SANMOTION R

AC SERVO SYSTEMS

ADVANCED MODEL

PROFINET Interface Model

Real-time communication

The new amplifier's deterministic capability makes it perfect for motion control and other sophisticated applications that have hard real-time synchronization control requirements, as well as high speed applications in the field of factory automation.

Open fieldbus

Compatible with standard Ethernet. This model is an optimum choice to replace existing PROFIBUS-based systems.

Common Specifications

Input power	Servo amplifier capacity
200 to 230 VAC +10, -15%, 50/60 Hz±3 Hz	15 A, 30 A (30 W to 750 W)
100 to 115 VAC +10, -15%, 50/60 Hz±3 Hz	15 A, 30 A (30 W to 200 W)
General Input / Output, safety function	6 inputs / 2 outputs, Safe Torque Off

Interface Specifications

Physical layer	IEC61158-2 IEEE802.3u 100BASE-TX
Data link layer	IEC61158-3, -4 Type10
Application layer	IEC61158-5, -6 Type10
Communication port / Connector	RJ45 connector (2 port) / FastConnect RJ45 plug
Baud rate	100Mbps (Full duplex)
Cable	FastConnect cable recommended (4-core cable for high speed Ethernet)
PROFINET communication	PROFINET IO RT / IRT Version 2.2
Real-time communication	RT (real-time)
	IRT (isochronous real-time)
PROFIdrive application	AC 1, AC 4 (AC 3 : in preparation)
Telegram	Tel 1, Tel 2, Tel 3 (Tel 5, Tel 7, Tel 9 Tel 105 : in preparation)
Operation mode	Position, Velocity, Homing

Specification

Servo Amplifier + R2 Servo Motor

High Efficiency and Low Ripple (Medium Inertia) RoHS

Input voltage 170 VAC to 253 VAC

Servo Amplifier Model No. 《 》 indicates amplifier capacity				RS2A01□□《15 A》				
Servo Motor Model No. 《 》 indicates flange size				R2AA04003F 《40mm sq.》	R2AA04005F 《40mm sq.》	R2AA04010F 《40mm sq.》	R2AA06010F 《60mm sq.》	R2AA06020F 《60mm sq.》
	Status	Symbol	Unit					
Rated Output	★	P_R	kW	0.03	0.05*4	0.1*4	0.1	0.2
Rated Speed	★	N_R	min^{-1}	3000	3000	3000	3000	3000
Maximum Speed	★	N_{max}	min^{-1}	6000	6000	6000	6000	6000
Rated Torque	★	T_R	N·m	0.098	0.159	0.318	0.318	0.637
Continuous Stall Torque	★	T_S	N·m	0.108	0.167	0.318	0.353	0.686
Peak Stall Torque	★	T_P	N·m	0.37	0.59	1.18	1.13	2.2
Rated Armature Current	★	I_R	Arms	0.51	0.67	0.81	0.86	1.5
Armature Stall Current	★	I_S	Arms	0.56	0.69	0.81	0.86	1.6
Peak Armature Stall Current	★	I_P	Arms	2.15	2.8	3.3	3.5	5.6
Torque Constant	☆	K_T	N·m/Arms	0.201	0.246	0.424	0.375	0.476
Voltage Constant for each Phase	☆	$K_{E\phi}$	mV/min^{-1}	7.0	8.6	14.8	13.1	16.6
Phase Resistance	☆	R_ϕ	Ω	12	9	9.3	4.8	2.7
Rated Power Rate	★	Q_R	kW/s	3.9	6.7	16	8.6	19
Electrical Time Constant	☆	te	ms	0.55	0.67	0.82	2	2.6
Mechanical Time Constant (Not including Encoder)	☆	tm	ms	2.2	1.7	0.97	1.2	0.78
Rotor Inertia		J_M	$\times 10^{-4}kg \cdot m^2(GD^2/4)$	0.0247	0.0376	0.0627	0.117	0.219
Absolute Encoder Inertia		J_S	$\times 10^{-4}kg \cdot m^2(GD^2/4)$	0.0042*1				
Servo Motor Mass*1		We	kg	0.37	0.41	0.53	0.74	0.99
Brake Static Friction Torque		Tb	N·m	0.32 min.			0.36 min.	1.37 min.
Brake Rated Voltage		Vb	V	90 VDC / 24 VDC ± 10%				
Brake Rated Current		Ib	A	0.07 / 0.27				0.11 / 0.32
Roter Moment of Inertia (Brake)		Jb	$\times 10^{-4}kg \cdot m^2(GD^2/4)$	0.0078			0.06	
Brake Mass		W	kg	0.27			0.34	0.39
Servo amplifier power supply capacity (rating)			kVA	0.2		0.3		0.6
CE and UL approved servo motors*5				Yes				
Servo motor protection code				IP67, IP65				
Size of aluminum plates for heat radiation during measurement				250 × 250 × 6 mm				

*1 This is for the battery-less absolute encoder [HA035].
For the following encoders, contact us for details.
· Battery-backup method absolute encoder

*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°C. The values are the typical values.

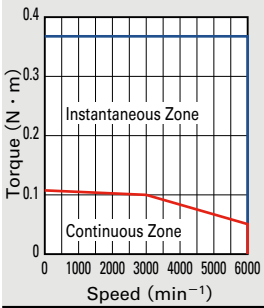
*4 Servo motors that come with brakes and oil seals (optional) may require an 5 to 20% reduction in output.

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

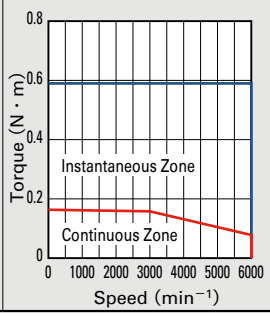
Speed-Torque Characteristics

Servo motor Model No. / Flange Size / Rated Output

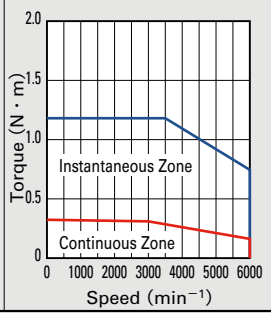
R2AA04003F / 40mm / 0.03kW



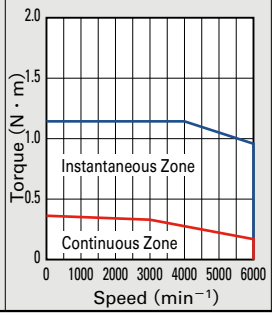
R2AA04005F / 40mm / 0.05kW



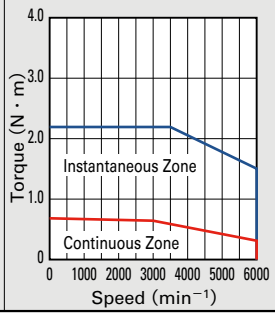
R2AA04010F/40 mm/0.1 (0.085/0.09) kW



R2AA06010F / 60mm / 0.1kW



R2AA06020F / 60mm / 0.2kW



These values are for when the input voltage is a 3-phase 200 VAC circuit. The characteristics of the instantaneous zone may change when the input voltage is less than 200 VAC or a single-phase 200 VAC.

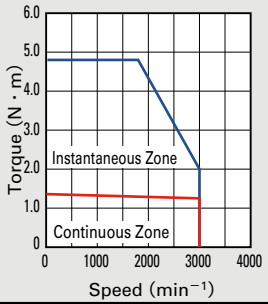
RS2A01□□《15 A》		RS2A03□□《30 A》			Servo Amplifier Model No.《 》indicates amplifier capacity			
R2AA06040H《60mm sq.》	R2AA08020F《80mm sq.》	R2AA06040F《60mm sq.》	R2AA08040F《80mm sq.》	R2AA08075F《80mm sq.》	Servo Motor Model No.《 》indicates flange size			
					Unit	Symbol	Status	
0.4[*4]	0.2	0.4[*4]	0.4	0.75[*4]	kW	P_R	★	Rated Output
3000	3000	3000	3000	3000	min^{-1}	N_R	★	Rated Speed
3000	6000	6000	6000	6000	min^{-1}	N_{max}	★	Maximum Speed
1.27	0.637	1.27	1.27	2.39	N·m	T_R	★	Rated Torque
1.37	0.686	1.37	1.37	2.55	N·m	T_S	★	Continuous Stall Torque
4.8	2.2	4.8	4.4	8.5	N·m	T_P	★	Peak Stall Torque
1.7	1.5	2.8	2.6	4.6	Arms	I_R	★	Rated Armature Current
1.8	1.5	2.8	2.6	4.6	Arms	I_S	★	Armature Stall Current
7.1	4.8	10.8	8.9	15.5	Arms	I_P	★	Peak Armature Stall Current
0.816	0.516	0.524	0.559	0.559	N·m/Arms	K_T	☆	Torque Constant
28.5	18.0	18.3	19.5	19.5	mV/min^{-1}	$K_{E\phi}$	☆	Voltage Constant for each Phase
3.3	2.3	1.36	0.93	0.4	Ω	R_ϕ	☆	Phase Resistance
39	8	39	16	31	kW/s	Q_R	★	Rated Power Rate
3.2	2.2	3.2	2.5	3	ms	te	☆	Electrical Time Constant
0.61	1.3	0.61	0.93	0.7	ms	tm	☆	Mechanical Time Constant (Not including Encoder)
0.412	0.52	0.412	1.04	1.82	$\times 10^{-4} kg \cdot m^2 (GD^2/4)$	J_M		Rotor Inertia
0.0042[*1]					$\times 10^{-4} kg \cdot m^2 (GD^2/4)$	J_S		Absolute Encoder Inertia
1.5	1.4	1.5	1.8	2.8	kg	We		Servo Motor Mass[*1]
1.37 min.	2.55 min.	1.37 min.	2.55 min.		N·m	Tb		Brake Static Friction Torque
90 VDC / 24 VDC ± 10%					V	Vb		Brake Rated Voltage
0.11 / 0.32	0.12 / 0.37	0.11 / 0.32	0.12 / 0.37		A	Ib		Brake Rated Current
0.06	0.25	0.06	0.25		$\times 10^{-4} kg \cdot m^2 (GD^2/4)$	Jb		Roter Moment of Inertia (Brake)
0.39	0.89	0.39	0.89		kg	W		Brake Mass
1.0	0.6	1.0		1.6	kVA			Servo amplifier power supply capacity (rating)
Yes								CE and UL approved servo motors[*5]
IP67, IP65								Servo motor protection code
250 × 250 × 6 mm								Size of aluminum plates for heat radiation during measurement

Servo Motor Operating Ambient Conditions

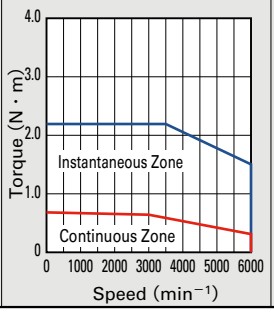
Operating temperature and humidity	Temp.: 0 to 40°C. Humidity: 90% max. (No condensation)
Vibration resistance	24.5 m/s^2
Shock resistance	98 m/s^2, twice
Elevation	1000 m or lower above sea level
Installation location	Indoor (without direct sunlight) Location where no substance that gives adverse effects on the device and motor, such as corrosive gas, flammable gas, or dust exists

Servo motor Model No. / Flange Size / Rated Output

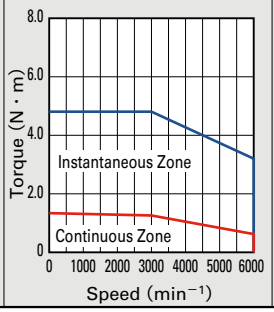
R2AA06040H / 60 mm / 0.4 (0.36) kW



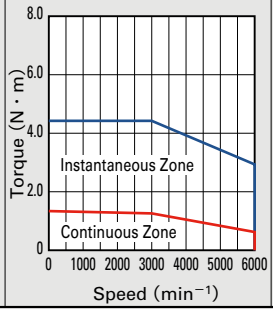
R2AA08020F / 80mm / 0.2kW



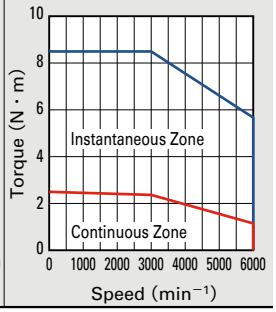
R2AA06040F / 60 mm / 0.4 (0.36) kW



R2AA08040F / 80mm / 0.4kW

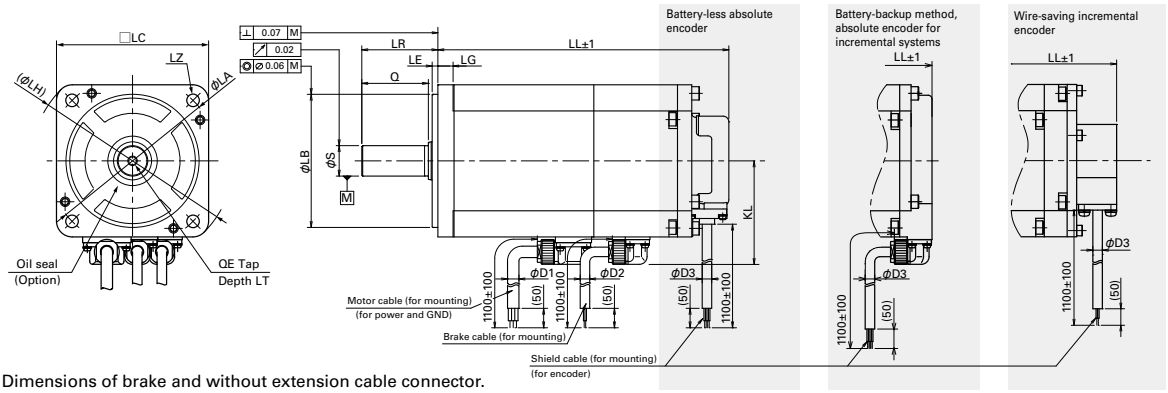


R2AA08075F / 80mm / 0.75kW



Servo Motor Dimensions [Unit : mm]

40mm sq. to 80mm sq. R2 Servo Motor Series



Dimensions of brake and without extension cable connector.

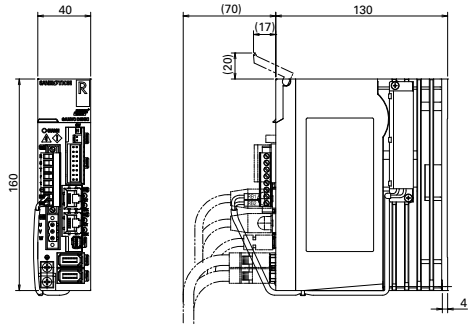
	Battery-less absolute encoder				Battery-backup method absolute encoder Absolute encoder for incremental systems				Incremental encoder			
	Without oil seal		With oil seal		Without oil seal		With oil seal		Without oil seal		With oil seal	
	Without brake	With brake	Without brake	With brake	Without brake	With brake	Without brake	With brake	Without brake	With brake	Without brake	With brake
Model No.	LL	LL	LL	LL	LL	LL	LL	LL	LL	LL	LL	LL
R2AA04003	62.5	98.5	67.5	103.5	51.5	87.5	56.5	92.5	63.5	99.5	68.5	104.5
R2AA04005	67.5	103.5	72.5	108.5	56.5	92.5	61.5	97.5	68.5	104.5	73.5	109.5
R2AA04010	83.0	119.0	88.0	124.0	72	108	77	113	84	120	89	125
R2AA06010	68.5	92.5	75.5	99.5	58.5	82.5	65.5	89.5	78.2	106.2	85.2	113.2
R2AA06020	79.5	107.5	86.5	114.5	69.5	97.5	76.5	104.5	89.2	117.2	96.2	124.2
R2AA06040	105.5	133.5	112.5	140.5	95.5	123.5	102.5	130.5	115.2	143.2	122.2	150.2
R2AA08020	76.3	112.0	83.3	119.0	66.3	102	73.3	109	90	122.7	97	129.7
R2AA08040	88.3	124.0	95.3	131.0	78.3	114	85.3	121	102	134.7	109	141.7
R2AA08075	117.3	153.0	124.3	150.2	107.3	143	114.3	150	131	163.7	138	170.7

Model No.	LG	KL	LA	LB	LE	LH	LC	LZ	LR	S	Q	QE	LT	D1	D2	D3
R2AA04003	5	35.4	46	0 / 30 − 0.021	2.5	56	40	2- ϕ 4.5	25	0 / 6 − 0.008	20	—	—	6	5	5
R2AA04005										0 / 8 − 0.009						
R2AA04010																
R2AA06010	6	44.6	70	0 / 50 − 0.025	3	82	60	4- ϕ 5.5	25	0 / 8 − 0.009		—	—			
R2AA06020									30	0 / 14 − 0.011	25	M5	12			
R2AA06040																
R2AA08020	8	54.4	90	0 / 70 − 0.030		108	80	4- ϕ 6.6								
R2AA08040												M5	12			
R2AA08075									40	0 / 16 − 0.011	35					

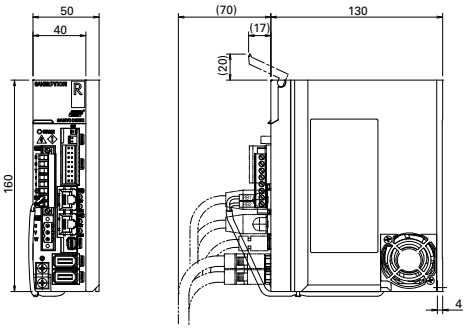
※1 Brake connectors (cables) are not supplied for models without brakes.
※2 A reduction in the rating might be needed if an oil seal and brake is attached. Please consult with us about the details.

R Servo Amplifier

15A



30A



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