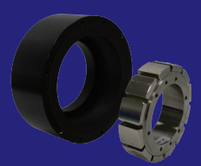
ACD SERIES

- Direct drive zero cogging coreless motor
- Precise homing through index pulse
- No cogging torque
- Smooth motion even at low speeds (low velocity ripple)



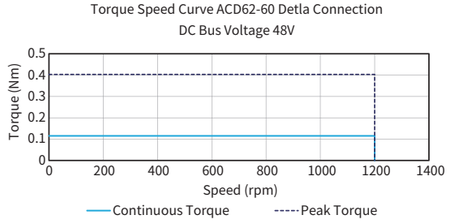
Note:Frameless ACD-P series motors are available, consisting of only rotors and stators.

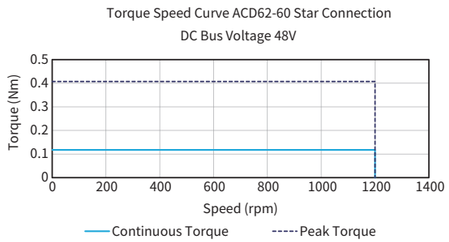
ACD62-60

ACD62-60				
Performance Parameters	**Symbol**	**Unit**	**D**	**Y**
Continuous Torque @100°C[1]	T_{cn}	Nm	0.115	0.115
Peak Torque	T_{pk}	Nm	0.40	0.40
Torque Constant ±10%	K_t	Nm/Arms	0.024	0.042
Back EMF Constant ±10%	K_e	Vpeak/rpm	0.002	0.004
Motor Constant @25°C	K_m	Nm/Sqrt(W)	0.023	0.028
Resistance (L-L) @25°C ±10%[2]	R_{25}	Ω	0.73	1.51
Inductance (L-L) ±20%[3]	L	mH	0.073	0.195
Electrical Time Constant	τ_e	ms	0.10	0.13
Continuous Current @100°C[1]	I_{cn}	Arms	4.8	2.8
Peak Current	I_{pk}	Arms	16.8	9.7
Continuous Power Dissipation @100°C[1]	P_{cn}	W	32.6	22.4
Max. Coil Temperature	t_{max}	°C	100	100
Thermal Dissipation Constant[1]	K_{thn}	W/°C	0.435	0.298
Max. Bus Voltage	U_{bus}	Vdc	48.0	48.0
Pole Number	2P	-	8	8
Rec. Max. Speed @48 VDC (Digital / SINCOS)[4]	Ω_{max}	rpm	1200	1200
Mechanical Parameters				
Overall Mass	m_n	kg	0.50	0.50
Rotor Inertia	J_r	kg·m²	2.157E-05	2.157E-05
Axial Runout[5]	-	μm	12	12
Radial Runout[5]	-	μm	10	10
Max. Axial Load (Upright Mounting)[6]	-	N	50	50
Max. Axial Load (Inverted / Wall Mounting)	-	N	5	5
Max. Moment Load (Upright Mounting)	-	Nm	0.3	0.3
Max. Moment Load (Inverted / Wall Mounting)	-	Nm	0.05	0.05
Encoder Parameters				
ABI Optical Incremental Encoder (SIN/COS)	-	lines / rev	1620	1620
ABI Optical Incremental Encoder (80x)	-	counts / rev	129600	129600
ABI Optical Incremental Encoder (160x)	-	counts / rev	259200	259200
ABI Optical Incremental Encoder (400x)	-	counts / rev	648000	648000
Accuracy after Error Mapping[7]	-	arc sec	+/-6	+/-6
Repeatability[7]	-	arc sec	+/-3	+/-3
Other Information				
Insulation Class		Class B (130°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.		

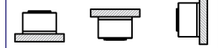
[1] Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment.
[2] Resistance is measured by DC current with standard 3 m cable.
[3] Inductance is measured by current frequency of 1 kHz.
[4] The value is based on ABI optical SIN/COS encoder (4096x interpolation) under max. bus voltage.
[5] The runout 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 subjected to change without prior notice.

■ Torque-Speed Curve

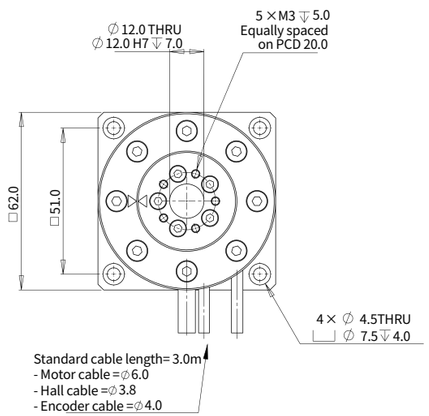


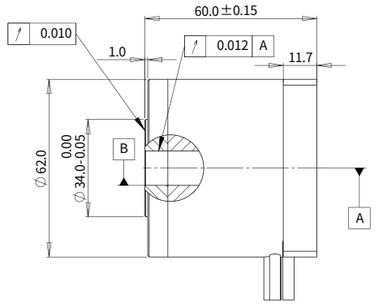


Mounting Illustration



■ Dimension



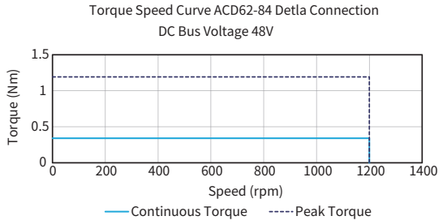


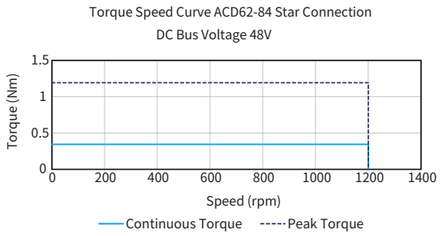
ACD62-84

ACD62-84				
Performance Parameters	**Symbol**	**Unit**	**D**	**Y**
Continuous Torque @100°C[1]	T_{cn}	Nm	0.341	0.341
Peak Torque	T_{pk}	Nm	1.19	1.19
Torque Constant ±10%	K_t	Nm/Arms	0.071	0.123
Back EMF Constant ±10%	K_e	Vpeak/rpm	0.006	0.011
Motor Constant @25°C	K_m	Nm/Sqrt(W)	0.058	0.068
Resistance (L-L) @25°C ±10%[2]	R_{25}	Ω	1.01	2.21
Inductance (L-L) ±20%[3]	L	mH	0.144	0.316
Electrical Time Constant	τ_e	ms	0.14	0.14
Continuous Current @100°C[1]	I_{cn}	Arms	4.8	2.8
Peak Current	I_{pk}	Arms	16.8	9.7
Continuous Power Dissipation @100°C[1]	P_{cn}	W	44.8	32.7
Max. Coil Temperature	t_{max}	°C	100	100
Thermal Dissipation Constant[1]	K_{thn}	W/°C	0.597	0.436
Max. Bus Voltage	U_{bus}	Vdc	48.0	48.0
Pole Number	2P	-	8	8
Rec. Max. Speed @48 VDC (Digital / SINCOS)[4]	Ω_{max}	rpm	1200	1200
Mechanical Parameters				
Overall Mass	m_n	kg	0.80	0.80
Rotor Inertia	J_r	kg·m²	3.944E-05	3.944E-05
Axial Runout[5]	-	μm	12	12
Radial Runout[5]	-	μm	10	10
Max. Axial Load (Upright Mounting)[6]	-	N	50	50
Max. Axial Load (Inverted / Wall Mounting)	-	N	5	5
Max. Moment Load (Upright Mounting)	-	Nm	0.3	0.3
Max. Moment Load (Inverted / Wall Mounting)	-	Nm	0.05	0.05
Encoder Parameters				
ABI Optical Incremental Encoder (SIN/COS)	-	lines / rev	1620	1620
ABI Optical Incremental Encoder (80x)	-	counts / rev	129600	129600
ABI Optical Incremental Encoder (160x)	-	counts / rev	259200	259200
ABI Optical Incremental Encoder (400x)	-	counts / rev	648000	648000
Accuracy after Error Mapping[7]	-	arc sec	+/-6	+/-6
Repeatability[7]	-	arc sec	+/-3	+/-3
Other Information				
Insulation Class		Class B (130°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.		

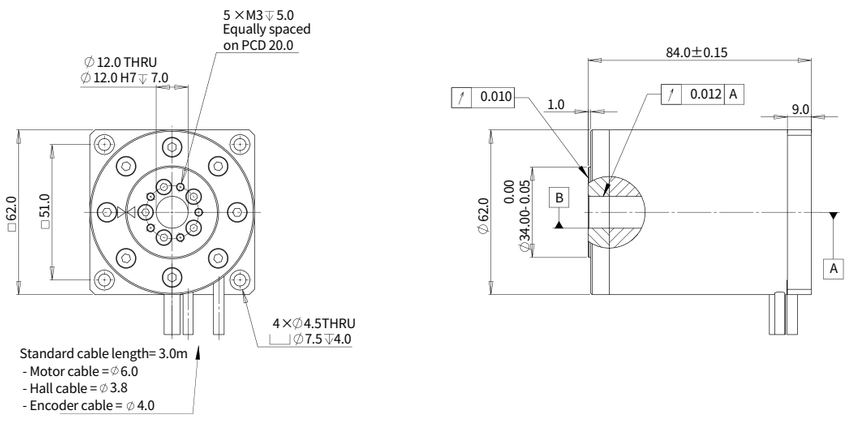
[1] Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment.
[2] Resistance is measured by DC current with standard 3 m cable.
[3] Inductance is measured by current frequency of 1 kHz.
[4] The value is based on ABI optical SIN/COS encoder (4096x interpolation) under max. bus voltage.
[5] The runout 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 subjected to change without prior notice.

Torque-Speed Curve





Dimension

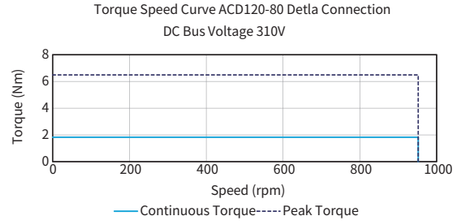


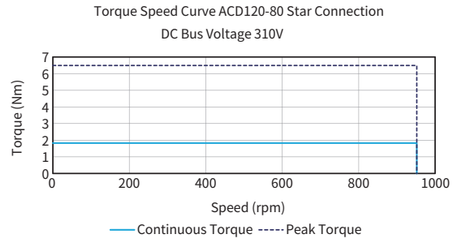
ACD120-80

ACD120-80				
Performance Parameters	**Symbol**	**Unit**	**D**	**Y**
Continuous Torque @100°C[1]	T_{cn}	Nm	1.85	1.85
Peak Torque	T_{pk}	Nm	6.46	6.46
Torque Constant ±10%	K_t	Nm/Arms	0.36	0.63
Back EMF Constant ±10%	K_e	Vpeak/rpm	0.031	0.054
Motor Constant @25°C	K_m	Nm/Sqrt(W)	0.220	0.238
Resistance (L-L) @25°C ±10%[2]	R_{25}	Ω	1.80	4.64
Inductance (L-L) ±20%[3]	L	mH	0.628	1.900
Electrical Time Constant	τ_e	ms	0.35	0.41
Continuous Current @100°C[1]	I_{cn}	Arms	5.1	2.9
Peak Current	I_{pk}	Arms	17.9	10.3
Continuous Power Dissipation @100°C[1]	P_{cn}	W	90.4	77.7
Max. Coil Temperature	t_{max}	°C	100	100
Thermal Dissipation Constant[1]	K_{thn}	W/°C	1.205	1.036
Max. Bus Voltage	U_{bus}	Vdc	330.0	330.0
Pole Number	2P	-	12	12
Rec. Max. Speed @230 VAC (Digital / SINCOS)[4]	Ω_{max}	rpm	952	952
Mechanical Parameters				
Overall Mass	m_n	kg	3.2	3.2
Rotor Inertia	J_r	kg·m²	1.08E-03	1.08E-03
Axial Runout[5]	-	μm	15	15
Radial Runout[5]	-	μm	10	10
Max. Axial Load (Upright Mounting)[6]	-	N	150	150
Max. Axial Load (Inverted / Wall Mounting)	-	N	15	15
Max. Moment Load (Upright Mounting)	-	Nm	10	10
Max. Moment Load (Inverted / Wall Mounting)	-	Nm	1.0	1.0
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[7]	-	arc sec	+/-6	+/-6
Repeatability[7]	-	arc sec	+/-3	+/-3
Other Information				
Insulation Class		Class B (130°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.		

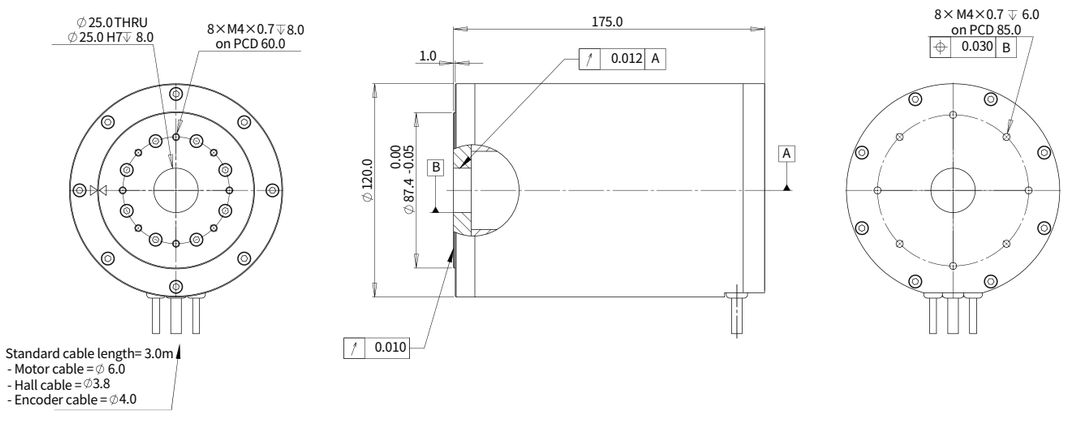
[1] Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment.
[2] Resistance is measured by DC current with standard 3 m cable.
[3] Inductance is measured by current frequency of 1 kHz.
[4] The value is based on ABI optical SIN/COS encoder (4096x interpolation) under max. bus voltage.
[5] The runout 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 subjected to change without prior notice.

Torque-Speed Curve





Dimension

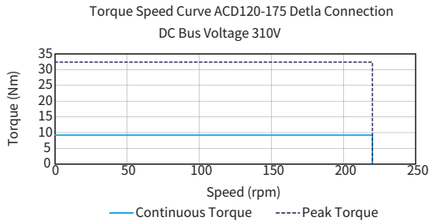


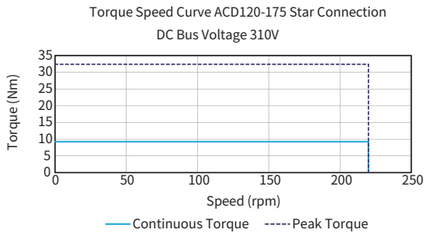
ACD120-175

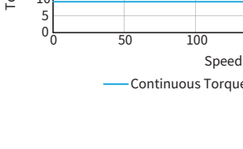
ACD120-175		Symbol	Unit	D	Y
Performance Parameters					
Continuous Torque @100°C[1]		T_{cn}	Nm	9.22	9.22
Peak Torque		T_{pk}	Nm	32.25	32.25
Torque Constant ±10%		K_t	Nm/Arms	1.81	3.13
Back EMF Constant ±10%		K_e	Vpeak/rpm	0.154	0.268
Motor Constant @25°C		K_m	Nm/Sqrt(W)	0.736	0.736
Resistance (L-L) @25°C ±10%[2]		R_{25}	Ω	4.02	12.07
Inductance (L-L) ±20%[3]		L	mH	1.873	5.619
Electrical Time Constant		τ_e	ms	0.47	0.47
Continuous Current @100°C[1]		I_{cn}	Arms	5.1	2.9
Peak Current		I_{pk}	Arms	17.9	10.3
Continuous Power Dissipation @100°C[1]		P_{cn}	W	202.4	202.1
Max. Coil Temperature		t_{max}	°C	100	100
Thermal Dissipation Constant[1]		K_{thn}	W/°C	2.698	2.695
Max. Bus Voltage		U_{bus}	Vdc	330.0	330.0
Pole Number		2P	-	12	12
Rec. Max. Speed @230 VAC (Digital / SINCOS)[4]		Ω_{max}	rpm	220	220
Mechanical Parameters					
Overall Mass		m_n	kg	7.0	7.0
Rotor Inertia		J_r	kg·m²	3.21E-03	3.21E-03
Axial Runout[5]		-	µm	15	15
Radial Runout[5]		-	µm	10	10
Max. Axial Load (Upright Mounting)[6]		-	N	150	150
Max. Axial Load (Inverted / Wall Mounting)		-	N	15	15
Max. Moment Load (Upright Mounting)		-	Nm	10	10
Max. Moment Load (Inverted / Wall Mounting)		-	Nm	1.0	1.0
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[7]		-	arc sec	+/-6	+/-6
Repeatability[7]		-	arc sec	+/-3	+/-3
Other Information					
Insulation Class		Class B (130°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.			

[1] Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment.
[2] Resistance is measured by DC current with standard 3 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] The runout 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 subjected to change without prior notice.

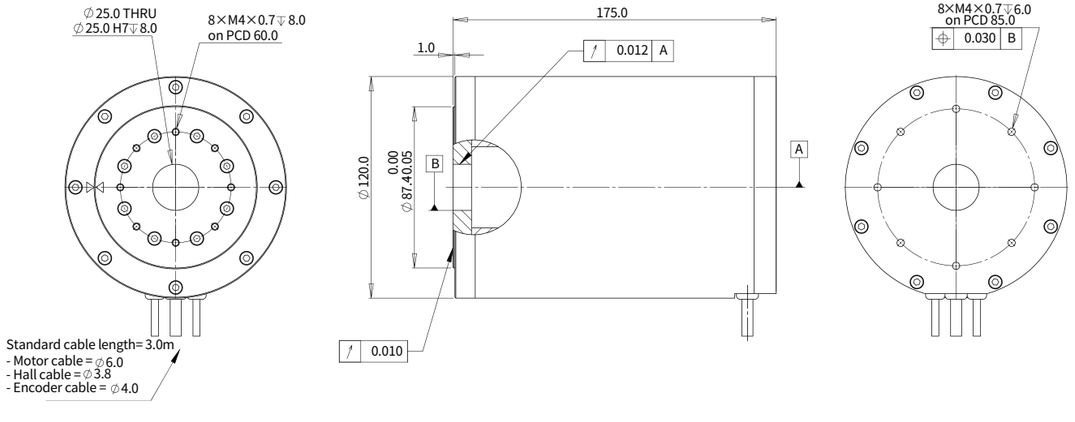
Torque-Speed Curve







Dimension



Part Numbering

ACD62-84-D-K-NH-3.0-FB-AB-1620-160X

- Motor Model: ACD62-60 / 84
- Connection: D = Delta/Y = Wye
- Thermal Sensor: K= PT100 (RTD)
- Hall Cable Option: NH[1] / H9D[2]
- Interpolation Option: SINCOS / 80X / 160X / 400X
- Encoder Option: AB-1620
- Motor Cable Option: FB[3]
- Cable length (m): 3.0

ACD120-80-Y-J-H9D-3.0-FB-AB-2868-SINCOS

- Motor Model: ACD120-80 / 175
- Connection: D = Delta/Y = Wye
- Thermal Sensor: J = Thermostat (Standard) / K= PT100 (RTD)
- Hall Cable Option: NH[1] / H9D[2]
- Interpolation Option: SINCOS / 80X / 160X / 400X
- Encoder Option: AB-2868
- Motor Cable Option: FB[3]
- Cable length (m): 3.0

[1] NH = Without Built-in Hall Sensor but with Thermal Sensor.
[2] H9D = With Built-in hall sensor, comes with 9-Pins D-Sub Connector.
[3] FB = With ferrite bead.

Motor Cable Connection

MOTOR CABLE

PIN	DESCRIPTION	COLOR
-	M1	YELLOW / GREY
-	M2	BLUE / ORANGE
-	M3	RED / GREEN
-	PE	YELLOW / GREEN

HALL CABLE

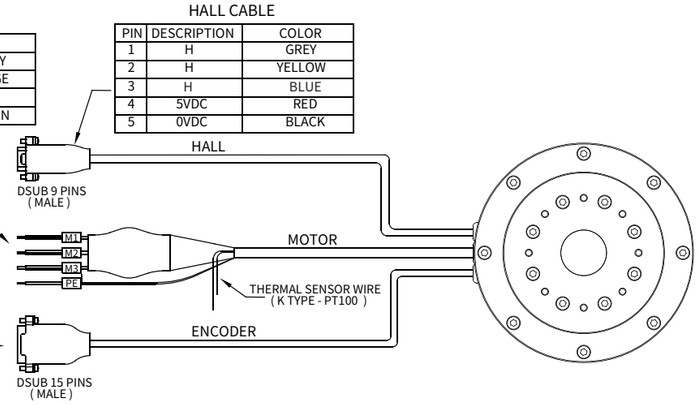
PIN	DESCRIPTION	COLOR
1	H	GREY
2	H	YELLOW
3	H	BLUE
4	5VDC	RED
5	0VDC	BLACK

AB (DIGITAL)

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

AB (SIN / COS)

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

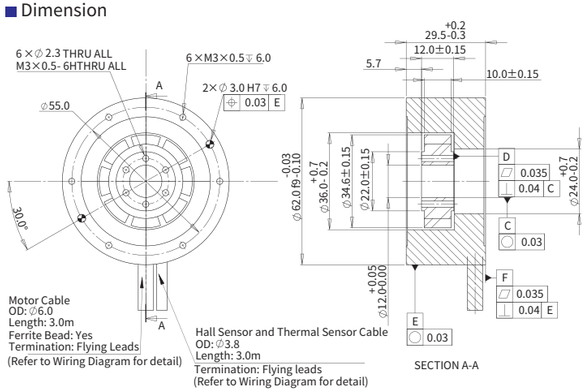


ACD62-P-10

ACD62-P-10				
Performance Parameters	**Symbol**	**Unit**	**D**	**Y**
Continuous Torque @100°C[1]	T_{cn}	Nm	0.115	0.115
Peak Torque	T_{pk}	Nm	0.40	0.40
Torque Constant ±10%	K_t	Nm/Arms	0.024	0.042
Back EMF Constant ±10%	K_e	Vpeak/rpm	0.002	0.004
Motor Constant @25°C	K_m	Nm/Sqrt(W)	0.023	0.028
Resistance (L-L) @25°C ±10%[2]	R_{25}	Ω	0.73	1.51
Inductance (L-L) ±20%[3]	L	mH	0.073	0.195
Electrical Time Constant	τ_e	ms	0.10	0.13
Continuous Current @100°C[1]	I_{cn}	Arms	4.8	2.8
Peak Current	I_{pk}	Arms	16.8	9.7
Continuous Power Dissipation @100°C[1]	P_{cn}	W	32.6	22.4
Max. Coil Temperature	t_{max}	°C	100	100
Thermal Dissipation Constant[1]	K_{thn}	W/°C	0.435	0.298
Max. Bus Voltage	U_{bus}	Vdc	48.0	48.0
Pole Number	$2p$	-	8	8
Mechanical Parameters				
Overall Mass	m_n	kg	0.5	0.5
Rotor Inertia	J_r	kg·m²	9.714E-06	9.714E-06
Other Information				
Insulation Class		Class B (130°C)		
Protection Grade		IP00		
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.		

[1] Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment.
[2] Resistance is measured by DC current with standard 3 m cable.
[3] Inductance is measured by current frequency of 1 kHz.
The contents of datasheet are subjected to change without prior notice.

■ Dimension



Note:
[1] User to ensure the concentricity of stator and rotor to be within 0.15mm when mounted;
[2] User to ensure flatness of mounting surface within 0.015/300mm;
[3] User to ensure perpendicularity of rotor inner bore relative to datum E within 0.1mm when mounted;
[4] The cable diameter tolerance +0.3, and cable length tolerance +60.0

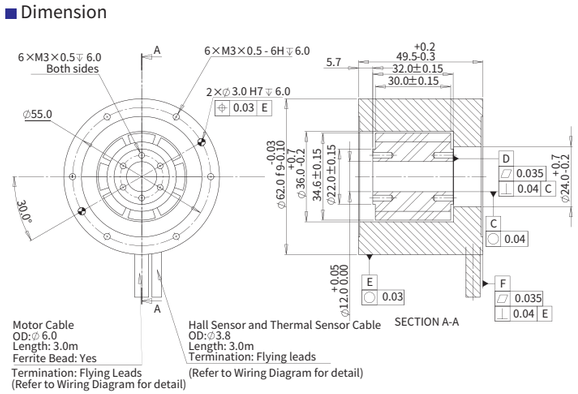
Mounting Illustration

ACD62-P-30

ACD62-P-30				
Performance Parameters	**Symbol**	**Unit**	**D**	**Y**
Continuous Torque @100°C[1]	T_{cn}	Nm	0.341	0.341
Peak Torque	T_{pk}	Nm	1.19	1.19
Torque Constant ±10%	K_t	Nm/Arms	0.071	0.123
Back EMF Constant ±10%	K_e	Vpeak/rpm	0.006	0.011
Motor Constant @25°C	K_m	Nm/Sqrt(W)	0.058	0.068
Resistance (L-L) @25°C ±10%[2]	R_{25}	Ω	1.01	2.21
Inductance (L-L) ±20%[3]	L	mH	0.144	0.316
Electrical Time Constant	τ_e	ms	0.14	0.14
Continuous Current @100°C[1]	I_{cn}	Arms	4.8	2.8
Peak Current	I_{pk}	Arms	16.8	9.7
Continuous Power Dissipation @100°C[1]	P_{cn}	W	44.8	32.7
Max. Coil Temperature	t_{max}	°C	100	100
Thermal Dissipation Constant[1]	K_{thn}	W/°C	0.597	0.436
Max. Bus Voltage	U_{bus}	Vdc	48.0	48.0
Pole Number	$2p$	-	8	8
Mechanical Parameters				
Overall Mass	m_n	kg	0.8	0.8
Rotor Inertia	J_r	kg·m²	2.883E-05	2.883E-05
Other Information				
Insulation Class		Class B (130°C)		
Protection Grade		IP00		
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.		

[1] Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment.
[2] Resistance is measured by DC current with standard 3 m cable.
[3] Inductance is measured by current frequency of 1 kHz.
The contents of datasheet are subjected to change without prior notice.

■ Dimension



Note:
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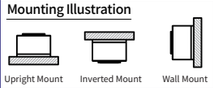
Mounting Illustration

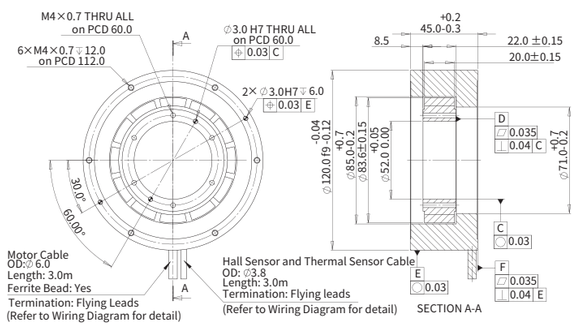


ACD120-P-20

ACD120-P-20				
Performance Parameters	**Symbol**	**Unit**	**D**	**Y**
Continuous Torque @100°C[1]	T_{cn}	Nm	1.85	1.85
Peak Torque	T_{pk}	Nm	6.46	6.46
Torque Constant ±10%	K_t	Nm/Arms	0.36	0.63
Back EMF Constant ±10%	K_e	Vpeak/rpm	0.031	0.054
Motor Constant @25°C	K_m	Nm/Sqrt(W)	0.220	0.238
Resistance (L-L) @25°C ±10%[2]	R_{25}	Ω	1.80	4.64
Inductance (L-L) ±20%[3]	L	mH	0.628	1.900
Electrical Time Constant	τ_e	ms	0.35	0.41
Continuous Current @100°C[1]	I_{cn}	Arms	5.1	2.9
Peak Current	I_{pk}	Arms	17.9	10.3
Continuous Power Dissipation @100°C[1]	P_{cn}	W	90.4	77.7
Max. Coil Temperature	t_{max}	°C	100	100
Thermal Dissipation Constant[1]	K_{thn}	W/°C	1.205	1.036
Max. Bus Voltage	U_{bus}	Vdc	330.0	330.0
Pole Number	$2p$	-	12	12
Mechanical Parameters				
Overall Mass	m_n	kg	3.2	3.2
Rotor Inertia	J_r	kg·m²	5.950E-04	5.950E-04
Other Information				
Insulation Class		Class B (130°C)		
Protection Grade		IP00		
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.		

[1] Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment.
[2] Resistance is measured by DC current with standard 3 m cable.
[3] Inductance is measured by current frequency of 1 kHz.
The contents of datasheet are subjected to change without prior notice.

■ Dimension



Note:
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[4] The cable diameter tolerance +0.3, and cable length tolerance +60.0

Mounting Illustration

Part Numbering

ACD62-P-10-D-K-NH-3.0-FB

- Motor Model: ACD62-P-10/ACD62-P-30
- Connection: D = Delta/Y = Wye
- Thermal Sensor: K= PT100 (RTD)
- Hall Cable Option: HF [1] / NH [2]
- Cable length (m): 3.0
- Motor Cable Option: FB [3]

ACD120-P-20-Y-J-HF-3.0-FB

- Motor Model: ACD120-P-20
- Connection: D = Delta/Y = Wye
- Thermal Sensor: J = Thermostat (Standard) / K= PT100 (RTD)
- Hall Cable Option: HF [1] / NH [2]
- Cable length (m): 3.0
- Motor Cable Option: FB [3]

[1] HF= With Built-in hall sensor & hall cable comes with flying leads.
[2] NH = Without Built-in Hall Sensor but with Thermal Sensor.
[3] FB = With ferrite bead.

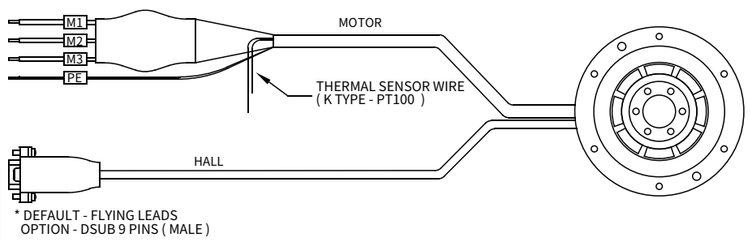
Motor Cable Connection

MOTOR CABLE

PIN	DESCRIPTION	COLOR
-	M1	YELLOW / GREY
-	M2	BLUE / ORANGE
-	M3	RED / GREEN
-	PE	YELLOW / GREEN

HALL CABLE

PIN	DESCRIPTION	COLOR
1	HA	GREY
2	HB	YELLOW
3	HC	BLUE
4	5VDC	RED
5	0VDC	BLACK



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