

Model Numbers

SM 040 1 A E2 - K CD- N N V

Series

SM Servo Motor Medium Inertia

Frame Size

040 40 mm
060 60 mm
080 80 mm

Motor Length

1 1 Stack All Frame Sizes
2 2 Stacks All Frame Sizes
3 3 Stacks 80mm only
4 4 Stacks 80mm only

Winding (See motor rating tables for available windings)

Basic Bus Voltage

A 320 VDC (230 VAC) Lower Current
B 240 VDC
C 160 VDC (115 VAC)
D 120 VDC
E 80 VDC
F 60 VDC
G 48 VDC
H 36 VDC
J 24 VDC Higher Current

Feedback

E2 2500 ppr Optical Encoder with Separate Commutation Signals
E4 2500 ppr Optical Encoder with Shared Commutation Signals
MA Absolute Multi Turn Tamagawa Encoder - **SM060 & SM080 Motors**
MB Absolute Multi Turn Heidenhain EnDat 2.2 Encoder - **SM060 & SM080 Motors**

Shaft

K Standard Keyway

Connections (Lead Style / Connector Style)

CD 300mm (12") Shielded Cables with Non - Sealed Connectors - For Windings up to 6.5 Amps
CF 300mm (12") Shielded Cables with Non - Sealed Connectors - For Windings 6.6 to 12.5 Amps
CM 300mm (12") Shielded Cables with Sealed Metal Connectors

Brake

N No Brake
B 24 VDC Brake

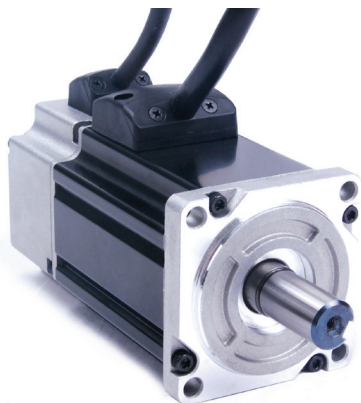
Temperature Sensor

N No Sensor

Shaft Seal

V Shaft seal shipped with motor, but not placed on shaft

SM060 Series: 60mm, 200-400 Watts



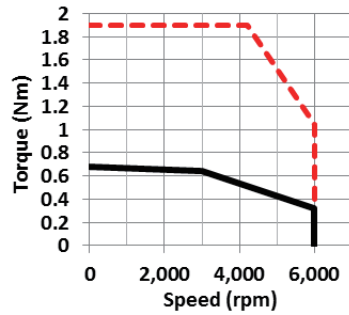
UL File Number	E465363
Insulation Class	B (130°C)
IP rating	IP65 (except shaft without seal and non-sealed connectors)
Installation location	Indoors, free from corrosive gas, inflammable gas
Ambient temperature	Operating 0 to 40°C, Storage -20 to 80°C
Ambient humidity	85%RH or lower (free from condensing)
Altitude (maximum)	Operating 1,000m
Vibration Resistance	49 m/s ²
Rotor Poles	8

Series		SM0601 - 200 Watt				SM0602 - 400 Watt			
Preferred Model & Winding Letter		^ A	^ C	^ E	G	^ A	^ C	^ D	^ F
Base Model Number (with 2500 PPR incremental encoder non-sealed plastic connectors, no brake)		SM0601 AE2-KCD- NNV	SM0601 CE2-KCD- NNV	SM0601 EE2-KCD- NNV	SM0601 GE2-KCF- NNV	SM0602 AE2-KCD- NNV	SM0602 CE2-KCD- NNV	SM0602 DE2-KCF- NNV	SM0602 FE2-KCF- NNV
Typical Supply Voltages	V (rms)	208-240 VAC	120 VAC	48-90 VDC	24-60 VDC	208-240 VAC	120 VAC	60 VDC-120 VAC	48-80 VDC
Basic DC Bus Voltage	V (dc)	320	160	80	48	320	160	120	60
Rated Output Power	watts	200	200	200	200	400	400	400	400
Rated Speed	rpm	3000	3000	3000	3000	3000	3000	3000	3150
Max. Mechanical Speed	rpm	6000	6000	6000	6000	6000	6000	6000	6000
Rated Torque	Nm	0.64	0.64	0.64	0.64	1.27	1.27	1.27	1.21
Continuous Stall Torque	Nm	0.68	0.68	0.68	0.64	1.27	1.27	1.27	1.21
Peak Torque	Nm	1.9	1.9	1.9	1.9	3.8	3.8	3.8	3.6
Rated Current	A (rms)	1.5	3	5.2	10	2.75	5.7	6.9	10
Continuous Stall Current	A (rms)	1.6	3.2	5.5	10	2.75	5.7	6.9	10
Peak Current	A (rms)	4.5	9	15.6	30	8.3	17.1	20.7	30
Voltage Constant ±5%	V (rms) / K rpm	27.2	13.6	7.9	4.1	29	13.8	11.4	7.4
Torque Constant ±5%	Nm / A (rms)	0.432	0.216	0.125	0.065	0.484	0.23	0.191	0.123
Winding Resistance (Line-Line)	Ohm ±10% @25°C	8.6	2.1	0.67	0.192	3.7	0.85	0.57	0.25
Winding Inductance (Line-Line)	mH	25	6.1	2	0.56	12.9	2.9	2	0.84
Inertia (with encoder)	kg m ²	0.165 X 10 ⁻⁴				0.272 X 10 ⁻⁴			
Inertia - With Brake Option	kg m ²	0.22 X 10 ⁻⁴				0.326 X 10 ⁻⁴			
Thermal Resistance (mounted)	°C / W	1.8				1.43			
Thermal Time Constant	Minutes	15				21			
Heat Sink Size	mm	180 x 180 x 5 Aluminum				180 x 180 x 5 Aluminum			
Shaft Load - Axial	(max.)	70 N / 15 Lb				70 N / 15 Lb			
Shaft Load - Radial (End of Shaft)	(max.)	200 N / 45 Lb				240 N / 54 Lb			
Weight (with std. encoder)		1.1 kg / 2.3 lb				1.4 kg / 3.1 lb			
Weight - With Brake Option		1.6 kg / 3.5 lb				1.9 kg / 4.2 lb			

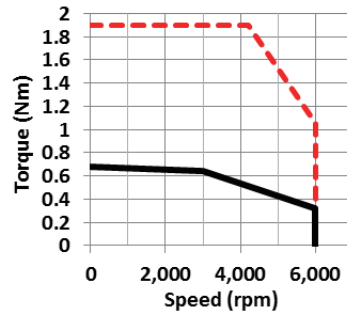
Shaft Load: (L₁₀ life, 20,000 hours, 2,000 RPM)

SM060 Series: 60mm, 200-400 Watts

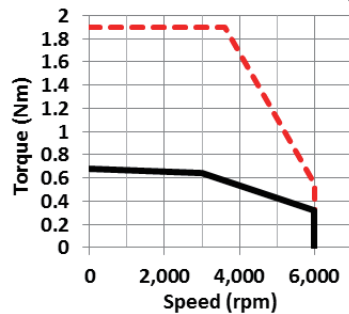
SM0601 (200 Watts) - Winding A
320 VDC (230VAC) - 1.5 Amps



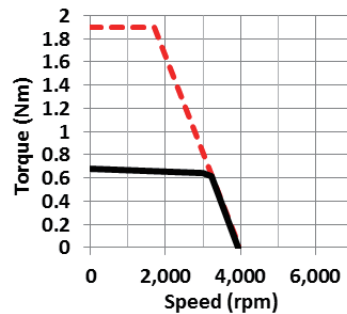
SM0601 (200 Watts) - Winding C
160 VDC (115 VAC) - 3 Amps



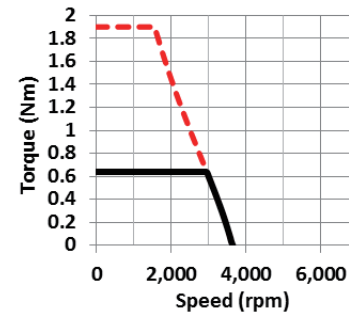
SM0601 (200 Watts) - Winding E
80 VDC - 5.2 Amps



SM0601 (200 Watts) - Winding E
48 VDC - 5.2 Amps

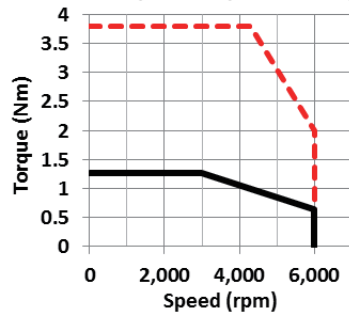


SM0601 (200 Watts) - Winding G
24 VDC - 10 Amps

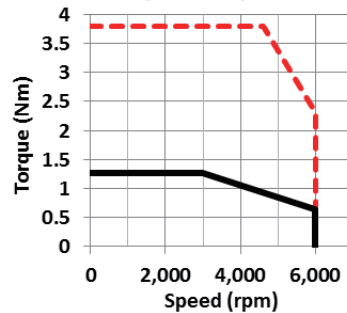


----- Max. Intermittent Torque
————— Max. Continuous Torque

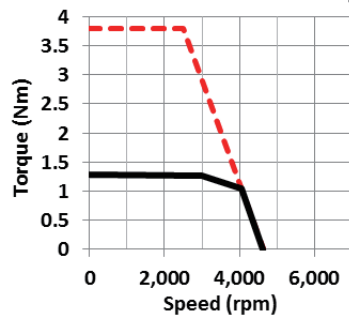
SM0602 (400 Watts) - Winding A
320 VDC (230VAC) - 2.75 Amps



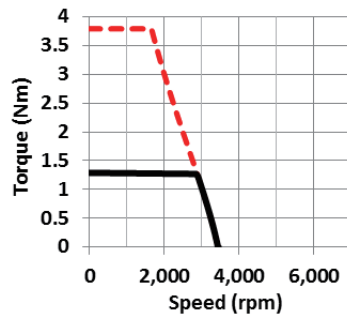
SM0602 (400 Watts) - Winding C
160 VDC (115 VAC) - 5.7 Amps



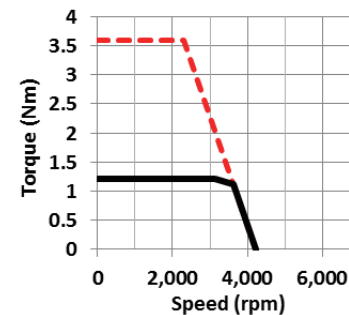
SM0602 (400 Watts) - Winding D
80 VDC - 6.9 Amps



SM0602 (400 Watts) - Winding D
60 VDC - 6.9 Amps

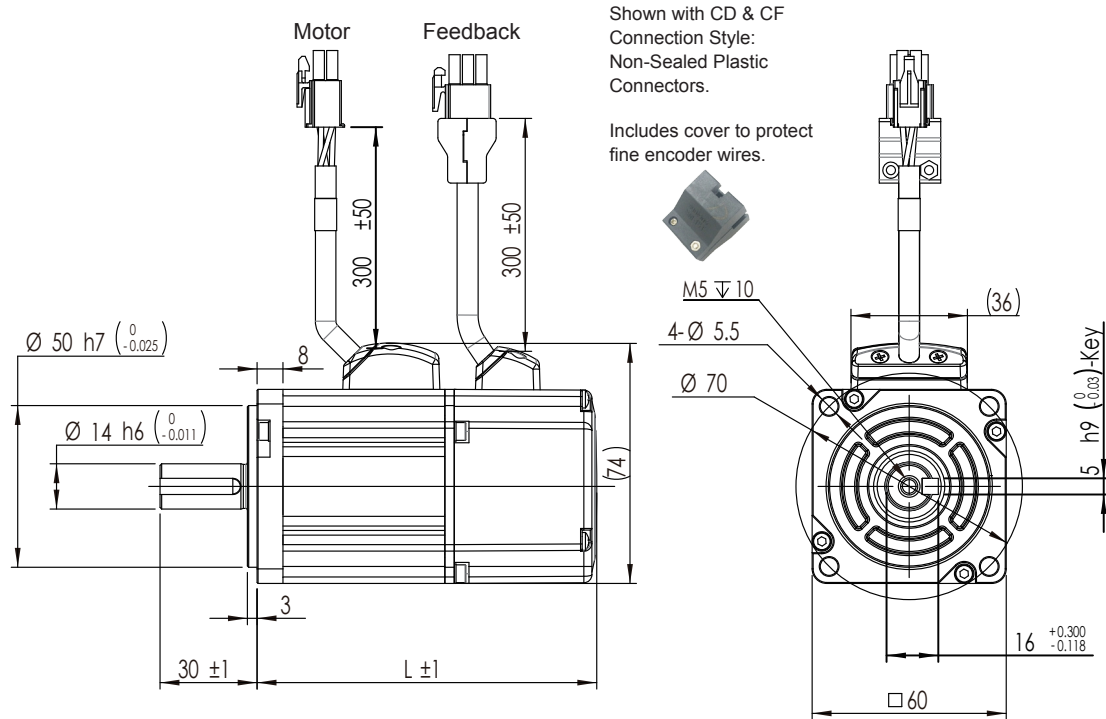


SM0602 (400 Watts) - Winding F
48 VDC - 10 Amps



SM060 Series: 60mm, 200-400 Watts

Motor Dimensions – No Brake: mm



Motor Length - Without Brake

Basic Motor Series	Feedback	L (mm)
SM0601, 200 Watt	E2 2500 ppr Optical Encoder with Separate Commutation Signals	98
	E4 2500 ppr Optical Encoder with Shared Commutation Signals	105
	MA Absolute Multi Turn Tamagawa Encoder	98
	MB Absolute Multi Turn Heidenhain Encoder	98
SM0602, 400 Watt	E2 2500 ppr Optical Encoder with Separate Commutation Signals	118
	E4 2500 ppr Optical Encoder with Shared Commutation Signals	125
	MA Absolute Multi Turn Tamagawa Encoder	118
	MB Absolute Multi Turn Heidenhain Encoder	118

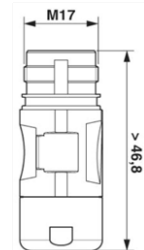
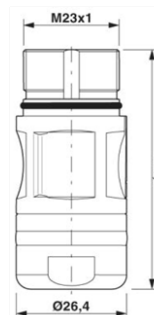
Optional CM Connection Style: Sealed Metal Connectors

These rugged connectors provide more protection

- IP65 sealed
- Better protection from EMI / RFI noise, for use over longer distances
- Metal housings provide more mechanical protection
- Metal housings form a continuous electrical shield
- Cable shields are connected to the connector housings

Motor Connector
(Includes Optional Brake)

Feedback Connector



SM060 Series: 60mm, 200-400 Watts

Brake Specifications:

This is a holding brake. Brake Releases when energized. Do NOT engage when motor is rotating.

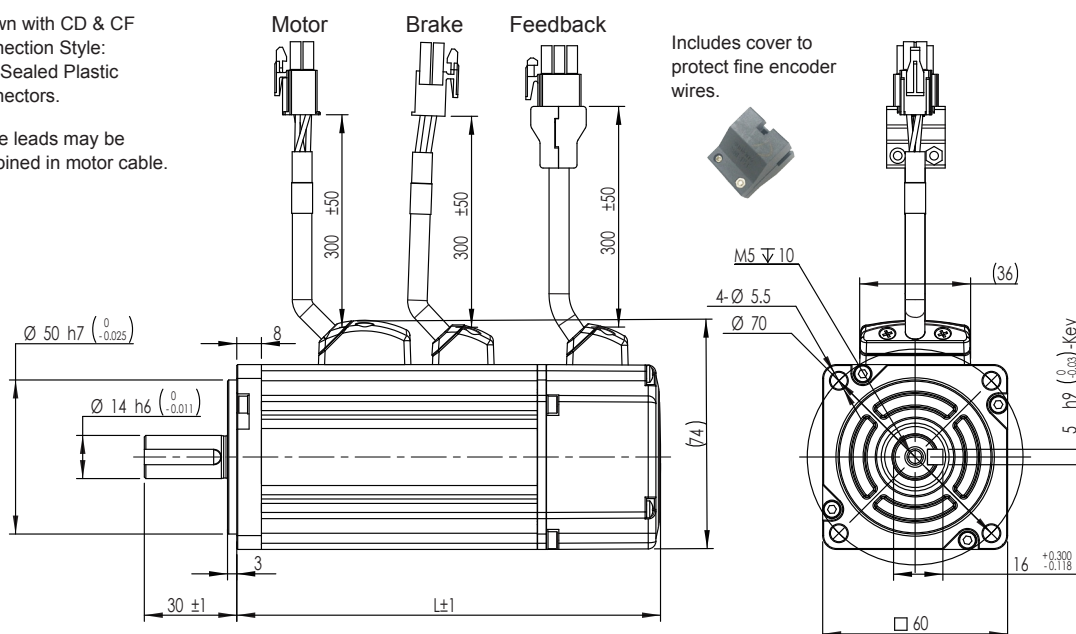
Brake power is not polarity sensitive.

Static Friction Torque	2 Nm
Rated Voltage	24 VDC
Rated Current	0.38 A
Engage Time	At nominal air gap @20°C - < 25ms (As brakes are out of box)
Release Time	Without diode - < 25 ms (During E-stop condition)
Release Voltage	18.5 VDC max (at 20°C)

Brake Motor Dimensions: mm

Shown with CD & CF
Connection Style:
Non-Sealed Plastic
Connectors.

Brake leads may be
combined in motor cable.



Motor Length - With Brake

Basic Motor Series		Feedback	L (mm)
SM0601, 200 Watt	E2	2500 ppr Optical Encoder with Separate Commutation Signals	138
	E4	2500 ppr Optical Encoder with Shared Commutation Signals	145
	MA	Absolute Multi Turn Tamagawa Encoder	138
	MB	Absolute Multi Turn Heidenhain Encoder	138
SM0602, 400 Watt	E2	2500 ppr Optical Encoder with Separate Commutation Signals	158
	E4	2500 ppr Optical Encoder with Shared Commutation Signals	165
	MA	Absolute Multi Turn Tamagawa Encoder	158
	MB	Absolute Multi Turn Heidenhain Encoder	158