OMRON

AC Servo System 1S-series with Safety Functionality

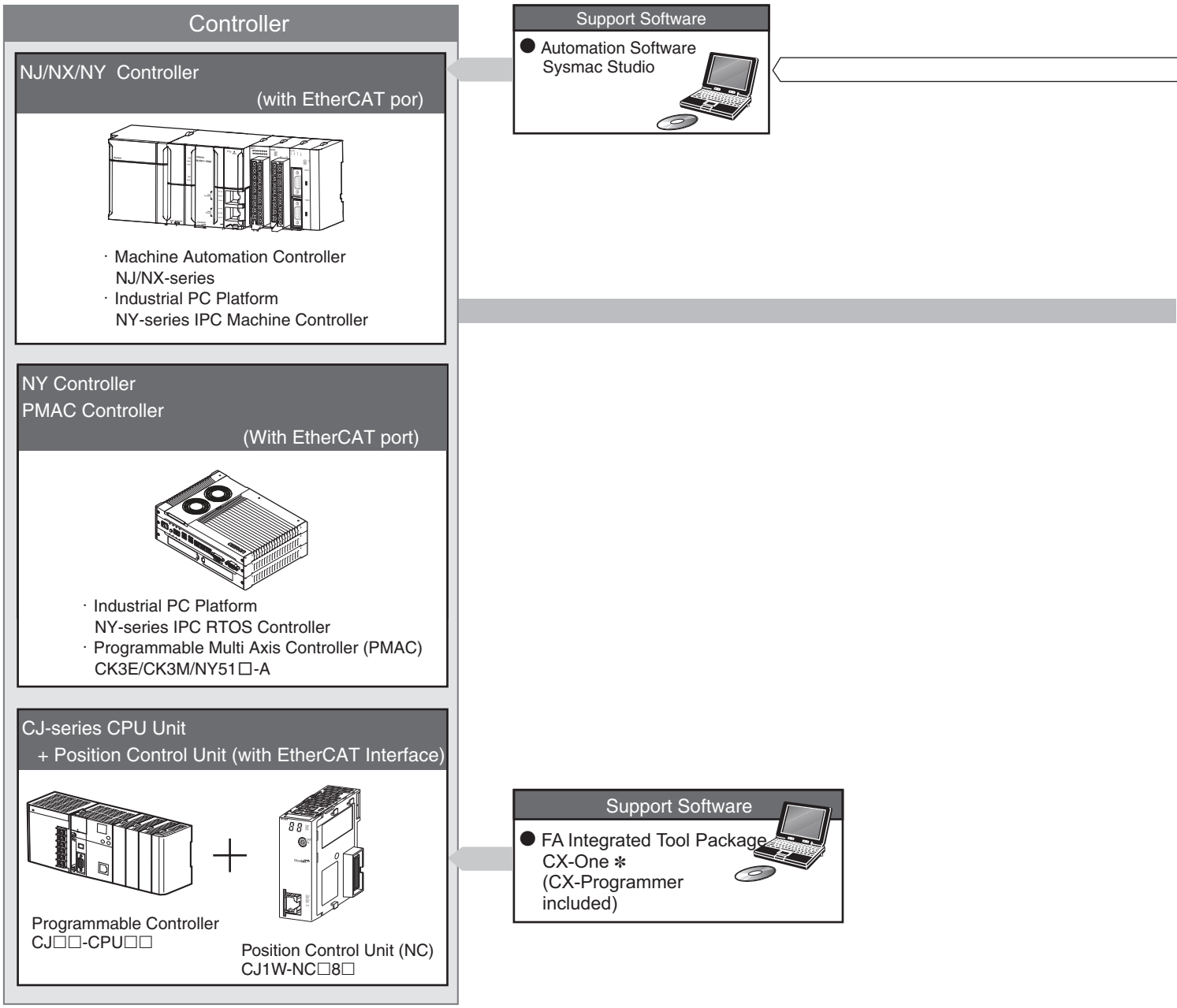
R88M-1A□/R88D-1SAN□-ECT

Safer environment and higher productivity

- 8 safety functions according to SIL3/PLe (STO, SS1, SS2, SOS, SLS, SLP, SDI, SBC)
- Safety-over-EtherCAT (FsoE)
- Power, encoder and brake in one cable
- 400-V models for higher machine efficiency
- Suppresses vibration of low-rigidity machines during acceleration/deceleration
- EtherCAT communications cycle of 125 µs
- TDF control structure for easy adjustment
- Battery-free absolute encoder

AC Servo System 1S-series with Safety Functionality

System Configuration

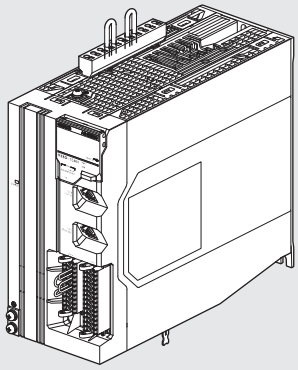


* You cannot use the CX-One to make the settings of 1S-series Servo Drives Advance type. Obtain the Sysmac Studio.
Note: PMAC is an abbreviation for Programmable Multi Axis Controller.

USB communications

EtherCAT communications

Servo Drive

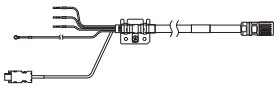


- 1S-series Servo Drive
  Advance type
  R88D-1SAN□-ECT
  AC200V
  AC400V

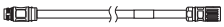
Power signal

Integrated Cable

- Without brake wire
  R88A-CX1□□□□SF
- With brake wire
  R88A-CX1□□□□BF

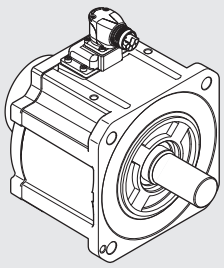


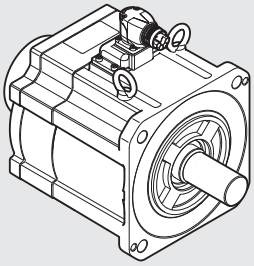
- Extension Cable
  R88A-CX1□E□□BF



Feedback signal

Servomotor



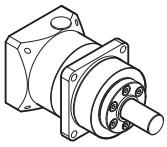


- 1S-series Servomotor
  Advance type
  R88M-1AL□/ 1AM□
  3000r/min
  1500r/min

ABS

Decelerator

- Backlash: 3 Arcminutes Max.
  R88G-HPG□
- Backlash: 15 Arcminutes Max.
  R88G-VRXF□



AC Servo Drives with Built-in EtherCAT Communications [1S-series with Safety Functionality]

R88D-1SAN□-ECT

Contents

Ordering Information

Refer to the Ordering Information.

Specifications

General Specifications

Item			Specifications
Operating ambient temperature and humidity			0 to 55°C, 90% max. (with no condensation)
Storage ambient temperature and humidity			-20 to 65°C, 90% max. (with no condensation)
Operating and storage atmosphere			No corrosive gases
Operating altitude			1,000 m max.
Vibration resistance			10 to 60 Hz and at an acceleration of 5.88 m/s^2 or less (Not to be run continuously at the resonance frequency)
Insulation resistance			Between power supply terminals/power terminals and PE terminals: 0.5 MΩ min. (at 500 VDC)
Dielectric strength			Between power supply terminals/power terminals and PE terminals: 1,500 VAC for 1 min (at 50/60 Hz)
Protective structure			IP20 (Built into IP54 panel)
International standard	**EU Directives**	**EMC Directive**	EN 61800-3 second environment, C3 category (EN 61000-6-7; Functional Safety)
		Low Voltage Directive	EN61800-5-1
		Machinery Directive	EN ISO 13849-1, EN61508, EN62061, EN61800-5-2
	UL standards		UL 61800-5-1
	CSA standards		CSA C22.2 No. 274
	Korean Radio Regulations (KC)		Compliant
	Australian EMC Labeling Requirements (RCM)		Compliant
	EAC requirements		Compliant
	SEMI standards		Can conform to the standard for momentary power interruptions (for no-load operation).
	Ship standards (NK/LR)		Not compliant

Note: 1. The above items reflect individual evaluation testing. The results may differ under compound conditions.

2. Disconnect all connections to the Servo Drive before attempting a megger test (insulation resistance measurement) on a Servo Drive. Not doing so may result in the Servo Drive failure.
Do not perform a dielectric strength test on the Servo Drive. Internal elements may be damaged.

The detail of Machinery Directive is as follows:
The STO function via safety input signals: EN ISO13849-1 (Cat3 PLe), EN61508, EN62061, EN61800-5-2 (SIL3)
The safety function via EtherCAT communications: EN ISO 13849-1 (STO/SS1/SBC: Cat.3 PLe, SS2/SLS/SDI/SOS/SLP: Cat.3 PLe), EN61508, EN62061, EN61800-5-2

Characteristics

200-VAC Input Models

Servo Drive model (R88D-)			1SAN02H-ECT	1SAN04H-ECT	1SAN08H-ECT
Item			200 W	400 W	750 W
Input	Main circuit	Power supply voltage	Single-phase and 3-phase 200 to 240 VAC (170 to 252 V) *1		
		Frequency	50/60 Hz (47.5 to 63 Hz) *1		
	Control circuit	Power supply voltage	24 VDC (21.6 to 26.4 V)		
		Current consumption *2	700 mA		
	Rated current [A (rms)] (Main circuit power supply voltage: 240 VAC)	Singlephase	2.7	4.6	7.3
		3-phase	1.5	2.7	4.0
Output	Rated current [A (rms)]		1.5	2.5	4.6
	Maximum current [A (rms)]		5.6	9.1	16.9
Heating value [W]		Main circuit	17.0	25.0	42.0
		Control circuit	11.9	11.9	14.5
Applicable Servomotor rated output [W]			200	400	750
3,000-r/min Servomotor (R88M-)		Batteryless 20-bit ABS	1AM20030T	1AM40030T	1AM75030T
Hold time at momentary power interruption (Main circuit power supply voltage: 200 VAC)			10 ms (Load condition: rated output) *4		
Weight [kg]			2.6	2.6	2.6

Servo Drive model (R88D-)			1SAN10H-ECT	1SAN15H-ECT	1SAN20H-ECT	1SAN30H-ECT
Item			1 kW	1.5 kW	2 kW	3 kW
Input	Main circuit	Power supply voltage	3-phase 200 to 240 VAC (170 to 252 V) *1	Single-phase and 3-phase 200 to 240 VAC (170 to 252 V) *1	3-phase 200 to 240 VAC (170 to 252 V) *1	
		Frequency	50/60 Hz (47.5 to 63 Hz) *1			
	Control circuit	Power supply voltage	24 VDC (21.6 to 26.4 V)			
		Current consumption *2	700 mA	1000 mA		
	Rated current [A (rms)] (Main circuit power supply voltage: 240 VAC)	Singlephase	---	15.7	---	---
		3-phase	5.8	9.0	13.0	15.9
Output	Rated current [A (rms)]		7.7	9.7	16.2	22.3
	Maximum current [A (rms)]		16.9	28.4	41.0	54.7
Heating value [W]		Main circuit *3	49.0	88.0	140.0	150.0
		Control circuit	14.5	22.4	22.4	22.4
Applicable Servomotor rated output [W]			1,000	1,500	2,000	3,000
3,000-r/min Servomotor (R88M-)		Batteryless 20-bit ABS	1AL1K030T	1AL1K530T	1AL2K030T	1AL2K630T
1,500-r/min Servomotor (R88M-)		Batteryless 20-bit ABS	---	1AM1K515T	---	1AM2K715T
Hold time at momentary power interruption (Main circuit power supply voltage: 200 VAC)			10 ms (Load condition: rated output) *4			
Weight [kg]			2.6	4.2	4.2	4.2

*1. The values outside parentheses indicate the rated value, and the values inside parentheses indicate the range of acceptable variation.
*2. Select a DC power supply in consideration of the current values that are specified in the current consumption. The rated current value that is printed on the product nameplate is a condition to apply the 1S-series product for the UL/Low Voltage Directive. Therefore, you do not need to consider it when you select a DC power supply for each model.
*3. This is the maximum heating value in applicable Servomotors. Refer to *Relationship between Servo Drive, Servomotors and the Main Circuit Heating Value* on page 6 for the heating value of each applicable Servomotor.
*4. It is a hold time at momentary power interruption. Use a DC power supply to fulfill the following conditions so that the power supply of the control circuit is held during momentary power interruption. Reinforced insulation or double insulation, and the output hold time of 10 ms or more

400-VAC Input Models

Use a neutral grounded 400 VAC 3-phase power supply for the 400 VAC input models.

Servo Drive model (R88D-)			1SAN10F-ECT	1SAN15F-ECT	1SAN20F-ECT	1SAN30F-ECT
Item			1 kW	1.5 kW	2 kW	3 kW
Input	Main circuit	Power supply voltage	3-phase 380 to 480 VAC (323 to 504 V) *1			
		Frequency	50/60 Hz (47.5 to 63 Hz) *1			
	Control circuit	Power supply voltage	24 VDC (21.6 to 26.4 V)			
		Current consumption *2	1000 mA			
	Rated current [A (rms)] (Main circuit power supply voltage: 480 VAC)	3-phase	3.1	4.3	6.5	8.4
Output		Rated current [A (rms)]	4.1	4.7	7.8	11.3
		Maximum current [A (rms)]	9.6	14.1	19.8	28.3
Heating value [W]		Main circuit *3	56.0	81.0	120.0	150.0
		Control circuit	22.4	22.4	22.4	22.4
Applicable Servomotor rated output [W]			1,000	1,500	2,000	3,000
3,000-r/min Servomotor (R88M-)		Batteryless 20-bit ABS	1AL75030C 1AL1K030C	1AL1K530C	1AL2K030C	1AL3K030C
1,500-r/min Servomotor (R88M-)		Batteryless 20-bit ABS	---	1AM1K515C	---	1AM3K015C
Hold time at momentary power interruption (Main circuit power supply voltage: 400 VAC)			10 ms (Load condition: rated output) *4			
Weight [kg]			4.2	4.2	4.2	4.2

*1. The values outside parentheses indicate the rated value, and the values inside parentheses indicate the range of acceptable variation.
*2. Select a DC power supply in consideration of the current values that are specified in the current consumption.
The rated current value that is printed on the product nameplate is a condition to apply the 1S-series Servo Drive Advance type product for the UL/Low Voltage Directive.
Therefore, you do not need to consider it when you select a DC power supply for each model.
*3. This is the maximum heating value in applicable Servomotors.
Refer to *Relationship between Servo Drive, Servomotors and the Main Circuit Heating Value* on page 6 for the heating value of each applicable Servomotor.
*4. It is a hold time at momentary power interruption. Use a DC power supply to fulfill the following conditions so that the power supply of the control circuit is held during momentary power interruption.
Reinforced insulation or double insulation, and the output hold time of 10 ms or more

Relationship between Servo Drive, Servomotors and the Main Circuit Heating Value

Servo Drive model	Servomotor model	Main circuit heating value [W]
R88D-1SAN15H-ECT	R88M-1AL1K530T-□	88
	R88M-1AM1K515T-□	69
R88D-1SAN30H-ECT	R88M-1AL2K630T-□	150
	R88M-1AM2K715T-□	150
R88D-1SAN10F-ECT	R88M-1AL75030C-□	55
	R88M-1AL1K030C-□	56
R88D-1SAN15F-ECT	R88M-1AL1K530C-□	81
	R88M-1AM1K515C-□	52
R88D-1SAN30F-ECT	R88M-1AL3K030C-□	150
	R88M-1AM3K015C-□	140

Outline of Safety Functions

Details about Safety Functions

Function	Description
Safe torque off (STO)	The function is used to cut off a motor current and stop the motor.
Safe stop 1 (SS1)	This function is used to stop a motor by activating STO function at any timing after receiving a command from a safety controller.
Safes stop 2 (SS2)	This function is used to monitor a motor's stop by activating SOS function at any timing after receiving a command from a safety controller.
Safe operating stop (SOS)	This function is used to monitor that a motor stops at any positions. Both a position and velocity are monitored. Excessive limit value error occurs when the motor operates from a position where it stops.
Safely-limited speed (SLS)	This function is used to monitor a safety present motor velocity. When the safety present motor velocity exceeds the velocity limit for monitoring, excessive limit value error occurs.
Safely-limited position (SLP)	This function is used to monitor current positions. Excessive limit value error occurs when the positions surpass a range for monitoring.
Safe direction (SDI)	This function is used to monitor motor's rotating direction. Excessive limit value error occurs when a motor rotates toward the banned rotating direction.
Safe brake control (SBC)	This function is used to provide safety output for a holding brake. The function can be used with STO, SS1 functions and the brake operation.

Safety Servo Drives have two type STO functions. Use either or both functions according to configuration of safety devices.
- STO function by safety input signals
- STO function via EtherCAT communications

When you use just STO function by safety input signals, you do not need a setting related EtherCAT network.

Achievable safety levels for each safety function at maximum are shown as the below table:

Function	Achievable safety level	Function	Achievable safety level
STO	SIL3/PLe	SLS	SIL3/PLe *1
SS1	SIL3/PLe	SLP	SIL3/PLe *2
SS2	SIL3/PLe	SDI	SIL3/PLe *1
SOS	SIL3/PLe *1	SBC	SIL3/PLe *3

*1. Achievable safety level varies in a basic control for use.
*2. Achievable safety level varies in Safety Origin Position Determination Method or SOPT input devices for use.
*3. Achievable safety level varies in Brake structure.

Refer to the *AC Servomotors/Servo Drives 1S-series with Built-in EtherCAT® Communications and Safety Functionality User's Manual* (Cat. No. I621) for details.

Configuration for Safety System

To make devices enter into safe state, a combined control among a safety controller, a standard controller and a Servo Drive is required. Typical roles of each device are shown as below.

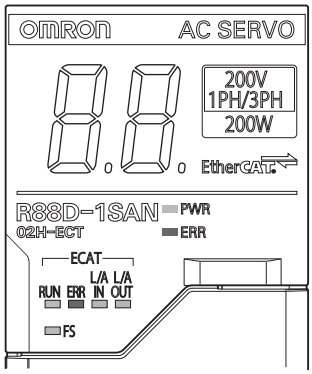
Device	Role
Safety Controller	• Monitor safety input and output. • Notify a standard controller of states of safety input and output. • Issue commands to activate and interrupt safety functions to a Servo Drive. • Issue commands to reset errors of safety functions to a Servo Drive.
Standard Controller	• Issue commands to turn Servo ON/OFF and reset errors to a Servo Drive. • Issue command to control a specified position, velocity and torque of a Servomotor to a Servo Drive.
Servo Drive	• Turn Servo ON/OFF and reset errors after receiving commands from a standard controller. • Control a Servomotor after receiving commands from a standard controller. • Activate and interrupt safety functions after receiving commands from a safety controller. • Reset errors of safety functions after receiving commands from a safety controller. • Stop a Servomotor when an error occurs.

A procedure for the control is described as follow:
1. A safety controller detects the following cases with a safety sensor and a safety switch.
   When workers entered exclusion zones
   When workers are about to touch hazardous sites of the device
   When workers come closely to the devices for the purpose of a check of devices/products, maintenance and supply of materials
2. A safety controller notifies a standard controller of the detected data.
3. A standard controller issues commands to decelerate and stop a Servomotor to a Servo Drive. At the same time, a safety controller issues commands to activate safety functions for use to a Servo Drive.
4. A Servo Drive receives and executes the commands from both controllers.

Servo Drive Functions

Status Indicators

The following seven indicators are mounted.



Name	Color	Description
PWR	Green	Displays the status of control power supply.
ERR	Red	Gives the Servo Drive error status.
ECAT-RUN	Green	Displays the EtherCAT communications status.
ECAT-ERR	Red	
ECAT-L/A IN, ECAT-L/A OUT	Green	Lights or flashes according to the status of a link in the EtherCAT physical layer.
FS	Red/green	Displays the safety communications status.

7-segment LED Display

A 2-digit 7-segment LED display shows error numbers, the Servo Drive status, and other information.

ID Switches

Two rotary switches (0 to F hex) are used to set the EtherCAT node address.

Charge Lamp

Lights when the main circuit power supply carries electric charge.

Control I/O Connector (CN1)

Used for connecting command input signals and I/O signals to an external device.

Encoder Connector (CN2)

Connector for the encoder installed in the Servomotor.

EtherCAT Communications Connectors (ECAT IN CN10, ECAT OUT CN11)

These connectors are for EtherCAT communications.

USB Connector (CN7)

USB-Micro B Communications connector for the computer. This connector enables USB 2.0 Full Speed (12 Mbps) communications.

Brake Interlock Connector (CN12)

Used for brake interlock signals.

Main Circuit Connector (CNA)

Connector for the main circuit power supply input, control power supply input, external regeneration resistor, and DC reactor.
Applicable models: R88D-1SAN02H-ECT/-1SAN04H-ECT/-1SAN08H-ECT/-1SAN10H-ECT

Main Circuit Connector A (CNA)

Connector for the main circuit power supply input and external regeneration resistor.
Applicable models: R88D-1SAN15H-ECT/-1SAN20H-ECT/-1SAN30H-ECT/-1SAN10F-ECT/-1SAN15F-ECT/-1SAN20F-ECT/-1SAN30F-ECT

Main Circuit Connector B (CNB)

Connector for a DC reactor.
Applicable models: R88D-1SAN15H-ECT/-1SAN20H-ECT/-1SAN30H-ECT/-1SAN10F-ECT/-1SAN15F-ECT/-1SAN20F-ECT/-1SAN30F-ECT

Control Power Supply Connector (CND)

Connector for control power supply input.
Applicable models: R88D-1SAN15H-ECT/-1SAN20H-ECT/-1SAN30H-ECT/-1SAN10F-ECT/-1SAN15F-ECT/-1SAN20F-ECT/-1SAN30F-ECT

Motor Connector (CNC)

Connector for the power line to the phase U, V, and W of the Servomotor.
The connector differs depending on the model.

Safety Signal Connector (CN14)

Used for connecting a safety device. The short-circuit wire is installed on the safety signals before shipment.

Safe Brake Control Connector (CN15)

Used for connecting to the brake to be controlled by safe brake control.

⏚ Terminal

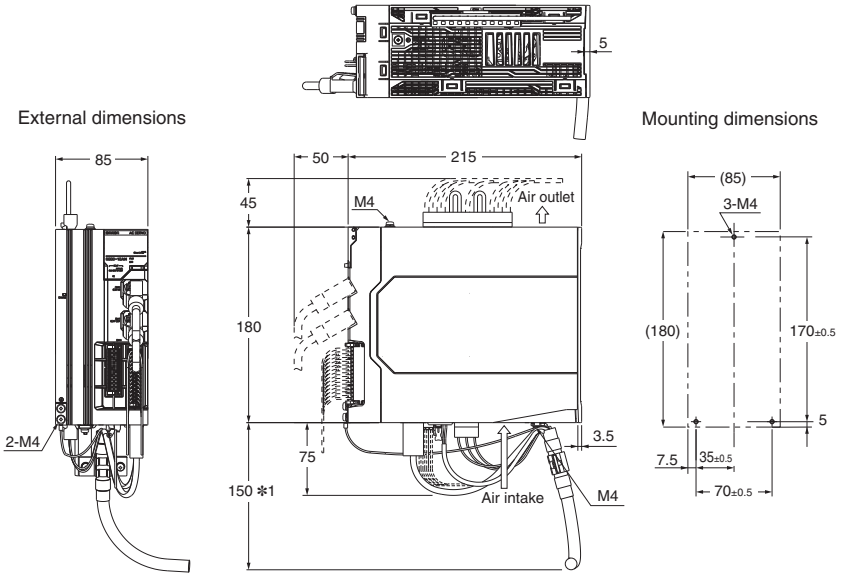
The number of ⏚ terminals of the Servo Drives and their connection targets are as follows.

Servo Drive model	Number of ⏚ terminals	Connection to
R88D-1SAN02H-ECT/-1SAN04H-ECT/-1SAN08H-ECT/ -1SAN10H-ECT	1 on top	PE wire of the main circuit power supply cable. FG wire inside the control panel, and FG wire for the Integrated Cable and Shield Clamp.
	2 on front	
	1 on bottom	
R88D-1SAN15H-ECT/-1SAN20H-ECT/-1SAN30H-ECT/ -1SAN10F-ECT/-1SAN15F-ECT/-1SAN20F-ECT/ -1SAN30F-ECT	1 on top	PE wire of the main circuit power supply cable. FG wire inside the control panel and the Shield Clamp.
	2 on front	
	1 on bottom	

Dimensions

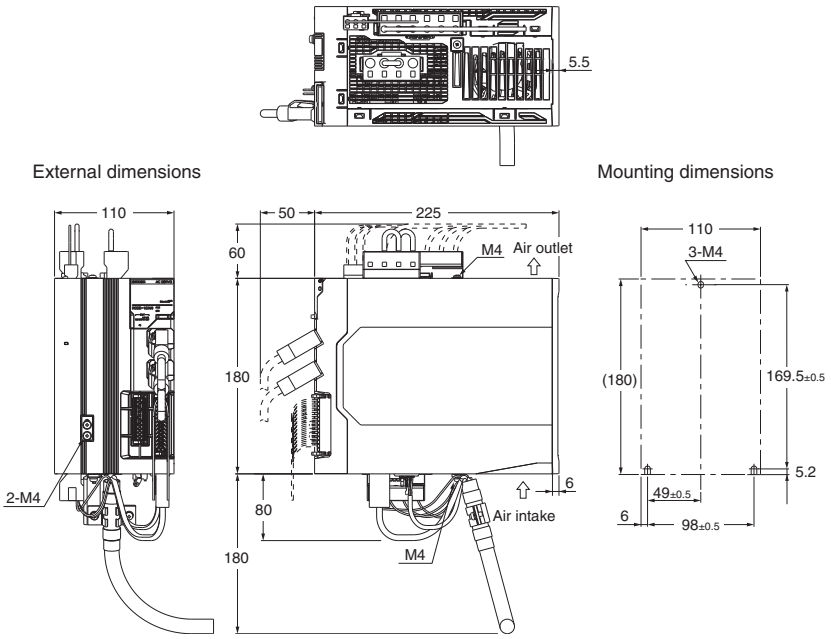
(Unit: mm)

Single-phase/3-phase 200 VAC: R88D-1SAN02H-ECT/-1SAN04H-ECT/-1SAN08H-ECT (200 to 750 W)
3-phase 200 VAC: R88D-1SAN10H-ECT (1 kW)



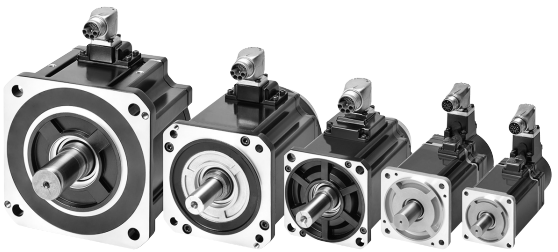
*1. The value is 180 for R88D-1SAN10H-ECT.

Single-phase/3-phase 200 VAC: R88D-1SAN15H-ECT (1.5 kW)
3-phase 200 VAC: R88D-1SAN20H-ECT/-1SAN30H-ECT (2 to 3 kW)
3-phase 400 VAC: R88D-1SAN10F-ECT/-1SAN15F-ECT/-1SAN20F-ECT/-1SAN30F-ECT (1 to 3 kW)



R88M-1AL□/-1AM□

Contents



Ordering Information

Refer to the Ordering Information.

Specifications

General Specifications

Item			Specifications
Operating ambient temperature and humidity			0 to 40°C 20% to 90% (with no condensation)
Storage ambient temperature and humidity			-20 to 65°C 20% to 90% (with no condensation)
Operating and storage atmosphere			No corrosive gases
Vibration resistance *			Acceleration of 49 m/s^2 24.5 m/s^2 max. in X, Y, and Z directions when the motor is stopped
Impact resistance			Acceleration of 98 m/s^2 max. 3 times each in X, Y, and Z directions
Insulation resistance			Between power terminals and FG terminals: 10 MΩ min. (at 500 VDC Megger)
Dielectric strength			Between power terminals and FG terminals: 1,500 VAC for 1 min (voltage 200 V) Between power terminals and FG terminals: 1,800 VAC for 1 min (voltage 400 V) Between brake terminal and FG terminals: 1,000 VAC for 1 min
Insulation class			Class F
Protective structure			IP67 (except for the through-shaft part and connector pins)
International standard	**EU Directives**	**Low Voltage Directive**	EN 60034-1/-5
	UL standards		UL 1004-1/-6
	CSA standards		CSA C22.2 No.100 (with cUR mark)

* The amplitude may be increased by machine resonance. As a guideline, 80% of the specified value must not be exceeded.

Note: 1. Do not use the cable when it is laying in oil or water.

2. Do not expose the cable outlet or connections to stress due to bending or its own weight.

Encoder Specifications

Item	Specifications
Encoder system	Optical batteryless absolute encoder
Resolution per rotation	20 bits
Multi-rotation data hold	12 bits
Output signal	Serial communications
Output interface	RS485 compliant

Note: It is possible to use an absolute encoder as an incremental encoder.
Refer to the *AC Servomotors/Servo Drives 1S-series with Built-in EtherCAT® Communications and Safety Functionality User's Manual* (Cat.No.I621) for details.

Characteristics

3,000-r/min Servomotors

Item		Model (R88M-) / Unit	200 VAC		
			1AM20030T	1AM40030T	1AM75030T
Rated output *1*2		W	200	400	750
Rated torque *1*2		N·m	0.637	1.27	2.39
Rated rotation speed *1*2		r/min	3000		
Maximum rotation speed		r/min	6000		
Momentary maximum torque *1*3		N·m	2.2 *4	4.5 *4	8.4 *4
Rated current *1*2		A(rms)	1.5	2.5	4.6
Momentary maximum current *1		A(rms)	5.6	9.1	16.9
Rotor inertia	Without brake	$\times 10^{-4}$ kg·m^2	0.224	0.446	1.825
	With brake	$\times 10^{-4}$ kg·m^2	0.284	0.506	2.075
Applicable load inertia		$\times 10^{-4}$ kg·m^2	4.80	8.40	19.4
Torque constant *1		N·m/A(rms)	0.48	0.56	0.59
Power rate *1*5		kW/s	18.1	36.2	31.3
Mechanical time constant *5		ms	0.79	0.58	0.66
Electrical time constant		ms	2.4	2.6	3.3
Allowable radial load *6		N	245	245	490
Allowable thrust load *6		N	88	88	196
Weight	Without brake	kg	1.3	1.8	3.2
	With brake	kg	1.7	2.2	4.1
Radiator plate dimensions (material)		mm	250 × 250 × t6 (aluminum)		
Brake specifications *7	Excitation voltage *8	V	24 DC ±10%		
	Current consumption (at 20°C)	A	0.32	0.32	0.37
	Static friction torque	N·m	1.37 min.	1.37 min.	2.55 min.
	Attraction time	ms	30 max.	30 max.	40 max.
	Release time *9	ms	20 max.	20 max.	35 max.
	Backlash	°	1.2 max.	1.2 max.	1.0 max.
	Allowable braking work	J	60	60	250
	Allowable total work	J	60,000	60,000	250,000
	Allowable angular acceleration	rad/s^2	10,000 max.		
	Brake lifetime (acceleration/ deceleration)	---	10 million times min.		
	Brake lifetime (ON/OFF), B10d	---	1 million times min.		
	Insulation class	---	Class F		

For models with an oil seal the following derating is used due to increase in friction torque.

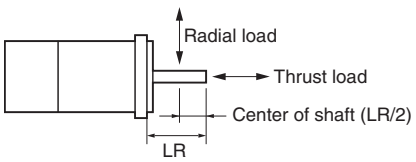
Item	Model (R88M-) / Unit	1AM20030T-O/ -OS2/-BO/-BOS2	1AM40030T-O/ -OS2/-BO/-BOS2	1AM75030T-O/ -OS2/-BO/-BOS2
Derating rate	%	95	80	90
Rated output	W	190	320	675
Rated current	A (rms)	1.5	2.1	4.2

Item			Model (R88M-)	200 VAC			
			Unit	1AL1K030T	1AL1K530T	1AL2K030T	1AL2K630T
Rated output *1*2			W	1,000	1,500	2,000	2,600
Rated torque *1*2			N·m	3.18	4.77	6.37	8.28
Rated rotation speed *1*2			r/min	3,000			
Maximum rotation speed			r/min	5,000			
Momentary maximum torque *1*3			N·m	9.55	14.3	19.1	24.8
Rated current *1*2			A(rms)	5.2	8.8	12.5	14.8
Momentary maximum current *1			A(rms)	16.9	28.4	41.0	47.3
Rotor inertia		Without brake	$\times 10^{-4}$ kg·m^2	2.105	2.105	2.405	6.813
		With brake	$\times 10^{-4}$ kg·m^2	2.555	2.555	2.855	7.313
Applicable load inertia			$\times 10^{-4}$ kg·m^2	35.3	47.6	60.2	118
Torque constant *1			N·m/A(rms)	0.67	0.58	0.56	0.62
Power rate *1*5			kW/s	48	108	169	134
Mechanical time constant *5			ms	0.58	0.58	0.50	0.47
Electrical time constant			ms	5.9	6.1	6.4	11
Allowable radial load *6			N	490			
Allowable thrust load *6			N	196			
Weight		Without brake	kg	5.8	5.8	6.5	11.5
		With brake	kg	7.5	7.5	8.2	13.5
Radiator plate dimensions (material)			mm	400 × 400 × t20 (aluminum)		470 × 470 × t20 (aluminum)	
Brake specifications *7	Excitation voltage *8		V	24 VDC±10%			
	Current consumption (at 20°C)		A	0.70	0.70	0.70	0.66
	Static friction torque		N·m	9.3 min.	9.3 min.	9.3 min.	12 min.
	Attraction time		ms	100 max.	100 max.	100 max.	100 max.
	Release time *9		ms	30 max.	30 max.	30 max.	30 max.
	Backlash		°	1.0 max.	1.0 max.	1.0 max.	0.8 max.
	Allowable braking work		J	500	500	500	1000
	Allowable total work		J	900,000	900,000	900,000	3000,000
	Allowable angular acceleration		rad/s^2	10,000 max.			
	Brake lifetime (acceleration/ deceleration)		---	10 million times min.			
	Brake lifetime (ON/OFF), B10d		---	1 million times min.			
	Insulation class		---	Class F			

Item			Model (R88M-)	AC400V		
			Unit	1AL75030C	1AL1K030C	1AL1K530C
Rated output *1*2			W	750	1,000	1,500
Rated torque *1*2			N·m	2.39	3.18	4.77
Rated rotation speed *1*2			r/min	3,000		
Maximum rotation speed			r/min	5,000		
Momentary maximum torque *1*3			N·m	7.16	9.55	14.3
Rated current *1*2			A(rms)	3.0	3.0	4.5
Momentary maximum current *1			A(rms)	9.6	9.6	14.1
Rotor inertia		Without brake	$\times 10^{-4}$ kg·m^2	1.305	2.105	2.105
		With brake	$\times 10^{-4}$ kg·m^2	1.755	2.555	2.555
Applicable load inertia			$\times 10^{-4}$ kg·m^2	38.6	35.3	47.6
Torque constant *1			N·m/A(rms)	0.91	1.17	1.17
Power rate *1*5			kW/s	44	48	108
Mechanical time constant *5			ms	1.1	0.58	0.58
Electrical time constant			ms	4.3	5.9	5.9
Allowable radial load *6			N	490		
Allowable thrust load *6			N	196		
Weight		Without brake	kg	4.2	5.8	5.8
		With brake	kg	5.9	7.5	7.5
Radiator plate dimensions (material)			mm	305 × 305 × t20 (aluminum)	400 × 400 × t20 (aluminum)	
Brake specifications *7	Excitation voltage *8		V	24 VDC±10%		
	Current consumption (at 20°C)		A	0.70	0.70	0.70
	Static friction torque		N·m	9.3 min.	9.3 min.	9.3 min.
	Attraction time		ms	100 max.	100 max.	100 max.
	Release time *9		ms	30 max.	30 max.	30 max.
	Backlash		°	1.0 max.	1.0 max.	1.0 max.
	Allowable braking work		J	500	500	500
	Allowable total work		J	900,000	900,000	900,000
	Allowable angular acceleration		rad/s^2	10,000 max.		
	Brake lifetime (acceleration/ deceleration)		---	10 million times min.		
	Brake lifetime (ON/OFF), B10d		---	1 million times min.		
	Insulation class		---	Class F		

Item			Model (R88M-)	AC400V	
			Unit	1AL2K030C	1AL3K030C
Rated output *1*2			W	2,000	3,000
Rated torque *1*2			N·m	6.37	9.55
Rated rotation speed *1*2			r/min	3,000	
Maximum rotation speed			r/min	5,000	
Momentary maximum torque *1*3			N·m	19.1	28.7
Rated current *1*2			A(rms)	6.3	8.7
Momentary maximum current *1			A(rms)	19.8	27.7
Rotor inertia		Without brake	$\times 10^{-4}$ kg·m^2	2.405	6.813
		With brake	$\times 10^{-4}$ kg·m^2	2.855	7.313
Applicable load inertia			$\times 10^{-4}$ kg·m^2	60.2	118
Torque constant *1			N·m/A(rms)	1.15	1.23
Power rate *1*5			kW/s	169	134
Mechanical time constant *5			ms	0.52	0.49
Electrical time constant			ms	6.3	11
Allowable radial load *6			N	490	
Allowable thrust load *6			N	196	
Weight		Without brake	kg	6.5	11.5
		With brake	kg	8.2	13.5
Radiator plate dimensions (material)			mm	470 × 470 × t20 (aluminum)	
Brake specifications *7	Excitation voltage *8		V	24 VDC±10%	
	Current consumption (at 20°C)		A	0.70	0.66
	Static friction torque		N·m	9.3 min.	12 min.
	Attraction time		ms	100 max.	100 max.
	Release time *9		ms	30 max.	30 max.
	Backlash		°	1.0 max.	0.8 max.
	Allowable braking work		J	500	1,000
	Allowable total work		J	900,000	3,000,000
	Allowable angular acceleration		rad/s^2	10,000 max.	
	Brake lifetime (acceleration/ deceleration)		---	10 million times min.	
	Brake lifetime (ON/OFF), B10d		---	1 million times min.	
	Insulation class		---	Class F	

*1. This is a typical value for when the Servomotor is used at a normal temperature (20°C, 65%) in combination with a Servo Drive.
*2. The rated values are the values with which continuous operation is possible at an ambient temperature of 40°C when the Servomotor is horizontally installed on a specified radiator plate.
*3. The momentary maximum torque is approximately 300% of the rated torque, except for some models.
*4. The momentary maximum torque is approximately 350% of the rated torque. Output at the momentary maximum torque shortens detection time of the overload protection function. Refer to Electronic Thermal Function in the *AC Servomotors/Servo Drives 1S-series with Built-in EtherCAT® Communications and Safety Functionality User's Manual* (Cat. No. I621) for details.
*5. This value is for models without options.
*6. The allowable radial and thrust loads are the values determined for a limit of 20,000 hours at normal operating temperatures. The allowable radial loads are applied as shown in the following diagram.

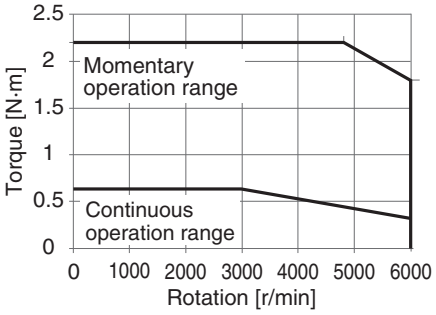


*7. When the brake is released for a vertical axis, refer to the *AC Servomotors/Servo Drives 1S-series with Built-in EtherCAT® Communications and Safety Functionality User's Manual* (Cat. No. I621) to set an appropriate value for Brake Interlock Output (4610 hex).
*8. This is a non-excitation brake. It is released when excitation voltage is applied.
*9. This value is a reference value.

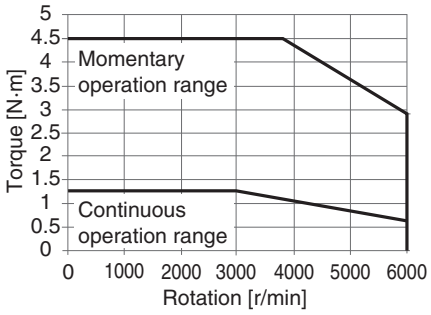
Torque-Rotation Speed Characteristics for 3,000-r/min Servomotors (200 VAC)

The following graphs show the characteristics with a 3-m standard cable and a 3-phase 200-VAC or single-phase 220-VAC input.

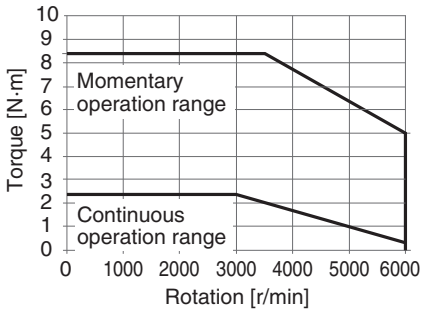
· R88M-1AM20030T



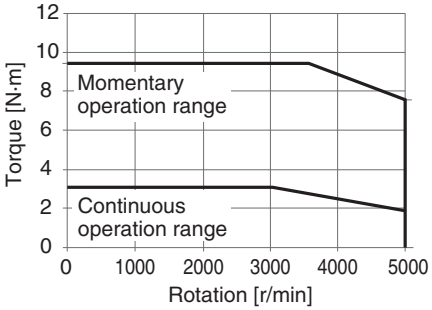
· R88M-1AM40030T



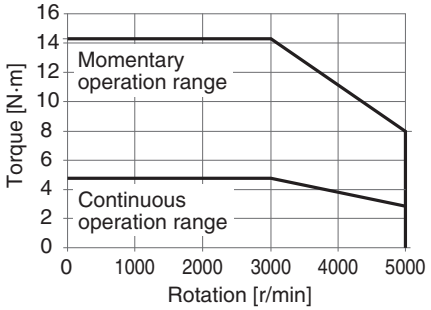
· R88M-1AM75030T



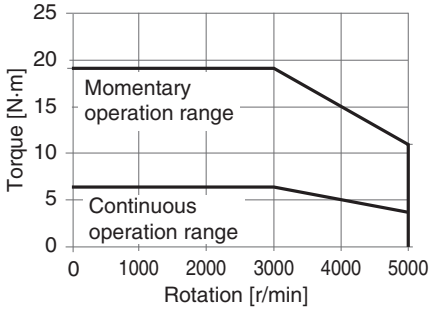
· R88M-1AL1K030T



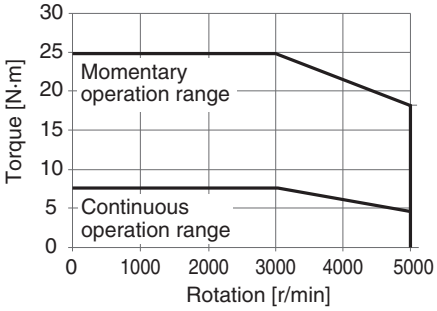
· R88M-1AL1K530T



· R88M-1AL2K030T



· R88M-1AL2K630T

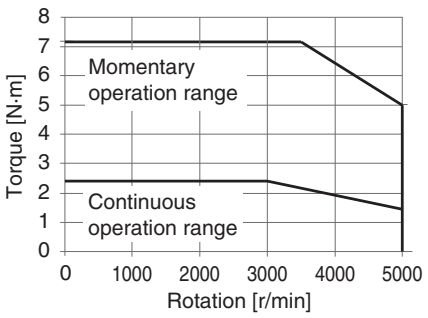


Note: The continuous operation range is the range in which continuous operation is possible at an ambient temperature of 40°C when the Servomotor is horizontally installed on a specified radiator plate.
Continuous operation at the maximum speed is also possible. However, doing so will reduce the output torque.

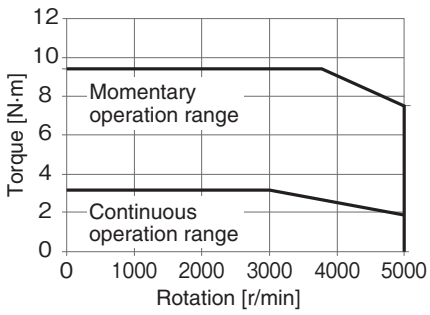
Torque-Rotation Speed Characteristics for 3,000-r/min Servomotors (400 VAC)

The following graphs show the characteristics with a 3-m standard cable and a 3-phase 400-VAC input.

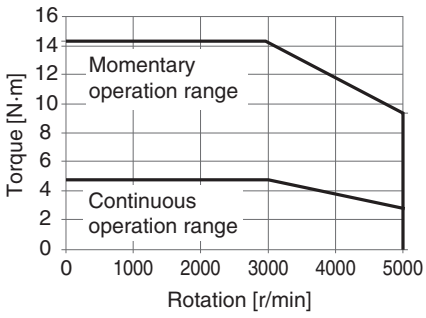
· R88M-1AL75030C



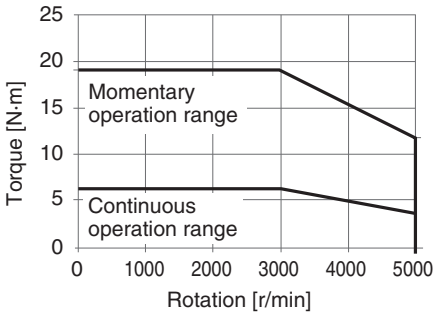
· R88M-1AL1K030C



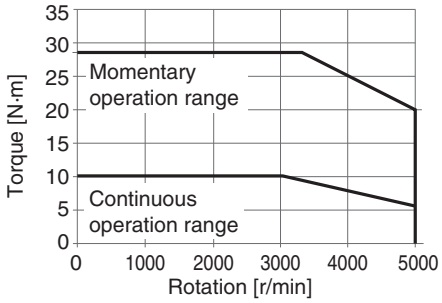
· R88M-1AL1K530C



· R88M-1AL2K030C



· R88M-1AL3K030C



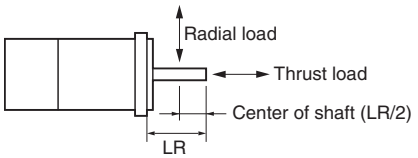
Note: The continuous operation range is the range in which continuous operation is possible at an ambient temperature of 40°C when the Servomotor is horizontally installed on a specified radiator plate.
Continuous operation at the maximum speed is also possible. However, doing so will reduce the output torque.

1,500-r/min Servomotors

Item			Model (R88M-)	AC200V	
			Unit	1AM1K515T	1AM2K715T
Rated output *1*2			W	1,500	2,700
Rated torque *1*2			N·m	9.55	17.2
Rated rotation speed *1*2			r/min	1,500	
Maximum rotation speed			r/min	3,000	
Momentary maximum torque *1			N·m	28.7	51.6
Rated current *1*2			A(rms)	8.6	14.6
Momentary maximum current *1			A(rms)	28.4	49.3
Rotor inertia		Without brake	$\times 10^{-4}$ kg·m^2	12.413	40.013
		With brake	$\times 10^{-4}$ kg·m^2	13.013	45.113
Applicable load inertia			$\times 10^{-4}$ kg·m^2	127.05	270.63
Torque constant *1			N·m/A(rms)	1.11	1.29
Power rate *1*3			kW/s	73	91
Mechanical time constant *3			ms	0.75	1.0
Electrical time constant			ms	17	19
Allowable radial load *4			N	490	1176
Allowable thrust load *4			N	196	490
Weight		Without brake	kg	11	18
		With brake	kg	13	22
Radiator plate dimensions (material)			mm	470 × 470 × t20 (aluminum)	
Brake specifications *5	Excitation voltage *6		V	24 VDC±10%	
	Current consumption (at 20°C)		A	0.66	1.20
	Static friction torque		N·m	12 min.	22 min.
	Attraction time		ms	100 max.	120 max.
	Release time *7		ms	30 max.	50 max.
	Backlash		°	0.6 max.	0.8 max.
	Allowable braking work		J	1,000	1,400
	Allowable total work		J	3,000,000	4,600,000
	Allowable angular acceleration		rad/s^2	10,000 max.	
	Brake lifetime (acceleration/ deceleration)		---	10 million times min.	
	Brake lifetime (ON/OFF), B10d		---	1 million times min.	
	Insulation class		---	Class F	

Item			Model (R88M-)	AC400V	
			Unit	1AM1K515C	1AM3K015C
Rated output *1*2			W	1,500	3,000
Rated torque *1*2			N·m	9.55	19.1
Rated rotation speed *1*2			r/min	1,500	
Maximum rotation speed			r/min	3,000	
Momentary maximum torque *1			N·m	28.7	57.3
Rated current *1*2			A(rms)	4.4	8.5
Momentary maximum current *1			A(rms)	14.1	28.3
Rotor inertia		Without brake	$\times 10^{-4}$ kg·m^2	12.413	40.013
		With brake	$\times 10^{-4}$ kg·m^2	13.013	45.113
Applicable load inertia			$\times 10^{-4}$ kg·m^2	127.05	270.63
Torque constant *1			N·m/A(rms)	2.21	2.46
Power rate *1*3			kW/s	73	91
Mechanical time constant *3			ms	0.75	1.2
Electrical time constant			ms	17	16
Allowable radial load *4			N	490	1176
Allowable thrust load *4			N	196	490
Weight		Without brake	kg	11	18
		With brake	kg	13	22
Radiator plate dimensions (material)			mm	470 × 470 × t20 (aluminum)	
Brake specifications *5	Excitation voltage *6		V	24 VDC±10%	
	Current consumption (at 20°C)		A	0.66	1.20
	Static friction torque		N·m	12 min.	22 min.
	Attraction time		ms	100 max.	120 max.
	Release time *7		ms	30 max.	50 max.
	Backlash		°	0.6 max.	0.8 max.
	Allowable braking work		J	1,000	1,400
	Allowable total work		J	3,000,000	4,600,000
	Allowable angular acceleration		rad/s^2	10,000 max.	
	Brake lifetime (acceleration/ deceleration)		---	10 million times min.	
	Brake lifetime (ON/OFF), B10d		---	1 million times min.	
	Insulation class		---	Class F	

*1. This is a typical value for when the Servomotor is used at a normal temperature (20°C, 65%) in combination with a Servo Drive.
*2. The rated values are the values with which continuous operation is possible at an ambient temperature of 40°C when the Servomotor is horizontally installed on a specified radiator plate.
*3. This value is for models without options.
*4. The allowable radial and thrust loads are the values determined for a limit of 20,000 hours at normal operating temperatures. The allowable radial loads are applied as shown in the following diagram.

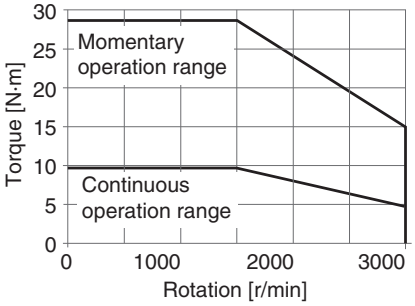


*5. When the brake is released for a vertical axis, refer to the *AC Servomotors/Servo Drives 1S-series with Built-in EtherCAT® Communications and Safety Functionality User's Manual* (Cat. No. I621) to set an appropriate value for Brake Interlock Output (4610 hex).
*6. This is a non-excitation brake. It is released when excitation voltage is applied.
*7. This value is a reference value.

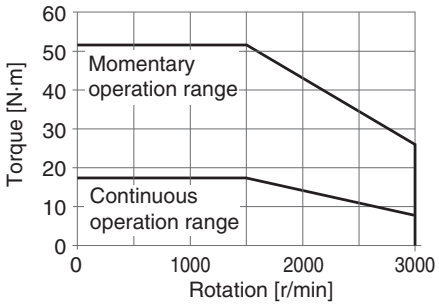
Torque-Rotation Speed Characteristics for 1,500-r/min Servomotors (200 VAC)

The following graphs show the characteristics with a 3-m standard cable and a 3-phase 200-VAC or single-phase 220-VAC input.

· R88M-1AM1K515T



· R88M-1AM2K715T

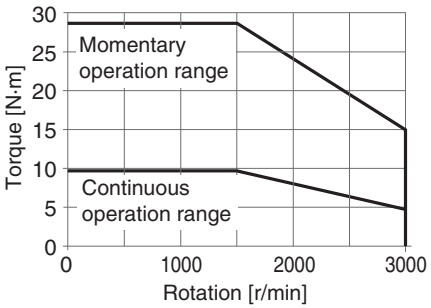


Note: The continuous operation range is the range in which continuous operation is possible at an ambient temperature of 40°C when the Servomotor is horizontally installed on a specified radiator plate.
Continuous operation at the maximum speed is also possible. However, doing so will reduce the output torque.

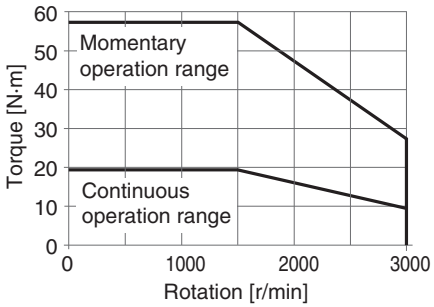
Torque-Rotation Speed Characteristics for 1,500-r/min Servomotors (400 VAC)

The following graphs show the characteristics with a 3-m standard cable and a 3-phase 400-VAC input.

· R88M-1AM1K515C



· R88M-1AM3K015C

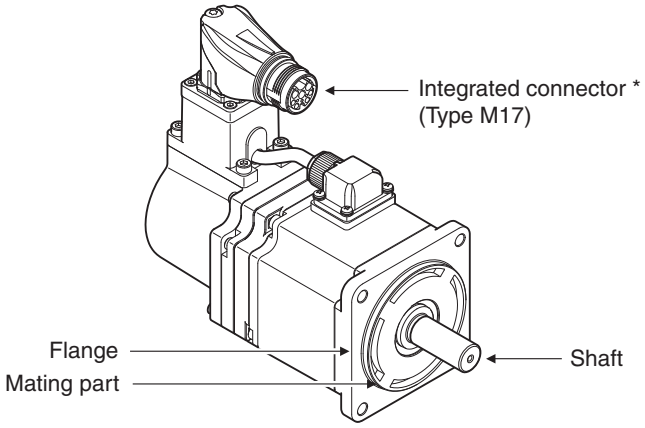


Note: The continuous operation range is the range in which continuous operation is possible at an ambient temperature of 40°C when the Servomotor is horizontally installed on a specified radiator plate.
Continuous operation at the maximum speed is also possible. However, doing so will reduce the output torque.

Part Names

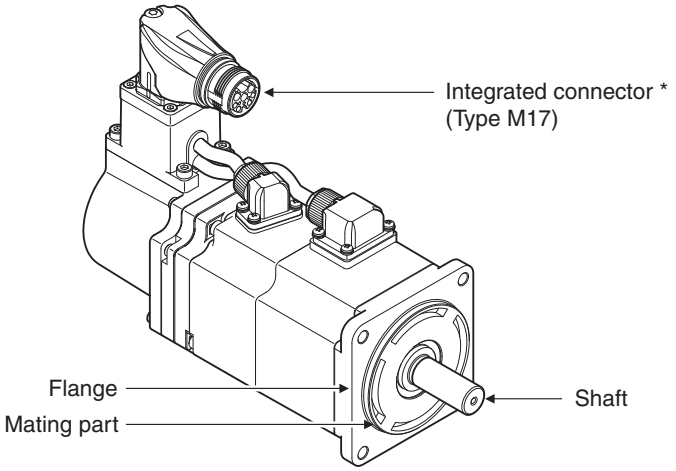
Servomotor Part Names

Flange Size of 60×60, 80×80



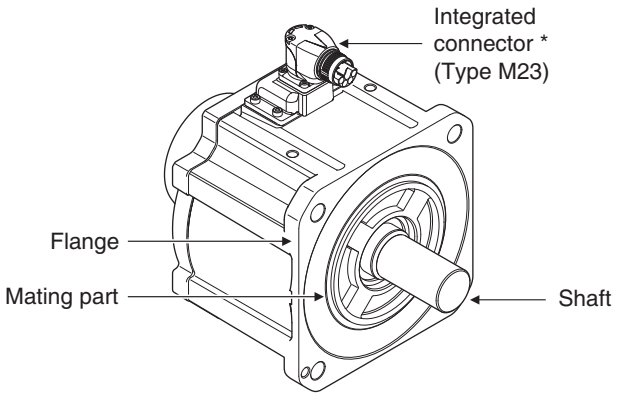
* For servomotors without Brake, brake wire signals are not use (terminal open).

200 VAC 200 W Servomotors (without Brake)



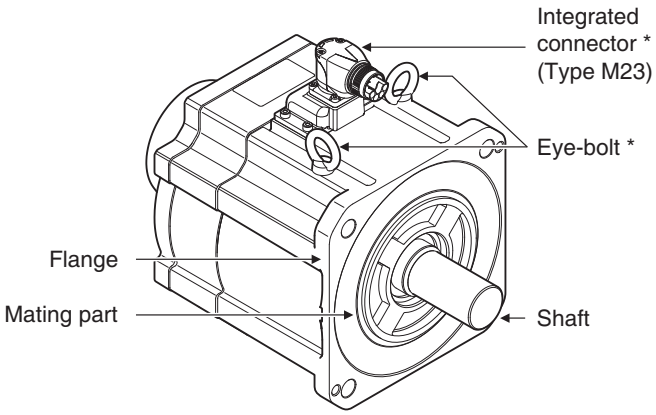
200 VAC 200 W Servomotors (with Brake)

Flange Size of 100×100, 130×130, 180×180



* For servomotors without Brake, brake wire signals are not use (terminal open).

400 VAC 3 kW Servomotors (without Brake)



* In some cases, eye bolts are not equipped, depending on the Servomotor's mass.

400 VAC 3 kW Servomotors (with Brake)

Servomotor Functions

Shaft

The load is mounted on this shaft.
The direction which is in parallel with the shaft is called the thrust direction, and the direction which is perpendicular to the shaft is called the radial direction.

Flange

Used for mounting the Servomotor on the equipment.
Fit the mating part into the equipment and use the mounting holes to screw the Servomotor.

Integrated Connector

This is an integrated connector that can connect each cable for power, encoder and brake all at once.
The power cable supplies power to the phases U, V, and W of the Servomotor.
The encoder cable supplies power to the encoder of the Servomotor and communicates with the Servo Drive.
The brake cable supplies power to the brake coil.
The cable outlet direction can be selected. The change of the cable outlet direction shall be up to five times.

Eye-bolt

Used for lifting and moving the motor by putting a wire rope, for example, through the shaft.

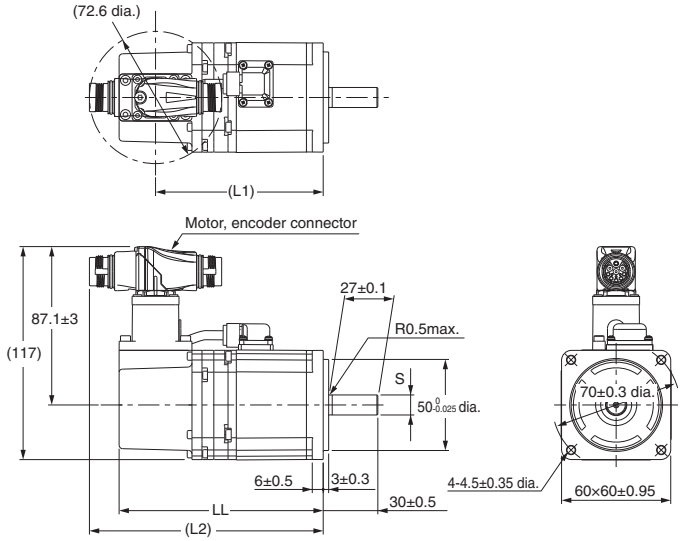
External Dimensions

(Unit: mm)

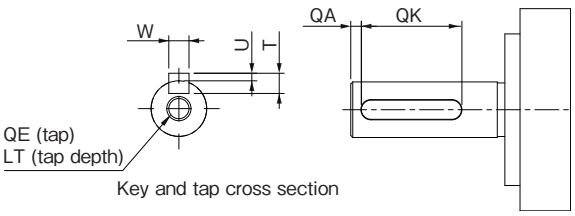
3,000-r/min Servomotors (200 V)

200 W/400 W (without Brake)

R88M-1AM20030T(-O/-S2/-OS2), R88M-1AM40030T(-O/-S2/-OS2)



Shaft-end with key and tap



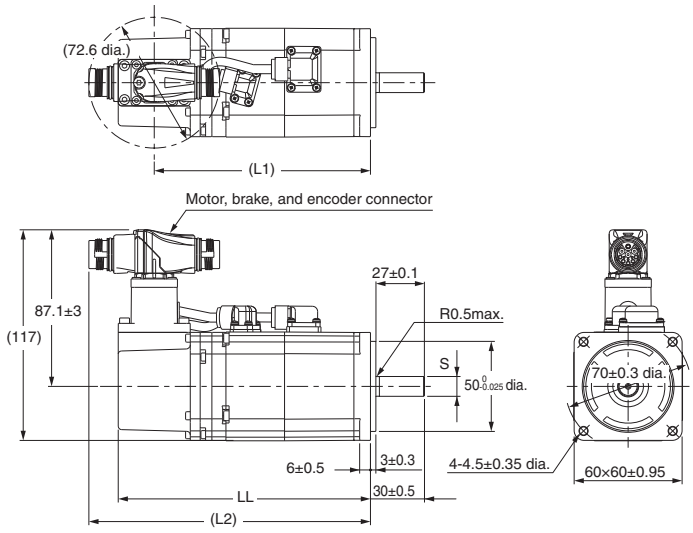
Model	Dimensions [mm]			
	S	LL	L1	L2
R88M-1AM20030T(-S2)	11 dia. 0 -0.011	112±1	92	128
R88M-1AM40030T(-S2)	14 dia. 0 -0.011	138±1	118	154
R88M-1AM20030T-O(S2)	11 dia. 0 -0.011	119±1	99	135
R88M-1AM40030T-O(S2)	14 dia. 0 -0.011	145±1	125	161

Model	Dimensions [mm]						
	QA	QK	W	T	U	QE	LT
R88M-1AM20030T(-S2/-OS2)	2	20	4 0 -0.03	4	1.5 0 -0.2	M4	10
R88M-1AM40030T(-S2/-OS2)	2	20	5 0 -0.03	5	2 0 -0.2	M5	12

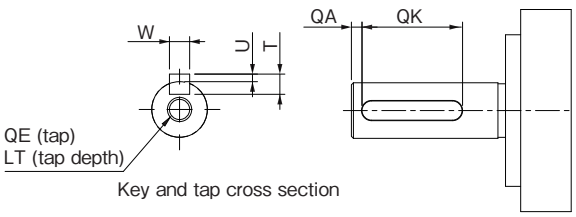
Note: The standard shaft type is a straight shaft. Models with a key and tap are indicated with “S2” at the end of the model number. Models with an oil seal are indicated with “O” at the end of the model number.

200 W/400 W (with Brake)

R88M-1AM20030T-B(O/S2/OS2), R88M-1AM40030T-B(O/S2/OS2)



Shaft-end with key and tap



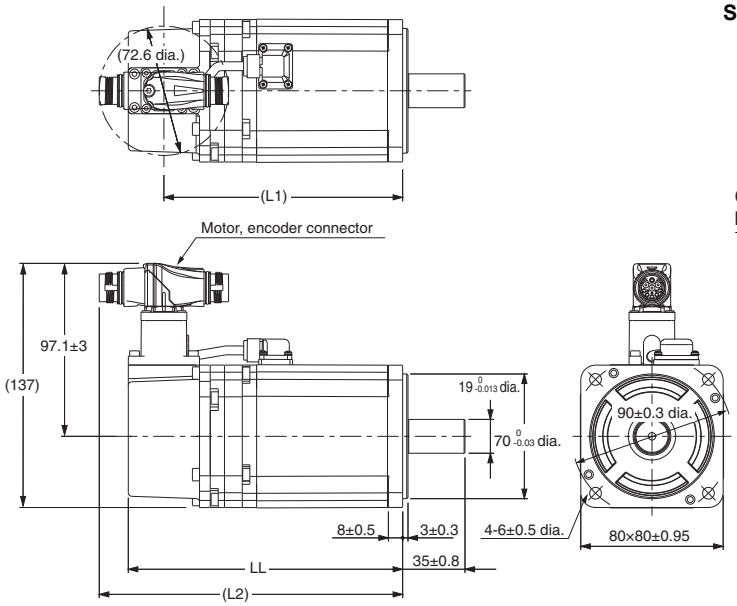
Model	Dimensions [mm]			
	S	LL	L1	L2
R88M-1AM20030T-B(S2)	11 dia. 0 -0.011	140±1	120	156
R88M-1AM40030T-B(S2)	14 dia. 0 -0.011	166±1	146	182
R88M-1AM20030T-BO(S2)	11 dia. 0 -0.011	147±1	127	163
R88M-1AM40030T-BO(S2)	14 dia. 0 -0.011	173±1	153	189

Model	Dimensions [mm]						
	QA	QK	W	T	U	QE	LT
R88M-1AM20030T-B(S2/OS2)	2	20	4 0 -0.03	4	1.5 0 -0.2	M4	10
R88M-1AM40030T-B(S2/OS2)	2	20	5 0 -0.03	5	2 0 -0.2	M5	12

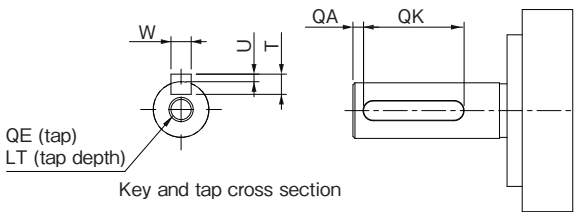
Note: The standard shaft type is a straight shaft. Models with a key and tap are indicated with “S2” at the end of the model number. Models with an oil seal are indicated with “O” at the end of the model number.

750 W (without Brake)

R88M-1AM75030T(-O/-S2/-OS2)



Shaft-end with key and tap



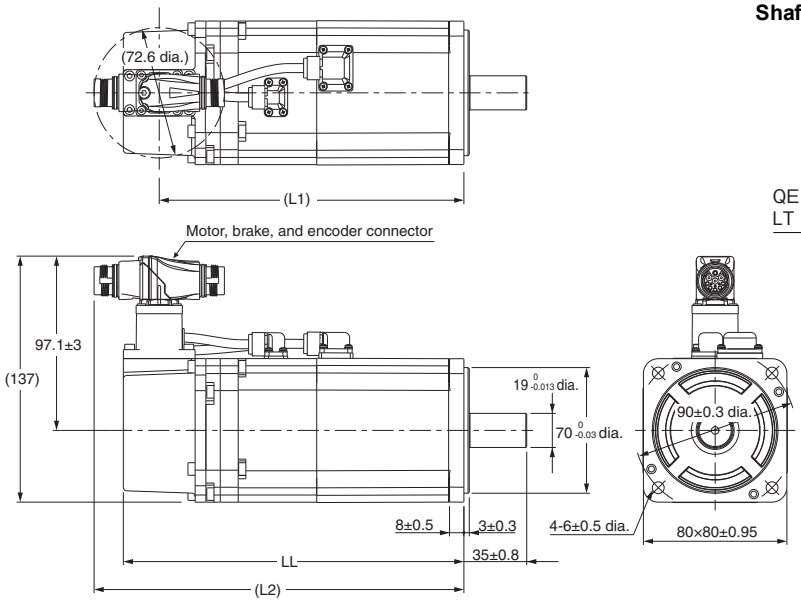
Model	Dimensions [mm]		
	LL	L1	L2
R88M-1AM75030T(-S2)	154±1	134	170
R88M-1AM75030T-O(S2)	161±1	141	177

Model	Dimensions [mm]						
	QA	QK	W	T	U	QE	LT
R88M-1AM75030T(-S2/-OS2)	3	24	$6^{0}_{-0.03}$	6	$2.5^{0}_{-0.2}$	M5	12

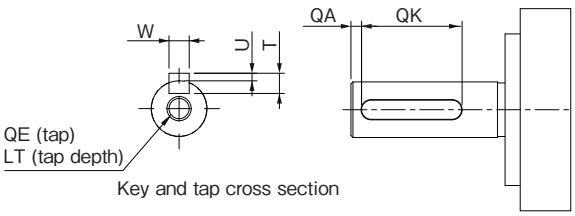
Note: The standard shaft type is a straight shaft. Models with a key and tap are indicated with “S2” at the end of the model number. Models with an oil seal are indicated with “O” at the end of the model number.

750 W (with Brake)

R88M-1AM75030T-B(O/S2/OS2)



Shaft-end with key and tap



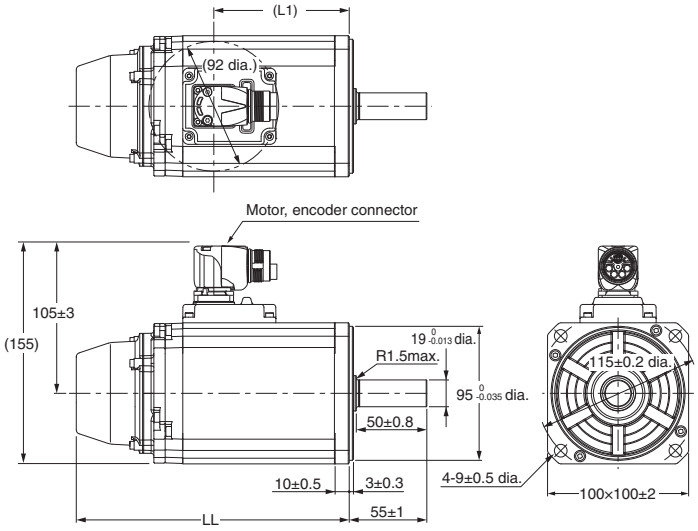
Model	Dimensions [mm]		
	LL	L1	L2
R88M-1AM75030T-B(S2)	189.8±2	170	206
R88M-1AM75030T-BO(S2)	196.8±2	177	213

Model	Dimensions [mm]						
	QA	QK	W	T	U	QE	LT
R88M-1AM75030T-B(S2/OS2)	3	24	$6^{0}_{-0.03}$	6	$2.5^{0}_{-0.2}$	M5	12

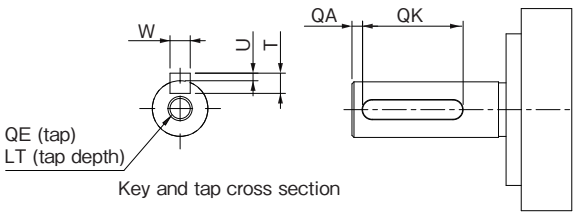
Note: The standard shaft type is a straight shaft. Models with a key and tap are indicated with “S2” at the end of the model number. Models with an oil seal are indicated with “O” at the end of the model number.

1 kW/1.5 kW/2 kW (without Brake)

R88M-1AL1K030T(-O/-S2/-OS2), R88M-1AL1K530T(-O/-S2/-OS2), R88M-1AL2K030T(-O/-S2/-OS2)



Shaft-end with key and tap



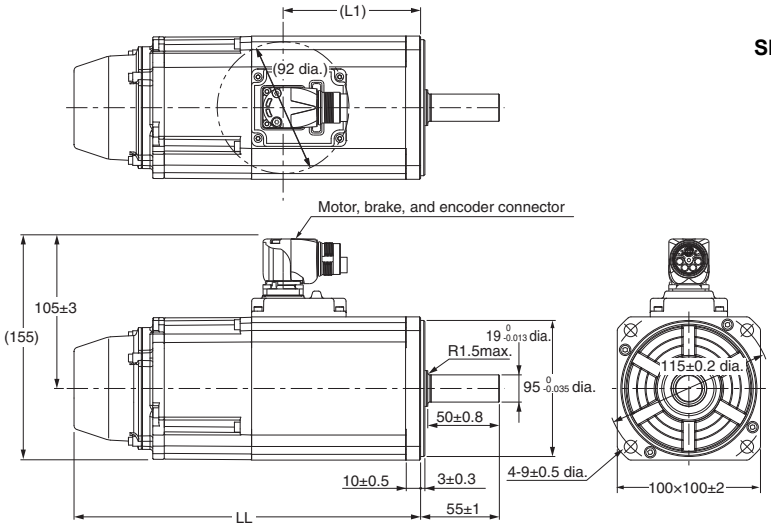
Model	Dimensions [mm]	
	LL	L1
R88M-1AL1K030T(-O/-S2/-OS2)	193.5±2	96
R88M-1AL1K530T(-O/-S2/-OS2)	193.5±2	96
R88M-1AL2K030T(-O/-S2/-OS2)	204.5±3	107

Model	Dimensions [mm]						
	QA	QK	W	T	U	QE	LT
R88M-1AL1K030T(-S2/-OS2)	3	42	6 0 -0.03	6	2.5 0 -0.2	M5	12
R88M-1AL1K530T(-S2/-OS2)	3	42	6 0 -0.03	6	2.5 0 -0.2	M5	12
R88M-1AL2K030T(-S2/-OS2)	3	42	6 0 -0.03	6	2.5 0 -0.2	M5	12

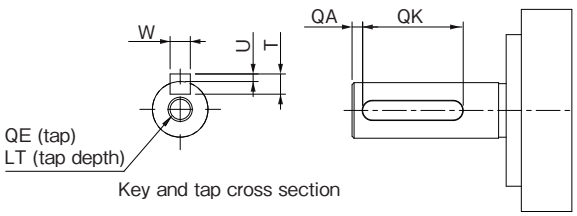
Note: The standard shaft type is a straight shaft. Models with a key and tap are indicated with “S2” at the end of the model number. Models with an oil seal are indicated with “O” at the end of the model number.

1 kW/1.5 kW/2 kW (with Brake)

R88M-1AL1K030T-B(O/S2/OS2), R88M-1AL1K530T-B(O/S2/OS2), R88M-1AL2K030T-B(O/S2/OS2)



Shaft-end with key and tap



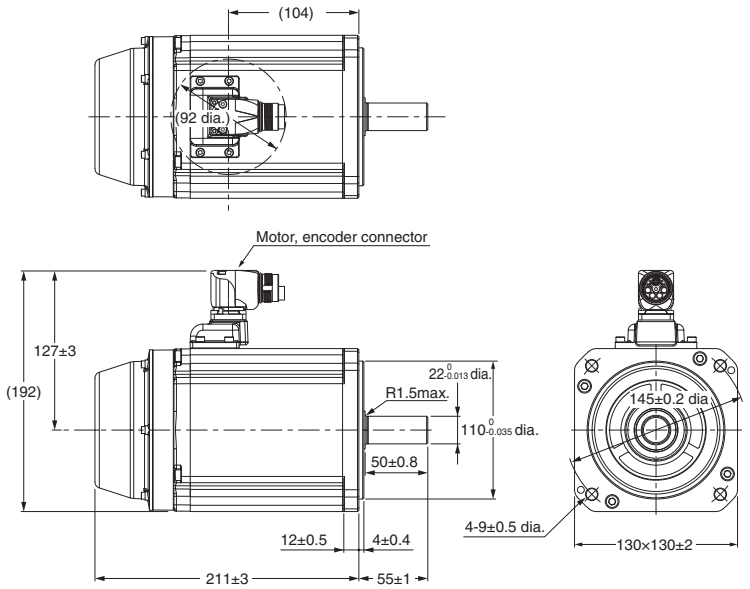
Model	Dimensions [mm]	
	LL	L1
R88M-1AL1K030T-B(O/S2/OS2)	242±3	96
R88M-1AL1K530T-B(O/S2/OS2)	242±3	96
R88M-1AL2K030T-B(O/S2/OS2)	253±3	107

Model	Dimensions [mm]						
	QA	QK	W	T	U	QE	LT
R88M-1AL1K030T-B(S2/OS2)	3	42	6 0 -0.03	6	2.5 0 -0.2	M5	12
R88M-1AL1K530T-B(S2/OS2)	3	42	6 0 -0.03	6	2.5 0 -0.2	M5	12
R88M-1AL2K030T-B(S2/OS2)	3	42	6 0 -0.03	6	2.5 0 -0.2	M5	12

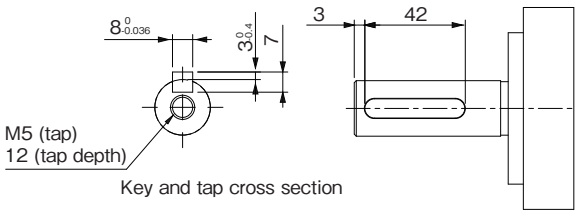
Note: The standard shaft type is a straight shaft. Models with a key and tap are indicated with “S2” at the end of the model number. Models with an oil seal are indicated with “O” at the end of the model number.

2.6 kW (without Brake)

R88M-1AL2K630T(-O/-S2/-OS2)



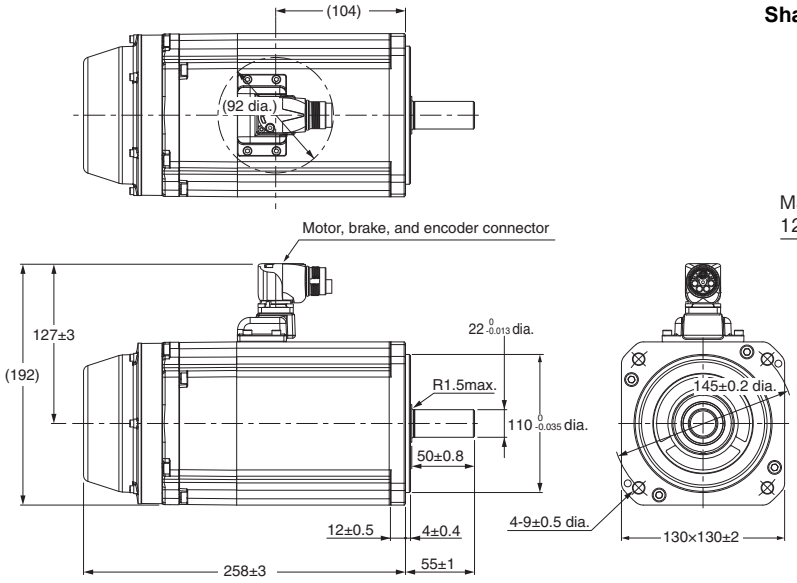
Shaft-end with key and tap



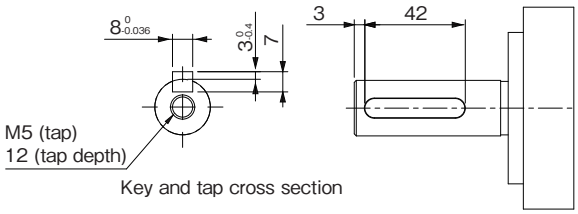
Note: The standard shaft type is a straight shaft. Models with a key and tap are indicated with “S2” at the end of the model number. Models with an oil seal are indicated with “O” at the end of the model number.

2.6 kW (with Brake)

R88M-1AL2K630T-B(O/S2/OS2)



Shaft-end with key and tap

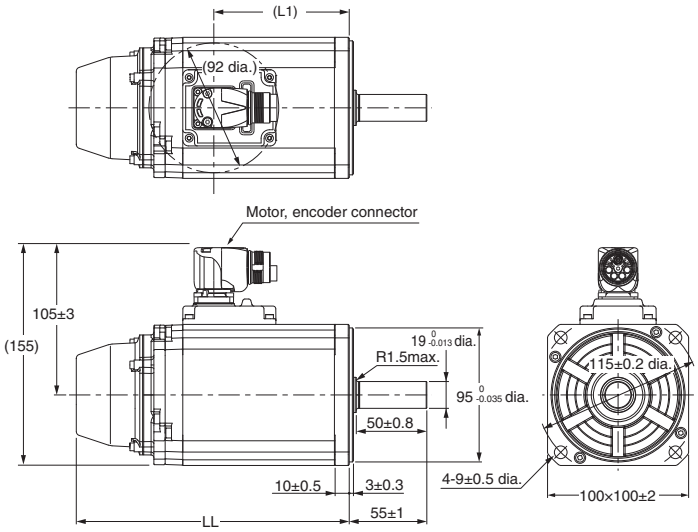


Note: The standard shaft type is a straight shaft. Models with a key and tap are indicated with “S2” at the end of the model number. Models with an oil seal are indicated with “O” at the end of the model number.

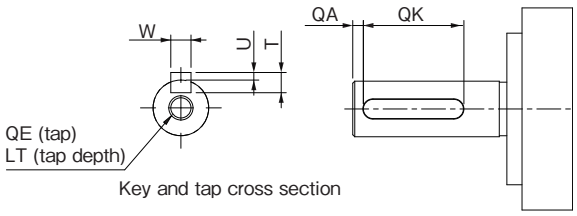
3,000-r/min Servomotors (400 V)

750 W/1 kW/1.5 kW/2 kW (without Brake)

R88M-1AL75030C(-O/ -S2/ -OS2), R88M-1AL1K030C(-O/ -S2/ -OS2)
R88M-1AL1K530C(-O/ -S2/ -OS2), R88M-1AL2K030C(-O/ -S2/ -OS2)



Shaft-end with key and tap



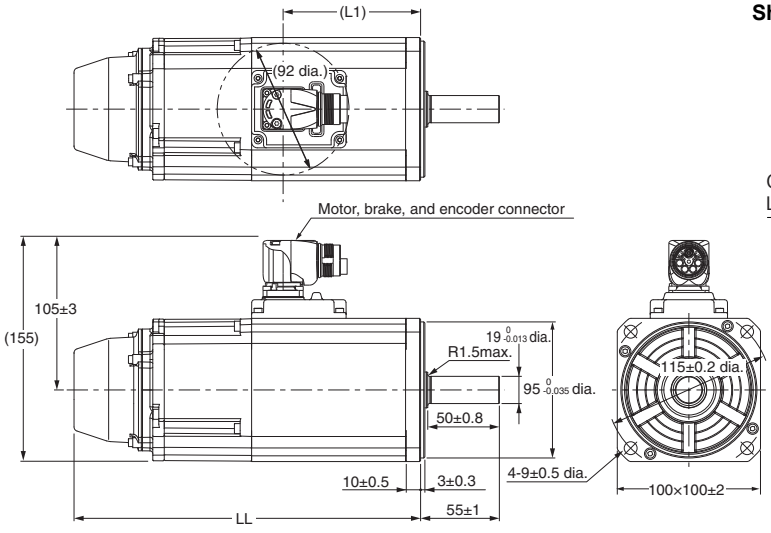
Model	Dimensions [mm]	
	LL	L1
R88M-1AL75030C(-O/-S2/-OS2)	164.5±2	67
R88M-1AL1K030C(-O/-S2/-OS2)	193.5±2	96
R88M-1AL1K530C(-O/-S2/-OS2)	193.5±2	96
R88M-1AL2K030C(-O/-S2/-OS2)	204.5±3	107

Note: The standard shaft type is a straight shaft. Models with a key and tap are indicated with "S2" at the end of the model number. Models with an oil seal are indicated with "O" at the end of the model number.

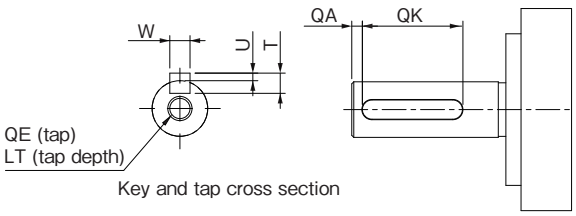
Model	Dimensions [mm]						
	QA	QK	W	T	U	QE	LT
R88M-1AL75030C(-S2/-OS2)	3	42	6 0 -0.03	6	2.5 0 -0.2	M5	12
R88M-1AL1K030C(-S2/-OS2)	3	42	6 0 -0.03	6	2.5 0 -0.2	M5	12
R88M-1AL1K530C(-S2/-OS2)	3	42	6 0 -0.03	6	2.5 0 -0.2	M5	12
R88M-1AL2K030C(-S2/-OS2)	3	42	6 0 -0.03	6	2.5 0 -0.2	M5	12

750 W/1 kW/1.5 kW/2 kW (with Brake)

R88M-1AL75030C-B(O/S2/OS2), R88M-1AL1K030C-B(O/S2/OS2)
R88M-1AL1K530C-B(O/S2/OS2), R88M-1AL2K030C-B(O/S2/OS2)



Shaft-end with key and tap



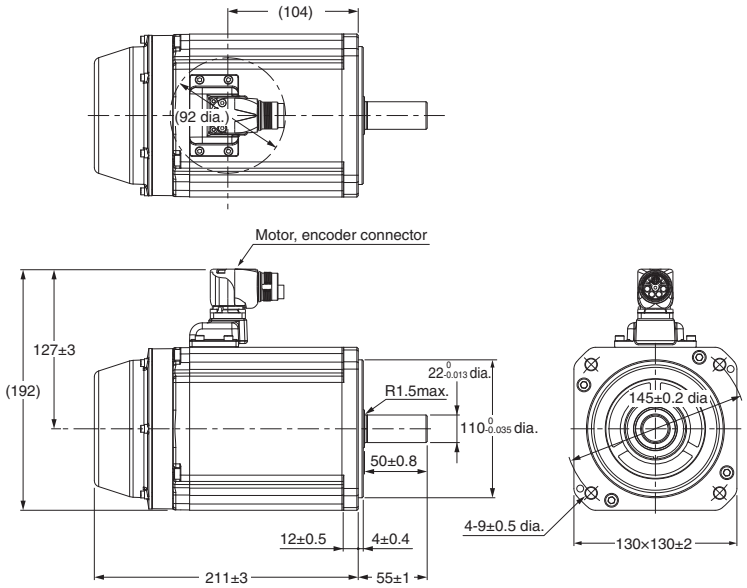
Model	Dimensions [mm]	
	LL	L1
R88M-1AL75030C-B(O/S2/OS2)	213±3	67
R88M-1AL1K030C-B(O/S2/OS2)	242±3	96
R88M-1AL1K530C-B(O/S2/OS2)	242±3	96
R88M-1AL2K030C-B(O/S2/OS2)	253±3	107

Note: The standard shaft type is a straight shaft. Models with a key and tap are indicated with "S2" at the end of the model number. Models with an oil seal are indicated with "O" at the end of the model number.

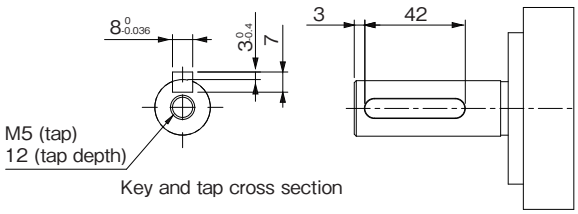
Model	Dimensions [mm]						
	QA	QK	W	T	U	QE	LT
R88M-1AL75030C-B(S2/OS2)	3	42	6 0 -0.03	6	2.5 0 -0.2	M5	12
R88M-1AL1K030C-B(S2/OS2)	3	42	6 0 -0.03	6	2.5 0 -0.2	M5	12
R88M-1AL1K530C-B(S2/OS2)	3	42	6 0 -0.03	6	2.5 0 -0.2	M5	12
R88M-1AL2K030C-B(S2/OS2)	3	42	6 0 -0.03	6	2.5 0 -0.2	M5	12

3 kW (without Brake)

R88M-1AL3K030C(-O/-S2/-OS2)



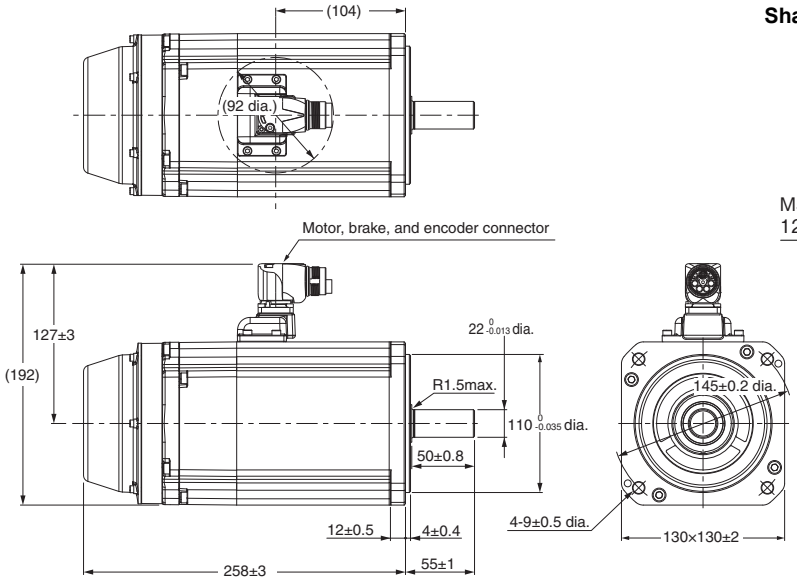
Shaft-end with key and tap



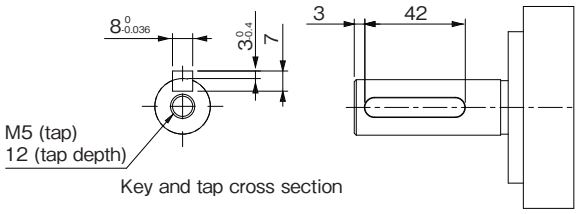
Note: The standard shaft type is a straight shaft. Models with a key and tap are indicated with “S2” at the end of the model number. Models with an oil seal are indicated with “O” at the end of the model number.

3 kW (with Brake)

R88M-1AL3K030C-B(O/S2/OS2)



Shaft-end with key and tap

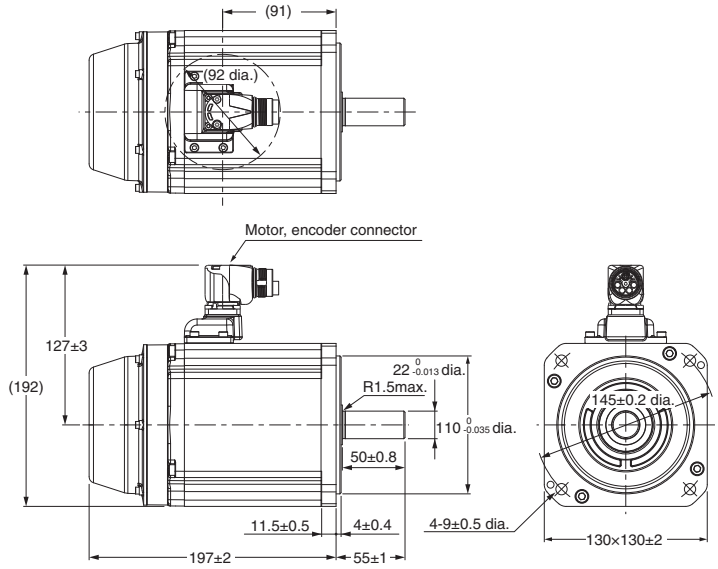


Note: The standard shaft type is a straight shaft. Models with a key and tap are indicated with “S2” at the end of the model number. Models with an oil seal are indicated with “O” at the end of the model number.

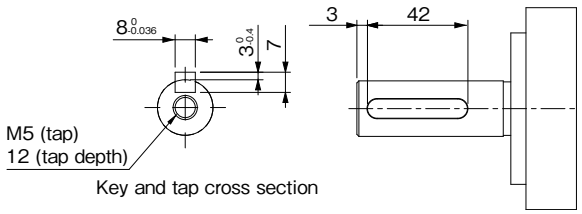
1,500-r/min Servomotors (200 V/400 V)

1.5 kW (without Brake)

R88M-1AM1K515T(-O/-S2/-OS2)
R88M-1AM1K515C(-O/-S2/-OS2)



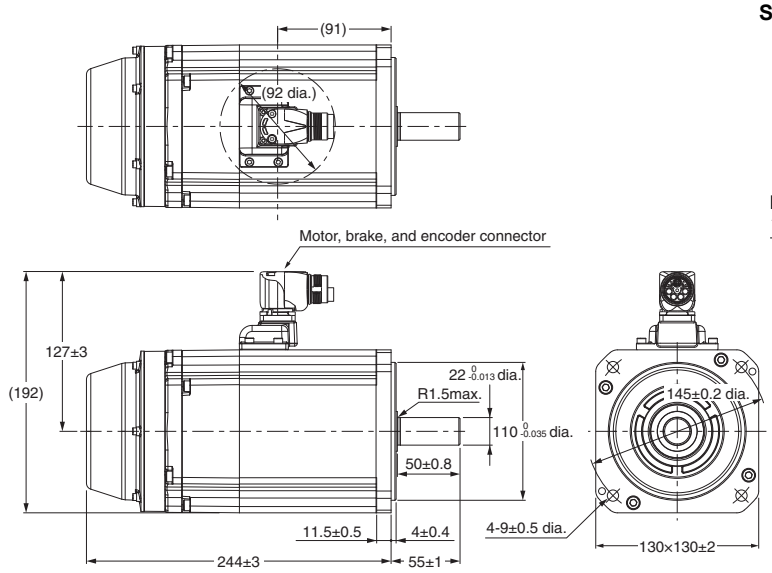
Shaft-end with key and tap



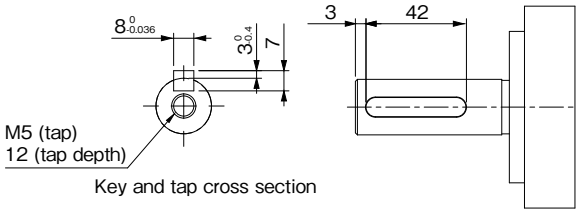
Note: The standard shaft type is a straight shaft. Models with a key and tap are indicated with “S2” at the end of the model number. Models with an oil seal are indicated with “O” at the end of the model number.

1.5 kW (with Brake)

R88M-1AM1K515T-B(O/S2/OS2)
R88M-1AM1K515C-B(O/S2/OS2)

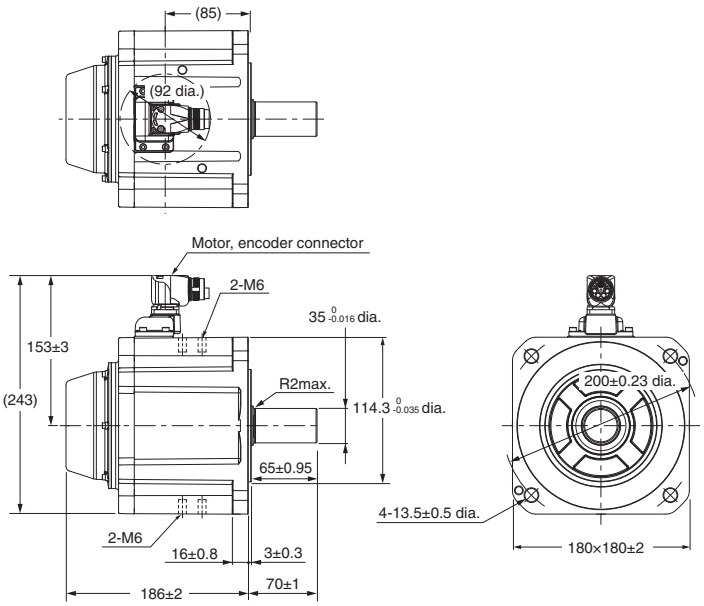


Shaft-end with key and tap

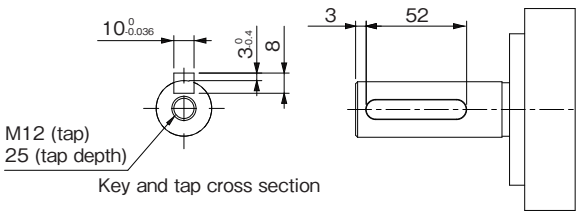


Note: The standard shaft type is a straight shaft. Models with a key and tap are indicated with “S2” at the end of the model number. Models with an oil seal are indicated with “O” at the end of the model number.

2.7 kW (without Brake) R88M-1AM2K715T(-O/-S2/-OS2)
3 kW (without Brake) R88M-1AM3K015C(-O/-S2/-OS2)

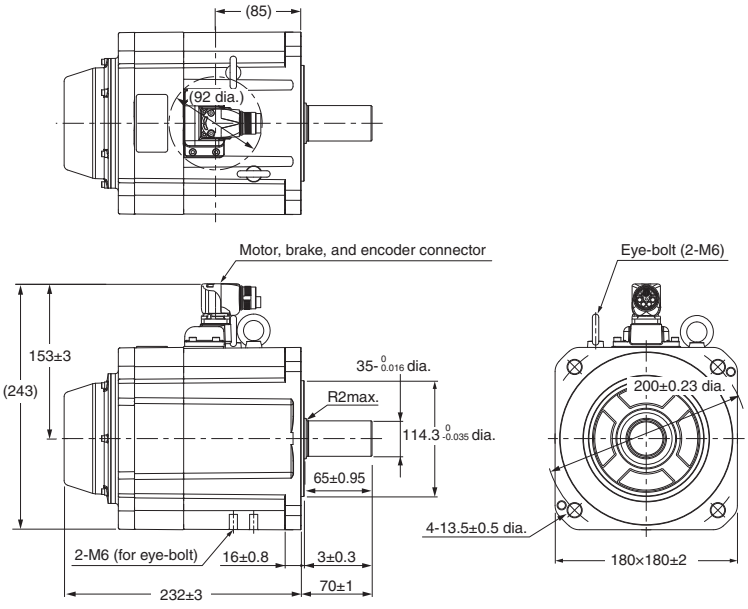


Shaft-end with key and tap

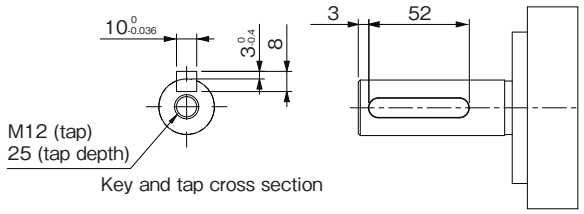


Note: The standard shaft type is a straight shaft. Models with a key and tap are indicated with “S2” at the end of the model number. Models with an oil seal are indicated with “O” at the end of the model number.

2.7 kW (with Brake) R88M-1AM2K715T-B(O/S2/OS2)
3 kW (with Brake) R88M-1AM3K015C-B(O/S2/OS2)



Shaft-end with key and tap

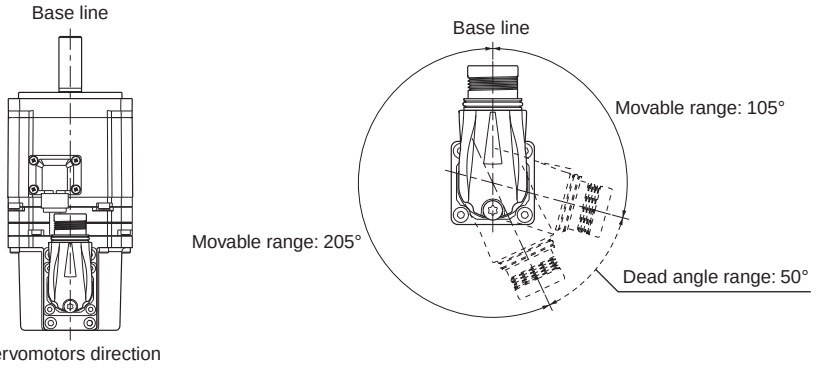


Note: The standard shaft type is a straight shaft. Models with a key and tap are indicated with “S2” at the end of the model number. Models with an oil seal are indicated with “O” at the end of the model number.

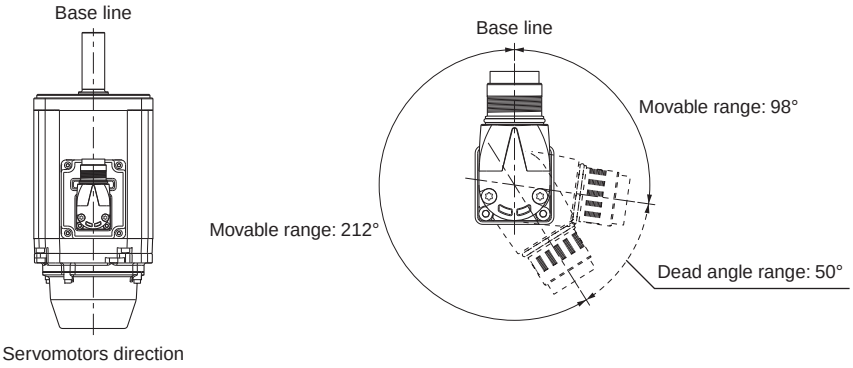
Cable Outlet Direction of Integrated Connector

The cable outlet direction of the servomotor for connector type M17 or M23 can be selected. The below shows the selectable range.
The change of the cable outlet direction shall be up to five times. For a procedure of the change of the cable outlet direction, refer to the *AC Servomotors/Servo Drives 1S-series with Built-in EtherCAT® Communications and Safety Functionality User's Manual* (I621).

Cable Outlet Direction of Connector Type M17



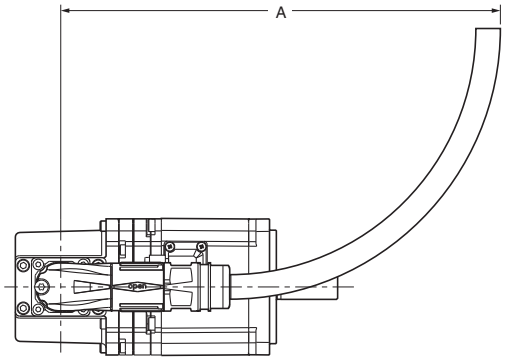
Cable Outlet Direction of Connector Type M23



Cable Wiring Dimension for a Case of Servo Motor Installing

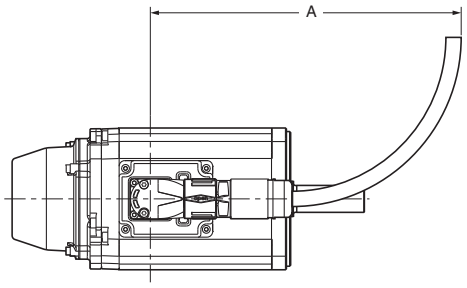
The Integrated cable wiring dimensions are shown below the table according to connector type for Servomotors.
The dimensions from the rotation center of the Integrated connector to the Integrated cable surrounding are indicated as A.

Servo Motor for Connector Type M17



Model	Dimensions [mm]
	A
R88M-1AM20030T(-O/-S2/-OS2)	210
R88M-1AM40030T(-O/-S2/-OS2)	
R88M-1AM75030T(-O/-S2/-OS2)	
R88M-1AM20030T-B(O/S2/OS2)	
R88M-1AM40030T-B(O/S2/OS2)	
R88M-1AM75030T-B(O/S2/OS2)	

Servo Motor for Connector Type M23



Model	Dimensions [mm]
	A
R88M-1AL75030C(-S2/-O/-OS2/-B/-BS2/-BO/-BOS2)	270
R88M-1AL1K030T(-S2/-O/-OS2/-B/-BS2/-BO/-BOS2)	
R88M-1AL1K030C(-S2/-O/-OS2/-B/-BS2/-BO/-BOS2)	
R88M-1AL1K530T(-S2/-O/-OS2/-B/-BS2/-BO/-BOS2)	
R88M-1AL1K530C(-S2/-O/-OS2/-B/-BS2/-BO/-BOS2)	
R88M-1AL2K030T(-S2/-O/-OS2/-B/-BS2/-BO/-BOS2)	
R88M-1AL2K030C(-S2/-O/-OS2/-B/-BS2/-BO/-BOS2)	
R88M-1AL2K630T(-S2/-O/-OS2/-B/-BS2/-BO/-BOS2)	
R88M-1AL3K030C(-S2/-O/-OS2/-B/-BS2/-BO/-BOS2)	
R88M-1AM1K515T(-S2/-O/-OS2/-B/-BS2/-BO/-BOS2)	
R88M-1AM1K515C(-S2/-O/-OS2/-B/-BS2/-BO/-BOS2)	
R88M-1AM2K715T(-S2/-O/-OS2/-B/-BS2/-BO/-BOS2)	
R88M-1AM3K015C(-S2/-O/-OS2/-B/-BS2/-BO/-BOS2)	

MEMO

Ordering Information

Interpreting Model Numbers

AC Servo Drives with Built-in EtherCAT

R88D-1S AN 02 H -ECT

(1) (2) (3) (4) (5)

No	Item	Symbol	Specifications
(1)	1S-series Servo Drive		
(2)	Servo Drive type	N	Standard / Communication type *
		AN	Advance / Communications type
(3)	Applicable Servomotor rated output	02	200 W
		04	400 W
		08	750 W
		10	1 kW
		15	1.5 kW
		20	2 kW
		30	3 kW
(4)	Power Supply Voltage	H	200 VAC
		F	400 VAC
(5)	Communications type	ECT	EtherCAT Communications

* For details of the 1S-series Standard / Communication type *, refer to the *AC Servo System 1S Series CATALOG* (Cat. No. I821).

AC Servomotor

R88M-1 AM 200 30 T -BOS2

(1) (2) (3) (4) (5) (6)

No	Item	Symbol	Specifications
(1)	1S-series Servomotor		
(2)	Servomotor Type	L	Standard / Low-inertia type *
		M	Standard / Middle-inertia type *
		AL	Advance / Low-inertia type
		AM	Advance / Middle-inertia type
(3)	Rated output	200	200 W
		400	400 W
		750	750 W
		1K0	1 kW
		1K5	1.5 kW
		2K0	2 kW
		2K6	2.6 kW
		2K7	2.7 kW
		3K0	3 kW
(4)	Rated rotation speed	15	1500 r/min
		30	3000 r/min
(5)	Servo Drive main power supply voltage and encoder type	T	200 VAC absolute encoder
		C	400 VAC absolute encoder
(6)	Options		
	Brake	None	Without brake
		B	With 24-VDC brake
	Oil seal	None	Without oil seal
		O	With oil seal
	Key and tap	None	Straight shaft
		S2	With key and tap

* For details of the 1S-series Standard / Low-inertia type and Standard / Middle-inertia type, refer to the *AC Servo System 1S Series CATALOG* (Cat. No. I821).

Table of AC Servomotor Variations

R88M-1□□ □□□ □□ □ - □□□□

(2) (3) (4) (5) (6) (7) (8)

(2) Type	(3) Rated output	(4) Rotation speed	Model	(5) Power supply specifications ABS 400 C	(5) ABS 200 T	(5) ABS 100 S	(6) Brake None	(6) Brake B	(7) Oil seal None	(7) Oil seal O	(8) Shaft type None	(8) Shaft type S2
AM	200 W	3000 r/min	R88M-1AM20030									
	400 W		R88M-1AM40030									
	750 W		R88M-1AM75030									
AL	750 W		R88M-1AL75030									
	1 kW		R88M-1AL1K030									
	1.5 kW		R88M-1AL1K530									
	2 kW		R88M-1AL2K030									
	2.6 kW		R88M-1AL2K630									
	3 kW		R88M-1AL3K030									
AM	1.5 kW	1500 r/min	R88M-1AM1K515									
	2.7 kW		R88M-1AM2K715									
	3 kW		R88M-1AM3K015									
AM: Middle inertia AL: Low inertia	200: 200 W 1K0: 1 kW 3K0: 3 kW	15: 1500 r/min 30: 3000 r/min		C: 400 VAC (with absolute encoder) ABS/INC T: 200 VAC (with absolute encoder) ABS/INC S: 100 VAC (with absolute encoder) ABS/INC			None: Without brake B: With 24-VDC brake		None: Without oil seal O: With oil seal		None: Straight shaft S2: With key and tap	

Ordering Information

AC Servo Drives with Built-in EtherCAT Communications and Safety Functionality

Power supply voltage	Rated output	Model
Single-phase/3-phase 200 VAC	200 W	R88D-1SAN02H-ECT
	400 W	R88D-1SAN04H-ECT
	750 W	R88D-1SAN08H-ECT
	1.5 kW	R88D-1SAN15H-ECT
3-phase 200 VAC	1 kW	R88D-1SAN10H-ECT
	2 kW	R88D-1SAN20H-ECT
	3 kW	R88D-1SAN30H-ECT
3-phase 400 VAC	1 kW	R88D-1SAN10F-ECT
	1.5 kW	R88D-1SAN15F-ECT
	2 kW	R88D-1SAN20F-ECT
	3 kW	R88D-1SAN30F-ECT

AC Servomotors with Safety Functionality

3,000-r/min Servomotors

Specifications			Model	
			Without oil seal	
			Straight shaft	With key and tap
Without brake	200 VAC	200 W	R88M-1AM20030T	R88M-1AM20030T-S2
		400 W	R88M-1AM40030T	R88M-1AM40030T-S2
		750 W	R88M-1AM75030T	R88M-1AM75030T-S2
		1 kW	R88M-1AL1K030T	R88M-1AL1K030T-S2
		1.5 kW	R88M-1AL1K530T	R88M-1AL1K530T-S2
		2 kW	R88M-1AL2K030T	R88M-1AL2K030T-S2
		2.6 kW	R88M-1AL2K630T	R88M-1AL2K630T-S2
	400 VAC	750 W	R88M-1AL75030C	R88M-1AL75030C-S2
		1 kW	R88M-1AL1K030C	R88M-1AL1K030C-S2
		1.5 kW	R88M-1AL1K530C	R88M-1AL1K530C-S2
		2 kW	R88M-1AL2K030C	R88M-1AL2K030C-S2
		3 kW	R88M-1AL3K030C	R88M-1AL3K030C-S2
With brake	200 VAC	200 W	R88M-1AM20030T-B	R88M-1AM20030T-BS2
		400 W	R88M-1AM40030T-B	R88M-1AM40030T-BS2
		750 W	R88M-1AM75030T-B	R88M-1AM75030T-BS2
		1 kW	R88M-1AL1K030T-B	R88M-1AL1K030T-BS2
		1.5 kW	R88M-1AL1K530T-B	R88M-1AL1K530T-BS2
		2 kW	R88M-1AL2K030T-B	R88M-1AL2K030T-BS2
		2.6 kW	R88M-1AL2K630T-B	R88M-1AL2K630T-BS2
	400 VAC	750 W	R88M-1AL75030C-B	R88M-1AL75030C-BS2
		1 kW	R88M-1AL1K030C-B	R88M-1AL1K030C-BS2
		1.5 kW	R88M-1AL1K530C-B	R88M-1AL1K530C-BS2
		2 kW	R88M-1AL2K030C-B	R88M-1AL2K030C-BS2
		3 kW	R88M-1AL3K030C-B	R88M-1AL3K030C-BS2

Specifications			Model	
			With oil seal	
			Straight shaft	With key and tap
Without brake	200 VAC	200 W	R88M-1AM20030T-O	R88M-1AM20030T-OS2
		400 W	R88M-1AM40030T-O	R88M-1AM40030T-OS2
		750 W	R88M-1AM75030T-O	R88M-1AM75030T-OS2
		1 kW	R88M-1AL1K030T-O	R88M-1AL1K030T-OS2
		1.5 kW	R88M-1AL1K530T-O	R88M-1AL1K530T-OS2
		2 kW	R88M-1AL2K030T-O	R88M-1AL2K030T-OS2
		2.6 kW	R88M-1AL2K630T-O	R88M-1AL2K630T-OS2
	400 VAC	750 W	R88M-1AL75030C-O	R88M-1AL75030C-OS2
		1 kW	R88M-1AL1K030C-O	R88M-1AL1K030C-OS2
		1.5 kW	R88M-1AL1K530C-O	R88M-1AL1K530C-OS2
		2 kW	R88M-1AL2K030C-O	R88M-1AL2K030C-OS2
		3 kW	R88M-1AL3K030C-O	R88M-1AL3K030C-OS2
With brake	200 VAC	200 W	R88M-1AM20030T-BO	R88M-1AM20030T-BOS2
		400 W	R88M-1AM40030T-BO	R88M-1AM40030T-BOS2
		750 W	R88M-1AM75030T-BO	R88M-1AM75030T-BOS2
		1 kW	R88M-1AL1K030T-BO	R88M-1AL1K030T-BOS2
		1.5 kW	R88M-1AL1K530T-BO	R88M-1AL1K530T-BOS2
		2 kW	R88M-1AL2K030T-BO	R88M-1AL2K030T-BOS2
		2.6 kW	R88M-1AL2K630T-BO	R88M-1AL2K630T-BOS2
	400 VAC	750 W	R88M-1AL75030C-BO	R88M-1AL75030C-BOS2
		1 kW	R88M-1AL1K030C-BO	R88M-1AL1K030C-BOS2
		1.5 kW	R88M-1AL1K530C-BO	R88M-1AL1K530C-BOS2
		2 kW	R88M-1AL2K030C-BO	R88M-1AL2K030C-BOS2
		3 kW	R88M-1AL3K030C-BO	R88M-1AL3K030C-BOS2

1,500-r/min Servomotors

Specifications			Model	
			Without oil seal	
			Straight shaft	With key and tap
Without brake	200 VAC	1.5 kW	R88M-1AM1K515T	R88M-1AM1K515T-S2
		2.7 kW	R88M-1AM2K715T	R88M-1AM2K715T-S2
	400 VAC	1.5 kW	R88M-1AM1K515C	R88M-1AM1K515C-S2
		3 kW	R88M-1AM3K015C	R88M-1AM3K015C-S2
With brake	200 VAC	1.5 kW	R88M-1AM1K515T-B	R88M-1AM1K515T-BS2
		2.7 kW	R88M-1AM2K715T-B	R88M-1AM2K715T-BS2
	400 VAC	1.5 kW	R88M-1AM1K515C-B	R88M-1AM1K515C-BS2
		3 kW	R88M-1AM3K015C-B	R88M-1AM3K015C-BS2

Specifications			Model	
			With oil seal	
			Straight shaft	With key and tap
Without brake	200 VAC	1.5 kW	R88M-1AM1K515T-O	R88M-1AM1K515T-OS2
		2.7 kW	R88M-1AM2K715T-O	R88M-1AM2K715T-OS2
	400 VAC	1.5 kW	R88M-1AM1K515C-O	R88M-1AM1K515C-OS2
		3 kW	R88M-1AM3K015C-O	R88M-1AM3K015C-OS2
With brake	200 VAC	1.5 kW	R88M-1AM1K515T-BO	R88M-1AM1K515T-BOS2
		2.7 kW	R88M-1AM2K715T-BO	R88M-1AM2K715T-BOS2
	400 VAC	1.5 kW	R88M-1AM1K515C-BO	R88M-1AM1K515C-BOS2
		3 kW	R88M-1AM3K015C-BO	R88M-1AM3K015C-BOS2

Cables and Peripheral Devices

Integrated Cable (Flexible Cable)

Applicable Servomotor			With or without brake wire
			Model
200 V	3,000-r/min Servomotors of 200 W, 400 W, 750 W	3 m	R88A-CX1A003BF-A
		5 m	R88A-CX1A005BF-A
		10 m	R88A-CX1A010BF-A
		15 m	R88A-CX1A015BF-A
		20 m	R88A-CX1A020BF-A
200 V	3,000-r/min Servomotors of 1 kW	3 m	R88A-CX1B003BF-A
		5 m	R88A-CX1B005BF-A
		10 m	R88A-CX1B010BF-A
		15 m	R88A-CX1B015BF-A
		20 m	R88A-CX1B020BF-A
200 V 400 V	200 V 3,000-r/min Servomotors of 1.5 kW 1,500-r/min Servomotors of 1.5 kW 400 V 3,000-r/min Servomotors of 750 W, 1 kW, 1.5 kW, 2 kW, 3 kW 1,500-r/min Servomotors of 1.5 kW, 3 kW	3 m	R88A-CX1C003BF-A
		5 m	R88A-CX1C005BF-A
		10 m	R88A-CX1C010BF-A
		15 m	R88A-CX1C015BF-A
		20 m	R88A-CX1C020BF-A
200 V	3,000-r/min Servomotors of 2 kW, 2.6 kW 1,500-r/min Servomotors of 2.7 kW	3 m	R88A-CX1D003BF-A
		5 m	R88A-CX1D005BF-A
		10 m	R88A-CX1D010BF-A
		15 m	R88A-CX1D015BF-A
		20 m	R88A-CX1D020BF-A

Extension Power Cable (Flexible Cable)

Use the cables listed below to extend the integrated cable either with or without brake wire.
Also, use R88A-CX1BE□□BF when you use an extension cable for R88A-CX1C□□□□F.

Applicable Servomotor			Model
200 V	3,000-r/min Servomotors of 200 W, 400 W, 750 W	10 m	R88A-CX1AE10BF-A
		20 m	R88A-CX1AE20BF-A
200 V 400 V	200 V 3,000-r/min Servomotors of 1 kW, 1.5 kW 1,500-r/min Servomotors of 1.5 kW 400 V 3,000-r/min Servomotors of 750 W, 1 kW, 1.5 kW, 2 kW, 3 kW 1,500r/min Servomotors of 1.5 kW, 3 kW	10 m	R88A-CX1BE10BF-A
		20 m	R88A-CX1BE20BF-A
200 V	3,000-r/min Servomotors of 2 kW, 2.6 kW 1,500-r/min Servomotors of 2.7 kW	10 m	R88A-CX1DE10BF-A
		20 m	R88A-CX1DE20BF-A

Peripheral Connector

Servo Drive Side Connectors

One of each of servo drive side connectors (except the encoder connector) are included with the R88D-1SN□-ECT AC Servo Drive.
All connecters are also available separately for maintenance.

Name and applications	Model
Main circuit connector (CNA) *1 For R88D-1SAN02H-ECT/ -1SAN04H-ECT/ -1SAN08H-ECT/ -1SAN10H-ECT	R88A-CN102P *4
Main circuit connector A (CNA) *2 For R88D-1SAN15H-ECT/ -1SAN20H-ECT/ -1SAN30H-ECT/ -1SAN10F-ECT/-1SAN15F-ECT/ -1SAN20F-ECT/ -1SAN30F-ECT	R88A-CN103P *4
Main circuit connector B (CNB) *2 For R88D-1SAN15H-ECT/ -1SAN20H-ECT/ -1SAN30H-ECT/ -1SAN10F-ECT/-1SAN15F-ECT/ -1SAN20F-ECT/ -1SAN30F-ECT	R88A-CN104P *4
Motor connector (CNC) For R88D-1SAN02H-ECT/ -1SAN04H-ECT/ -1SAN08H-ECT/ -1SAN10H-ECT	R88A-CN101A *4
Motor connector (CNC) For R88D-1SAN15H-ECT/ -1SAN20H-ECT/ -1SAN30H-ECT/ -1SAN10F-ECT/-1SAN15F-ECT/ -1SAN20F-ECT/ -1SAN30F-ECT	R88A-CN102A *4
Control power supply connector (CND) For R88D-1SAN15H-ECT/ -1SAN20H-ECT/ -1SAN30H-ECT/ -1SAN10F-ECT/-1SAN15F-ECT/ -1SAN20F-ECT/ -1SAN30F-ECT	R88A-CN101P *4
Control I/O connector (CN1)	R88A-CN102C
Encoder connector (CN2)	R88A-CN101R
Brake interlock connector (CN12)	R88A-CN101B
Safety signal connector (CN14) *3	R88A-CN101S
Safe brake control connector (CN15)	R88A-CN102S

*1. Two short-circuit wires are connected to the connector.
*2. One short-circuit wire is connected to the connector.
*3. Four short-circuit wires are connected to the connector. One pin to prevent improper wiring are included.
*4. One opener is included.

Shield Clamp Bracket

A shield clamp is used to fix the integrated cable and to connect the shield of the integrated cable to FG of the servo drive. The shield clamp consists of the shield clamp bracket and shield clamp plate.

Name	Applicable Servo Drive and Integrated Cables		Model
Shield Clamp Bracket S	R88D-1SAN02H-ECT R88D-1SAN04H-ECT R88D-1SAN08H-ECT	R88A-CX1A□□□□□F	R88A-SC10CX
	R88D-1SAN10H-ECT	R88A-CX1B□□□□□F	
	R88D-1SAN15H-ECT R88D-1SAN10F-ECT R88D-1SAN15F-ECT R88D-1SAN20F-ECT R88D-1SAN30F-ECT	R88A-CX1C□□□□□F	
	R88D-1SAN20H-ECT R88D-1SAN30H-ECT	R88A-CX1D□□□□□F	

Note: An applicable Integrated cable comes with a shield clamp bracket.
An extension cable does not come with a shield clamp bracket.

External Regeneration Resistors

Applicable Servo Drive	Specifications	Model
R88D-1SAN02H-ECT	Regeneration process capacity: 24 W, 25 Ω	R88A-RR12025
R88D-1SAN30H-ECT	Regeneration process capacity: 60 W, 8 Ω	R88A-RR30008
R88D-1SAN20H-ECT	Regeneration process capacity: 60 W, 10 Ω	R88A-RR30010
R88D-1SAN15H-ECT	Regeneration process capacity: 60 W, 14 Ω	R88A-RR30014
R88D-1SAN08H-ECT/-1SAN10H-ECT/-1SAN20F-ECT *	Regeneration process capacity: 60 W, 20 Ω	R88A-RR30020
R88D-1SAN02H-ECT/-1SAN04H-ECT	Regeneration process capacity: 60 W, 25 Ω	R88A-RR30025
R88D-1SAN30F-ECT	Regeneration process capacity: 60 W, 32 Ω	R88A-RR30032
R88D-1SAN10F-ECT *	Regeneration process capacity: 60 W, 33 Ω	R88A-RR30033
R88D-1SAN15F-ECT	Regeneration process capacity: 60 W, 54 Ω	R88A-RR30054

* Use two series-connected External Regeneration Resistors for this model.

External Regeneration Resistance Unit

Applicable Servo Drive	Specifications	Model
R88D-1SAN30H-ECT	Regeneration process capacity: 640 W, 8 Ω	R88A-RR1K608
R88D-1SAN20H-ECT	Regeneration process capacity: 640 W, 10 Ω	R88A-RR1K610
R88D-1SAN15H-ECT	Regeneration process capacity: 640 W, 14 Ω	R88A-RR1K614
R88D-1SAN08H-ECT/-1SAN10H-ECT/-1SAN20F-ECT *	Regeneration process capacity: 640 W, 20 Ω	R88A-RR1K620
R88D-1SAN30F-ECT	Regeneration process capacity: 640 W, 32 Ω	R88A-RR1K632
R88D-1SAN20F-ECT	Regeneration process capacity: 640 W, 40 Ω	R88A-RR1K640
R88D-1SAN15F-ECT	Regeneration process capacity: 640 W, 54 Ω	R88A-RR1K654
R88D-1SAN10F-ECT	Regeneration process capacity: 640 W, 66 Ω	R88A-RR1K666

* Use two series-connected External Regeneration Resistors for this model.

DC Reactor

Applicable Servo Drive	Model
R88D-1SAN02H-ECT	R88A-PD2002
R88D-1SAN04H-ECT	R88A-PD2004
R88D-1SAN08H-ECT	R88A-PD2007
R88D-1SAN10H-ECT/ -1SAN15H-ECT	R88A-PD2015
R88D-1SAN20H-ECT	R88A-PD2022
R88D-1SAN30H-ECT	R88A-PD2037
R88D-1SAN10F-ECT/ -1SAN15F-ECT	R88A-PD4015
R88D-1SAN20F-ECT	R88A-PD4022
R88D-1SAN30F-ECT	R88A-PD4037

Software

Automation Software Sysmac Studio

Please purchase a DVD and required number of licenses the first time you purchase the Sysmac Studio. DVDs and licenses are available individually. Each model of licenses does not include any DVD.

Product name	Specifications	Number of licenses	Media	Model
Sysmac Studio Standard Edition Ver.1.□□ *1	The Sysmac Studio is the software that provides an integrated environment for setting, programming, debugging and maintenance of machine automation controllers including the NJ/NX-series CPU Units, NY-series Industrial PC, EtherCat Slave, and the HMI. Sysmac Studio runs on the following OS. Windows 7 (32-bit/64-bit version)/Windows 8 (32-bit/64-bit version)/ Windows 8.1 (32-bit/64-bit version)/Windows 10 (32-bit/64-bit version) *2 The Sysmac Studio Standard Edition DVD includes Support Software to set up EtherNet/IP Units, DeviceNet slaves, Serial Communications Units, and Support Software for creating screens on HMIs (CX-Designer). For details, refer to your OMRON website.	--- (Media only)	Sysmac Studio (32 bit) DVD	SYSMAC-SE200D
		--- (Media only)	Sysmac Studio (64 bit) DVD	SYSMAC-SE200D-64
		1 license *3	---	SYSMAC-SE201L
Sysmac Studio Drive Edition Ver.1.□□	Sysmac Studio Drive Edition is a limited license that provides selected functions required for 1S/G5 series Servo settings. This product is a license only. You need the Sysmac Studio Standard Edition DVD media to install it. With Drive Edition, you can use only the setup functions for 1S, G5-series Servo System	1 license	---	SYSMAC-DE001L

*1 The 1S-series Safety Servo Drive unit version 1.0 or later is supported by Sysmac Studio version 1.27 or higher.
*2 Model "SYSMAC-SE200D-64" runs on Windows 10 (64 bit).
*3 Multi licenses are available for the Sysmac Studio (3, 10, 30, or 50 licenses).

Collections of software functional components

Sysmac Library

Sysmac Library is POU Libraries (Function Block and Function) provided for NJ/NX-series Controller.
Please download it from following URL and install to Sysmac Studio.
http://www.ia.omron.com/sysmac_library/

Product	Features	Model
EtherCAT 1S Series Library	The EtherCAT 1S Series Library is used to initialize the absolute encoder, back up and restore the parameters for an OMRON 1S-series Servo Drive with built-in EtherCAT communications. You can use this library to reduce manpower of programming when implementing the processing for a Servo Drive.	SYSMAC-XR011

Combination table

Servo Drive and Servomotor Combinations

The following tables show the possible combinations of 1S-series Servo Drives Advance type and Servomotors.
The Servomotors and Servo Drives can only be used in the listed combinations. "□"t the end of the motor model number is for options, such as the shaft type and brake.

3,000-r/min Servomotors and Servo Drives

Main circuit power supply voltage	Servomotor rated output	Servomotor	Servo Drive
Single-phase/3-phase 200 VAC	200 W	R88M-1AM20030T-□	R88D-1SAN02H-ECT
	400 W	R88M-1AM40030T-□	R88D-1SAN04H-ECT
	750 W	R88M-1AM75030T-□	R88D-1SAN08H-ECT
	1.5 kW	R88M-1AL1K530T-□	R88D-1SAN15H-ECT
3-phase 200 VAC	1 kW	R88M-1AL1K030T-□	R88D-1SAN10H-ECT
	2 kW	R88M-1AL2K030T-□	R88D-1SAN20H-ECT
	2.6 kW	R88M-1AL2K630T-□	R88D-1SAN30H-ECT
3-phase 400 VAC	750 W	R88M-1AL75030C-□	R88D-1SAN10F-ECT
	1 kW	R88M-1AL1K030C-□	R88D-1SAN10F-ECT
	1.5 kW	R88M-1AL1K530C-□	R88D-1SAN15F-ECT
	2 kW	R88M-1AL2K030C-□	R88D-1SAN20F-ECT
	3 kW	R88M-1AL3K030C-□	R88D-1SAN30F-ECT

1,500-r/min Servomotors and Servo Drives

Main circuit power supply voltage	Servomotor rated output	Servomotor	Servo Drive
Single-phase/3-phase 200 VAC	1.5 kW	R88M-1AM1K515T-□	R88D-1SAN15H-ECT
3-phase 200 VAC	2.7 kW	R88M-1AM2K715T-□	R88D-1SAN30H-ECT
3-phase 400 VAC	1.5 kW	R88M-1AM1K515C-□	R88D-1SAN15F-ECT
	3 kW	R88M-1AM3K015C-□	R88D-1SAN30F-ECT

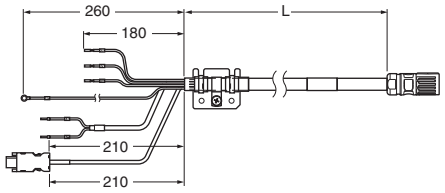
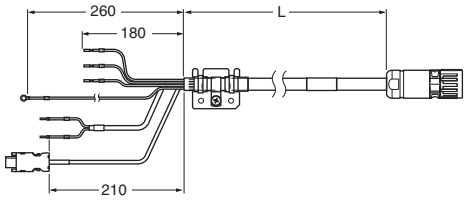
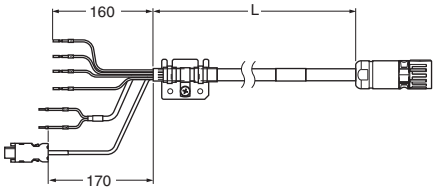
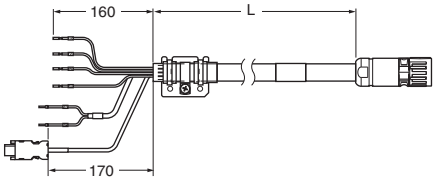
Cable Connection Configuration

Select an appropriate cable for the Servomotor.

Precautions for Correct Use

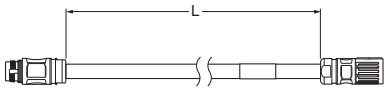
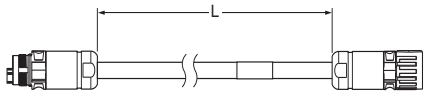
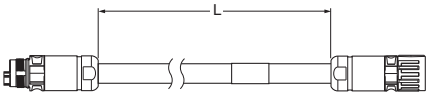
The regulations for cables differ according to the country in use. (The regulations can also be different in the same country according to the region or where the Servomotors are installed.) Therefore, be sure to check to the respective certificate institution for a cable that conforms to the regulations of each country.

Cables with Brake Wire

Connected to	Model	Connection configuration and external dimensions [mm]		
200 V: 3,000-r/min Servomotors of 200 W, 400 W, and 750 W	R88A-CX1A□□□BF The empty boxes in the model number are for the cable length. (11.8 mm dia.)	Servo Drive side Connector model: Receptacle 3E206-0100KV (3M) Shell kit 3E306-3200-008 (3M)		Servomotor side M17 Series (Phoenix Contact) Connector model 1624639 Contact model Power: 1618251 Brake: 1607582 Encoder (DSL): 1607581 Encoder (DSL) shield: 1607582
200 V: 3,000-r/min Servomotors of 1 kW	R88A-CX1B□□□BF The empty boxes in the model number are for the cable length. (14.5 mm dia.)	Servo Drive side Connector model: Receptacle 3E206-0100KV (3M) Shell kit 3E306-3200-008 (3M)		Servomotor side M23 Series (Phoenix Contact) Connector model 1621517 Contact model Power: 1621576 Brake: 1618251 Encoder (DSL): 1621573
200 V: 3,000-r/min Servomotors of 1.5 kW 1,500-r/min Servomotors of 1.5 kW 400 V: 3,000-r/min Servomotors of 750 W, 1 kW, 1.5 kW, 2 kW, and 3 kW 1,500-r/min Servomotors of 1.5 kW and 3 kW	R88A-CX1C□□□BF The empty boxes in the model number are for the cable length. (14.5 mm dia.)	Servo Drive side Connector model: Receptacle 3E206-0100KV (3M) Shell kit 3E306-3200-008 (3M)		Servomotor side M23 Series (Phoenix Contact) Connector model 1621517 Contact model Power: 1621576 Brake: 1618251 Encoder (DSL): 1621573
200 V: 3,000-r/min Servomotors of 2 kW and 2.6 kW 1,500-r/min Servomotors of 2.7 kW	R88A-CX1D□□□BF The empty boxes in the model number are for the cable length. (14.9 mm dia.)	Servo Drive side Connector model: Receptacle 3E206-0100KV (3M) Shell kit 3E306-3200-008 (3M)		Servomotor side M23 Series (Phoenix Contact) Connector model 1621517 Contact model Power: 1621577 Brake: 1618251 Encoder (DSL): 1621573

Note: Cable length: 3 m, 5 m, 10 m, 15 m, 20 m
The empty boxes in the model number are put as follows: 3 m = 003, 5 m = 005, 10 m = 010.

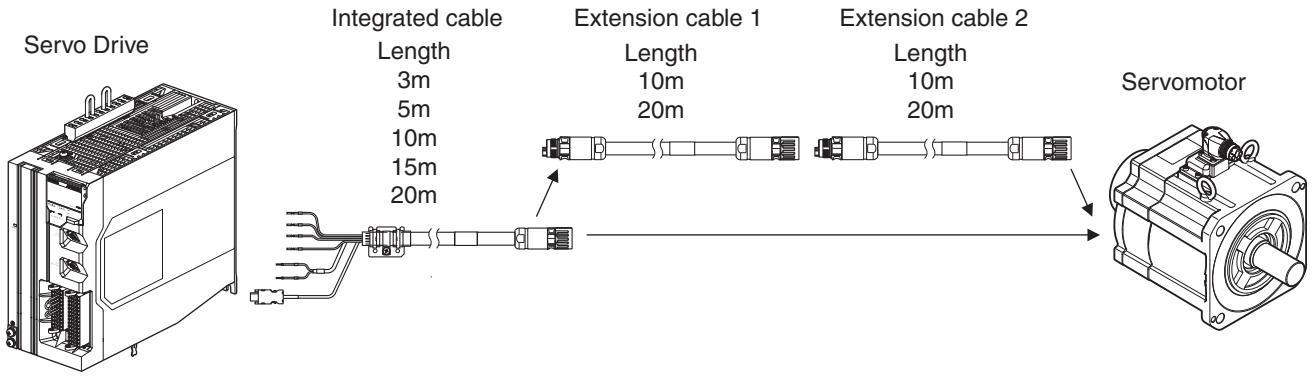
Extension Power Cable

Connected to	Model	Connection configuration and external dimensions [mm]		
200 V: 3,000-r/min Servomotors of 200 W, 400 W and 750 W	R88A-CX1AE□□BF The empty boxes in the model number are for the cable length. (11.8 mm dia.)	Servo Drive side connector M17 Series (Phoenix Contact) Connector model 1624653 Contact model Power: 1618256 Brake: 1607579 Encoder (DSL): 1607578 Encoder (DSL) shield: 1607579		Servomotor side M17 Series (Phoenix Contact) Connector model 1624639 Contact model Power: 1618251 Brake: 1607582 Encoder (DSL): 1607581 Encoder (DSL) shield: 1607582
200 V: 3,000-r/min Servomotors of 1 kW and 1.5 kW 1,500-r/min Servomotors of 1.5 kW 400 V: 3,000-r/min Servomotors of 750 W, 1 kW, 1.5 kW, 2 kW and 3 kW 1,500-r/min Servomotors of 1.5 kW and 3 kW	R88A-CX1BE□□BF The empty boxes in the model number are for the cable length. (14.5 mm dia.)	Servo Drive side connector M23 Series (Phoenix Contact) Connector model 1621549 Contact model Power: 1621579 Brake: 1618256 Encoder (DSL): 1621575		Servomotor side M23 Series (Phoenix Contact) Connector model 1621517 Contact model Power: 1621576 Brake: 1618251 Encoder (DSL): 1621573
200 V: 3,000-r/min Servomotors of 2 kW and 2.6 kW 1,500-r/min Servomotors of 2.7 kW	R88A-CX1DE□□BF The empty boxes in the model number are for the cable length. (14.9 mm dia.)	Servo Drive side connector M23 Series (Phoenix Contact) Connector model 1621549 Contact model Power: 1621580 Brake: 1618256 Encoder (DSL): 1621575		Servomotor side M23 Series (Phoenix Contact) Connector model 1621517 Contact model Power: 1621577 Brake: 1618251 Encoder (DSL): 1621573

Note: Cable length: 10 m, 20 m
The empty boxes in the model number are put as follows: 10 m = 10, 20 m = 20

Combinations of Integrated Cables and Extension Power Cables

The table below lists the combinations of cables that can be used to extend the integrated cable to more than 20 m.



Length (m)				Combination
Total	Integrated cable	Extension cable 1	Extension cable 2	
3	3	---	---	Integrated cable only
5	5	---	---	Integrated cable only
10	10	---	---	Integrated cable only
15	15	---	---	Integrated cable only
20	20	---	---	Integrated cable only
30	20	10	---	Integrated cable + extension cable 1
40	20	20	---	Integrated cable + extension cable 1
50	20	10	20	Integrated cable + extension cable 1 + extension cable 2 *

* A 20 m extension cable 1 and a 10 m extension cable 2 can also be used.

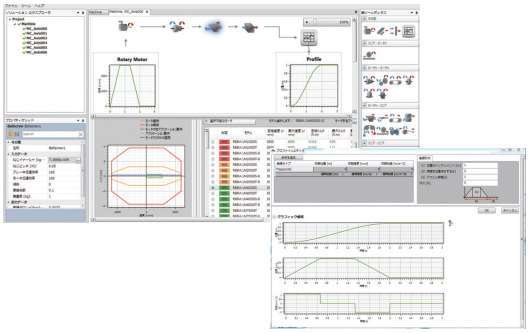
Sizing Tool for AC Servo Motors

AC Servo motors selection for the entire machine

- User can size all axes in one project with the corresponded Sysmac controller.
- Pre-defined system can be used for common applications.
- Selection of optimized drive, motor and gearbox combination.
- Multiple views are not required: design, adjust and validate at a glance.
- Import sizing file directly to Sysmac Studio for reducing the machine development time.

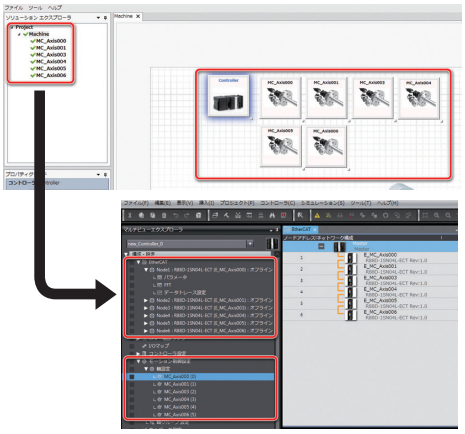
Quick sizing and selection of AC servo motors

- High variety of mechanical system
- Import CAM from Sysmac Studio
- Kinematics chain architecture includes motor, reducer, loads and motion profile.
- Adjustments can be done in one view and results auto-refreshed.



Re-use work done during design phase

- Export sizing file result.
- Import sizing file result in Sysmac Studio.
- EtherCAT configuration, axes settings and drives parameters will be created automatically



Compatible models

1S series	EtherCAT Communications and Safety Functionality	R88D-1SAN□-ECT
1S series	EtherCAT Communications	R88D-1SN□-ECT
G5 series	EtherCAT Communications for Position Control	R88D-KN□-ECT
G5 series	EtherCAT Communications (Linear Motor Type)	R88D-KN□-ECT-L
G5 series	MECHATROLINK-II Communications	R88D-KN□-ML2
G5 series	General-purpose Pulse Train or Analog Inputs	R88D-KT
G series	MECHATROLINK-II Communications	R88D-GN□-ML2
G series	General-purpose Pulse Train or Analog Inputs	R88D-GT
Smart Step 2	General-purpose Pulse Train	R7D-BP

OMRON AUTOMATION AMERICAS HEADQUARTERS • Chicago, IL USA • 847.843.7900 • 800.556.6766 • automation.omron.com

OMRON CANADA, INC. • HEAD OFFICE
Toronto, ON, Canada • 416.286.6465 • 866.986.6766 • automation.omron.com

OMRON ELECTRONICS DE MEXICO • HEAD OFFICE
Ciudad de México • 52.55.5901.4300 • 01.800.386.6766 • mela@omron.com

OMRON ELECTRONICS DE MEXICO • SALES OFFICE
San Pedro Garza García, N.L. • 81.12.53.7392 • 01.800.386.6766 • mela@omron.com

OMRON ELECTRONICS DE MEXICO • SALES OFFICE
Eugenio Garza Sada,León, Gto • 01.800.386.6766 • mela@omron.com

OMRON ELETRÔNICA DO BRASIL LTDA • HEAD OFFICE
São Paulo, SP, Brasil • 55 11 5171-8920 • automation.omron.com

OMRON ARGENTINA • SALES OFFICE
Buenos Aires, Argentina • +54.11.4521.8630 • +54.11.4523.8483
mela@omron.com

OTHER OMRON LATIN AMERICA SALES
+54.11.4521.8630 • +54.11.4523.8483 • mela@omron.com

Authorized Distributor:

Controllers & I/O
• Machine Automation Controllers (MAC) • Motion Controllers
• Programmable Logic Controllers (PLC) • Temperature Controllers • Remote I/O

Robotics
• Industrial Robots • Mobile Robots

Operator Interfaces
• Human Machine Interface (HMI)

Motion & Drives
• Machine Automation Controllers (MAC) • Motion Controllers • Servo Systems
• Frequency Inverters

Vision, Measurement & Identification
• Vision Sensors & Systems • Measurement Sensors • Auto Identification Systems

Sensing
• Photoelectric Sensors • Fiber-Optic Sensors • Proximity Sensors
• Rotary Encoders • Ultrasonic Sensors

Safety
• Safety Light Curtains • Safety Laser Scanners • Programmable Safety Systems
• Safety Mats and Edges • Safety Door Switches • Emergency Stop Devices
• Safety Switches & Operator Controls • Safety Monitoring/Force-guided Relays

Control Components
• Power Supplies • Timers • Counters • Programmable Relays
• Digital Panel Meters • Monitoring Products

Switches & Relays
• Limit Switches • Pushbutton Switches • Electromechanical Relays
• Solid State Relays

Software
• Programming & Configuration • Runtime

Note: Specifications are subject to change.