SANMOTION

SERVO SYSTEMS

R

ADVANCED MODEL

AC 100 V 30 W - 200 W, AC 200 V 30 W - 25kW

Ver.3.2

SANYO DENKI

SANMOTION R
SERVO SYSTEMS

ADVANCED MODEL

SANMOTION R ADVANCED MODEL Made in Japan

Input voltage AC100 V, 200 V

Servo amplifier

Amp.capacity 15A · 30A · 50A · 100A · 150A · 300A

Servo motor

Flange size 40mm sq. · 60mm sq. · 80mm sq. · 86mm sq. · 100mm sq. · 120mm sq. · 130mm sq. · 180mm sq. · 220mm sq.

Rated output 30W · 50W · 80W · 90W · 100W · 200W · 360W · 380W · 400W · 550W · 675W · 710W · 750W · 1.0kW · 1.2kW · 1.5kW · 1.8kW · 2.0kW · 2.5kW · 3.0kW · 3.5kW · 4.0kW · 4.5kW · 5.0kW · 5.5kW · 7.0kW · 7.5kW · 11kW · 15kW · 20kW · 21kW · 25kW

SANMOTION R ADVANCED MODEL Servo Motor: Made in The Philippines

Input voltage AC200 V

The servo motors are made in The Philippines.
We can deliver them to customers quickly.

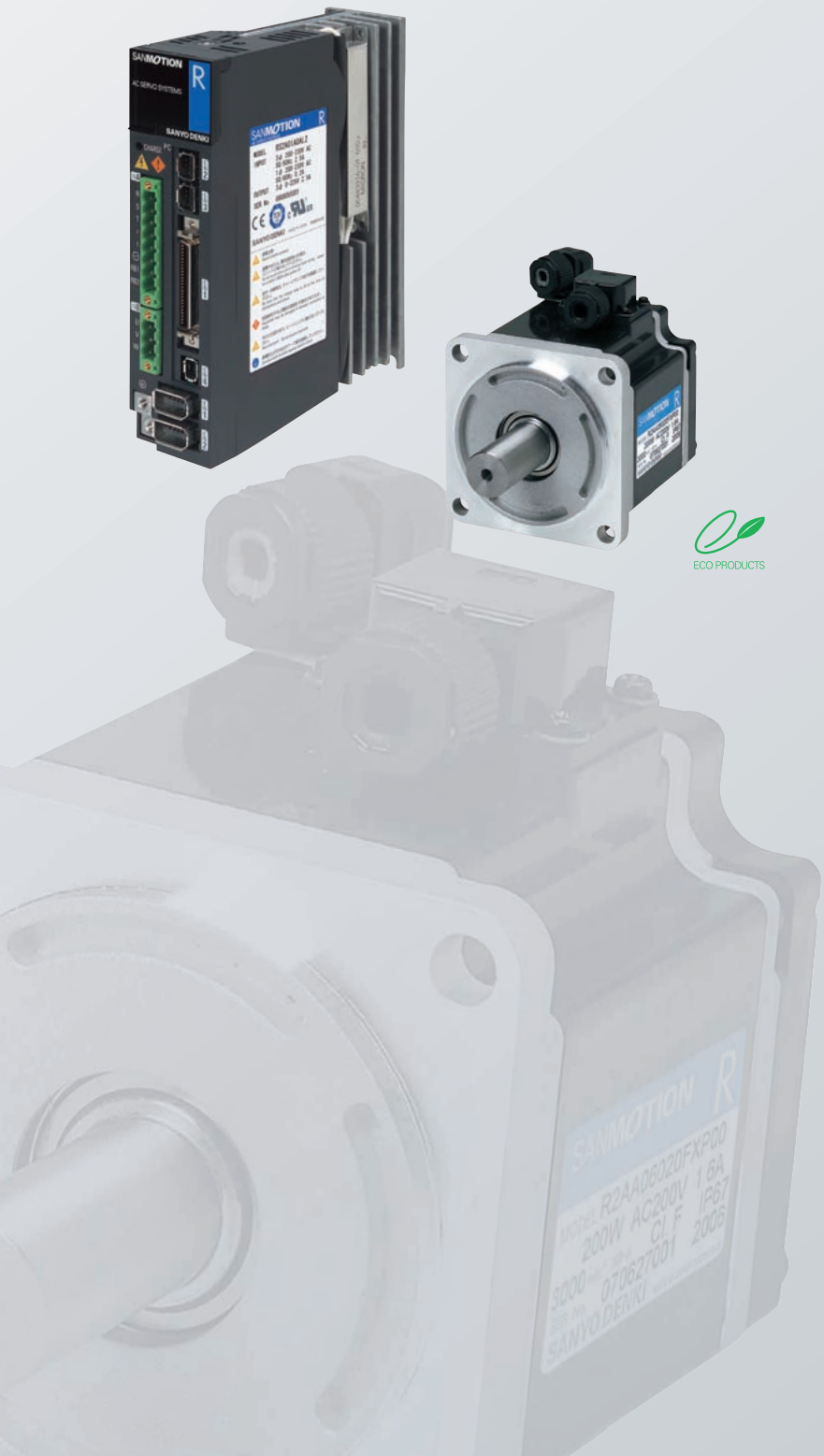
Servo amplifier

Amp.capacity 15A · 30A · 50A

Servo motor

Flange size 40mm sq. · 60mm sq. · 80mm sq. · 86mm sq. · 130mm sq.

Rated output 85W · 90W · 100W · 200W · 320W · 360W · 400W · 675W · 750W · 1.0kW · 1.2kW · 2.0kW



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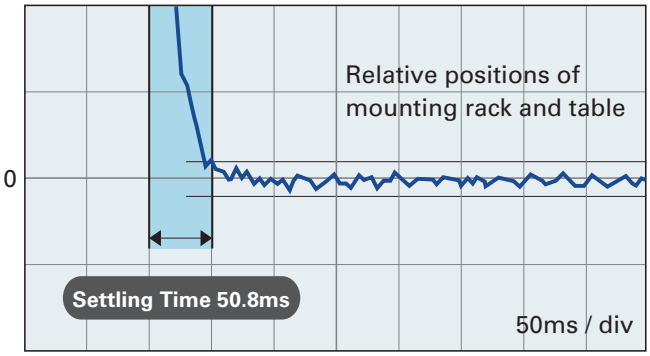
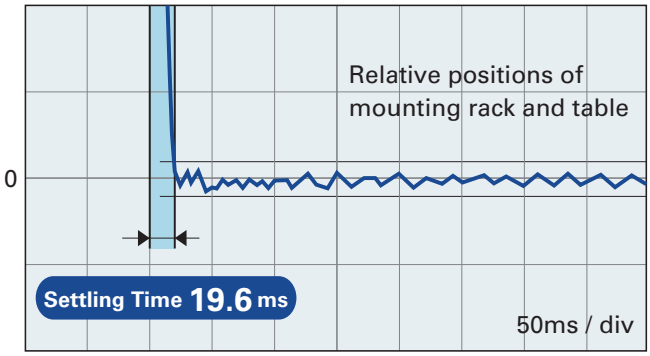
50% Shorter Position Settling Time ※

The vibrations of the low rigidity machine stand resonance are minimized, shortening positioning settling time. The amplifier is suitable for chip mounters and equipment that needs high speed positioning.

※ Compared with our conventional product "SANMOTION R".



Our conventional product

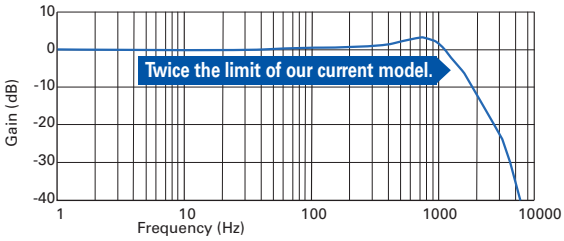


SANMOTION R ADVANCED MODEL

Doubled Frequency Response Limit

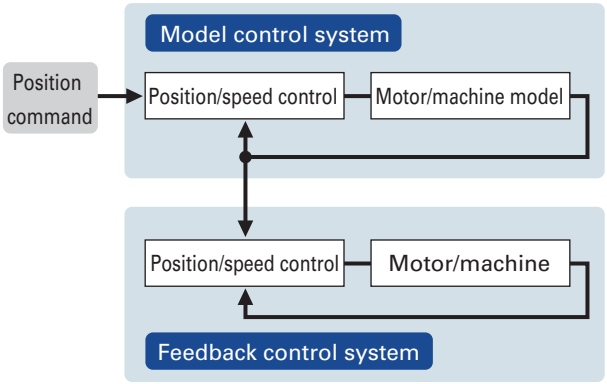
The frequency response limit has been increased to 1200 Hz, twice the limit of our current model. ※

※ Compared with our conventional product "SANMOTION R".



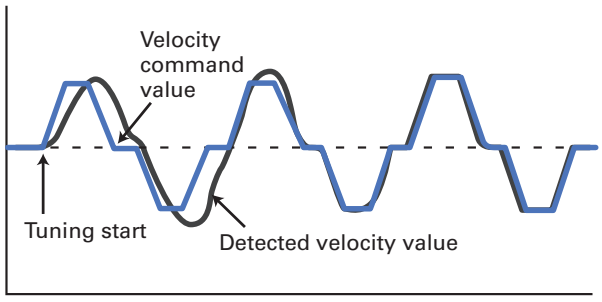
Features Model-based Following Control

Model-based tracking control enables an improved target response curve, enhanced disturbance suppression, and greater robustness.



Auto-Tuning

Servo amplifier automatically optimizes servo gain and filter frequency in realtime.



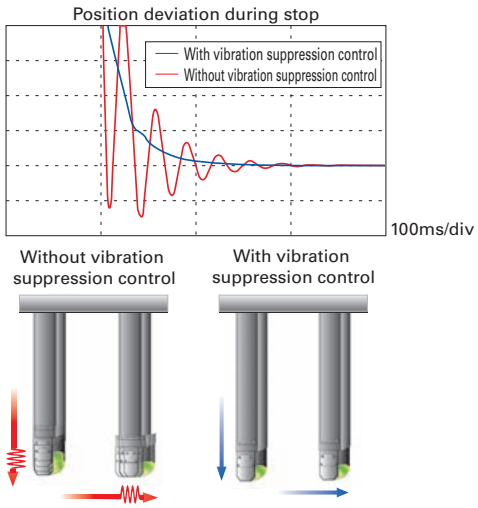
Downsized Servo Motors

R2 Series Servo Motors are downsized by as much as 30% in length and 25% in volume from our conventional product, while still achieving high torque and high performance.

※ Our conventional product is "SANMOTION Q".

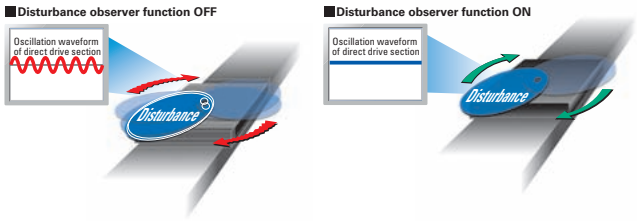
Feed-forward vibration suppression control

With feed-forward vibration suppression control, vibrations at the processing point and base of a machine can be suppressed through simple tuning procedures. Vibration control frequencies are selectable.



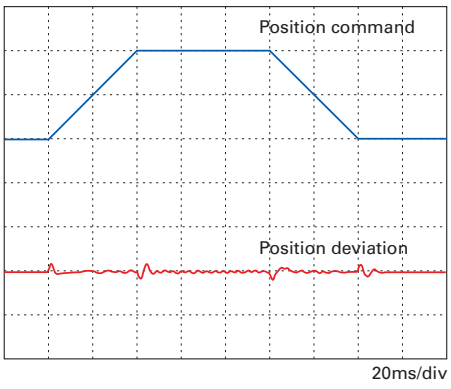
Disturbance Suppression

It is possible to control impacts from other axes in case of multiaxial constitution, by using the new disturbance observer with extended applicable frequency.



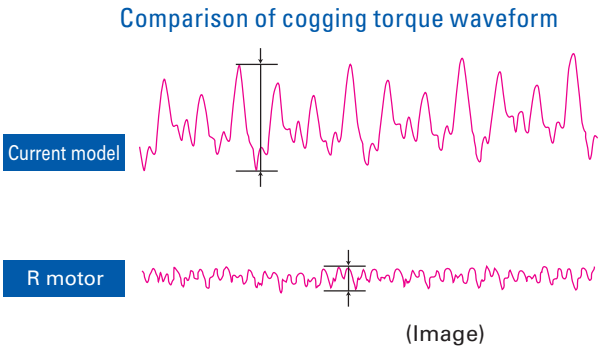
Command Follow-up Control

Performance of the positioning doubled in comparison with current models by adoption of new positioning control algorithm and new speed control algorithm. Position deviation ≒ 0 is achieved.



Low Cogging Torque

The R2 Series Servo Motor's low cogging torque delivers smooth rotation that is ideal for high precision processes and vibration-sensitive conveyor applications.



Resonance Suppression

A 4th-order notch filter reduces phase delay to suppress mechanical resonance and improve velocity response of equipment.

High Resolution

Support for encoders up to 17 bit (131,072 divisions) is available for high resolution control. An optional 20 bit encoder (1,048,576 divisions) is also available.

Now Available with EtherCAT Interface

EtherCAT is a 100Mbps high-speed fieldbus system, which helps shorten Takt time. It is compatible with Ethernet, and its high versatility enables the creation of a system compatible with a variety of devices. Servo amplifier firmware can be updated via EtherCAT. It is also certified through EtherCAT conformance testing conducted by a third party organization.

EtherCAT® Conformance tested

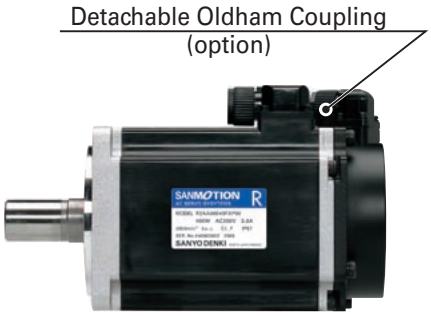
Safety Model newly added to lineup

Since this new model safely shuts down motor torque, safety systems are more easily installed on the equipment. This safety function is defined in the "IEC61800-5-2:Safe Torque Off" and "IEC60204-1:Stop Category 0". In addition, this model has acquired "IEC61508, SIL2/IEC62061,SILCL2" and "ISO13849-1:Cat.3,PL=d".

TÜV SÜD Safety tested Production monitored Functional Safety

Encoder Connected by Oldham Coupling

Encoders can be mounted by Oldham coupling to servo motors 100 mm sq. or larger.
This makes it easy to replace encoder if necessary.
*This is an optional configuration, please contact us for details.



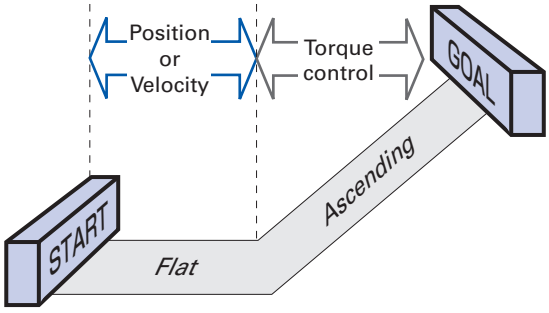
Water Proof and Dust Proof

All models of R Advanced Servo Motors have high IP65 waterproof and dustproof ratings, and variants rated IP67 are available for models other than R Servo Motors from 130 mm sq. to 220 mm sq.

*Shaft feedthrough and cable end are excluded

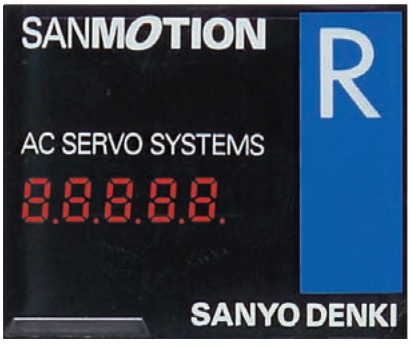
All-in-One Control

Configurable parameters allow you to switch between control modes for torque, position or velocity.



5-digit LED Display, Built-in Operator

The built-in operator allows you to change parameters and monitor the amplifier status and alarm trace.

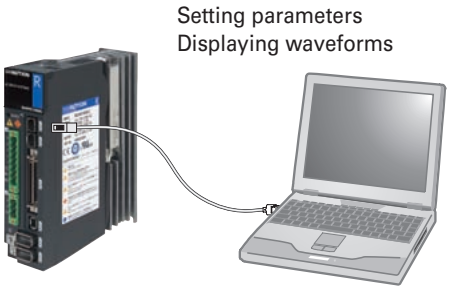


Test Function (JOG)

On-board JOG operation function is available for testing motor and amplifier connection without the need to connect to a host device.

Setup Software

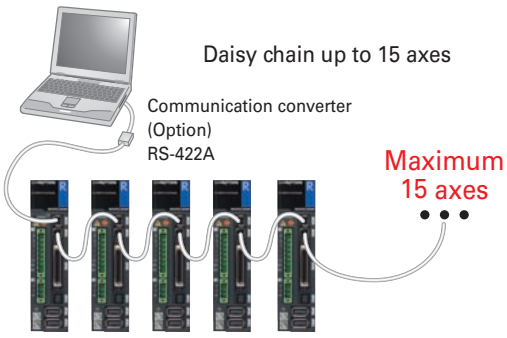
The setup software allows you to set parameters, and view graphical displays of monitored position, velocity or torque waveforms.



Multiaxial Monitor Function

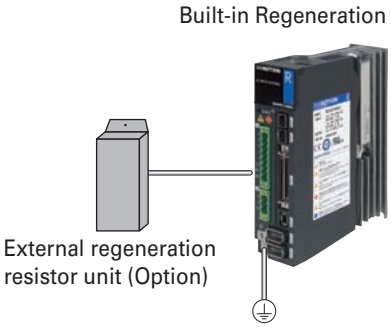
The setup software allows up to 15 axes to be monitored. To enable monitoring of multiple axes, an optional communication converter and amplifier communication cable are available.

*Analog/Pulse input type only



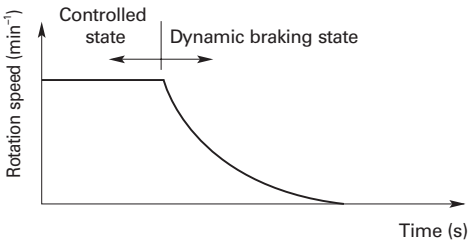
Built-in Regeneration Resistor

It is possible to choose whether to equip regeneration resistance or not. If the regeneration resistance capability is insufficient, it is possible to use an external regeneration resistance unit.



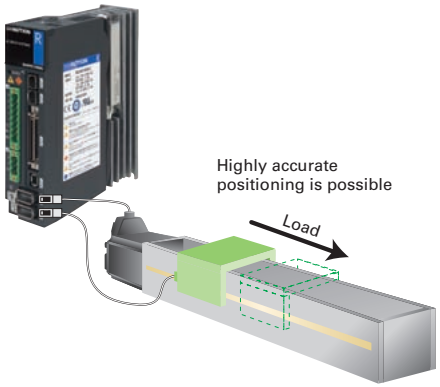
Built-in Dynamic Brake

A built-in dynamic brake provides emergency stop capability. The six kinds of motion sequences for the dynamic brake can be selected by parameter setting.



Fully-closed loop control

Fully-closed loop control is possible using a linear scale mounted on the device together with high resolution encoder information.



SANMOTION R
SERVO SYSTEMS

ADVANCED MODEL

Made in Japan

R2 Servo Motor 100V System Small Capacity, Medium Inertia

Standard specifications Output shaft: round, oil seal: none, connection: cable

Rated Output	Motor Flange Size	Protection Code	Holding Brake	CE and UL approved	Model No.		Page	
					Battery backup method absolute encoder (PA035C)	Absolute encoder for incremental system (PA035S)	Specifications	Dimensions
30W	40mm sq.	IP67	No	No	R2EA04003FXP00	R2EA04003FXH00	P.25	P.48
				Yes	R2EA04003FXP00M	R2EA04003FXH00M	P.25	P.48
			Yes (DC24V)	No	R2EA04003FCP00	R2EA04003FCH00	P.25	P.48
				Yes	R2EA04003FCP00M	R2EA04003FCH00M	P.25	P.48
		IP65	No	No	R2EA04003FXP03	R2EA04003FXH03	P.25	P.48
				Yes	R2EA04003FXP03M	R2EA04003FXH03M	P.25	P.48
			Yes (DC24V)	No	R2EA04003FCP03	R2EA04003FCH03	P.25	P.48
				Yes	R2EA04003FCP03M	R2EA04003FCH03M	P.25	P.48
50W	40mm sq.	IP67	No	No	R2EA04005FXP00	R2EA04005FXH00	P.25	P.48
				Yes	R2EA04005FXP00M	R2EA04005FXH00M	P.25	P.48
			Yes (DC24V)	No	R2EA04005FCP00	R2EA04005FCH00	P.25	P.48
				Yes	R2EA04005FCP00M	R2EA04005FCH00M	P.25	P.48
		IP65	No	No	R2EA04005FXP03	R2EA04005FXH03	P.25	P.48
				Yes	R2EA04005FXP03M	R2EA04005FXH03M	P.25	P.48
			Yes (DC24V)	No	R2EA04005FCP03	R2EA04005FCH03	P.25	P.48
				Yes	R2EA04005FCP03M	R2EA04005FCH03M	P.25	P.48
80W	40mm sq.	IP67	No	No	R2EA04008FXP00	R2EA04008FXH00	P.25	P.48
				Yes	R2EA04008FXP00M	R2EA04008FXH00M	P.25	P.48
			Yes (DC24V)	No	R2EA04008FCP00	R2EA04008FCH00	P.25	P.48
				Yes	R2EA04008FCP00M	R2EA04008FCH00M	P.25	P.48
		IP65	No	No	R2EA04008FXP03	R2EA04008FXH03	P.25	P.48
				Yes	R2EA04008FXP03M	R2EA04008FXH03M	P.25	P.48
			Yes (DC24V)	No	R2EA04008FCP03	R2EA04008FCH03	P.25	P.48
				Yes	R2EA04008FCP03M	R2EA04008FCH03M	P.25	P.48
100W	60mm sq.	IP67	No	No	R2EA06010FXP00	R2EA06010FXH00	P.26	P.48
				Yes	R2EA06010FXP00M	R2EA06010FXH00M	P.26	P.48
			Yes (DC24V)	No	R2EA06010FCP00	R2EA06010FCH00	P.26	P.48
				Yes	R2EA06010FCP00M	R2EA06010FCH00M	P.26	P.48
		IP65	No	No	R2EA06010FXP03	R2EA06010FXH03	P.26	P.48
				Yes	R2EA06010FXP03M	R2EA06010FXH03M	P.26	P.48
			Yes (DC24V)	No	R2EA06010FCP03	R2EA06010FCH03	P.26	P.48
				Yes	R2EA06010FCP03M	R2EA06010FCH03M	P.26	P.48
200W	60mm sq.	IP67	No	No	R2EA06020FXP00	R2EA06020FXH00	P.26	P.48
				Yes	R2EA06020FXP00M	R2EA06020FXH00M	P.26	P.48
			Yes (DC24V)	No	R2EA06020FCP00	R2EA06020FCH00	P.26	P.48
				Yes	R2EA06020FCP00M	R2EA06020FCH00M	P.26	P.48
		IP65	No	No	R2EA06020FXP03	R2EA06020FXH03	P.26	P.48
				Yes	R2EA06020FXP03M	R2EA06020FXH03M	P.26	P.48
			Yes (DC24V)	No	R2EA06020FCP03	R2EA06020FCH03	P.26	P.48
				Yes	R2EA06020FCP03M	R2EA06020FCH03M	P.26	P.48

For specifications on other model, please contact us.

Servo Amplifier 100V System

Type	Main Power	Control Power	Encoder Type	Selectable Output	Internal Registration Resistor	Safe Torque Off function	Amplifier Capacity	Model No.	Page	
									Servo Amplifier Specifications	Dimensions
Analog/Pulse input type	AC100V System AC100 to 115V Single-phase	AC100V System AC100 to 115V Single-phase	Serial encoder	NPN	No	No	15A	RS2E01A0AL0	P.23	P.55
							30A	RS2E03A0AL0	P.23	P.55
					Yes	No	15A	RS2E01A0AA0	P.23	P.55
							30A	RS2E03A0AA0	P.23	P.55
				PNP	No	No	15A	RS2E01A0BL0	P.23	P.55
							30A	RS2E03A0BL0	P.23	P.55
					Yes	No	15A	RS2E01A0BA0	P.23	P.55
							30A	RS2E03A0BA0	P.23	P.55
EtherCAT interface type	AC100V System AC100 to 115V Single-phase	AC100V System AC100 to 115V Single-phase	Serial encoder	Photo relay output	No	Yes (with delay circuit)	15A	RS2E01A0KL4	P.23	P.55
							30A	RS2E03A0KL4	P.23	P.55
					Yes		15A	RS2E01A0KA4	P.23	P.55
							30A	RS2E03A0KA4	P.23	P.55

Our standard servo amplifier has attained the UL, c-UL and EN Standards.
For specifications on other model, please contact us.

R2 Servo Motor 200V System Small Capacity, Medium Inertia

Standard specifications Output shaft: round, oil seal: none, connection: cable

Rated Output	Motor Flange Size	Protection Code	Holding Brake	CE and UL approved	Model No.		Page	
					Battery backup method absolute encoder (PA035C)	Absolute encoder for incremental system (PA035S)	Specifications	Dimensions
30W	40mm sq.	IP67	No	No	R2AA04003FXP00	R2AA04003FXH00	P.27	P.48
				Yes	R2AA04003FXP00M	R2AA04003FXH00M	P.27	P.48
			Yes (DC24V)	No	R2AA04003FCP00	R2AA04003FCH00	P.27	P.48
				Yes	R2AA04003FCP00M	R2AA04003FCH00M	P.27	P.48
		IP65	No	No	R2AA04003FXP03	R2AA04003FXH03	P.27	P.48
				Yes	R2AA04003FXP03M	R2AA04003FXH03M	P.27	P.48
			Yes (DC24V)	No	R2AA04003FCP03	R2AA04003FCH03	P.27	P.48
				Yes	R2AA04003FCP03M	R2AA04003FCH03M	P.27	P.48
50W	40mm sq.	IP67	No	No	R2AA04005FXP00	R2AA04005FXH00	P.27	P.48
				Yes	R2AA04005FXP00M	R2AA04005FXH00M	P.27	P.48
			Yes (DC24V)	No	R2AA04005FCP00	R2AA04005FCH00	P.27	P.48
				Yes	R2AA04005FCP00M	R2AA04005FCH00M	P.27	P.48
		IP65	No	No	R2AA04005FXP03	R2AA04005FXH03	P.27	P.48
				Yes	R2AA04005FXP03M	R2AA04005FXH03M	P.27	P.48
			Yes (DC24V)	No	R2AA04005FCP03	R2AA04005FCH03	P.27	P.48
				Yes	R2AA04005FCP03M	R2AA04005FCH03M	P.27	P.48
90W	40mm sq.	IP67	Yes (DC24V)	No	R2AA04010FCP00	R2AA04010FCH00	P.27	P.48
				Yes	R2AA04010FCP00M6	R2AA04010FCH00M6	P.27	P.48
		IP65	Yes (DC24V)	No	R2AA04010FCP03	R2AA04010FCH03	P.27	P.48
				Yes	R2AA04010FCP03M6	R2AA04010FCH03M6	P.27	P.48
100W	40mm sq.	IP67	No	No	R2AA04010FXP00	R2AA04010FXH00	P.27	P.48
				Yes	R2AA04010FXP00M	R2AA04010FXH00M	P.27	P.48
		IP65	No	No	R2AA04010FXP03	R2AA04010FXH03	P.27	P.48
				Yes	R2AA04010FXP03M	R2AA04010FXH03M	P.27	P.48
	60mm sq.	IP67	No	No	R2AA06010FXP00	R2AA06010FXH00	P.27	P.48
				Yes	R2AA06010FXP00M	R2AA06010FXH00M	P.27	P.48
			Yes (DC24V)	No	R2AA06010FCP00	R2AA06010FCH00	P.27	P.48
				Yes	R2AA06010FCP00M	R2AA06010FCH00M	P.27	P.48
		IP65	No	No	R2AA06010FXP03	R2AA06010FXH03	P.27	P.48
				Yes	R2AA06010FXP03M	R2AA06010FXH03M	P.27	P.48
			Yes (DC24V)	No	R2AA06010FCP03	R2AA06010FCH03	P.27	P.48
				Yes	R2AA06010FCP03M	R2AA06010FCH03M	P.27	P.48
200W	60mm sq.	IP67	No	No	R2AA06020FXP00	R2AA06020FXH00	P.28	P.48
				Yes	R2AA06020FXP00M	R2AA06020FXH00M	P.28	P.48
			Yes (DC24V)	No	R2AA06020FCP00	R2AA06020FCH00	P.28	P.48
				Yes	R2AA06020FCP00M	R2AA06020FCH00M	P.28	P.48
		IP65	No	No	R2AA06020FXP03	R2AA06020FXH03	P.28	P.48
				Yes	R2AA06020FXP03M	R2AA06020FXH03M	P.28	P.48
			Yes (DC24V)	No	R2AA06020FCP03	R2AA06020FCH03	P.28	P.48
				Yes	R2AA06020FCP03M	R2AA06020FCH03M	P.28	P.48
	80mm sq.	IP67	No	No	R2AA08020FXP00	R2AA08020FXH00	P.28	P.48
				Yes	R2AA08020FXP00M	R2AA08020FXH00M	P.28	P.48
			Yes (DC24V)	No	R2AA08020FCP00	R2AA08020FCH00	P.28	P.48
				Yes	R2AA08020FCP00M	R2AA08020FCH00M	P.28	P.48
		IP65	No	No	R2AA08020FXP03	R2AA08020FXH03	P.28	P.48
				Yes	R2AA08020FXP03M	R2AA08020FXH03M	P.28	P.48
			Yes (DC24V)	No	R2AA08020FCP03	R2AA08020FCH03	P.28	P.48
				Yes	R2AA08020FCP03M	R2AA08020FCH03M	P.28	P.48
360W	60mm sq.	IP67	Yes (DC24V)	No	R2AA06040FCP00	R2AA06040FCH00	P.28	P.48
				Yes	R2AA06040FCP00M6	R2AA06040FCH00M6	P.28	P.48
			Yes (DC24V)	No	R2AA06040HCP00	R2AA06040HCH00	P.28	P.48
				Yes	R2AA06040HCP00M6	R2AA06040HCH00M6	P.28	P.48
		IP65	Yes (DC24V)	No	R2AA06040FCP03	R2AA06040FCH03	P.28	P.48
				Yes	R2AA06040FCP03M6	R2AA06040FCH03M6	P.28	P.48
			Yes (DC24V)	No	R2AA06040HCP03	R2AA06040HCH03	P.28	P.48
				Yes	R2AA06040HCP03M6	R2AA06040HCH03M6	P.28	P.48
400W	60mm sq.	IP67	No	No	R2AA06040FXP00	R2AA06040FXH00	P.28	P.48
				Yes	R2AA06040FXP00M	R2AA06040FXH00M	P.28	P.48
			No	No	R2AA06040HXP00	R2AA06040HXH00	P.28	P.48
				Yes	R2AA06040HXP00M	R2AA06040HXH00M	P.28	P.48
		IP65	No	No	R2AA06040FXP03	R2AA06040FXH03	P.28	P.48
				Yes	R2AA06040FXP03M	R2AA06040FXH03M	P.28	P.48
			No	No	R2AA06040HXP03	R2AA06040HXH03	P.28	P.48
				Yes	R2AA06040HXP03M	R2AA06040HXH03M	P.28	P.48

For specifications of models other than listed, please contact us.

R2 Servo Motor 200V System Small Capacity, Medium Inertia

Standard specifications Output shaft: round, oil seal: none, connection: cable

Rated Output	Motor Flange Size	Protection Code	Holding Brake	CE and UL approved	Model No.		Page	
					Battery backup method absolute encoder (PA035C)	Absolute encoder for incremental system (PA035S)	Specifications	Dimensions
400W	80mm sq.	IP67	No	No	R2AA08040FXP00	R2AA08040FXH00	P.29	P.48
				Yes	R2AA08040FXP00M	R2AA08040FXH00M	P.29	P.48
			Yes (DC24V)	No	R2AA08040FCP00	R2AA08040FCH00	P.29	P.48
				Yes	R2AA08040FCP00M	R2AA08040FCH00M	P.29	P.48
		IP65	No	No	R2AA08040FXP03	R2AA08040FXH03	P.29	P.48
				Yes	R2AA08040FXP03M	R2AA08040FXH03M	P.29	P.48
			Yes (DC24V)	No	R2AA08040FCP03	R2AA08040FCH03	P.29	P.48
				Yes	R2AA08040FCP03M	R2AA08040FCH03M	P.29	P.48
750W	80mm sq.	IP67	No	No	R2AA08075FXP00	R2AA08075FXH00	P.29	P.48
				Yes	R2AA08075FXP00M	R2AA08075FXH00M	P.29	P.48
			Yes (DC24V)	No	R2AA08075FCP00	R2AA08075FCH00	P.29	P.48
				Yes	R2AA08075FCP00M	R2AA08075FCH00M	P.29	P.48
		IP65	No	No	R2AA08075FXP03	R2AA08075FXH03	P.29	P.48
				Yes	R2AA08075FXP03M	R2AA08075FXH03M	P.29	P.48
			Yes (DC24V)	No	R2AA08075FCP03	R2AA08075FCH03	P.29	P.48
				Yes	R2AA08075FCP03M	R2AA08075FCH03M	P.29	P.48
	86mm sq.	IP67	No	No	R2AAB8075FXP00	R2AAB8075FXH00	P30	P.48
				Yes	R2AAB8075FXP00M	R2AAB8075FXH00M	P30	P.48
			Yes (DC24V)	No	R2AAB8075FCP00	R2AAB8075FCH00	P30	P.48
				Yes	R2AAB8075FCP00M	R2AAB8075FCH00M	P30	P.48
		IP65	No	No	R2AAB8075FXP03	R2AAB8075FXH03	P30	P.48
				Yes	R2AAB8075FXP03M	R2AAB8075FXH03M	P30	P.48
			Yes (DC24V)	No	R2AAB8075FCP03	R2AAB8075FCH03	P30	P.48
				Yes	R2AAB8075FCP03M	R2AAB8075FCH03M	P30	P.48
	100mm sq.	IP67	No	No	R2AA10075FXP00	R2AA10075FXH00	P.29	P.48
				Yes	R2AA10075FXP00M	R2AA10075FXH00M	P.29	P.48
			Yes (DC24V)	No	R2AA10075FCP00	R2AA10075FCH00	P.29	P.48
				Yes	R2AA10075FCP00M	R2AA10075FCH00M	P.29	P.48
		IP65	No	No	R2AA10075FXP03	R2AA10075FXH03	P.29	P.48
				Yes	R2AA10075FXP03M	R2AA10075FXH03M	P.29	P.48
			Yes (DC24V)	No	R2AA10075FCP03	R2AA10075FCH03	P.29	P.48
				Yes	R2AA10075FCP03M	R2AA10075FCH03M	P.29	P.48
1kW	86mm sq.	IP67	No	No	R2AAB8100FXP00	R2AAB8100FXH00	P.30	P.48
				Yes	R2AAB8100FXP00M	R2AAB8100FXH00M	P.30	P.48
			Yes (DC24V)	No	R2AAB8100FCP00	R2AAB8100FCH00	P.30	P.48
				Yes	R2AAB8100FCP00M	R2AAB8100FCH00M	P.30	P.48
			No	No	R2AAB8100HXP00	R2AAB8100HXH00	P.29	P.48
				Yes	R2AAB8100HXP00M	R2AAB8100HXH00M	P.29	P.48
			Yes (DC24V)	No	R2AAB8100HCP00	R2AAB8100HCH00	P.29	P.48
				Yes	R2AAB8100HCP00M	R2AAB8100HCH00M	P.29	P.48
		IP65	No	No	R2AAB8100FXP03	R2AAB8100FXH03	P.30	P.48
				Yes	R2AAB8100FXP03M	R2AAB8100FXH03M	P.30	P.48
			Yes (DC24V)	No	R2AAB8100FCP03	R2AAB8100FCH03	P.30	P.48
				Yes	R2AAB8100FCP03M	R2AAB8100FCH03M	P.30	P.48
			No	No	R2AAB8100HXP03	R2AAB8100HXH03	P.29	P.48
				Yes	R2AAB8100HXP03M	R2AAB8100HXH03M	P.29	P.48
			Yes (DC24V)	No	R2AAB8100HCP03	R2AAB8100HCH03	P.29	P.48
				Yes	R2AAB8100HCP03M	R2AAB8100HCH03M	P.29	P.48
	100mm sq.	IP67	No	No	R2AA10100FXP00	R2AA10100FXH00	P.31	P.48
				Yes	R2AA10100FXP00M	R2AA10100FXH00M	P.31	P.48
			Yes (DC24V)	No	R2AA10100FCP00	R2AA10100FCH00	P.31	P.48
				Yes	R2AA10100FCP00M	R2AA10100FCH00M	P.31	P.48
		IP65	No	No	R2AA10100FXP03	R2AA10100FXH03	P.31	P.48
				Yes	R2AA10100FXP03M	R2AA10100FXH03M	P.31	P.48
			Yes (DC24V)	No	R2AA10100FCP03	R2AA10100FCH03	P.31	P.48
				Yes	R2AA10100FCP03M	R2AA10100FCH03M	P.31	P.48

For specifications on other model, please contact us.

R2 Servo Motor 200V System Medium Capacity, Medium Inertia

Standard specifications Output shaft: with key, oil seal: yes, connection: Cannon plug (550 W to 15 kW), terminal block (20, 25 kW)

Rated Output	Motor Flange Size	Protection Code	Holding Brake	CE and UL approved	Model No.		Page	
					Battery backup method absolute encoder (PA035C)	Absolute encoder for incremental system (PA035S)	Specifications	Dimensions
550W	130mm sq.	IP65	No	No	R2AA13050HXP00	R2AA13050HXH00	P.30	P.49
				Yes	R2AA13050HXP00M	R2AA13050HXH00M	P.30	P.49
			Yes (DC24V)	No	R2AA13050HCP00	R2AA13050HCH00	P.30	P.49
				Yes	R2AA13050HCP00M	R2AA13050HCH00M	P.30	P.49
			No	No	R2AA13050DXP00	R2AA13050DXH00	P.30	P.49
				Yes	R2AA13050DXP00M	R2AA13050DXH00M	P.30	P.49
			Yes (DC24V)	No	R2AA13050DCP00	R2AA13050DCH00	P.30	P.49
				Yes	R2AA13050DCP00M	R2AA13050DCH00M	P.30	P.49
1.2kW	130mm sq.	IP65	No	No	R2AA13120BXP00	R2AA13120BXH00	P.30	P.49
				Yes	R2AA13120BXP00M	R2AA13120BXH00M	P.30	P.49
			Yes (DC24V)	No	R2AA13120BCP00	R2AA13120BCH00	P.30	P.49
				Yes	R2AA13120BCP00M	R2AA13120BCH00M	P.30	P.49
			No	No	R2AA13120LXP00	R2AA13120LXH00	P.31	P.49
				Yes	R2AA13120LXP00M	R2AA13120LXH00M	P.31	P.49
			Yes (DC24V)	No	R2AA13120LCP00	R2AA13120LCH00	P.31	P.49
				Yes	R2AA13120LCP00M	R2AA13120LCH00M	P.31	P.49
			No	No	R2AA13120DXP00	R2AA13120DXH00	P.31	P.49
				Yes	R2AA13120DXP00M	R2AA13120DXH00M	P.31	P.49
			Yes (DC24V)	No	R2AA13120DCP00	R2AA13120DCH00	P.31	P.49
				Yes	R2AA13120DCP00M	R2AA13120DCH00M	P.31	P.49
1.8kW	130mm sq.	IP65	No	No	R2AA13180HXP00	R2AA13180HXH00	P.31	P.49
				Yes	R2AA13180HXP00M	R2AA13180HXH00M	P.31	P.49
			Yes (DC24V)	No	R2AA13180HCP00	R2AA13180HCH00	P.31	P.49
				Yes	R2AA13180HCP00M	R2AA13180HCH00M	P.31	P.49
			No	No	R2AA13180DXP00	R2AA13180DXH00	P.32	P.49
				Yes	R2AA13180DXP00M	R2AA13180DXH00M	P.32	P.49
			Yes (DC24V)	No	R2AA13180DCP00	R2AA13180DCH00	P.32	P.49
				Yes	R2AA13180DCP00M	R2AA13180DCH00M	P.32	P.49
2kW	130mm sq.	IP65	No	No	R2AA13200LXP00	R2AA13200LXH00	P.32	P.49
				Yes	R2AA13200LXP00M	R2AA13200LXH00M	P.32	P.49
			Yes (DC24V)	No	R2AA13200LCP00	R2AA13200LCH00	P.32	P.49
				Yes	R2AA13200LCP00M	R2AA13200LCH00M	P.32	P.49
			No	No	R2AA13200DXP00	R2AA13200DXH00	P.32	P.49
				Yes	R2AA13200DXP00M	R2AA13200DXH00M	P.32	P.49
			Yes (DC24V)	No	R2AA13200DCP00	R2AA13200DCH00	P.32	P.49
				Yes	R2AA13200DCP00M	R2AA13200DCH00M	P.32	P.49
3.5kW	180mm sq.	IP65	No	No	R2AA18350LXP00	R2AA18350LXH00	P.32	P.50
				Yes	R2AA18350LXP00M	R2AA18350LXH00M	P.32	P.50
			Yes (DC24V)	No	R2AA18350LCP00	R2AA18350LCH00	P.32	P.50
				Yes	R2AA18350LCP00M	R2AA18350LCH00M	P.32	P.50
			No	No	R2AA18350DXP00	R2AA18350DXH00	P.33	P.50
				Yes	R2AA18350DXP00M	R2AA18350DXH00M	P.33	P.50
			Yes (DC24V)	No	R2AA18350DCP00	R2AA18350DCH00	P.33	P.50
				Yes	R2AA18350DCP00M	R2AA18350DCH00M	P.33	P.50
4.5kW	180mm sq.	IP65	No	No	R2AA18450HXP00	R2AA18450HXH00	P.33	P.50
				Yes	R2AA18450HXP00M	R2AA18450HXH00M	P.33	P.50
			Yes (DC24V)	No	R2AA18450HCP00	R2AA18450HCH00	P.33	P.50
				Yes	R2AA18450HCP00M	R2AA18450HCH00M	P.33	P.50
5kW	220mm sq.	IP65	No	No	R2AA22500LXP00	R2AA22500LXH00	P.34	P.51
				Yes	R2AA22500LXP00M	R2AA22500LXH00M	P.34	P.51
			Yes (DC24V)	No	R2AA22500LCP00	R2AA22500LCH00	P.34	P.51
				Yes	R2AA22500LCP00M	R2AA22500LCH00M	P.34	P.51

For specifications on other model, please contact us.

R2 Servo Motor 200V System Medium Capacity, Medium Inertia

Standard specifications Output shaft: with key, oil seal: yes, connection: Cannon plug (550 W to 15 kW), terminal block (20, 25 kW)

Rated Output	Motor Flange Size	Protection Code	Holding Brake	CE and UL approved	Model No.		Page	
					Battery backup method absolute encoder (PA035C)	Absolute encoder for incremental system (PA035S)	Specifications	Dimensions
5.5kW	180mm sq.	IP65	No	No	R2AA18550RXP00	R2AA18550RXH00	P.33	P.50
				Yes	R2AA18550RXP00M	R2AA18550RXH00M	P.33	P.50
			Yes (DC24V)	No	R2AA18550RCP00	R2AA18550RCH00	P.33	P.50
				Yes	R2AA18550RCP00M	R2AA18550RCH00M	P.33	P.50
			No	No	R2AA18550HXP00	R2AA18550HXH00	P.35	P.50
				Yes	R2AA18550HXP00M	R2AA18550HXH00M	P.35	P.50
			Yes (DC24V)	No	R2AA18550HCP00	R2AA18550HCH00	P.35	P.50
				Yes	R2AA18550HCP00M	R2AA18550HCH00M	P.35	P.50
7kW	220mm sq.	IP65	No	No	R2AA22700SXP00	R2AA22700SXH00	P.34	P.51
				Yes	R2AA22700SXP00M	R2AA22700SXH00M	P.34	P.51
			Yes (DC24V)	No	R2AA22700SCP00	R2AA22700SCH00	P.34	P.51
				Yes	R2AA22700SCP00M	R2AA22700SCH00M	P.34	P.51
7.5kW	180mm sq.	IP65	No	No	R2AA18750HXP00	R2AA18750HXH00	P.35	P.50
				Yes	R2AA18750HXP00M	R2AA18750HXH00M	P.35	P.50
			Yes (DC24V)	No	R2AA18750HCP00	R2AA18750HCH00	P.35	P.50
				Yes	R2AA18750HCP00M	R2AA18750HCH00M	P.35	P.50
11kW	180mm sq.	IP65	No	No	R2AA1811KRXP00	R2AA1811KRXH00	P.35	P.50
				Yes	R2AA1811KRXP00M	R2AA1811KRXH00M	P.35	P.50
			Yes (DC24V)	No	R2AA1811KRCP00	R2AA1811KRCH00	P.35	P.50
				Yes	R2AA1811KRCP00M	R2AA1811KRCH00M	P.35	P.50
	220mm sq.	IP65	No	No	R2AA2211KBXP00	R2AA2211KBXH00	P.36	P.51
				Yes	R2AA2211KBXP00M	R2AA2211KBXH00M	P.36	P.51
			Yes (DC24V)	No	R2AA2211KBCP00	R2AA2211KBCH00	P.36	P.51
				Yes	R2AA2211KBCP00M	R2AA2211KBCH00M	P.36	P.51
15kW	220mm sq.	IP65	No	No	R2AA2215KBXP00	R2AA2215KBXH00	P.36	P.51
				Yes	R2AA2215KBXP00M	R2AA2215KBXH00M	P.36	P.51
			Yes (DC24V)	No	R2AA2215KBCP00	R2AA2215KBCH00	P.36	P.51
				Yes	R2AA2215KBCP00M	R2AA2215KBCH00M	P.36	P.51
20kW	220mm sq.	IP65	No	Under preparation	R2AA2220KBXP00	R2AA2220KBXH00	P.36	P.52
			Yes (DC24V)		R2AA2220KBCP00	R2AA2220KBCH00	P.36	P.52
25kW	220mm sq.	IP65	No	Under preparation	R2AA2225KBXP00	R2AA2225KBXH00	P.36	P.52
			Yes (DC24V)		R2AA2225KBCP00	R2AA2225KBCH00	P.36	P.52

For specifications on other model, please contact us.

R1 Servo Motor 200V System Medium Capacity, Low Inertia

Standard specifications Output shaft: with key, oil seal: yes, connection: Cannon plug (5.5 kW to 15 kW), terminal block (21 kW)

Rated Output	Motor Flange Size	Protection Code	Holding Brake	CE and UL approved	Model No.		Page	
					Battery backup method absolute encoder (PA035C)	Absolute encoder for incremental system (PA035S)	Specifications	Dimensions
5.5kW	180mm sq.	IP65 (Excluding cooling fan)	No	Under preparation	R1AA18550HXP00	R1AA18550HXH00	P.37	P.53
			Yes (DC24V)		R1AA18550HCP00	R1AA18550HCH00	P.37	P.53
7.5kW	180mm sq.		No		R1AA18750LXP00	R1AA18750LXH00	P.37	P.53
			Yes (DC24V)		R1AA18750LCP00	R1AA18750LCH00	P.37	P.53
11kW	180mm sq.		No		R1AA1811KRXP00	R1AA1811KRXH00	P.38	P.53
			Yes (DC24V)		R1AA1811KRCP00	R1AA1811KRCH00	P.38	P.53
15kW	180mm sq.		No		R1AA1815KBXP00	R1AA1815KBXH00	P.38	P.53
			Yes (DC24V)		R1AA1815KBCP00	R1AA1815KBCH00	P.38	P.53
21kW	220mm sq.		No		R1AA2220KVXP00	R1AA2220KVXH00	P.38	P.53

For specifications on other model, please contact us.

Q1 Servo Motor 200V System Medium Capacity, Low Inertia

Standard specifications Output shaft: with key, oil seal: yes, connection: Cannon plug

Rated Output	Motor Flange Size	Protection Code	Holding Brake	CE and UL approved	Model No.		Page	
					Battery backup method absolute encoder (PA035C)	Wire-saving incremental encoder (PP031T/PP038H/PP062)	Specifications	Dimensions
1kW	100mm sq.	IP67	No	No	Q1AA10100DXP00	Q1AA10100DXS00	P.39	P.54
				Yes	Q1AA10100DXP00M	Q1AA10100DXS00M	P.39	P.54
			Yes (DC24V)	No	Q1AA10100DCP00	Q1AA10100DCS00	P.39	P.54
				Yes	Q1AA10100DCP00M	Q1AA10100DCS00M	P.39	P.54
	120mm sq.	IP67	No	No	Q1AA12100DXP00	Q1AA12100DXS00	P.40	P.54
				Yes	Q1AA12100DXP00M	Q1AA12100DXS00M	P.40	P.54
			Yes (DC24V)	No	Q1AA12100DCP00	Q1AA12100DCS00	P.40	P.54
				Yes	Q1AA12100DCP00M	Q1AA12100DCS00M	P.40	P.54
1.5kW	100mm sq.	IP67	No	No	Q1AA10150DXP00	Q1AA10150DXS00	P.39	P.54
				Yes	Q1AA10150DXP00M	Q1AA10150DXS00M	P.39	P.54
			Yes (DC24V)	No	Q1AA10150DCP00	Q1AA10150DCS00	P.39	P.54
				Yes	Q1AA10150DCP00M	Q1AA10150DCS00M	P.39	P.54
2kW	100mm sq.	IP67	No	No	Q1AA10200DXP00	Q1AA10200DXS00	P.39	P.54
				Yes	Q1AA10200DXP00M	Q1AA10200DXS00M	P.39	P.54
			Yes (DC24V)	No	Q1AA10200DCP00	Q1AA10200DCS00	P.39	P.54
				Yes	Q1AA10200DCP00M	Q1AA10200DCS00M	P.39	P.54
	120mm sq.	IP67	No	No	Q1AA12200DXP00	Q1AA12200DXS00	P.40	P.54
				Yes	Q1AA12200DXP00M	Q1AA12200DXS00M	P.40	P.54
			Yes (DC24V)	No	Q1AA12200DCP00	Q1AA12200DCS00	P.40	P.54
				Yes	Q1AA12200DCP00M	Q1AA12200DCS00M	P.40	P.54
2.5kW	100mm sq.	IP67	No	No	Q1AA10250DXP00	Q1AA10250DXS00	P.40	P.54
				Yes	Q1AA10250DXP00M	Q1AA10250DXS00M	P.40	P.54
			Yes (DC24V)	No	Q1AA10250DCP00	Q1AA10250DCS00	P.40	P.54
				Yes	Q1AA10250DCP00M	Q1AA10250DCS00M	P.40	P.54
3kW	120mm sq.	IP67	No	No	Q1AA12300DXP00	Q1AA12300DXS00	P.41	P.54
				Yes	Q1AA12300DXP00M	Q1AA12300DXS00M	P.41	P.54
			Yes (DC24V)	No	Q1AA12300DCP00	Q1AA12300DCS00	P.41	P.54
				Yes	Q1AA12300DCP00M	Q1AA12300DCS00M	P.41	P.54
	130mm sq.	IP67	No	No	Q1AA13300DXP00	Q1AA13300DXS00	P.41	P.54
				Yes	Q1AA13300DXP00M	Q1AA13300DXS00M	P.41	P.54
			Yes (DC24V)	No	Q1AA13300DCP00	Q1AA13300DCS00	P.41	P.54
				Yes	Q1AA13300DCP00M	Q1AA13300DCS00M	P.41	P.54
4kW	130mm sq.	IP67	No	No	Q1AA13400DXP00	Q1AA13400DXS00	P.42	P.54
				Yes	Q1AA13400DXP00M	Q1AA13400DXS00M	P.42	P.54
			Yes (DC24V)	No	Q1AA13400DCP00	Q1AA13400DCS00	P.42	P.54
				Yes	Q1AA13400DCP00M	Q1AA13400DCS00M	P.42	P.54
5kW	130mm sq.	IP67	No	No	Q1AA13500DXP00	Q1AA13500DXS00	P.42	P.54
				Yes	Q1AA13500DXP00M	Q1AA13500DXS00M	P.42	P.54
			Yes (DC24V)	No	Q1AA13500DCP00	Q1AA13500DCS00	P.42	P.54
				Yes	Q1AA13500DCP00M	Q1AA13500DCS00M	P.42	P.54

For specifications on other model, please contact us.

R5 Servo Motor 200V System Small Capacity, Medium Inertia

Standard specifications Output shaft: round, oil seal: none, connection: cable

Rated Output	Motor Flange Size	Protection Code	Holding Brake	CE and UL approved	Model No.		Page	
					Battery backup method absolute encoder (PA035C)	Absolute encoder for incremental system (PA035S)	Specifications	Dimensions
200W	60mm sq.	IP65	No	No	R5AA06020HXP03	R5AA06020HXH03	P.43	P.48
				Yes	R5AA06020HXP03M	R5AA06020HXH03M	P.43	P.48
			Yes (DC24V)	No	R5AA06020HCP03	R5AA06020HCH03	P.43	P.48
				Yes	R5AA06020HCP03M	R5AA06020HCH03M	P.43	P.48
			No	No	R5AA06020FXP03	R5AA06020FXH03	P.44	P.48
				Yes	R5AA06020FXP03M	R5AA06020FXH03M	P.44	P.48
			Yes (DC24V)	No	R5AA06020FCP03	R5AA06020FCH03	P.44	P.48
				Yes	R5AA06020FCP03M	R5AA06020FCH03M	P.44	P.48
380W	60mm sq.	IP65	Yes (DC24V)	No	R5AA06040HCP03	R5AA06040HCH03	P.43	P.48
				Yes	R5AA06040HCP03M	R5AA06040HCH03M	P.43	P.48
400W	60mm sq.	IP65	No	No	R5AA06040HXP03	R5AA06040HXH03	P.43	P.48
				Yes	R5AA06040HXP03M	R5AA06040HXH03M	P.43	P.48
				No	R5AA06040FXP03	R5AA06040FXH03	P.44	P.48
				Yes	R5AA06040FXP03M	R5AA06040FXH03M	P.44	P.48
			Yes (DC24V)	No	R5AA06040FCP03	R5AA06040FCH03	P.44	P.48
				Yes	R5AA06040FCP03M	R5AA06040FCH03M	P.44	P.48
675W	80mm sq.	IP65	Yes (DC24V)	No	R5AA08075FCP03	R5AA08075FCH03	P.44	P.48
				Yes	R5AA08075FCP03M	R5AA08075FCH03M	P.44	P.48
710W	80mm sq.	IP65	Yes (DC24V)	No	R5AA08075DCP03	R5AA08075DCH03	P.43	P.48
				Yes	R5AA08075DCP03M	R5AA08075DCH03M	P.43	P.48
750W	80mm sq.	IP65	No	No	R5AA08075DXP03	R5AA08075DXH03	P.43	P.48
				Yes	R5AA08075DXP03M	R5AA08075DXH03M	P.43	P.48
				No	R5AA08075FXP03	R5AA08075FXH03	P.44	P.48
				Yes	R5AA08075FXP03M	R5AA08075FXH03M	P.44	P.48

For specifications on other model, please contact us.

Servo Amplifier 200V System

Type	Main Power	Control Power	Encoder Type	Selectable Output	Internal Registration Resistor	Safe Torque Off function	Amplifier Capacity	Model No.	Page	
									Servo Amplifier Specifications	Dimensions
Analog / Pulse input type	AC200V system AC200 to 230V 3-phase	AC200V system AC200 to 230V Single-phase	Serial encoder	NPN	No	No	15A	RS2A01A0AL0	P.23	P.55
							30A	RS2A03A0AL0	P.23	P.55
							50A	RS2A05A0AL0	P.23	P.55
							100A	RS2A10A0AL0	P.23	P.56
							150A	RS2A15A0AL0	P.23	P.56
							300A	RS2A30A0AL0	P.23	P.56
					Yes	No	15A	RS2A01A0AA0	P.23	P.55
							30A	RS2A03A0AA0	P.23	P.55
							50A	RS2A05A0AA0	P.23	P.55
							100A	RS2A10A0AA0	P.23	P.56
							150A	RS2A15A0AA0	P.23	P.56
				PNP	No	No	15A	RS2A01A0BL0	P.23	P.55
							30A	RS2A03A0BL0	P.23	P.55
							50A	RS2A05A0BL0	P.23	P.55
							100A	RS2A10A0BL0	P.23	P.56
							150A	RS2A15A0BL0	P.23	P.56
							300A	RS2A30A0BL0	P.23	P.56
					Yes	No	15A	RS2A01A0BA0	P.23	P.55
							30A	RS2A03A0BA0	P.23	P.55
							50A	RS2A05A0BA0	P.23	P.55
							100A	RS2A10A0BA0	P.23	P.56
							150A	RS2A15A0BA0	P.23	P.56
EtherCAT interface type	AC200V system AC200 to 230V 3-phase	AC200V system AC200 to 230V Single-phase	Serial encoder	Photo relay output	No	Yes (with delay circuit)	15A	RS2A01A0KL4	P.23	P.55
							30A	RS2A03A0KL4	P.23	P.55
							50A	RS2A05A0KL4	P.23	P.55
							300A	RS2A30A0KL4	P.23	P.56
					Yes		15A	RS2A01A0KA4	P.23	P.55
							30A	RS2A03A0KA4	P.23	P.55
							50A	RS2A05A0KA4	P.23	P.55
							100A	RS2A10A0KA4	P.23	P.56
							150A	RS2A15A0KA4	P.23	P.56

Our standard servo amplifier has attained the UL, c-UL and EN Standards.
For specifications on other model, please contact us.

Model Number Nomenclature

Servo Motor

Example: R2 series servo motor models, 60mm sq. flange size, 200W rated output, 6000min^{-1} maximum rotation speed, DC24V brake, and a battery backup method absolute encoder (131072 partition number/rotation), UL/CE approval.

R 2 AA 06 020 F C P 00 M

- **Standard Identification**
  - E ··· CE
  - U ··· UL
  - M ··· CE and UL
- **Specification**
  - 00 ··· Standard
- **Encoder Type**
  - Serial Encoder
    - P ··· Optical battery backup method absolute encoder
    - H ··· Optical absolute encoder for incremental system
    - W ··· Resolver method batteryless absolute encoder
    - R ··· High precision batteryless optical absolute encoder
  - Pulse Encoder
    - S ··· Optical wire-saving incremental encoder
- **Holding Brake**
  - X ··· No Brake
  - B ··· DC90V Brake
  - C ··· DC24V Brake
- **Maximum Rotation Speed**
  - For the numeric values, see the specifications on Pages 25 through 44.
- **Rated Output**

003 ··· 30W	020 ··· 200W	100 ··· 1.0kW	200 ··· 2.0kW	400 ··· 4.0kW	700 ··· 7.0kW	20K ··· 20kW, 21kW
005 ··· 50W	040 ··· 400W	120 ··· 1.2kW	250 ··· 2.5kW	450 ··· 4.5kW	750 ··· 7.5kW	25K ··· 25kW
008 ··· 80W	050 ··· 550W	150 ··· 1.5kW	300 ··· 3.0kW	500 ··· 5.0kW	11K ··· 11kW	
010 ··· 100W	075 ··· 750W	180 ··· 1.8kW	350 ··· 3.5kW	550 ··· 5.5kW	15K ··· 15kW	

  - A reduction rating might be needed if an oil seal and brake is attached. Please consult with us about the details.
- **Flange Size**
  - 04 ··· 40mm sq.
  - 06 ··· 60mm sq.
  - 08 ··· 80mm sq.
  - B8 ··· 86mm sq.
  - 10 ··· 100mm sq.
  - 12 ··· 120mm sq.
  - 13 ··· 130mm sq.
  - 18 ··· 180mm sq.
  - 22 ··· 220mm sq.
- **Voltage**
  - AA ··· AC200V
  - EA ··· AC100V
- **Servo Motor type**
  - 1 ··· Low inertia
  - 2 ··· Medium inertia
  - 5 ··· Medium inertia
- **R ··· R Series**
- **Q ··· Q Series**

Encoder Specification

Serial encoder

Encoder Type	Partition number/rotation	Multiple Rotations	Remarks
Optical battery backup method absolute encoder	17bit (131,072)	16bit (65,536)	An optional 20 bit encoder (1,048,576 divisions) is also available.
Optical absolute encoder for incremental system	17bit (131,072)	–	An optional 20 bit encoder (1,048,576 divisions) is also available.
Resolver method batteryless absolute encoder	17bit (131,072)	16bit (65,536)	
High precision batteryless optical absolute encoder	17bit (131,072) 20bit (1,048,576)	16bit (65,536)	Applicable motor size: 100mm sq. or more

Pulse encoder

Encoder Type	Pulse/rotation	Multiple Rotations	Remarks
Optical wire-saving incremental encoder	2,000P/R	–	Pulse number can be set up to 10,000 P/R.

・For details on speed reducer installation, please contact us.

Servo Amplifier

Example: RS2 series servo amplifier models, input voltage AC200V, amplifier capacity 15A, with built-in regeneration resistance/with DB resistance, without safety function.

RS2 A 01 A 0 A A 0

Option 2

	Safe Torque Off function
0	None
2	Available (without delay circuit)
4	Available (with delay circuit)

Option 1
A ···With built-in regeneration resistance/ with DB resistance
L ···Without built-in regeneration resistance/ with DB resistance
300A amplifier capacity is only available for the model without a built-in regeneration resistor.

Interface type
A···Analog pulse control, NPN (Sink) output
B···Analog pulse control, PNP (Source) output
K···EtherCAT interface

PNP Generic output : PNP (Source) output :
It takes external 24VDC as common power supply and outputs 24VDC when generic output is ON.

Motor Encoder Type

	EN1 (Motor encoder)	EN2 (External pulse encoder)
0	Serial encoder	—
2	Serial encoder	Pulse encoder
8	Pulse encoder	—
A	Pulse encoder	Pulse encoder

2 or A is selectable for a servo amplifier for a fully-closed system. Please specify 2 or A according to the motor encoder to be used.
0 or 8 is only for a semi-closed system and is not selectable for a fully-closed system. Please note that a servo amplifier for a fully-closed system can be used for a semi-closed system.

Servo Motor type
A ···Rotary motor

Servo Amplifier capacity
01 ···15A
03 ···30A
05 ···50A
10 ···100A
15 ···150A
30 ···300A

Input voltage
A ···AC200V
E ···AC100V

RS2 Series

・The motor parameters need to be set for the amplifier for use.
Use the setup software.

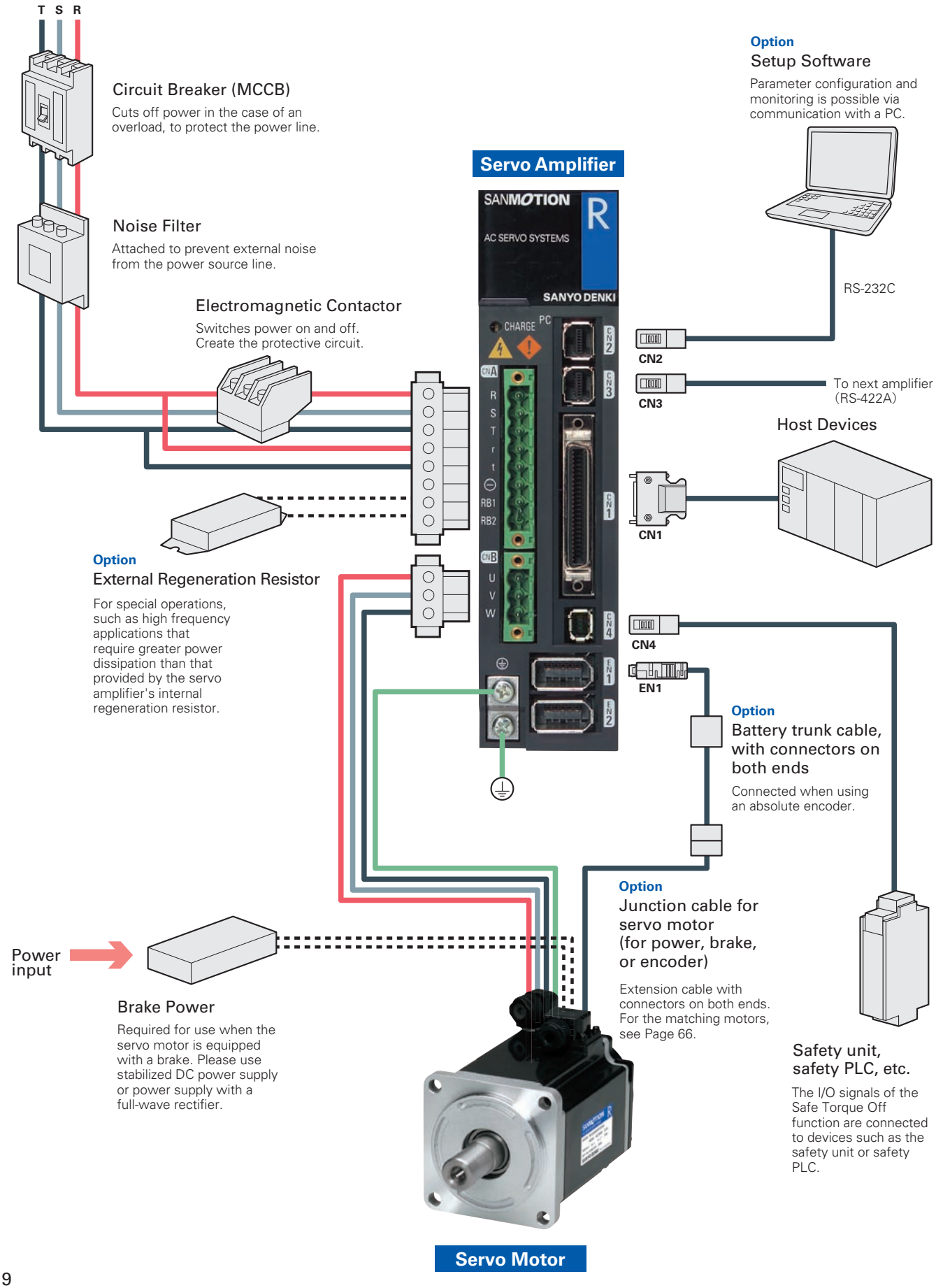
Conformance to Safety Standards

Our standard servo amplifier has attained the UL, c-UL and EN Safety Standards.
You can also employ servo motors that have attained the UL, c-UL and EN Standards.

* For the following models, acquisition preparations are underway.
UL and EN Standards acquisition preparations underway:R1 Servo Motor 180mm sq. (R1AA18□□□□)

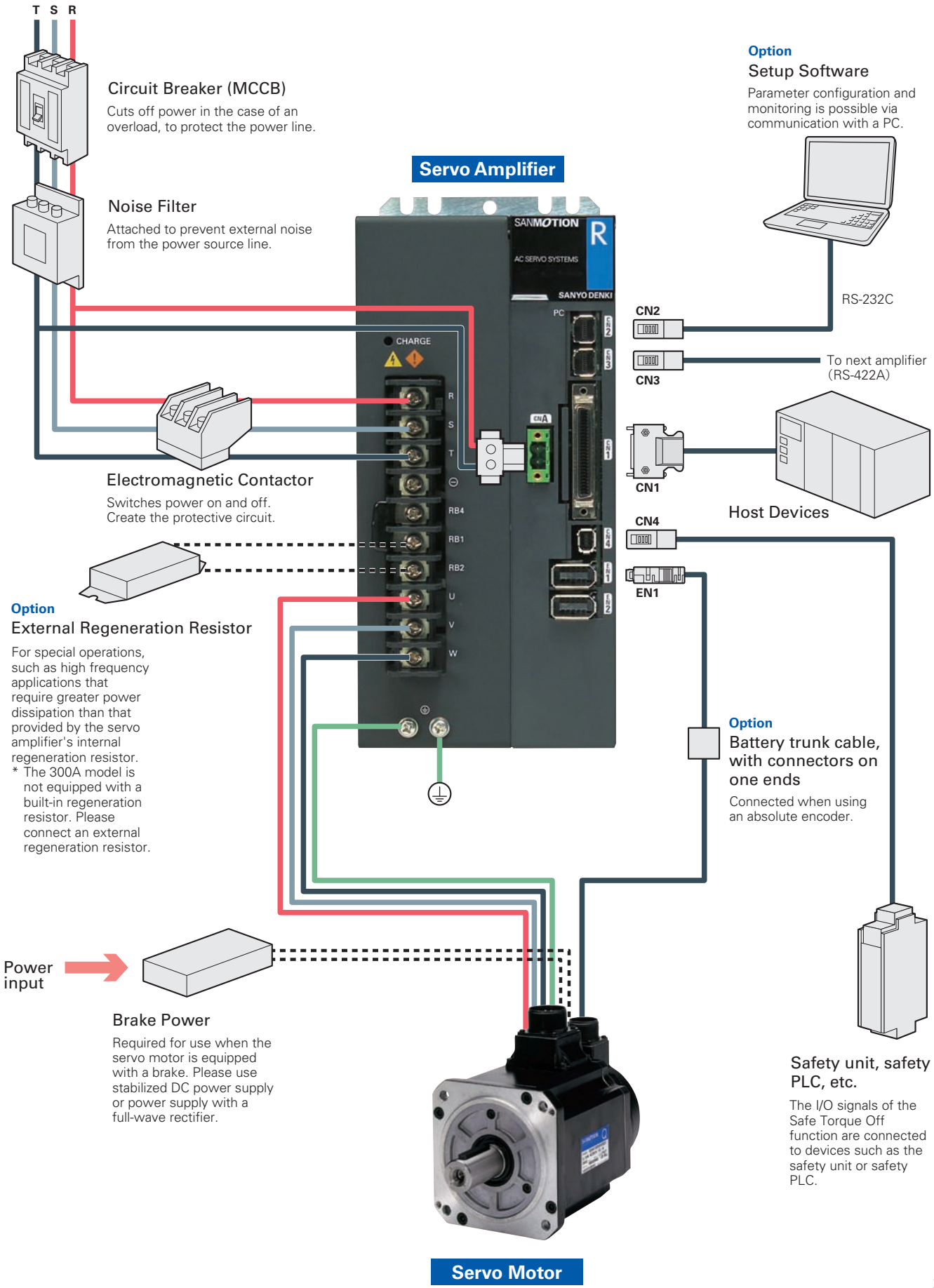
Analog/Pulse Input Type Servo Amplifier

15A to 50A The photograph shows the 15A model.



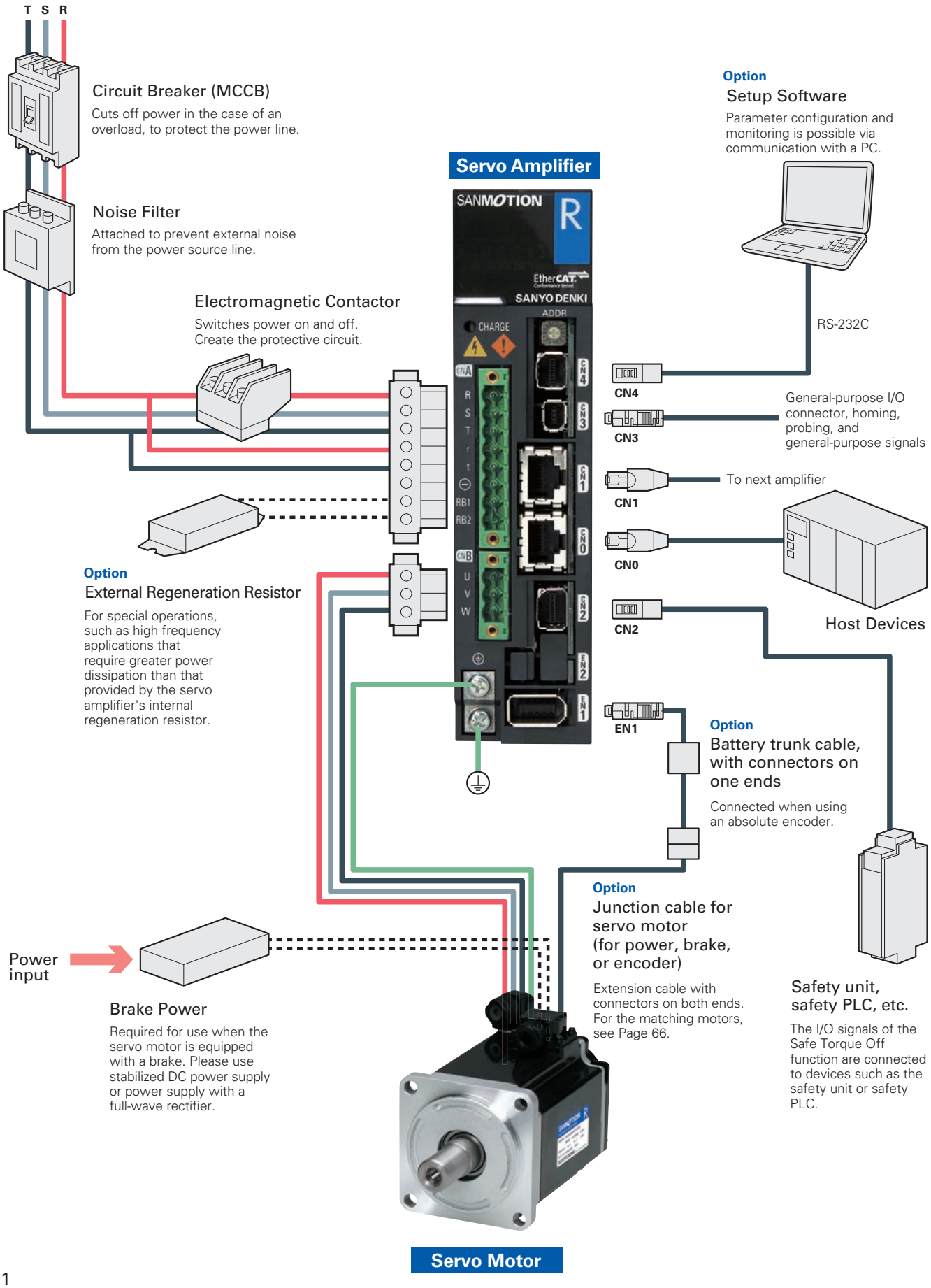
Analog/Pulse Input Type Servo Amplifier

100A to 300A The photograph shows the 100A model.



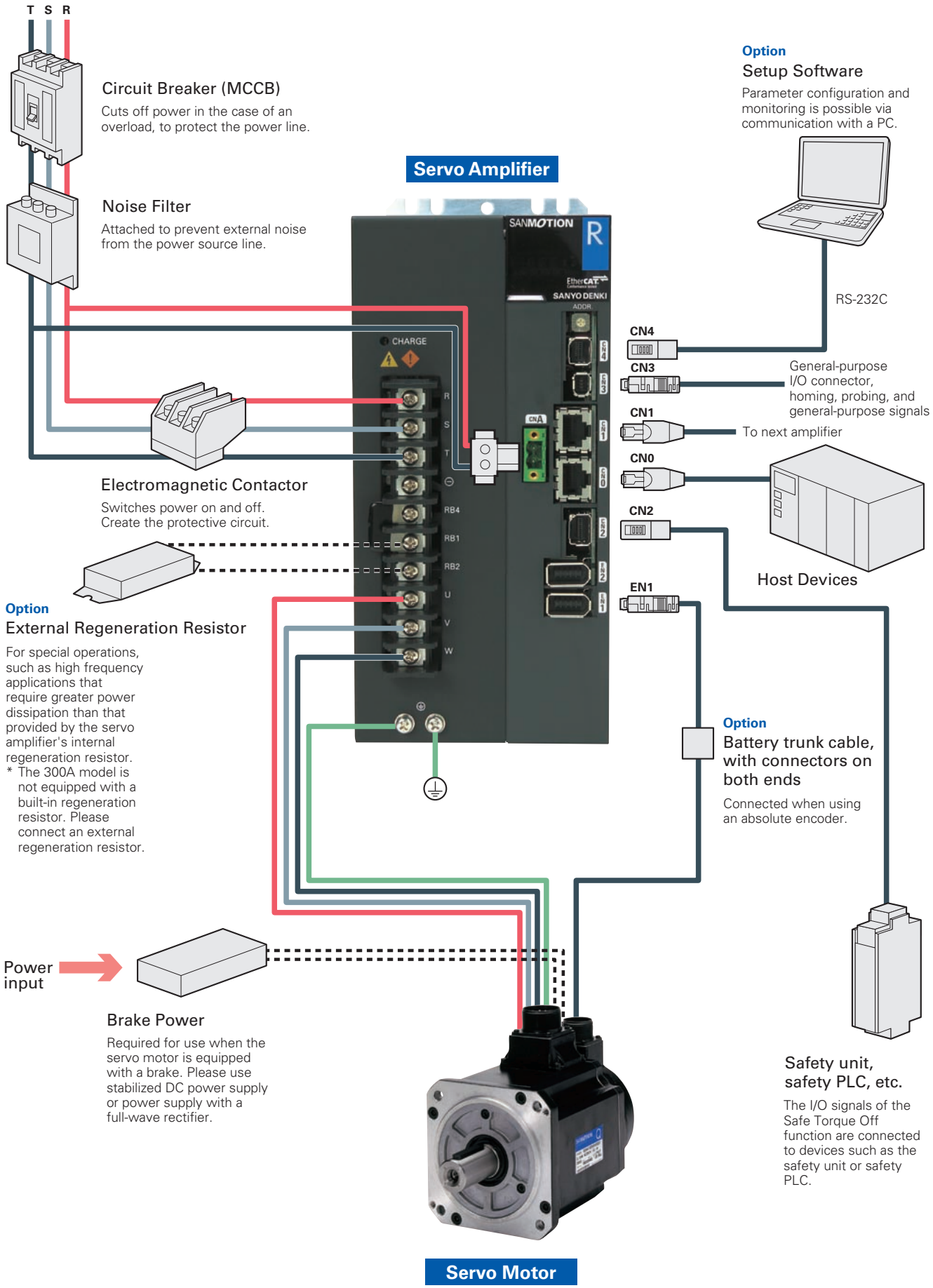
EtherCAT interface type servo amplifier

15A to 50A The photograph shows the 15A model.



EtherCAT interface type servo amplifier

100A to 300A The photograph shows the 100A model.



Servo Amplifier Specifications

Control function	Position control/Speed control/Torque control (Parameter changeover)	
Control system	IGBT：PWM control Sinusoidal drive	
Main Circuit Power ※1	3-phase：AC200 to 230V+10, -15%, 50/60Hz±3Hz Single-phase：AC200 to 230V+10, -15%, 50/60Hz±3Hz ※2 Single-phase：AC100 to 115V+10, -15%, 50/60Hz±3Hz ※3	
Control Power ※1	Single-phase：AC200 to 230V+10, -15%, 50/60Hz±3Hz Single-phase：AC100 to 115V+10, -15%, 50/60Hz±3Hz ※3	
Environment	Ambient temperature	0 to +55℃
	Storage temperature	-20 to +65℃
	Operation/Storage humidity	Below 90%RH (no condensation)
	Elevation	Below 1000m
	Vibration	4.9m/s^2 Frequency range 10 to 55Hz tested for 2h in each direction X.Y.Z
	Shock	19.6m/s^2
Structure	Built-in tray type power supply	

※1
Power source voltage should be within the specified range AC200V Power input type:
Specified power supply range = AC170V to AC253V
AC100V Power input type:
Specified power supply range = AC85V to AC127V

※2
The AC200V single-phase input types corresponds only to the RS2□01 (15A), RS2□03 (30A), and RS2□05 (50A).

※3
AC100V single-phase input type corresponds only to, RS2□01/RS2□03

Performance

Speed control range	1:5000 (Internal speed command)
Frequency characteristics	1200Hz (In case of high frequency sampling mode) *Varies depending on the model.

Built-in functions

Protection functions	Over current, Current detection error, Overload, Regeneration error, Amplifier overheating, External overheating, Over voltage, Main circuit power low voltage, Main circuit power supply open phase, Control power supply low voltage, Encoder error, Over speed, Speed control error, Speed feedback error, Excessive position, Position command pulse error, Built-in memory error, Parameter error
LED display	Status display, Monitor display, Alarm display, Parameter setting, Adjustment mode
Dynamic brake circuit	Built-in
Regeneration process circuit	Built-in
Monitor	Speed monitor (VMON) 2.0V±10% (at 1000min^{-1})
	Torque (Thrust) (TCMON) 2.0V±10% (at 100%)

Safety standard

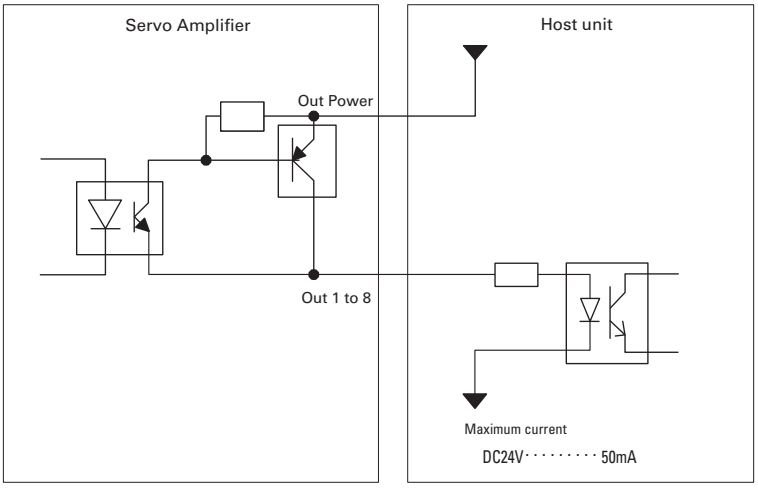
Servo amplifier type	Safety standards		
All models	UL ratings	UL508C	
	EN standards	Low-voltage directive	・EN61800－5－1
		EMC directive	・EN55011 G1 ClassA ・EN61000－6－2 ・EN61800－3
Model with safety function	Function safety standards	・IEC61508, SIL2 ・IEC62061, SILCL2	・ISO13849－1, Cat. 3, PL=d ・EN954－1, Cat. 3

EtherCAT interface specifications

Physical layer	IEC61158-2 IEEE802.3u 100BASE-TX
Data link layer	IEC61158-3,-4 Type12
Application layer	IEC61158-5,-6 Type12
Device profile	IEC61800-7 Profile type1(CiA402) ・CoE (CANopen over EtherCAT) ・FoE (File access over EtherCAT)
Communication port	RJ45 connector (2 ports)
Baud rate	100 Mbps (Full duplex)
Max. No. of nodes	65535 nodes
Transmission distance/topology	Max. 100 m (between nodes)/Daisy-chain
Cable	Twisted-pair CAT5e (straight or cross)
Communication object	SDO (Service Data Object) PDO (Process Data Object)
PDO length	Output：Max.64Byte, Input：Max.64Byte Total: Max. 128 Bytes
Synchronization function	SYNC0, SYNC1 Event Synchronization Mode (DC Mode),Synchronous with SM2 Event Mode, Asynchronous Mode
Operation mode	Profile Position Mode, Profile Velocity Mode, Profile Torque Mode, Homing Mode, Cycle Sync Position Mode, Cycle Sync Velocity Mode, Cycle Sync Torque Mode
LED indicator	Port 0/1 link display, RUN display, error display
General Input/Output	2 inputs, 2 outputs (4 total)

General-Purpose Output Specifications

PNP output (Analog/Pulse Input Type)



NPN output (Analog/Pulse Input Type)

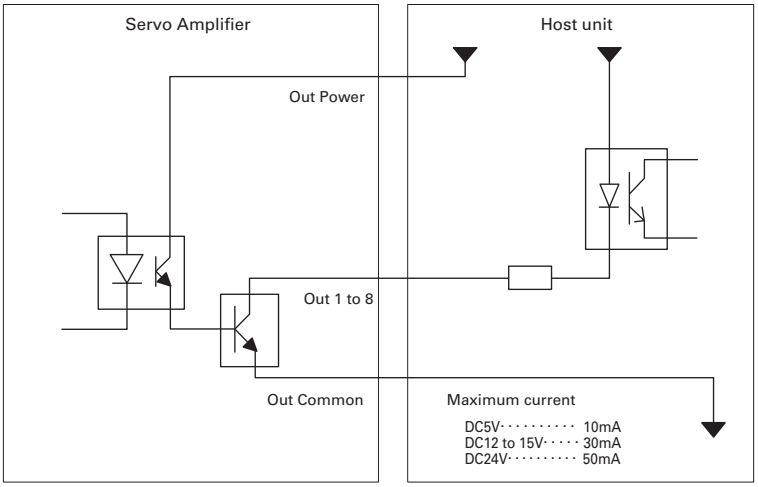
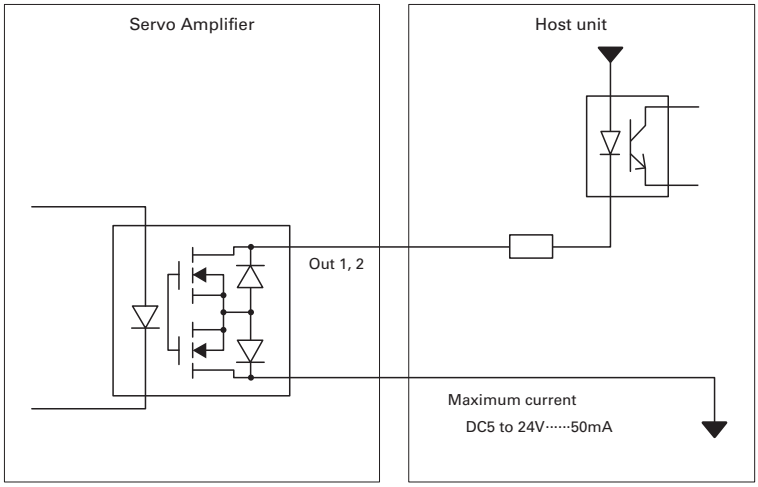


Photo relay output (EtherCAT interface type)



Specification

Servo Amplifier + R2 Servo Motor High Efficiency and Low Ripple (Medium Inertia)

input voltage AC100V Power supply range AC85V to AC127V

Servo Amplifier Model No.				RS2E01□□		
Servo Motor Model No. and Flange Size				R2EA04003F 《40mm sq.》	R2EA04005F 《40mm sq.》	R2EA04008F 《40mm sq.》
	Status	Symbol	Unit			
Rated Output	★	P_R	kW	0.03	0.05	0.08
Rated Speed	★	N_R	min^{-1}	3000	3000	3000
Maximum Speed	★	N_{max}	min^{-1}	6000	6000	6000
Rated Torque	★	T_R	N·m	0.098	0.159	0.255
Continuous Stall Torque	★	T_S	N·m	0.108	0.167	0.255
Peak Stall Torque	★	T_P	N·m	0.37	0.59	0.86
Rated Armature Current	★	I_R	Arms	0.94	1.2	1.3
Armature Stall Current	★	I_S	Arms	1.0	1.3	1.3
Peak Armature Stall Current	★	I_P	Arms	3.7	4.9	4.5
Torque Constant	☆	K_T	N·m／Arms	0.116	0.142	0.22
Voltage Constant for each Phase	☆	$K_{E\phi}$	mV／min^{-1}	4.04	4.97	7.7
Phase Resistance	☆	R_ϕ	Ω	4.0	3.0	2.9
Rated Power Rate	★	Q_R	kW／s	3.9	6.7	10
Electrical Time Constant	☆	te	ms	0.55	0.67	0.81
Mechanical Time Constant (Not including Encoder)	☆	tm	ms	2.2	1.7	0.98
Roter Moment of Inertia ※1		J_M	$\times 10^{-4}$kg·m^2(GD^2／4)	0.0247	0.0376	0.0627
Roter Moment of Inertia (Encoder)		J_S	$\times 10^{-4}$kg·m^2(GD^2／4)	0.0033 ※1		
Servo Motor Mass ※1		WE	kg	0.35	0.39	0.51
Brake Static Friction Torque		TB	N·m	0.32 MIN.		
Brake Rated Voltage		VB	V	DC90V ／ DC24V ± 10%		
Brake Rated Current		IB	A	0.07 ／ 0.27		
Roter Moment of Inertia (Brake)		JB	$\times 10^{-4}$kg·m^2(GD^2／4)	0.0078		
Brake Mass		W	kg	0.27	0.27	0.27
Servo Motor Operating Temp, Rel.Humidity				Operating Temperature: 0 to 40℃, Relative Humidity: 90% maximum, no condensation		
Servo amplifier power supply capacity (rating)			kVA	0.2	0.2	0.4
CE and UL approved servo motors ※5				Yes		
Servo motor protection code				IP67, IP65		
Size of aluminum plates for heat radiation during measurement				t6×250mm sq.		

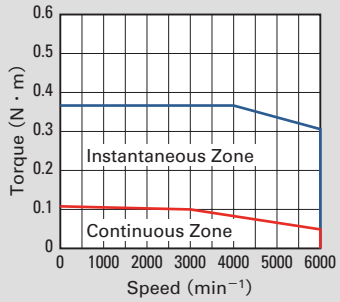
※1 This is an instance with the battery-backup method absolute encoder [PA035C].
For the following encoders, please make inquiries:
・Batteryless absolute encoder
・Wire-saving incremental encoder
For the servo amplifier weight, see page 55 and 56.

※2 Items with ★ and speed - torque characteristics indicate values after temperature rise saturation when used with a standard servo amplifier. The values are the typical values.
※3 ☆ : Indicates a typical value when the winding temperature is 20℃ .
※4 A reduction rating might be needed if an oil seal and brake is attached. Please consult with us about the details.
※5 Our standard servo amplifiers are CE and UL approved.

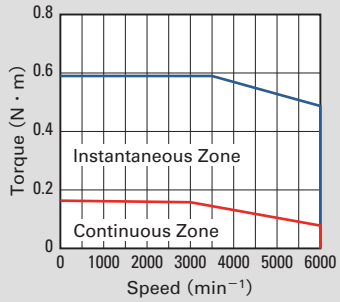
Speed-Torque Characteristics

Servo motor Model No./Flange Size/Rated Output

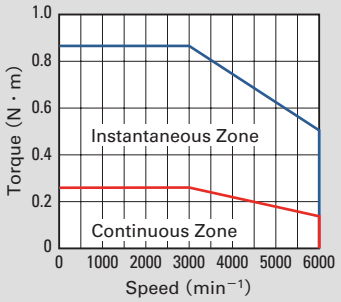
R2EA04003F／40mm／0.03kW



R2EA04005F／40mm／0.05kW



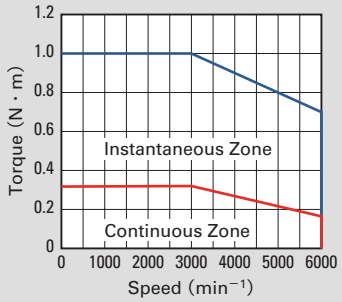
R2EA04008F／40mm／0.08kW



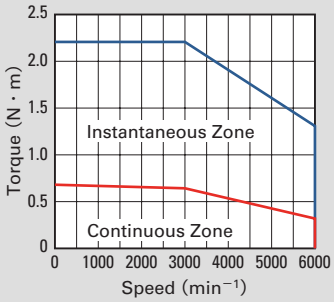
These values are for when the input power supply is AC 100 V. The area of the instantaneous zone decreases when the power supply voltage is less than 100 V.

RS2E01□□	RS2E03□□	Servo Amplifier Model No.			
R2EA06010F 《60mm sq.》	R2EA06020F 《60mm sq.》	Servo Motor Model No. and Flange Size			
		Unit	Symbol	Status	
0.1	0.2	kW	P_R	★	Rated Output
3000	3000	min^{-1}	N_R	★	Rated Speed
6000	6000	min^{-1}	N_{max}	★	Maximum Speed
0.318	0.637	N·m	T_R	★	Rated Torque
0.318	0.686	N·m	T_S	★	Continuous Stall Torque
1.0	2.2	N·m	T_P	★	Peak Stall Torque
1.7	3.1	Arms	I_R	★	Rated Armature Current
1.7	3.2	Arms	I_S	★	Armature Stall Current
5.6	11.9	Arms	I_P	★	Peak Armature Stall Current
0.206	0.224	N·m／Arms	K_T	☆	Torque Constant
7.2	7.82	mV／min^{-1}	$K_{E\phi}$	☆	Voltage Constant for each Phase
1.5	0.6	Ω	R_ϕ	☆	Phase Resistance
8.6	19	kW／s	Q_R	★	Rated Power Rate
1.9	2.6	ms	te	☆	Electrical Time Constant
1.2	0.79	ms	tm	☆	Mechanical Time Constant (Not including Encoder)
0.117	0.219	$\times 10^{-4}$kg·m^2(GD^2／4)	J_M		Roter Moment of Inertia ※1
0.0033 ※1		$\times 10^{-4}$kg·m^2(GD^2／4)	Js		Roter Moment of Inertia (Encoder)
0.71	0.96	kg	WE		Servo Motor Mass ※1
0.36 MIN.	1.37 MIN.	N·m	TB		Brake Static Friction Torque
DC90V ／ DC24V ± 10%		V	VB		Brake Rated Voltage
0.07 ／ 0.27	0.11 ／ 0.32	A	IB		Brake Rated Current
0.06		$\times 10^{-4}$kg·m^2(GD^2／4)	JB		Roter Moment of Inertia (Brake)
0.34	0.39	kg	W		Brake Mass
Operating Temperature: 0 to 40℃, Relative Humidity: 90% maximum, no condensation					Servo Motor Operating Temp, Rel.Humidity
0.5	0.6	kVA			Servo amplifier power supply capacity (rating)
Yes					CE and UL approved servo motors ※5
IP67, IP65					Servo motor protection code
t6×250mm sq.					Size of aluminum plates for heat radiation during measurement

R2EA06010F／60mm／0.1kW



R2EA06020F／60mm／0.2kW



Specification

Servo Amplifier + R2 Servo Motor High Efficiency and Low Ripple (Medium Inertia)

input voltage AC200V Power supply range AC170V to AC253V

Servo Amplifier Model No.				RS2A01□□			
Servo Motor Model No. and Flange Size				R2AA04003F 《40mm sq.》	R2AA04005F 《40mm sq.》	R2AA04010F 《40mm sq.》	R2AA06010F 《60mm sq.》
	Status	Symbol	Unit				
Rated Output	★	PR	kW	0.03	0.05	0.1 (0.09) ※6	0.1
Rated Speed	★	NR	min-1	3000	3000	3000	3000
Maximum Speed	★	Nmax	min-1	6000	6000	6000	6000
Rated Torque	★	TR	N·m	0.098	0.159	0.318	0.318
Continuous Stall Torque	★	TS	N·m	0.108	0.167	0.318	0.353
Peak Stall Torque	★	TP	N·m	0.37	0.59	1.18	1.13
Rated Armature Current	★	IR	Arms	0.51	0.67	0.81	0.86
Armature Stall Current	★	IS	Arms	0.56	0.69	0.81	0.86
Peak Armature Stall Current	★	IP	Arms	2.15	2.8	3.3	3.5
Torque Constant	☆	KT	N·m/Arms	0.201	0.246	0.424	0.375
Voltage Constant for each Phase	☆	KEϕ	mV/min-1	7.0	8.6	14.8	13.1
Phase Resistance	☆	Rϕ	Ω	12	9	9.3	4.8
Rated Power Rate	★	QR	kW/s	3.9	6.7	16	8.6
Electrical Time Constant	☆	te	ms	0.55	0.67	0.82	2
Mechanical Time Constant (Not including Encoder)	☆	tm	ms	2.2	1.7	0.97	1.2
Roter Moment of Inertia ※1		JM	×10-4kg·m2(GD2/4)	0.0247	0.0376	0.0627	0.117
Roter Moment of Inertia (Encoder)		JS	×10-4kg·m2(GD2/4)	0.0033 ※1			
Servo Motor Mass ※1		WE	kg	0.35	0.39	0.51	0.71
Brake Static Friction Torque		TB	N·m	0.32 MIN.			0.36 MIN.
Brake Rated Voltage		VB	V	DC90V / DC24V ± 10%			
Brake Rated Current		IB	A	0.07 / 0.27			
Roter Moment of Inertia (Brake)		JB	×10-4kg·m2(GD2/4)	0.0078			0.06
Brake Mass		W	kg	0.27	0.27	0.27	0.34
Servo Motor Operating Temp, Rel.Humidity				Operating Temperature: 0 to 40℃, Relative Humidity: 90% maximum, no condensation			
Servo amplifier power supply capacity (rating)			kVA	0.2	0.2	0.3	0.3
CE and UL approved servo motors ※5				Yes			
Servo motor protection code				IP67, IP65			
Size of aluminum plates for heat radiation during measurement				t6 × 250mm sq.			

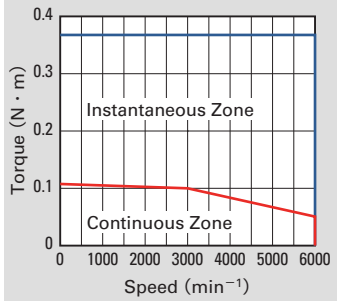
※1 This is an instance with the battery-backup method absolute encoder [PA035C].
For the following encoders, please make inquiries:
・Batteryless absolute encoder
・Wire-saving incremental encoder
For the servo amplifier weight, see page 55 and 56.

※2 Items with ★ and speed - torque characteristics indicate values after temperature rise saturation when used with a standard servo amplifier. The values are the typical values.
※3 ☆ : Indicates a typical value when the winding temperature is 20℃ .
※4 Servo motors that come with oil seals (optional) may require an 80 to 95% reduction in output.
※5 Our standard servo amplifiers are CE and UL approved.
※6 If enclosed in ( ), it comes with brake.

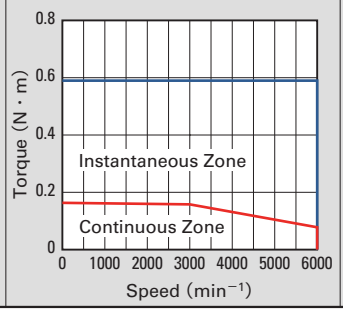
Speed-Torque Characteristics

Servo motor Model No./Flange Size/Rated Output

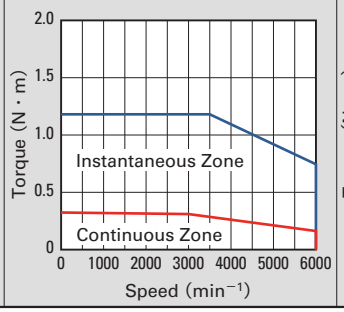
R2AA04003F/40mm/0.03kW



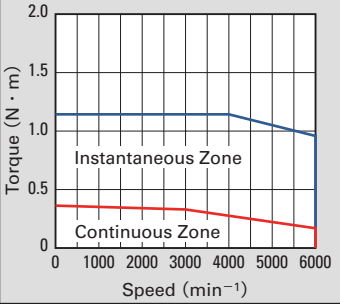
R2AA04005F/40mm/0.05kW



R2AA04010F/40mm/0.1 (0.09) kW※6



R2AA06010F/60mm/0.1 kW

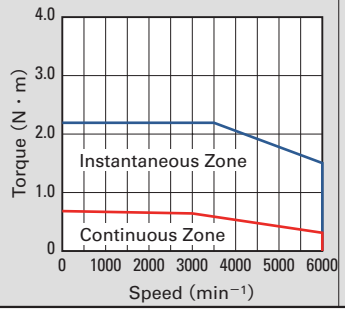


These values are for when the input power supply is a 3-phase AC 200 V circuit. The area of the instantaneous zone decreases when the power supply voltage is less than 200 V. Please contact us if the servo amp. power supply is a single-phase AC 200 V circuit.

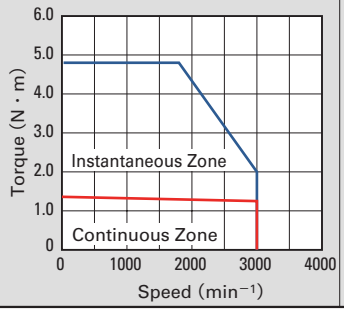
RS2A01□□			RS2A03□□	Servo Amplifier Model No.			
R2AA06020F 《60mm sq.》	R2AA06040H 《60mm sq.》	R2AA08020F 《80mm sq.》	R2AA06040F 《60mm sq.》	Servo Motor Model No. and Flange Size			
				Unit	Symbol	Status	
0.2	0.4 (0.36) ※6	0.2	0.4 (0.36) ※6	kW	P_R	★	Rated Output
3000	3000	3000	3000	min^{-1}	N_R	★	Rated Speed
6000	3000	6000	6000	min^{-1}	N_{max}	★	Maximum Speed
0.637	1.27	0.637	1.27	N·m	T_R	★	Rated Torque
0.686	1.37	0.686	1.37	N·m	T_S	★	Continuous Stall Torque
2.2	4.8	2.2	4.8	N·m	T_P	★	Peak Stall Torque
1.5	1.7	1.5	2.8	Arms	I_R	★	Rated Armature Current
1.6	1.8	1.5	2.8	Arms	I_S	★	Armature Stall Current
5.6	7.1	4.8	10.8	Arms	I_P	★	Peak Armature Stall Current
0.476	0.816	0.516	0.524	N·m／Arms	K_T	☆	Torque Constant
16.6	28.5	18.0	18.3	mV／min^{-1}	$K_{E\phi}$	☆	Voltage Constant for each Phase
2.7	3.3	2.3	1.36	Ω	R_ϕ	☆	Phase Resistance
19	39	8	39	kW／s	Q_R	★	Rated Power Rate
2.6	3.2	2.2	3.2	ms	te	☆	Electrical Time Constant
0.78	0.61	1.3	0.61	ms	tm	☆	Mechanical Time Constant (Not including Encoder)
0.219	0.412	0.52	0.412	×10-4kg·m²(GD²／4)	J_M		Roter Moment of Inertia ※1
0.0033 ※1				×10-4kg·m²(GD²／4)	Js		Roter Moment of Inertia (Encoder)
0.96	1.4	1.3	1.4	kg	WE		Servo Motor Mass ※1
1.37 MIN.	1.37 MIN.	2.55 MIN.	1.37 MIN.	N·m	TB		Brake Static Friction Torque
DC90V／DC24V ± 10%				V	VB		Brake Rated Voltage
0.11／0.32	0.11／0.32	0.12／0.37	0.11／0.32	A	IB		Brake Rated Current
0.06	0.060	0.25	0.06	×10-4kg·m²(GD²／4)	JB		Roter Moment of Inertia (Brake)
0.39	0.39	0.89	0.39	kg	W		Brake Mass
Operating Temperature: 0 to 40℃, Relative Humidity: 90% maximum, no condensation							Servo Motor Operating Temp, Rel.Humidity
0.6	1.0	0.6	1.0	kVA			Servo amplifier power supply capacity (rating)
Yes							CE and UL approved servo motors ※5
IP67, IP65							Servo motor protection code
t6 × 250mm sq.							Size of aluminum plates for heat radiation during measurement

Servo motor Model No./Flange Size/Rated Output

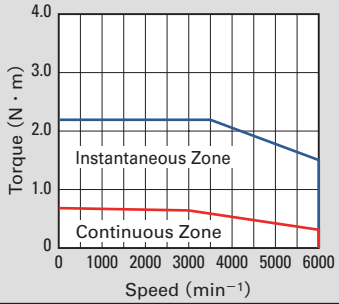
R2AA06020F／60mm／0.2kW



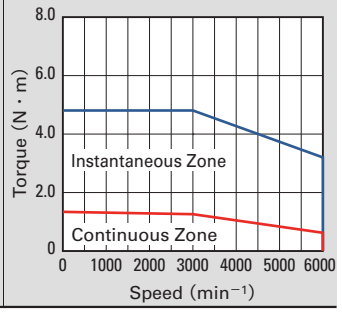
R2AA06040H／60mm／0.4 (0.36) kW※6



R2AA08020F／80mm／0.2kW



R2AA06040F／60mm／0.4 (0.36) kW※6



Specification

Servo Amplifier + R2 Servo Motor High Efficiency and Low Ripple (Medium Inertia)

input voltage AC200V Power supply range AC170V to AC253V

Servo Amplifier Model No.				RS2A03□□			
Servo Motor Model No. and Flange Size				R2AA08040F 《80mm sq.》	R2AA08075F 《80mm sq.》	R2AAB8100H 《86mm sq.》	R2AA10075F 《100mm sq.》
	Status	Symbol	Unit				
Rated Output	★	P_R	kW	0.4	0.75	1.0	0.75
Rated Speed	★	N_R	min^{-1}	3000	3000	3000	3000
Maximum Speed	★	N_{max}	min^{-1}	6000	6000	3000	6000
Rated Torque	★	T_R	N·m	1.27	2.39	3.18	2.39
Continuous Stall Torque	★	T_S	N·m	1.37	2.55	3.92	2.55
Peak Stall Torque	★	T_P	N·m	4.4	8.5	11.6	8.6
Rated Armature Current	★	I_R	Arms	2.6	4.6	4.6	4.4
Armature Stall Current	★	I_S	Arms	2.6	4.6	4.7	4.6
Peak Armature Stall Current	★	I_P	Arms	8.9	15.5	15.5	15.5
Torque Constant	☆	K_T	N·m／Arms	0.559	0.559	0.825	0.582
Voltage Constant for each Phase	☆	$K_{E\phi}$	mV／min^{-1}	19.5	19.5	28.8	20.3
Phase Resistance	☆	R_ϕ	Ω	0.93	0.4	0.85	0.69
Rated Power Rate	★	Q_R	kW／s	16	31	42	29
Electrical Time Constant	☆	te	ms	2.5	3	4.6	7.0
Mechanical Time Constant (Not including Encoder)	☆	tm	ms	0.93	0.7	0.89	1.2
Roter Moment of Inertia ※1		J_M	$\times 10^{-4}kg \cdot m^2(GD^2/4)$	1.04	1.82	2.38	2.00
Roter Moment of Inertia (Encoder)		J_S	$\times 10^{-4}kg \cdot m^2(GD^2/4)$	0.0033 ※1			
Servo Motor Mass ※1		WE	kg	1.7	2.7	3.6	3.3
Brake Static Friction Torque		TB	N·m	2.55 MIN.		3.92 MIN.	
Brake Rated Voltage		VB	V	DC90V／DC24V ± 10%			
Brake Rated Current		IB	A	0.12／0.37		0.09／0.30	
Roter Moment of Inertia (Brake)		JB	$\times 10^{-4}kg \cdot m^2(GD^2/4)$	0.25		0.343	
Brake Mass		W	kg	0.89	0.89	0.84	0.9
Servo Motor Operating Temp, Rel.Humidity				Operating Temperature: 0 to 40℃, Relative Humidity: 90% maximum, no condensation			
Servo amplifier power supply capacity (rating)			kVA	1.0	1.6	2.0	1.7
CE and UL approved servo motors ※5				Yes			
Servo motor protection code				IP67, IP65			
Size of aluminum plates for heat radiation during measurement				t6 × 250mm sq.		t12 × 305mm sq.	

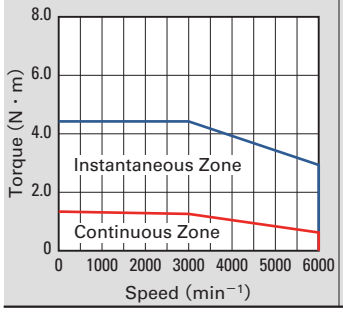
※1 This is an instance with the battery-backup method absolute encoder [PA035C].
For the following encoders, please make inquiries:
・Batteryless absolute encoder
・Wire-saving incremental encoder [PP031T]
For the servo amplifier weight, see page 55 and 56.

※2 Items with ★ and speed - torque characteristics indicate values after temperature rise saturation when used with a standard servo amplifier. The values are the typical values.
※3 ☆ : Indicates a typical value when the winding temperature is 20℃ .
※4 Servo motors that come with oil seals (optional) may require an 80 to 95% reduction in output.
※5 Our standard servo amplifiers are CE and UL approved.

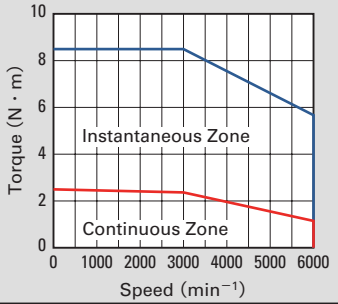
Speed-Torque Characteristics

Servo motor Model No./Flange Size/Rated Output

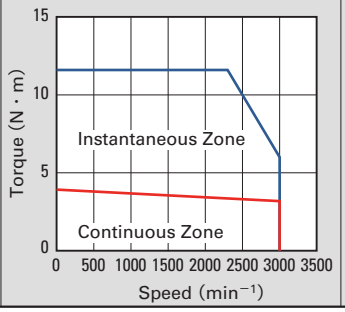
R2AA08040F／80mm／0.4kW



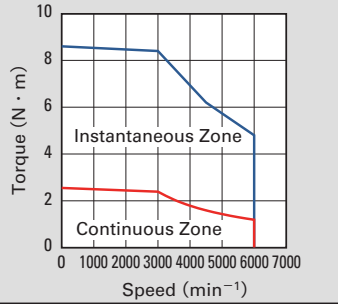
R2AA08075F／80mm／0.75kW



R2AAB8100H／86mm／1.0kW



R2AA10075F／100mm／0.75kW

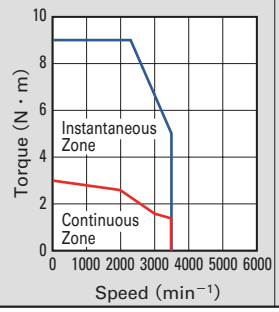


These values are for when the input power supply is a 3-phase AC 200 V circuit. The area of the instantaneous zone decreases when the power supply voltage is less than 200 V. Please contact us if the servo amp. power supply is a single-phase AC 200 V circuit.

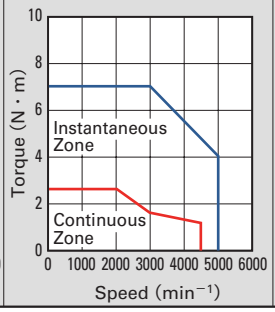
RS2A03□□			RS2A05□□		Servo Amplifier Model No.			
R2AA13050H 《130mm sq.》	R2AA13050D 《130mm sq.》	R2AA13120B 《130mm sq.》	R2AAB8075F 《86mm sq.》	R2AAB8100F 《86mm sq.》	Servo Motor Model No. and Flange Size			
					Unit	Symbol	Status	
0.55	0.55	1.2	0.75	1.0	kW	P_R	★	Rated Output
2000	2000	2000	3000	3000	min^{-1}	N_R	★	Rated Speed
3500	5000	2000	6000	6000	min^{-1}	N_{max}	★	Maximum Speed
2.6	2.6	5.7	2.38	3.18	N·m	T_R	★	Rated Torque
3.0	2.6	6.0	2.94	3.92	N·m	T_S	★	Continuous Stall Torque
9.0	7.0	16	11.0	14.3	N·m	T_P	★	Peak Stall Torque
4.2	5.2	5.2	4.7	6.0	Arms	I_R	★	Rated Armature Current
4.6	5.2	5.2	5.5	6.8	Arms	I_S	★	Armature Stall Current
15.5	15.5	15.5	23.7	25.7	Arms	I_P	★	Peak Armature Stall Current
0.67	0.53	1.09	0.547	0.582	N·m／Arms	K_T	☆	Torque Constant
23.5	18.5	37.8	19.1	20.3	mV／min^{-1}	$K_{E\phi}$	☆	Voltage Constant for each Phase
0.65	0.39	0.64	0.62	0.44	Ω	R_ϕ	☆	Phase Resistance
22	22	54	35	42	kW／s	Q_R	★	Rated Power Rate
14	14	16	4.2	4.3	ms	te	☆	Electrical Time Constant
1.3	1.3	0.98	1.00	0.93	ms	tm	☆	Mechanical Time Constant (Not including Encoder)
3.1	3.1	6.0	1.64	2.38	$\times 10^{-4}$kg·m²(GD²／4)	J_M		Roter Moment of Inertia ※1
0.0033 ※1					$\times 10^{-4}$kg·m²(GD²／4)	J_S		Roter Moment of Inertia (Encoder)
4.5	4.5	6.1	2.9	3.6	kg	WE		Servo Motor Mass ※1
3.5 MIN.	3.5 MIN.	9.0 MIN.	3.92 MIN.	3.92 MIN.	N·m	TB		Brake Static Friction Torque
DC90V／DC24V ± 10%					V	VB		Brake Rated Voltage
0.15／0.41	0.15／0.41	0.17／0.51	0.09／0.30	0.09／0.30	A	IB		Brake Rated Current
0.5	0.5	0.5	0.34	0.34	$\times 10^{-4}$kg·m²(GD²／4)	JB		Roter Moment of Inertia (Brake)
1.3	1.3	1.5	0.84	0.84	kg	W		Brake Mass
Operating Temperature: 0 to 40℃, Relative Humidity: 90% maximum, no condensation								Servo Motor Operating Temp, Rel.Humidity
1.2	1.2	2.2	1.6	2.3	kVA			Servo amplifier power supply capacity (rating)
Yes			Yes	Yes				CE and UL approved servo motors ※5
IP65			IP67, IP65					Servo motor protection code
t20 × 305mm sq.		t20 × 400mm sq.	t12 × 305mm sq.					Size of aluminum plates for heat radiation during measurement

Servo motor Model No./Flange Size/Rated Output

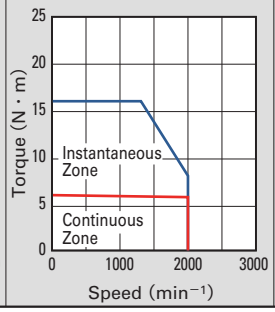
R2AA13050H／130mm／0.55kW



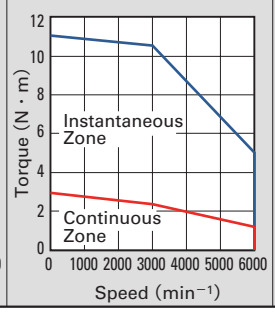
R2AA13050D／130mm／0.55kW



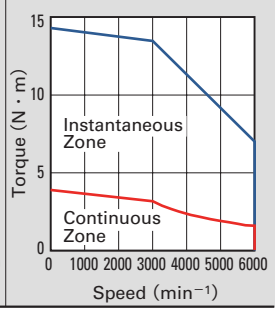
R2AA13120B／130mm／1.2kW



R2AAB8075F／86mm／0.75kW



R2AAB8100F／86mm／1.0kW



Specification

Servo Amplifier + R2 Servo Motor High Efficiency and Low Ripple (Medium Inertia)

input voltage AC200V Power supply range AC170V to AC253V

Servo Amplifier Model No.				RS2A05□□			
Servo Motor Model No. and Flange Size				R2AA10100F 《100mm sq.》	R2AA13120L 《130mm sq.》	R2AA13120D 《130mm sq.》	R2AA13180H 《130mm sq.》
	Status	Symbol	Unit				
Rated Output	★	P_R	kW	1.0	1.2	1.2	1.8
Rated Speed	★	N_R	min^{-1}	3000	2000	2000	2000
Maximum Speed	★	N_{max}	min^{-1}	6000	3000	5000	3500
Rated Torque	★	T_R	N·m	3.18	5.7	5.7	8.6
Continuous Stall Torque	★	T_S	N·m	3.92	6.0	6.0	10.0
Peak Stall Torque	★	T_P	N·m	14.3	20	16	22
Rated Armature Current	★	I_R	Arms	5.7	7.6	9.1	11.0
Armature Stall Current	★	I_S	Arms	6.8	8.4	9.3	11.8
Peak Armature Stall Current	★	I_P	Arms	25.7	26.5	25.4	26.5
Torque Constant	☆	K_T	N·m／Arms	0.584	0.77	0.65	0.89
Voltage Constant for each Phase	☆	$K_{E\phi}$	mV／min^{-1}	20.4	27.0	22.7	31.1
Phase Resistance	☆	R_ϕ	Ω	0.35	0.35	0.23	0.23
Rated Power Rate	★	Q_R	kW／s	29	54	54	82
Electrical Time Constant	☆	te	ms	8.3	15	16	18
Mechanical Time Constant (Not including Encoder)	☆	tm	ms	1.1	1.1	0.98	0.78
Roter Moment of Inertia ※1		J_M	$\times 10^{-4}kg \cdot m^2(GD^2/4)$	3.50	6.0	6.0	9.0
Roter Moment of Inertia (Encoder)		J_S	$\times 10^{-4}kg \cdot m^2(GD^2/4)$	0.0033 ※1			
Servo Motor Mass ※1		WE	kg	4.1	6.1	6.1	7.7
Brake Static Friction Torque		TB	N·m	3.92 MIN.	9.0 MIN.	9.0 MIN.	9.0 MIN.
Brake Rated Voltage		VB	V	DC90V／DC24V ± 10%			
Brake Rated Current		IB	A	0.09／0.30	0.17／0.51	0.17／0.51	0.17／0.51
Roter Moment of Inertia (Brake)		JB	$\times 10^{-4}kg \cdot m^2(GD^2/4)$	0.343	0.5	0.5	0.5
Brake Mass		W	kg	0.9	1.5	1.5	1.5
Servo Motor Operating Temp, Rel.Humidity				Operating Temperature: 0 to 40℃, Relative Humidity: 90% maximum, no condensation			
Servo amplifier power supply capacity (rating)			kVA	2.3	2.8	2.8	3.6
CE and UL approved servo motors ※4				Yes			
Servo motor protection code				IP67, IP65	IP65		
Size of aluminum plates for heat radiation during measurement				t12×305mm sq.	t20×400mm sq.		t20×470mm sq.

※1 This is an instance with the battery-backup method absolute encoder [PA035C].
For the following encoders, please make inquiries:
・Batteryless absolute encoder
・Wire-saving incremental encoder [PP031T]
For the servo amplifier weight, see page 55 and 56.

※2 Items with ★ and speed - torque characteristics indicate values after temperature rise saturation when used with a standard servo amplifier. The values are the typical values.

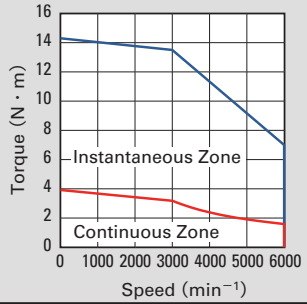
※3 ☆ : Indicates a typical value when the winding temperature is 20℃ .

※4 Our standard servo amplifiers are CE and UL approved.

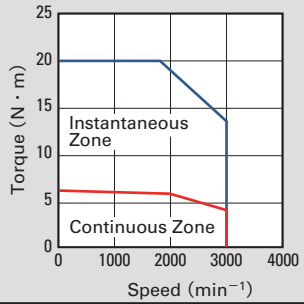
Speed-Torque Characteristics

Servo motor Model No./Flange Size/Rated Output

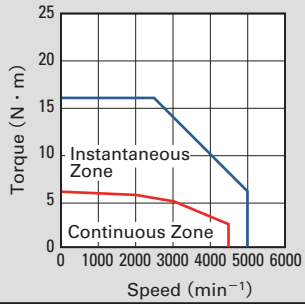
R2AA10100F／100mm／1.0kW



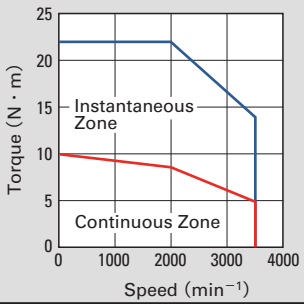
R2AA13120L／130mm／1.2kW



R2AA13120D／130mm／1.2kW



R2AA13180H／130mm／1.8kW

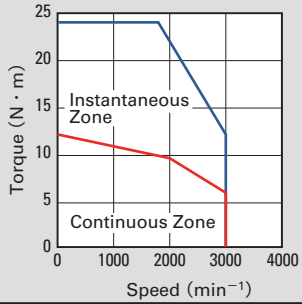


These values are for when the input power supply is a 3-phase AC 200 V circuit. The area of the instantaneous zone decreases when the power supply voltage is less than 200 V. Please contact us if the servo amp. power supply is a single-phase AC 200 V circuit.

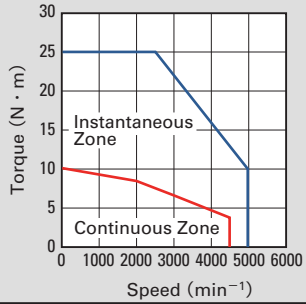
RS2A05□□	RS2A10□□			Servo Amplifier Model No.			
R2AA13200L《130mm sq.》	R2AA13180D《130mm sq.》	R2AA13200D《130mm sq.》	R2AA18350L《180mm sq.》	Servo Motor Model No. and Flange Size			
				Unit	Symbol	Status	
2	1.8	2	3.5	kW	P_R	★	Rated Output
2000	2000	2000	2000	min^{-1}	N_R	★	Rated Speed
3000	5000	5000	3000	min^{-1}	N_{max}	★	Maximum Speed
9.5	8.6	9.5	17	N·m	T_R	★	Rated Torque
12	10.0	12	22.0	N·m	T_S	★	Continuous Stall Torque
24	25	30	49	N·m	T_P	★	Peak Stall Torque
11.0	15.6	14.3	19.1	Arms	I_R	★	Rated Armature Current
12.0	17.3	17.5	23.7	Arms	I_S	★	Armature Stall Current
26.5	43.0	45.5	55.0	Arms	I_P	★	Peak Armature Stall Current
0.97	0.63	0.70	1.00	N·m／Arms	K_T	☆	Torque Constant
33.7	21.8	24.3	34.8	mV／min^{-1}	$K_{E\phi}$	☆	Voltage Constant for each Phase
0.22	0.13	0.11	0.085	Ω	R_ϕ	☆	Phase Resistance
74	82	74	72	kW／s	Q_R	★	Rated Power Rate
17	16	18	18	ms	te	☆	Electrical Time Constant
0.86	0.89	0.83	1.0	ms	tm	☆	Mechanical Time Constant (Not including Encoder)
12.2	9.0	12.2	40	$\times10^{-4}kg{\cdot}m^2(GD^2/4)$	J_M		Roter Moment of Inertia ※1
0.0033 ※1				$\times10^{-4}kg{\cdot}m^2(GD^2/4)$	J_S		Roter Moment of Inertia (Encoder)
10	7.7	10	15.5	kg	WE		Servo Motor Mass ※1
12 MIN.	9.0 MIN.	12 MIN.	22 MIN.	N·m	TB		Brake Static Friction Torque
DC90V／DC24V ± 10%				V	VB		Brake Rated Voltage
0.17／0.66	0.17／0.51	0.17／0.66	0.32／1.2	A	IB		Brake Rated Current
0.5	0.5	0.5	5.1	$\times10^{-4}kg{\cdot}m^2(GD^2/4)$	JB		Roter Moment of Inertia (Brake)
1.5	1.5	1.5	2.4	kg	W		Brake Mass
Operating Temperature: 0 to 40℃, Relative Humidity: 90% maximum, no condensation							Servo Motor Operating Temp, Rel.Humidity
4.0	4.0	5.0	6.0	kVA			Servo amplifier power supply capacity (rating)
Yes	Yes	Yes					CE and UL approved servo motors ※5
IP65							Servo motor protection code
t20×470mm sq.							Size of aluminum plates for heat radiation during measurement

Servo motor Model No./Flange Size/Rated Output

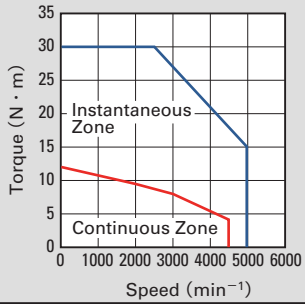
R2AA13200L／130mm／2.0kW



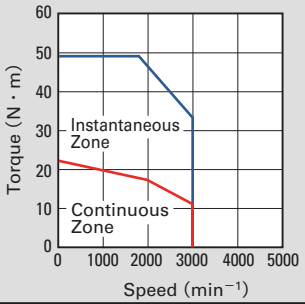
R2AA13180D／130mm／1.8kW



R2AA13200D／130mm／2.0kW



R2AA18350L／180mm／3.5kW



Specification

Servo Amplifier + R2 Servo Motor

High Efficiency and Low Ripple (Medium Inertia)

input voltage AC200V Power supply range AC170V to AC253V

Servo Amplifier Model No.				RS2A15□□		
Servo Motor Model No. and Flange Size				R2AA18350D 《180mm sq.》	R2AA18450H 《180mm sq.》	R2AA18550R 《180mm sq.》
	Status	Symbol	Unit			
Rated Output	★	P_R	kW	3.5	4.5	5.5
Rated Speed	★	N_R	min^{-1}	2000	2000	1500
Maximum Speed	★	N_{max}	min^{-1}	4000	3500	2500
Rated Torque	★	T_R	N·m	17	21.5	35
Continuous Stall Torque	★	T_S	N·m	22.0	30.0	37.3
Peak Stall Torque	★	T_P	N·m	60	75	90
Rated Armature Current	★	I_R	Arms	21.7	23.7	31.6
Armature Stall Current	★	I_S	Arms	27.0	31.7	32.9
Peak Armature Stall Current	★	I_P	Arms	83.0	83.0	83.0
Torque Constant	☆	K_T	N·m／Arms	0.88	1.02	1.23
Voltage Constant for each Phase	☆	$K_{E\phi}$	mV／min^{-1}	30.6	35.6	42.8
Phase Resistance	☆	R_ϕ	Ω	0.075	0.065	0.059
Rated Power Rate	★	Q_R	kW／s	72	92	180
Electrical Time Constant	☆	te	ms	16	18	22
Mechanical Time Constant (Not including Encoder)	☆	tm	ms	1.2	0.94	0.80
Roter Moment of Inertia ※1		J_M	$\times 10^{-4}$kg·m^2(GD^2／4)	40	50	68
Roter Moment of Inertia (Encoder)		J_S	$\times 10^{-4}$kg·m^2(GD^2／4)	0.0033 ※1		
Servo Motor Mass ※1		WE	kg	15.5	19.5	27.7
Brake Static Friction Torque		TB	N·m	22 MIN.	32 MIN.	42 MIN.
Brake Rated Voltage		VB	V	DC90V ／ DC24V ± 10%		
Brake Rated Current		IB	A	0.32 ／ 1.2	0.27 ／ 1.0	0.27 ／ 1.0
Roter Moment of Inertia (Brake)		JB	$\times 10^{-4}$kg·m^2(GD^2／4)	5.1	5.1	5.1
Brake Mass		W	kg	2.4	2.8	2.8
Servo Motor Operating Temp, Rel.Humidity				Operating Temperature: 0 to 40℃, Relative Humidity: 90% maximum, no condensation		
Servo amplifier power supply capacity (rating)			kVA	7.0	7.4	8.4
CE and UL approved servo motors ※4				Yes		
Servo motor protection code				IP65		
Size of aluminum plates for heat radiation during measurement				t20 × 470mm sq.		t20 × 540mm sq.

※1 This is an instance with the battery-backup method absolute encoder [PA035C].
For the following encoders, please make inquiries:
・Batteryless absolute encoder
・Wire-saving incremental encoder [PP031T]
For the servo amplifier weight, see page 55 and 56.

※2 Items with ★ and speed - torque characteristics indicate values after temperature rise saturation when used with a standard servo amplifier. The values are the typical values.

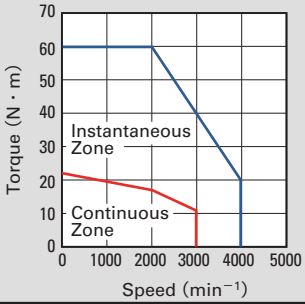
※3 ☆ : Indicates a typical value when the winding temperature is 20℃ .

※4 Our standard servo amplifiers are CE and UL approved.

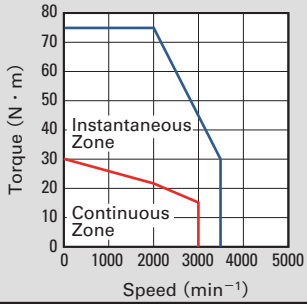
Speed-Torque Characteristics

Servo motor Model No./Flange Size/Rated Output

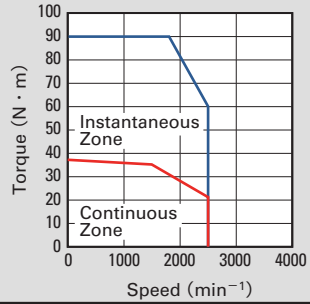
R2AA18350D／180mm／3.5kW



R2AA18450H／180mm／4.5kW

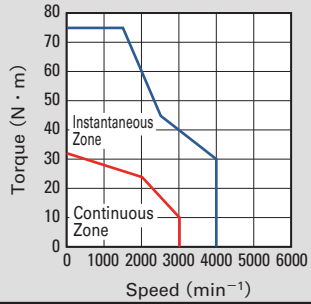
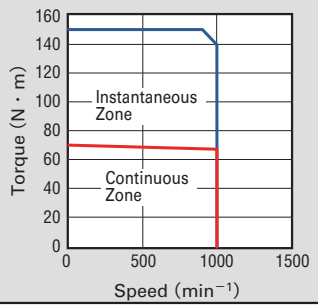


R2AA18550R／180mm／5.5kW



These values are for when the input power supply is a 3-phase AC 200 V circuit. The area of the instantaneous zone decreases when the power supply voltage is less than 200 V. Please contact us if the servo amp. power supply is a single-phase AC 200 V circuit.

RS2A15□□		Servo Amplifier Model No.			
R2AA22500L 《220mm sq.》	**R2AA22700S** 《220mm sq.》	Servo Motor Model No. and Flange Size			
		Unit	Symbol	Status	
5	7	kW	P_R	★	Rated Output
2000	1000	min^{-1}	N_R	★	Rated Speed
4000	1000	min^{-1}	N_{max}	★	Maximum Speed
24	67	N·m	T_R	★	Rated Torque
32	70	N·m	T_S	★	Continuous Stall Torque
75	150	N·m	T_P	★	Peak Stall Torque
22.0	34	Arms	I_R	★	Rated Armature Current
34.0		Arms	I_S	★	Armature Stall Current
83.0		Arms	I_P	★	Peak Armature Stall Current
1.00	2.25	N·m／Arms	K_T	☆	Torque Constant
34.9	78.6	mV／min^{-1}	$K_{E\phi}$	☆	Voltage Constant for each Phase
0.047	0.085	Ω	R_ϕ	☆	Phase Resistance
105	330	kW／s	Q_R	★	Rated Power Rate
40	26	ms	te	☆	Electrical Time Constant
0.78	0.68	ms	tm	☆	Mechanical Time Constant (Not including Encoder)
55	136	$\times 10^{-4}$kg·m^2(GD^2／4)	J_M		Roter Moment of Inertia ※1
0.0033 ※1		$\times 10^{-4}$kg·m^2(GD^2／4)	J_S		Roter Moment of Inertia (Encoder)
22.5	43	kg	WE		Servo Motor Mass ※1
42 MIN.	90 MIN.	N·m	TB		Brake Static Friction Torque
DC90V ／ DC24V ± 10%	DC90V ／ DC24V	V	VB		Brake Rated Voltage
0.32 ／ 1.2	0.44 ／ 1.7	A	IB		Brake Rated Current
5.1	24	$\times 10^{-4}$kg·m^2(GD^2／4)	JB		Roter Moment of Inertia (Brake)
5.5	7.8	kg	W		Brake Mass
Operating Temperature: 0 to 40℃, Relative Humidity: 90% maximum, no condensation					Servo Motor Operating Temp, Rel.Humidity
9.6	12.2	kVA			Servo amplifier power supply capacity (rating)
Yes					CE and UL approved servo motors ※5
IP65					Servo motor protection code
t20 × 540mm sq.					Size of aluminum plates for heat radiation during measurement

Servo motor Model No./Flange Size/Rated Output	
R2AA22500L／220mm／5.0kW	R2AA22700S／220mm／7.0kW
	

Specification

Servo Amplifier + R2 Servo Motor

High Efficiency and Low Ripple (Medium Inertia)

input voltage AC200V

Power supply range AC170V to AC253V

Servo Amplifier Model No.				RS2A30□□		
Servo Motor Model No. and Flange Size				R2AA18550H 《180mm sq.》	R2AA18750H 《180mm sq.》	R2AA1811KR 《180mm sq.》
	Status	Symbol	Unit			
Rated Output	★	P_R	kW	5.5	7.5	11
Rated Speed	★	N_R	min^{-1}	1500	1500	1500
Maximum Speed	★	N_{max}	min^{-1}	3000	3000	2500
Rated Torque	★	T_R	N·m	35	48	70
Continuous Stall Torque	★	T_S	N·m	37.5	54.9	80.0
Peak Stall Torque	★	T_P	N·m	107	140	170
Rated Armature Current	★	I_R	Arms	46.2	51.2	61.9
Armature Stall Current	★	I_S	Arms	48.0	56.8	66.0
Peak Armature Stall Current	★	I_P	Arms	155.0	155.0	155.0
Torque Constant	☆	K_T	N·m／Arms	0.84	1.04	1.25
Voltage Constant for each Phase	☆	$K_{E\phi}$	mV／min^{-1}	29.3	36.6	43.8
Phase Resistance	☆	R_ϕ	Ω	0.030	0.030	0.035
Rated Power Rate	★	Q_R	kW／s	180	235	445
Electrical Time Constant	☆	te	ms	20	20	22
Mechanical Time Constant (Not including Encoder)	☆	tm	ms	0.87	0.81	0.74
Roter Moment of Inertia ※1		J_M	$\times 10^{-4}$kg·m^2(GD^2／4)	68	98	110
Roter Moment of Inertia (Encoder)		J_S	$\times 10^{-4}$kg·m^2(GD^2／4)	0.0033 ※1		
Servo Motor Mass ※1		WE	kg	27.7	35.7	40
Brake Static Friction Torque		TB	N·m	42 MIN.	54.9 MIN.	100 MIN.
Brake Rated Voltage		VB	V	DC90V／DC24V ± 10%		
Brake Rated Current		IB	A	0.27／1.0	0.37／1.4	0.5／1.9
Roter Moment of Inertia (Brake)		JB	$\times 10^{-4}$kg·m^2(GD^2／4)	5.1	4.5	9.7
Brake Mass		W	kg	2.8	4.5	8.9
Servo Motor Operating Temp, Rel.Humidity				Operating Temperature: 0 to 40℃, Relative Humidity: 90% maximum, no condensation		
Servo amplifier power supply capacity (rating)			kVA	9.3	11.6	16.0
Cooling fan power		PF	W	——		31/29 AC180V to AC253V Single-phase 50/60Hz
CE and UL approved servo motors ※4				Yes		
Servo motor protection code				IP65 (Excluding cooling fan)		
Size of aluminum plates for heat radiation during measurement				t20 × 540mm sq.		t30 × 610mm sq.

※1 This is an instance with the battery-backup method absolute encoder [PA035C].
For the following encoders, please make inquiries:
・Batteryless absolute encoder
・Wire-saving incremental encoder [PP031T]
For the servo amplifier weight, see page 55 and 56.

※2 Items with ★ and speed - torque characteristics indicate values after temperature rise saturation when used with a standard servo amplifier. The values are the typical values.

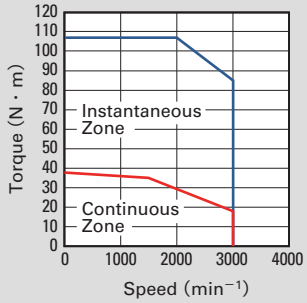
※3 ☆ : Indicates a typical value when the winding temperature is 20℃ .

※4 Our standard servo amplifiers are CE and UL approved.

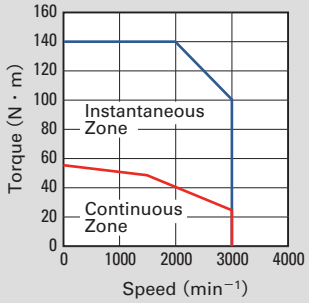
Speed-Torque Characteristics

Servo motor Model No./Flange Size/Rated Output

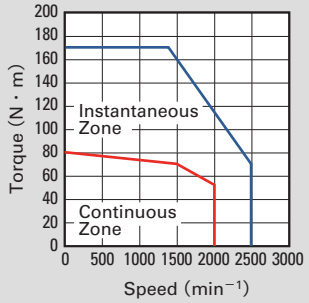
R2AA18550H ／ 180mm ／ 5.5kW



R2AA18750H ／ 180mm ／ 7.5kW



R2AA1811KR ／ 180mm ／ 11kW

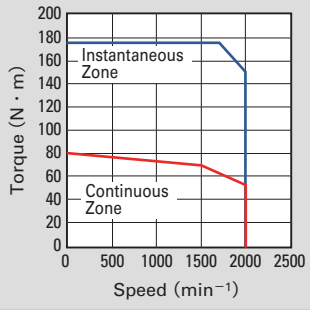


These values are for when the input power supply is a 3-phase AC 200 V circuit. The area of the instantaneous zone decreases when the power supply voltage is less than 200 V. Please contact us if the servo amp. power supply is a single-phase AC 200 V circuit.

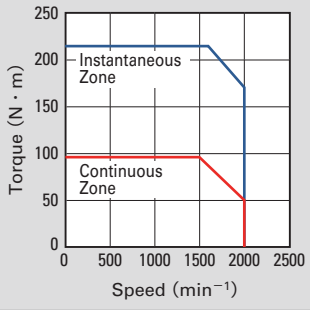
RS2A30□□		–		Servo Amplifier Model No.			
R2AA2211KB 《220mm sq.》	R2AA2215KB 《220mm sq.》	R2AA2220KB 《220mm sq.》	R2AA2225KB 《220mm sq.》	Servo Motor Model No. and Flange Size			
				Unit	Symbol	Status	
11	15	20	25	kW	P_R	★	Rated Output
1500	1500	1500	1500	min^{-1}	N_R	★	Rated Speed
2000	2000	2000	2000	min^{-1}	N_{max}	★	Maximum Speed
70	95	125	159	N·m	T_R	★	Rated Torque
80	95	125	159	N·m	T_S	★	Continuous Stall Torque
176	215	280	415	N·m	T_P	★	Peak Stall Torque
60	66	116	111	Arms	I_R	★	Rated Armature Current
66	66	113	108	Arms	I_S	★	Armature Stall Current
155	155	290	290	Arms	I_P	★	Peak Armature Stall Current
1.38	1.50	1.21	1.58	N·m/Arms	K_T	☆	Torque Constant
48	52.3	42.4	55.2	mV/min^{-1}	$K_{E\phi}$	☆	Voltage Constant for each Phase
0.022	0.017	0.013	0.017	Ω	R_ϕ	☆	Phase Resistance
275	380	659	878	kW/s	Q_R	★	Rated Power Rate
27	34	33	36	ms	te	☆	Electrical Time Constant
0.62	0.54	0.63	0.59	ms	tm	☆	Mechanical Time Constant (Not including Encoder)
178	237	237	288	×10-4kg·m²(GD²/4)	J_M		Roter Moment of Inertia ※1
0.0033 ※1				×10-4kg·m²(GD²/4)	J_S		Roter Moment of Inertia (Encoder)
55	62	70	80	kg	WE		Servo Motor Mass ※1
90 MIN.		170 MIN.		N·m	TB		Brake Static Friction Torque
DC90V / DC24V		DC24V		V	VB		Brake Rated Voltage
0.44 / 1.7		1.5		A	IB		Brake Rated Current
24		12		×10-4kg·m²(GD²/4)	JB		Roter Moment of Inertia (Brake)
7.8		17		kg	W		Brake Mass
Operating Temperature: 0 to 40℃, Relative Humidity: 90% maximum, no condensation							Servo Motor Operating Temp, Rel.Humidity
16.0	21.4	30.0	36.0	kVA			Servo amplifier power supply capacity (rating)
——		31/29 AC180V to AC253V Single-phase 50/60Hz		W	P_F		Cooling fan power
Yes		Under preparation					CE and UL approved servo motors ※4
IP65 (Excluding cooling fan)							Servo motor protection code
t30 × 610mm sq.							Size of aluminum plates for heat radiation during measurement

Servo motor Model No./Flange Size/Rated Output

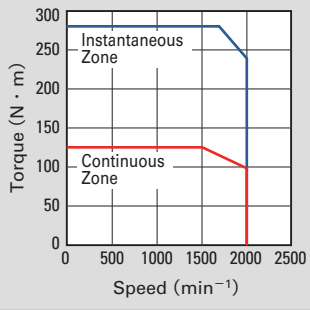
R2AA2211KB／220mm／11kW



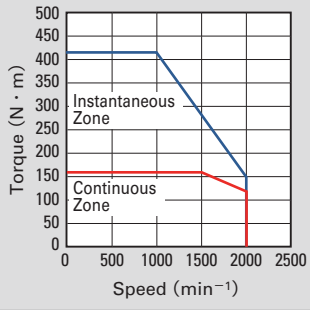
R2AA2215KB／220mm／15kW



R2AA2220KB／220mm／20kW



R2AA2225KB／220mm／25kW



Specification

Servo Amplifier + R1 Servo Motor High Power Rate (Low Inertia)

input voltage AC200V Power supply range AC170V to AC253V

Servo Amplifier Model No.				RS2A30A□	
Servo Motor Model No. and Flange Size				R1AA18550H 《180mm sq.》	R1AA18750L 《180mm sq.》
	Status	Symbol	Unit		
Rated Output	★	P_R	kW	5.5	7.5
Rated Speed	★	N_R	min^{-1}	1500	1500
Maximum Speed	★	N_{max}	min^{-1}	3000	3000
Rated Torque	★	T_R	N·m	35	48
Continuous Stall Torque	★	T_S	N·m	37	48
Peak Stall Torque	★	T_P	N·m	110	135
Rated Armature Current	★	I_R	Arms	46	49
Armature Stall Current	★	I_S	Arms	47	47
Peak Armature Stall Current	★	I_P	Arms	155	155
Torque Constant	☆	K_T	N·m／Arms	0.86	1.09
Voltage Constant for each Phase	☆	$K_{E\phi}$	mV／min^{-1}	30	38.1
Phase Resistance	☆	R_ϕ	Ω	0.029	0.031
Rated Power Rate	★	Q_R	kW／s	370	550
Electrical Time Constant	☆	te	ms	23	21
Mechanical Time Constant (Not including Encoder)	☆	tm	ms	0.39	0.33
Roter Moment of Inertia ※1		J_M	$\times 10^{-4}$kg·m^2(GD^2／4)	33	42
Servo Motor Mass ※1		WE	kg	33	39
Brake Static Friction Torque		TB	N·m	53.9 MIN.	53.9 MIN.
Brake Rated Voltage		VB	V	DC90V／DC24V ± 10%	
Brake Rated Current		IB	A	0.37／1.4	0.37／1.4
Roter Moment of Inertia (Brake)		JB	$\times 10^{-4}$kg·m^2(GD^2／4)	5.7	5.7
Brake Mass		W	kg	5	5
Servo Motor Operating Temp, Rel.Humidity				Operating Temperature: 0 to 40℃, Relative Humidity: 90% maximum, no condensation	
Servo amplifier power supply capacity (rating)			kVA	9.3	11.6
Cooling fan power		P_F	W	30/26 AC200V±10% Single-phase 50Hz/60Hz	
CE and UL approved servo motors ※4				Under preparation	
Servo motor protection code				IP65(not include cooling fan)	
Size of aluminum plates for heat radiation during measurement				t20 × 540mm sq.	

※1 Including wire-saving incremental encoder.
For the servo amplifier weight, see page 55 and 56.

※2 Items with ★ indicate values after temperature rise saturation when installed on the SANYO DENKI specified heat sink and used with a standard servo amplifier (with 3 phase AC200V input). The values are the typical values.

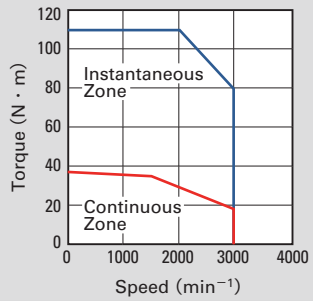
※3 ☆ : Indicates a typical value when the winding temperature is 20℃ .

※4 Our standard servo amplifiers are CE and UL approved.

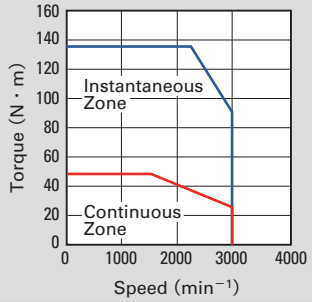
Speed-Torque Characteristics

Servo motor Model No./Flange Size/Rated Output

R1AA18550H ／ 180mm ／ 5.5kW



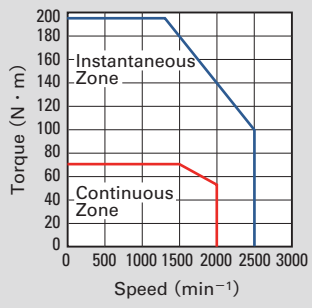
R1AA18750L ／ 180mm ／ 7.5kW



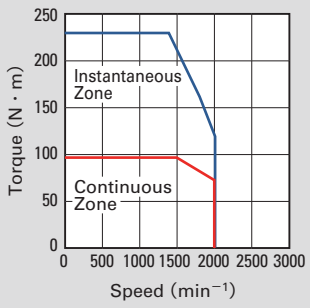
RS2A30A□		—	Servo Amplifier Model No.			
R1AA1811KR 《180mm sq.》	R1AA1815KB 《180mm sq.》	R1AA2220KV 《220mm sq.》	Servo Motor Model No. and Flange Size			
			Unit	Symbol	Status	
11	15	21	kW	P_R	★	Rated Output
1500	1500	1500	min^{-1}	N_R	★	Rated Speed
2500	2000	2000	min^{-1}	N_{max}	★	Maximum Speed
70	95.5	135	N·m	T_R	★	Rated Torque
70	95.5	135	N·m	T_S	★	Continuous Stall Torque
195	230	380	N·m	T_P	★	Peak Stall Torque
55.0	60.0	100	Arms	I_R	★	Rated Armature Current
54.0	58.0	96	Arms	I_S	★	Armature Stall Current
155	155	290	Arms	I_P	★	Peak Armature Stall Current
1.4	1.77	1.51	N·m／Arms	K_T	☆	Torque Constant
48.7	61.6	52.8	mV／min^{-1}	$K_{E\phi}$	☆	Voltage Constant for each Phase
0.033	0.033	0.014	Ω	R_ϕ	☆	Phase Resistance
770	1060	1740	kW／s	Q_R	★	Rated Power Rate
22	25	51	ms	te	☆	Electrical Time Constant
0.32	0.27	0.19	ms	tm	☆	Mechanical Time Constant (Not including Encoder)
64	86	105	×10-4kg·m²(GD²／4)	J_M		Roter Moment of Inertia ※1
52	64	107	kg	WE		Servo Motor Mass ※1
75 MIN.	120 MIN.	—	N·m	TB		Brake Static Friction Torque
DC24V ± 10%		—	V	VB		Brake Rated Voltage
1.5	1.9	—	A	IB		Brake Rated Current
8.0	9.7	—	×10-4kg·m²(GD²／4)	JB		Roter Moment of Inertia (Brake)
7	9	—	kg	W		Brake Mass
Operating Temperature: 0 to 40℃, Relative Humidity: 90% maximum, no condensation						Servo Motor Operating Temp, Rel.Humidity
16	21.4	30.0	kVA			Servo amplifier power supply capacity (rating)
30/26 AC200V±10% Single-phase 50Hz/60Hz			P_F	W		Cooling fan power
Under preparation		No				CE and UL approved servo motors ※4
IP65(not include cooling fan)						Servo motor protection code
t20 × 540mm sq.		t30 × 610mm sq.				Size of aluminum plates for heat radiation during measurement

Servo motor Model No./Flange Size/Rated Output

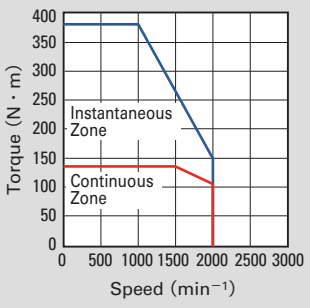
R1AA1811KR ／ 180mm ／ 11kW



R1AA1815KB ／ 180mm ／ 15kW



R1AA2220KV ／ 220mm ／ 21kW



Specification

Servo Amplifier + Q1 Servo Motor High Power Rate (Low Inertia)

input voltage AC200V Power supply range AC170V to AC253V

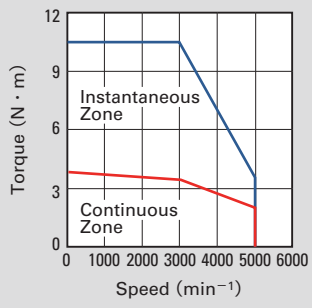
Servo Amplifier Model No.				RS2A05A□		RS2A10A□
Servo Motor Model No. and Flange Size				Q1AA10100D 《100mm sq.》	Q1AA10150D 《100mm sq.》	Q1AA10200D 《100mm sq.》
	Status	Symbol	Unit			
Rated Output	★	P_R	kW	1	1.5	2
Rated Speed	★	N_R	min^{-1}	3000		
Maximum Speed	★	N_{max}	min^{-1}	5000	4500	5000
Rated Torque	★	T_R	N·m	3.19	4.79	6.37
Continuous Stall Torque	★	T_S	N·m	3.92	4.9	7.36
Peak Stall Torque	★	T_P	N·m	10.5	14.7	19.6
Rated Armature Current	★	I_R	Arms	6.5	8.2	15.9
Armature Stall Current	★	I_S	Arms	7.8	8.2	18
Peak Armature Stall Current	★	I_P	Arms	24.5	26.5	55
Torque Constant	☆	K_T	N·m／Arms	0.55	0.705	0.47
Voltage Constant for each Phase	☆	$K_{E\phi}$	mV／min^{-1}	19.3	24.6	16.4
Phase Resistance	☆	R_ϕ	Ω	0.34	0.272	0.086
Rated Power Rate	★	Q_R	kW／s	78.9	143	189
Electrical Time Constant	☆	te	ms	7.6	11.4	12.1
Mechanical Time Constant (Not including Encoder)	☆	tm	ms	0.43	0.26	0.25
Roter Moment of Inertia ※1		J_M	$\times 10^{-4}$kg·m^2(GD^2／4)	1.29	1.61	2.15
Servo Motor Mass ※1		WE	kg	5.4	6.5	8.7
Brake Static Friction Torque		TB	N·m	3.92	9.8	9.8
Brake Rated Voltage		VB	V	DC90V／DC24V ± 10%		
Brake Rated Current		IB	A	0.2／0.61	0.2／0.83	0.2／0.83
Roter Moment of Inertia (Brake)		JB	$\times 10^{-4}$kg·m^2(GD^2／4)	0.15	0.4	0.4
Brake Mass		W	kg	1.3	1.5	1.5
Servo Motor Operating Temp, Rel.Humidity				Operating Temperature: 0 to 40℃, Relative Humidity: 90% maximum, no condensation		
Servo amplifier power supply capacity (rating)			kVA	2.5	3.0	4.0
CE and UL approved servo motors ※4				Yes		
Servo motor protection code				IP67		
Size of aluminum plates for heat radiation during measurement				t20 × 400mm sq.		t20 × 470mm sq.

※1 Including wire-saving incremental encoder.
For the servo amplifier weight, see page 55 and 56.
※2 Items with ★ and speed - torque characteristics indicate values after temperature rise saturation when used with a standard servo amplifier. The values are the typical values.
※3 ☆: Indicates a typical value when the winding temperature is 20℃.
※4 Our standard servo amplifiers are CE and UL approved.

Speed-Torque Characteristics

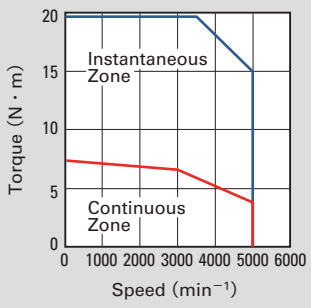
Servo motor Model No./Flange Size/Rated Output

Q1AA10100D／100mm／1kW



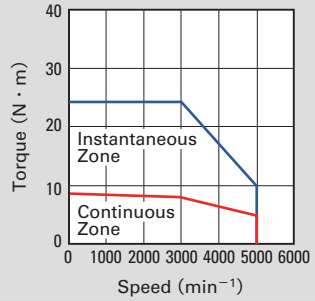
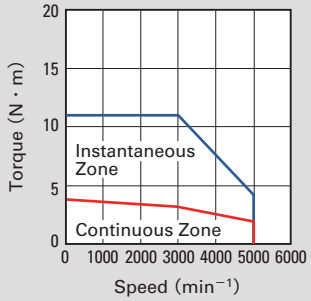
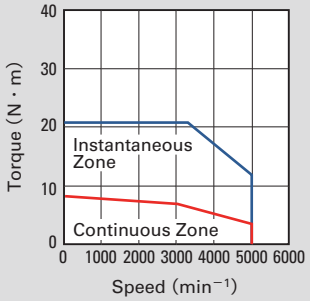
Q1AA10150D／100mm／1.5kW

Q1AA10200D／100mm／2kW



RS2A10A□	RS2A05A□	RS2A10A□	Servo Amplifier Model No.			
Q1AA10250D 《100mm sq.》	**Q1AA12100D** 《120mm sq.》	**Q1AA12200D** 《120mm sq.》	Servo Motor Model No. and Flange Size			
			Unit	Symbol	Status	
2.5	1	2	kW	P_R	★	Rated Output
3000			min^{-1}	N_R	★	Rated Speed
5000			min^{-1}	N_{max}	★	Maximum Speed
7.97	3.19	6.37	N·m	T_R	★	Rated Torque
8.82	3.92	7.36	N·m	T_S	★	Continuous Stall Torque
24.4	11	21	N·m	T_P	★	Peak Stall Torque
16.6	6.2	14.3	Arms	I_R	★	Rated Armature Current
17.2	7.5	16.2	Arms	I_S	★	Armature Stall Current
55	24.5	53	Arms	I_P	★	Peak Armature Stall Current
0.587	0.587	0.5	N·m／Arms	K_T	☆	Torque Constant
20.5	20.2	17.6	mV／min^{-1}	$K_{E\phi}$	☆	Voltage Constant for each Phase
0.104	0.19	0.06	Ω	R_ϕ	☆	Phase Resistance
240	45.2	93	kW／s	Q_R	★	Rated Power Rate
13	13	20	ms	te	☆	Electrical Time Constant
0.24	0.38	0.31	ms	tm	☆	Mechanical Time Constant (Not including Encoder)
2.65	2.25	4.37	$\times 10^{-4}$kg·m^2(GD^2／4)	J_M		Roter Moment of Inertia ※1
9.4	5.4	8.7	kg	WE		Servo Motor Mass ※1
9.8	9.0	9.0	N·m	TB		Brake Static Friction Torque
DC90V／DC24V ± 10%			V	VB		Brake Rated Voltage
0.2／0.83	0.25／0.86		A	IB		Brake Rated Current
0.4	0.5	0.5	$\times 10^{-4}$kg·m^2(GD^2／4)	JB		Roter Moment of Inertia (Brake)
1.5	1.5	1.5	kg	W		Brake Mass
Operating Temperature: 0 to 40℃, Relative Humidity: 90% maximum, no condensation						Servo Motor Operating Temp, Rel.Humidity
4.2	2.5	4.0	kVA			Servo amplifier power supply capacity (rating)
Yes						CE and UL approved servo motors ※4
IP67						Servo motor protection code
t20 × 470mm sq.	t20 × 400mm sq.	t20 × 470mm sq.				Size of aluminum plates for heat radiation during measurement

Servo motor Model No./Flange Size/Rated Output

Q1AA10250D／100mm／2.5kW	Q1AA12100D／120mm／1kW	Q1AA12200D／120mm／2kW
		

Specification

Servo Amplifier + Q1 Servo Motor High Power Rate (Low Inertia)

input voltage AC200V Power supply range AC170V to AC253V

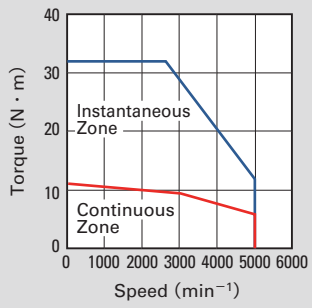
Servo Amplifier Model No.				RS2A10A□	
Servo Motor Model No. and Flange Size				Q1AA12300D 《120mm sq.》	Q1AA13300D 《130mm sq.》
	Status	Symbol	Unit		
Rated Output	★	P_R	kW	3	
Rated Speed	★	N_R	min^{-1}	3000	
Maximum Speed	★	N_{max}	min^{-1}	5000	4500
Rated Torque	★	T_R	N·m	9.6	9.5
Continuous Stall Torque	★	T_S	N·m	11	10.8
Peak Stall Torque	★	T_P	N·m	31	28.4
Rated Armature Current	★	I_R	Arms	16.2	16.7
Armature Stall Current	★	I_S	Arms	17.3	17.6
Peak Armature Stall Current	★	I_P	Arms	55	55
Torque Constant	☆	K_T	N·m／Arms	0.73	0.693
Voltage Constant for each Phase	☆	$K_{E\phi}$	mV／min^{-1}	25.4	24.2
Phase Resistance	☆	R_ϕ	Ω	0.082	0.087
Rated Power Rate	★	Q_R	kW／s	143	184
Electrical Time Constant	☆	te	ms	13.9	17.9
Mechanical Time Constant (Not including Encoder)	☆	tm	ms	0.3	0.27
Roter Moment of Inertia ※1		J_M	$\times 10^{-4}$kg·m^2(GD^2／4)	6.4	4.92
Servo Motor Mass ※1		WE	kg	11.4	
Brake Static Friction Torque		TB	N·m	11.8	
Brake Rated Voltage		VB	V	DC90V／DC24V ± 10%	
Brake Rated Current		IB	A	0.28／1.0	
Roter Moment of Inertia (Brake)		JB	$\times 10^{-4}$kg·m^2(GD^2／4)	0.5	
Brake Mass		W	kg	1.7	
Servo Motor Operating Temp, Rel.Humidity				Operating Temperature: 0 to 40℃, Relative Humidity: 90% maximum, no condensation	
Servo amplifier power supply capacity (rating)			kVA	5.0	5.0
CE and UL approved servo motors ※4				Yes	
Servo motor protection code				IP67	
Size of aluminum plates for heat radiation during measurement				t20 × 470mm sq.	

※1 Including wire-saving incremental encoder.
For the servo amplifier weight, see page 55 and 56.
※2 Items with ★ and speed - torque characteristics indicate values after temperature rise saturation when used with a standard servo amplifier. The values are the typical values.
※3 ☆ : Indicates a typical value when the winding temperature is 20℃ .
※4 Our standard servo amplifiers are CE and UL approved.

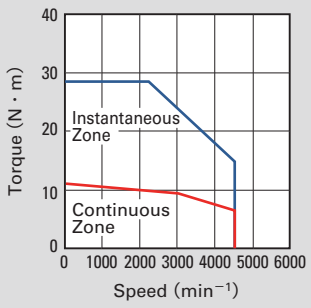
Speed-Torque Characteristics

Servo motor Model No./Flange Size/Rated Output

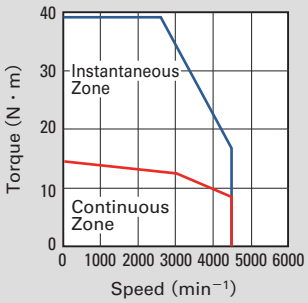
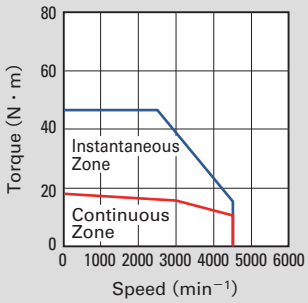
Q1AA12300D／120mm／3kW



Q1AA13300D／130mm／3kW



RS2A15A□		Servo Amplifier Model No.			
Q1AA13400D 《130mm sq.》	Q1AA13500D 《130mm sq.》	Servo Motor Model No. and Flange Size			
		Unit	Symbol	Status	
4	5	kW	P_R	★	Rated Output
3000		min^{-1}	N_R	★	Rated Speed
4500		min^{-1}	N_{max}	★	Maximum Speed
12.7	15.7	N·m	T_R	★	Rated Torque
14.7	18.1	N·m	T_S	★	Continuous Stall Torque
39.2	47.6	N·m	T_P	★	Peak Stall Torque
23.4	25.8	Arms	I_R	★	Rated Armature Current
26.4	27.5	Arms	I_S	★	Armature Stall Current
83	83	Arms	I_P	★	Peak Armature Stall Current
0.612	0.724	N·m／Arms	K_T	☆	Torque Constant
21.4	25.3	mV／min^{-1}	$K_{E\phi}$	☆	Voltage Constant for each Phase
0.048	0.0461	Ω	R_ϕ	☆	Phase Resistance
251	291	kW／s	Q_R	★	Rated Power Rate
19.2	20.8	ms	te	☆	Electrical Time Constant
0.25	0.22	ms	tm	☆	Mechanical Time Constant (Not including Encoder)
6.43	8.47	×10^{-4}kg·m^2(GD^2／4)	J_M		Roter Moment of Inertia ※1
14.4	16	kg	WE		Servo Motor Mass ※1
19.6		N·m	TB		Brake Static Friction Torque
DC90V ／ DC24V ± 10%		V	VB		Brake Rated Voltage
0.25 ／ 0.95		A	IB		Brake Rated Current
0.58		×10^{-4}kg·m^2(GD^2／4)	JB		Roter Moment of Inertia (Brake)
2.2		kg	W		Brake Mass
Operating Temperature: 0 to 40℃, Relative Humidity: 90% maximum, no condensation					Servo Motor Operating Temp, Rel.Humidity
6.7	8.3	kVA			Servo amplifier power supply capacity (rating)
Yes					CE and UL approved servo motors ※4
IP67					Servo motor protection code
t20 × 470mm sq.	t20 × 540mm sq.				Size of aluminum plates for heat radiation during measurement

Servo motor Model No./Flange Size/Rated Output	
Q1AA13400D ／ 130mm ／ 4kW	Q1AA13500D ／ 130mm ／ 5kW
	

Specification

Servo Amplifier + R5 Servo Motor

High Efficiency and Ultra Low Ripple (Medium Inertia)

input voltage AC200V Power supply range AC170V to AC253V

Servo Amplifier Model No.				RS2A01□□		RS2A03□□
Servo Motor Model No. and Flange Size				R5AA06020H 《60mm sq.》	R5AA06040H 《60mm sq.》	R5AA08075D 《80mm sq.》
	Status	Symbol	Unit			
Rated Output	★	P_R	kW	0.2	0.4 (0.38) ※6	0.75 (0.71) ※6
Rated Speed	★	N_R	min^{-1}	3000	3000	3000
Maximum Speed	★	N_{max}	min^{-1}	3000	3000	5000
Rated Torque	★	T_R	N·m	0.637	1.27	2.39
Continuous Stall Torque	★	T_S	N·m	0.686	1.37	2.55
Peak Stall Torque	★	T_P	N·m	2.2	4.8	8.5
Rated Armature Current	★	I_R	Arms	1.1	1.8	3.9
Armature Stall Current	★	I_S	Arms	1.1	1.8	3.9
Peak Armature Stall Current	★	I_P	Arms	4.2	7.0	14.4
Torque Constant	☆	K_T	N·m／Arms	0.649	0.836	0.763
Voltage Constant for each Phase	☆	$K_{E\phi}$	mV／min^{-1}	21.7	27.0	23.2
Phase Resistance	☆	R_ϕ	Ω	4.8	3.3	0.78
Rated Power Rate	★	Q_R	kW／s	20	39	35
Electrical Time Constant	☆	te	ms	4.3	5.5	13
Mechanical Time Constant (Not including Encoder)	☆	tm	ms	0.71	0.63	0.76
Roter Moment of Inertia ※1		J_M	$\times10^{-4}kg{\cdot}m^2(GD^2/4)$	0.198	0.414	1.65
Roter Moment of Inertia (Encoder)		J_S	$\times10^{-4}kg{\cdot}m^2(GD^2/4)$	0.0033 ※1		
Servo Motor Mass ※1		WE	kg	0.96	1.4	3.6
Brake Static Friction Torque		TB	N·m	1.37 MIN.		2.55 MIN.
Brake Rated Voltage		VB	V	DC90V ／ DC24V ± 10%		
Brake Rated Current		IB	A	0.11 ／ 0.32		0.12 ／ 0.37
Roter Moment of Inertia (Brake)		JB	$\times10^{-4}kg{\cdot}m^2(GD^2/4)$	0.060	0.060	0.25
Brake Mass		W	kg	0.39	0.39	0.89
Servo Motor Operating Temp, Rel.Humidity				Operating Temperature: 0 to 40℃, Relative Humidity: 90% maximum, no condensation		
Servo amplifier power supply capacity (rating)			kVA	0.6	1.0	1.6
CE and UL approved servo motors ※5				Yes		
Servo motor protection code				IP65		
Size of aluminum plates for heat radiation during measurement				t6 × 250mm sq.		

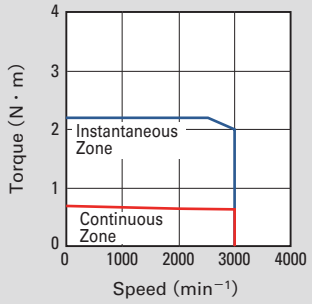
※1 This is an instance with the battery-backup method absolute encoder [PA035C].
For the following encoders, please make inquiries:
・Batteryless absolute encoder
・Wire-saving incremental encoder [PP031T]
For the servo amplifier weight, see page 55 and 56.

※2 Items with ★ and speed - torque characteristics indicate values after temperature rise saturation when used with a standard servo amplifier. The values are the typical values.
※3 ☆ : Indicates a typical value when the winding temperature is 20℃ .
※4 Servo motors that come with oil seals (optional) may require an 80 to 95% reduction in output.
※5 Our standard servo amplifiers are CE and UL approved.
※6 If enclosed in ( ), it comes with brake.

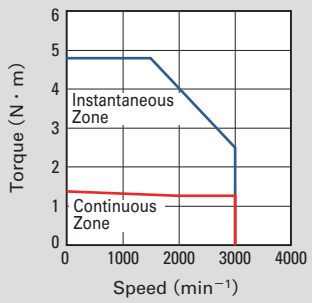
Speed-Torque Characteristics

Servo motor Model No./Flange Size/Rated Output

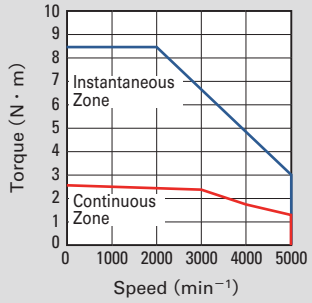
R5AA06020H／60mm／0.2kW



R5AA06040H／60mm／0.4 (0.38) kW※6



R5AA08075D／80mm／0.75 (0.71) kW※6

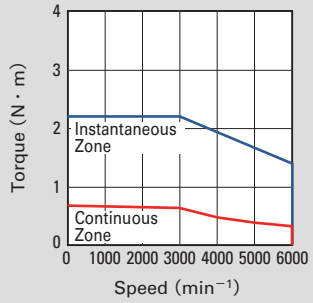


These values are for when the input power supply is a 3-phase AC 200 V circuit. The area of the instantaneous zone decreases when the power supply voltage is less than 200 V. Please contact us if the servo amp. power supply is a single-phase AC 200 V circuit.

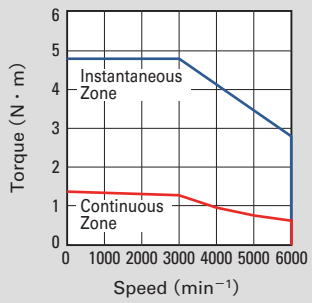
RS2A01□□	RS2A03□□		Servo Amplifier Model No.			
R5AA06020F 《60mm sq.》	R5AA06040F 《60mm sq.》	R5AA08075F 《80mm sq.》	Servo Motor Model No. and Flange Size			
			Unit	Symbol	Status	
0.2	0.4	0.75 (0.675) ※6	kW	P_R	★	Rated Output
3000	3000	3000	min^{-1}	N_R	★	Rated Speed
6000	6000	6000	min^{-1}	N_{max}	★	Maximum Speed
0.637	1.27	2.39	N·m	T_R	★	Rated Torque
0.686	1.37	2.55	N·m	T_S	★	Continuous Stall Torque
2.2	4.8	7.5	N·m	T_P	★	Peak Stall Torque
1.5	2.8	4.5	Arms	I_R	★	Rated Armature Current
1.6	2.8	4.5	Arms	I_S	★	Armature Stall Current
5.7	10.8	15.5	Arms	I_P	★	Peak Armature Stall Current
0.476	0.525	0.607	N·m/Arms	K_T	☆	Torque Constant
16.1	17.3	18.9	mV/min^{-1}	$K_{E\phi}$	☆	Voltage Constant for each Phase
2.7	1.36	0.51	Ω	R_ϕ	☆	Phase Resistance
20	39	35	kW/s	Q_R	★	Rated Power Rate
4.2	5.7	13	ms	te	☆	Electrical Time Constant
0.73	0.65	0.77	ms	tm	☆	Mechanical Time Constant (Not including Encoder)
0.198	0.414	1.65	×10-4kg·m²(GD²/4)	J_M		Roter Moment of Inertia ※1
0.0033 ※1			×10-4kg·m²(GD²/4)	J_S		Roter Moment of Inertia (Encoder)
0.96	1.4	3.6	kg	WE		Servo Motor Mass ※1
1.37 MIN.		2.55 MIN.	N·m	TB		Brake Static Friction Torque
DC90V / DC24V ± 10%			V	VB		Brake Rated Voltage
0.11 / 0.32		0.12 / 0.37	A	IB		Brake Rated Current
0.060	0.060	0.25	×10-4kg·m²(GD²/4)	JB		Roter Moment of Inertia (Brake)
0.39	0.39	0.89	kg	W		Brake Mass
Operating Temperature: 0 to 40℃, Relative Humidity: 90% maximum, no condensation						Servo Motor Operating Temp, Rel.Humidity
0.6	1.0	1.6	kVA			Servo amplifier power supply capacity (rating)
Yes						CE and UL approved servo motors ※5
IP65						Servo motor protection code
t6 × 250mm sq.						Size of aluminum plates for heat radiation during measurement

Servo motor Model No./Flange Size/Rated Output

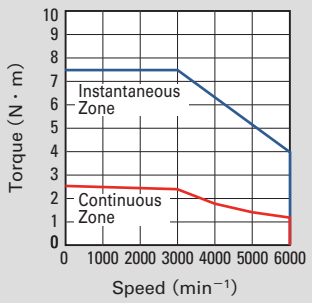
R5AA06020F／60mm／0.2kW



R5AA06040F／60mm／0.4kW



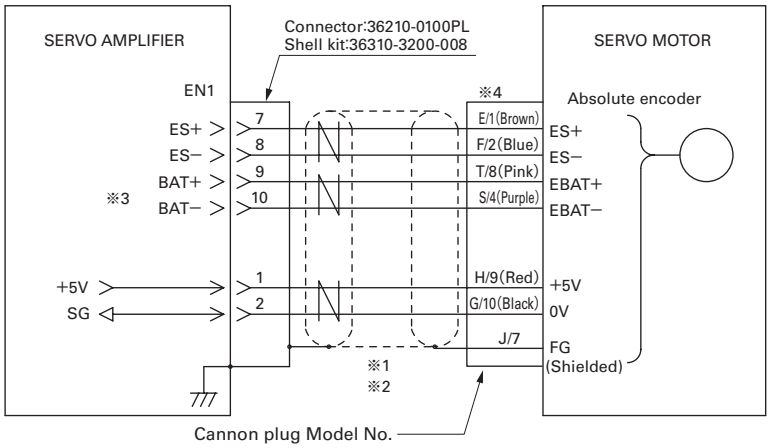
R5AA08075F／80mm／0.75 (0.675) kW※6



Encoder Wiring Diagram

Serial Encoder

- Battery backup type absolute encoder [PA035C]
- Absolute encoder for incremental system [PA035S]
- Batteryless absolute encoder [RA035C, HA062]



R1, R2 Servo Motor (Min. flange size: 130 mm sq.)	JN2DS10SL1-R	JN2FS10ML1-R
	JN2DS10SL2-R	JN2FS10ML2-R
	JN2DS10SL3-R	JN2FS10ML3-R
Q1 Servo Motor	N/MS3106B20-29S	
	N/MS3108B20-29S	

※1 Use a twisted-pair shielded cable.
※2 The maximum cable lengths under the conductor size of the power supply cable (5V,SG).

Conductor size		Conductor resistance	Length
AWG	SQ (mm²)	(Ω/km) ※20℃	(m)
26	0.15	150 or less	5
24	0.2	100 or less	10
22	0.3	60 or less	15
20	0.5	40 or less	25
18	0.75	25 or less	40

Conductor resistance is different by conductor specifications.

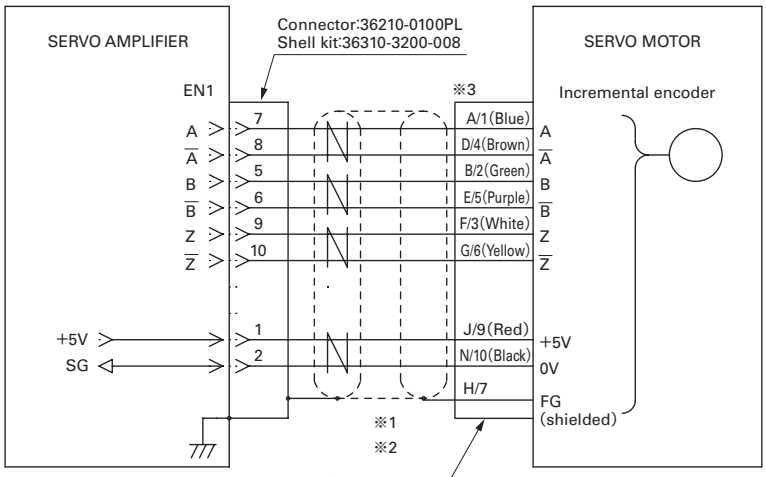
※3 When the absolute encoder for incremental system or batteryless absolute encoder is used, battery lines (EBAT+, EBAT-) are not required.
※4 Lead wire colors are indicated in parentheses.
The pin numbers of Cannon plug type: See the following table.

		ES+	ES−	EBAT+	EBAT−	+5V
R1, R2 Servo Motor	100mm sq. or less	Brown	Blue	Pink※3	Purple※3	Red
	130mm sq. or more	1	2	8※3	4※3	9
Q1 Servo Motor		E	F	T	S	H

		0V	FG
R1, R2 Servo Motor	100mm sq. or less	Black	Shield
	130mm sq. or more	10	7
Q1 Servo Motor		G	J

Pulse Encoder

- Wire-saving incremental encoder



Servo Motor Encoder Connectors ▶ P.61

Cannon plug Model No.

R1, R2 Servo Motor (Min. flange size: 130 mm sq.)	JN2DS10SL1-R	JN2FS10ML1-R
	JN2DS10SL2-R	JN2FS10ML2-R
	JN2DS10SL3-R	JN2FS10ML3-R
Q1 Servo Motor	N/MS3106B20-29S	
	N/MS3108B20-29S	

※1 Use a twisted-pair shielded cable.
※2 The maximum cable lengths under the conductor size of the power supply cable (5V,SG).

Conductor size		Conductor resistance	Length
AWG	SQ (mm²)	(Ω/km) ※20℃	(m)
26	0.15	150 or less	5
24	0.2	100 or less	10
22	0.3	60 or less	15
20	0.5	40 or less	25
18	0.75	25 or less	40

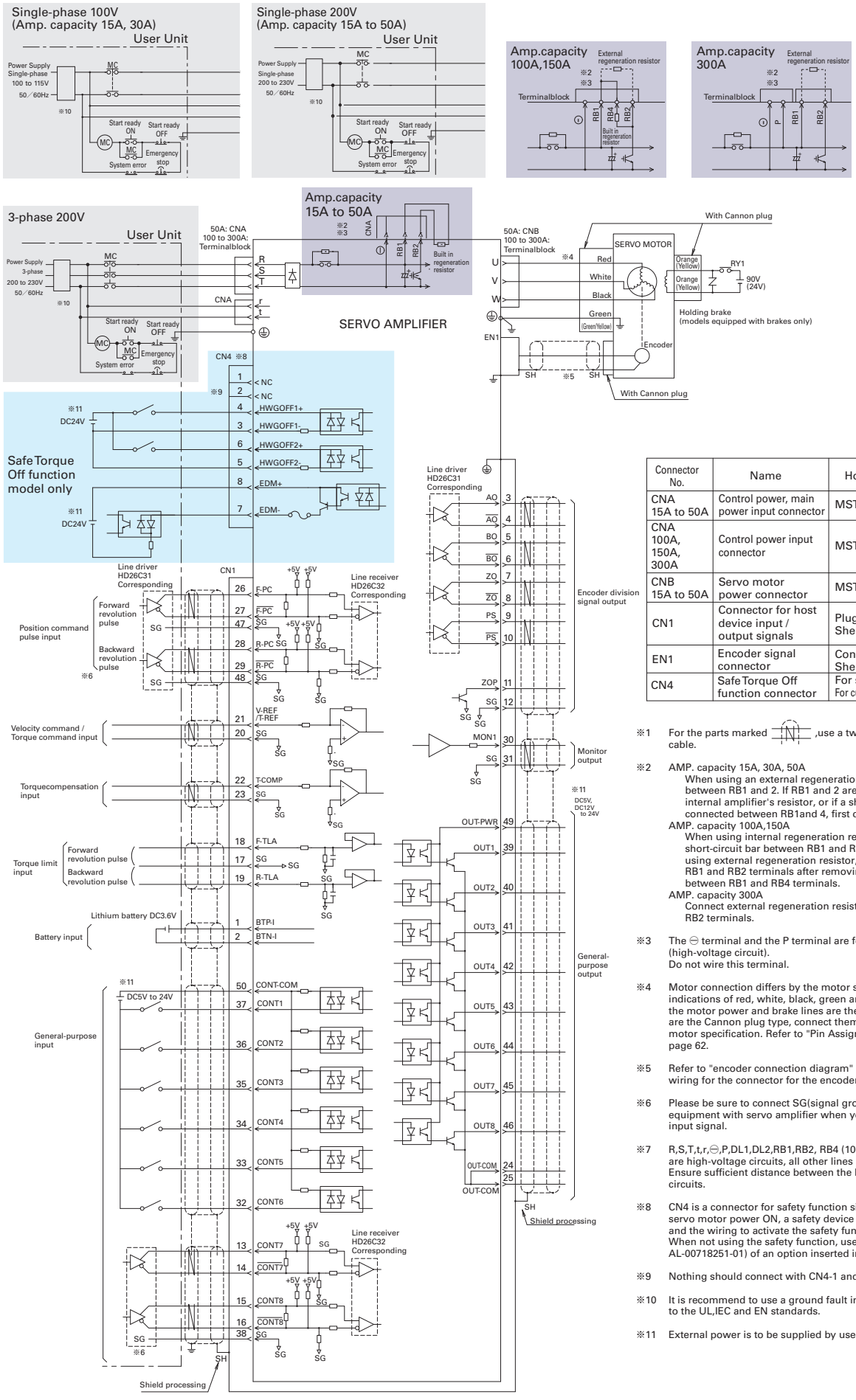
Conductor resistance is different by conductor specifications.

※3 Lead wire colors are indicated in parentheses.
The pin numbers of Cannon plug type: See the following table.

		A	Ā	B	B̄	Z
R1, R2 Servo Motor	100mm sq. or less	Blue	Brown	Green	Purple	White
	130mm sq. or more	1	4	2	5	3
Q1 Servo Motor		A	D	B	E	F

		Z̄	+5V	0V	FG
R1, R2 Servo Motor	100mm sq. or less	Yellow	Red	Black	Shield
	130mm sq. or more	6	9	10	7
Q1 Servo Motor		G	J	N	H

Analog/Pulse input type (NPN output)



Connector No.	Name	Housing, plug, shell
CNA 15A to 50A	Control power, main power input connector	MSTB2.5/8-STF-5.08LUB
CNA 100A, 150A, 300A	Control power input connector	MSTBT2.5/2-STF-5.08
CNB 15A to 50A	Servo motor power connector	MSTBT2.5/3-STF-5.08
CN1	Connector for host device input / output signals	Plug:10150-3000PE Shell:10350-52A0-008
EN1	Encoder signal connector	Connector:36210-0100PL Shell kit:36310-3200-008
CN4	Safe Torque Off function connector	For short-circuit:2040978-1 For customer wining:2013595-3

※1 For the parts marked , use a twisted pair shielded cable.

※2 AMP. capacity 15A, 30A, 50A
When using an external regeneration resistor, connect it between RB1 and 2. If RB1 and 2 are connected to the internal amplifier's resistor, or if a shorting bar is connected between RB1and 4, first disconnect them.
AMP. capacity 100A,150A
When using internal regeneration resistor, connect short-circuit bar between RB1 and RB4 terminals. When using external regeneration resistor, connect it between RB1 and RB2 terminals after removing short-circuit bar between RB1 and RB4 terminals.
AMP. capacity 300A
Connect external regeneration resistor between RB1 and RB2 terminals.

※3 The ⊖ terminal and the P terminal are for maintenance (high-voltage circuit).
Do not wire this terminal.

※4 Motor connection differs by the motor specifications. The indications of red, white, black, green and orange apply when the motor power and brake lines are the lead type. When they are the Cannon plug type, connect them according to the motor specification. Refer to "Pin Assignment Symbols" on page 62.

※5 Refer to "encoder connection diagram" on page 45 for the wiring for the connector for the encoder connection.

※6 Please be sure to connect SG(signal ground) between equipment with servo amplifier when you use a difference input signal.

※7 R,S,T,t,r,⊖,P,DL1,DL2,RB1,RB2, RB4 (100A, 150A only), U,V,W are high-voltage circuits, all other lines are low-voltage. Ensure sufficient distance between the high- and low-voltage circuits.

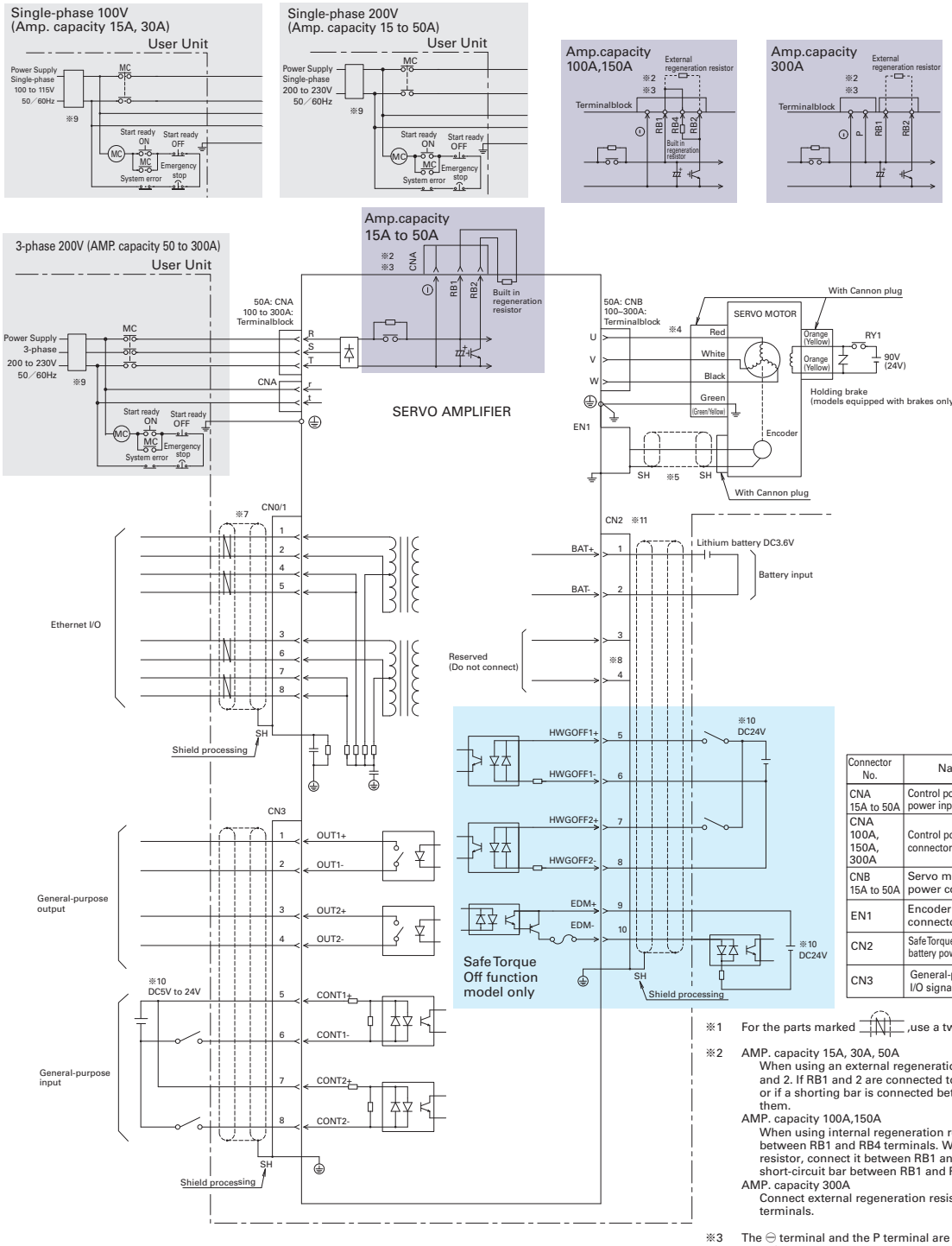
※8 CN4 is a connector for safety function signals. To turn the servo motor power ON, a safety device must be connected and the wiring to activate the safety function must be done. When not using the safety function, use the connector (P.N : AL-00718251-01) of an option inserted into the CN4.

※9 Nothing should connect with CN4-1 and 2pin.

※10 It is recommend to use a ground fault interrupter conforming to the UL,IEC and EN standards.

※11 External power is to be supplied by user.

EtherCAT interface type



Connector No.	Name	Housing, plug, shell
CNA 15A to 50A	Control power, main power input connector	MSTB2.5/8-STF-5.08LUB
CNA 100A, 150A, 300A	Control power input connector	MSTBT2.5/2-STF-5.08
CNB 15A to 50A	Servo motor power connector	MSTBT2.5/3-STF-5.08
EN1	Encoder signal connector	Connector:36210-0100PL Shell kit:36310-3200-008
CN2	Safe Torque Off function, battery power connector	MUF-PK10K-X
CN3	General-purpose I/O signal connector	2013595-3

※1 For the parts marked , use a twisted pair shielded cable.

※2 AMP. capacity 15A, 30A, 50A
When using an external regeneration resistor, connect it between RB1 and 2. If RB1 and 2 are connected to the internal amplifier's resistor, or if a shorting bar is connected between RB1and 4, first disconnect them.
AMP. capacity 100A,150A
When using internal regeneration resistor, connect short-circuit bar between RB1 and RB4 terminals. When using external regeneration resistor, connect it between RB1 and RB2 terminals after removing short-circuit bar between RB1 and RB4 terminals.
AMP. capacity 300A
Connect external regeneration resistor between RB1 and RB2 terminals.

※3 The ⊖ terminal and the P terminal are for maintenance (high voltage circuit).
Do not wire this terminal.

※4 Motor connection differs by the motor specifications. The indications of red, white, black, green and orange apply when the motor power and brake lines are the lead type. When they are the Cannon plug type, connect them according to the motor specification. Refer to "Pin Assignment Symbols" on page 62.

※5 Refer to "encoder connection diagram" on page 45 for the wiring for the connector for the encoder connection.

※6 R,S,T,t,r,⊖,,P,DL1,DL2,RB1,RB2, RB4 (100A, 150A only), U,V,W are high-voltage circuits, all other lines are low-voltage. Ensure sufficient distance between the high- and low-voltage circuits.

※7 Use a TIA category 5e or better shielded twisted pair (STP) cable.

※8 Nothing should connect with CN2-3 and 4pin.

※9 It is recommend to use a ground fault interrupter conforming to the UL,IEC and EN standards. Do not wire the S phase for a single-phase power amplifier.

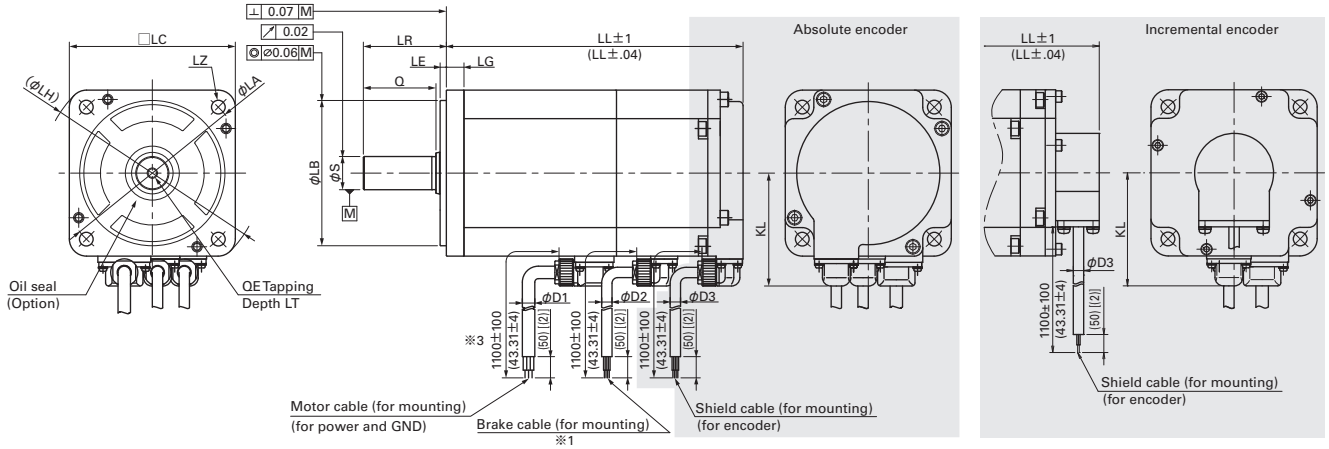
※10 External power is to be supplied by user.

※11 CN2 is a Safe Torque Off function connector. If it is not connected to the safety device to enable the Safe Torque Off function to work, the servo does not turn on (the motor is not energized).

Servo Motor Dimensions [Unit : mm (inch)]

40mm sq. to 100mm sq.

R2 Servo Motor Series
R5 Servo Motor Series



Dimensions with brake but without relay cable connector

	Battery backup method absolute encoder, Absolute encoder for incremental system				Incremental encoder					
	W/out oil seal		With oil seal		W/out oil seal		With oil seal			
	W/out brake	With brake	W/out brake	With brake	W/out brake	With brake	W/out brake	With brake		
Model	LL	LL	LL	LL	LL	LL	LL	LL	LG	KL
R2□A04003	51.5 (2.03)	87.5 (3.44)	56.5 (2.22)	92.5 (3.64)	63.5 (2.50)	99.5 (3.92)	68.5 (2.70)	104.5 (4.11)	5 (.2)	35.4 (1.39)
R2□A04005	56.5 (2.24)	92.5 (3.64)	61.5 (2.42)	97.5 (3.84)	68.5 (2.70)	104.5 (4.11)	73.5 (2.89)	109.5 (4.31)		
R2EA04008 R2AA04010	72 (2.80)	108 (4.25)	77 (3.03)	113 (4.45)	84 (3.31)	120 (4.72)	89 (3.50)	125 (4.92)		
R2□A06010	58.5 (2.30)	82.5 (3.25)	65.5 (2.58)	89.5 (3.52)	78.2 (3.08)	106.2 (4.18)	85.2 (3.35)	113.2 (4.46)	6 (.24)	44.6 (1.76)
R2□A06020	69.5 (2.74)	97.5 (3.84)	76.5 (3.01)	104.5 (4.11)	89.2 (3.51)	117.2 (4.61)	96.2 (3.79)	124.2 (4.89)		
R2AA06040	95.5 (3.76)	123.5 (4.86)	102.5 (4.04)	130.5 (5.14)	115.2 (4.54)	143.2 (5.64)	122.2 (4.81)	150.2 (5.91)		
R2AA08020	66.3 (2.61)	102 (4.02)	73.3 (2.89)	109 (4.29)	90 (3.54)	122.7 (4.83)	97 (3.82)	129.7 (5.11)	8 (.31)	54.4 (2.14)
R2AA08040	78.3 (3.08)	114 (4.49)	85.3 (3.36)	121 (4.76)	102 (4.02)	134.7 (5.30)	109 (4.29)	141.7 (5.58)		
R2AA08075	107.3 (4.22)	143 (5.63)	114.3 (4.50)	150 (5.91)	131 (5.16)	163.7 (6.44)	138 (5.43)	170.7 (6.72)		
R2AAB8075	114.3 (4.50)	140.2 (5.52)	114.3 (4.50)	140.2 (5.52)	128.8 (5.07)	154.7 (6.09)	128.8 (5.07)	154.7 (6.09)		59.4 (2.34)
R2AAB8100	137 (5.39)	163 (6.42)	137 (5.39)	163 (6.42)	151.5 (5.96)	177.4 (6.98)	151.5 (5.96)	177.4 (6.98)		
R2AA10075	111.3 (4.38)	128.8 (5.07)	111.3 (4.38)	128.8 (5.07)	—	—	—	—	10 (.39)	66.8 (2.63)
R2AA10100	128.3 (5.05)	145.8 (5.74)	128.3 (5.05)	145.8 (5.74)	—	—	—	—		
R5□□06020	72.5 (2.85)	100.5 (3.96)	79.5 (3.13)	107.5 (4.23)	92.2 (3.63)	120.2 (4.73)	99.2 (3.91)	127.2 (5.01)	6 (.24)	44.6 (1.76)
R5□□06040	98.5 (3.88)	126.5 (4.98)	105.5 (4.15)	133.5 (5.26)	118.2 (4.65)	146.2 (5.76)	125.2 (4.93)	153.2 (6.03)		
R5□□08075	110.3 (4.34)	146 (5.75)	117.3 (4.62)	153 (6.02)	134 (5.28)	166.7 (6.56)	141 (5.55)	173.7 (6.84)	8 (.31)	54.4 (2.14)

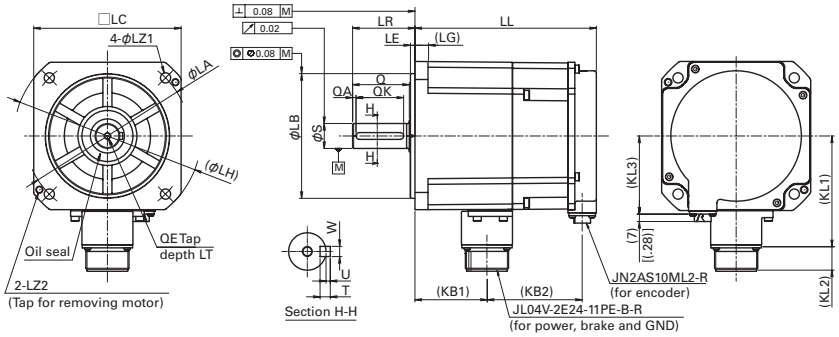
Model	LA	LB	LE	LH	LC	LZ	LR	S	Q	QE	LT	D1	D2	D3
R2□A04003 R2□A04005 R2EA04008 R2AA04010	46 (1.81)	0 30-0.021 (1.18- 0 .00084)	2.5 (.1)	56 (2.20)	40 (1.57)	2-ø4.5 (2-ø.18)	25 (.98)	0 6-0.008 (.24- 0 .00032) 0 8-0.009 (.31- 0 .0004)	20 (.79)	—	—	6 (.24)	5 (.20)	5 (.20)
R2□A06010	70 (2.76)	0 50-0.025 (1.97- 0 .001)	3 (.12)	82 (3.23)	60 (2.36)	4-ø5.5 (4-ø.22)	25 (.98)	0 8-0.009 (.31- 0 .0004)	25 (.98)	—	—			
R2□A06020 R2AA06040							30 (1.18)	0 14-0.011 (.55- 0 .0004)		M5	12 (.47)			
R2AA08020 R2AA08040	90 (3.54)	0 70-0.030 (2.76- 0 .0012)		108 (4.25)	80 (3.15)	4-ø6.6 (4-ø.264)								
R2AA08075							40 (1.57)	0 16-0.011 (.63- 0 .0004)	35 (1.38)	M5	12 (.47)			
R2AAB8075 R2AAB8100	100 (3.94)	0 80-0.030 (3.15- 0 .0012)		115.5 (4.55)	86 (3.39)	4-ø6.6 (4-ø.264)	35 (1.38)	0 16-0.011 (.63- 0 .0004)	30 (1.18)	M5	12 (.47)			
R2AA10075 R2AA10100	115 (4.53)	0 95-0.035 (3.74- 0 .0014)		130 (5.12)	100 (3.94)	4-ø9 (4-ø.35)	45 (1.77)	0 22-0.013 (.87- 0 .0005)	40 (1.57)	M6	20 (.79)			
R5□□06020 R5□□06040	70 (2.76)	0 50-0.025 (1.97- 0 .001)	3 (.12)	82 (3.23)	60 (2.36)	4-ø5.5 (4-ø.22)	30 (1.18)	0 14-0.011 (.55- 0 .0004)	25 (.98)	M5	12 (.47)			
R5□□08075	90 (3.54)	0 70-0.030 (2.76- 0 .0012)	3 (.12)	108 (4.25)	80 (3.15)	4-ø6.6 (4-ø.264)	40 (1.57)	0 16-0.011 (.63- 0 .0004)	35 (1.38)	M5	12 (.47)			

※1 Brake connectors (cables) are not supplied for models without brakes.
※2 A reduction in the rating might be needed if an oil seal and Brake is attached. Please consult with us about the details.
※3 The cable length of the motor with relay cable connector is 200±30mm. The connector is attached to the end of the cable.

For the following encoders, please make inquiries:
・Resolver method batteryless absolute encoder [RA035C], High precision batteryless optical absolute encoder [HA062].

130mm sq.

R2 Servo Motor Series 0.55kW to 1.8kW



Dimensions with the battery backup method absolute encoder and brake.

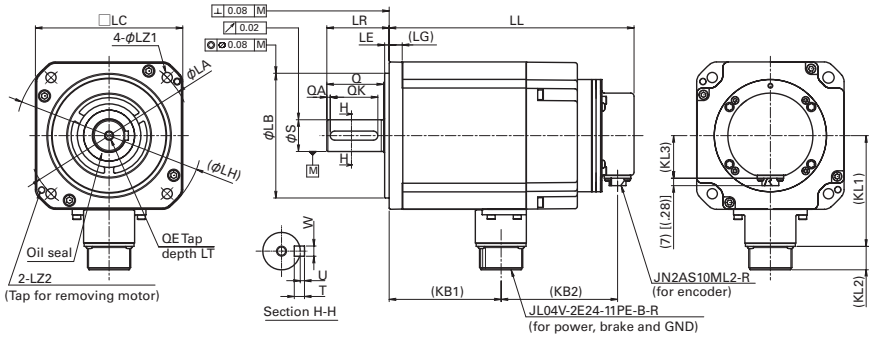
	Battery backup method absolute encoder, Absolute encoder for incremental system																
	Without brake			With brake													
Model	LL	KB2	KL3	LL	KB2	KL3	LG	KL1	KL2	LA	LB	LE	LH	LC	LZ1	LZ2	LR
R2AA13050	103 (4.06)	44 (1.73)	69 (2.72)	139.5 (5.49)	81 (3.19)	69 (2.72)	12 (.47)	98 (3.86)	21 (.83)	145 (5.71)	$0\ 110^{0}_{-0.035}\ 0\ (4.33^{0}_{-.0014})$	4 (.16)	165 (6.50)	130 (5.12)	9 (.35)	M6	55 (2.17)
R2AA13120	120.5 (4.74)			160 (6.30)	84 (3.31)												
R2AA13180	138 (5.43)			179 (7.05)	86 (3.39)												

Model	S	Q	QA	QK	W	T	U	KB1	QE	LT
R2AA13050	$0\ 22^{0}_{-0.013}\ 0\ (.87^{0}_{-.000052})$	50 (1.97)	3 (.12)	42 (1.65)	$0\ 6^{0}_{-0.030}\ 0\ (.24^{0}_{-.0012})$	6 (.24)	2.5 (.1)	46 (1.81)	M6	20 (.79)
R2AA13120								64 (2.52)		
R2AA13180								81 (3.19)		

For the following encoders, please make inquiries:
・Resolver method batteryless absolute encoder [RA035C], High precision batteryless optical absolute encoder [HA062].

130mm sq.

R2 Servo Motor Series 2kW



Dimensions with the battery backup method absolute encoder and brake.

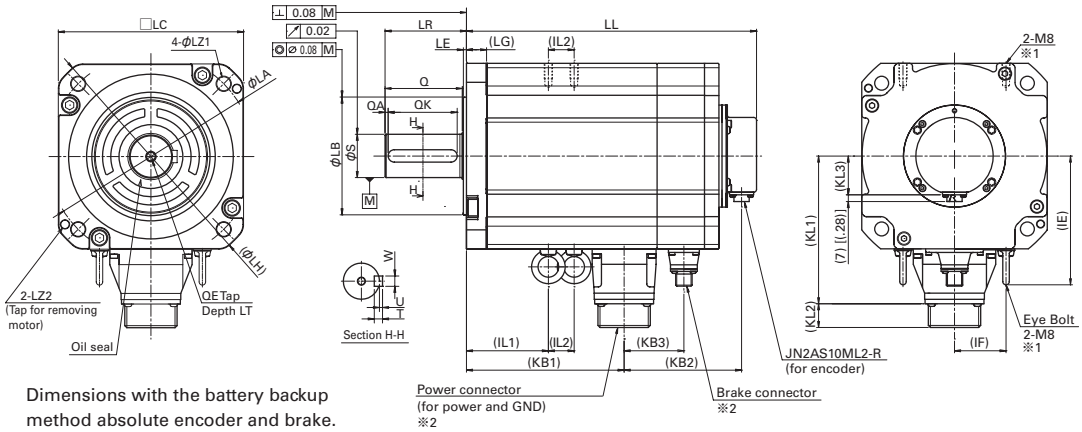
	Battery backup method absolute encoder, Absolute encoder for incremental system																
	Without brake			With brake													
Model	LL	KB2	KL3	LL	KB2	KL3	LG	KL1	KL2	LA	LB	LE	LH	LC	LZ1	LZ2	LR
R2AA13200	171 (6.73)	57 (2.24)	38 (1.50)	216 (8.50)	103 (4.06)	38 (1.50)	12 (.47)	98 (3.86)	21 (.83)	145 (5.71)	$0\ 110^{0}_{-0.035}\ 0\ (4.33^{0}_{-.0014})$	4 (.16)	165 (6.5)	130 (5.12)	9 (.35)	M6	55 (2.17)

Model	S	Q	QA	QK	W	T	U	KB1	QE	LT
R2AA13200	$0\ 28^{0}_{-0.013}\ 0\ (1.10^{0}_{-.00052})$	50 (1.97)	3 (.12)	42 (1.65)	$0\ 8^{0}_{-0.036}\ 0\ (.31^{0}_{-.0014})$	7 (.28)	3 (.12)	99 (3.90)	M8	25 (.98)

For the following encoders, please make inquiries:
・Resolver method batteryless absolute encoder [RA035C], High precision batteryless optical absolute encoder [HA062].

180mm sq.

R2 Servo Motor Series 3.5kW to 7.5kW



Dimensions with the battery backup method absolute encoder and brake.

Model	Battery backup method absolute encoder, Absolute encoder for incremental system																		
	Without brake				With brake														
	LL	KB2	KB3	KL3	LL	KB2	KB3	KL3	LG	KL1	KL2	LA	LB	LE	LH	LC	LZ1	LZ2	LR
R2AA18350	155 (6.10)	48 (1.89)	–	38 (1.50)	205 (8.07)	98 (3.86)	–	38 (1.50)	16 (.63)	123 (4.84)	21 (.83)	200 (7.87)	0 114.3−0.035 0 (4.500−.0014)	3 (.12)	230 (9.06)	180 (7.09)	13.5 (.53)	M8	65 (2.56)
R2AA18450	172 (6.77)				222 (8.74)														
R2AA18550	228 (8.98)	59 (2.32)			274 (10.79)	107 (4.21)	64 (2.52)		19 (.75)	144 (5.67)	22 (.87)								79 (3.11)
R2AA18750	273 (10.75)				329 (12.95)	117 (4.61)	74 (2.91)												

Model	S	Q	QA	QK	W	T	U	KB1	QE	LT	IE	IF	IL1	IL2	Power connector model No.	Brake connector model No.
R2AA18350	0 35−0.016 0 (1.38−.00064)	60 (2.36)	3 (.12)	50 (1.97)	0 10−0.036 0 (.39−.00141)	8 (.31)	3 (.12)	92 (3.62)	M8	25 (.98)	123 ※1 (4.84)	50 ※1 (1.97)	47 ※1 (1.85)	20 ※1 (.79)	JL04V-2E24-11PE-B-R	– ※2
R2AA18450								109 (4.29)					57 (2.24)	20 (.79)		
R2AA18550	0 42−0.016 0 (1.65−.00064)	75 (2.95)		67 (2.64)	0 12−0.043 0 (.47−.0017)			153 (6.02)	M10		123 (4.84)	50 (1.97)	63 (2.48)	41 (1.61)	JL04V-2E32-17PE-B-R	JL04V-2E10SL-3PE-B-R
R2AA18750								198 (7.80)						86 (3.39)		

※1 The R2AA18350 motor without brake comes with no eye bolt.

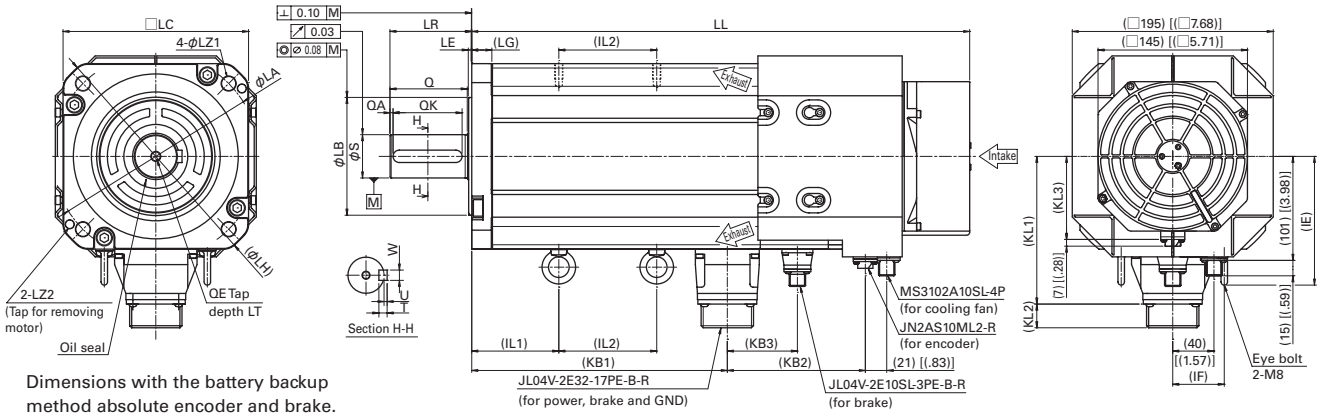
※2 For R2AA18350 and R2AA18450, the brake line is shared with the power connector.

For the following encoders, please make inquiries:

・Resolver method batteryless absolute encoder [RA035C], High precision batteryless optical absolute encoder [HA062].

180mm sq.

R2 Servo Motor Series 11kW



Dimensions with the battery backup method absolute encoder and brake.

Model	Battery backup method absolute encoder, Absolute encoder for incremental system																		
	Without brake				With brake														
	LL	KB2	KB3	KL3	LL	KB2	KB3	KL3	LG	KL1	KL2	LA	LB	LE	LH	LC	LZ1	LZ2	LR
R2AA1811K	395 (15.55)	60 (2.36)	–	81 (3.19)	467 (18.39)	133 (5.24)	90 (3.54)	81 (3.19)	19 (.75)	143 (5.63)	23 (.91)	200 (7.87)	0 114.3−0.035 0 (4.500−.0014)	3 (.12)	230 (9.06)	180 (7.09)	13.5 (.53)	M8	79 (3.11)

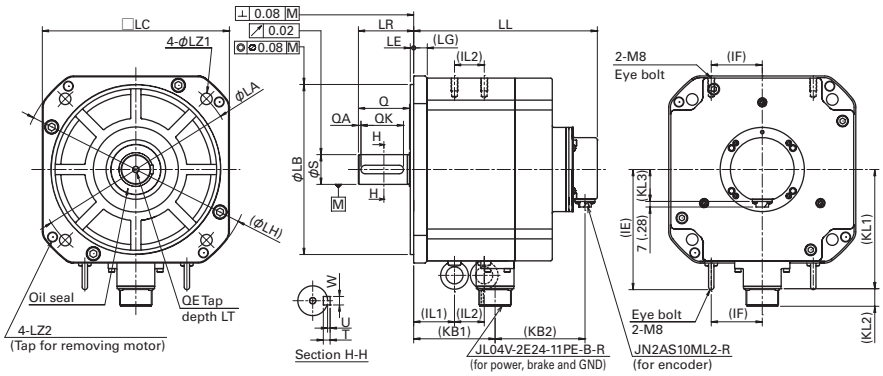
Model	S	Q	QA	QK	W	T	U	KB1	QE	LT	IE	IF	IL1	IL2
R2AA1811K	0 42−0.016 0 (1.65−.00064)	75 (2.95)	3 (.12)	67 (2.64)	0 12−0.043 0 (.47−.0017)	8 (.31)	3 (.12)	220 (8.66)	M10	25 (.98)	123 (4.84)	50 (1.97)	63 (2.48)	108 (4.25)

For the following encoders, please make inquiries:

・Resolver method batteryless absolute encoder [RA035C], High precision batteryless optical absolute encoder [HA062].

220mm sq.

R2 Servo Motor Series 5kW



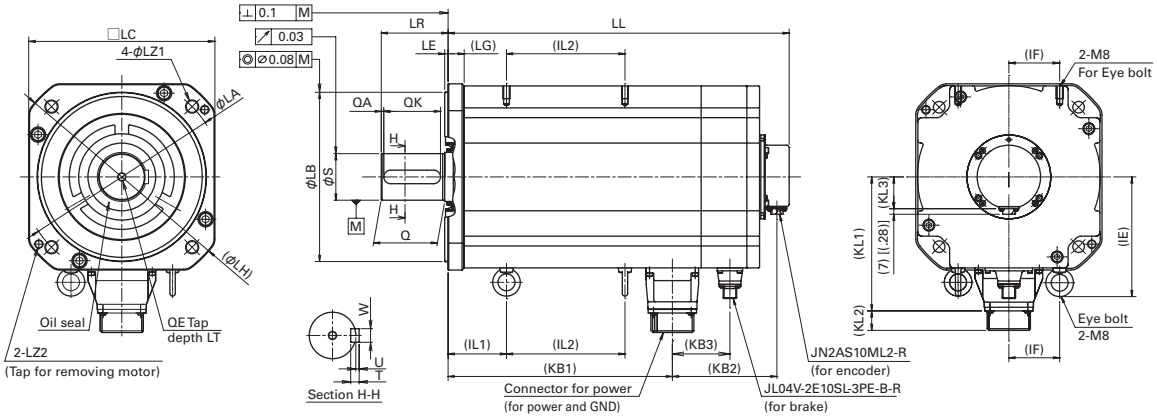
Dimensions with the battery backup method absolute encoder and brake.

	Battery backup method absolute encoder, Absolute encoder for incremental system																	
	Without brake			With brake														
Model	LL	KB2	KL3	LL	KB2	KL3	LG	KL1	KL2	KL3	LA	LB	LE	LH	LC	LZ1	LZ2	LR
R2AA22500	163 (6.42)	52 (2.05)	38 (1.50)	216 (8.5)	106 (4.17)	38 (1.50)	16 (.63)	142 (5.59)	21 (.83)	38 (1.50)	235 (9.25)	$^{0}_{200-0.046}$ $^{0}_{(7.87-.00184)}$	4 (.16)	270 (10.63)	220 (8.66)	13.5 (.53)	M12	65 (2.56)

Model	S	Q	QA	QK	W	T	U	KB1	QE	LT	IE	IF	IL1	IL2
R2AA22500	$^{0}_{35-0.016}$ $^{0}_{(1.38-.00064)}$	60 (2.36)	3 (.12)	50 (1.97)	$^{0}_{10-0.036}$ $^{0}_{(.39-.00143)}$	8 (.31)	3 (.12)	96 (3.78)	M8	25 (.98)	142 (5.59)	60 (2.36)	48 (1.89)	35 (1.38)

For the following encoders, please make inquiries:
・Resolver method batteryless absolute encoder [RA035C], High precision batteryless optical absolute encoder [HA062].

R2 Servo Motor Series 7kW to 15kW



Dimensions with the battery backup method absolute encoder and brake.

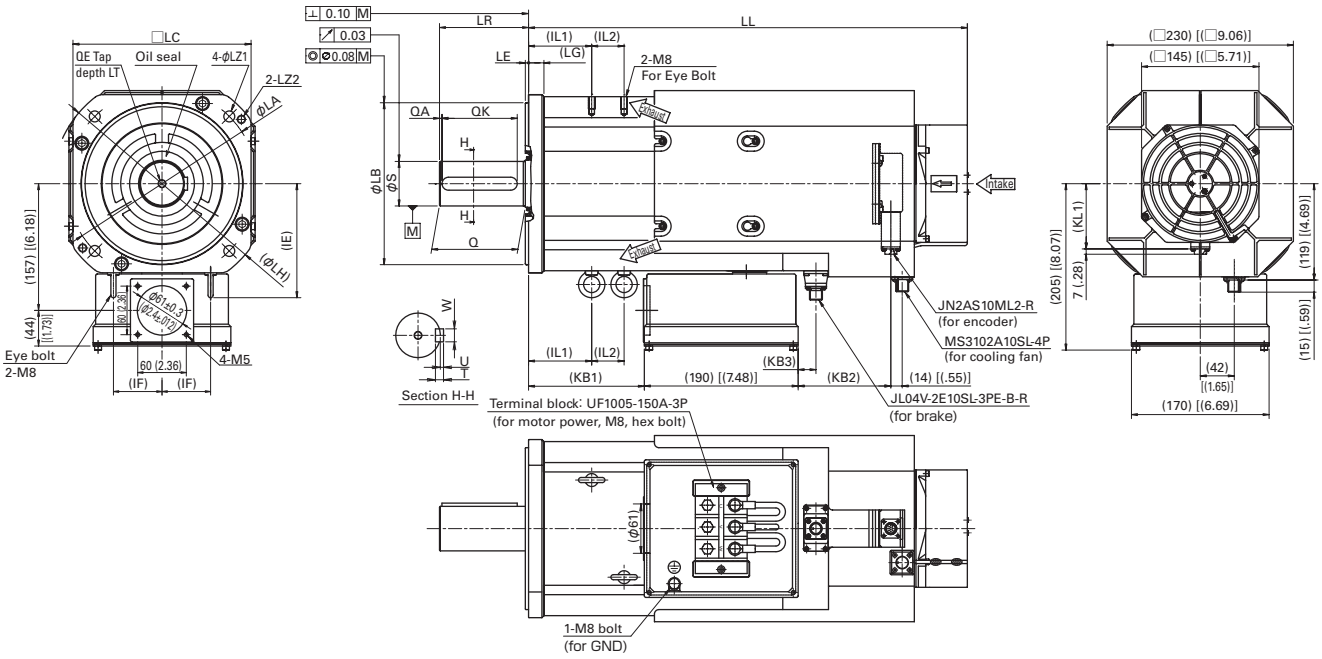
	Battery backup method absolute encoder, Absolute encoder for incremental system																			
	Without brake				With brake															
Model	LL	KB2	KB3	KL3	LL	KB2	KB3	KL3	LG	KL1	KL2	LA	LB	LE	LH	LC	LZ1	LZ2	LR	S
R2AA22700	265 (10.43)	54 (2.13)	—	38 (1.50)	325 (12.80)	114 (4.49)	57 (2.24)	38 (1.50)	19 (.75)	141 (5.55)	21 (.83)	235 (9.25)	$^{0}_{200-0.046}$ $^{0}_{(7.87-.00181)}$	4 (.16)	270 (10.63)	220 (8.66)	13.5 (.53)	M10	79 (3.11)	$^{0}_{55-0.019}$ $^{0}_{(2.17-.00074)}$
R2AA2211K	304 (11.97)	63 (2.48)			364 (14.33)	123 (4.84)	66 (2.60)			162 (6.38)	22 (.87)									
R2AA2215K	343 (13.50)				403 (15.87)															

Model	Q	QA	QK	W	T	U	KB1	QE	LT	IE	IF	IL1	IL2	Connector Model No. for Power
R2AA22700	75 (2.95)	3 (.12)	67 (2.64)	$^{0}_{16-0.043}$ $^{0}_{(.63-.0017)}$	10 (.39)	4 (.16)	196 (7.72)	M10	25 (.98)	142 (5.59)	60 (2.36)	69 (2.72)	62 (2.44)	JL04V-2E24-11PE-B-R
R2AA2211K							226 (8.90)						101 (3.98)	JL04V-2E32-17PE-B-R
R2AA2215K							265 (10.43)						140 (5.51)	

For the following encoders, please make inquiries:
・Resolver method batteryless absolute encoder [RA035C], High precision batteryless optical absolute encoder [HA062].

220mm sq.

R2 Servo Motor Series 20kW, 25kW



Dimensions with the battery backup method absolute encoder and brake.

	Battery backup method absolute encoder, Absolute encoder for incremental system																
	Without brake				With brake												
Model	LL	KB2	KB3	KL1	LL	KB2	KB3	KL1	LG	LA	LB	LE	LH	LC	LZ1	LZ2	LR
R2AA2220K	466 (18.35)	10 (.39)	—	80 (3.15)	570 (22.44)	114 (4.49)	22 (.87)	80 (3.15)	19 (.75)	235 (9.25)	$0\ 200^{-0.046}_{0}$ $(7.87^{-.00181}_{0})$	4 (.16)	270 (10.63)	220 (8.66)	13.5 (.53)	M10	110 (4.33)
R2AA2225K	505 (19.88)				609 (23.98)												

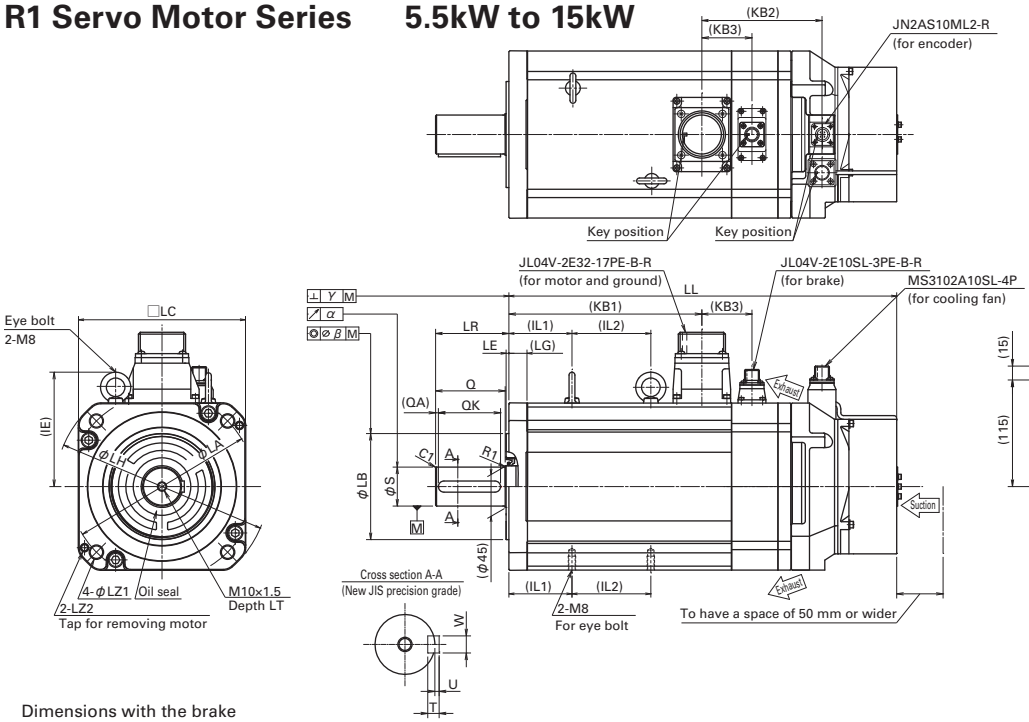
Model	S	Q	QA	QK	W	T	U	KB1	QE	LT	IE	IF	IL1	IL2
R2AA2220K	$0\ 55^{-0.019}_{0}$ $(2.17^{-.00074}_{0})$	106 (4.17)	3 (.12)	93 (3.66)	$0\ 16^{-0.043}_{0}$ $(.63^{-.0017}_{0})$	10 (.39)	4 (.16)	143 (5.63)	M10	25 (.98)	142 (5.59)	60 (2.36)	78 (3.07)	40 (1.57)
R2AA2225K								182 (7.17)					40 (1.57)	117 (4.61)

For the following encoders, please make inquiries:

・Resolver method batteryless absolute encoder [RA035C], High precision batteryless optical absolute encoder [HA062].

180mm sq.

R1 Servo Motor Series 5.5kW to 15kW



Dimensions with the brake

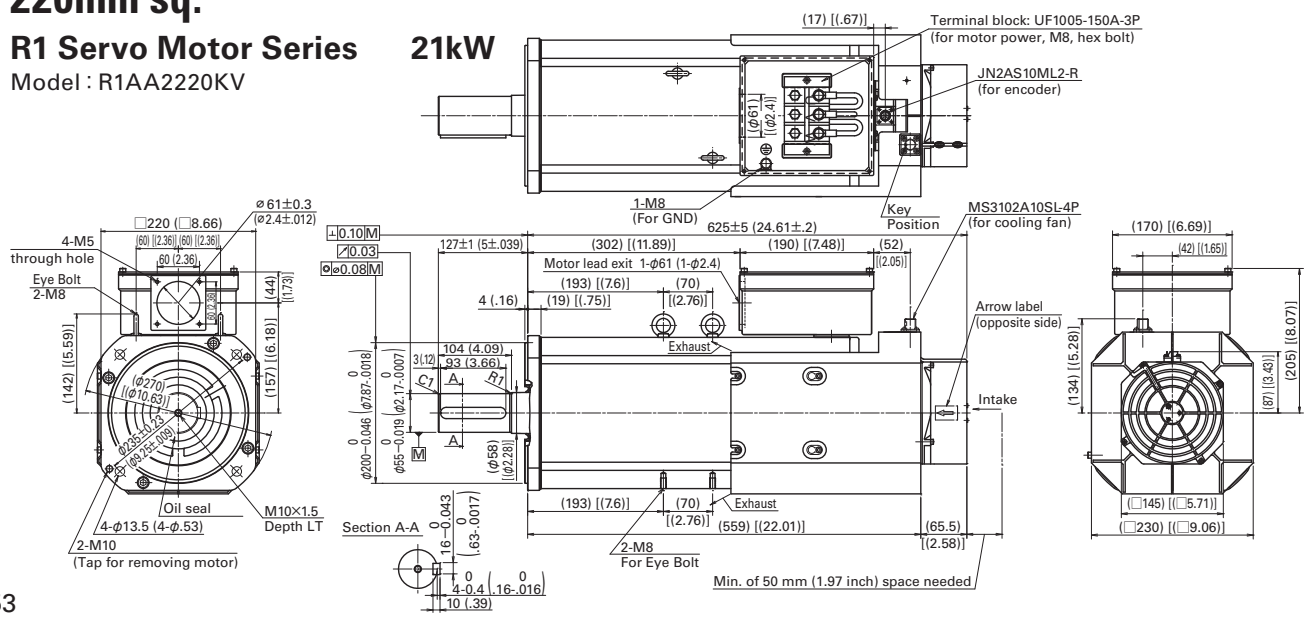
	Battery-backup method absolute encoder Absolute encoder for incremental systems																		
	W/out brake				With brake														
Model	LL	KB2	KB3	KL3	LL	KB2	KB3	KL3	LG	KL1	KL2	LA	LB	LE	LH	LC	LZ1	LZ2	LR
R1AA18550	333 (13.11)	80 (3.15)	–	81 (3.19)	383 (15.08)	130 (5.12)	54 (2.13)	81 (3.19)	19 (.75)	143 (5.63)	23 (.91)	200 (7.87)	ϕ 114.3 $^{0}_{-0.035}$ ϕ 4.50 $^{0}_{-.0014}$	3 (.12)	230 (9.06)	180 (7.09)	13.5 (.53)	M8	79 (3.11)
R1AA18750	368 (14.49)				418 (16.46)	130 (5.12)	54 (2.13)												
R1AA1811K	438 (17.24)				517 (20.35)	158 (6.22)	79 (3.11)												
R1AA1815K	516 (20.31)				628 (24.72)	191 (7.52)	110 (4.33)												

Model	S	Q	QA	QK	W	T	U	KB1	α	β	γ	QE	LT	IE	IF	IL1	IL2
R1AA18550	0 42 $^{-0.016}$ 0 (1.65 $^{-.00062}$)	75 (2.95)	3 (.12)	67 (2.64)	0 12 $^{-0.043}$ 0 (.47 $^{-.0017}$)	8 (.31)	3 (.12)	173 (6.81)	0.02 (.0008)	0.08 (.0031)	0.08 (.0031)	M10	25 (.98)	124 (4.88)	50 (1.97)	54 (2.13)	65 (2.56)
R1AA18750								208 (8.19)								68 (2.68)	85 (3.35)
R1AA1811K								278 (10.94)								68 (2.68)	163 (6.42)
R1AA1815K	0 55 $^{-0.019}$ 0 (2.17 $^{-.00074}$)				0 16 $^{-0.043}$ 0 (.63 $^{-.0017}$)	10 (.39)	4 (.16)	356 (14.02)	0.03 (.0012)	0.08 (.0031)	0.10 (.004)					92 (3.62)	210 (8.27)

220mm sq.

R1 Servo Motor Series 21kW

Model : R1AA2220KV



100mm sq. to 130mm sq.

Q1 Servo Motor Series

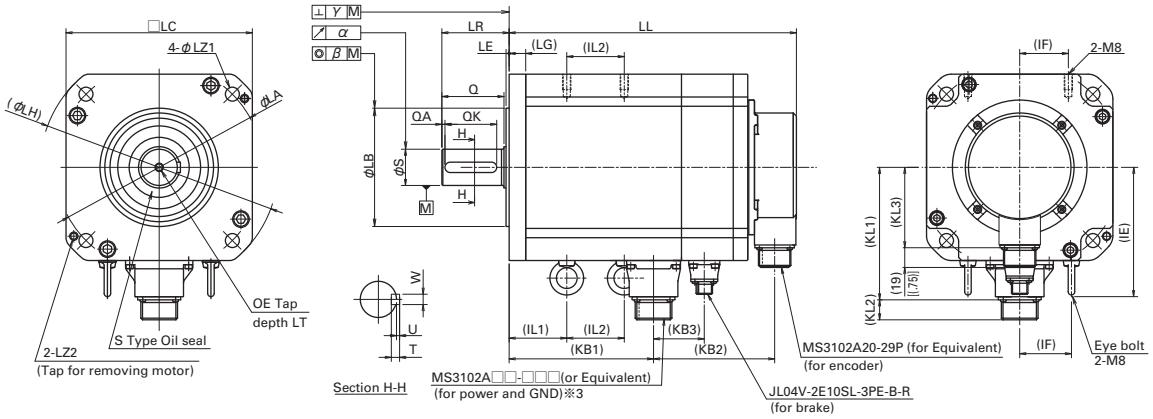


Diagram shows motor with brake attached.

	Incremental encoder																			
	Without brake		With brake																	
Model	LL	KB2	LL	KB2	KB3	LG	KL1	KL2	KL3	LA	LB	LE	LH	LC	LZ1	LZ2	LR	S	Q	QA
Q1AA10100	184 (7.24)	80 (3.15)	219 (8.62)	116 (4.57)	51 (2.01)	10 (.39)	78 (3.07)	19 (.75)	63 (2.48)	115 (4.53)	0 95-0.035 0 (3.74-.0014)	3 (.12)	130 (5.12)	100 (3.94)	9 (.35)	-	45 (1.77)	0 22-0.013 0 (.87-.00052)	40 (1.57)	3 (.12)
Q1AA10150	209 (8.23)		244 (9.61)																	
Q1AA10200	234 (9.21)		269 (10.59)																	
Q1AA10250	259 (10.20)		294 (11.57)																	
Q1AA12100	168 (6.61)	72 (2.83)	204 (8.03)	108 (4.25)	45 (1.77)	12 (.47)	93 (3.66)	21 (.83)	67 (2.64)	135 (5.31)	0 110-0.035 0 (4.33-.0014)	3 (.12)	162 (6.38)	120 (4.72)	9 (.35)	-	45 (1.77)	0 22-0.013 0 (.87-.00052)	40 (1.57)	3 (.12)
Q1AA12200	205 (8.07)		241 (9.49)																	
Q1AA12300	242 (9.53)		278 (10.94)														55 (2.17)	0 28-0.013 0 (1.10-.00052)	50 (1.97)	3 (.12)
Q1AA13300	205 (8.07)	67 (2.64)	254 (10.00)	117 (4.61)	-	12 (.47)	98 (3.86)	21 (.83)	80 (3.15)	145 (5.71)	0 110-0.035 0 (4.33-.0014)	4 (.16)	165 (6.5)	130 (5.12)	9 (.35)	M6	55 (2.17)	0 28-0.013 0 (1.10-.00052)	50 (1.97)	3 (.12)
Q1AA13400	232 (9.13)		281 (11.06)																	
Q1AA13500	269 (10.59)		318 (12.52)																	

Model	QK	W	T	U	KB1	α	β	γ	QE	LT	IE	IF	IL1	IL2	Power connector model No. ※1	Brake connector model No. ※2
Q1AA10100	32 (1.26)	0 6-0.030 0 (.24-.0012)	6 (.24)	2.5 (.1)	84 (3.31)	0.02 (.0008)	0.08 (.0031)	0.08 (.0031)	M6	20 (.79)	-	-	-	-	MS3102A20-15P	JL04V-2E10SL-3PE-B-R
Q1AA10150					109 (4.29)											
Q1AA10200					134 (5.28)											
Q1AA10250					159 (6.26)											
Q1AA12100	32 (1.26)	0 6-0.030 0 (.24-.0012)	6 (.24)	2.5 (.1)	76 (2.99)	0.02 (.0008)	0.08 (.0031)	0.08 (.0031)	M6	20 (.79)	-	-	-	-	MS3102A24-11P	JL04V-2E10SL-3PE-B-R
Q1AA12200					113 (4.45)											
Q1AA12300	42 (1.65)	0 8-0.036 0 (.31-.0012)	7 (.28)	3 (.12)	150 (5.91)				M8	25 (.98)						
Q1AA13300	42 (1.65)	0 8-0.036 0 (.31-.0012)	7 (.28)	3 (.12)	117 (4.61)	0.02 (.0008)	0.08 (.0031)	0.08 (.0031)	M8	25 (.98)	-	-	-	-	MS3102A24-11P※3	
Q1AA13400					144 (5.67)											
Q1AA13500					181 (7.13)											

※1 Waterproof specification IP67 requires that the connector to be attached ; for IP67 compliance, use a waterproof connector for the mating plug.

※2 All brake connectors are JL04V-2E10SL-3PE-B-R for CE compliant DC24V brakes.

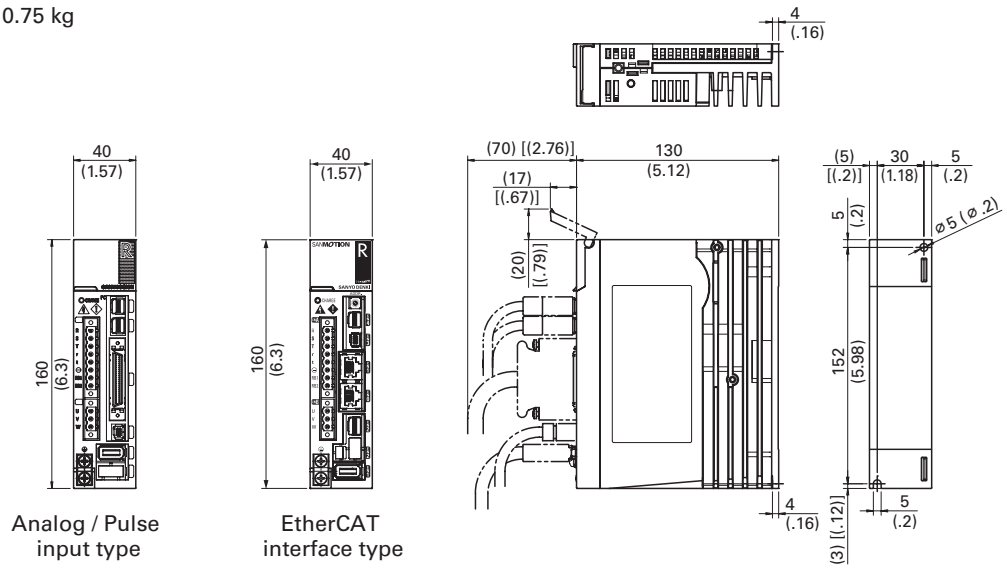
※3 For Q1AA13□00, the brake line is shared with the power connector.

※Please inquire for the dimensions with the absolute encoder.

Servo Amplifier Dimensions [Unit : mm (inch)]

15A

Mass: 0.75 kg

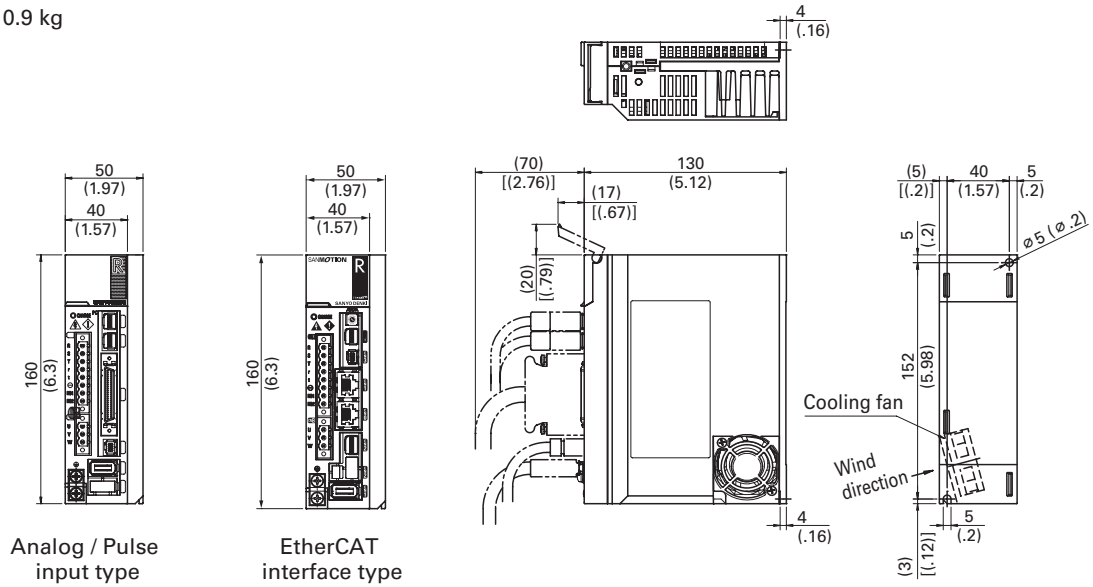


Analog / Pulse input type

EtherCAT interface type

30A

Mass: 0.9 kg

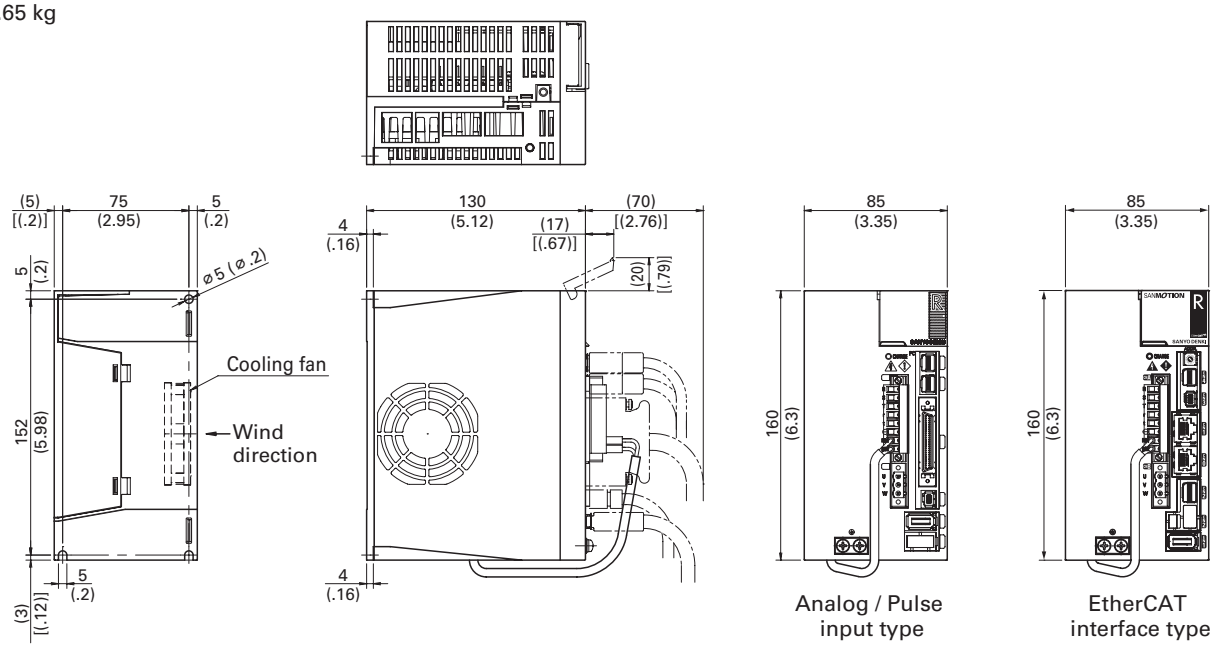


Analog / Pulse input type

EtherCAT interface type

50A

Mass: 1.65 kg



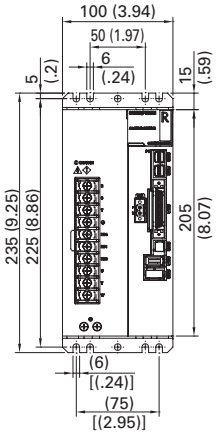
Analog / Pulse input type

EtherCAT interface type

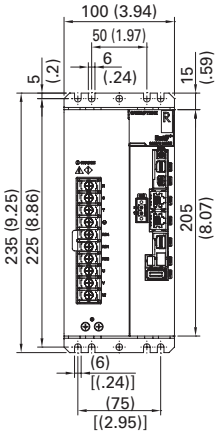
100A

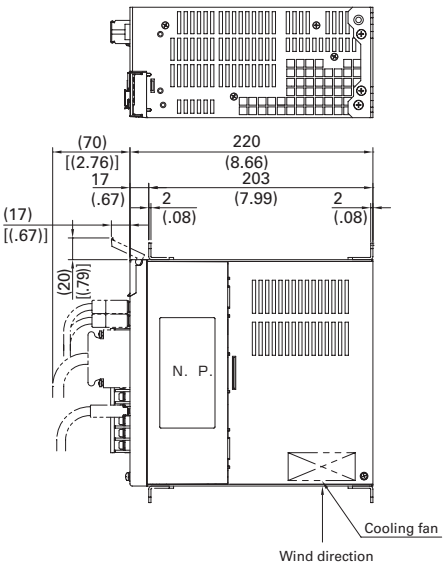
Mass: 5.0 kg

Analog / Pulse input type



EtherCAT interface type

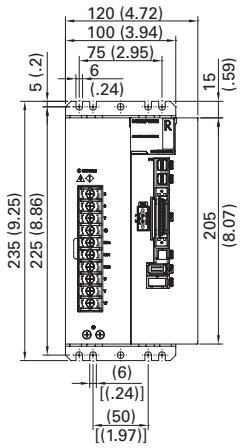




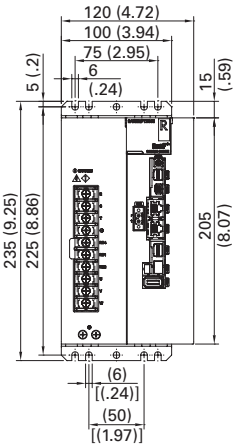
150A

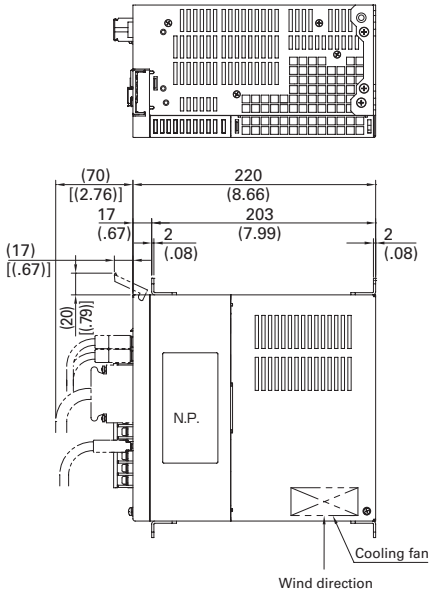
Mass: 5.3 kg

Analog / Pulse input type



EtherCAT interface type

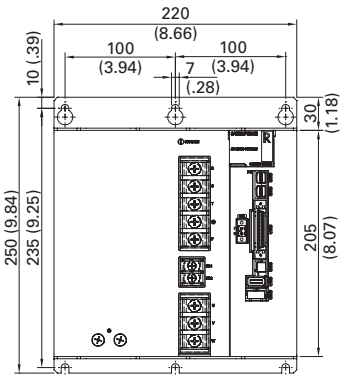




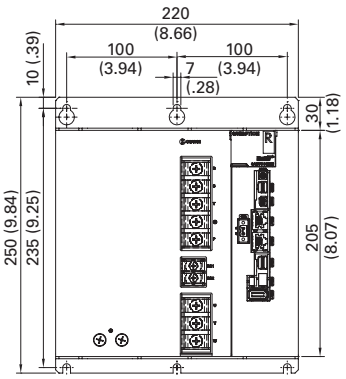
300A

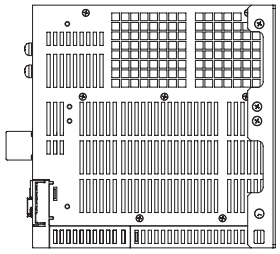
Mass: 9.6 kg

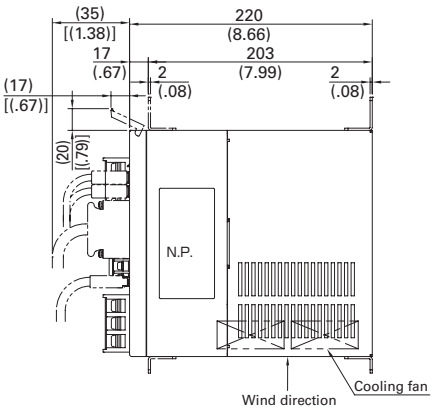
Analog / Pulse input type



EtherCAT interface type



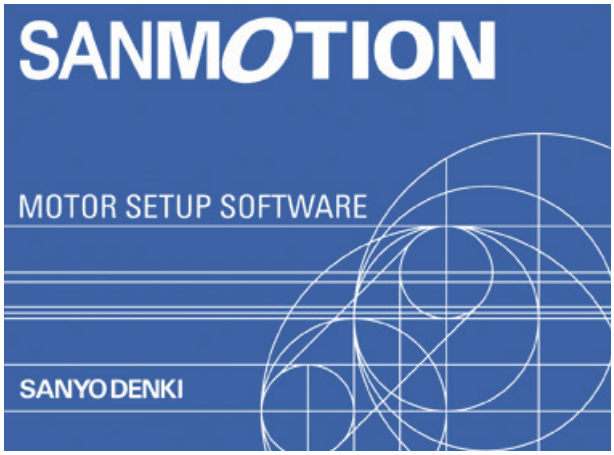




Setup Software

This software allows you to set servo system parameters from a PC.
It also allows you to easily start up or test run the servo system.
The software can be downloaded from Product Information on our website.
URL : http://www.sanyodenki.com

Start-up screen



■ Setup software title:

SANMOTION MOTOR SETUP SOFTWARE

■ Main Functions

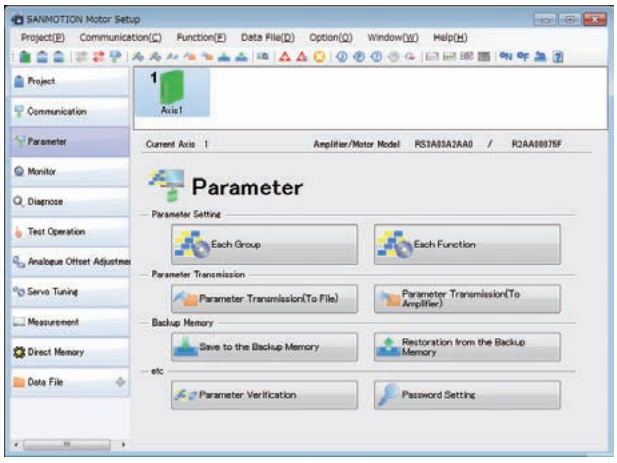
Parameter settings (settings by group, settings by function)
Diagnosis (alarm display, warning display, alarm cancellation)
Test run execution (speed JOG, position JOG, motor starting point search, serial encoder clearance)
Servo tuning (notch filter tuning, FF vibration control frequency tuning)
Various measurement functions (operating waveform display, machinery frequency response measurement)

■ Supported OS

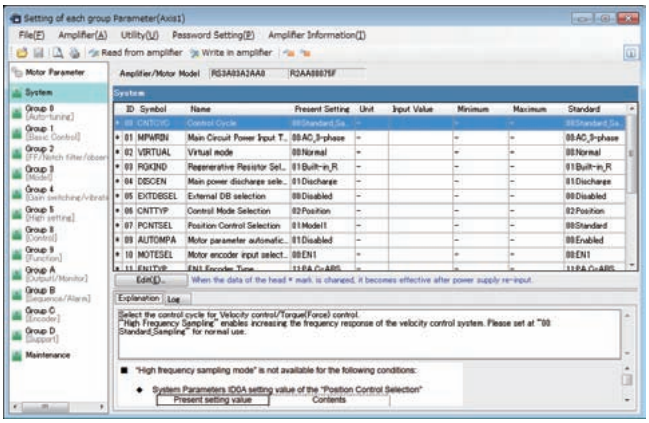
Windows XP (SP3 or higher) / Vista / 7 / 8

* See our website for details on supported versions.

Main screen

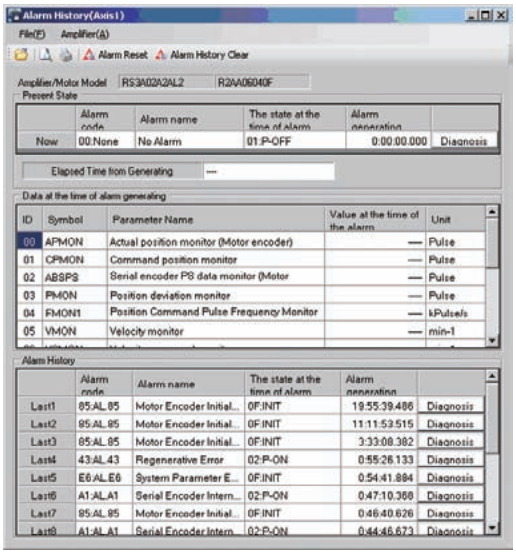


Setting of each group Parameter



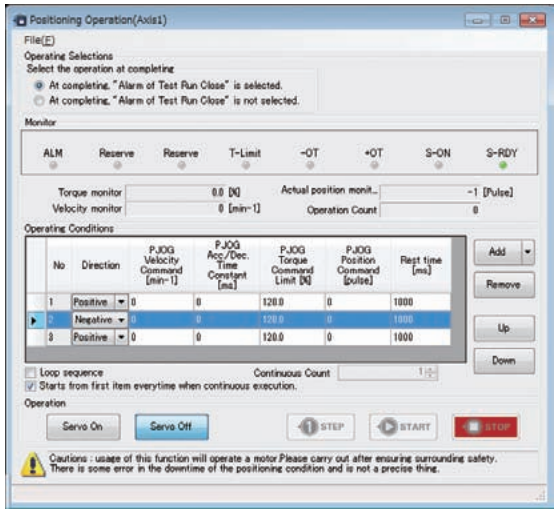
Parameters can be set, saved, and read from a PC.

Diagnosis screen



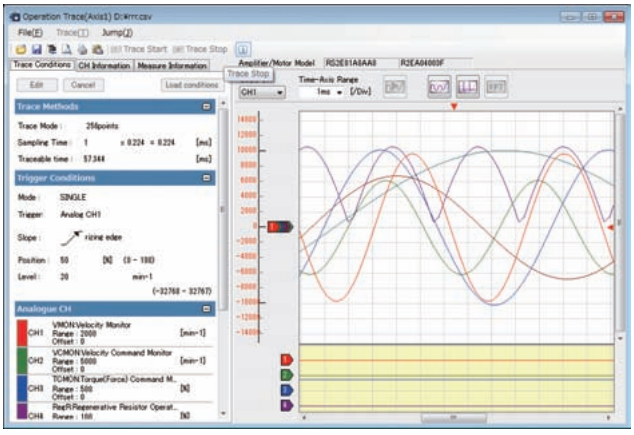
The current and previous 7 alarm occurrences can be checked.

Test run



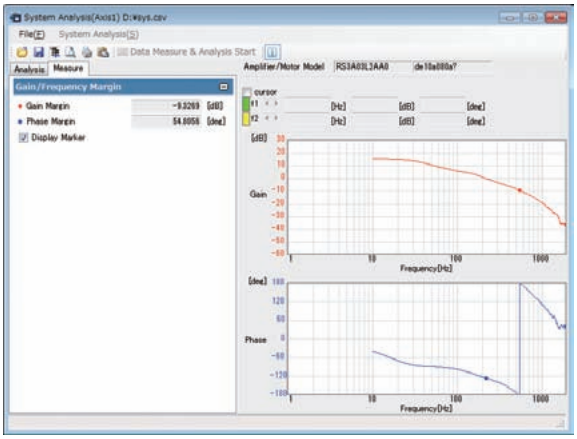
Simple test run of servo motor by issuing velocity commands and position commands from a PC. (Position JOG in operation shown in screen)

Measurement



Operation Trace

Graphically displays servo motor's speed, torque and internal status.



System Analysis

Analyzes servo system frequency characteristics.

Connectors of Servo Amplifier Analog/Pulse input type

15A, 30A, 50A

Single Connectors

Connector No.	Item	Model No.	Manufacturer model No.	Manufacturer
CN1	To connect host device	AL-00385594	10150-3000PE 10350-52A0-008	Sumitomo 3M Limited
EN1, EN2	To connect encoder	AL-00632607	36210-0100PL 36310-3200-008	
CNA	For input power supply, regeneration resistor connection	AL-00686902-01	MSTBT2.5/8-STF-5.08LUB	Phoenix Contact.K.K
CNB	To connect servo motor	AL-Y0004079-01	MSTBT2.5/3-STF-5.08	
CN4 ※1	To connect safety device (For short-circuiting)	AL-00718251-01	2040978-1	Tyco Electronics Japan G.K.
CN4	To connect safety device (For wiring)	AL-00718252-01	2013595-3	

※1 When wiring for CN4 is not performed, make sure to insert safety device connector (for short-circuiting) to CN4 on servo amplifier.

Connector sets (No safe-torque-off function)

Connector No.	Item	Model No.	Applicable servo amplifier model No.	Remarks
CN1,EN1,CNA,CNB	Standard	AL-00723282	RS2□□□A0□L0/RS2□□□A8□L0	Without regeneration resistance
CN1,EN1,CNB		AL-00723284	RS2□□□A0□A0/RS2□□□A8□A0	With regeneration resistance
CN1,EN1,EN2,CNA,CNB	For fully closed control system	AL-00723286	RS2□□□A2□L0/RS2□□□AA□L0	Without regeneration resistance
CN1,EN1,EN2,CNB		AL-00723288	RS2□□□A2□A0/RS2□□□AA□A0	With regeneration resistance
CN1,EN1	Low voltage set	AL-00723290	RS2□□□A0□□0/RS2□□□A8□□0	—
CNA,CNB	High voltage set	AL-00696037	RS2□□□A□□L0	Without regeneration resistance

Connector sets (With safe-torque-off function)

Connector No.	Item	Model No.	Applicable servo amplifier model No.	Remarks
CN1,EN1,CNA,CNB,CN4	Standard	AL-00723155	RS2□□□A0□L2(4)/RS2□□□A8□L2(4)	Without regeneration resistance
CN1,EN1,CNB,CN4		AL-00723156	RS2□□□A0□A2(4)/RS2□□□A8□A2(4)	With regeneration resistance
CN1,EN1,EN2,CNA,CNB,CN4	For fully closed control system	AL-00723157	RS2□□□A2□L2(4)/RS2□□□AA□L2(4)	Without regeneration resistance
CN1,EN1,EN2,CNB,CN4		AL-00723158	RS2□□□A2□A2(4)/RS2□□□AA□A2(4)	With regeneration resistance
CN1,EN1,CN4	Low voltage set	AL-00723159	RS2□□□A0□□2(4)/RS2□□□A8□□2(4)	—

※ CN4 of the connector set is for safety device connection (wiring) with model number AL-00718252-01.

100A, 150A, 300A

Single Connectors

Connector No.	Item	Model No.	Manufacturer model No.	Manufacturer
CN1	To connect host device	AL-00385594	10150-3000PE 10350-52A0-008	Sumitomo 3M Limited
EN1, EN2	To connect encoder	AL-00632607	36210-0100PL 36310-3200-008	
CNA	To input control power	AL-Y0005159-01	MSTBT2.5/2-STF-5.08	Phoenix Contact.K.K
CN4 ※1	To connect safety device (For short-circuiting)	AL-00718251-01	2040978-1	Tyco Electronics Japan G.K.
CN4	To connect safety device (For wiring)	AL-00718252-01	2013595-3	

※1 When wiring for CN4 is not performed, make sure to insert safety device connector (for short-circuiting) to CN4 on servo amplifier.

Connector sets (No safe-torque-off function)

Connector No.	Item	Model No.	Applicable servo amplifier model No.
CN1,EN1,CNA	Standard	AL-00751448	RS2□□□A0A□0/RS2□□□A8A□0
CN1,EN1,EN2,CNA	For fully closed control system	AL-00751450	RS2□□□A2A□0/RS2□□□AAA□0
CN1,EN1	Low voltage set	AL-00723290	RS2□□□A0A□0/RS2□□□A8A□0

Connector sets (With safe-torque-off function)

Connector No.	Item	Model No.	Applicable servo amplifier model No.
CN1,EN1,CNA,CN4	Standard	AL-00751452	RS2□□□A0A□2(4)/RS2□□□A8A□2(4)
CN1,EN1,EN2,CNA,CN4	For fully closed control system	AL-00751454	RS2□□□A2A□2(4)/RS2□□□AAA□2(4)
CN1,EN1,CN4	Low voltage set	AL-00723159	RS2□□□A0A□2(4)/RS2□□□A8A□2(4)

Connector for Servo Amplifier　EtherCAT interface type

15A, 30A, 50A

Single Connectors

Connector No.	Item	Model No.	Manufacturer model No.	Manufacturer
CN0,CN1	Ethernet For host device connection	Not provided by our company. Please use shielded type modular plug (RJ-45) corresponding to the CAT5e standard.		
EN1,EN2	For encoder connection	AL-00632607	36210-0100PL 36310-3200-008	Sumitomo 3M Limited
CNA	For input power supply, regeneration resistor connection	AL-00686902-01	MSTBT2.5/8-STF-5.08LUB	Phoenix Contact.K.K
CNB	For servo motor connection	AL-Y0004079-01	MSTBT2.5/3-STF-5.08	Phoenix Contact.K.K
CN2	For safety device connection	AL-Y0004290-02	MUF-PK10K-X	J.S.T Mfg Co.,Ltd.
CN3	For general I/O	AL-00718252-01	2013595-3	Tyco Electronics Japan G.K.

Connector sets

Connector No.	Item	Model No.	Applicable servo amplifier model No.	Remarks
CNA,CNB,EN1,CN2,CN3	Standard	AL-00734194	RS2□□□A0KL□/RS2□□□A8KL□	Without regeneration resistance
CNB,EN1,CN2,CN3		AL-00734196	RS2□□□A0KA□/RS2□□□A8KA□	With regeneration resistance
CNA,CNB,EN1,EN2,CN2,CN3	For fully closed	AL-00734195	RS2□□□A2KL□/RS2□□□AAKL□	Without regeneration resistance
CNB,EN1,EN2,CN2,CN3	control system	AL-00734197	RS2□□□A2KA□/RS2□□□AAKA□	With regeneration resistance

100A, 150A, 300A

Single Connectors

Connector No.	Item	Model No.	Manufacturer model No.	Manufacturer
CN0,CN1	Ethernet For host device connection	Not provided by our company. Please use shielded type modular plug (RJ-45) corresponding to the CAT5e standard.		
EN1, EN2	For encoder connection	AL-00632607	36210-0100PL 36310-3200-008	Sumitomo 3M Limited
CNA	To input control power	AL-Y0005159-01	MSTBT2.5/2-STF-5.08	Phoenix Contact.K.K
CN2	For safety device connection	AL-Y0004290-02	MUF-PK10K-X	J.S.T Mfg Co.,Ltd.
CN3	For general I/O	AL-00718252-01	2013595-3	Tyco Electronics Japan G.K.

Connector sets

Connector No.	Item	Model No.	Applicable servo amplifier model No.
CNA,EN1,CN2,CN3	Standard	AL-00756240	RS2□□□A0K□□/RS2□□□A8K□□
CNA,EN1,EN2,CN2,CN3	For fully closed control system	AL-00756242	RS2□□□A2K□□/RS2□□□AAK□□
EN1,CN2,CN3	Low voltage set	AL-00756244	RS2□□□A0K□□/RS2□□□A8K□□
EN1,EN2,CN2,CN3	For fully closed control system Low voltage set	AL-00756246	RS2□□□A2K□□/RS2□□□AAK□□

Servo Motor Encoder Connectors Model No.

R2 Servo Motor

Motor type	Encoder receptacle	Applicable cable diameter (bushing color phase)	Combination plug for encoder (with rubber bushing)		Pin Layout Symbol
			Straight	Angle	
All R2 Servo Motor Models	JN2AS10ML2-R	ϕ 5.7 to 7.3 (Black)	JN2DS10SL1-R	JN2FS10SL1-R	See the encoder wiring diagram on Page 45.
		ϕ 6.5 to 8.0 (Gray)	JN2DS10SL2-R	JN2FS10SL2-R	
		ϕ 3.5 to 5.0 (Brick)	JN2DS10SL3-R	JN2FS10SL3-R	

Please select the correct plug and contacts for the size of cable to be used. The manufacturer's model number and the model number for parts procured from SANYO DENKI are the same number.

Applicable contact for encoder plug ※1, 2

Contact size	Category	Applicable contact	
		Socket contact model No.	Applicable wire size
#22	Manual crimp tool type ※3, 4	JN1-22-20S-R-PKG100	AWG #20
		JN1-22-22S-PKG100	AWG #21 to #25
		JN1-22-26S-PKG100	AWG #26 to #28
	Solder type	JN1-22-22F-PKG100	AWG #20

※1：Please select the correct plug and contacts for the size of cable to be used. The manufacturer's model number and the model number for parts procured from SANYO DENKI are the same number.
※2：When removing a contact that has already been inserted, please use a removal tool. Please purchase the removal tool from the connector manufacturer (Japan Aviation Electronics Industry Limited).
※3：For the manual crimp tool part number, see the instruction manuals from the connector manufacturer (Japan Aviation Electronics Industry Limited).
※4：Please purchase the semi-automatic crimp tool from the connector manufacturer (Japan Aviation Electronics Industry Limited).
※5：For the connector and contact instructions, precautions, etc., please see the catalogs and instruction manuals from the connector manufacturer (Japan Aviation Electronics Industry Limited).

Q1 Servo Motor

Motor type	Encoder receptacle	Standard Encoder Plug (Cable Clamp) 【Plug + Clamp】		TÜV-Conforming Plug (Cable Clamp) for Encoder Waterproof Specification 【Plug + Clamp】		Pin Layout Symbol
		Straight	Angle	Straight	Angle	
Q1 Servo Motor Models	MS3102A20-29P (or Equivalent)	N/MS3106B20-29S (N/MS3057-12A) 【MS06B20-29S-12】	N/MS3108B20-29S (N/MS3057-12A) 【MS08B20-29S-12】	JA06A-20-29S-J1-EB (JL04-2022CK(14)-R)	JA08A-20-29S-J1-EBH (JL04-2022CK(14)-R)	See the encoder wiring diagram on Page 45.

【 】indicates the SANYO DENKI part numbers (Plug & Cable Clamp)

Cooling Fan Connectors

Motor type	Cooling fan receptacle	Standard plug (Cable Clamp) for Cooling Fan 【Plug + Clamp】		Waterproof plug (Cable Clamp) for Cooling Fan 【Plug + Clamp】			Pin Layout Symbol		
		Straight	Angle	Straight	Angle		AC200V ± 10% Single phase 50/60Hz		
R1, R2 Servo Motor	N/MS3102A10SL-4P	N/MS3106B10SL-4S (N/MS3057-4A) 【MS06B10SL-4S-4】	N/MS3108B10SL-4S (N/MS3057-4A) 【MS08B10SL-4S-4】	JA06A-10SL-4S-J1-R (conduit)		Conduit preparation to be handled by user.	A	B	

Please see the catalogs and instruction manuals of the connector manufacturer's (Japan Aviation Electronics Industry Limited) for details, including the instructions for the connector and the precautions.
【 】indicates the SANYO DENKI part numbers (Plug & Cable Clamp)

Motor Connectors Model No. ※1, 2, 4

Voltage	Flange Size	Motor Model No.	Motor power receptacle	Brake receptacle Standard specifications, TÜV specifications: DC90V (※4 TÜV: DC24V only)	Plug for power line (Cable Clamp) 【Plug + Clamp】		TÜV-Standard Plug Waterproof Specification (Cable Clamp) 【Plug + Clamp】	
					Straight	Angle	Straight	Angle
200V Type	130mm	R2AA13050H R2AA13050D R2AA13120B R2AA13120L R2AA13120D R2AA13180H R2AA13180D R2AA13200L R2AA13200D	JL04V-2E24-11PE-B-R	※3	N/MS3106B24-11S (N/MS3057-16A) 【MS06B24-11S-16】	N/MS3108B24-11S (N/MS3057-16A) 【MS08B24-11S-16】	JL04V-6A24-11SE-EB-R (JL04-2428CK-R) 【332706X10】	JL04V-8A24-11SE-EB-R (JL04-2428CK-R) 【332707X10】
	180mm	R2AA18350L R2AA18350D R2AA18450H	JL04V-2E24-11PE-B-R	※3	N/MS3106B24-11S (N/MS3057-16A) 【MS06B24-11S-16】	N/MS3108B24-11S (N/MS3057-16A) 【MS08B24-11S-16】	JL04V-6A24-11SE-EB-R (JL04-2428CK-R) 【332706X10】	JL04V-8A24-11SE-EB-R (JL04-2428CK-R) 【332707X10】
		R2AA18550R R2AA18550H R2AA18750H R2AA1811KR	JL04V-2E32-17PE-B-R	JL04V-2E10SL-3PE-B-R	N/MS3106B32-17S (N/MS3057-20A) 【MS06B32-17S-20】	N/MS3108B32-17S (N/MS3057-20A) 【MS08B32-17S-20】	JL04V-6A32-17SE-R (Conduit ※5) 【JL04V-6A32-17SE】	
	220mm	R2AA22500L	JL04V-2E24-11PE-B-R	※3	N/MS3106B24-11S (N/MS3057-16A) 【MS06B24-11S-16】	N/MS3108B24-11S (N/MS3057-16A) 【MS08B24-11S-16】	JL04V-6A24-11SE-EB-R (JL04-2428CK-R) 【332706X10】	JL04V-8A24-11SE-EB-R (JL04-2428CK-R) 【332707X10】
		R2AA22700S		JL04V-2E10SL-3PE-B-R				
		R2AA2211KB	JL04V-2E32-17PE-B-R	JL04V-2E10SL-3PE-B-R	N/MS3106B32-17S (N/MS3057-20A) 【MS06B32-17S-20】	N/MS3108B32-17S (N/MS3057-20A) 【MS08B32-17S-20】	JL04V-6A32-17SE-R (Conduit ※5) 【JL04V-6A32-17SE】	
		R2AA2215KB						
	180mm	R1AA18550H R1AA18750L R1AA1811KR R1AA1815KB	JL04V-2E32-17PE-B-R	JL04V-2E10SL-3PE-B-R	N/MS3106B32-17S (N/MS3057-20A) 【MS06B32-17S-20】	N/MS3108B32-17S (N/MS3057-20A) 【MS08B32-17S-20】	JL04V-6A32-17SE-R (Conduit ※5) 【JL04V-6A32-17SE】	
	100mm	Q1AA10100D Q1AA10150D Q1AA10200D Q1AA10250D	JL04V-2E20-15PE-B-R	JL04V-2E10SL-3PE-B-R	N/MS3106B20-15S (N/MS3057-12A) 【MS06B20-15S-12】	N/MS3108B20-15S (N/MS3057-12A) 【MS08B20-15S-12】	JL04V-6A20-15SE-EB-R (JL04-2022CK-R) 【332706X5】	JL04V-8A20-15SE-EB-R (JL04-2022CK-R) 【332707X5】
	120mm	Q1AA12100D Q1AA12200D Q1AA12300D	JL04V-2E24-11PE-B-R	JL04V-2E10SL-3PE-B-R	N/MS3106B24-11S (N/MS3057-16A) 【MS06B24-11S-16】	N/MS3108B24-11S (N/MS3057-16A) 【MS08B24-11S-16】	JL04V-6A24-11SE-EB-R (JL04-2428CK) 【332706X10】	JL04V-8A24-11SE-EB-R (JL04-2428CK) 【332707X10】
	130mm	Q1AA13300D Q1AA13400D Q1AA13500D	JL04V-2E24-11PE-B-R	※4 (JL04V-2E10SL-3PE-B-R)	N/MS3106B24-11S (N/MS3057-16A) 【MS06B24-11S-16】	N/MS3108B24-11S (N/MS3057-16A) 【MS08B24-11S-16】	JL04V-6A24-11SE-EB-R (JL04-2428CK) 【332706X10】	JL04V-8A24-11SE-EB-R (JL04-2428CK) 【332707X10】

Voltage	Flange Size	Motor Model No.	TÜV-Standard Plug for Brake Waterproof Specification (Cable Clamp) 【Plug + Clamp】		Pin Layout Symbol					Applicable amplifier model No.	Recommended motor power wire size (U, V, W, GND)		Wire size of main power supply (R, S, T, GND)	
			Straight	Angle	U phase	V phase	W phase	Ground	Brake		mm²	AWG No.	mm²	AWG No.
200V Type	130mm	R2AA13050H R2AA13050D R2AA13120B	※3		D	E	F	G , H	A , B	RS2A03	0.75	#19	2	#14
		R2AA13120L R2AA13120D R2AA13180H	※3		D	E	F	G , H	A , B	RS2A05	2	#14	2	#14
		R2AA13180D	※3		D	E	F	G , H	A , B	RS2A10	5.5	#10	5.5	#10
		R2AA13200L								RS2A05	2	#14	2	#14
		R2AA13200D								RS2A10	5.5	#10	5.5	#10
	180mm	R2AA18350L R2AA18350D R2AA18450H	※3		D	E	F	G , H	A , B	RS2A15			8	#8
		R2AA18550R	JL04V-6A10SL-3SE-EB-R (JL04-1012CK-R) 【332706X1】	JL04V-8A10SL-3SE-EB-R (JL04-1012CK-R) 【332707X1】	A	B	C	D	A , B		8	#8		
		R2AA18550H R2AA18750H R2AA1811KR								RS2A30	14	#6	14	#6
	220mm	R2AA22500L R2AA22700S	※3		D	E	F	G , H	A , B	RS2A15	5.5	#10	8	#8
		R2AA2211KB R2AA2215KB	JL04V-6A10SL-3SE-EB-R (JL04-1012CK-R) 【332706X1】	JL04V-8A10SL-3SE-EB-R (JL04-1012CK-R) 【332707X1】	A	B	C	D	A , B	RS2A30	14	#6	14	#6
	180mm	R1AA18550H R1AA18750L R1AA1811KR R1AA1815KB	JL04V-6A10SL-3SE-EB-R (JL04-1012CK-R) 【332706X1】	JL04V-8A10SL-3SE-EB-R (JL04-1012CK-R) 【332707X1】	A	B	C	D	A , B	RS2A30	14	#6	14	#6
	100mm	Q1AA10100D Q1AA10150D Q1AA10200D Q1AA10250D	JL04V-6A10SL-3SE-EB-R (JL04-1012CK-R) 【332706X1】	JL04V-8A10SL-3SE-EB-R (JL04-1012CK-R) 【332707X1】	A	B	C	D	A , B	RS2A05 RS2A10	3.5	#12	3.5	#12
	120mm	Q1AA12100D Q1AA12200D Q1AA12300D	JL04V-6A10SL-3SE-EB-R (JL04-1012CK-R) 【332706X1】	JL04V-8A10SL-3SE-EB-R (JL04-1012CK-R) 【332707X1】	D	E	F	G , H	A , B	RS2A05 RS2A10	5.5	#10	5.5	#10
	130mm	Q1AA13300D Q1AA13400D Q1AA13500D	※4	※4	D	E	F	G , H	A , B	RS2A10 RS2A15	5.5	#10	8	#8

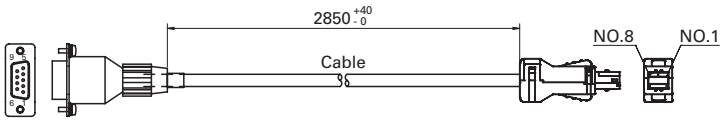
※1 : Please see the catalogs and instruction manuals of the connector manufacturer's (Japan Aviation Electronics Industry Limited) for details, including the instructions for the connector and the precautions.
※2 : 【 】indicates the SANYO DENKI part numbers (Plug & Cable Clamp)
※3 : The brake line is shared with the power receptacle.
※4 : Both power and brake connectors are required for all motors equipped with TÜV compliant DC24V brakes.
※5 : Conduit preparation to be handled by user.

Setup software, Serial Communication Relation

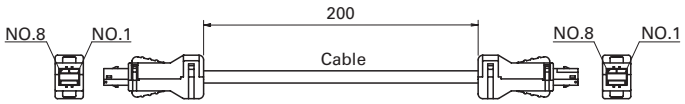
Name	Details	Model No.
1) Cable for personal computer communications	Between personal computer and servo amplifier — Analog / Pulse input type : CN2; EtherCAT interface type : CN4	AL-00689703-01
2) Cable for communication between amp. (0.2m) ※1	Servo Amplifier (CN2) ⇔ Servo Amplifier (CN3)	AL-00695974-01
3) Cable for communication between amp. (3.0m) ※1		AL-00695974-02
4) Communication converter ※1	RS-232C ⇔ RS-422	SAU-024-01
5) Connector with terminator ※1	RS-422 terminator for communication	AL-00695977-01

Dimentions (Unit : mm)

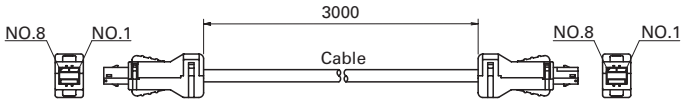
1) Cable for personal computer communications (Model No. : AL-00689703-01)



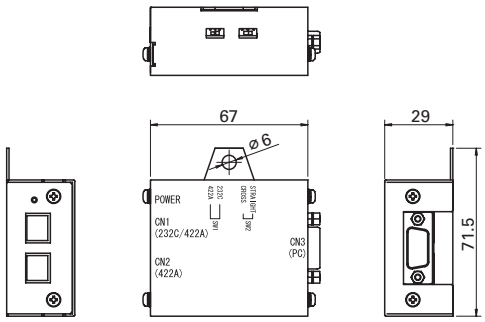
2) Cable for communication between amp. (0.2m) (Model No. : AL-00695974-01) ※1



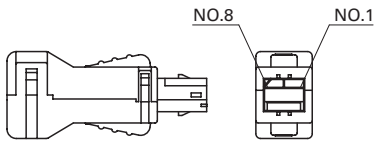
3) Cable for communication between amp. (3.0m) (Model No. : AL-00695974-02) ※1



4) Communication converter (Model No. : SAU-024-01) ※1



5) Connector with terminator (Model No. : AL-00695977-01) ※1

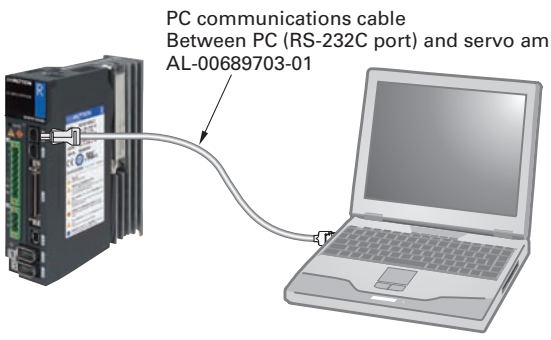


※1 Optional connector dedicated for analog/pulse input type.

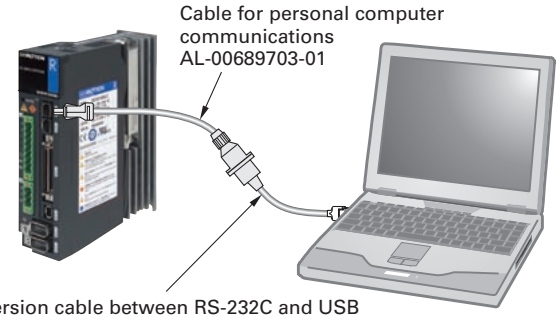
Connection examples

1) For single axis

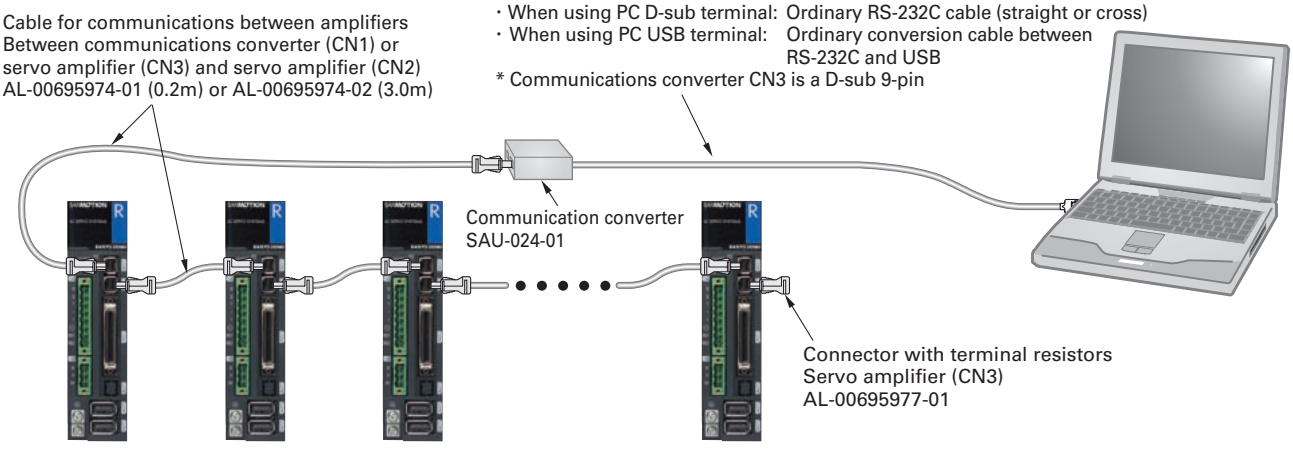
・When using PC RS-232C terminal



・When using PC USB terminal



2) For multiple axes

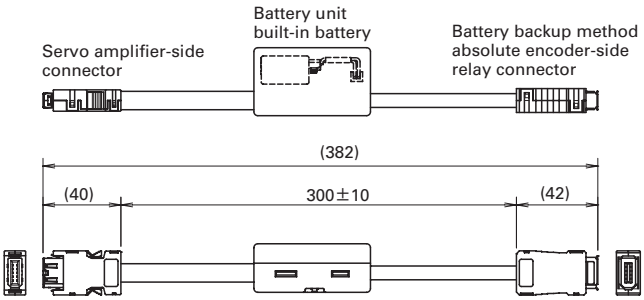


Battery for Battery Backup Method Absolute Encoder Relation

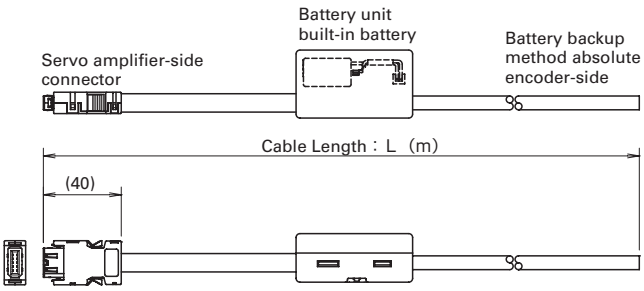
Name	Details	Model No.
1) Battery trunk cable, with connectors on both ends	–	AL-00731792-01
2) Battery trunk cable, with connectors on one end	–	AL-00697960- □□
3) Replacement batteries	Lithium battery : ER3VLY Toshiba Consumer Marketing Ltd.	AL-00697958-01

Dimensions (Unit : mm)

1) Battery trunk cable, with connectors on both ends (Model No. : AL-00731792-01)

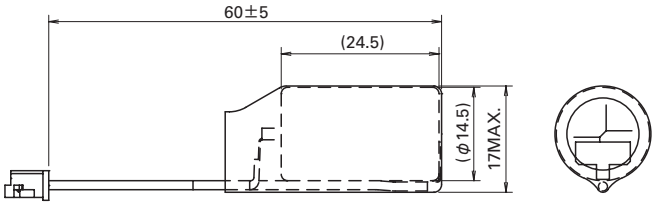


2) Battery trunk cable, with connectors on one end (Model No. : AL-00697960-□□)



	Model No.	L [m]
1	AL-00697960-01	3
2	AL-00697960-02	5
3	AL-00697960-03	10
4	AL-00697960-04	15
5	AL-00697960-05	20
6	AL-00697960-06	25

3) Replacement batteries (Model No. : AL-00697958-01)

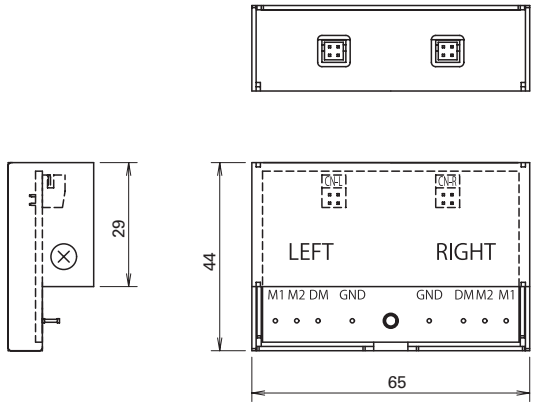


Analog Monitor Relation

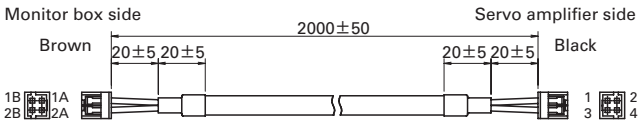
Name	Details	Model No.
1) Monitor Box	Monitor box body 2 dedicated cables	Q-MON-3
2) Dedicated cable	1 dedicated cables	AL-00690525-01

Dimensions (Unit : mm)

1) Monitor Box (Model No. : Q-MON-3)

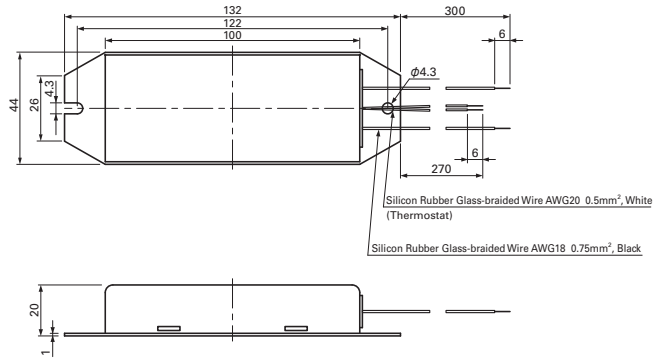


2) Dedicated Cable (Model No. : AL-00690525-01)



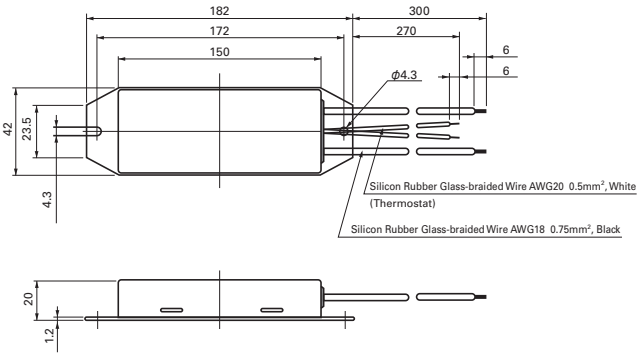
※1 2 units of the dedicated cables per above 2) (PN# AL-00690525-01) are attached to Monitor Box (PN#Q-MON-3).

External Regeneration Resistor Dimensions (Unit: mm)



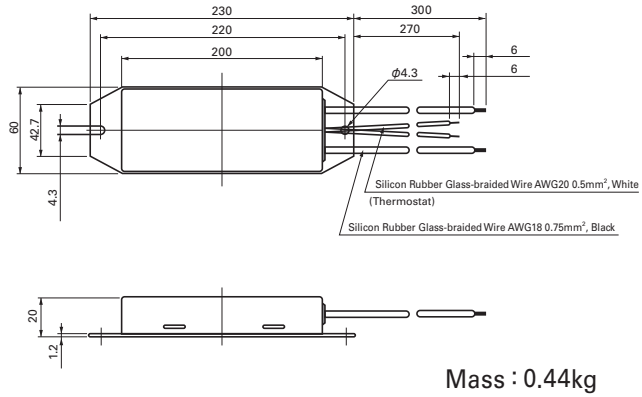
Mass : 0.19kg

	Model No.	Thermostat
1	REGIST-080W100B	Normal close
2	REGIST-080W50B	Normal close



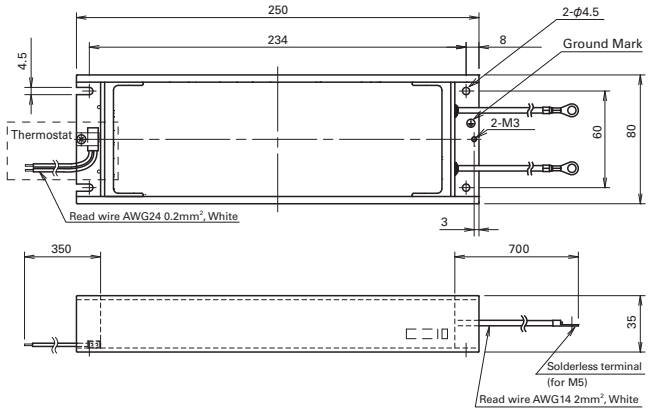
Mass : 0.24kg

	Model No.	Thermostat
1	REGIST-120W100B	Normal close
2	REGIST-120W50B	Normal close



Mass : 0.44kg

	Model No.	Thermostat
1	REGIST-220W20B	Normal close
2	REGIST-220W50B	Normal close
3	REGIST-220W100B	Normal close

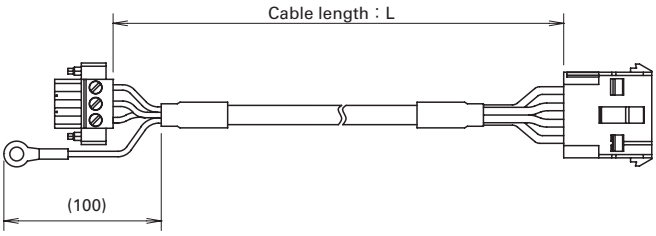


Mass : 1.5kg

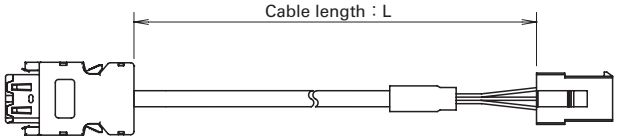
	Model No.	Thermostat
1	REGIST-500CW20B	Normal close
2	REGIST-500CW14B	Normal close
3	REGIST-500CW10B	Normal close
4	REGIST-500CW7B	Normal close

Junction cable for servo motor

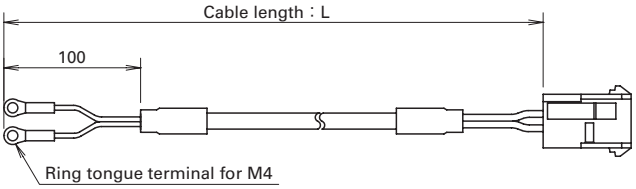
Power cable



Encoder cable



Brake cable



Model No.			Cable length : L (m)
Power cable	Brake cable	Encoder cable	
RS-CM4-01-R	RS-CB3-01-R	RS-CA4-01-R	1
RS-CM4-02-R	RS-CB3-02-R	RS-CA4-02-R	2
RS-CM4-03-R	RS-CB3-03-R	RS-CA4-03-R	3
RS-CM4-05-R	RS-CB3-05-R	RS-CA4-05-R	5
RS-CM4-10-R	RS-CB3-10-R	RS-CA4-10-R	10

Servo motor with connectors for junction cables
200V System

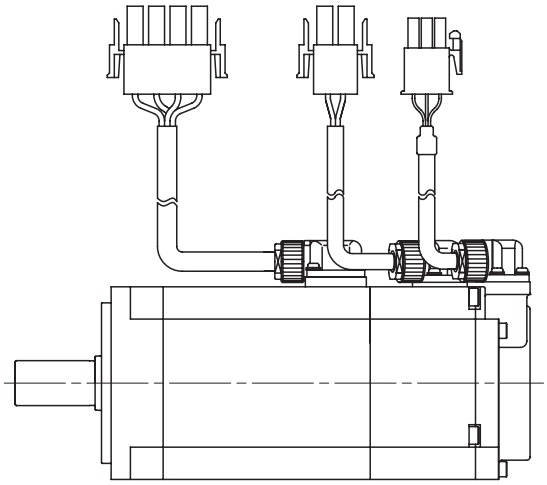
R2 Servo Motor

Rated output	Motor flange size	Holding brake	Model No.
30W	40mm sq.	No	R2AA04003FXPA0
30W	40mm sq.	Yes (DC24V)	R2AA04003FCPA0
50W	40mm sq.	No	R2AA04005FXPA0
50W	40mm sq.	Yes (DC24V)	R2AA04005FCPA0
90W	40mm sq.	Yes (DC24V)	R2AA04010FCPA0
100W	40mm sq.	No	R2AA04010FXPA0
100W	60mm sq.	No	R2AA06010FXPA0
100W	60mm sq.	Yes (DC24V)	R2AA06010FCPA0
200W	60mm sq.	No	R2AA06020FXPA0
200W	60mm sq.	Yes (DC24V)	R2AA06020FCPA0
360W	60mm sq.	Yes (DC24V)	R2AA06040FCPA0
400W	60mm sq.	No	R2AA06040FXPA0
750W	80mm sq.	No	R2AA08075FXPA0
750W	80mm sq.	Yes (DC24V)	R2AA08075FCPA0

R5 Servo Motor

Rated output	Motor flange size	Holding brake	Model No.
200W	60mm sq.	No	R5AA06020HXPA0
200W	60mm sq.	Yes (DC24V)	R5AA06020HCPA0
380W	60mm sq.	Yes (DC24V)	R5AA06040HCPA0
400W	60mm sq.	No	R5AA06040HXPA0
710W	80mm sq.	Yes (DC24V)	R5AA08075DCPA0
750W	80mm sq.	No	R5AA08075DXPA0

・Connectors are connected as shown in the figure. The cable length is 200 ± 30mm.



SANMOTION R
SERVO SYSTEMS

ADVANCED MODEL

Servo Motor: Made in The Philippines.

We can deliver them to customers quickly.

Standard Model Number List

R2 Servo Motor 200V System Small Capacity, Medium Inertia

Rated Output	Motor Flange Size	Protection Code	Holding Brake	CE and UL approved	Encoder	Output shaft	Oil seal	Model No.	Page	
									Specifications	Dimensions
85W	40mm sq.	IP67	No	No	Battery backup method absolute encoder	With key	Yes	R2AA04010FXP29	P.77	P.84
			Yes (DC24V)	No	Battery backup method absolute encoder	With key	Yes	R2AA04010FCP29	P.77	P.84
90W	40mm sq.	IP67	Yes (DC24V)	No	Battery backup method absolute encoder	Round	No	R2AA04010FCP00	P.77	P.84
				No	Battery backup method absolute encoder	With key	No	R2AA04010FCP1C	P.77	P.84
				No	Absolute encoder for incremental system	Round	No	R2AA04010FCH00	P.77	P.84
				Yes	Battery backup method absolute encoder	Round	No	R2AA04010FCP00M6	P.77	P.84
				Yes	Battery backup method absolute encoder	With key	No	R2AA04010FCP1CM6	P.77	P.84
				Yes	Absolute encoder for incremental system	Round	No	R2AA04010FCH00M6	P.77	P.84
				Yes	Absolute encoder for incremental system	With key	No	R2AA04010FCH1CM6	P.77	P.84
100W	40mm sq.	IP67	No	No	Battery backup method absolute encoder	Round	No	R2AA04010FXP00	P.77	P.84
				No	Battery backup method absolute encoder	With key	No	R2AA04010FXP1C	P.77	P.84
				No	Absolute encoder for incremental system	Round	No	R2AA04010FXH00	P.77	P.84
				No	Absolute encoder for incremental system	With key	No	R2AA04010FXH1C	P.77	P.84
				Yes	Absolute encoder for incremental system	Round	No	R2AA04010FXH00M	P.77	P.84
				Yes	Absolute encoder for incremental system	With key	No	R2AA04010FXH1CM	P.77	P.84
200W	60mm sq.	IP67	No	No	Battery backup method absolute encoder	Round	No	R2AA06020FXP00	P.77	P.84
				No	Battery backup method absolute encoder	With key	No	R2AA06020FXP11	P.77	P.84
				No	Battery backup method absolute encoder	With key	Yes	R2AA06020FXP29	P.77	P.84
				No	Absolute encoder for incremental system	Round	No	R2AA06020FXH00	P.77	P.84
				No	Absolute encoder for incremental system	With key	No	R2AA06020FXH11	P.77	P.84
				Yes	Battery backup method absolute encoder	Round	No	R2AA06020FXP00M	P.77	P.84
				Yes	Battery backup method absolute encoder	With key	No	R2AA06020FXP11M	P.77	P.84
				Yes	Absolute encoder for incremental system	Round	No	R2AA06020FXH00M	P.77	P.84
				Yes	Absolute encoder for incremental system	With key	No	R2AA06020FXH11M	P.77	P.84
			Yes (DC24V)	No	Battery backup method absolute encoder	Round	No	R2AA06020FCP00	P.77	P.84
				No	Battery backup method absolute encoder	With key	No	R2AA06020FCP11	P.77	P.84
				No	Battery backup method absolute encoder	With key	Yes	R2AA06020FCP29	P.77	P.84
				No	Absolute encoder for incremental system	Round	No	R2AA06020FCH00	P.77	P.84
				No	Absolute encoder for incremental system	With key	No	R2AA06020FCH11	P.77	P.84
				Yes	Battery backup method absolute encoder	Round	No	R2AA06020FCP00M	P.77	P.84
				Yes	Battery backup method absolute encoder	With key	No	R2AA06020FCP11M	P.77	P.84
				Yes	Absolute encoder for incremental system	Round	No	R2AA06020FCH00M	P.77	P.84
				Yes	Absolute encoder for incremental system	With key	No	R2AA06020FCH11M	P.77	P.84
320W	60mm sq.	IP67	No	No	Battery backup method absolute encoder	With key	Yes	R2AA06040FXP29	P.77	P.84
				No	Absolute encoder for incremental system	Round	Yes	R2AA06040FXH01	P.77	P.84
			Yes (DC24V)	No	Battery backup method absolute encoder	With key	Yes	R2AA06040FCP29	P.77	P.84
				No	Absolute encoder for incremental system	Round	Yes	R2AA06040FCH01	P.77	P.84
360W	60mm sq.	IP67	Yes (DC24V)	No	Battery backup method absolute encoder	Round	No	R2AA06040FCP00	P.77	P.84
				No	Battery backup method absolute encoder	With key	No	R2AA06040FCP11	P.77	P.84
				No	Absolute encoder for incremental system	Round	No	R2AA06040FCH00	P.77	P.84
				No	Absolute encoder for incremental system	With key	No	R2AA06040FCH11	P.77	P.84
				Yes	Battery backup method absolute encoder	Round	No	R2AA06040FCP00M6	P.77	P.84
				Yes	Absolute encoder for incremental system	Round	No	R2AA06040FCH00M6	P.77	P.84
				Yes	Absolute encoder for incremental system	With key	No	R2AA06040FCH11M6	P.77	P.84
400W	60mm sq.	IP67	No	No	Battery backup method absolute encoder	Round	No	R2AA06040FXP00	P.77	P.84
				No	Battery backup method absolute encoder	With key	No	R2AA06040FXP11	P.77	P.84
				No	Absolute encoder for incremental system	Round	No	R2AA06040FXH00	P.77	P.84
				No	Absolute encoder for incremental system	With key	No	R2AA06040FXH11	P.77	P.84
				Yes	Battery backup method absolute encoder	Round	No	R2AA06040FXP00M	P.77	P.84
				Yes	Battery backup method absolute encoder	With key	No	R2AA06040FXP11M	P.77	P.84
				Yes	Absolute encoder for incremental system	Round	No	R2AA06040FXH00M	P.77	P.84
				Yes	Absolute encoder for incremental system	With key	No	R2AA06040FXH11M	P.77	P.84
675W	80mm sq.	IP67	No	No	Battery backup method absolute encoder	With key	Yes	R2AA08075FXP29	P.78	P.84
				Yes	Absolute encoder for incremental system	With key	Yes	R2AA08075FXH29M6	P.78	P.84
			Yes (DC24V)	No	Battery backup method absolute encoder	Round	Yes	R2AA08075FCP01	P.78	P.84
				No	Battery backup method absolute encoder	With key	Yes	R2AA08075FCP29	P.78	P.84
				No	Absolute encoder for incremental system	Round	Yes	R2AA08075FCH01	P.78	P.84

R2 Servo Motor 200V System Small Capacity, Medium Inertia

Rated Output	Motor Flange Size	Protection Code	Holding Brake	CE and UL approved	Encoder	Output shaft	Oil seal	Model No.	Page	
									Specifications	Dimensions
750W	80mm sq.	IP67	No	No	Battery backup method absolute encoder	Round	No	R2AA08075FXP00	P.78	P.84
				No	Battery backup method absolute encoder	With key	No	R2AA08075FXP11	P.78	P.84
				No	Absolute encoder for incremental system	Round	No	R2AA08075FXH00	P.78	P.84
				No	Absolute encoder for incremental system	With key	No	R2AA08075FXH11	P.78	P.84
				Yes	Battery backup method absolute encoder	Round	No	R2AA08075FXP00M	P.78	P.84
				Yes	Absolute encoder for incremental system	Round	No	R2AA08075FXH00M	P.78	P.84
				Yes	Absolute encoder for incremental system	With key	No	R2AA08075FXH11M	P.78	P.84
			Yes (DC24V)	No	Battery backup method absolute encoder	Round	No	R2AA08075FCP00	P.78	P.84
				No	Battery backup method absolute encoder	With key	No	R2AA08075FCP11	P.78	P.84
				No	Absolute encoder for incremental system	Round	No	R2AA08075FCH00	P.78	P.84
				No	Absolute encoder for incremental system	With key	No	R2AA08075FCH11	P.78	P.84
				Yes	Battery backup method absolute encoder	Round	No	R2AA08075FCP00M	P.78	P.84
				Yes	Absolute encoder for incremental system	Round	No	R2AA08075FCH00M	P.78	P.84
				Yes	Absolute encoder for incremental system	With key	No	R2AA08075FCH11M	P.78	P.84
1.0kW	86mm sq.	IP67	No	No	Battery backup method absolute encoder	Round	No	R2AAB8100FXP04	P.79	P.85
				No	Battery backup method absolute encoder	Round	No	R2AAB8100HXP04	P.78	P.85
				No	Absolute encoder for incremental system	Round	No	R2AAB8100FXH04	P.79	P.85
				No	Absolute encoder for incremental system	With key	Yes	R2AAB8100HXH5A	P.78	P.85
			Yes (DC24V)	No	Battery backup method absolute encoder	Round	No	R2AAB8100HCP04	P.78	P.85
				No	Absolute encoder for incremental system	With key	Yes	R2AAB8100HCH5A	P.78	P.85

R2 Servo Motor 200V System Medium Capacity, Medium Inertia

Rated Output	Motor Flange Size	Protection Code	Holding Brake	CE and UL approved	Encoder	Output shaft	Oil seal	Model No.	Page	
									Specifications	Dimensions
1.2kW	130mm sq.	IP65	No	No	Battery backup method absolute encoder	With key	Yes	R2AA13120BXP00	P.78	P.85
				No	Battery backup method absolute encoder	With key	Yes	R2AA13120LXP00	P.79	P.85
				No	Battery backup method absolute encoder	With key	Yes	R2AA13120DXP00	P.79	P.85
				No	Absolute encoder for incremental system	With key	Yes	R2AA13120BXH00	P.78	P.85
				No	Absolute encoder for incremental system	With key	Yes	R2AA13120LXH00	P.79	P.85
				No	Absolute encoder for incremental system	With key	Yes	R2AA13120DXH00	P.79	P.85
			Yes (DC24V)	No	Battery backup method absolute encoder	With key	Yes	R2AA13120BCP00	P.78	P.85
				No	Battery backup method absolute encoder	With key	Yes	R2AA13120LCP00	P.79	P.85
				No	Battery backup method absolute encoder	With key	Yes	R2AA13120DCP00	P.79	P.85
				No	Absolute encoder for incremental system	With key	Yes	R2AA13120BCH00	P.78	P.85
				No	Absolute encoder for incremental system	With key	Yes	R2AA13120LCH00	P.79	P.85
				No	Absolute encoder for incremental system	With key	Yes	R2AA13120DCH00	P.79	P.85
2.0kW	130mm sq.	IP65	No	No	Battery backup method absolute encoder	With key	Yes	R2AA13200LXPW0	P.80	P.85
				No	Battery backup method absolute encoder	With key	Yes	R2AA13200DXPW0	P.80	P.85
				No	Absolute encoder for incremental system	With key	Yes	R2AA13200LXHW0	P.80	P.85
				No	Absolute encoder for incremental system	With key	Yes	R2AA13200DXHW0	P.80	P.85
			Yes (DC24V)	No	Battery backup method absolute encoder	With key	Yes	R2AA13200LCPW0	P.80	P.85
				No	Battery backup method absolute encoder	With key	Yes	R2AA13200DCPW0	P.80	P.85
				No	Absolute encoder for incremental system	With key	Yes	R2AA13200LCHW0	P.80	P.85
				No	Absolute encoder for incremental system	With key	Yes	R2AA13200DCHW0	P.80	P.85

Servo Amplifier 200V System

Type	Main Power	Control Power	Encoder Type	Selectable Output	Internal Registration Resistor	Safe Torque Off function	Amplifier Capacity	Model No.	Page	
									Servo Amplifier Specifications	Dimensions
Analog / Pulse input type	AC200V system AC200 to 230V 3-phase	AC200V system AC200 to 230V Single-phase	Serial encoder	NPN	No	No	15A	RS2A01A0AL0W00	P.75	P.86
					No		30A	RS2A03A0AL0W00	P.75	P.86
					Yes		50A	RS2A05A0AA0W00	P.75	P.86
EtherCAT interface type	AC200V system AC200 to 230V 3-phase	AC200V system AC200 to 230V Single-phase	Serial encoder	Photo relay output	Yes	Yes (with delay circuit)	15A	RS2A01A0KA4W00	P.75	P.86
					Yes		30A	RS2A03A0KA4W00	P.75	P.86
					Yes		50A	RS2A05A0KA4W00	P.75	P.86

Our standard servo amplifier has attained the UL, c-UL and EN Standards.
For specifications on other model, please contact us.

Model Number Nomenclature

Servo Motor

Example: R2 series servo motor models, 60mm sq. flange size, 200W rated output, 6000min^{-1} maximum rotation speed, DC24V holding brake, and an optical battery backup method absolute encoder (131072 partition number/rotation), UL/CE approval.

R 2 AA 06 020 F C P 00 M

- **M** — Additional Specification Identification
  M ··· Conforms to CE and UL
- **00** — Specification
  00 ··· Standard
- **P** — Encoder Type
  Serial Encoder
  P ··· Optical battery backup method absolute encoder
  H ··· Optical absolute encoder for incremental system
- **C** — Holding Brake
  X ··· No Brake
  C ··· DC24V Holding Brake
- **F** — Maximum Rotation Speed
  For the numeric values, see the specifications on Pages 77 through 80.
- **020** — Rated Output
  010 ··· 100W 100 ··· 1.0kW
  020 ··· 200W 120 ··· 1.2kW
  040 ··· 400W 200 ··· 2.0kW
  075 ··· 750W
  A reduction rating might be needed if an oil seal and brake is attached. Please consult with us about the details.
- **06** — Flange Size
  04 ··· 40mm sq.
  06 ··· 60mm sq.
  08 ··· 80mm sq.
  B8 ··· 86mm sq.
  13 ··· 130mm sq.
- **AA** — Voltage
  AA ··· AC200V
- **2** — Servo Motor type
  2 ··· Medium inertia
- **R** ··· R Series

Encoder Specification

Serial encoder

	Partition number/ rotation	Multiple rotations	Remarks
Optical battery backup method absolute encoder	17bit (131072)	16bit (65536)	An optional 20 bit encoder (1,048,576 divisions) is also available.
Optical absolute encoder for incremental system	17bit (131072)	—	An optional 20 bit encoder (1,048,576 divisions) is also available.

・For details on speed reducer installation, please contact us.
・For specifications on other model, please contact us.

Servo Amplifier

Example: RS2 series servo amplifier models, input voltage AC200V, amplifier capacity 15A, without built-in regeneration resistance/with DB resistance, without safety function.

RS2 A 01 A 0 A L 0 W 00

- **RS2 Series**
- **Input voltage**
  A ··· AC200V
- **Servo Amplifier capacity**
  01 ··· 15A
  03 ··· 30A
  05 ··· 50A
- **Servo Motor type**
  A ... Rotary motor
- **Motor Encoder Type**

	EN1 (Motor encoder)	EN2 (External pulse encoder)
0	Serial encoder	—

0 is only for a semi-closed system and is not selectable for a fully-closed system.

- **Interface type**
  A···Analog pulse control, NPN (Sink) output
  K···EtherCAT interface
- **Option 1**
  A ··· With built-in regeneration resistance/ with DB resistance
  L ··· Without built-in regeneration resistance/ with DB resistance
- **Option 2**

	Safe Torque Off function
0	None
4	Available (with delay circuit)

- **Standard Identification**
  W ··· Made in China
- **Specification**
  00 ··· Standard

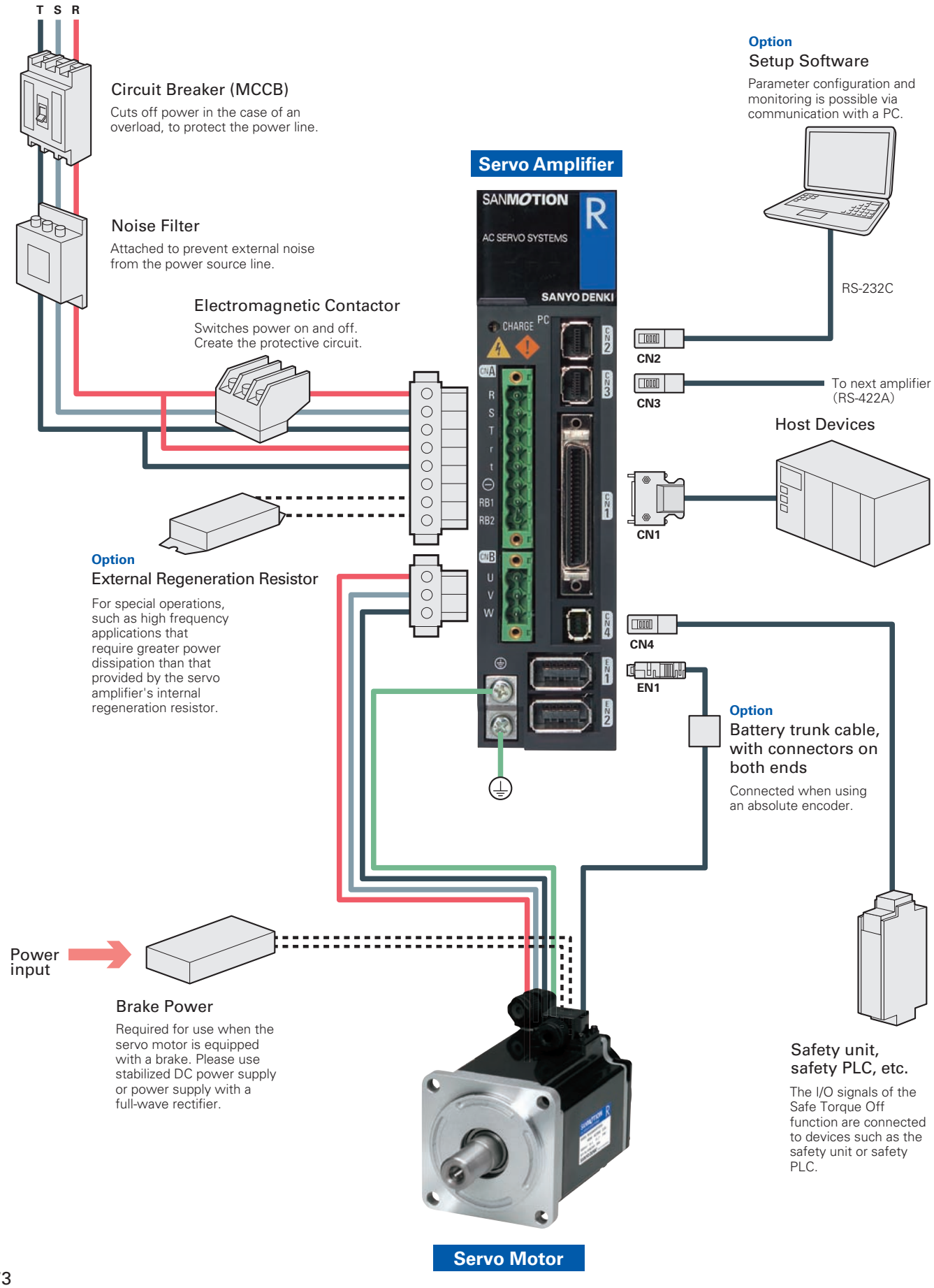
・The motor parameters need to be set for the amplifier for use.
  Use the setup software.
・For specifications on other model, please contact us.

Conformance to Safety Standards

Our standard servo amplifier has attained the UL, c-UL and EN Safety Standards.
You can also employ servo motors that have attained the UL, c-UL and EN Standards.

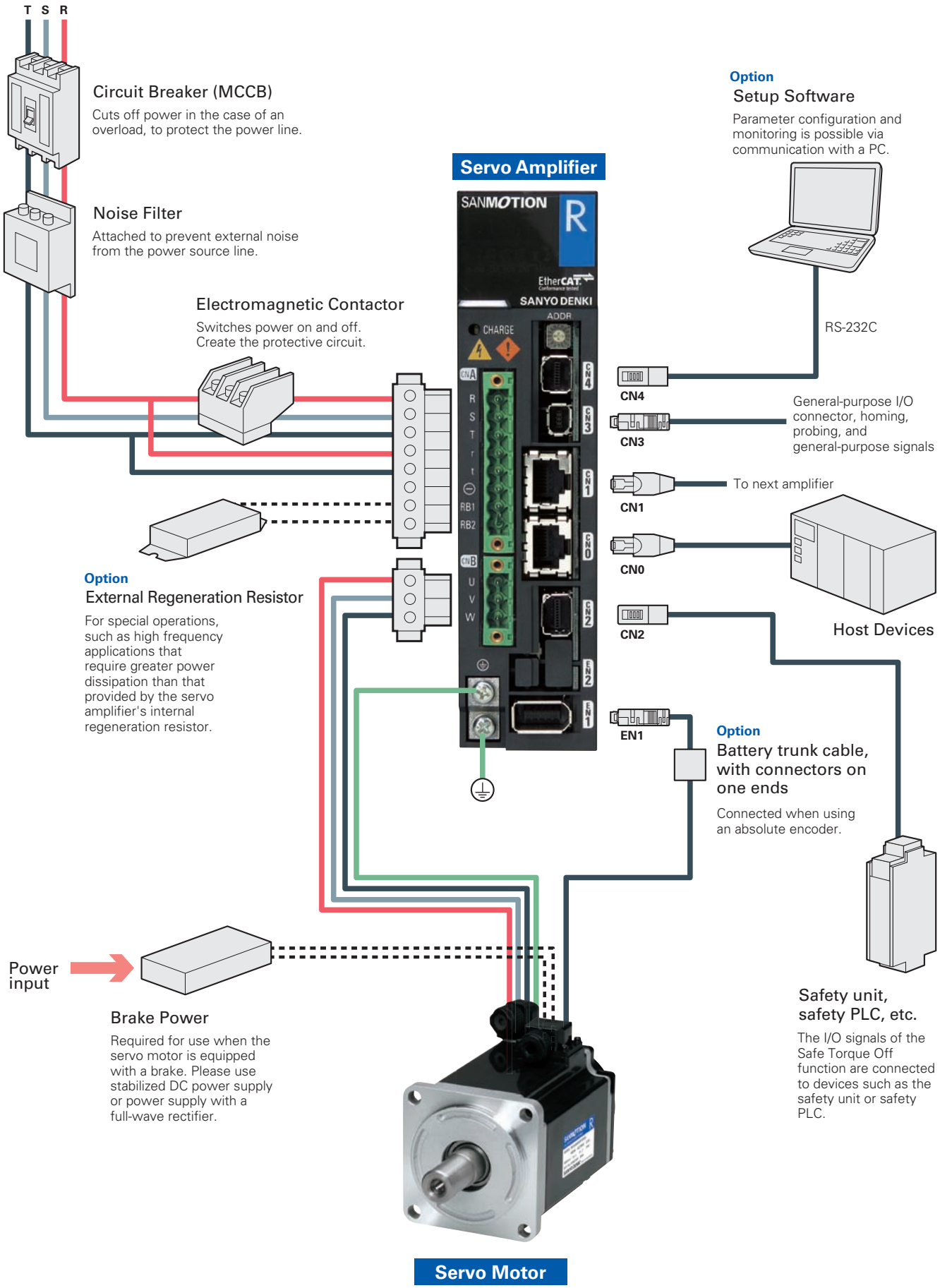
Analog/Pulse Input Type Servo Amplifier

15A to 50A The photograph shows the 15A model.



EtherCAT interface type servo amplifier

15A to 50A The photograph shows the 15A model.



Servo Amplifier Specifications

Control function	Position control/Speed control/Torque control (Parameter changeover)	
Control system	IGBT：PWM control Sinusoidal drive	
Main Circuit Power ※	3-phase: AC200 to 230V+10, -15%, 50/60Hz±3Hz Single-phase: AC200 to 230V+10, -15%, 50/60Hz±3Hz	
Control Power ※	Single-phase: AC200 to 230V+10, -15%, 50/60Hz±3Hz	
Environment	Ambient temperature	0 to +55℃
	Storage temperature	-20 to +65℃
	Operation/Storage humidity	Below 90%RH (no condensation)
	Elevation	Below 1000m
	Vibration	4.9m/s^2 Frequency range 10 to 55Hz tested for 2h in each direction X.Y.Z
	Shock	19.6m/s^2
Structure	Built-in tray type power supply	

※ Power source voltage should be within the specified range AC200V Power input type:
Specified power supply range = AC170V to AC253V

Performance

Speed control range	1:5000 (Internal speed command)
Frequency characteristics	1200Hz (In case of high frequency sampling mode) *Varies depending on the model.

Built-in functions

Protection functions	Over current, Current detection error, Overload, Regeneration error, Amplifier overheating, External overheating, Over voltage, Main circuit power low voltage, Main circuit power supply open phase, Control power supply low voltage, Encoder error, Over speed, Speed control error, Speed feedback error, Excessive position, Position command pulse error, Built-in memory error, Parameter error
LED display	Status display, Monitor display, Alarm display, Parameter setting, Adjustment mode
Dynamic brake circuit	Built-in
Regeneration process circuit	Built-in
Monitor	Speed monitor (VMON) 2.0V±10% (at 1000min^{-1})
	Torque (Thrust) (TCMON) 2.0V±10% (at 100%)

Safety standard

Servo amplifier type	Safety standards		
All models	UL ratings	UL508C	
	EN standards	Low-voltage directive	・EN61800－5－1
		EMC directive	・EN55011 G1 ClassA ・EN61000－6－2 ・EN61800－3
Model with safety function	Function safety standards	・IEC61508, SIL2 ・IEC62061, SILCL2	・ISO13849－1, Cat. 3, PL＝d ・EN954－1, Cat. 3

EtherCAT interface specifications

Physical layer	IEC61158-2 IEEE802.3u 100BASE-TX
Data link layer	IEC61158-3,-4 Type12
Application layer	IEC61158-5,-6 Type12
Device profile	IEC61800-7 Profile type1(CiA402) ・CoE (CANopen over EtherCAT) ・FoE (File access over EtherCAT)
Communication port	RJ45 connector (2 ports)
Baud rate	100 Mbps (Full duplex)
Max. No. of nodes	65535 nodes
Transmission distance/topology	Max. 100 m (between nodes)/Daisy-chain
Cable	Twisted-pair CAT5e (straight or cross)
Communication object	SDO (Service Data Object) PDO (Process Data Object)
PDO length	Output：Max.64Byte, Input：Max.64Byte Total: Max. 128 Bytes
Synchronization function	SYNC0, SYNC1 Event Synchronization Mode (DC Mode),Synchronous with SM2 Event Mode, Asynchronous Mode
Operation mode	Profile Position Mode, Profile Velocity Mode, Profile Torque Mode, Homing Mode, Cycle Sync Position Mode, Cycle Sync Velocity Mode, Cycle Sync Torque Mode
LED indicator	Port 0/1 link display, RUN display, error display
General Input/Output	2 inputs, 2 outputs (4 total)

General-Purpose Output Specifications

NPN output (Analog/Pulse Input Type)

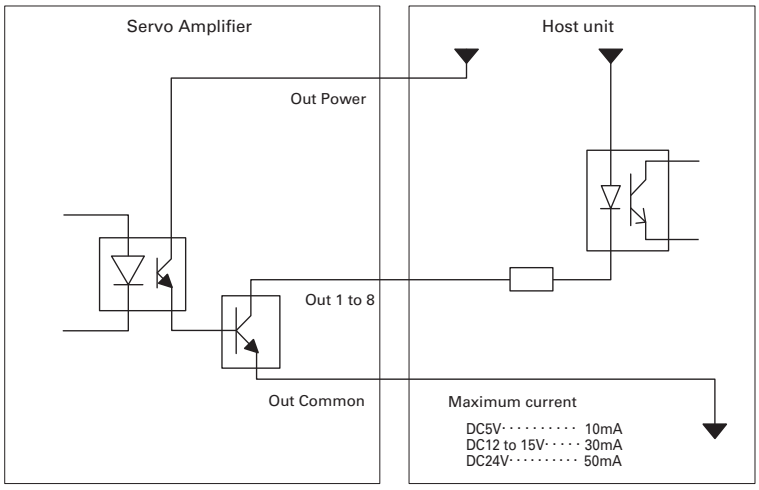
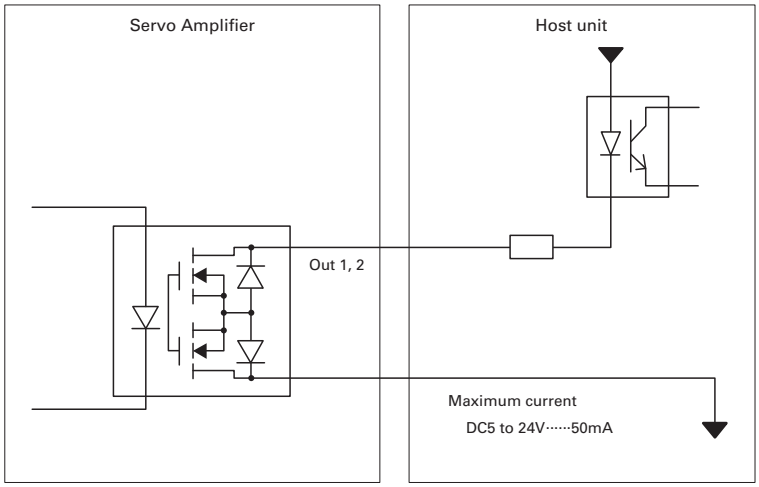


Photo relay output (EtherCAT interface type)



Specification

Servo Amplifier + R2 Servo Motor

High Efficiency and Low Ripple (Medium Inertia)

input voltage AC200V

Power supply range AC170V to AC253V

Servo Amplifier Model No.				RS2A01□□		RS2A03□□
Servo Motor Model No. and Flange Size				R2AA04010F 《40mm sq.》	R2AA06020F 《60mm sq.》	R2AA06040F 《60mm sq.》
	Status	Symbol	Unit			
Rated Output	★	P_R	kW	0.1 (0.085/0.09) ※6	0.2	0.4 (0.32/0.36) ※6
Rated Speed	★	N_R	min^{-1}	3000	3000	3000
Maximum Speed	★	N_{max}	min^{-1}	6000	6000	6000
Rated Torque	★	T_R	N·m	0.318	0.637	1.27
Continuous Stall Torque	★	T_S	N·m	0.318	0.686	1.37
Peak Stall Torque	★	T_P	N·m	1.18	2.2	4.8
Rated Armature Current	★	I_R	Arms	0.81	1.5	2.8
Armature Stall Current	★	I_S	Arms	0.81	1.6	2.8
Peak Armature Stall Current	★	I_P	Arms	3.3	5.6	10.8
Torque Constant	☆	K_T	N·m／Arms	0.424	0.476	0.524
Voltage Constant for each Phase	☆	$K_{E\phi}$	mV／min^{-1}	14.8	16.6	18.3
Phase Resistance	☆	R_ϕ	Ω	9.3	2.7	1.36
Rated Power Rate	★	Q_R	kW／s	16	19	39
Electrical Time Constant	☆	te	ms	0.82	2.6	3.2
Mechanical Time Constant (Not including Encoder)	☆	tm	ms	0.97	0.78	0.61
Roter Moment of Inertia ※1		J_M	$\times 10^{-4}$kg·m^2(GD^2／4)	0.0627	0.219	0.412
Roter Moment of Inertia (Encoder)		J_S	$\times 10^{-4}$kg·m^2(GD^2／4)	0.0033 ※1		
Servo Motor Mass ※1		WE	kg	0.51	0.96	1.4
Brake Static Friction Torque		TB	N·m	0.32 MIN.	1.37 MIN.	1.37 MIN.
Brake Rated Voltage		VB	V	DC90V ／ DC24V ± 10%		
Brake Rated Current		IB	A	0.07 ／ 0.27	0.11 ／ 0.32	0.11 ／ 0.32
Roter Moment of Inertia (Brake)		JB	$\times 10^{-4}$kg·m^2(GD^2／4)	0.0078	0.06	0.06
Brake Mass		W	kg	0.27	0.39	0.39
Servo Motor Operating Temp, Rel.Humidity				Operating Temperature: 0 to 40℃, Relative Humidity: 90% maximum, no condensation		
Servo amplifier power supply capacity (rating)			kVA	0.3	0.6	1.0
CE and UL approved servo motors ※5				P.69		
Servo motor protection code				IP67		
Size of aluminum plates for heat radiation during measurement				t6 × 250mm sq.		

※1 This is an instance with the battery-backup method absolute encoder. For the servo amplifier weight, see page 86.

※2 Items with ★ and speed - torque characteristics indicate values after temperature rise saturation when used with a standard servo amplifier. The values are the typical values.

※3 ☆ : Indicates a typical value when the winding temperature is 20℃ .

※4 Servo motors that come with oil seals (optional) may require an 80 to 95% reduction in output.

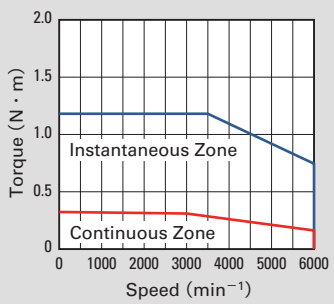
※5 Our standard servo amplifiers are CE and UL approved.

※6 If enclosed in ( ), it comes with brake or oil seal.

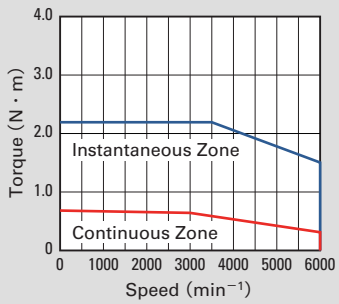
Speed-Torque Characteristics

Servo motor Model No./Flange Size/Rated Output

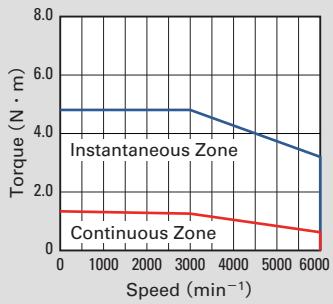
R2AA04010F/40mm/0.1 (0.085/0.09) kW※6



R2AA06020F/60mm/0.2kW



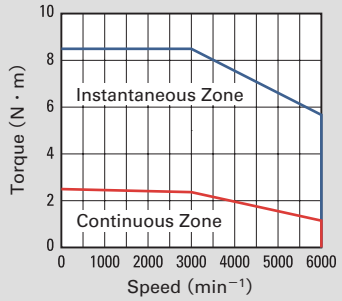
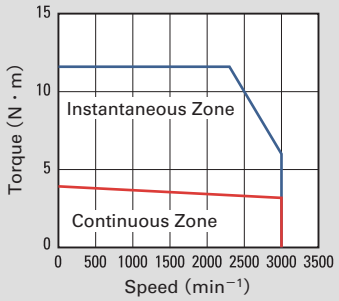
R2AA06040F/60mm/0.4 (0.32/0.36) kW※6



These values are for when the input power supply is a 3-phase AC 200 V circuit. The area of the instantaneous zone decreases when the power supply voltage is less than 200 V. Please contact us if the servo amp. power supply is a single-phase AC 200 V circuit.

RS2A03□□			Servo Amplifier Model No.			
R2AA08075F 《80mm sq.》	R2AAB8100H 《86mm sq.》	R2AA13120B 《130mm sq.》	Servo Motor Model No. and Flange Size			
			Unit	Symbol	Status	
0.75 (0.675) ※6	1.0	1.2	kW	P_R	★	Rated Output
3000	3000	2000	min^{-1}	N_R	★	Rated Speed
6000	3000	2000	min^{-1}	N_{max}	★	Maximum Speed
2.39	3.18	5.7	N·m	T_R	★	Rated Torque
2.55	3.92	6.0	N·m	T_S	★	Continuous Stall Torque
8.5	11.6	16	N·m	T_P	★	Peak Stall Torque
4.6	4.6	5.2	Arms	I_R	★	Rated Armature Current
4.6	4.7	5.2	Arms	I_S	★	Armature Stall Current
15.5	15.5	15.5	Arms	I_P	★	Peak Armature Stall Current
0.559	0.825	1.09	N·m／Arms	K_T	☆	Torque Constant
19.5	28.8	37.8	mV／min^{-1}	$K_E\phi$	☆	Voltage Constant for each Phase
0.4	0.85	0.64	Ω	$R\phi$	☆	Phase Resistance
31	42	54	kW／s	Q_R	★	Rated Power Rate
3	4.6	16	ms	te	☆	Electrical Time Constant
0.7	0.89	0.98	ms	tm	☆	Mechanical Time Constant (Not including Encoder)
1.82	2.38	6.0	×10^{-4}kg·m^2(GD^2／4)	J_M		Roter Moment of Inertia ※1
0.0033 ※1			×10^{-4}kg·m^2(GD^2／4)	J_S		Roter Moment of Inertia (Encoder)
2.7	3.6	6.1	kg	WE		Servo Motor Mass ※1
2.55 MIN.	3.92 MIN.	9.0 MIN.	N·m	TB		Brake Static Friction Torque
DC90V／DC24V ± 10%			V	VB		Brake Rated Voltage
0.12／0.37	0.09／0.30	0.17／0.51	A	IB		Brake Rated Current
0.25	0.343	0.5	×10^{-4}kg·m^2(GD^2／4)	JB		Roter Moment of Inertia (Brake)
0.89	0.84	1.5	kg	W		Brake Mass
Operating Temperature: 0 to 40℃, Relative Humidity: 90% maximum, no condensation						Servo Motor Operating Temp, Rel.Humidity
1.6	2.0	2.2	kVA			Servo amplifier power supply capacity (rating)
P.69, 70						CE and UL approved servo motors ※5
IP67	IP67	IP65				Servo motor protection code
t6 × 250mm sq.	t12 × 305mm sq.	t20 × 400mm sq.				Size of aluminum plates for heat radiation during measurement

Servo motor Model No./Flange Size/Rated Output

R2AA08075F/80mm/0.75 (0.675) kW※6	R2AAB8100H/86mm/1.0kW	R2AA13120B/130mm/1.2kW
		

Specification

Servo Amplifier +  **R2 Servo Motor** High Efficiency and Low Ripple (Medium Inertia)

input voltage AC200V Power supply range AC170V to AC253V

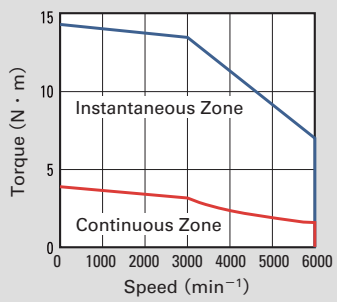
Servo Amplifier Model No.				RS2A05□□		
Servo Motor Model No. and Flange Size				R2AAB8100F 《86mm sq.》	R2AA13120L 《130mm sq.》	R2AA13120D 《130mm sq.》
	Status	Symbol	Unit			
Rated Output	★	P_R	kW	1.0	1.2	1.2
Rated Speed	★	N_R	min^{-1}	3000	2000	2000
Maximum Speed	★	N_{max}	min^{-1}	6000	3000	5000
Rated Torque	★	T_R	N·m	3.18	5.7	5.7
Continuous Stall Torque	★	T_S	N·m	3.92	6.0	6.0
Peak Stall Torque	★	T_P	N·m	14.3	20	16
Rated Armature Current	★	I_R	Arms	6.0	7.6	9.1
Armature Stall Current	★	I_S	Arms	6.8	8.4	9.3
Peak Armature Stall Current	★	I_P	Arms	25.7	26.5	25.4
Torque Constant	☆	K_T	N·m／Arms	0.582	0.77	0.65
Voltage Constant for each Phase	☆	$K_{E\phi}$	mV／min^{-1}	20.3	27.0	22.7
Phase Resistance	☆	R_ϕ	Ω	0.44	0.35	0.23
Rated Power Rate	★	Q_R	kW／s	42	54	54
Electrical Time Constant	☆	te	ms	4.3	15	16
Mechanical Time Constant (Not including Encoder)	☆	tm	ms	0.93	1.1	0.98
Roter Moment of Inertia ※1		J_M	$\times 10^{-4}$kg·m^2(GD^2／4)	2.38	6.0	6.0
Roter Moment of Inertia (Encoder)		J_S	$\times 10^{-4}$kg·m^2(GD^2／4)	0.0033 ※1		
Servo Motor Mass ※1		WE	kg	3.6	6.1	6.1
Brake Static Friction Torque		TB	N·m	3.92 MIN.	9.0 MIN.	9.0 MIN.
Brake Rated Voltage		VB	V	DC90V／DC24V ± 10%		
Brake Rated Current		IB	A	0.09／0.30	0.17／0.51	0.17／0.51
Roter Moment of Inertia (Brake)		JB	$\times 10^{-4}$kg·m^2(GD^2／4)	0.34	0.5	0.5
Brake Mass		W	kg	0.84	1.5	1.5
Servo Motor Operating Temp, Rel.Humidity				Operating Temperature: 0 to 40℃, Relative Humidity: 90% maximum, no condensation		
Servo amplifier power supply capacity (rating)			kVA	2.3	2.8	2.8
CE and UL approved servo motors ※5				No		
Servo motor protection code				IP67	IP65	IP65
Size of aluminum plates for heat radiation during measurement				t12 × 305mm sq.	t12 × 400mm sq.	t12 × 400mm sq.

※1 This is an instance with the battery-backup method absolute encoder. For the servo amplifier weight, see page 86.
※2 Items with ★ and speed - torque characteristics indicate values after temperature rise saturation when used with a standard servo amplifier. The values are the typical values.
※3 ☆ : Indicates a typical value when the winding temperature is 20℃ .
※4 A reduction rating might be needed if an oil seal and brake is attached. Please consult with us about the details.
※5 Our standard servo amplifiers are CE and UL approved.
※6 Please contact with us about model no.

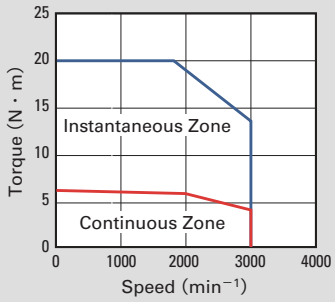
Speed-Torque Characteristics

Servo motor Model No./Flange Size/Rated Output

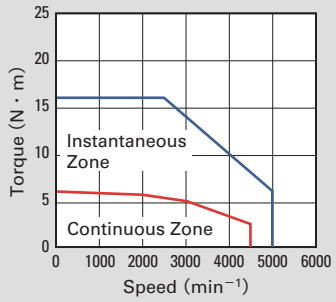
R2AAB8100F/86mm/1.0kW



R2AA13120L/130mm/1.2kW



R2AA13120D/130mm/1.2kW

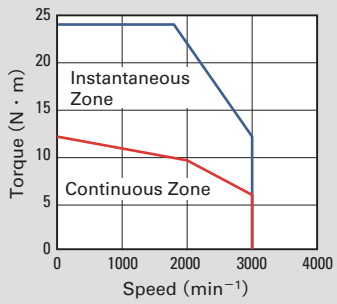


These values are for when the input power supply is a 3-phase AC 200 V circuit. The area of the instantaneous zone decreases when the power supply voltage is less than 200 V. Please contact us if the servo amp. power supply is a single-phase AC 200 V circuit.

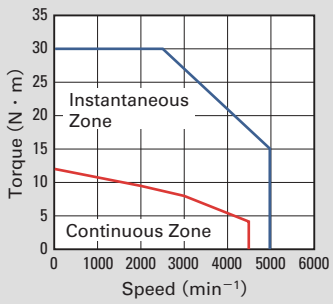
RS2A05□□	Amp. capacity: 100 A ※6	Servo Amplifier Model No.			
R2AA13200L 《130mm sq.》	R2AA13200D 《130mm sq.》	Servo Motor Model No. and Flange Size			
		Unit	Symbol	Status	
2	2	kW	P_R	★	Rated Output
2000	2000	min^{-1}	N_R	★	Rated Speed
3000	5000	min^{-1}	N_{max}	★	Maximum Speed
9.5	9.5	N·m	T_R	★	Rated Torque
12	12	N·m	T_S	★	Continuous Stall Torque
24	30	N·m	T_P	★	Peak Stall Torque
11.0	14.3	Arms	I_R	★	Rated Armature Current
12.0	17.5	Arms	I_S	★	Armature Stall Current
26.5	45.5	Arms	I_P	★	Peak Armature Stall Current
0.97	0.70	N·m／Arms	K_T	☆	Torque Constant
33.7	24.3	mV／min^{-1}	$K_E\phi$	☆	Voltage Constant for each Phase
0.22	0.11	Ω	$R\phi$	☆	Phase Resistance
74	74	kW／s	Q_R	★	Rated Power Rate
17	18	ms	te	☆	Electrical Time Constant
0.86	0.83	ms	tm	☆	Mechanical Time Constant (Not including Encoder)
12.2	12.2	$\times 10^{-4}$kg·m^2(GD^2／4)	J_M		Roter Moment of Inertia ※1
0.0033 ※1		$\times 10^{-4}$kg·m^2(GD^2／4)	J_S		Roter Moment of Inertia (Encoder)
10	10	kg	WE		Servo Motor Mass ※1
12 MIN.	12 MIN.	N·m	TB		Brake Static Friction Torque
DC90V ／ DC24V ± 10%		V	VB		Brake Rated Voltage
0.17 ／ 0.66	0.17 ／ 0.66	A	IB		Brake Rated Current
0.5	0.5	$\times 10^{-4}$kg·m^2(GD^2／4)	JB		Roter Moment of Inertia (Brake)
1.5	1.5	kg	W		Brake Mass
Operating Temperature: 0 to 40℃, Relative Humidity: 90% maximum, no condensation					Servo Motor Operating Temp, Rel.Humidity
4.0	5.0	kVA			Servo amplifier power supply capacity (rating)
No					CE and UL approved servo motors ※5
IP65					Servo motor protection code
t20 × 470mm sq.	t20 × 470mm sq.				Size of aluminum plates for heat radiation during measurement

Servo motor Model No./Flange Size/Rated Output

R2AA13200L/130mm/2.0kW



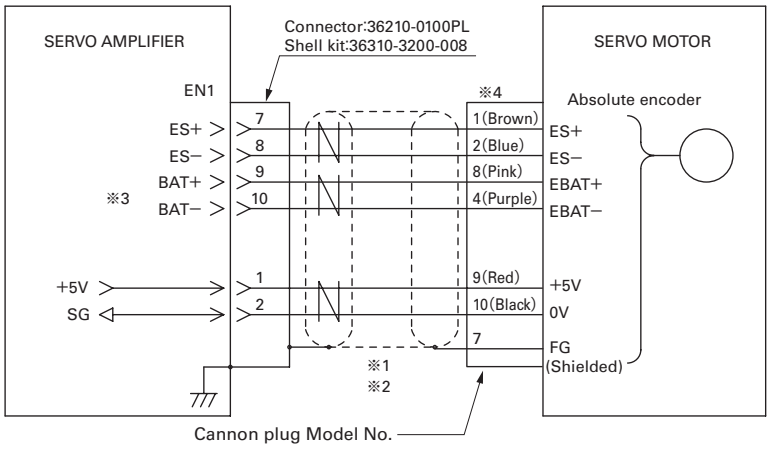
R2AA13200D/130mm/2.0kW



Encoder Wiring Diagram

Serial Encoder

・Battery backup type absolute encoder
・Absolute encoder for incremental system



R2 Servo Motor (130mm sq. or more)	JN2DS10SL1-R	JN2FS10ML1-R
	JN2DS10SL2-R	JN2FS10ML2-R
	JN2DS10SL3-R	JN2FS10ML3-R

※1 Use a twisted-pair shielded cable.
※2 The maximum cable lengths under the conductor size of the power supply cable (5V,SG).

Conductor size		Conductor resistance	Length
AWG	SQ (mm²)	(Ω/km) ※20℃	(m)
26	0.15	150 or less	5
24	0.2	100 or less	10
22	0.3	60 or less	15
20	0.5	40 or less	25
18	0.75	25 or less	40

Conductor resistance is different by conductor specifications.

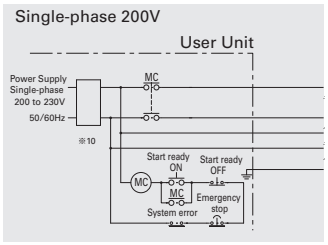
※3 When the absolute encoder for incremental system or batteryless absolute encoder is used, battery lines (EBAT+, EBAT-) are not required.
※4 Lead wire colors are indicated in parentheses.
The pin numbers of Cannon plug type: See the following table.

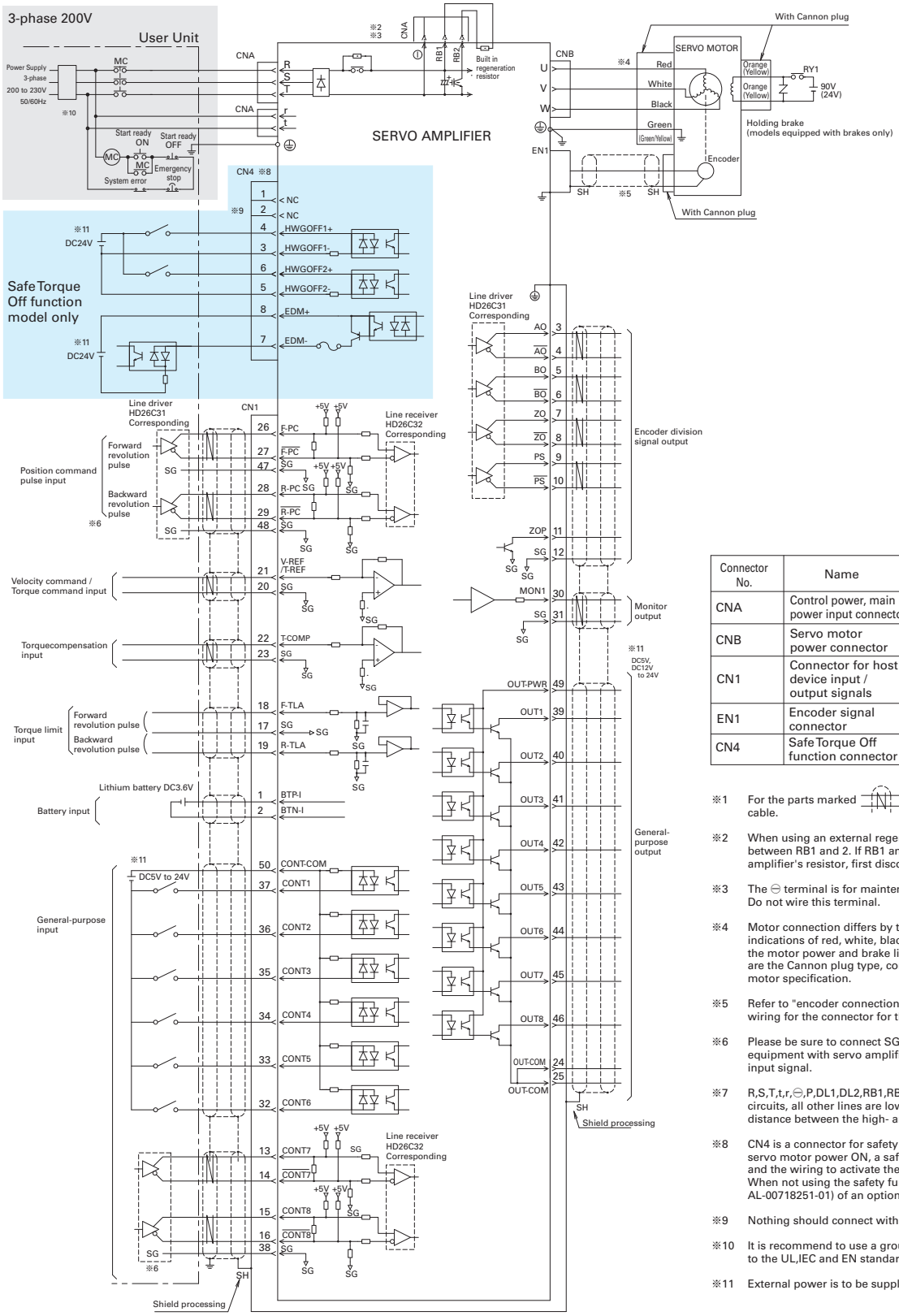
		ES+	ES−	EBAT+	EBAT−	+5V
R2 Servo Motor	100mm sq. or less	Brown	Blue	Pink※3	Purple※3	Red
	130mm sq. or more	1	2	8※3	4※3	9

		0V	FG
R2 Servo Motor	100mm sq. or less	Black	Shield
	130mm sq. or more	10	7

External Wiring Diagram

Analog/Pulse input type (NPN output)





Connector No.	Name	Housing, plug, shell
CNA	Control power, main power input connector	MSTB2.5/8-STF-5.08LUB
CNB	Servo motor power connector	MSTBT2.5/3-STF-5.08
CN1	Connector for host device input / output signals	Plug:10150-3000PE Shell:10350-52A0-008
EN1	Encoder signal connector	Connector:36210-0100PL Shell kit:36310-3200-008
CN4	Safe Torque Off function connector	For short-circuit:2040978-1 For customer wining:2013595-3

※1 For the parts marked , use a twisted pair shielded cable.

※2 When using an external regeneration resistor, connect it between RB1 and 2. If RB1 and 2 are connected to the internal amplifier's resistor, first disconnect them.

※3 The ⏚ terminal is for maintenance (high-voltage circuit). Do not wire this terminal.

※4 Motor connection differs by the motor specifications. The indications of red, white, black, green and orange apply when the motor power and brake lines are the lead type. When they are the Cannon plug type, connect them according to the motor specification.

※5 Refer to "encoder connection diagram" on page 81 for the wiring for the connector for the encoder connection.

※6 Please be sure to connect SG(signal ground) between equipment with servo amplifier when you use a difference input signal.

※7 R,S,T,t,r,⏚,P,DL1,DL2,RB1,RB2, U,V,W are high-voltage circuits, all other lines are low-voltage. Ensure sufficient distance between the high- and low-voltage circuits.

※8 CN4 is a connector for safety function signals. To turn the servo motor power ON, a safety device must be connected and the wiring to activate the safety function must be done. When not using the safety function, use the connector (P.N : AL-00718251-01) of an option inserted into the CN4.

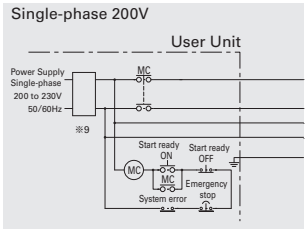
※9 Nothing should connect with CN4-1 and 2pin.

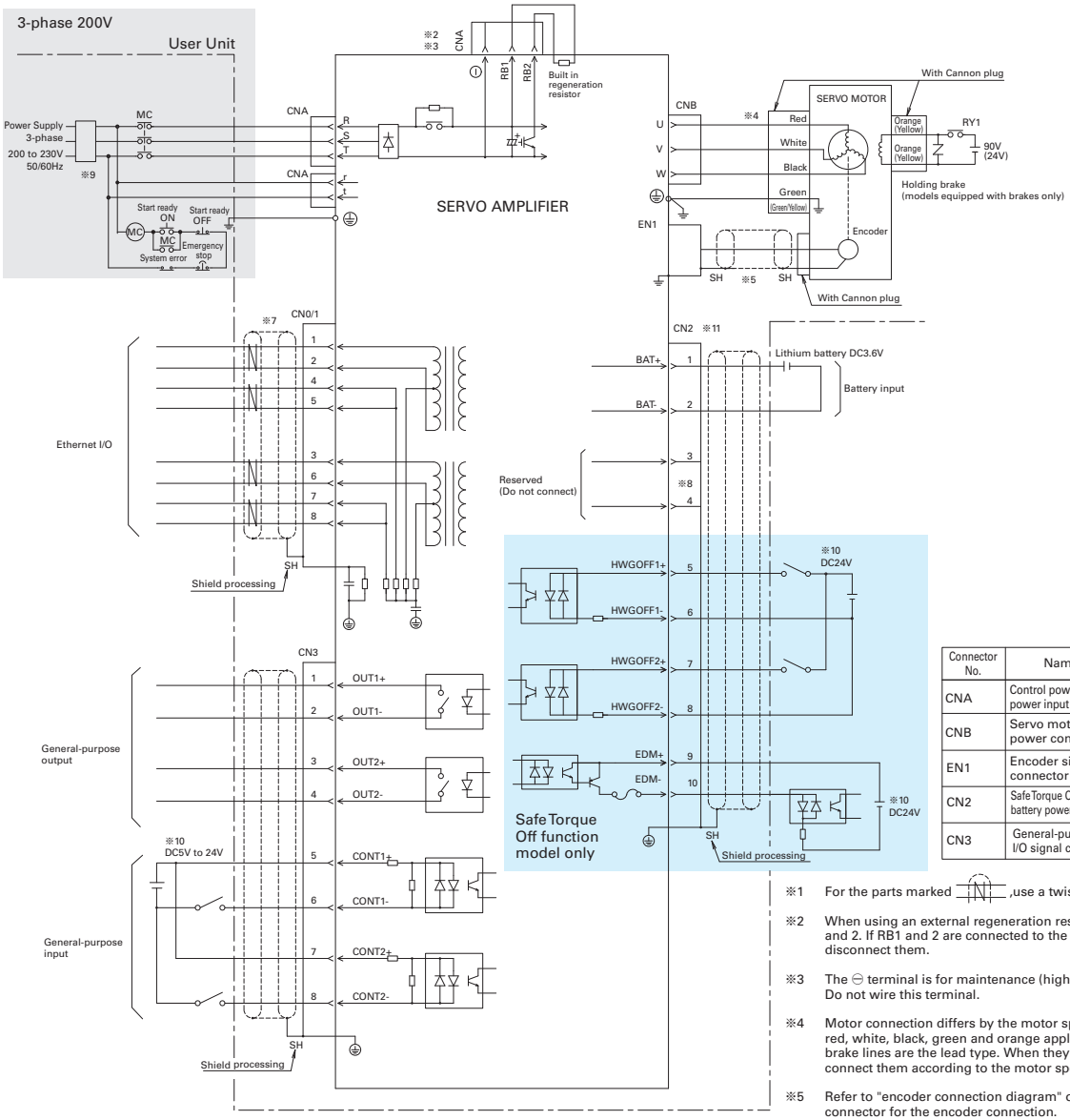
※10 It is recommend to use a ground fault interrupter conforming to the UL,IEC and EN standards.

※11 External power is to be supplied by user.

External Wiring Diagram

EtherCAT interface type





Connector No.	Name	Housing, plug, shell
CNA	Control power, main power input connector	MSTB2.5/8-STF-5.08LUB
CNB	Servo motor power connector	MSTBT2.5/3-STF-5.08
EN1	Encoder signal connector	Connector:36210-0100PL Shell kit:36310-3200-008
CN2	Safe Torque Off function, battery power connector	MUF-PK10K-X
CN3	General-purpose I/O signal connector	2013595-3

※1 For the parts marked ,use a twisted pair shielded cable.

※2 When using an external regeneration resistor, connect it between RB1 and 2. If RB1 and 2 are connected to the internal amplifier's resistor, first disconnect them.

※3 The ⏚ terminal is for maintenance (high voltage circuit). Do not wire this terminal.

※4 Motor connection differs by the motor specifications. The indications of red, white, black, green and orange apply when the motor power and brake lines are the lead type. When they are the Cannon plug type, connect them according to the motor specification.

※5 Refer to "encoder connection diagram" on page 81 for the wiring for the connector for the encoder connection.

※6 R,S,T,t,r,⏚,,P,DL1,DL2,RB1,RB2, U,V,W are high-voltage circuits, all other lines are low-voltage. Ensure sufficient distance between the high- and low-voltage circuits.

※7 Use a TIA category 5e or better shielded twisted pair (STP) cable.

※8 Nothing should connect with CN2-3 and 4pin.

※9 It is recommend to use a ground fault interrupter conforming to the UL,IEC and EN standards. Do not wire the S phase for a single-phase power amplifier.

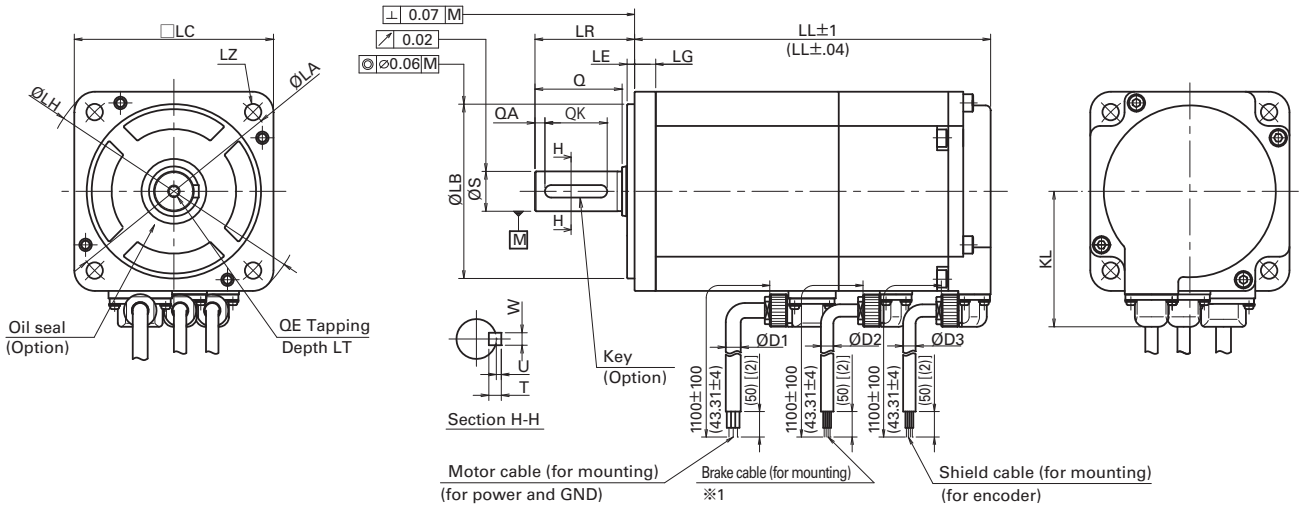
※10 External power is to be supplied by user.

※11 CN2 is a Safe Torque Off function connector. If it is not connected to the safety device to enable the Safe Torque Off function to work, the servo does not turn on (the motor is not energized).

Servo Motor Dimensions [Unit : mm (inch)]

40mm sq. to 80mm sq.

R2 Servo Motor Series



Dimensions with the battery backup method absolute encoder and brake.

	Battery backup method absolute encoder, Absolute encoder for incremental system											
	W/out oil seal		With oil seal									
	W/out brake	With brake	W/out brake	With brake								
Model	LL	LL	LL	LL	LG	KL	LA	LB	LE	LH	LC	LZ
R2AA04010	72 (2.80)	108 (4.25)	77 (3.03)	113 (4.45)	5 (.2)	35.4 (1.39)	46 (1.81)	0 0 30-0.021 (1.18- .00084)	2.5 (.1)	56 (2.20)	40 (1.57)	2-ø4.5 (2-ø.18)
R2AA06020	69.5 (2.74)	97.5 (3.84)	76.5 (3.01)	104.5 (4.11)	6 (.24)	44.6 (1.76)	70 (2.76)	0 0 50-0.025 (1.97- .001)	3 (.12)	82 (3.23)	60 (2.36)	4-ø5.5 (4-ø.22)
R2AA06040	95.5 (3.76)	123.5 (4.86)	102.5 (4.04)	130.5 (5.14)								
R2AA08075	107.3 (4.22)	143 (5.63)	114.3 (4.50)	150 (5.91)	8 (.31)	54.4 (2.14)	90 (3.54)	0 0 70-0.030 (2.76- .0012)	3 (.12)	108 (4.25)	80 (3.15)	4-ø6.6 (4-ø.264)

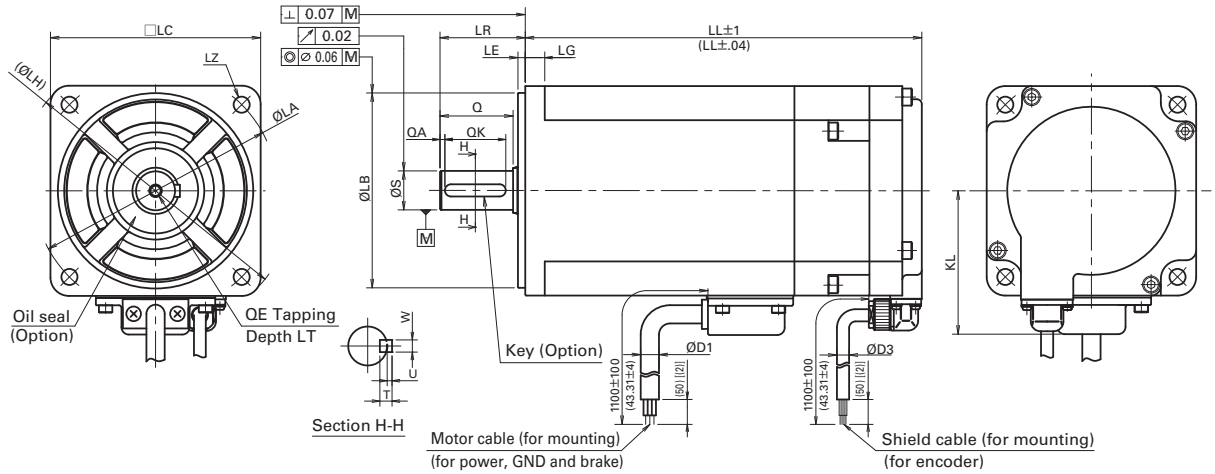
Model	LR	S	Q	QE	LT	D1	D2	D3	QA	QK	W	T	U
R2AA04010	25 (.98)	0 0 8-0.009 (.31- .0004)	20 (.79)	—	—	6 (.24)	5 (.20)	5 (.20)	2 (.08)	12 (.47)	0 0 3-0.025 (.12- .001)	3 (.12)	0 0 1.2-0.2 (.05- .008)
R2AA06020	30 (1.18)	0 0 14-0.011 (.55- .0004)	25 (.98)	M5	12 (.47)	6 (.24)	5 (.20)	5 (.20)	2 (.08)	20 (.79)	0 0 5-0.030 (.2- .0012)	5 (.20)	0 0 2-0.2 (.08- .008)
R2AA06040													
R2AA08075	40 (1.57)	0 0 16-0.011 (.63- .0004)	35 (1.38)	M5	12 (.47)	6 (.24)	5 (.20)	5 (.20)	4 (.16)	25 (.98)			

※1 Brake connectors (cables) are not supplied for models without brakes.
※2 A reduction in the rating might be needed if an oil seal and Brake is attached. Please consult with us about the details.

Servo Motor Dimensions [Unit : mm (inch)]

86mm sq.

R2 Servo Motor Series



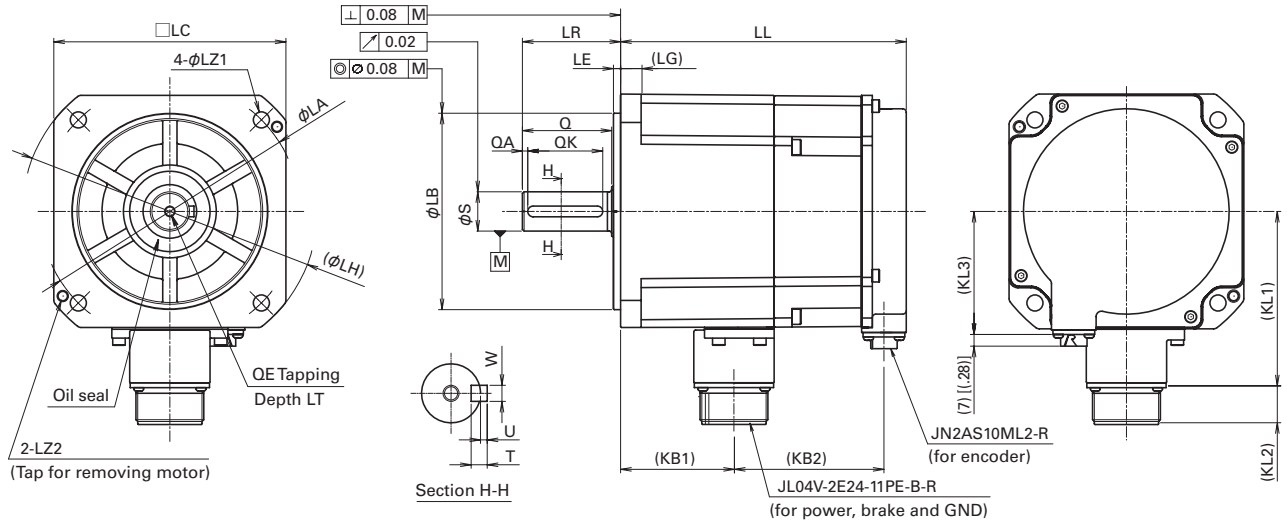
Dimensions with the battery backup method absolute encoder and brake.

	Battery backup method absolute encoder, Absolute encoder for incremental system											
	W/out oil seal		With oil seal									
	W/out brake	With brake	W/out brake	With brake								
Model	LL	LL	LL	LL	LG	KL	LA	LB	LE	LH	LC	LZ
R2AAB8100	139 (5.47)	163 (6.42)	139 (5.47)	163 (6.42)	8 (.31)	58.8 (2.31)	100 (3.94)	0 80-0.030 (3.15- .0012)	3 (.12)	115.5 (1.55)	86 (3.39)	4-ø6.6 (4-ø.264)

Model	LR	S	Q	QE	LT	D1	D2	D3	QA	QK	W	T	U
R2AAB8100	35 (1.38)	0 16-0.011 (.63- .0004)	30 (1.18)	M5	12 (.47)	7.5 (.3)	-	5 (.2)	2 (.08)	25 (.98)	0 5-0.030 (.2- .0012)	5 (.2)	0 2-0.2 (.08- .008)

130mm sq.

R2 Servo Motor Series



Dimensions with the battery backup method absolute encoder and brake.

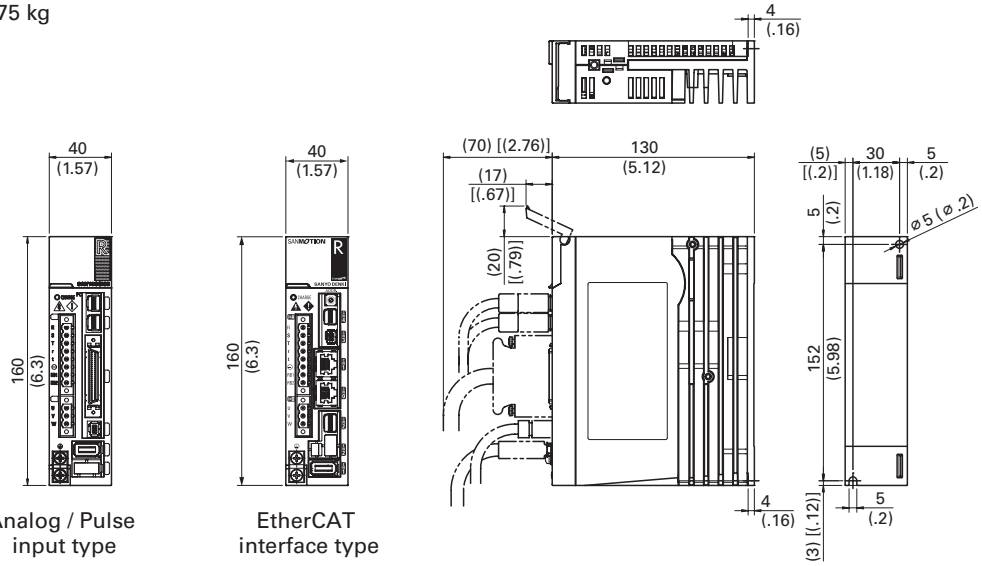
	Battery backup method absolute encoder, Absolute encoder for incremental system												
	W/out brake		With brake										
Model	LL	KB2	LL	KB2	LG	KL1	KL2	KL3	LA	LB	LE	LH	LC
R2AA13120	120.5 (4.74)	44 (1.73)	160 (6.3)	84 (3.31)	12 (.47)	98 (3.86)	21 (.83)	69 (2.72)	145 (5.71)	0 110-0.035 (4.33- .0014)	4 (.16)	165 (6.5)	130 (5.12)
R2AA13200	160 (6.3)	48 (1.89)	201 (7.91)	90 (3.54)									

Model	LZ1	LZ2	LR	S	Q	QA	QK	W	T	U	KB1	QE	LT
R2AA13120	9 (.35)	M6	55 (2.17)	0 22-0.013 (.87- .0005)	50 (1.97)	3 (.12)	42 (1.65)	0 6-0.030 (.24- .0012)	6 (.24)	2.5 (.1)	64 (2.52)	M6	20 (.79)
R2AA13200			55 (2.17)	0 28-0.013 (1.1- .0005)	50 (1.97)	3 (.12)	42 (1.65)	0 8-0.036 (.31- .0014)	7 (.28)	3 (.12)	99 (3.90)	M8	25 (.98)

Servo Amplifier Dimensions [Unit : mm (inch)]

15A

Mass: 0.75 kg

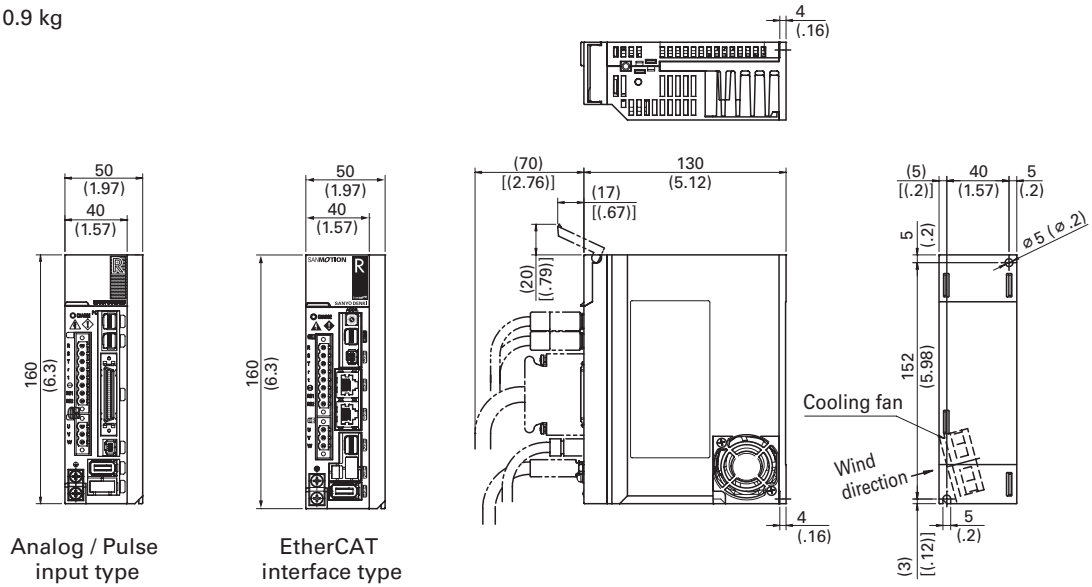


Analog / Pulse input type

EtherCAT interface type

30A

Mass: 0.9 kg

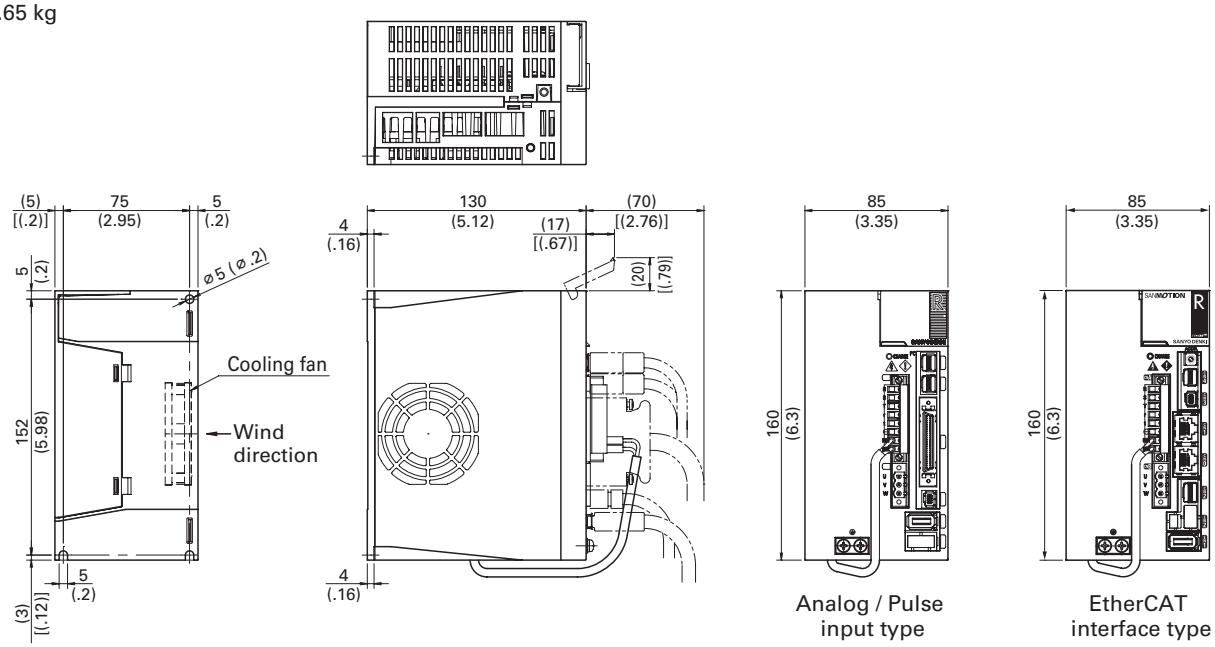


Analog / Pulse input type

EtherCAT interface type

50A

Mass: 1.65 kg



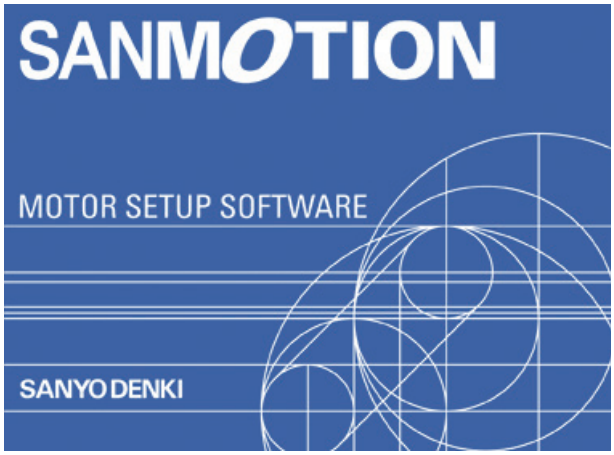
Analog / Pulse input type

EtherCAT interface type

Setup Software

This software allows you to set servo system parameters from a PC.
It also allows you to easily start up or test run the servo system.
The software can be downloaded from Product Information on our website.
URL : http://www.sanyodenki.com

Start-up screen



■ Setup software title:

SANMOTION MOTOR SETUP SOFTWARE

■ Main Functions

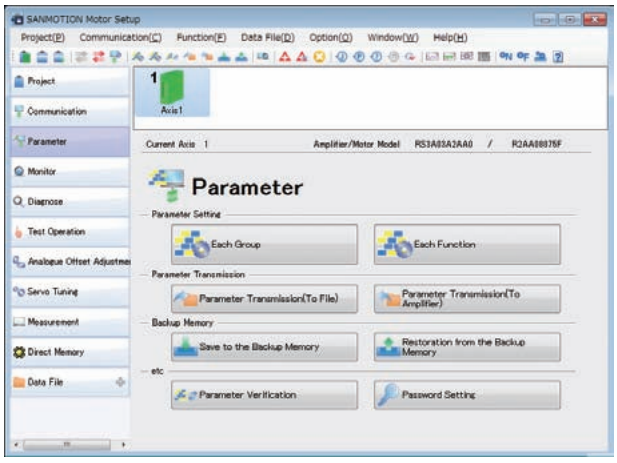
Parameter settings (settings by group, settings by function)
Diagnosis (alarm display, warning display, alarm cancellation)
Test run execution (speed JOG, position JOG, motor starting point search, serial encoder clearance)
Servo tuning (notch filter tuning, FF vibration control frequency tuning)
Various measurement functions (operating waveform display, machinery frequency response measurement)

■ Supported OS

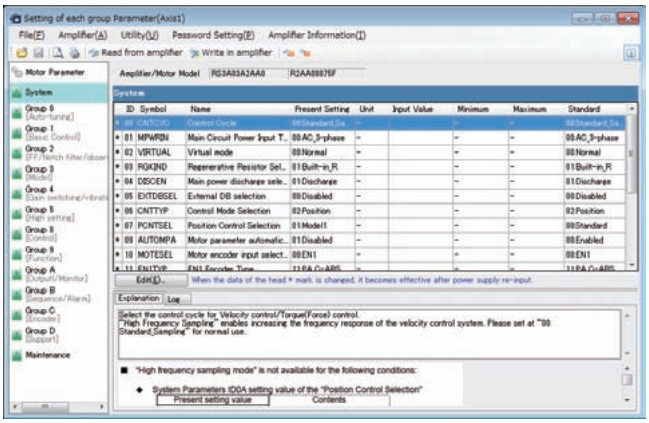
Windows XP (SP3 or higher) / Vista / 7 / 8

* See our website for details on supported versions.

Main screen

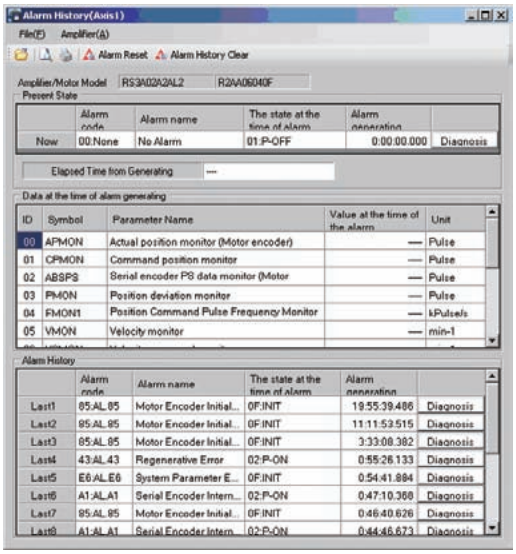


Setting of each group Parameter



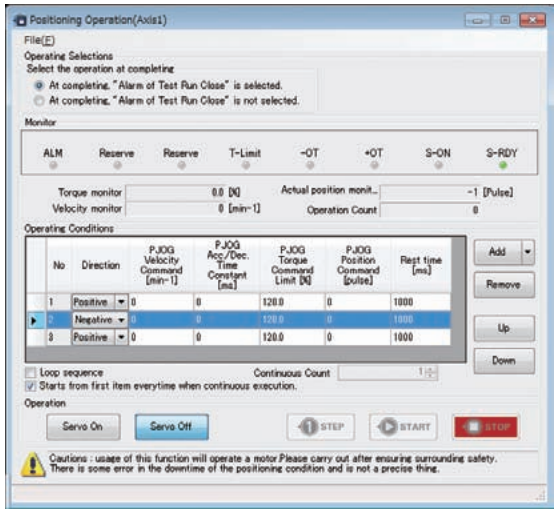
Parameters can be set, saved, and read from a PC.

Diagnosis screen



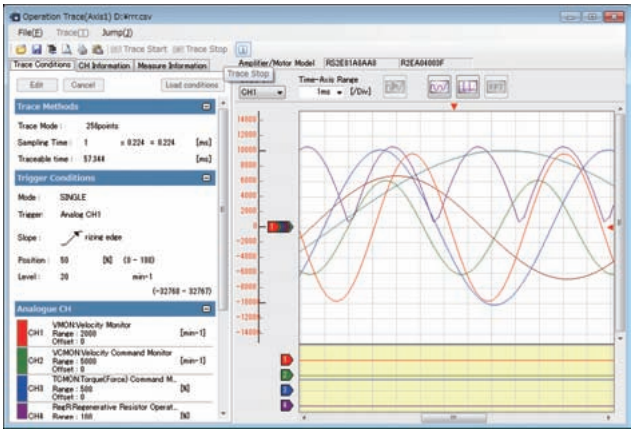
The current and previous 7 alarm occurrences can be checked.

Test run



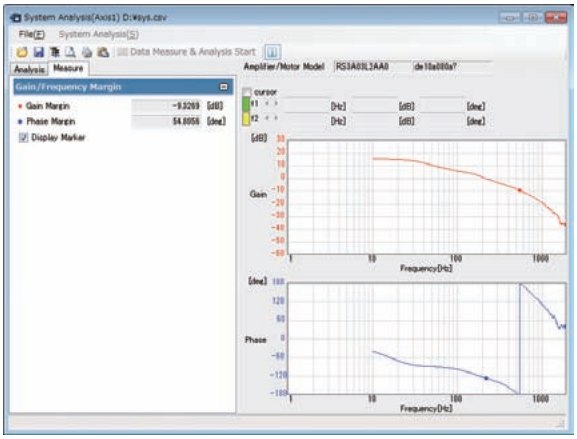
Simple test run of servo motor by issuing velocity commands and position commands from a PC. (Position JOG in operation shown in screen)

Measurement



Operation Trace

Graphically displays servo motor's speed, torque and internal status.



System Analysis

Analyzes servo system frequency characteristics.

Option

The options on Page 89 to 93 is made in Japan.
We export the products from Japan when customers order them.

Connectors of Servo Amplifier　Analog/Pulse input type

Single Connectors

Connector No.	Item	Model No.	Manufacturer model No.	Manufacturer
CN1	To connect host device	AL-00385594	10150-3000PE 10350-52A0-008	Sumitomo 3M Limited
EN1	To connect encoder	AL-00632607	36210-0100PL 36310-3200-008	
CNA	For input power supply, regeneration resistor connection	AL-00686902-01	MSTBT2.5/8-STF-5.08LUB	Phoenix Contact.K.K
CNB	To connect servo motor	AL-Y0004079-01	MSTBT2.5/3-STF-5.08	
CN4 ※1	To connect safety device (For short-circuiting)	AL-00718251-01	2040978-1	Tyco Electronics Japan G.K.
CN4	To connect safety device (For wiring)	AL-00718252-01	2013595-3	

※1 When wiring for CN4 is not performed, make sure to insert safety device connector (for short-circuiting) to CN4 on servo amplifier.

Connector sets　(No safe-torque-off function)

Connector No.	Item	Model No.	Applicable servo amplifier model No.	Remarks
CN1,EN1,CNA,CNB	Standard	AL-00723282	RS2A**A0AL0W00	Without regeneration resistance
CN1,EN1,CNB		AL-00723284	RS2A**A0AA0W00	With regeneration resistance
CN1,EN1	Low voltage set	AL-00723290	RS2A**A0A*0W00	–
CNA,CNB	High voltage set	AL-00696037	RS2A**A0AL0W00	Without regeneration resistance

Connector sets　(With safe-torque-off function)

Connector No.	Item	Model No.	Applicable servo amplifier model No.	Remarks
CN1,EN1,CNA,CNB,CN4	Standard	AL-00723155	RS2A**A0AL4W00	Without regeneration resistance
CN1,EN1,CNB,CN4		AL-00723156	RS2A**A0AA4W00	With regeneration resistance
CN1,EN1,CN4	Low voltage set	AL-00723159	RS2A**A0A*4W00	–

※ CN4 of the connector set is for safety device connection (wiring) with model number AL-00718252-01.

Connector for Servo Amplifier　EtherCAT interface type

Single Connectors

Connector No.	Item	Model No.	Manufacturer model No.	Manufacturer
CN0,CN1	Ethernet For host device connection	Not provided by our company. Please use shielded type modular plug (RJ-45) corresponding to the CAT5e standard.		
EN1	For encoder connection	AL-00632607	36210-0100PL 36310-3200-008	Sumitomo 3M Limited
CNA	For input power supply, regeneration resistor connection	AL-00686902-01	MSTBT2.5/8-STF-5.08LUB	Phoenix Contact.K.K
CNB	For servo motor connection	AL-Y0004079-01	MSTBT2.5/3-STF-5.08	Phoenix Contact.K.K
CN2	For safety device connection	AL-Y0004290-02	MUF-PK10K-X	J.S.T Mfg Co.,Ltd.
CN3	For general I/O	AL-00718252-01	2013595-3	Tyco Electronics Japan G.K.

Connector sets

Connector No.	Item	Model No.	Applicable servo amplifier model No.	Remarks
CNA,CNB,EN1,CN2,CN3	Standard	AL-00734194	RS2A**A0KL*W00	Without regeneration resistance
CNB,EN1,CN2,CN3		AL-00734196	RS2A**A0KA*W00	With regeneration resistance

Servo Motor Encoder Connectors Model No.

R2 Servo Motor

Motor type	Encoder receptacle	Applicable cable diameter (bushing color phase)	Combination plug for encoder (with rubber bushing)		Pin Layout Symbol
			Straight	Angle	
All R2 Servo Motor Models	JN2AS10ML2-R	ϕ 5.7 to 7.3 (Black)	JN2DS10SL1-R	JN2FS10SL1-R	See the encoder wiring diagram on Page 83.
		ϕ 6.5 to 8.0 (Gray)	JN2DS10SL2-R	JN2FS10SL2-R	
		ϕ 3.5 to 5.0 (Black)	JN2DS10SL3-R	JN2FS10SL3-R	

Please select the correct plug and contacts for the size of cable to be used. The manufacturer's model number and the model number for parts procured from SANYO DENKI are the same number.

Applicable contact for encoder plug ※1, 2

Contact size	Category	Applicable contact	
		Socket contact model No.	Applicable wire size
#22	Manual crimp tool type ※3, 4	JN1-22-20S-R-PKG100	AWG #20
		JN1-22-22S-PKG100	AWG #21 to #25
		JN1-22-26S-PKG100	AWG #26 to #28
	Solder type	JN1-22-22F-PKG100	AWG #20

※1 : Please select the correct plug and contacts for the size of cable to be used. The manufacturer's model number and the model number for parts procured from SANYO DENKI are the same number.
※2 : When removing a contact that has already been inserted, please use a removal tool. Please purchase the removal tool from the connector manufacturer (Japan Aviation Electronics Industry Limited).
※3 : For the manual crimp tool part number, see the instruction manuals from the connector manufacturer (Japan Aviation Electronics Industry Limited).
※4 : Please purchase the semi-automatic crimp tool from the connector manufacturer (Japan Aviation Electronics Industry Limited).
※5 : For the connector and contact instructions, precautions, etc., please see the catalogs and instruction manuals from the connector manufacturer (Japan Aviation Electronics Industry Limited).

Motor Connectors Model No. ※1

Voltage	Flange Size	Motor Model No.	Motor power receptacle	Plug for power line (Cable Clamp)		TÜV-Standard Plug Waterproof Specification (Cable Clamp)	
				Straight	Angle	Straight	Angle
200V Type	130mm	R2AA13120B	JL04V-2E24-11PE-B-R	N/MS3106B24-11S (N/MS3057-16A) 【MS06B24-11S-16】	N/MS3108B24-11S (N/MS3057-16A) 【MS08B24-11S-16】	JL04V-6A24-11SE-EB-R (JL04-2428CK-R) 【332706X10】	JL04V-8A24-11SE-EB-R (JL04-2428CK-R) 【332707X10】
		R2AA13120L					
		R2AA13120D					
		R2AA13200L					
		R2AA13200D					

Voltage	Flange Size	Motor Model No.	Pin Layout Symbol					Applicable amplifier model No.	Recommended motor power wire size (U, V, W, GND)		Wire size of main power supply (R, S, T, GND)	
			U phase	V phase	W phase	Ground	Brake		mm^2	AWG No.	mm^2	AWG No.
200V Type	130mm	R2AA13120B	D	E	F	G, H	A, B	RS2A03	0.75	#19	2	#14
		R2AA13120L						RS2A05	2	#14	2	#14
		R2AA13120D										
		R2AA13200L										
		R2AA13200D						RS2A10	5.5	#10	5.5	#10

※1 : Please see the catalogs and instruction manuals of the connector manufacturer's (Japan Aviation Electronics Industry Limited) for details, including the instructions for the connector and the precautions.
※2 : 【 】indicates the SANYO DENKI part numbers (Plug & Cable Clamp)

Option

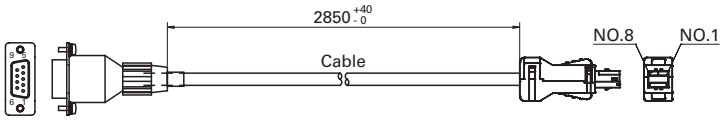
The options on Page 89 to 93 is made in Japan.
We export the products from Japan when customers order them.

Setup software, Serial Communication Relation

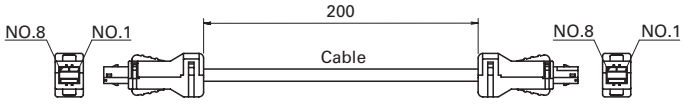
Name	Details	Model No.
1) Cable for personal computer communications	Between personal computer and servo amplifier — Analog / Pulse input type : CN2; EtherCAT interface type : CN4	AL-00689703-01
2) Cable for communication between amp. (0.2m) ※1	Servo Amplifier (CN2) ⇔ Servo Amplifier (CN3)	AL-00695974-01
3) Cable for communication between amp. (3.0m) ※1		AL-00695974-02
4) Communication converter ※1	RS-232C ⇔ RS-422	SAU-024-01
5) Connector with terminator ※1	RS-422 terminator for communication	AL-00695977-01

Dimentions (Unit : mm)

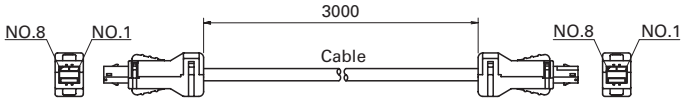
1) Cable for personal computer communications (Model No. : AL-00689703-01)



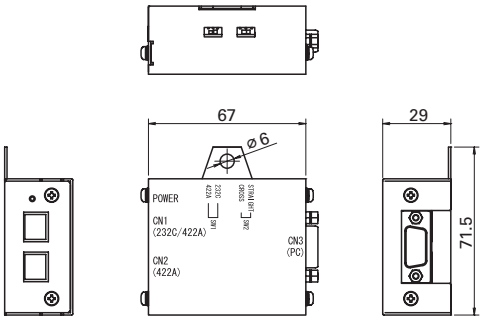
2) Cable for communication between amp. (0.2m) (Model No. : AL-00695974-01) ※1



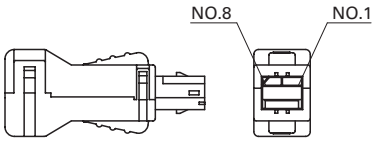
3) Cable for communication between amp. (3.0m) (Model No. : AL-00695974-02) ※1



4) Communication converter (Model No. : SAU-024-01) ※1



5) Connector with terminator (Model No. : AL-00695977-01) ※1

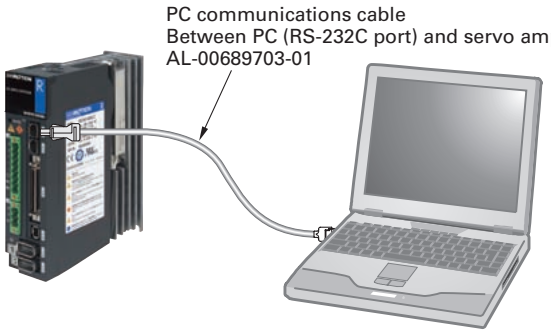


※1 Optional connector dedicated for analog/pulse input type.

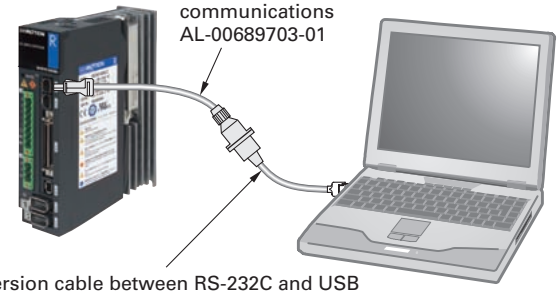
Connection examples

1) For single axis

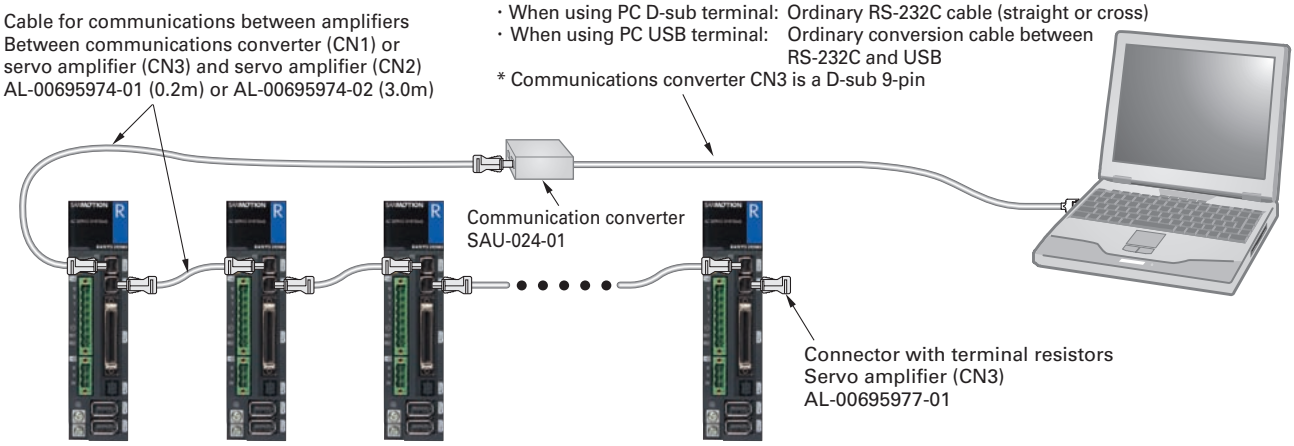
・When using PC RS-232C terminal



・When using PC USB terminal



2) For multiple axes

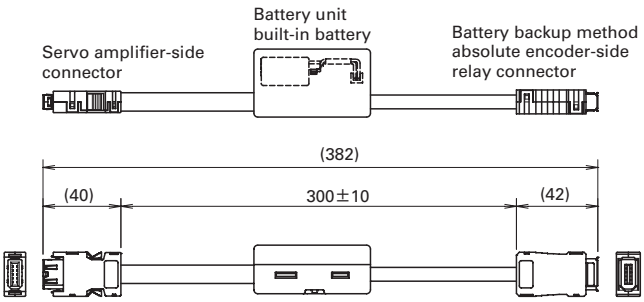


Battery for Battery Backup Method Absolute Encoder Relation

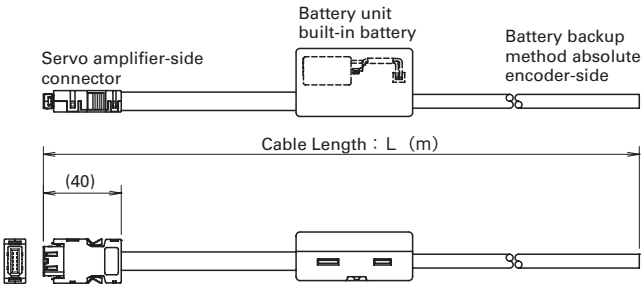
Name	Details	Model No.
1) Battery trunk cable, with connectors on both ends	–	AL-00731792-01
2) Battery trunk cable, with connectors on one end	–	AL-00697960-□□
3) Replacement batteries	Lithium battery : ER3VLY Toshiba Consumer Marketing Ltd.	AL-00697958-01

Dimensions (Unit : mm)

1) Battery trunk cable, with connectors on both ends (Model No. : AL-00731792-01)

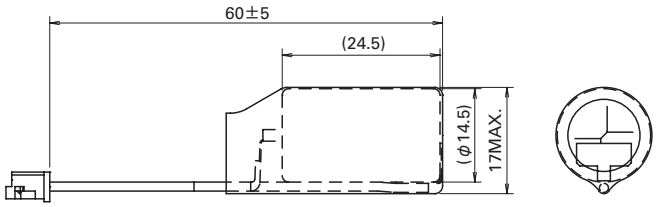


2) Battery trunk cable, with connectors on one end (Model No. : AL-00697960-□□)



	Model No.	L [m]
1	AL-00697960-01	3
2	AL-00697960-02	5
3	AL-00697960-03	10
4	AL-00697960-04	15
5	AL-00697960-05	20
6	AL-00697960-06	25

3) Replacement batteries (Model No. : AL-00697958-01)

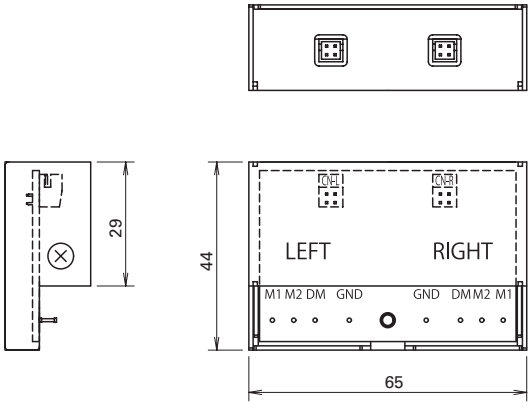


Analog Monitor Relation

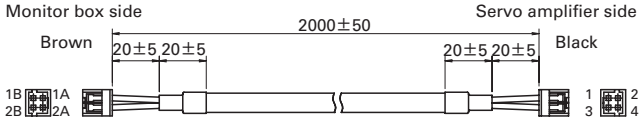
Name	Details	Model No.
1) Monitor Box	Monitor box body 2 dedicated cables	Q-MON-3
2) Dedicated cable	1 dedicated cables	AL-00690525-01

Dimensions (Unit : mm)

1) Monitor Box (Model No. : Q-MON-3)



2) Dedicated Cable (Model No. : AL-00690525-01)

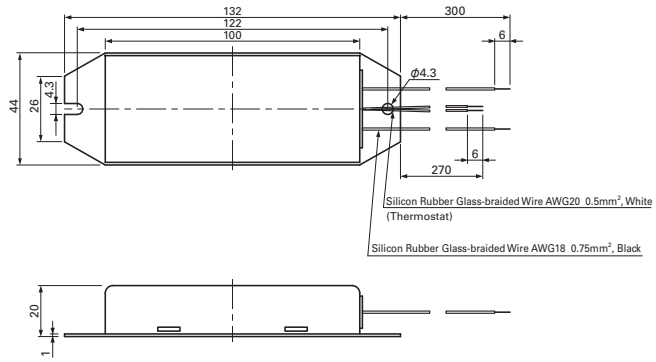


※1 2 units of the dedicated cables per above 2) (PN# AL-00690525-01) are attached to Monitor Box (PN#Q-MON-3).

Option

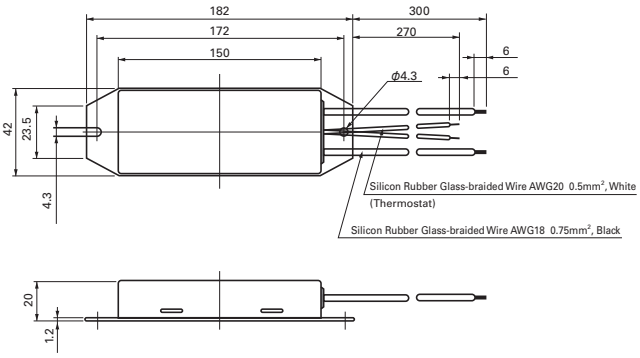
The options on Page 89 to 93 is made in Japan.
We export the products from Japan when customers order them.

External Regeneration Resistor Dimensions (Unit: mm)



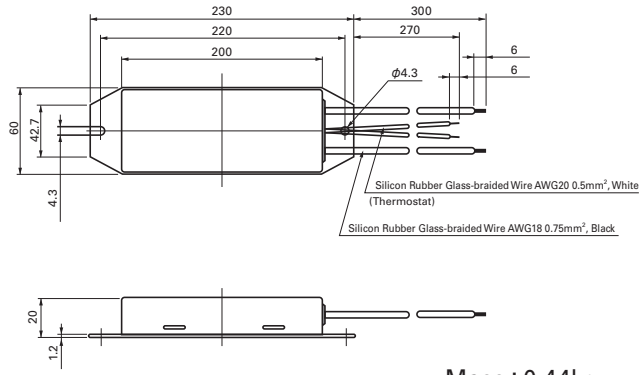
Mass : 0.19kg

	Model No.	Thermostat
1	REGIST-080W100B	Normal close
2	REGIST-080W50B	Normal close



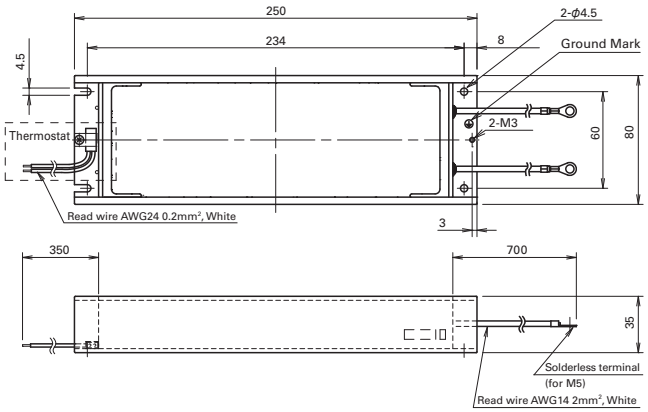
Mass : 0.24kg

	Model No.	Thermostat
1	REGIST-120W100B	Normal close
2	REGIST-120W50B	Normal close



Mass : 0.44kg

	Model No.	Thermostat
1	REGIST-220W20B	Normal close
2	REGIST-220W50B	Normal close
3	REGIST-220W100B	Normal close



Mass : 1.5kg

	Model No.	Thermostat
1	REGIST-500CW20B	Normal close
2	REGIST-500CW14B	Normal close
3	REGIST-500CW10B	Normal close
4	REGIST-500CW7B	Normal close

Inquiry Check Sheet

For more information regarding any products or services described herein, please contact your nearest office listed on the back of this catalog.

To SANYO DENKI Co., LTD.

Date：

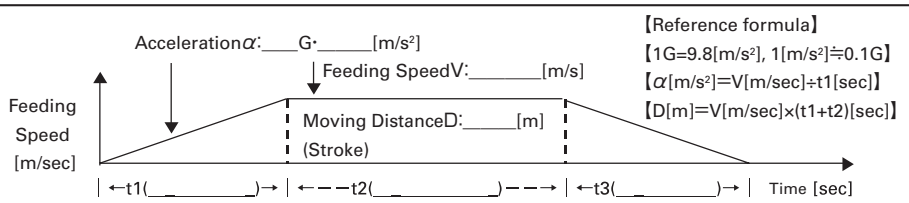
Company:

Department:

Name:

Tel: FAX:

E-mail:

	Item	Contents
❶	Name of target equipment	Equipment name, category (transport, processing, test, other)
❷	Name of servo axis	Axis name, axial mechanism (horizontal/vertical), brake mechanism (yes/no)
❸	Current condition of above axis	Manufacturer Name ( ) Series Name ( ) Motor Capacity ( ) Hydraulic, Mechanical, or New System ( )
❹	Positioning accuracy	± mm･± μm
❺	Operation pattern	 【Reference formula】 【1G=9.8[m/s²], 1[m/s²]≒0.1G】 【α[m/s²]=V[m/sec]÷t1[sec]】 【D[m]=V[m/sec]×(t1+t2)[sec]】
❻	Mechanism	Ball-screw/screw-rotation type (horizontal/vertical), ball-screw/nut-rotation type (horizontal/vertical), rack and pinion (horizontal/vertical), belt/chain (horizontal/vertical), rotary table, roll feed, other
❼	Mechanical structure	WT(table mass) kg　WL(work mass) kg　WA(mass of other drive parts) kg WR(rack mass) kg　WB(belt/chain mass) kg　WC(counterbalance mass) kg Fa(external force axial direction) N　Fb(ball-screw preload) N　T(roll pushing force) N Dr1(drive-side roll diameter) mm　Dr2(follower-side roll diameter) mm Lr1(drive-side roll length) mm　Lr2(follower-side roll length) mm　G(reduction ratio) JG(speed-reducer inertia) kg･m²　JC(coupling inertia) kg･m² JN(nut inertia) kg･m²　JO(other motor-axis conversion inertia) kg･m² Db(ball-screw diameter) mm　Lb(ball-screw axial length) mm　Pb(ball -screw lead) mm Dp(pinion/pulley diameter) mm　Lp(pinion axial length) mm　tp(pully thickness) mm Dt(table diameter) mm　Dh(table-support diameter) mm　LW(load shift from axis) mm Ds(table shaft diameter) mm　Ls(table shaft length) mm ρ(specific gravity of ball-screw/pinion/pulley/table-shaft material) kg･cm³ μ(friction coefficient between sheet and sliding surface/support-section/roll)　ρ1(specific gravity of roll-1 material) kg／cm³ ρ2(specific gravity of roll-2 material) kg／cm³　κ(internal friction coefficient of preload nut) η(mechanical efficiency)　JL(load inertia of motor-axis conversion) kg･m² TF(friction torque of motor axis conversion) N･m　Tu(imbalance torque of motor axis conversion) N･m
❽	Speed reducer	Customer-provided (／)･SANYO DENKI standard (planet/spur/no-backlash-planet ／) other (／)
❾	Encoder type	Encoder type specified (yes / no) Yes: (Wiring saving incremental encoder, battery backup absolute encoder, absolute encoder for incremental system, batteryless absolute encoder) Resolution( )
❿	Input format	Position, velocity, torque, other ( )
⓫	Host equipment (controller)	Sequencer, laptop, customer-developed product, SANYO DENKI-provided, other ( )
⓬	Usage environment and other requirements	Cutting, clean-room use, anti-dust measures, other ( )
⓭	Estimated production	Single product: ( ) units/month ( ) units/year
⓮	Development schedule	Prototype period: ( ) Year ( ) Month Production period: ( ) Year ( ) Month
⓯	Various measures	Related documentation (already submitted / send later by mail) Visit/PR desired (yes / no) Meeting desired (yes / no)
⓰	Miscellaneous (questions, pending problems, unresolved issues, etc.)	

■ ECO PRODUCTS

ECO PRODUCTS

ECO PRODUCTS are designed with the goal of lessening nevironmental impact, from product development to disposal.

■ Precautions For Adoption

Failure to follow the precautions on the right may cause moderate injury and property damage, or in some circumstances,could lead to a serious accident. Always follow all listed precautions.

⚠ Cautions

- Read the accompanying Instruction Manual carefully prior to using the product.
- If applying to medical devices and other equipment affecting people's lives, please contact us beforehand and take appropriate safety measures.
- If applying to equipment that can have significant effects on society and the general public, please contact us beforehand.
- Do not use this product in an environment where vibration is present, such as in a moving vehicle or shipping vessel.
- Do not perform any retrofitting, re-engineering, or modification to this equipment.
- The products presented in this catalog are meant to be used for general industrial applications. If using for special applications related to aviation and space, nuclear power, electric power, submarine repeaters, etc., please contact us beforehand.

*For any question or inquiry regarding the above, contact our Sales Department.

http://www.sanyodenki.com

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