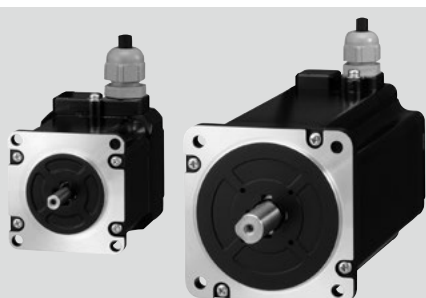
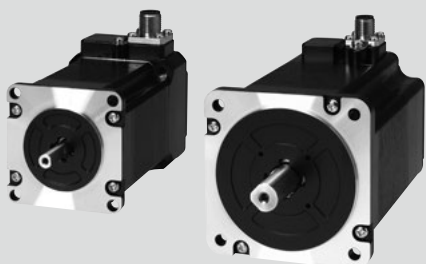


Waterproof, dustproof



Cable type



Connector type   

- These IP65 rated motors* have superior water and dust resistance, and can be safely utilized in harsh or wet environments such as in food processing machines.

*Except for the shaft and the cable end.

- The input voltage range of the motors is up to 250 VAC.
- Brake, encoder, and oil seal can be combined.

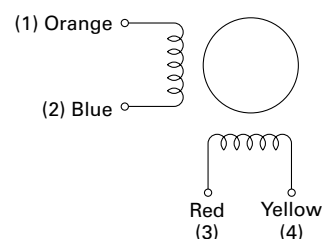
CE/UL-certified.

- **Internal wiring and rotation direction**

Bipolar winding

Internal wire connection

() connector pin number



Driver is not included.

If you require assistance finding a driver, contact us for details.

The output shaft rotates clockwise as seen from the shaft side, when excited by DC in the following order.

Lead wire color		Red	Blue	Yellow	Orange
Connector pin no.		3	2	4	1
Exciting order	1	—	—	+	+
	2	+	—	—	+
	3	+	+	—	—
	4	—	+	+	—

	56 mm sq.	86 mm sq.
Motor model no.	SP256 □ -5 □ □ 0	SP286 □ -5 □ □ 0
Type	S1 (continuous operation)	
Operating ambient temperature	-10 to +40°C	
Storage temperature	-20 to +60°C	
Operating ambient humidity	95% RH max. at 40°C or less (no condensation)	
Storage humidity	95% RH max. at 40°C or less, 57% RH max. at 50°C or less, 35% RH max. at 60°C or less (no condensation)	
Operation altitude	1000 m max. above sea level	
Vibration resistance	Vibration frequency 10 to 500 Hz, total amplitude 1.52 mm (10 to 70 Hz) vibration acceleration 150 m/s ² (70 to 500 Hz), sweep time 15 min/cycle, 12 sweeps in each X, Y and Z direction.	
Impact resistance	500 m/s ² of acceleration for 11 ms with half-sine wave applying three times for X, Y and Z axes each, 18 times in total.	
Thermal class	Class F (+155°C)	
Withstandable voltage	At normal temperature and humidity, no failure with 1500 VAC @50/60 Hz applied for one minute between motor winding and frame.	
Insulation resistance	At normal temperature and humidity, not less than 100 MΩ between winding and frame by 500 VDC megger.	
Protection grade	IP65 (Except for the shaft and the cable end)	
Winding temperature rise	100 K max. (Based on SANYO DENKI standard)	
Static angle error	±0.054°	±0.09°
Thrust play	0.075 mm max. (load: 10 N)	
Radial play	0.025 mm max. (load: 5 N)	
Shaft runout	0.025 mm	
Concentricity of mounting pilot relative to shaft	ø0.075 mm	
Squareness of mounting surface relative to shaft	0.1 mm	0.15 mm
Direction of motor mounting	Can be freely mounted vertically or horizontally	

■ Safety standards

CE	Standard category	Applicable standard	
	Low-voltage directives	EN 60034-1, EN 60034-5	
UL	Acquired standards	Applicable standard	File no.
	UL	UL 1004-1, UL 1004-6	E179832
	UL for Canada (c-UL)	CSA C22.2 No.100	

Model no. differs when the motor is equipped with a brake or oil seal.

Model no. and vibration resistance levels differ when the motor is equipped with a brake or oil seal.

56 mm sq.

1.8°/step **RoHS**

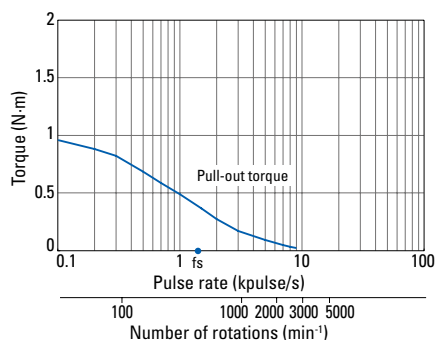
Bipolar winding

Model no.		Holding torque at 2-phase energization	Rated current	Winding resistance	Winding inductance	Rotor inertia	Mass	Allowable thrust load	Allowable radial load
Cable type	Connector type	N·m min.	A/phase	Ω/phase	mH/phase	$\times 10^{-4} \text{kg} \cdot \text{m}^2$	kg	N	N
SP2563-5060	SP2563-5000	1	1	5.8	29	0.21	0.9	15	52
SP2563-5160	SP2563-5100	1	2	1.5	7.3	0.21	0.9	15	52
SP2563-5260	SP2563-5200	1	3	0.75	3.4	0.21	0.9	15	52
SP2566-5060	SP2566-5000	1.7	1	7.8	35.4	0.36	1.2	15	23
SP2566-5160	SP2566-5100	1.7	2	2	9.2	0.36	1.2	15	23
SP2566-5260	SP2566-5200	1.7	3	1	4.4	0.36	1.2	15	23

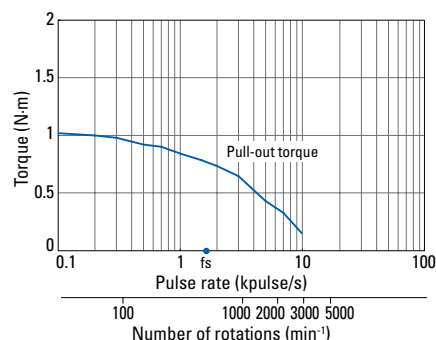
• The model no., rotor inertia and mass differ when the motor is equipped with brake, encoder or oil seal.

Characteristics diagram

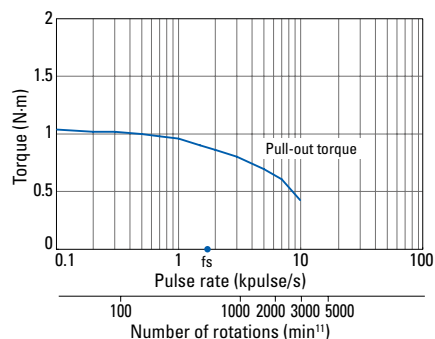
SP2563-5000
SP2563-5060



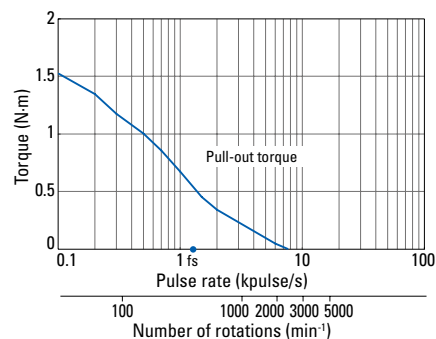
SP2563-5100
SP2563-5160



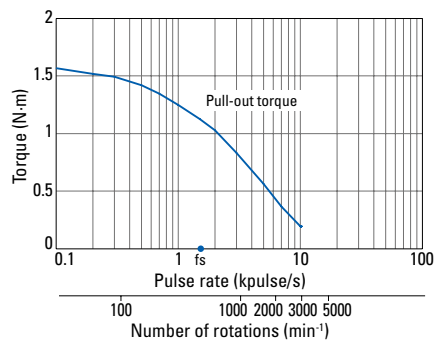
SP2563-5200
SP2563-5260



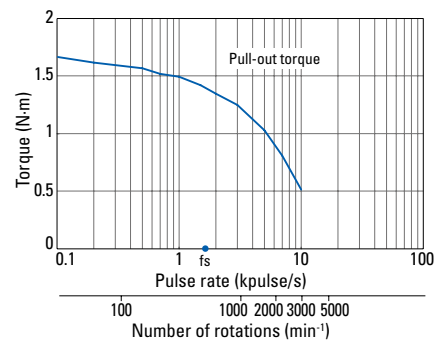
SP2566-5000
SP2566-5060



SP2566-5100
SP2566-5160



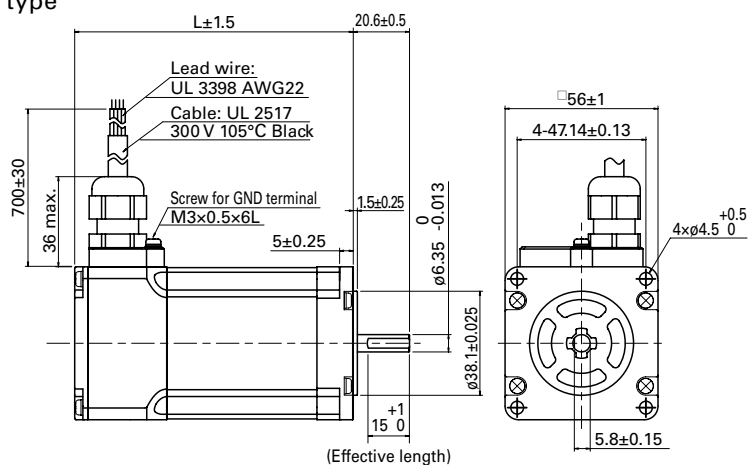
SP2566-5200
SP2566-5260



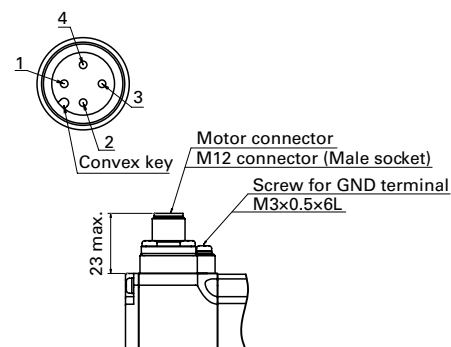
Dimensions (Unit: mm)

56 mm sq.

Cable type



Connector type



Model no.		Motor length (L)
Cable type	Connector type	
SP2563-5 □ 60	SP2563-5 □ 00	80
SP2566-5 □ 60	SP2566-5 □ 00	102

86 mm sq.

1.8°/step **RoHS**

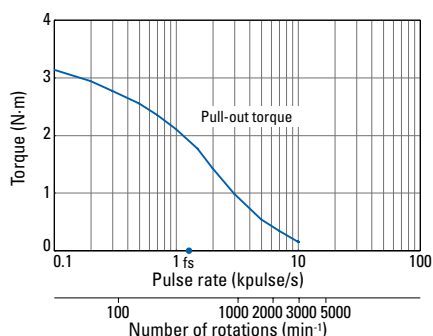
Bipolar winding

Model no.		Holding torque at 2-phase energization	Rated current	Winding resistance		Winding inductance	Rotor inertia	Mass	Allowable thrust load	Allowable radial load
Cable type	Connector type	N·m min.	A/phase	Ω/phase	Ω/phase	mH/phase	×10 ⁻⁴ kg·m ²	kg	N	N
SP2861-5060	SP2861-5000	3.3	2	2.1	2.05	15	1.48	1.95	60	200
SP2861-5160	SP2861-5100	3.3	4	0.61	0.56	3.7	1.48	1.95	60	200
SP2861-5260	—	3.3	6	0.36	—	1.7	1.48	1.95	60	200
SP2862-5060	SP2862-5000	6.4	2	3.2	3.2	25	3	3.1	60	200
SP2862-5160	SP2862-5100	6.4	4	0.85	0.83	6.4	3	3.1	60	200
SP2862-5260	—	6.4	6	0.41	—	2.8	3	3.1	60	200
SP2863-5060	SP2863-5000	9	2	4	4	32	4.5	4.2	60	200
SP2863-5160	SP2863-5100	9	4	1.05	1	7.9	4.5	4.2	60	200
SP2863-5260	—	9	6	0.53	—	3.8	4.5	4.2	60	200

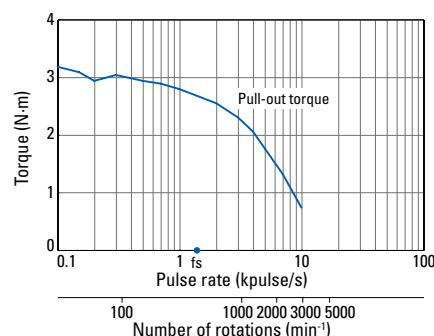
- The model no., rotor inertia and mass differ when the motor is equipped with brake, encoder or oil seal.
- The rated current of the motor with the connector is 4 A or less.

Characteristics diagram

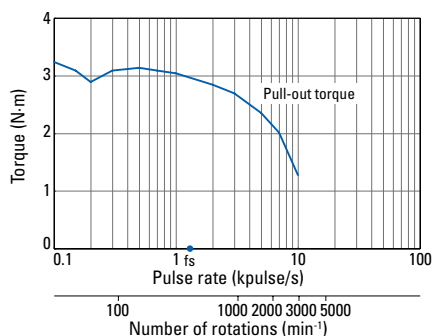
SP2861-5000
SP2861-5060



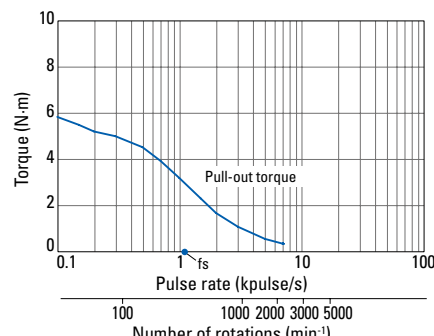
SP2861-5100
SP2861-5160



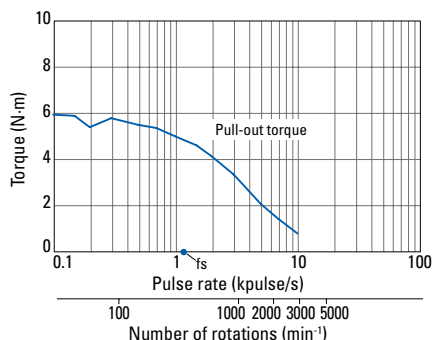
SP2861-5260



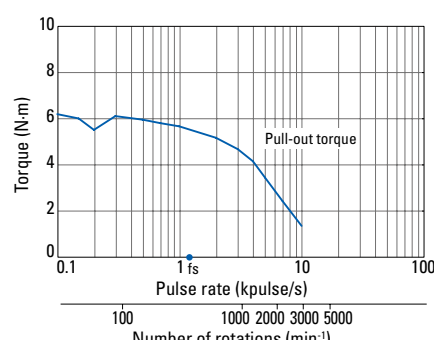
SP2862-5000
SP2862-5060



SP2862-5100
SP2862-5160

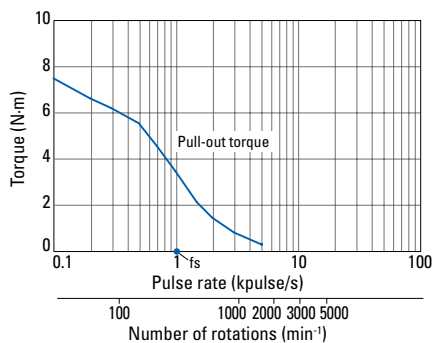


SP2862-5260



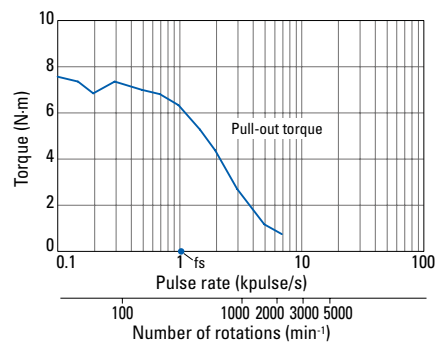
Characteristics diagram

**SP2863-5000
SP2863-5060**



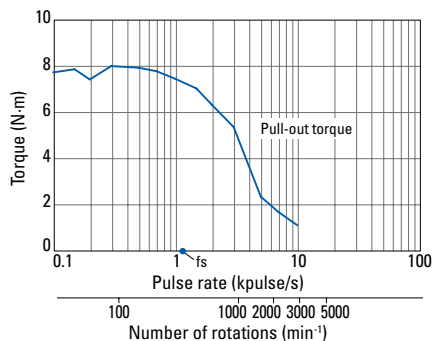
Constant current circuit
Source voltage: 100 VAC
Operating current: 2 A/phase, 2-phase energization (full-step)
Pull-out torque: $J_L=44 \times 10^{-4} \text{ kg} \cdot \text{m}^2$ (use the rubber coupling)
fs: Maximum self-start frequency when not loaded

**SP2863-5100
SP2863-5160**



Constant current circuit
Source voltage: 100 VAC
Operating current: 4 A/phase, 2-phase energization (full-step)
Pull-out torque: $J_L=44 \times 10^{-4} \text{ kg} \cdot \text{m}^2$ (use the rubber coupling)
fs: Maximum self-start frequency when not loaded

SP2863-5260

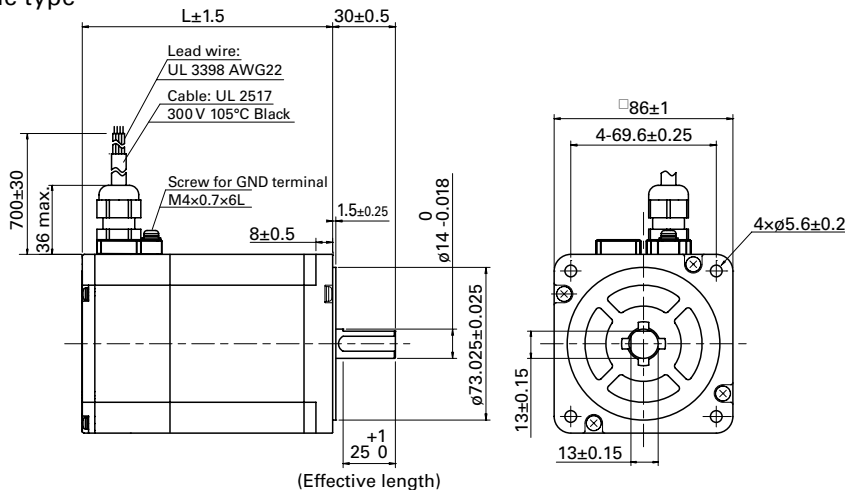


Constant current circuit
Source voltage: 100 VAC
Operating current: 6 A/phase, 2-phase energization (full-step)
Pull-out torque: $J_L=44 \times 10^{-4} \text{ kg} \cdot \text{m}^2$ (use the rubber coupling)
fs: Maximum self-start frequency when not loaded

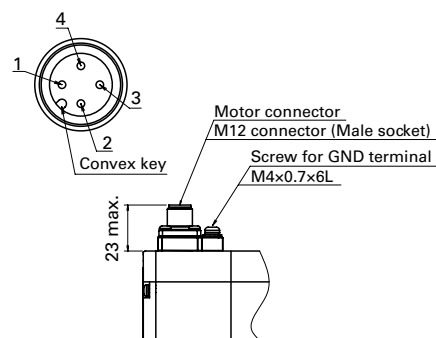
Dimensions (Unit: mm)

86 mm sq.

Cable type



Connector type



Model no.	Connector type	Motor length (L)
SP2861-5 □ 60	SP2861-5 □ 00	89.5
SP2862-5 □ 60	SP2862-5 □ 00	120
SP2863-5 □ 60	SP2863-5 □ 00	150