

SANMOTION

AC SERVO SYSTEMS

Q



Vol.3

SANYO DENKI

English

SANMOTION Q

AC SERVO SYSTEMS



CONCEPT

1

Save installation time and expense

Economical ...Smaller profile, less wiring time needed
Quick Setup ...No adjustment needed; complete with
measurement functions and setup software

CONCEPT

2

Improved precision and speed

StabilityDoubled from earlier models
Accuracy.....Minimal positional deviation
(achieves zero deviation)
Vibration Control ...Rapid response with minimal vibration

CONCEPT

3

Worldwide compatibility assured

Reliability.....Improved MTBF
Maintenance ...Reduced MTTR; offers preventative
maintenance functions,fault location
recognition, and setup software
SafetyConforms to international standards
Waterproofing: Entire line meets
IP67 protection standards
(optional for Q1 motors with diameter less than 76mm, and
Q2 motors less than 42mm; Q4 motor components rated at IP40)

CONCEPT

4

Reduced operating costs

Economical ...Energy efficient, boosts energy savings

INDEX

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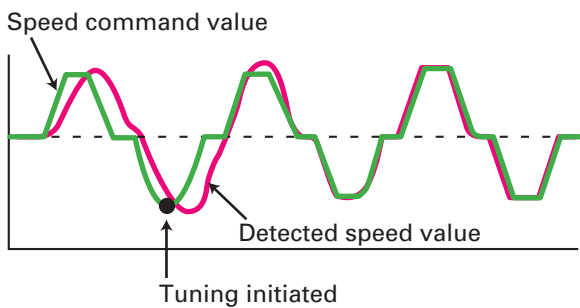
CONCEPT 1

Sanyo Denki Q Series Servo Systems reduce the time and expense needed for system construction and installation.

Real-time Auto Tuning Function

AC DC P/A/T PF

Machine characteristics are automatically measured to set the proper servo gain. Optimum settings are easily achieved.



5-digit LED with Integrated Controls

AC P/A/T PF

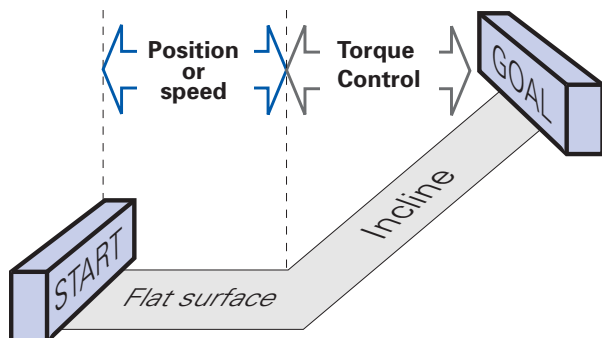
Make on-site modifications and monitor parameter settings with ease, using the integrated operator controls.



One Input Point for All Controls

AC P/A/T

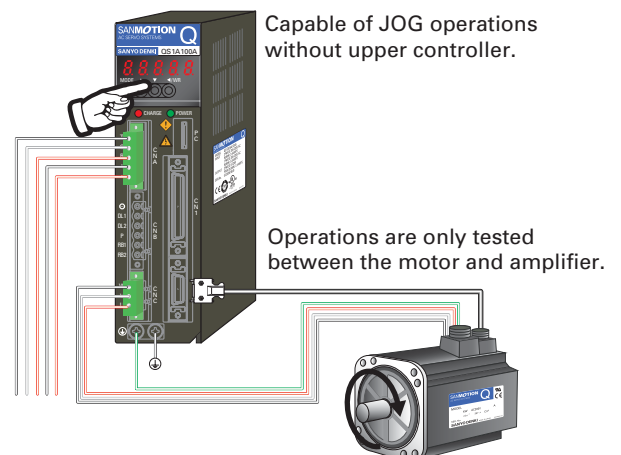
Torque, position and speed control can be configured specifically and precisely by modifying user parameters.



Test Operations (JOG Functions)

AC P/A/T

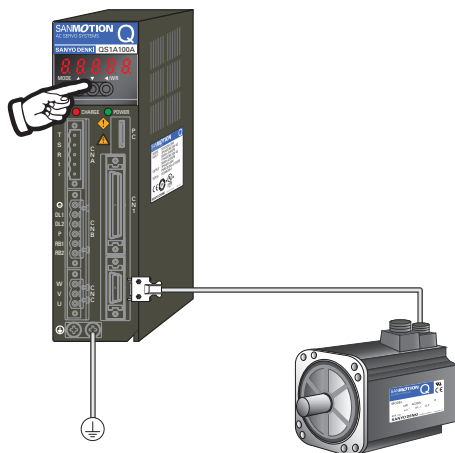
Use the system's JOG Functions to check connections between the motor and amplifier, for simple testing-without having to enter position and speed commands.



AC AC Input Type **P/A/T** Pulse/Analog/Torque
DC DC Input Type **PF** Amplifier with Positioning Function

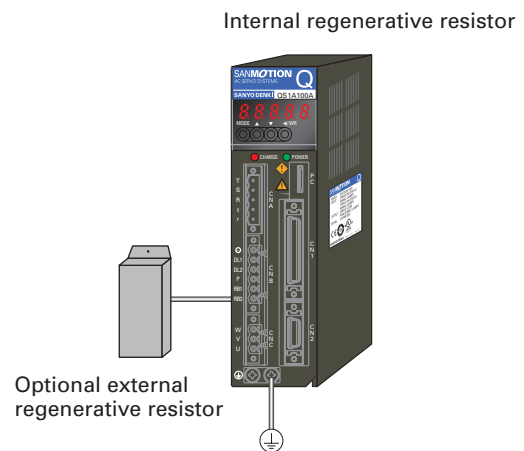
Smart Motor Recognition/ **AC P/A/T PF** Configuration Feature

The servo amplifier automatically configures itself relative to the servo motor capacity and model type. [Note that 131,072-division (17-bit) single-rotation sensor resolution is supported only by PA035 and PA062 reduced wiring absolute sensors.]



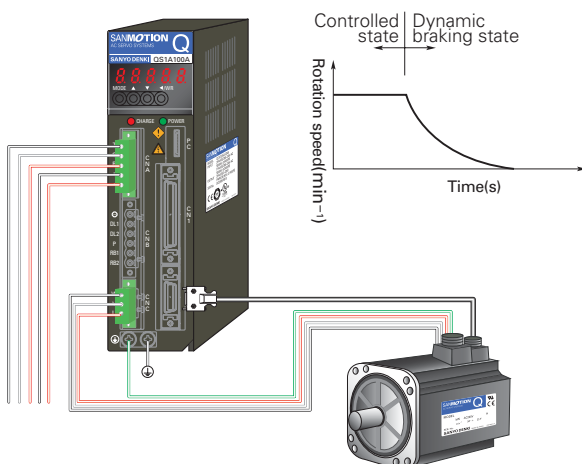
Internal Regenerative **AC DC P/A/T PF** Resistor

If the capacity of the internal regenerative resistor is insufficient, an optional external regenerative resistor can be added to boost power dissipation.



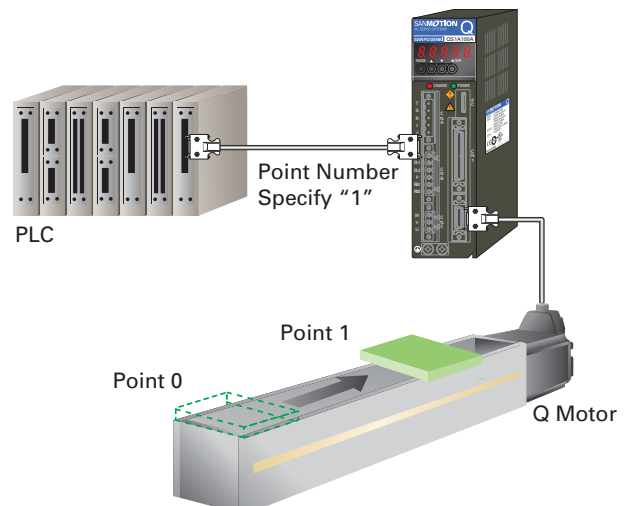
Internal Dynamic Brake **AC DC P/A/T PF**

The internal dynamic brake provides emergency stop capability during power off or alarm events. Dynamic braking sequence parameters are open for configuration.



Versatile I/O Positioning Operation **AC PF**

The system offers simple positioning by means of specifying point numbers via the I/O of the upper controller (such as a PLC).



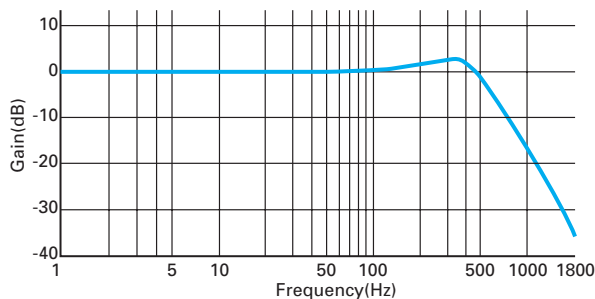


Major improvements in equipment precision and speed

Rapid Response

AC P/A/T PF

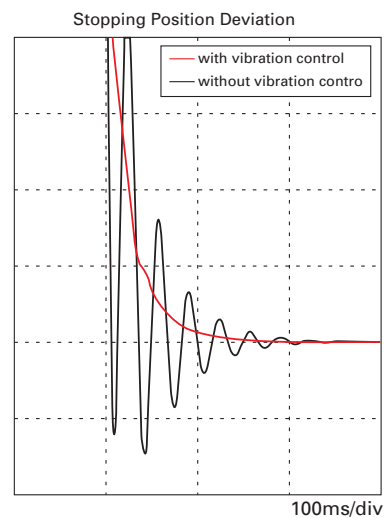
The high-performance CPU shortens sampling time to half that of earlier models, providing a 600-Hz frequency response.



Vibration Control

AC P/A/T PF

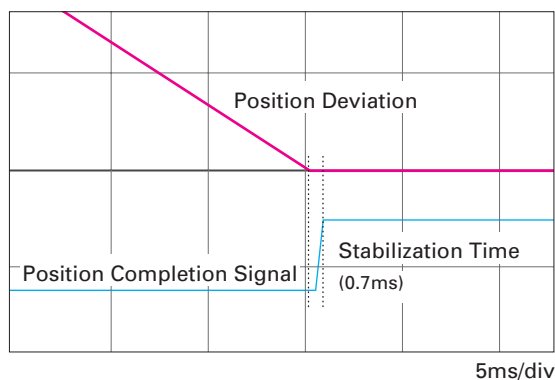
Vibration control functions such as high-order torque command low-pass filter, broadband second-order notch filter and vibration control monitoring provide rapid-response, low-vibration performance.



Faster Positioning Stabilization

AC P/A/T PF

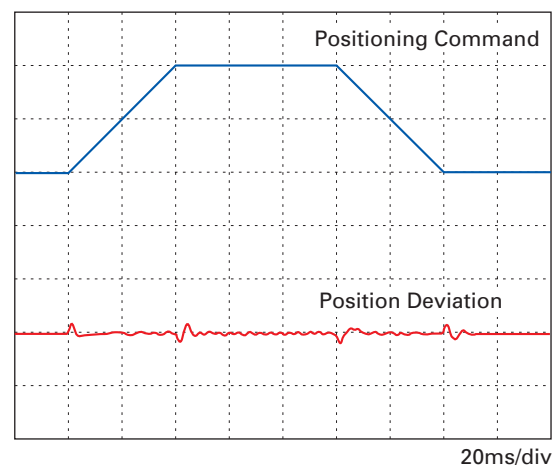
A new speed controller substantially shortens position stabilization time, to one fifth that of earlier models.



Command Track Control

AC P/A/T PF

A new position and speed controller algorithm improves position control tracking ability to better than twice that of earlier models. In addition, near-zero position deviation has been achieved.

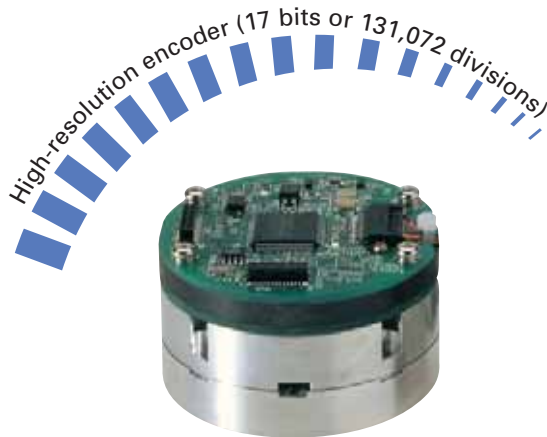


AC AC Input Type **P/A/T** Pulse/Analog/Torque
DC DC Input Type **PF** Amplifier with Positioning Function

High Resolution

AC P/A/T PF

The high-resolution absolute encoder (17 bits or 131,072 divisions) greatly improves positioning resolution.



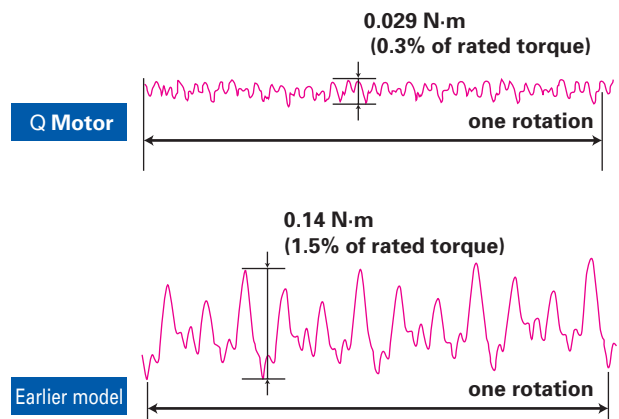
RA062 Resolver-type Absolute Encoder Sensor

Reduced Motor Cogging Torque

AC P/A/T PF

New, patented motor technology reduces motor cogging torque by 33%, to a fifth of that of earlier models.

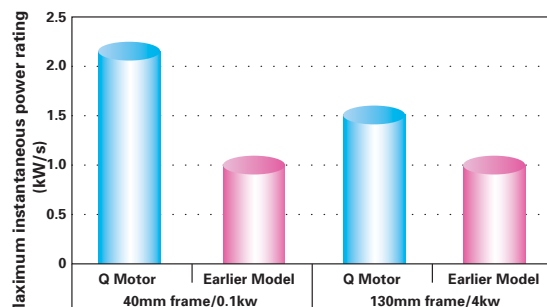
This smooth motor rotation is ideal for high-precision processes and conveyance applications that are adversely affected by vibration.



Power Rating

AC P/A/T PF

To decrease positioning stabilization time, the magnetic circuit has been redesigned to increase the maximum instantaneous power rating to nearly twice that of earlier models. In addition, the maximum rotation speed has been increased by 20% over that of earlier models, to 5000 min⁻¹.



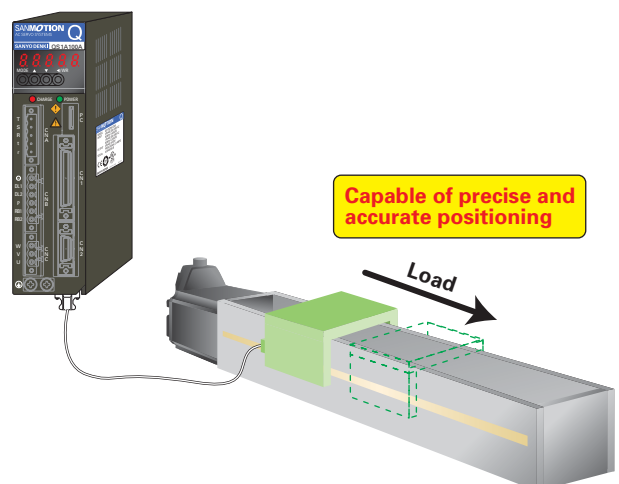
Increased maximum instantaneous power rating ($Q_p = T_p^2 / J_m$)

Improved acceleration and deceleration performance

Full-close Control

AC P/A/T PF

The system supports full-close control using information from a high-resolution linear scale encoder mounted on the load side.





Worldwide compatibility is assured

Conforms to International Standards

AC P/A/T

Standard specification SANMOTION Q Series servo amplifiers comply with UL, CSA and EN international standards. SANYO DENKI also provides UL and EN compliant servo motors, as well as EMC filters to satisfy applicable EMC directives.



Rich Product Lineup

AC P/A/T

SANMOTION Q Series servo motors are available in 62 models, from small to medium capacities. Motors equipped with brakes and gears are also available. The small size and low weight of Q Series products can greatly improve performance and suitability for a wide range of applications.



Waterproof and Durable

AC

An IP67 ingress protection rating for the entire SANMOTION Q Series ensures environmental endurance. (This rating is optional for the Q1 Series motors of 76 mm dia. MAX. and for Q2 Series of 42 mm dia. Option.)

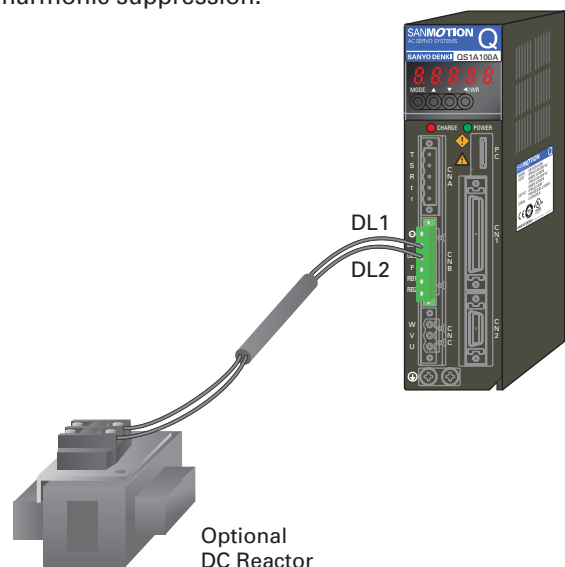


Note: The fan motor and fan motor housing of the Q4 Series are rated at IP 40

Harmonic Suppression

AC P/A/T PF

DC reactor connectors are provided for power harmonic suppression.

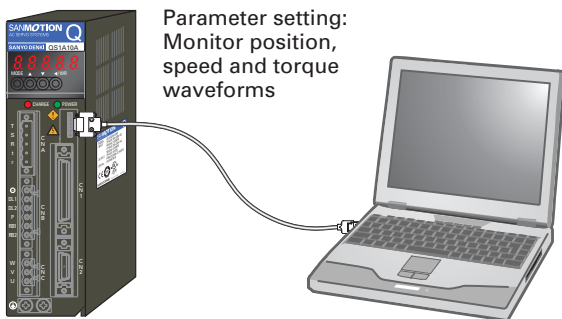


CONCEPT 4

Reduced Operating Cost

Setup Software via PC **AC DC P/A/T PF**

Optional setup software enables the user to set parameters, graphically display monitoring waveforms of position, speed, and torque data, and perform system analysis functions via a PC connection



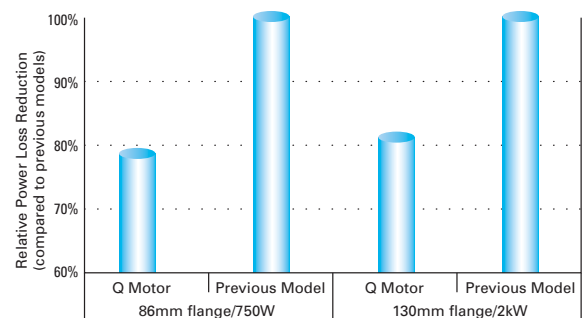
Parameter setting:
Monitor position,
speed and torque
waveforms

Note: Use optional cable AL-00490833-01
for PC connection

Conserves 20% of Lost Power

AC P/A/T PF

Power losses in the amplifier circuitry are reduced by enhancements such as a low-loss power module. Motor power losses are reduced by improvements in the magnetic circuitry, particularly in the windings. The result is an overall power loss reduction of 20% as compared to earlier models.



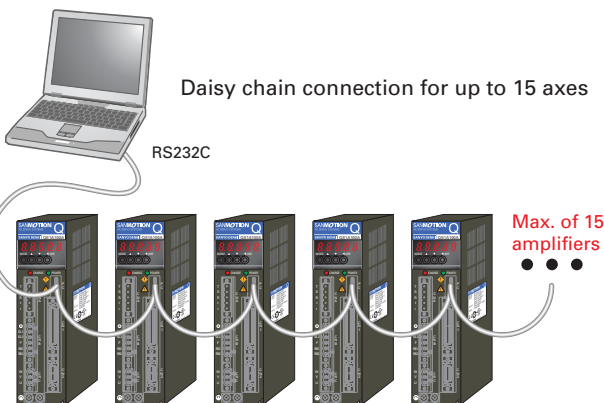
88 to 90% efficiency
Loss is reduced 20%

Power Savings Results

Annual Power Reduction=(Reduced Loss)x[8760 hrs]
86mm flange/0.75kW: 245kWh/unit
130mm flange/2kW: 438kWh/unit

Simultaneous Monitoring Function **AC DC P/A/T PF**

The Q Series Setup software can monitor up to 15 axes / amplifiers, a useful function when monitoring waveforms of synchronous operations.



Note: Optional PC connection cable is available

AC AC Input Type **P/A/T** Pulse/Analog/Torque
DC DC Input Type **PF** Amplifier with Positioning Function

AC Models

QS

Q1

Q4

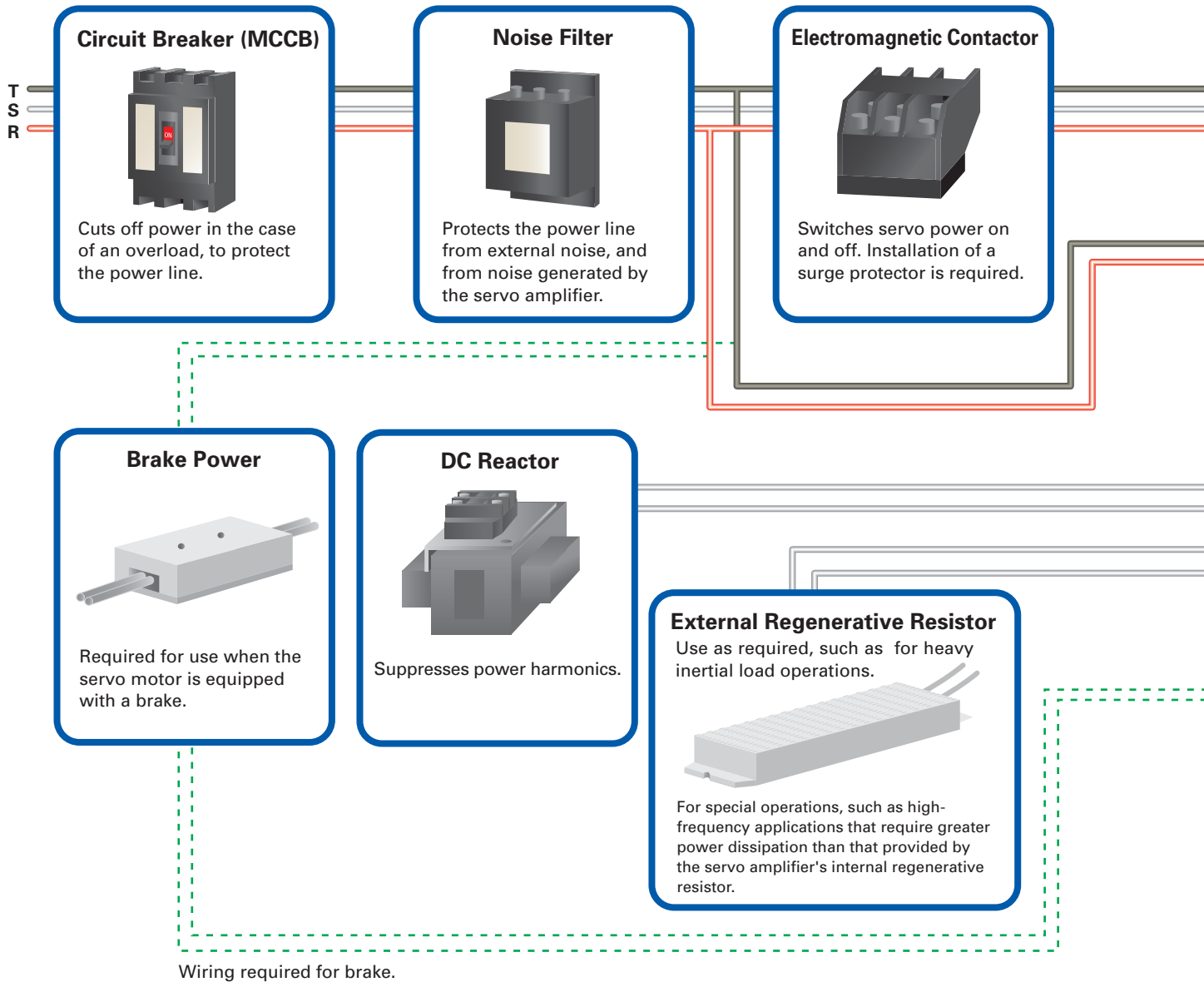
Q2

DC Models

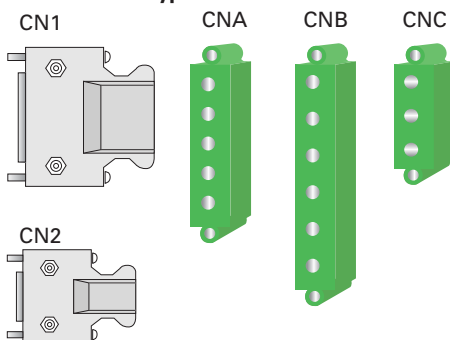
Setup Software

Positioning General Spec

Options

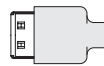
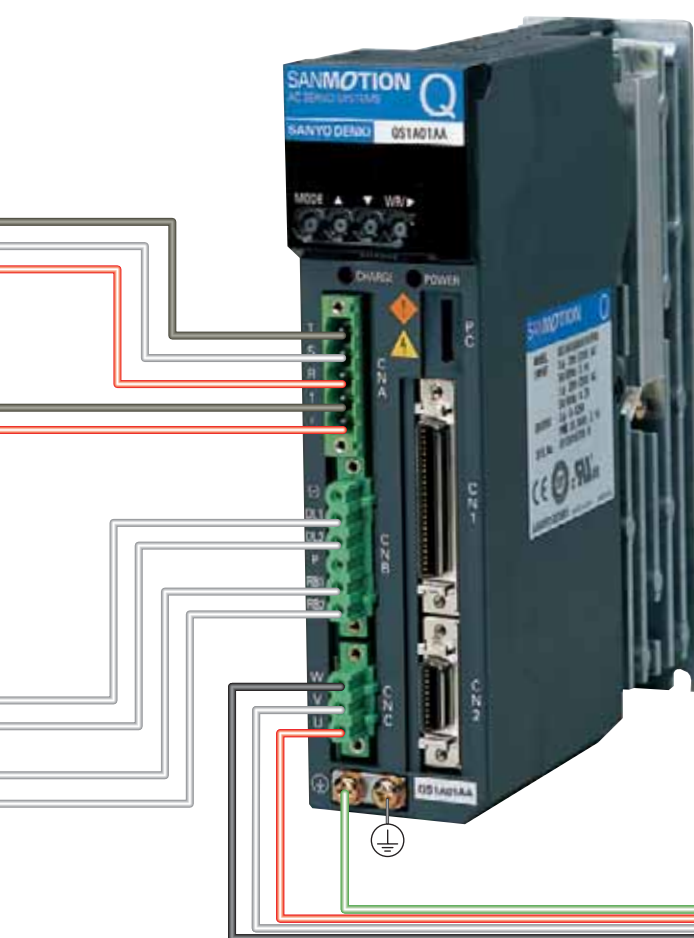


Connector Types



Connectors for Amplifier Connections

	Contents	Model Number
Single Connectors	CN1 (Plug, Housing)	AL-00385594
	CN2 (Plug, Housing)	AL-00385596
	CNA (Plug)	AL-00329461-01
	CNB (Plug): Accessory	AL-Y0000988-01
	CNC (Plug)	AL-00329458-01
Connector Sets	CN1, CN2 (Plug, Housing)	AL-00292309
	CN1, CN2 (Plug, Housing) CNA, CNC (Plug)	AL-00393603



PC

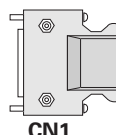
AL-00490833-01

See p.43

Monitoring Function

Parameter configuration and monitoring is possible via communication with a PC.

Setup Software
pp. 39 - 40

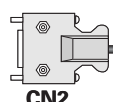


CN1

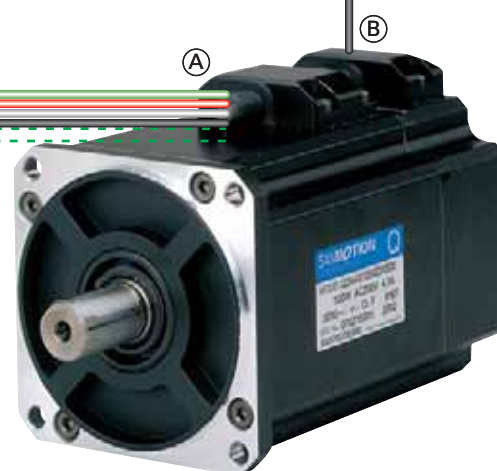
Upper Controller

SANYO DENKI upper controller devices permit communication with third-party products.

External Drawing p. 29
SMS-15



CN2

**Ⓐ Motor Power Connectors**

Motor Model No.	Standard Specification Plug (Cable Clamp) for Power Side		TUV Standard Plug (Cable Clamp) with Waterproof Spec. for Power		TUV Standard Plug (Cable Clamp)* with Waterproof Spec. for Brake	
	Straight	L-Angle	Straight	L-Angle	Straight	L-Angle
Q1AA10100***	MS3106B20-15S (MS3057-12A)	MS3108B20-15S (MS3057-12A)	JL04V-6A20-15SE-EB (JL04-2022CK)	JL04V-8A20-15SE-EB (JL04-2022CK)	JL04V-6A10SL-3SE-EB (JL04-1012CK)	JL04V-8A10SL-3SE-EB (JL04-1012CK)
Q1AA10150***						
Q1AA10200***						
Q1AA10250***						
Q1AA12100***						
Q1AA12200***	MS3106B24-11S (MS3057-16A)	MS3108B24-11S (MS3057-16A)	JL04V-6A24-11SE-EB (JL04-2428CK)	JL04V-8A24-11SE-EB (JL04-2428CK)		
Q1AA12300***						
Q1AA13300***						
Q1AA13400***						
Q1AA13500***						
Q1AA18450***	MS3106B32-17S (MS3057-20A)	MS3108B32-17S (MS3057-20A)	JL04V-6A32-17SE (Single-block)			
Q1AA18750***						
Q2AA10100***						
Q2AA10150***						
Q2AA13050***						
Q2AA13100***	MS3106B24-11S (MS3057-16A)	MS3108B24-11S (MS3057-16A)	JL04V-6A20-15SE-EB (JL04-2022CK)	JL04V-8A24-11SE-EB (JL04-2428CK)	JL04V-6A10SL-3SE-EB (JL04-1012CK)	JL04V-8A10SL-3SE-EB (JL04-1012CK)
Q2AA10150***						
Q2AA13200***						
Q2AA18200***						
Q2AA18350***						
Q2AA18450***	MS3106B32-17S (MS3057-20A)	MS3108B32-17S (MS3057-20A)	JL04V-6A32-17SE (Single-block)			
Q2AA18550***						
Q2AA18750***						
Q2AA2211K***						
Q2AA2215K***						
Q4AA2211K***	MS3106B32-17S (MS3057-20A)	MS3108B32-17S (MS3057-20A)	JL04V-6A32-17SE (Single-block)			
Q4AA2215K***						

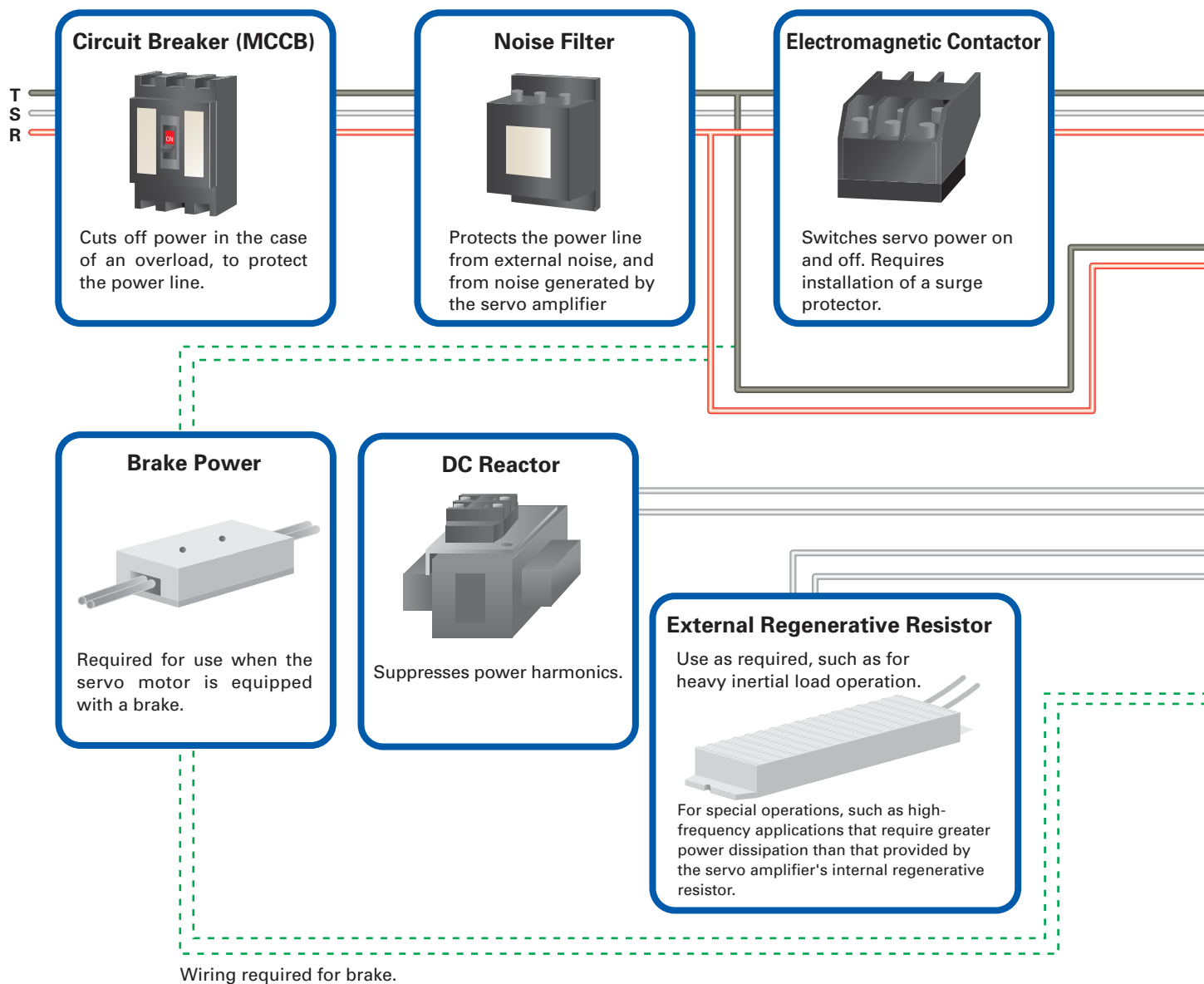
*Order a plug that conforms to TUV standards for brakes with waterproof specification separately from the motor power connector.

Ⓑ Motor Encoder Connectors

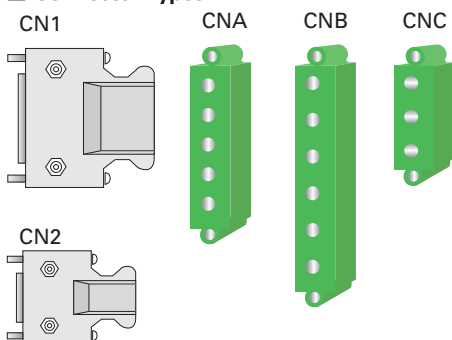
Motor Model No	Standard Specification Plug (Cable Clamp) for Encoder		TUV Standard Plug (Cable Clamp) with Waterproof Spec. for Encoder	
	Straight	L-Angle	Straight	L-Angle
All Q1, Q2, and Q4 Models	MS3106B20-29S (MS3057-12A)	MS3108B20-29S (MS3057-12A)	JA06A-20-29S-J1-EB (JL04-2022CK)	JA06A-20-29S-J1-EB (JL04-2022CK)

Ⓒ Cooling Fan Connectors

Motor Model No	Cooling Fan Standard Specifications		TUV Std. Plug, Waterproof
	Straight	L-Angle	Straight
All Q4 Models	MS3106B10SL-4S (MS3057-4A)	MS3108B10SL-4S (MS3057-4A)	JA06A-10SL-4S-J1 (Single-block)

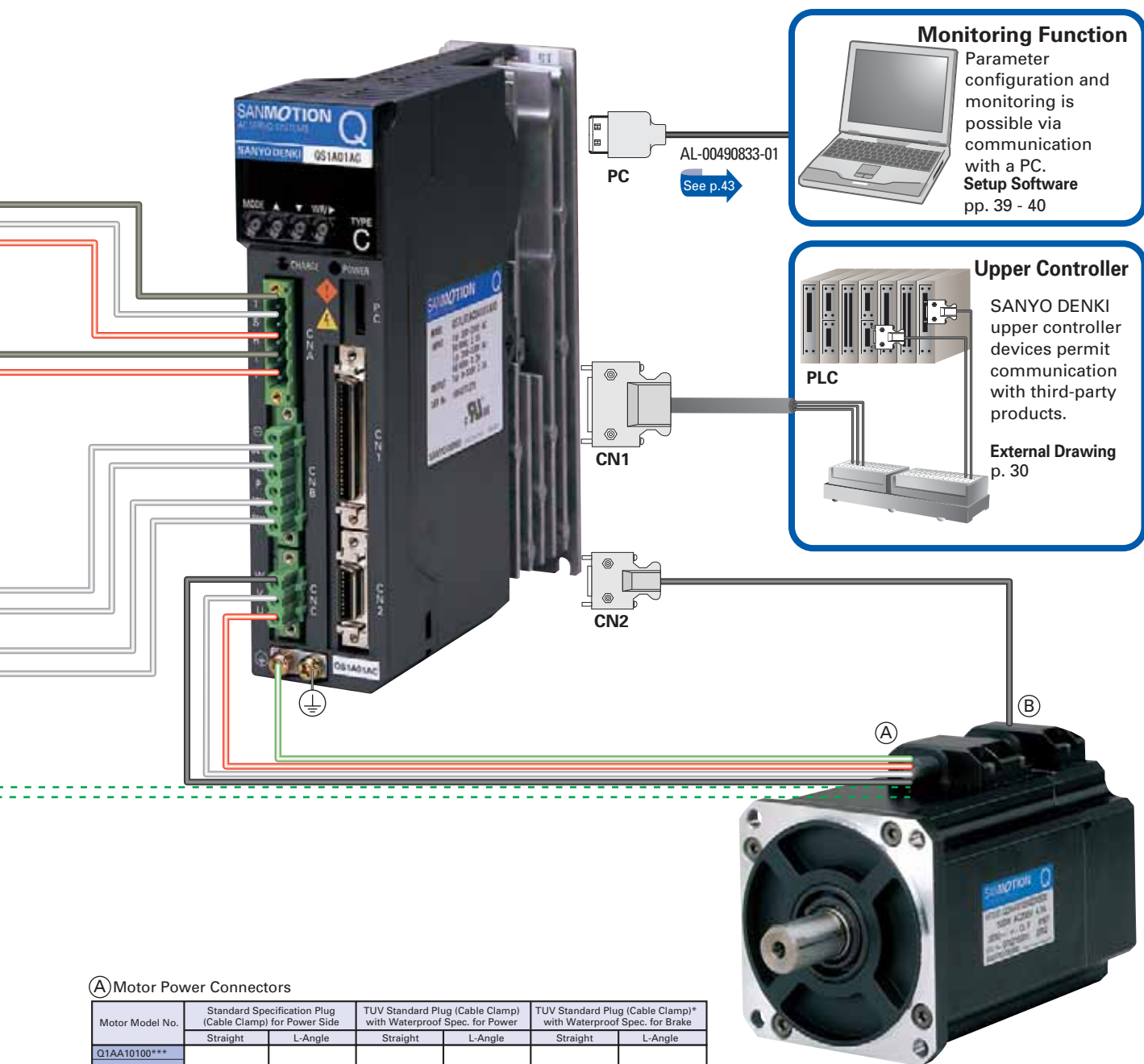


Connector Types



Connectors for Amplifier Connections

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	CN2 (Plug, Housing)	AL-00385596
	CNA (Plug)	AL-00329461-01
	CNB (Plug): Accessory	AL-Y0000988-01
	CNC (Plug)	AL-00329458-01
Connector Sets	CN1, CN2 (Plug, Housing)	AL-00292309
	CN1, CN2 (Plug, Housing) CNA, CNC (Plug)	AL-00393603



A Motor Power Connectors

Motor Model No.	Standard Specification Plug (Cable Clamp) for Power Side		TUV Standard Plug (Cable Clamp) with Waterproof Spec. for Power		TUV Standard Plug (Cable Clamp)* with Waterproof Spec. for Brake	
	Straight	L-Angle	Straight	L-Angle	Straight	L-Angle
Q1AA10100*** Q1AA10150*** Q1AA10200*** Q1AA10250*** Q1AA12100*** Q1AA12200*** Q1AA12300*** Q1AA13300*** Q1AA13400*** Q1AA13500*** Q1AA18450***	MS3106B20-15S (MS3057-12A)	MS3108B20-15S (MS3057-12A)	JL04V-6A20-15SE-EB (JL04-2022CK)	JL04V-8A20-15SE-EB (JL04-2022CK)	JL04V-6A10SL-3SE-EB (JL04-1012CK)	JL04V-8A10SL-3SE-EB (JL04-1012CK)
Q1AA12100*** Q1AA12200*** Q1AA12300*** Q1AA13300*** Q1AA13400*** Q1AA13500*** Q1AA18450***	MS3106B24-11S (MS3057-16A)	MS3108B24-11S (MS3057-16A)	JL04V-6A24-11SE-EB (JL04-2428CK)	JL04V-8A24-11SE-EB (JL04-2428CK)	—	—
Q1AA18750***	MS3106B32-17S (MS3057-20A)	MS3108B32-17S (MS3057-20A)	JL04V-6A32-17SE (Single-block)	—	—	—
Q2AA10100*** Q2AA10150*** Q2AA13050*** Q2AA13100*** Q2AA13100*** Q2AA13200*** Q2AA18200*** Q2AA18350*** Q2AA18450*** Q2AA18550*** Q2AA18750***	MS3106B20-15S (MS3057-12A)	MS3108B20-15S (MS3057-12A)	JL04V-6A20-15SE-EB (JL04-2022CK)	JL04V-8A20-15SE-EB (JL04-2022CK)	JL04V-6A10SL-3SE-EB (JL04-1012CK)	JL04V-8A10SL-3SE-EB (JL04-1012CK)
Q2AA12211K*** Q2AA12215K*** Q4AA2211K*** Q4AA2215K***	MS3106B32-17S (MS3057-20A)	MS3108B32-17S (MS3057-20A)	JL04V-6A32-17SE (Single-block)	—	—	—

*Order a plug that conforms to TUV standards for brakes with waterproof specification separately from the motor power connector.

B Motor Encoder Connectors

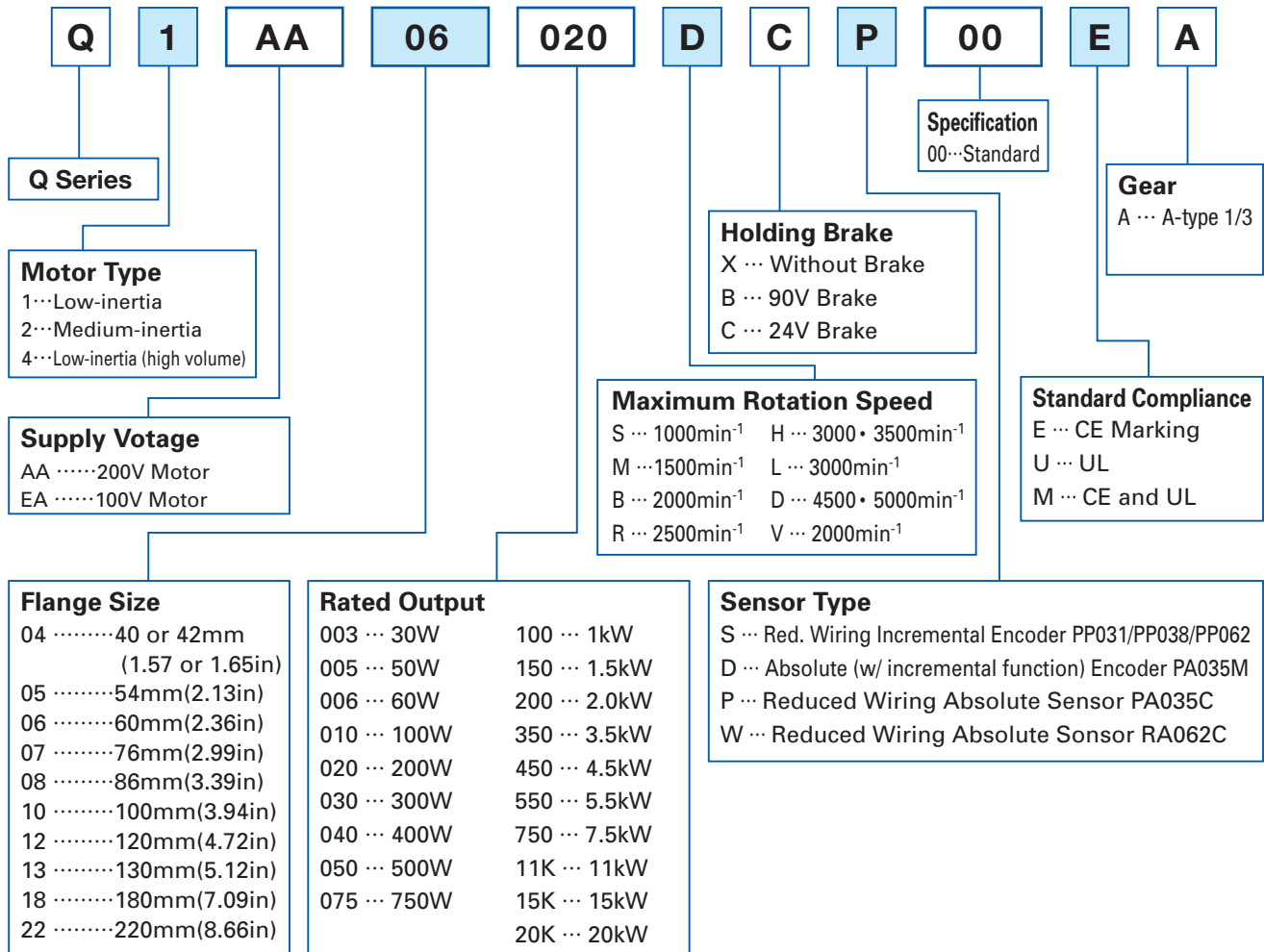
Motor Model No	Standard Specification Plug (Cable Clamp) for Encoder		TUV Standard Plug (Cable Clamp) with Waterproof Spec. for Encoder	
	Straight	L-Angle	Straight	L-Angle
All Q1, Q2, and Q4 Models	MS3106B20-29S (MS3057-12A)	MS3108B20-29S (MS3057-12A)	JA06A-20-29S-J1-EB (JL04-2022CK)	JA06A-20-29S-J1-EB (JL04-2022CK)

C Cooling Fan Connectors

Motor Model No	Cooling Fan Standard Specifications		TUV Std. Plug, Waterproof
	Straight	L-Angle	
All Q4 Models	MS3106B10SL-4S (MS3057-4A)	MS3108B10SL-4S (MS3057-4A)	JA06A-10SL-4S-J1 (Single-block)

Servo Motor

Example: The following model number defines a Q1 (low-inertia) servomotor with a 60-mm square flange, 200W output rating, 5000 min⁻¹ maximum rotation speed, brake (24V), absolute sensor (131,072 divisions/rotation), CE Marking conformity and A-type 1/3 gear.



Combined Motor/Sensor Specification

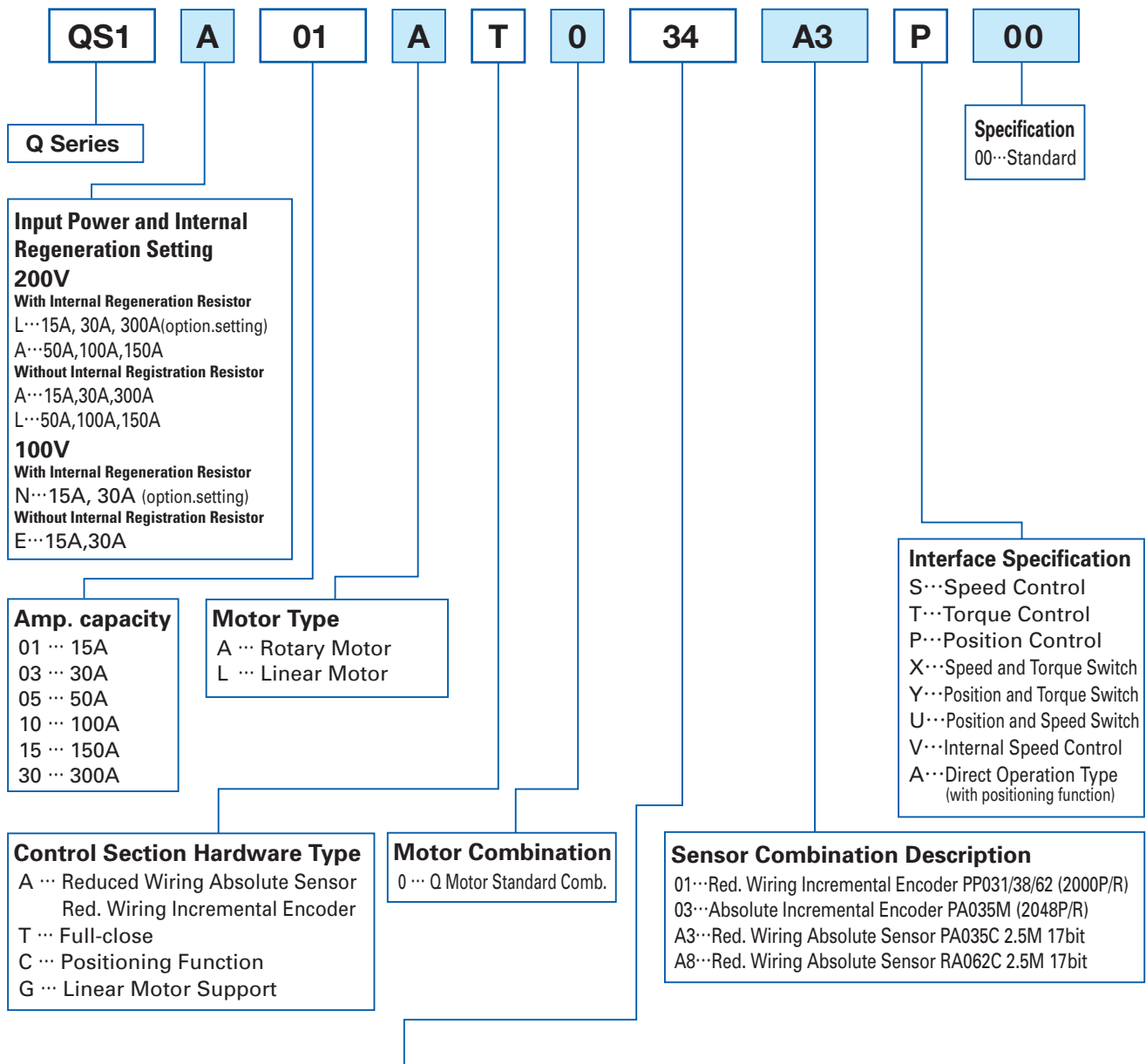
Model			Standard		Supported Range		Flange Size	Remarks
			Encoder Pulse Count	Resolution	Encoder Pulse Count	Resolution	Dimension (sq.)	
PP031	Optical Detection System	Incremental Type	2000P/R	8000	2000P/R•2048P/R	8000•8192	40mm (1.57 in) MIN	Red. Wiring Incremental
PP038			16384P/R	—	2000P/R•2500P/R	4096P/R to 25000P/R (2048•2500X2•4•8•10)	42mm (1.65 in) MIN	Red. Wiring Incremental
PP062			2000P/R	8000	2000P/R•2048P/R 5000P/R•8192P/R•10000P/R	8000•8192•20000 32768•40000	72mm (2.83 in) MIN	Red. Wiring Incremental

Model			Standard		Flange Size	Remarks
			Per rotation	Multiple Rotations	Dimension (sq.)	
PA035C	Optical Detection System	Absolute Type	131072(17bit)	65536(16bit)	40mm (1.57 in) MIN	Red. Wiring Absolute
PA035M			8192(13bit)	—	74mm (2.91 in) MIN	Absolute Incremental
RA062C			131072(17bit)	8192(13bit)	74mm (2.91 in) MIN	Batteryless

Please contact our Sales Division for assistance.

Servo Amplifier

Example: The model number shown below is for when a Q series servo amplifier with input voltage of AC200V, 15A capacity, full clothesline receiver, and minimum wiring absolute sensor (131,072 divisions per second), and a Q1 motor with a 200W rated output 60 mm flange size and position control are selected.



Applicable Motor Code

Q1 Series

31... Q1AA04003D	3D... Q1AA12300D
32... Q1AA04005D	3E... Q1AA13300D
33... Q1AA04010D	3F... Q1AA13400D
34... Q1AA06020D	3G... Q1AA13500D
35... Q1AA06040D	3H... Q1AA18450M
36... Q1AA07075D	3S... Q1EA04003D
37... Q1AA10100D	3T... Q1EA04005D
38... Q1AA10150M	3U... Q1EA04010D
39... Q1AA10200D	3V... Q1EA06020D
3A... Q1AA10250D	
3B... Q1AA12100D	
3C... Q1AA12200D	

Q2 Series

41... Q2AA04006D	4E... Q2AA10150H
42... Q2AA04010D	4F... Q2AA13050H
43... Q2AA05005D	4G... Q2AA13100H
44... Q2AA05010D	4H... Q2AA13150H
45... Q2AA05020D	4J... Q2AA13200H
46... Q2AA07020D	4K... Q2AA18200H
47... Q2AA07030D	4L... Q2AA18350H
48... Q2AA07040D	4M... Q2AA18450R
49... Q2AA07050D	4N... Q2AA18550R
4A... Q2AA08050D	4P... Q2AA22250H
4B... Q2AA08075D	4R... Q2AA22350H
4C... Q2AA08100D	4S... Q2AA22450R
4D... Q2AA10100H	

4T... Q2AA22550B
4U... Q2AA22700S
7M... Q2AA18550H
7N... Q2AA18750L
7R... Q2AA2211KV
7S... Q2AA2215KV
4V... Q2EA04006D
4W... Q2EA04010D
4X... Q2EA05005D
4Y... Q2EA05010D
4Z... Q2EA05020D
71... Q2EA07020D

Q4 Series

A1... Q4AA1811KB
A2... Q4AA1815KB

QS

Servo Amplifier

- Amplifier Capacity 15 to 300A
- Eight Models



Amplifiers for Q1 Motors

200V AC Type	Refer.	Page 17		Page 18				Page 17
Motor Model	Unit	Q1AA04003D	Q1AA04005D	Q1AA04010D	Q1AA06020D	Q1AA06040D	Q1AA07075D	Q1AA10100D
Motor Flange Dimension		40	40	40	60	60	76	100
Motor Rated Output	kW	0.03	0.05	0.1	0.2	0.4	0.75	1
Amplifier Model		QS1A01				QS1A03		QS1A05
Amplifier Power Supply		200V to 230V AC +10/-15%, 50/60Hz ±3 Hz						
Operating Temp. and RH		Operating Temperature: 0 to 55°C, Relative Humidity: 50% maximum, no condensation						
Power Consumption*	kVA	0.2		0.3	0.5	1.0	1.7	2.5
Amplifier Mass	kg(lbs)	1.25 (2.76)				1.3 (2.87)		2.2 (4.85)

200V AC Type	Refer.	Page 17	Page 18				Page 19	
Motor Model	Unit	Q1AA10150D	Q1AA10200D	Q1AA10250D	Q1AA12100D	Q1AA12200D	Q1AA12300D	Q1AA13300D
Motor Flange Dimension		100	100	100	120	120	120	130
Motor Rated Output	kW	1.5	2	2.5	1	2	3	
Amplifier Model		QS1A05	QS1A10		QS1A05	QS1A10		
Amplifier Power Supply		200V to 230V AC +10/-15%, 50/60Hz ±3 Hz						
Operating Temp. and RH		Operating Temperature: 0 to 55°C, Relative Humidity: 50% maximum, no condensation						
Power Consumption*	kVA	3.0	4.0	4.2	2.5	4.0	5.0	
Amplifier Mass	kg(lbs)	2.2 (4.85)	5.5 (12.13)		2.2 (4.85)	5.5 (12.13)		

200V AC Type	Refer.	Page 20			
Motor Model	Unit	Q1AA13400D	Q1AA13500D	Q1AA18450M	Q1AA18750H
Motor Flange Dimension		130	130	180	180
Motor Rated Output	kW	4	5	4.5	7.5
Amplifier Model		QS1A15			QS1A30
Amplifier Power Supply		200V to 230V AC +10/-15%, 50/60Hz ± 3 Hz			
Operating Temp. and RH		Operating Temperature: 0 to 55°C, RH: 50% maximum, no condensation			
Power Consumption*	kVA	6.7	8.3	7.4	12.5
Amplifier Mass	kg(lbs)	6.8 (14.99)			10 (22.05)

100V AC Type	Refer.	Page 27		Page 28	
Motor Model	Unit	Q1EA04003D	Q1EA04005D	Q1EA04010D	Q1EA06020D
Motor Flange Dimension		40	60	40	60
Motor Rated Output	kW	0.03	0.05	0.1	0.2
Amplifier Model		QS1E01			QS1E03
Amplifier Power Supply		100V to 115V AC +10/-15%, 50/60Hz ± 3 Hz			
Operating Temp. and RH		Operating Temperature: 0 to 55°C, RH: 50% maximum, no condensation			
Power Consumption*	kVA	0.2	0.3	0.5	
Amplifier Mass	kg(lbs)	1.25 (2.76)			1.3 (2.87)

Amplifiers for Q4 Motors

200V AC Type	Refer.	Page 19	
Motor Model	Unit	Q4AA1811KB	Q4AA1815KB
Motor Flange Dimension		180	180
Motor Rated Output	kW	11	15
Amplifier Model		QS1A30	
Amplifier Power Supply		200V to 230V AC +10/-15%, 50/60Hz ± 3 Hz	
Operating Temp. and RH		Operating Temperature: 0 to 55°C, RH: 50% maximum, no condensation	
Power Consumption*	kVA	12.5	
Amplifier Mass	kg(lbs)	10(2.76)	

*Actual power consumption depends on load impedance, and is shown here at the amplifier's rated output.

Amplifiers for Q2 Motors

200V AC Type	Refer.	Page 21		Page 22				Page 21
Motor Model	Unit	Q2AA04006D	Q2AA04010D	Q2AA05005D	Q2AA05010D	Q2AA05020D	Q2AA07020D	Q2AA7030D
Motor Flange Dimension		42	42	54	54	54	76	76
Motor Rated Output	kW	0.06	0.1	0.05	0.1	0.2		0.3
Amplifier Model		QS1A01						
Amplifier Power Supply		200V to 230V AC +10/-15%, 50/60Hz ±3 Hz						
Operating Temp. and RH		Operating Temperature: 0 to 55°C, Relative Humidity: 50% maximum, no condensation						
Power Consumption*	kVA	0.3	0.4	0.3	0.4	0.8		1.0
Amplifier Mass	kg(lbs)	1.25 (2.76)						

200V AC Type	Refer.	Page 21	Page 22				Page 23	
Motor Model	Unit	Q2AA07040D	Q2AA07050D	Q2AA08050D	Q2AA08075D	Q2AA08100D	Q2AA10100H	Q2AA10150H
Motor Flange Dimension		76	76	86	86	86	100	100
Motor Rated Output	kW	0.4	0.5		0.75	1		1.5
Amplifier Model		QS1A03			QS1A05			
Amplifier Power Supply		200V to 230V AC +10/-15%, 50/60Hz ±3 Hz						
Operating Temp. and RH		Operating Temperature: 0 to 55°C, Relative Humidity: 50% maximum, no condensation						
Power Consumption*	kVA	1.3	1.5		2.0	2.5		3.0
Amplifier Mass	kg(lbs)	1.3 (2.87)				2.2 (4.85)		

200V AC Type	Refer.	Page 24				Page 23		Page 24
Motor Model	Unit	Q2AA13050H	Q2AA13100H	Q2AA13150H	Q2AA13200H	Q2AA18200H	Q2AA18350H	Q2AA18450H
Motor Flange Dimension		130	130	130	130	180	180	180
Motor Rated Output	kW	0.5	1.0	1.5	2		3.5	4.5
Amplifier Model		QS1A03	QS1A05		QS1A10		QS1A15	
Amplifier Power Supply		200V to 230V AC +10/-15%, 50/60Hz ±3 Hz						
Operating Temp. and RH		Operating Temperature: 0 to 55°C, Relative Humidity: 50% maximum, no condensation						
Power Consumption*	kVA	1.4	2.5	3.0	5.0		6.9	7.4
Amplifier Mass	kg(lbs)	1.3 (2.87)	2.2 (4.85)		5.5 (12.13)		6.8 (14.99)	

200V AC Type	Refer.	Page 24			Page 25		Page 26	
Motor Model	Unit	Q2AA18550R	Q2AA22250H	Q2AA22350H	Q2AA22450R	Q2AA22550B	Q2AA22700S	Q2AA18550H
Motor Flange Dimension		180	220	220	220	220	220	180
Motor Rated Output	kW	5.5	2.5	3.5	4.5	5.5	7	5.5
Amplifier Model		QS1A15	QS1A10	QS1A15				QS1A30
Amplifier Power Supply		200V to 230V AC +10/-15%, 50/60Hz ±3 Hz						
Operating Temp. and RH		Operating Temperature: 0 to 55°C, Relative Humidity: 50% maximum, no condensation						
Power Consumption*	kVA	8.4	5.9	7.4	8.4	10.1	12.2	10.1
Amplifier Mass	kg(lbs)	6.8 (14.99)	5.5 (12.13)		6.8 (14.99)			10 (22.05)

200V AC Type	Refer.	Page 26		Page 25
Motor Model	Unit	Q2AA18750L	Q2AA2211KV	Q2AA2215KV
Motor Flange Dimension		180	220	220
Motor Rated Output	kW	7.5	11	15
Amplifier Model		QS1A30		
Amplifier Power Supply		200V to 230V AC +10/-15%, 50/60Hz ± 3 Hz		
Operating Temp. and RH		Op. Temp.: 0 to 55°C, RH: 50% maximum, no condensation		
Power Consumption*	kVA	12.5	15.7	21.4
Amplifier Mass	kg(lbs)	10 (22.05)		

100V AC Type	Refer.	Page 27		Page 28			
Motor Model	Unit	Q2EA04006D	Q2EA04010D	Q2EA05005D	Q2EA05010D	Q2EA05020D	Q2EA07020D
Motor Flange Dimension		42	42	54	54	54	76
Motor Rated Output	kW	0.06	0.1	0.05	0.1	0.2	
Amplifier Model		QS1E01				QS1E03	
Amplifier Power Supply		100V to 115V AC +10/-15%, 50/60Hz ±3 Hz					
Operating Temp. and RH		Operating Temperature: 0 to 55°C, Relative Humidity: 50% maximum, no condensation					
Power Consumption*	kVA	0.3	0.5	0.3	0.5	1.0	
Amplifier Mass	kg(lbs)	1.25 (2.76)				1.3 (2.87)	

*Actual power consumption depends on load impedance, and is shown here at the amplifier's rated output.

Servo Motor Standard Specifications



Q1

Servo Motor

200V System

Capacity

Flange Size
40mm to 120mm
(1.57in to 4.72in)

30W to 2.5kW
(18 models)

Features

High Power
(Low Inertia)

100V System p.27-28

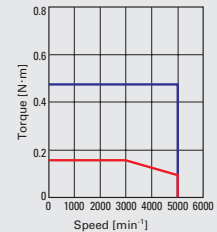
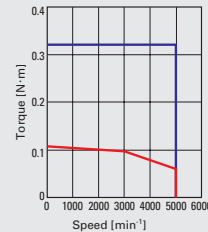
Motor Dwgs p.33-34

★: Indicates a typical value after warm-up and thermal stabilization, together with a standard amplifier.

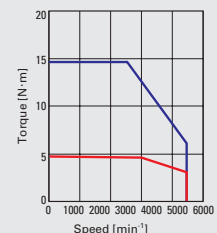
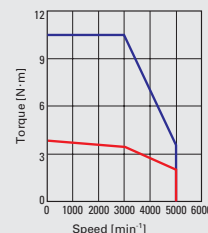
☆: Indicates a typical value when the winding temperature is 20°C.

Note: Actual power consumption depends on load impedance.

Amplifier Model				QS1A01	
Motor Model and Flange Dimension in mm(in)				Q1AA04003D 40mm (1.57in)	Q1AA04005D 40mm (1.57in)
	Status	Symbol	Unit		
Rated Output	★	P _R	kW	0.03	0.05
Rated Rotation Speed	★	N _R	min ⁻¹	3000	
Max. Rotation Speed	★	N _{MAX}	min ⁻¹	5000	
Rated Torque	★	T _R	N•m(oz•in)	0.098(13.88)	0.159(22.52)
Continuous Stall Torque	★	T _S	N•m(oz•in)	0.108(15.29)	0.159(22.52)
Inst. Max. Stall Torque	★	T _P	N•m(oz•in)	0.322(45.60)	0.477(67.55)
Rated Armature Current	★	I _R	Arms	0.49	0.80
Continuous Stall Armature Current	★	I _S	Arms	0.53	0.80
Instant. Max. Stall Armature Current	★	I _P	Arms	2.2	2.9
Torque Constant	☆	K _T	N•m/Arms	0.220	0.230
Induced Voltage Constant	☆	K _{EΦ}	mV/min ⁻¹	7.68	8.0
Per-Phase Armature Resistance	☆	R _Φ	Ω	15	8.1
Rated Power Rate	★	Q _R	kW/s	9.60	18.8
Electrical Time Constant	☆	te	ms	0.87	0.8
Mechanical Time Constant	☆	tm	ms	0.93	0.6
Rotor Inertia (INC)		J _M	kg•m ² (GD/4)(oz•in ²)	0.01x10 ⁻⁴ (0.05)	0.0134x10 ⁻⁴ (0.07)
Sensor: Reduced Wiring INC			P/R	2000	
Mass-including Red. Wiring INC		WE	kg(lbs)	0.3 (0.66)	0.35 (0.77)
Brake Holding Torque		TB	N•m(oz•in)	0.098 (13.88)	0.157 (22.23)
Brake Excitation Voltage		VB	V	90/24	
Brake Excitation Current		IB	Arms	0.07/0.26	
Brake Inertia		JB	kg•m ² (GD/4)(oz•in ²)	0.0078x10 ⁻⁴ (0.04)	
Brake Mass		W	kg(lbs)	0.24 (0.53)	
Motor Operating Temp, Rel. Humidity				0 to 40°C; maximum 90% RH (no condensation)	

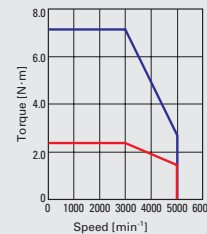
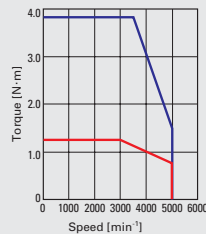
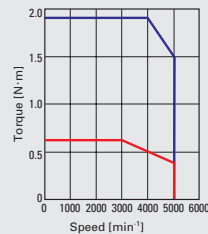
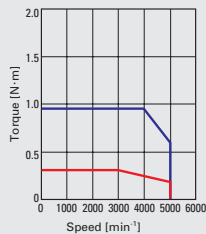


Amplifier Model				QS1A05	
Motor Model and Flange Dimension in mm(in)				Q1AA10100D 100mm (3.94in)	Q1AA10150D 100mm (3.94in)
	Status	Symbol	Unit		
Rated Output	★	P _R	kW	1	1.5
Rated Rotation Speed	★	N _R	min ⁻¹	3000	
Max. Rotation Speed	★	N _{MAX}	min ⁻¹	5000	4500
Rated Torque	★	T _R	N•m(oz•in)	3.19(451.73)	4.79(678.30)
Continuous Stall Torque	★	T _S	N•m(oz•in)	3.92(555.10)	4.9(693.87)
Inst. Max. Stall Torque	★	T _P	N•m(oz•in)	10.5(1486.87)	14.7(2081.62)
Rated Armature Current	★	I _R	Arms	6.5	8.2
Continuous Stall Armature Current	★	I _S	Arms	7.8	8.2
Instant. Max. Stall Armature Current	★	I _P	Arms	24.5	26.5
Torque Constant	☆	K _T	N•m/Arms	0.55	0.705
Induced Voltage Constant	☆	K _{EΦ}	mV/min ⁻¹	19.3	24.6
Per-Phase Armature Resistance	☆	R _Φ	Ω	0.34	0.272
Rated Power Rate	★	Q _R	kW/s	78.9	143
Electrical Time Constant	☆	te	ms	7.6	11.4
Mechanical Time Constant	☆	tm	ms	0.43	0.26
Rotor Inertia (INC)		J _M	kg•m ² (GD/4)(oz•in ²)	1.29x10 ⁻⁴ (7.05)	1.61x10 ⁻⁴ (8.80)
Sensor: Reduced Wiring INC			P/R	2000	
Mass-including Red. Wiring INC		WE	kg(lbs)	5.4 (11.90)	6.5 (14.33)
Brake Holding Torque		TB	N•m(oz•in)	3.92(555.10)	7.84(1110.20)
Brake Excitation Voltage		VB	V	90/24	
Brake Excitation Current		IB	Arms	0.2/0.75	
Brake Inertia		JB	kg•m ² (GD/4)(oz•in ²)	0.15x10 ⁻⁴ (0.82)	0.4x10 ⁻⁴ (2.19)
Brake Mass		W	kg(lbs)	1.3 (2.87)	1.5 (3.31)
Motor Operating Temp, Rel. Humidity				0 to 40°C; maximum 90% RH (no condensation)	



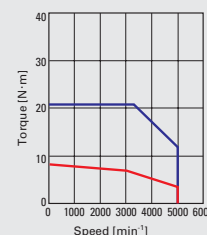
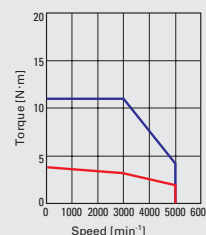
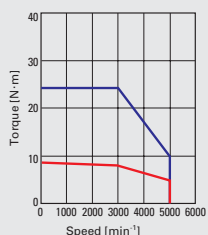
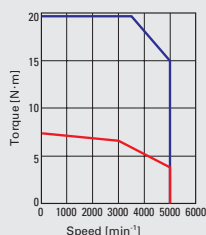
QS1A01		QS1A03		Symbol	Unit
Q1AA04010D 40mm (1.57in)	Q1AA06020D 60mm (2.36in)	Q1AA06040D 60mm (2.36in)	Q1AA07075D 76mm (2.99in)		
0.1	0.2	0.4	0.75	P_R	kW
3000				N_R	min ⁻¹
5000				N_{MAX}	min ⁻¹
0.318 (45.03)	0.637 (90.20)	1.27 (179.84)	2.38 (337.02)	T_R	N • m(oz • in)
0.318 (45.03)	0.637 (90.20)	1.27 (179.84)	2.38 (337.02)	T_S	N • m(oz • in)
0.955 (135.23)	1.91 (270.47)	3.82 (540.94)	7.16 (1013.91)	T_F	N • m(oz • in)
1	1.5	2.9	4.5	I_R	Arms
1	1.5	2.9	4.5	I_S	Arms
3.6	5.8	10.5	15	I_P	Arms
0.360	0.49	0.510	0.61	K_T	N • m/Arms
12.6	17.2	17.8	21.4	$K_{E\Phi}$	mV/min ⁻¹
7.6	2.5	1.3	0.63	R_Φ	Ω
43.4	28.7	65.3	89.1	Q_R	kW/s
0.97	3.3	3.7	6.3	t_e	ms
0.41	0.4	0.4	0.32	t_m	ms
0.0233×10^{-4} (0.13)	0.141×10^{-4} (0.77)	0.247×10^{-4} (1.35)	0.636×10^{-4} (3.48)	J_M	kg • m ² (GD ² /4)(oz • in ²)
2000					P/R
0.5 (1.10)	1.1 (2.43)	1.73 (3.75)	3.3 (7.28)	WE	kg(lbs)
0.32 (45.31)	0.637 (90.20)	1.274 (180.41)	2.38 (337.02)	TB	N • m(oz • in)
90/24				VB	V
0.07/0.26	0.07/0.31		0.08/0.37	IB	Arms
0.0078×10^{-4} (0.04)	0.06×10^{-4} (0.33)		0.343×10^{-4} (1.88)	JB	kg • m ² (GD ² /4)(oz • in ²)
0.24 (0.53)	0.44 (0.97)		0.8 (1.76)	W	kg(lbs)

0 to 40°C; maximum 90% RH (no condensation)



QS1A10		QS1A05	QS1A10	Symbol	Unit
Q1AA10200D 100mm (3.94in)	Q1AA10250D 100mm (3.94in)	Q1AA12100D 120mm (4.72in)	Q1AA12200D 120mm (4.72in)		
2	2.5	1	2	P_R	kW
3000				N_R	min ⁻¹
5000				N_{MAX}	min ⁻¹
6.37 (902.04)	7.97 (1128.61)	3.19 (451.73)	6.37 (902.04)	T_R	N • m(oz • in)
7.36 (1042.23)	8.82 (1248.97)	3.92 (555.10)	7.36 (1042.23)	T_S	N • m(oz • in)
19.6 (2775.50)	24.4 (3455.21)	11 (1557.68)	21 (2973.75)	T_F	N • m(oz • in)
15.9	16.6	6.2	14.3	I_R	Arms
18	17.2	7.5	16.2	I_S	Arms
55	55	24.5	53	I_P	Arms
0.47	0.587	0.578	0.5	K_T	N • m/Arms
16.4	20.5	20.2	17.6	$K_{E\Phi}$	mV/min ⁻¹
0.086	0.104	0.19	0.06	R_Φ	Ω
189	240	45.2	93	Q_R	kW/s
12.1	13	13	20	t_e	ms
0.25	0.24	0.38	0.31	t_m	ms
2.15×10^{-4} (11.76)	2.65×10^{-4} (14.49)	2.25×10^{-4} (12.30)	4.37×10^{-4} (23.89)	J_M	kg • m ² (GD ² /4)(oz • in ²)
2000					P/R
8.7 (19.18)	9.4 (20.72)	5.4 (11.90)	8.7 (19.18)	WE	kg(lbs)
7.84 (1110.20)	9.8 (1387.75)	3.92 (555.10)	7.84 (1110.20)	TB	N • m(oz • in)
90/24				VB	V
0.2/0.75				IB	Arms
0.4×10^{-4} (2.19)		0.15×10^{-4} (0.82)	0.4×10^{-4} (2.19)	JB	kg • m ² (GD ² /4)(oz • in ²)
1.5 (3.31)		1.3 (2.87)	1.5 (3.31)	W	kg(lbs)

0 to 40°C; maximum 90% RH (no condensation)



Servo Motor Standard Specifications



Q1

Servo Motor

200V System

Capacity

Flange Size

120mm to 180mm

(4.72in to 7.09in)

3kW to 7.5kW

(18 models)

Features

High Power

(Low Inertia)

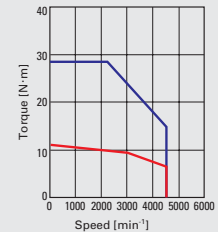
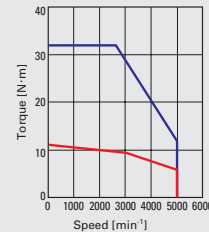
100V System p.27-28 Motor Dwgs p.33-34

Amplifier Model				QS1A10	
Motor Model and Flange Dimension in mm(in)				Q1AA12300D 120mm (4.72in)	Q1AA13300D 130mm (5.12in)
	Status	Symbol	Unit		
Rated Output	★	P _R	kW		3
Rated Rotation Speed	★	N _R	min ⁻¹		3000
Max. Rotation Speed	★	N _{MAX}	min ⁻¹	5000	4500
Rated Torque	★	T _R	N•m(oz•in)	9.6 (1359.43)	9.5 (1345.27)
Continuous Stall Torque	★	T _S	N•m(oz•in)	11 (1557.68)	10.8 (1529.36)
Inst. Max. Stall Torque	★	T _P	N•m(oz•in)	31 (4389.82)	28.4 (4021.64)
Rated Armature Current	★	I _R	Arms	16.2	16.7
Continuous Stall Armature Current	★	I _S	Arms	17.3	17.6
Instant. Max. Stall Armature Current	★	I _P	Arms	55	55
Torque Constant	☆	K _T	N•m/Arms	0.73	0.693
Induced Voltage Constant	☆	K _{EΦ}	mV/min ⁻¹	25.4	24.2
Per-Phase Armature Resistance	☆	R _Φ	Ω	0.075	0.087
Rated Power Rate	★	Q _R	kW/s	143	184
Electrical Time Constant	☆	te	ms	13.9	17.9
Mechanical Time Constant	☆	tm	ms	0.3	0.27
Rotor Inertia (INC)		J _M	kg•m ² (GD/4)(oz•in ²)	6.4x10 ⁻⁴ (34.99)	4.92x10 ⁻⁴ (26.90)
Sensor: Reduced Wiring INC			P/R	2000	
Mass-including Red. Wiring INC		WE	kg(lbs)	11.4 (25.13)	
Brake Holding Torque		TB	N•m(oz•in)	11.8 (1670.96)	
Brake Excitation Voltage		VB	V	90/24	
Brake Excitation Current		IB	Arms	0.2/0.75	
Brake Inertia		JB	kg•m ² (GD/4)(oz•in ²)	0.5x10 ⁻⁴ (2.73)	
Brake Mass		W	kg(lbs)	1.7(3.75)	
Motor Operating Temp, Rel. Humidity				0 to 40°C; maximum 90% RH (no condensation)	

★: Indicates a typical value after warm-up and thermal stabilization, together with a standard amplifier.

☆: Indicates a typical value when the winding temperature is 20°C.

Note: Actual power consumption depends on load impedance.



Q4

Servo Motor

200V System

Capacity

Flange Size

180mm to 220mm

(3.94in to 8.66in)

11kW to 20kW

(3 models)

Features

High Power

(Low Inertia)

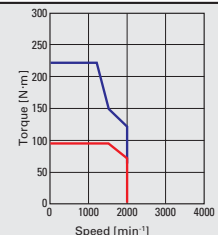
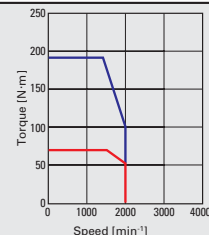
Motor Dwgs p.33-34

Amplifier Model				QS1A30	
Motor Model and Flange Dimension in mm(in)				Q4AA1811KB 180mm (3.94in)	Q4AA1815KB 180mm (8.66in)
	Status	Symbol	Unit		
Rated Output	★	P _R	kW	11	15
Rated Rotation Speed	★	N _R	min ⁻¹		1500
Max. Rotation Speed	★	N _{MAX}	min ⁻¹		2000
Rated Torque	★	T _R	N•m(oz•in)	70 (9912.49)	95.5 (13523.47)
Continuous Stall Torque	★	T _S	N•m(oz•in)	70 (9912.49)	95.5 (13523.47)
Inst. Max. Stall Torque	★	T _P	N•m(oz•in)	190 (26905.33)	220 (31153.54)
Rated Armature Current	★	I _R	Arms	54	61
Continuous Stall Armature Current	★	I _S	Arms	53	59
Instant. Max. Stall Armature Current	★	I _P	Arms	155	155
Torque Constant	☆	K _T	N•m/Arms	1.42	1.75
Induced Voltage Constant	☆	K _{EΦ}	mV/min ⁻¹	49.7	61.1
Per-Phase Armature Resistance	☆	R _Φ	Ω	0.025	0.032
Rated Power Rate	★	Q _R	kW/s	780	1100
Electrical Time Constant	☆	te	ms	31	32
Mechanical Time Constant	☆	tm	ms	0.23	0.27
Rotor Inertia (INC)		J _M	kg•m ² (GD/4)(oz•in ²)	63 (3444512.08)	85 (4647357.57)
Sensor: Reduced Wiring INC			P/R	2000	
Mass-including Red. Wiring INC		WE	kg(lbs)	60 (132.28)	75 (165.35)
Brake Holding Torque		TB	N•m(oz•in)	-----	-----
Brake Excitation Voltage		VB	V	-----	-----
Brake Excitation Current		IB	Arms	-----	-----
Brake Inertia		JB	kg•m ² (GD/4)(oz•in ²)	-----	-----
Brake Mass		W	kg(lbs)	-----	-----
Motor Operating Temp, Rel. Humidity				0 to 40°C; maximum 90% RH (no condensation)	
Cooling Fan Motor		P _F	W	39/33 200V AC +10% Single phase 50/60Hz	

★: Indicates a typical value after warm-up and thermal stabilization, together with a standard amplifier.

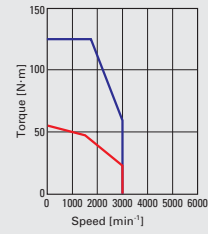
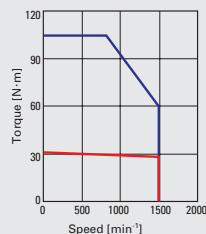
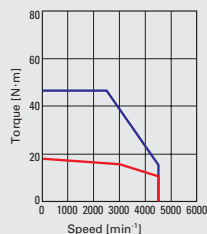
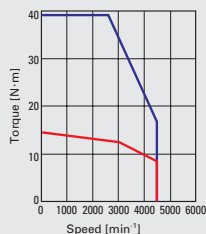
☆: Indicates a typical value when the winding temperature is 20°C.

Note: Actual power consumption depends on load impedance.



QS1A15				QS1A30	
Q1AA13400D 130mm (5.12in)	Q1AA13500D 130mm (5.12in)	Q1AA18450M 180mm (7.09in)	Q1AA18750H 180mm (7.09in)	Symbol	Unit
4	5	4.5	7.5	P _R	kW
3000		1500		N _R	min ⁻¹
4500			3000	N _{MAX}	min ⁻¹
12.7 (1798.41)	15.7 (2223.23)	28.5 (4035.80)	48 (6797.14)	T _R	N•m(oz•in)
14.7 (2081.62)	18.1 (2563.09)	31.6 (4474.78)	55 (7788.38)	T _S	N•m(oz•in)
39.2 (5550.99)	47.6 (6740.49)	105 (14868.73)	125 (17700.87)	T _P	N•m(oz•in)
23.4	25.8	24.8	55	I _R	Arms
26.4	27.5	24.8	60	I _S	Arms
	83		155	I _P	Arms
0.612	0.724	1.37	0.91	K _T	N•m/Arms
21.4	25.3	47.7	31.7	K _Φ	mV/min ⁻¹
0.048	0.0461	0.0838	0.021	R _Φ	Ω
251	291	295	443	Q _R	kW/s
19.2	20.8	24	23	t _e	ms
0.25	0.22	0.37	0.40	t _m	ms
6.43x10 ⁻⁴ (3.17)	8.47x10 ⁻⁴ (46.31)	27.5x10 ⁻⁴ (150.36)	52x10 ⁻⁴ (284.31)	J _M	kg•m ² (GD ² /4)(oz•in ²)
		2000			P/R
14.4 (31.75)	18.1 (39.90)	21.7 (47.84)	47 (103.62)	WE	kg(lbs)
19.6 (2775.50)		32 (4531.42)	54.9 (7774.22)	TB	N•m(oz•in)
		90/24		VB	V
0.25/0.95			0.37/1.4	IB	Arms
0.58x10 ⁻⁴ (3.17)		5.5x10 ⁻⁴ (30.07)	5.5x10 ⁻⁴ (30.07)	JB	kg•m ² (GD ² /4)(oz•in ²)
2.2 (4.85)		5 (11.02)	6 (13.23)	W	kg(lbs)

0 to 40°C; maximum 90% RH (no condensation)



(Note 1)		
Q4AA2220KB 220mm (8.66in)	Symbol	Unit
20	P _R	kW
1500	N _R	min ⁻¹
2000	N _{MAX}	min ⁻¹
127 (17984.09)	T _R	N•m(oz•in)
127 (17984.09)	T _S	N•m(oz•in)
305 (43190.13)	T _P	N•m(oz•in)
106	I _R	Arms
102	I _S	Arms
262	I _P	Arms
1.4	K _T	N•m/Arms
48.8	K _Φ	mV/min ⁻¹
0.012	R _Φ	Ω
1600	Q _R	kW/s
46	t _e	ms
0.19	t _m	ms
102 (5576829.09)	J _M	kg•m ² (GD ² /4)(oz•in ²)
2000		P/R
104 (22.928)	WE	kg(lbs)
-----	TB	N•m(oz•in)
-----	VB	V
-----	IB	Arms
-----	JB	kg•m ² (GD ² /4)(oz•in ²)
-----	W	kg(lbs)
0 to 40°C; maximum 90% RH (no condensation)		
39/33 200V AC +10% Single phase 50/60Hz		

Note1: For those interested in the 20kW Q4 motor, please contact our Sales Division for assistance.

Servo Motor Standard Specifications



Q2

Servo Motor

200V System

Capacity

Flange Size
42mm to 86mm
(1.65in to 3.39in)

50W to 1kW
(31 models)

Features

High Efficiency
and Low Ripple
(Medium Inertia)

100V System p.27-28

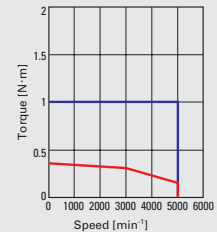
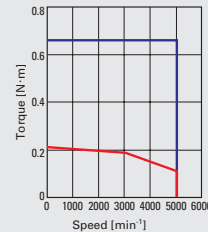
Motor Dwgs p.33-34

★: Indicates a typical value after warm-up and thermal stabilization, together with a standard amplifier.

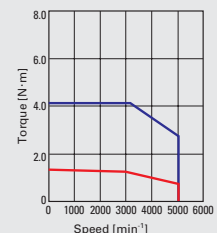
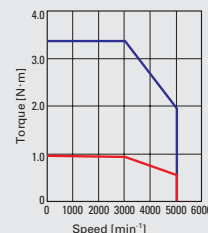
☆: Indicates a typical value when the winding temperature is 20°C.

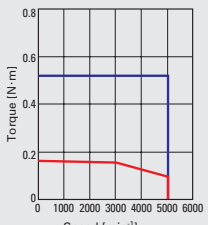
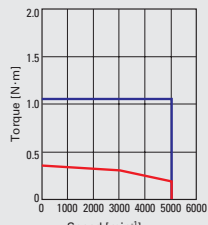
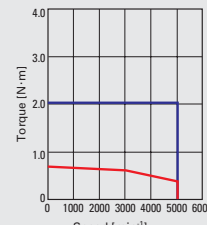
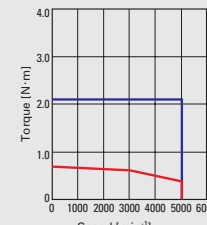
Note: Actual power consumption depends on load impedance.

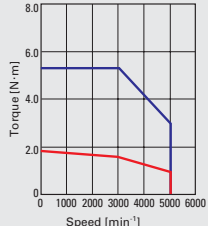
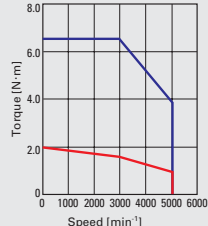
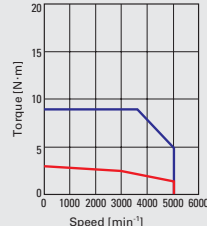
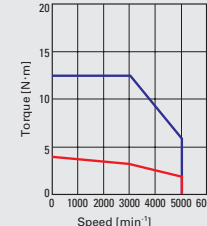
Amplifier Model				QS1A01	
Motor Model and Flange Dimension in mm(in)				Q2AA04006D 42mm (1.65in)	Q2AA04010D 42mm (1.65in)
	Status	Symbol	Unit		
Rated Output	★	P _R	kW	0.06	0.1
Rated Rotation Speed	★	N _R	min ⁻¹	3000	
Max. Rotation Speed	★	N _{MAX}	min ⁻¹	5000	
Rated Torque	★	T _R	N•m(oz•in)	0.191 (27.05)	0.318 (45.03)
Continuous Stall Torque	★	T _S	N•m(oz•in)	0.216 (30.59)	0.353 (49.99)
Inst. Max. Stall Torque	★	T _P	N•m(oz•in)	0.65 (92.04)	1 (141.61)
Rated Armature Current	★	I _R	Arms	0.67	1.1
Continuous Stall Armature Current	★	I _S	Arms	0.67	1.2
Instant. Max. Stall Armature Current	★	I _P	Arms	2.7	3.6
Torque Constant	☆	K _T	N•m/Arms	0.310	0.325
Induced Voltage Constant	☆	K _{EΦ}	mV/min ⁻¹	10.97	11.34
Per-Phase Armature Resistance	☆	R _Φ	Ω	11.3	6.77
Rated Power Rate	★	Q _R	kW/s	6.46	11.8
Electrical Time Constant	☆	te	ms	0.69	0.56
Mechanical Time Constant	☆	tm	ms	1.94	1.7
Rotor Inertia (INC)		J _M	kg•m ² (GD/4)(oz•in ²)	0.0565x10 ⁻⁴ (0.31)	0.086x10 ⁻⁴ (0.47)
Sensor: Reduced Wiring INC			P/R	2000	
Mass-including Red. Wiring INC		WE	kg(lbs)	0.46 (1.01)	0.59 (1.30)
Brake Holding Torque		TB	N•m(oz•in)	0.191 (27.05)	0.319 (45.17)
Brake Excitation Voltage		VB	V	90/24	
Brake Excitation Current		IB	Arms	0.07/0.26	
Brake Inertia		JB	kg•m ² (GD/4)(oz•in ²)	0.0078x10 ⁻⁴ (0.04)	
Brake Mass		W	kg(lbs)	0.24 (0.53)	
Motor Operating Temp, Rel. Humidity				0 to 40°C; maximum 90% RH (no condensation)	



Amplifier Model				QS1A01	QS1A03
Motor Model and Flange Dimension in mm(in)				Q2AA07030D 76mm (2.99in)	Q2AA07040D 76mm (2.99in)
	Status	Symbol	Unit		
Rated Output	★	P _R	kW	0.3	0.4
Rated Rotation Speed	★	N _R	min ⁻¹	3000	
Max. Rotation Speed	★	N _{MAX}	min ⁻¹	5000	
Rated Torque	★	T _R	N•m(oz•in)	0.955 (135.23)	1.273 (180.27)
Continuous Stall Torque	★	T _S	N•m(oz•in)	0.98 (138.77)	1.372 (194.28)
Inst. Max. Stall Torque	★	T _P	N•m(oz•in)	3.4 (481.46)	4.1 (580.59)
Rated Armature Current	★	I _R	Arms	2.1	3.0
Continuous Stall Armature Current	★	I _S	Arms	2.5	3.1
Instant. Max. Stall Armature Current	★	I _P	Arms	7.9	12
Torque Constant	☆	K _T	N•m/Arms	0.519	0.482
Induced Voltage Constant	☆	K _{EΦ}	mV/min ⁻¹	18.1	16.8
Per-Phase Armature Resistance	☆	R _Φ	Ω	2.22	1.26
Rated Power Rate	★	Q _R	kW/s	20.3	21.6
Electrical Time Constant	☆	te	ms	2.5	2.6
Mechanical Time Constant	☆	tm	ms	1.1	1.2
Rotor Inertia (INC)		J _M	kg•m ² (GD/4)(oz•in ²)	0.45x10 ⁻⁴ (2.46)	0.75x10 ⁻⁴ (4.10)
Sensor: Reduced Wiring INC			P/R	2000	
Mass-including Red. Wiring INC		WE	kg(lbs)	1.7 (3.5)	2.0 (4.41)
Brake Holding Torque		TB	N•m(oz•in)	0.98 (138.77)	1.37 (194.00)
Brake Excitation Voltage		VB	V	90/24	
Brake Excitation Current		IB	Arms	0.08/0.3	
Brake Inertia		JB	kg•m ² (GD/4)(oz•in ²)	0.245x10 ⁻⁴ (1.34)	
Brake Mass		W	kg(lbs)	0.57 (1.26)	
Motor Operating Temp, Rel. Humidity				0 to 40°C; maximum 90% RH (no condensation)	



QS1A01				Symbol	Unit
Q2AA05005D 54mm (2.13in)	Q2AA05010D 54mm (2.13in)	Q2AA05020D 54mm (2.13in)	Q2AA07020D 76mm (2.99in)		
0.05	0.1	0.2		P_R	kW
		3000		N_R	min^{-1}
		5000		N_{MAX}	min^{-1}
0.159 (22.52)	0.318 (45.03)		0.637 (90.20)	T_R	$\text{N} \cdot \text{m}(\text{oz} \cdot \text{in})$
0.167 (23.65)	0.353 (49.99)		0.686 (97.14)	T_S	$\text{N} \cdot \text{m}(\text{oz} \cdot \text{in})$
0.518 (73.35)	1.06 (150.10)	2.05 (290.29)	2.1 (297.37)	T_F	$\text{N} \cdot \text{m}(\text{oz} \cdot \text{in})$
0.86	1.1	1.6	2.1	I_R	Arms
0.88	1.2	1.7	2.2	I_S	Arms
3.3	4.3	5.9	7.5	I_P	Arms
0.210	0.33	0.435	0.34	K_T	$\text{N} \cdot \text{m}/\text{Arms}$
7.26	11.4	15.2	11.8	$K_{E\Phi}$	$\text{mV}/\text{min}^{-1}$
4.72	4.05	3.24	1.88	R_Φ	Ω
3.78	7.78	16.2	10.6	Q_R	kW/s
0.70	1.0	0.92	1.8	t_e	ms
2.2	1.5	1.3	1.9	t_m	ms
0.067×10^{-4} (0.37)	0.13×10^{-4} (0.71)	0.25×10^{-4} (1.37)	0.38×10^{-4} (2.08)	J_M	$\text{kg} \cdot \text{m}^2(\text{GD}^2/4)(\text{oz} \cdot \text{in}^2)$
		2000			P/R
0.53 (1.17)	0.74 (1.63)	1.1 (2.43)	1.4 (3.09)	WE	kg(lbs)
0.167 (23.65)	0.353 (49.99)	0.353 (49.99)	0.69 (97.71)	TB	$\text{N} \cdot \text{m}(\text{oz} \cdot \text{in})$
		90/24		VB	V
	0.11/0.4		0.08/0.3	IB	Arms
	0.029×10^{-4} (0.16)		0.245×10^{-4} (1.34)	JB	$\text{kg} \cdot \text{m}^2(\text{GD}^2/4)(\text{oz} \cdot \text{in}^2)$
	0.3 (0.66)		0.57 (1.26)	W	kg(lbs)
0 to 40°C; maximum 90% RH (no condensation)					
					

QS1A01		QS1A05		Symbol	Unit
Q2AA07050D 76mm (2.99in)	Q2AA08050D 86mm (3.39in)	Q2AA08075D 86mm (3.39in)	Q2AA08100D 86mm (3.39in)		
0.5	0.5	0.75	1	P_R	kW
		3000		N_R	min^{-1}
		5000		N_{MAX}	min^{-1}
1.59 (225.16)	1.592 (225.44)	2.387 (338.02)	3.18 (450.31)	T_R	$\text{N} \cdot \text{m}(\text{oz} \cdot \text{in})$
1.85 (261.97)	1.96 (277.55)	2.941 (416.47)	3.92 (555.10)	T_S	$\text{N} \cdot \text{m}(\text{oz} \cdot \text{in})$
5.2 (736.36)	6.56 (928.94)	9 (1274.46)	12.5 (1770.09)	T_F	$\text{N} \cdot \text{m}(\text{oz} \cdot \text{in})$
4.3	3.7	5.9	6.0	I_R	Arms
5.0	4.3	7.0	6.9	I_S	Arms
15	15	23.7	25	I_P	Arms
0.442	0.520	0.441	0.59	K_T	$\text{N} \cdot \text{m}/\text{Arms}$
15.4	18.1	15.4	20.5	$K_{E\Phi}$	$\text{mV}/\text{min}^{-1}$
0.8	0.8	0.358	0.410	R_Φ	Ω
27.3	19.4	27.5	37	Q_R	kW/s
2.6	3.3	3.6	4.1	t_e	ms
1.3	1.2	1.1	0.96	t_m	ms
0.85×10^{-4} (4.65)	1.3×10^{-4} (7.11)	2.07×10^{-4} (11.32)	2.7×10^{-4} (14.76)	J_M	$\text{kg} \cdot \text{m}^2(\text{GD}^2/4)(\text{oz} \cdot \text{in}^2)$
		2000			P/R
2.3 (5.07)	2.75 (5.95)	3.9 (8.60)	5.1 (11.24)	WE	kg(lbs)
1.85 (261.97)	1.96 (277.55)		2.94 (16.32)	TB	$\text{N} \cdot \text{m}(\text{oz} \cdot \text{in})$
		90/24		VB	V
		0.08/0.33		IB	Arms
0.245×10^{-4} (1.34)		0.343×10^{-4} (1.88)		JB	$\text{kg} \cdot \text{m}^2(\text{GD}^2/4)(\text{oz} \cdot \text{in}^2)$
0.57 (1.26)		0.8 (1.76)		W	kg(lbs)
0 to 40°C; maximum 90% RH (no condensation)					
					

Servo Motor Standard Specifications



Q2

Servo Motor

200V System

Capacity

Flange Size
100mm to 220mm
(3.94in to 8.66in)

500W to 5.5kW
(31 models)

Features

High Efficiency
and Low Ripple
(Medium Inertia)

100V System p.27-28

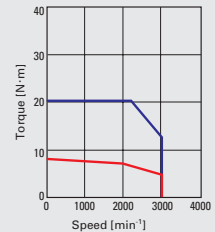
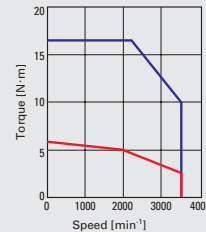
Motor Dwgs p.33-34

★: Indicates a typical value after warm-up and thermal stabilization, together with a standard amplifier.

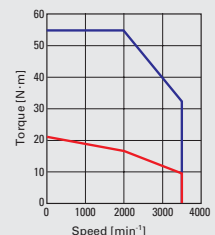
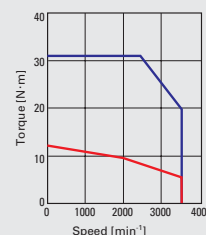
☆: Indicates a typical value when the winding temperature is 20°C.

Note: Actual power consumption depends on load impedance.

Amplifier Model				QS1A05	
Motor Model and Flange Dimension in mm(in)				Q2AA10100H 100mm (3.94in)	Q2AA10150H 100mm (3.94in)
	Status	Symbol	Unit		
Rated Output	★	P _R	kW	1	1.5
Rated Rotation Speed	★	N _R	min ⁻¹	2000	
Max. Rotation Speed	★	N _{MAX}	min ⁻¹	3500	3000
Rated Torque	★	T _R	N•m(oz•in)	5 (708.03)	7.2 (1019.57)
Continuous Stall Torque	★	T _S	N•m(oz•in)	6 (849.64)	8 (1132.86)
Inst. Max. Stall Torque	★	T _P	N•m(oz•in)	16.6 (2350.68)	20.5 (2902.94)
Rated Armature Current	★	I _R	Arms	6.8	8.6
Continuous Stall Armature Current	★	I _S	Arms	8.1	9.4
Instant. Max. Stall Armature Current	★	I _P	Arms	24.5	25.5
Torque Constant	☆	K _T	N•m/Arms	0.814	0.94
Induced Voltage Constant	☆	K _{EΦ}	mV/min ⁻¹	28.4	32.7
Per-Phase Armature Resistance	☆	R _Φ	Ω	0.477	0.34
Rated Power Rate	★	Q _R	kW/s	46.0	65
Electrical Time Constant	☆	t _e	ms	4.8	6
Mechanical Time Constant	☆	t _m	ms	1.2	0.93
Rotor Inertia (INC)		J _M	kg•m ² (GD/4)(oz•in ²)	5.44x10 ⁻⁴ (29.74)	8x10 ⁻⁴ (43.74)
Sensor: Reduced Wiring INC			P/R	2000	
Mass-including Red. Wiring INC		WE	kg(lbs)	5.4 (11.90)	6.5 (14.33)
Brake Holding Torque		TB	N•m(oz•in)	3.92 (555.10)	7.84 (1110.20)
Brake Excitation Voltage		VB	V	90/24	
Brake Excitation Current		IB	Arms	0.20/0.75	
Brake Inertia		JB	kg•m ² (GD/4)(oz•in ²)	0.15x10 ⁻⁴ (0.82)	0.4x10 ⁻⁴ (2.19)
Brake Mass		W	kg(lbs)	1.3 (2.87)	1.5 (3.31)
Motor Operating Temp, Rel. Humidity				0 to 40°C; maximum 90% RH (no condensation)	

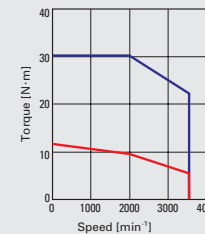
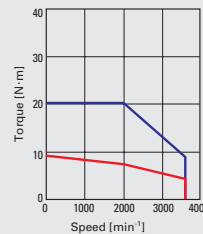
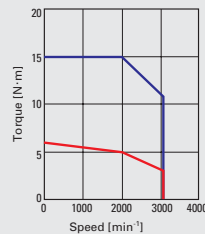
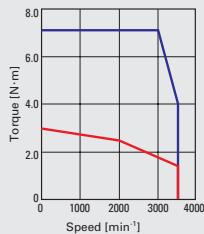


Amplifier Model				QS1A10	QS1A15
Motor Model and Flange Dimension in mm(in)				Q2AA18200H 180mm (7.09in)	Q2AA18350H 180mm (7.09in)
	Status	Symbol	Unit		
Rated Output	★	P _R	kW	2	3.5
Rated Rotation Speed	★	N _R	min ⁻¹	2000	
Max. Rotation Speed	★	N _{MAX}	min ⁻¹	3500	
Rated Torque	★	T _R	N•m(oz•in)	9.5 (1345.27)	16.7 (2364.84)
Continuous Stall Torque	★	T _S	N•m(oz•in)	12 (1699.28)	21.1 (2987.91)
Inst. Max. Stall Torque	★	T _P	N•m(oz•in)	27.9 (3950.84)	55 (7788.38)
Rated Armature Current	★	I _R	Arms	15	22.6
Continuous Stall Armature Current	★	I _S	Arms	18	28
Instant. Max. Stall Armature Current	★	I _P	Arms	55	83
Torque Constant	☆	K _T	N•m/Arms	0.75	0.840
Induced Voltage Constant	☆	K _{EΦ}	mV/min ⁻¹	25.9	29.3
Per-Phase Armature Resistance	☆	R _Φ	Ω	0.075	0.048
Rated Power Rate	★	Q _R	kW/s	45.7	73
Electrical Time Constant	☆	t _e	ms	14.7	15
Mechanical Time Constant	☆	t _m	ms	0.82	0.77
Rotor Inertia (INC)		J _M	kg•m ² (GD/4)(oz•in ²)	20x10 ⁻⁴ (109.3496)	38x10 ⁻⁴ (207.76)
Sensor: Reduced Wiring INC			P/R	2000	
Mass-including Red. Wiring INC		WE	kg(lbs)	13.6 (29.98)	17.7 (39.02)
Brake Holding Torque		TB	N•m(oz•in)	12 (1699.28)	32 (4531.42)
Brake Excitation Voltage		VB	V	90/24	
Brake Excitation Current		IB	Arms	0.37/1.4	
Brake Inertia		JB	kg•m ² (GD/4)(oz•in ²)	5.5x10 ⁻⁴ (30.07)	
Brake Mass		W	kg(lbs)	5 (11.02)	
Motor Operating Temp, Rel. Humidity				0 to 40°C; maximum 90% RH (no condensation)	



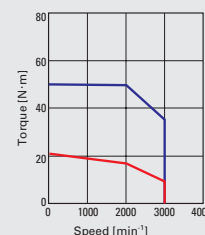
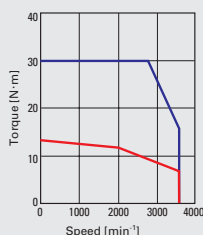
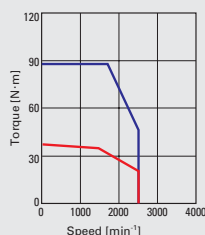
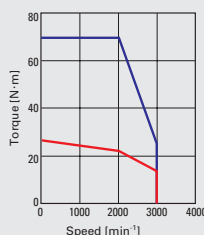
QS1A03	QS1A05		QS1A10		
Q2AA13050H 130mm (5.12in)	Q2AA13100H 130mm (5.12in)	Q2AA13150H 130mm (5.12in)	Q2AA13200H 130mm (5.12in)	Symbol	Unit
0.5	1.0	1.5	2	P _R	kW
2000				N _R	min ⁻¹
3500	3000	3500		N _{MAX}	min ⁻¹
2.5 (354.02)	5 (708.03)	7.5 (1062.05)	9.55 (1352.35)	T _R	N•m(oz•in)
3 (424.82)	6 (849.64)	9 (1274.46)	12 (1699.28)	T _S	N•m(oz•in)
7.1 (1005.41)	15 (2124.10)	20.3 (2874.62)	30.5 (4319.01)	T _P	N•m(oz•in)
4.6	7	8.7	13.1	I _R	Arms
5.2	8.3	10.2	16.3	I _S	Arms
15	23.7	26.5	48	I _P	Arms
0.607	0.803	0.981	0.822	K _T	N•m/Arms
21.2	28.0	34.2	29.0	K _{EΦ}	mV/min ⁻¹
0.442	0.276	0.266	0.119	R _Φ	Ω
22.3	46	64	78	Q _R	kW/s
8.5	12	12	14	t _e	ms
1.0	0.69	0.73	0.63	t _m	ms
2.8x10 ⁻⁴ (15.31)	5.4x10 ⁻⁴ (29.52)	8.8x10 ⁻⁴ (48.11)	12x10 ⁻⁴ (65.61)	J _M	kg•m ² (GD ² /4)(oz•in ²)
2000					P/R
4.7 (10.36)	6.6 (14.55)	7.8 (17.20)	9.8 (21.61)	WE	kg(lbs)
3.5 (495.62)	9 (1274.46)	9 (1274.46)	12 (1699.28)	TB	N•m(oz•in)
90/24				VB	V
0.25/0.91	0.25/0.86		0.28/1.0	IB	Arms
0.5x10 ⁻⁴ (2.73)				JB	kg•m ² (GD ² /4)(oz•in ²)
1.3 (2.87)	1.5 (3.31)		1.7 (3.75)	W	kg(lbs)
0 to 40°C: maximum 90% RH (no condensation)					

0 to 40°C; maximum 90% RH (no condensation)



QS1A15		QS1A10		QS1A15	
Q2AA18450H 180mm (7.09in)	Q2AA18550R 180mm (7.09in)	Q2AA22250H 220mm (8.66in)	Q2AA22350H 220mm (8.66in)	Symbol	Unit
4.5	5.5	2.5	3.5	P _R	kW
2000	1500	2000		N _R	min ⁻¹
3000	2500	3500		N _{MAX}	min ⁻¹
21.5 (3044.55)	35 (4956.24)	12 (1699.28)	17 (2407.32)	T _R	N•m(oz•in)
27.1 (3837.55)	37.3 (5281.94)	13.5 (1911.69)	22 (3115.35)	T _S	N•m(oz•in)
70 (9912.49)	88 (12461.42)	30 (4248.21)	50 (7080.35)	T _P	N•m(oz•in)
24	32.2	19.6	23.3	I _R	Arms
29	33.7	21.8	29.8	I _S	Arms
81	83	55	78	I _P	Arms
1.04	1.24	0.685	0.814	K _T	N•m/Arms
36.4	43.2	23.9	28.4	K _{EΦ}	mV/min ⁻¹
0.044	0.039	0.0735	0.0559	R _Φ	Ω
84.0	180	44.7	61.1	Q _R	kW/s
18	21	12	15	t _e	ms
0.67	0.53	1.5	1.2	t _m	ms
55x10 ⁻⁴ (300.71)	69x10 ⁻⁴ (377.26)	32.2x10 ⁻⁴ (176.05)	47.33x10 ⁻⁴ (258.78)	J _M	kg•m ² (GD ² /4)(oz•in ²)
2000					P/R
21.7 (47.84)	31.7 (69.89)	15.5 (34.17)	18.5 (40.79)	WE	kg(lbs)
32 (4531.42)	54.9 (7774.22)	32 (4531.42)		TB	N•m(oz•in)
90/24				VB	V
0.37/1.4		0.42/1.6		IB	Arms
5.5x10 ⁻⁴ (30.07)	5.5x10 ⁻⁴ (30.07)	9.9x10 ⁻⁴ (54.13)		JB	kg•m ² (GD ² /4)(oz•in ²)
5 (11.02)	6 (13.23)	5.9 (13.01)		W	kg(lbs)
0 to 40°C: maximum 90% RH (no condensation)					

0 to 40°C; maximum 90% RH (no condensation)



Servo Motor Standard Specifications



Q2

Servo Motor

200V System

Capacity

Flange Size
180mm to 220mm
(3.94in to 8.66in)

4.5KW to 15KW
(31 models from
50W to 15kW)

Features

High Efficiency
and Low Ripple
(Medium Inertia)

100V System p.27-28

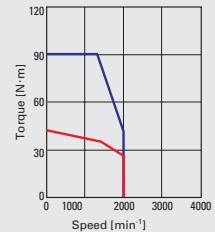
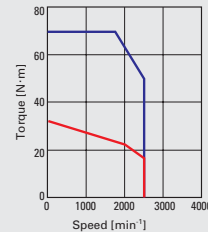
Motor Dwgs p.33-34

★: Indicates a typical value after warm-up and thermal stabilization, together with a standard amplifier.

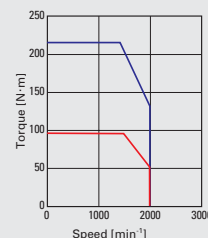
☆: Indicates a typical value when the winding temperature is 20°C.

Note: Actual power consumption depends on load impedance.

Amplifier Model				QS1A15	
Motor Model and Flange Dimension in mm(in)				Q2AA22450R 220mm (8.66in)	Q2AA22550B 220mm (8.66in)
	Status	Symbol	Unit		
Rated Output	★	P_R	kW	4.5	5.5
Rated Rotation Speed	★	N_R	min^{-1}	2000	1500
Max. Rotation Speed	★	N_{MAX}	min^{-1}	2500	2000
Rated Torque	★	T_R	$\text{N} \cdot \text{m}(\text{oz} \cdot \text{in})$	21.5 (3044.55)	35 (4956.24)
Continuous Stall Torque	★	T_S	$\text{N} \cdot \text{m}(\text{oz} \cdot \text{in})$	32 (4531.42)	42 (5947.49)
Inst. Max. Stall Torque	★	T_P	$\text{N} \cdot \text{m}(\text{oz} \cdot \text{in})$	70 (9912.49)	90 (12744.63)
Rated Armature Current	★	I_R	Arms	23	30
Continuous Stall Armature Current	★	I_S	Arms	33	35.1
Instant. Max. Stall Armature Current	★	I_P	Arms	83	79.7
Torque Constant	☆	K_T	$\text{N} \cdot \text{m}/\text{Arms}$	1.06	1.32
Induced Voltage Constant	☆	K_E	$\text{mV}/\text{min}^{-1}$	37.1	46
Per-Phase Armature Resistance	☆	R_ϕ	Ω	0.0497	0.0464
Rated Power Rate	★	Q_R	kW/s	68.5	128.5
Electrical Time Constant	☆	t_e	ms	19	24
Mechanical Time Constant	☆	t_m	ms	0.89	0.76
Rotor Inertia (INC)		J_M	$\text{kg} \cdot \text{m}^2(\text{GD}^2/4)(\text{oz} \cdot \text{in}^2)$	67.45×10^{-4} (368.78)	95.3×10^{-4} (521.05)
Sensor: Reduced Wiring INC			P/R	2000	
Mass-including Red. Wiring INC		WE	kg(lbs)	22 (48.50)	34.8 (76.72)
Brake Holding Torque		TB	$\text{N} \cdot \text{m}(\text{oz} \cdot \text{in})$	32 (4531.42)	90 (12744.63)
Brake Excitation Voltage		VB	V	90/24	
Brake Excitation Current		IB	Arms	0.42/1.6	0.36/1.3
Brake Inertia		JB	$\text{kg} \cdot \text{m}^2(\text{GD}^2/4)(\text{oz} \cdot \text{in}^2)$	9.9×10^{-4} (54.13)	23×10^{-4} (125.75)
Brake Mass		W	kg(lbs)	5.9 (13.01)	10.4 (22.93)
Motor Operating Temp, Rel. Humidity				0 to 40°C; maximum 90% RH (no condensation)	

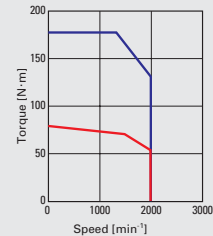
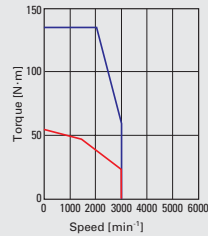
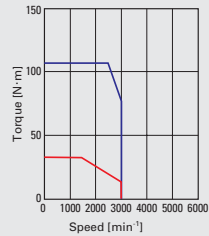
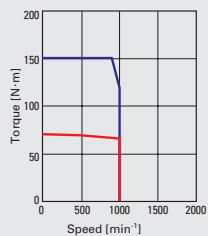


Amplifier Model				QS1A01
Motor Model and Flange Dimension in mm(in)				Q2AA04006D 42mm (1.65in)
	Status	Symbol	Unit	
Rated Output	★	P_R	kW	15
Rated Rotation Speed	★	N_R	min^{-1}	1500
Max. Rotation Speed	★	N_{MAX}	min^{-1}	2000
Rated Torque	★	T_R	$\text{N} \cdot \text{m}(\text{oz} \cdot \text{in})$	95.5 (13523.47)
Continuous Stall Torque	★	T_S	$\text{N} \cdot \text{m}(\text{oz} \cdot \text{in})$	95.5 (13523.47)
Inst. Max. Stall Torque	★	T_P	$\text{N} \cdot \text{m}(\text{oz} \cdot \text{in})$	215 (30445.50)
Rated Armature Current	★	I_R	Arms	66
Continuous Stall Armature Current	★	I_S	Arms	66
Instant. Max. Stall Armature Current	★	I_P	Arms	157
Torque Constant	☆	K_T	$\text{N} \cdot \text{m}/\text{Arms}$	1.54
Induced Voltage Constant	☆	K_E	$\text{mV}/\text{min}^{-1}$	53.6
Per-Phase Armature Resistance	☆	R_ϕ	Ω	0.016
Rated Power Rate	★	Q_R	kW/s	360
Electrical Time Constant	☆	t_e	ms	33
Mechanical Time Constant	☆	t_m	ms	0.52
Rotor Inertia (INC)		J_M	$\text{kg} \cdot \text{m}^2(\text{GD}^2/4)(\text{oz} \cdot \text{in}^2)$	255×10^{-4} (1394.21)
Sensor: Reduced Wiring INC			P/R	2000
Mass-including Red. Wiring INC		WE	kg(lbs)	70 (154.32)
Brake Holding Torque		TB	$\text{N} \cdot \text{m}(\text{oz} \cdot \text{in})$	90 (12744.63)
Brake Excitation Voltage		VB	V	90/24
Brake Excitation Current		IB	Arms	0.44/1.7
Brake Inertia		JB	$\text{kg} \cdot \text{m}^2(\text{GD}^2/4)(\text{oz} \cdot \text{in}^2)$	24×10^{-4} (131.22)
Brake Mass		W	kg(lbs)	11 (24.25)
Motor Operating Temp, Rel. Humidity				0 to 40°C; max. 90% RH (no condensation)



QS1A15			QS1A30		
Q2AA22700S 220mm (8.66in)	Q2AA18550H 180mm (7.09in)	Q2AA18750L 180mm (7.09in)	Q2AA2211KV 220mm (8.66in)	Symbol	Unit
7	5.5	7.5	11	P _R	kW
1000		1500		N _R	min ⁻¹
1000	3000		2000	N _{MAX}	min ⁻¹
67 (9487.67)	35 (4956.24)	48 (6797.14)	70 (9912.49)	T _R	N•m(oz•in)
70 (9912.49)	37.3 (5281.94)	55 (7788.38)	80 (11328.56)	T _S	N•m(oz•in)
150 (21241.05)	107 (15151.95)	135 (19116.94)	176 (24922.83)	T _F	N•m(oz•in)
34	47	52	60	I _R	Arms
34	47	57	66	I _S	Arms
83	155	155	155	I _P	Arms
2.13	0.830	1.03	1.29	K _T	N•m/Arms
74.5	29.0	36.0	45.1	K _{EΦ}	mV/min ⁻¹
0.057	0.018	0.017	0.015	R _Φ	Ω
243	170	240	260	Q _R	kW/s
30	17	20	33	te	ms
0.7	0.57	0.46	0.50	tm	ms
185x10 ⁻⁴ (1011.48)	73x10 ⁻⁴ (399.13)	95x10 ⁻⁴ (519.41)	186x10 ⁻⁴ (1016.95)	J _M	kg•m ² (GD ² /4)(oz•in ²)
2000					P/R
52.8 (116.40)	31 (68.34)	40 (88.18)	58 (127.87)	WE	kg(lbs)
90 (12744.63)	54.9 (7774.22)		90 (12744.63)	TB	N•m(oz•in)
	90/24			VB	V
0.36/1.3	0.37/1.4		0.44/1.7	IB	Arms
23x10 ⁻⁴ (125.75)	5.5x10 ⁻⁴ (30.07)		24x10 ⁻⁴ (131.22)	JB	kg•m ² (GD ² /4)(oz•in ²)
10.4 (22.93)	6 (13.23)		11 (24.25)	W	kg(lbs)
0 to 40°C: maximum 90% RH (no condensation)					

0 to 40°C; maximum 90% RH (no condensation)



Servo Motor Standard Specifications



Q1

Servo Motor

100V System

Capacity

Flange Size

40mm to 60mm

(1.57in to 2.36in)

30W to 200W

(4 models)

Features

High Power

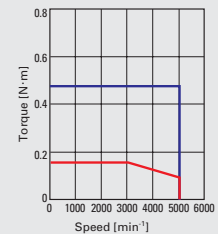
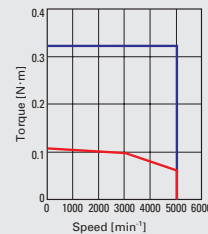
100V System p.27-28

Amplifier Model				QS1E01	
Motor Model and Flange Dimension in mm(in)				Q1EA04003D 40mm (1.57in)	Q1EA04005D 60mm (2.36in)
Status	Symbol	Unit			
Rated Output	★	P _R	kW	0.03	0.05
Rated Rotation Speed	★	N _R	min ⁻¹	3000	
Max. Rotation Speed	★	N _{MAX}	min ⁻¹	5000	
Rated Torque	★	T _R	N•m(oz•in)	0.098 (13.88)	0.159 (22.52)
Continuous Stall Torque	★	T _S	N•m(oz•in)	0.108 (15.29)	0.159 (22.52)
Inst. Max. Stall Torque	★	T _P	N•m(oz•in)	0.322 (45.60)	0.477 (67.55)
Rated Armature Current	★	I _R	Arms	0.9	1.90
Continuous Stall Armature Current	★	I _S	Arms	0.95	1.90
Instant. Max. Stall Armature Current	★	I _P	Arms	4	7
Torque Constant	☆	K _T	N•m/Arms	0.115	0.096
Induced Voltage Constant	☆	K _{EΦ}	mV/min ⁻¹	4.03	3.3
Per-Phase Armature Resistance	☆	R _Φ	Ω	4.28	1.4
Rated Power Rate	★	Q _R	kW/s	9.60	18.8
Electrical Time Constant	☆	t _e	ms	0.75	0.8
Mechanical Time Constant	☆	t _m	ms	0.97	0.6
Rotor Inertia (INC)		J _M	kg•m ² (GD/4)(oz•in ²)	0.01x10 ⁻⁴ (0.05)	0.0134x10 ⁻⁴ (0.07)
Sensor: Reduced Wiring INC			P/R	2000	
Mass-including Red. Wiring INC		WE	kg(lbs)	0.3 (0.66)	0.35 (0.77)
Brake Holding Torque		TB	N•m(oz•in)	0.098 (13.88)	0.157 (22.23)
Brake Excitation Voltage		VB	V	90/24	
Brake Excitation Current		IB	Arms	0.07/0.26	
Brake Inertia		JB	kg•m ² (GD/4)(oz•in ²)	0.0078x10 ⁻⁴ (0.04)	
Brake Mass		W	kg(lbs)	0.24 (0.53)	
Motor Operating Temp, Rel. Humidity				0 to 40°C; maximum 90% RH (no condensation)	

★: Indicates a typical value after warm-up and thermal stabilization, together with a standard amplifier.

☆: Indicates a typical value when the winding temperature is 20°C.

Note: Actual power consumption depends on load impedance.



Q2

Servo Motor

100V System

Capacity

Flange Size

42mm to 76mm

(1.65in to 2.9in)

50W to 200W

(6 models)

Features

High Efficiency,

Low Ripple

(Medium Inertia)

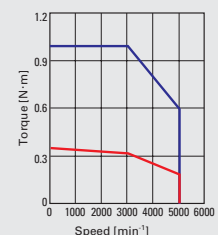
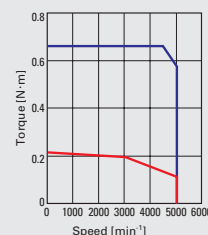
Motor Dwg's p.33-34

Amplifier Model				QS1E01	
Motor Model and Flange Dimension in mm(in)				Q2EA04006D 42mm (1.65in)	Q2EA04010D 42mm (1.65in)
Status	Symbol	Unit			
Rated Output	★	P _R	kW	0.06	0.1
Rated Rotation Speed	★	N _R	min ⁻¹	3000	
Max. Rotation Speed	★	N _{MAX}	min ⁻¹	5000	
Rated Torque	★	T _R	N•m(oz•in)	0.191 (27.05)	0.318 (45.03)
Continuous Stall Torque	★	T _S	N•m(oz•in)	0.216 (30.59)	0.353 (49.99)
Inst. Max. Stall Torque	★	T _P	N•m(oz•in)	0.65 (92.04)	1 (141.61)
Rated Armature Current	★	I _R	Arms	1.9	2
Continuous Stall Armature Current	★	I _S	Arms	1.9	2.2
Instant. Max. Stall Armature Current	★	I _P	Arms	7.9	7
Torque Constant	☆	K _T	N•m/Arms	0.117	0.188
Induced Voltage Constant	☆	K _{EΦ}	mV/min ⁻¹	4.09	6.55
Per-Phase Armature Resistance	☆	R _Φ	Ω	1.5	1.9
Rated Power Rate	★	Q _R	kW/s	6.46	11.8
Electrical Time Constant	☆	t _e	ms	0.62	0.59
Mechanical Time Constant	☆	t _m	ms	1.9	1.39
Rotor Inertia (INC)		J _M	kg•m ² (GD/4)(oz•in ²)	0.0565x10 ⁻⁴ (0.31)	0.086x10 ⁻⁴ (0.47)
Sensor: Reduced Wiring INC			P/R	2000	
Mass-including Red. Wiring INC		WE	kg(lbs)	0.46 (1.01)	0.59 (1.30)
Brake Holding Torque		TB	N•m(oz•in)	0.191 (27.05)	0.319 (45.17)
Brake Excitation Voltage		VB	V	90/24	
Brake Excitation Current		IB	Arms	0.07/0.26	
Brake Inertia		JB	kg•m ² (GD/4)(oz•in ²)	0.0078x10 ⁻⁴ (0.04)	
Brake Mass		W	kg(lbs)	0.24 (0.53)	
Motor Operating Temp, Rel. Humidity				0 to 40°C; maximum 90% RH (no condensation)	

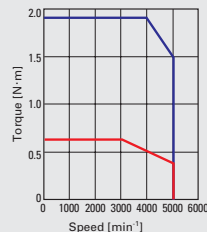
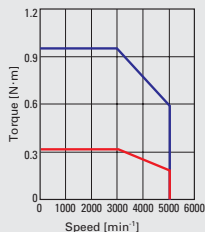
★: Indicates a typical value after warm-up and thermal stabilization, together with a standard amplifier.

☆: Indicates a typical value when the winding temperature is 20°C.

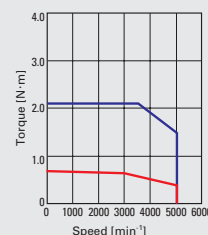
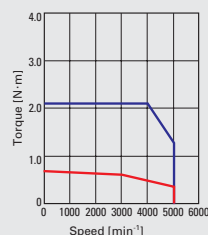
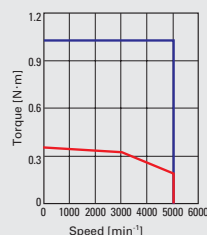
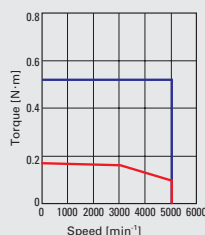
Note: Actual power consumption depends on load impedance.

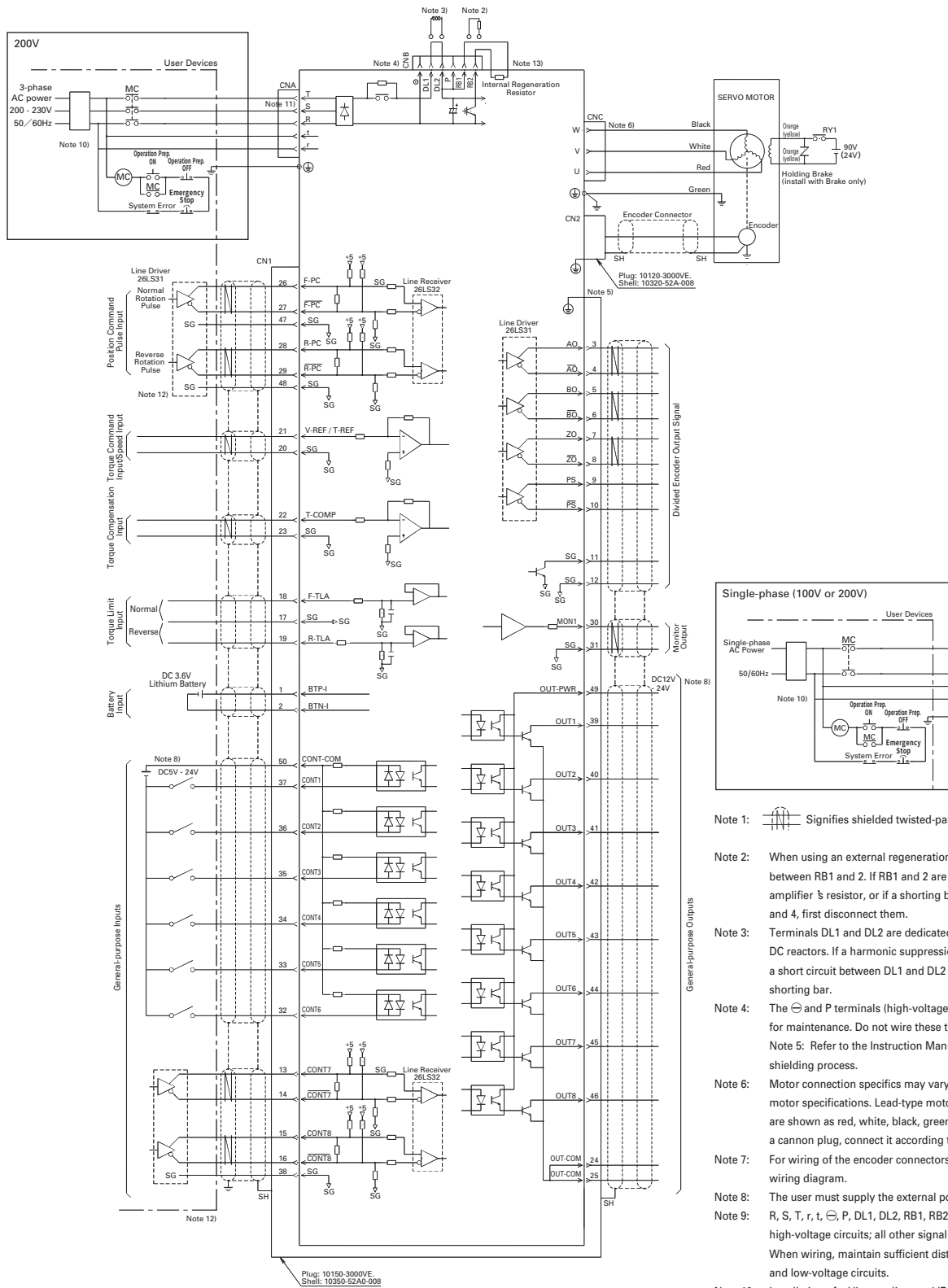


QS1E01		QS1E03	
Q1EA04010D 40mm (1.57in)	Q1EA06020D 60mm (2.36in)	Symbol	Unit
0.1	0.2	P_R	kW
3000		N_R	min^{-1}
5000		N_{MAX}	min^{-1}
0.318 (45.03)	0.637 (90.20)	T_R	$\text{N}\cdot\text{m}(\text{oz}\cdot\text{in})$
0.318 (45.03)	0.637 (90.20)	T_S	$\text{N}\cdot\text{m}(\text{oz}\cdot\text{in})$
0.955 (135.23)	1.91 (270.47)	T_P	$\text{N}\cdot\text{m}(\text{oz}\cdot\text{in})$
2.2	4.5	I_R	Arms
2.2	4.5	I_S	Arms
7.9	15.5	I_P	Arms
0.176	0.161	K_T	$\text{N}\cdot\text{m}/\text{Arms}$
6.13	5.63	$K_{E\Phi}$	$\text{mV}/\text{min}^{-1}$
2.2	0.33	R_Φ	Ω
43.5	28.7	Q_R	kW/s
0.82	2.7	t_e	ms
0.50	0.5	t_m	ms
0.0233×10^{-4} (0.1274)	0.141×10^{-4} (0.77)	J_M	$\text{kg}\cdot\text{m}^2(\text{GD}^2/4)(\text{oz}\cdot\text{in}^2)$
2000			P/R
0.5 (1.10)	1.1 (2.43)	WE	kg(lbs)
0.32 (45.31)	0.637 (90.20)	TB	$\text{N}\cdot\text{m}(\text{oz}\cdot\text{in})$
90/24		VB	V
0.07/0.26	0.07/0.31	IB	Arms
0.0078×10^{-4} (0.04)	0.06×10^{-4} (0.33)	JB	$\text{kg}\cdot\text{m}^2(\text{GD}^2/4)(\text{oz}\cdot\text{in}^2)$
0.24 (0.53)	0.44 (0.97)	W	kg(lbs)
0 to 40°C; maximum 90% RH (no condensation)			



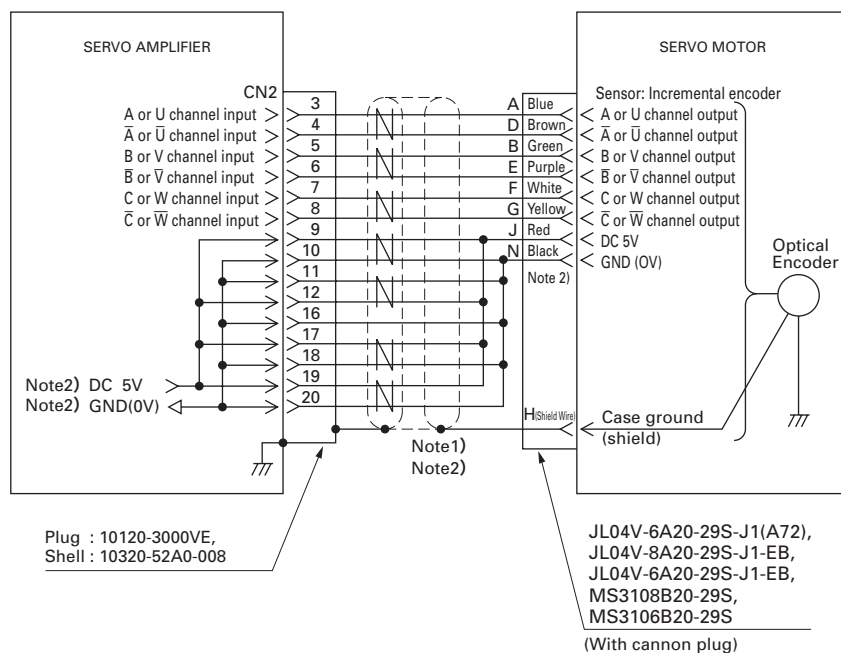
QS1E01					Symbol	Unit
Q2AEA05005D 54mm (2.13in)	Q2EA05010D 54mm (2.13in)	Q2EA05020D 54mm (2.13in)	Q2EA07020D 76mm (2.99in)			
0.05	0.1	0.2	0.2		P_R	kW
		3000			N_R	min^{-1}
		5000			N_{MAX}	min^{-1}
0.159 (22.52)	0.318 (45.03)	0.637 (90.20)	0.637 (90.20)		T_R	$\text{N}\cdot\text{m}(\text{oz}\cdot\text{in})$
0.167 (23.65)	0.353 (49.99)	0.686 (97.14)	0.686 (97.14)		T_S	$\text{N}\cdot\text{m}(\text{oz}\cdot\text{in})$
0.518 (73.35)	1.03 (145.86)	2.1 (297.37)	2.1 (297.37)		T_P	$\text{N}\cdot\text{m}(\text{oz}\cdot\text{in})$
1.5	2.1	3.9	4.4		I_R	Arms
1.5	2.3	4.1	4.6		I_S	Arms
5.6	7.9	15.5	15.5		I_P	Arms
0.121	0.169	0.184	0.162		K_T	$\text{N}\cdot\text{m}/\text{Arms}$
4.23	5.9	6.41	5.67		$K_{E\Phi}$	$\text{mV}/\text{min}^{-1}$
1.84	1.22	0.64	0.5		R_Φ	Ω
3.78	7.8	16.2	10.6		Q_R	kW/s
0.68	0.96	0.98	1.9		t_e	ms
2.5	1.7	1.4	2.2		t_m	ms
0.067×10^{-4} (0.37)	0.13×10^{-4} (0.71)	0.25×10^{-4} (1.37)	0.38×10^{-4} (2.08)		J_M	$\text{kg}\cdot\text{m}^2(\text{GD}^2/4)(\text{oz}\cdot\text{in}^2)$
		2000				P/R
0.53 (1.17)	0.74 (1.63)	1.1 (2.43)	1.4 (3.09)		WE	kg(lbs)
0.167 (23.65)	0.353 (49.99)	0.353 (49.99)	0.69 (97.71)		TB	$\text{N}\cdot\text{m}(\text{oz}\cdot\text{in})$
		90/24			VB	V
	0.11/0.4		0.08/0.3		IB	Arms
	0.0029×10^{-4} (0.16)		0.245×10^{-4} (1.34)		JB	$\text{kg}\cdot\text{m}^2(\text{GD}^2/4)(\text{oz}\cdot\text{in}^2)$
	0.3 (0.66)		0.57 (1.26)		W	kg(lbs)
0 to 40°C; maximum 90% RH (no condensation)						



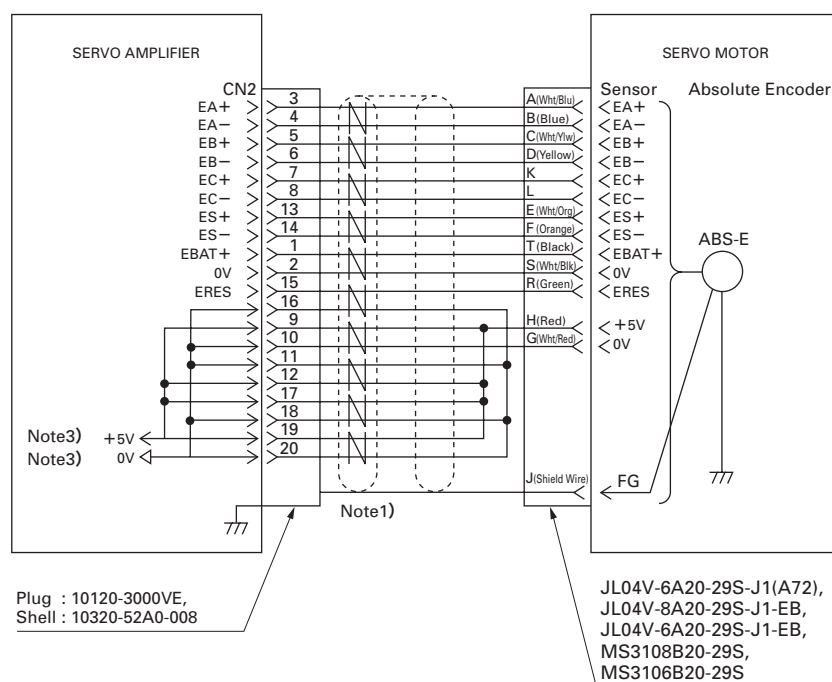




Reduced Wiring Incremental Encoder PP031/PP038/PP062) (Cannon plug and lead-wire types)



Sensor Absolute Encoder PA035M (Cannon plug and lead-wire types)



Note1) Use a twisted-pair shielded cable.

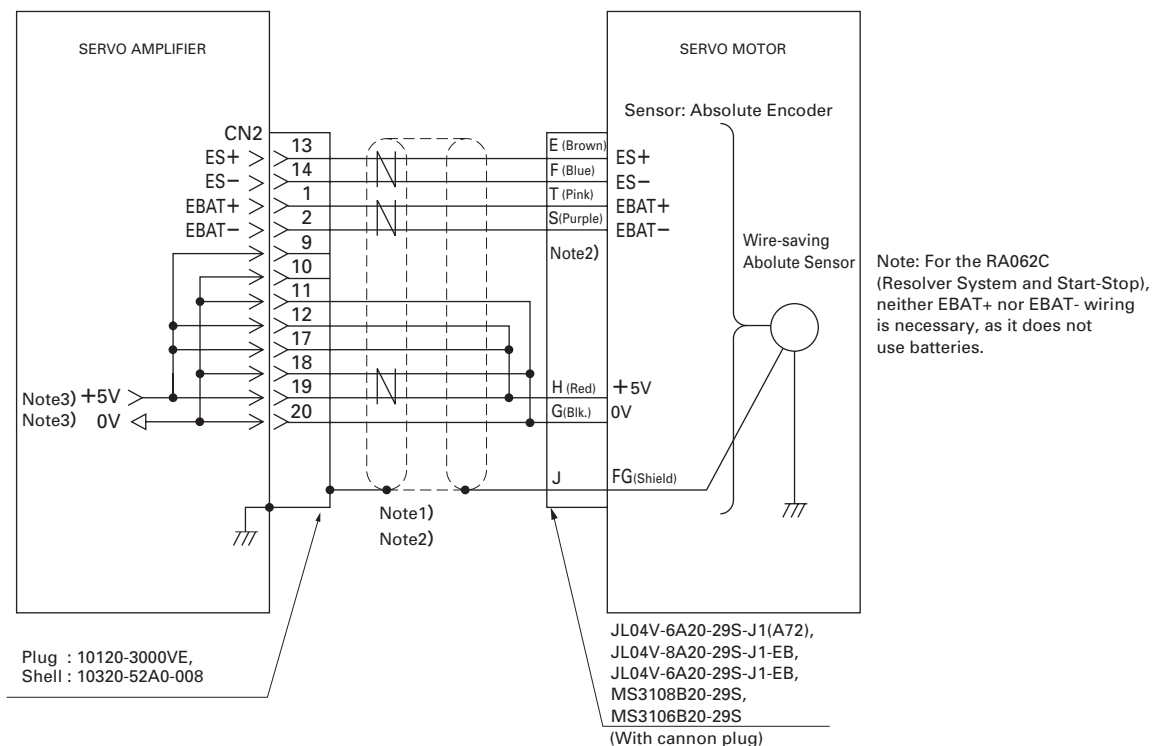
Note2) Sensor power connections depend on sensor cable length. See the following table:

Sensor cable length	5m MAX	10m MAX	20m MAX	30m MAX
+5V DC Wiring	Connect pin 19 (Do not connect pins 9,12,17)	Connect pins 17, 19 (Do not connect pins 9,12)	Connect pins 12, 17, 19 (Do not connect pin9)	Connect pins 9, 12, 17, 19
0V DC Wiring	Connect pin 20 (Do not connect 10,11,16,18)	Connect pins 18, 20 (Do not connect pins 10,11,16)	Connect pins 11,18, 20 (Do not connect 10, 16)	Connect pins 10, 11, 16, 18, 20

Note3) Sensor power connections depend on sensor cable length. See the following table:

Sensor cable length	5m MAX	10m MAX	15m MAX	25m MAX
+5V DC Wiring	Connect pin 19 (Do not connect pins 9,12,17)	Connect pins 17, 19 (Do not connect pins 9,12)	Connect pins 12, 17, 19 (Do not connect pin 9)	Connect pins 9, 12, 17, 19
0V DC Wiring	Connect pins 16, 20 (Do not connect pins 10,11,18)	Connect pins 16,18,20 (Do not connect pins 10, 11)	Connect pins 11,16,18,20 (Do not connect 10)	Connect pins 10, 11, 16, 18, 20

Sensor Absolute Encoder PA035C / RA062C (Cannon plug and lead-wire types)



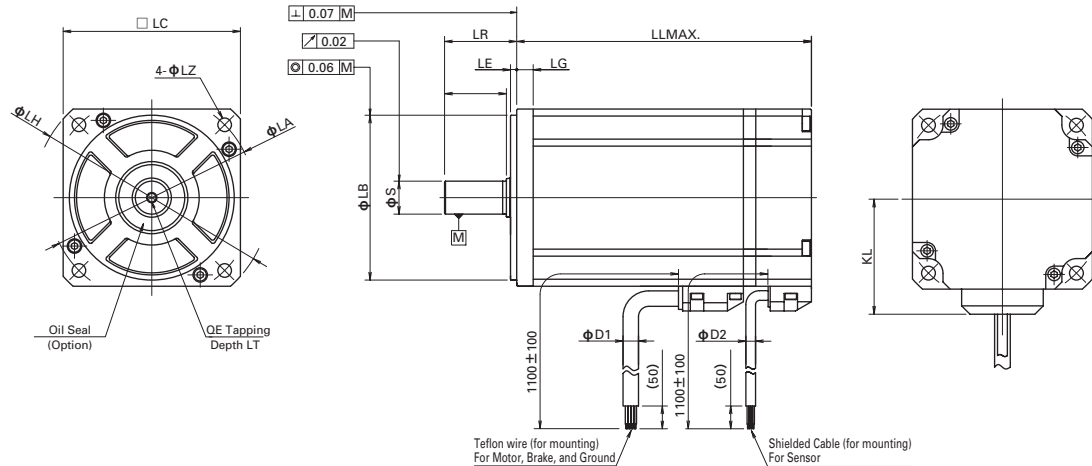
Note1) Use a twisted-pair shielded cable.

Note2) Sensor power connections depend on sensor cable length. See the following table:

Sensor cable length	10m MAX	25m MAX	40m MAX
+5V DC Wiring	Connect pin 19 (Do not connect pins 12,17)	Connect pins 17, 19 (Do not connect pin 12)	Connect pins 12, 17, 19
0V DC Wiring	Connect pin 20 (Do not connect pins 11,18)	Connect pins 18, 20 (Do not connect pin 11)	Connect pins 11,16, 18, 20

Note3) Use 0.2mm² sensor cable.

40mm to 76mm Flange Size



Q1 Motor Series: High Power (Low Inertia)

MODEL	Incremental		LG	KL	LA	LB	LE	LH	LC	LZ	LR	S	Q	OE	LT	D1	D2	Oil Seal
	Without Brake	With Brake																
Q1AA04003***	77	123.5										0 6-0.008	-	-	-	-	-	
Q1AA04005***	83	129.5	5	30	46	0 30-0.021	2.5	54	40	4.5	25	0 8-0.009	-	-	-	-	-	
Q1AA04010***	102	148.5										0 14-0.011	-	-	-	-	4.7	Options
Q1AA06020***	113	142										0 14-0.011	-	-	-	-	-	
Q1AA06040***	142	171	6	41	70	0 50-0.025	3	81	60	5.5	30	0 16-0.011	MS	12	7.5			
Q1AA07075***	156	179.5	8	50	90	0 70-0.030	3	100	76	5.5	40	0 16-0.011	35					

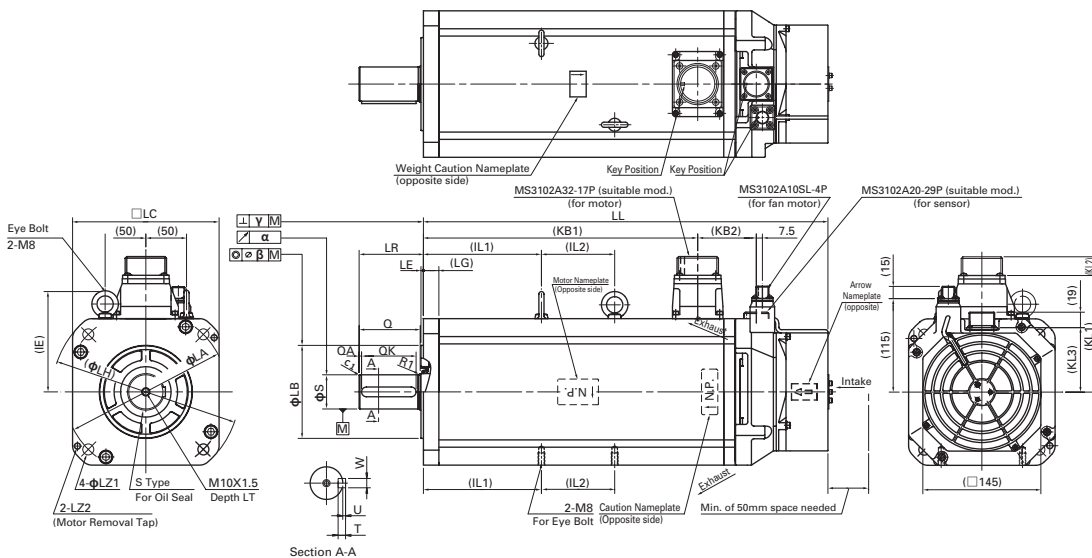
Q2 Motor Series: High Efficiency / Low Ripple (Medium Inertia)

MODEL	Incremental		LG	KL	LA	LB	LE	LH	LC	LZ	LR	S	Q	QA	QK	W	T	U	OE	LT	D1	D2	Oil Seal		
	Without Brake	With Brake																							
Q2AA04006***	82	114	5	31	48	0	2	57	42	3.5	24	0	20	-	15	2 slot cuts 6.5±0.2	-	-	-	-	-	-	7	Options	
Q2AA04010***	96	128				34-0.025						7-0.009													-
Q2AA05005***	81	110	5	38	60	0	2.5	71.5	54	4.5	24	0	20	-	15	2 slot cuts 7.5±0.2	M3	8						4.7	Included
Q2AA05010***	89	117				50-0.025						8-0.009													
Q2AA05020***	105	133	8	50	90	0	3	100	76	5.5	30	0	25	2	20	4	1.5	M4	10						
Q2AA07020***	98	123				11-0.011						25													
Q2AA07030***	105	130	8	55	100	0	3	115	86	6.6	35	0	30	2	25	5	2	M5	12						
Q2AA07040***	112	137				14-0.011						25													
Q2AA07050***	120	145	8	55	100	0	3	115	86	6.6	35	0	30	2	25	5	2	M5	12						
Q2AA08050***	130	166				16-0.011						30													
Q2AA08075***	147	183	8	55	100	0	3	115	86	6.6	35	0	30	2	25	5	2	M5	12						
Q2AA08100***	166	200				80-0.030						16-0.011													

Note 1) If an oil seal is needed for Q2AA04, the overall motor length will be slightly different.

180mm Flange Size

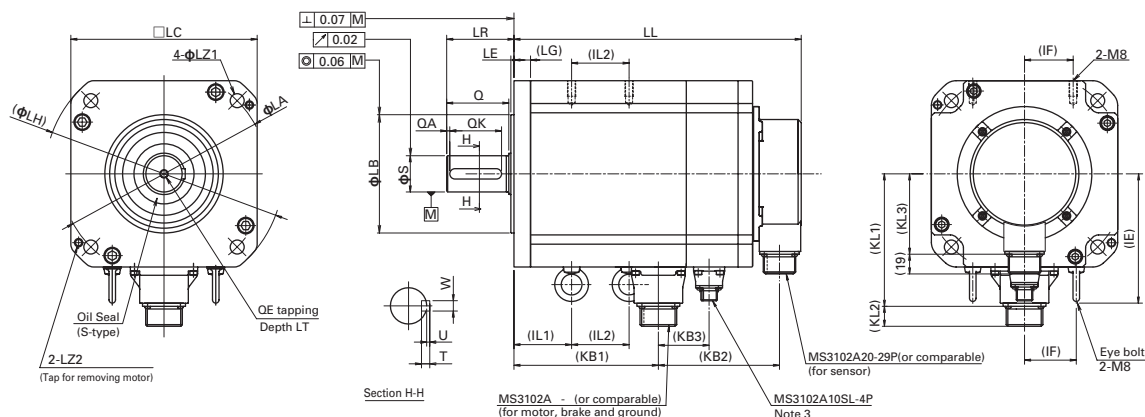
Q4 Motor Series: High Power (Low Inertia / High Volume)



		Incremental		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, 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Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, Ground		Motor, 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Note 1) Waterproof specification IP67 requires that the connector be attached; for IP67 compliance, use a waterproof connector for the mating plug.

100mm to 220mm Flange Size



Q1 Motor Series: High Power (Low Inertia)

MODEL	Incremental				Connector Note 1		LG	KL1	KL2	KL3	LA	LB	LE	LH	LC	LZ1	LZ2	LR	S	Q	QA	QK	W	T	U	KB1	α	β	γ	QE	LT	IE	IF	IL1	IL2		
	Without brake	KL	KB2	With brake	KB3	Motor grounding																														Brake (only when mounted)	
Q1AA10100***	184	219				MS3102A	10	78	19	63	115	0	95-0.035	3	130	100	9	45	0	22-0.013	40	3	32	0	6-0.030	6	2.5	84	0.02	0.08	0.08	M6	20	—	—	—	
Q1AA10150***	209	244					10	78	19	63	115	0	95-0.035	3	130	100	9	45	0	22-0.013	40	3	32	0	6-0.030	6	2.5	109	0.02	0.08	0.08	M6	20	—	—	—	
Q1AA10200***	234	269					10	78	19	63	115	0	95-0.035	3	130	100	9	45	0	22-0.013	40	3	32	0	6-0.030	6	2.5	134	0.02	0.08	0.08	M6	20	—	—	—	
Q1AA10250***	259	294					10	78	19	63	115	0	95-0.035	3	130	100	9	45	0	22-0.013	40	3	32	0	6-0.030	6	2.5	159	0.02	0.08	0.08	M6	20	—	—	—	
Q1AA12100***	168	204				24-11P	12	93	21	67	135	0	110-0.035	3	162	120	9	45	0	22-0.013	40	3	32	0	6-0.030	6	2.5	76	0.02	0.08	0.08	M6	20	—	—	—	
Q1AA12200***	205	241	108				12	93	21	67	135	0	110-0.035	3	162	120	9	45	0	22-0.013	40	3	32	0	6-0.030	6	2.5	113	0.02	0.08	0.08	M6	20	—	—	—	
Q1AA12300***	242	278					12	93	21	67	135	0	110-0.035	3	162	120	9	45	0	22-0.013	40	3	32	0	6-0.030	6	2.5	138	0.02	0.08	0.08	M6	20	—	—	—	
Q1AA13300***	205	249	112				12	93	21	67	135	0	110-0.035	3	162	120	9	45	0	22-0.013	40	3	32	0	6-0.030	6	2.5	117	0.02	0.08	0.08	M8	25	—	—	—	
Q1AA13400***	232	261				24-11P	12	98	21	80	145	0	110-0.035	4	165	130	9	M6	55	0	28-0.013	50	3	42	0	8-0.036	7	3	144	0.02	0.08	0.08	M8	25	—	—	—
Q1AA13500***	269	318	117				12	98	21	80	145	0	110-0.035	4	165	130	9	M6	55	0	28-0.013	50	3	42	0	8-0.036	7	3	181	0.02	0.08	0.08	M8	25	—	—	—
Q1AA18450***	288	67	338	117			16	123	21	80	200	0	114.3-0.035	3	230	180	13.5	M8	65	35-0.016	60	3	50	0	10-0.036	8	3	200	0.02	0.08	0.08	M8	25	124	50	93	50
Q1AA18750***	384	72	434	122	54		19	144	22	80	200	0	114.3-0.035	3	230	180	13.5	M8	79	42-0.016	75	3	67	0	12-0.043	8	3	291	0.02	0.08	0.08	M10	25	124	50	85	114

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

Note 2) Brake connector JL04V-2E10SL-3PE-B used for CE compliance.

Note 3) Brake is included only with Model Q1AA18750.

Q2 Motor Series: High Efficiency / Low Ripple (Medium Inertia)

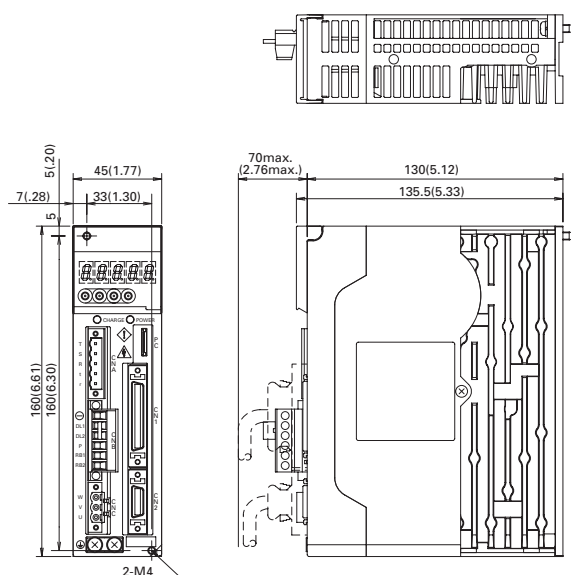
MODEL	Incremental				Connector Note 1		LG	KL1	KL2	KL3	LA	LB	LE	LH	LC	LZ1	LZ2	LR	S	Q	QA	QK	W	T	U	KB1	α	β	γ	QE	LT	IE	IF	IL1	IL2					
	Without brake	With brake	Motor grounding	Brake (only when mounted) Note 2																																				
Q2AA10100***	196	231	—	—	MS3102A				10	78	19	67	115	0	95-0.035	3	130	100	9	—	45	0	22-0.013	40	3	32	0	6-0.030	6	2.5	98	0.02	0.08	0.08	M6	20	—	—	—	
Q2AA10150***	226	261	—	—	20-15P				10	78	19	67	115	0	95-0.035	3	130	100	9	—	45	0	22-0.013	40	3	32	0	6-0.030	6	2.5	128	0.02	0.08	0.08	M6	20	—	—	—	
Q2AA13050***	135	171	—	—	24-11P				12	98	21	80	145	0	110-0.035	4	165	130	9	M6	55	0	22-0.013	50	3	42	0	6-0.030	6	2.5	47	0.02	0.08	0.08	M6	20	—	—	—	
Q2AA13100***	152	188	103	—					12	98	21	80	145	0	110-0.035	4	165	130	9	M6	55	0	22-0.013	50	3	42	0	6-0.030	6	2.5	64	0.02	0.08	0.08	M6	20	—	—	—	
Q2AA13150***	169	205	—	—					12	98	21	80	145	0	110-0.035	4	165	130	9	M6	55	0	22-0.013	50	3	42	0	6-0.030	6	2.5	81	0.02	0.08	0.08	M6	20	—	—	—	
Q2AA13200***	186	222	107	—					12	98	21	80	145	0	110-0.035	4	165	130	9	M6	55	0	22-0.013	50	3	42	0	6-0.030	6	2.5	98	0.02	0.08	0.08	M6	20	—	—	—	
Q2AA18200***	171	221	—	—	32-17P				16	123	21	80	200	0	114.3-0.035	3	230	180	13.5	M8	65	0	35-0.016	60	3	50	0	10-0.036	8	3	83	0.02	0.08	0.08	M8	25	—	—	—	
Q2AA18350***	203	253	117	—					16	123	21	80	200	0	114.3-0.035	3	230	180	13.5	M8	65	0	35-0.016	60	3	50	0	10-0.036	8	3	115	0.02	0.08	0.08	M8	25	124	50	61	20
Q2AA18450***	218	268	—	—	10SL-4P				16	123	21	80	200	0	114.3-0.035	3	230	180	13.5	M8	65	0	35-0.016	60	3	50	0	10-0.036	8	3	130	0.02	0.08	0.08	M8	25	124	50	61	20
Q2AA18550***	282	332	122	54					19	144	22	80	200	0	114.3-0.035	3	230	180	13.5	M8	79	0	42-0.016	75	3	67	0	12-0.043	8	3	189	0.02	0.08	0.08	M10	25	124	50	85	50
Q2AA18750***	332	382	122	54	19	144	22	80	200	0	114.3-0.035	3	230	180	13.5	M8	79	0	42-0.016	75	3	67	0	12-0.043	8	3	213	0.02	0.08	0.08	M10	25	124	50	85	50				
Q2AA22250***	150	196	—	—	24-11P				16	141	21	80	235	0	200-0.046	4	270	220	13.5	M10	65	0	35-0.016	60	3	50	0	10-0.036	8	3	64	0.02	0.08	0.08	M8	25	142	60	50	20
Q2AA22350***	163	209	111	—					16	141	21	80	235	0	200-0.046	4	270	220	13.5	M10	65	0	35-0.016	60	3	50	0	10-0.036	8	3	77	0.02	0.08	0.08	M8	25	142	60	50	20
Q2AA22450***	181	227	—	—					16	141	21	80	235	0	200-0.046	4	270	220	13.5	M10	65	0	35-0.016	60	3	50	0	10-0.036	8	3	95	0.02	0.08	0.08	M8	25	142	60	50	20
Q2AA22550***	252	309	140	—					19	162	22	80	235	0	200-0.046	4	270	220	13.5	M10	79	0	55-0.019	75	3	67	0	16-0.043	10	4	149	0.03	0.08	0.10	M10	25	142	60	55	50
Q2AA22700***	310	368	—	—	32-17P				19	162	22	80	235	0	200-0.046	4	270	220	13.5	M10	79	0	55-0.019	75	3	67	0	16-0.043	10	4	167	0.03	0.08	0.10	M10	25	142	60	55	50
Q2AA2211K***	335	395	—	—					19	162	22	80	235	0	200-0.046	4	270	220	13.5	M10	79	0	55-0.019	75	3	67	0	16-0.043	10	4	185	0.03	0.08	0.10	M10	25	142	60	55	50
Q2AA2215K***	394	454	—	—	10SL-4P				19	162	22	80	235	0	200-0.046	4	270	220	13.5	M10	79	0	55-0.019	75	3	67	0	16-0.043	10	4	213	0.03	0.08	0.10	M10	25	142	60	55	50
Q2AA2215K***	394	454	—	—					19	162	22	80	235	0	200-0.046	4	270	220	13.5	M10	79	0	55-0.019	75	3	67	0	16-0.043	10	4	231	0.03	0.08	0.10	M10	25	142	60	55	50

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

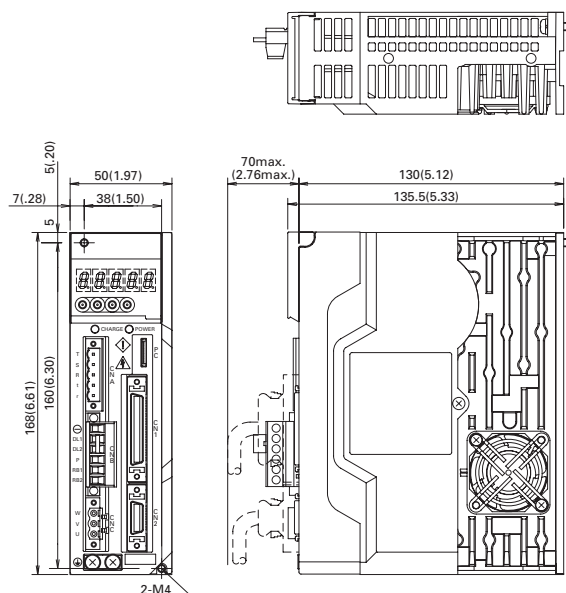
Note 2) Brake connector JL04V-2E10SL-3PE-B used for CE compliance.

Note 3) Brake is included only with Models Q2AA18550, Q2AA18750, Q2AA2211K and Q2AA2215K.

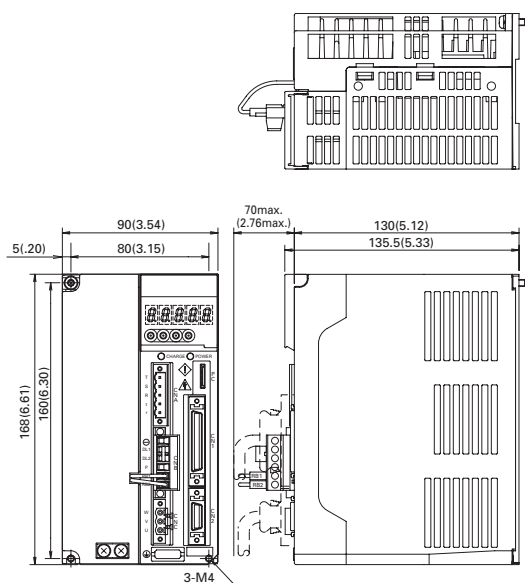
QS1A01 / QS1E01



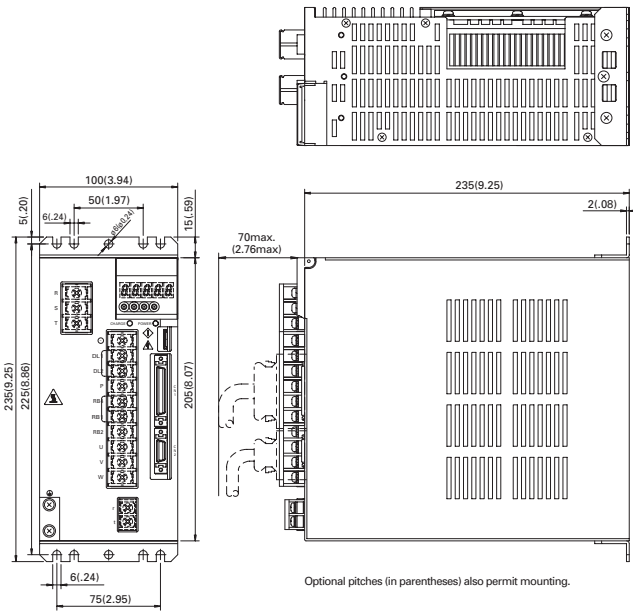
QS1A03 / QS1E03



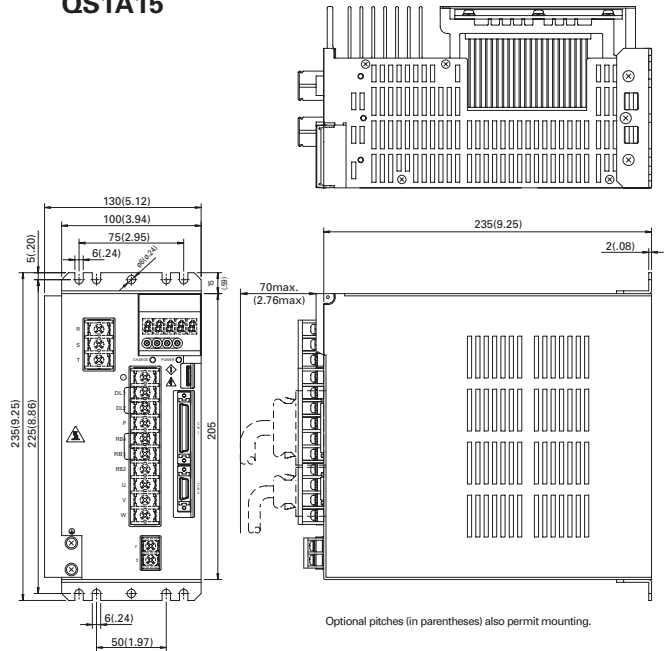
QS1A05



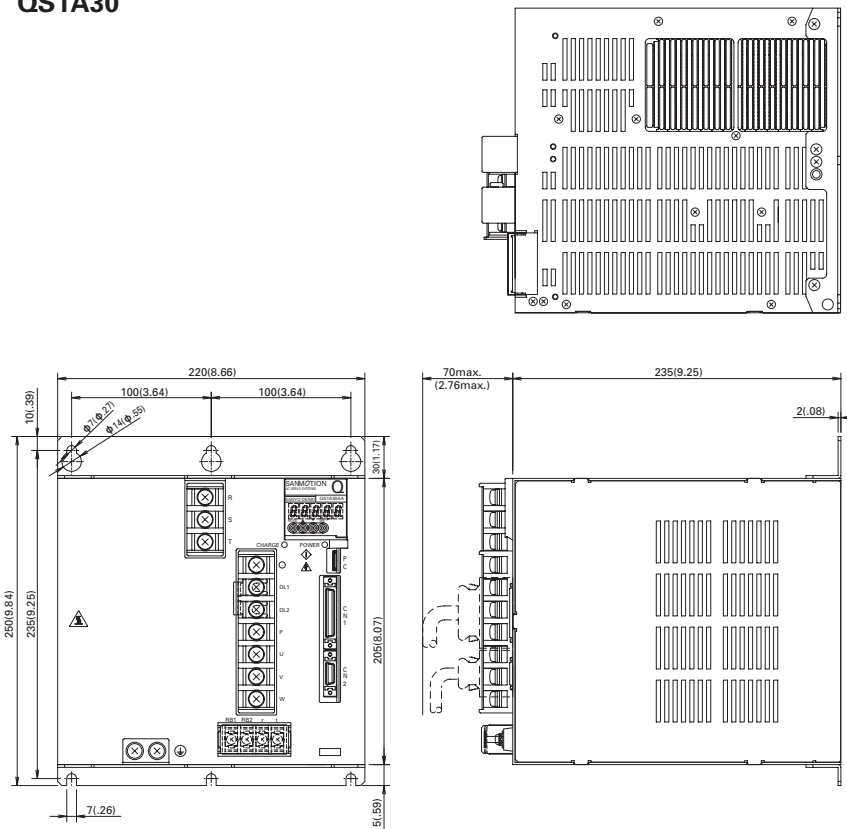
QS1A10



QS1A15



QS1A30





DC 24V System

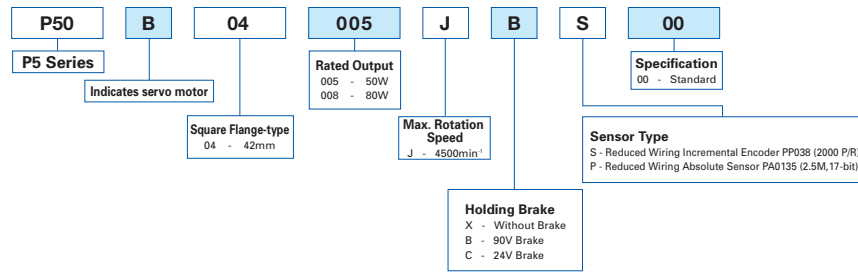
Capacity

Flange Size
42mm (1.65 in)

50W and 80W

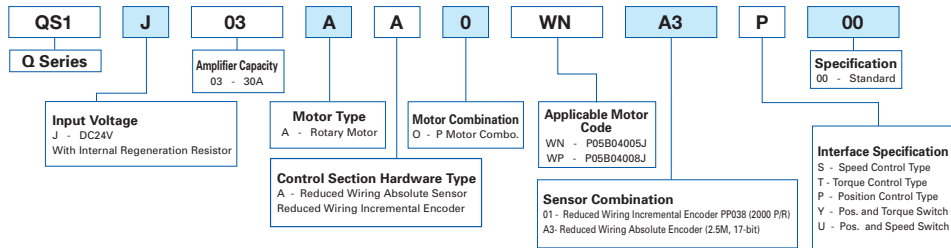
Motor Model Number Nomenclature

Example: The following model number describes a P5 (compact, square shaft-type) servomotor with 50W rated output, 4500min⁻¹ maximum rotation speed, 24V motor with 42mm flange, incremental sensor, and brake (90V DC).



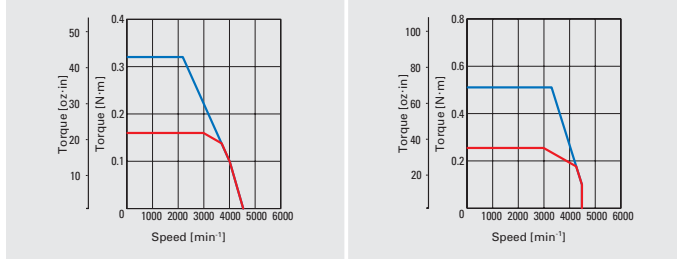
Amplifier Model Number Nomenclature

Example: The following model number describes a Q Series position control-type servo amplifier with 24V input, 30A capacity, reduced wiring absolute sensor (2.5M, 17-bit), 50W P5 motor, 42-mm (1.65 in.) square flange.



Standard Specifications

Motor Model and Flange Dimension in mm(in)			P50B04005JXS 42mm (1.65in)	P50B04008JXS 42mm (1.65 in)
	Symbol	Unit		
Rated Output	P_R	kW	0.05	0.08
Rated Rotation Speed	N_R	min ⁻¹		3000
Max. Rotation Speed	N_{MAX}	min ⁻¹		4000
Rated Torque	T_R	N•m(oz•in)	0.159 (22.52)	0.255 (36.11)
Continuous Stall Torque	T_S	N•m(oz•in)	0.159 (22.52)	0.255 (36.11)
Inst. Max. Stall Torque	T_P	N•m(oz•in)	0.318 (45.03)	0.509 (72.08)
Rated Armature Current	I_R	Arms	3.82	6.1
Continuous Stall Armature Current	I_S	Arms	3.55	5.8
Instant. Max. Stall Armature Current	I_P	Arms	8.24	12
Torque Constant	K_T	N•m/Arms	0.048	0.049
Induced Voltage Constant	K_E	mV/min ⁻¹	1.67	1.71
Per-Phase Armature Resistance	R_Φ	Ω	0.25	0.15
Rated Power Rate	Q_R	kW/s	5.1	8.8
Electrical Time Constant	t_e	ms	1.4	1.5
Mechanical Time Constant	t_m	ms	1.6	1.4
Rotor Inertia (INC)	J_M	kg•m ² (GD ² /4)(oz•in ²)	0.054x10 ⁻⁴ (0.03)	0.079x10 ⁻⁴ (0.04)
Sensor: Reduced Wiring INC		P/R		2000
Mass-including Red. Wiring INC	WE	kg(lbs)	0.46 (1.01)	0.59 (1.30)
Brake Holding Torque	TB	N•m(oz•in)	0.191 (27.05)	0.319 (45.17)
Brake Excitation Voltage	VB	V		90/24
Brake Excitation Current	IB	Arms		0.07/0.26
Brake Inertia	JB	kg•m ² (GD ² /4)(oz•in ²)		0.0078x10 ⁻⁴ (0.04)
Brake Mass	W	kg(lbs)		0.24 (0.53)
Motor Operating Temp. Rel. Humidity			0 to 40°C; maximum 90% RH (no condensation)	
Amplifier Model			QS1J03	
Amplifier Power Supply			DC 24V+10%, -10%	
Amp. Operating Temp., Rel. Humidity			0 to 55°C; maximum 90% RH (no condensation)	
Power Consumption (rated output)		kVA	0.1	0.16
Amplifier Mass		kg (lbs)	0.6 (1.32)	0.6 (1.32)



Note: Actual operating temperature depends on mounting conditions and motor model.

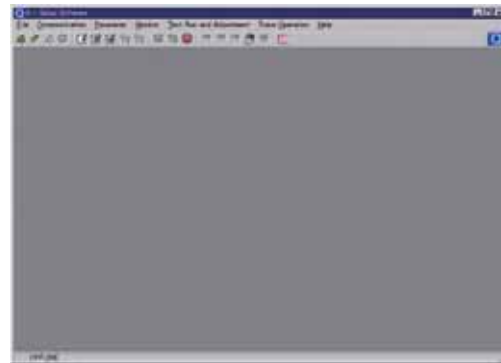
■ Pulse / Analog / Torque with Positioning Function Screen

(1) Setup Software Start-up Screen

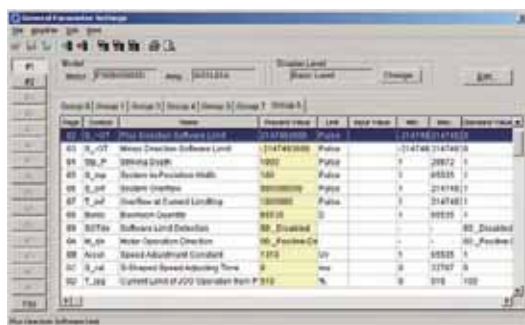


Shown: Setup Software start-up screen logo

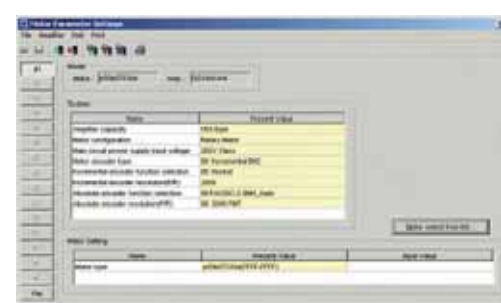
(2) Main Screen



(3) Parameter Configuration Screen

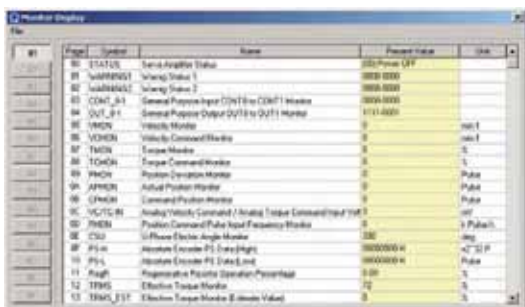


Configuration of General Parameters:
Enables parameter loading, saving, etc., via PC connection



Configuration of Motor Parameters:
Combined motors can be configured via PC connection

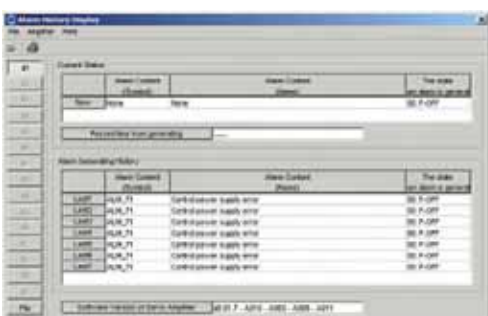
(4) Monitor Functions



Monitor Display:
Observe Operation and Input/Output signal status



Multi-monitor Display:
Simultaneous monitoring of operational status of multiple servo amplifiers networked to a PC.



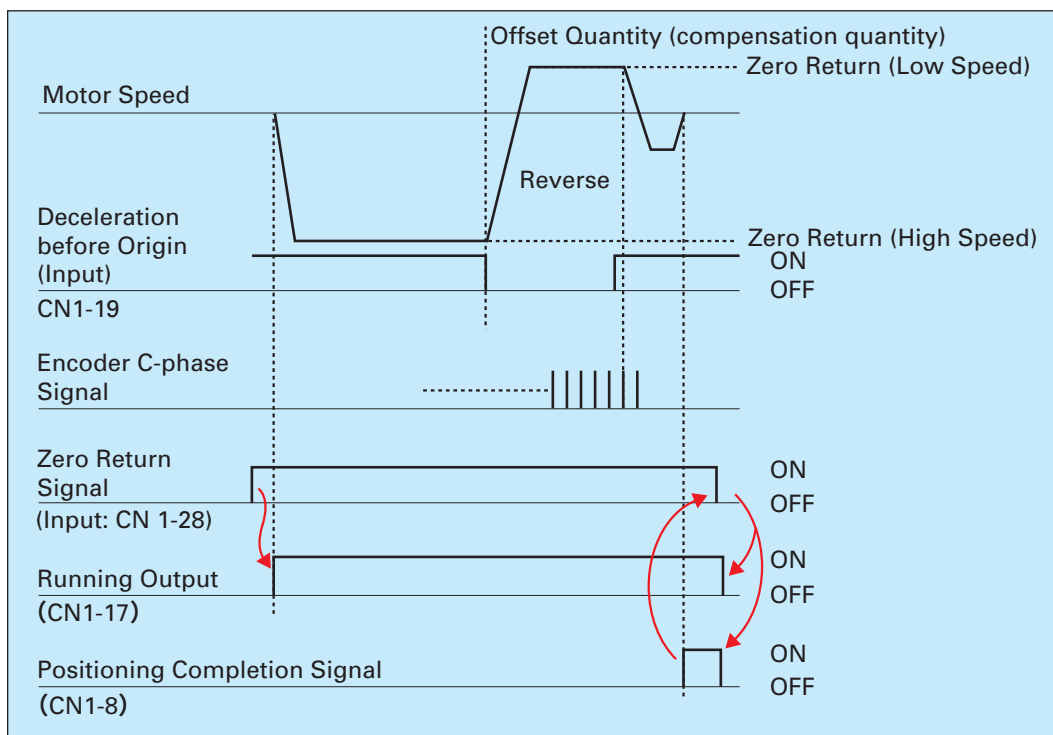
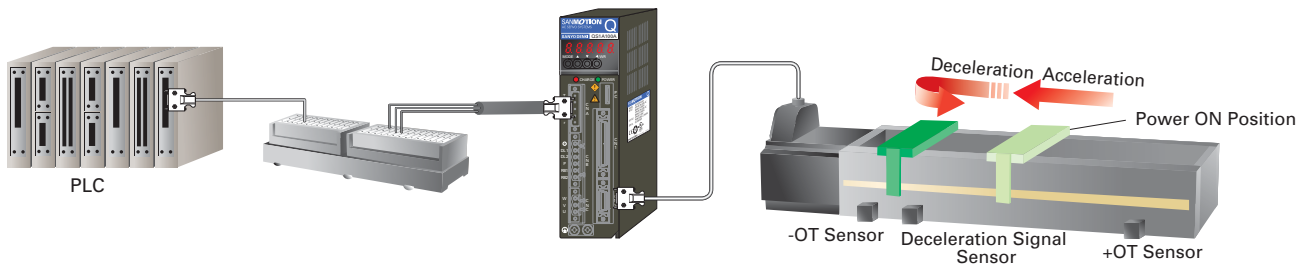
General Specifications

Positioning Function	Control Shaft Count	Single Shaft
	Register Point Count	Configurable up to 254 points (P000 to P253)
	Maximum No. of Commands	From -2,147,483,648 to +2,147,483,647
	Command Unit	Either mm or pulse is acceptable
	Fast-forward Speed	2,147,483.647mm/sec (0.001mm/when "pulse" is selected)
	Acceleration and Deceleration	Automatic acceleration and deceleration (straight and S switch)
	Point Data Setup	Numerical input via PC, and setup by teaching
	Travel Point Number Setup	Parallel 8 bits (binary code)
	Current Limit	0 to 510% (at 100% rating), but less than instantaneous maximum stall current
	Software Limit	Exists
	Travel Mode	Zero Return, Manual (JOG, 1Step), and Point-specified Travel
	Zone Signal	Maximum of 8 zones
Input and Output	Sequence Input Signals	Servo ON, alarm reset, start up, zero return, manual, override/manual high-speed, cancel, deceleration before origin, external error, over-travel, external data setup1 step forward, interrupt activated, output selection, MFIN, point specified input
	Sequence Output Signals	NC ready, holding brake timing, error, external operation enabled, running, positioning completion, in-position output, zero return completion, general output (8 bits)

Sample Operations of the Positioning-type Amplifier

(1) Zero Return Operation (example)

The system is capable of zero return operation by using sensor output for the zero return and deceleration signals.



(2) Positioning Operation with Speed Variation (example)

By starting up Point 1, Points 2 and 3 will be executed consecutively.

Point Data Setup: Enables configuration and saving of parameters, and the reading of point data from a PC.

Point Data Setting

File

Edit

View

Help

Axis

Control

Model

Monitor Status

Status

Actual Position

Pulse

Axis

Control

Model

Monitor Status

Status

Actual Position

Pulse

Axis

Control

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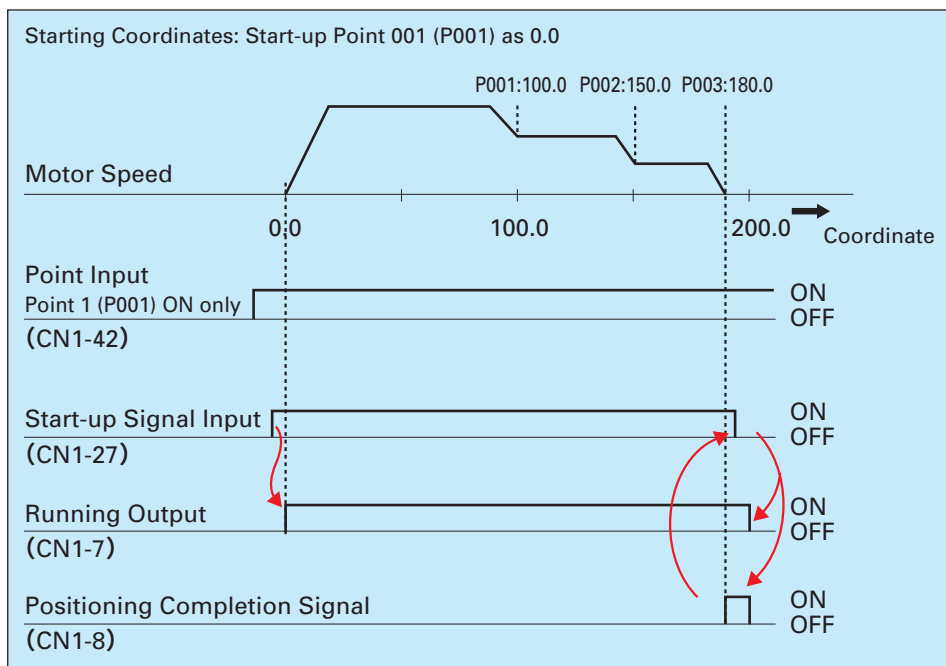
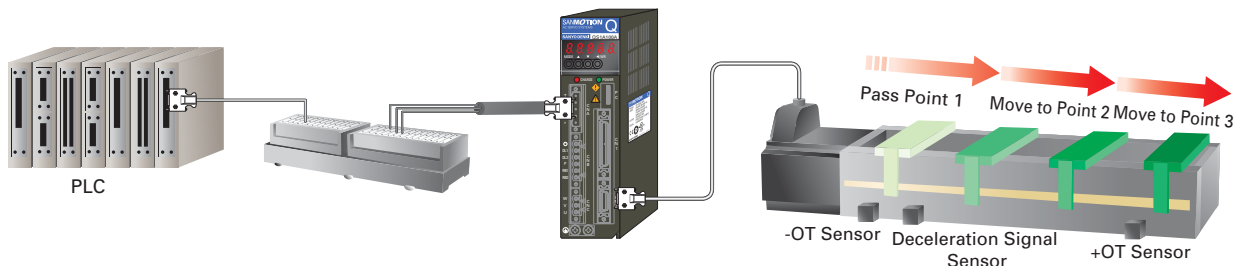
Actual Position

Pulse

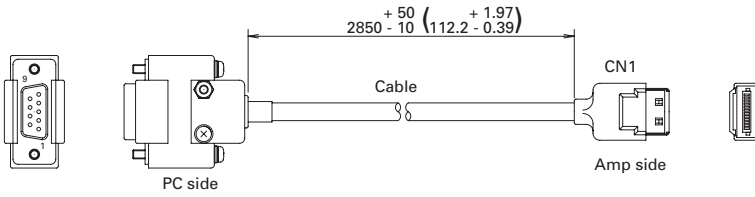
Axis

Control

Mode 1: [01]= Positioning Operation enabled; Mode 2: [00]= Final Travel, [01]= Continue to next Point Number
Gear Change: Stop / Continue: [1]= Consecutive Gear Shift Operation



■ PC Interface Cable [unit: mm(inch)]

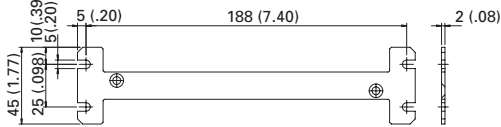


Model No.: AL-00490833-01

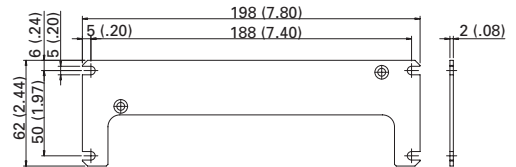
A note regarding RS-232C communications:
The user must provide a PC for computer interface.
Parameter settings may require adjustment.

■ Mounting Hardware [unit: mm(inch)]

Rear Side

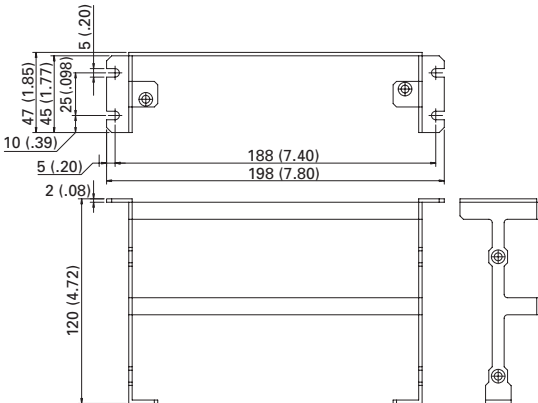


For mounting on the rear side of the amplifier
Model No.: AL-00483540-01
Applicable Amplifiers: QS1*01***, QS1*03***
Material: SPCC
Surface Finish: Chromate Plating (Green)

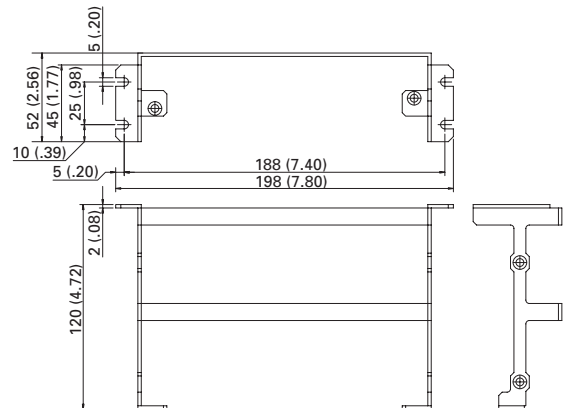


For mounting on the rear side of the amplifier
Model No.: AL-00483543-01
Applicable Amplifiers: QS1*05***
Material: SPCC
Surface Finish: Chromate Plating (Green)

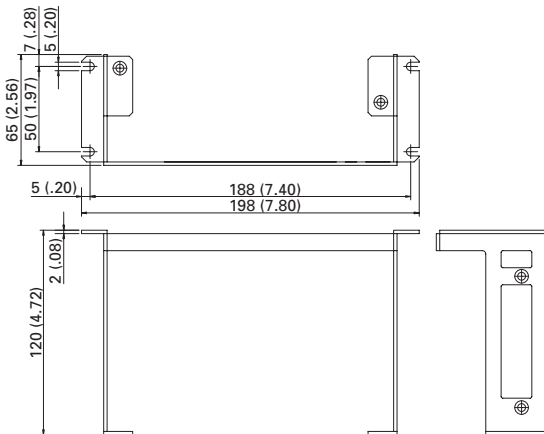
Front Side



For mounting on the front side of the amplifier
Model No.: AL-00483541-01
Applicable Amplifiers: QS1*01***
Material: SPCC
Surface Finish: Chromate Plating (Green)



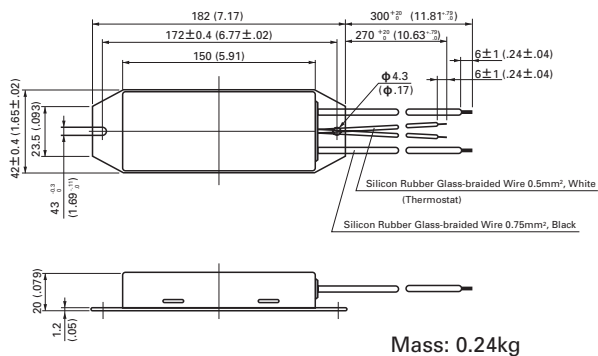
For mounting on the front side of the amplifier
Model No.: AL-00483542-01
Applicable Amplifiers: QS1*03***
Material: SPCC
Surface Finish: Chromate Plating (Green)



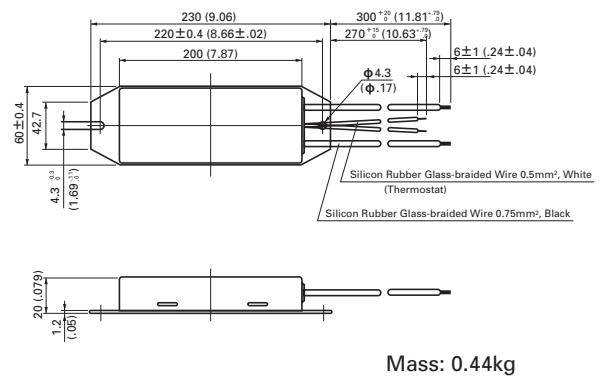
For mounting on the front side of the amplifier
Model No.: AL-00483544-01
Applicable Amplifiers: QS10*05***
Material: SPCC
Surface Finish: Chromate Plating (Green)

Model No.	AL-00483540-01	AL-00483541-01	AL-00483542-01
Contents	Mounting Bracket: 1 Screws: 2	Mounting Bracket: 1 Screws: 6	Mounting Bracket: 1 Screws: 6
Model No.	AL-00483543-01	AL-00483544-01	
Contents	Mounting Bracket: 1 Screws: 2	Mounting Bracket: 1 Screws: 6	

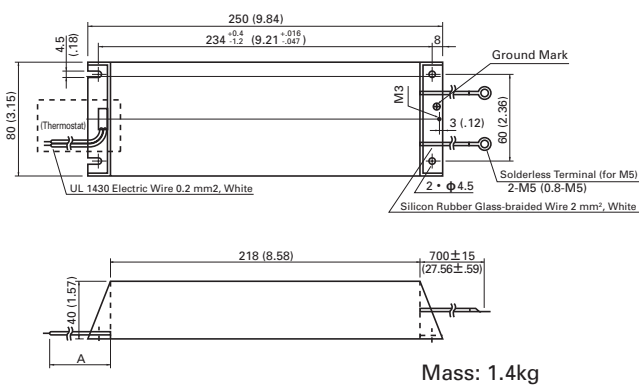
External Regenerative Resistor Dimensions [unit: mm(inch)]



	Model Number	Remarks
1	REGIST-120W100B	Thermostat, B-contact
2	REGIST-120W50B	Thermostat, B-contact



	Model Number	Remarks
1	REGIST-220W50B	Thermostat, B-contact
2	REGIST-220W20B	Thermostat, B-contact
3	REGIST-220W100B	Thermostat, B-contact



	Model Number	A	Remarks
1	REGIST-500W20B	350±15 (13.78±0.59)	Thermostat, B-contact
2	REGIST-500W20	---	No Thermostat
3	REGIST-500W10B	350±15 (13.78±0.59)	Thermostat, B-contact
4	REGIST-500W10	---	No Thermostat
5	REGIST-500W7B	350±15 (13.78±0.59)	Thermostat, B-contact
6	REGIST-500W7	---	No Thermostat
7	REGIST-500W14B	350±15 (13.78±0.59)	Thermostat, B-contact
8	REGIST-500W14	---	No Thermostat

Options

AC

Amplifier Connectors (AC 200V Models)

Usage	Contents	Model No.	Manufacturer	Manufacturer's Part No.	Max. Amp. Capacity
Single Connectors	CN1 (Plug and Housing)	AL-00385594	Sumitomo 3M	10150-3000VE+10350-52A0-008	No Limit
	CN2 (Plug and Housing)	AL-00385596		10120-3000VE+10320-52A0-008	
	CNA (Plug)	AL-00329461-01	Phoenix Contact	MSTB2.5/5-STF-5.08	50A Maximum
	CNB (Plug) - accessory	AL-Y0000988-01		IC2.5/6-STF-5.08	
	CNC (Plug)	AL-00329458-01		IC2.5/3-STF-5.08	
Connector Sets	CN1, CN2 (Plug, Housing) CNA, CNC (Plug)	AL-00393603	Sumitomo 3M Phoenix Contact	10150-3000VE+10350-52A0-008 10120-3000VE+10320-52A0-008 MSTB2.5/5-STF-5.08 IC2.5/3-STF-5.08	50A Maximum
	CN1, CN2 (Plug, Housing)	AL-00292309	Sumitomo 3M	10150-3000VE+10350-52A0-008 10120-3000VE+10320-52A0-008	100A Maximum

Amplifier Connectors (AC 100V Models)

Usage	Contents	Model No.	Manufacturer	Manufacturer's Part No.
Single Connectors	CNA (Plug)	AL-00329461-02	Phoenix Contact	MSTB2.5/4-STF-5.08
Low Voltage / High Voltage Connector Sets	CN1, CN2 (Plug, Housing) CNA, CNC (Plug)	AL-00492384	Sumitomo 3M Phoenix Contact	10150-3000VE
				10350-52A0-008
				10120-3000VE
				10320-52A0-008
				MSTB2.5/4-STF-5.08
				IC2.5/3-STF-5.08

Amplifier Connectors (AC 100V Models)

Motor Model No.	Encoder Plug Standard Specifications (Cable Clamp)		TÜV-Standard Plug (Cable Clamp) Waterproof Specification		TÜV-Standard Plug (Cable Clamp) for Brake (Note 1) Waterproof Specification	
	Straight	L-Angle	Straight	L-Angle	Straight	L-Angle
Q1AA10100***	MS3106B20-15S (MS3057-12A)	MS3108B20-15S (MS3057-12A)	JL04V-6A20-15SE-EB (JL04-2022CK)	JL04V-8A20-15SE-EB (JL04-2022CK)	JL04V-6A10SL-3SE-EB (JL04-1012CK)	JL04V-8A10SL-3SE-EB (JL04-1012CK)
Q1AA10150***						
Q1AA10200***						
Q1AA10250***						
Q1AA12100***	MS3106B24-11S (MS3057-16A)	MS3108B24-11S (MS3057-16A)	JL04V-6A24-11SE-EB (JL04-2428CK)	JL04V-8A24-11SE-EB (JL04-2428CK)	—————	—————
Q1AA12200***						
Q1AA12300***						
Q1AA13300***						
Q1AA13400***						
Q1AA13500***						
Q1AA18450***						
Q1AA18750	MS3106B32-17S (MS3057-20A)	MS3108B32-17S (MS3057-20A)	JL04V-6A32-17SE (Single Block)	—————	JL04V-6A10SL-3SE-EB (JL04-1012CK)	JL04V-8A10SL-3SE-EB (JL04-1012CK)
Q2AA10100***	MS3106B20-15S (MS3057-12A)	MS3108B20-15S (MS3057-12A)	JL04V-6A20-15SE-EB (JL04-2022CK)	JL04V-8A20-15SE-EB (JL04-2022CK)		
Q2AA10150***						
Q2AA13050***	MS3106B24-11S (MS3057-16A)	MS3108B24-11S (MS3057-16A)	JL04V-6A24-11SE-EB (JL04-2428CK)	JL04V-8A24-11SE-EB (JL04-2428CK)		
Q2AA13100***						
Q2AA10150***						
Q2AA13200***						
Q2AA18200***						
Q2AA18350***						
Q2AA18450***						
Q2AA18550***						
Q2AA18750***	MS3106B32-17S (MS3057-20A)	MS3108B32-17S (MS3057-20A)	JL04V-6A32-17SE (Single Block)	—————		
Q2AA2211K***						
Q2AA2215K***						
Q4AA1811K***	MS3106B32-17S (MS3057-20A)	MS3108B32-17S (MS3057-20A)	JL04V-6A32-17SE (Single Block)	—————		
Q4AA1815K***						

Note1: Please order the plug that conforms to the TÜV-standard waterproof specification separately from the motor power connector.

Motor Encoder Connectors

Motor Model No.	Encoder Plug Standard Specifications (Cable Clamp)		TÜV-Conforming Plug (Cable Clamp) for Encoder Waterproof Specification	
	Straight	L-Angle	Straight	L-Angle
All Q1, Q2, Q4 Models	MS3106B20-29S (MS3057-12A)	MS3108B20-29S (MS3057-12A)	JA06A-20-29S-J1-EB (JL04-2022CK)	JA06A-20-29S-J1-EB (JL04-2022CK)

Cooling Fan Connectors

Motor Model No.	Cooling Fan Standard Specifications		Waterproof Spec.
	Straight	L-Angle	Straight
All Q4 Models	MS3106B10SL-4S (MS3057-4A)	MS3108B10SL-4S (MS3057-4A)	JA06A-10SL-4S-J1 (Single Block)

DC

Amplifier Connections (AC 100V Models)

Usage	Contents	Model No.	Manufacturer	Manufacturer's Part No.	Max. Amp. Capacity
Single Connectors	CN1 (Plug and Housing)	AL-00549202	Sumitomo 3M	10126-3000VE+10326-52A0-008	DC 24V Servo Amplifier 30A
	CN2 (Plug and Housing)	AL-00385596		10120-3000VE+10320-52A0-008	
	CNA (Plug)	AL-Y0001914-02	Wago Japan	721-108/026-000	
	CNC (Plug)	AL-Y0001914-01		721-105/026-000	
Connector Sets	CN1, CN2 (Plug, Housing)	AL-00549203	Sumitomo 3M	10126-3000VE+10326-52A0-008 10120-3000VE+10320-52A0-008	
	CNA, CNC (Plug)	AL-00549204	Wago Japan	721-108/026-000+231-131(Tool)	
				721-105/026-000	

Please provide the following information when placing an order or making an inquiry.
Also feel free to include any questions that require our attention.

Company Name: _____
Department: _____
Telephone : _____
Fax: _____
1) Application: _____
2) Name of Machinery: _____
3) Number of Units: _____

Date: _____
To contact us: _____
Phone: +81(03) 3917-5157
Fax : +81(03) 3917-0643

Item	Contents																																																																																																
1	Name of target equipment Equipment name, category (transport, processing, test, other)																																																																																																
2	Name of servo axis Axis name, axial mechanism (horizontal/vertical), brake mechanism (yes/no)																																																																																																
3	Current condition of above axis Manufacturer Name () Series Name () Motor Capacity () Hydraulic, Mechanical, or New System ()																																																																																																
4	Positioning accuracy ± mm / ± μm																																																																																																
5	Operation pattern Reference formula: $[1G=9.8, m/s^2, 1(m/s^2) \quad 0.1G]$ $[\alpha(m/s^2)=V(m/sec) \div t1(sec)]$ $[D(m)=V(m/sec) \times (t1+t2)(sec)]$																																																																																																
6	Mechanism Ball-screw/screw-rotation type (horizontal), ball-screw/nut-rotation type (horizontal), rack and pinion (horizontal), belt/chain (horizontal), rotary table, roll feed, instability																																																																																																
7	Mechanical structure <table border="0" style="width: 100%;"> <tr> <td>WT (table mass)</td><td>kg</td> <td>WL (work mass)</td><td>kg</td> <td>WA (mass of other drive parts)</td><td>kg</td> </tr> <tr> <td>WR (rack mass)</td><td>kg</td> <td>WB (belt/chain mass)</td><td>kg</td> <td>WC (counterbalance mass)</td><td>kg</td> </tr> <tr> <td>Fa (external force in axial direction)</td><td>N</td> <td>Fb (ball-screw preload)</td><td>N</td> <td>T (roll pushing force)</td><td>N</td> </tr> <tr> <td>Dr1 (drive-side roll diameter)</td><td>mm</td> <td>Dr2 (follower-side roll diameter)</td><td>mm</td> <td></td><td></td> </tr> <tr> <td>Lr1 (drive-side roll length)</td><td>mm</td> <td>Lr2 (follower-side roll length)</td><td>mm</td> <td>G (reduction ratio)</td><td></td> </tr> <tr> <td>JG (speed-reducer inertia)</td><td>kg·m²</td> <td>JC (coupling inertia)</td><td>kg·m²</td> <td></td><td></td> </tr> <tr> <td>JN (nut inertia)</td><td>kg·m²</td> <td>JO (other motor-axis conversion inertia)</td><td>kg·m²</td> <td></td><td></td> </tr> <tr> <td>Db (ball-screw diameter)</td><td>mm</td> <td>Lb (ball-screw axial length)</td><td>mm</td> <td>Pb (ball-screw lead)</td><td>mm</td> </tr> <tr> <td>Dp (pinion/pulley diameter)</td><td>mm</td> <td>Lp (pinion axial length)</td><td>mm</td> <td>Tp (pulley thickness)</td><td>mm</td> </tr> <tr> <td>Dt (table diameter)</td><td>mm</td> <td>Dh (table-support diameter)</td><td>mm</td> <td>LW (load shift from axis)</td><td>mm</td> </tr> <tr> <td>Ds (table shaft diameter)</td><td>mm</td> <td>Ls (table shaft length)</td><td>mm</td> <td></td><td></td> </tr> <tr> <td>ρ (specific gravity of ball-screw/pinion/pulley/table-shaft material)</td><td></td> <td></td><td>kg/cm³</td> <td></td><td></td> </tr> <tr> <td>μ (friction coefficient between sheet and sliding-surface/support-section/roll)</td><td></td> <td>P1 (specific gravity of roll-1 material)</td><td></td> <td></td><td>kg/cm³</td> </tr> <tr> <td>ρ2 (specific gravity of roll-2 material)</td><td>kg/cm³</td> <td>κ (internal friction coefficient of preload nut)</td><td></td> <td></td><td></td> </tr> <tr> <td>η (mechanical efficiency)</td><td></td> <td>JL (load inertia of motor-axis conversion)</td><td></td> <td></td><td>kg·m²</td> </tr> <tr> <td>TF (friction torque of motor axis conversion)</td><td>N·m</td> <td>Tu (imbalance torque of motor axis conversion)</td><td></td> <td></td><td>N·m</td> </tr> </table>	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 in 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 (pulley 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)		P1 (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
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8	Speed reducer Customer-provided (/); Sanyo standard (planet/spur/no-backlash-planet:: /); other (/)																																																																																																
9	Sensor type Sensor type specified (yes / no) Yes: (incremental , optical absolute , optical absolute [resolver absolute with incremental function]) Resolution ()																																																																																																
10	Input format Position , speed, torque, communications (SERCOS / CAN / DeviceNet) other ()																																																																																																
11	Upper-level equipment (controller) Sequencer , laptop , customer-developed product , Sanyo-provided , other ()																																																																																																
12	Usage environment and other requirements Cutting , clean-room use , anti-dust measures , other ()																																																																																																
13	Estimated production Single product: () units/month () units/year																																																																																																
14	Development schedule Prototype period: ()Year ()Month Production period: ()Year ()Month																																																																																																
15	Various measures Related documentation (already submitted ; send later by mail) Visit/PR desired (yes / no) Meeting desired (yes / no)																																																																																																
16	Miscellaneous (questions, pending problems, unresolved issues, etc.)																																																																																																

■ 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.
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- The amplifiers 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.

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