OMRON

OMNUC W-series

AC Servomotors/Servodrivers

- Series now includes 1,500-r/min Servomotors.
- Servodrivers now available with capacities of up to 15 kW.

The advanced W Series of Servomotores and Servodrivers are loaded with functions. They can also be connected to DeviceNet networks, allowing easier distributed control and information management.

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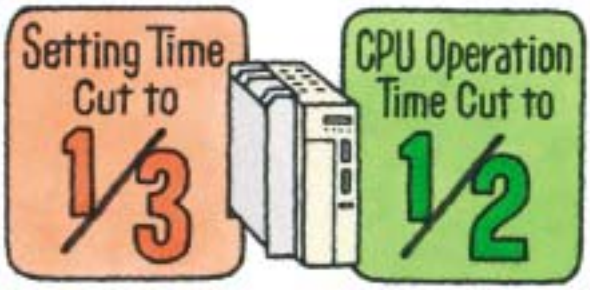
CE cULus

W Series

The OMNUC W Series provides the per today's workplace. Their fast response, high speed, and pr improve machine performance and pro

1 Dramatically improved basic performance.

To realize the productivity improvements demanded of equipment today, you have to maximize the equipment's performance with the best possible control. The OMNUC W-series CPU operation time has been cut in half and the settling time has been slashed to one-third compared to the OMNUC U Series. These improvements and others, such as upgraded control algorithms, have helped to dramatically improve basic performance.



2 More variety to suit different applications.

The OMNUC W Series has a wide range of variations to help build the ideal system. Space-saving flat Servomotors, water-resistant IP67-compatible Servomotors, and Servomotors with gears are all available even with capacities over 1 kW, which could not be handled with earlier models. Of course, absolute encoder compatibility and braking are still available and the Servomotors conform to safety standards, such as CE and UL/cUL. The built-in online autotuning function is effective in applications with machinery that has variable loads. The autotuning function makes it easy to adjust parameters, even for users operating a Servomotor for the first time.

60 to 70 % of U Series.

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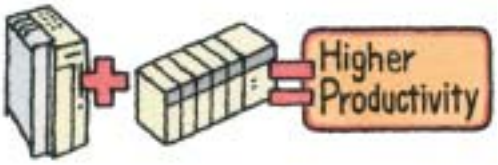
Contents

This catalog provides information and specifications needed to select Servomotors and Servodrivers. It does not provide precautions for operating these products. Always refer to the OMNUC W-series AC Servomotors/Servodriver User's Manual for precautions and other information before operating these products.

Improve productivity even more by connecting to a PLC.

Even more advanced control and system configurations can be achieved by connecting to an OMRON Position Control Unit (such as a CS1W-NC□□□) or Motion Control Unit (such as a CS1-MC□□□) mounted to an OMRON PLC. Debugging can be performed using convenient Windows-based tools. For smaller scale systems, it is possible to connect to a compact or micro OMRON PLC.



Compatible with the open field network DeviceNet.

A DeviceNet Option Unit is also available. As a Position Control Unit, it can be connected directly to an OMNUC W-series Servodriver, and is equipped with communications functions for DeviceNet. This means that parameters can be set, the operating status can be monitored, and faults can be predicted from a PLC up to 500 m away.

The OMNUC W Series provides high performanc
They are easy-to-use and the full line-up of variations can be used in a wide range of applica

W Series High Performance

New Additions

The Series has been expanded to include 1,500-r/min Servomotors (for both incremental and absolute encoders) with capacities ranging from 450 W to 15 kW and Servodrivers with capacities of 7.5 kW and 15 kW.

Reduced Settling Time

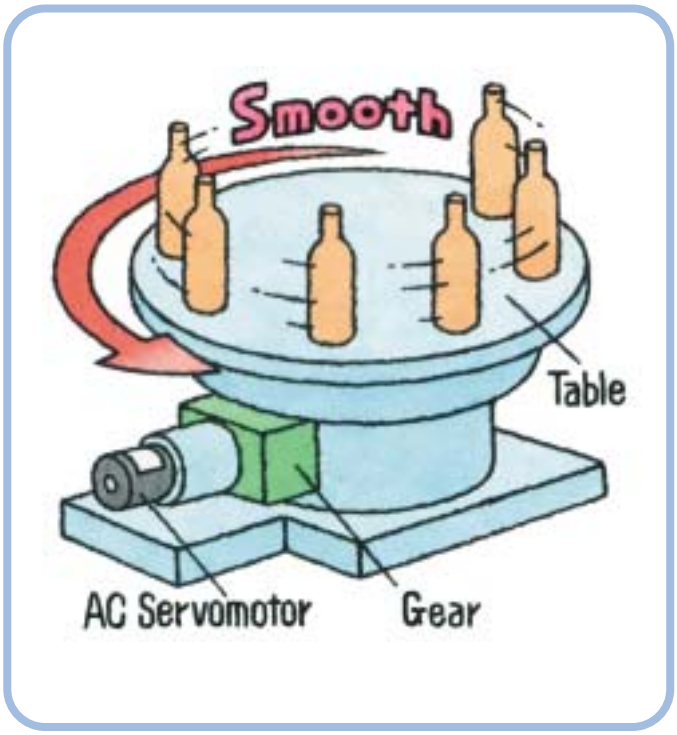
Vibration-suppression has been improved with upgraded control algorithms. Even with low-rigidity machinery, the upgraded vibration-suppression can slash the settling time to 1/3 the time required in the U Series.

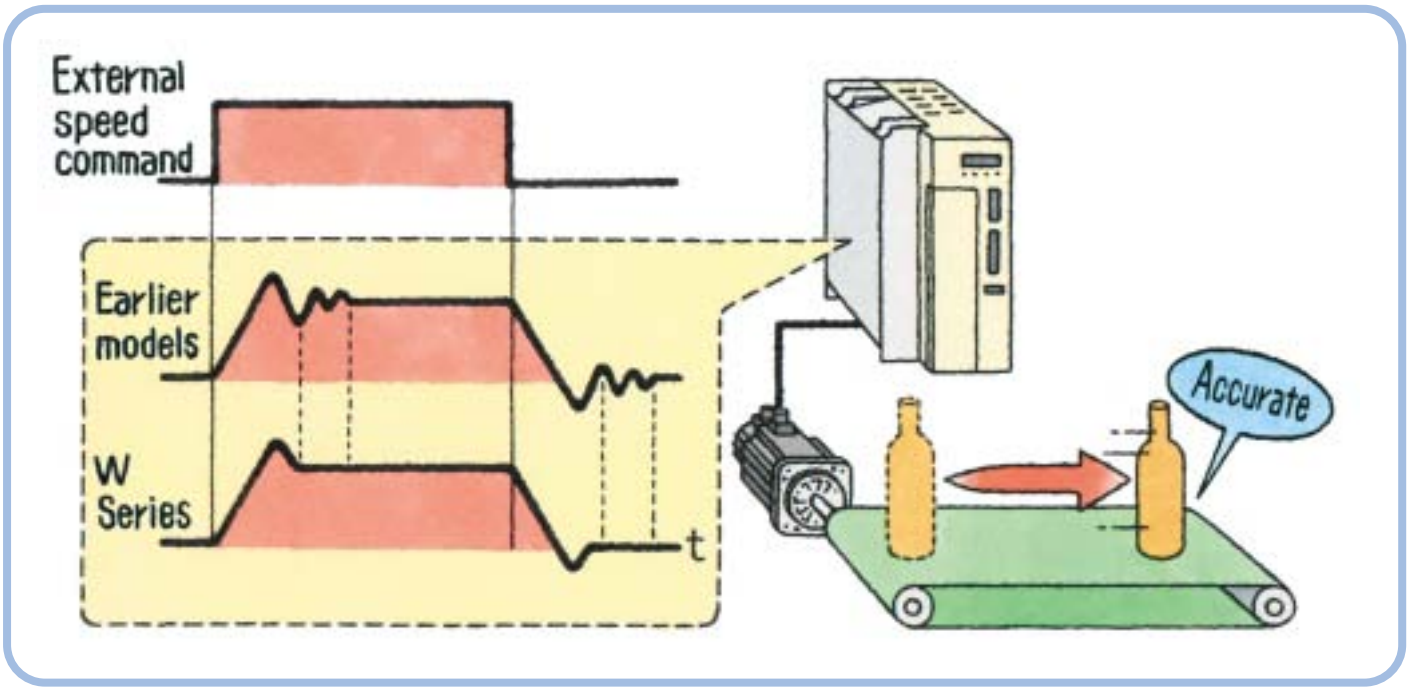
High-speed, High-precision Drive

A maximum speed of 5,000 r/min has been achieved in most models. Positioning precision can be improved by using a high-resolution serial encoder (16,384 pulses/revolution or 32,768 pulses/revolution). Torque control precision (reproducibility) has also been improved to –2%.

Smooth Operation

Motor speed ripple has been reduced substantially. Operation is smooth at low speeds.





W Series Easy Setup

Online Autotuning

Automatically measures machine characteristics and sets required servo gains. Settings can be made quickly even by first-time users.

Automatic Motor Discrimination Function

The Servodriver automatically determines the Servomotor's capacity and model and sets the motor parameters accordingly.

Personal Computer Monitoring Software

Windows-based monitoring software is available. The software can be used to easily perform tasks such as setting up the system, monitoring operation, and editing parameters. Of course the U-series models (including the UE models) can be connected, too.

e and a multitude of functions.

tions.

W Series Flexibility

Comprehensive Motor Line

A full line of variations is available, including motors with brakes, motors with gears, and flat-profile motors. Also, three different rated motor speeds are available: 3,000 r/min, 1,500 r/min, and 1,000 r/min. The wide variety allows you to choose the best model for your application.

Compatible with Long Cables

Unlike conventional models, long power cables and encoder cables (up to 70 m) can be used.

All-in-one Control

Torque, position, and speed control can be achieved just by switching parameters.

Regenerative Resistance Terminals Standard

External regenerative resistance terminals are standard equipment, so regenerative resistance can be connected very easily.

W Series Reliability

Conformance to International Standards

The W-series Servomotors and Servodrivers can be exported and used overseas because they conform to UL/cUL standards.

Environmentally Resistant Models

Enclosures can conform to IP67 standards (possible for flat-profile motors, 3,000-r/min motors with capacities of 1 kW or more, 1,000-r/min motors, and 1,500-r/min motors). These motors are ideal for applications where waterproofing is required.

Countermeasures Against Power Supply Harmonics

A DC reactor connection terminal is provided.

W Series Easy Maintenance

Simple Replacement of OMRON Servomotors

OMRON S-, R-, H-, V-, and M-series Servomotors can now be replaced with W-series Servomotors.

Built-in Parameter Setting Device

Parameters can be input directly from the Servodriver.

Reduced Wiring

When a serial encoder is used, the number of encoder signal wires is 1/2 of earlier models.

Absolute encoder: Wires reduced from 15 to just 7.
Incremental encoder: Wires reduced from 9 to just 5.

Separate Main and Control Power Supplies

The main and control power supplies have been separated completely. If an alarm occurs, the alarm code can be read and the appropriate countermeasures can be taken even with the main power supply turned OFF for safety.

W Series DeviceNet Communications Functions

Trace Function

When trigger conditions are satisfied, up to two analog elements and two ON/OFF elements can be recorded in the DeviceNet Option Unit and read from the PLC.

Monitor Item Reading Function

The contents of AC Servodriver monitor display can be read from the PLC.

Parameter Reading/Writing Function

Parameters can be checked from the PLC using DeviceNet communications, and reading/writing performed according to the operating status.

Note: If the DeviceNet Option Unit is mounted to an AC Servodriver, the AC Servodriver will automatically be set to operate in position control mode. No other operating mode can be used.

Servomotor/Servodriver Combinations

Choose the Servomotor/Servodriver for Each Application to Maximize Performance

R88M Servomotors						R88D Servodrivers			Application
Style	Rated speed	Capacity	International standards CE, UL/cUL	Shaft end (without reduction gear)	Enclosure rating	100 V	200 V Single phase	200 V Three phase	
Cylinder style	3,000 r/min. (5,000 r/min.)	30 W	Approved	Straight With key With key and tap Straight with tap	IP55 (excluding shaft opening)	WTA3HL	WTA3H	---	Low-inertia machines Machines with fast tact times (Robots, Assembly machines, Conveyance machines)
		50 W				WTA5HL	WTA5H	---	
		100 W				WT01HL	WT01H	---	
		200 W				WT02HL	WT02H	---	
		400 W				---	WT04H	---	
		750 W				---	WT08H (See note.)	WT08H	
		1 kW		With key and tap Straight	IP67 (excluding shaft opening)	---	---	WT10H	
		1.5 kW				---	---	WT15H	
		2 kW				---	---	WT20H	
		3 kW				---	---	WT30H	
		4 kW				---	---	WT50H	
		5 kW				---	---	WT50H	
	1,500 r/min. (3,000 r/min.)	450 W	Approved	With key and tap Straight	IP67 (excluding shaft opening)	---	---	WT05H	Machines requiring high torque (Simple processing machines, Assembly machines, Transfer machines)
		850 W				---	---	WT10H	
		1.3 kW				---	---	WT15H	
		1.8 kW				---	---	WT20H	
		2.9 kW				---	---	WT30H	
		4.4 kW				---	---	WT50H	
		5.5 kW				---	---	WT60H	
		7.5 kW				---	---	WT75H	
	1,500 r/min. (2,000 r/min.)	11 kW				---	---	WT150H	
		15 kW				---	---	WT150H	
	1,000 r/min. (2,000 r/min.)	300 W	Approved	With key and tap Straight	IP67 (excluding shaft opening)	---	---	WT05H	Machines requiring high torque (Simple processing machines, Assembly machines, Transfer machines)
		600 W				---	---	WT08H	
		900 W				---	---	WT10H	
		1.2 kW				---	---	WT15H	
		2 kW				---	---	WT20H	
		3 kW				---	---	WT30H	
		4 kW				---	---	WT50H	
		5.5 kW				---	---	WT60H	
Flat style	3,000 r/min. (5,000 r/min.)	100 W	Approved	Straight With key With key and tap Straight with tap	IP55 (excluding shaft opening) IP67 (including shaft opening)	WT01HL	WT01H	---	Machines allowing little motor depth Machines requiring waterproof motor (Semiconductor-manufacturing machines, Food-processing machines, AGVs)
		200 W				WT02HL	WT02H	---	
		400 W				---	WT04H	---	
		750 W				---	WT08H (See note.)	WT08H	
		1.5 kW				---	---	WT15H	

Note: When using a 200-V single-phase Servomotor, it is necessary to change part of the power supply wiring. Refer to the relevant connection diagram for details. The power supply specification is 220 to 230 VAC (+10%/–15%).

■ Available Models

AC Servodrivers

R88D-WT□□H□
1 2 3 4 5 6

Part	Item	Code	Specification
1	R88D indicates the product is a Servodriver.		
2	Series	W	W-series
3	Input signal	T	Analog or pulse-train input
4	Max. output capacity	A3	30 W
		A5	50 W
		01	100 W
		02	200 W
		04	400 W
		05	500 W
		08	750 W
		10	1 kW
		15	1.5 kW
		20	2 kW
		30	3 kW
		50	5 kW
		60	6 kW
		75	7.5 kW
		150	15 kW
5	---	H	---
6	Power supply	Blank	200 VAC
		L	100 VAC

AC Servomotors (Without Reduction Gear)

R88M-W□□□□□□□-□□□□
1 2 3 4 5 6 7 8 9

Part	Item	Code	Specification
1	R88M indicates the product is a Servomotor.		
2	Series	W	W-series
3	Style	Blank	Cylinder style
		P	Flat style
4	Motor capacity	030	30 W
		100	100 W
		1K0	1 kW
5	Speed	10	1000 r/min.
		15	1500 r/min.
		30	3000 r/min.
6	Motor power supply specifications	H	200 VAC, incremental encoder
		L	100 VAC, incremental encoder
		T	200 VAC, absolute encoder
		S	100 VAC, absolute encoder
7	Brake	Blank	No brake
		B	24-VDC brake
8	Waterproof/ oil seal specifications	Blank	No additional specifications
		O	With oil seal
		W	Waterproof
9	Shaft end	Blank	Straight
		S1	With key
		S2	With key and tap
		S3	Straight with tap

Note: Waterproof specifications are available for only flat-style motors.

AC Servomotors (With Reduction Gear)

R88M-W□□□□□□□-□G□□□□
1 2 3 4 5 6 7 8 9 10

Part	Item	Code	Specification
1	R88M indicates the product is a Servomotor.		
2	Series	W	W-series
3	Style	Blank	Cylinder style
		P	Flat style
4	Motor capacity	030	30 W
		100	100 W
		1K0	1 kW
5	Speed	10	1000 r/min.
		15	1500 r/min.
		30	3000 r/min.
6	Motor power supply specifications	H	200 VAC, incremental encoder
		L	100 VAC, incremental encoder
		T	200 VAC, absolute encoder
		S	100 VAC, absolute encoder
7	Brake	Blank	No brake
		B	24-VDC brake
8	Gear ratio (See note.)	G05 to G45	G05: 1/5, G09: 1/9, G11: 1/11, G15: 1/15, G20: 1/20, G21: 1/21, G25: 1/25, G29: 1/29, G33: 1/33, G45: 1/45
9	Backlash	B	3 minutes max.
		C	About 45 minutes
10	Brake shaft end	Blank	Straight
		J	With key

Note: Not all motors can be combined with a reduction gear. See “Servomotor and Reduction Gear Combinations” on page 10 for more details.

Servomotor Combinations (Models without Reduction Gears)

R88M-W□□□□□□□-□□□□
3 4 5 6 7 8 9

3	4	5	Basic model	6				7		8			9			
Type	Capacity	Rotation speed		Motor power supply specification				With/without brake		Wateproof/oil seal specifications			Shaft shape			
				H	L	T	S	Blank	B	Blank	O	W	Blank	S1	S2	S3
Cylinder	30 W	3,000 r/min	R88M-W03030	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes
	50 W		R88M-W05030	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes
	100 W		R88M-W10030	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes
	200 W		R88M-W20030	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes
	400 W		R88M-W40030	Yes		Yes		Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes
	750 W		R88M-W75030	Yes		Yes		Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes
	1 kW		R88M-W1K030	Yes		Yes		Yes	Yes	Yes	Yes		Yes		Yes	
	1.5 kW		R88M-W1K530	Yes		Yes		Yes	Yes	Yes	Yes		Yes		Yes	
	2 kW		R88M-W2K030	Yes		Yes		Yes	Yes	Yes	Yes		Yes		Yes	
	3 kW		R88M-W3K030	Yes		Yes		Yes	Yes	Yes	Yes		Yes		Yes	
	4 kW		R88M-W4K030	Yes		Yes		Yes	Yes	Yes	Yes		Yes		Yes	
	5 kW		R88M-W5K030	Yes		Yes		Yes	Yes	Yes	Yes		Yes		Yes	
	450 W	1,500 r/min	R88M-W45015			Yes		Yes	Yes	Yes	Yes		Yes		Yes	
	850 W		R88M-W85015			Yes		Yes	Yes	Yes	Yes		Yes		Yes	
	1.3 kW		R88M-W1K315			Yes		Yes	Yes	Yes	Yes		Yes		Yes	
	1.8 kW		R88M-W1K815			Yes		Yes	Yes	Yes	Yes		Yes		Yes	
	2.9 kW		R88M-W2K915			Yes		Yes	Yes	Yes	Yes		Yes		Yes	
	4.4 kW		R88M-W4K415			Yes		Yes	Yes	Yes	Yes		Yes		Yes	
	5.5 kW		R88M-W5K515			Yes		Yes	Yes	Yes	Yes		Yes		Yes	
	7.5 kW		R88M-W7K515			Yes		Yes	Yes	Yes	Yes		Yes		Yes	
	11 kW		R88M-W11K015			Yes		Yes	Yes	Yes	Yes		Yes		Yes	
	15 kW		R88M-W15K015			Yes		Yes	Yes	Yes	Yes		Yes		Yes	
	300 W	1,000 r/min	R88M-W30010	Yes		Yes		Yes	Yes	Yes	Yes		Yes		Yes	
	600 W		R88M-W60010	Yes		Yes		Yes	Yes	Yes	Yes		Yes		Yes	
	900 W		R88M-W90010	Yes		Yes		Yes	Yes	Yes	Yes		Yes		Yes	
	1.2 kW		R88M-W1K210	Yes		Yes		Yes	Yes	Yes	Yes		Yes		Yes	
	2 kW		R88M-W2K010	Yes		Yes		Yes	Yes	Yes	Yes		Yes		Yes	
	3 kW		R88M-W3K010	Yes		Yes		Yes	Yes	Yes	Yes		Yes		Yes	
	4 kW		R88M-W4K010	Yes		Yes		Yes	Yes	Yes	Yes		Yes		Yes	
	5.5 kW		R88M-W5K510	Yes		Yes		Yes	Yes	Yes	Yes		Yes		Yes	
Flat	100 W	3,000 r/min	R88M-WP10030	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	200 W		R88M-WP20030	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	400 W		R88M-WP40030	Yes		Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	750 W		R88M-WP75030	Yes		Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	1.5 kW		R88M-WP1K530	Yes		Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: 1,500-r/min motors are equipped with absolute encoders only. (These encoders can, however, be used as incremental encoders.)

Servomotor and Reduction Gear Combinations

■ How to Use the Servomotor Combination Tables

Use the table on the right, *Motor and Reduction Gear Combinations*, to check whether or not the desired combination is possible. Next, check the configuration details using the table for the corresponding Servomotor category.

• The model numbers are basically configured with the motor capacity (1) and the gear ratio option specification (2).

R88M-W□-□
1 2

• The meanings of the symbols used in the tables are as follows:

□ Blank: Without brake
B: With brake

▲ Blank: Straight shaft
J: With key

✻ H: 200 VAC with incremental encoder
L: 100 VAC with incremental encoder
T: 200 VAC with absolute encoder
S: 100 VAC with absolute encoder

☆ H: 200 VAC with incremental encoder
T: 200 VAC with absolute encoder

Motor and Reduction Gear Combinations

Motor type	Capacity	Reduction gear type		Standalone Reduction Gear (See note 1.)
		Standard (Backlash: 30' max.)	Economy (Backlash: Approx. 45')	Standard (Backlash: 30' max.)
Cylinder-style motor (3,000 r/min)	30 W to 750 W	Yes	Yes	Yes
	1 kW to 5 kW	Yes		
Cylinder-style motor (1,500 r/min)	450 W to 15 kW	Yes		
Cylinder-style motor (1,000 r/min)	300 W to 5.5 kW	Yes		
Flat-style motor	100 W to 750 W	Yes	Yes	Yes
	1.5 kW	Yes		

Note: 1. The SMARTSTEP Reduction Gear (backlash: 3 min max.) can be combined with the 3,000-r/min, 50- to 750-W motor. The actual installation work to combine the Reduction Gear and Servomotor should be done by the customer.
2. "Yes" represents compatible combinations. Any combinations without "Yes" cannot be used.

■ 30-W to 750-W Cylinder-style Motors (3,000 r/min)

Motor capacity	Basic model	Reduction gear ratio				
		1/5	1/9	1/11	1/21	1/33
		-□G05B▲	-□G09B▲	-□G11B▲	-□G21B▲	-□G33B▲
30 W	R88M-W03030✻-□	Yes	Yes		Yes	Yes
50 W	R88M-W05030✻-□	Yes	Yes		Yes	Yes
100 W	R88M-W10030✻-□	Yes		Yes	Yes	Yes
200 W	R88M-W20030✻-□	Yes		Yes	Yes	Yes
400 W	R88M-W40030☆-□	Yes		Yes	Yes	Yes
750 W	R88M-W75030☆-□	Yes		Yes	Yes	Yes

Note: "Yes" represents compatible combinations. Any combinations without "Yes" cannot be used.

Economy Reduction Gears (Backlash: Approx. 45')

Motor capacity	Basic model	Reduction gear ratio			
		1/5	1/9	1/15	1/25
		-□G05CJ	-□G09CJ	-□G15CJ	-□G25CJ
30 W	R88M-W03030✻-□				
50 W	R88M-W05030✻-□				
100 W	R88M-W10030✻-□	Yes	Yes	Yes	Yes
200 W	R88M-W20030✻-□	Yes	Yes	Yes	Yes
400 W	R88M-W40030☆-□	Yes	Yes	Yes	Yes
750 W	R88M-W75030☆-□	Yes	Yes	Yes	Yes

Note: 1. "Yes" represents compatible combinations. Any combinations without "Yes" cannot be used.
2. These reduction gears can be attached to only shafts with key.

■ 1-kW to 5-kW Cylinder-style Motors (3,000 r/min)

Motor capacity	Basic model	Reduction gear ratio				
		1/5	1/9	1/20	1/29	1/45
		-□G05BJ	-□G09BJ	-□G20BJ	-□G29BJ	-□G45BJ
1 kW	R88M-W1K030☆-□	Yes	Yes	Yes	Yes	Yes
1.5 kW	R88M-W1K030☆-□	Yes	Yes	Yes	Yes	Yes
2 kW	R88M-W2K030☆-□	Yes	Yes	Yes	Yes	Yes
3 kW	R88M-W3K030☆-□	Yes	Yes	Yes	Yes	Yes
4 kW	R88M-W4K030☆-□	Yes	Yes	Yes	Yes	
5 kW	R88M-W5K030☆-□	Yes	Yes	Yes		

Note: 1. "Yes" represents compatible combinations. Any combinations without "Yes" cannot be used.
2. These reduction gears can be attached to only shafts with key.

■ 100-W to 1.5-kW Flat-style Motors (3,000 r/min)

Standard Reduction Gears (Backlash: 3' max.)

Motor capacity	Basic model	Reduction gear ratio			
		1/5	1/11	1/21	1/33
		-□G05B▲	-□G11B▲	-□G21B▲	-□G33B▲
100 W	R88M-WP10030✻-□	Yes	Yes	Yes	Yes
200 W	R88M-WP20030✻-□	Yes	Yes	Yes	Yes
400 W	R88M-WP40030☆-□	Yes	Yes	Yes	Yes
750 W	R88M-WP75030☆-□	Yes	Yes	Yes	Yes
1.5 kW	R88M-WP1K530☆-□	Yes	Yes	Yes	Yes

Note: "Yes" represents compatible combinations.

Economy Reduction Gears (Backlash: Approx. 45')

Motor capacity	Basic model	Reduction gear ratio			
		1/5	1/9	1/15	1/25
		-□G05CJ	-□G09CJ	-□G15CJ	-□G25CJ
100 W	R88M-WP10030✻-□	Yes	Yes	Yes	Yes
200 W	R88M-WP20030✻-□	Yes	Yes	Yes	Yes
400 W	R88M-WP40030☆-□	Yes	Yes	Yes	Yes
750 W	R88M-WP75030☆-□	Yes	Yes	Yes	Yes
1.5 kW	R88M-WP1K530☆-□				

Note: 1. "Yes" represents compatible combinations. Any combinations without "Yes" cannot be used.
2. These reduction gears can be attached to only shafts with key.

■ 450-W to 15-kW Cylinder-style Motors (1,500 r/min)

Motor capacity	Basic model	Reduction gear ratio				
		1/5	1/9	1/20	1/29	1/45
		-□G05BJ	-□G09BJ	-□G20BJ	-□G29BJ	-□G45BJ
450 W	R88M-W45015☆-□	Yes	Yes	Yes	Yes	Yes
850 W	R88M-W85015☆-□	Yes	Yes	Yes	Yes	Yes
1.3 kW	R88M-W1K315☆-□	Yes	Yes	Yes	Yes	Yes
1.8 kW	R88M-W1K815☆-□	Yes	Yes	Yes	Yes	
2.9 kW	R88M-W2K915☆-□	Yes	Yes	Yes		
4.4 kW	R88M-W4K415☆-□	Yes	Yes			
5.5 kW	R88M-W5K515☆-□					
7.5 kW	R88M-W7K515☆-□					
11 kW	R88M-W11K015☆-□					
15 kW	R88M-W15K015☆-□					

Note: 1. "Yes" represents compatible combinations. Any combinations without "Yes" cannot be used.
2. These reduction gears can be attached to only shafts with key.
3. The motors are equipped with absolute encoders only. (These encoders can, however, be used as incremental encoders.)

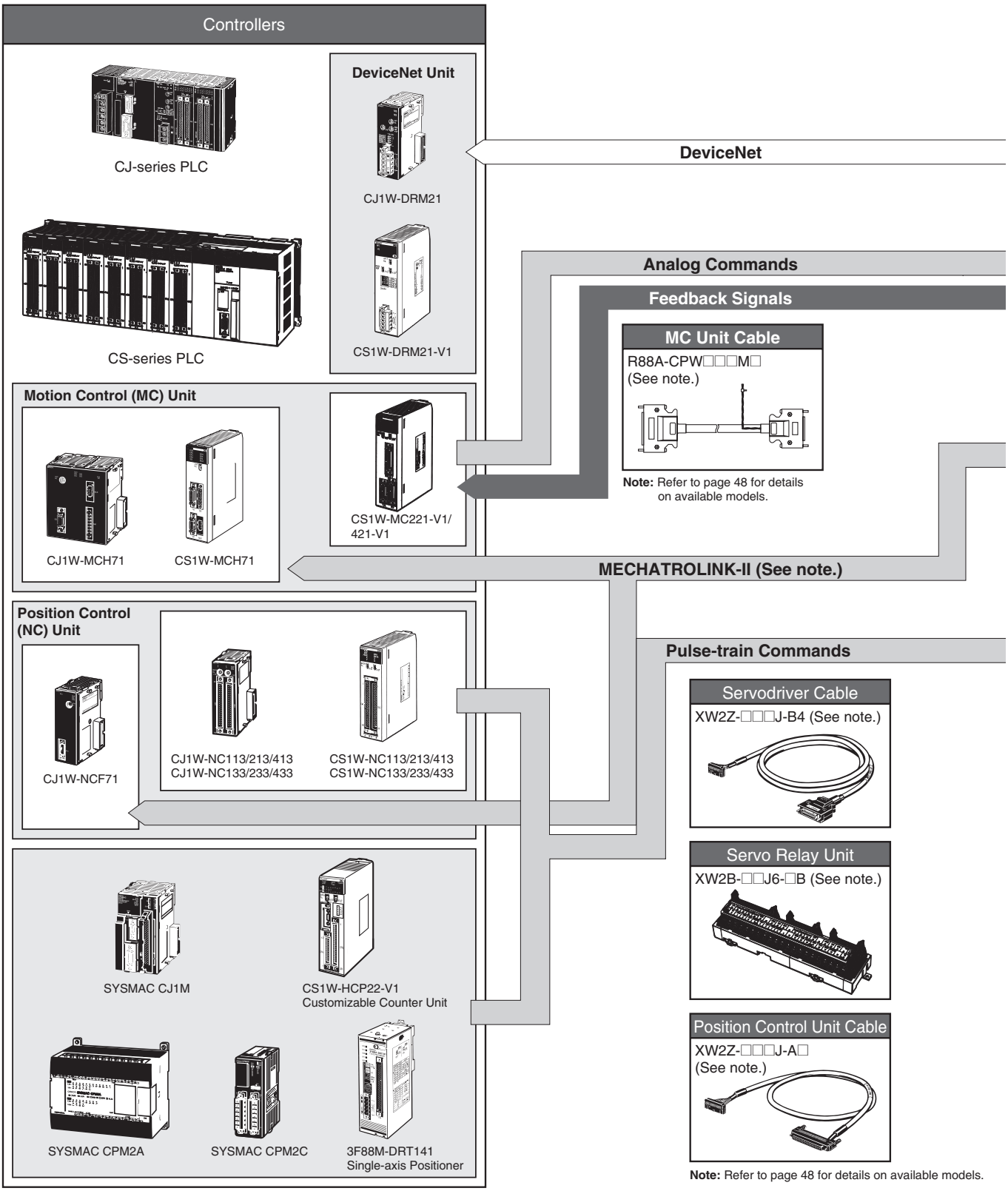
■ 300-W to 5.5-kW Cylinder-style Motors (1,000 r/min)

Motor capacity	Basic model	Reduction gear ratio				
		1/5	1/9	1/20	1/29	1/45
		-□G05BJ	-□G09BJ	-□G20BJ	-□G29BJ	-□G45BJ
300 W	R88M-W30010☆-□	Yes	Yes	Yes	Yes	Yes
600 W	R88M-W60010☆-□	Yes	Yes	Yes	Yes	Yes
900 W	R88M-W90010☆-□	Yes	Yes	Yes	Yes	Yes
1.2 kW	R88M-W1K210☆-□	Yes	Yes	Yes		
2 kW	R88M-W2K010☆-□	Yes	Yes	Yes		
3 kW	R88M-W3K010☆-□	Yes	Yes			
4 kW	R88M-W4K010☆-□					
5.5 kW	R88M-W5K510☆-□					

Note: 1. "Yes" represents compatible combinations. Any combinations without "Yes" cannot be used.
2. These reduction gears can be attached to only shafts with key.

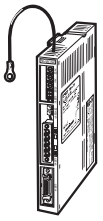
System Configuration

Flexible System Configuration That Can Be Matched to the Application



AC Servodrivers

DeviceNet Option Unit

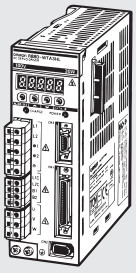


R88A-NCW152-DRT

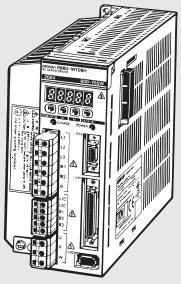
MECHATROLINK-II Interface Unit

Yaskawa model number JUSP-NS115 (OMRON ordering model number FNY-NS115) (See note.)

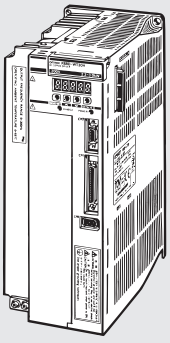
Note: Use the OMRON ordering model number (FNY-NS115) when ordering. The product is marked only with the Yaskawa model number (JUSP-NS115).



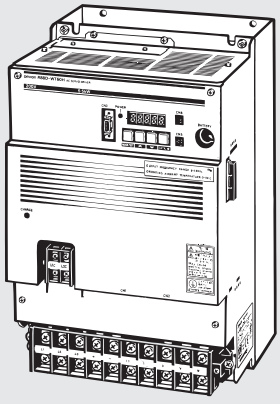
R88D-WTA3HL



R88D-WT08H



R88D-WT30H

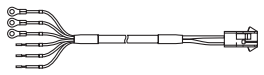


R88D-WT60H

Note: The illustrations shown here are examples only.

Power Cables (See note.)

For motors without brake:
R88A-CAW□□□□S
For motors with brake:
R88A-CAW□□□□B



Note: Refer to page 48 for details on available models.

Power Signals

Feedback Signals

Encoder Cables (See note.)

R88A-CRWA□□□C
For cylinder-style motors (3,000 r/min): 30 W to 75 W

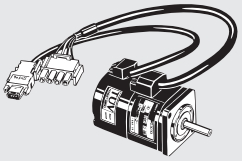
R88A-CRWB□□□N
For cylinder-style motors (3,000 r/min): 1 kW to 5 kW

For cylinder-style motors (1,000 r/min): 300 W to 5.5 kW

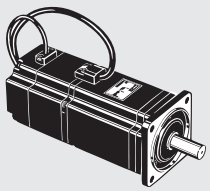
For cylinder-style motors (1,500 r/min): 450 W to 15 kW

Note: Refer to page 48 for details on available models.

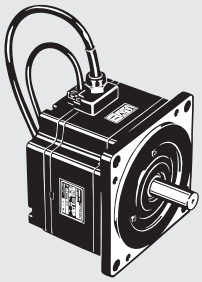
AC Servomotors



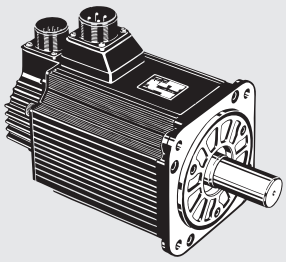
R88M-W03030L



R88M-W75030T-B



R88M-WP75030H



R88M-W3K030H

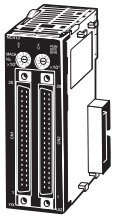
Note: The illustrations shown here are examples only.

Controllers

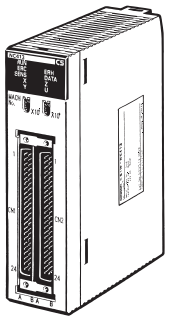
Combining the Servodriver with a Controller from Simple Positioning Can Improve Machine Productivity to Advanced Positioning

■ Position Control (NC) Units

Perform simple positioning just by writing position data from the CPU Unit.

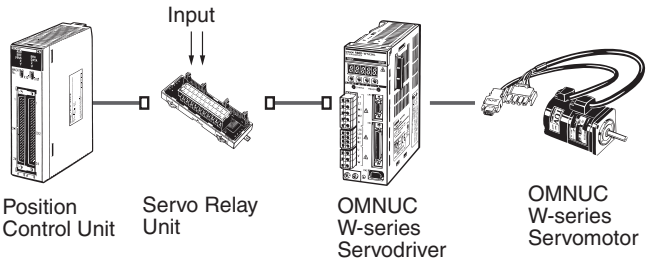


CJ1W-NC113/213/413
CJ1W-NC133/233/433



CS1W-NC113/213/413
CS1W-NC133/233/433
C200HW-NC113/213/413

- The Position Control Unit can respond to commands from the CPU Unit and produce a pulse output at high speed (2 ms when using the CS1W-NC or CJ1W-NC.)
- To suppress machine vibration, an S-shape curve can be specified for the acceleration/deceleration curve instead of a trapezoidal curve.
- When the CS1W-NC or CJ1W-NC is being used, the Unit's data and parameters can be created and stored easily using the Windows-based WS02-NCTC1-E Support Software.
- Position data can be stored in the Position Control Unit's flash memory, which eliminates the need to periodically replace the backup battery.

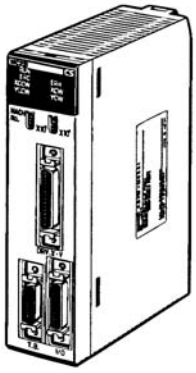


Open Loop Method, Pulse Output

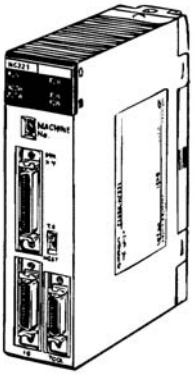
- Simple positioning can be performed with the direct operation function.

■ Motion Control (MC) Units

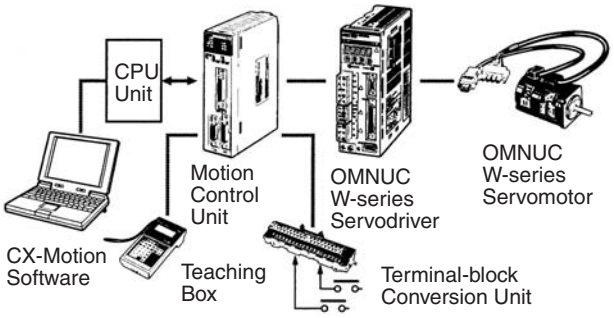
These high-speed, highly accurate, 2-axis/4-axis Motion Controllers are equipped with the multi-tasking G language and are compatible with absolute and incremental encoders.



CS1W-MC221/421



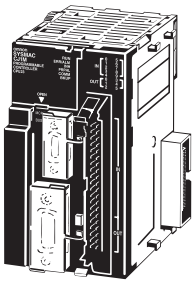
C200H-MC221



- The multi-tasking G language allows 4 axes to be controlled simultaneously and it is also possible to control each axis independently. The G language can simplify the PLC's ladder program by reducing position-control-related ladder programming.
- Winding operations can be simplified and speeded up. (Instructions providing a 2-axis traverse function are available.)
- The encoder response frequency is 2 Mpps for x4 operation, which is compatible with applications requiring high-speed and high-accuracy.
- A D code (interrupt code) can be output to the CPU Unit when positioning is completed or an important position is passed.
- Programming is easy with the WIndows-based CX-Motion Support Software.
- A manual pulse generator can be used.

■ SYSMAC CJ1M

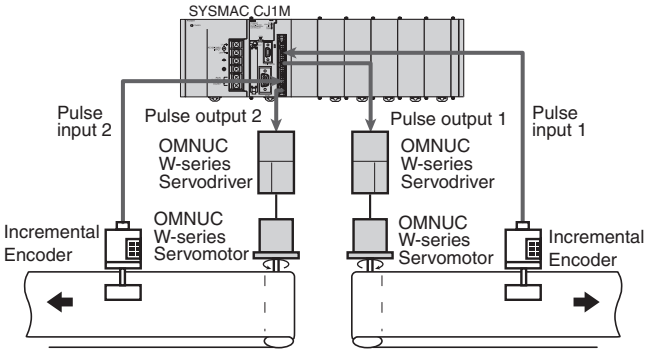
The CJ1M is a high-performance, compact PLC for distributed control.
Built-in I/O boards and special instructions support simple positioning and pulse I/O.



SYSMAC CJ1M

Simple Positioning

The Pulse I/O board is equipped with two ports each for input and output, supporting high-speed input at up to 100 kHz and output at up to 100 kHz. Connection with a Servodriver enables simple positioning.



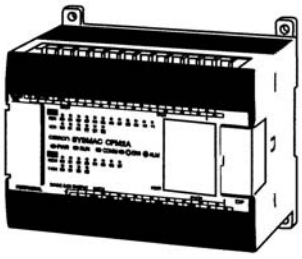
Special Instructions for Simple Positioning

Equipped with special pulse I/O instructions, the CJ1M can be operated by writing easy ladder programs.

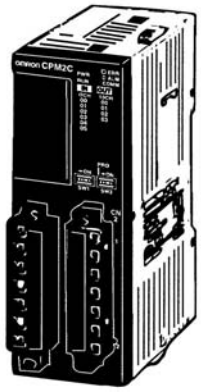
Instruction example: Search for origin (ORG), speed instruction (ACC), pulse output (PLS2)

■ SYSMAC CPM2A/CPM2C

The CPM2A/CPM2C PLCs are equipped with synchronized pulse control and position control functions. Meets the needs for higher line speed and multiple-product small-lot production.



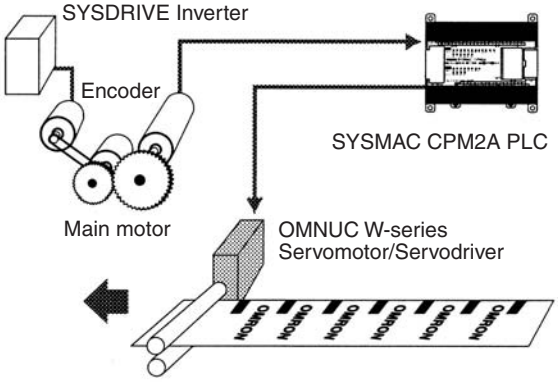
SYSMAC CPM2A



SYSMAC CPM2C

Synchronized Pulse Control

The output pulse frequency can be set to be a specified multiple of the input pulse frequency and that multiple can be changed from the ladder program. This function can be used to adjust the feed rate of packaging film so that the brand name or other printing remains in the correct location during packaging.



Position Control Function

This function supports 1-axis pulse outputs with trapezoidal acceleration/deceleration (10 kHz) and 2-axis simple pulse outputs. A Servomotor can be used for operations such as adjusting the feed rate of workpieces (constant feed) and the amount of fillings (constant amount) such as jam or custard.

Servomotor Specifications

■ Performance Specifications

Cylinder-style Motors (3,000 r/min)

Item			200 VAC										
Servomotor (R88M-)			W03030□	W05030□	W10030□	W20030□	W40030□	W75030□	W1K030□	W1K530□	W2K030□	W3K030□	W4K030□	W5K030□
Servodriver (R88D-)			WTA3H	WTA5H	WT01H	WT02H	WT04H	WT08H	WT10H	WT15H	WT20H	WT30H	WT50H	WT50H
Rated output		W	30	50	100	200	400	750	1 k	1.5 k	2 k	3 k	4 k	5 k
Rated torque		N·m	0.0955	0.159	0.318	0.637	1.27	2.39	3.18	4.90	6.36	9.80	12.6	15.8
Max. momentary torque		N·m	0.286	0.477	0.955	1.91	3.82	7.16	9.54	14.7	19.1	29.4	37.8	47.6
Rated speed		r/min	3,000											
Max. momentary speed		r/min	5,000											
Rated current		A(rms)	0.44	0.64	0.91	2.1	2.8	4.4	5.7	9.7	12.7	18.8	25.4	28.6
Rotor inertia (without brake)		kg·m^2 × 10^{-4}	0.0166	0.022	0.0364	0.106	0.173	0.672	1.74	2.47	3.19	7.0	9.6	12.3
Power rate		kW/s	5.49	11.5	27.8	38.2	93.7	84.8	57.9	97.2	127	137	166	202
Applicable load inertia		Multiple	100 (Restricted, however, by the regenerative processing capacity.)						10					
Allowable radial load on shaft		N	68		78	245		392	686			980	1176	
Allowable thrust load on shaft		N	54			74		147	196			392		
Approx. weight (without brake)		kg	0.3	0.4	0.5	1.1	1.7	3.4	4.6	5.8	7.0	11.0	14.0	17.0
Approx. weight (with brake)		kg	0.6	0.7	0.8	1.6	2.2	4.3	6.0	7.5	8.5	14.0	17.0	20.0
Encoder resolution (See note.)		INC	A, B phase: 2,048 pulses/rev.						A, B phase: 32,768 pulses/rev.					
		ABS	A, B phase: 16,384 pulses/rev.						A, B phase: 32,768 pulses/rev.					
Brake specifications														
	Inertia	kg·m^2 × 10^{-4}	0.0085			0.058		0.14	0.325			2.1		
	Excitation voltage	V	24 VDC ±10%						24 VDC ±10%					
	Power consumption	W	6			6.9		7.7	7			9.85		
	Current consumption	A	0.25			0.29		0.32	0.29			0.41		
	Static friction torque	N•m	0.2min.		0.34 min.	1.47 min.		2.45 min.	7.84 min.			20 min.		
	Absorption time	ms	30 max.			60 max.		80 max.	180 max.					
	Release time	ms	60 max.			20 max.		20 max.	100 max.					
	Backlash	---	1° (reference value)											
	Rating	---	Continuous											
	Insulation	---	Type F											

Note: The encoder resolution for the Z phase is 1 pulse/rev.

Cylinder-style Motors (3,000 r/min)

Item			100 VAC			
Servomotor (R88M-)			W03030□	W05030□	W10030□	W20030□
Servodriver (R88D-)			WTA3HL	WTA5HL	WT01HL	WT02HL
Rated output		W	30	50	100	200
Rated torque		N·m	0.0955	0.159	0.318	0.637
Max. momentary torque		N·m	0.286	0.477	0.955	1.91
Rated speed		r/min	3,000			
Max. momentary speed		r/min	5,000			
Rated current		A(rms)	0.66	0.95	2.4	3.0
Rotor inertia (without brake)		kg·m^2 × 10^{-4}	0.0166	0.022	0.0364	0.106
Power rate		kW/s	5.49	11.5	27.8	38.2
Applicable load inertia		Multiple	100 (Restricted, however, by the regenerative processing capacity.)			
Allowable radial load on shaft		N	68		78	245
Allowable thrust load on shaft		N	54			74
Approx. weight (without brake)		kg	0.3	0.4	0.5	1.1
Approx. weight (with brake)		kg	0.6	0.7	0.8	16
Encoder resolution		INC	A, B phase: 2,048 pulses/rev.; Z phase: 1 pulse/rev.			
		ABS	A, B phase: 16,384 pulses/rev.; Z phase: 1 pulse/rev.			
Brake specifications						
	Inertia	kg·m^2 × 10^{-4}	0.0085			0.058
	Excitation voltage	V	24 VDC ±10%			
	Power consumption	W	6			6.5
	Current consumption	A	0.25			0.27
	Static friction torque	N·m	0.2 min.		0.34 min.	1.5 min.
	Absorption time	ms	30 max.			60 max.
	Release time	ms	60 max.			20 max.
	Backlash	---	1° (reference value)			
	Rating	---	Continuous			
	Insulation	---	Type F			

■ General Motor Specifications

Cylinder-style Motors (3,000 r/min)

Item		30 to 750 W	1 to 5 kW
Ambient temperature		Operating: 0 to +40°C Storage: –20 to +60°C	
Ambient humidity (with no condensation)		Operating: 20% to 80% Storage: 20% to 80%	
Atmosphere		No corrosive gases	
Vibration resistance		49 m/s^2	24.5 m/s^2
Shock resistance		490 m/s^2 (twice in vertical direction)	
Insulation resistance		10 MΩ min. at 500 VDC	
Dielectric strength		1,500 VAC for 1 min	
Operating position		Any direction	
Insulation class		Type B	Type F
Construction		Totally-enclosed self-cooling	
Enclosure rating		IP55 (See note.)	IP67 (See note.)
Vibration class		V-15	
EC directives	EMC directive	EN55011 class A group1	
		EN61000-6-2	
	Low-voltage directive	IEC60034-1, 5, 8, 9 EN60034-1, 9	
UL standards		UL1004	
cUL standards		cUL C22.2 No.100	

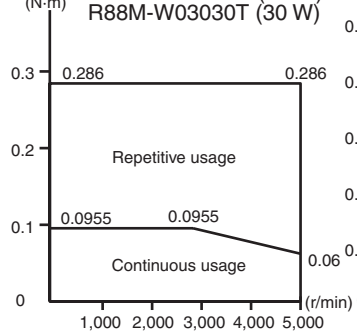
Note: Enclosure ratings do not include the shaft opening.

■ Torque and Rotation Speed Characteristics

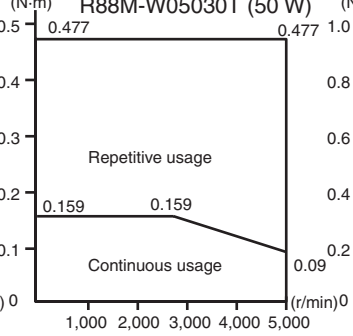
Cylinder-style Motors with 200-VAC Power Supply (3,000 r/min)

The following graphs show characteristics with a standard 3-m cable and 200-VAC input.

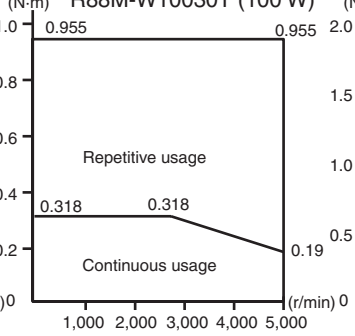
R88M-W03030H (30 W)
R88M-W03030T (30 W)



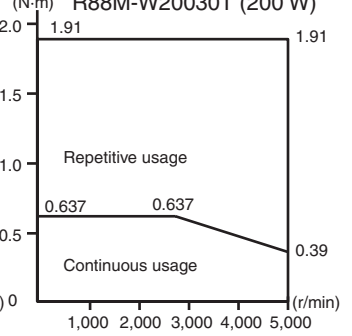
R88M-W05030H (50 W)
R88M-W05030T (50 W)



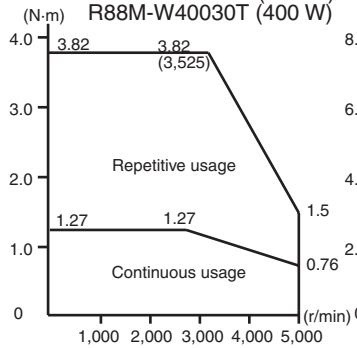
R88M-W10030H (100 W)
R88M-W10030T (100 W)



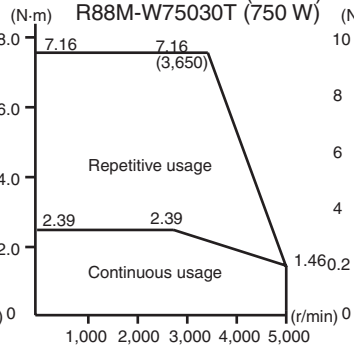
R88M-W20030H (200 W)
R88M-W20030T (200 W)



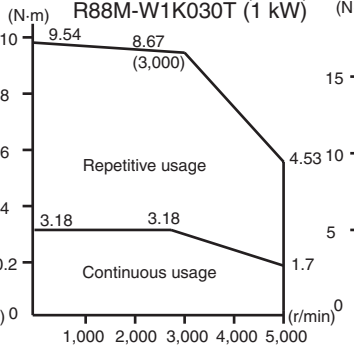
R88M-W40030H (400 W)
R88M-W40030T (400 W)



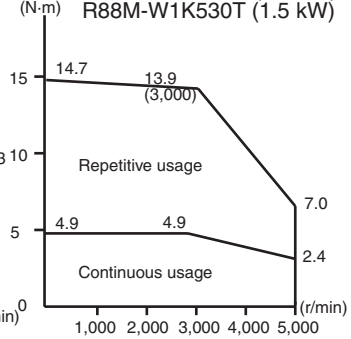
R88M-W75030H (750 W)
R88M-W75030T (750 W)



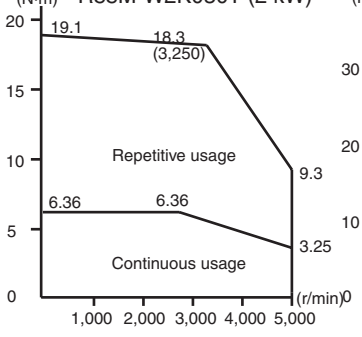
R88M-W1K030H (1 kW)
R88M-W1K030T (1 kW)



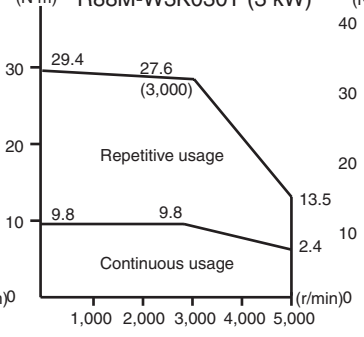
R88M-W1K530H (1.5 kW)
R88M-W1K530T (1.5 kW)



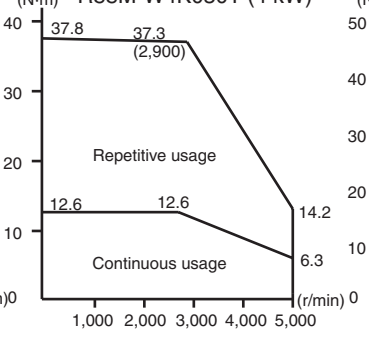
R88M-W2K030H (2 kW)
R88M-W2K030T (2 kW)



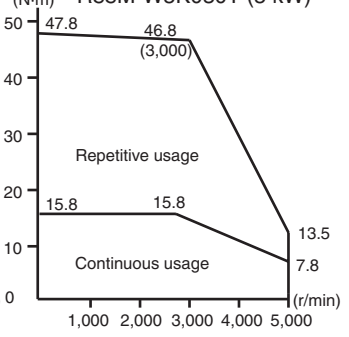
R88M-W3K030H (3 kW)
R88M-W3K030T (3 kW)



R88M-W4K030H (4 kW)
R88M-W4K030T (4 kW)



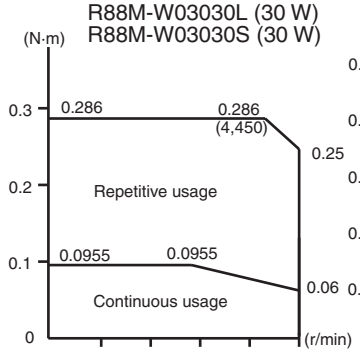
R88M-W5K030H (5 kW)
R88M-W5K030T (5 kW)



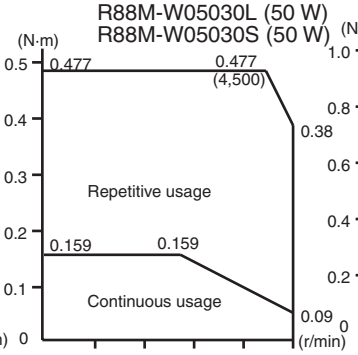
■ Cylinder-style Motors with 100-VAC Power Supply (3,000 r/min)

The following graphs show characteristics with a standard 3-m cable and 100-VAC input.

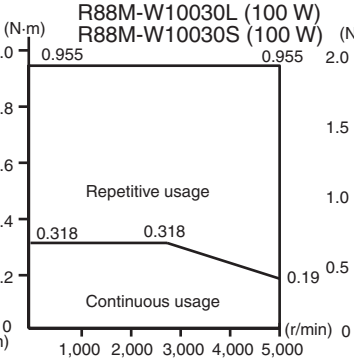
R88M-W03030L (30 W)
R88M-W03030S (30 W)



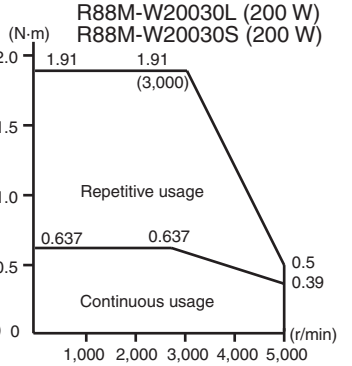
R88M-W05030L (50 W)
R88M-W05030S (50 W)



R88M-W10030L (100 W)
R88M-W10030S (100 W)



R88M-W20030L (200 W)
R88M-W20030S (200 W)



Cylinder-style Motors (1,500 r/min)

Item		200 VAC									
Servomotor (R88M-)		W45015T	W85015T	W1K315T	W1K815T	W2K915T	W4K415T	W5K515T	W7K515T	W11K015T	W15K015T
Servodriver (R88D-)		WT05H	WT10H	WT15H	WT20H	WT30H	WT50H	WT60H	WT75H	WT150H	WT150H
Rated output	W	450	850	1,300	1,800	2,900	4,400	5,500	7,500	11,000	15,000
Rated torque	N·m	2.84	5.39	8.34	11.5	18.6	28.4	35.0	48.0	70.0	95.4
Max. momentary torque	N·m	8.92	13.8	23.3	28.7	45.1	71.1	87.6	119	175	224
Rated speed	r/min	1,500									
Max. momentary speed	r/min	3,000								2,000	
Rated current	A(rms)	3.8	7.1	10.7	16.7	23.8	32.8	42.1	54.7	58.6	78.0
Rotor inertia (without brake)	kg·m^2 × 10^{-4}	7.24	13.9	20.5	31.7	46.0	67.5	89.0	125	281	315
Power rate	kW/s	11.2	20.9	33.8	41.5	75.3	120	137	184	174	289
Applicable load inertia	Multiple	5									
Allowable radial load on shaft	N	490		686	1,176	1,470		1,764			4,998
Allowable thrust load on shaft	N	98		343	490			588			2,156
Approx. weight (without brake)	kg	Approx. 5.5	Approx. 7.6	Approx. 9.6	Approx. 14	Approx. 18	Approx. 23	Approx. 30	Approx. 40	Approx. 57.5	Approx. 86
Approx. weight (with brake)	kg	Approx. 7.5	Approx. 9.6	Approx. 12	Approx. 19	Approx. 23.5	Approx. 28.5	Approx. 35	Approx. 45.5	Approx. 65	Approx. 100
Encoder resolution	INC	---									
	ABS	A, B phase: 32,768 pulses/rev. Z phase: 1 pulse/rev.									
Brake specifications											
Inertia	kg·m^2 × 10^{-4}	2.1			8.5					18.8	37.5
Excitation voltage	V	24 VDC ±10% (nonpolar)									
Power consumption	W	9.85			18.5			23.5		32	35
Current consumption	A	0.41			0.77			0.98		1.33	1.46
Static friction torque	N·m	4.41	12.7		43.1			72.6		84.3	114.6
Absorption time	ms	180 max.								170 max.	250 max.
Release time	ms	100 max.								80 max.	
Backlash	---	1° max.									
Rating	---	Continuous									
Insulation	---	Type F									

■ General Motor Specifications

Cylinder-style Motors (1,500 r/min)

Item		450 W to 15 kW (standard type: 1,500 r/min)
Ambient temperature		Operating: 0 to +40°C Storage: –20 to +60°C
Ambient humidity (with no condensation)		Operating: 20% to 80% Storage: 20% to 80%
Atmosphere		No corrosive gases
Vibration resistance		24.5 m/s^2
Shock resistance		490 m/s^2 (twice in vertical direction)
Insulation resistance		10 MΩ min. at 500 VDC
Dielectric strength		1,500 VAC for 1 min
Operating position		Any direction
Insulation class		Type F
Construction		Totally-enclosed self-cooling
Enclosure rating		IP67 (See note.)
Vibration class		V-15
EC directives	EMC directive	EN55011 class A group1
		EN61000-6-2
	Low-voltage directive	IEC60034-1, 5, 8, 9 EN60034-1, 9
UL standards		UL1004
cUL standards		cUL C22.2 No.100

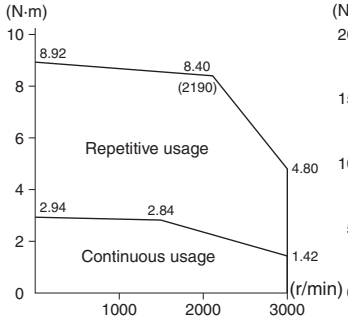
Note: Enclosure ratings do not include the shaft opening.

■ Torque and Rotation Speed Characteristics

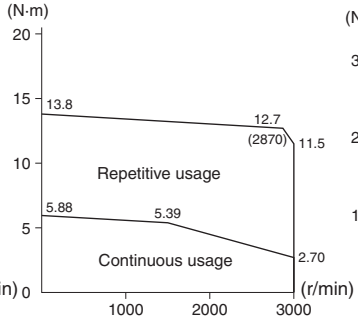
Cylinder-style Motors with 200-VAC Power Supply (1,500 r/min)

The following graphs show characteristics with a standard 3-m cable and 200-VAC input.

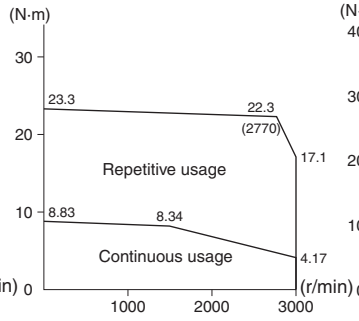
R88M-W45015T (450 W)



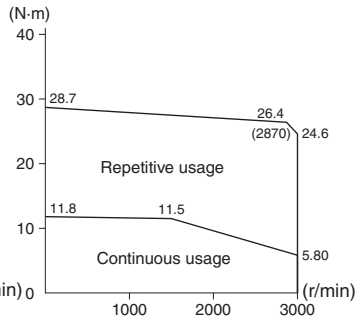
R88M-W85015T (850 W)



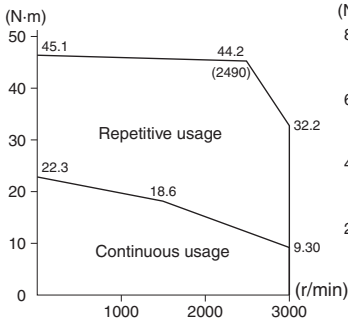
R88M-W1K315T (1.3 kW)



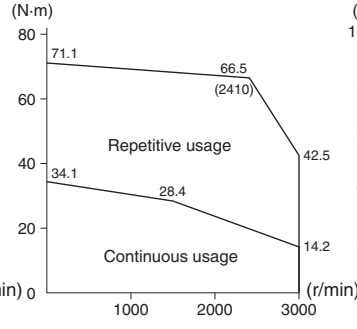
R88M-W1K815T (1.8 kW)



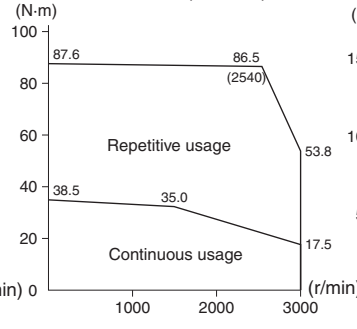
R88M-W2K915T (2.9 kW)



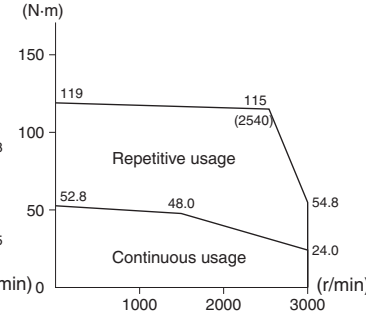
R88M-W4K415T(4.4 kW)



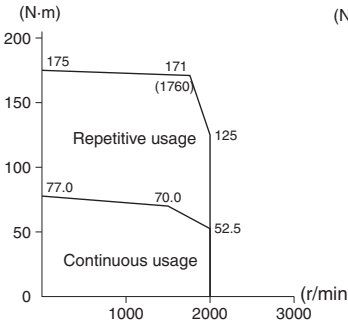
R88M-W5K515T (5.5 kW)



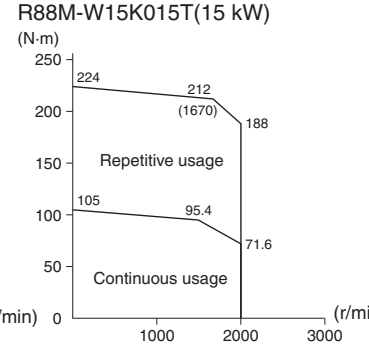
R88M-W7K515T(7.5 kW)



R88M-W11K015T (11 kW)



R88M-W15K015T(15 kW)



■ Performance Specifications

Cylinder-style Motors (1,000 r/min)

Item			200 VAC							
Servomotor (R88M-)			W30010□	W60010□	W90010□	W1K210□	W2K010□	W3K010□	W4K010□	W5K510□
Servodriver (R88D-)			WT05H	WT08H	WT10H	WT15H	WT20H	WT30H	WT50H	WT60H
Rated output		W	300	600	900	1.2k	2k	3k	4k	5.5k
Rated torque		N·m	2.84	5.68	8.62	11.5	19.1	28.4	38.2	52.6
Max. momentary torque		N·m	7.17	14.1	19.3	28.0	44.0	63.7	107	137
Rated speed		r/min	1,000							
Max. momentary speed		r/min	2,000							
Rated current		A(rms)	3	5.7	7.6	11.6	18.5	24.8	30	43.2
Rotor inertia (without brake)		$kg·m^2 \times 10^{-4}$	7.24	13.9	20.5	31.7	46.0	67.5	89.0	125
Power rate		kW/s	11.2	23.2	36.3	41.5	79.4	120	164	221
Applicable load inertia		Multiple	10							
Allowable radial load on shaft		N	490		686	1176	1470		1764	
Allowable thrust load on shaft		N	98		343	490			588	
Approx. weight (without brake)		kg	5.5	7.6	9.6	14	18	23	30	40
Approx. weight (with brake)		kg	7.5	9.6	12	19	23.5	28.5	35	45.5
Encoder resolution		INC	A, B phase: 32,768 pulses/rev.; Z phase: 1 pulse/rev.							
		ABS								
Brake specifications										
	Inertia	$kg·m^2 \times 10^{-4}$	2.1			8.5				
	Excitation voltage	V	24 VDC±10%							
	Power consumption	W	9.85			18.5			23.5	
	Current consumption	A	0.41			0.77			0.98	
	Static friction torque	N·m	4.41	12.7		43.1			72.6	
	Absorption time	ms	180 ms max.							
	Release time	ms	100 ms max.							
	Backlash	---	1° max.							
	Rating	---	Continuous							
	Insulation	---	Type F							

■ General Motor Specifications

Cylinder-style Motors (1,000 r/min)

Item		300 to 5.5 kW
Ambient temperature		Operating: 0 to +40°C Storage: –20 to +60°C
Ambient humidity (with no condensation)		Operating: 20% to 80% Storage: 20% to 80%
Atmosphere		No corrosive gases
Vibration resistance		24.5 m/s^2
Shock resistance		490 m/s^2 (twice in vertical direction)
Insulation resistance		10 MΩ min. at 500 VDC
Dielectric strength		1,500 VAC for 1 min
Operating position		Any direction
Insulation class		Type F
Construction		Totally-enclosed self-cooling
Enclosure rating		IP67 (See note.)
Vibration class		V-15
EC directives	EMC directive	EN55011 class A group1
		EN61000-6-2
	Low-voltage directive	IEC60034-1, 5, 8, 9 EN60034-1, 9
UL standards		UL1004
cUL standards		cUL C22.2 No.100

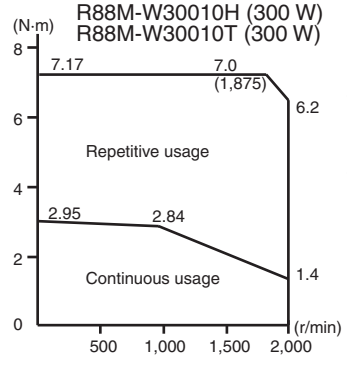
Note: Enclosure ratings do not include the shaft opening.

■ Torque and Rotation Speed Characteristics

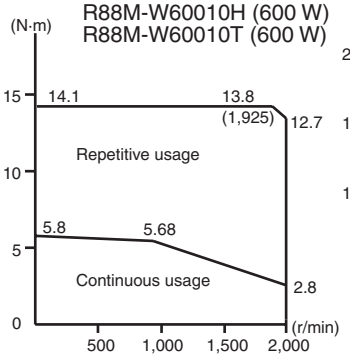
Cylinder-style Motors with 200-VAC Power Supply (1,000 r/min)

The following graphs show characteristics with a standard 3-m cable and 200-VAC input.

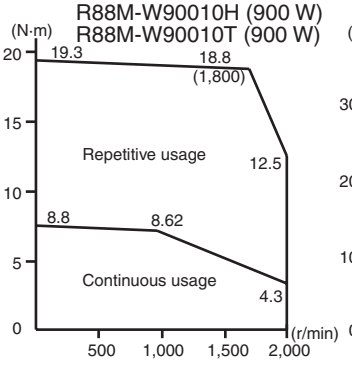
R88M-W30010H (300 W)
R88M-W30010T (300 W)



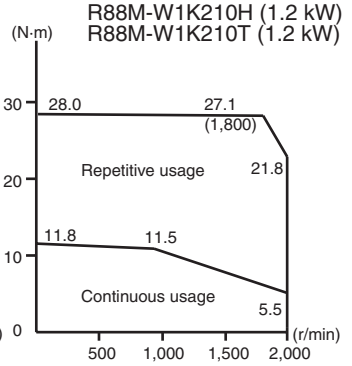
R88M-W60010H (600 W)
R88M-W60010T (600 W)



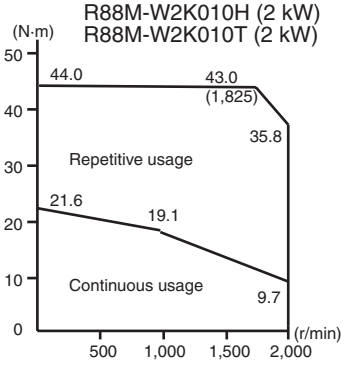
R88M-W90010H (900 W)
R88M-W90010T (900 W)



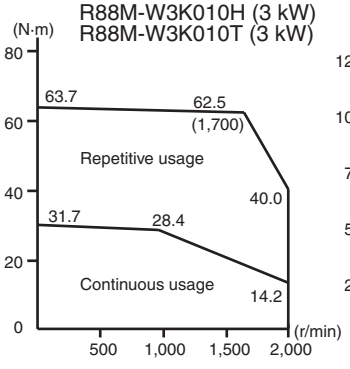
R88M-W1K210H (1.2 kW)
R88M-W1K210T (1.2 kW)



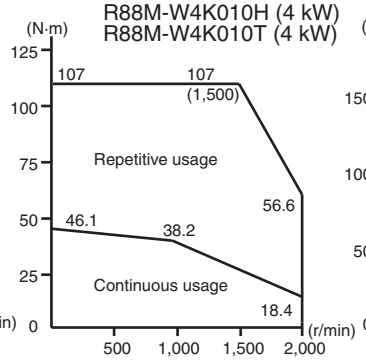
R88M-W2K010H (2 kW)
R88M-W2K010T (2 kW)



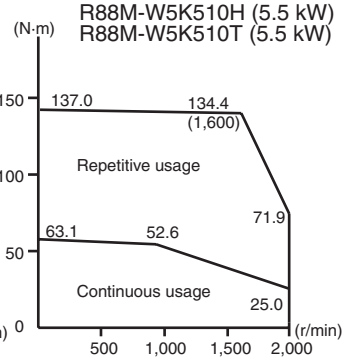
R88M-W3K010H (3 kW)
R88M-W3K010T (3 kW)



R88M-W4K010H (4 kW)
R88M-W4K010T (4 kW)



R88M-W5K510H (5.5 kW)
R88M-W5K510T (5.5 kW)



■ Performance Specifications

Flat-style Motors

Item			200 VAC					100 VAC	
Servomotor (R88M-)			WP10030□	WP20030□	WP40030□	WP75030□	WP1K530□	WP10030□	WP20030□
Servodriver (R88D-)			WT01H	WT02H	WT04H	WT08H	WT15H	WT01HL	WT02HL
Rated output		W	100	200	400	750	1.5k	100	200
Rated torque		N·m	0.318	0.637	1.27	2.39	4.77	0.318	0.637
Max. momentary torque		N·m	0.955	1.91	3.82	7.16	14.3	0.955	1.91
Rated speed		r/min	3,000					3,000	
Max. momentary speed		r/min	5,000					5,000	
Rated current		A (rms)	0.89	2.0	2.6	4.1	7.5	2.2	2.7
Rotor inertia (without brake)		$kg·m^2 \times 10^{-4}$	0.0491	0.193	0.331	2.1	4.02	0.0491	0.193
Power rate		kW/s	20.6	21.0	49.0	27.1	56.7	20.6	21.0
Applicable load inertia		Multiple	100 (Restricted, however, by the regenerative processing capacity.)						
Allowable radial load on shaft		N	78	245		392	490	78	245
Allowable thrust load on shaft		N	49	68		147		49	68
Approx. weight (without brake)		kg	0.7	1.4	2.1	4.2	6.6	0.7	1.4
Approx. weight (with brake)		kg	0.9	1.9	2.6	5.7	8.1	0.9	1.9
Encoder resolution		INC	A, B phase: 2,048 pulses/rev., Z phase: 1 pulse/rev.						
		ABS	A, B phase: 16,384 pulses/rev., Z phase: 1 pulse/rev.						
Brake specifications									
	Inertia	$kg·m^2 \times 10^{-4}$	0.029	0.109		0.875		0.029	0.109
	Excitation voltage	V	24 VDC±10%					24 VDC±10%	
	Power consumption	W	8.2	7.6	8.2	7.5	10	8.2	7.6
	Current consumption	A	0.34	0.32	0.34	0.31	0.42	0.34	0.32
	Static friction torque	N·m	0.4 min.	0.9 min.	1.9 min.	3.5 min.	7.1 min.	0.4 min.	0.9 min.
	Absorption time	ms	20 ms max.		60 ms max.	20 ms max.		20 ms max.	
	Release time	ms	40 ms max.		20 ms max.	20 ms max.		40 ms max.	
	Backlash	---	1° max.					1° max.	
	Rating	---	Continuous					Continuous	
	Insulation	---	Type F					Type F	

■ General Motor Specifications

Flat-style Motors (3,000 r/min)

Item		100 W to 1.5 kW
Ambient temperature		Operating: 0 to +40°C, Storage: –20 to +60°C
Ambient humidity (with no condensation)		Operating: 20% to 80%, Storage: 20% to 80%
Atmosphere		No corrosive gases
Vibration resistance		49 m/s^2
Shock resistance		490 m/s^2 (twice in vertical direction)
Insulation resistance		10 MΩ min. at 500 VDC
Dielectric strength		1,500 VAC for 1 min
Operating position		Any direction
Insulation class		Type B
Construction		Totally-enclosed self-cooling
Enclosure rating		IP55 (See note.) or IP67
Vibration class		V-15
EC directives	EMC directive	EN55011 class A group1
		EN61000-6-2
	Low-voltage directive	IEC60034-1, 5, 8, 9; EN60034-1, 9
UL standards		UL1004
cUL standards		cUL C22.2 No.100

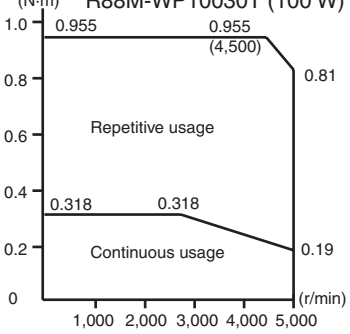
Note: Enclosure ratings do not include the shaft opening.

■ Torque and Rotation Speed Characteristics

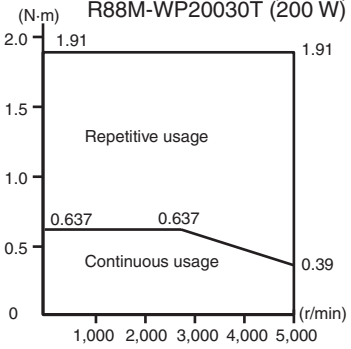
Flat-style Motors with 200-VAC Power Supply

The following graphs show characteristics with a standard 3-m cable and 200-VAC input.

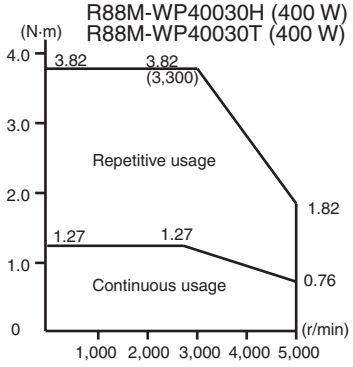
R88M-WP10030H (100 W)
R88M-WP10030T (100 W)



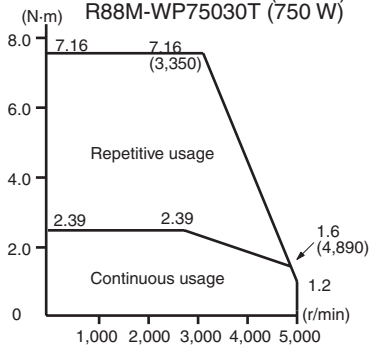
R88M-WP20030H (200 W)
R88M-WP20030T (200 W)



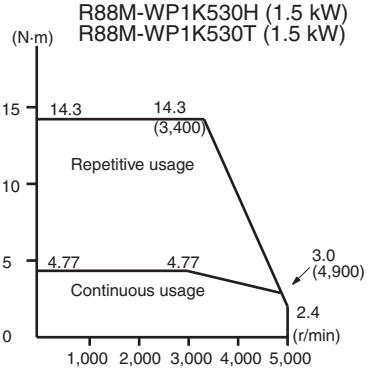
R88M-WP40030H (400 W)
R88M-WP40030T (400 W)



R88M-WP75030H (750 W)
R88M-WP75030T (750 W)



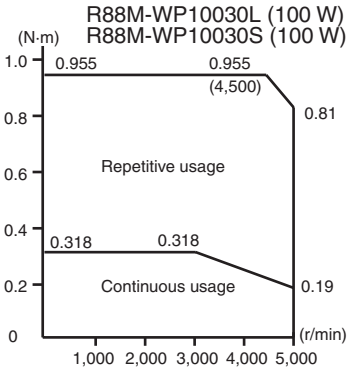
R88M-WP1K530H (1.5 kW)
R88M-WP1K530T (1.5 kW)



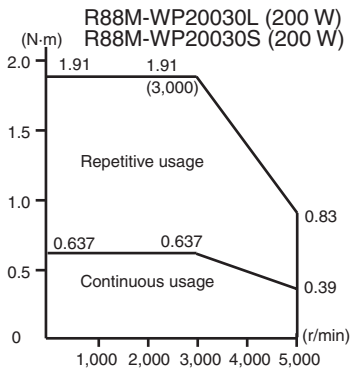
Flat-style Motors with 100-VAC Power Supply

The following graphs show characteristics with a standard 3-m cable and 100-VAC input.

R88M-WP10030L (100 W)
R88M-WP10030S (100 W)



R88M-WP20030L (200 W)
R88M-WP20030S (200 W)



Servodriver Specifications

■ Performance Specifications

Servodrivers

Item			200 VAC														
		Servomotor (R88M-)	WTA3H	WTA5H	WT01H	WT02H	WT04H	WT05H	WT08H	WT10H	WT15H	WT20H	WT30H	WT50H	WT60H	WT75H	WT150H
Maximum servomotor output			30 W	50 W	100 W	200 W	400 W	500 W	750 W	1 kW	1.5 kW	2 kW	3 kW	5 kW	5.5 kW	7.5 kW	15 kW
Continuous output current (rms)			0.44 A	0.64 A	0.91 A	2.1 A	2.8 A	3.8 A	5.7 A	7.6 A	11.6 A	18.5 A	24.8 A	32.9 A	46.9 A	54.7 A	78 A
Momentary maximum output current (rms)			1.3 A	2.0 A	2.8 A	6.5 A	8.5 A	11.0 A	13.9 A	17 A	28 A	42 A	56 A	84 A	110 A	130 A	170 A
Weight			0.8 kg				1.1 kg	1.7 kg			2.8 kg	3.8 kg		5.5 kg	15 kg		26 kg
Input power supply		Main circuits	Single-phase 200 to 230 VAC, +10% to –15%, 50/60 Hz				Three-phase 200 to 230 VAC, +10% to –15%, 50/60 Hz (See note 2.)				Three-phase 200 to 230 VAC, +10% to –15%, 50/60 Hz						
		Control circuits	Single-phase 200 to 230 VAC, +10% to –15%, 50/60 Hz														
Control method			All-digital servo														
Seed feedback			Serial encoder, 13/16/17 bits (incremental and absolute encoders)														
Capacity	Analog inputs	Speed control range	1:5,000														
		Load fluctuation rate	±0.01% max. at 0% to 100% (at rated rotation speed)														
		Voltage fluctuation rate	0% at rated voltage ±10% (at rated rotation speed)														
		Temperature fluctuation rate	±0.1% max. at 25 ± 25°C (at rated rotation speed)														
		Frequency characteristics	400 Hz (at the same load as the rotor inertia)														
		Torque control repeatability	±2%														
		Acceleration time setting	0 to 10 s (acceleration and deceleration set separately)														
	Pulse train inputs	Maximum response pulse frequency	Line driver input: 500 Kpps Open collector input: 200 Kpps														
		Positioning range	0 to 250 (command unit)														
		Feed-forward compensation	0% to 100%														
		Bias setting	0 to 450 r/min														
Input signals		Position command pulse	Feed pulse, forward/reverse signal, forward pulse, reverse pulse, 90° phase difference (phases A/B) signal														
		Speed command voltage	±2 to 10 VDC / rated rotation speed (motor forward rotation by +voltage) Mechanical impedance: Approx. 14 kΩ; circuit time constant: Approx. 47 μs														
		Torque command voltage	±1 to 10 VDC / rated torque (motor forward torque by +voltage) Mechanical impedance: Approx. 14 kΩ; circuit time constant: Approx. 47 μs														
		Sequence input	Run command, gain deceleration, position lock command, control mode switch, gain switch, direction command, pulse prohibit, forward/reverse current limit, speed selection command, forward/reverse drive prohibit, alarm reset														
Output signals		Position feedback output	Phase A, phase B, phase Z, absolute phase (for absolute encoders only): Line driver output														
		Speed monitor output	1 V/1,000 r/min														
		Current monitor output	1 V/rated torque														
		Sequence output	Servo alarm, alarm code (3-bit output): CN1 output terminal fixed, speed conformity, positioning completion 1, motor rotation detection, servo ready, current limit detection, brake interlock, warning, positioning completion 2, speed limit detection														
Dynamic brake stopping			Operates when the power supply turns off, a servo alarm is generated, an overrun occurs, or the servo turns off.														
Other protective functions			Parameter destruction, main circuit detector error, parameter setting error, motor mismatch, overcurrent, regenerative error, regenerative overload, overvoltage, undervoltage, overspeeding, overload, dynamic brake overload, inrush resistance overload, heating plate overheating, backup error (absolute), checksum error (absolute), battery error (absolute), absolute error (absolute), overspeed error (absolute), encoder overheating, speed command input read error, torque command input read error, system error, overrun detection, excessive rotation data error (absolute), encoder communications error, encoder parameter error, encoder data error, multiple rotation limit mismatch (absolute), error counter count-up, phase-failure detection, Parameter Unit transmission error														

Note: 1. Applicable rotor inertia differs according to the motor. Refer to the motor specifications.

2. Input power supply specification when using the R88D-WT08H at single-phase 200 V: single-phase 200 to 230 VAC, +10% to –15%, 50/60 Hz.

Servodrivers

Item				100 VAC			
			Servomotor (R88M-)	WTA3HL	WTA5HL	WT01HL	WT02HL
Maximum servomotor output				30 W	50 W	100 W	200 W
Continuous output current (rms)				0.66 A	0.95 A	2.4 A	3.0 A
Momentary maximum output current (rms)				2.0 A	2.9 A	7.2 A	9.0 A
Weight				0.8 kg			1.1 kg
Input power supply			Main circuits	Single-phase 100 to 115 VAC, +10% to –15%, 50/60 Hz			
			Control circuits	Single-phase 100 to 115 VAC, +10% to –15%, 50/60 Hz			
Control method				All-digital servo			
Seed feedback				Serial encoder, 13/16/17 bits (incremental and absolute encoders)			
Capacity	Analog inputs	Speed control range		1:5000			
		Load fluctuation rate		±0.01% max. at 0% to 100% (at rated rotation speed)			
		Voltage fluctuation rate		0% at rated voltage ±10% (at rated rotation speed)			
		Temperature fluctuation rate		±0.1% max. at 25 ± 25°C (at rated rotation speed)			
		Frequency characteristics		400 Hz (at the same load as the rotor inertia)			
		Torque control repeatability		±2%			
		Acceleration time setting		0 to 10 s (acceleration and deceleration set separately)			
	Pulse train inputs	Maximum response pulse frequency		Line driver input: 500 Kpps Open collector input: 200 Kpps			
		Positioning range		0 to 250 (command unit)			
		Feed-forward compensation		0% to 100%			
		Bias setting		0 to 450 r/min			
Input signals		Position command pulse		Feed pulse, forward/reverse signal, forward pulse, reverse pulse, 90° phase difference (phases A/B) signal			
		Speed command voltage		±2 to 10 VDC / rated rotation speed (motor forward rotation by +voltage) Mechanical impedance: Approx. 14 kΩ; circuit time constant: Approx. 47 μs			
		Torque command voltage		±1 to 10 VDC / rated torque (motor forward torque by +voltage) Mechanical impedance: Approx. 14 kΩ; circuit time constant: Approx. 47 μs			
		Sequence input		Run command, gain deceleration, position lock command, control mode switch, gain switch, direction command, pulse prohibit, forward/reverse current limit, speed selection command, forward/reverse drive prohibit, alarm reset			
Output signals		Position feedback output		Phase A, phase B, phase Z, absolute phase (for absolute encoders only): Line driver output			
		Speed monitor output		1 V/1000 r/min			
		Current monitor output		1 V/rated torque			
		Sequence output		Servo alarm, alarm code (3-bit output): CN1 output terminal fixed, speed conformity, positioning completion 1, motor rotation detection, servo ready, current limit detection, brake interlock, warning, positioning completion 2, speed limit detection			
Dynamic brake stopping				Operates when the power supply turns OFF, a servo alarm is generated, an overrun occurs, or the servo turns OFF.			
Other protective functions				Parameter destruction, main circuit detector error, parameter setting error, motor mismatch, overcurrent, regenerative error, regenerative overload, overvoltage, undervoltage, overspeeding, overload, dynamic brake overload, inrush resistance overload, heating plate overheating, backup error (absolute), checksum error (absolute), battery error (absolute), absolute error (absolute), overspeed error (absolute), encoder overheating, speed command input read error, torque command input read error, system error, overrun detection, excessive rotation data error (absolute), encoder communications error, encoder parameter error, encoder data error, multiple rotation limit mismatch (absolute), error counter count-up, phase-failure detection, Parameter Unit transmission error			

Note: Applicable rotor inertia differs according to the motor. Refer to the motor specifications.

■ General Specifications

Item		Specifications
Ambient temperature		Operating: 0 to +55°C Storage: –20 to +85°C
Ambient humidity (with no condensation)		Operating: 20 to 90% max. Storage: 20 to 90% max.
Atmosphere		No corrosive gases
Vibration resistance		4.9 m/s^2
Shock resistance		19.6 m/s^2 (3 times each in X, Y, and Z directions)
Insulation resistance		1 MΩ min. at 500 VDC
Dielectric strength		1,500 VAC for 1 min
Protective structure		Built into control panel (IP10)
Vibration class		V-15
EC directives	EMC directive	EN55011
		EN61000-6-2
	Low-voltage directive	EN50178
UL standards		UL508C
cUL standards		cUL C22.2 No. 14

External Dimensions

■ AC Servomotors

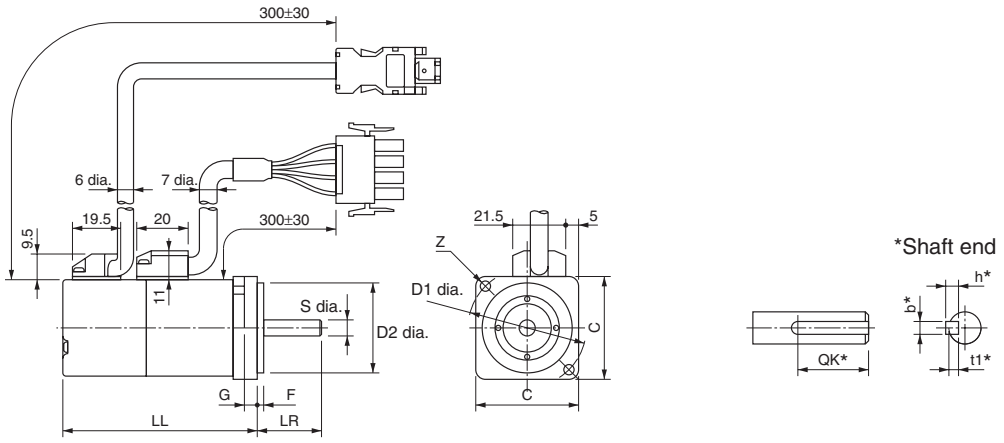
Cylinder-style Motors without Brakes (3,000 r/min)

200 VAC: 30 W/50 W/100 W

R88M-W03030H (-S1)/W05030H (-S1)/W10030H (-S1)
R88M-W03030T (-S1)/W05030T (-S1)/W10030T (-S1)

100 VAC: 30 W/50 W/100 W

R88M-W03030L (-S1)/W05030L (-S1)/W10030L (-S1)
R88M-W03030S (-S1)/W05030S (-S1)/W10030S (-S1)



* These dimensions are applicable to R88M-W□-S1 with key.

Dimensions (mm)	LL	LR	Flange surface						Shaft end				
Model			C	D1	D2	F	G	Z	S	QK*	b*	h*	t1*
R88M-W03030□ (-S1)	69.5	25	40	46	30^{h7}	2.5	5	Two, 4.3 dia.	6^{h6}	14	2	2	1.2
R88M-W05030□ (-S1)	77												
R88M-W10030□ (-S1)	94.5								8^{h6}		3	3	1.8

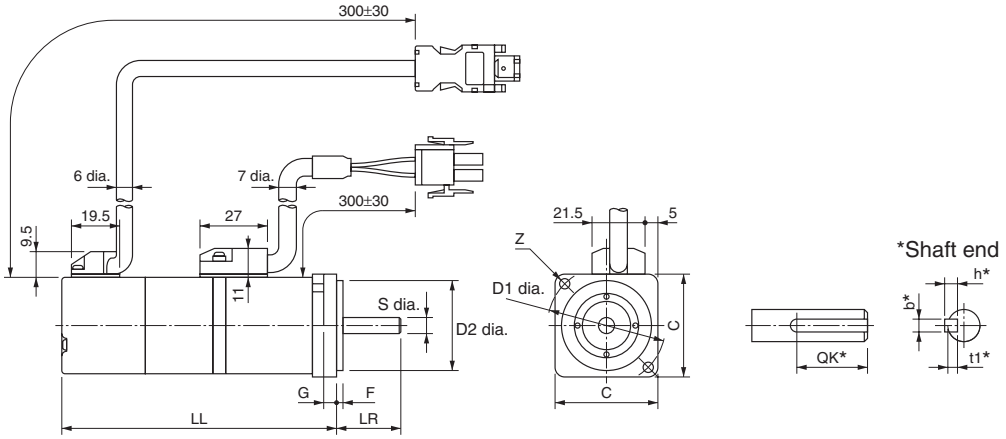
Cylinder-style Motors with Brakes (3,000 r/min)

200 VAC: 30 W/50 W/100 W

R88M-W03030H-B (S1)/W05030H-B (S1)/W10030H-B (S1)
R88M-W03030T-B (S1)/W05030T-B (S1)/W10030T-B (S1)

100 VAC: 30 W/50 W/100 W

R88M-W03030L-B (S1)/W05030L-B (S1)/W10030L-B (S1)
R88M-W03030S-B (S1)/W05030S-B (S1)/W10030S-B (S1)



* These dimensions are applicable to R88M-W□-BS1 with key.

Dimensions (mm)	LL	LR	Flange surface						Shaft end				
Model			C	D1	D2	F	G	Z	S	QK*	b*	h*	t1*
R88M-W03030□-B (S1)	101	25	40	46	30^{h7}	2.5	5	Two, 4.3 dia.	6^{h6}	14	2	2	1.2
R88M-W05030□-B (S1)	108.5												
R88M-W10030□-B (S1)	135								8^{h6}		3	3	1.8

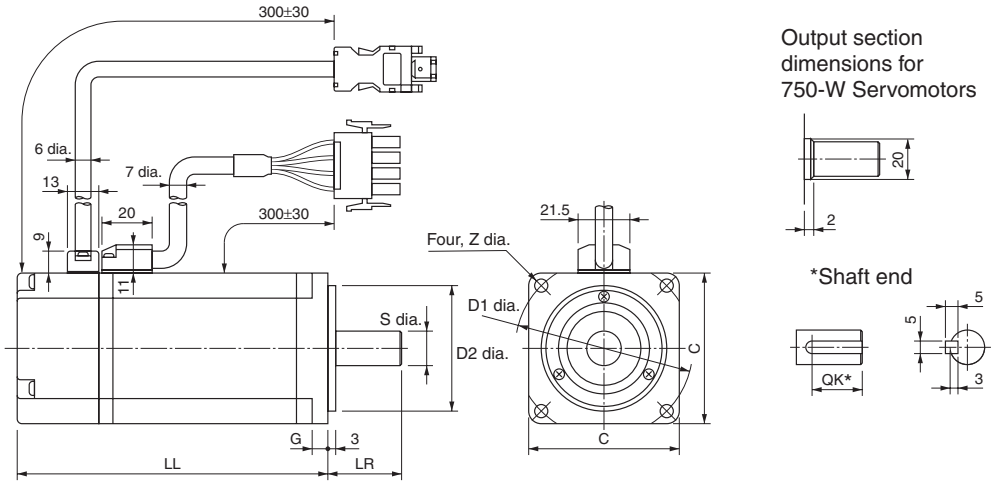
Cylinder-style Motors without Brakes (3,000 r/min)

200 VAC: 200 W/400 W/750 W

R88M-W20030H (-S1)/W40030H (-S1)/W75030H (-S1)
R88M-W20030T (-S1)/W40030T (-S1)/W75030T (-S1)

100 VAC: 200 W

R88M-W20030L (-S1)
R88M-W20030S (-S1)



* These dimensions are applicable to R88M-W□-S1 with key.

Dimensions (mm)	LL	LR	Flange surface						Shaft end				
Model			C	D1	D2	F	G	Z	S	QK*	b*	h*	t1*
R88M-W20030□ (-S1)	96.5	30	60	70	50^{h7}	3	6	Four, 5.5 dia.	14^{h6}	20	5	5	3
R88M-W40030□ (-S1)	124.5												
R88M-W75030□ (-S1)	145	40	80	90	70^{h7}	3	8	Four, 7 dia.	16^{h6}	30			

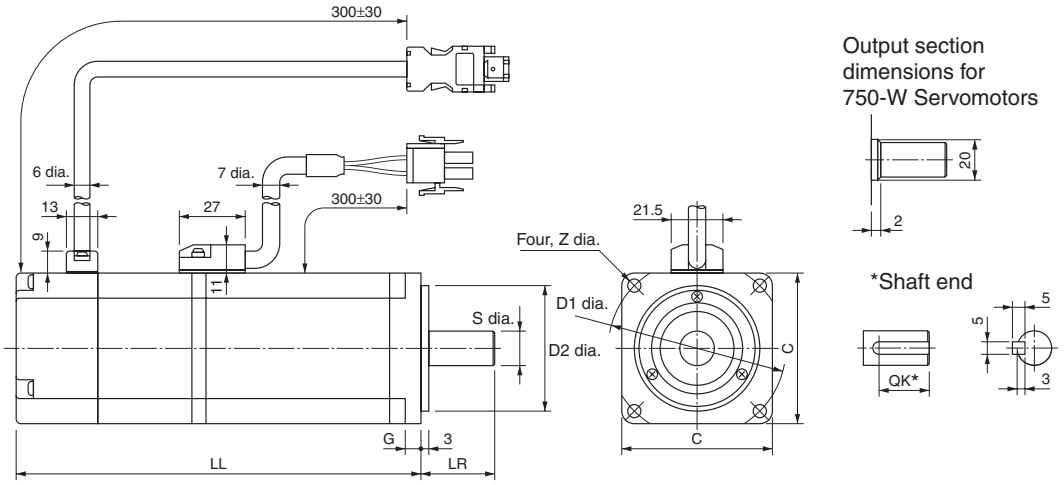
Cylinder-style Motors with Brakes (3,000 r/min)

200 VAC: 200 W/400 W/750 W

R88M-W20030H-B (S1)/W40030H-B (S1)/W75030H-B (S1)
R88M-W20030T-B (S1)/W40030T-B (S1)/W75030T-B(S1)

100 VAC: 200 W

R88M-W20030L-B (S1)
R88M-W20030S-B (S1)



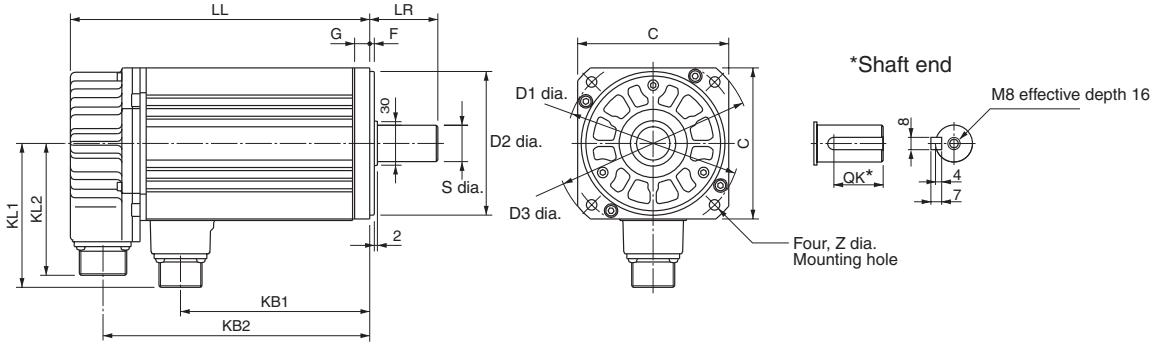
* These dimensions are applicable to R88M-W□-BS1 with key.

Dimensions (mm)	LL	LR	Flange surface						Shaft end				
Model			C	D1	D2	F	G	Z	S	QK*	b*	h*	t1*
R88M-W20030□-B (S1)	136	30	60	70	50^{h7}	3	6	Four, 5.5 dia.	14^{h6}	20	5	5	3
R88M-W40030□-B (S1)	164												
R88M-W75030□-B (S1)	189.5	40	80	90	70^{h7}	3	8	Four, 7 dia.	16^{h6}	30			

Cylinder-style Motors without Brakes (3,000 r/min)

200 VAC: 1 kW/1.5 kW/2 kW/3 kW/4 kW/5 kW

R88M-W1K030H (-S2)/W1K530H (-S2)/W2K030H (-S2)/W3K030H (-S2)/W4K030H (-S2)/W5K030H (-S2)
R88M-W1K030T (-S2)/W1K530T (-S2)/W2K030T (-S2)/W3K030T (-S2)/W4K030T (-S2)/W5K030T (-S2)



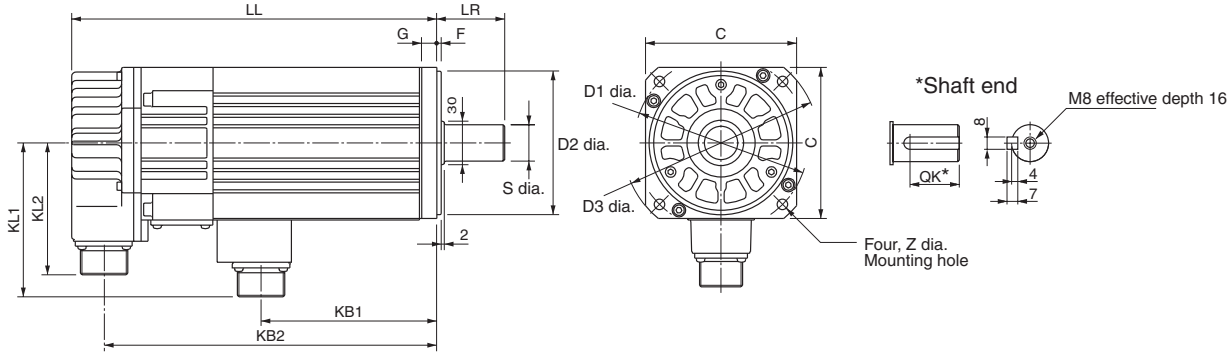
* These dimensions are applicable to R88M-W□-S2 with key and tap.

Dimensions (mm)	LL	LR	KB1	KB2	KL1	KL2	Flange surface							Shaft end	
Model							C	D1	D2	D3	F	G	Z	S	QK*
R88M-W1K030□ (-S2)	149	45	76	128	96	88	100	115	95^{h7}	130	3	10	7	24^{h6}	32
R88M-W1K530□ (-S2)	175		102	154											
R88M-W2K030□ (-S2)	198		125	177											
R88M-W3K030□ (-S2)	199	63	124	178	114	88	130	145	110^{h7}	165	6	12	9	28^{h6}	50
R88M-W4K030□ (-S2)	236		161	215											
R88M-W5K030□ (-S2)	276		201	255											

Cylinder-style Motors with Brakes (3,000 r/min)

200 VAC: 1 kW/1.5 kW/2 kW/3 kW/4 kW/5 kW

R88M-W1K030H-B (S2)/W1K530H-B (S2)/W2K030H-B (S2)/W3K030H-B (S2)/W4K030H-B (S2)/W5K030H-B (S2)
R88M-W1K030T-B (S2)/W1K530T-B (S2)/W2K030T-B (S2)/W3K030T-B (S2)/W4K030T-B (S2)/W5K030T-B (S2)



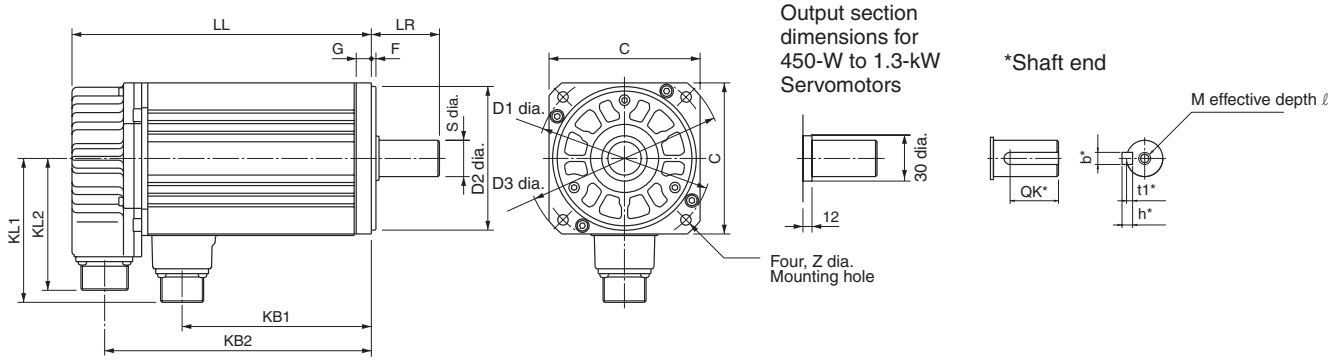
* These dimensions are applicable to R88M-W□-BS2 with key and tap.

Dimensions (mm)	LL	LR	KB1	KB2	KL1	KL2	Flange surface							Shaft end	
Model							C	D1	D2	D3	F	G	Z	S	QK*
R88M-W1K030□-B (S2)	193	45	67	171	102	88	100	115	95^{h7}	130	3	10	7	24^{h6}	32
R88M-W1K530□-B (S2)	219		93	197											
R88M-W2K030□-B (S2)	242		116	220											
R88M-W3K030□-B (S2)	237	63	114	216	119	88	130	145	110^{h7}	165	6	12	9	28^{h6}	50
R88M-W4K030□-B (S2)	274		151	253											
R88M-W5K030□-B (S2)	314		191	293											

Cylinder-style Motors without Brakes (1,500 r/min)

200 VAC: 450 W/850 W/1.3 kW/1.8 kW/2.9 kW/4.4 kW

R88M-W45015T (-S2)/W85015T (-S2)/W1K315T (-S2)/W1K815T (-S2)/W2K915T (-S2)/W4K415T (-S2)



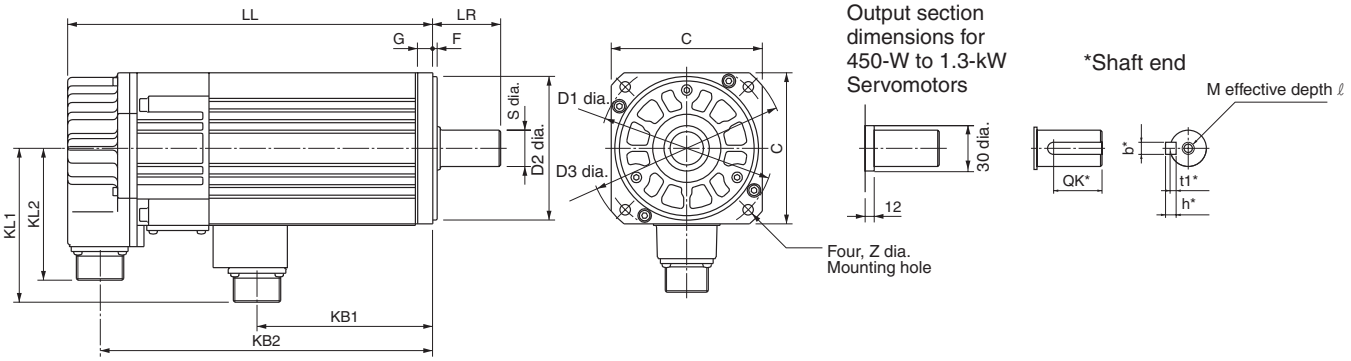
* These dimensions are applicable to R88M-W□-S2 with key and tap.

Dimensions (mm)	LL	LR	KB1	KB2	KL1	KL2	Flange surface							Shaft end						
Model							C	D1	D2	D3	F	G	Z	S	QK*	b*	h*	t1*	M	ℓ
R88M-W45015T (-S2)	138	58	65	117	109	88	130	145	110^{h7}	165	6	12	9	19^{h6}	25	5	5	3	M5	12
R88M-W85015T (-S2)	161		88	140																
R88M-W1K315T (-S2)	185		112	164										22^{h6}		6	6	3.5		
R88M-W1K815T (-S2)	166	79	89	144	140	88	180	200	$114.3_{-0.025}^{0}$	230	3.2	18	13.5	$35^{+0.01}_{0}$	60	10	8	5	M12	25
R88M-W2K915T (-S2)	192		115	170																
R88M-W4K415T (-S2)	226		149	204																

Cylinder-style Motors with Brakes (1,500 r/min)

200 VAC: 450 W/850 W/1.3 kW/1.8 kW/2.9 kW/4.4 kW

R88M-W45015T-B (S2)/W85015T-B (S2)/W1K315T-B (S2)/W1K815T-B (S2)/W2K915T-B (S2)/W4K415T-B (S2)



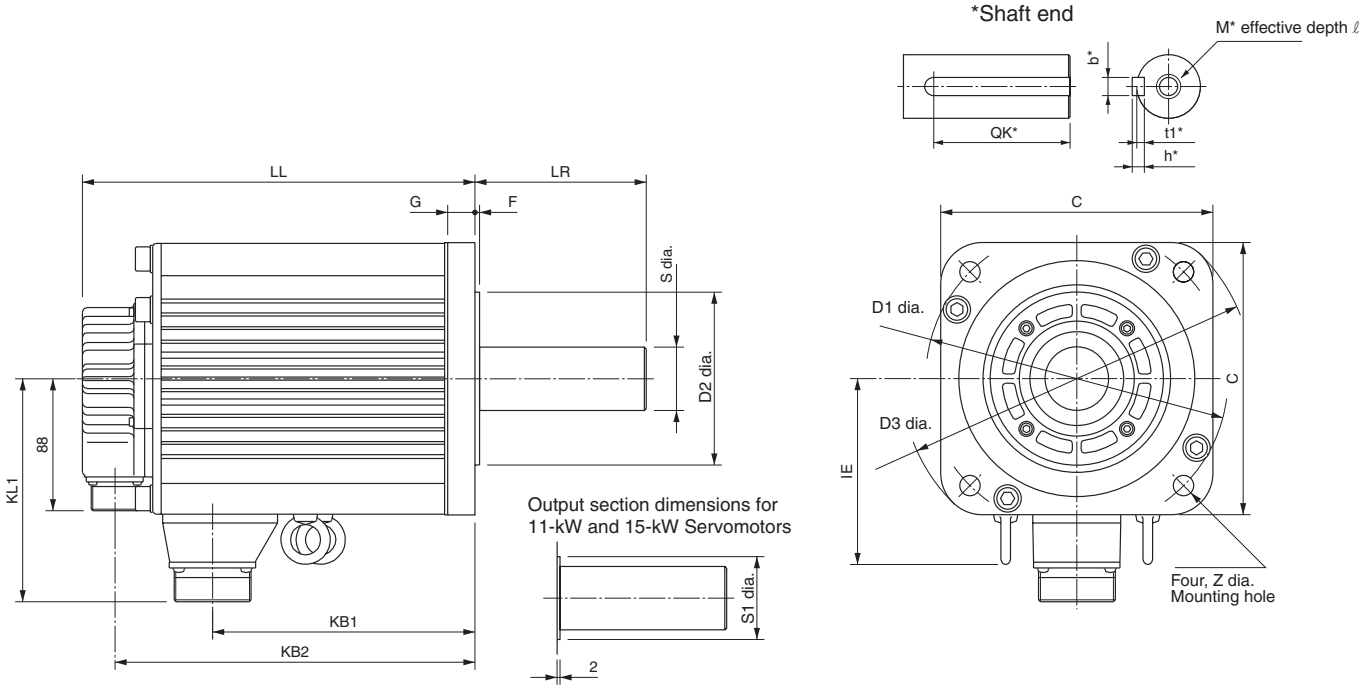
* These dimensions are applicable to R88M-W□-BS2 with key and tap.

Dimensions (mm)	LL	LR	KB1	KB2	KL1	KL2	Flange surface							Shaft end						
Model							C	D1	D2	D3	F	G	Z	S	QK*	b*	h*	t1*	M	ℓ
R88M-W45015T-B (-S2)	176	58	56	154	120	88	130	145	110^{h7}	165	6	12	9	19^{h6}	25	5	5	3	M5	12
R88M-W85015T-B (-S2)	199		79	177																
R88M-W1K315T-B (-S2)	223		103	201										22^{h6}		6	6	3.5		
R88M-W1K815T-B (-S2)	217	79	79	195	146	88	180	200	$114.3_{-0.025}^{0}$	230	3.2	18	13.5	$35^{+0.01}_{0}$	60	10	8	5	M12	25
R88M-W2K915T-B (-S2)	243		105	221																
R88M-W4K415T-B (-S2)	277		139	255																

Cylinder-style Motors without Brakes (1,500 r/min)

200 VAC: 5.5 kW/7.5 kW/11 kW/15 kW

R88M-W5K515T (-S2)/W7K515T (-S2)/W11K015T (-S2)/W15K015T (-S2)



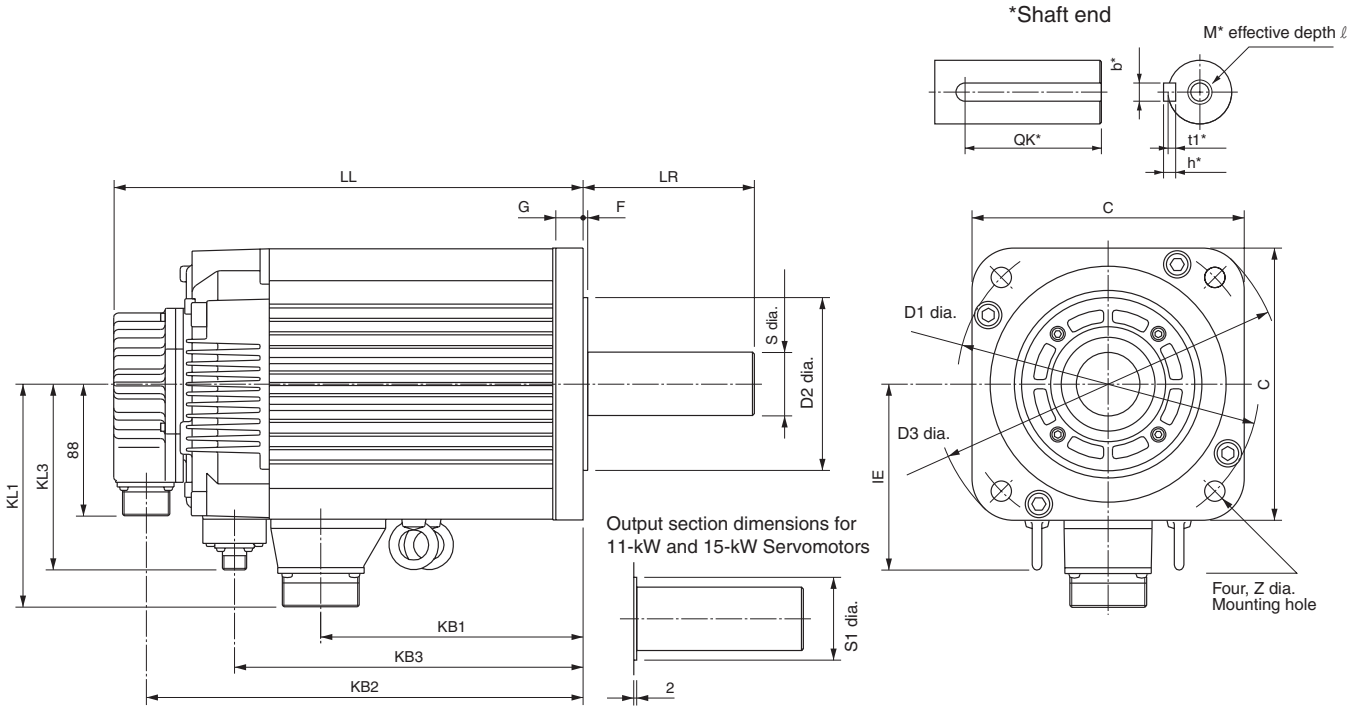
* These dimensions are applicable to R88M-W□-S2 with key and tap.

Dimensions (mm)	LL	LR	KB1	KB2	KL1	IE	Flange surface							Shaft end							
Model							C	D1	D2	D3	F	G	Z	S	S1	QK*	b*	h*	t1*	M	ℓ
R88M-W5K515T (-S2)	260	113	174	238	150	123	180	200	$114.3_{-0.025}^{0}$	230	3.2	18	13.5	42^{h6}	---	90	12	8	5	M16	32
R88M-W7K515T (-S2)	334		248	312																	
R88M-W11K015T (-S2)	338	116	251	317	168	142	220	235	200^{h7}	270	4				45						
R88M-W15K015T (-S2)	457		343	435		150						20		$55_{+0.011}^{+0.030}$	65		16	10	6	M20	40

Cylinder-style Motors with Brakes (1,500 r/min)

200 VAC: 5.5 kW/7.5 kW/11 kW/15 kW

R88M-W5K515T-B (-S2)/W7K515T-B (-S2)/W11K015T-B (-S2)/W15K015T-B (-S2)



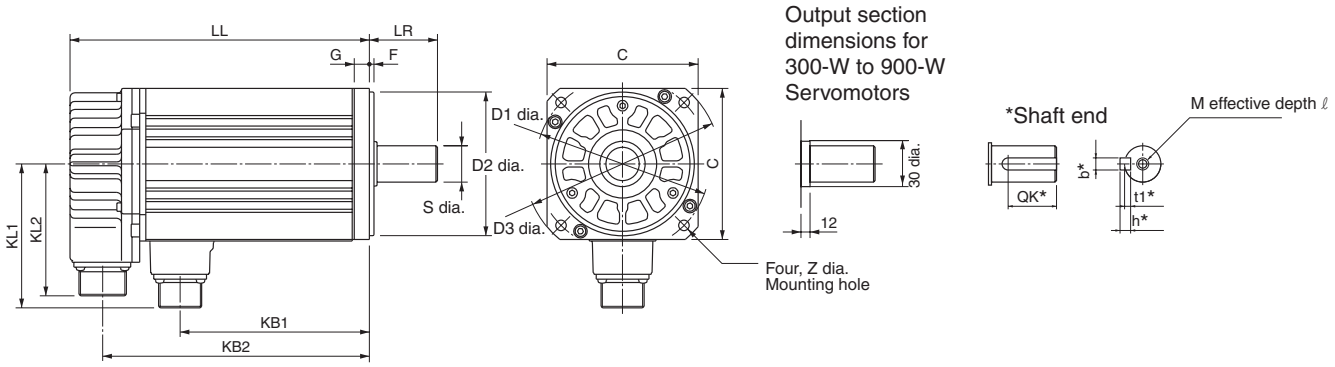
* These dimensions are applicable to R88M-W□-BS2 with key and tap.

Dimensions (mm)	LL	LR	KB1	KB2	KB3	KL1	KL3	IE	Flange surface							Shaft end							
Model									C	D1	D2	D3	F	G	Z	S	S1	QK*	b*	h*	t1*	M	ℓ
R88M-W5K515T-B (-S2)	311	113	174	289	231	150	123	123	180	200	$114.3_{-0.025}^{0}$	230	3.2	18	13.5	42^{h6}	---	90	12	8	5	M16	32
R88M-W7K515T-B (-S2)	385		248	363	305																		
R88M-W11K015T-B (-S2)	383	116	258	362	315	168	142	142	220	235	200^{h7}	270	4				45						
R88M-W15K015T-B (-S2)	519		343	497	415			150						20		$55^{+0.030}_{+0.011}$	65		16	10	6	M20	40

Cylinder-style Motors without Brakes (1,000 r/min)

200 VAC: 300 W/600 W/900 W/1.2 kW/2 kW/3 kW

R88M-W30010H (-S2)/W60010H (-S2)/W90010H (-S2)/W1K210H (-S2)/W2K010H (-S2)/W3K010H (-S2)
R88M-W30010T (-S2)/W60010T (-S2)/W90010T (-S2)/W1K210T (-S2)/W2K010T (-S2)/W3K010T (-S2)



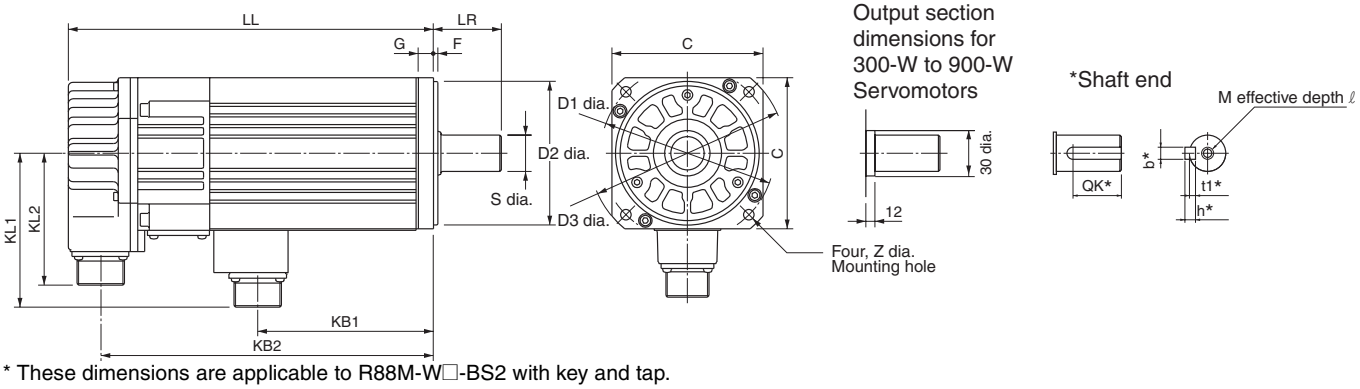
* These dimensions are applicable to R88M-W□-S2 with key and tap.

Dimensions (mm)	LL	LR	KB1	KB2	KL1	KL2	Flange surface							Shaft end						
Model							C	D1	D2	D3	F	G	Z	S	QK*	b*	h*	t1*	M	ℓ
R88M-W30010□ (-S2)	138	58	65	117	109	88	130	145	110^{h7}	165	6	12	9	19^{h6}	25	5	5	3	M5	12
R88M-W60010□ (-S2)	161		88	140																
R88M-W90010□ (-S2)	185		112	164										22^{h6}		6	6	3.5		
R88M-W1K210□ (-S2)	166	79	89	144	140	88	180	200	$114.3\ ^{0}_{-0.025}$	230	3.2	18	13.5	$35\ ^{+0.01}_{0}$	60	10	8	5	M12	25
R88M-W2K010□ (-S2)	192		115	170																
R88M-W3K010□ (-S2)	226		149	204																

Cylinder-style Motors with Brakes (1,000 r/min)

200 VAC: 300 W/600 W/900 W/1.2 kW/2 kW/3 kW

R88M-W30010H-B (S2)/W60010H-B (S2)/W90010H-B (S2)/W1K210H-B (S2)/W2K010H-B (S2)/W3K010H-B (S2)
R88M-W30010T-B (S2)/W60010T-B (S2)/W90010T-B (S2)/W1K210T-B (S2)/W2K010T-B (S2)/W3K010T-B (S2)



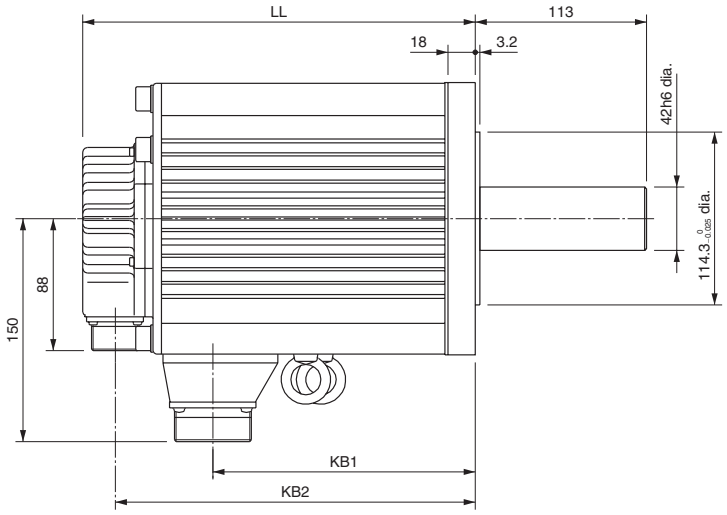
* These dimensions are applicable to R88M-W□-BS2 with key and tap.

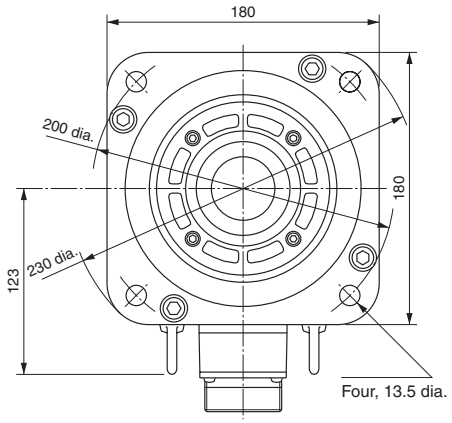
Dimensions (mm)	LL	LR	KB1	KB2	KL1	KL2	Flange surface							Shaft end						
Model							C	D1	D2	D3	F	G	Z	S	QK*	b*	h*	t1*	M	ℓ
R88M-W30010□-B (S2)	176	58	56	154	120	88	130	145	110^{h7}	165	6	12	9	19^{h6}	25	5	5	3	M5	12
R88M-W60010□-B (S2)	199		79	177																
R88M-W90010□-B (S2)	223		103	201										22^{h6}		6	6	3.5		
R88M-W1K210□-B (S2)	217	79	79	195	146	88	180	200	$114.3\ ^{0}_{-0.025}$	230	3.2	18	13.5	$35\ ^{+0.01}_{0}$	60	10	8	5	M12	25
R88M-W2K010□-B (S2)	243		105	221																
R88M-W3K010□-B (S2)	277		139	255																

Cylinder-style Motors without Brakes (1,000 r/min)

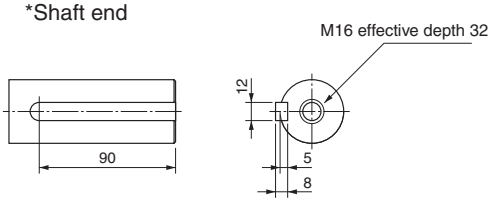
200 VAC: 4 kW/5.5 kW

R88M-W4K010H (-S2)/W5K510H (-S2)
R88M-W4K010T (-S2)/W5K510T (-S2)





*Shaft end

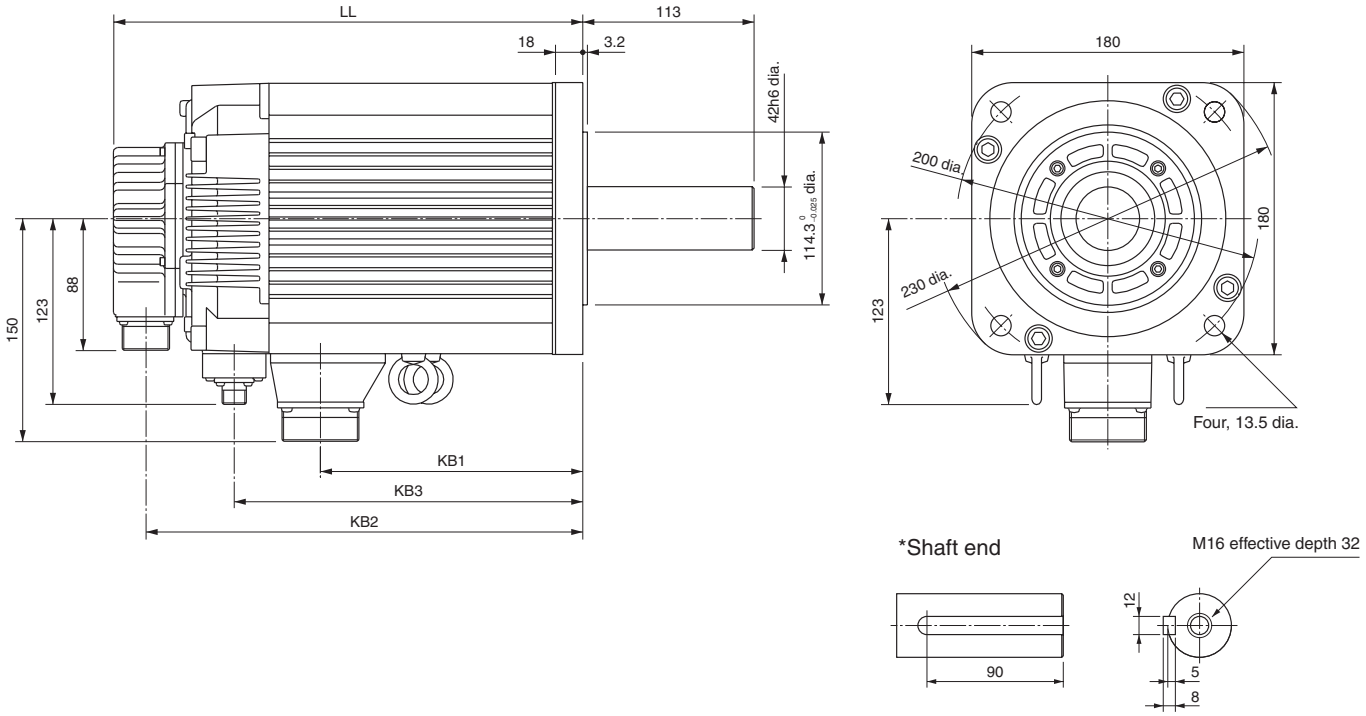


Dimensions (mm) / Model	LL	KB1	KB2
R88M-W4K010□ (-S2)	260	174	238
R88M-W5K010□ (-S2)	334	248	312

Cylinder-style Motors with Brakes (1,000 r/min)

200 VAC: 4 kW/5.5 kW

R88M-W4K010H-B (S2)/W5K510H-B (S2)
R88M-W4K010T-B (S2)/W5K510T-B (S2)



Dimensions (mm) / Model	LL	KB1	KB2	KB3
R88M-W4K010□-B (S2)	311	174	289	231
R88M-W5K510□-B (S2)	385	248	363	305

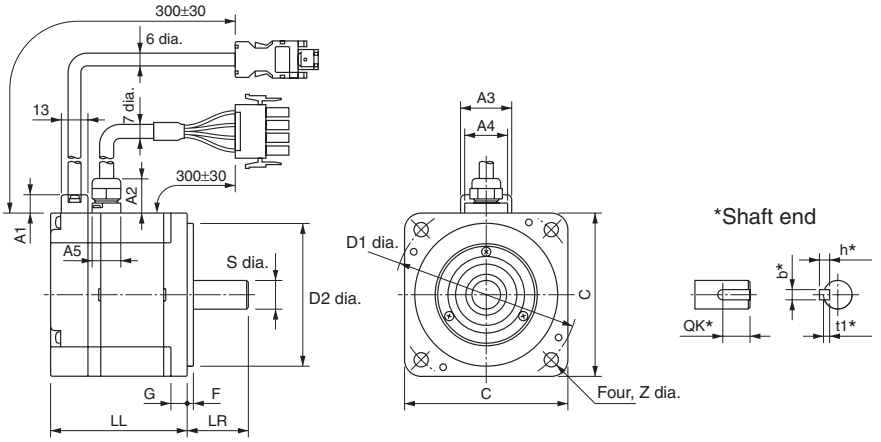
Flat-style Motors without Brakes

200 VAC: 100 W/200 W/400 W/750 W/1.5 kW

R88M-WP10030H (-S1)/WP20030H (-S1)/WP40030H (-S1)/WP75030H (-S1)/WP1K530H (-S1)
R88M-WP10030T (-S1)/WP20030T (-S1)/WP40030T (-S1)/WP75030T (-S1)/WP1K530T (-S1)

100 VAC: 100 W/200 W

R88M-WP10030L (-S1)/WP20030L (-S1)
R88M-WP10030S (-S1)/WP20030S (-S1)



* These dimensions are applicable to R88M-W□-S1 with key.

Dimensions (mm)	LL	LR	Flange surface						Shaft end					Cable pull-out section				
Model			C	D1	D2	F	G	Z	S	QK*	b*	h*	t1*	A1	A2	A3	A4	A5
R88M-WP10030□ (-S1)	62	25	60	70	50^{h7}	3	6	5.5	8^{h6}	14	3	3	1.8	9	18	25	21	14
R88M-WP20030□ (-S1)	67	30	80	90	70^{h7}	3	8	7	14^{h6}	16	5	5	3					
R88M-WP40030□ (-S1)	87																	
R88M-WP75030□ (-S1)	86.5	40	120	145	110^{h7}	3.5	10	10	16^{h6}	22					28		38	19
R88M-WP1K530□ (-S1)	114.5								19^{h6}		6	6	3.5					

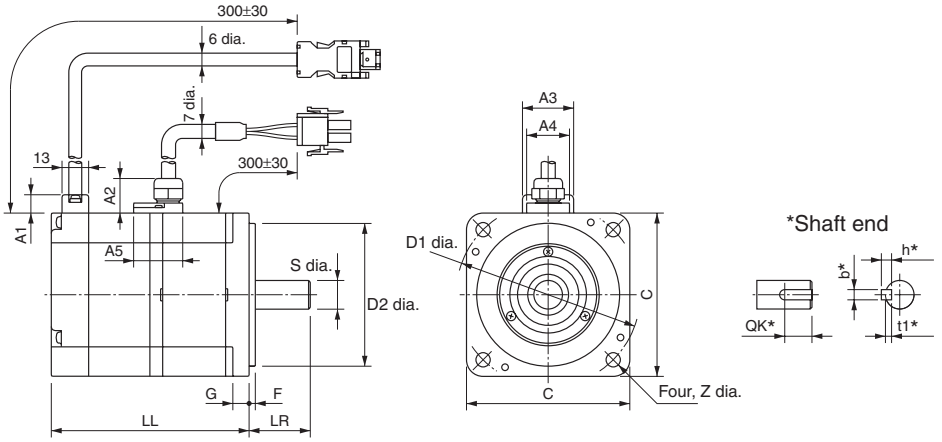
Flat-style Motors with Brakes

200 VAC: 100 W/200 W/400 W/750 W/1.5 kW

R88M-WP10030H-B (S1)/WP20030H-B (S1)/WP40030H-B (S1)/WP75030H-B (S1)/WP1K530H-B (S1)
R88M-WP10030T-B (S1)/WP20030T-B (S1)/WP40030T-B (S1)/WP75030T-B (S1)/WP1K530T-B (S1)

100 VAC: 100 W/200 W

R88M-WP10030L-B (S1)/WP20030L-B (S1)
R88M-WP10030S-B (S1)/WP20030S-B (S1)



* These dimensions are applicable to R88M-W□-BS1 with key.

Dimensions (mm)	LL	LR	Flange surface						Shaft end					Cable pull-out section				
Model			C	D1	D2	F	G	Z	S	QK*	b*	h*	t1*	A1	A2	A3	A4	A5
R88M-WP10030□-B (S1)	91	25	60	70	50^{h7}	3	6	5.5	8^{h6}	14	3	3	1.8	9	18	25	21	23
R88M-WP20030□-B (S1)	98.5	30	80	90	70^{h7}	3	8	7	14^{h6}	16	5	5	3					
R88M-WP40030□-B (S1)	118.5																	
R88M-WP75030□-B (S1)	120	40	120	145	110^{h7}	3.5	10	10	16^{h6}	22					28		38	26
R88M-WP1K530□-B (S1)	148								19^{h6}		6	6	3.5					

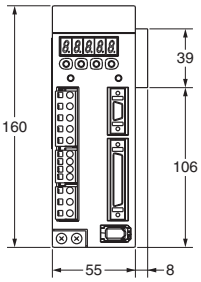
■ AC Servodrivers

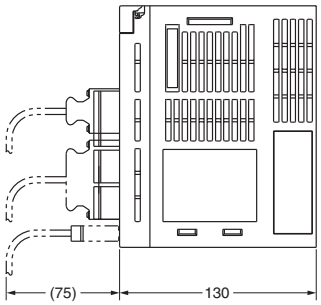
200 VAC: 30 W/50 W/100 W/200 W

R88D-WTA3H/WTA5H/WT01H/WT02H

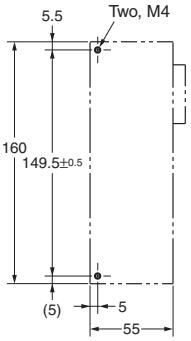
100 VAC: 30 W/50 W/100 W

R88D-WTA3HL/WTA5HL/WT01HL





Mounting hole dimensions

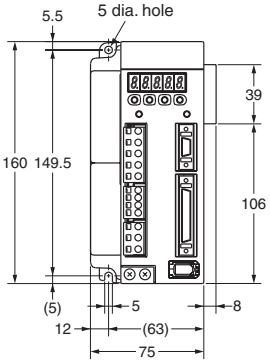


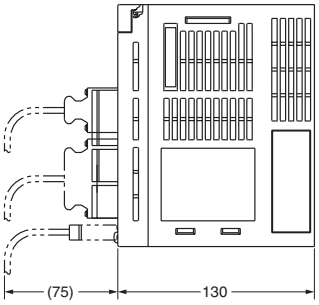
200 VAC: 400 W

R88D-WT04H

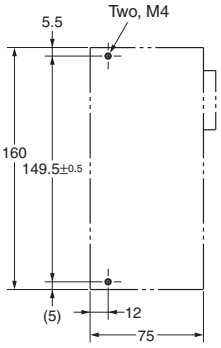
100 VAC: 200 W

R88D-WT02HL



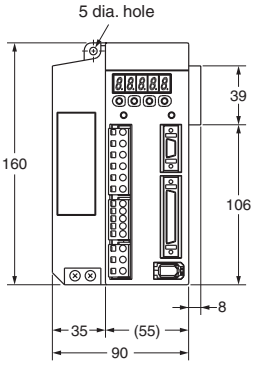


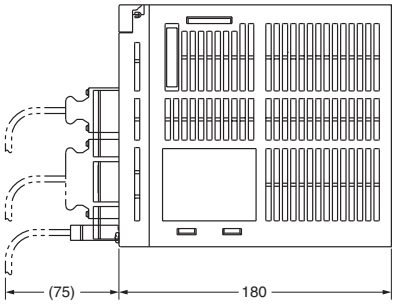
Mounting hole dimensions



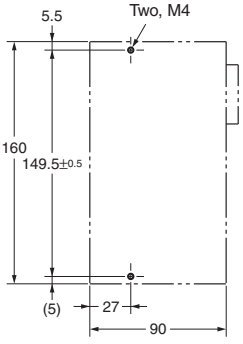
200 VAC: 500 W/750 W/1 kW

R88D-WT05H/WT08H/WT10H



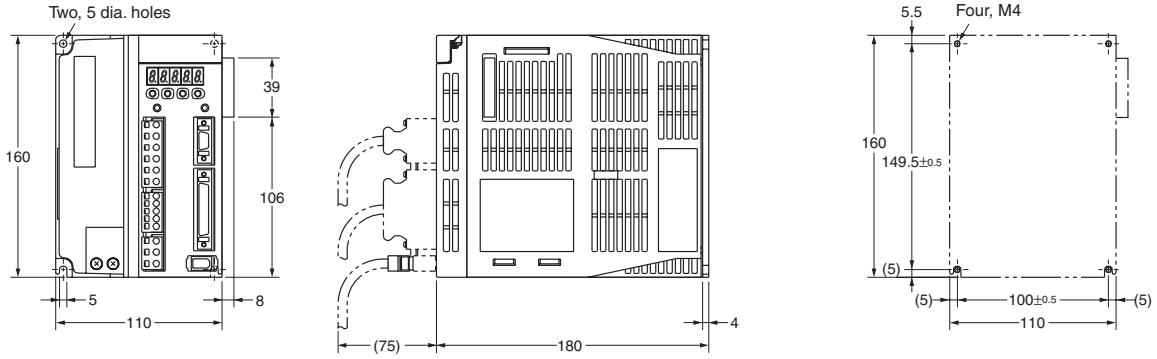


Mounting hole dimensions



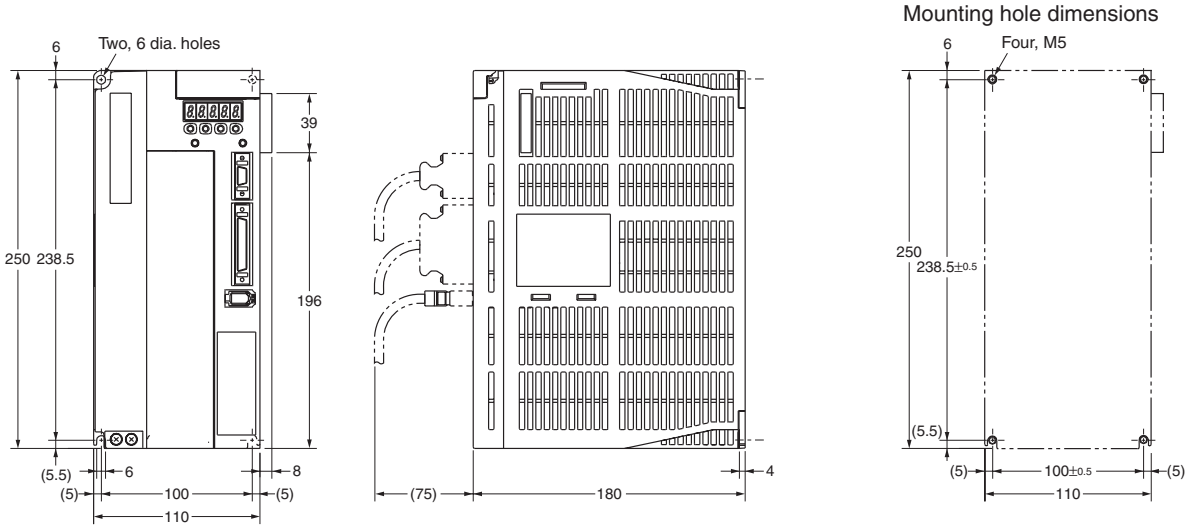
200 VAC: 1.5 kW

R88D-WT15H



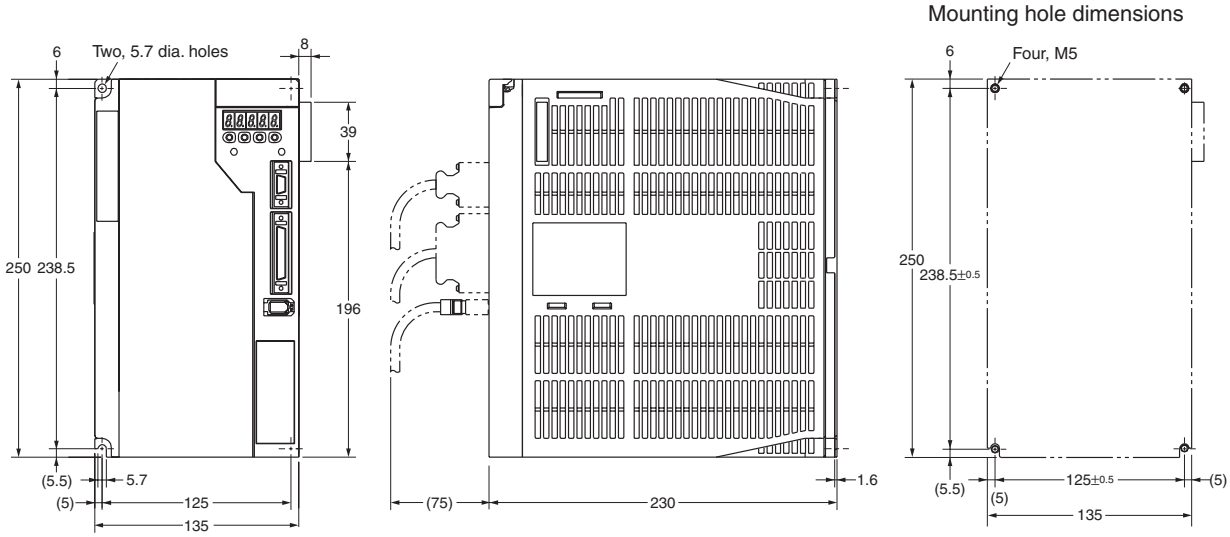
200 VAC: 2 kW/3 kW

R88D-WT20H/WT30H



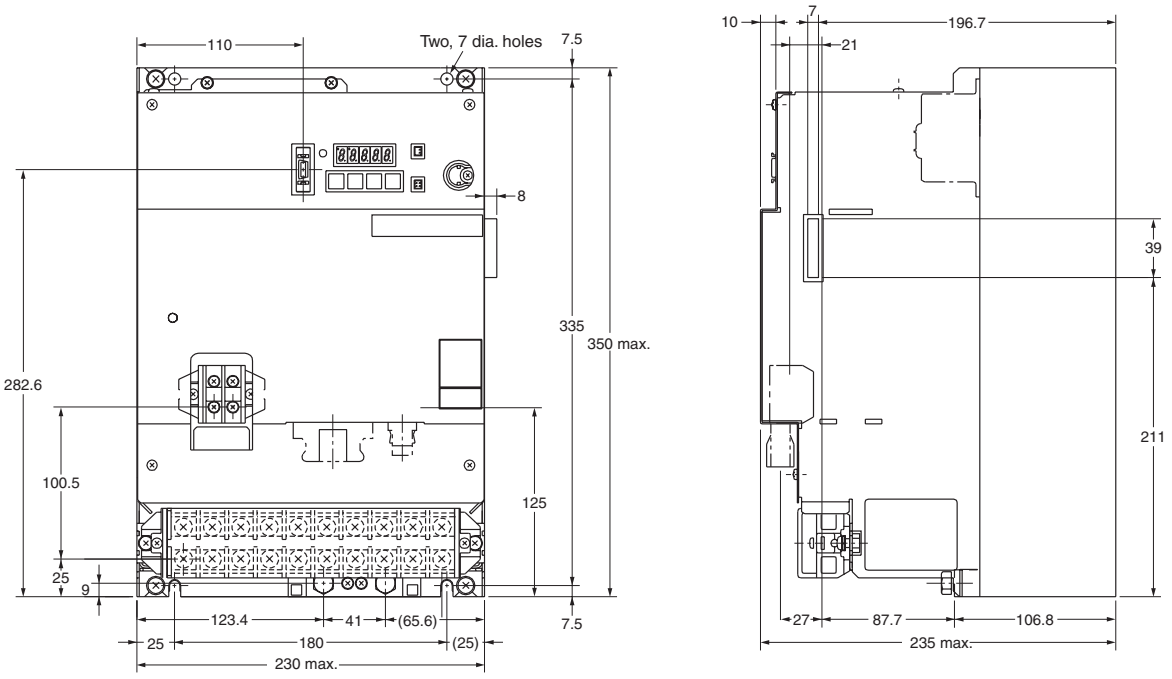
200 VAC: 5 kW

R88D-WT50H

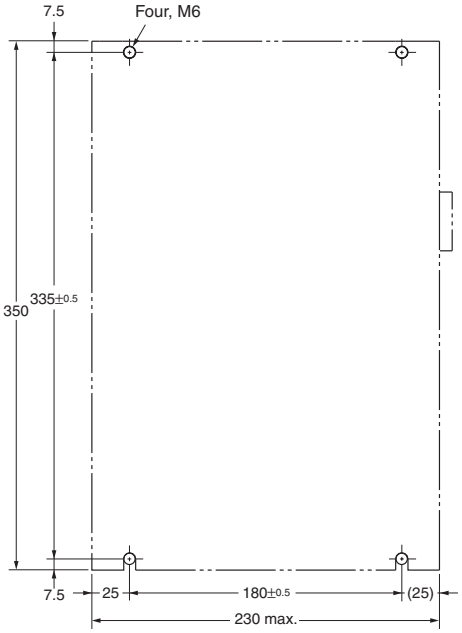


200 VAC: 6 kW/7.5 kW

R88D-WT60H/WT75H

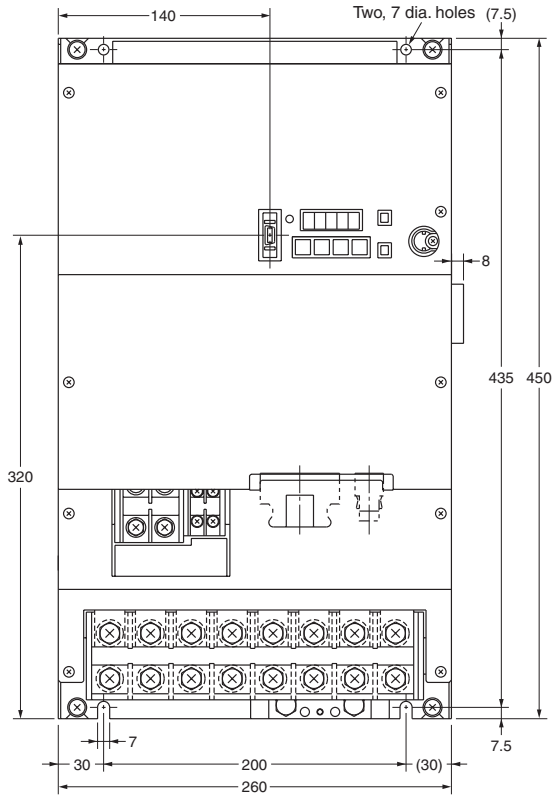


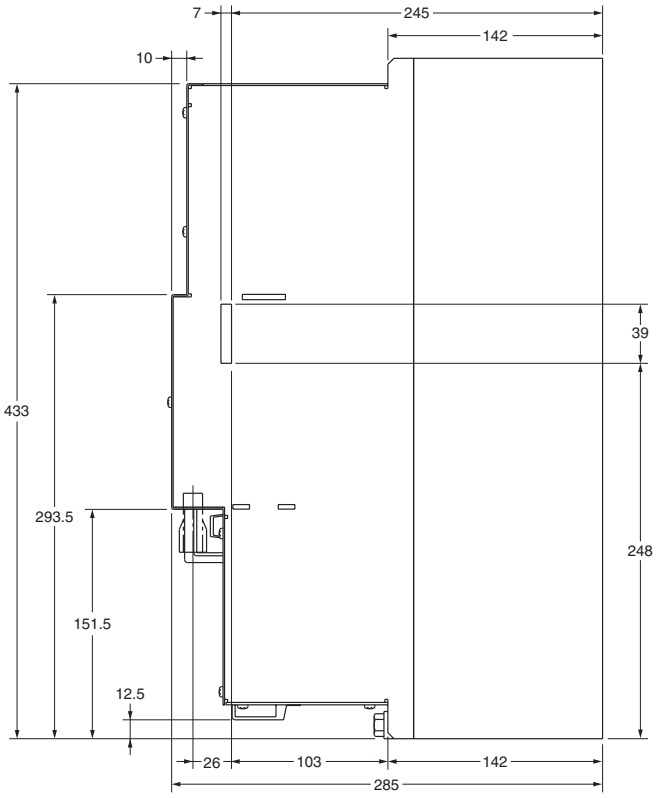
Mounting hole dimensions



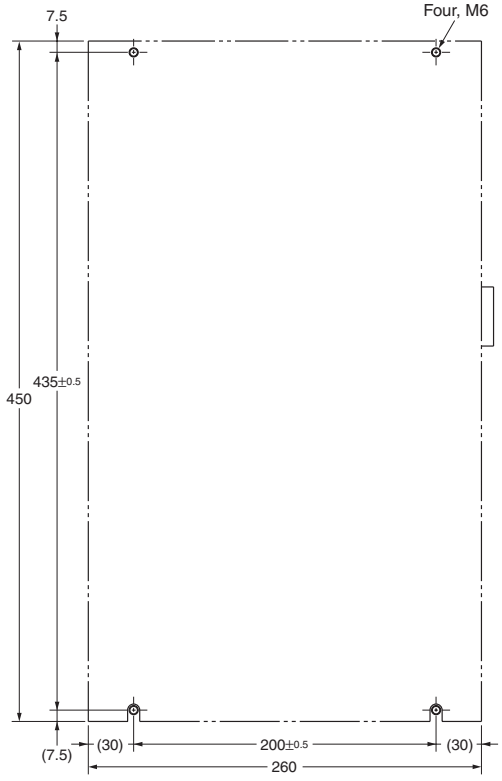
200 VAC: 15 kW

R88D-WT150H

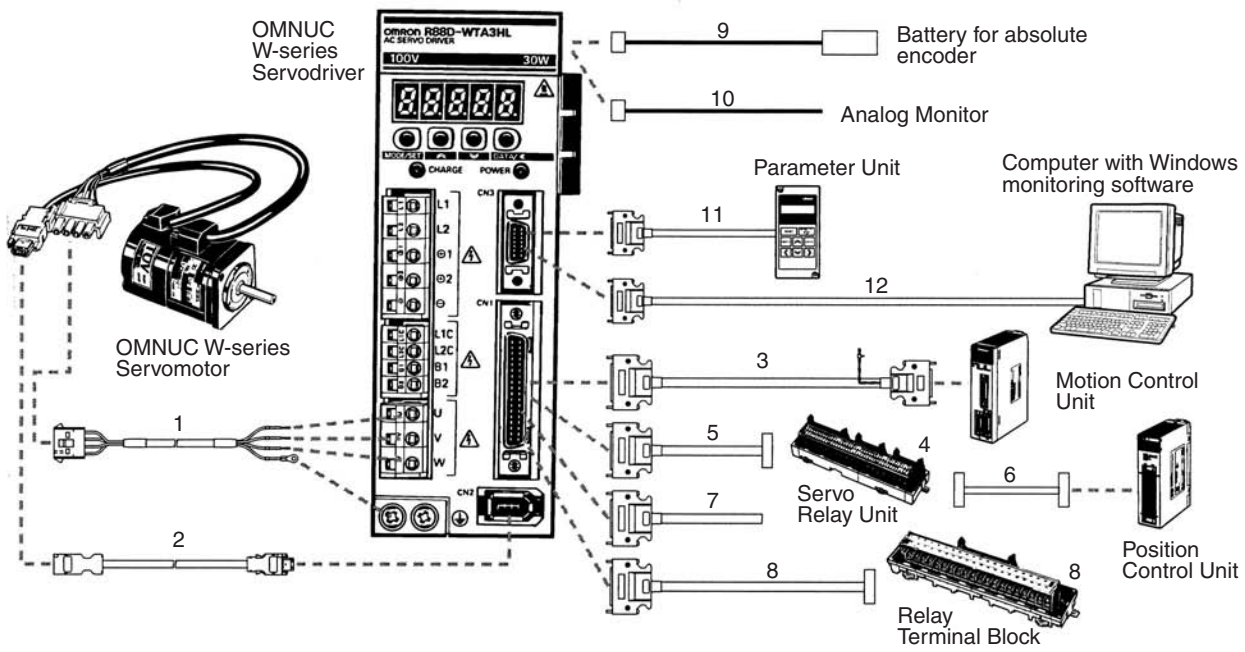




Mounting hole dimensions

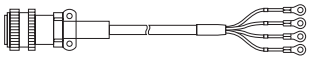
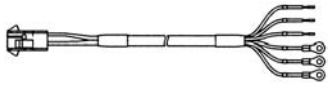
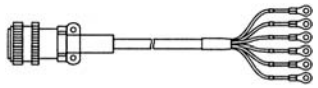
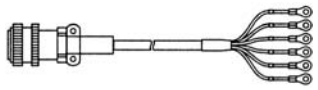


Cable Specifications



■ Power Cables

Symbol	Description	Connect to:	Model	Remarks
1	Power Cables for Servomotors without Brakes	Cylinder-style Servomotors (3,000 r/min): 30 to 750 W Flat-style Servomotors (3,000 r/min): 100 to 750 W	R88A-CAWA□□□S □ represents one of the following cable lengths: 3 m, 5 m, 10 m, 15 m, 20 m, 30 m, 40 m, 50 m	Connector on motor end (manufactured by AMP Japan, Ltd.) Connector cap: 350780-1 Connector socket: 350689-3 
		Flat-style Servomotors (3,000 r/min): 1.5 kW	R88A-CAWB□□□S □ represents one of the following cable lengths: 3 m, 5 m, 10 m, 15 m, 20 m, 30 m, 40 m, 50 m	Connector on motor end (manufactured by AMP Japan, Ltd.) Connector cap: 350780-1 Connector socket: 350551-6 (pins 1 to 3) 350551-3 (pin 4) 
		Cylinder-style Servomotors (3,000 r/min): 1 to 2 kW Cylinder-style Servomotors (1,500 r/min): 450 W to 1.3 kW Cylinder-style Servomotors (1,000 r/min): 300 to 900 W	R88A-CAWC□□□S □ represents one of the following cable lengths: 3 m, 5 m, 10 m, 15 m, 20 m, 30 m, 40 m, 50 m	Connector on motor end (manufactured by Daiichi Denshi Kogyo Co., Ltd.) Connector cap: MS3106B18-10S Cable clamp: MS3057-10A 
		Cylinder-style Servomotors (3,000 r/min): 3 to 5 kW Cylinder-style Servomotors (1,500 r/min): 1.8 to 4.4 kW Cylinder-style Servomotors (1,000 r/min): 1.2 to 3 kW	R88A-CAWD□□□S □ represents one of the following cable lengths: 3 m, 5 m, 10 m, 15 m, 20 m, 30 m, 40 m, 50 m	Connector on motor end (manufactured by Daiichi Denshi Kogyo Co., Ltd.) Connector cap: MS3106B22-22S Cable clamp: MS3057-12A 

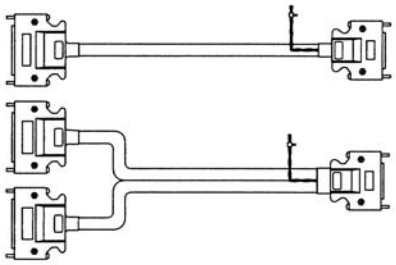
Symbol	Description		Connect to:	Model	Remarks
1	Power Cables for Servomotors without Brakes, and Servomotors with Brakes (See note.)	Power connectors (See note.)	Cylinder-style Servomotors (1,000 r/min): 4 kW	R88A-CAWE□□□S □ represents one of the following cable lengths: 3 m, 5 m, 10 m, 15 m, 20 m, 30 m, 40 m, 50 m	Connector on motor end (manufactured by Daiichi Denshi Kogyo Co., Ltd.) Connector cap: MS3106B32-17S Cable clamp: MS3057-20A 
			Cylinder-style Servomotors (1,500 r/min): 5.5 to 11 kW Cylinder-style Servomotors (1,000 r/min): 5.5 kW	R88A-CAWF□□□S □ represents one of the following cable lengths: 3 m, 5 m, 10 m, 15 m, 20 m, 30 m, 40 m, 50 m	Connector on motor end (manufactured by Daiichi Denshi Kogyo Co., Ltd.) Connector cap: MS3106B32-17S Cable clamp: MS3057-20A 
		Brake connectors (See note.)	Cylinder-style Servomotors (1,500 r/min): 5.5 to 11 kW Cylinder-style Servomotors (1,000 r/min): 4 to 5.5 kW **Note:** Must be used in combination with an R88A-CAWE□□□S or R88A-CAWF□□□S Power Cable.	R88A-CAWE□□□B □ represents one of the following cable lengths: 3 m, 5 m, 10 m, 15 m, 20 m, 30 m, 40 m, 50 m	Connector on motor end (manufactured by Daiichi Denshi Kogyo Co., Ltd.) Connector cap: MS3106A10SL-3S Cable clamp: MS3057-4A 
	Power Cables for Servomotors with Brakes		Cylinder-style Servomotors (3,000 r/min): 30 to 750 W Flat-style Servomotors (3,000 r/min): 100 to 750 W	R88A-CAWA□□□B □ represents one of the following cable lengths: 3 m, 5 m, 10 m, 15 m, 20 m, 30 m, 40 m, 50 m	Connector on motor end (manufactured by AMP Japan, Ltd.) Connector cap: 350781-1 Connector socket: 350689-3 
			Flat-style Servomotors (3,000 r/min): 1.5 kW	R88A-CAWB□□□B □ represents one of the following cable lengths: 3 m, 5 m, 10 m, 15 m, 20 m, 30 m, 40 m, 50 m	Connector on motor end (manufactured by AMP Japan, Ltd.) Connector cap: 350781-1 Connector socket: 350551-6 (pins 1 to 3) 350551-3 (pin 4) 
			Cylinder-style Servomotors (3,000 r/min): 1 to 2 kW Cylinder-style Servomotors (1,500 r/min): 450 W to 1.3 kW Cylinder-style Servomotors (1,000 r/min): 300 to 900 W	R88A-CAWC□□□B □ represents one of the following cable lengths: 3 m, 5 m, 10 m, 15 m, 20 m, 30 m, 40 m, 50 m	Connector on motor end (manufactured by Daiichi Denshi Kogyo Co., Ltd.) Connector cap: MS3106B20-15S Cable clamp: MS3057-12A 
			Cylinder-style Servomotors (3,000 r/min): 3 to 5 kW Cylinder-style Servomotors (1,500 r/min): 1.8 to 4.4 kW Cylinder-style Servomotors (1,000 r/min): 1.2 to 3 kW	R88A-CAWD□□□B □ represents one of the following cable lengths: 3 m, 5 m, 10 m, 15 m, 20 m, 30 m, 40 m, 50 m	Connector on motor end (manufactured by Daiichi Denshi Kogyo Co., Ltd.) Connector cap: MS3106B24-10S Cable clamp: MS3057-16A 

Note: Power connectors and brake connectors are separate for Servomotors with a capacity of 4 kW min. (1,000 r/min) and 5.5 kW min. (1,500 r/min). This means that two cables are necessary when using Servomotors with Brakes: an R88A-CAWE□□□S or R88A-CAWF□□□S Power Connector and an R88A-CAWF□□□B Brake Connector. The R88A-CAWF□□□B Brake Connector is wired (2 conductors) only for braking.

■ Encoder Cables (for CN2)

Symbol	Description	Connect to:	Model	Remarks
2	Encoder Cable	Cylinder-style Servomotors (3,000 r/min): 30 to 750 W Flat-style Servomotors (3,000 r/min): 100 W to 1.5 kW	R88A-CRWA□□□C □represents one of the following cable lengths: 3 m, 5 m, 10 m, 15 m, 20 m, 30 m, 40 m, 50 m	Connector on motor end (manufactured by MOLEX JAPAN CO., Ltd.) Connector socket: 54280-0600 Connector on driver end (manufactured by MOLEX JAPAN CO., Ltd.) Crimp terminal: 50639-8091 Connector plug: 55101-0600 
		Cylinder-style Servomotors (3,000 r/min): 1 to 5 kW Cylinder-style Servomotors (1,500 r/min): 450 W to 15 kW Cylinder-style Servomotors (1,000 r/min): 300 W to 5.5 kW	R88A-CRWB□□□N □represents one of the following cable lengths: 3 m, 5 m, 10 m, 15 m, 20 m, 30 m, 40 m, 50 m	Connector on motor end (manufactured by Daiichi Denshi Kogyo Co., Ltd.) Connector socket: MS3106B20-29S Cable clamp: MS3057-12A Connector on driver end (manufactured by MOLEX JAPAN CO., Ltd.) Crimp terminal: 50639-8091 Connector plug: 55101-0600 

■ Control Cables (for CN1)

Symbol	Description	Connect to	Model	Remarks
3	Control Cable	Motion Control Units (for all SYSMAC CS1, C200H, and CV PCs)	R88A-CPW□□□M◊ □represents one of the following cable lengths: 1 m, 2 m, 3 m, 5 m ◊ represents the number of axes: 1: 1 axis 2: 2 axes	
4	Servo Relay Unit	1-axis Position Control Unit	XW2B-20J6-1B	---
		2-axis Position Control Unit	XW2B-40J6-2B	
		1-axis CJ1M	XW2B-20J6-8A	
		2-axis CJ1M	XW2B-40J6-9A	
5	Servodriver Connecting Cable	XW2B-20J6-1B, XW2B-40J6-2B, XW2B-20J6-3B, XW2B-20J6-8A, or XW2B-40J6-9A Servo Relay Unit	XW2Z-□□□J-B4 □ represents either of the following cable lengths: 1 m, 2 m	
		XW2B-40J6-4A Servo Relay Unit	XW2Z-□□□J-B8 □ represents either of the following cable lengths: 1 m, 2 m	
6	Position Control Unit Connecting Cable	CS1W-NC113 or C200HW-NC113 Position Control Unit	XW2Z-□□□J-A6 □ represents either of the following cable lengths: 50 cm, 1 m	
		CS1W-NC213/413 or C200HW-NC213/413 Position Control Unit	XW2Z-□□□J-A7 □ represents either of the following cable lengths: 50 cm, 1 m	
		CJ1W-NC113 Position Control Unit	XW2Z-□□□J-A14 □ represents either of the following cable lengths: 50 cm, 1m	
		CJ1W-NC213/413 Position Control Unit	XW2Z-□□□J-A15 □ represents either of the following cable lengths: 50 cm, 1m	
		CJ1M (CJ1M-CPU22/23)	XW2Z-100J-A27	
7	Control Cable	General-purpose Controller	R88A-CPW□□□S □ represents either of the following cable lengths: 1 m, 2 m	---

Symbol	Description	Connect to	Model	Remarks
8	Relay Terminal Block Cable	General-purpose Controller	R88A-CTW□□□N □ represents either of the following cable lengths: 1 m, 2 m	---
	Relay Terminal Block		XW2B-50G5	
---	Control I/O Connector CN1	---	R88A-CNU11C	

■ CN3 Options

Symbol	Description	Connect to:	Model
11	Parameter Unit with Cable (1 m)	---	R88A-PR02W
	Parameter Unit Connecting Cable (2 m)	R88A-PR02U/ PR02W	R88A-CCW002C
12	Computer Connecting Cable (2 m)	IBM PC/AT or compatibles	R88A-CCW002P2

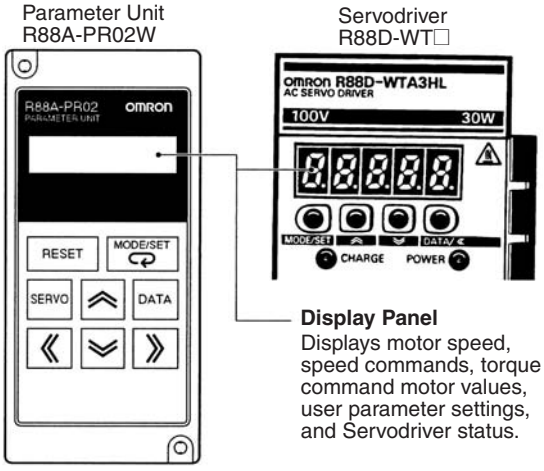
■ Other Options

Symbol	Description	Connect to:	Model
9	Backup Battery	R88D-WT□H (□: 50 or less)	R88A-BAT01W
		R88D-WT60H/ 75H/150H	R88A-BAT02W
10	Analog Monitor Cable (1 m)	---	R88A-CMW001S
---	Encoder Cable Connector	Servodriver side	R88A-CNW01R
		Servomotor side	R88A-CNW02R

Note: For details, refer to *Ordering Information* on page 67.

Operation and Display

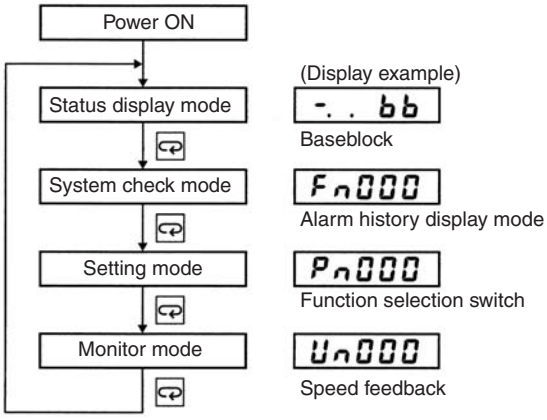
■ Operating Functions



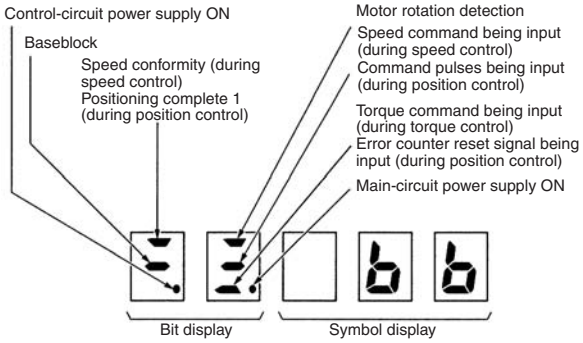
Display Panel
Displays motor speed, speed commands, torque command motor values, user parameter settings, and Servodriver status.

■ Changing Modes

To change modes, press the MODE/SET Key.



■ Status Display Mode

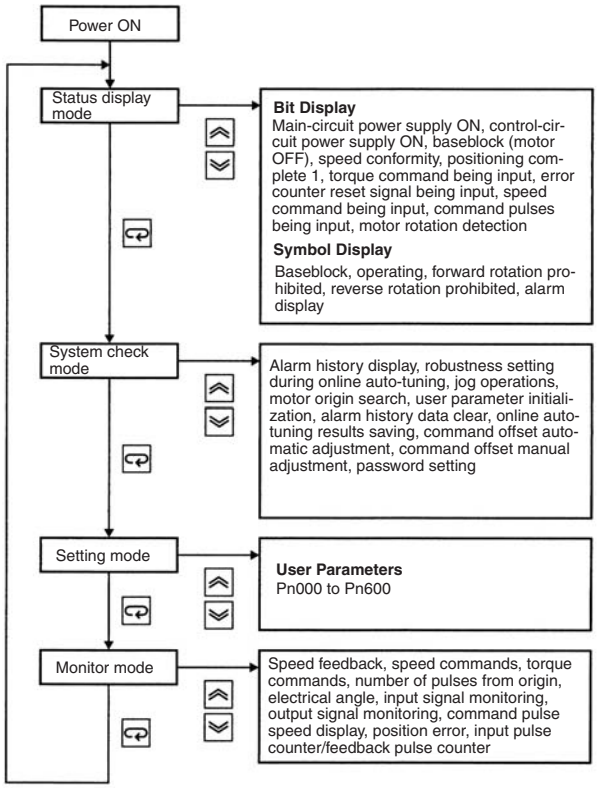


Symbol	Status
bb	Baseblock (motor OFF)
run	Operating
Pot	Forward rotation prohibited (forward overtravel)
not	Reverse rotation prohibited (reverse overtravel)
A.02	Alarm display (refer to *Alarm List* on page 51)

■ Unit Keys

R88A-PR02W	R88D-WT□	Function
RESET	+	Resets an alarm.
MODE/SET	MODE/SET	Switches between status display mode, system check mode, setting mode, and monitor mode. Used as a data setting key while in setting mode.
SERVO	MODE/SET	Turns ON or OFF the Servo while jog operations are being performed.
DATA	DATA/«	Switches between parameter display and data display, and records data.
▲	▲	Increments parameter settings. Used as a forward rotation start key during jog operation.
▼	▼	Decrements parameter settings. Used as a reverse rotation start key during jog operation.
«	DATA/«	Selects the digit whose setting is to be changed. When selected, the digit flashes.
»		

■ Mode Details



Monitor Item and Alarm List

■ Monitor Mode

Monitor No.	Monitor item	Unit	Explanation
Un000	Speed Feedback	r/min	Displays the actual motor speed.
Un001	Speed Command	r/min	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).

■ Alam Displays

In addition to the displays listed below, error codes for the Option Unit are also output.

Display	Alarm code			Alarm details
	AL01	AL02	AL03	
A.02	OFF	OFF	OFF	Parameter destruction, Servodriver EEP-ROM data error
A.03				Main circuit detector error
A.04				Parameter setting error
A.05				Motor mismatch, Servomotor and Servodriver capacity mismatch
A.10	ON	OFF	OFF	Overcurrent or heat sink overheating (1.5 kW min.)
A.30	ON	ON	OFF	Regeneration error (broken resistor wiring, transistor short-circuit)
A.32				Regeneration overload
A.33				Main-circuit power supply setting error
A.40	OFF	OFF	ON	Overvoltage
A.41				Undervoltage
A.51	ON	OFF	ON	Overspeed
A.71	ON	ON	ON	Overload (maximum momentary load)
A.72				Overload (maximum continuous load)
A.73				Dynamic brake overload
A.74				Inrush resistance overload
A.7A				Radiation shield overheating (Displayed for 30 W to 1.0 kW models only)
A.81	OFF	OFF	OFF	Backup error
A.82				Checksum error
A.83				Parity error
A.84				Absolute error
A.85				Overspeed error
A.86				Encoder overheating
A.b1				Speed command input read error
A.b2				Torque command input read error
A.bF				System error

Display	Alarm code			Alarm details
	AL01	AL02	AL03	
A.C1	ON	OFF	ON	Overrun detection
A.C8				Excessive rotation data error
A.C9				Encoder communications error
A.CA				Encoder parameter error
A.Cb				Encoder data error
A.CC	ON	OFF	ON	Multiple rotation limit mismatch
A.d0	ON	ON	OFF	Error counter count-up
A.d1				Motor-load deviation over
A.E7	OFF	ON	ON	Option detection error
A.F1	OFF	ON	OFF	Phase-failure detected
A.F5	OFF	ON	OFF	Motor current error
A.F6	OFF	ON	OFF	Motor conduction error

Note: Alarm codes are output to pin 37 (AL01), pin 38 (AL02), and pin 39 (AL03) of the CN1 connector on the Servodriver.

User Parameters

Function Selection Parameters

PRM. No.	Parameter name	Digit	Function name	Setting	Explanation	Factory setting	Unit	Setting range
Pn000	Function Selection Basic Switches	0	Reverse Rotation Mode	0	Defines forward rotation as counter-clockwise (CCW) rotation.	0010	---	---
				1	Defines forward rotation as clockwise (CW) rotation.			
		1	Control Mode Selection	0	Speed control (analog command)			
				1	Position control (pulse-train command)			
				2	Torque control (analog command)			
				3	Internally set speed control			
				4	Internally set speed control ↔ Speed control (analog command)			
				5	Internally set speed control ↔ Position control (pulse-train command)			
				6	Internally set speed control ↔ Torque control (analog command)			
				7	Position control (pulse-train command) ↔ Speed control (analog command)			
				8	Position control (pulse-train command) ↔ Torque control (analog command)			
				9	Torque control (analog command) ↔ Speed control (analog command)			
				A	Speed control with position lock function (analog command)			
				B	Position control with pulse prohibit function (pulse-train command)			
		2	Unit No. Setting	0 to F	Sets the unit No. of the device communicating with Servodriver.			
		3	Not Used					
Pn001	Function Selection Application Switches 1	0	Servo OFF or Alarm Stop Mode	0	Uses the dynamic brake to stop the Servomotor.	1002	---	---
				1	Uses the dynamic brake to stop the Servomotor, and releases the dynamic brake after the Servomotor stops.			
				2	Coasts the Servomotor to a stop.			
		1	Run Prohibit Input Stop Mode	0	Stops the Servomotor according to the Pn001.0 setting.			
				1	Decelerates the Servomotor to a stop at the torque specified in Pn406 and then locks the Servomotor.			
				2	Decelerates the Servomotor to a stop at the torque specified in Pn406 and then turns OFF the Servomotor.			
		2	Main Circuit Power Supply AC/DC Input Selection	0	Supplies AC power from L1, L2, and (L3) terminals.			
				1	Supplies DC power from (+) 1 and (–) terminals.			
		3	Warning Code Output Selection	0	Outputs only alarm codes from AL01, AL02, and AL03.			
				1	Outputs both alarm codes and warning codes from AL01, AL02, and AL03.			

Note: 1. Do not change the factory settings of any “Not Used” parameters.

2. When changing the Pn000, Pn001, or Pn002 parameter, always turn OFF and then ON the main circuit and control circuit power supplies to make the settings valid.

PRM. No.	Parameter name	Digit	Function name	Setting	Explanation	Factory setting	Unit	Setting range
Pn002	Function Selection Application Switches 2	0	Torque Command Input Switch during Position/Speed Control	0	None.	0000	---	---
				1	Uses TREF for analog torque limit input.			
				2	Uses TREF for torque feed-forward input.			
				3	Uses TREF for analog torque limit input when PCL and NCL are ON.			
		1	Speed Command Input Switch during Torque Control	0	None.			
				1	Uses REF for analog torque limit input.			
		2	Absolute Encoder Usage	0	Uses the absolute encoder as an absolute encoder.			
				1	Uses the absolute encoder as an incremental encoder.			
		3	Fully Closed Encoder Usage	0	Fully closed encoder is not used.			
				1	Fully closed encoder is used without phase Z.			
				2	Fully closed encoder is used with phase Z.			
				3	Fully closed encoder is used in Reverse Rotation Mode without phase Z.			
				4	Fully closed encoder is used in Reverse Rotation Mode with phase Z.			
Pn003	Function Selection Application Switches 3	0	Analog Monitor 1	0	Motor speed: 1 V/1,000 r/min	0002	---	---
				1	Speed command: 1 V/1,000 r/min			
				2	Torque command: 0.05 V/rated torque			
				3	Position error: 0.05 V/1 command unit			
				4	Position error: 0.05 V/100 command units			
				5	Reference pulse frequency: 1 V/1,000 r/min			
				6	Motor speed: 1 V/250 r/min			
				7	Motor speed: 1 V/125 r/min			
				8 to F	Reserved			
		1	Analog Monitor 2	0 to F	Same as Analog Monitor 1			
		2 to 3	Not Used					
Pn004 and Pn005	Not Used					0000	---	---

Note: 1. Do not change the factory settings of any “Not Used” parameters.

2. When changing the Pn000, Pn001, or Pn002 parameter, always turn OFF and then ON the main circuit and control circuit power supplies to make the settings valid.

Gain-related Parameters

PRM. No.	Parameter name	Digit	Function name	Setting	Explanation	Factory setting	Unit	Setting range
Pn100	Speed Loop Gain	Adjusts speed loop response.				80	Hz	1 to 2000
Pn101	Speed Loop Integral Time Constant	Speed loop integral time constant				2000	0.01 ms	15 to 51200
Pn102	Position Loop Gain	Adjusts speed loop response.				40	1/s	1 to 2000
Pn103	Inertia Ratio	Sets the ratio for the mechanical inertia relative to the Servomotor rotor inertia.				300	%	0 to 20000
Pn104	Speed Loop Gain 2	Adjusts speed loop response (enabled by gain selector input).				80	Hz	1 to 2000
Pn105	Speed Loop Integral Time Constant 2	Speed loop integral time constant (enabled by gain selector input).				2000	0.01 ms	15 to 51200
Pn106	Position Loop Gain 2	Adjusts speed loop response (enabled by gain selector input).				40	1/s	1 to 2000
Pn107	Bias Rotational Speed	Position control bias setting				0	r/min	0 to 450
Pn108	Bias Addition Baud	Uses the deviation counter pulse width to set the operation start for the position control bias function.				7	Command units	0 to 250
Pn109	Feed-forward Amount	Position control feed-forward compensating gain value				0	%	0 to 100
Pn10A	Feed-forward Command Filter	Sets the command filter for position control feed-forward.				0	0.01 ms	0 to 6400
Pn10B	Speed Control Settings	0	P Control Switching Condition	0	Uses an internal torque command value as the switching condition (level setting: Pn10C).	0004	---	---
				1	Uses a speed command value as the switching condition (level setting: Pn10D).			
				2	Uses an acceleration command value as the switching condition (level setting: Pn10E).			
				3	Uses the number of error pulses as the switching condition (level setting: Pn10F).			
				4	Does not use the P control switching function.			
		1	Speed Control Loop Switch	0	PI control			
				1	IP control			
		2	Automatic Gain Switching Selection	0	Automatic gain switching disabled			
				1	Gain switching using position commands			
				2	Gain switching using position deviation			
				3	Gain switching using position commands and position deviation			
		3	Not Used					
Pn10C	P Control Switching (Torque Command)	Sets the torque command level for switching from PI control to P control.				200	%	0 to 800
Pn10D	P Control Switching (Speed Command)	Sets the speed command level for switching from PI control to P control.				0	r/min	0 to 10000
Pn10E	P Control Switching (Acceleration Command)	Sets the acceleration command level for switching from PI control to P control.				0	10r/ min/s	0 to 3000
Pn10F	P Control Switching (Deviation Pulse)	Sets the deviation pulse level for switching from PI control to P control.				10	Command units	0 to 10000

PRM. No.	Parameter name	Digit	Function name	Setting	Explanation	Factory setting	Unit	Setting range
Pn110	Online Autotuning Setting	0	Online Autotuning Selection	0	Performs autotuning only when the system runs for the first time after the power is turned ON.	0012	---	---
				1	Performs autotuning continuously.			
				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 rated torque ratio			
				2	Friction compensation: Large rated torque ratio			
		3	Not Used					
Pn111	Speed Feedback Compensating Gain	Adjusts the speed loop feedback gain.				100	%	0 to 500
Pn124	Automatic Gain Switching Timer	Sets the switching delay following the completion of the condition when using the automatic gain switching function (Pn10B.2 = 1 to 3).				100	ms	1 to 10000
Pn125	Automatic Gain Switching Width (Position Deviation Amount)	Sets the position deviation amount for the switching condition when using the automatic gain switching function based on position deviation (Pn10B.2 = 2, 3).				7	Command units	1 to 250

Note: Do not change the factory settings of any “Not Used” parameters.

Position Control-related Parameters

PRM. No.	Parameter name	Digit	Function name	Setting	Explanation	Factory setting	Unit	Setting range
Pn200	Position Control Setting 1	0	Command Pulse Mode	0	Feed pulse/forward-reverse signal: Positive logic	1011	---	---
				1	Forward rotation pulse/reverse rotation pulse: Positive logic			
				2	Phase-A/B signal with 90° phase differential (×1): Positive logic			
				3	Phase-A/B signal with 90° phase differential (×2): Positive logic			
				4	Phase-A/B signal with 90° phase differential (×4): Positive logic			
				5	Feed pulse/forward-reverse signal: Negative logic			
				6	Forward rotation pulse/reverse rotation pulse: Negative logic			
				7	Phase-A/B signal with 90° phase differential (×1): Negative logic			
				8	Phase-A/B signal with 90° phase differential (×2): Negative logic			
				9	Phase-A/B signal with 90° phase differential (×4): Negative logic			
		1	Error Counter Clear Signal Form	0	Clears the error counter when the clear signal goes high.			
				1	Clears the error counter on the rising edge of the clear signal.			
				2	Clears the error counter when the clear signal goes low.			
				3	Clears the error counter on the falling edge of the clear signal.			
		2	Error Counter Clear during Servo OFF or Alarm	0	Clears the error counter when the Servo is turned OFF or when an alarm is generated.			
				1	Does not clear the error counter when the Servo is turned OFF or when an alarm is generated.			
				2	Clears the error counter only when an alarm is generated.			
		3	Pulse Command Filter Selection	0	Uses command filter for line driver signal input (500 Kpps).			
				1	Uses command filter for open collector signal input (200 Kpps).			
Pn201	Encoder Divider Rate	Sets the number of output pulses from the driver.				1000	Pulses/ revolution	16 to 16384
Pn202	Electronic Gear Ratio G1 (Numerator)	Sets the pulse rate for the command pulse and amount of Servomotor movement. 0.01≤G1/G2≤100				4	---	1 to 65535
Pn203	Electronic Gear Ratio G2 (Denominator)					1	---	1 to 65535
Pn204	Position Command Filter Time Constant 1	Soft start setting for command pulse (soft start characteristic: primary filter)				0	0.01 ms	0 to 6400
Pn205	Absolute Encoder Multi-turn Limit Setting	Sets the multi-turn limit when using a Servomotor with an absolute encoder.				65535	Number of revolutions	0 to 65535
Pn206	Number of Fully Closed Encoder Pulses	Sets the number of fully closed encoder pulses per Servomotor revolution.				16384	P/R	25 to 65535

PRM. No.	Parameter name	Digit	Function name	Setting	Explanation	Factory setting	Unit	Setting range
Pn207	Position Control Setting 2	0	Position Command Filter Selection	0	Primary filter	0000	---	---
				1	Linear acceleration/deceleration			
		1	Speed Command Input Switch (during Position Control)	0	None			
				1	Uses REF for speed feed-forward input.			
		2 to 3	Not Used					
Pn208	Position Command Filter Time Constant 2 (Linear Acceleration and Deceleration)	Soft start setting for command pulse (soft start characteristic: linear acceleration and deceleration)				0	0.01 ms	0 to 6400
Pn217	Command Pulse Factor	Sets the factor for command pulse input.				1	Factor	1 to 99
Pn218	Position Control Setting 3	0	Command Pulse Factor Switching Selection	0	Disables function.	0000	---	---
				1	Uses command pulse factor switching selection.			
		1 to 3	Not Used					

Speed-related Parameters

PRM. No.	Parameter name	Digit	Function name	Setting	Explanation	Factory setting	Unit	Setting range
Pn300	Speed Command Scale	Sets the speed command voltage (REF) to rotate at the rated r/min.				1000	0.01 V/rated speed	150 to 3000
Pn301	No.1 Internal Speed Setting	r/min for No. 1 internal speed setting				100	r/min	0 to 10000
Pn302	No. 2 Internal Speed Setting	r/min for No. 2 internal speed setting				200	r/min	0 to 10000
Pn303	No. 3 Internal Speed Setting	r/min for No. 3 internal speed setting				300	r/min	0 to 10000
Pn304	Jog Speed	Sets the r/min for jog operation.				500	r/min	0 to 10000
Pn305	Soft Start Acceleration Time	Sets the acceleration time for speed-controlling soft start.				0	ms	0 to 10000
Pn306	Soft Start Deceleration Time	Sets the deceleration time for speed-controlling soft start.				0	ms	0 to 10000
Pn307	Speed Command Filter Time Constant	Sets the filter time constant for speed command voltage input (REF).				40	0.01 ms	0 to 65535
Pn308	Speed Feedback Filter Time Constant	Sets the filter time constant for speed feedback.				0	0.01 ms	0 to 65535

Note: 1. Do not change the factory settings of any “Not Used” parameters.

2. When changing any position control-related parameters (Pn200 to Pn208), always turn OFF and then ON the main circuit and control circuit power supplies to make the settings valid.

3. For 13-bit encoders, dividing will not occur if a value of 2048 or greater is specified in Pn201.

Torque-related Parameters

PRM. No.	Parameter name	Digit	Function name	Setting	Explanation	Factory setting	Unit	Setting range
Pn400	Torque Command Scale	Sets the torque command voltage (TREF) to output the rated torque.				30	0.1 V/rated torque	10 to 100
Pn401	Torque Command Filter Time Constant	Sets the filter time constant for internal torque command.				40	0.01 ms	0 to 65535
Pn402	Forward Torque Limit	Output torque limit (percentage of rated torque) for forward direction				350	%	0 to 800
Pn403	Reverse Torque Limit	Output torque limit (percentage of rated torque) for reverse direction				350	%	0 to 800
Pn404	Forward Rotation External Current Limit	Output torque limit (percentage of rated torque) for forward rotation external current limit input				100	%	0 to 800
Pn405	Reverse Rotation External Current Limit	Output torque limit (percentage of rated torque) for reverse rotation external current limit input				100	%	0 to 800
Pn406	Emergency Stop Torque	Deceleration torque (percentage of rated torque) for emergency stops				350	%	0 to 800
Pn407	Speed Limit	Sets the speed limit for the torque control mode				3000	r/min	0 to 10000

PRM. No.	Parameter name	Digit	Function name	Setting	Explanation	Factory setting	Unit	Setting range
Pn408	Torque Command Setting	0	Selects Notch Filter 1 Function.	0	None	0000	---	---
				1	Notch filter 1 used for torque commands.			
		1	Not Used					
		2	Selects Notch Filter 2 Function.	0	None			
				1	Notch filter 2 used for torque commands.			
		3	Not Used					
Pn409	Notch Filter 1 Frequency	Sets the notch filter 1 frequency for the torque command.				2000	Hz	50 to 2000
Pn40A	Notch Filter 1 Q Value	Sets the notch filter 1 Q value.				70	0.01	50 to 400
Pn40B	Notch Filter 2 Frequency	Sets the notch filter 2 frequency for the torque command.				2000	Hz	50 to 2000
Pn40C	Notch Filter 2 Q Value	Sets the notch filter 2 Q value.				70	0.01	50 to 400

Sequence-related Parameters

PRM. No.	Parameter name	Digit	Function name	Setting	Explanation	Factory setting	Unit	Setting range
Pn500	Positioning Completed Width 1	Sets the width for positioning completed output 1 (INP1).				3	Command units	0 to 250
Pn501	Position Lock Rotation Speed	Sets the r/min for position lock during speed control.				10	r/min	0 to 10000
Pn502	Rotation Speed For Motor Rotation Detection	Sets the r/min for the motor rotation detection output (TGON).				20	r/min	0 to 10000
Pn503	Speed Conformity Signal Output Width	Sets the allowable variation width (r/min) for the speed conformity output signal (VCMP).				10	r/min	0 to 100
Pn504	Positioning Completion Range 2	Sets the width for positioning completed output 1 (INP2).				3	Command units	1 to 250
Pn505	Deviation Counter Overflow Level	Sets the detection level for the deviation counter overflow alarm.				1024	Command units × 256	1 to 32767
Pn506	Brake Timing 1	Sets the amount of delay time from the brake command to the time the servomotor turns OFF.				0	10 ms	0 to 50
Pn507	Brake Command Speed	Sets the r/min for outputting the brake command.				100	r/min	0 to 10000
Pn508	Brake Timing 2	Sets the amount of wait time from the time the servomotor turns OFF until the brake command is output.				50	10 ms	10 to 100
Pn509	Momentary Hold Time	Sets the alarm detection disable time for generating a momentary hold.				20	ms	20 to 1000
Pn50A	Input Signal Selections 1	0	Input Signal Allocation Mode	0	Uses the same sequence input signal allocation setting as the R88D-UT. For details, refer to the OMNUC W-series AC SERVOMOTORS/ SERVO DRIVERS User's Manual) (I531-E1-□).	8100	---	---
				1	Enables any sequence input signal allocation settings.			

Note: 1. Do not change the factory settings of any "Not Used" parameters.

2. When changing any Input Signal Selection parameters (Pn50A to Pn50D), always turn OFF and then ON the main circuit and control circuit power supplies to make the settings valid.

PRM. No.	Parameter name	Digit	Function name	Setting	Explanation	Factory setting	Unit	Setting range
Pn50A	Input Signal Selections 1	1	RUN Signal Input Terminal Allocation	0	Allocates the signal to CN1-40 pin: Enabled when low.	8100	---	---
				1	Allocates the signal to CN1-41 pin: Enabled when low.			
				2	Allocates the signal to CN1-42 pin: Enabled when low.			
				3	Allocates the signal to CN1-43 pin: Enabled when low.			
				4	Allocates the signal to CN1-44 pin: Enabled when low.			
				5	Allocates the signal to CN1-45 pin: Enabled when low.			
				6	Allocates the signal to CN1-46 pin: Enabled when low.			
				7	Always enabled.			
				8	Always disabled.			
				9	Allocates the signal to CN1-40 pin: Enabled when high.			
				A	Allocates the signal to CN1-41 pin: Enabled when high.			
				B	Allocates the signal to CN1-42 pin: Enabled when high.			
				C	Allocates the signal to CN1-43 pin: Enabled when high.			
				D	Allocates the signal to CN1-44 pin: Enabled when high.			
				E	Allocates the signal to CN1-45 pin: Enabled when high.			
				F	Allocates the signal to CN1-46 pin: Enabled when high.			
		2	MING (Gain Reduction) Signal Input Terminal Allocation	0 to F	Same as Pn50A.1			
		3	POT (Forward Run Prohibit) Signal Input Terminal Allocation	0 to F	Same as Pn50A.1			
Pn50B	Input Signal Selection 2	0	NOT (Reverse Run Prohibit) Signal Input Terminal Allocation	0 to F	Same as Pn50A.1	6548	---	---
		1	RESET (Alarm Reset) Signal Input Terminal Allocation	0 to F	Same as Pn50A.1			
		2	PCL (Forward Torque Limit) Signal Input Terminal Allocation	0 to F	Same as Pn50A.1			
		3	NCL (Reverse Torque Limit) Signal Input Terminal Allocation	0 to F	Same as Pn50A.1			
Pn50C	Input Signal Selections 3	0	RDIR (Rotation Direction Command) Signal Input Terminal Allocation	0 to F	Same as Pn50A.1	8888	---	---
		1	SPD1 (Speed Selection Command 1) Signal Input Terminal Allocation	0 to F	Same as Pn50A.1			
		2	SPD2 (Speed Selection Command 2) Signal Input Terminal Allocation	0 to F	Same as Pn50A.1			
		3	CSEL (Control Mode Selection) Signal Input Terminal Allocation	0 to F	Same as Pn50A.1			

Note: 1. Do not change the factory settings of any “Not Used” parameters.

2. When changing any Input Signal Selection parameters (Pn50A to Pn50D), always turn OFF and then ON the main circuit and control circuit power supplies to make the settings valid.

3. When installing an external regenerative resistor, set the resistor capacity (W).

PRM. No.	Parameter name	Digit	Function name	Setting	Explanation	Factory setting	Unit	Setting range
Pn50D	Input Signal Selections 4	0	PLOCK (Position Lock Command) Signal Input Terminal Allocation	0 to F	Same as Pn50A.1	8888	---	---
		1	IPG (Pulse Prohibit) Signal Input Terminal Allocation	0 to F	Same as Pn50A.1			
		2	GSEL (Gain Selection) Signal Input Terminal Allocation	0 to F	Same as Pn50A.1			
		3	Not Used					
Pn50E	Output Signal Selections 1	0	INP1 (Positioning Completed 1) Signal Output Terminal Allocation	0	Disabled (Not used for the output signal)	3211	---	---
				1	Allocates the signal to CN1-25 and CN1-26 pins.			
				2	Allocates the signal to CN1-27 and CN1-28 pins.			
				3	Allocates the signal to CN1-29 and CN1-30 pins.			
		1	VCMP (Speed Coincidence) Signal Output Terminal Allocation	0 to 3	Same as Pn50E.0.			
		2	TGON (Motor Rotation Detection) Signal Output Terminal Allocation	0 to 3	Same as Pn50E.0.			
		3	READY (Servo Ready) Signal Output Terminal Allocation	0 to 3	Same as Pn50E.0.			
Pn50F	Output Signal Selections 2	0	CLMT (Torque Limit Detection) Signal Output Terminal Allocation	0 to 3	Same as Pn50E.0.	0000	---	---
		1	VLMT (Speed Limit Detection) Signal Output Terminal Allocation	0 to 3	Same as Pn50E.0.			
		2	BKIR (Brake Interlock) Signal Output Terminal Allocation	0 to 3	Same as Pn50E.0.			
		3	WRN (Warning) Signal Output Terminal Allocation	0 to 3	Same as Pn50E.0.			
Pn510	Output Signal Selections 3	0	INP2 (Positioning Completed 2) Signal Output Terminal Allocation	0 to 3	Same as Pn50E.0.	0000	---	---
		1	Not Used					
		2	PSON (Command Pulse Factor Enable) Signal Output Terminal Allocation	0 to 3	Same as Pn50E.0.			
		1 to 3	Not Used					
Pn511	Not Used					8888	---	---
Pn512	Output Signal Reversal	0	CN1-25/26 Pin Output Signal Reversal	0	Does not reverse output signal.	0000	---	---
				1	Reverses output signal.			
		1	CN1-27/28 Pin Output Signal Reversal	0, 1	Same as Pn512.0.			
		2	CN1-29/30 Pin Output Signal Reversal	0, 1	Same as Pn512.0.			
		3	Not Used					
Pn513	Input Signal Selection 5	0	PSEL (Command Pulse Factor Switching) Signal Input Terminal Allocation	0 to F	Same as Pn50A.1.	0088	---	---
Pn51A	Motor-load Deviation Over Level	Sets the allowable deviation level for fully closed and semi-closed encoders.				0	Pulse	0 to 32767
Pn51E	Deviation Counter Overflow Warning Level	Sets the detection level for the deviation counter overflow warning (set as a percentage of the Deviation Counter Overflow Level (Pn505)).				0	%	0 to 100

Note: Do not change the factory settings of any “Not Used” parameters.

Other Parameters

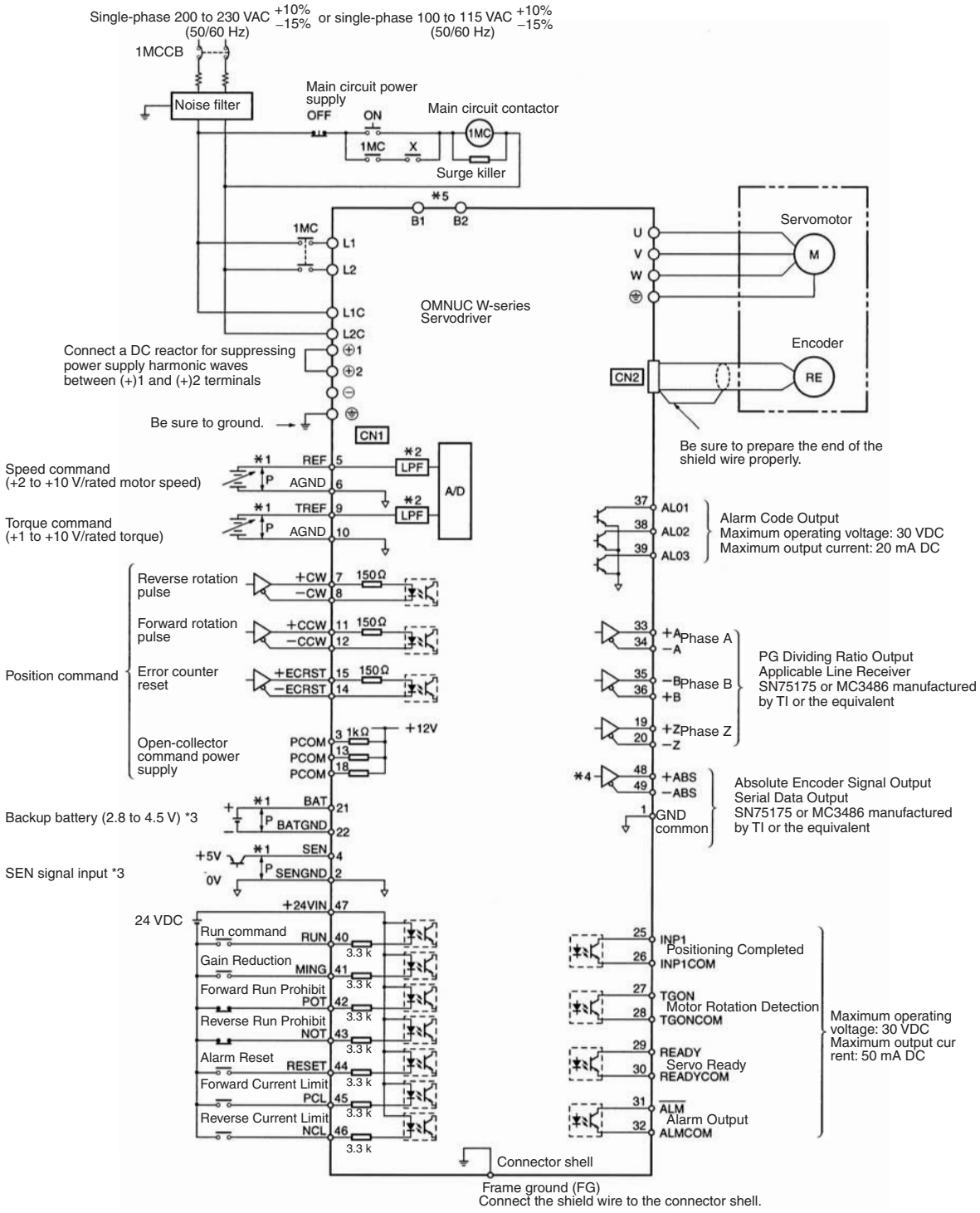
PRM. No.	Parameter name	Digit	Function name	Setting	Explanation	Factory setting	Unit	Setting range
Pn600	Regenerative Resistor Capacity	Sets the monitor calculation for the regenerative resistor load rate.				0	10 W	0 to maximum (depending on each model)
Pn601	Not Used					0		

Note: 1. Do not change the factory settings of any “Not Used” parameters.

2. When installing an external regenerative resistor, set the resistor capacity (W).

Connection Diagrams

■ Single-phase



*1. P represents a twisted-pair cable.

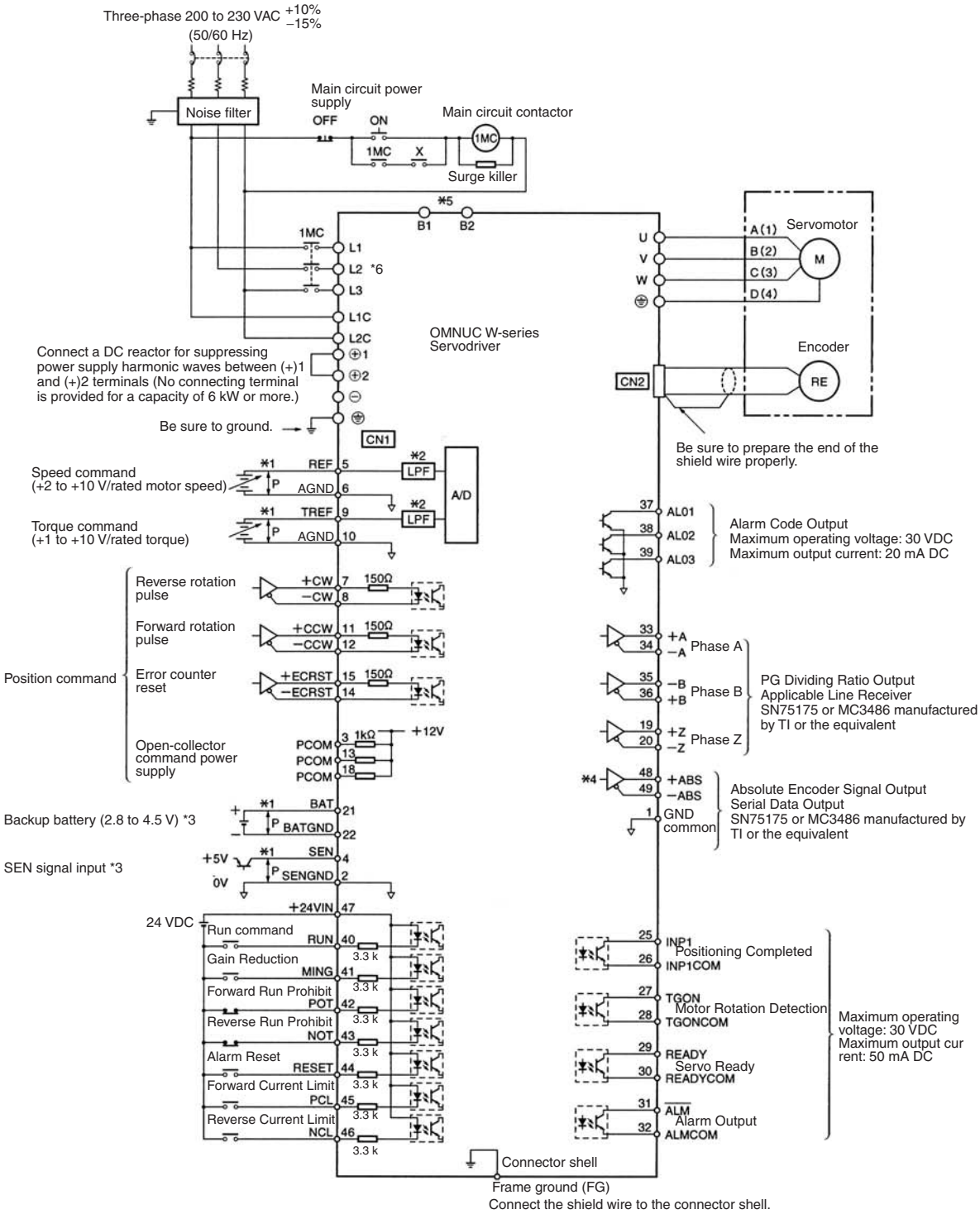
*2. Primary filter

*3. Connect when using an absolute encoder.

*4. Used only with an absolute encoder.

*5. A regenerative resistor can be connected between B1 and B2.

■ Three-phase



*1. P represents a twisted-pair cable.

*2. Primary filter

*3. Connect when using an absolute encoder.

*4. Used only with an absolute encoder.

*5. When using an external regenerative resistor, connect it between B1 and B2.
(When the capacity is 6 kW, connect a Regenerative Resistor Unit.)

*6. When using the R88D-WT08H at single-phase 200 V, connect single-phase 200 V to L1 and L3, and short-circuit L1 to L2.

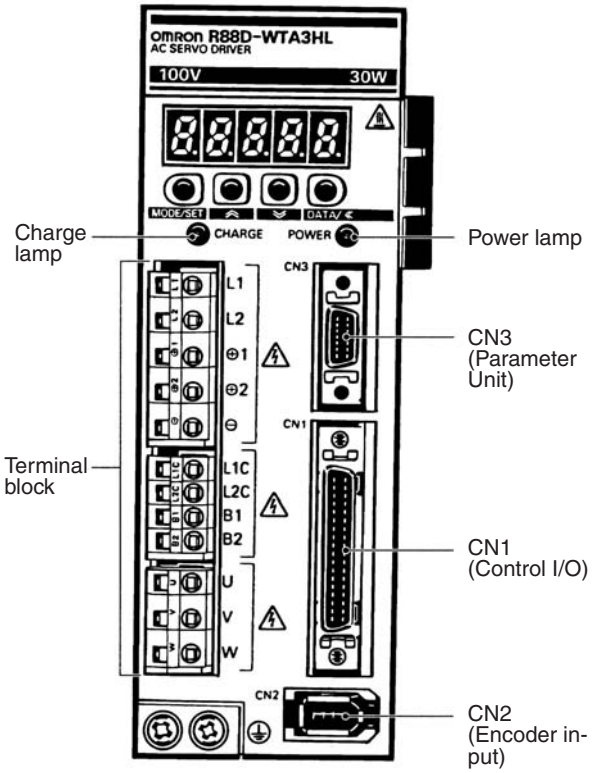
Terminal Blocks and Connectors

■ Terminal Blocks

Symbol	Name	Function	
L1, L2 or L1, L2, L3	Main circuit AC input terminal	AC power input terminals for the main circuit. R88D-WT□□ H (200 VAC): 200/230 VAC (170 to 253 V), 50/60 Hz R88D-WT□□ HL (100 VAC): 100/115 VAC (85 to 127 V), 50/60 = Hz	
U	Servomotor connection terminal	Red	Terminals for outputs to the Servomotor.
V		White	
W		Blue	
L1C, L2C	Control power input terminal	AC power input terminals for the control circuit. R88D-WT□□ H (200 VAC): 200/230 VAC (170 to 253 V), 50/60 Hz R88D-WT□□ HL (100 VAC): 100/115 VAC (85 to 127 V), 50/60 Hz	
⏚	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. Note: These terminals do not exist on the R88D-WT60H/75H/150H.	
⊕	Main circuit DC output terminal (positive)	Normally, not connected. This terminal exists on the R88D-WT60H only.	
⊖	Main circuit DC output terminal (negative)	Normally, not connected.	

■ CN2 Encoder Inputs

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



■ CN1 Control Inputs

For Speed and Torque Control

Pin No.	Symbol	Signal name	Function/interface
5	REF	Speed command input	±2 to ±10 V/rated speed Can be changed using the Pn300 user parameter (Speed Command Scale).
6	AGND	Speed command input ground	
9	TRFF	Torque command input	±1 to ±10 V/rated torque Can be changed using the Pn400 user parameter (Torque Command Scale).
10	AGND	Torque command input ground	

For Position Control

Pin No.	Symbol	Signal name	Function/interface
3	PCOM	Open collector command power supply	Used to input CW, CCW, and ECRST signals as open-collector outputs. Connect + inputs to these terminals and connect – inputs to open-collector output terminals.
13			
18			
7	+PULS/CW/A	Feed pulse, reverse pulse, 90° phase difference pulse (phase A)	Line-driver input: 10 mA at 3 V; maximum response frequency: 500 kpps Open-collector input: 25 mA at 5 V; maximum response frequency: 200 kpps Switches between feed pulse and forward/reverse signal, between reverse pulse and forward pulse, or between phases A and B 90° phase difference pulses (×1, 2, 4) according to the Pn200 setting (Position Control Switches 1).
8	–PULS/CW/A		
11	+SIGN/CCW/B	Forward/reverse signal, forward pulse, 90° phase difference pulse (phase B)	
12	–SIGN/CCW/B		
14	–ECRST	Error counter reset	Line-driver input: 10 mA at 3 V Open-collector input: 25 mA at 5 V ON: Disables the command and resets the error counter.
15	+ECRST		

Shared Terminals

Pins 41 to 44 can be reassigned using the Pn50A to Pn50D user parameters.

Pin No.	Symbol	Signal name	Function/interface
40	RUN	Speed command input	ON: Servo ON
41 to 46	MING	Gain deceleration input	ON: Switches speed loop to P control to decrease speed loop gain.
	TVSEL	Control mode switch input	ON: Switches each control mode.
	PLOCK	Position lock command input	ON: Enables position lock when the motor speed drops below the position lock rotation speed set in Pn501.
	IPG	Pulse disable input	ON: Prohibits input command pulses.
	RDIR	Rotation direction command input	Rotation direction command for internal speed settings 1 to 3. (OFF: Forward rotation, ON: Reverse rotation)
	POT	Forward drive prohibit input	Forward rotation overtravel input (OFF when prohibited)
	NOT	Reverse drive prohibit input	Reverse rotation overtravel input (OFF when prohibited)
	RESET	Alarm reset input	ON: Resets Servo alarm status.
	PCL	Forward rotation current limit input	ON: Limits current according to the value specified in Pn404 (Forward External Torque Limit)
	NCL	Reverse rotation current limit input	ON: Limits current according to the value specified in Pn405 (Reverse External Torque Limit)
	SPD1	Speed selection command 1 input	Switches the internal speed settings (Pn301, Pn302, Pn303).
	SPD2	Speed selection command 2 input	
	GSEL	Gain selection input	ON: Switches to the second speed loop gain (Pn104, Pn105, Pn106).
47	+24VIN	+24 VDC control power supply input	+24 V input power supply for pins 40, 41, 42, 43, 44, 45, and 46
4	SEN	Sensor ON input (See note.)	ON: Supplies 5 V power to absolute encoder.
2	SENGND	Sensor ON input ground (See note.)	
21	BAT	Backup battery + input (See note.)	Backup battery connection terminals for absolute encoder in case of power interruption
22	BATGND	Backup battery – input (See note.)	

Note: These input signals are used with absolute encoder only.

■ CN1 Control Outputs

Pins 16 and 17 can be reassigned using the Pn003 user parameter. Pins 25 to 30 can be reassigned using the Pn50E to Pn510 user parameters.

Pin No.	Symbol	Signal name	Function/interface
1	GND	Ground common	Ground for encoder outputs and alarm codes.
19	+Z	Encoder Z-phase + output	Encoder Z-phase output (1 pulse/revolution). Line-driver output: Conforms to RS-422A
20	–Z	Encoder Z-phase – output	
25	INP1, INP2	Positioning completion output 1, 2	ON when the position error is within the positioning completed width specified in Pn500 while in position control mode. Always OFF while in other modes.
26 to 30	VCMP	Speed conformity output	ON when the speed error is within the speed coincidence signal output width specified in Pn503 while in speed control mode. Always OFF while in other modes.
	TGON	Servomotor rotation detection output	ON when the motor speed exceeds the motor rotation detection level specified in Pn502.
	READY	Servo ready output	ON if no errors are detected after the main circuit power supply is turned ON.
	CLIMT	Current limit detection output	If PCL (forward rotation current limit input) or NCL (reverse rotation current limit input) is ON, the CLIMT signal will turn ON when the output torque reaches the external torque limit specified in Pn404/405 or the torque limit specified in Pn402/403, whichever is lower. If PCL (forward rotation current limit input) or NCL (reverse rotation current limit input) is OFF, the CLIMT signal will turn ON when the output torque reaches the torque limit specified in Pn402/403.
	VLIMT	Speed limit detection output	ON when the motor speed is controlled by Pn407 in torque control mode. Always OFF while in other modes.
	BKIR	Brake interlock output	Outputs holding brake timing signals according to the Pn506, Pn507, and Pn508 user parameter settings.
	WARN	Warning output	OFF when an overload warning or a regeneration overload warning is detected.
31	ALM	Alarm output	Turns OFF the output when the Servodriver generates an alarm. Open-collector output: 30 VDC, 50 mA max.
32	ALMCOM	Alarm output ground	
33	+A	Encoder A-phase + output	Outputs encoder pulses divided according to the Pn201 setting (PG ratio). Line-driver output: Conforms to RS-422A
34	–A	Encoder A-phase – output	
35	–B	Encoder B-phase – output	Outputs encoder pulses divided according to the Pn201 setting (PG ratio). Line-driver output: Conforms to RS-422A
36	+B	Encoder B-phase + output	
37	AL01	Alarm code output 1	Outputs an alarm code when the Servodriver generates an alarm. Open-collector output: 30 VDC, 20 mA max.
38	AL02	Alarm code output 2	
39	AL03	Alarm code output 3	
48	+ABS	Absolute encoder signal + output (See note.)	Outputs absolute encoder data. Line-driver output: Conforms to RS-422A
49	–ABS	Absolute encoder signal – output (See note.)	
Shell	FG	Frame ground	Ground terminal for shield wire of cable and FG line

Note: These input signals are used with absolute encoder only.

Ordering Information

■ AC Servomotors

Cylinder-style Motors (3,000 r/min) with Incremental Encoders

Specifications				Model
Straight shafts without key	Without brake	200 VAC	30 W	R88M-W03030H
			50 W	R88M-W05030H
			100 W	R88M-W10030H
			200 W	R88M-W20030H
			400 W	R88M-W40030H
			750 W	R88M-W75030H
		100 VAC	30 W	R88M-W03030L
			50 W	R88M-W05030L
			100 W	R88M-W10030L
			200 W	R88M-W20030L
	With brake	200 VAC	30 W	R88M-W03030H-B
			50 W	R88M-W05030H-B
			100 W	R88M-W10030H-B
			200 W	R88M-W20030H-B
			400 W	R88M-W40030H-B
			750 W	R88M-W75030H-B
		100 VAC	30 W	R88M-W03030L-B
			50 W	R88M-W05030L-B
			100 W	R88M-W10030L-B
			200 W	R88M-W20030L-B

Specifications				Model
Straight shafts with key	Without brake	200 VAC	30 W	R88M-W03030H-S1
			50 W	R88M-W05030H-S1
			100 W	R88M-W10030H-S1
			200 W	R88M-W20030H-S1
			400 W	R88M-W40030H-S1
			750 W	R88M-W75030H-S1
			1 kW	R88M-W1K030H-S2
			1.5 kW	R88M-W1K530H-S2
			2 kW	R88M-W2K030H-S2
			3 kW	R88M-W3K030H-S2
			4 kW	R88M-W4K030H-S2
			5 kW	R88M-W5K030H-S2
		100 VAC	30 W	R88M-W03030L-S1
			50 W	R88M-W05030L-S1
			100 W	R88M-W10030L-S1
			200 W	R88M-W20030L-S1
	With brake	200 VAC	30 W	R88M-W03030H-BS1
			50 W	R88M-W05030H-BS1
			100 W	R88M-W10030H-BS1
			200 W	R88M-W20030H-BS1
			400 W	R88M-W40030H-BS1
			750 W	R88M-W75030H-BS1
			1 kW	R88M-W1K030H-BS2
			1.5 kW	R88M-W1K530H-BS2
			2 kW	R88M-W2K030H-BS2
			3 kW	R88M-W3K030H-BS2
			4 kW	R88M-W4K030H-BS2
			5 kW	R88M-W5K030H-BS2
		100 VAC	30 W	R88M-W03030L-BS1
			50 W	R88M-W05030L-BS1
			100 W	R88M-W10030L-BS1
			200 W	R88M-W20030L-BS1

Note: “S1” at the end of a model name represents models with key and without tap. “S2” at the end of a model name represents models with key and tap. Motors with a capacity of 1 kW or more do not have the S1 or S3 type.

Cylinder-style Motors (3,000 r/min) with Absolute Encoders

Specifications				Model
Straight shafts without key	Without brake	200 VAC	30 W	R88M-W03030T
			50 W	R88M-W05030T
			100 W	R88M-W10030T
			200 W	R88M-W20030T
			400 W	R88M-W40030T
			750 W	R88M-W75030T
		100 VAC	30 W	R88M-W03030S
			50 W	R88M-W05030S
			100 W	R88M-W10030S
			200 W	R88M-W20030S
	With brake	200 VAC	30 W	R88M-W03030T-B
			50 W	R88M-W05030T-B
			100 W	R88M-W10030T-B
			200 W	R88M-W20030T-B
			400 W	R88M-W40030T-B
			750 W	R88M-W75030T-B
		100 VAC	30 W	R88M-W03030S-B
			50 W	R88M-W05030S-B
			100 W	R88M-W10030S-B
			200 W	R88M-W20030S-B

Specifications				Model
Straight shafts with key	Without brake	200 VAC	30 W	R88M-W03030T-S1
			50 W	R88M-W05030T-S1
			100 W	R88M-W10030T-S1
			200 W	R88M-W20030T-S1
			400 W	R88M-W40030T-S1
			750 W	R88M-W75030T-S1
			1 kW	R88M-W1K030T-S2
			1.5 kW	R88M-W1K530T-S2
			2 kW	R88M-W2K030T-S2
			3 kW	R88M-W3K030T-S2
			4 kW	R88M-W4K030T-S2
			5 kW	R88M-W5K030T-S2
		100 VAC	30 W	R88M-W03030S-S1
			50 W	R88M-W05030S-S1
			100 W	R88M-W10030S-S1
			200 W	R88M-W20030S-S1
	With brake	200 VAC	30 W	R88M-W03030T-BS1
			50 W	R88M-W05030T-BS1
			100 W	R88M-W10030T-BS1
			200 W	R88M-W20030T-BS1
			400 W	R88M-W40030T-BS1
			750 W	R88M-W75030T-BS1
			1 kW	R88M-W1K030T-BS2
			1.5 kW	R88M-W1K530T-BS2
			2 kW	R88M-W2K030T-BS2
			3 kW	R88M-W3K030T-BS2
			4 kW	R88M-W4K030T-BS2
			5 kW	R88M-W5K030T-BS2
		100 VAC	30 W	R88M-W03030S-BS1
			50 W	R88M-W05030S-BS1
			100 W	R88M-W10030S-BS1
			200 W	R88M-W20030S-BS1

Note: “S1” at the end of a model name represents models with key and without tap. “S2” at the end of a model name represents models with key and tap. Motors with a capacity of 1 kW or more do not have the S1 or S3 type.

Cylinder-style Motors (1,500 r/min) with Incremental or Absolute Encoders

Specifications				Model
Straight shafts with key	Without brake	200 VAC	450 W	R88M-W45015T-S2
			850 W	R88M-W85015T-S2
			1.3 kW	R88M-W1K315T-S2
			1.8 kW	R88M-W1K815T-S2
			2.9 kW	R88M-W2K915T-S2
			4.4 kW	R88M-W4K415T-S2
			5.5 kW	R88M-W5K515T-S2
			7.5 kW	R88M-W7K515T-S2
			11 kW	R88M-W11K015T-S2
			15 kW	R88M-W15K015T-S2
	With brake		450 W	R88M-W45015T-BS2
			850 W	R88M-W85015T-BS2
			1.3 kW	R88M-W1K315T-BS2
			1.8 kW	R88M-W1K815T-BS2
			2.9 kW	R88M-W2K915T-BS2
			4.4 kW	R88M-W4K415T-BS2
			5.5 kW	R88M-W5K515T-BS2
			7.5 kW	R88M-W7K515T-BS2
			11 kW	R88M-W11K015T-BS2
			15 kW	R88M-W15K015T-BS2

Note: "S2" at the end of a model name represents models with key and tap. Motors with a speed of 1,500 r/min do not have the S1 or S3 type.

Cylinder-style Motors (1,000 r/min) with Incremental Encoders

Specifications				Model
Straight shafts with key	Without brake	200 VAC	300 W	R88M-W30010H-S2
			600 W	R88M-W60010H-S2
			900 W	R88M-W90010H-S2
			1.2 kW	R88M-W1K210H-S2
			2 kW	R88M-W2K010H-S2
			3 kW	R88M-W3K010H-S2
			4 kW	R88M-W4K010H-S2
			5.5 kW	R88M-W5K510H-S2
	With brake		300 W	R88M-W30010H-BS2
			600 W	R88M-W60010H-BS2
			900 W	R88M-W90010H-BS2
			1.2 kW	R88M-W1K210H-BS2
			2 kW	R88M-W2K010H-BS2
			3 kW	R88M-W3K010H-BS2
			4 kW	R88M-W4K010H-BS2
			5.5 kW	R88M-W5K510H-BS2

Note: "S2" at the end of a model name represents models with key and tap. Motors with a speed of 1,000 r/min do not have the S1 or S3 type.

Cylinder-style Motors (1,000 r/min) with Absolute Encoders

Specifications				Model
Straight shafts with key	Without brake	200 VAC	300 W	R88M-W30010T-S2
			600 W	R88M-W60010T-S2
			900 W	R88M-W90010T-S2
			1.2 kW	R88M-W1K210T-S2
			2 kW	R88M-W2K010T-S2
			3 kW	R88M-W3K010T-S2
			4 kW	R88M-W4K010T-S2
			5.5 kW	R88M-W5K510T-S2
	With brake		300 W	R88M-W30010T-BS2
			600 W	R88M-W60010T-BS2
			900 W	R88M-W90010T-BS2
			1.2 kW	R88M-W1K210T-BS2
			2 kW	R88M-W2K010T-BS2
			3 kW	R88M-W3K010T-BS2
			4 kW	R88M-W4K010T-BS2
			5.5 kW	R88M-W5K510T-BS2

Note: "S2" at the end of a model name represents models with key and tap. Motors with a speed of 1,000 r/min do not have the S1 or S3 type.

Flat-style Motors with Incremental Encoders

Specifications				Model
Straight shafts without key	Without brake	200 VAC	100 W	R88M-WP10030H
			200 W	R88M-WP20030H
			400 W	R88M-WP40030H
			750 W	R88M-WP75030H
			1.5 kW	R88M-WP1K530H
		100 VAC	100 W	R88M-WP10030L
			200 W	R88M-WP20030L
	With brake	200 VAC	100 W	R88M-WP10030H-B
			200 W	R88M-WP20030H-B
			400 W	R88M-WP40030H-B
			750 W	R88M-WP75030H-B
			1.5 kW	R88M-WP1K530H-B
		100 VAC	100 W	R88M-WP10030L-B
			200 W	R88M-WP20030L-B
Straight shafts with key	Without brake	200 VAC	100 W	R88M-WP10030H-S1
			200 W	R88M-WP20030H-S1
			400 W	R88M-WP40030H-S1
			750 W	R88M-WP75030H-S1
			1.5 kW	R88M-WP1K530H-S1
		100 VAC	100 W	R88M-WP10030L-S1
			200 W	R88M-WP20030L-S1
	With brake	200 VAC	100 W	R88M-WP10030H-BS1
			200 W	R88M-WP20030H-BS1
			400 W	R88M-WP40030H-BS1
			750 W	R88M-WP75030H-BS1
			1.5 kW	R88M-WP1K530H-BS1
		100 VAC	100 W	R88M-WP10030L-BS1
			200 W	R88M-WP20030L-BS1

Flat-style Motors with Absolute Encoders

Specifications				Model
Straight shafts without key	Without brake	200 VAC	100 W	R88M-WP10030T
			200 W	R88M-WP20030T
			400 W	R88M-WP40030T
			750 W	R88M-WP75030T
			1.5 kW	R88M-WP1K530T
		100 VAC	100 W	R88M-WP10030S
			200 W	R88M-WP20030S
	With brake	200 VAC	100 W	R88M-WP10030T-B
			200 W	R88M-WP20030T-B
			400 W	R88M-WP40030T-B
			750 W	R88M-WP75030T-B
			1.5 kW	R88M-WP1K530T-B
		100 VAC	100 W	R88M-WP10030S-B
			200 W	R88M-WP20030S-B
Straight shafts with key	Without brake	200 VAC	100 W	R88M-WP10030T-S1
			200 W	R88M-WP20030T-S1
			400 W	R88M-WP40030T-S1
			750 W	R88M-WP75030T-S1
			1.5 kW	R88M-WP1K530T-S1
		100 VAC	100 W	R88M-WP10030S-S1
			200 W	R88M-WP20030S-S1
	With brake	200 VAC	100 W	R88M-WP10030T-BS1
			200 W	R88M-WP20030T-BS1
			400 W	R88M-WP40030T-BS1
			750 W	R88M-WP75030T-BS1
			1.5 kW	R88M-WP1K530T-BS1
		100 VAC	100 W	R88M-WP10030S-BS1
			200 W	R88M-WP20030S-BS1

Flat-style Motors (Waterproof Type) with Incremental Encoders

Specifications				Model
Straight shafts without key	Without brake	200 VAC	100 W	R88M-WP10030H-W
			200 W	R88M-WP20030H-W
			400 W	R88M-WP40030H-W
			750 W	R88M-WP75030H-W
			1.5 kW	R88M-WP1K530H-W
		100 VAC	100 W	R88M-WP10030L-W
			200 W	R88M-WP20030L-W
	With brake	200 VAC	100 W	R88M-WP10030H-BW
			200 W	R88M-WP20030H-BW
			400 W	R88M-WP40030H-BW
			750 W	R88M-WP75030H-BW
			1.5 kW	R88M-WP1K530H-BW
		100 VAC	100 W	R88M-WP10030L-BW
			200 W	R88M-WP20030L-BW
Straight shafts with key	Without brake	200 VAC	100 W	R88M-WP10030H-WS1
			200 W	R88M-WP20030H-WS1
			400 W	R88M-WP40030H-WS1
			750 W	R88M-WP75030H-WS1
			1.5 kW	R88M-WP1K530H-WS1
		100 VAC	100 W	R88M-WP10030L-WS1
			200 W	R88M-WP20030L-WS1
	With brake	200 VAC	100 W	R88M-WP10030H-BWS1
			200 W	R88M-WP20030H-BWS1
			400 W	R88M-WP40030H-BWS1
			750 W	R88M-WP75030H-BWS1
			1.5 kW	R88M-WP1K530H-BWS1
		100 VAC	100 W	R88M-WP10030L-BWS1
			200 W	R88M-WP20030L-BWS1

Note: Precautions When Selecting Products

1. The standard cable (R88A-CAW□) can be connected, but it is not water resistant. Use a water-resistant cable in locations subject to water.
2. The cable attached to the Motor is water resistant, but the connector is not. Do not allow water to come into contact with the connector to protect the terminals.

Flat-style Motors (Waterproof Type) with Absolute Encoders

Specifications				Model
Straight shafts without key	Without brake	200 VAC	100 W	R88M-WP10030T-W
			200 W	R88M-WP20030T-W
			400 W	R88M-WP40030T-W
			750 W	R88M-WP75030T-W
			1.5 kW	R88M-WP1K530T-W
		100 VAC	100 W	R88M-WP10030S-W
			200 W	R88M-WP20030S-W
	With brake	200 VAC	100 W	R88M-WP10030T-BW
			200 W	R88M-WP20030T-BW
			400 W	R88M-WP40030T-BW
			750 W	R88M-WP75030T-BW
			1.5 kW	R88M-WP1K530T-BW
		100 VAC	100 W	R88M-WP10030S-BW
			200 W	R88M-WP20030S-BW
Straight shafts with key	Without brake	200 VAC	100 W	R88M-WP10030T-WS1
			200 W	R88M-WP20030T-WS1
			400 W	R88M-WP40030T-WS1
			750 W	R88M-WP75030T-WS1
			1.5 kW	R88M-WP1K530T-WS1
		100 VAC	100 W	R88M-WP10030S-WS1
			200 W	R88M-WP20030S-WS1
	With brake	200 VAC	100 W	R88M-WP10030T-BWS1
			200 W	R88M-WP20030T-BWS1
			400 W	R88M-WP40030T-BWS1
			750 W	R88M-WP75030T-BWS1
			1.5 kW	R88M-WP1K530T-BWS1
		100 VAC	100 W	R88M-WP10030S-BWS1
			200 W	R88M-WP20030S-BWS1

Note: Precautions When Selecting Products

1. The standard cable (R88A-CAW□) can be connected, but it is not water resistant. Use a water-resistant cable in locations subject to water.
2. The cable attached to the Motor is water resistant, but the connector is not. Do not allow water to come into contact with the connector to protect the terminals.

■ AC Servodrivers

Specifications			Model
Common to analog and pulse train inputs Common to incremental and absolute encoders	200 VAC	30 W	R88D-WTA3H
		50 W	R88D-WTA5H
		100 W	R88D-WT01H
		200 W	R88D-WT02H
		400 W	R88D-WT04H
		500 W	R88D-WT05H
		750 W	R88D-WT08H
		1 kW	R88D-WT10H
		1.5 kW	R88D-WT15H
		2 kW	R88D-WT20H
		3 kW	R88D-WT30H
		5 kW	R88D-WT50H
		6 kW	R88D-WT60H (See note.)
		7.5 kW	R88D-WT75H (See note.)
		15 kW	R88D-WT150H (See note.)
	100 VAC	30 W	R88D-WTA3HL
		50 W	R88D-WTA5HL
		100 W	R88D-WT01HL
		200 W	R88D-WT02HL

Note: When ordering the R88D-WT60H/75H/150H, a regenerative resistor must also be ordered.

■ Power Cables

Specification			Model
For motors without brakes	30-W to 750-W cylinder-style motors (3,000 r/min) 100-W to 750-W flat-style motors	3 m	R88A-CAWA003S
		5 m	R88A-CAWA005S
		10 m	R88A-CAWA010S
		15 m	R88A-CAWA015S
		20 m	R88A-CAWA020S
		30 m	R88A-CAWA030S
		40 m	R88A-CAWA040S
		50 m	R88A-CAWA050S
	1.5-kW flat-style motors	3 m	R88A-CAWB003S
		5 m	R88A-CAWB005S
		10 m	R88A-CAWB010S
		15 m	R88A-CAWB015S
		20 m	R88A-CAWB020S
		30 m	R88A-CAWB030S
		40 m	R88A-CAWB040S
		50 m	R88A-CAWB050S
	300-W to 900-W cylinder-style motors (1,000 r/min) 450-W to 1.3-kW cylinder-style motors (1,500 r/min) 1-kW to 2-kW cylinder-style motors (3,000 r/min)	3 m	R88A-CAWC003S
		5 m	R88A-CAWC005S
		10 m	R88A-CAWC010S
		15 m	R88A-CAWC015S
		20 m	R88A-CAWC020S
		30 m	R88A-CAWC030S
		40 m	R88A-CAWC040S
		50 m	R88A-CAWC050S
	1.2-kW to 3-kW cylinder-style motors (1,000 r/min) 1.8-kW to 4.4-kW cylinder-style motors (1,500 r/min) 3-kW to 5-kW cylinder-style motors (3,000 r/min)	3 m	R88A-CAWD003S
		5 m	R88A-CAWD005S
		10 m	R88A-CAWD010S
		15 m	R88A-CAWD015S
		20 m	R88A-CAWD020S
		30 m	R88A-CAWD030S
		40 m	R88A-CAWD040S
		50 m	R88A-CAWD050S

Specification			Model
Motors with brakes	30-W to 750-W cylinder-style motors (3,000 r/min) 100-W to 750-W flat-style motors	3 m	R88A-CAWA003B
		5 m	R88A-CAWA005B
		10 m	R88A-CAWA010B
		15 m	R88A-CAWA015B
		20 m	R88A-CAWA020B
		30 m	R88A-CAWA030B
		40 m	R88A-CAWA040B
		50 m	R88A-CAWA050B
	1.5-kW flat-style motors	3 m	R88A-CAWB003B
		5 m	R88A-CAWB005B
		10 m	R88A-CAWB010B
		15 m	R88A-CAWB015B
		20 m	R88A-CAWB020B
		30 m	R88A-CAWB030B
		40 m	R88A-CAWB040B
		50 m	R88A-CAWB050B
	300-W to 900-W cylinder-style motors (1,000 r/min) 450-W to 1.3-kW cylinder-style motors (1,500 r/min) 1-kW to 2-kW cylinder-style motors (3,000 r/min)	3 m	R88A-CAWC003B
		5 m	R88A-CAWC005B
		10 m	R88A-CAWC010B
		15 m	R88A-CAWC015B
		20 m	R88A-CAWC020B
		30 m	R88A-CAWC030B
		40 m	R88A-CAWC040B
		50 m	R88A-CAWC050B
	1.2-kW to 3-kW cylinder-style motors (1,000 r/min) 1.8-kW to 4.4-kW cylinder-style motors (1,500 r/min) 3-kW to 5-kW cylinder-style motors (3,000 r/min)	3 m	R88A-CAWD003B
		5 m	R88A-CAWD005B
		10 m	R88A-CAWD010B
		15 m	R88A-CAWD015B
		20 m	R88A-CAWD020B
		30 m	R88A-CAWD030B
		40 m	R88A-CAWD040B
		50 m	R88A-CAWD050B

Specification			Model
4-kW cylinder-style motors (1,000 r/min)	Power connector for the motor	3 m	R88A-CAWE003S
		5 m	R88A-CAWE005S
		10 m	R88A-CAWE010S
		15 m	R88A-CAWE015S
		20 m	R88A-CAWE020S
		30 m	R88A-CAWE030S
		40 m	R88A-CAWE040S
		50 m	R88A-CAWE050S
	Brake connector for the motor	3 m	R88A-CAWE003B (See note 1.)
		5 m	R88A-CAWE005B (See note 1.)
		10 m	R88A-CAWE010B (See note 1.)
		15 m	R88A-CAWE015B (See note 1.)
		20 m	R88A-CAWE020B (See note 1.)
		30 m	R88A-CAWE030B (See note 1.)
		40 m	R88A-CAWE040B (See note 1.)
		50 m	R88A-CAWE050B (See note 1.)
5.5-kW cylinder-style motors (1,000 r/min) 5.5-kW/11-kW cylinder-style motors (1,500 r/min)	Power connector for the motor	3 m	R88A-CAWF003S
		5 m	R88A-CAWF005S
		10 m	R88A-CAWF010S
		15 m	R88A-CAWF015S
		20 m	R88A-CAWF020S
		30 m	R88A-CAWF030S
		40 m	R88A-CAWF040S
		50 m	R88A-CAWF050S
	Brake connector for the motor	---	R88A-CAWE□□□B (See notes 1 and 2.)

Note: 1. When using a motor with brake, a cable for the power connector is required in addition to the cable for the brake connector.

2. The boxes (□□□) indicate cable length.

■ Encoder Cables

Specification		Model
30-W to 750-W cylinder-style motors (3,000 r/min) 100-W to 1.5-kW flat-style motors	3 m	R88A-CRWA003C
	5 m	R88A-CRWA005C
	10 m	R88A-CRWA010C
	15 m	R88A-CRWA015C
	20 m	R88A-CRWA020C
	30 m	R88A-CRWA030C
	40 m	R88A-CRWA040C
	50 m	R88A-CRWA050C
1-kW to 5-kW cylinder-style motors (3,000 r/min) 450-W to 15-kW cylinder-style motors (1,500 r/min) 300-W to 5.5-kW cylinder-style motors (1,000 r/min)	3 m	R88A-CRWB003N
	5 m	R88A-CRWB005N
	10 m	R88A-CRWB010N
	15 m	R88A-CRWB015N
	20 m	R88A-CRWB020N
	30 m	R88A-CRWB030N
	40 m	R88A-CRWB040N
	50 m	R88A-CRWB050N
Encoder Cable for 70-m connection (cable line material only)	1 m	R88A-CRW001

Note: All these cables are common to incremental and absolute encoders.

■ Control Cables and Relay Units

Specification				Model
For Motion Control Units	Control cables for 1 axis (common to SYSMAC CS1, C200H, and CV-series PCs)		1 m	R88A-CPW001M1
			2 m	R88A-CPW002M1
			3 m	R88A-CPW003M1
			5 m	R88A-CPW005M1
	Control cables for 2 axes (common to SYSMAC CS1, C200H, and CV-series PCs)		1 m	R88A-CPW001M2
			2 m	R88A-CPW002M2
			3 m	R88A-CPW003M2
			5 m	R88A-CPW005M2
For Position Control Units and SYSMAC CQM1	Servo Relay Units	For CS1W-NC113/133, CJ1W-NC113/133, C200HW-NC113, and 3F88M-DRT141		XW2B-20J6-1B
		For CS1W-NC213/413/233/433, CJ1W-NC213/413/233/433, and C200HW-NC213/413		XW2B-40J6-2B
		For CQM1-CPU43, CQM1H-PLB21		XW2B-20J6-3B
		For CJ1M-CPU22/23 (1 axis)		XW2B-20J6-8A
		For CJ1M-CPU22/23 (2 axes)		XW2B-40J6-9A
		For CJ1W-NC213/413/223/423 (with communications support)		XW2B-40J6-4A
		For CS1W-HCPP22-V1		XW2B-80J7-1A
	Servodriver cable	Relay Units other than those listed below	1 m	XW2Z-100J-B4
			2 m	XW2Z-200J-B4

Specification				Model
For Position Control Units and SYSMAC CQM1	Servodriver cable	XW2B-40J6-4A Communications support type	1 m	XW2Z-100J-B8
			2 m	XW2Z-200J-B8
		XW2B-80J7-1A For customizable counters	1 m	XW2Z-100J-B11
			2 m	XW2Z-200J-B11
	Cables on Position Control Unit end	For C200HW-NC113 and CS1W-NC113	0.5 m	XW2Z-050J-A6
			1 m	XW2Z-100J-A6
		For C200HW-NC213/413 and CS1W-NC213/413	0.5 m	XW2Z-050J-A7
			1 m	XW2Z-100J-A7
		For CS1W-NC133	0.5 m	XW2Z-050J-A10
			1 m	XW2Z-100J-A10
		For CS1W-NC233/433	0.5 m	XW2Z-050J-A11
			1 m	XW2Z-100J-A11
		For CJ1W-NC113	0.5 m	XW2Z-050J-A14
			1 m	XW2Z-100J-A14
		For CJ1W-NC213/413	0.5 m	XW2Z-050J-A15
			1 m	XW2Z-100J-A15
		For CJ1W-NC133	0.5 m	XW2Z-050J-A18
			1 m	XW2Z-100J-A18
		For CJ1W-NC233/433	0.5 m	XW2Z-050J-A19
			1 m	XW2Z-100J-A19
		For CQM1-CPU43-V1 and CQM1H-PLB21	0.5 m	XW2Z-050J-A3
			1 m	XW2Z-100J-A3
		For 3F88M-DRT141	0.5 m	XW2Z-050J-A24
			1 m	XW2Z-100J-A24
		For CS1W-HCP22-V1 (For 24-pin connectors) (See note.)	0.5 m	XW2Z-050J-A29
			1 m	XW2Z-100J-A29
		For CS1W-HCP22-V1 (For 40-pin connectors) (See note.)	0.5 m	XW2Z-050J-A32
			1 m	XW2Z-100J-A32
		For CJ1M-CPU22/23		XW2Z-100J-A27
For general-purpose controllers	Control cables with connector at one end		1 m	R88A-CPW001S
			2 m	R88A-CPW002S
	Cables for relay terminal block		1 m	R88A-CTW001N
			2 m	R88A-CTW002N
	Relay terminal block			XW2B-50G5

Note: When using the CS1W-HCP22-V1, cables for both 24-pin connectors and 40-pin connectors are required.

■ Parameter Units

Specification	Model
Handy type for OMNUC W-series (with 1-m cable)	R88A-PR02W
Cable for U-series (2 m) (See note.)	R88A-CCW002C

Note: This cable can be used to connect the R88A-PR02U Parameter Unit for U-series to the W-series Servodriver.

■ Backup Battery Unit for Absolute Encoder

Specification	Model
R88D-WT□H (□: 50 or less)	R88A-BAT01W
R88D-WT60H/75H/150H	R88A-BAT02W

■ External Regenerative Resistors

Specification	Model
220 W, 47 Ω	R88A-RR22047S
880 W, 6.25 Ω	R88A-RR88006

■ DC Reactors

Specification	Model
For R88D-WT30H	R88A-PX5059
For R88D-WT15H/WT20H	R88A-PX5060
For R88D-WT05H/WT08H/WT10H	R88A-PX5061
For R88D-WT02HL	R88A-PX5062
For R88D-WTA3HL/WTA5HL/WT01HL	R88A-PX5063
For R88D-WT50H	R88A-PX5068
For R88D-WT04H	R88A-PX5069
For R88D-WT02H	R88A-PX5070
For R88D-WTA3H/WTA5H/WT01H	R88A-PX5071

■ Front Panel Mounting Brackets

Specification	Model
For R88D-WTA3□ to WT10H	R88A-TK01W
For R88D-WT15H	R88A-TK02W
For R88D-WT20H/WT30H/WT50H	R88A-TK03W

■ Other Peripheral Cables and Connectors

Specification	Model
Analog monitoring cable (1 m)	R88A-CMW001S
Personal computer monitoring cable (2 m)	R88A-CCW002P2
Control I/O connector CN1	R88A-CNU11C
Encoder connector CN2	R88A-CNW01R
Encoder connector (for R88A-CRWA motor side)	R88A-CNW02R

■ Equipment for Replacing S/R/H/M-series Products

Mounting Brackets

Specifications	Model
R Series, 60 W/110 W	R88A-MF01W
S Series, 50 W/100 W; R Series, 100 W; H Series, 50 W/100 W	R88A-MF02W
S Series, 500 W/750 W; R Series, 450 W min., H Series, 500 W/750 W/1,100 W	R88A-MF03W

Power Cables

Specifications	Model
S Series, 50 W/100 W/200 W/300 W, without brake; R Series, 60 W/100 W/110 W/200 W/300 W/ 450 W, without brake	R88A-CAWR0R5S1
S Series, 500 W/750 W, without brake; R Series, 500 W/600 W/750 W/820 W, without brake	R88A-CAWR0R5S2
R Series, 820 W/1,100 W, with brake	R88A-CAWR0R5S3
S Series, 50 W/100 W/200 W/300 W, with brake; R Series, 60 W/100 W/110 W/200 W/300 W/ 450 W, with brake	R88A-CAWR0R5B1
S Series, 500 W/750 W, with brake; R Series, 500 W/600 W/750 W/820 W, with brake	R88A-CAWR0R5B2
R Series, 820 W/1,100 W, with brake	R88A-CAWR0R5B3
H Series, 50 W/100 W/200 W/300 W/500W/ 750 W, without brake	R88A-CAWH0R5S1
H Series, 1,100 W, without brake	R88A-CAWH0R5S2
H Series, 50 W/100 W/200 W/300 W/500 W/ 750 W, with brake	R88A-CAWH0R5B1
H Series, 1,100 W, with brake	R88A-CAWH0R5B2

Encoder Cables

Specifications	Model
S Series, Servodriver side	R88A-CRWS0R3D
S Series, 50 W/100 W/200 W/300 W, Servomotor side; R Series, 100 W/200 W/300 W/450 W, Servomotor side	R88A-CRWR0R5M1
S Series, 500 W/750 W, Servomotor side	R88A-CRWS0R5M
R Series, Servodriver side	R88A-CRWR0R3D
R Series, 60 W/110 W, Servomotor side; H Series, Servomotor side	R88A-CRWH0R5M
R Series, 500 W/600 W/750 W/820 W/ 1,100 W, Servomotor side	R88A-CRWR0R5M2
H Series, Servodriver side	R88A-CRWH0R3D

Control Cables

Specifications	Model
S/R Series, analog input	R88A-CPWR0R3A
S/R Series, pulse train input	R88A-CPWR0R3P
H Series, analog/pulse train input	R88A-CPWH0R3C
M Series, analog/pulse train input	R88A-CPWM0R3C

Note: Refer to *Replacement Set for S, R, and H Series* (I806-E1-□) for detailed specifications.

DeviceNet Option Unit for OMNUC W-series AC Servo Drivers R88A-NCW152-DRT

Distributed control with a built-in Single-axis Position Control Unit, information management via DeviceNet, and a failure prediction function for servo systems, can all be added to OMNUC W-series AC Servo Drivers with just one Unit.

NEW

- Two Roles Performed by One Unit
  The Option Unit has both DeviceNet communications functions and the positioning functions of a Position Control Unit. These functions can be added to a W-series AC Servo Driver simply by mounting the Option Unit directly to it.
- Distributed Control of up to 63 Units
  Using Option Units allows up to 63 W-series AC Servo Drivers to be connected as DeviceNet slaves to an open field network with a total network length of 500 m.
- Batch Handling of Operating Information for Servo Systems
  Information that can be displayed at W-series AC Servo Drivers using monitor functions (e.g., speed commands and speed feedback) can be read by a PLC using remote I/O functions.
- Failure Prediction and Diagnosis
  Up to 1,000 samples of sequential data, such as speed feedback and torque commands, can be recorded in units as small as 250 μs to approx. 8 seconds. Comparison with data recorded during normal operation allows failure prediction and effective cause analysis for incorrect operation.

Ordering Information

■ List of Models

Product name	Model number
DeviceNet Option Unit	R88A-NCW152-DRT
External I/O Connector	R88A-CNU01R
Cable for Setup Tool (IBM PC/AT or compatible: 2 m)	R88A-CCW002P4

Specifications

Position Control Function Specifications

Item		Specifications	
Number of control axes		1 axis per slave	
Control system		Semi-closed loop/full closed-loop control	
Controlled driver		R88D-WT Servo Drivers	
Positioning unit		User-specified position units (set freely). The amount moved per step can be set as an electronic gear ratio (setting range: 10,000,000 to 0.0000001)	
Operating specifications	Memory operation	Step operation and point table operation	
	Direct operation	Direct operation, interrupt feeding, notch signal output positioning, and multi-speed positioning	
Move command specifications	Type	Incremental (positioning according to relative coordinates) or absolute (positioning according to absolute coordinates)	
	Position commands	Signed, 32-bit data (setting range: −99,999,999 to 99,999,999 steps)	
	Speed commands	Unsigned, 32-bit data (units: step/min; setting range: 1 to 240,000 steps)	
	Acceleration/deceleration method	Fixed acceleration/deceleration	Single-step linear acceleration/deceleration, 2-step linear acceleration/deceleration, asymmetric linear acceleration/deceleration, S-curve acceleration/deceleration, asymmetric S-curve acceleration/deceleration
		Fixed acceleration/deceleration time	Exponential acceleration/deceleration, exponential acceleration/deceleration with bias, single-step linear acceleration/deceleration
	Acceleration/deceleration time	1 to 10,000 ms (time taken to reach maximum speed)	
	Coordinate system settings	Set whether to use the AC Servomotor as a linear axis or a rotary axis.	
	Speed changes	The speed can be switched between 16 settings while positioning during multi-speed operation.	
Operation management/compensation functions	Origin search operation	Without limit reversal	Use the ON/OFF signal of any of the following: Origin proximity signal + origin signal, origin signal, origin proximity signal + phase Z, or phase Z
		With limit reversal	Use the ON/OFF signal of any of the following: Origin proximity signal + origin signal, origin signal, or origin proximity signal + Phase Z
	Backlash compensation	0 to 32,767 steps	
	Jog operation	Based on the origin position when power is turned ON and after origin search	
	Indexing operation	Positioning performed with 1 motor revolution divided equally by a specified number (range: 1 to 32,767).	
	Software limits	Decelerates to a stop at a specified position. (The direction can be specified as either positive or negative in the range −99,999,999 to 99,999,999.)	
	Emergency stop/deceleration stop	Possible via remote I/O communications or using input signal.	
	Present position preset	Possible via remote I/O communications.	
	Trace function	Analog trace data (Select up to 2 elements.)	Command pulse speed (r/min), position deviation (command units), speed feedback (r/min), or torque commands (%)
		ON/OFF trace data (Select up to 2 elements.)	Sensor-ON input, alarm output, positioning completed output 1, speed coincidence output, motor revolution detection output, servo ready output, current limit detection output, speed control detection output, brake interlock output, warning output, positioning completed output 2, alarm code output 1, alarm code output 2, alarm code output 3
		Trigger data	Analog trace data (rising edge, falling edge, or rising/falling edge) ON/OFF trace data (rising edge, falling edge, or rising/falling edge)
		Data sampling	Sampling cycle: Set in 250-μs units (range: 250 to 8,191,750 μs) Number of samples: 1,000 samples (fixed)
	Reading monitor items	Monitor items	Speed feedback (r/min), torque commands (%), number of pulses from phase Z (pulses), electrical angle (°), input signal monitor (no units), output signal monitor (no units), command pulse speed display (r/min), position deviation (command units), cumulative load rate (%), regenerative load rate (%), dynamic brake resistance load rate (%), input pulse counter (rightmost 16 bits; command units), feedback pulse counter (rightmost 16 bits; pulses)

DeviceNet Communications Specifications

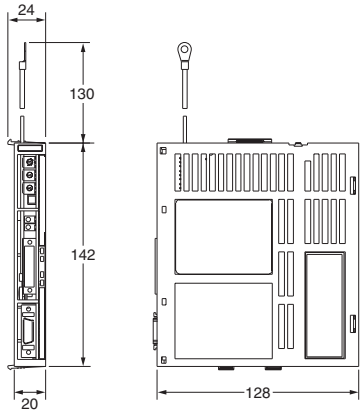
Item		Details	
DeviceNet Communications	Unit classification	Slave Unit	
	Baud rate	125, 250, or 500 kbps (selected with rotary switch)	
	Communications functions	Remote I/O communications (operates as slave) and explicit message communications (sends explicit messages)	
	Communications contents	Remote I/O communications	• Move commands for positioning • Origin compensation (when absolute encoder is used) • Reading and writing Servo Driver and DeviceNet Option Unit parameters • Reading monitor items • Present position compensation • Alarm reset
		Explicit message communications	• Setting trace function • Reading trace data • Reading and writing Servo Driver and DeviceNet Option Unit parameters
	Connection format	Combinations of multi-drop method and T-branch method	
	Maximum number of connectable nodes	64 (This figure includes the Master Unit, Slave Units, and Configurator (if connected).)	
	Node address setting	0 to 63 (selected with rotary switch)	

General Specifications

Item		Details
Applicable Servo Drivers		R88D-WT□ (software version 14 or later)
Mounting method		Mounted to the side of R88D-WT□ Servo Drivers
Basic specifications	Power supply voltage	Unit: Supplied from the Servo Driver DeviceNet: 11 to 25-VDC Isolated Power Supply Unit
	Power consumption	1.3 W (current consumption: 250 mA)
	Ambient operating temperature and humidity	0 to 55°C, 90% max. (with no condensation or corrosive gases)
	Ambient storage temperature and humidity	–20 to 85°C, 90% max. (with no corrosive gases)
	Vibration resistance	4.9 m/s^2
	External dimensions	20 × 142 × 128 mm (W × H × D)
	Approximate weight	0.2 kg

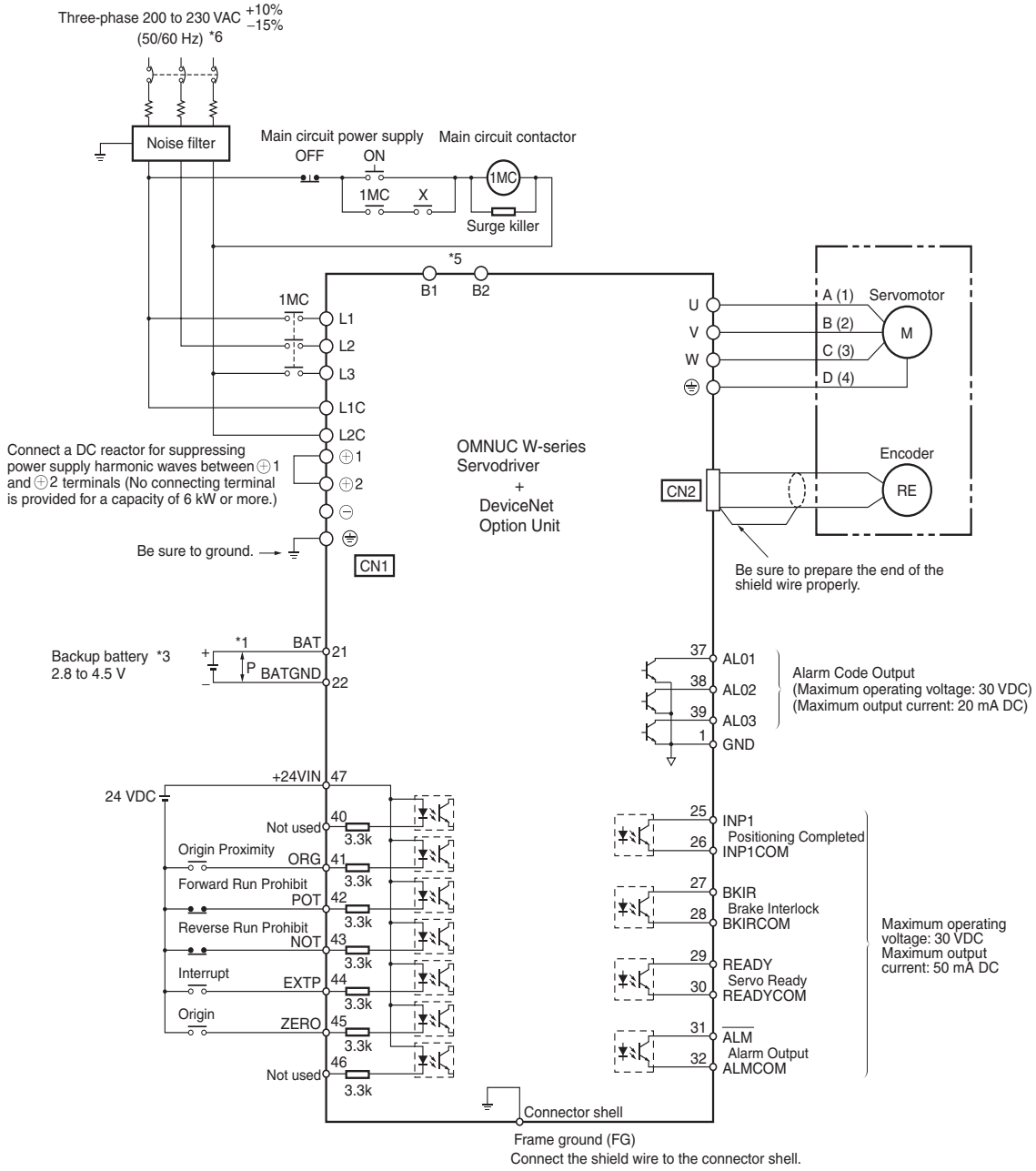
Dimensions (Unit: mm)

R88A-NCW152-DRT



Connection Diagram (for Mounting to OMNUC W-series Products)

Three-phase (See *6.)



*1. P represents a twisted-pair cable.

*2. Primary filter

*3. Connect when using an absolute encoder.

*4. Used only with an absolute encoder.

*5. When using an external regenerative resistor, connect it between B1 and B2.
(When the capacity is 6 kW, connect a Regenerative Resistor Unit.)

*6. For single-phase connection, refer to page 62. The wiring is different only around L1, L2, L3, L1C, L2C, the main circuit power supply, and the main circuit contactor.

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