTEM

A new step in servodrive simplicity



» Precise and cost-effective

» Ultra-compact design

» Simple to use and set up

SmartStep 2 - the right step forward...

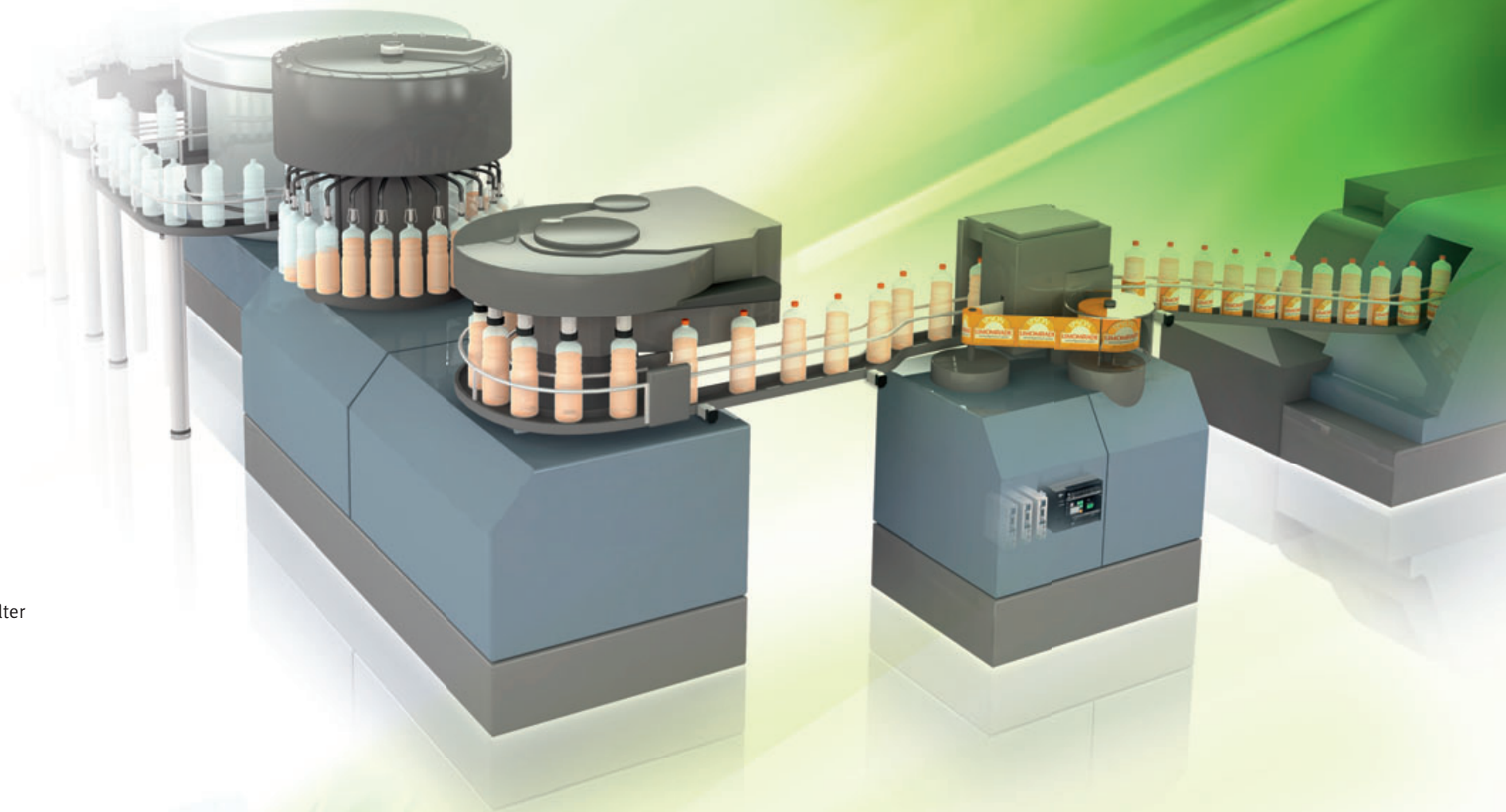
Omron knows that simplicity and precision are vital in your positioning application.

The new SmartStep offers an ideal solution for point-to-point motion applications where simplicity is essential. SmartStep2 keeps things simple whilst combining high performance in a cost-effective solution.

SmartStep2 has a completely new compact design that gives a 50% space saving compared with the previous model. It also has new features and functionality to help you to make your machines more efficient and cost-effective.

Features at a glance:

- Pulse control servo drive
- Ultra-compact size
- Auto-tuning
- Vibration suppression
- Adaptive resonance suppression filter
- Two programmable torque limits
- Feedback pulse output
- Power range from 50 W to 750 W
- Cylindrical and flat servo motors
- Electronic gear
- 10,000 steps per revolution

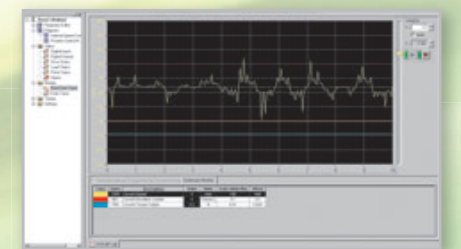


...to faster development with great drive simplicity

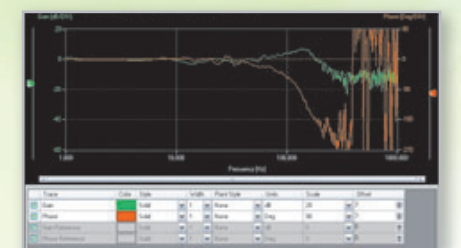
Getting started quickly

CX-Drive is a single, easy-to-use software tool for configuring, commissioning and maintaining both inverters and servos. SmartStep 2 is fully supported with a wide range of features making the servo drive set-up easier and faster than ever:

- Auto-tuning
- Parameter editing and monitoring
- Speed and position diagrams
- I/O status and alarms
- Real-time data trace



Real-time data trace



Frequency analysis

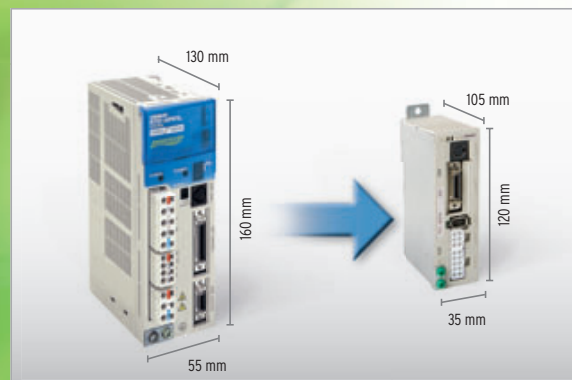


A compact design that's easy to connect

Although it has more functionality than previous models, SmartStep 2 has a compact design with an ultra-small footprint that saves considerable space. In addition, SmartStep 2 can be easily integrated with other automation devices such as the CP1L compact machine controller and NS operator terminals, helping to make an efficient and cost-effective machine design.

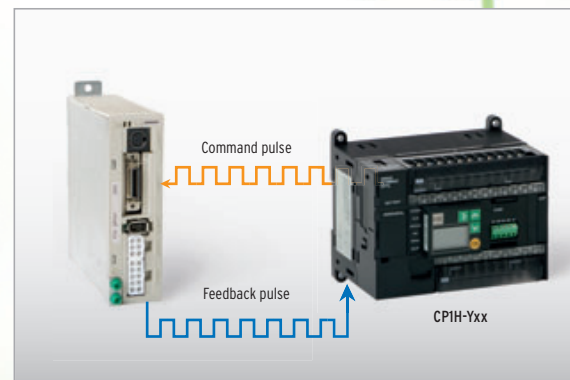
Additional features:

- Position control via pulse input 500 kpps
- Rated speed 4,000 rpm; peak 5,000 rpm
- Wide range of pulse configurations
- Four internal speed settings switched by external signal for easy control
- Servomotors compatible with SmartStep



Compact space-saving design

SmartStep 2 has a footprint 48% smaller than that of previous models and the volume is 39% smaller, saving cabinet space and costs.



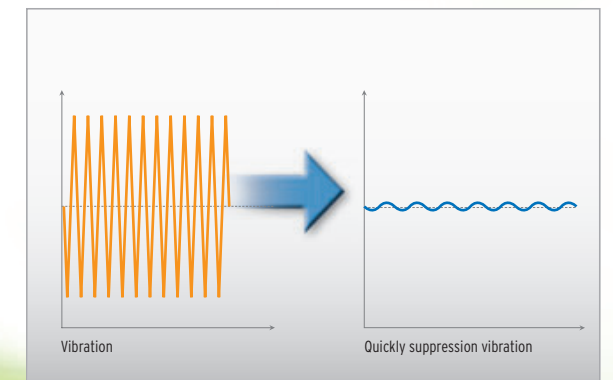
Feedback pulse output

Enables servo position feedback to the controller for close control position loop and monitor real positioning; it can be also used to synchronise with another axis.



Adjustment-free operation

Depending on load variations, the real-time auto-tuning function automatically calculates and adjusts the optimum gain values for the machine.



Vibration suppression

An adaptive filter ensures that resonant frequency changes are automatically followed to reduce the effect of vibration due to low mechanical rigidity. A further filter minimises vibration for better positioning when stopping the load.

R7D-BP□, R88D-GP□, R88M-G□

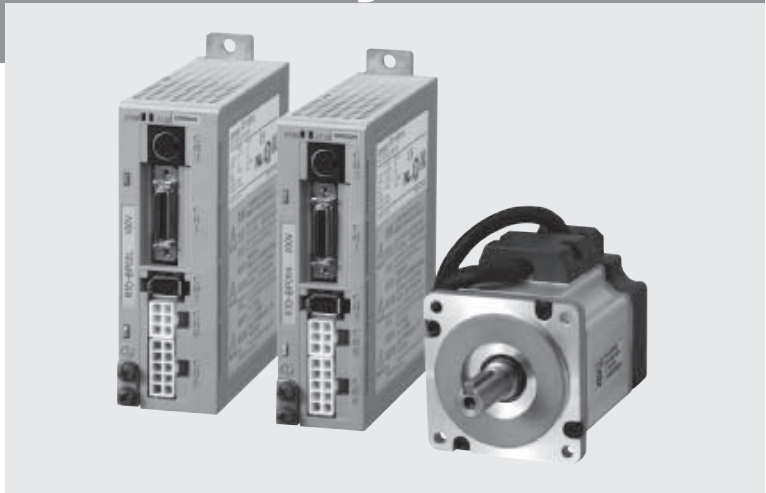
SmartStep 2 servo system

Another step forward in drive simplicity

- On-line Auto-tuning and Easy set up
- Ultra-compact size. The footprint is only 48% that of the SmartStep series
- Two torque limits
- Electronic gear, four internal speed settings and wide range of pulse settings
- Adaptive filters for suppression of vibration and resonance
- Servomotors with IP65 as standard and shaft oil seal available
- Motors with brake as option

Ratings

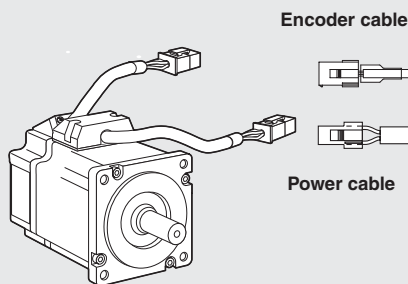
- 230 VAC single-phase 50 W to 750 W (0.16 to 2.4 Nm)



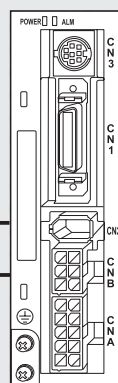
System configuration

(Refer to chapter SmartStep servo motors)

SmartStep 2
Servo Motor



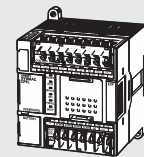
SmartStep 2
Servo Drive



Personal computer
software: CX-One



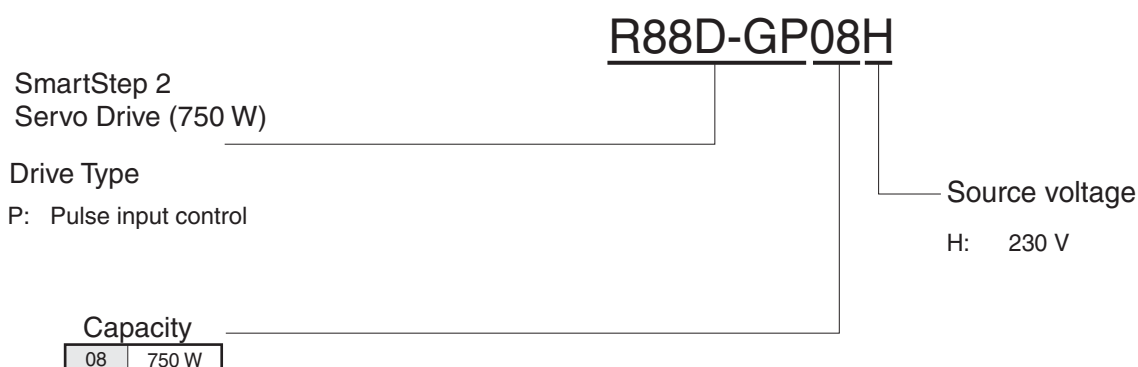
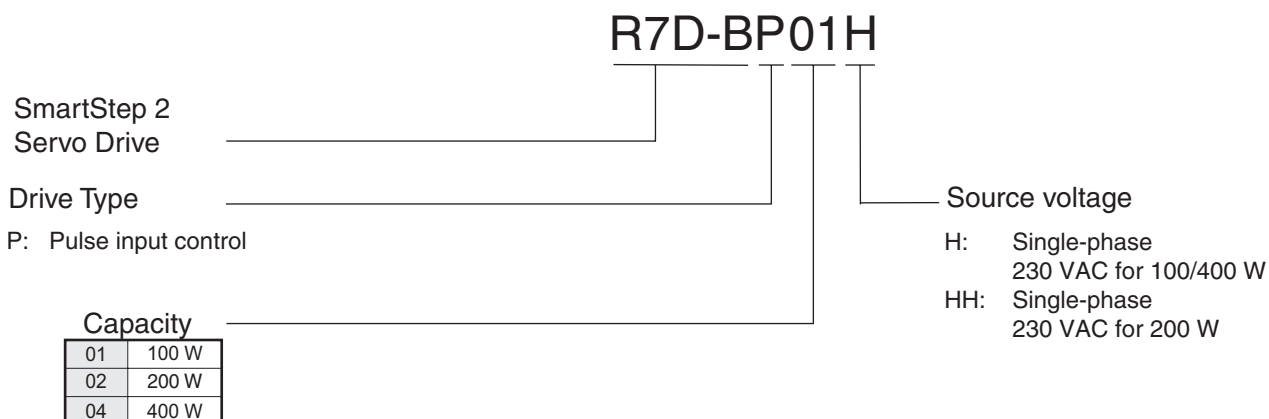
Position control unit



Terminal block
General purpose controller
(with pulse output)



Servo drive type designation



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 65°C
Ambient storage humidity	90% max. (with no condensation)
Storage/operating atmosphere	No corrosive gases.
Vibration resistance	10 to 60 Hz; acceleration : 5.9 m/s ² (0.6G) max.
Impact resistance	Acceleration 19.6 m/s ² max., 3 times each in X, Y, and Z directions,
Insulation resistance	Between power supply/power line terminals and frame ground: 0.5 MΩ min. (at 500 VDC)
Dielectric strength	Between power supply/power terminals and frame ground: 1,500 VAC for 1 min at 50/60 Hz Between each control signal and frame ground: 500 VAC for 1 min
Protective structure	Built into panel (IP10).
International standards	Approval obtained for UL: UL 508C; cUL: cUL C22.2 No 14 Approval EC : EMC EN55011 class A Group 1, EN 61000-6-2, low voltage EN50178

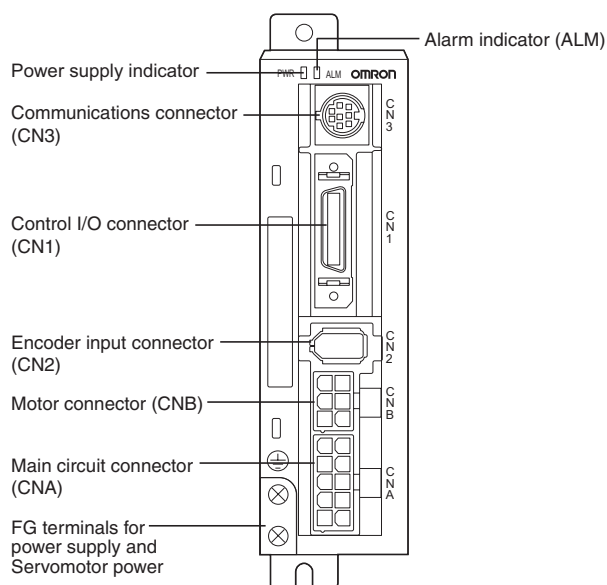
Performance specifications

Item	200 VAC input type			
	100 W R7D-BP01H	200 W R7D-BP02HH	400 W R7D-BP04H	750 W R88D-GP08H
Continuous output current (rms)	1.0 A	1.6 A	2.5 A	4 A
Momentary maximum output current (rms)	3.3 A	4.9 A	7.8 A	14.1 A
Main-circuit power supply	Single-phase 200 to 240 VAC (170 to 264 V), 50/60 Hz			Single-phase/three-phase 200 to 240 VAC (170 to 264 V), 50/60 Hz

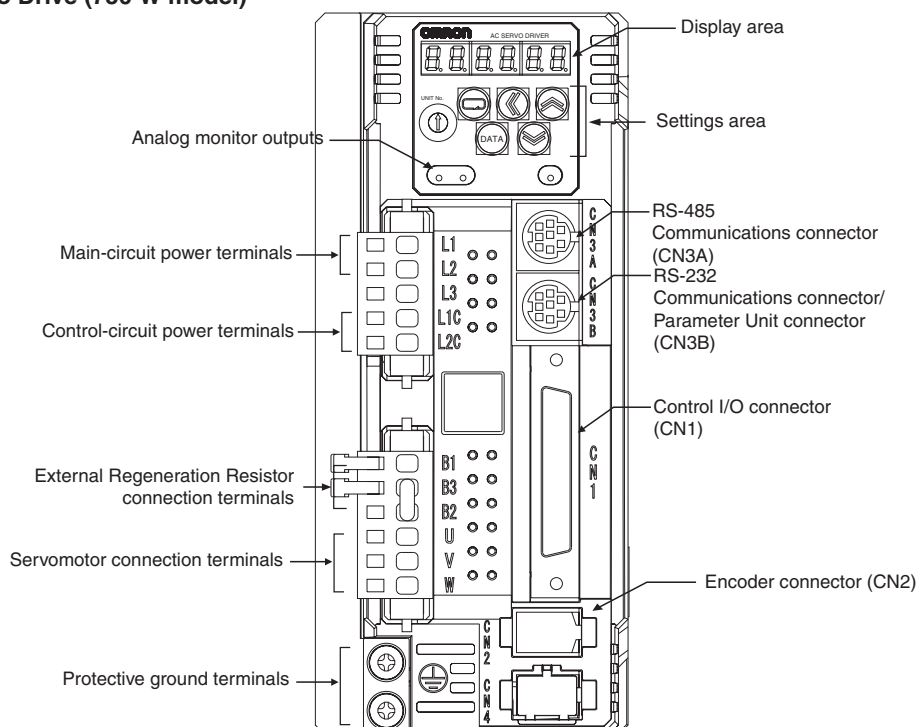
Item	200 VAC input type			
	100 W	200 W	400 W	750 W
	R7D-BP01H	R7D-BP02HH	R7D-BP04H	R88D-GP08H
Control circuit input power	-			Single-phase 200 to 240 VAC (170 to 264 V)
Control method	All-digital method			
Feedback	10,000 pulses/revolution incremental encoder			
Inverter method	PWM method based on IGBT			
PWM frequency	12 kHz		6 kHz	
Weight	0.35 kg	0.42 kg	0.42 kg	1.5 kg
Compatible motor voltage	200 V			
Command pulse response	Line drive: 500 kpps			
Compatible motor capacity	50 W 100 W	200 W	400 W	750 W
Applicable servo motor (R88M-)	G05030H G10030H GP10030H	G020030H GP20030H	G40030H GP40030H	G75030H

Servodrive part names

SmartStep2 Servo Drive (100 - 400 W models)



SmartStep2 Servo Drive (750 W model)



Servomotor type designation

R88M-GP10030H-BOS2

SmartStep2 Servomotor

Motor Type

Blank: Cylinder type
P: Flat type

Capacity

050	50 W
100	100 W
200	200 W
400	400 W
750	750 W

Rated Speed (r/min)

30	3000
----	------

Shaft end specifications

Blank	Straight shaft, no key
S2	Straight, key, tapped

Oil seal specifications

Blank	No oil seal
O	Oil seal

Brake specifications

Blank	No brake
B	Brake

Voltage and encoder specifications

H: 230 V with incremental encoder

Servo motor / servo drive combination

Servo motor							
Family			Voltage	Speed	Rated torque	Capacity	Model
Cylindric	50-750 W		230 V	3000 min ⁻¹	0.16 Nm	50 W	R88M-G05030H-□S2
					0.32 Nm	100 W	R88M-G10030H-□S2
					0.64 Nm	200 W	R88M-G20030H-□S2
					1.3 Nm	400 W	R88M-G40030H-□S2
					2.4 Nm	750 W	R88M-G75030H-□S2
Flat	100-400 W				0.32 Nm	100 W	R88M-GP10030H-□S2
					0.64 Nm	200 W	R88M-GP20030H-□S2
					1.3 Nm	400 W	R88M-GP40030H-□S2

Servo motor specifications

General specifications

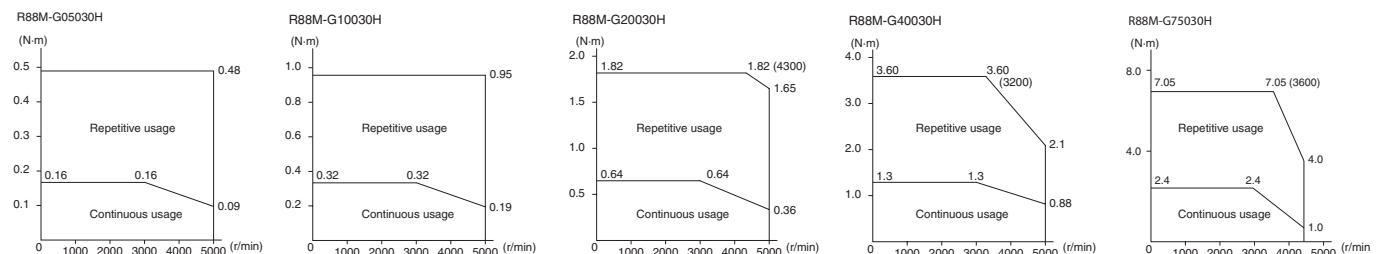
Item	Specification
Ambient operating temperature	0 to 40°C
Ambient operating humidity	85% max. (with no condensation)
Ambient storage temperature	-20 to 65°C
Ambient storage humidity	85% max. (with no condensation)
Storage/operating atmosphere	No corrosive gases
Vibration resistance	49 m/s ² max. in the X, Y, and Z directions
Impact resistance	Acceleration of 98 m/s ² max. 3 times each in the X, Y, and Z directions
Insulation resistance	20 MΩ min. at 500 VDC between the power terminals and FG terminal
Dielectric strength	1,500 VAC (50 or 60 Hz) for 1 minute between the power terminals and FG terminal
Run position	Any direction
Insulation grade	Type B
Structure	Totally-enclosed, self-cooling
Protective structure	IP65 (excluding the through-shaft portion)
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

Cylindric servo motors

Item	Unit	R88M-G05030H	R88M-G10030H	R88M-G20030H	R88M-G40030H	R88M-G75030H
Rated output	W	50	100	200	400	750
Rated torque	N·m	0.16	0.32	0.64	1.3	2.4
Rated rotation speed	r/min	3000				
Momentary maximum rotation speed	r/min	5000				
Momentary maximum torque	N·m	0.48	0.95	1.78	3.60	7.05
Rated current	A (rms)	1.1		1.6	2.6	4
Momentary maximum current	A (rms)	3.4		4.9	7.9	12.1
Rotor inertia	kg·m ²	2.5×10^{-6}	5.1×10^{-6}	1.4×10^{-5}	2.6×10^{-5}	8.7×10^{-5}
Power rate	kW/s	10.4	20.1	30.3	62.5	66
Allowable radial load	N	68		245		392
Allowable thrust load	N	58		98		147
Weight	Without brake	kg	0.3	0.5	0.8	1.2
	With brake	kg	0.5	0.7	1.3	1.7
Encoder resolution	---	Phase A and B: 2,500 pulses/rotation, Phase Z: 1 pulse/rotation				
Radiation shield dimensions	---	100 × 80 × t10 (Al)		130 × 120 × t12 (Al)		-
Brake specifications	Brake inertia	kg·m ²	2.0×10^{-7}	2.0×10^{-7}	1.8×10^{-6}	7.5×10^{-6}
	Excitation voltage	V	24 VDC ±10%			
	Power consumption (at 20 °C)	W	7		9	10
	Current consumption (at 20 °C)	A	0.30		0.36	0.42
	Static friction torque	N·m	0.29 min.		1.27 min.	2.45 min.
	Attraction time	ms	35 max.		50 max.	70 max.
	Release time	ms	20 max.		15 max.	20 max.
	Backlash	-	±1° max.			
	Rating	-	Continuous			
	Brake life	-	10,000,000 operations min.			
Applicable servo driver		R7D-BP01H		R7D-BP02HH	R7D-BP04H	R88D-GP08H

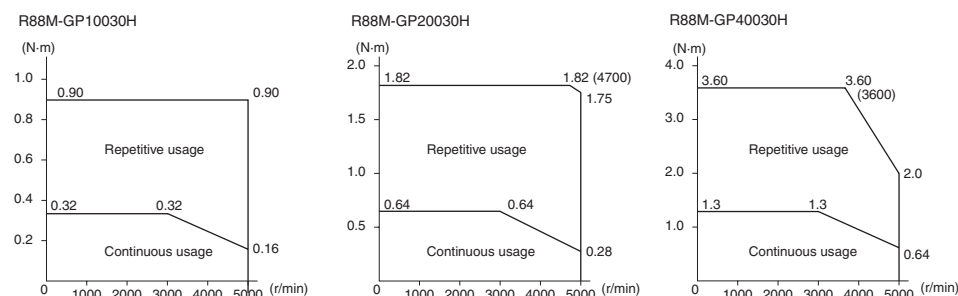
Torque-speed characteristics



Flat servo motors

Item		Unit	R88M-GP10030H	R88M-G20030H	R88M-G40030H
Rated output		W	100	200	400
Rated torque		N·m	0.32	0.64	1.3
Rated rotation speed		r/min	3000		
Momentary maximum rotation speed		r/min	5000		
Momentary maximum torque		N·m	0.90	1.82	3.60
Rated current		A (rms)	1.0	1.6	4.4
Momentary maximum current		A (rms)	4.3	6.8	18.6
Rotor inertia		kg·m ²	9.0 × 10 ⁻⁶	3.4 × 10 ⁻⁵	6.4 × 10 ⁻⁵
Power rate		kW/s	11.4	11.8	25.5
Allowable radial load		N	68	245	
Allowable thrust load		N	58	98	
Weight	Without brake	kg	0.7	1.3	1.8
	With brake	kg	0.9	2.0	2.5
Encoder resolution		---	Phase A and B: 2,500 pulses/rotation, Phase Z: 1 pulse/rotation		
Radiation shield dimensions		---	130 × 120 × t10 (Al)	170 × 160 × t12 (Al)	
Brake specifications	Brake inertia	kg·m ²	3.0 × 10 ⁻⁶	9.0 × 10 ⁻⁶	9.0 × 10 ⁻⁶
	Excitation voltage	V	24 VDC ±10%		
	Power consumption (at 20 °C)	W	7	10	
	Current consumption (at 20 °C)	A	0.29	0.41	
	Static friction torque	N·m	0.29 min.		1.27 min.
	Attraction time	ms	50 max.	60 max.	
	Release time	ms	15 max.		
	Backlash	-	±1° max.		
	Rating	-	Continuous		
	Brake life	-	10,000,000 operations min.		
Applicable servo driver (R7D-)			BP01H	BP02HH	BP04H

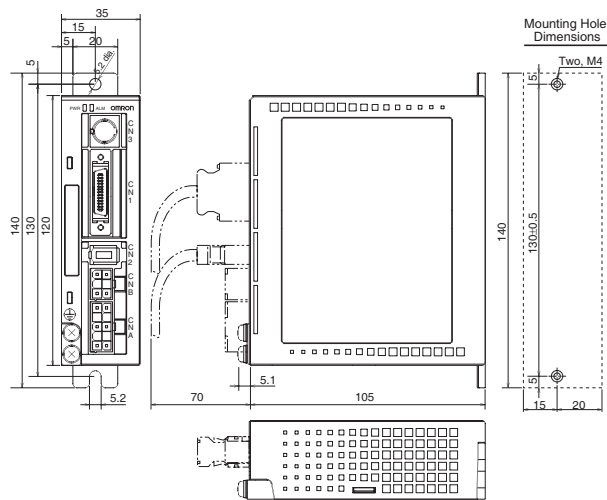
Torque-speed characteristics



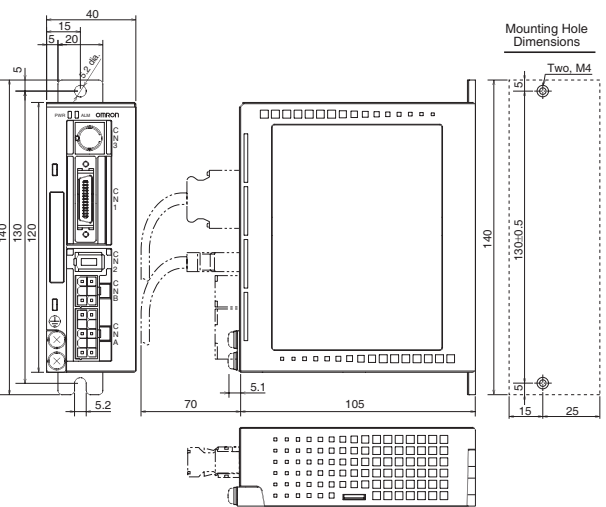
Dimensions

Servo drives

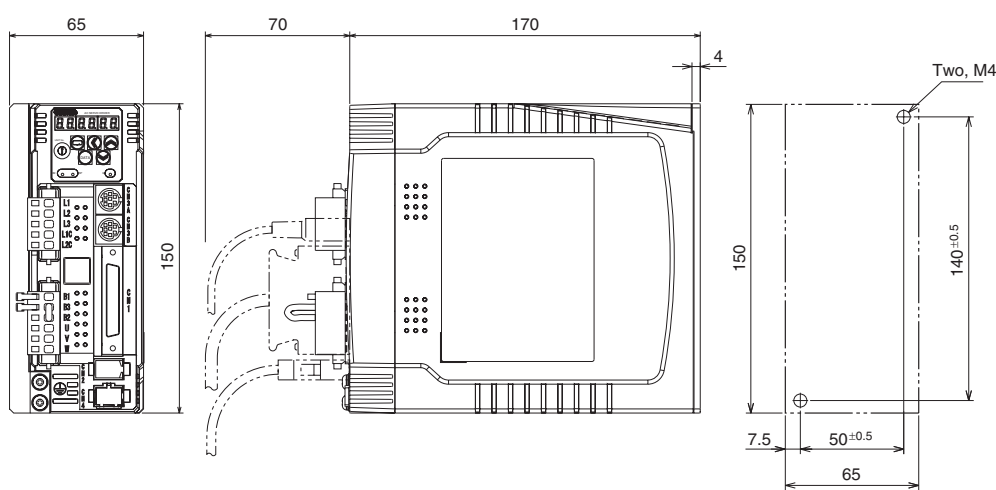
R7D-BP01H



R7D-BP02HH/ 04H

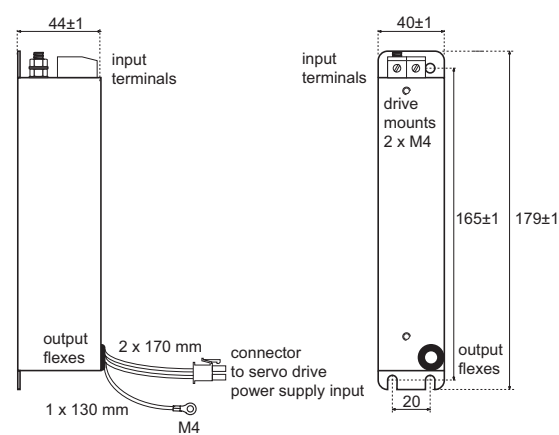


R88D-GP08H

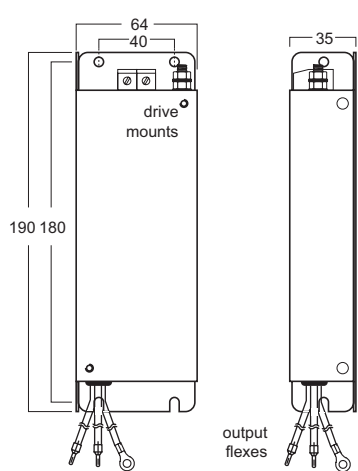


Filters

R7A-FIB104-RE



R88A-FIK107-RE

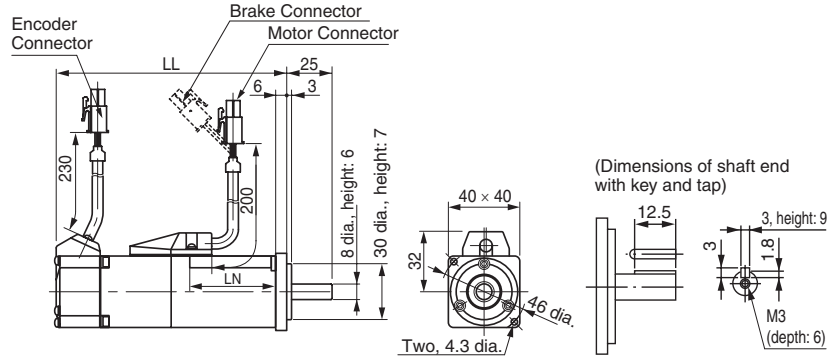


Filter model	Rated current	Leakage current	Rated voltage
R7A-FIB104-RE	4 A	3.5 mA	250 VAC single-phase
R88A-FIK107-RE	6.6 A	3.5 mA	250 VAC single-phase

Servo motors

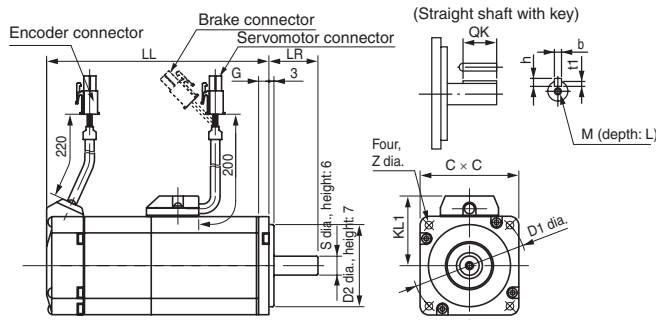
Cylindrical type 3000 r/min (230 V, 50 - 100W)

Dimensions (mm)	Without brake	With brake	LN	Aprox. Mass (Kg)	
Model	LL	LL		Without brake	With brake
R88M-G05030H-□S2	72	102	26.5	0.3	0.5
R88M-G10030H-□S2	92	122	46.5	0.5	0.7



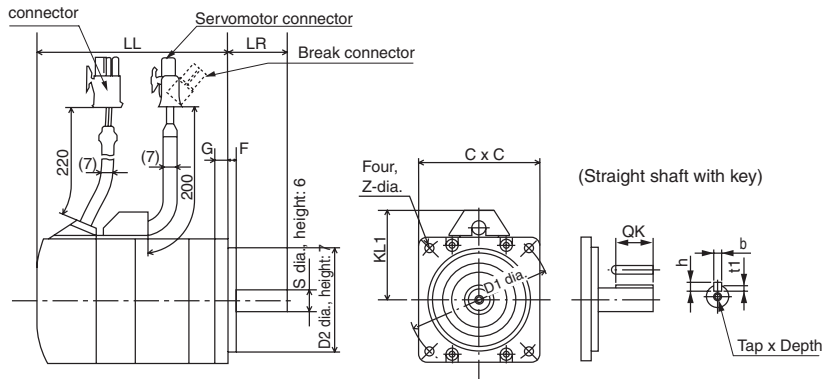
Cylindrical type 3000 r/min (230 V, 200 - 750W)

Dimensions (mm)	Without brake	With brake	LR	KL1	Flange surface					Shaft end						Aprox. Mass (Kg)		
Model	LL	LL			D1	D2	C	G	Z	S	QK	b	h	M	t1	L	Without brake	With brake
R88M-G20030H-□S2	79.5	116	30	43	70	50	60	6.5	4.5	11	18	4h9	4	M4	2.5	8	0.8	1.3
R88M-G40030H-□S2	99	135.5								14	22.5	5h9	5	M5	3	10	1.2	1.7
R88M-G75030H-□S2	112.2	149.2	35	53	90	70	80	8	6	19	22	6h9	6	M5	3.5	10	2.3	3.1



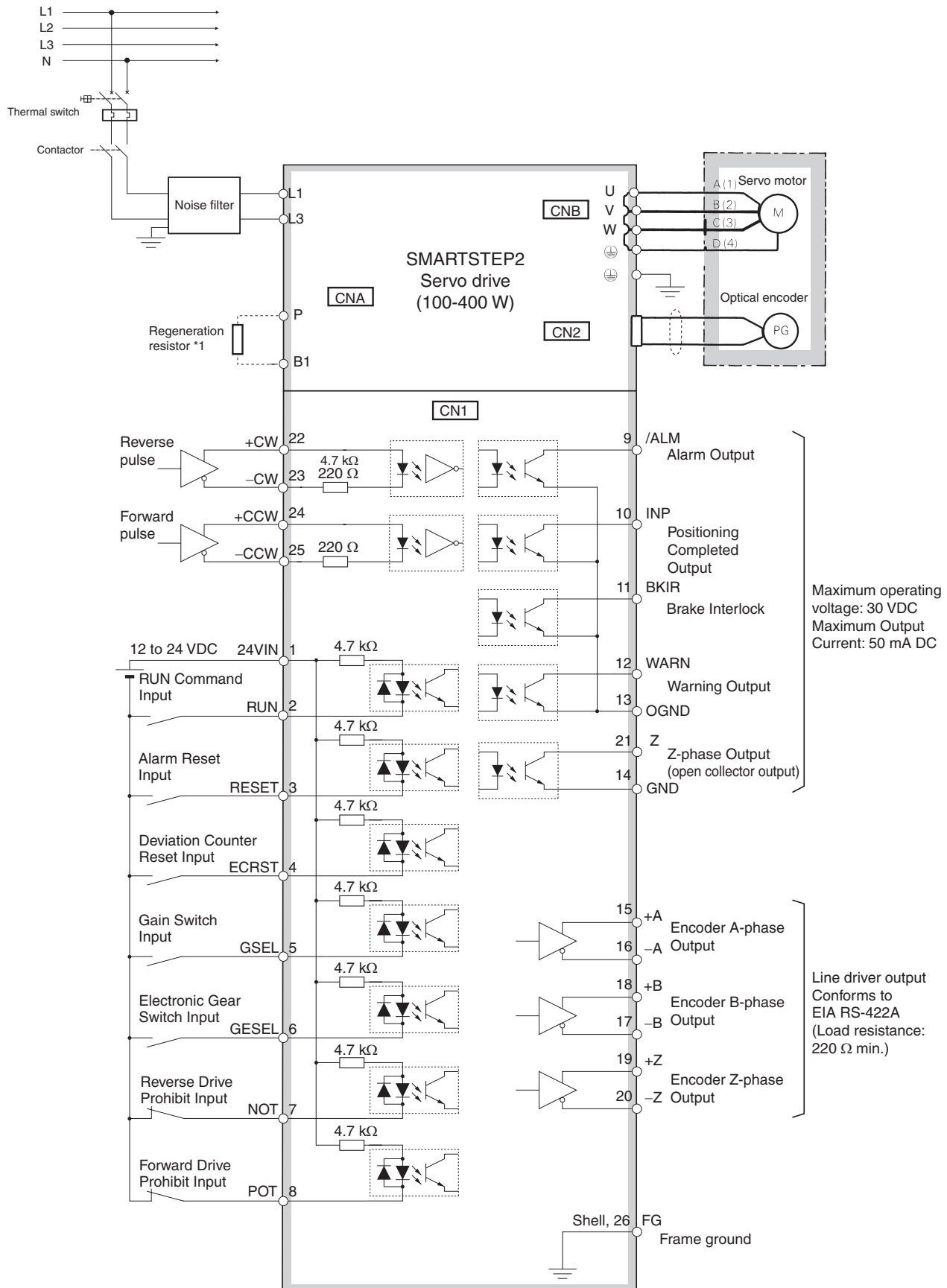
Flat type 3000 r/min (230 V, 100 W - 400 W)

Dimensions (mm)	Without brake	With brake	LR	KL1	Flange surface						Shaft end						Aprox. Mass (Kg)	
Model	LL	LL			D1	D2	C	F	G	Z	S	QK	b	h	t1	Tap x depth	Without brake	With brake
R88M-GP10030H-□S2	60.5	84.5	25	43	70	50	60	3	7	4.5	8	12.5	3h9	3	1.8	M3x6	0.7	0.9
R88M-GP20030H-□S2	67.5	100	30	53	90	70	80	5	8	5.5	11	18	4h9	4	2.5	M4x8	1.3	2
R88M-GP40030H-□S2	82.5	115									14	22.5	5h9	5	3.0	M5x10	1.8	2.5



Installation

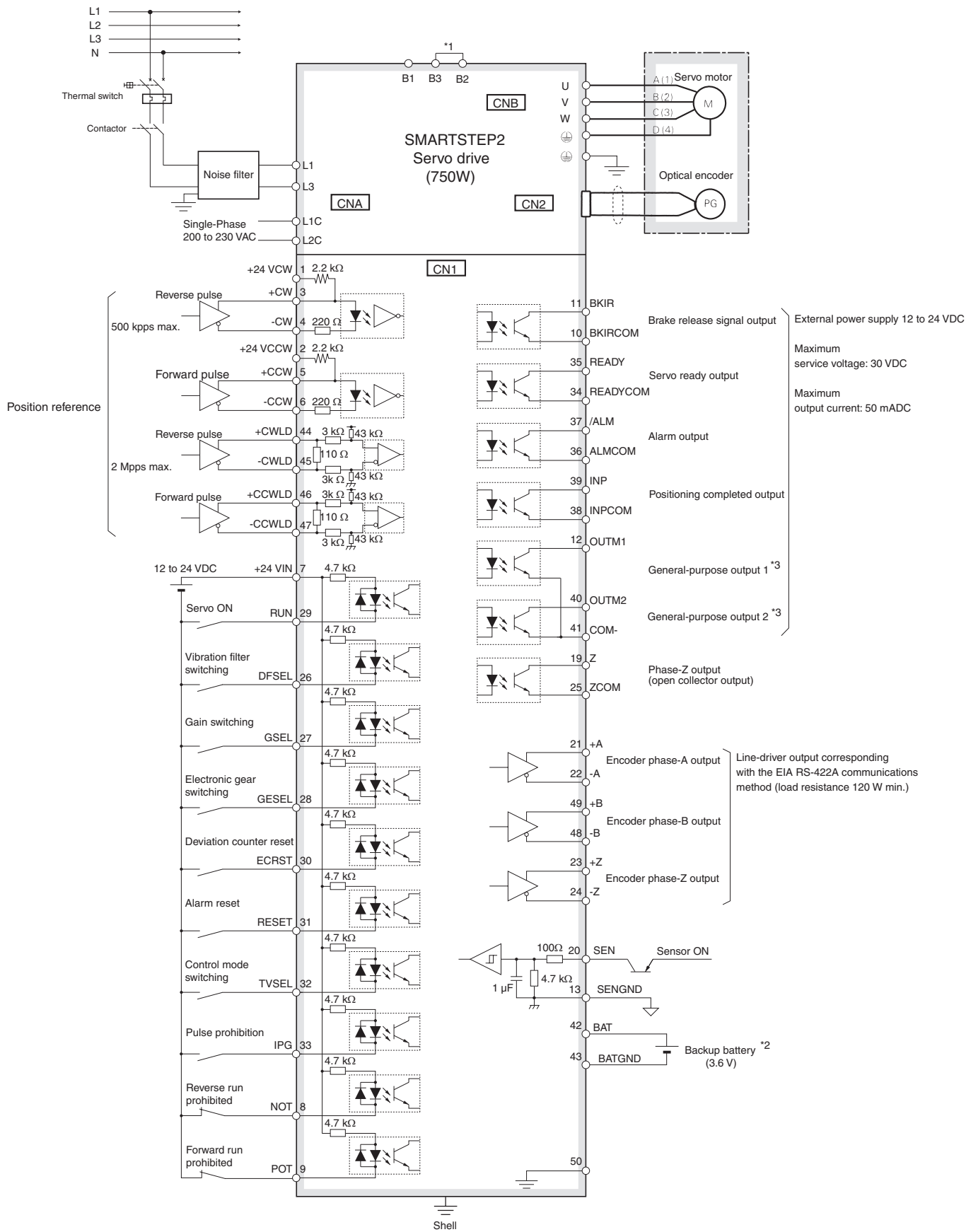
Single-phase, 230 VAC



*1. An External Regeneration Resistor can be connected. Connect this resistor if the regenerative energy exceeds regeneration absorption capacity in the Servo Drive.

Note: 1. The dynamic brake operates when the main circuit power supply or the control circuit power supply is turned OFF.

Note: 2. When turning OFF the main circuit power supply, turn OFF the RUN Command Input (RUN) signal at the same time.



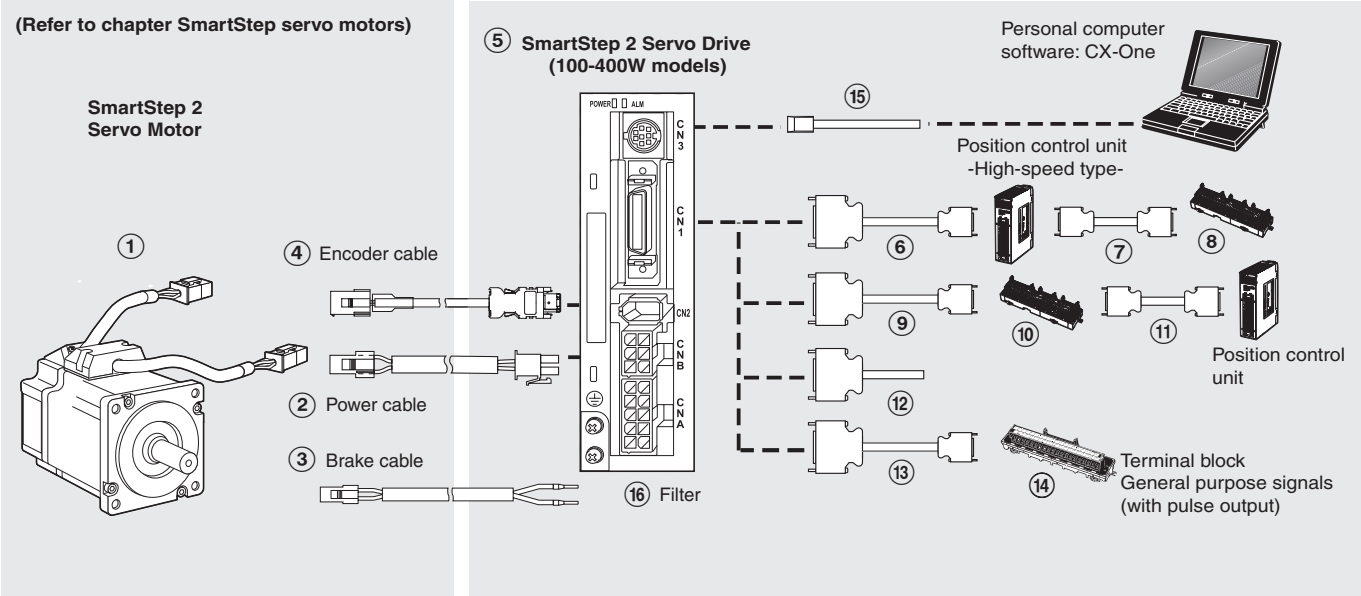
*1 B3-B2 are short-circuited. If the internal regenerative resistor is insufficient, remove the wire between B2 and B3 and connect an external regenerative resistor between B1 and B2.

*2 Use only when an absolute encoder. If a backup battery is connected, an encoder cable with a battery is not required.

*3 The default values are ZSP (zero-speed detection) for OUTM1 and T-LIMIT (at torque limit) for OUTM2.

Ordering information

SmartStep2 Servo Drive Configuration (100-400 W)



Note: The symbols ①②③④⑤... show the recommended sequence to select the components in a SmartStep 2 servo system

Servo motor

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

Symbol	Specifications				Servo motor model	Compatible servo drives ⑤
	Design		Rated torque	Capacity		
①	Straight shaft with key and tap	Without brake	0.16 Nm	50 W	R88M-G05030H-S2	R7D-BP01H
			0.32 Nm	100 W	R88M-G10030H-S2	
			0.64 Nm	200 W	R88M-G20030H-S2	R7D-BP02HH
			1.3 Nm	400 W	R88M-G40030H-S2	R7D-BP04H
		With brake	0.16 Nm	50 W	R88M-G05030H-BS2	R7D-BP01H
			0.32 Nm	100 W	R88M-G10030H-BS2	
			0.64 Nm	200 W	R88M-G20030H-BS2	R7D-BP02HH
			1.3 Nm	400 W	R88M-G40030H-BS2	R7D-BP04H

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

Symbol	Specifications				Servo motor model	Compatible servo drives ⑤
	Design		Rated torque	Capacity		
①	Straight shaft with key and tap	Without brake	0.32 Nm	100 W	R88M-GP10030H-S2	R7D-BP01H
			0.64 Nm	200 W	R88M-GP20030H-S2	R7D-BP02HH
			1.3 Nm	400 W	R88M-GP40030H-S2	R7D-BP04H
		With brake	0.32 Nm	100 W	R88M-GP10030H-BS2	R7D-BP01H
			0.64 Nm	200 W	R88M-GP20030H-BS2	R7D-BP02HH
			1.3 Nm	400 W	R88M-GP40030H-BS2	R7D-BP04H

Servo drives

Symbol	Specifications		SmartStep 2 drive model	Compatible servo motors ①	
				Cylindrical type	Flat type
⑤	200 VAC	100 W	R7D-BP01H	R88M-G05030H-□	-
				R88M-G10030H-□	R88M-GP10030H-□
		200 W	R7D-BP02HH	R88M-G20030H-□	R88M-GP20030H-□
		400 W	R7D-BP04H	R88M-G40030H-□	R88M-GP40030H-□

Power Supply cables (for CNA)

Symbol	Specifications	Model	Appearance
⑤	Power Supply Input Cable for Single-Phase Power (connectors attached)	R7A-CLB002S2	

Servo motor cables

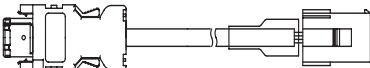
Power cables (for CNB)

Symbol	Specifications	Model	Appearance
②	Power cables for SmartStep 2 Servo motors	1.5 m R7A-CAB001-5SR-E	
		3 m R7A-CAB003SR-E	
		5 m R7A-CAB005SR-E	
		10 m R7A-CAB010SR-E	
		15 m R7A-CAB015SR-E	
		20 m R7A-CAB020SR-E	

Brake cables

Symbol	Specifications	Model	Appearance
③	Brake cables for SmartStep 2 Servo motors	1.5 m R88A-CAGA001-5BR-E	
		3 m R88A-CAGA003BR-E	
		5 m R88A-CAGA005BR-E	
		10 m R88A-CAGA010BR-E	
		15 m R88A-CAGA015BR-E	
		20 m R88A-CAGA020BR-E	

Encoder cables (for CN2)

Symbol	Specifications	Model	Appearance
④	Encoder cables for SmartStep 2 Servo motors	1.5 R88A-CRGB001-5CR-E	
		3 m R88A-CRGB003CR-E	
		5 m R88A-CRGB005CR-E	
		10 m R88A-CRGB010CR-E	
		15 m R88A-CRGB015CR-E	
		20 m R88A-CRGB020CR-E	

Note: ②, ④ Flexible and shielded cable
③ Flexible cable

Control cables (for CN1)

Symbol	Description	Connect to	Model
⑥	Control cable (line-driver output for 1 axis)	Position control unit (high-speed type)	1 m XW2Z-100J-G12
		CJ1W-NC234	5 m XW2Z-500J-G12
		CJ1W-NC434	10 m XW2Z-10MJ-G12
	Control cable (open-collector output for 1 axis)	Position control unit (high-speed type)	1 m XW2Z-100J-G16
		CJ1W-NC214	3 m XW2Z-300J-G16
		CJ1W-NC414	
	Control cable (line-driver output for 2 axis)	Position control unit (high-speed type)	1 m XW2Z-100J-G4
		CJ1W-NC234	5 m XW2Z-500J-G4
		CJ1W-NC434	10 m XW2Z-10MJ-G4
	Control cable (open-collector output for 2 axis)	Position control unit (high-speed type)	1 m XW2Z-100J-G8
		CJ1W-NC214	3 m XW2Z-300J-G8
		CJ1W-NC414	
⑦	Terminal block cable for external signals (for input common, forward/reverse run prohibited inputs, emergency stop input, origin proximity input and interrupt input)	Position control units (high-speed type)	0.5 m XW2Z-C50X
		CJ1W-NC234	1 m XW2Z-100X
		CJ1W-NC434	2 m XW2Z-200X
		CJ1W-NC214	3 m XW2Z-300X
		CJ1W-NC414	5 m XW2Z-500X
			10 m XW2Z-010X
⑧	Terminal block for external signals (with M3 screw and for pin terminals)		- XW2B-20G4
	Terminal block ext. signals (with M3.5 screw and for fork/round terminals)		- XW2B-20G5
	Terminal block ext. signals (with M3 screw and fork/round pin terminals)		- XW2D-20G6
⑨	Cable from servo relay unit to servo drive	CS1W-NC1□3, CJ1W-NC1□3, C200HW-NC113, CS1W-NC2□3/4□3, CJ1W-NC2□3/4□3, C200HW-NC213/413, CQM1H-PLB21 or CQM1-CPU43-V1	1 m XW2Z-100J-B29
			2 m XW2Z-200J-B29
		CJ1M-CPU21/22/23	1 m XW2Z-100J-B32
			2 m XW2Z-200J-B32
⑩	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 or CQM1-CPU43-V1	- XW2B-20J6-3B (1 axis)
		CJ1M-CPU21/22/23	- XW2B-20J6-8A (1 axis)
			- XW2B-40J6-9A (2 axes)

Symbol	Description	Connect to		Model
⑪	Position control unit connecting cable	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
		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
		CS1W-NC113 C200HW-NC113	0.5 m	XW2Z-050J-A6
			1 m	XW2Z-100J-A6
		CS1W-NC213/413 C200HW-NC213/413	0.5 m	XW2Z-050J-A7
			1 m	XW2Z-100J-A7
⑫	General purpose cable	For general purpose controllers	0.5 m	XW2Z-050J-A33
			1 m	XW2Z-100J-A33
⑬	Terminal block cable	For general purpose controllers	0.5 m	XW2Z-050J-A3
			1 m	XW2Z-100J-A3
⑭	Terminal block (with M3 screw and for pin terminals)		-	XW2B-34G4
	Terminal block (with M3.5 screw and for fork/round terminals)		-	XW2B-34G5
	Terminal block (with M3 screw and fork/round pin terminals)		-	XW2D-34G6

Cable for CN3

Symbol	Name	Length	Model
⑮	Personal Computer Monitor Cable	2 m	R88A-CCG002P2

Filters

Symbol	Applicable servo drive	Rated current	Rated voltage	Filter model
⑯	R7D-BP01H/ 02HH/ 04H	4 A	1 pH, 230 V	R7A-FIB104-RE

Connectors

Specifications	Model
Main Circuit Connector (CNA)	R7A-CNB01P
Servomotor Connector (CNB)	R7A-CNB01A
Control I/O Connector (CN1)	R88A-CN01C
Encoder Input Connector (CN2)	R88A-CN01R
Servomotor Connector for Encoder Cable	R88A-CNG02R
Servomotor Connector for Servomotor Power Cable	R88A-CNG01A
Brake Cable Connector	R88A-CNG01B

External regeneration resistor

Specification	Model
80 W, 50 Ω	R88A-RR08050S
80 W, 100 Ω	R88A-RR080100S
220 W, 47 Ω	R88A-RR22047S

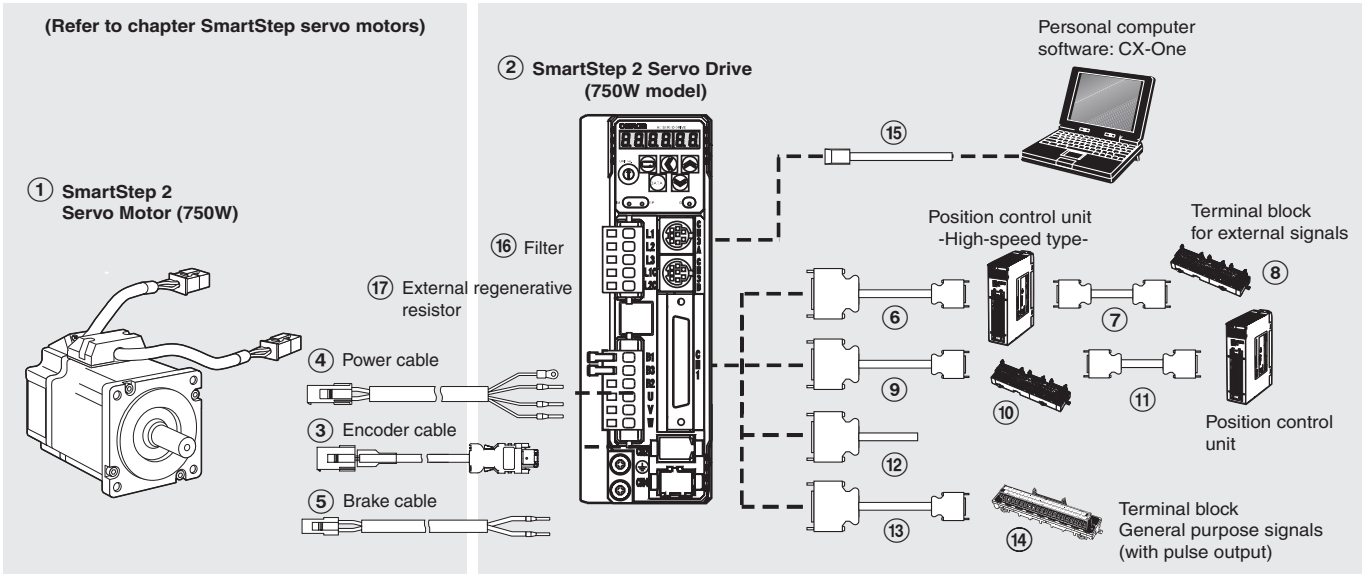
External regeneration resistor cable

Specifications	Model
External Regenerative Resistor Connection Cable, 2 meters	R7A-CLB002RG

Parameter unit & computer software

Specifications	Model
Parameter copy unit (with cable)	R88A-PR02G
Configuration and monitoring software tool for servo drives and inverters. (CX-drive version 1.8 or higher)	CX-drive

SmartStep2 Servo Drive Configuration (750W)



Note: The symbols ①②③④⑤... show the recommended sequence to select the components in a SmartStep 2 servo system.

Servo drives

Symbol	Specifications	Servo drive model	① Compatible rotary servo motors
②	1 phase 200 VAC 750 W	R88D-GP08H	Cylindric type R88M-G75030H-□

Encoder Cables

Symbol	Specifications	Model	Appearance
③	Encoder cable R88M-G75030H-□	1.5 m R88A-CRGB001-5CR-E 3 m R88A-CRGB003CR-E 5 m R88A-CRGB005CR-E 10 m R88A-CRGB010CR-E 15 m R88A-CRGB015CR-E 20 m R88A-CRGB020CR-E	

Power cables

Symbol	Specifications	Model	Appearance
④	For 750W servomotors without brake R88M-G75030H-S2	1.5 m R88A-CAGA001-5SR-E 3 m R88A-CAGA003SR-E 5 m R88A-CAGA005SR-E 10 m R88A-CAGA010SR-E 15 m R88A-CAGA015SR-E 20 m R88A-CAGA020SR-E	
	For servomotors with brake, a separate cable (R88A-CAGA□BR-E) is needed		

Brake cable

Symbol	Specifications	Model	Appearance
⑤	Brake cable only. For R88M-G75030H-BS2 servomotors.	1.5 m R88A-CAGA001-5BR-E 3 m R88A-CAGA003BR-E 5 m R88A-CAGA005BR-E 10 m R88A-CAGA010BR-E 15 m R88A-CAGA015BR-E 20 m R88A-CAGA020BR-E	

Control cables (for CN1)

Symbol	Description	Connect to	Model
⑥	Control cable (line-driver output for 1 axis)	Position control units (high-speed type) CJ1W-NC234 CJ1W-NC434	1 m XW2Z-100J-G9 5 m XW2Z-500J-G9 10 m XW2Z-10MJ-G9
	Control cable (open-collector output for 1 axis)	Position control units (high-speed type) CJ1W-NC214 CJ1W-NC414	1 m XW2Z-100J-G13 3 m XW2Z-300J-G13
	Control cable (line-driver output for 2 axis)	Position control units (high-speed type) CJ1W-NC234 CJ1W-NC434	1 m XW2Z-100J-G1 5 m XW2Z-500J-G1 10 m XW2Z-10MJ-G1
	Control cable (open-collector output for 2 axis)	Position control units (high-speed type) CJ1W-NC214 CJ1W-NC414	1 m XW2Z-100J-G5 3 m XW2Z-300J-G5

Symbol	Description	Connect to		Model
⑦	Terminal block cable for external signals (for input common, forward/reverse run prohibited inputs, emergency stop input, origin proximity input and interrupt input)	Position control units (high-speed type) CJ1W-NC234 CJ1W-NC434 CJ1W-NC214 CJ1W-NC414	0.5 m	XW2Z-C50X
			1 m	XW2Z-100X
			2 m	XW2Z-200X
			3 m	XW2Z-300X
			5 m	XW2Z-500X
			10 m	XW2Z-010X
⑧	Terminal block for external signals (M3 screw, pin terminals)		-	XW2B-20G4
	Terminal block ext. signals(M3.5 screw, fork/round terminals)		-	XW2B-20G5
	Terminal block ext. signals(M3 screw, fork/round terminals)		-	XW2D-20G6
⑨	Cable from servo relay unit to servo drive	CS1W-NC1□3, CJ1W-NC1□3, C200HW-NC113/213/413, CS1W-NC2□3/4□3, CJ1W-NC2□3/4□3 or CQM1H-PLB21	1 m	XW2Z-100J-B25
			2 m	XW2Z-200J-B25
		CJ1M-CPU21/22/23	1 m	XW2Z-100J-B31
			2 m	XW2Z-200J-B31
⑩	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	-	XW2B-20J6-3B (1 axis)
		CJ1M-CPU21/22/23	-	XW2B-20J6-8A (1 axis)
			-	XW2B-40J6-9A (2 axes)
⑪	Position control unit connecting cable	CQM1H-PLB21	0.5 m	XW2Z-050J-A3
			1 m	XW2Z-100J-A3
		CS1W-NC113 or C200HW-NC113	0.5 m	XW2Z-050J-A6
			1 m	XW2Z-100J-A6
		CS1W-NC213/413 or 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
⑫	General purpose cable	For general purpose controllers	0.5 m	XW2Z-050J-A19
			1 m	XW2Z-100J-A19
			0.5 m	XW2Z-050J-A33
			1 m	XW2Z-100J-A33
⑬	Terminal block cable	For general purpose controllers	1 m	R88A-CPG001S
			2 m	R88A-CPG002S
⑭	Terminal block (M3 screw and for pin terminals) Terminal block (M3.5 screw and for fork/round terminals) Terminal block (M3 screw and for fork/round terminals)		1 m	XW2Z-100J-B24
			2 m	XW2Z-200J-B24
			-	XW2B-50G4
			-	XW2B-50G5
			-	XW2D-50G6

Computer cable (for CN3)

Symbol	Name		Model
⑮	Computer cable RS232	2 m	R88A-CCG002P2

Filter

Symbol	Applicable servodrive	Filter model	Rated current	Leakage current	Rated voltage
⑯	R88D-GP08H	R88A-FIK107-RE	6.6 A	3.5 mA	250 VAC single-phase

External regenerative resistor

Symbol	Regenerative resistor unit model	Specifications
⑰	R88A-RR08050S	50 Ω, 80 W
	R88A-RR080100S	100 Ω, 80 W
	R88A-RR22047S	47 Ω, 220 W
	R88A-RR50020S	20 Ω, 500 W

Connectors

Specifications	Model
I/O connector kit -50 pins- (for CN1)	R88A-CNU11C
Power cable connector (motor side)	R88A-CNG01A
Encoder connector (Servo drive side CN2)	R88A-CNW01R
Incremental encoder cable connector (motor side)	R88A-CNG02R

Computer software

Specifications	Model
Configuration and monitoring software tool for servo drives and inverters (CX-drive version 1.91 or higher).	CX-Drive

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