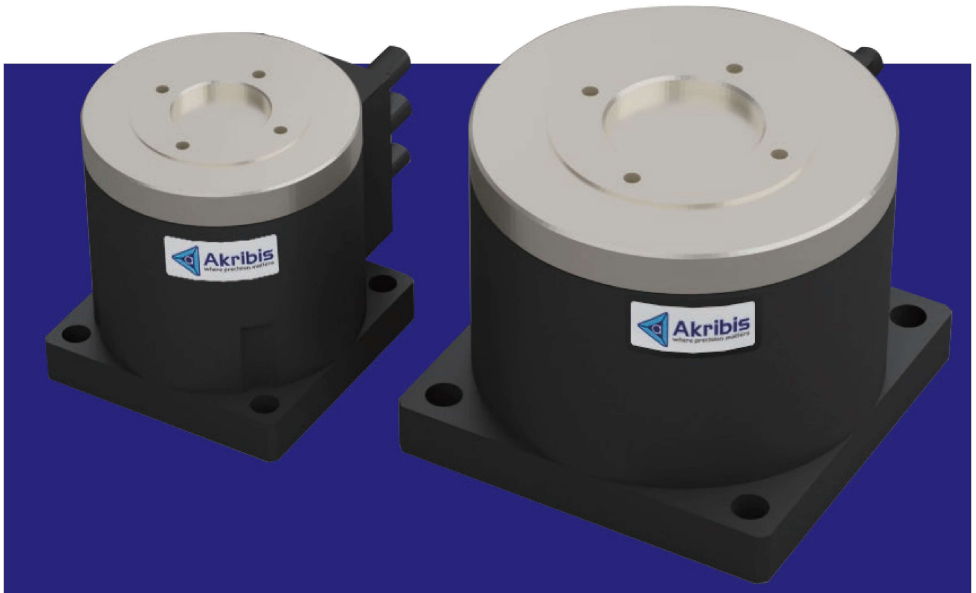


AXM SERIES

- Compact size
- Direct drive brushless motor
- Fully integrated with encoder and bearing
- Low cogging torque
- Optional for low speed and high speed windings
- High torque density
- Built-in high precision grating scale

EN-24.5.1

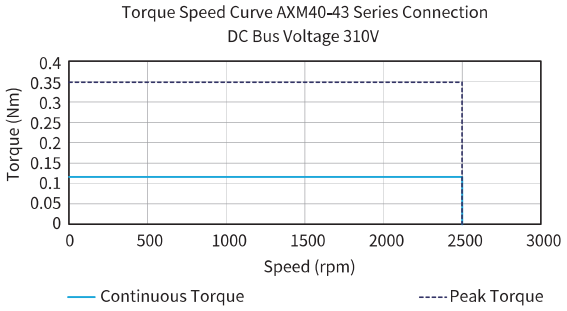
Akribis systems

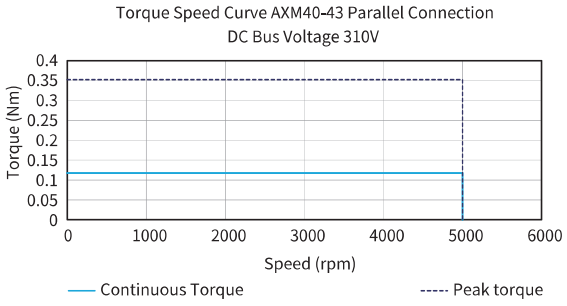
AXM40-43

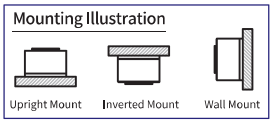
AXM40-43					
Performance Parameters		Symbol	Unit	Series	Parallel
Continuous Torque (NC) @100°C[1]		T_{cn}	Nm	0.11	0.11
Peak Torque		T_{pk}	Nm	0.30	0.30
Torque Constant ±10%		K_t	Nm/Arms	0.09	0.05
Back EMF Constant ±10%		K_e	Vpeak/rpm	0.008	0.004
Motor Constant @25°C		K_m	Nm/Sqrt(W)	0.03	0.03
Resistance (L-L) @25°C ±10%[2]		R_{25}	Ω	7.6	1.9
Inductance (L-L) ±20%[3]		L	mH	6.8	1.7
Electrical Time Constant		τ_e	ms	0.9	0.9
Continuous Current (NC) @100°C[1]		I_{cn}	Arms	1.2	2.4
Peak Current		I_{pk}	Arms	4.9	9.8
Continuous Power Dissipation (NC) @100°C[1]		P_{cn}	W	22.0	22.0
Max. Coil Temperature		t_{max}	°C	100	100
Thermal Dissipation Constant (NC)[1]		K_{thn}	W/°C	0.29	0.29
Max. Bus Voltage		U_{bus}	Vdc	330	330
Pole Number		2P	-	10	10
Max Speed[4]		Ω_{max}	rpm	2500	5000
Mechanical Parameters					
Overall Mass (NC)		m_n	kg	0.24	0.24
Rotor Inertia		J_r	kg.m²	1.18E-05	1.18E-05
Axial Runout[5]		-	µm	25	25
Radial Runout[5]		-	µm	25	25
Max Axial Load (Upright Mounting)[6]		-	N	20	20
Max Axial Load (Inverted / Wall Mounting)		-	N	6	6
Max Moment Load (Upright Mounting)		-	Nm	0.3	0.3
Max Moment Load (Inverted / Wall Mounting)		-	Nm	0.1	0.1
Encoder Parameters					
ABI Optical Incremental Encoder (SIN/COS)		-	lines / rev	650	650
ABI Optical Incremental Encoder (80x)		-	counts / rev	52000	52000
ABI Optical Incremental Encoder (160x)		-	counts / rev	104000	104000
ABI Optical Incremental Encoder (400x)		-	counts / rev	260000	260000
Accuracy after Error Mapping[7]		-	arc sec	+/-20	+/-20
Repeatability[7]		-	arc sec	+/-10	+/-10
Other Information					
Insulation Class		Class A (105°C)			
Protection Grade		IP40			
Compliance with Global Standards		Chinese RoHS, CE			
Ambient Temperature	Operation	0°C to 40°C (non-freezing)			
	Storage	-15°C to 70°C (non-freezing)			
Ambient Humidity	Operation	10%RH to 80%RH (non-condensing)			
	Storage	10%RH to 90%RH (non-condensing)			
Recommended Ambience		Indoor (no direct sunlight); No corrosive gas, inflammable gas, oil mist or dust.			

[1] Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment.
[2] Resistance is measured by DC current with standard 0.2 m cable.
[3] Inductance is measured by current frequency of 1 kHz.
[4] The value is based on ABI optical SIN/COS encoder (4096x interpolation) under max. bus voltage.
[5] Runout specification define in the datasheet is based on constant loading and temperature condition (the value in parenthesis is optional).
[6] Please refer to the illustration for different mountings.
[7] Based on ABI optical SIN/COS encoder (4096x interpolation) with standard runout.
The contents of datasheet are subject to change without prior notice.

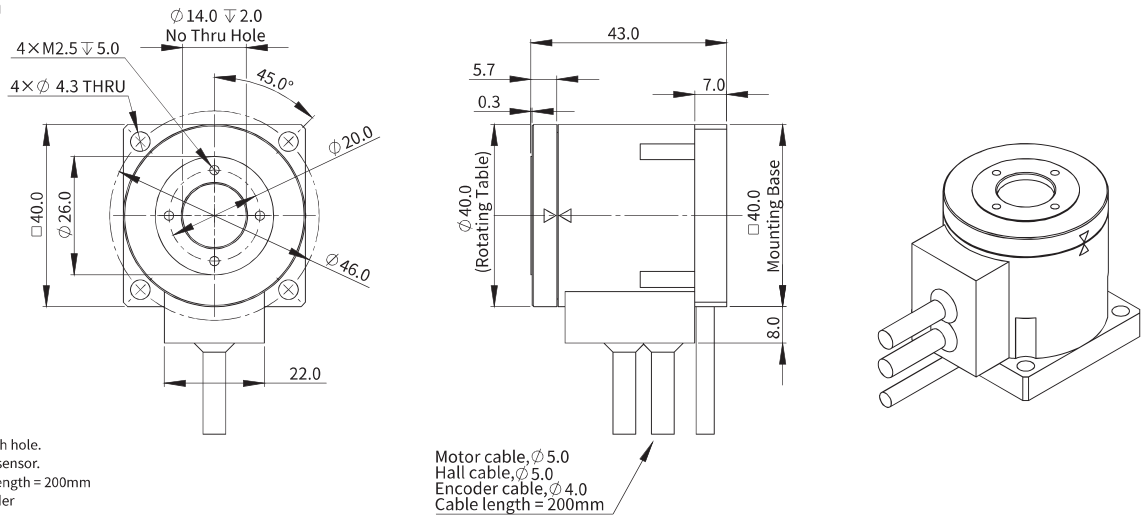
Torque-Speed Curve







Dimension



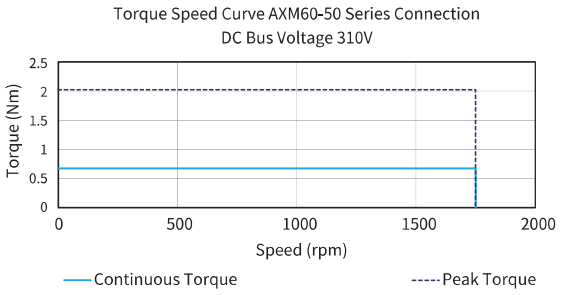
Note:
[1] No centre through hole.
[2] No temperature sensor.
[3] Standard cable length = 200mm
[4] ABI analog encoder

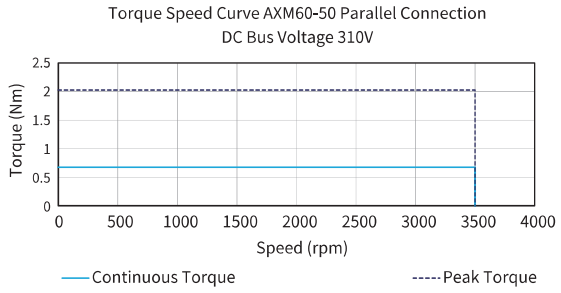
AXM60-50

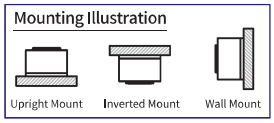
AXM60-50					
Performance Parameters		Symbol	Unit	Series	Parallel
Continuous Torque (NC) @100°C❶		T_{cn}	Nm	0.71	0.71
Peak Torque		T_{pk}	Nm	2.00	2.00
Torque Constant ±10%		K_t	Nm/Arms	0.47	0.24
Back EMF Constant ±10%		K_e	Vpeak/rpm	0.040	0.020
Motor Constant @25°C		K_m	Nm/Sqrt(W)	0.11	0.11
Resistance (L-L) @25°C ±10%❷		R_{25}	Ω	12.8	3.2
Inductance (L-L) ±20%❸		L	mH	28.5	7.1
Electrical Time Constant		τ_e	ms	2.2	2.2
Continuous Current (NC) @100°C❶		I_{cn}	Arms	1.5	3.0
Peak Current		I_{pk}	Arms	6.0	12.0
Continuous Power Dissipation (NC) @100°C❶		P_{cn}	W	55.9	55.9
Max. Coil Temperature		t_{max}	°C	100	100
Thermal Dissipation Constant (NC)❶		K_{thn}	W/°C	0.75	0.75
Max. Bus Voltage		U_{bus}	Vdc	330	330
Pole Number		2P	-	10	10
Max Speed❹		Ω_{max}	rpm	1750	3500
Mechanical Parameters					
Overall Mass (NC)		m_n	kg	0.64	0.64
Rotor Inertia		J_r	kg·m²	7.38E-05	7.38E-05
Axial Runout❺		-	μm	25	25
Radial Runout❺		-	μm	25	25
Max Axial Load (Upright Mounting)❻		-	N	50	50
Max Axial Load (Inverted / Wall Mounting)		-	N	15	15
Max Moment Load (Upright Mounting)		-	Nm	0.7	0.7
Max Moment Load (Inverted / Wall Mounting)		-	Nm	0.2	0.2
Encoder Parameters					
ABI Optical Incremental Encoder (SIN/COS)		-	lines / rev	650	650
ABI Optical Incremental Encoder (80x)		-	counts / rev	52000	52000
ABI Optical Incremental Encoder (160x)		-	counts / rev	104000	104000
ABI Optical Incremental Encoder (400x)		-	counts / rev	260000	260000
Accuracy after Error Mapping❼		-	arc sec	+/-20	+/-20
Repeatability❼		-	arc sec	+/-10	+/-10
Other Information					
Insulation Class		Class A (105°C)			
Protection Grade		IP40			
Compliance with Global Standards		Chinese RoHS, CE			
Ambient Temperature	Operation	0°C to 40°C (non-freezing)			
	Storage	-15°C to 70°C (non-freezing)			
Ambient Humidity	Operation	10%RH to 80%RH (non-condensing)			
	Storage	10%RH to 90%RH (non-condensing)			
Recommended Ambience		Indoor (no direct sunlight); No corrosive gas, inflammable gas, oil mist or dust.			

❶ Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment.
❷ Resistance is measured by DC current with standard 0.2 m cable.
❸ Inductance is measured by current frequency of 1 kHz.
❹ The value is based on ABI optical SIN/COS encoder (4096x interpolation) under max. bus voltage.
❺ Runout specification define in the datasheet is based on constant loading and temperature condition (the value in parenthesis is optional).
❻ Please refer to the illustration for different mountings.
❼ Based on ABI optical SIN/COS encoder (4096x interpolation) with standard runout.
The contents of datasheet are subject to change without prior notice.

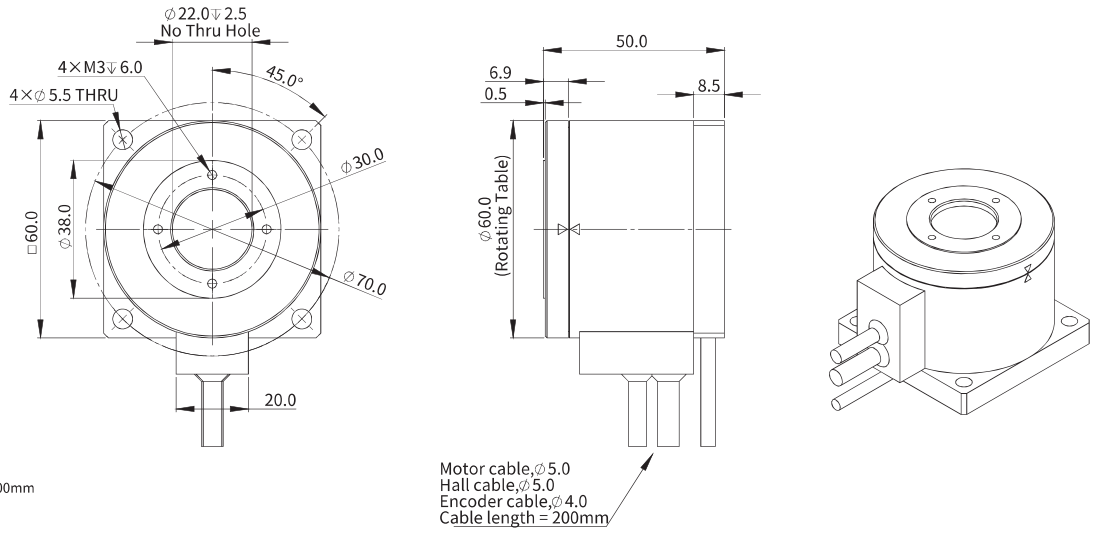
■ Torque-Speed Curve







■ Dimension



Note:
❶ No centre through hole.
❷ No temperature sensor.
❸ Standard cable length = 200mm
❹ ABI analog encoder

Motor Cable Connection

HALL CABLE

PIN	DESCRIPTION	COLOR
1	HA	GREEN
2	HB	YELLOW
3	HC	GREY
4	5VDC	BROWN
5	0VDC	WHITE
6	SHIELD	BLACK
Connector	MINI UNIVERSAL MATE-N-LOK PLUG HOUSING 6POS. UL94V-0 (P/N: 172168-1) with PIN CONTACT X6 (P/N: 170359-1)	

MOTOR CABLE

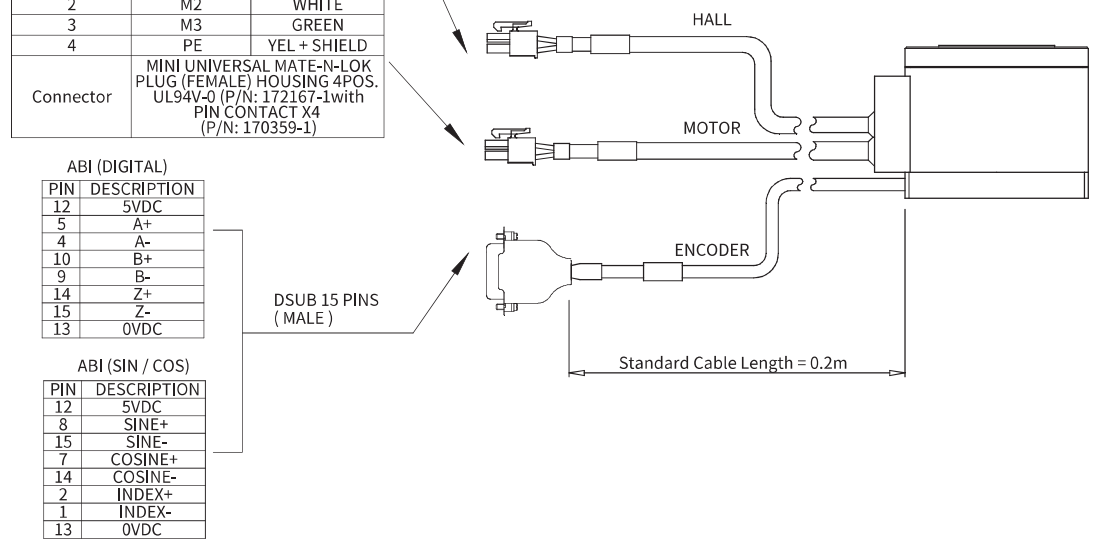
PIN	DESCRIPTION	COLOR
1	M1	BROWN
2	M2	WHITE
3	M3	GREEN
4	PE	YEL + SHIELD
Connector	MINI UNIVERSAL MATE-N-LOK PLUG (FEMALE) HOUSING 4POS. UL94V-0 (P/N: 172167-1with PIN CONTACT X4 (P/N: 170359-1)	

ABI (DIGITAL)

PIN	DESCRIPTION
12	5VDC
5	A+
4	A-
10	B+
9	B-
14	Z+
15	Z-
13	0VDC

ABI (SIN / COS)

PIN	DESCRIPTION
12	5VDC
8	SINE+
15	SINE-
7	COSINE+
14	COSINE-
2	INDEX+
1	INDEX-
13	0VDC



Part Numbering

AXM60-50-P-0.2-AB-650-SINCOS-P25

Motor Model:
AXM40-43 / AXM60-50

Winding Code:
S = Series / P = Parallel

Cable Length (m):
0.2

Runout:[1]
P25

Interpolation:
SINCOS / 80X / 160X / 400X

Encoder:
AB-650

[1] P25 = Axial Runout 25μm, Radial Runout is 25μm