OMRON

W-Series
Servo Motors and Drives

W-Series

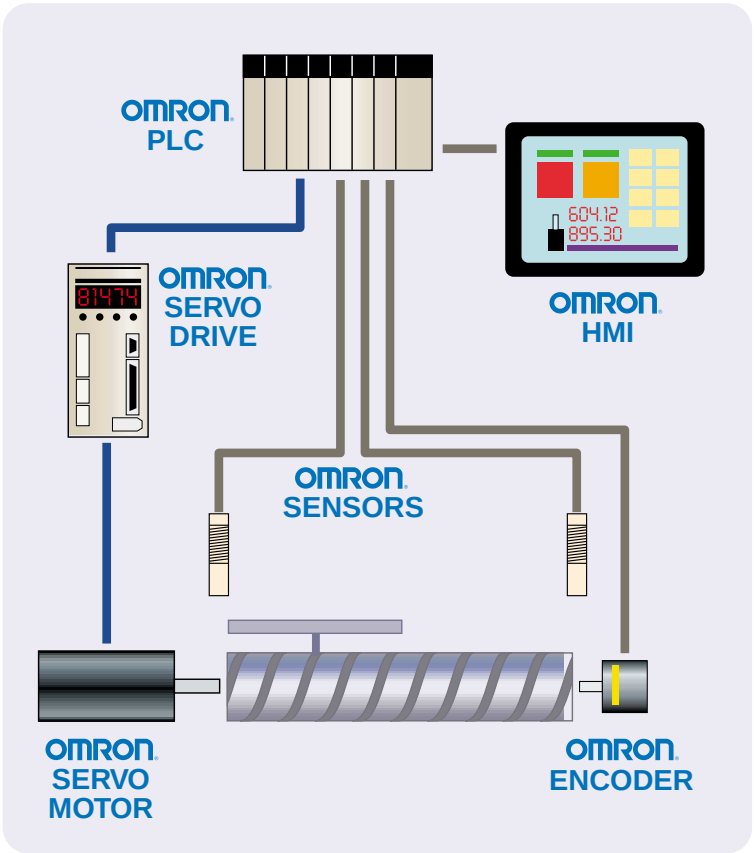
Servo Motors and Drives

Delivering High Performance and Precision

Solving virtually any motion application, Omron's new W-Series of Servo Motors and Drives provides the flexibility and precise positioning required in today's industrial automation environment. The upgraded control algorithms dramatically improve basic operation and reduce vibration and settling times. Using the online auto-tuning function, first-time users can quickly and easily adjust the Servo Drive's parameters to match machine characteristics. These features complement the expanded choice of motor types. The W-Series Motors feature Slim-Profile and Cylinder-Style designs, with a size range of 30 W to 5.5 kW and meet CE and UL/cUL standards. Plug-and-play connectivity to Omron's Motion and Position Control Modules minimizes system set-up time while delivering a complete and powerful solution.

Complete Position and Motion Control Solutions

Omron's extensive line of PLCs, Sensors, HMIs, Power Supplies, and Digital Displays interface with the W-Series to get a seamlessly integrated, powerful solution to any application.



High Performance Servo Drives

- The W-Series Servo Drives have one of the highest loop processor speeds in the industry, drastically reducing the settling and operation time.
- Torque, position, and speed control modes are available in one drive, selectable through the parameters.
- Built-in regenerative processing.
- Overload capacity is 300 to 400% for time periods up to 3 seconds.
- 400,000 MTBF.

Superior Motor Flexibility

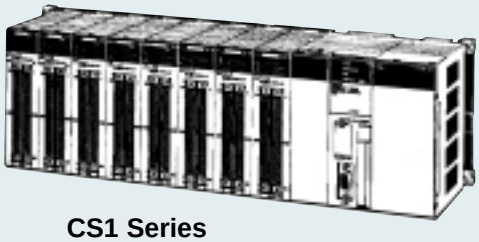
- Motor options include brakes, different shaft configurations, absolute encoders, and IP67 ratings.
- Slim-Profile Motors are about 1/2 the length of conventional Servo Motors making them ideal for mounting in compact spaces.
- Low rotor inertia makes the W-Series Motors perfect for high-speed positioning.
- Choose from several different sizes from 30 watt to 5.5 kW to fit your application requirements.
- Rated speeds of 1000 and 3000 RPM available.

Easy Setup

- Plug and play connectivity to Omron's Position and Motion Control Modules simplifies system configuration.
- The digital operator can configure and modify parameters as well as perform functions like alarm monitoring, jogging, and trouble-shooting.
- Windows® based software simplifies system setup, operation monitoring, and parameter editing.
- Online auto-tuning measures machine characteristics and sets the required servo gains.
- Servo Drive automatically determines motor capacity, resulting in faster system setup.

SYSTEM CONFIGURATION

Controllers



CS1 Series

C200H-Alpha

Motion Control (MC) Module

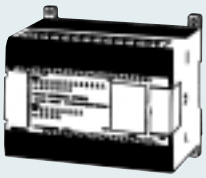
CS1W-MC221/421

C200H-MC221

Position Control (NC) Module

C200HW-NC113/213/413

Controllers



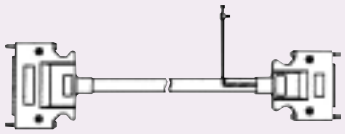
CMP2A

CMP2C

CQM1H

Analog Commands

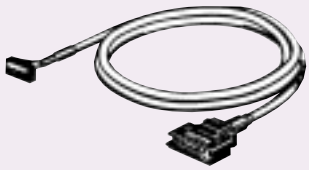
Dedicated Control Cables
R88A-CPW□□□M□



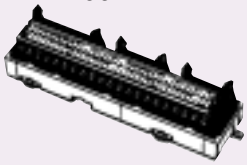
Feedback Signals

Pulse-train Commands

Servo Drive Cable
XW2Z-□□□J-B4



Position Control Terminal Blocks
XW2B-□□J6-□B



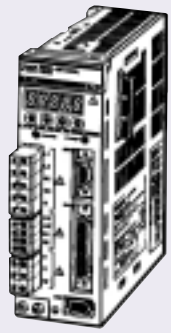
Dedicated Control Cable
XW2Z-□□□J-A□

Refer to the Ordering Information section for applicable cable and Terminal Block models.

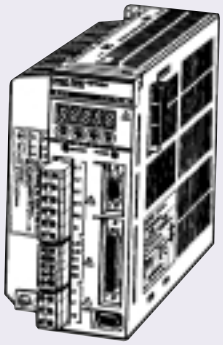
SYSTEM CONFIGURATION

W-Series Servo Drives

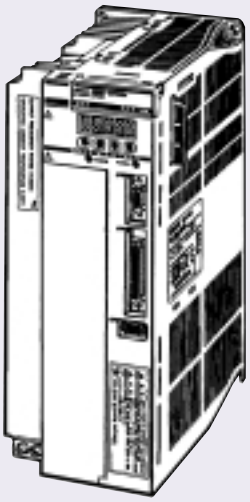
Servo Drives from each size range are shown



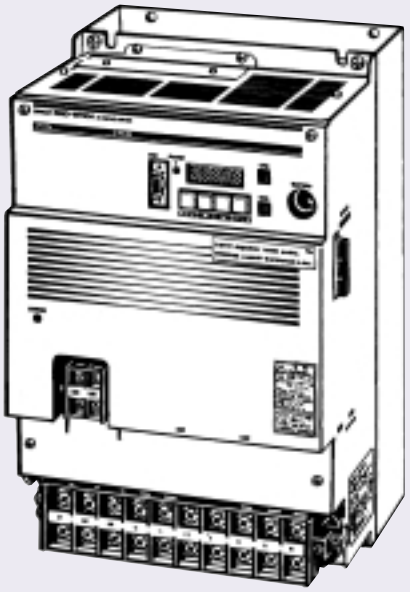
R88D-WTA3HL



R88D-WT08H



R88D-WT30H



R88D-WT60H

Power Cables

R88A-CAW□□□□S
For motors without brake

R88A-CAW□□□□B
For motors with brake

For details on available models refer to the Servo Cabling and Wiring Information section

Power Signals

Feedback Signals

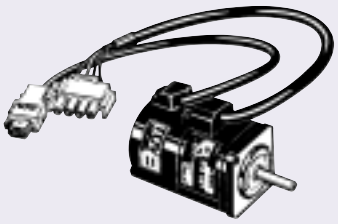
Encoder Cables

R88A-CRWA□□□C
For Cylinder-Style Motors (3,000 RPM): 30W to 750W
For Slim-Profile Motors (3,000 RPM): l00 W to 1.5 kW

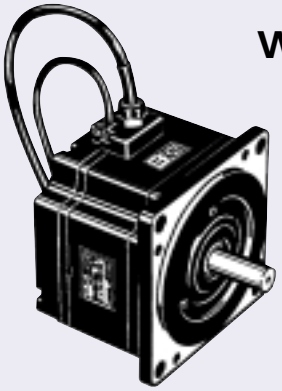
R88A-CRWB□□□N
For Cylinder-Style Motors (3,000 RPM): 1 kW to 5 kw
For Cylinder-Style Motors (1,000 RPM): 300 W to 5.5 kW

For details on available models refer to the Servo Cabling and Wiring Information section

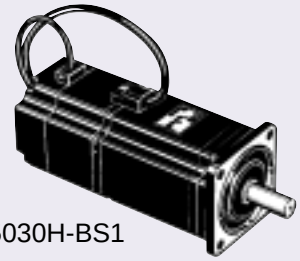
W-Series Servo Motors



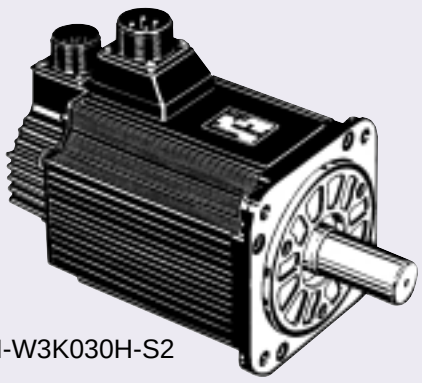
R88M-W03030L-S1



R88M-WP75030H-S1



R88M-W75030H-BS1



R88M-W3K030H-S2

SERVO SYSTEM OVERVIEW

SERVO MOTOR AND DRIVE SPECIFICATIONS

SERVO MOTOR AND DRIVE DIMENSIONS

OPERATION, MONITORING, AND PARAMETERS

SERVO CABLING AND WIRING INFORMATION

ORDERING INFORMATION

REFERENCE INFORMATION

WARRANTY

NOTE: Throughout this catalog, many of the product dimensions are shown in both millimeters and inches. When both are not shown, divide millimeters by 25.4 to calculate inches.

NOTE: Specifications subject to change without notice.

Warranty: Omron certifies all of its products either meet or exceed stipulated specifications one year from the date of purchase. Omron is not liable for stenographic and/or clerical errors.

Omron's obligation under this warranty is limited solely to repair or replacement at Omron's discretion. Omron will not be liable for any design furnished by Buyer and incorporated into equipment.

This warranty is voided if the product is altered in any way or suffers consequential damage due to negligence or misuse.

Omron is not to suffer risk due to the suitability or unsuitability or the results of the use of its products used in combination with any electrical or electronic components, circuits, systems, assemblies or any other materials or substances or environments.

The foregoing warranty is the only warranty which Omron Electronics, Inc., provides with respect to the products listed herein. No other warranties, expressed, implied or statutory shall apply, whether as to merchantability, fitness for a particular purpose, description, or otherwise.

Limitation of Liability: Notwithstanding any other statement herein, Omron Electronics, Inc., its contractors and suppliers, shall not be liable for any special, indirect, incidental or consequential damages. The remedies of the purchaser set forth herein are exclusive where so stated, and the total cumulative liability of Omron Electronics, Inc., its contractors and suppliers, with respect to this contract or anything done in connection therewith, shall not exceed replacement price reimbursement as to the product on which such liability is based.

■ Servo Motor/Servo Drive Combinations

R88M Servo Motors						R88D Servo Drive			Application
Style	Rated speed	Capacity	International standards CE, UL/cUL	Shaft end	Enclosure rating	100 V	200 V Single phase	200 V Three phase	
Cylinder	3,000 RPM. (5,000 RPM.)	30 W	Approved	Straight With key With key and tap Straight with tap	IP55 (excluding shaft opening)	WTA3HL	WTA3H	---	Low-inertia machines Machines requiring high-speed positioning (Robots, assembly machines, conveyors)
		50 W				WTA5HL	WTA5H	---	
		100 W				WT01HL	WT01H	---	
		200 W				WT02HL	WT02H	---	
		400 W				---	WT04H	---	
		750 W				---	---	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	
	1,000 RPM. (2,000 RPM.)	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	
Slim Profile	3,000 RPM. (5,000 RPM.)	100 W	Approved	Straight With key With key and tap Straight with tap	IP55 (excluding shaft opening) IP67 (excluding shaft opening)	WT01HL	WT01H	---	Machines allowing little motor depth Machines requiring water-resistant motors (Semiconductor-manufacturing machines, food-processing machines, AGVs)
		200 W				WT02HL	WT02H	---	
		400 W				---	WT04H	---	
		750 W				---	---	WT08H	
		1.5 kW				---	---	WT15H	

■ Available Models

AC Servo Drives

R88D-WT□□H□
1 2 3 4 5 6

Position	Item	Code	Specification
1	R88D indicates the product is a Servo Drive.		
2	Series	W	---
3	Input signal	T	Accepts both analog and pulse-train inputs
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
5	---	H	---
6	Power supply	Blank	200 VAC
		L	100 VAC

■ Available Models

AC Servo Motors

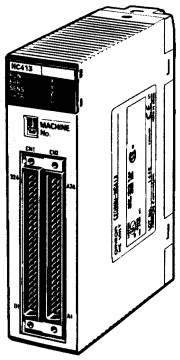
R88M-W□□□□□□□-□□□□
1 2 3 4 5 6 7 8 9

Position	Item	Code	Specification
1	R88M indicates the product is a Servo Motor.		
2	Series	W	---
3	Style	Blank	Cylinder-Style Model
		P	Slim-Profile Model
4	Motor capacity	030	30 W
		050	50 W
		100	100 W
		200	200 W
		300	300 W
		400	400 W
		600	600 W
		750	750 W
		900	900 W
		1K0	1 kW
		1K2	1.2 kW
		1K5	1.5 kW
		2K0	2 kW
		3K0	3 kW
		4K0	4 kW
		5K0	5 kW
		5K5	5.5 kW
5	Speed	10	1000 RPM
		30	3000 RPM
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	Water-resistance specification (See note.)	Blank	Not water-resistant
		W	Water-resistant
9	Shaft end	Blank	Straight
		S1	With key
		S2	With key and tap

Note: The water-resistance specification is available with the Slim-Profile Servo Motors only.

■ Position Control (NC) Modules

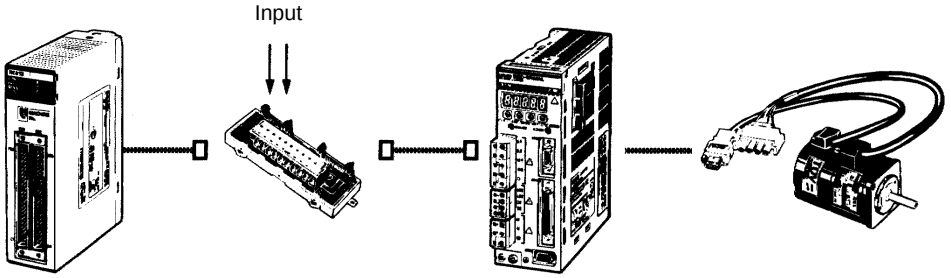
Select Servo and Controller Combinations to perform simple positioning easily by writing position data from the CPU.



C200HW-NC113/213/413

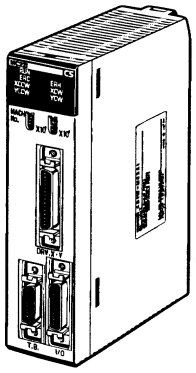
Open Loop Method, Pulse Output

- Simple positioning can be performed with the direct operation function.
- The Position Control Module can respond to commands from the CPU and produce a pulse output at high speed (10 ms when using the C200HW-NC113.)
- Different Motion profiles can be specified to improve machine performance. For instance, to suppress machine vibration an S-shape curve can be used for the acceleration/deceleration curve instead of a trapezoidal curve.
- When the C200HW-NC113 is being used, the Module's data and parameters can be created and stored easily using the WS01-NCTF1-E Support Software.
- When the C200HW-NC113 is being used, position data can be stored in the Position Control Module's flash memory, eliminating the need to periodically replace the backup battery.

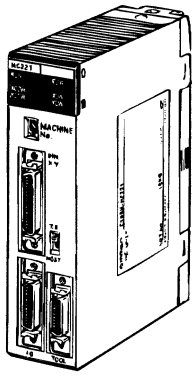


■ Motion Control (MC) Module

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

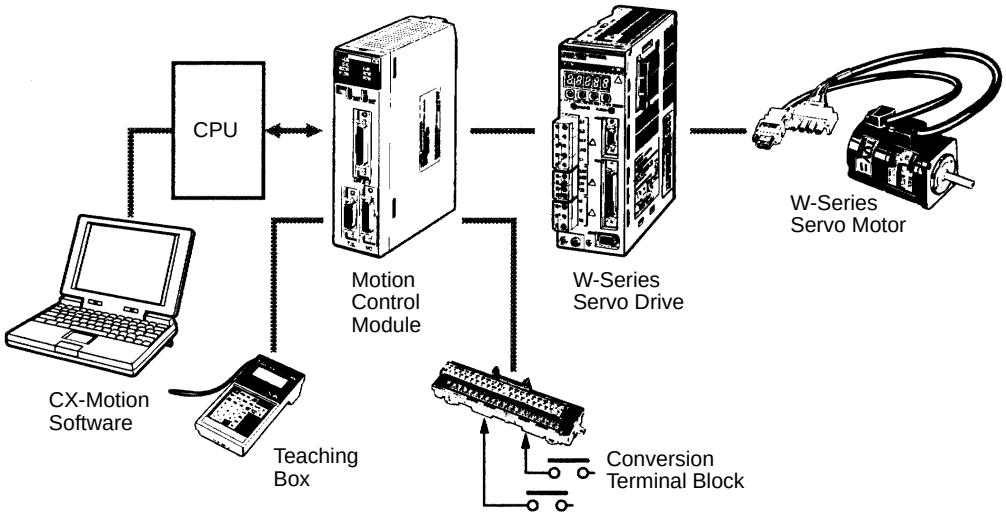


CS1W-MC221/421



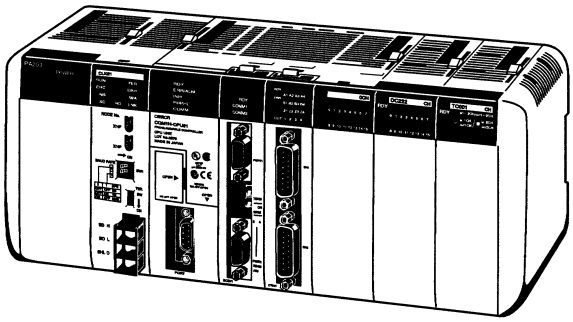
C200H-MC221

- The multi-tasking G-code language allows 4 axes to be controlled simultaneously, and it is also possible to control each axis independently (CS1W-MC221/421). The G-code 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.
- When Positioning is completed or when an important position is passed, the MC Module will output D- Code (interrupt code) to the CPU.
- Programming is easy with the Windows®-based CX-Motion Support Software.
- A manual pulse generator can be used.



■ CQM1H Series Compact Controllers

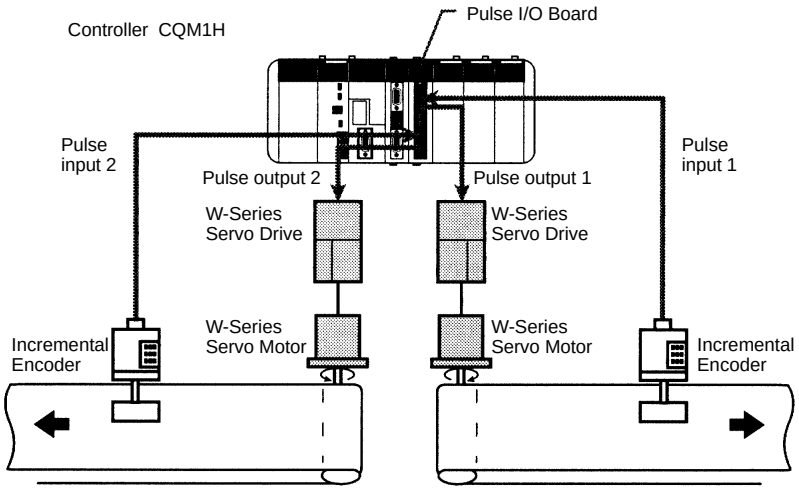
For advanced positioning, select Servo and Controller combinations: The CQM1H is an advanced, compact PLC that can also provide distributed control. The optional Inner Boards used in the CQM1H can support simple positioning and pulse I/O.



CQM1H Controller

Pulse I/O Board

The Pulse I/O Board is equipped with 2 ports which each support a high-speed input at up to 50 KHz and a high-speed output at up to 50 KHz. A Pulse I/O Board can be used for simple 2-axis positioning or speed control with the frequency conversion instructions.

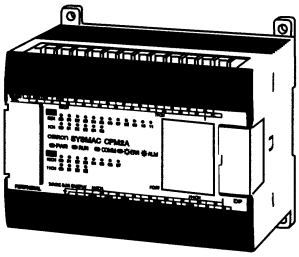


Absolute Encoder Interface Board

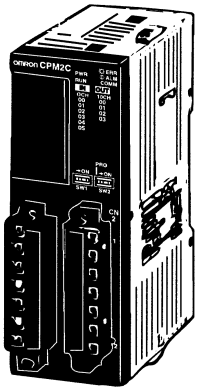
ABS inputs are 12-bit binary gray-code inputs. Position data is retained even when power is interrupted, so it isn't necessary to perform an origin-return procedure when power is restored. In addition, the origin compensation function allows the user to specify any position as the origin.

■ CPM2A/CPM2C Series Micro Controllers

Select from more Servo and Controller combinations for advanced positioning: The CPM2A/CPM2C PLCs are equipped with synchronized pulse control and position control functions, for higher line speed and multiple-product small-lot production.



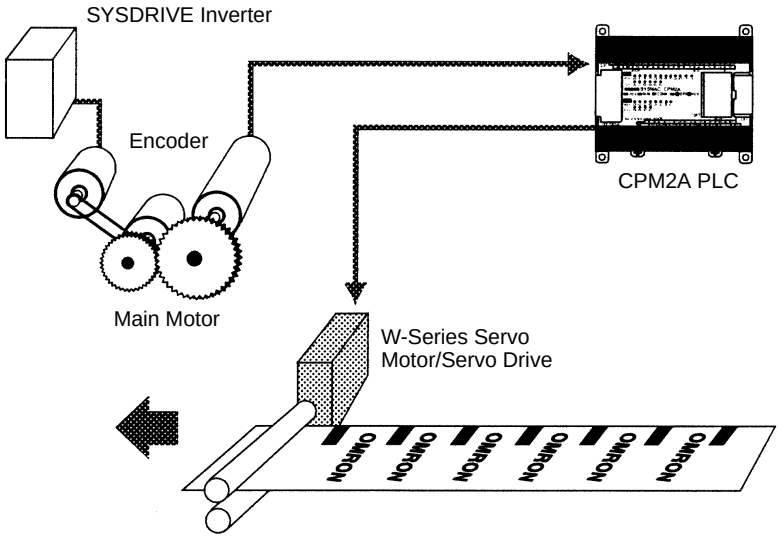
CPM2A



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 Servo Motor can be used for operations such as adjusting the feed rate of workpieces (constant feed) and the volume of fillings (constant amount) in bottling-type applications.

■ Performance Specifications

Cylinder-Style Motors (3,000 RPM)

Item		200 VAC											
Servo Motor (R88M-)		W030 30H□	W050 30H□	W100 30H□	W200 30H□	W400 30H□	W750 30H□	W1K0 30H□	W1K5 30H□	W2K0 30H□	W3K0 30H□	W4K0 30H□	W5K0 30H□
Servo Drive (R88D-)		WTA 3H	WTA 5H	WT 01H	WT 02H	WT 04H	WT 08H	WT 10H	WT 15H	WT 20H	WT 30H	WT 50H	WT 50H
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 oz•in lb•in	0.0955 22.5	0.159 22.5	0.318 45.1	0.637 90.2	1.27 179.9	2.39 338.5	3.18 28.2	4.90 43.4	6.36 56.3	9.80 86.7	12.6 112	15.8 140
Max. momentary torque	N•m oz•in lb•in	0.286 40.5	0.477 67.6	0.955 135	1.91 271	3.82 541	7.16 1014	9.54 84.4	14.7 130	19.1 169	29.4 260	37.8 335	47.6 421
Rated speed	RPM	3,000											
Max. momentary speed	RPM	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} oz•in•s^2 × 10^{-3} lb•in•s^2 × 10^{-3}	0.0166 0.235	0.022 0.312	0.0364 0.515	0.106 1.50	0.173 2.45	0.672 9.52	1.74 1.54	2.47 2.19	3.19 2.82	7.0 6.20	9.6 8.5	12.3 10.9
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	30				20		10					
Allowable radial load on shaft	N lb	68 15		78 17	245 55		392 88	686 154			980 220	1176 264	
Allowable thrust load on shaft	N lb	54 12			74 16		147 33	196 44			392 88		
Approx. weight (without brake)	kg lb	0.3 0.66	0.4 0.88	0.5 1.10	1.1 2.43	1.7 3.75	3.4 7.5	4.6 10.1	5.8 12.8	7.0 15.4	11.0 24.3	14.0 30.9	17.0 37.5
Approx. weight (with brake)	kg lb	0.6 1.32	0.7 1.54	0.8 1.76	1.6 3.53	2.2 4.85	4.3 9.48	6.0 13.2	7.5 16.5	8.5 18.7	14.0 30.9	17.0 37.5	20.0 44.1
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.					

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

Item		200 VAC											
Servo Motor (R88M-)		W030 30H□	W050 30H□	W100 30H□	W200 30H□	W400 30H□	W750 30H□	W1K0 30H□	W1K5 30H□	W2K0 30H□	W3K0 30H□	W4K03 0H□	W5K0 30H□
Servo Drive (R88D-)		WTA 3H	WTA 5H	WT 01H	WT 02H	WT 04H	WT 08H	WT 10H	WT 15H	WT 20H	WT 30H	WT 50H	WT 50H
Brake specifications													
Inertia	kg•m^2×10^{-4} oz-•in•s^2×10^{-3} lb•in•s^2×10^{-3}	0.0085 0.112			0.058 0.821		0.14 1.98	0.325 0.288			2.1 1.86		
Excitation voltage	V	24 VDC ±10%						24 VDC ±10%					
Power consumption	W	6			6.5		6	7			9.8		
Current consumption	A	0.25			0.27		0.25	0.29			0.41		
Static friction torque	N•m oz•in lb•in	0.2min. 28.3		0.34 min. 48.2	1.5 min. 212.4		2.5 min. 354.0	7.8 min. 69.0			20 min. 177.0		
Absorption time	ms	60 max.			100 max.		200 max.	180 max.					
Release time	ms	30 max.			40 max.		50 max.	100 max.					
Backlash	---	1° (reference value)											
Rating	---	Continuous											
Insulation	---	Type F											

Cylinder-Style Motors (3,000 RPM)

Item			100 VAC			
	Servo Motor (R88M-)		W03030L□	W05030L□	W10030L□	W20030L□
	Servo Drive (R88D-)		WTA3HL	WTA5HL	WT01HL	WT02HL
Rated output		W	30	50	100	200
Rated torque		N•m oz•in	0.0955 13.5	0.159 22.5	0.318 45.0	0.637 90.2
Max. momentary torque		N•m oz•in	0.286 40.5	0.477 67.6	0.955 135.2	1.91 270.5
Rated speed		RPM	3,000			
Max. momentary speed		RPM	5,000			
Rated current		A(rms)	0.66	0.95	2.4	3.0
Rotor inertia (without brake)		$kg•m^2 \times 10^{-4}$ $oz•in•s \times 10^{-3}$	0.0166 0.235	0.022 0.312	0.0364 0.515	0.106 1.50
Power rate		kW/s	5.49	11.5	27.8	38.2
Applicable load inertia		Multiple	30			
Allowable radial load on shaft		N lb	68 15		78 17	245 55
Allowable thrust load on shaft		N lb	54 12			74 16
Approx. weight (without brake)		kg lb	0.3 0.66	0.4 0.88	0.5 1.10	1.1 2.43
Approx. weight (with brake)		kg lb	0.6 1.32	0.7 1.54	0.8 1.76	16 3.53
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	$kg•m^2 \times 10^{-4}$ $oz•in•s^2 \times 10^{-3}$	0.0085 0.112			0.058 0.822
	Excitation voltage	V	24 VDC ±10%			
	Power consumption	W	6			6.5
	Current consumption	A	0.25			0.27
	Static friction torque	N•m oz•in	0.2 min. 28.3		0.34 min. 48.2	1.5 min. 212.4
	Absorption time	ms	60 max.			100 max.
	Release time	ms	30 max.			40 max.
	Backlash	---	1° (reference value)			
	Rating	---	Continuous			
	Insulation	---	Type F			

■ General Motor Specifications

Cylinder-Style Motors (3,000 RPM)

Item		30 to 750 W	1 to 5 kW
Ambient temperature		Operating: 0 to +40°C (32°F to +104°F) Storage: –20 to +60°C (–4°F to +140°F)	
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	
		EN50082-2	
	Low-voltage directive	IEC60034-1, 5, 8, 9 EN60034-1, 9	
UL standards		UL1004	
cUL standards		cUL C22.2 No.100	

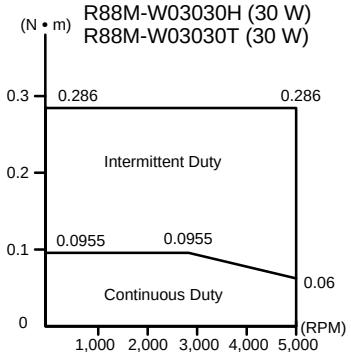
Note: Enclosure ratings do not include the shaft opening.

■ Torque/Speed Characteristics

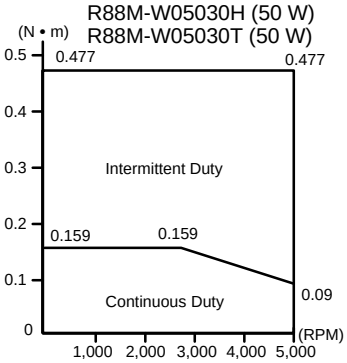
Cylinder-Style Motors with 200-VAC Power Supply (3,000 RPM)

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

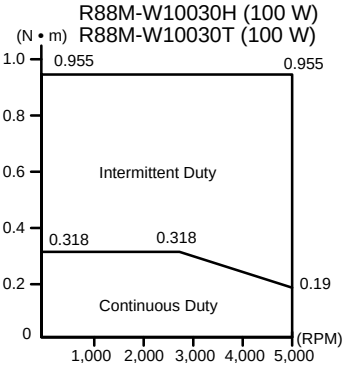
R88M-W03030H (30 W)
R88M-W03030T (30 W)



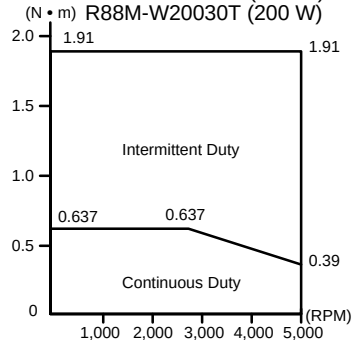
R88M-W05030H (50 W)
R88M-W05030T (50 W)



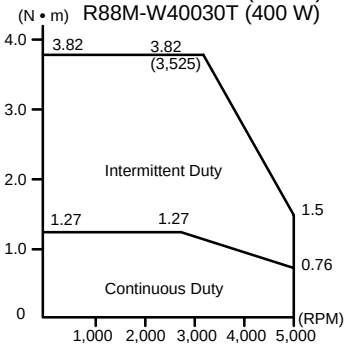
R88M-W10030H (100 W)
R88M-W10030T (100 W)



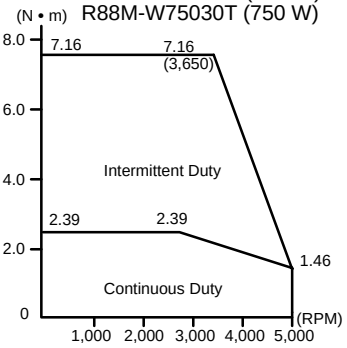
R88M-W20030H (200 W)
R88M-W20030T (200 W)



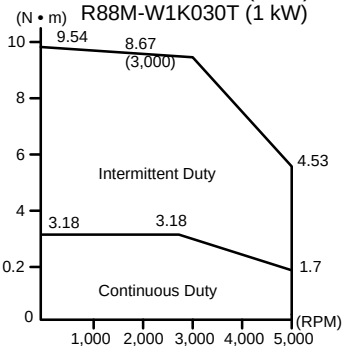
R88M-W40030H (400 W)
R88M-W40030T (400 W)



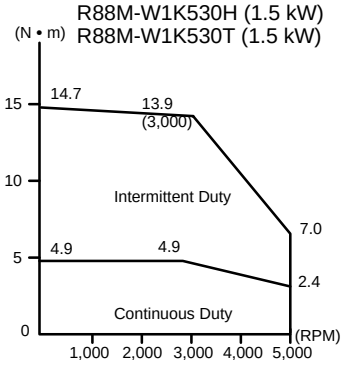
R88M-W75030H (750 W)
R88M-W75030T (750 W)



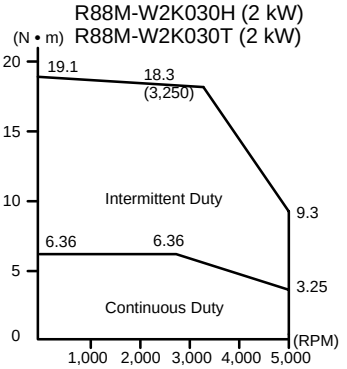
R88M-W1K030H (1 kW)
R88M-W1K030T (1 kW)



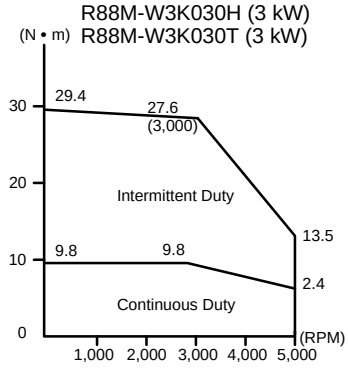
R88M-W1K530H (1.5 kW)
R88M-W1K530T (1.5 kW)



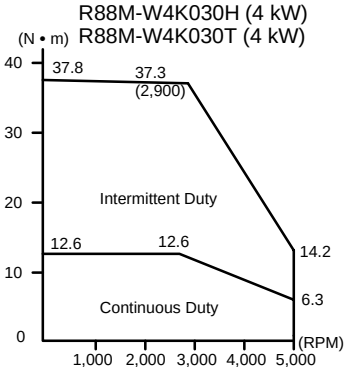
R88M-W2K030H (2 kW)
R88M-W2K030T (2 kW)



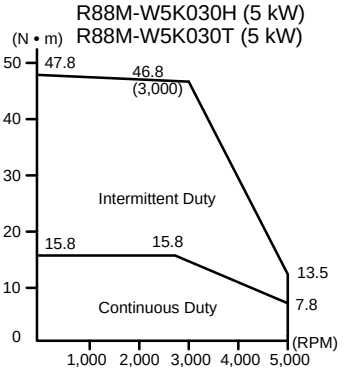
R88M-W3K030H (3 kW)
R88M-W3K030T (3 kW)



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



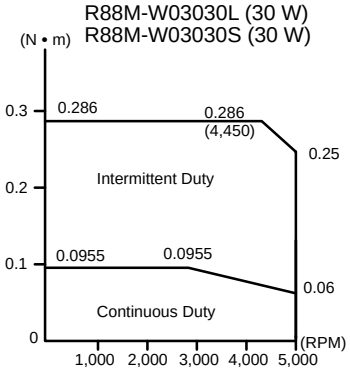
R88M-W5K030H (5 kW)
R88M-W5K030T (5 kW)



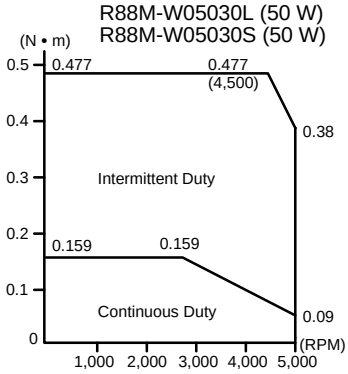
Cylinder-Style Motors with 100-VAC Power Supply (3,000 RPM)

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

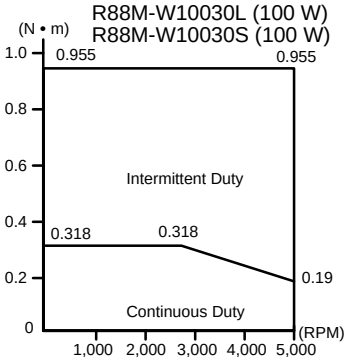
R88M-W03030L (30 W)
R88M-W03030S (30 W)



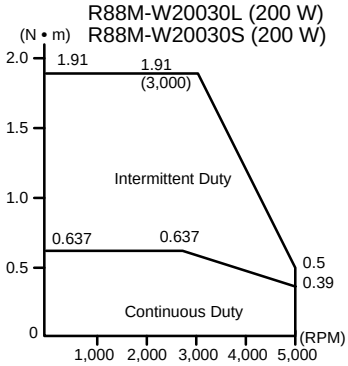
R88M-W05030L (50 W)
R88M-W05030S (50 W)



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



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



■ Performance Specifications

Cylinder-Style Motors (1,000 RPM)

Item		200 VAC							
Servo Motor (R88M-)		W300 10H□	W600 10H□	W900 10H□	W1K2 10H□	W2K0 10H□	W3K0 10H□	W4K0 10H□	W5K5 10H□
Servo Drive (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 lb•in	2.84 25.1	5.68 50.3	8.62 76.3	11.5 101.8	19.1 169.1	28.4 251.4	38.2 338.1	52.6 465.6
Max. momentary torque	N•m lb•in	7.17 63.5	14.1 124.8	19.3 170.8	28.0 247.8	44.0 389.4	63.7 563.8	107 947.0	137 1213
Rated speed	RPM	1,000							
Max. momentary speed	RPM	2,000							
Rated current	A(rms)	3	5.7	7.6	11.6	18.5	24.8	30	43.2
Rotor inertia (without brake)	$kg•m^2 \times 10^{-4}$ $lb•in•s^2 \times 10^{-3}$	7.24 6.4	13.9 12.3	20.5 18.1	31.7 28.1	46.0 40.7	67.5 59.7	89.0 78.8	125 110.6
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 lb	490 110		686 154	1176 264	1470 330.4		1764 396.6	
Allowable thrust load on shaft	N lb	98 22		343 77	490 110			588 132	
Approx. weight (without brake)	kg lb	5.5 12.1	7.6 16.7	9.6 21.2	14 30.9	18 39.7	23 50.7	30 66.1	40 88.2
Approx. weight (with brake)	kg lb	7.5 16.5	9.6 21.2	12 26.5	19 41.9	23.5 51.8	28.5 62.8	35 77.2	45.5 100.3
Encoder resolution	INC	A, B phase: 32,768 pulses/rev.; Z phase: 1 pulse/rev.							
	ABS								
Brake specifications									
Inertia	$kg•m^2 \times 10^{-4}$ $lb•in•s^2 \times 10^{-3}$	2.1 1.9			8.5 7.5				
Excitation voltage	V	24 VDC±10%							
Power consumption	W	9.8			18.5			23.5	
Current consumption	A	0.41			0.77			0.98	
Static friction torque	N•m lb•in	4.41 39.0	12.7 112.4		43.1 381.5			72.6 642.6	
Absorption time	ms	180 ms max.							
Release time	ms	100 ms max.							
Backlash	---	1° max.							
Rating	---	Continuous							
Insulation	---	Type F							

■ General Specifications

Cylinder-Style Motors (1,000 RPM)

Item		300 to 5.5 kW
Ambient temperature		Operating: 0 to +40°C (32°F to +104°F) Storage: –20 to +60°C (–4°F to +140°F)
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
		EN50082-2
	Low-voltage directive	IEC60034-1, 5, 8, 9 EN60034-1, 9
UL standards		UL1004
cUL standards		cUL C22.2 No.100

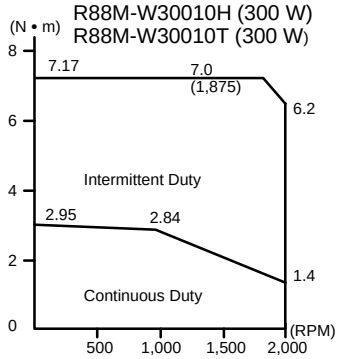
Note: Enclosure ratings do not include the shaft opening.

■ Torque/Speed Characteristics

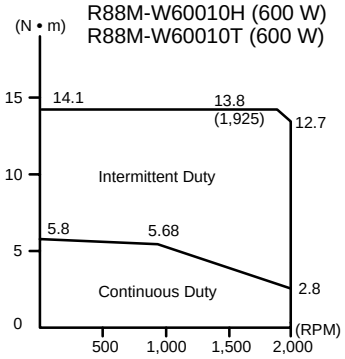
Cylinder-Style Motors with 200-VAC Power Supply (1,000 RPM)

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

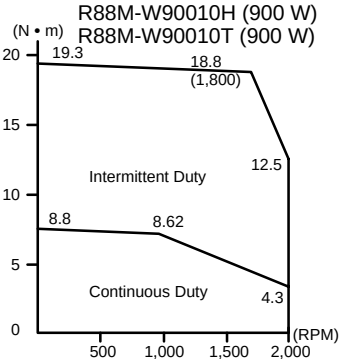
R88M-W30010H (300 W)
R88M-W30010T (300 W)



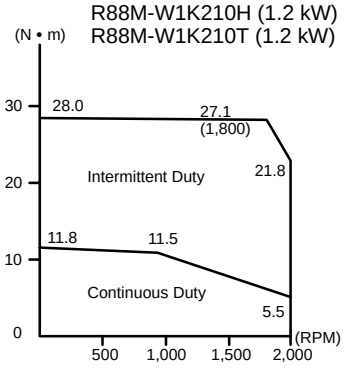
R88M-W60010H (600 W)
R88M-W60010T (600 W)



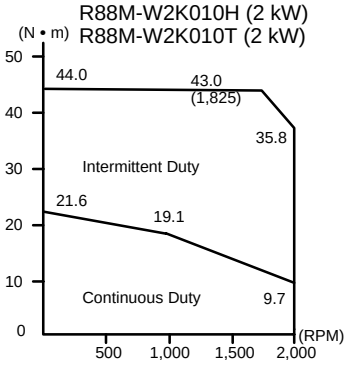
R88M-W90010H (900 W)
R88M-W90010T (900 W)



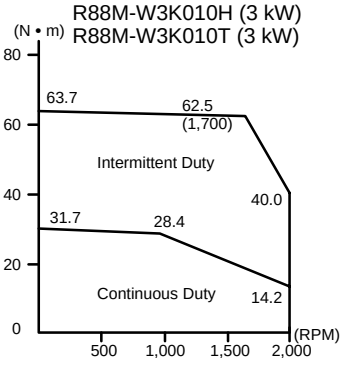
R88M-W1K210H (1.2 kW)
R88M-W1K210T (1.2 kW)



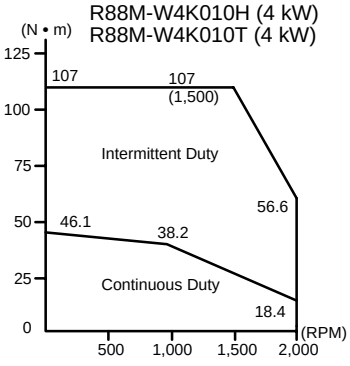
R88M-W2K010H (2 kW)
R88M-W2K010T (2 kW)



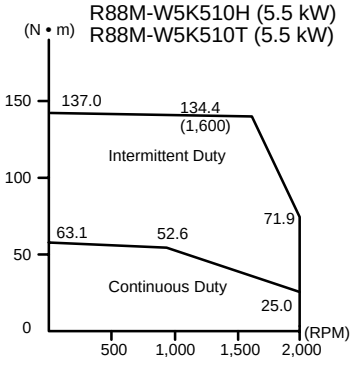
R88M-W3K010H (3 kW)
R88M-W3K010T (3 kW)



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



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



■ Performance Specifications

Slim-Profile Motors (3,000 RPM)

Item		200 VAC					100 VAC	
Servo Motor (R88M-)		WP100 30H□	WP200 30H□	WP400 30H□	WP750 30H□	WP1K5 30H□	WP100 30L□	WP200 30L□
Servo Drive (R88D-)		WT01H	WT02H	WT04H	WT08H	WT15H	WT01HL	WT02HL
Rated output	W	100	200	400	750	1.5k	100	200
Rated torque	N•m oz•in	0.318 45.0	0.637 90.2	1.27 180	2.39 339	4.77 676	0.318 45.0	0.637 90.2
Max. momentary torque	N•m oz•in	0.955 135	1.91 271	3.82 541	7.16 1014	14.3 2025	0.955 135	1.91 271
Rated speed	RPM	3,000					3,000	
Max. momentary speed	RPM	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)	$kg•m^2 \times 10^{-4}$ $oz•in•s^2 \times 10^{-3}$	0.0491 0.695	0.193 2.73	0.331 4.69	2.1 29.7	4.02 56.9	0.0491 0.695	0.193 2.7
Power rate	kW/s	20.6	21.0	49.0	27.1	56.7	20.6	21.0
Applicable load inertia	Multiple	25	15	10			25	12
Allowable radial load on shaft	N lb	78 17	245 55		393 88	490 110	78 17	245 55
Allowable thrust load on shaft	N lb	49 11	68 15		147 33		49 11	68 15
Approx. weight (without brake)	kg lb	0.7 1.54	1.4 3.09	2.1 4.63	4.2 9.26	6.6 14.55	0.7 1.54	1.4 3.09
Approx. weight (with brake)	kg lb	0.9 1.98	1.9 4.2	2.6 5.7	5.7 12.6	8.1 17.9	0.9 1.98	1.9 4.2
Encoder resolution	INC	A, B phase: 2,048 pulses/rev., Z phase: 1 pulse/rev.						
	ABS							
Brake specifications								
Inertia	$kg•m^2 \times 10^{-4}$ $oz•in•s^2 \times 10^{-3}$	0.029 0.411	0.109 1.54		0.875 12.4		0.029 0.411	0.109 1.54
Excitation voltage	V	24 VDC±10%					24 VDC±10%	
Power consumption	W	6	5	7.6	7.5	10	6	5
Current consumption	A	0.25	0.21	0.32	0.31	0.42	0.25	0.21
Static friction torque	N•m oz•in	0.4 min. 56.6	0.9 min. 127.5	1.9 min. 269.1	3.5 min. 495.6	7.1 min. 1005.5	0.4 min. 56.6	0.9 min. 127.5
Absorption time	ms	20 ms max.					20 ms max.	
Release time	ms	40 ms max.					40 ms max.	
Backlash	---	1° max.					1° max.	
Rating	---	Continuous					Continuous	
Insulation	---	Type F					Type F	

■ General Motor Specifications

Slim-Profile Motors (3,000 RPM)

Item		100 W to 1.5 kW
Ambient temperature		Operating: 0 to +40°C (32°F to +104°F) Storage: –20 to +60°C (–4°F to +140°F)
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
		EN50082-2
	Low-voltage directive	IEC60034-1, 5, 8, 9 EN60034-1, 9
UL standards		UL1004
cUL standards		cUL C22.2 No.100

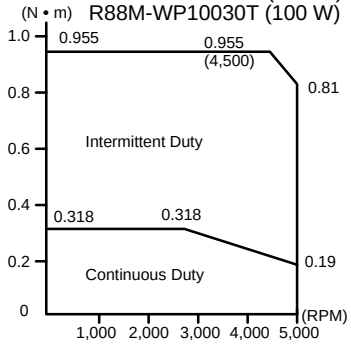
Note: Enclosure ratings do not include the shaft opening.

■ Torque/Speed Characteristics

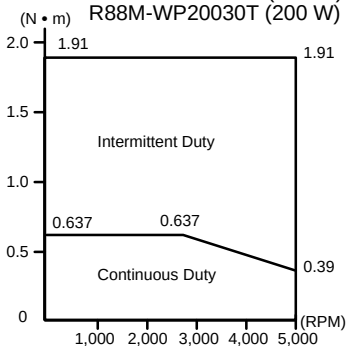
Slim-Profile Motors with 200-VAC Power Supply (3,000 RPM)

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

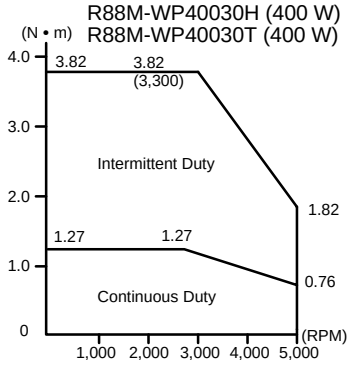
R88M-WP10030H (100 W)
R88M-WP10030T (100 W)



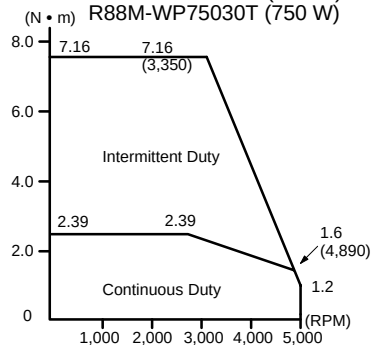
R88M-WP20030H (200 W)
R88M-WP20030T (200 W)



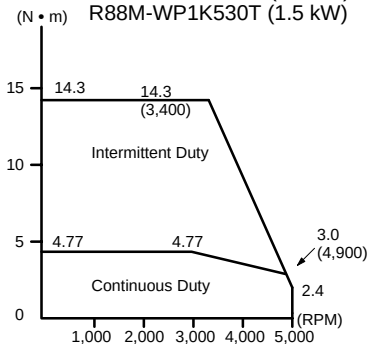
R88M-WP40030H (400 W)
R88M-WP40030T (400 W)



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

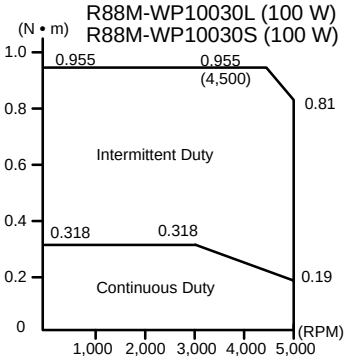


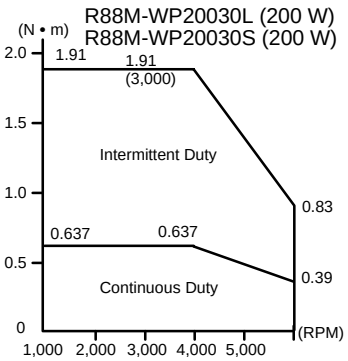
R88M-WP1K530H (1.5 kW)
R88M-WP1K530T (1.5 kW)



Slim-Profile Motors with 100-VAC Power Supply (3,000 RPM)

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





■ Performance Specifications

Servo Drives

Item			200 VAC												
		Servo Drive (R88D–)	WTA3 H	WTA5 H	WT01 H	WT02 H	WT04 H	WT05 H	WT08 H	WT10 H	WT15 H	WT20 H	WT30 H	WT50 H	WT60 H
Maximum Servo Motor 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
Continuous output current (O-P)			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
Momentary maximum output current (O-P)			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
Weight			0.8 kg (1.76 lb)				1.1 kg (2.43 lb)	1.7 kg (3.75 lb)		1.7 kg (3.75 lb)	2.8 kg (6.17 lb)	3.8 kg (8.38 lb)		5.5 kg (12.13 lb)	15 kg (33.07 lb)
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							
		Control circuits	Single-phase 200 to 230 VAC, +10% to –15%, 50/60 Hz												
Control method			All-digital servo												
Speed 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 speed)												
		Voltage fluctuation rate	0% at rated voltage ±10% (at rated speed)												
		Temperature fluctuation rate	±0.1% max. at 25 ± 25°C (at rated speed)												
		Frequency characteristics	400 Hz (at the same load inertia as the rotor inertia)												
		Torque control repeatability	±2%												
		Acceleration/deceleration time setting	0 to 10 s (acceleration and deceleration can be 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 RPM												
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 RPM												
		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.

Servo Drives

Item			100 VAC			
		Servo Drive (R88D–)	WTA3HL	WTA5HL	WT01HL	WT02HL
Maximum Servo Motor output			30 W	50 W	100 W	200 W
Continuous output current (O-P)			0.66 A	0.95 A	2.4 A	3.0 A
Momentary maximum output current (O-P)			2.0 A	2.9 A	7.2 A	9.0 A
Weight			0.8 kg (1.76 lb)			1.1 kg (2.43 lb)
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 speed)			
		Voltage fluctuation rate	0% at rated voltage ±10% (at rated speed)			
		Temperature fluctuation rate	±0.1% max. at 25 ± 25°C (at rated speed)			
		Frequency characteristics	400 Hz (at the same load inertia as the rotor inertia)			
		Torque control repeatability	±2%			
		Acceleration/deceleration time setting	0 to 10 s (acceleration and deceleration can be 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 RPM			
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 RPM			
		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 (32°F to +131°F) Storage: –20 to +85°C (32°F to +185°F)
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
		EN50082-2
	Low-voltage directive	EN50178
UL standards		UL508C
cUL standards		cUL C22.2 No. 14

■ AC Servo Motors

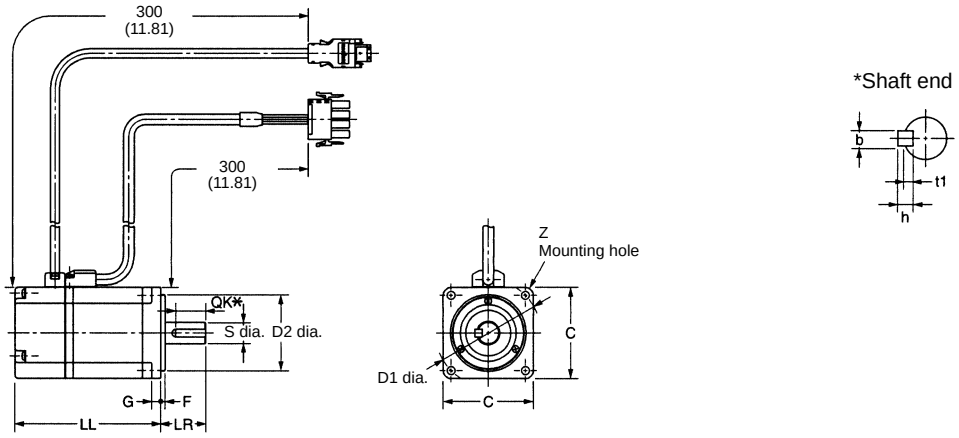
Cylinder-Style Motors without Brakes (3,000 RPM)

200 VAC: 30 W/50 W/100 W/200 W/400 W/750 W

R88M-W03030H (-S1)/W05030H (-S1)/W10030H (-S1)/W20030H (-S1)/W40030H (-S1)/W75030H (-S1)
R88M-W03030T (-S1)/W05030T (-S1)/W10030T (-S1)/W20030T (-S1)/W40030T (-S1)/W75030T (-S1)

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

R88M-W03030L (-S1)/W05030L (-S1)/W10030L (-S1)/W20030L (-S1)
R88M-W03030S (-S1)/W05030S (-S1)/W10030S (-S1)/W20030S (-S1)



Unit: mm (inch)

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

Dimensions / Model	LL	LR	Flange surface						Shaft end				
			C	D1	D2	F	G	Z	S	OK*	b*	h*	t1*
R88M-W03030□	69.5 (2.74)	25 (0.98)	40 (1.57)	46 (1.81)	30 (1.18) See Note 1	2.5 (0.10)	5 (0.20)	Two, 4.3 dia. (0.17)	6 (0.24) See Note 3	14 (0.55)	2 (0.08)	2 (0.08)	1.2 (0.05)
R88M-W05030□	77 (3.03)												
R88M-W10030□	94.5 (3.72)								8 (0.31) See Note 4		3 (0.12)	3 (0.12)	1.8 (0.07)
R88M-W20030□	96.5 (3.80)	30 (1.18)	60 (2.36)	70 (2.76)	50 (1.97) See Note 1	3 (0.12)	6 (0.24)	Four, 5.5 dia. (0.22)	14 (0.55) See Note 5	20 (0.79)	5 (0.20)	5 (0.20)	3 (0.12)
R88M-W40030□	124.5 (4.90)												
R88M-W75030□	145 (5.71)	40 (1.57)	80 (3.15)	90 (3.54)	70 (2.76) See Note 2	3 (0.12)	8 (0.31)	Four, 7dia. (0.28)	16 (0.63) See Note 5	30 (1.18)			

Note: 1. $^{0}_{-25}$ Micron tolerance for the item indicated
Note: 2. $^{0}_{-30}$ Micron tolerance for the item indicated
Note: 3. $^{0}_{-8}$ Micron tolerance for the item indicated
Note: 4. $^{0}_{-9}$ Micron tolerance for the item indicated
Note: 5. $^{0}_{-11}$ Micron tolerance for the item indicated

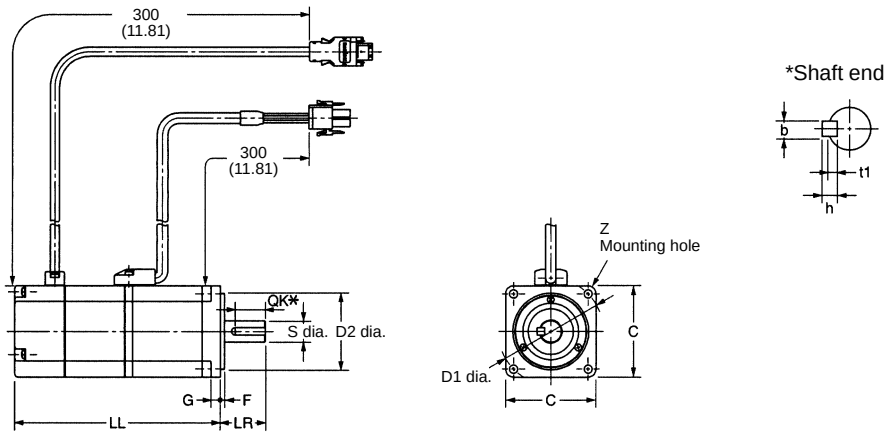
Cylinder-Style Motors with Brakes (3,000 RPM)

200 VAC: 30 W/50 W/100 W/200 W/400 W/750 W

R88M-W03030H-B (S1)/W05030H-B (S1)/W10030H-B (S1)/W20030H-B (S1)/W40030H-B (S1)/W75030H-B (S1)
R88M-W03030T-B (S1)/W05030T-B (S1)/W10030T-B (S1)/W20030T-B (S1)/W40030T-B (S1)/W75030T-B(S1)

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

R88M-W03030L-B (S1)/W05030L-B (S1)/W10030L-B (S1)/W20030L-B (S1)
R88M-W03030S-B (S1)/W05030S-B (S1)/W10030S-B (S1)/W20030S-B (S1)



Unit: mm (inch)

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

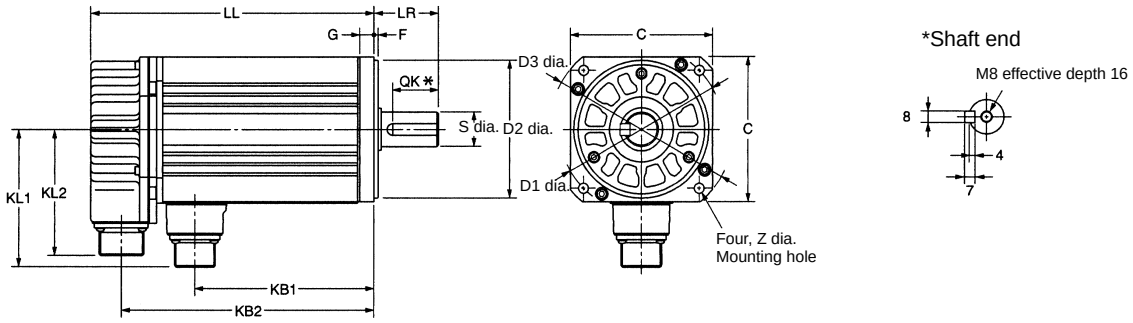
Dimensions / Model	LL	LR	Flange surface						Shaft end				
			C	D1	D2	F	G	Z	S	OK*	b*	h*	t1*
R88M-W03030□	101 (3.98)	25 (0.98)	40 (1.57)	46 (1.81)	30 (1.18) See Note 1	2.5 (0.10)	5 (0.20)	Two, 4.3 dia. (0.17)	6 (0.24) See Note 3	14 (0.55)	2 (0.08)	2 (0.08)	1.2 (0.05)
R88M-W05030□	108.5 (4.27)												
R88M-W10030□	135 (5.31)								8 (0.31) See Note 4		3 (0.12)	3 (0.12)	1.8 (0.07)
R88M-W20030□	136 (5.35)	30 (1.18)	60 (2.36)	70 (2.76)	50 (1.97) See Note 1	3 (0.12)	6 (0.24)	Four, 5.5 dia. (0.22)	14 (0.55) See Note 5	20 (0.79)	5 (0.20)	5 (0.20)	3 (0.12)
R88M-W40030□	164 (6.46)												
R88M-W75030□	189.5 (7.46)	40 (1.57)	80 (3.15)	90 (3.54)	70 (2.76) See Note 2	3 (0.12)	8 (0.31)	Four, 7 dia. (0.28)	16 (0.63) See Note 5	30 (1.18)			

Note: 1. $^{0}_{-25}$ Micron tolerance for the item indicated
Note: 2. $^{0}_{-30}$ Micron tolerance for the item indicated
Note: 3. $^{0}_{-8}$ Micron tolerance for the item indicated
Note: 4. $^{0}_{-9}$ Micron tolerance for the item indicated
Note: 5. $^{0}_{-11}$ Micron tolerance for the item indicated

Cylinder-Style Motors without Brakes (3,000 RPM)

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



Unit: mm (inch)

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

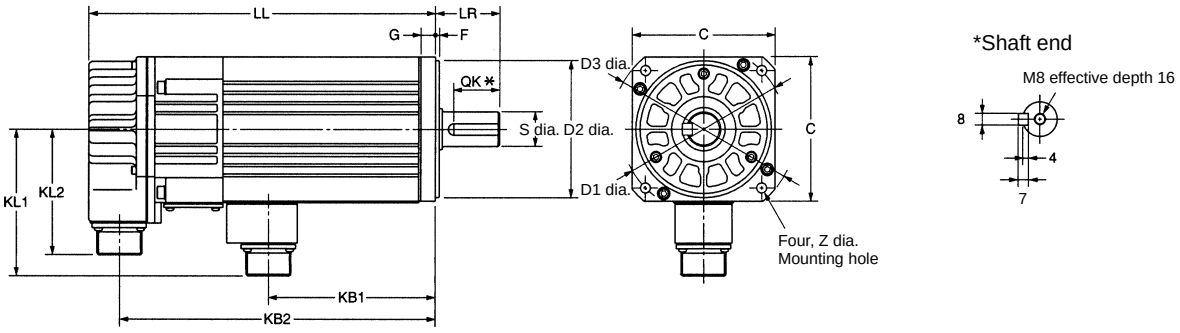
Dimensions / Model	LL	LR	KB1	KB2	KL1	KL2	Flange surface							Shaft end	
							C	D1	D2	D3	F	G	Z	S	OK*
R88M-W1K030□	149 (5.87)	45 (1.77)	76 (2.99)	128 (5.04)	96 (3.78)	88 (3.46)	100 (3.94)	115 (4.53)	95 (3.74) See Note 1	130 (5.12)	3 (0.12)	10 (0.39)	7 (0.28)	24 (0.94) See Note 2	32 (1.26)
R88M-W1K530□	175 (6.89)		102 (4.02)	154 (6.06)											
R88M-W2K030□	198 (7.80)		125 (4.92)	177 (6.97)											
R88M-W3K030□	199 (7.83)	63 (2.48)	124 (4.88)	178 (7.01)	114 (4.49)	88 (3.46)	130 (5.12)	145 (5.71)	110 (4.33) See Note 1	165 (6.50)	6 (0.24)	12 (0.47)	9 (0.35)	28 (1.10) See Note 2	50 (1.97)
R88M-W4K030□	236 (9.29)		161 (6.34)	215 (8.46)											
R88M-W5K030□	276 (10.87)		201 (7.91)	255 (10.04)											

Note: 1. $^{0}_{-35}$ Micron tolerance for the item indicated
Note: 2. $^{0}_{-13}$ Micron tolerance for the item indicated

Cylinder-Style Motors with Brakes (3,000 RPM)

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

R88M-W1K030H-BS2/W1K530H-BS2/W2K030H-BS2/W3K030H-BS2/W4K030H-BS2/W5K030H-BS2
R88M-W1K030T-BS2/W1K530T-BS2/W2K030T-BS2/W3K030T-BS2/W4K030T-BS2/W5K030T-BS2



Unit: mm (inch)

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

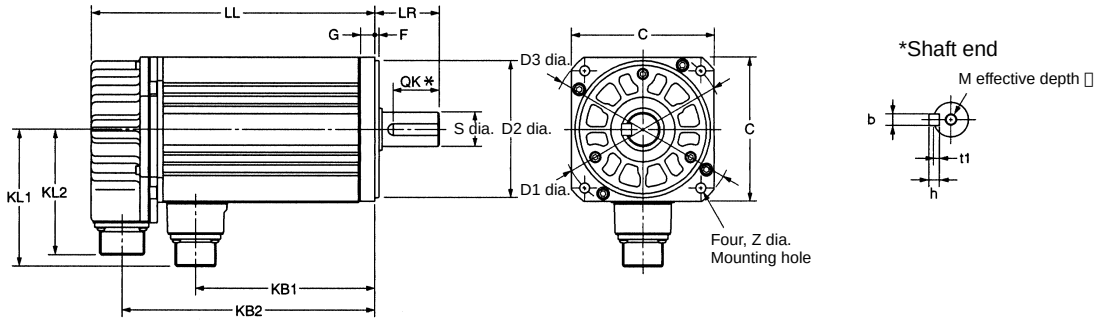
Dimensions / Model	LL	LR	KB1	KB2	KL1	KL2	Flange surface							Shaft end	
							C	D1	D2	D3	F	G	Z	S	OK*
R88M-W1K030□	193 (7.60)	45 (1.77)	67 (2.64)	171 (6.73)	102 (4.02)	88 (3.46)	100 (3.94)	115 (4.53)	95 (3.74) See Note 1	130 5.12	3 (0.12)	10 (0.39)	7 (0.28)	24 (0.94) See Note 2	32 (1.26)
R88M-W1K530□	219 (8.62)		93 (3.66)	197 (7.76)											
R88M-W2K030□	242 (9.53)		116 (4.57)	220 (8.66)											
R88M-W3K030□	237 (9.33)	63 (2.48)	114 (4.49)	216 (8.50)	119 (4.69)	88 (3.46)	130 (5.12)	145 (5.71)	110 (4.33) See Note 1	165 (6.50)	6 (0.24)	12 (0.47)	9 (0.35)	28 (1.10) See Note 2	50 (1.97)
R88M-W4K030□	274 (10.79)		151 (5.94)	253 (9.96)											
R88M-W5K030□	314 (12.36)		191 (7.52)	293 (11.54)											

Note: 1. $^{0}_{-35}$ Micron tolerance for the item indicated
Note: 2. $^{0}_{-13}$ Micron tolerance for the item indicated

Cylinder-Style Motors without Brakes (1,000 RPM)

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



Unit: mm (inch)

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

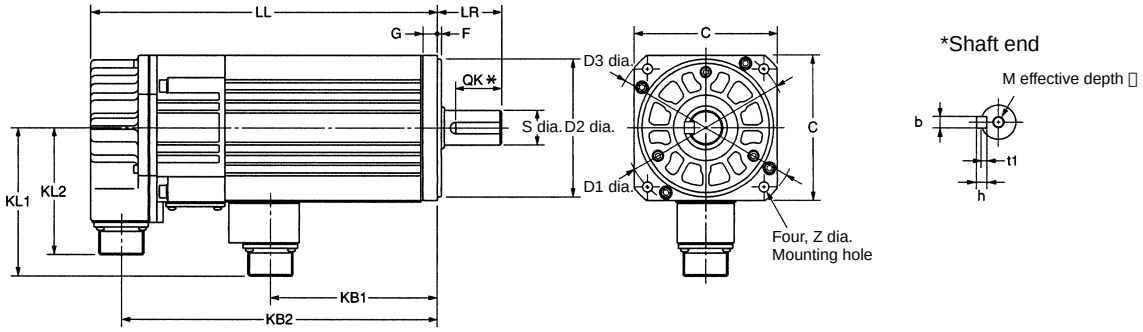
Dimensions / Model	LL	LR	KB1	KB2	KL1	KL2	Flange surface							Shaft end						
							C	D1	D2	D3	F	G	Z	S	QK*	b*	h*	t1*	m	□
R88M-W30010□	138 (5.43)	58 (2.28)	65 (2.56)	117 (4.61)	109 (4.29)	88 (3.46)	130 (5.12)	145 (5.71)	110 (4.33) See Note 1	165 (6.50)	6 (0.24)	12 (0.47)	9 (0.35)	19 (0.75) See Note 3	25 (0.98)	5 (0.20)	5 (0.20)	3 (0.12)	M5 (0.20)	12 (0.47)
R88M-W60010□	161 (6.34)		88 (3.46)	140 (5.51)																
R88M-W90010□	185 (7.28)		112 (4.41)	164 (6.46)										22 (0.87) See Note 3		6 (0.24)	6 (0.24)	3.5 (0.14)		
R88M-W1K210□	166 (6.54)	79 (3.11)	89 (3.50)	144 (5.67)	140 (5.51)	88 (3.46)	180 (7.09)	200 (7.87)	114.3 (4.5) See Note 2	230 (9.06)	3.2 (0.13)	18 (0.71)	13.5 (0.53)	35 See Note 4	60 (2.36)	10 (0.39)	8 (0.31)	5 (0.20)	M12 (0.47)	25 (0.98)
R88M-W2K010□	192 (7.56)		115 (4.53)	170 (6.69)																
R88M-W3K010□	226 (8.90)		149 (5.87)	204 (8.03)																

Note: 1. $^{0}_{-35}$ Micron tolerance for the item indicated
Note: 2. $^{0}_{-0.02}$ Micron tolerance for the item indicated
Note: 3. $^{0}_{-13}$ Micron tolerance for the item indicated
Note: 4. $^{+0.01}_{0}$ Micron tolerance for the item indicated

Cylinder-Style Motors with Brakes (1,000 RPM)

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

R88M-W30010H-BS2/W60010H-BS2/W90010H-BS2/W1K210H-BS2/W2K010H-BS2/W3K010H-BS2
R88M-W30010T-BS2/W60010T-BS2/W90010T-BS2/W1K210T-BS2/W2K010T-BS2/W3K010T-BS2



Unit: mm (inch)

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

Dimensions / Model	LL	LR	KB1	KB2	KL1	KL2	Flange surface						
							C	D1	D2	D3	F	G	Z
R88M-W30010□	176 (6.93)	58 (2.28)	56 (2.20)	154 (6.06)	120 (4.72)	88 (3.46)	130 (5.12)	145 (5.71)	110 (4.33) See Note 1	165 (6.50)	6 (0.24)	12 (0.47)	9 (0.35)
R88M-W60010□	199 (7.83)		79 (3.11)	177 (6.97)									
R88M-W90010□	223 (8.78)		103 (4.06)	201 (7.91)									
R88M-W1K210□	217 (8.54)	79 (3.11)	79 (3.11)	195 (7.68)	146 (5.75)	88 (3.46)	180 (7.09)	200 (7.87)	114.3 (4.5) See Note 2	230 (9.06)	3.2 (0.13)	18 (0.71)	13.5 (0.53)
R88M-W2K010□	243 (9.57)		105 (4.13)	221 (8.70)									
R88M-W3K010□	277 (10.91)		139 (5.47)	255 (10.04)									

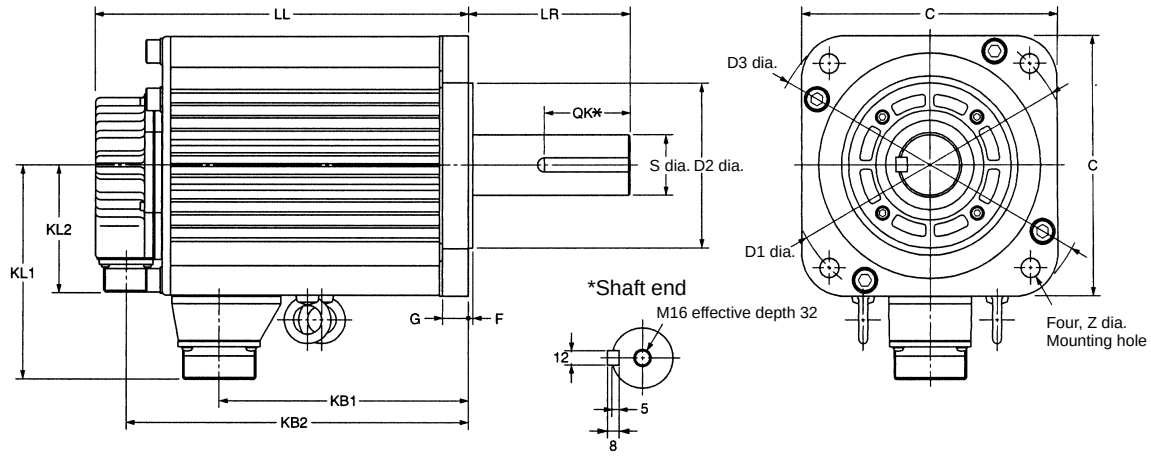
Dimensions / Model	Shaft end						
	S	QK*	b*	h*	t1*	m	□
R88M-W30010□	19 (0.75) See Note 3	25 (0.98)	5 (0.20)	5 (0.20)	3 (0.12)	M5 (0.20)	12 (0.47)
R88M-W60010□							
R88M-W90010□	22 (0.87) See Note 3		6 (0.24)	6 (0.24)	3.5 (0.14)		
R88M-W1K210□	35 (1.38) See Note 4	60 (2.36)	10 (0.39)	8 (0.31)	5 (0.20)	M12 (0.47)	25 (0.98)
R88M-W2K010□							
R88M-W3K010□							

Note: 1. $^{0}_{-35}$ Micron tolerance for the item indicated
Note: 2. $^{0}_{-0.025}$ Micron tolerance for the item indicated
Note: 3. $^{0}_{-13}$ Micron tolerance for the item indicated
Note: 4. $^{+0.01}_{0}$ Micron tolerance for the item indicated

Cylinder-Style Motors without Brakes (1,000 RPM)

200 VAC: 4 kW/5.5 kW

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



Unit: mm (inch)

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

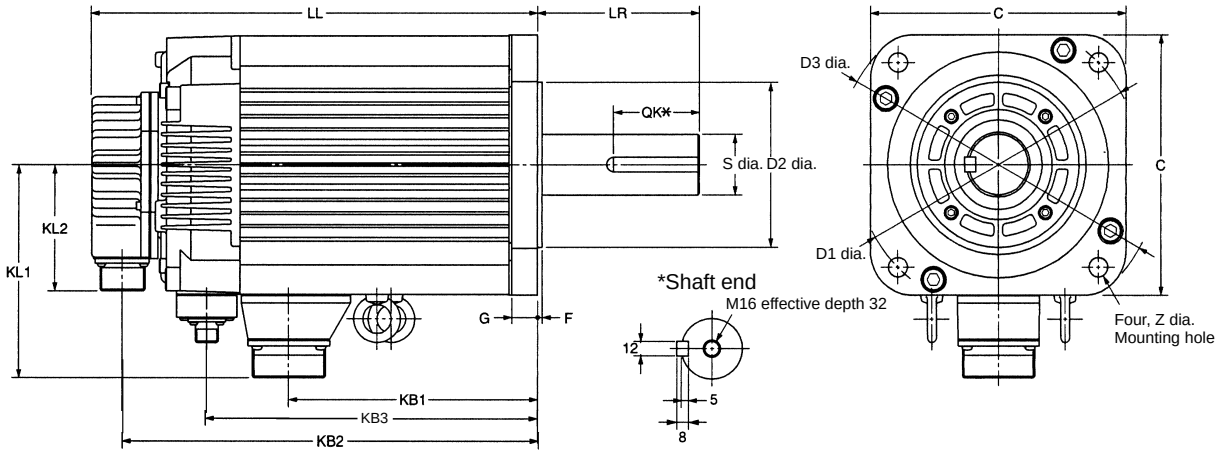
Dimensions / Model	LL	LR	KB1	KB2	KL1	KL2	Flange surface							Shaft end	
							C	D1	D2	D3	F	G	Z	S	QK*
R88M-W4K010□	260 (10.24)	113 (4.45)	174 (6.85)	238 (9.37)	150 (5.91)	88 (3.46)	180 (7.09)	220 (8.66)	114.3 (4.5) See Note 1	230 (9.06)	3.2 (0.13)	18 (0.71)	13.5 (0.53)	42 (1.65) See Note 2	90 (3.54)
R88M-W5K010□	334 (13.15)		248 (9.76)	312 (12.28)											

Note: 1. $^{0}_{-0.025}$ Micron tolerance for the item indicated
Note: 2. $^{0}_{-16}$ Micron tolerance for the item indicated

Cylinder-Style Motors with Brakes (1,000 RPM)

200 VAC: 4 kW/5.5 kW

R88M-W4K010H-BS2/W5K510H-BS2
R88M-W4K010T-BS2/W5K510T-BS2



Unit: mm (inch)

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

Dimensions / Model	LL	LR	KB1	KB2	KB3	KL1	KL2	Flange surface						Shaft end	
								C	D1	D2	F	G	Z	S	QK*
R88M-W4K010□	311 (12.24)	113 (4.45)	174 (6.85)	289 (11.38)	231 (9.09)	150 (5.91)	88 (3.46)	180 (7.09)	200 (8.66)	114.3 (4.5) See Note 1	3.2 (0.13)	18 (0.71)	13.5 (0.53)	42 (1.65) See Note 2	90 (3.54)
R88M-W5K510□	385 (15.16)		248 (9.76)	363 (14.29)	305 (12.01)										

Note: 1. $^{0}_{-0.025}$ Micron tolerance for the item indicated
Note: 2. $^{0}_{-16}$ Micron tolerance for the item indicated

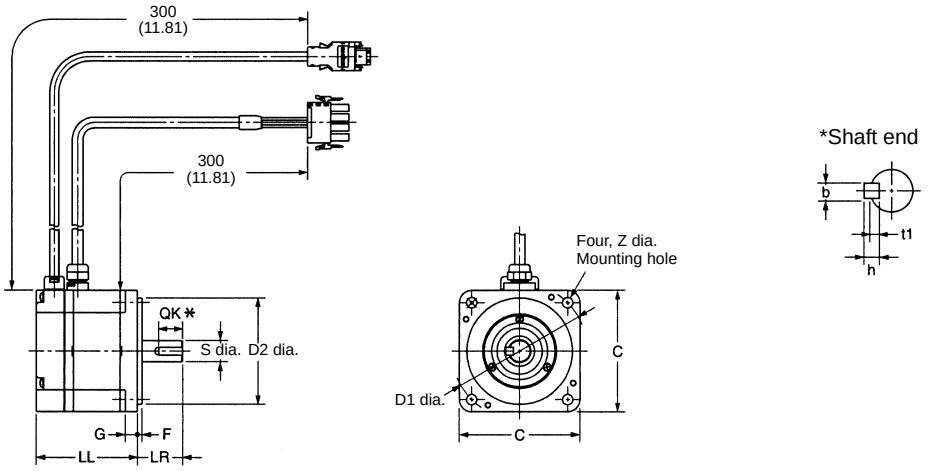
Slim-Profile Motors without Brakes (3,000 RPM)

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 / Model	LL	LR	Flange surface						Shaft end				
			C	D1	D2	F	G	Z	S	QK*	b*	h*	t1*
R88M-WP10030□	62 (2.44)	25 (0.98)	60 (2.36)	70 (2.76)	50 (1.97) See Note 1	3 (0.12)	6 (0.24)	5.5 (0.22)	8 (0.31) See Note 3	14 (0.55)	3 (0.12)	3 (0.12)	1.8 (0.07)
R88M-WP20030□	67 (2.64)	30 (1.18)	80 (3.15)	90 (3.54)	70 (2.76) See Note 1	3 (0.12)	8 (0.31)	7 (0.28)	14 (0.55) See Note 4	16 (0.63)	5 (0.20)	5 (0.20)	3 (0.12)
R88M-WP40030□	87 (3.43)												
R88M-WP75030□	86.5 (3.41)	40 (1.57)	120 (4.72)	145 (5.71)	110 (4.33) See Note 2	3.5 (0.14)	10 (0.39)	10 (0.39)	16 (0.63) See Note 4	22 (0.87)			
R88M-WP1K530□	114.5 (4.51)								19 (0.75) See Note 5		6 (0.24)	6 (0.24)	3.5 (0.14)

Note: 1. $^{0}_{-30}$ Micron tolerance for the item indicated
Note: 2. $^{0}_{-35}$ Micron tolerance for the item indicated
Note: 3. $^{0}_{-9}$ Micron tolerance for the item indicated
Note: 4. $^{0}_{-11}$ Micron tolerance for the item indicated
Note: 5. $^{0}_{-13}$ Micron tolerance for the item indicated

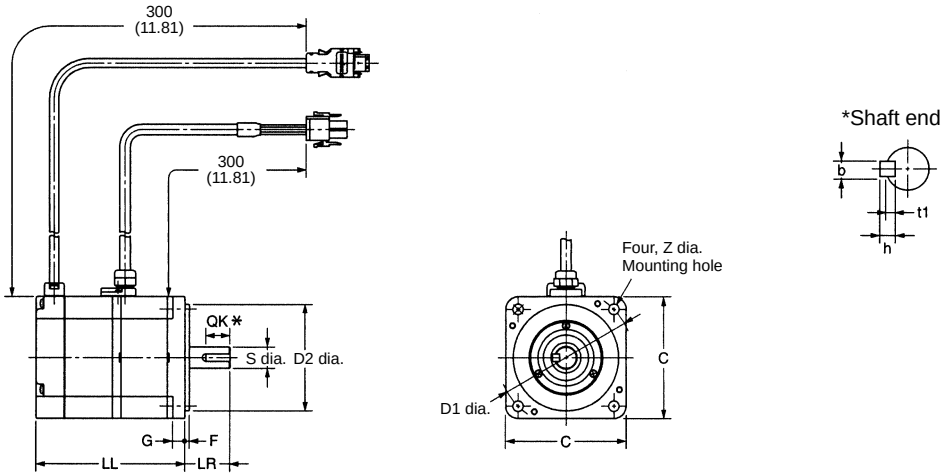
Slim-Profile Motors with Brakes (3,000 RPM)

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 / Model	LL	LR	Flange surface						Shaft end				
			C	D1	D2	F	G	Z	S	QK*	b*	h*	t1*
R88M-WP10030□	91 (3.58)	25 (0.98)	60 (2.36)	70 (2.76)	50 (1.97) See Note 1	3 (0.12)	6 (0.24)	5.5 (0.22)	8 (0.31) See Note 3	14 (0.55)	3 (0.12)	3 (0.12)	1.8 (0.07)
R88M-WP20030□	98.5 (3.88)	30 (1.18)	80 (3.15)	90 (3.54)	70 (2.76) See Note 1	3 (0.12)	8 (0.31)	7 (0.28)	14 (0.55) See Note 4	16 (0.63)	5 (0.20)	5 (0.20)	3 (0.12)
R88M-WP40030□	118.5 (4.67)												
R88M-WP75030□	120 (4.72)	40 (1.57)	120 (4.72)	145 (5.71)	110 (4.33) See Note 2	3.5 (0.14)	10 (0.39)	10 (0.39)	16 (0.63) See Note 4	22 (0.87)			
R88M-WP1K530□	148 (5.83)								19 (0.75) See Note 5		6 (0.24)	6 (0.24)	3.5 (0.14)

Note: 1. $^{0}_{-30}$ Micron tolerance for the item indicated
Note: 2. $^{0}_{-35}$ Micron tolerance for the item indicated
Note: 3. $^{0}_{-9}$ Micron tolerance for the item indicated
Note: 4. $^{0}_{-11}$ Micron tolerance for the item indicated
Note: 5. $^{0}_{-13}$ Micron tolerance for the item indicated

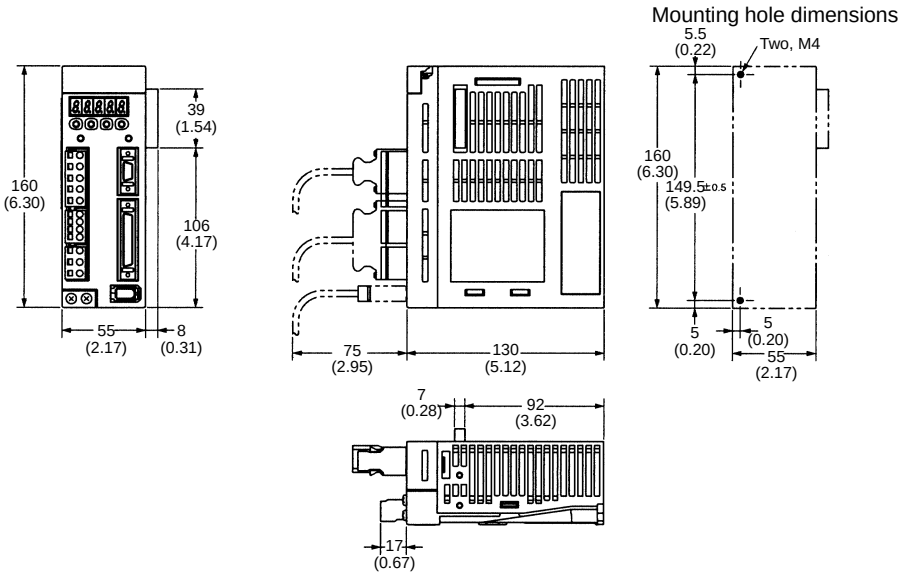
■ AC Servo Drives

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

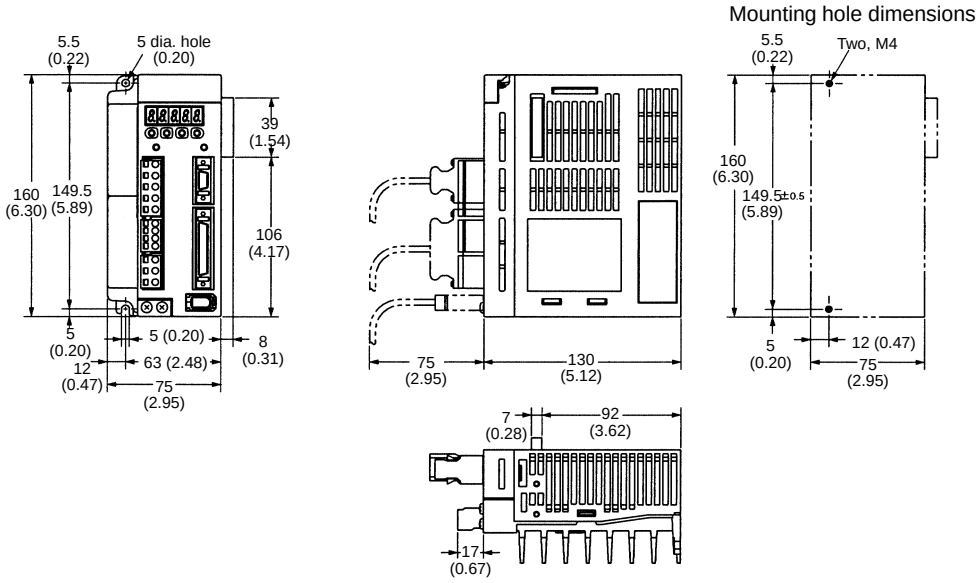


200 VAC: 400 W

R88D-WT04H

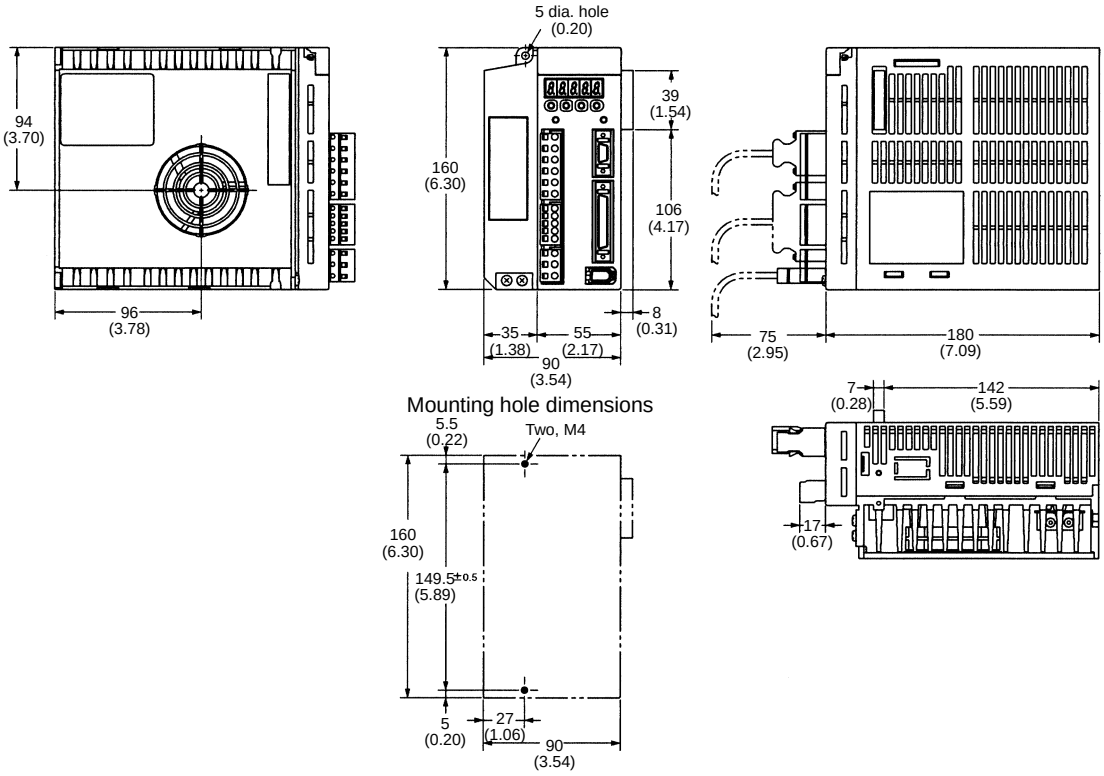
100 VAC: 200 W

R88D-WT02HL



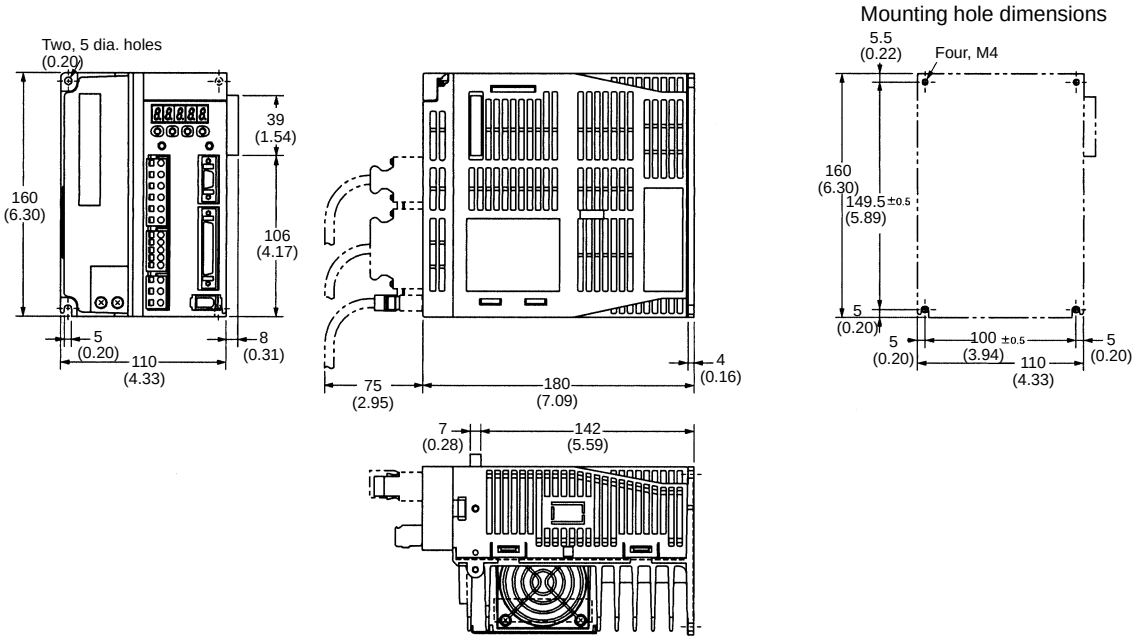
200 VAC: 500 W/750 W/1 kW

R88D-WT05H/WT08H/WT10H



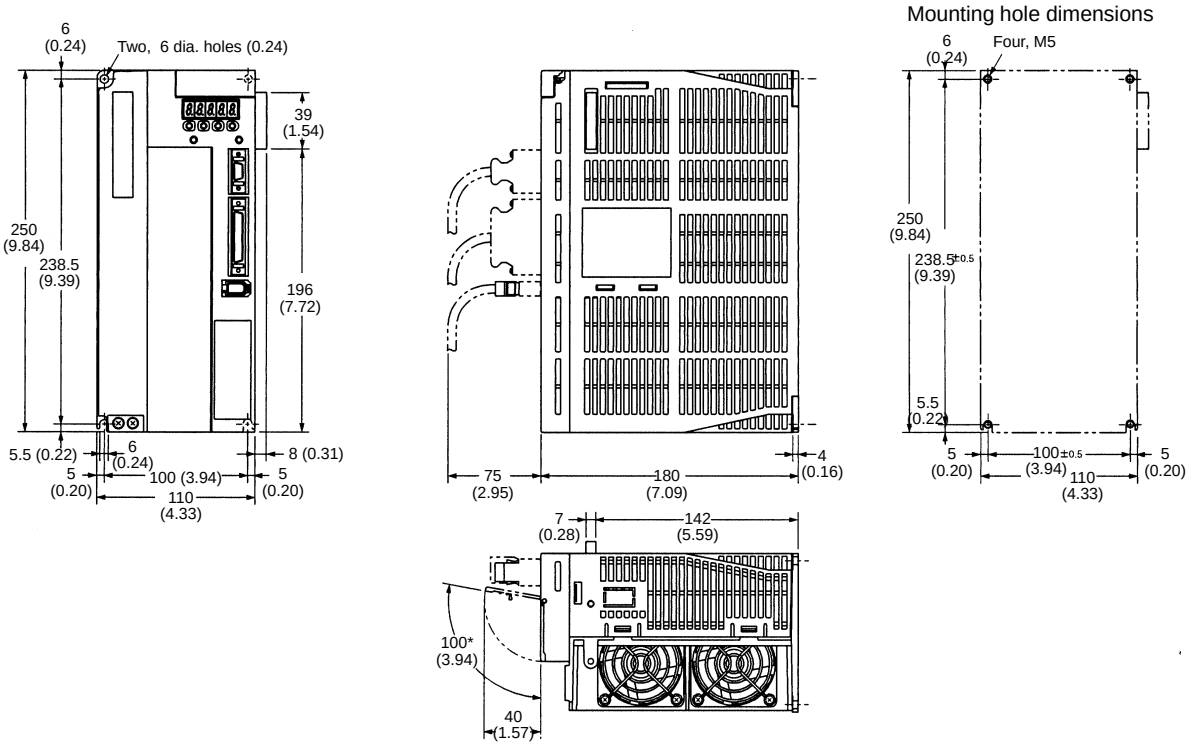
200 VAC: 1.5 kW

R88D-WT15H



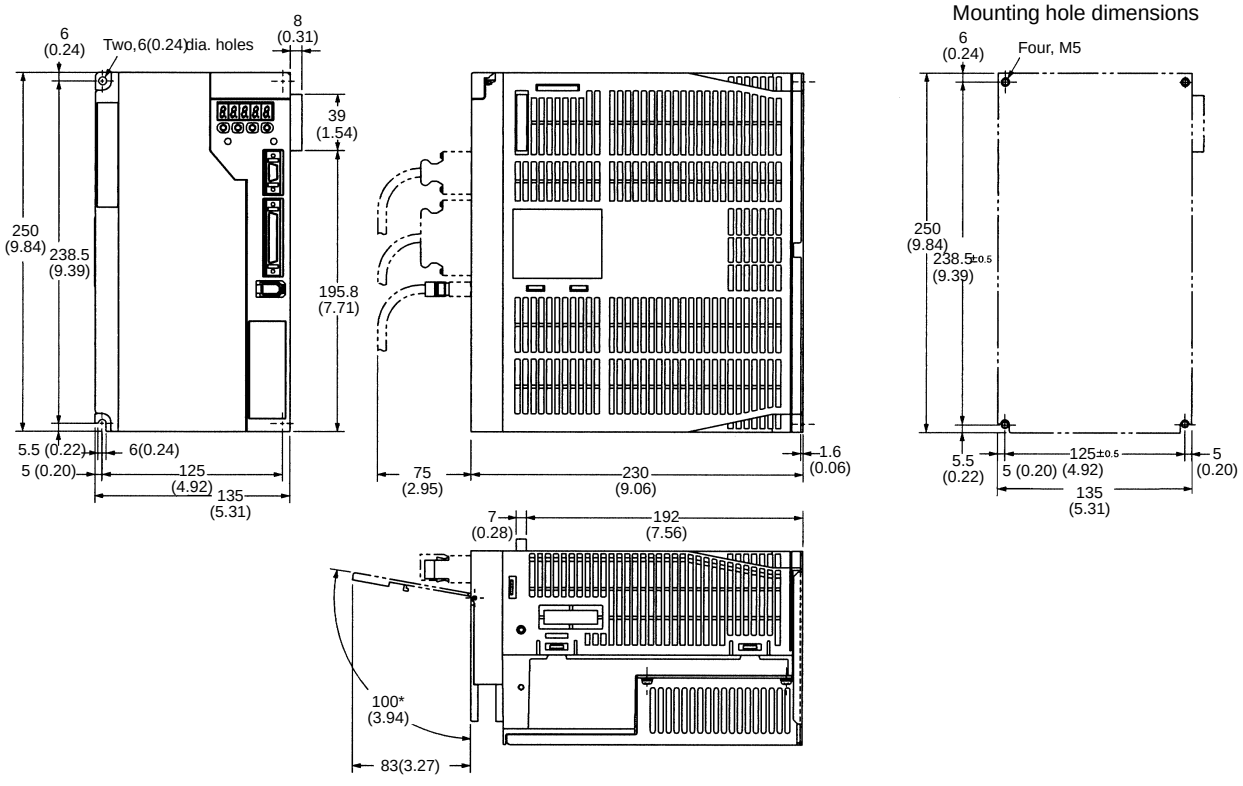
200 VAC: 2 kW/3 kW

R88D-WT20H/WT30H



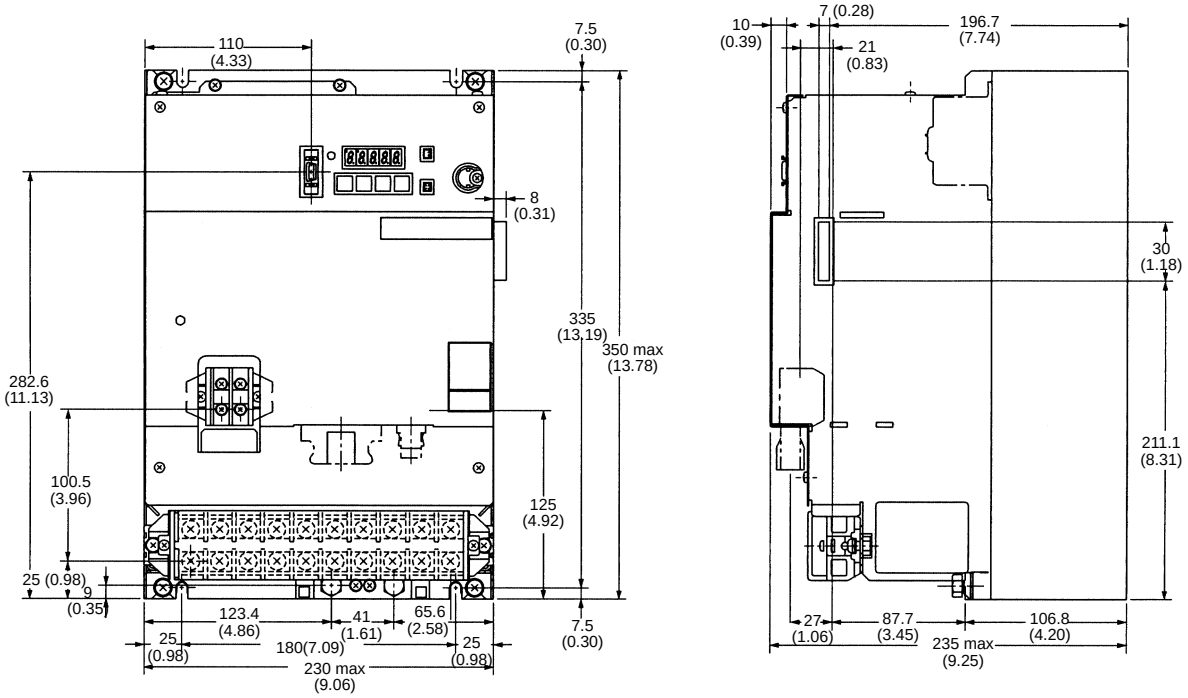
200 VAC: 5 kW

R88D-WT50H

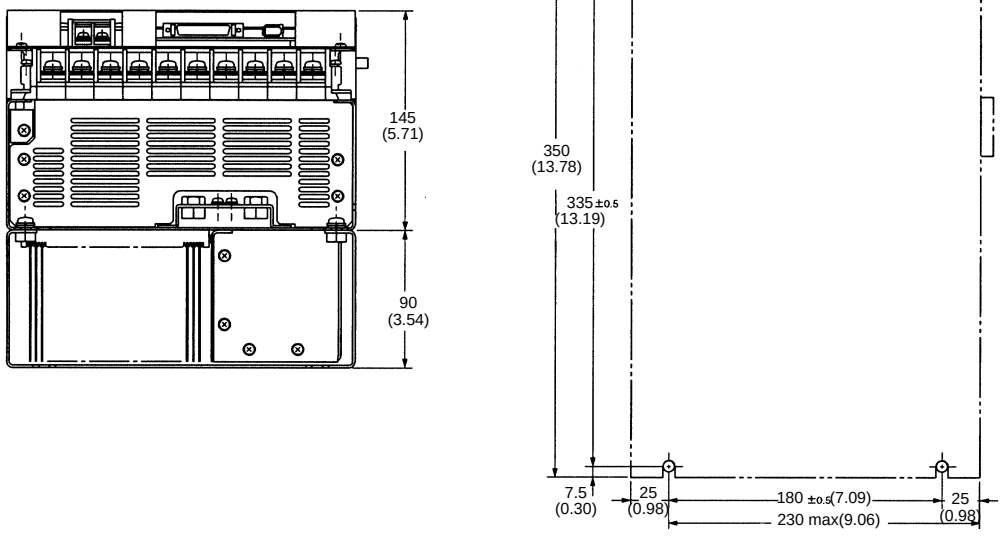


200 VAC: 6 kW

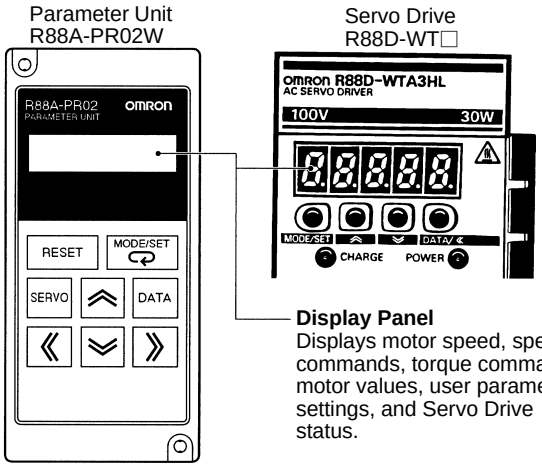
R88D-WT60H



Mounting hole dimensions



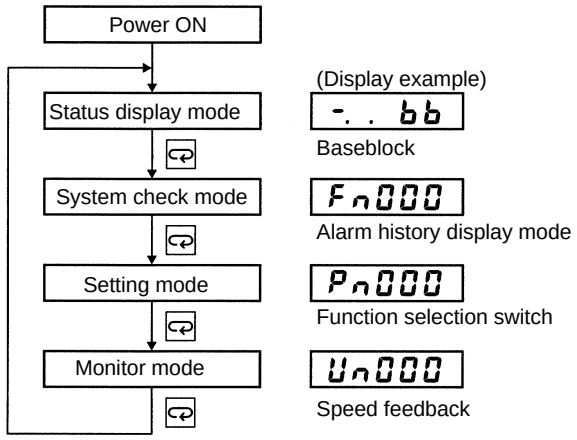
■ Operating Functions



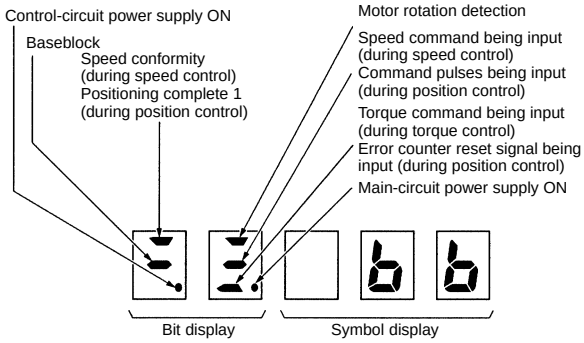
Display Panel
Displays motor speed, speed commands, torque command motor values, user parameter settings, and Servo Drive status.

■ Changing Modes

To change modes, press the MODE/SET Key.



■ Status Display Mode

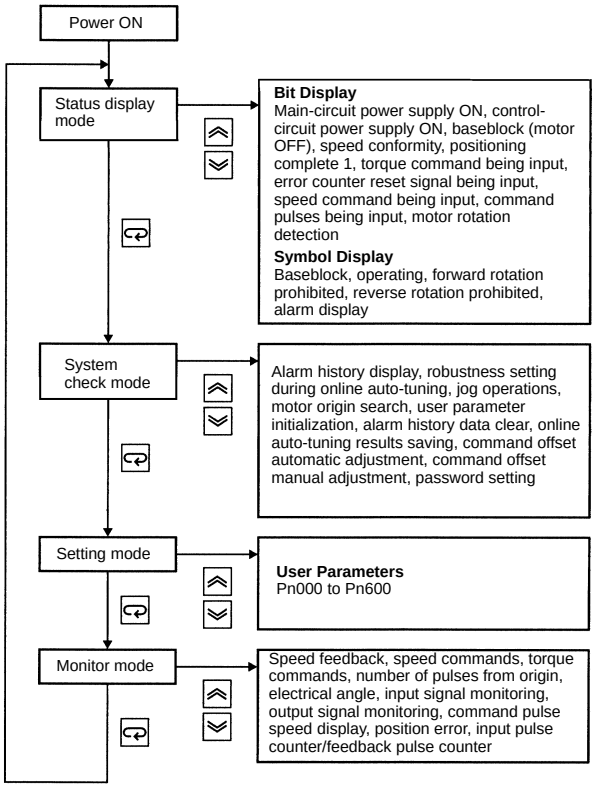


Symbol	Status
bb	Baseblock (motor OFF)
rUn	Operating
p%t	Forward rotation prohibited (forward overtravel)
n%t	Reverse rotation prohibited (reverse overtravel)
a.02	Alarm display (Refer to *Alarm List* — the subsection following *Monitor Mode*)

■ 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 the Servo ON or OFF while jog operations are being performed.
DATA	DATA/«	Switches between parameter display, 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 Mode

Monitor No.	Monitor item	Unit	Explanation
Un000	Speed Feedback	RPM	Displays the actual motor speed.
Un001	Speed Command	RPM	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 (multiplied by 4).
Un004	Electrical Angle	Degrees	Displays the motor electrical angle.
Un005	Input Signal Monitor	---	Displays drive I/O signal status by turning ON or OFF each signal bit.
Un006	Output Signal Monitor	---	
Un007	Command Pulse Speed Display	RPM	Displays command pulse frequency converted in RPM.
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).

■ Alarm Displays

Display	Alarm code			Alarm details
	AL01	AL02	AL03	
A.02	OFF	OFF	OFF	Parameter destruction, Servo Drive EEP-ROM data error
A.03				Main circuit detector error
A.04				Parameter setting error
A.05				Motor mismatch, Servo motor and Servo Drive 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.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
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.F1	OFF	ON	OFF	Phase-failure detected

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

■ List of Parameters

Function Selection Parameters

PRM. No.	Parameter name	Digit	Function name	Setting	Explanation	Factory setting	Unit	Setting range
Pn000	Function Selection Basic Switches					0010	---	---
		0	Reverse Rotation Mode	0	Defines forward rotation as counter-clockwise (CCW) rotation.			
				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 Servo Drive.			
		3	Reserved					
Pn001	Function Selection Application Switches 1					1002	---	---
		0	Servo OFF or Alarm Stop Mode	0	Uses the dynamic brake to stop the Servo Motor.			
				1	Uses the dynamic brake to stop the Servo Motor, and releases the dynamic brake after the Servo Motor stops.			
				2	Coasts the Servo Motor to a stop.			
		1	Run Prohibit Input Stop Mode	0	Stops the Servo Motor according to the Pn001.0 setting.			
				1	Decelerates the Servo Motor to a stop at the torque specified in Pn406 and then locks the Servo Motor.			
				2	Decelerates the Servo Motor to a stop at the torque specified in Pn406 and then turns OFF the Servo Motor.			
		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 “Reserved” parameters.
2. When changing the Pn000, Pn001, or Pn002 parameter, always turn the main and control circuit power supplies OFF and then ON to validate the settings.

(This table continues on the next page.)

Function Selection Parameters (continued)

PRM. No.	Parameter name	Digit	Function name	Setting	Explanation	Factory setting	Unit	Setting range
Pn002	Function Selection Application Switches 2					0000	---	---
		0	Torque Command Input Switch during Position/Speed Control	0	None.			
				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	Reserved					
Pn003	Function Selection Application Switches 3					0002	---	---
		0	Analog Monitor 1	0	Motor speed: 1 V/1,000 RPM			
				1	Speed command: 1 V/1,000 RPM			
				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 RPM			
				6	Motor speed: 1 V/250 RPM			
				7	Motor speed: 1 V/125 RPM			
				8 to F	Reserved			
		1	Analog Monitor 2	0 to F	Same as Analog Monitor 1			
		2 to 3	Reserved					
Pn004 and Pn005	Reserved					0000	---	---

Note: 1. Do not change the factory settings of any “Reserved” parameters.
2. When changing the Pn000, Pn001, or Pn002 parameter, always turn the main and control circuit power supplies OFF and then ON to validate the settings.

Gain-Related Parameters

PRM. No.	Parameter name	Digit	Function name	Setting	Explanation	Factory setting	Unit	Setting range
Pn10B	Speed Control Settings					0004	---	---
Pn100	Speed Loop Gain					80	Hz	1 to 2000
Pn101	Speed Loop Integral Time Constant					2000	0.01 ms	15 to 51200
Pn102	Position Loop Gain					40	1/s	1 to 2000
Pn103	Inertia Ratio					300	%	0 to 10000
Pn104	Speed Loop Gain 2					80	Hz	1 to 2000
Pn105	Speed Loop Integral Time Constant 2					2000	0.01 ms	15 to 51200
Pn106	Position Loop Gain 2					40	1/s	1 to 2000
Pn107	Bias Rotational Speed					0	RPM	0 to 450
Pn108	Bias Addition Baud					7	Command units	0 to 250
Pn109	Feed-forward Amount					0	%	0 to 100

PRM. No.	Parameter name	Digit	Function name	Setting	Explanation	Factory setting	Unit	Setting range
Pn10A	Feed-forward Command Filter					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 to 3	Reserved					
Pn10C	P Control Switching (Torque Command)					200	%	0 to 800
Pn10D	P Control Switching (Speed Command)					0	RPM	0 to 10000
Pn10E	P Control Switching (Acceleration Command)					0	10r/ min/s	0 to 3000
Pn10F	P Control Switching (Deviation Pulse)					10	Command units	0 to 10000
Pn110	Online Autotuning Setting					0012	---	---
		0	Online Autotuning Selection	0	Performs autotuning only when the system runs for the first time after the power is turned ON.			
				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	Reserved					
Pn111	Speed Feedback Compensating Gain					100	%	1 to 500

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

(This table continues on the next page.)

Gain-Related Parameters (continued)

PRM. No.	Parameter name	Digit	Function name	Setting	Explanation	Factory setting	Unit	Setting range
Pn112	Reserved parameters (do not change)					100	%	-
Pn113						1000	-	-
Pn114						200	-	-
Pn115						32	-	-
Pn116						16	-	-
Pn117						100	%	-
Pn118						100	%	-
Pn119						50	S-1	-
Pn11A						1000	0.1%	-
Pn11B						50	Hz	-
Pn11C						70	Hz	-
Pn11D						100	%	-
Pn11E						100	%	-
Pn11F						0	ms	-
Pn120						0	.01ms	-
Pn121						50	Hz	-
Pn122						0	Hz	-
Pn123						0	%	-

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

Position Control-Related Parameters

PRM. No.	Parameter name	Digit	Function name	Setting	Explanation	Factory setting	Unit	Setting range
Pn200	Position Control Setting 1					1011	---	---
		0	Command Pulse Mode	0	Feed pulse/forward-reverse signal: Positive logic			
				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					1000	Pulses/ revolution	16 to 16384
Pn202	Electronic Gear Ratio G1 (Numerator)					4	---	1 to 65535
Pn203	Electronic Gear Ratio G2 (Denominator)					1	---	1 to 65535
Pn204	Position Command Filter Time Constant 1					0	0.01 ms	0 to 6400
Pn205	Absolute Encoder Multi-turn Limit Setting					65535	Number of revolutions	0 to 65535
Pn206	Reserved					16384		

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

(This table continues on the next page.)

Position Control-Related Parameters (continued)

PRM. No.	Parameter name	Digit	Function name	Setting	Explanation	Factory setting	Unit	Setting range
Pn207	Position Control Setting 2					0000	---	---
		0	Position Command Filter Selection	0	Primary filter			
				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	Reserved					
Pn208	Position Command Filter Time Constant 2					0	0.01 ms	0 to 6400

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

Speed-Related Parameters

PRM. No.	Parameter name	Digit	Function name	Setting	Explanation	Factory setting	Unit	Setting range
Pn300	Speed Command Scale					1000	0.01 V/ rated speed	150 to 3000
Pn301	No.1 Internal Speed Setting					100	RPM	0 to 10000
Pn302	No. 2 Internal Speed Setting					200	RPM	0 to 10000
Pn303	No. 3 Internal Speed Setting					300	RPM	0 to 10000
Pn304	Jog Speed					500	RPM	0 to 10000
Pn305	Soft Start Acceleration Time					0	ms	0 to 10000
Pn306	Soft Start Deceleration Time					0	ms	0 to 10000
Pn307	Speed Command Filter Time Constant					40	0.01 ms	0 to 65535
Pn308	Speed Feedback Filter Time Constant					0	0.01 ms	0 to 65535

Note: 1. Do not change the factory settings of any “Reserved” parameters.
2. When changing any position control-related parameters (Pn200 to Pn208), always turn the main and control circuit power supplies OFF and then ON to validate the settings.

Torque-Related Parameters

PRM. No.	Parameter name	Digit	Function name	Setting	Explanation	Factory setting	Unit	Setting range
Pn400	Torque Command Scale					30	0.1 V/ rated torque	10 to 100
Pn401	Torque Command Filter Time Constant					40	0.01 ms	0 to 65535
Pn402	Forward Torque Limit					350	%	0 to 800
Pn403	Reverse Torque Limit					350	%	0 to 800
Pn404	Forward Rotation External Current Limit					100	%	0 to 800
Pn405	Reverse Rotation External Current Limit					100	%	0 to 800
Pn406	Emergency Stop Torque					350	%	0 to 800
Pn407	Speed Limit					3000	RPM	0 to 10000
Pn408	Torque Command Setting					0000	---	---
		0	Notch Filter Selection	0	None			
				1	Uses notch filter for torque command.			
		1 to 3	Reserved					
Pn409	Notch Filter Frequency					2000	Hz	50 to 2000

Sequence-Related Parameters

PRM. No.	Parameter name	Digit	Function name	Setting	Explanation	Factory setting	Unit	Setting range
Pn500	Positioning Completed Width 1					3	Command units	0 to 250
Pn501	Position Lock Rotation Speed					10	RPM	0 to 10000
Pn502	Rotation Speed For Motor Rotation Detection					20	RPM	0 to 10000
Pn503	Speed Conformity Signal Output Width					10	RPM	0 to 100
Pn504	Positioning Completion Range 2					3	Command units	1 to 250
Pn505	Deviation Counter Overflow Level					1024	Command units × 256	1 to 32767
Pn506	Brake Timing 1					0	10 ms	0 to 50
Pn507	Brake Command Speed					100	RPM	0 to 10000
Pn508	Brake Timing 2					50	10 ms	10 to 100
Pn509	Momentary Hold Time					20	ms	20 to 1000

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

(This table continues on the next page.)

Sequence-Related Parameters (continued)

PRM. No.	Parameter name	Digit	Function name	Setting	Explanation	Factory setting	Unit	Setting range
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 user's manual (I531-E3–1).	8100	---	---
				1	Enables any sequence input signal allocation settings.			
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					6548	---	---
		0	NOT (Reverse Run Prohibit) Signal Input Terminal Allocation	0 to F	Same as Pn50A.1			
		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					8888	---	---
		0	RDIR (Rotation Direction Command) Signal Input Terminal Allocation	0 to F	Same as Pn50A.1			
		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			

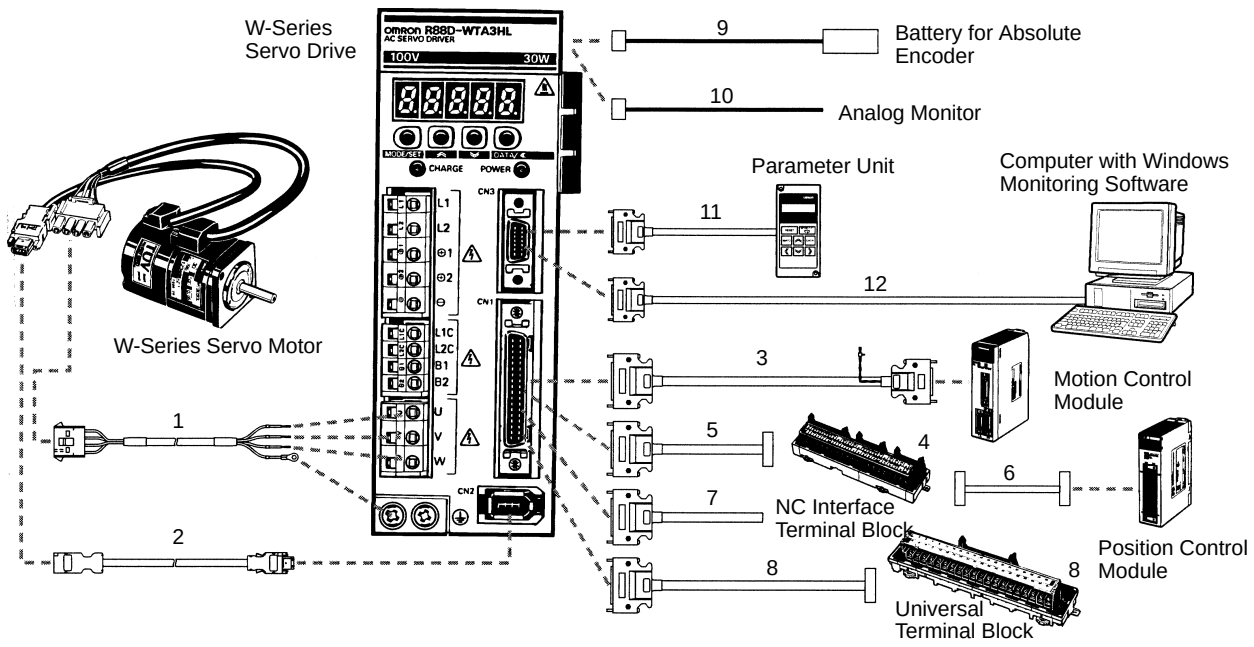
Note: 1. Do not change the factory settings of any "Reserved" parameters.
2. When changing any Input Signal Selection parameters (Pn50A to Pn50D), always turn the main and control circuit power supplies OFF and then ON to validate the settings.

PRM. No.	Parameter name	Digit	Function name	Setting	Explanation	Factory setting	Unit	Setting range
Pn50D	Input Signal Selections 4					8888	---	---
		0	PLOCK (Position Lock Command) Signal Input Terminal Allocation	0 to F	Same as Pn50A.1			
		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	Reserved					
Pn50E	Output Signal Selections 1					3211	---	---
		0	INP1 (Positioning Completed 1) Signal Output Terminal Allocation	0	Disabled (Reserved for the output signal)			
				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					0000	---	---
		0	CLMT (Torque Limit Detection) Signal Output Terminal Allocation	0 to 3	Same as Pn50E.0.			
		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					0000	---	---
		0	INP2 (Positioning Completed 2) Signal Output Terminal Allocation	0 to 3	Same as Pn50E.0.			
		1 to 3	Reserved					
Pn511	Reserved					8888	---	---
Pn512	Output Signal Reversal					0000	---	---
		0	CN1-25/26 Pin Output Signal Reversal	0	Does not reverse output signal.			
				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	Reserved					

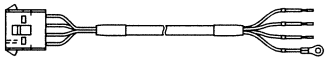
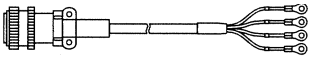
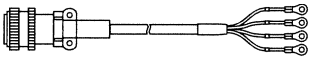
Other Parameters

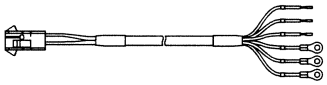
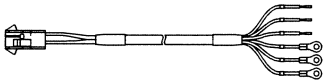
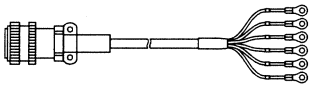
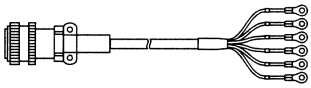
PRM. No.	Parameter name	Digit	Function name	Setting	Explanation	Factory setting	Unit	Setting range
Pn600	Regenerative Resistor Capacity					0	10 W	0 to maximum (depending on each model)
Pn601	Reserved					0		

Note: 1. Do not change the factory settings of any “Reserved” parameters.
2. When changing any Input Signal Selection parameters (Pn50A to Pn50D), always turn the main and control circuit power supplies OFF and then ON to validate the settings.
3. When installing an external regenerative resistor, set the resistor capacity (W).



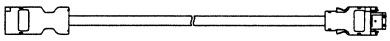
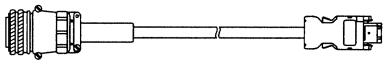
■ Power Cables

Symbol	Description	Connect to	Model	Remarks
1	Power Cables for Servo Motors without Brakes	Cylinder-Style Servo Motors (3,000 RPM): 30 to 750 W Slim-Profile Servo Motors (3,000 RPM): 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 
		Slim-Profile Servo Motors (3,000 RPM): 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: 350550-6 
		Cylinder-Style Servo Motors (3,000 RPM): 1 to 2 kW Cylinder-Style Servo Motors (1,000 RPM): 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 Servo Motors (3,000 RPM): 3 to 5 kW Cylinder-Style Servo Motors (1,000 RPM): 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 

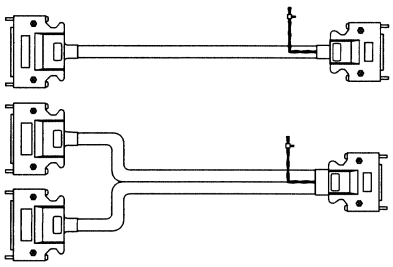
Symbol	Description	Connect to	Model	Remarks
1	Power Cables for Servo Motors with Brakes	Cylinder-Style Servo Motors (3,000 RPM): 30 to 750 W Slim-Profile Servo Motors (3,000 RPM): 100 to 750 W	R88A-CAWA□□□B □represents one of the following cable lengths: 3 m, 5 m, 10 m, 15 m, 20 m, 30 m, 40 m, 50 m	Connector on motor end (manufactured by AMP Japan, Ltd.) Connector cap: 350781-1 Connector socket: 350689-3 
		Slim-Profile Servo Motors (3,000 RPM): 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: 350550-6 
		Cylinder-Style Servo Motors (3,000 RPM): 1 to 2 kW Cylinder-Style Servo Motors (1,000 RPM): 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 Servo Motors (3,000 RPM): 3 to 5 kW Cylinder-Style Servo Motors (1,000 RPM): 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: The following power cables are available for Cylinder-Style Servo Motors with a capacity of 4 to 5.5 kW (1,000 RPM).
Motors without Brakes (4 kW): R88A-CAWE□□□S
Motors without Brakes (5.5 kW): R88A-CAWF□□□S
Motors with Brakes (4 kW/5.5 kW): R88A-CAWE□□□B

■ Encoder Cables (for CN2)

Symbol	Description	Connect to	Model	Remarks	
2	Encoder Cable	Cylinder-Style Servo Motors (3,000 RPM): 30 to 750 W Slim-Profile Servo Motors (3,000 RPM): 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: 55101-0006
		Cylinder-Style Servo Motors (3,000 RPM): 1 to 5 kW Cylinder-Style Servo Motors (1,000 RPM): 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: 55101-0006

■ Control Cables (for CN1)

Symbol	Description	Connect to	Model	Remarks
3	Control Cable	Motion Control Modules (for all SYSMAC CS1, C200H, and CV Series Controllers)	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	Position Control Terminal Blocks	C200HW-NC113 Position Control Module	XW2B-20J6-1B	---
		C200HW-NC213/413 Position Control Module	XW2B-40J6-2B	
5	Servo Drive Connecting Cable	Position Control Module	XW2Z-□□□J-B4 □represents either of the following cable lengths: 1 m, 2 m	
6	Position Control Module Connecting Cable	C200HW-NC113 Position Control Module	XW2Z-□□□J-A6 □represents either of the following cable lengths: 50 cm, 1 m	
		C200HW-NC213/413 Position Control Module	XW2Z-□□□J-A7 □represents either of the following cable lengths: 50 cm, 1 m	
7	Universal Control Cable	General-Purpose Controller	R88A-CPW□□□S □represents either of the following cable lengths: 1 m, 2 m	
8	Universal Terminal Block Cable	General-Purpose Controller	R88A-CTW□□□N □represents either of the following cable lengths: 1 m, 2 m	
	Universal Terminal Block		XW2B-50G5	
---	CN1 Control I/O Connector	---	R88A-CNU11C	

■ CN3 Options

Symbol	Description	Connect to	Model
11	Handheld Programmer for W-Series (with 1-m cable)	---	R88A-PR02W
	Cable (2 m) for U-Series Handheld Programmers (see note)	R88A-PR02U	R88A-CCW002C
12	Computer Connecting Cable	IBM PC/AT or compatibles	R88A-CCW002P2

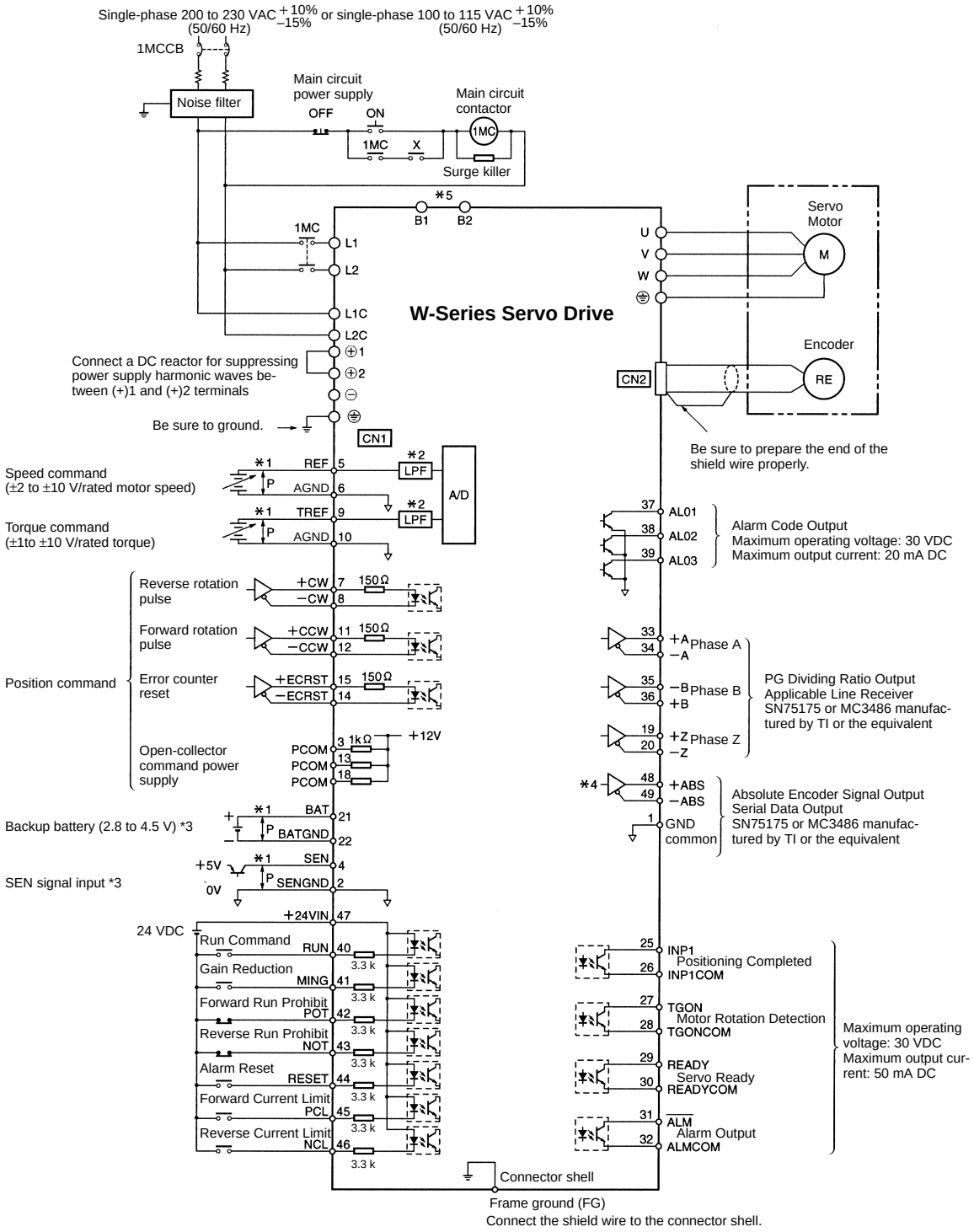
Note: This cable can be used to connect the R88A-PR02U Handheld Programmer for U-Series to the W-Series Servo Drive.

■ Additional Options

Symbol	Description	Connect to	Model
9	Backup Battery	Absolute Encoder	R88A-BAT01W
10	Analog Monitor Cable	---	R88A-CMW001S

Note: For details, refer to *Ordering Information* in Section 6.

■ Single-Phase



*1. P represents a twisted-pair cable.

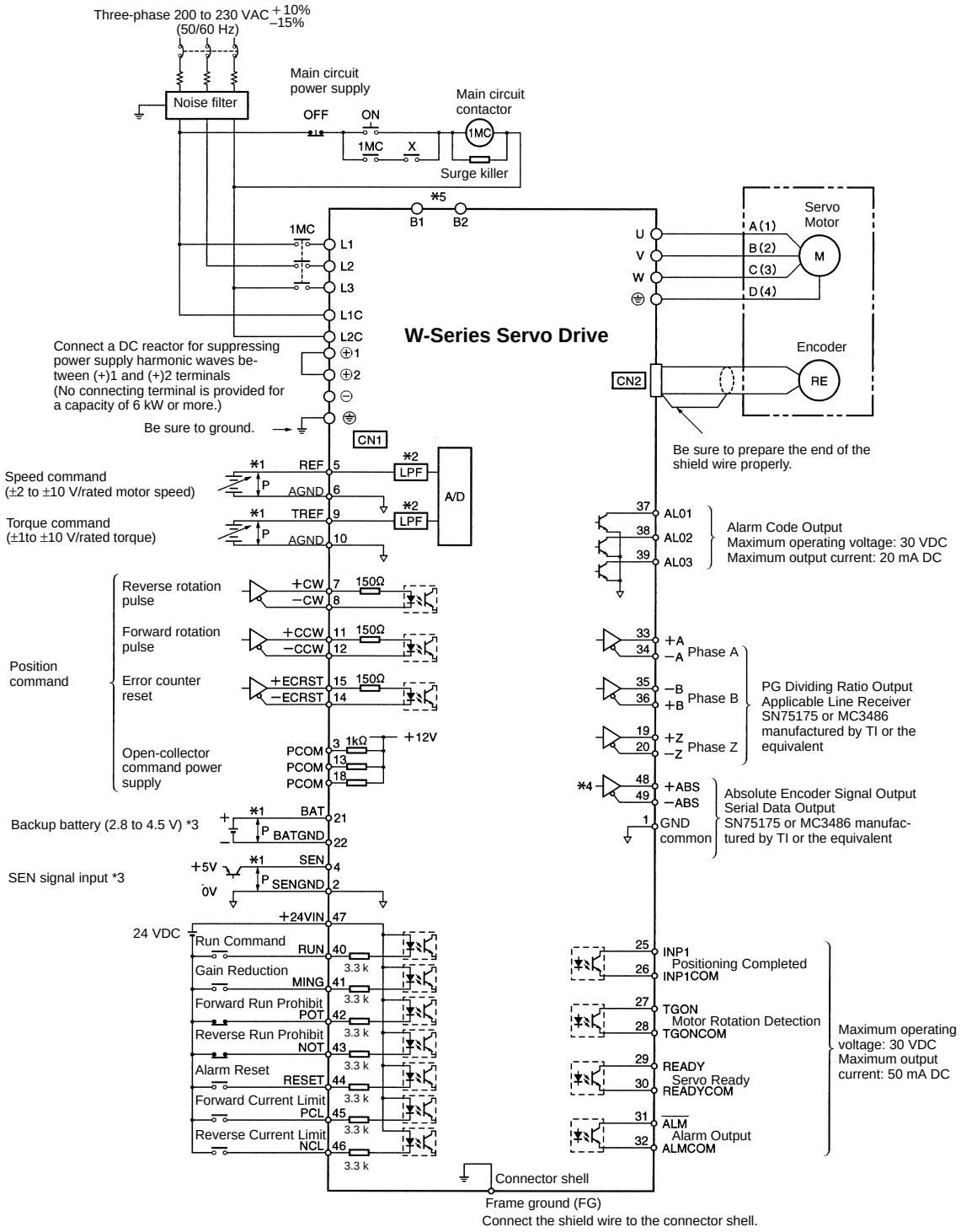
*2. Primary filter

*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.

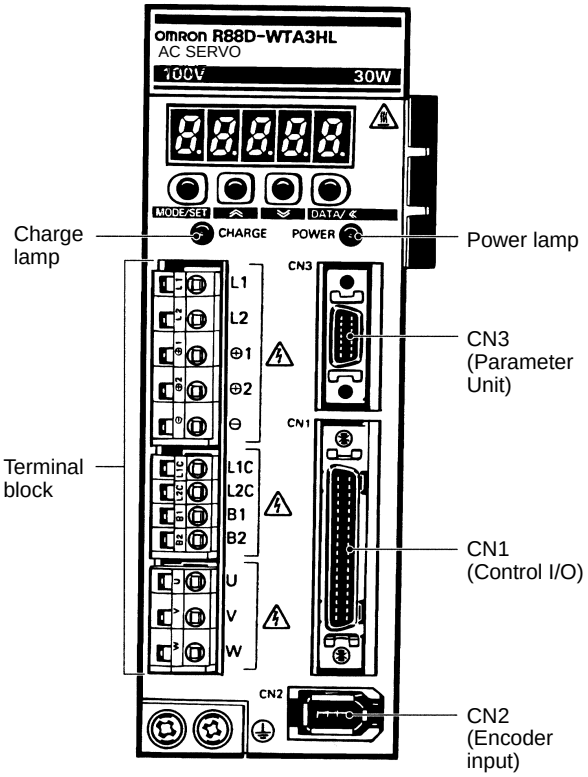
*5. When using an external regenerative resistor, connect it between B1 and B2.
(When the capacity is 6 kW, connect a Regenerative Resistor Unit.)

■ 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	Servo Motor connection terminal	Red	Terminals for outputs to the Servo Motor.
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 100Ω. (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.	
⊕	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	Servo Motor 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 Servo Drive 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 Servo Drive 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.

■ AC Servo Motors

Cylinder-Style Motors (3,000 RPM) with Incremental Encoders

Specifications				Part Number
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				Part Number
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 part number represents models with key and without tap. “S2” at the end of a part number represents models with key and tap. Motors with a capacity of 1 kW or more do not have the S1 type.

Cylinder-Style Motors (3,000 RPM) with Absolute Encoders

Specifications				Part Number
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				Part Number
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 part number represents models with key and without tap. “S2” at the end of a part number represents models with key and tap. Motors with a capacity of 1 kW or more do not have the S1 type.

Cylinder-Style Motors (1,000 RPM) with Incremental Encoders

Specifications				Part Number
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 part number represents models with key and tap. Motors with a speed of 1,000 RPM do not have the S1 type.

Cylinder-Style Motors (1,000 RPM) with Absolute Encoders

Specifications				Part Number
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 part number represents models with key and tap. Motors with a speed of 1,000 RPM do not have the S1 type.

Slim-Profile Motors (3,000 RPM) with Incremental Encoders

Specifications				Part Number
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

Slim-Profile Motors (3,000 RPM) with Absolute Encoders

Specifications				Part Number
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

Slim-Profile Motors (3,000 RPM) (Water-resistant Type) with Incremental Encoders

Specifications				Part Number
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

Slim-Profile Motors (3,000 RPM) (Water-resistant Type) with Absolute Encoders

Specifications				Part Number
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

■ AC Servo Drives

Specifications			Part Number
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
	100 VAC	30 W	R88D-WTA3HL
		50 W	R88D-WTA5HL
		100 W	R88D-WT01HL
		200 W	R88D-WT02HL

■ Power Cables

Specification			Part Number
For motors without brakes	30-W to 750-W Cylinder-Style Motors (3,000 RPM) 100-W to 750-W Slim-Profile Motors (3,000 RPM)	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 Slim-Profile 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 RPM) 1-kW to 2-kW Cylinder-Style Motors (3,000 RPM)	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 RPM) 3-kW to 5-kW Cylinder-Style Motors (3,000 RPM)	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			Part Number
Motors with brakes	30-W to 750-W Cylinder-Style Motors (3,000 RPM) 100-W to 750-W Slim-Profile Motors (3,000 RPM)	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 Slim-Profile 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 RPM) 1-kW to 2-kW Cylinder-Style Motors (3,000 RPM)	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 RPM) 3-kW to 5-kW Cylinder-Style Motors (3,000 RPM)	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

Note: The following power cables are available for 4-kW to 5.5-kW Cylinder-Style Motors (1,000 RPM). For the list prices, contact your local sales representative.
Motors without brakes (4 kW): 88A-CAWE□□□S
Motors without brakes (5.5 kW): 88A-CAWF□□□S
Motors with brakes (4/5.5 kW): 88A-CAWE□□□B

■ Encoder Cables

Specification		Part Number
30-W to 750-W Cylinder-Style Motors (3,000 RPM) 100-W to 1.5-kW Slim-Profile Motors (3,000 RPM)	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 RPM) 300-W to 5.5-kW Cylinder-Style Motors (1,000 RPM)	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

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

■ Control Cables

Specification				Part Number
For Motion Control Modules	Control cables for 1 axis (common to CS1, C200H, and CV-Series Controllers)		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 Controllers)		1 m	R88A-CPW001M2
			2 m	R88A-CPW002M2
			3 m	R88A-CPW003M2
			5 m	R88A-CPW005M2
For Position Control Modules and SYSMAC CQM1	Servo Terminal Blocks	For C200HW-NC113		XW2B-20J6-1B
		For C200HW-NC213/413		XW2B-40J6-2B
		For CQM1H-PLB21		XW2B-20J6-3B
	Cables on Servo Drive end		1 m	XW2Z-100J-B4
			2 m	XW2Z-200J-B4
	Cables on Position Control Module end	For C200HW-NC113	0.5 m	XW2Z-050J-A6
			1 m	XW2Z-100J-A6
		For C200HW-NC213/413	0.5 m	XW2Z-050J-A7
			1 m	XW2Z-100J-A7
		For CQM1-CPU43	0.5 m	XW2Z-050J-A3
			1 m	XW2Z-100J-A3
		For C500-NC113/211	0.5 m	XW2Z-050J-A2
			1 m	XW2Z-100J-A2
For general-purpose controllers	Control cables with connector at one end		1 m	R88A-CPW001S
			2 m	R88A-CPW002S
	Cables for Universal Terminal Block		1 m	R88A-CTW001N
			2 m	R88A-CTW002N
	Universal Terminal Block			XW2B-50G5

■ Parameter Units

Specification	Part Number
Handheld programmer for W-Series (with 1-m cable)	R88A-PR02W
Cable for U-Series handheld programmers (2 m) (see note)	R88A-CCW002C

Note: This cable can be used to connect the R88A-PR02U handheld programmer for U-series to the W-series Servo drive.

■ Backup Battery for Absolute Encoder

Specification	Part Number
1,000 mA 3.6 V (except for WT60H)	R88A-BAT01W

■ External Regenerative Resistors

Specification	Part Number
220 W 47 Ω	R88A-RR22047S
880 W 6.25 Ω	R88A-RR88006

■ DC Reactors

Specification	Part Number
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	Part Number
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	Part Number
Analog monitoring cable (1 m)	R88A-CMW001S
Personal computer monitoring cable (2 m)	R88A-CCW002P2
Control I/O connector CN1	R88A-CNU11C

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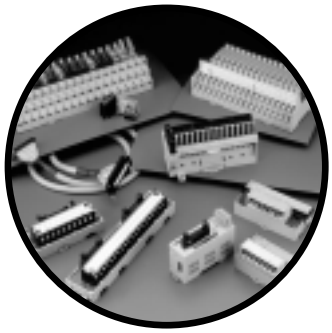

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