

AXD SERIES

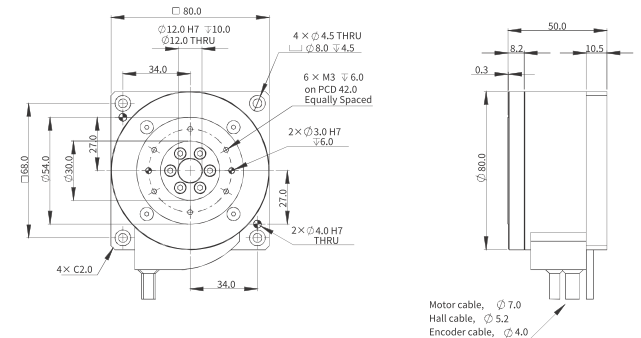
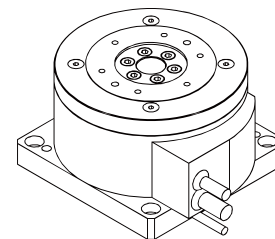
- ▶ Direct drive and brushless motor
- ▶ Fully integrated with encoder and bearing
- ▶ Low cogging torque
- ▶ Precise homing through index pulse
- ▶ Optional for low speed and high speed windings
- ▶ High torque density
- ▶ Low profile with large centre hole
- ▶ Flat design

AXD80-50

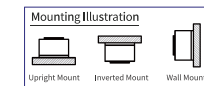
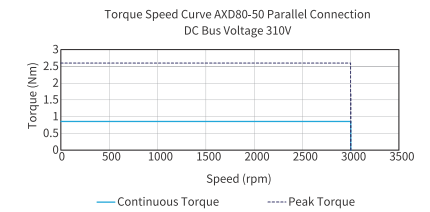
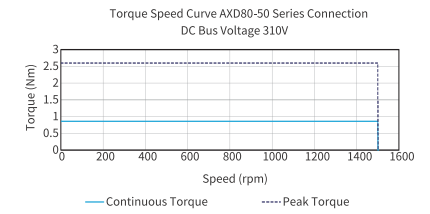
AXD80-50				
Performance Parameters	Symbol	Unit	Series	Parallel
Continuous Torque (NC) @100°C	T _{cn}	Nm	0.9	0.9
Peak Torque	T _{pk}	Nm	2.6	2.6
Torque Constant ±10%	K _t	Nm/Arms	0.91	0.46
Back EMF Constant ±10%	K _e	Vpeak/rpm	0.078	0.039
Motor Constant @25°C	K _m	Nm/Sqrt(W)	0.25	0.25
Resistance (L-L) @25°C ±10%	R _{2s}	Ω	9.1	2.3
Inductance (L-L) ±20%	L	mH	28.1	7.0
Electrical Time Constant	τ _e	ms	3.1	3.1
Continuous Current (NC) @100°C	I _{cn}	Arms	0.9	1.9
Peak Current	I _{pk}	Arms	3.4	6.8
Continuous Power Dissipation (NC) @100°C	P _{cn}	W	15.6	15.6
Max. Coil Temperature	t _{max}	°C	100	100
Thermal Dissipation Constant (NC)	K _{th}	W/°C	0.2	0.2
Max. Bus Voltage	U _{bus}	Vdc	330	330
Pole Number	ZP	-	14	14
Max Speed	Ω _{max}	rpm	1500	3000
Mechanical Parameters				
Overall Mass (NC)	m _n	kg	1.35	1.35
Rotor Inertia	J _r	kg·m ²	1.82E-04	1.82E-04
Axial Runout	-	μm	15	15
Radial Runout	-	μm	15	15
Max Axial Load (Upright Mounting)	-	N	350	350
Max Axial Load (Inverted / Wall Mounting)	-	N	100	100
Max Moment Load (Upright Mounting)	-	Nm	10	10
Max Moment Load (Inverted / Wall Mounting)	-	Nm	3	3
Encoder Parameters				
ABI Optical Incremental Encoder (SIN/COS)	-	lines / rev	1062	1062
ABI Optical Incremental Encoder (80x)	-	counts / rev	84960	84960
ABI Optical Incremental Encoder (160x)	-	counts / rev	169920	169920
ABI Optical Incremental Encoder (400x)	-	counts / rev	424800	424800
Accuracy after Error Mapping	-	arc sec	+/-12	+/-12
Repeatability	-	arc sec	+/-6	+/-6
Other Information				
Insulation Class	Class A (105°C)			
Protection Grade	IP40			
Compliance with Global Standards	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.			

- Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment.
 - Resistance is measured by DC current with standard 3 m cable.
 - Inductance is measured by current frequency of 1 kHz.
 - The value is based on ABI optical SIN/COS encoder (4096x interpolation) under max. bus voltage.
 - The runout value in parenthesis is optional.
 - Please refer to the illustration for different mountings.
 - Based on ABI optical SIN/COS encoder (4096x interpolation) with standard runout.
- The contents of datasheet are subjected to change without prior notice.

Dimension



Torque-Speed Curve

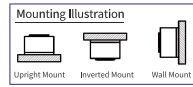
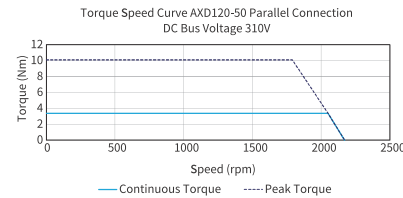
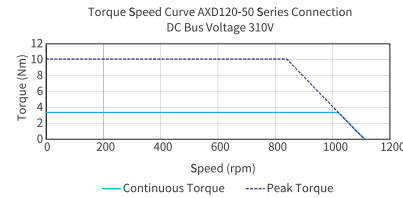


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AXD120-50

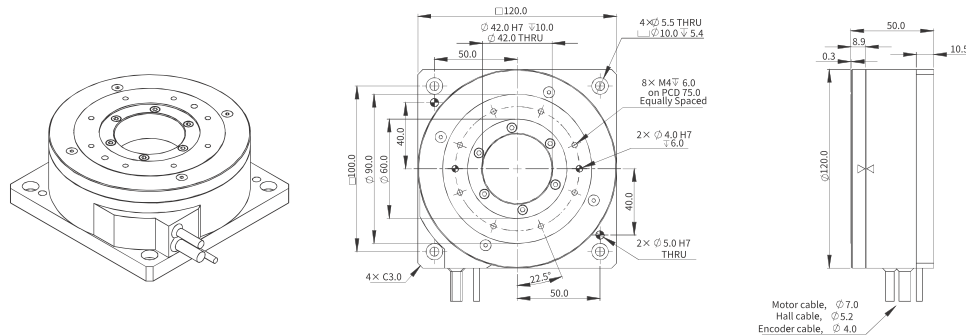
AXD120-50				
Performance Parameters				
Continuous Torque (NC) @100°C	Symbol	Unit	Series	Parallel
	T_{cn}	Nm	3.4	3.4
Peak Torque	T_{pk}	Nm	10.0	10.0
Torque Constant $\pm 10\%$	K_t	Nm/Arms	3.04	1.52
Back EMF Constant $\pm 10\%$	K_e	Vpeak/rpm	0.26	0.13
Motor Constant @25°C	K_m	Nm/Sqrt(W)	0.64	0.64
Resistance (L-L) @25°C $\pm 10\%$	R_{25}	Ω	15.2	3.8
Inductance (L-L) $\pm 20\%$	L	mH	47.7	11.9
Electrical Time Constant	τ_e	ms	3.1	3.1
Continuous Current (NC) @100°C	I_{cn}	Arms	1.1	2.2
Peak Current	I_{pk}	Arms	3.9	7.8
Continuous Power Dissipation (NC) @100°C	P_{2n}	W	36.4	36.4
Max. Coil Temperature	T_{max}	°C	100	100
Thermal Dissipation Constant (NC)	K_{thn}	W/°C	0.5	0.5
Max. Bus Voltage	U_{bus}	Vdc	330	330
Pole Number	2P	-	14	14
Max Speed	Ω_{max}	rpm	800	1700
Mechanical Parameters				
Overall Mass (NC)	m_n	kg	2.6	2.6
Rotor Inertia	J_r	kg·m ²	1.02E-03	1.02E-03
Axial Runout	-	μ m	20	20
Radial Runout	-	μ m	20	20
Max Axial Load (Upright Mounting)	-	N	500	500
Max Axial Load (Inverted / Wall Mounting)	-	N	150	150
Max Moment Load (Upright Mounting)	-	Nm	30	30
Max Moment Load (Inverted / Wall Mounting)	-	Nm	10	10
Encoder Parameters				
ABI Optical Incremental Encoder (SIN/COS)	-	lines / rev	2052	2052
ABI Optical Incremental Encoder (80x)	-	counts / rev	164160	164160
ABI Optical Incremental Encoder (160x)	-	counts / rev	328320	328320
ABI Optical Incremental Encoder (400x)	-	counts / rev	820800	820800
Accuracy after Error Mapping	-	arc sec	+/-6	+/-6
Repeatability	-	arc sec	+/-3	+/-3
Other Information				
Insulation Class	Class A (105°C)			
Protection Grade	IP40			
Compliance with Global Standards	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.			

Torque-Speed Curve



- Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment.
 - Resistance is measured by DC current with standard 3 m cable.
 - Inductance is measured by current frequency of 1 kHz.
 - The value is based on ABI optical SIN/COS encoder (4096x interpolation) under max. bus voltage.
 - The runout value in parenthesis is optional.
 - Please refer to the illustration for different mountings.
 - Based on ABI optical SIN/COS encoder (4096x interpolation) with standard runout.
- The contents of datasheet are subjected to change without prior notice.

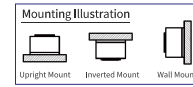
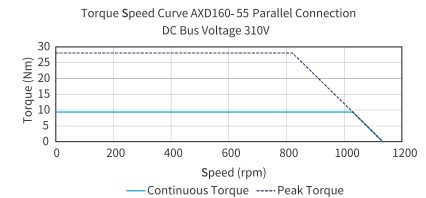
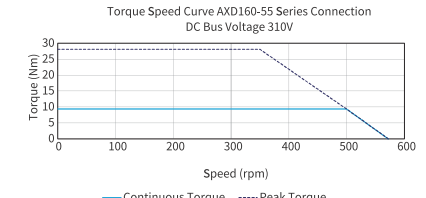
Dimension



AXD160-55

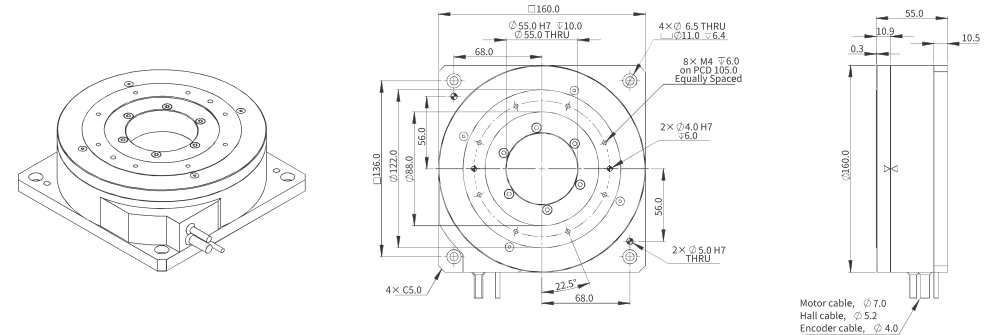
AXD160-55				
Performance Parameters				
Continuous Torque (NC) @100°C	Symbol	Unit	Series	Parallel
	T_{cn}	Nm	9.4	9.4
Peak Torque	T_{pk}	Nm	27.0	27.0
Torque Constant $\pm 10\%$	K_t	Nm/Arms	5.85	2.93
Back EMF Constant $\pm 10\%$	K_e	Vpeak/rpm	0.50	0.25
Motor Constant @25°C	K_m	Nm/Sqrt(W)	1.24	1.24
Resistance (L-L) @25°C $\pm 10\%$	R_{25}	Ω	14.9	3.7
Inductance (L-L) $\pm 20\%$	L	mH	92.1	23.0
Electrical Time Constant	τ_e	ms	6.2	6.2
Continuous Current (NC) @100°C	I_{cn}	Arms	1.6	3.2
Peak Current	I_{pk}	Arms	5.8	11.5
Continuous Power Dissipation (NC) @100°C	P_{2n}	W	74.0	74.0
Max. Coil Temperature	T_{max}	°C	100	100
Thermal Dissipation Constant (NC)	K_{thn}	W/°C	1.0	1.0
Max. Bus Voltage	U_{bus}	Vdc	330	330
Pole Number	2P	-	14	14
Max Speed	Ω_{max}	rpm	330	800
Mechanical Parameters				
Overall Mass (NC)	m_n	kg	5.1	5.1
Rotor Inertia	J_r	kg·m ²	3.72E-03	3.72E-03
Axial Runout	-	μ m	30	30
Radial Runout	-	μ m	30	30
Max Axial Load (Upright Mounting)	-	N	750	750
Max Axial Load (Inverted / Wall Mounting)	-	N	225	225
Max Moment Load (Upright Mounting)	-	Nm	40	40
Max Moment Load (Inverted / Wall Mounting)	-	Nm	12	12
Encoder Parameters				
ABI Optical Incremental Encoder (SIN/COS)	-	lines / rev	2868	2868
ABI Optical Incremental Encoder (80x)	-	counts / rev	229440	229440
ABI Optical Incremental Encoder (160x)	-	counts / rev	458880	458880
ABI Optical Incremental Encoder (400x)	-	counts / rev	1147200	1147200
Accuracy after Error Mapping	-	arc sec	+/-5	+/-5
Repeatability	-	arc sec	+/-2.5	+/-2.5
Other Information				
Insulation Class	Class A (105°C)			
Protection Grade	IP40			
Compliance with Global Standards	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.			

Torque-Speed Curve



- Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment.
 - Resistance is measured by DC current with standard 3 m cable.
 - Inductance is measured by current frequency of 1 kHz.
 - The value is based on ABI optical SIN/COS encoder (4096x interpolation) under max. bus voltage.
 - The runout value in parenthesis is optional.
 - Please refer to the illustration for different mountings.
 - Based on ABI optical SIN/COS encoder (4096x interpolation) with standard runout.
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Dimension

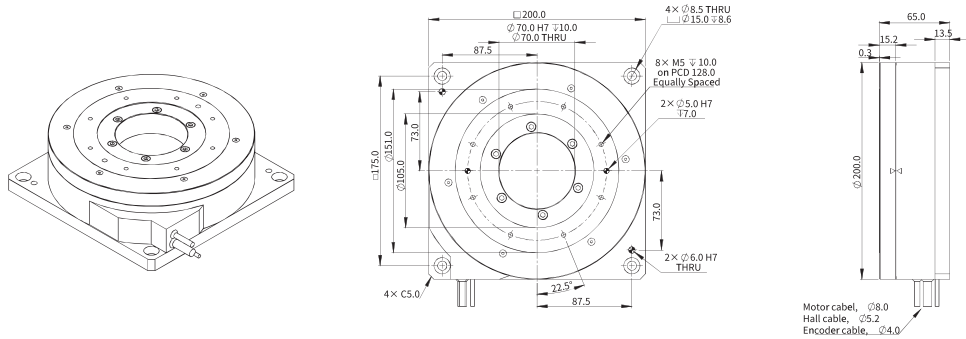


AXD200-65

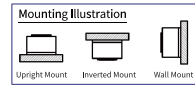
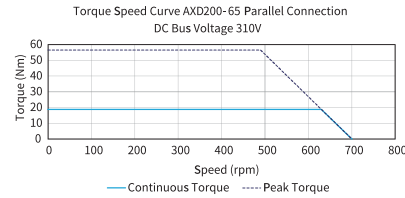
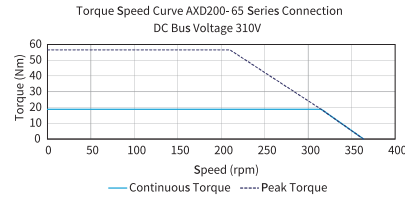
AXD200-65				
Performance Parameters				
Continuous Torque (NC) @100°C	Symbol	Unit	Series	Parallel
	T_{CN}	Nm	18.8	18.8
Peak Torque	T_{PK}	Nm	54.3	54.3
Torque Constant $\pm 10\%$	K_t	Nm/Arms	9.42	4.71
Back EMF Constant $\pm 10\%$	K_e	Vpeak/rpm	0.81	0.40
Motor Constant @25°C	K_m	Nm/Sqrt(W)	2.13	2.13
Resistance (L-L) @25°C $\pm 10\%$	R_{25}	Ω	13.0	3.3
Inductance (L-L) $\pm 20\%$	L	mH	121.0	30.3
Electrical Time Constant	τ_e	ms	9.3	9.3
Continuous Current (NC) @100°C	I_{CN}	Arms	2.0	4.0
Peak Current	I_{PK}	Arms	7.2	14.4
Continuous Power Dissipation (NC) @100°C	P_{CN}	W	100.9	100.9
Max. Coil Temperature	t_{max}	°C	100	100
Thermal Dissipation Constant (NC)	K_{thn}	W/°C	1.3	1.3
Max. Bus Voltage	U_{bus}	Vdc	330	330
Pole Number	2P	-	14	14
Max Speed	Ω_{max}	rpm	200	490
Mechanical Parameters				
Overall Mass (NC)	m_n	kg	8.3	8.3
Rotor Inertia	J _r	kg·m ²	1.00E-02	1.00E-02
Axial Runout	-	μ m	40	40
Radial Runout	-	μ m	40	40
Max Axial Load (Upright Mounting)	-	N	1000	1000
Max Axial Load (Inverted / Wall Mounting)	-	N	300	300
Max Moment Load (Upright Mounting)	-	Nm	50	50
Max Moment Load (Inverted / Wall Mounting)	-	Nm	15	15
Encoder Parameters				
ABI Optical Incremental Encoder (SIN/COS)	-	lines / rev	3934	3934
ABI Optical Incremental Encoder (80x)	-	counts / rev	314720	314720
ABI Optical Incremental Encoder (160x)	-	counts / rev	629440	629440
ABI Optical Incremental Encoder (400x)	-	counts / rev	1573600	1573600
Accuracy after Error Mapping	-	arc sec	+/-4	+/-4
Repeatability	-	arc sec	+/-2	+/-2
Other Information				
Insulation Class	Class A (105°C)			
Protection Grade	IP40			
Compliance with Global Standards	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.			

- Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment.
 - Resistance is measured by DC current with standard 3 m cable.
 - Inductance is measured by current frequency of 1 kHz.
 - The value is based on ABI optical SIN/COS encoder (4096x interpolation) under max. bus voltage.
 - The runout value in parenthesis is optional.
 - Please refer to the illustration for different mountings.
 - Based on ABI optical SIN/COS encoder (4096x interpolation) with standard runout.
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Dimension



Torque-Speed Curve

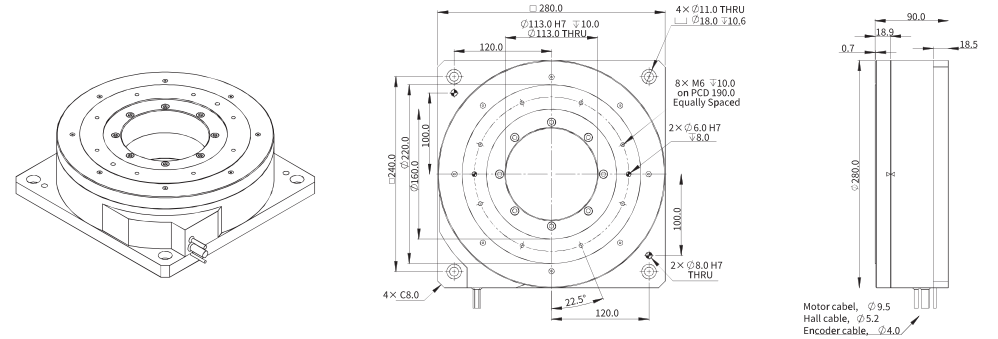


AXD280-90

AXD280-90				
Performance Parameters				
Continuous Torque (NC) @100°C	Symbol	Unit	Series	Parallel
	T_{CN}	Nm	51.1	51.1
Peak Torque	T_{PK}	Nm	150.3	150.3
Torque Constant $\pm 10\%$	K_t	Nm/Arms	22.23	11.12
Back EMF Constant $\pm 10\%$	K_e	Vpeak/rpm	1.90	0.95
Motor Constant @25°C	K_m	Nm/Sqrt(W)	4.34	4.34
Resistance (L-L) @25°C $\pm 10\%$	R_{25}	Ω	17.5	4.4
Inductance (L-L) $\pm 20\%$	L	mH	194.0	48.5
Electrical Time Constant	τ_e	ms	11.1	11.1
Continuous Current (NC) @100°C	I_{CN}	Arms	2.3	4.6
Peak Current	I_{PK}	Arms	8.0	16.0
Continuous Power Dissipation (NC) @100°C	P_{CN}	W	179.7	179.7
Max. Coil Temperature	t_{max}	°C	100	100
Thermal Dissipation Constant (NC)	K_{thn}	W/°C	2.4	2.4
Max. Bus Voltage	U_{bus}	Vdc	330	330
Pole Number	2P	-	28	28
Max Speed	Ω_{max}	rpm	60	180
Mechanical Parameters				
Overall Mass (NC)	m_n	kg	21.0	21.0
Rotor Inertia	J _r	kg·m ²	6.00E-02	6.00E-02
Axial Runout	-	μ m	50	50
Radial Runout	-	μ m	50	50
Max Axial Load (Upright Mounting)	-	N	1800	1800
Max Axial Load (Inverted / Wall Mounting)	-	N	500	500
Max Moment Load (Upright Mounting)	-	Nm	75	75
Max Moment Load (Inverted / Wall Mounting)	-	Nm	23	23
Encoder Parameters				
ABI Optical Incremental Encoder (SIN/COS)	-	lines / rev	5560	5560
ABI Optical Incremental Encoder (80x)	-	counts / rev	444800	444800
ABI Optical Incremental Encoder (160x)	-	counts / rev	889600	889600
ABI Optical Incremental Encoder (400x)	-	counts / rev	2224000	2224000
Accuracy after Error Mapping	-	arc sec	+/-4	+/-4
Repeatability	-	arc sec	+/-2	+/-2
Other Information				
Insulation Class	Class A (105°C)			
Protection Grade	IP40			
Compliance with Global Standards	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.			

- Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment.
 - Resistance is measured by DC current with standard 3 m cable.
 - Inductance is measured by current frequency of 1 kHz.
 - The value is based on ABI optical SIN/COS encoder (4096x interpolation) under max. bus voltage.
 - The runout value in parenthesis is optional.
 - Please refer to the illustration for different mountings.
 - Based on ABI optical SIN/COS encoder (4096x interpolation) with standard runout.
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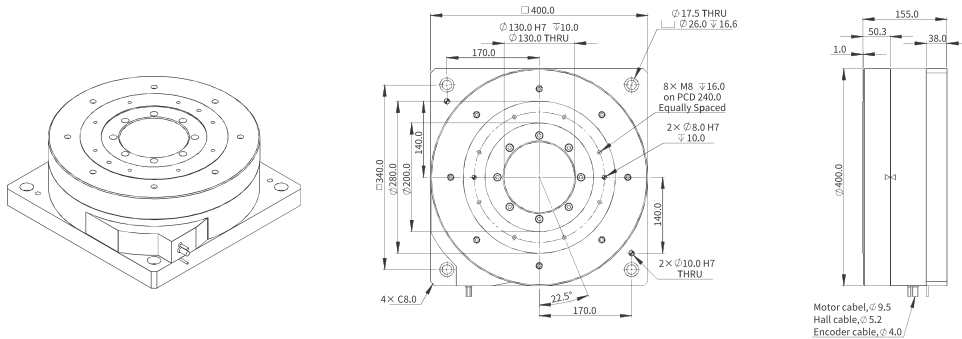
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AXD400-155

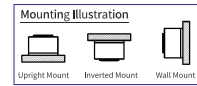
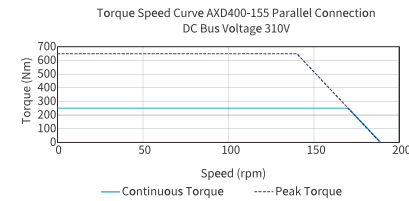
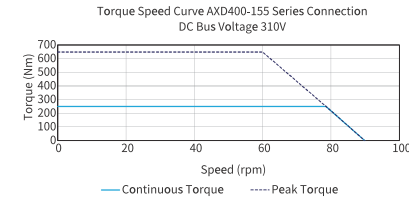
AXD400-155				
Performance Parameters	Symbol	Unit	Series	Parallel
Continuous Torque (NC) @100°C	T _{cn}	Nm	250.6	250.6
Peak Torque	T _{pk}	Nm	648.9	648.9
Torque Constant ±10%	K _t	Nm/Arms	35.80	17.90
Back EMF Constant ±10%	K _e	Vpeak/rpm	3.06	1.53
Motor Constant @25°C	K _m	Nm/Sqrt(W)	15.62	15.62
Resistance (L-L) @25°C ±10%	R _{2s}	Ω	3.5	0.875
Inductance (L-L) ±20%	L	mH	74.0	18.5
Electrical Time Constant	τ _e	ms	21.1	21.1
Continuous Current (NC) @100°C	I _{cn}	Arms	7.0	14.0
Peak Current	I _{pk}	Arms	25.0	50.0
Continuous Power Dissipation (NC) @100°C	P _{cn}	W	332.9	332.9
Max. Coil Temperature	T _{max}	°C	100	100
Thermal Dissipation Constant (NC)	K _{thn}	W/°C	4.4	4.4
Max. Bus Voltage	U _{bus}	Vdc	330	330
Pole Number	ZP	-	28	28
Max Speed	Ω _{max}	rpm	60	140
Mechanical Parameters				
Overall Mass (NC)	m _n	kg	80.0	80.0
Rotor Inertia	J _r	kg·m ²	5.12E-01	5.12E-01
Axial Runout	-	μm	70	70
Radial Runout	-	μm	70	70
Max Axial Load (Upright Mounting)	-	N	8000	8000
Max Axial Load (Inverted / Wall Mounting)	-	N	1500	1500
Max Moment Load (Upright Mounting)	-	Nm	100	100
Max Moment Load (Inverted / Wall Mounting)	-	Nm	30	30
Encoder Parameters				
ABI Optical Incremental Encoder (SIN/COS)	-	lines / rev	7500	7500
ABI Optical Incremental Encoder (80x)	-	counts / rev	600000	600000
ABI Optical Incremental Encoder (160x)	-	counts / rev	1200000	1200000
ABI Optical Incremental Encoder (400x)	-	counts / rev	3000000	3000000
Accuracy after Error Mapping	-	arc sec	+/-4	+/-4
Repeatability	-	arc sec	+/-2	+/-2
Other Information				
Insulation Class	Class A (105°C)			
Protection Grade	IP40			
Compliance with Global Standards	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.			

- Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment.
 - Resistance is measured by DC current with standard 3 m cable.
 - Inductance is measured by current frequency of 1 kHz.
 - The value is based on ABI optical SIN/COS encoder (4096x interpolation) under max. bus voltage.
 - The runout value in parenthesis is optional.
 - Please refer to the illustration for different mountings.
 - Based on ABI optical SIN/COS encoder (4096x interpolation) with standard runout.
- The contents of datasheet are subjected to change without prior notice.

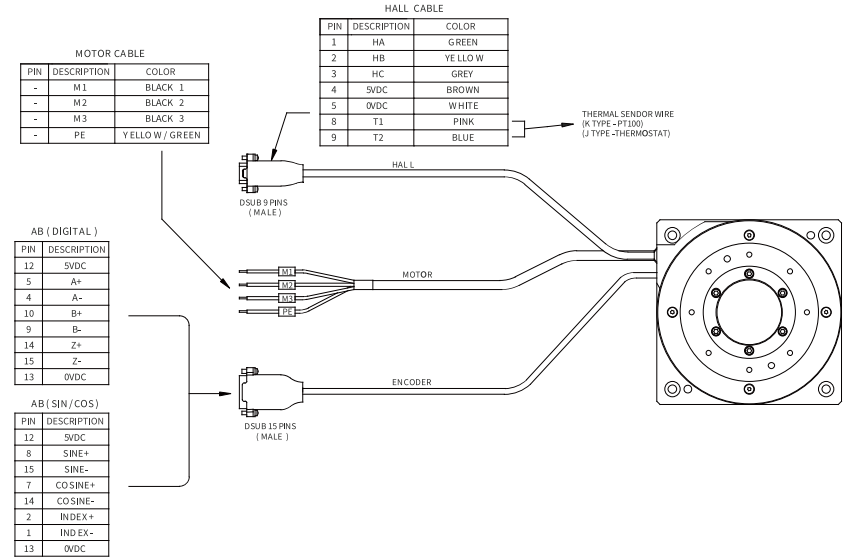
Dimension



Torque-Speed Curve



Motor Cable Connection



Part Numbering

