

R88D-1SAN□-ECT

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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 PL_e), EN61508, EN62061, EN61800-5-2 (SIL3)

The safety function via EtherCAT communications: EN ISO 13849-1 (STO/SS1/SBC: Cat.3 PL_e, SS2/SLS/SDI/SOS/SLP: Cat.3 PL_e), EN61508, EN62061, EN61800-5-2

AC Servo System 1S-series with Safety Functionality

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			
SCCR [A (rms)]		5000			
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				
SCCR [A (rms)]		5000				
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

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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			
Output	Rated current [A (rms)] (Main circuit power supply voltage: 480 VAC)	3-phase	3.1	4.3	6.5	8.4
		Rated current [A (rms)]	4.1	4.7	7.8	11.3
Heating value [W]	Main circuit *3	Rated current [A (rms)]	9.6	14.1	19.8	28.3
		Control circuit	56.0	81.0	120.0	150.0
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			
SCCR [A (rms)]			5000			
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

AC Servo System 1S-series with Safety Functionality

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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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.

AC Servo System 1S-series with Safety Functionality

Thus, a safety controller and a standard controller must issue commands to a Servo Drive at an appropriate timing according to states of switches, sensors and devices, and then have the programs to issue the commands.

To secure the combined operation between a safety controller and a standard controller, design programs for each device with consideration of the following times. Without this consideration of the times mentioned earlier, when safety functions are activated, STO may be active and an excessive limit value error (Error display No.71.03) may occur.

- Time until safety functions starts the activations

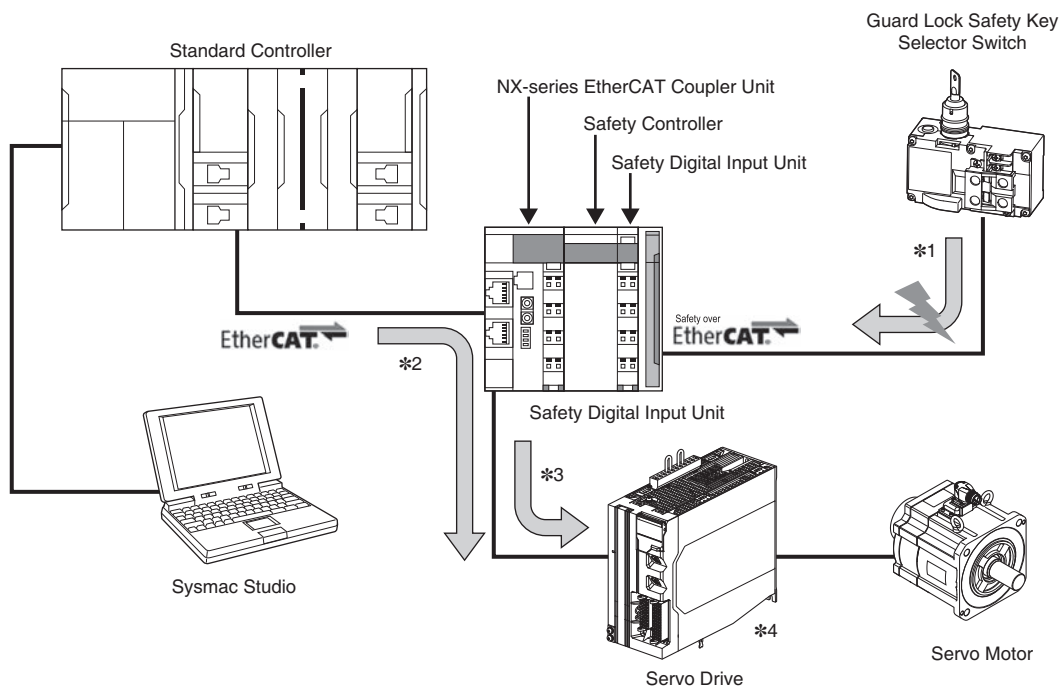
It refers to "Time until a safety controller issues command to activate safety functions + Delay time of safety functions".

- Delay time of safety functions

Time until STO becomes active or a Servo Drive starts monitoring after it receives commands of safety functions.

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.

This section describes a flow of control of each device with an example such as SLS function.



Safety system configuration equipment	Model
Standard Controller	NX701
EtherCAT Coupler Unit	NX-ECC201 NX-ECC202
Safety Controller	NX-SL3300 NX-SL3500
Safety Digital Input Unit	NX-SIH400
Guard Lock Safety Key Selector Switch	A22LK
Servo Drive	R88D-1SAN

***1.** The safety key selector switch and the safety controller detect that workers come closer to devices due to the reason such as maintenance, etc.

***2.** The standard controller reads data from the safety controller and checks a switch to maintenance mode. In such case, it issues a command to decelerate a velocity of the Servomotor and gives the command to the Servo Drive.

***3.** The safety controller issues/gives a command to activate SLS function to the Servo Drive.

***4.** The Servo Drive controls the motor's deceleration, following the command from the standard controller. In addition, it activates SLS function after receiving the command to activate SLS from the safety controller.

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EtherCAT Communications Specifications

Item	Specifications
Communications standard	IEC 61158 Type 12, IEC 61800-7 CiA 402 Drive Profile
Physical layer	100BASE-TX (IEEE802.3)
Connectors	RJ45 × 2 (shielded) ECAT IN: EtherCAT input ECAT OUT: EtherCAT output
Communications media	Recommended media: Twisted-pair cable, which is doubly shielded by the aluminum tape and braid, with Ethernet Category 5 (100BASE-TX) or higher
Communications distance	Distance between nodes: 100 m max.
Process data	Fixed PDO mapping Variable PDO mapping
Mailbox (CoE)	Emergency messages, SDO requests, SDO responses, and SDO information
Synchronization mode and communications cycle	DC Mode (Synchronous with Sync0 Event) Communications cycle: 125 μs, 250 μs, 500 μs, 750 μs, 1 to 10 ms (in 0.25 ms increments) Free Run Mode
Indicators	ECAT-L/A IN (Link/Activity IN) × 1 ECAT-L/A OUT (Link/Activity OUT) × 1 ECAT-RUN × 1 ECAT-ERR × 1
CiA 402 Drive Profile	<ul style="list-style-type: none"> • Cyclic synchronous position mode • Cyclic synchronous velocity mode • Cyclic synchronous torque mode • Profile position mode • Profile velocity mode • Homing mode • Touch probe function • Torque limit function

Version Information

The following table gives the relationship between unit versions of 1S-series Servo Drives Advance type and the corresponding Sysmac Studio versions.

Unit version	Sysmac Studio
Version 1.0 *	Version 1.44.1 or higher

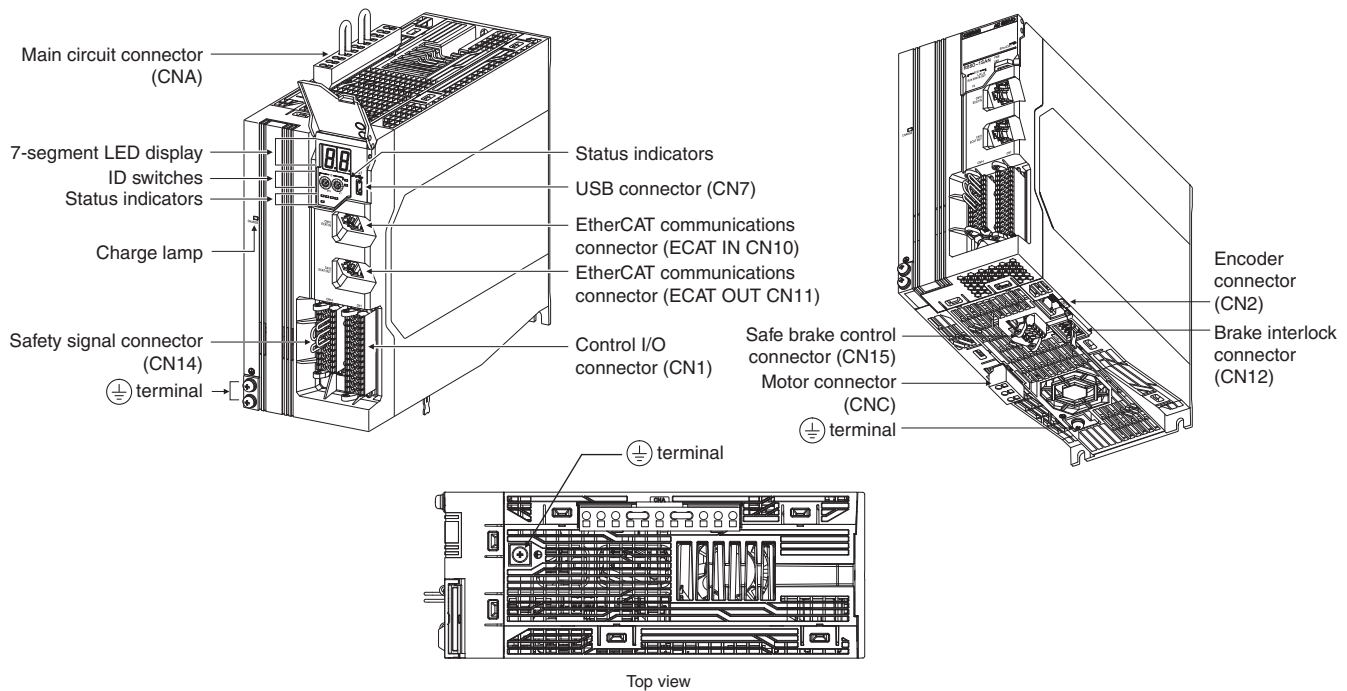
* Sysmac Studio version 1.44 or higher enables you to use the cable redundancy function and configure a ring topology.

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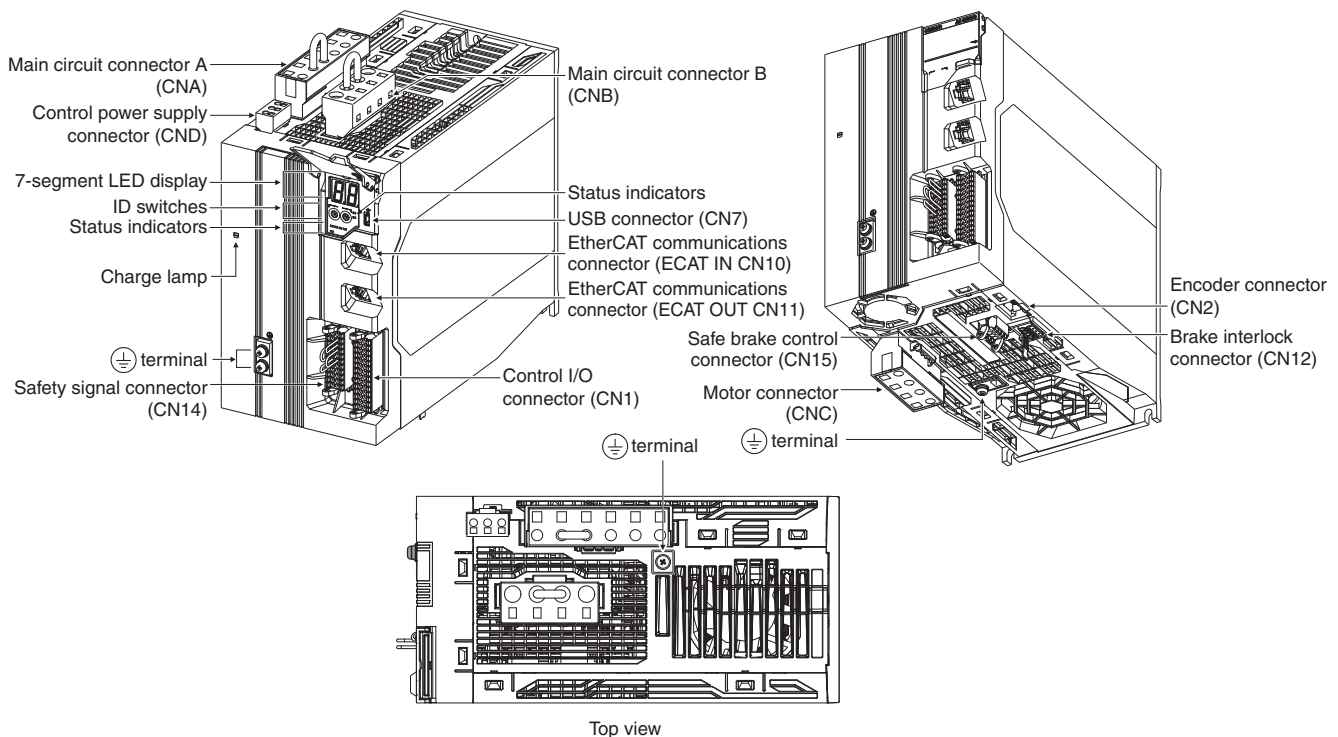
Part Names

Servo Drive Part Names

R88D-1SAN02H-ECT/-1SAN04H-ECT/-1SAN08H-ECT/-1SAN10H-ECT



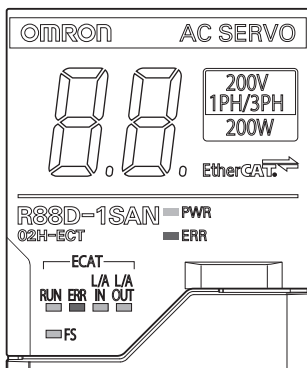
R88D-1SAN15H-ECT/-1SAN20H-ECT/-1SAN30H-ECT/-1SAN10F-ECT/
-1SAN15F-ECT/-1SAN20F-ECT/-1SAN30F-ECT



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

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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.

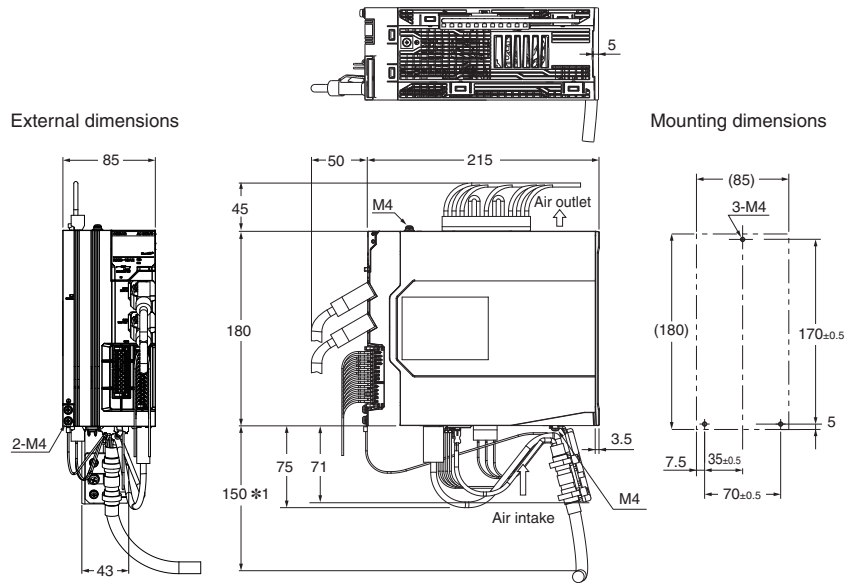
Servo Drive model	Number of ⊕ terminals	Connection to
R88D-1SAN02H-ECT/-1SAN04H-ECT/-1SAN08H-ECT/ -1SAN10H-ECT	1 on top	PE wire of the main circuit power supply cable. FG wire inside the control panel, and FG wire for the Integrated Cable and Shield Clamp.
	2 on front	
	1 on bottom	
R88D-1SAN15H-ECT/-1SAN20H-ECT/-1SAN30H-ECT/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

AC Servo System 1S-series with Safety Functionality

Dimensions

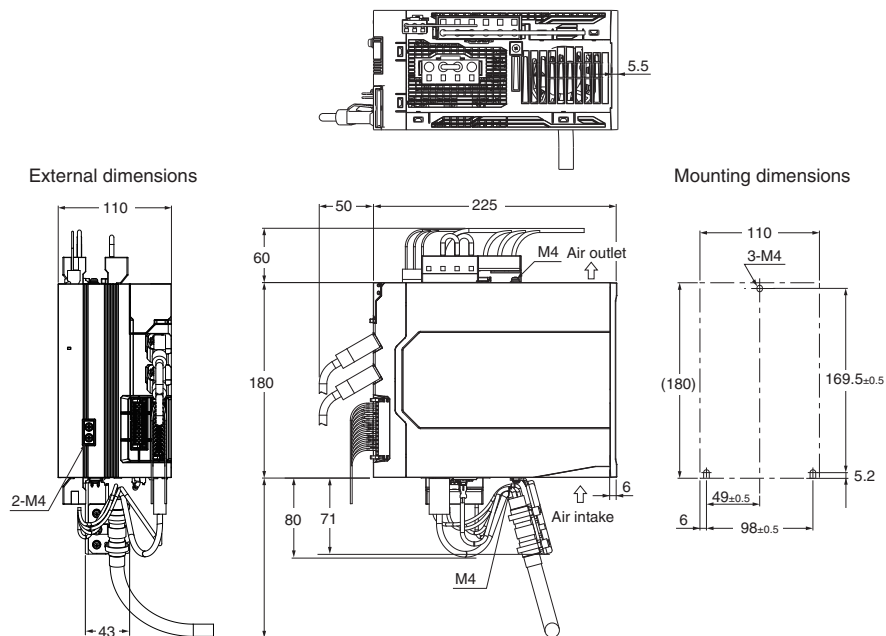
(Unit: mm)

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)

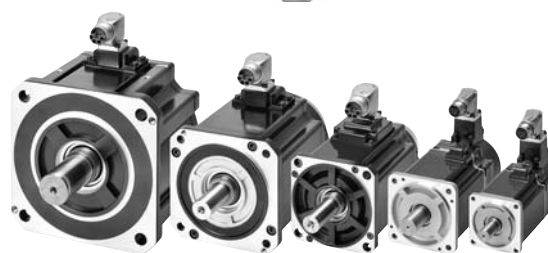


AC Servomotors [1S-series with Safety Functionality]

R88M-1AL□/□-1AM□

Contents

- Ordering Information
- Specifications
- Names and Functions
- External Dimensions



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	EN 60034-1/-5
	Low Voltage Directive	
	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.

AC Servo System 1S-series with Safety Functionality

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 \pm 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
Rated output	W	190	320	675
Rated current	A (rms)	1.5	2.1	4.2

AC Servo System 1S-series with Safety Functionality

Item		Model (R88M-)	200 VAC			
			1AL1K030T	1AL1K530T	1AL2K030T	1AL2K630T
Rated output *1*2		Unit	1,000	1,500	2,000	2,600
Rated torque *1*2		Unit	3.18	4.77	6.37	8.28
Rated rotation speed *1*2		Unit	3,000			
Maximum rotation speed		Unit	5,000			
Momentary maximum torque *1*3		Unit	9.55	14.3	19.1	24.8
Rated current *1*2		Unit	5.2	8.8	12.5	14.8
Momentary maximum current *1		Unit	16.9	28.4	41.0	47.3
Rotor inertia	Without brake	Unit	2.105	2.105	2.405	6.813
	With brake	Unit	2.555	2.555	2.855	7.313
Applicable load inertia		Unit	35.3	47.6	60.2	118
Torque constant *1		Unit	0.67	0.58	0.56	0.62
Power rate *1*5		Unit	48	108	169	101
Mechanical time constant *5		Unit	0.58	0.58	0.50	0.47
Electrical time constant		Unit	5.9	6.1	6.4	11
Allowable radial load *6		Unit	490			
Allowable thrust load *6		Unit	196			
Weight	Without brake	Unit	5.8	5.8	6.5	11.5
	With brake	Unit	7.5	7.5	8.2	13.5
Radiator plate dimensions (material)		Unit	400 × 400 × t20 (aluminum)		470 × 470 × t20 (aluminum)	
Brake specifications *7	Excitation voltage *8	Unit	24 VDC±10%			
	Current consumption (at 20°C)	Unit	0.70	0.70	0.70	0.66
	Static friction torque	Unit	9.3 min.	9.3 min.	9.3 min.	12 min.
	Attraction time	Unit	100 max.	100 max.	100 max.	100 max.
	Release time *9	Unit	30 max.	30 max.	30 max.	30 max.
	Backlash	Unit	1.0 max.	1.0 max.	1.0 max.	0.8 max.
	Allowable braking work	Unit	500	500	500	1000
	Allowable total work	Unit	900,000	900,000	900,000	3000,000
	Allowable angular acceleration	Unit	10,000 max.			
	Brake lifetime (acceleration/ deceleration)	Unit	10 million times min.			
	Brake lifetime (ON/OFF), B10d	Unit	1 million times min.			
	Insulation class		Unit	Class F		

AC Servo System 1S-series with Safety Functionality

Item		Model (R88M-)	AC400V		
			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 \pm 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	

AC Servo System 1S-series with Safety Functionality

Item		Model (R88M-)	AC400V	
			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 \pm 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.

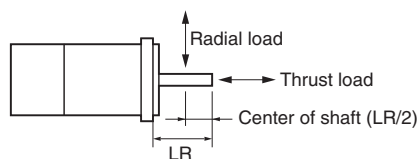
*2. The rated values are the values with which continuous operation is possible at an ambient temperature of 40°C when the Servomotor is horizontally installed on a specified radiator plate.

*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).

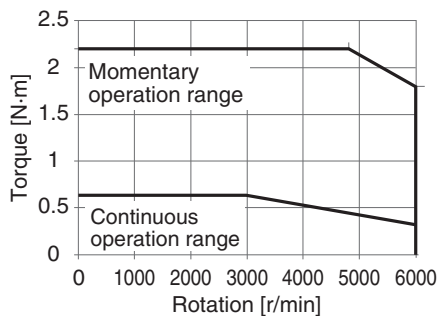
*8. This is a non-excitation brake. It is released when excitation voltage is applied.

*9. This value is a reference value.

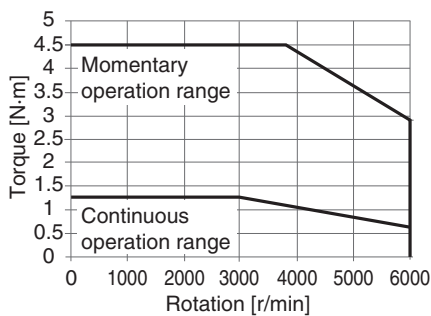
Torque-Rotation Speed Characteristics for 3,000-r/min Servomotors (200 VAC)

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

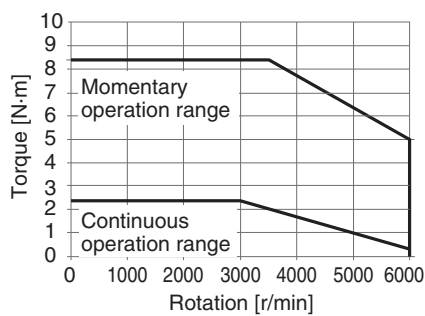
· R88M-1AM20030T



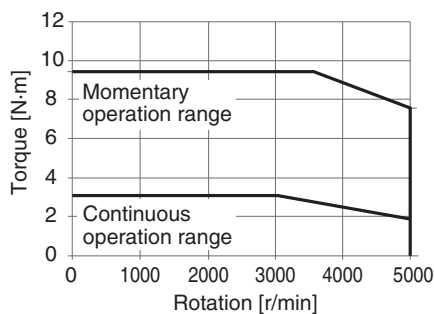
· R88M-1AM40030T



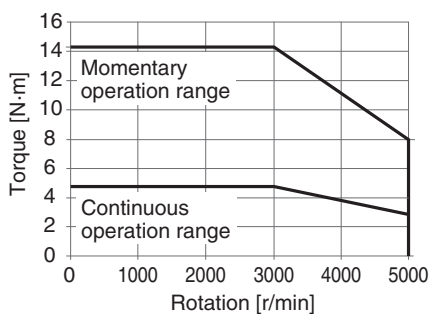
· R88M-1AM75030T



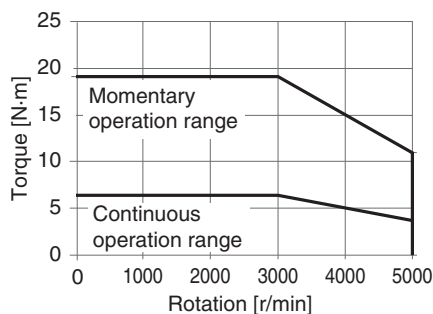
· R88M-1AL1K030T



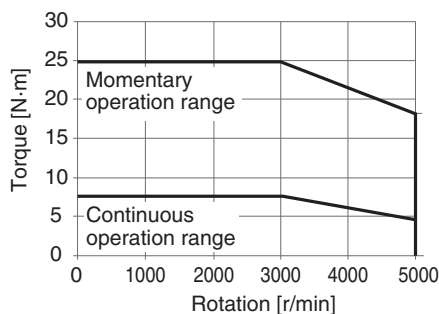
· R88M-1AL1K530T



· R88M-1AL2K030T



· R88M-1AL2K630T



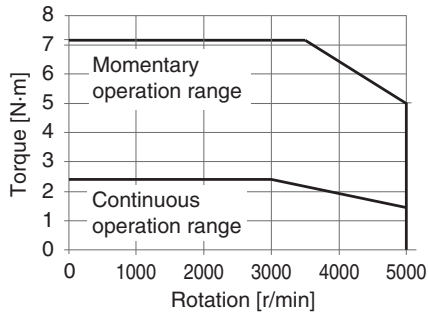
Note: The continuous operation range is the range in which continuous operation is possible at an ambient temperature of 40°C when the Servomotor is horizontally installed on a specified radiator plate. Continuous operation at the maximum speed is also possible. However, doing so will reduce the output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

AC Servo System 1S-series with Safety Functionality

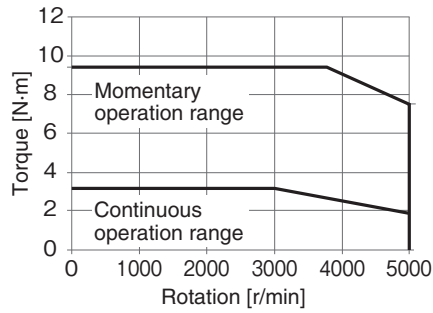
Torque-Rotation Speed Characteristics for 3,000-r/min Servomotors (400 VAC)

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

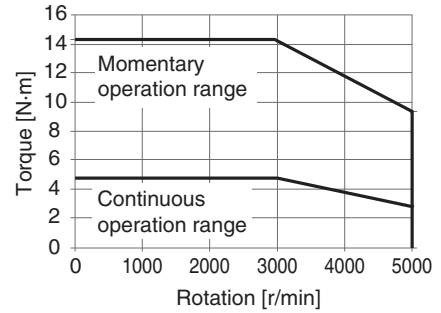
· R88M-1AL75030C



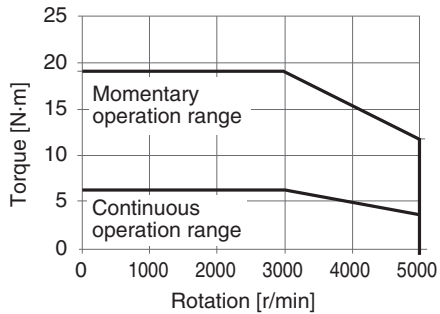
· R88M-1AL1K030C



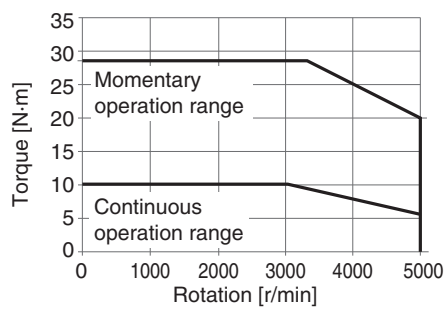
· R88M-1AL1K530C



· 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.

AC Servo System 1S-series with Safety Functionality

1,500-r/min Servomotors

Item		Model (R88M-) Unit	AC200V	
			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	74
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 \pm 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

AC Servo System 1S-series with Safety Functionality

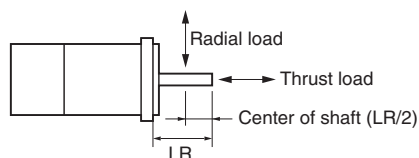
Item		Model (R88M-)	AC400V	
			1AM1K515C	1AM3K015C
Rated output *1*2		W	1,500	3,000
Rated torque *1*2		N·m	9.55	19.1
Rated rotation speed *1*2		r/min	1,500	
Maximum rotation speed		r/min	3,000	
Momentary maximum torque *1		N·m	28.7	57.3
Rated current *1*2		A(rms)	4.4	8.5
Momentary maximum current *1		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 \pm 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).

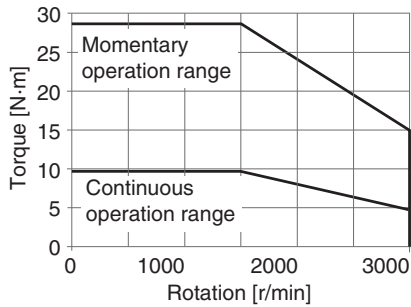
*6. This is a non-excitation brake. It is released when excitation voltage is applied.

*7. This value is a reference value.

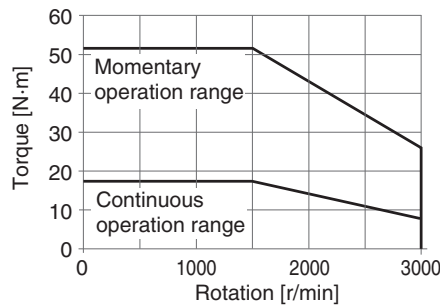
Torque-Rotation Speed Characteristics for 1,500-r/min Servomotors (200 VAC)

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

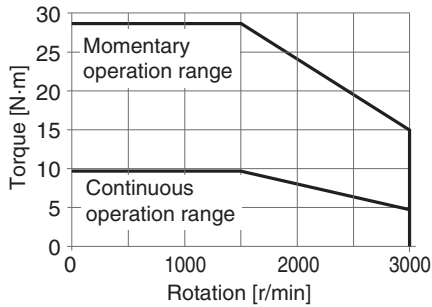


Note: The continuous operation range is the range in which continuous operation is possible at an ambient temperature of 40°C when the Servomotor is horizontally installed on a specified radiator plate. Continuous operation at the maximum speed is also possible. However, doing so will reduce the output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

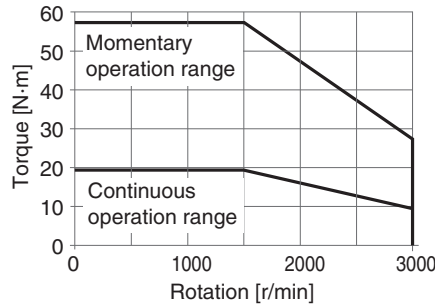
Torque-Rotation Speed Characteristics for 1,500-r/min Servomotors (400 VAC)

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

· R88M-1AM1K515C



· R88M-1AM3K015C



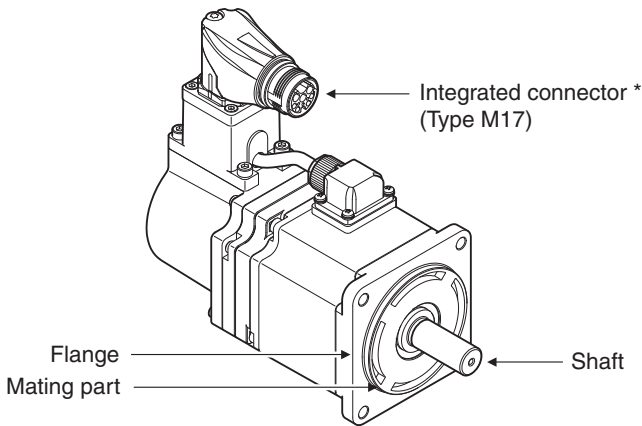
Note: The continuous operation range is the range in which continuous operation is possible at an ambient temperature of 40°C when the Servomotor is horizontally installed on a specified radiator plate. Continuous operation at the maximum speed is also possible. However, doing so will reduce the output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

AC Servo System 1S-series with Safety Functionality

Part Names

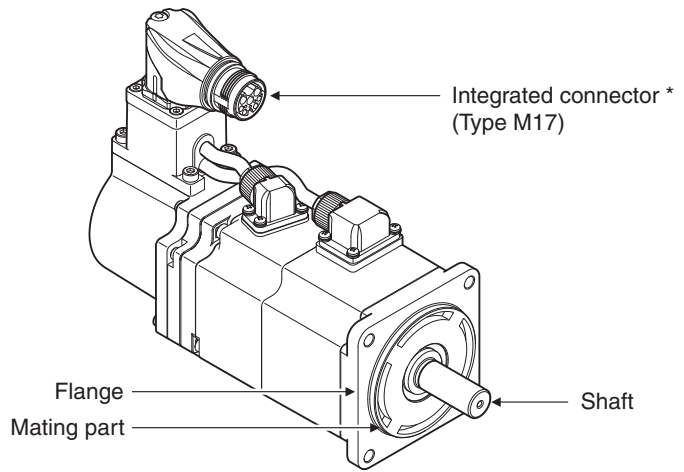
Servomotor Part Names

Flange Size of 60×60, 80×80



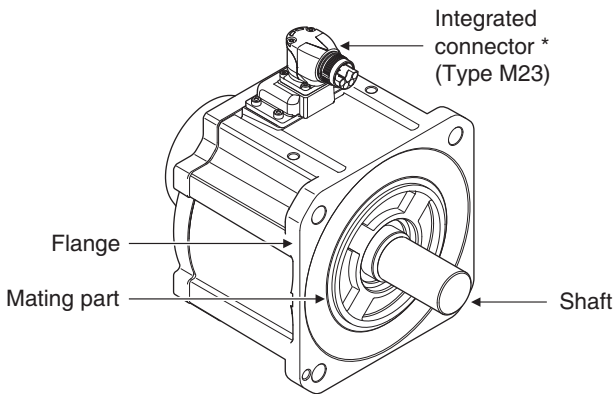
* For servomotors without Brake, brake wire signals are not use (terminal open).

200 VAC 200 W Servomotors (without Brake)



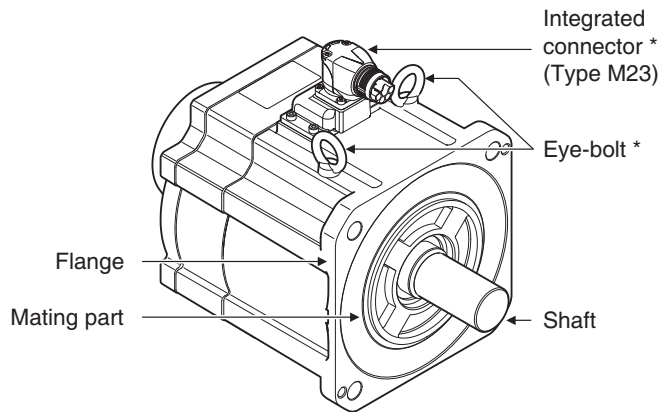
200 VAC 200 W Servomotors (with Brake)

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.

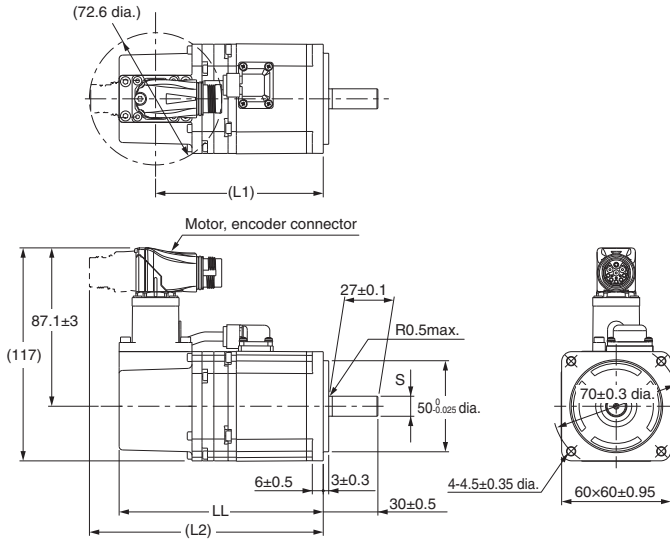
External Dimensions

(Unit: mm)

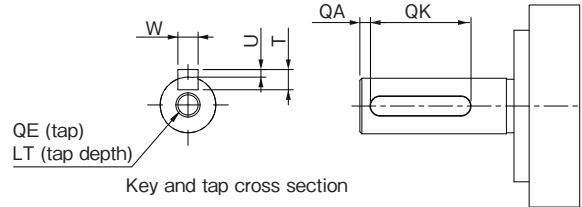
3,000-r/min Servomotors (200 V)

200 W/400 W (without Brake)

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



Shaft-end with key and tap



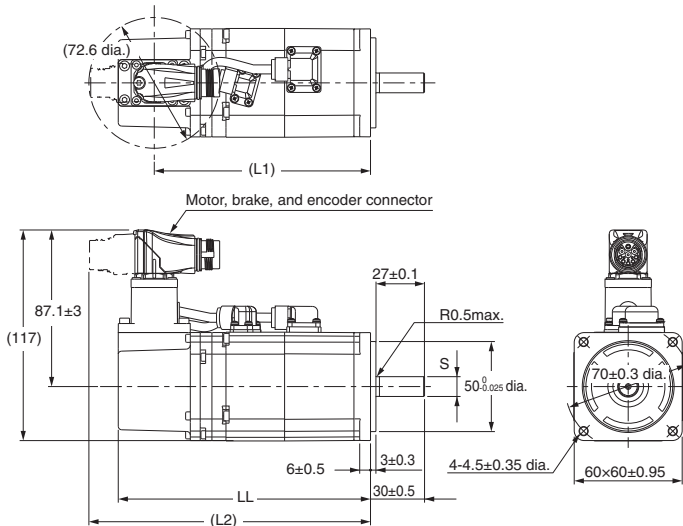
Model	Dimensions [mm]			
	S	LL	L1	L2
R88M-1AM20030T(-S2)	11 dia. $^{0}_{-0.011}$	112±1	92	128
R88M-1AM40030T(-S2)	14 dia. $^{0}_{-0.011}$	138±1	118	154
R88M-1AM20030T(-O(S2))	11 dia. $^{0}_{-0.011}$	119±1	99	135
R88M-1AM40030T(-O(S2))	14 dia. $^{0}_{-0.011}$	145±1	125	161

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

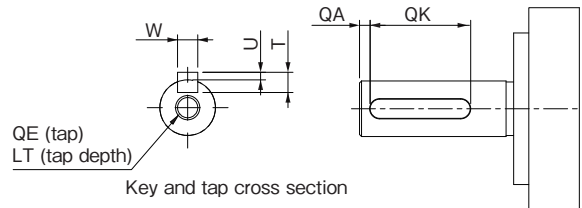
Note: The standard shaft type is a straight shaft. Models with a key and tap are indicated with "S2" at the end of the model number. Models with an oil seal are indicated with "O" at the end of the model number.

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-B(O(S2))	11 dia. $^{0}_{-0.011}$	147±1	127	163
R88M-1AM40030T-B(O(S2))	14 dia. $^{0}_{-0.011}$	173±1	153	189

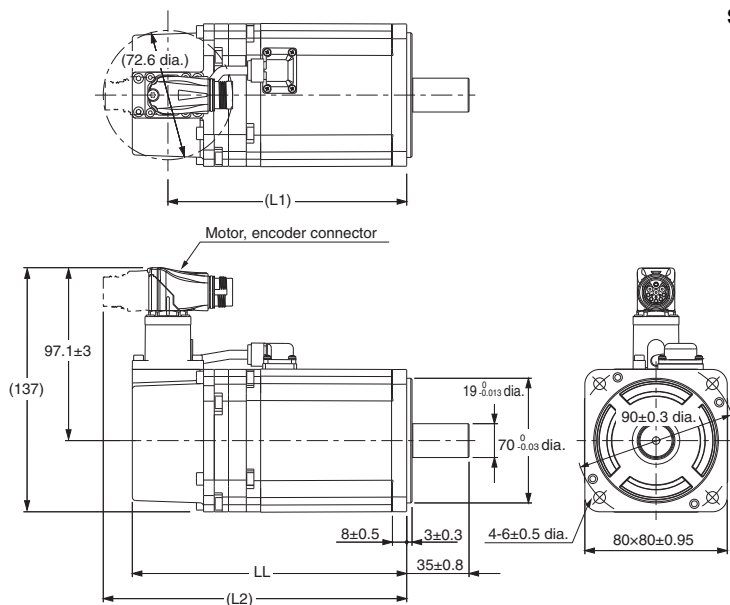
Model	Dimensions [mm]						
	QA	QK	W	T	U	QE	LT
R88M-1AM20030T-B(S2/OS2)	2	20	4 $^{0}_{-0.03}$	4	1.5 $^{0}_{-0.2}$	M4	10
R88M-1AM40030T-B(S2/OS2)	2	20	5 $^{0}_{-0.03}$	5	2 $^{0}_{-0.2}$	M5	12

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.

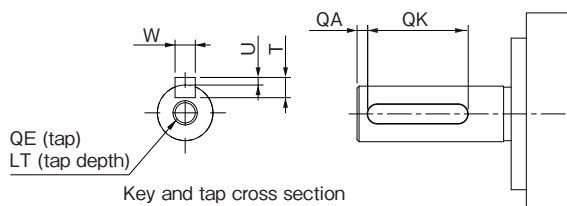
AC Servo System 1S-series with Safety Functionality

750 W (without Brake)

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



Shaft-end with key and tap



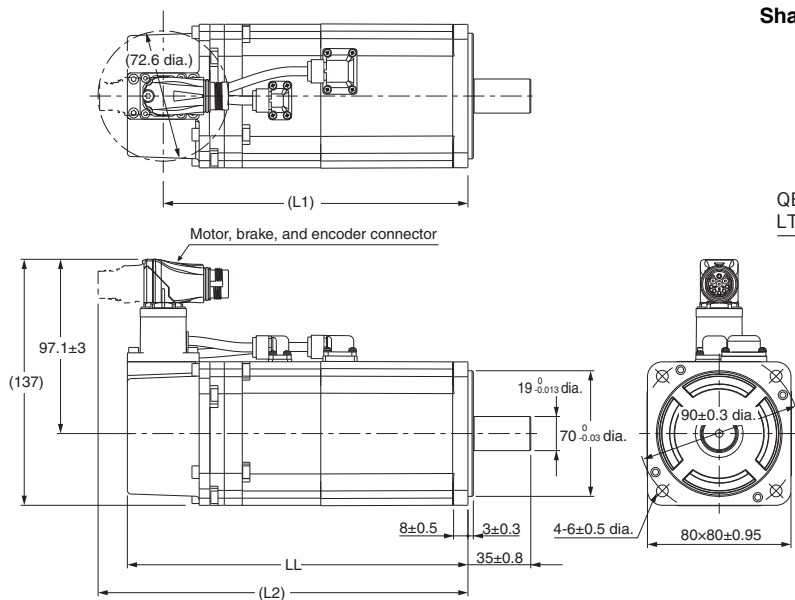
Model	Dimensions [mm]		
	LL	L1	L2
R88M-1AM75030T(-S2)	154±1	134	170
R88M-1AM75030T-O(S2)	161±1	141	177

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

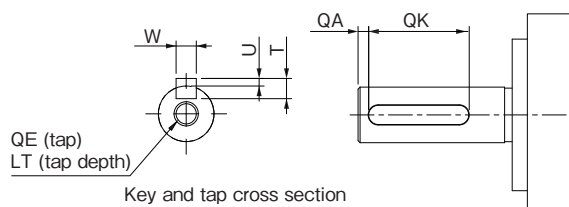
Note: The standard shaft type is a straight shaft. Models with a key and tap are indicated with “S2” at the end of the model number. Models with an oil seal are indicated with “O” at the end of the model number.

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

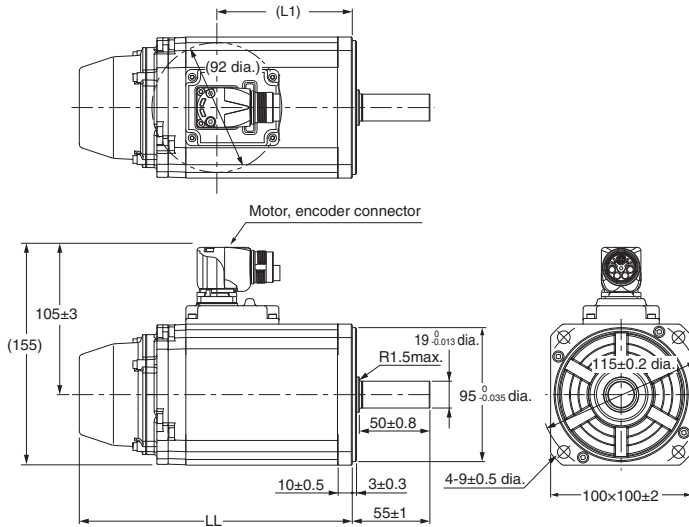
Model	Dimensions [mm]						
	QA	QK	W	T	U	QE	LT
R88M-1AM75030T-B(S2/OS2)	3	24	6 ⁰ _{-0.03}	6	2.5 ⁰ _{-0.2}	M5	12

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.

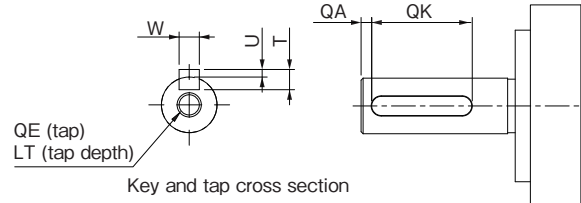
AC Servo System 1S-series with Safety Functionality

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



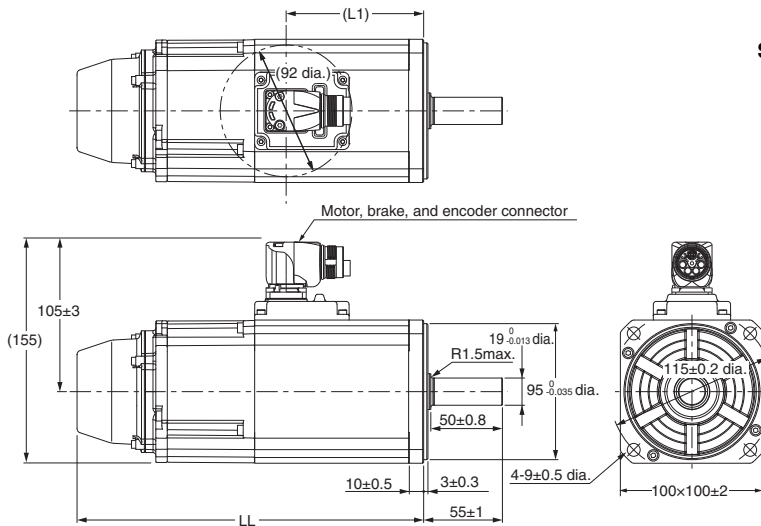
Model	Dimensions [mm]	
	LL	L1
R88M-1AL1K030T(-O/-S2/-OS2)	193.5±2	96
R88M-1AL1K530T(-O/-S2/-OS2)	193.5±2	96
R88M-1AL2K030T(-O/-S2/-OS2)	204.5±3	107

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

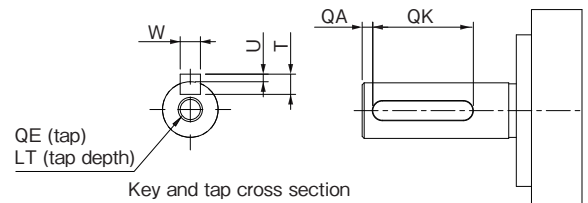
Note: The standard shaft type is a straight shaft. Models with a key and tap are indicated with "S2" at the end of the model number. Models with an oil seal are indicated with "O" at the end of the model number.

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

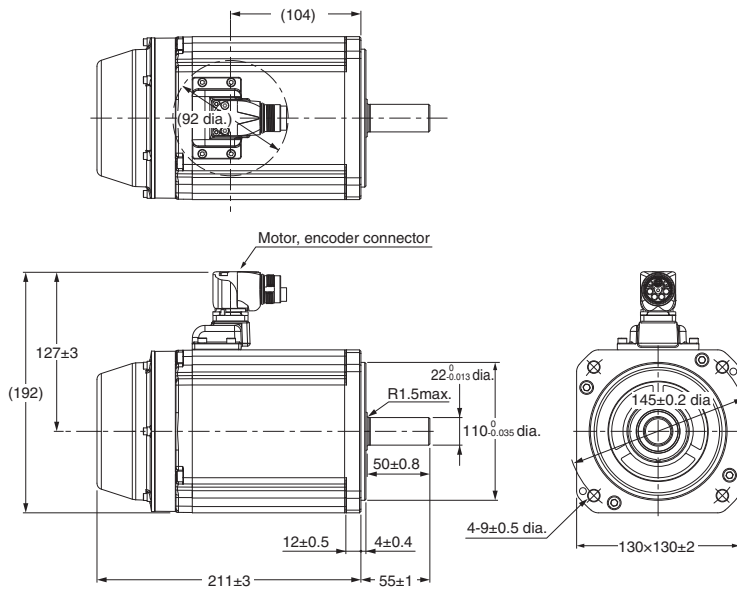
Model	Dimensions [mm]						
	QA	QK	W	T	U	QE	LT
R88M-1AL1K030T-B(S2/OS2)	3	42	6 ⁰ _{-0.03}	6	2.5 ⁰ _{-0.2}	M5	12
R88M-1AL1K530T-B(S2/OS2)	3	42	6 ⁰ _{-0.03}	6	2.5 ⁰ _{-0.2}	M5	12
R88M-1AL2K030T-B(S2/OS2)	3	42	6 ⁰ _{-0.03}	6	2.5 ⁰ _{-0.2}	M5	12

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.

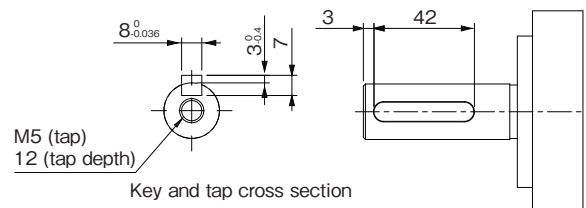
AC Servo System 1S-series with Safety Functionality

2.6 kW (without Brake)

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



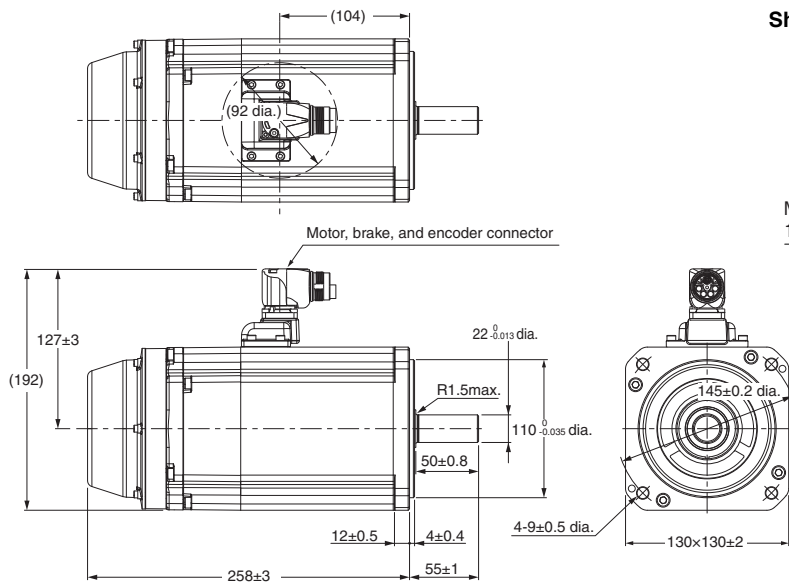
Shaft-end with key and tap



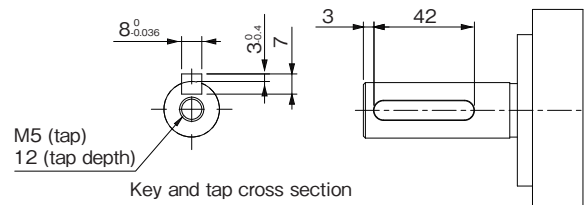
Note: The standard shaft type is a straight shaft. Models with a key and tap are indicated with "S2" at the end of the model number. Models with an oil seal are indicated with "O" at the end of the model number.

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.

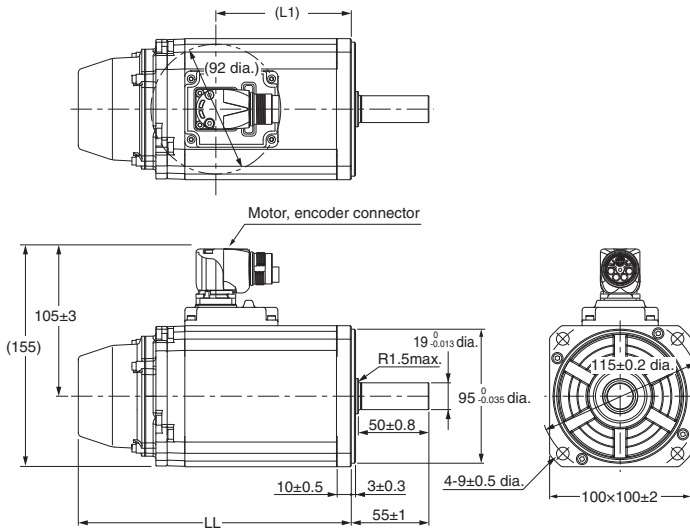
AC Servo System 1S-series with Safety Functionality

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

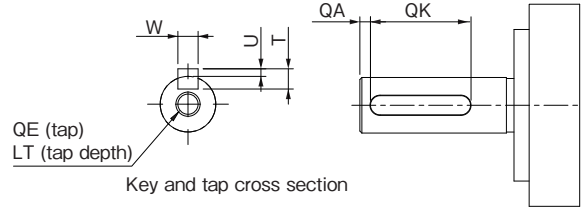
750 W/1 kW/1.5 kW/2 kW (without Brake)

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

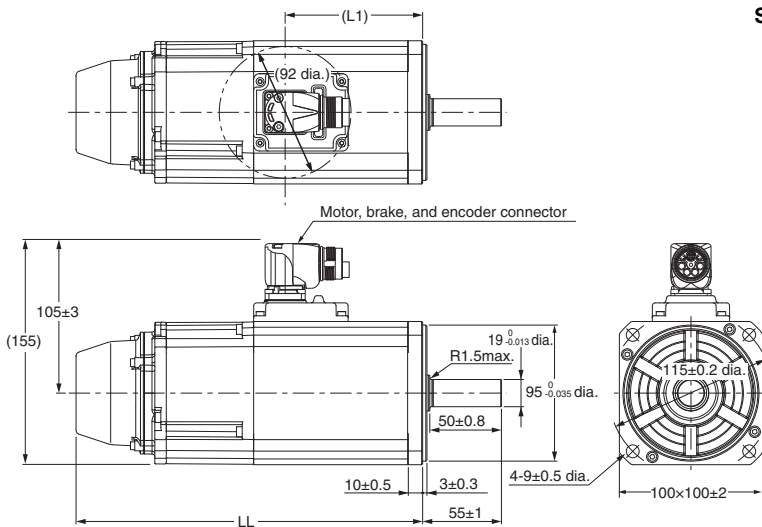
Model	Dimensions [mm]						
	QA	QK	W	T	U	QE	LT
R88M-1AL75030C(-S2/-OS2)	3	42	6 ⁰ _{-0.03}	6	2.5 ⁰ _{-0.2}	M5	12
R88M-1AL1K030C(-S2/-OS2)	3	42	6 ⁰ _{-0.03}	6	2.5 ⁰ _{-0.2}	M5	12
R88M-1AL1K530C(-S2/-OS2)	3	42	6 ⁰ _{-0.03}	6	2.5 ⁰ _{-0.2}	M5	12
R88M-1AL2K030C(-S2/-OS2)	3	42	6 ⁰ _{-0.03}	6	2.5 ⁰ _{-0.2}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

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.

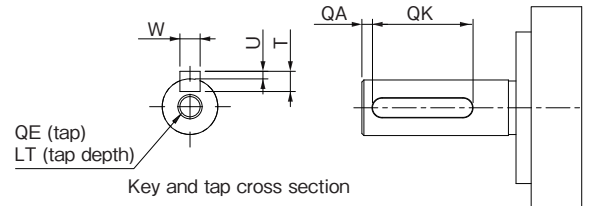
750 W/1 kW/1.5 kW/2 kW (with Brake)

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

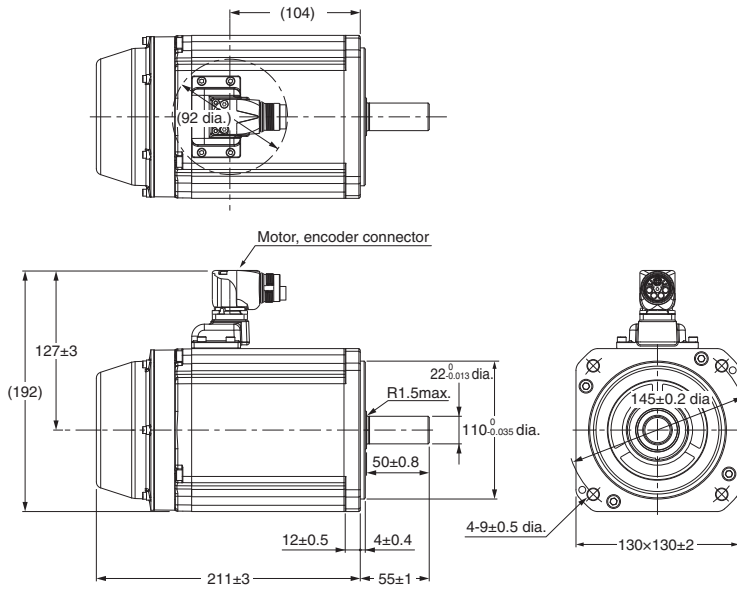
Model	Dimensions [mm]						
	QA	QK	W	T	U	QE	LT
R88M-1AL75030C-B(S2/OS2)	3	42	6 ⁰ _{-0.03}	6	2.5 ⁰ _{-0.2}	M5	12
R88M-1AL1K030C-B(S2/OS2)	3	42	6 ⁰ _{-0.03}	6	2.5 ⁰ _{-0.2}	M5	12
R88M-1AL1K530C-B(S2/OS2)	3	42	6 ⁰ _{-0.03}	6	2.5 ⁰ _{-0.2}	M5	12
R88M-1AL2K030C-B(S2/OS2)	3	42	6 ⁰ _{-0.03}	6	2.5 ⁰ _{-0.2}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

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.

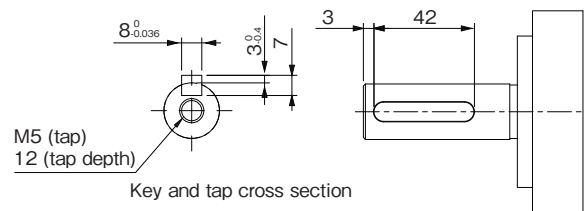
AC Servo System 1S-series with Safety Functionality

3 kW (without Brake)

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



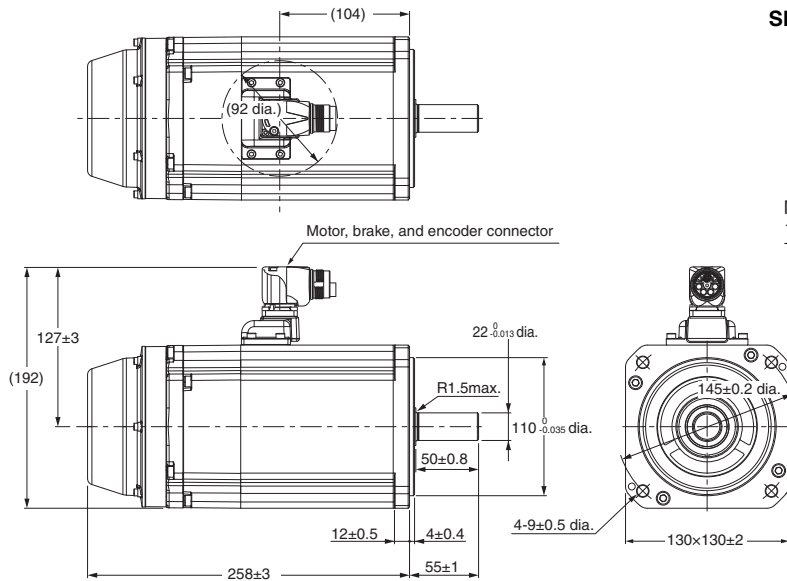
Shaft-end with key and tap



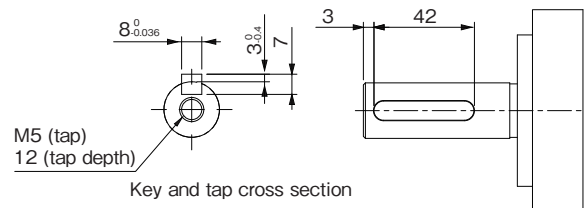
Note: The standard shaft type is a straight shaft. Models with a key and tap are indicated with "S2" at the end of the model number. Models with an oil seal are indicated with "O" at the end of the model number.

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.

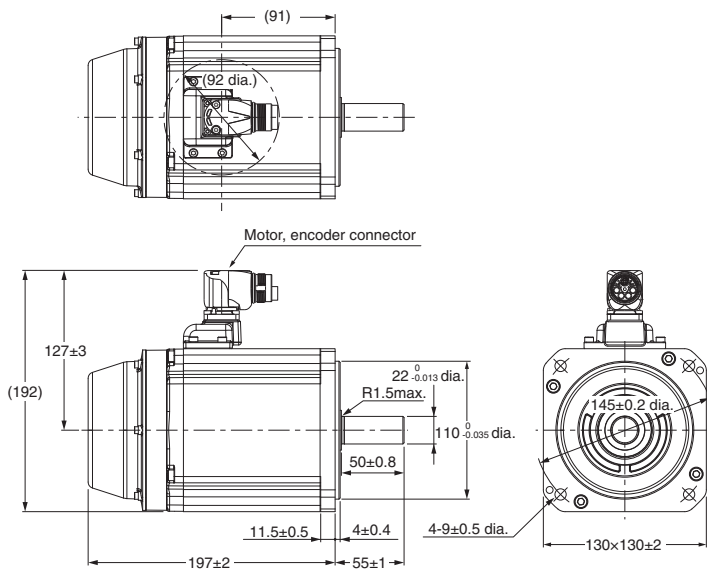
AC Servo System 1S-series with Safety Functionality

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

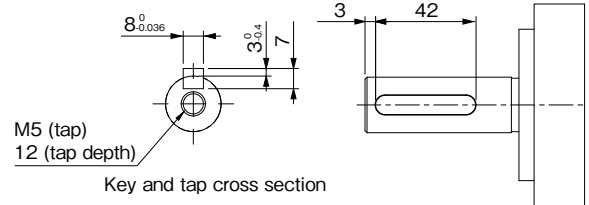
1.5 kW (without Brake)

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

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



Shaft-end with key and tap

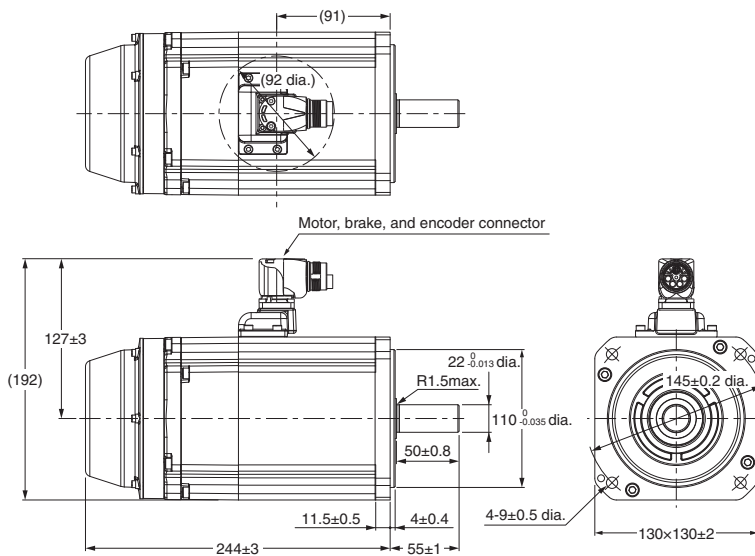


Note: The standard shaft type is a straight shaft. Models with a key and tap are indicated with "S2" at the end of the model number. Models with an oil seal are indicated with "O" at the end of the model number.

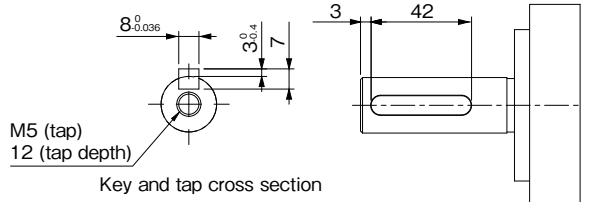
1.5 kW (with Brake)

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

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



Shaft-end with key and tap

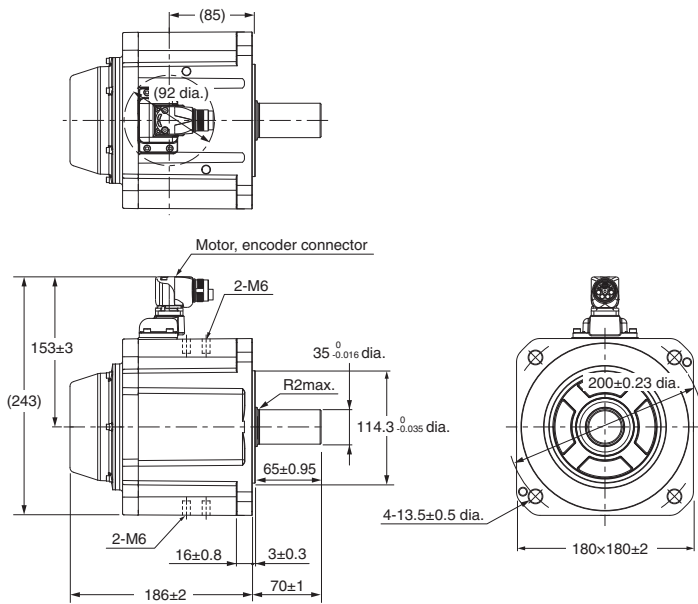


Note: The standard shaft type is a straight shaft. Models with a key and tap are indicated with "S2" at the end of the model number. Models with an oil seal are indicated with "O" at the end of the model number.

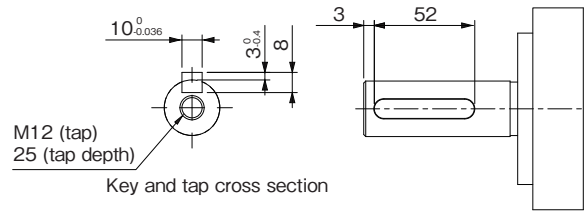
AC Servo System 1S-series with Safety Functionality

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

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



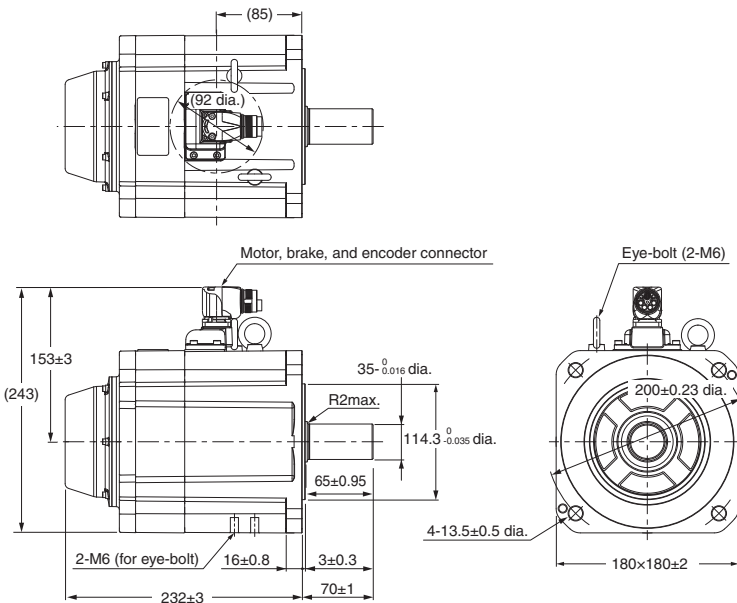
Shaft-end with key and tap



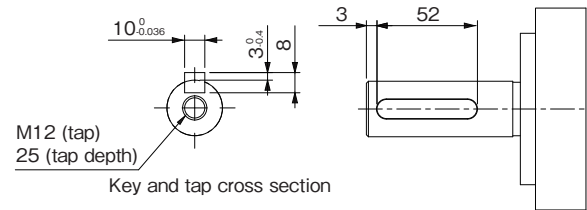
Note: The standard shaft type is a straight shaft. Models with a key and tap are indicated with "S2" at the end of the model number. Models with an oil seal are indicated with "O" at the end of the model number.

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

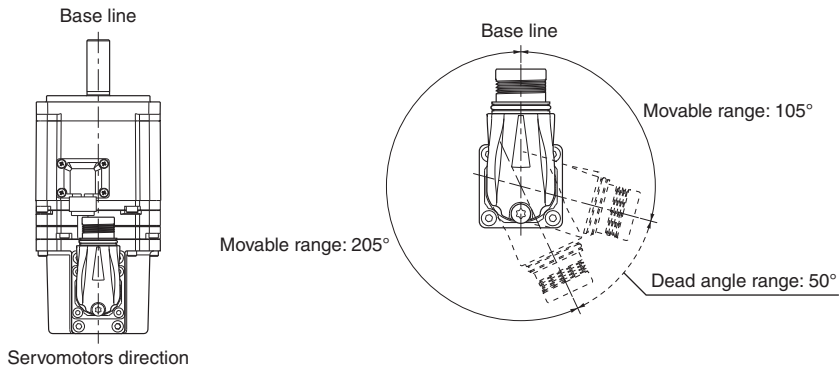


Note: The standard shaft type is a straight shaft. Models with a key and tap are indicated with "S2" at the end of the model number. Models with an oil seal are indicated with "O" at the end of the model number.

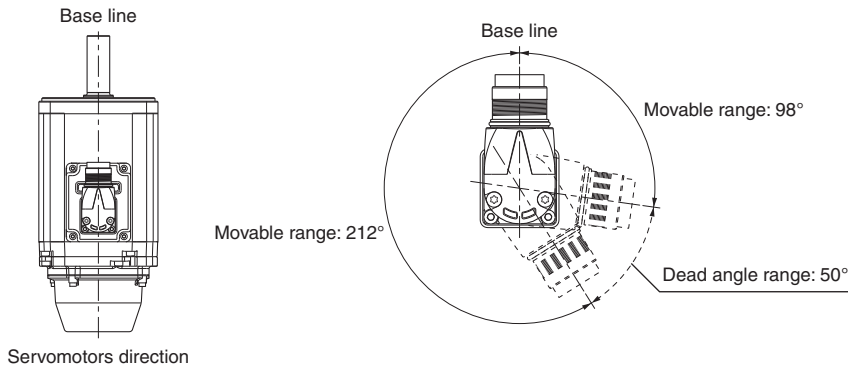
Cable Outlet Direction of Integrated Connector

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

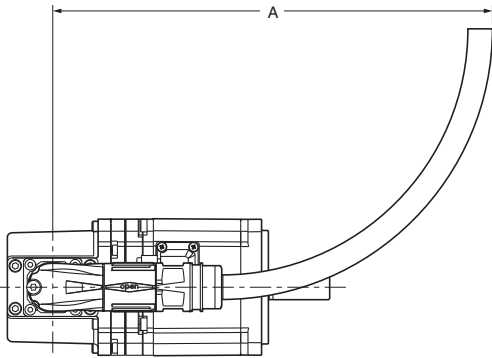


AC Servo System 1S-series with Safety Functionality

Cable Wiring Dimension for a Case of Servo Motor Installing

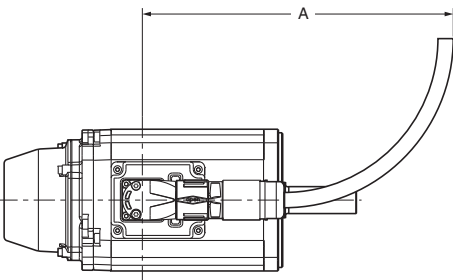
The Integrated cable wiring dimensions are shown below the table according to connector type for Servomotors.
The dimensions from the rotation center of the Integrated connector to the Integrated cable surrounding are indicated as A.

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

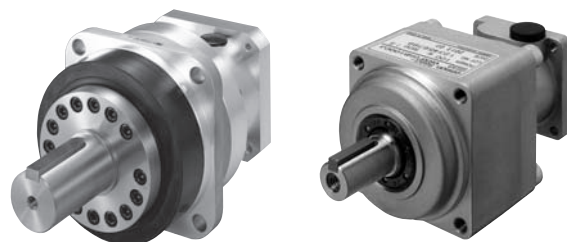


Model	Dimensions [mm]
	A
R88M-1AL75030C(-S2/-O/-OS2/-B/-BS2/-BO/-BOS2)	270
R88M-1AL1K030T(-S2/-O/-OS2/-B/-BS2/-BO/-BOS2)	
R88M-1AL1K030C(-S2/-O/-OS2/-B/-BS2/-BO/-BOS2)	
R88M-1AL1K530T(-S2/-O/-OS2/-B/-BS2/-BO/-BOS2)	
R88M-1AL1K530C(-S2/-O/-OS2/-B/-BS2/-BO/-BOS2)	
R88M-1AL2K030T(-S2/-O/-OS2/-B/-BS2/-BO/-BOS2)	
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)	

R88G-HPG□/VRXF□

Contents

- Ordering Information
- Specifications
- External Dimensions



Ordering Information

Refer to the Ordering Information.

Specifications

Backlash: 3 Arcminutes Max.

For 3,000-r/min Servomotors

Servomotor rated output	Reduction ratio	Model	Rated rotation speed	Rated torque	Efficiency	Momentary maximum rotation speed	Momentary maximum torque	Decelerator inertia	Allowable radial load	Allowable thrust load	Weight
			r/min	N·m	%	r/min	N·m	$\times 10^{-4}$ kg·m ²	N	N	kg
200 W	1/5	R88G-HPG14A05200B□	600	2.4	75.4	1200	9.7	0.207	221	883	1.0
	1/11	R88G-HPG14A11200B□	272	5.8	82.6	545	21.8	0.197	280	1119	1.1
	1/21	R88G-HPG20A21200B□	142	10.2	76.2	285	41.7	0.49	800	2817	2.9
	1/33	R88G-HPG20A33200B□	90	17.0	80.6	181	66.5	0.45	916	3226	2.9
	1/45	R88G-HPG20A45200B□	66	23.5	82.1	133	91.1	0.45	1006	3541	2.9
400 W	1/5	R88G-HPG14A05400B□	600	5.3	84.2	1200	20.4	0.207	221	883	1.1
	1/11	R88G-HPG20A11400B□	272	11.4	81.6	545	45.5	0.57	659	2320	2.9
	1/21	R88G-HPG20A21400B□	142	23.0	86.1	285	88.1	0.49	800	2817	2.9
	1/33	R88G-HPG32A33400B□	90	33.8	80.7	181	136.2	0.62	1565	6240	7.5
	1/45	R88G-HPG32A45400B□	66	46.6	81.5	133	186.1	0.61	1718	6848	7.5
750 W (200 V)	1/5	R88G-HPG20A05750B□	600	9.9	82.9	1200	38.7	0.68	520	1832	2.9
	1/11	R88G-HPG20A11750B□	272	20.0 *1	87.2	545	86.7	0.6	659	2320	3.1
	1/21	R88G-HPG32A21750B□	142	42.1	84.0	285	163.3	3.0	1367	5448	7.8
	1/33	R88G-HPG32A33750B□	90	69.3	87.9	181	259.7	2.7	1565	6240	7.8
750 W (400 V)	1/5	R88G-HPG32A052K0B□	600	7.7	64.3	1000	30.6	3.8	889	3542	7.4
	1/11	R88G-HPG32A112K0B□	272	20.5	78.0	454	70.9	3.4	1126	4488	7.9
	1/21	R88G-HPG32A211K5B□	142	42.1	84.0	238	138.3	3.0	1367	5448	7.9
1 kW	1/5	R88G-HPG32A052K0B□	600	11.5	72.2	1000	42.0	3.8	889	3542	7.4
	1/11	R88G-HPG32A112K0B□	272	28.9	82.5	454	96.1	3.4	1126	4488	7.9
	1/21	R88G-HPG32A211K5B□	142	58.1	86.9	238	186.5	3.0	1367	5448	7.9

AC Servo System 1S-series with Safety Functionality

Servomotor rated output	Reduction ratio	Model	Rated rotation speed	Rated torque	Efficiency	Momentary maximum rotation speed	Momentary maximum torque	Decelerator inertia	Allowable radial load	Allowable thrust load	Weight
			r/min	N·m	%	r/min	N·m	$\times 10^{-4}$ kg·m ²	N	N	kg
1.5 kW	1/5	R88G-HPG32A052K0B□	600	19.1	80.1	1000	64.8	3.8	889	3542	7.4
	1/11	R88G-HPG32A112K0B□	272	45.7	87.0	454	146.3	3.4	1126	4488	7.9
	1/21	R88G-HPG32A211K5B□	142	90.1	90.0	238	282.2	3.0	1367	5448	7.9
	1/33	R88G-HPG50A332K0B□	90	141.3	89.8	151	443.2	4.8	4135	14300	19.0
	1/45	R88G-HPG50A451K5B□	66	194.8	90.8	111	606.5	4.7	4538	15694	19.0
2 kW	1/5	R88G-HPG32A052K0B□	600	26.8	84.1	1000	87.9	3.8	889	3542	7.4
	1/11	R88G-HPG32A112K0B□	272	62.5	89.3	454	197.0	3.4	1126	4488	7.9
2.6 kW (200 V)	1/5	R88G-HPG32A053K0B□	600	36.0	86.8	1000	115.2	3.8	889	3542	7.3
3 kW (400 V)	1/5	R88G-HPG32A053K0B□	600	42.0	88.1	1000	134.0	3.8	889	3542	7.3

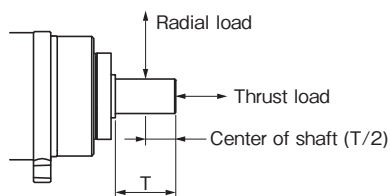
*1. The value is the allowable continuous output torque of the Decelerator. Take care so that this value is not exceeded.

*2. The value is the maximum allowable torque of the Decelerator. Take care so that this value is not exceeded.

Note: 1. The Decelerator inertia is the Servomotor shaft conversion value.

2. The protective structure rating of the Servomotor with the Decelerator is IP44.

3. The Allowable radial load column shows the values obtained at the center of the shaft (T/2).



4. The standard shaft type is a straight shaft. A model with a key and tap is indicated with "J" at □ of the model number.

5. Take care so that the surface temperature of the Decelerator does not exceed 70°C.

For 1,500-r/min Servomotors

Servomotor rated output	Reduction ratio	Model	Rated rotation speed	Rated torque	Efficiency	Momentary maximum rotation speed	Momentary maximum torque	Decelerator inertia	Allowable radial load	Allowable thrust load	Weight
			r/min	N·m	%	r/min	N·m	$\times 10^{-4}$ kg·m ²	N	N	kg
1.5 kW	1/5	R88G-HPG32A053K0B□	300	43.8	91.7	600	135.7	3.8	889	3542	7.3
	1/11	R88G-HPG32A112K0SB□	136	98.1	93.4	272	299.0 *1	3.4	1126	4488	7.8
	1/21	R88G-HPG50A21900TB□	71	187.2	93.3	142	573.2	7.0	3611	12486	19.1
	1/33	R88G-HPG50A33900TB□	45	294.1 *2	94.1	90	849.0 *1	5.9	4135	14300	19.1
2.7 kW (200 V)	1/5	R88G-HPG50A055K0SB□	300	79.2	92.1	600	244.3	11	2347	8118	22.0
	1/11	R88G-HPG50A115K0SB□	136	177.8	94.0	272	541.1	8.4	2974	10285	23.5
	1/20	R88G-HPG65A205K0SB□	75	315.6	91.7	150	976.0	14	7338	26799	55.4
	1/25	R88G-HPG65A255K0SB□	60	396.8	92.3	120	1222.4	14	7846	28654	55.4
3 kW (400 V)	1/5	R88G-HPG50A055K0SB□	300	88.3	92.5	600	271.7	11	2347	8118	22.0
	1/11	R88G-HPG50A115K0SB□	136	197.9	94.2	272	601.2	8.4	2974	10285	23.5
	1/20	R88G-HPG65A205K0SB□	75	352.0	92.2	150	1085.5	14	7338	26799	55.4
	1/25	R88G-HPG65A255K0SB□	60	442.4	92.7	120	1359.2	14	7846	28654	55.4

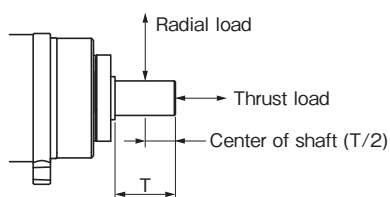
*1. The value is the allowable continuous output torque of the Decelerator. Take care so that this value is not exceeded.

*2. The value is the maximum allowable torque of the Decelerator. Take care so that this value is not exceeded.

Note: 1. The Decelerator inertia is the Servomotor shaft conversion value.

2. The protective structure rating of the Servomotor with the Decelerator is IP44.

3. The Allowable radial load column shows the values obtained at the center of the shaft (T/2).



4. The standard shaft type is a straight shaft. A model with a key and tap is indicated with "J" at □ of the model number.

5. Take care so that the surface temperature of the Decelerator does not exceed 70°C.

AC Servo System 1S-series with Safety Functionality

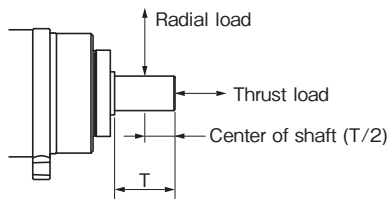
Backlash: 15 Arcminutes Max.

For 3,000-r/min Servomotors

Servomotor rated output	Reduction ratio	Model	Rated rotation speed	Rated torque	Efficiency	Momentary maximum rotation speed	Momentary maximum torque	Decelerator inertia	Allowable radial load	Allowable thrust load	Weight
			r/min	N·m	%	r/min	N·m	$\times 10^{-4}$ kg·m ²	N	N	kg
200 W	1/5	R88G-VRXF05B200CJ	600	2.93	92	1200	9.94 *	0.147	392	196	0.72
	1/9	R88G-VRXF09C200CJ	333	4.76	83	667	16.43	0.273	931	465	1.70
	1/15	R88G-VRXF15C200CJ	200	8.22	86	400	28.38	0.302	1176	588	2.10
	1/25	R88G-VRXF25C200CJ	120	13.70	86	240	47.30	0.293	1323	661	2.10
400 W	1/5	R88G-VRXF05C400CJ	600	5.59	88	1200	19.80	0.370	784	392	1.70
	1/9	R88G-VRXF09C400CJ	333	10.06	88	667	34.00 *	0.273	931	465	1.70
	1/15	R88G-VRXF15C400CJ	200	16.95	89	400	56.70 *	0.302	1176	588	2.10
	1/25	R88G-VRXF25C400CJ	120	28.26	89	240	92.40 *	0.293	1323	661	2.10
750 W (200 V)	1/5	R88G-VRXF05C750CJ	600	10.99	92	1200	38.64	0.817	784	392	2.10
	1/9	R88G-VRXF09D750CJ	333	19.57	91	667	63.70 *	0.755	1176	588	3.40
	1/15	R88G-VRXF15D750CJ	200	31.91	89	400	106.00 *	0.685	1372	686	3.80
	1/25	R88G-VRXF25D750CJ	120	53.18	89	240	177.00 *	0.658	1617	808	3.80

* The value is the maximum allowable torque of the Decelerator. Take care so that this value is not exceeded.

- Note:**
1. The Decelerator inertia is the Servomotor shaft conversion value.
 2. The protective structure rating of the Servomotor combined with the Decelerator is IP44.
(Excluding decelerator and servo motor connecting parts.)
 3. The Allowable radial load column shows the values obtained at the center of the shaft (T/2).



4. The standard shaft type is a shaft with key and tap. (The key is temporarily assembled to the shaft.)
5. Take care so that the surface temperature of the Decelerator does not exceed 90°C.

AC Servo System 1S-series with Safety Functionality

External Dimensions

(Unit: mm)

Backlash: 3 Arcminutes Max.
For 3,000-r/min Servomotors (200 to 750 W)

Servomotor rated output	Reduction ratio	Model	Outline Drawing	Dimensions [mm]												
				LM	LR	C1	C2	D1	D2	D3	D4	D5	D6 *1	E	F1	F2
200 W	1/5	R88G-HPG14A05200B□	1	64.0	58	60	60 × 60	70	70	56	55.5	40	---	37	2.5	21
	1/11	R88G-HPG14A11200B□	1	64.0	58	60	60 × 60	70	70	56	55.5	40	---	37	2.5	21
	1/21	R88G-HPG20A21200B□	2	71.0	80	90	89 dia.	105	70	85	84	59	---	53	7.5	27
	1/33	R88G-HPG20A33200B□	2	71.0	80	90	89 dia.	105	70	85	84	59	---	53	7.5	27
	1/45	R88G-HPG20A45200B□	2	71.0	80	90	89 dia.	105	70	85	84	59	---	53	7.5	27
400 W	1/5	R88G-HPG14A05400B□	1	64	58	60	60 × 60	70	70	56	55.5	40	---	37	2.5	21
	1/11	R88G-HPG20A11400B□	2	71	80	90	89 dia.	105	70	85	84	59	---	53	7.5	27
	1/21	R88G-HPG20A21400B□	2	71	80	90	89 dia.	105	70	85	84	59	---	53	7.5	27
	1/33	R88G-HPG32A33400B□	2	104	133	120	122 dia.	135	70	115	114	84	---	98	12.5	35
	1/45	R88G-HPG32A45400B□	2	104	133	120	122 dia.	135	70	115	114	84	---	98	12.5	35
750 W (200 V)	1/5	R88G-HPG20A05750B□	1	78	80	90	80 × 80	105	90	85	84	59	89	53	7.5	27
	1/11	R88G-HPG20A11750B□	1	78	80	90	80 × 80	105	90	85	84	59	89	53	7.5	27
	1/21	R88G-HPG32A21750B□	2	104	133	120	122 dia.	135	90	115	114	84	---	98	12.5	35
	1/33	R88G-HPG32A33750B□	2	104	133	120	122 dia.	135	90	115	114	84	---	98	12.5	35
	1/45	R88G-HPG32A45750B□	2	104	133	120	122 dia.	135	90	115	114	84	---	98	12.5	35
750 W (400 V)	1/5	R88G-HPG32A052K0B□	2	110	133	120	135 dia.	135	115	115	114	84	---	98	12.5	35
	1/11	R88G-HPG32A112K0B□	2	110	133	120	135 dia.	135	115	115	114	84	---	98	12.5	35
	1/21	R88G-HPG32A211K5B□	2	110	133	120	135 dia.	135	115	115	114	84	---	98	12.5	35
	1/33	R88G-HPG32A33600SB□	2	110	133	120	135 dia.	135	115	115	114	84	---	98	12.5	35

Servomotor rated output	Reduction ratio	Model	Dimensions [mm]											
			G	S	T	Z1	Z2	AT *2	Key				Tap	
									QK	b	h	t1	M	L
200 W	1/5	R88G-HPG14A05200B□	8	16	28	5.5	M4 × 10	M4	25	5	5	3	M4	8
	1/11	R88G-HPG14A11200B□	8	16	28	5.5	M4 × 10	M4	25	5	5	3	M4	8
	1/21	R88G-HPG20A21200B□	10	25	42	9	M4 × 10	M4	36	8	7	4	M6	12
	1/33	R88G-HPG20A33200B□	10	25	42	9	M4 × 10	M4	36	8	7	4	M6	12
	1/45	R88G-HPG20A45200B□	10	25	42	9	M4 × 10	M4	36	8	7	4	M6	12
400 W	1/5	R88G-HPG14A05400B□	8	16	28	5.5	M4 × 10	M4	25	5	5	3	M4	8
	1/11	R88G-HPG20A11400B□	10	25	42	9	M4 × 10	M4	36	8	7	4	M6	12
	1/21	R88G-HPG20A21400B□	10	25	42	9	M4 × 10	M4	36	8	7	4	M6	12
	1/33	R88G-HPG32A33400B□	13	40	82	11	M4 × 10	M4	70	12	8	5	M10	20
	1/45	R88G-HPG32A45400B□	13	40	82	11	M4 × 10	M4	70	12	8	5	M10	20
750 W (200 V)	1/5	R88G-HPG20A05750B□	10	25	42	9	M5 × 12	M4	36	8	7	4	M6	12
	1/11	R88G-HPG20A11750B□	10	25	42	9	M5 × 12	M4	36	8	7	4	M6	12
	1/21	R88G-HPG32A21750B□	13	40	82	11	M5 × 12	M6	70	12	8	5	M10	20
	1/33	R88G-HPG32A33750B□	13	40	82	11	M5 × 12	M6	70	12	8	5	M10	20
	1/45	R88G-HPG32A45750B□	13	40	82	11	M5 × 12	M6	70	12	8	5	M10	20
750 W (400 V)	1/5	R88G-HPG32A052K0B□	13	40	82	11	M8 × 10	M6	70	12	8	5	M10	20
	1/11	R88G-HPG32A112K0B□	13	40	82	11	M8 × 10	M6	70	12	8	5	M10	20
	1/21	R88G-HPG32A211K5B□	13	40	82	11	M8 × 10	M6	70	12	8	5	M10	20
	1/33	R88G-HPG32A33600SB□	13	40	82	11	M8 × 10	M6	70	12	8	5	M10	20

*1. D6 is the maximum diameter of the decelerator body between the flange side and Servomotor side. (See Outline Drawing) The value is given only when the diameter is larger than the diameters of these two sides. Take heed of this when you mount the decelerator to the machine.

*2. Indicates set bolt.

Note: 1. The standard shaft type is a straight shaft.

2. A model with a key and tap is indicated with "J" at □ of the model number. (Example: R88G-HPG14A05400BJ)

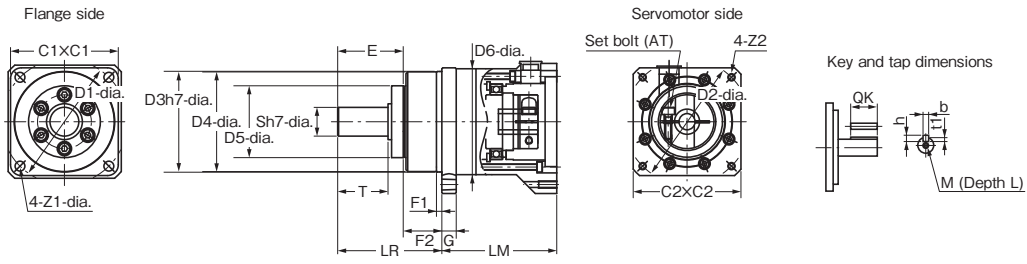
3. The diameter of the motor shaft insertion hole is the same as the shaft diameter of the corresponding Servomotor.

4. You cannot use this type of Decelerator for the Servomotor with key.

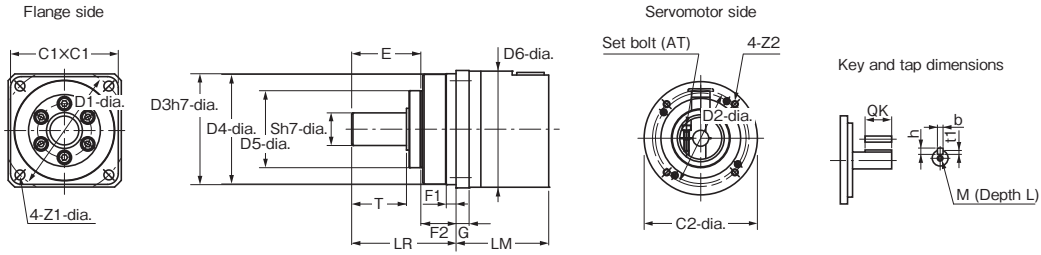
5. The dimensional drawings in this document are for showing main dimensions only, and they do not give the details of the product shape.

AC Servo System 1S-series with Safety Functionality

Outline Drawing 1



Outline Drawing 2



AC Servo System 1S-series with Safety Functionality

For 3,000-r/min Servomotors (1 to 3 kW)

Servomotor rated output	Reduction ratio	Model	Outline Drawing	Dimensions [mm]												
				LM	LR	C1	C2	D1	D2	D3	D4	D5	D6 #1	E	F1	F2
1 kW	1/5	R88G-HPG32A052K0B□	2	110	133	120	135 dia.	135	115	115	114	84	---	98	12.5	35
	1/11	R88G-HPG32A112K0B□	2	110	133	120	135 dia.	135	115	115	114	84	---	98	12.5	35
	1/21	R88G-HPG32A211K5B□	2	110	133	120	135 dia.	135	115	115	114	84	---	98	12.5	35
1.5 kW	1/5	R88G-HPG32A052K0B□	2	110	133	120	135 dia.	135	115	115	114	84	---	98	12.5	35
	1/11	R88G-HPG32A112K0B□	2	110	133	120	135 dia.	135	115	115	114	84	---	98	12.5	35
	1/21	R88G-HPG32A211K5B□	2	110	133	120	135 dia.	135	115	115	114	84	---	98	12.5	35
2 kW	1/5	R88G-HPG32A052K0B□	2	110	133	120	135 dia.	135	115	115	114	84	---	98	12.5	35
	1/11	R88G-HPG32A112K0B□	2	110	133	120	135 dia.	135	115	115	114	84	---	98	12.5	35
2.6 kW (200 V) 3 kW (400 V)	1/5	R88G-HPG32A053K0B□	1	107	133	120	130 × 130	135	145	115	114	84	---	98	12.5	35

Servomotor rated output	Reduction ratio	Model	Dimensions [mm]											
			G	S	T	Z1	Z2	AT #2	Key				Tap	
									QK	b	h	t1	M	L
1 kW	1/5	R88G-HPG32A052K0B□	13	40	82	11	M8 × 10	M6	70	12	8	5	M10	20
	1/11	R88G-HPG32A112K0B□	13	40	82	11	M8 × 10	M6	70	12	8	5	M10	20
	1/21	R88G-HPG32A211K5B□	13	40	82	11	M8 × 10	M6	70	12	8	5	M10	20
1.5 kW	1/5	R88G-HPG32A052K0B□	13	40	82	11	M8 × 10	M6	70	12	8	5	M10	20
	1/11	R88G-HPG32A112K0B□	13	40	82	11	M8 × 10	M6	70	12	8	5	M10	20
	1/21	R88G-HPG32A211K5B□	13	40	82	11	M8 × 10	M6	70	12	8	5	M10	20
2 kW	1/5	R88G-HPG32A052K0B□	13	40	82	11	M8 × 10	M6	70	12	8	5	M10	20
	1/11	R88G-HPG32A112K0B□	13	40	82	11	M8 × 10	M6	70	12	8	5	M10	20
2.6 kW (200 V) 3 kW (400V)	1/5	R88G-HPG32A053K0B□	13	40	82	11	M8 × 18	M6	70	12	8	5	M10	20

*1. D6 is the maximum diameter of the decelerator body between the flange side and Servomotor side. (See Outline Drawing) The value is given only when the diameter is larger than the diameters of these two sides. Take heed of this when you mount the decelerator to the machine.

*2. Indicates set bolt.

Note: 1. The standard shaft type is a straight shaft.

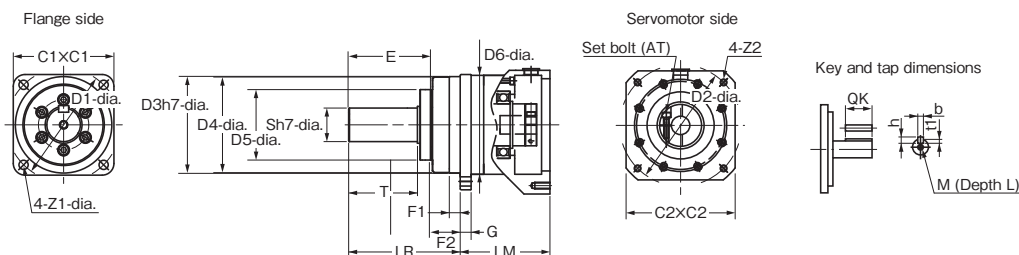
2. A model with a key and tap is indicated with "J" at □ of the model number. (Example: R88G-HPG32A052K0BJ)

3. The diameter of the motor shaft insertion hole is the same as the shaft diameter of the corresponding Servomotor.

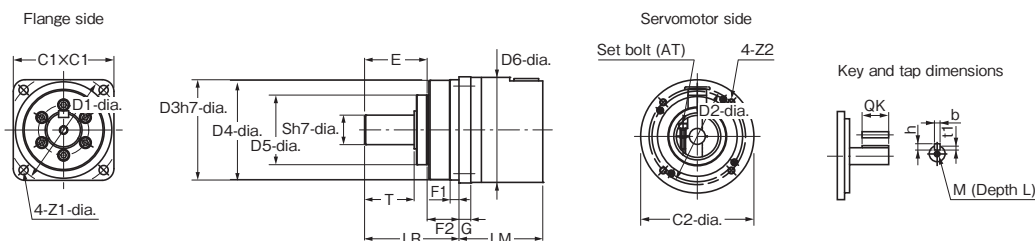
4. You cannot use this type of Decelerator for the Servomotor with key.

5. The dimensional drawings in this document are for showing main dimensions only, and they do not give the details of the product shape.

Outline Drawing 1



Outline Drawing 2



AC Servo System 1S-series with Safety Functionality

For 1,500-r/min Servomotors (1.5 to 3 kW)

Servomotor rated output	Reduction ratio	Model	Outline Drawing	Dimensions [mm]												
				LM	LR	C1	C2	D1	D2	D3	D4	D5	D6 *1	E	F1	F2
1.5 kW	1/5	R88G-HPG32A053K0B□	1	107	133	120	130 × 130	135	145	115	114	84	---	98	12.5	35
	1/11	R88G-HPG32A112K0SB□	1	107	133	120	130 × 130	135	145	115	114	84	---	98	12.5	35
	1/21	R88G-HPG50A21900TB□	1	149	156	170	130 × 130	190	145	165	163	122	170	103	12	53
	1/33	R88G-HPG50A33900TB□	1	149	156	170	130 × 130	190	145	165	163	122	170	103	12	53
2.7 kW (200 V) 3 kW (400 V)	1/5	R88G-HPG50A055K0SB□	1	149	156	170	180 × 180	190	200	165	163	122	---	103	12	53
	1/11	R88G-HPG50A115K0SB□	1	149	156	170	180 × 180	190	200	165	163	122	---	103	12	53
	1/20	R88G-HPG65A205K0SB□	1	231	222	230	180 × 180	260	200	220	214	168	220	165	12	57
	1/25	R88G-HPG65A255K0SB□	1	231	222	230	180 × 180	260	200	220	214	168	220	165	12	57

Servomotor rated output	Reduction ratio	Model	Dimensions [mm]											
			G	S	T	Z1	Z2	AT *2	Key				Tap	
									QK	b	h	t1	M	L
1.5 kW	1/5	R88G-HPG32A053K0B□	13	40	82	11	M8 × 18	M6	70	12	8	5	M10	20
	1/11	R88G-HPG32A112K0SB□	13	40	82	11	M8 × 18	M6	70	12	8	5	M10	20
	1/21	R88G-HPG50A21900TB□	16	50	82	14	M8 × 25	M6	70	14	9	5.5	M10	20
	1/33	R88G-HPG50A33900TB□	16	50	82	14	M8 × 25	M6	70	14	9	5.5	M10	20
2.7 kW (200 V) 3 kW (400 V)	1/5	R88G-HPG50A055K0SB□	16	50	82	14	M12 × 25	M6	70	14	9	5.5	M10	20
	1/11	R88G-HPG50A115K0SB□	16	50	82	14	M12 × 25	M6	70	14	9	5.5	M10	20
	1/20	R88G-HPG65A205K0SB□	25	80	130	18	M12 × 25	M8	110	22	14	9	M16	35
	1/25	R88G-HPG65A255K0SB□	25	80	130	18	M12 × 25	M8	110	22	14	9	M16	35

*1. D6 is the maximum diameter of the decelerator body between the flange side and Servomotor side. (See Outline Drawing) The value is given only when the diameter is larger than the diameters of these two sides. Take heed of this when you mount the decelerator to the machine.

*2. Indicates set bolt.

Note: 1. The standard shaft type is a straight shaft.

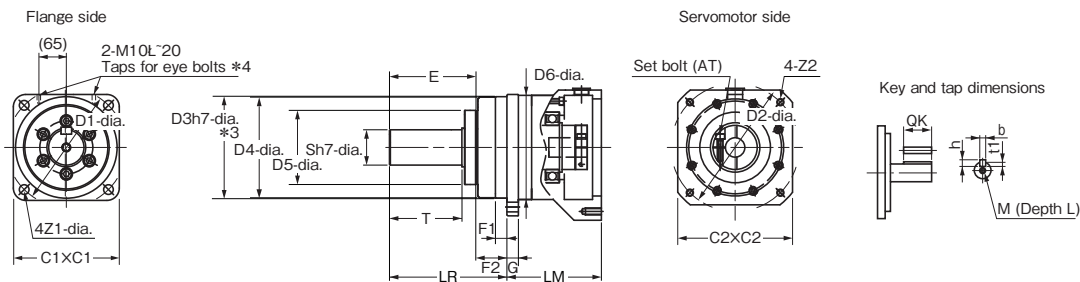
2. A model with a key and tap is indicated with "J" at □ of the model number. (Example: R88G-HPG32A05900TBJ)

3. The diameter of the motor shaft insertion hole is the same as the shaft diameter of the corresponding Servomotor.

4. You cannot use this type of Decelerator for the Servomotor with key.

5. The dimensional drawings in this document are for showing main dimensions only, and they do not give the details of the product shape.

Outline Drawing



*3. The tolerance is "h8" for R88G-HPG50□ and R88G-HPG65□.

*4. The model R88G-HPG65□ has the taps for eye bolts.

AC Servo System 1S-series with Safety Functionality

Backlash: 15 Arcminutes Max. For 3,000-r/min Servomotors

Model			Dimensions [mm]										
			LM	LR	C1	C2	D1	D2	D3	F	G	S	T
200 W	1/5	R88G-VRXF05B200CJ	72.5	32	60	52	70	60	50	3	10	12	20
	1/9	R88G-VRXF09C200CJ	89.5	50	60	78	70	90	70	3	8	19	30
	1/15	R88G-VRXF15C200CJ	100.0	50	60	78	70	90	70	3	8	19	30
	1/25	R88G-VRXF25C200CJ	100.0	50	60	78	70	90	70	3	8	19	30
400 W	1/5	R88G-VRXF05C400CJ	89.5	50	60	78	70	90	70	3	8	19	30
	1/9	R88G-VRXF09C400CJ	89.5	50	60	78	70	90	70	3	8	19	30
	1/15	R88G-VRXF15C400CJ	100.0	50	60	78	70	90	70	3	8	19	30
	1/25	R88G-VRXF25C400CJ	100.0	50	60	78	70	90	70	3	8	19	30
750 W (200 V)	1/5	R88G-VRXF05C750CJ	93.5	50	80	78	90	90	70	3	10	19	30
	1/9	R88G-VRXF09D750CJ	97.5	61	80	98	90	115	90	5	10	24	40
	1/15	R88G-VRXF15D750CJ	110.0	61	80	98	90	115	90	5	10	24	40
	1/25	R88G-VRXF25D750CJ	110.0	61	80	98	90	115	90	5	10	24	40

Model			Dimensions [mm]									
			Z1	Z2	AT *	L	Key				Tap	
							QK	b	h	t1	m	l
200 W	1/5	R88G-VRXF05B200CJ	M4	M5	M4	12	16	4	4	2.5	M5	10
	1/9	R88G-VRXF09C200CJ	M4	M6	M5	20	22	6	6	3.5	M6	12
	1/15	R88G-VRXF15C200CJ	M4	M6	M5	20	22	6	6	3.5	M6	12
	1/25	R88G-VRXF25C200CJ	M4	M6	M5	20	22	6	6	3.5	M6	12
400 W	1/5	R88G-VRXF05C400CJ	M4	M6	M5	20	22	6	6	3.5	M6	12
	1/9	R88G-VRXF09C400CJ	M4	M6	M5	20	22	6	6	3.5	M6	12
	1/15	R88G-VRXF15C400CJ	M4	M6	M5	20	22	6	6	3.5	M6	12
	1/25	R88G-VRXF25C400CJ	M4	M6	M5	20	22	6	6	3.5	M6	12
750 W (200 V)	1/5	R88G-VRXF05C750CJ	M5	M6	M6	20	22	6	6	3.5	M6	12
	1/9	R88G-VRXF09D750CJ	M5	M8	M6	20	30	8	7	4	M8	16
	1/15	R88G-VRXF15D750CJ	M5	M8	M6	20	30	8	7	4	M8	16
	1/25	R88G-VRXF25D750CJ	M5	M8	M6	20	30	8	7	4	M8	16

* Indicates set bolt.

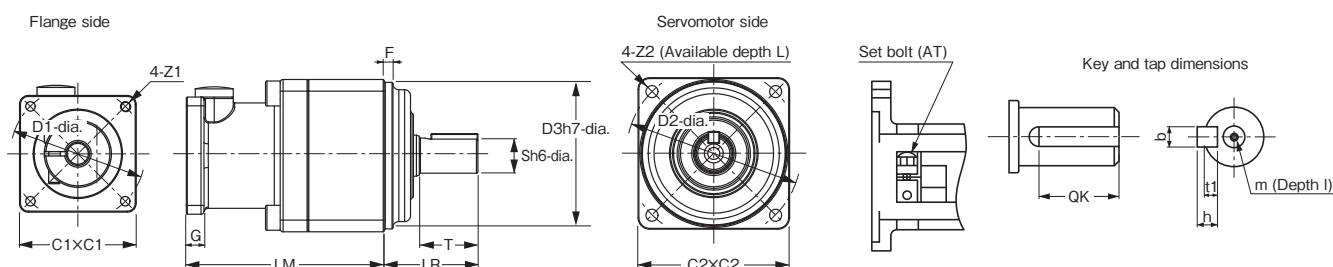
Note: 1. The standard shaft type is a shaft with key and tap.

2. The diameter of the motor shaft insertion hole is the same as the shaft diameter of the corresponding Servomotor.

3. You cannot use this type of Decelerator for the Servomotor with key.

4. The dimensional drawings in this document are for showing main dimensions only, and they do not give the details of the product shape.

Outline Drawing



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AC Servo System 1S-series with Safety Functionality

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
(3)	Rated output	AM	Advance / Middle-inertia type
		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).