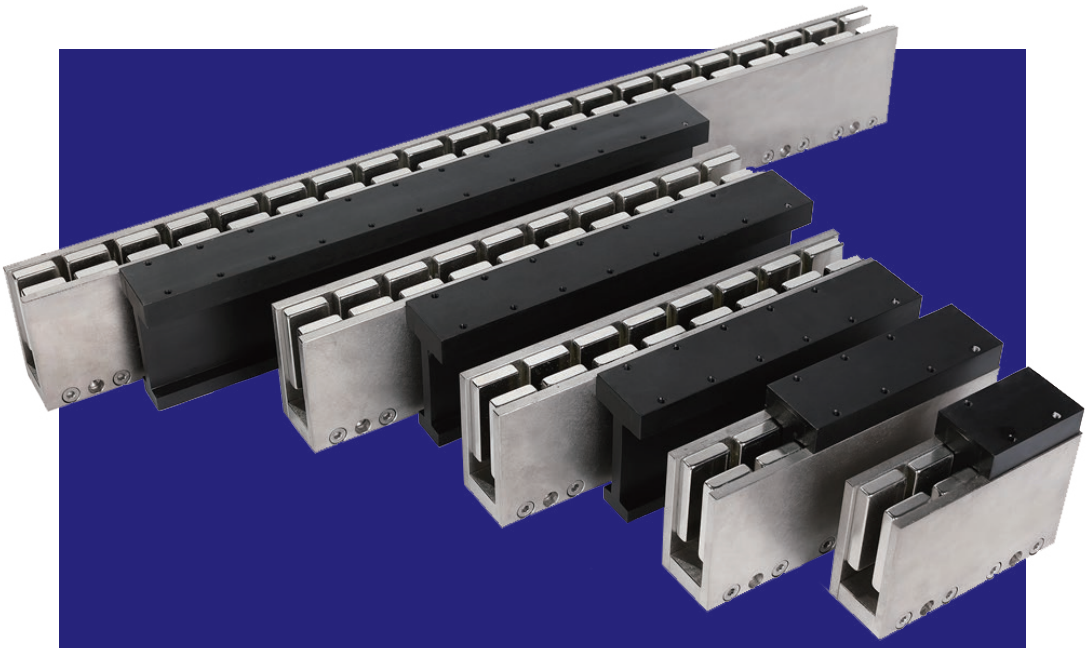


AUM SERIES

- Ironless technology
- Zero cogging force
- Patented technology
- Small electrical and mechanical constant
- High continuous force and peak force

Akribis systems

AUM Series

Introduction

AUM series Ironless brushless linear motors are compact in size but high in force density, achieving larger thrust force.

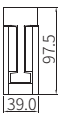
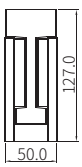
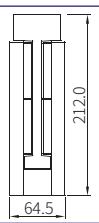
Fcn (Continuous force) = 3N ~ 2340N
Fpk (Peak force) = 11.9N ~ 16200N

Features

- Ironless technology and no cogging force
- High continuous and peak force
- Optional hall sensors
- High motor constant
- Wide range of forces and sizes to choose from
- Optional air cooling and water cooling configurations

Applications

Applicable to point-to-point micron/nanometer level positioning; unlimited travel stroke with top speed of 5m/s or faster; low velocity ripple during both fast and low speed scanning; precise force control with fine resolution.
Applications & Industries: high speed and precision machines for positioning, motion profile tracking, velocity controlling used in front-end & back-end wafer handling and inspection, photovoltaic and lithium battery systems, glass and LCD applications, biomedical equipment, printing machines, and laser processing machines.

	Model	Coil Length[1] (mm)	● Continuous Force (Fcn) / ■ PeakForce (Fpk)[2] Unit: N 10 50 100 500 1000 1500 2000 ....
	AUM1-S1	22	●3.0 / ■11.9
	AUM1-S2	43	●6.0 / ■23.8
	AUM1-S3	64	●8.9 / ■35.7
	AUM1-S4	85	●11.9 / ■47.6
	AUM1-S5	106	●14.9 / ■59.5
	AUM2-S1	31	●8.8 / ■44.0
	AUM2-S2	61	●17.6 / ■88.0
	AUM2-S3	91	●26.4 / ■132.0
	AUM2-S4	121	●35.2 / ■176.0
	AUM2-S8	241	●70.4 / ■352.0
	AUM3-S1	61	●28.0 / ■144.0
	AUM3-S2	121	●57.0 / ■289.0
	AUM3-S3	181	●85.0 / ■433.0
	AUM3-S4	241	●113.0 / ■578.0
	AUM3-S6	361	●170.0 / ■867.0
	AUM4-S1	61	●55.0 / ■312.0
	AUM4-S2	121	●110.0 / ■624.0
	AUM4-S3	181	●166.0 / ■936.0
	AUM4-S4	241	●221.0 / ■1248.0
	AUM4-S5	301	●276.0 / ■1560.0
	AUM4-S6	361	●331.0 / ■1872.0
	AUM4-S8	481	●442.0 / ■2496.0
	AUM5-S1	85	●98.0 / ■707.0
	AUM5-S2	169	●197.0 / ■1415.0
	AUM5-S3	253	●295.0 / ■2112.0
	AUM5-S4	337	●393.0 / ■2830.0
	AUM5-S5	421	●491.0 / ■3537.0
	AUM5-S6	505	●590.0 / ■4244.0
	AUM5-S8-V107	673	●786.0 / ■5659.0
	AUM5-S9-V80	757	●884.0 / ■6367.0
	AUM5-S10-V107	841	●983.0 / ■7078.0
	AUM5-S12-V107	1009	●1179.0 / ■8489.0
	AUM6-P5-S4	337	●780.0 / ■5400.0
	AUM6-P8-S6	505	●1170.0 / ■8100.0
	AUM6-P5-S8	673	●1560.0 / ■10800.0
	AUM6-P8-S9	757	●1755.0 / ■12150.0
	AUM6-P7-S10	841	●1950.0 / ■13500.0
	AUM6-P8-S12	1009	●2340.0 / ■16200.0

[1] No hall sensor.

[2] Continuous force is measured under the condition of self-cooling. Please refer to the detail parameters table for the continuous force under the condition of air cooling or water cooling.

AUM1

			AUM1-S1	AUM1-S2	AUM1-S3	AUM1-S4	AUM1-S5
Performance Parameters	Symbol	Unit	Series	Series	Series	Series	Series
Continuous Force (NC) @100°C[1]	F_{cn}	N	3.0	6.0	8.9	11.9	14.9
Peak Force	F_{pk}	N	11.9	23.8	35.7	47.6	59.5
Force Constant ±10%	K_f	N/Arms	1.75	3.50	5.25	7.00	8.75
Back EMF Constant ±10%	K_e	Vpeak/(m/s)	1.4	2.9	4.3	5.7	7.1
Motor Constant @25°C	K_m	N/Sqrt(W)	1.4	1.9	2.4	2.8	3.1
Resistance (L-L) 25°C ±10% [2]	R_{25}	Ω	1.11	2.18	3.18	4.18	5.18
Inductance (L-L) ±40% [3]	L	mH	0.15	0.30	0.44	0.59	0.72
Electrical Time Constant	τ_e	ms	0.14	0.14	0.14	0.14	0.14
Continuous Current (NC) @100°C[1]	I_{cn}	Arms	1.7	1.7	1.7	1.7	1.7
Peak Current	I_{pk}	Arms	6.8	6.8	6.8	6.8	6.8
Continuous Power Dissipation (NC) @100°C[1]	P_{cn}	W	6.20	12.18	17.77	23.32	28.94
Max. Coil Temperature	t_{max}	°C	100	100	100	100	100
Thermal Dissipation Constant (NC)[1]	K_{thn}	W/°C	0.1	0.2	0.2	0.3	0.4
Max. Bus Voltage	U_{bus}	Vdc	60	60	60	60	60
Magnetic Period	τ_{NN}	mm	21.0	21.0	21.0	21.0	21.0
Attraction Force	F_a	kN	0	0	0	0	0
Mechanical Parameters							
Coil Mass (NC)	m_{cn}	kg	0.025	0.050	0.075	0.100	0.125
Coil Length (NC)	L_{cn}	mm	22.0	43.0	64.0	85.0	106.0
Track Mass Per Meter	m_{track}	kg/m	2.37	2.37	2.37	2.37	2.37
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.				

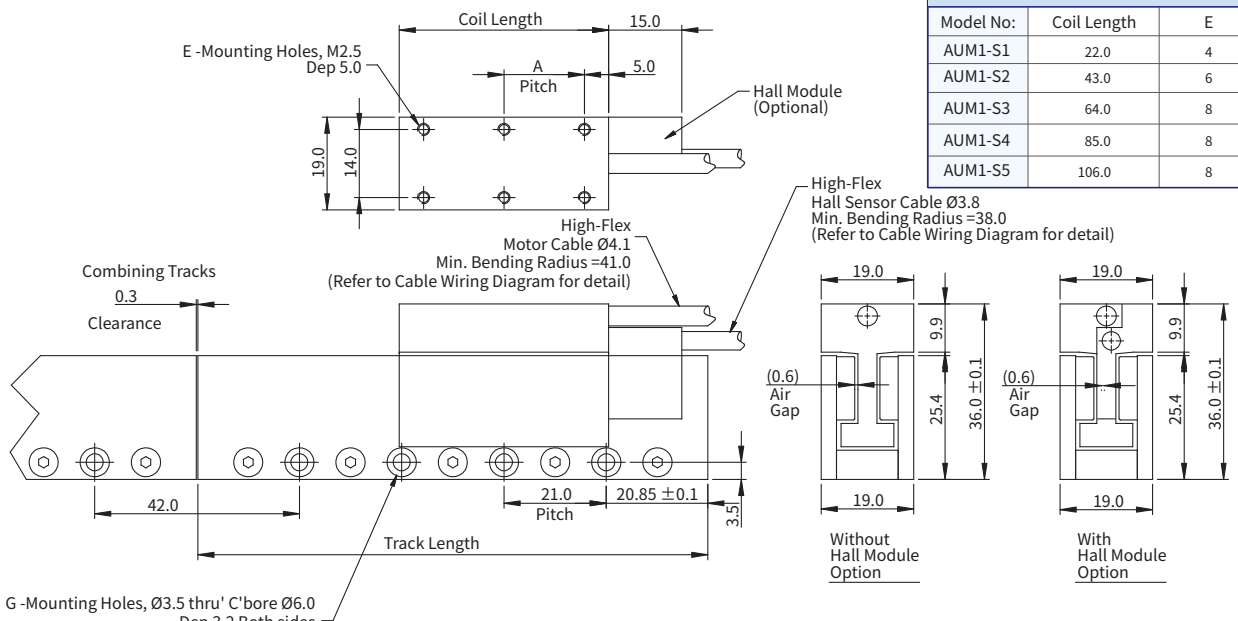
[1] Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment. Abbreviations: NC-Natural Cooling, AC-Air Cooling, WC-Water Cooling.

[2] Resistance is measured by DC current with standard 0.5 m cable.

[3] Inductance is measured by current frequency of 1 kHz. The variation range of AUM inductance is ±40% because three phase inductances are different. The value in the catalog is the average between the maximum and minimum values. For each phase, the variation range is ±20%.

The contents of datasheet are subject to change without prior notice.

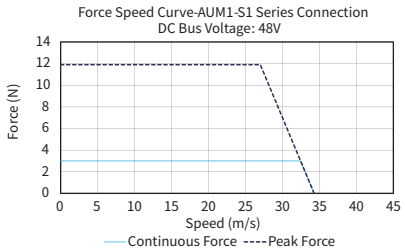
■ Dimension

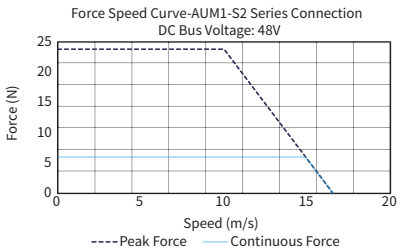


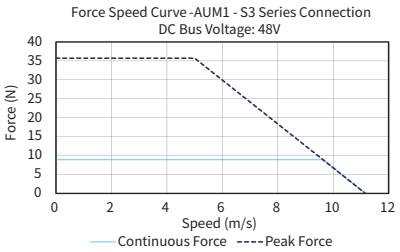
Motor Coil			
Model No:	Coil Length	E	A
AUM1-S1	22.0	4	12.0
AUM1-S2	43.0	6	16.5
AUM1-S3	64.0	8	18.0
AUM1-S4	85.0	8	25.0
AUM1-S5	106.0	8	32.0

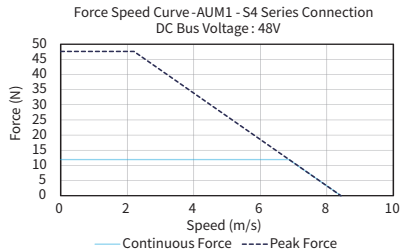
Motor Track			
Model No:	Track Length	G	H
AUM1-TL63	62.7	2	3
AUM1-TL84	83.7	3	4
AUM1-TL105	104.7	4	5

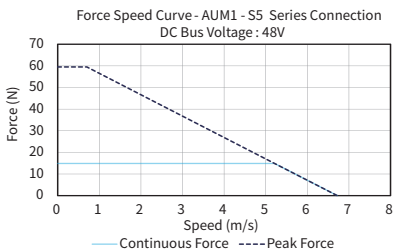
Force-Speed Curve











Part Numbering

Motor Coil

AUM1-S-S3-HF-0.5-FB

- Motor: AUM1
- Connection: S=Series
- Size: S1 / S2 / S3 / S4 / S5
- Motor Cable Options: FB[4] / NFB[5]
- Cable Length (m): 0.5 / 3.0
- Hall Cable Option: NH[1] / HF[2] / H9D[3]

1. NH = Without Built- in Hall Cable
2. HF = With Hall Module, Hall Cable C/W flying leads
3. H9D = With Hall Module C/W 9-Pins D-Sub Connector
4. FB = With Ferrite Bead C/W flying leads
5. NFB = Without Ferrite Bead C/W flying leads

Motor Track

AUM1-TL63

- Model: AUM1
- Track Length: TL63 / TL84 / TL105

AUM2

			AUM2-S1	AUM2-S2		AUM2-S3		AUM2-S4		AUM2-S8	
Performance Parameters	**Symbol**	**Unit**	**Series**	**Series**	**Parallel**	**Series**	**Parallel**	**Series**	**Parallel**	**Series**	**Parallel**
Continuous Force (NC) @100°C[1]	F_{cn}	N	8.8	17.6	17.6	26.4	26.4	35.2	35.2	70.4	70.4
Peak Force	F_{pk}	N	44.0	88.0	88.0	132.0	132.0	176.0	176.0	352.0	352.0
Force Constant ±10%	K_f	N/Arms	5.5	11.0	5.5	16.5	8.3	22.0	11.0	44.0	22.0
Back EMF Constant ±10%	K_e	Vpeak/(m/s)	4.5	9.0	4.5	13.5	6.7	18.0	9.0	35.9	18.0
Motor Constant @25°C	K_m	N/Sqrt(W)	2.6	3.7	3.5	4.5	4.4	5.2	5.1	7.4	7.3
Resistance (L-L) 25°C ±10%[2]	R_{25}	Ω	3.09	6.04	1.61	8.99	2.35	11.94	3.09	23.74	6.04
Inductance (L-L) ±40%[3]	L	mH	1.03	1.96	0.51	2.94	0.73	3.88	0.97	7.83	1.96
Electrical Time Constant	τ_e	ms	0.33	0.32	0.32	0.33	0.31	0.33	0.31	0.33	0.32
Continuous Current (NC) @100°C[1]	I_{cn}	Arms	1.6	1.6	3.2	1.6	3.2	1.6	3.2	1.6	3.2
Peak Current	I_{pk}	Arms	8.0	8.0	16.0	8.0	16.0	8.0	16.0	8.0	16.0
Continuous Power Dissipation (NC) @100°C[1]	P_{cn}	W	15.3	29.9	31.9	44.5	46.5	59.1	61.1	117.5	119.5
Max. Coil Temperature	t_{max}	°C	100	100	100	100	100	100	100	100	100
Thermal Dissipation Constant (NC)[1]	K_{thn}	W/°C	0.2	0.4	0.4	0.6	0.6	0.8	0.8	1.6	1.6
Max. Bus Voltage	U_{bus}	Vdc	330	330	330	330	330	330	330	330	330
Magnetic Period	τ_{NN}	mm	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0	30.0
Attraction Force	F_a	kN	0	0	0	0	0	0	0	0	0
Mechanical Parameters											
Coil Mass (NC)	m_{cn}	kg	0.06	0.12	0.12	0.18	0.18	0.24	0.24	0.47	0.47
Coil Length (NC)	L_{cn}	mm	31.0	61.0	61.0	91.0	91.0	121.0	121.0	241.0	241.0
Track Mass Per Meter	m_{track}	kg/m	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90

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. Abbreviations: NC-Natural Cooling, AC-Air Cooling, WC-Water Cooling.

[2] Resistance is measured by DC current with standard 0.5 m cable.

[3] Inductance is measured by current frequency of 1 kHz. The variation range of AUM inductance is ±40% because three phase inductances are different. The value in the catalog is the average between the maximum and minimum values. For each phase, the variation range is ±20%.

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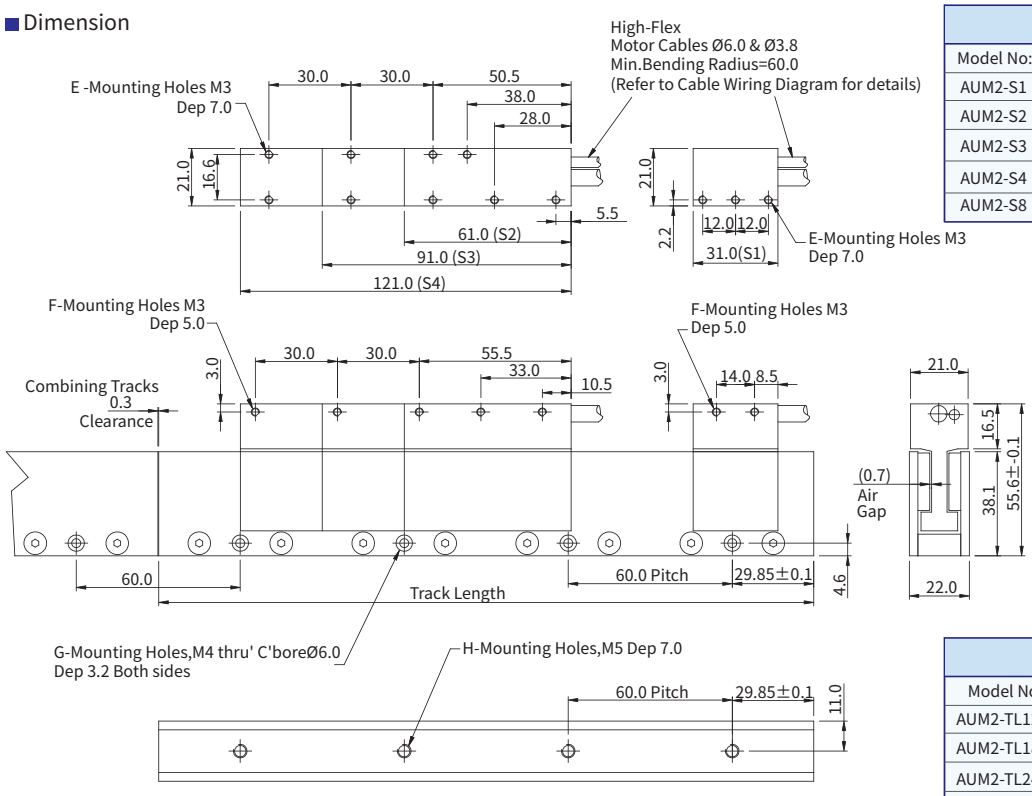
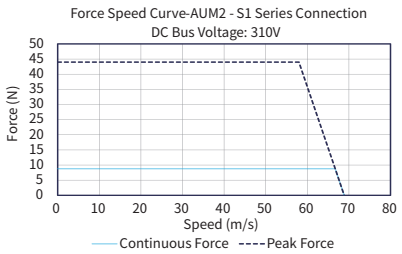
Dimension

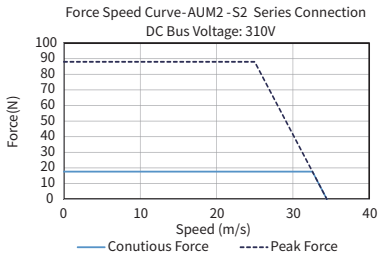


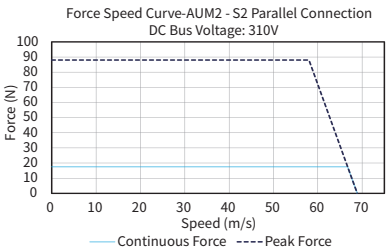
Motor Coil			
Model No:	Coil Length	E	F
AUM2-S1	31.0	3	2
AUM2-S2	61.0	5	5
AUM2-S3	91.0	7	7
AUM2-S4	121.0	9	9
AUM2-S8	241.0	17	17

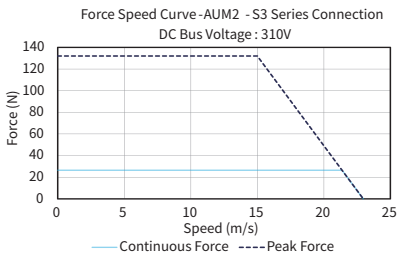
Motor Track			
Model No:	Track Length	G	H
AUM2-TL120	119.7	2	2
AUM2-TL180	179.7	3	3
AUM2-TL240	239.7	4	4
AUM2-TL300	299.7	5	5

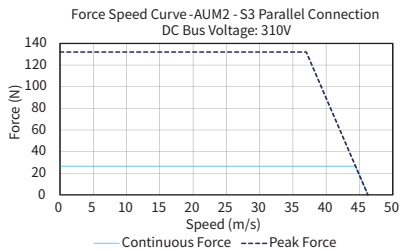
Force-Speed Curve

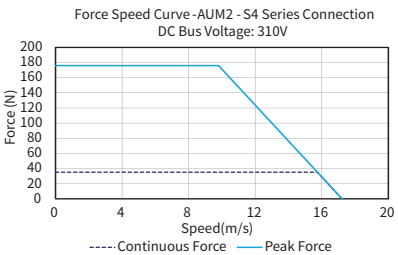


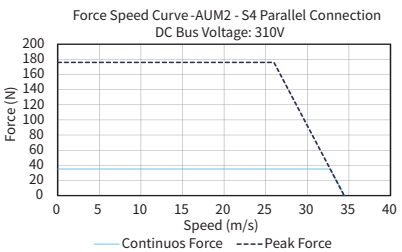


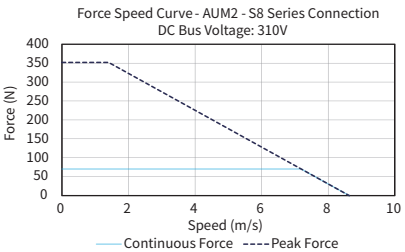


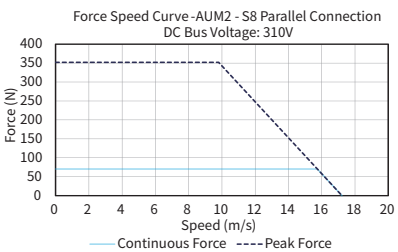












Part Numbering

Motor Coil

AUM2-S-S3-K-HF-0.5-FB

- Motor: AUM2
- Connection: S=Series / P=Parallel
- Size: S1 / S2 / S3 / S4 / S8
  1. NH = Without Built-in Hall Sensor
  2. HF = With Built-in Hall Sensor, Hall Cable C/W flying leads
  3. H9D = With Built-in Hall Sensor C/W 9-Pins D-Sub Connector
  4. FB = With Ferrite Bead C/W flying leads
  5. NFB = Without Ferrite Bead C/W flying leads
  6. 9W4M = Without Ferrite bead C/W D-Sub 9W4 Male Connector
- Thermal Sensor: K=PT100(RTD)
- Hall Cable Option: NH[1] / HF[2] / H9D[3]
- Cable Length (m): 0.5 / 3.0
- Motor Cable Options: FB[4] / NFB[5] / 9W4M[6]

Motor Track

AUM2-TL120

- Model: AUM2
- Track Length: TL120 / TL180 / TL240 / TL300

AUM3

			AUM3-S1	AUM3-S2		AUM3-S3		AUM3-S4		AUM3-S6	
Performance Parameters	**Symbol**	**Unit**	**Series**	**Series**	**Parallel**	**Series**	**Parallel**	**Series**	**Parallel**	**Series**	**Parallel**
Continuous Force (NC) @100°C[1]	F_{cn}	N	28	57	57	85	85	113	113	170	170
Continuous Force (AC) @100°C[1]	F_{ca}	N	34	68	68	102	102	136	136	203	203
Continuous Force (WC) @100°C[1]	F_{cw}	N	37	73	73	110	110	147	147	220	220
Peak Force	F_{pk}	N	144	289	289	433	433	578	578	867	867
Force Constant ±10%	K_f	N/Arms	15.7	31.4	15.7	47.1	23.6	62.8	31.4	94.2	47.1
Back EMF Constant ±10%	K_e	Vpeak/(m/s)	12.8	25.6	12.8	38.5	19.2	51.3	25.6	76.9	38.5
Motor Constant @25°C	K_m	N/Sqrt(W)	6.1	8.8	8.6	10.8	10.6	12.5	12.5	15.3	15.3
Resistance (L-L) @25°C ±10%[2]	R_{25}	Ω	4.36	8.58	2.25	12.67	3.30	16.89	4.23	25.33	6.34
Inductance (L-L) ±40%[3]	L	mH	3.49	6.99	1.75	10.48	2.62	13.98	3.49	20.96	5.24
Electrical Time Constant	τ_e	ms	0.80	0.81	0.78	0.83	0.79	0.83	0.83	0.83	0.83
Continuous Current (NC) @100°C[1]	I_{cn}	Arms	1.8	1.8	3.6	1.8	3.6	1.8	3.6	1.8	3.6
Continuous Current (AC) @100°C[1]	I_{ca}	Arms	2.2	2.2	4.3	2.2	4.3	2.2	4.3	2.2	4.3
Continuous Current (WC) @100°C[1]	I_{cw}	Arms	2.3	2.3	4.7	2.3	4.7	2.3	4.7	2.3	4.7
Peak Current	I_{pk}	Arms	9.2	9.2	18.4	9.2	18.4	9.2	18.4	9.2	18.4
Continuous Power Dissipation (NC) @100°C[1]	P_{cn}	W	27.3	53.7	56.3	79.4	82.7	105.8	106.1	158.7	158.9
Continuous Power Dissipation (AC) @100°C[1]	P_{ca}	W	39.3	77.4	81.1	114.3	119.1	152.4	152.7	228.5	228.9
Continuous Power Dissipation (WC) @100°C[1]	P_{cw}	W	46.1	90.8	95.2	134.2	139.8	178.8	179.3	268.2	268.6
Max. Coil Temperature	t_{max}	°C	100	100	100	100	100	100	100	100	100
Thermal Dissipation Constant (NC)[1]	K_{thn}	W/°C	0.4	0.7	0.8	1.1	1.1	1.4	1.4	2.1	2.1
Thermal Dissipation Constant (AC)[1]	K_{tha}	W/°C	0.5	1.0	1.1	1.5	1.6	2.0	2.0	3.0	3.1
Thermal Dissipation Constant (WC)[1]	K_{thw}	W/°C	0.6	1.2	1.3	1.8	1.9	2.4	2.4	3.6	3.6
Max. Bus Voltage	U_{bus}	Vdc	330	330	330	330	330	330	330	330	330
Magnetic Period	τ_{NN}	mm	60	60	60	60	60	60	60	60	60
Attraction Force	F_a	kN	0	0	0	0	0	0	0	0	0
Mechanical Parameters											
Coil Mass (NC)	m_{cn}	kg	0.22	0.45	0.45	0.68	0.68	0.91	0.91	1.37	1.37
Coil Length (NC)	L_{cn}	mm	61.0	121.0	121.0	181.0	181.0	241.0	241.0	361.0	361.0
Coil Length (AC)	L_{ca}	mm	61.0	121.0	121.0	181.0	181.0	241.0	241.0	361.0	361.0
Coil Length (WC)	L_{cw}	mm	61.0	121.0	121.0	181.0	181.0	241.0	241.0	361.0	361.0
Track Mass Per Meter	m_{track}	kg/m	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33	8.33
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.								

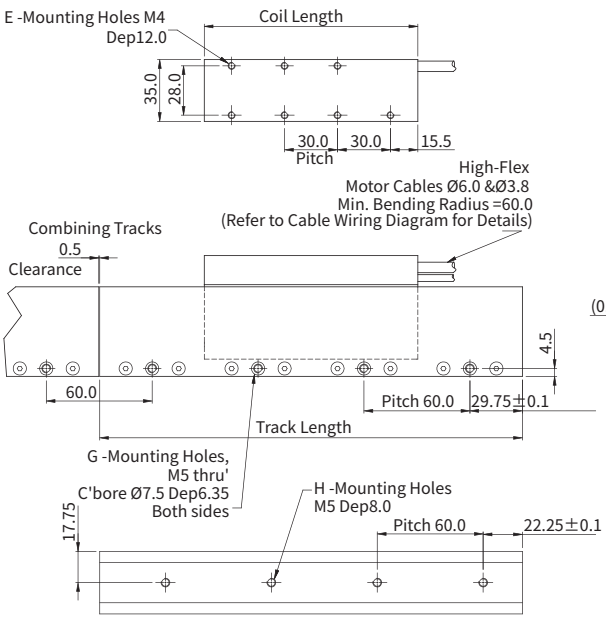
[1] Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment. Abbreviations: NC-Natural Cooling, AC-Air Cooling, WC-Water Cooling.

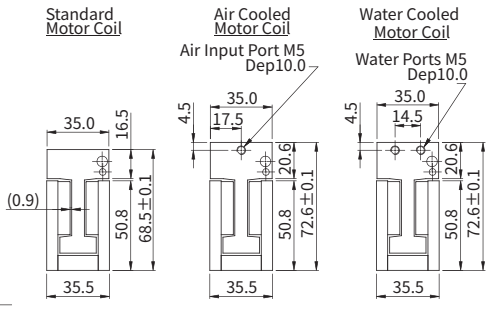
[2] Resistance is measured by DC current with standard 0.5 m cable.

[3] Inductance is measured by current frequency of 1 kHz. The variation range of AUM inductance is ±40% because three phase inductances are different. The value in the catalog is the average between the maximum and minimum values. For each phase, the variation range is ±20%.

The contents of datasheet are subject to change without prior notice.

Dimension



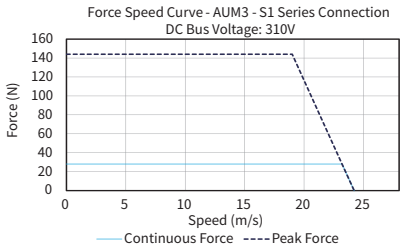


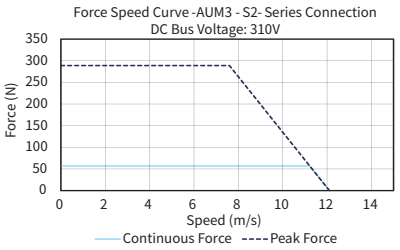
Motor Coil		
Model No:[1]	Coil Length	E
AUM3-S1	61.0	3
AUM3-S2	121.0	7
AUM3-S3	181.0	11
AUM3-S4	241.0	15
AUM3-S6	361.0	23

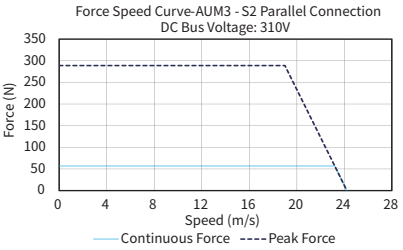
[1] For air or water cooled models, Coil Length and E are the same as the standard model.

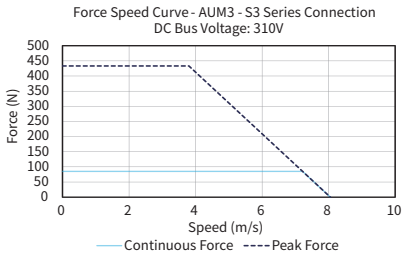
Motor Track			
Model No:	Track Length	G	H
AUM3-TL120	119.5	2	2
AUM3-TL180	179.5	3	3
AUM3-TL240	239.5	4	4
AUM3-TL300	299.5	5	5
AUM3-TL600	599.5	10	10

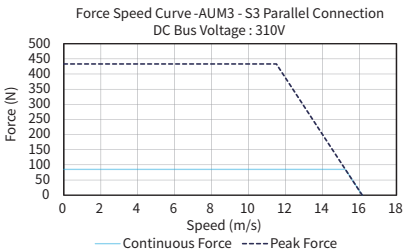
Force-Speed Curve

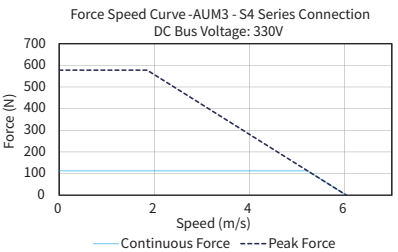


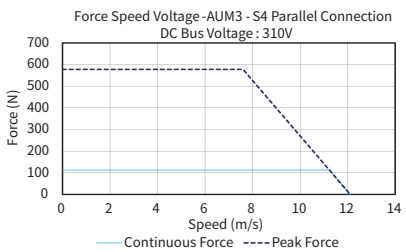


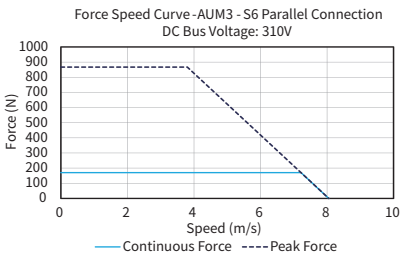












Part Numbering

Motor Coil

AUM3-▮-S-S3-K-HF-0.5-FB

Motor:
AUM3

Cooling Option:
(Blank)=Natural Convection
A=Air Cooled / W=Water Cooled

Connection:
S=Series / P=Parallel

Size:
S1 / S2 / S3 / S4 / S6

Motor Cable Options:
FB[4] / NFB[5] / 9W4M[6]

Cable Length (m):
0.5 / 3.0

Hall Cable Option:
NH[1] / HF[2] / H9D[3]

Thermal Sensor:
J=Thermostat(standard) / K=PT100(RTD)

1. NH = Without Built-in Hall Sensor
2. HF = With Built-in Hall Sensor, Hall Cable C/W flying leads
3. H9D = With Built-in Hall Sensor C/W 9-Pins D-Sub Connector
4. FB = With Ferrite Bead C/W flying leads
5. NFB = Without Ferrite Bead C/W flying leads
6. 9W4M = Without Ferrite bead C/W D-Sub 9W4 Male Connector

Motor Track

AUM3-TL120

Model:
AUM3

Track Length:
TL120 / TL180 / TL240 / TL300 / TL600

AUM4

			AUM4-S1	AUM4-S2		AUM4-S3		AUM4-S4		AUM4-S5	AUM4-S6	AUM4-S8
Performance Parameters	Symbol	Unit	Series	Series	Parallel	Series	Parallel	Series	Parallel	Parallel	Parallel	Parallel
Continuous Force (NC) @100°C[1]	F_{cn}	N	55	110	110	166	166	221	221	276	331	442
Continuous Force (AC) @100°C[1]	F_{ca}	N	66	132	132	199	199	265	265	331	397	530
Continuous Force (WC) @100°C[1]	F_{cw}	N	72	144	144	215	215	287	287	359	431	574
Peak Force	F_{pk}	N	312	624	624	936	936	1248	1248	1560	1872	2496
Force Constant ±10%	K_f	N/Arms	24.0	48.0	24.0	72.0	36.0	96.0	48.0	60.0	72.0	96.0
Back EMF Constant ±10%	K_e	Vpeak/(m/s)	19.6	39.2	19.6	58.8	29.4	78.4	39.2	49.0	58.8	78.4
Motor Constant @25°C	K_m	N/Sqrt(W)	9.3	13.2	12.9	16.3	16.0	18.8	18.6	20.8	22.9	26.5
Resistance (L-L) @25°C ±10%[2]	R_{25}	Ω	4.45	8.76	2.29	13.08	3.37	17.39	4.45	5.53	6.61	8.76
Inductance (L-L) ±40%[3]	L	mH	3.83	7.67	1.92	11.50	2.87	15.33	3.83	4.79	5.75	7.67
Electrical Time Constant	τ_e	ms	0.86	0.87	0.84	0.88	0.85	0.88	0.86	0.87	0.87	0.87
Continuous Current (NC) @100°C[1]	I_{cn}	Arms	2.3	2.3	4.6	2.3	4.6	2.3	4.6	4.6	4.6	4.6
Continuous Current (AC) @100°C[1]	I_{ca}	Arms	2.8	2.8	5.5	2.8	5.5	2.8	5.5	5.5	5.5	5.5
Continuous Current (WC) @100°C[1]	I_{cw}	Arms	3.0	3.0	6.0	3.0	6.0	3.0	6.0	6.0	6.0	6.0
Peak Current	I_{pk}	Arms	13.0	13.0	26.0	13.0	26.0	13.0	26.0	26.0	26.0	26.0
Continuous Power Dissipation (NC) @100°C[1]	P_{cn}	W	46	90	94	134	138	178	182	226	270	358
Continuous Power Dissipation (AC) @100°C[1]	P_{ca}	W	66	129	135	193	199	256	262	326	389	516
Continuous Power Dissipation (WC) @100°C[1]	P_{cw}	W	77	151	159	226	233	300	308	382	457	606
Max. Coil Temperature	t_{max}	°C	100	100	100	100	100	100	100	100	100	100
Thermal Dissipation Constant (NC)[1]	K_{thn}	W/°C	0.6	1.2	1.3	1.8	1.8	2.4	2.4	3.0	3.6	4.8
Thermal Dissipation Constant (AC)[1]	K_{tha}	W/°C	0.9	1.7	1.8	2.6	2.6	3.4	3.5	4.3	5.2	6.9
Thermal Dissipation Constant (WC)[1]	K_{thw}	W/°C	1.0	2.0	2.1	3.0	3.1	4.0	4.1	5.1	6.1	8.1
Max. Bus Voltage	U_{bus}	Vdc	330	330	330	330	330	330	330	330	330	330
Magnetic Period	τ_{NN}	mm	60	60	60	60	60	60	60	60	60	60
Attraction Force	F_a	kN	0	0	0	0	0	0	0	0	0	0
Mechanical Parameters												
Coil Mass (NC)	m_{cn}	kg	0.28	0.56	0.56	0.89	0.89	1.19	1.19	1.49	1.78	2.37
Coil Length (NC)	L_{cn}	mm	61.0	121.0	121.0	181.0	181.0	241.0	241.0	301.0	361.0	481.0
Coil Length (AC)	L_{ca}	mm	61.0	121.0	121.0	181.0	181.0	241.0	241.0	301.0	361.0	481.0
Coil Length (WC)	L_{cw}	mm	61.0	121.0	121.0	181.0	181.0	241.0	241.0	301.0	361.0	481.0
Track Mass Per Meter	m_{track}	kg/m	14.75	14.75	14.75	14.75	14.75	14.75	14.75	14.75	14.75	14.75
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.									

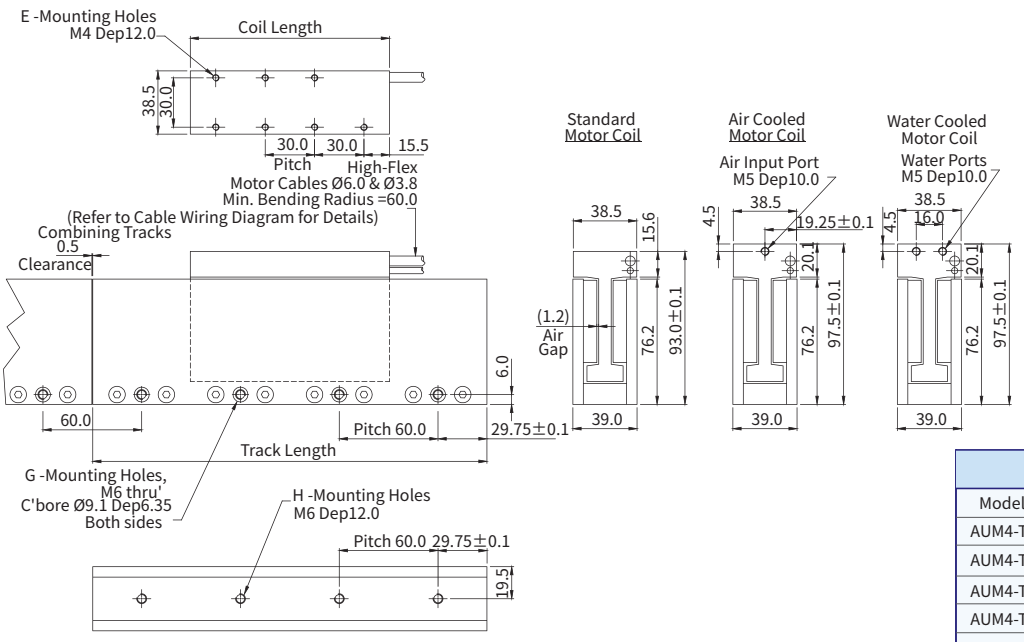
[1] Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment. Abbreviations: NC-Natural Cooling, AC-Air Cooling, WC-Water Cooling.

[2] Resistance is measured by DC current with standard 0.5 m cable.

[3] Inductance is measured by current frequency of 1 kHz. The variation range of AUM inductance is ±40% because three phase inductances are different. The value in the catalog is the average between the maximum and minimum values. For each phase, the variation range is ±20%.

The contents of datasheet are subject to change without prior notice.

Dimension

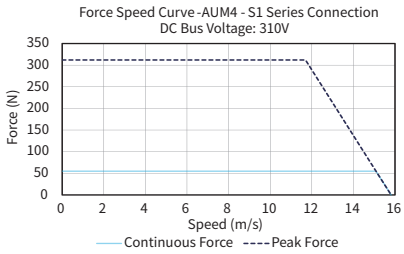


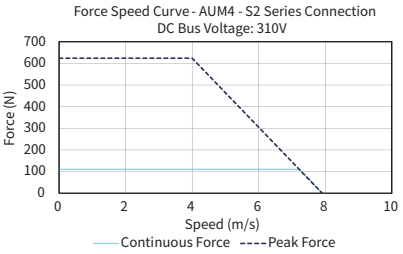
Motor Coil		
Model No:[1]	Coil Length	E
AUM4-S1	61.0	3
AUM4-S2	121.0	7
AUM4-S3	181.0	11
AUM4-S4	241.0	15
AUM4-S5	301.0	19
AUM4-S6	361.0	23
AUM4-S8	481.0	31

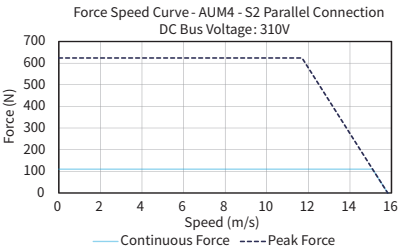
[1] For air or water cooled models, Coil Length and E are the same as the standard model.
AUM4-S6 Motor Coil Series & above will use 60mm pitch for E-Mounting Holes.

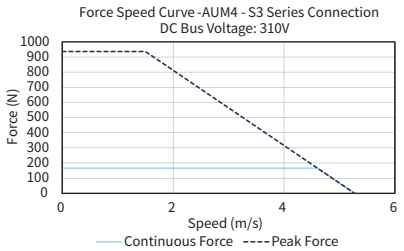
Motor Track			
Model No:	Track Length	G	H
AUM4-TL120	119.5	2	2
AUM4-TL180	179.5	3	3
AUM4-TL240	239.5	4	4
AUM4-TL300	299.5	5	5
AUM4-TL600	599.5	10	10

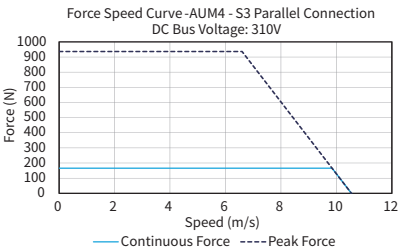
Force-Speed Curve

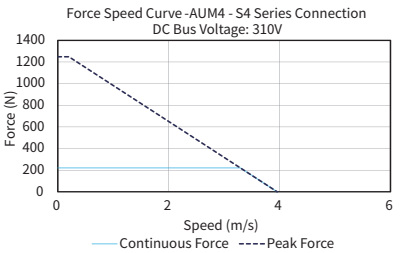


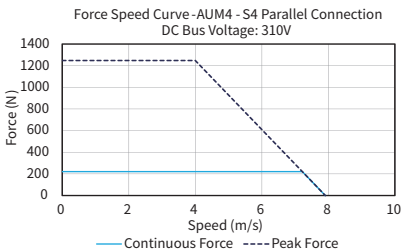


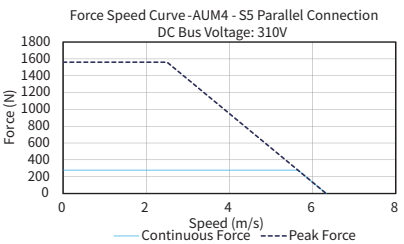


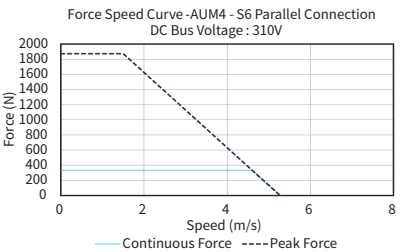


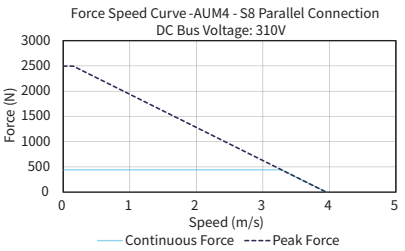






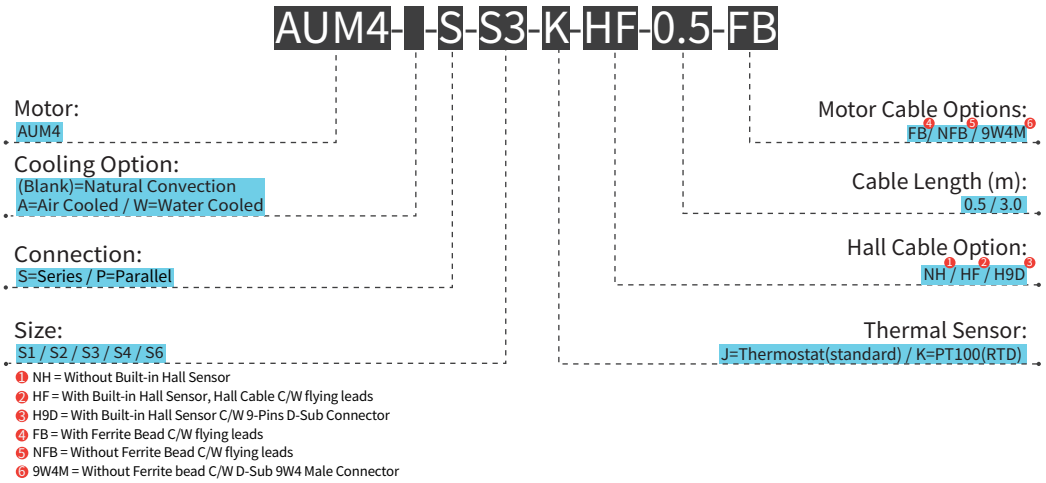






Part Numbering

Motor Coil



1. NH = Without Built-in Hall Sensor
2. HF = With Built-in Hall Sensor, Hall Cable C/W flying leads
3. H9D = With Built-in Hall Sensor C/W 9-Pins D-Sub Connector
4. FB = With Ferrite Bead C/W flying leads
5. NFB = Without Ferrite Bead C/W flying leads
6. 9W4M = Without Ferrite bead C/W D-Sub 9W4 Male Connector

Motor Track

AUM5

			AUM5-S1	AUM5-S2		AUM5-S3		AUM5-S4		AUM5-S5	AUM5-S6	AUM5-S8 -V107	AUM5-S9 -V80	AUM5-S10 -V107	AUM5-S12 -V107
Performance Parameters	**Symbol**	**Unit**	**Series**	**Series**	**Parallel**	**Series**	**Parallel**	**Series**	**Parallel**	**Parallel**	**Parallel**	**P5**	**P7**	**P5**	**P5**
Continuous Force (NC) @100°C❶	F_{cn}	N	98	197	197	295	295	393	393	491	590	786	884	983	1179
Continuous Force (AC) @100°C❶	F_{ca}	N	118	236	236	354	354	472	472	590	707	-	-	-	-
Continuous Force (WC) @100°C❶	F_{cw}	N	128	255	255	383	383	511	511	639	766	-	-	-	-
Peak Force	F_{pk}	N	707	1415	1415	2122	2122	2830	2830	3537	4244	5659	6367	7078	8489
Force Constant ±10%	K_f	N/Arms	39.3	78.6	39.3	117.9	59.0	157.2	78.6	98.3	117.9	78.6	117.9	98.3	117.9
Back EMF Constant ±10%	K_e	Vpeak/(m/s)	32.1	64.2	32.1	96.3	48.1	128.4	64.2	80.2	96.3	64.2	96.3	80.3	96.3
Motor Constant @25°C	K_m	N/Sqrt(W)	16.3	23.2	22.6	28.5	28.0	33.0	32.5	36.5	40.1	46.3	48.0	51.3	55.8
Resistance (L-L) @25°C ±10%❷	R_{25}	Ω	3.89	7.64	2.01	11.39	2.95	15.14	3.89	4.83	5.76	1.92	4.02	2.45	2.97
Inductance (L-L) ±40%❸	L	mH	6.50	13.00	3.25	19.50	4.88	26.00	6.50	8.13	9.75	3.25	6.50	4.06	4.88
Electrical Time Constant	τ_e	ms	1.67	1.70	1.61	1.71	1.65	1.72	1.67	1.68	1.69	1.69	1.62	1.66	1.64
Continuous Current (NC) @100°C❶	I_{cn}	Arms	2.5	2.5	5.0	2.5	5.0	2.5	5.0	5.0	5.0	10.0	7.5	10.0	10.0
Continuous Current (AC) @100°C❶	I_{ca}	Arms	3.0	3.0	6.0	3.0	6.0	3.0	6.0	6.0	6.0	-	-	-	-
Continuous Current (WC) @100°C❶	I_{cw}	Arms	3.3	3.3	6.5	3.3	6.5	3.3	6.5	6.5	6.5	-	-	-	-
Peak Current	I_{pk}	Arms	18.0	18.0	36.0	18.0	36.0	18.0	36.0	36.0	36.0	72.0	54.0	72.0	72.0
Continuous Power Dissipation (NC) @100°C❶	P_{cn}	W	49	99	104	145	152	201	194	245	296	372	437	474	575
Continuous Power Dissipation (AC) @100°C❶	P_{ca}	W	70	143	149	209	219	289	280	353	426	0	0	0	0
Continuous Power Dissipation (WC) @100°C❶	P_{cw}	W	82	168	175	245	257	339	328	414	500	0	0	0	0
Max. Coil Temperature	t_{max}	°C	100	100	100	100	100	100	100	100	100	100	100	100	100
Thermal Dissipation Constant (NC)❶	K_{thn}	W/°C	0.6	1.3	1.4	1.9	2.0	2.7	2.6	3.3	3.9	5.0	5.8	6.3	7.7
Thermal Dissipation Constant (AC)❶	K_{tha}	W/°C	0.9	1.9	2.0	2.8	2.9	3.9	3.7	4.7	5.7	-	-	-	-
Thermal Dissipation Constant (WC)❶	K_{thw}	W/°C	1.1	2.2	2.3	3.3	3.4	4.5	4.4	5.5	6.7	-	-	-	-
Max. Bus Voltage	U_{bus}	Vdc	330	330	330	330	330	330	330	330	330	330	330	330	330
Magnetic Period	τ_{NN}	mm	84	84	84	84	84	84	84	84	84	84	84	84	84
Attraction Force	F_a	kN	0	0	0	0	0	0	0	0	0	0	0	0	0
Mechanical Parameters															
Coil Mass (NC)	m_{cn}	kg	0.73	1.45	1.45	2.16	2.16	2.88	2.88	3.60	4.32	5.73	6.53	7.25	8.76
Coil Length (NC)	L_{cn}	mm	85.0	169.0	169.0	253.0	253.0	337.0	337.0	421.0	505.0	673.0	757.0	841.0	1009.0
Coil Length (AC)	L_{ca}	mm	85.0	169.0	169.0	253.0	253.0	337.0	337.0	421.0	505.0	-	-	-	-
Coil Length (WC)	L_{cw}	mm	85.0	169.0	169.0	253.0	253.0	337.0	337.0	421.0	505.0	-	-	-	-
Track Mass Per Meter	m_{track}	kg/m	35.50	35.50	35.50	35.50	35.50	35.50	35.50	35.50	35.50	35.50	35.50	35.50	35.50

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.

❶ Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment. Abbreviations: NC-Natural Cooling, AC-Air Cooling, WC-Water Cooling.

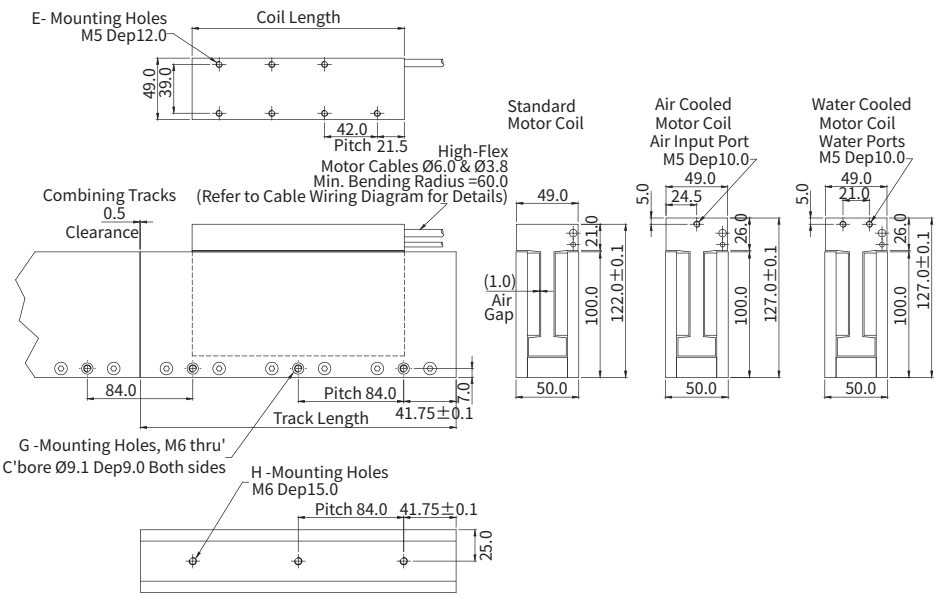
❷ Resistance is measured by DC current with standard 0.5 m cable.

❸ Inductance is measured by current frequency of 1 kHz. The variation range of AUM inductance is ±40% because three phase inductances are different. The value in the catalog is the average between the maximum and minimum values. For each phase, the variation range is ±20%.

The contents of datasheet are subject to change without prior notice.

■ Dimension

AUM5-S1,S2,S3,S4,S5,S6



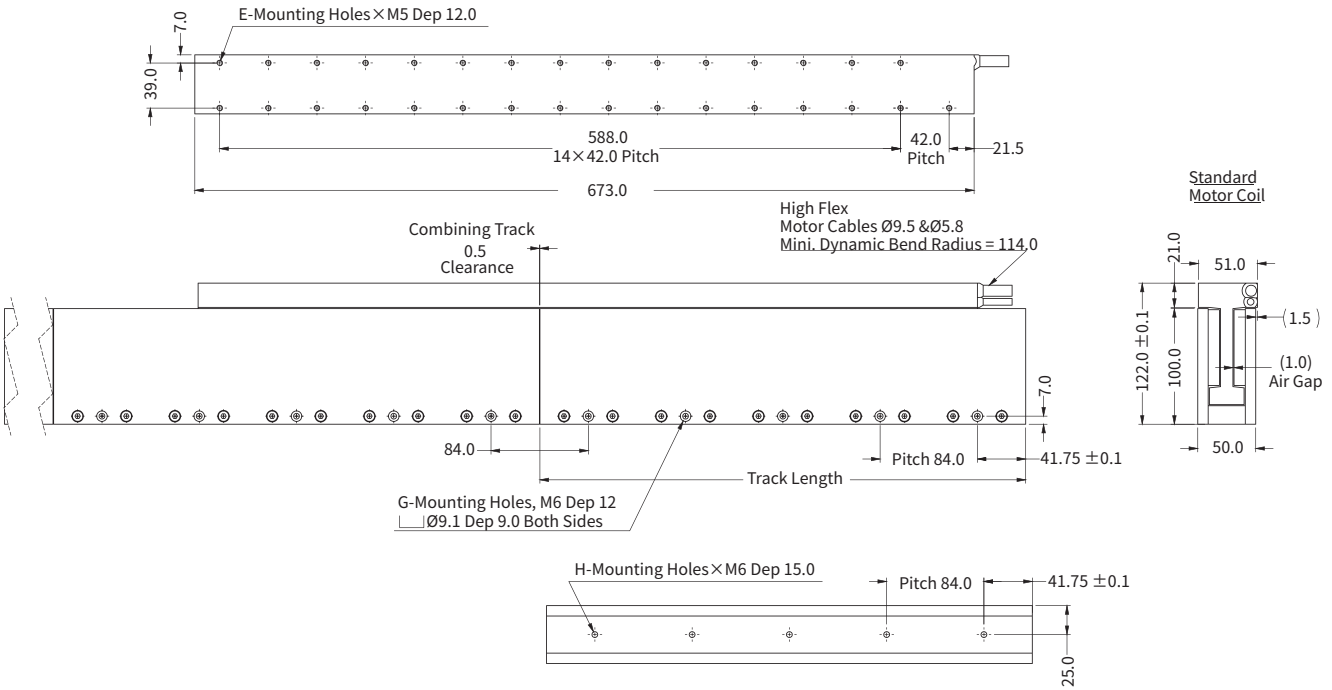
Motor Coil		
Model No: ❶❷	Coil Length	E
AUM5-S1	85.0	3
AUM5-S2	169.0	7
AUM5-S3	253.0	11
AUM5-S4	337.0	15
AUM5-S5	421.0	19
AUM5-S6	505.0	23

❶ For air or water cooled models, Coil Length and E are the same as the standard model.

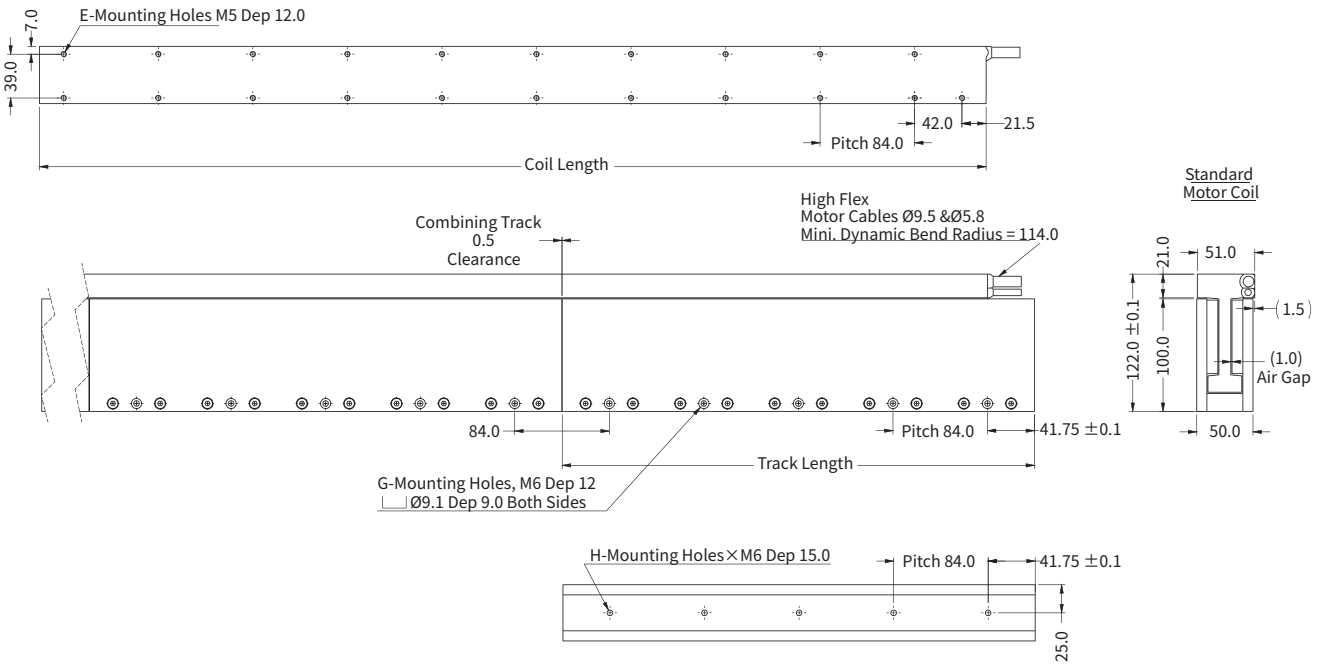
❷ Water cooled models only available up to S6 coil length.

Motor Track			
Model No:	Track Length	G	H
AUM5-TL168	167.5	2	2
AUM5-TL252	251.5	3	3
AUM5-TL420	419.5	5	5

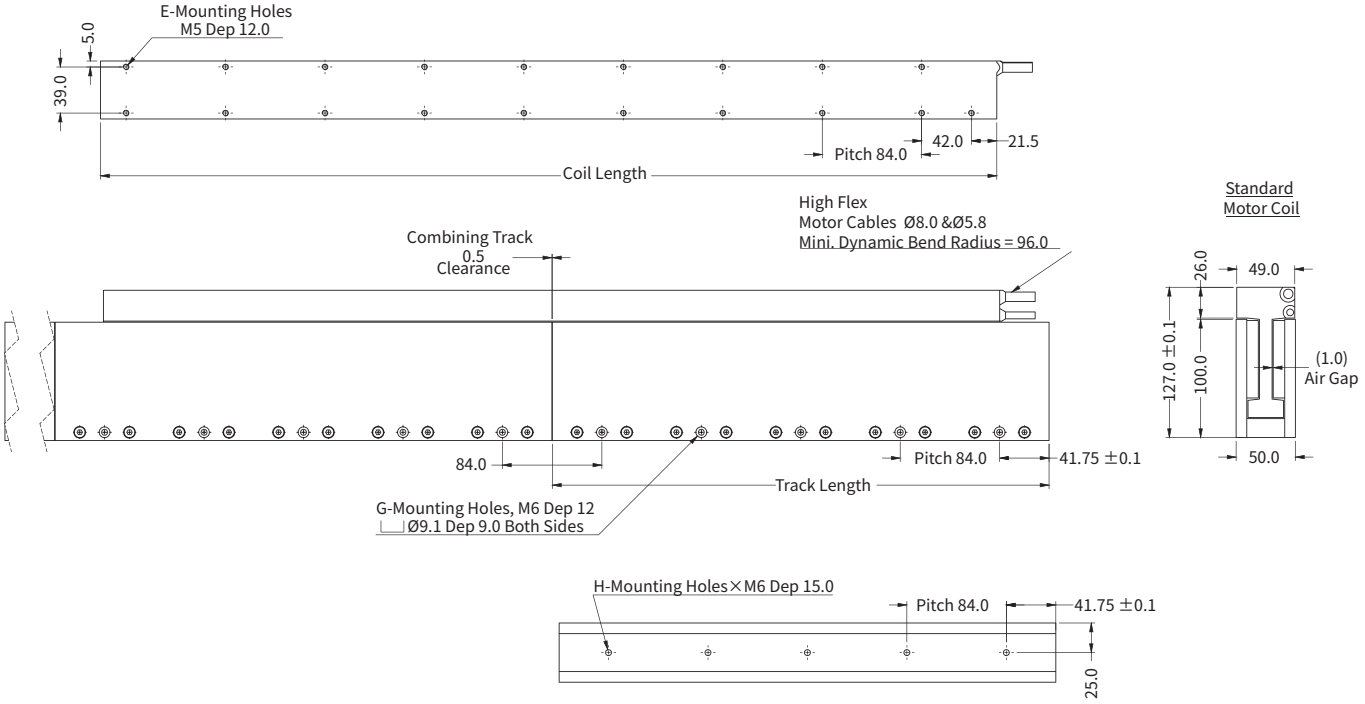
AUM5-P5-S8-V107



AUM5-P5-S10,S12-V107



AUM5-P7-S9-V80

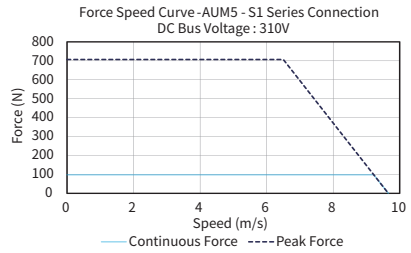


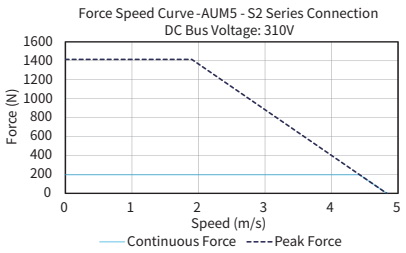
Motor Coil		
Model No: [1]	Coil Length	E
AUM5-P5-S8-V107	673.0	31
AUM5-P7-S9-V80	757.0	19
AUM5-P5-S10-V107	841.0	21
AUM5-P5-S12-V107	1009.0	25

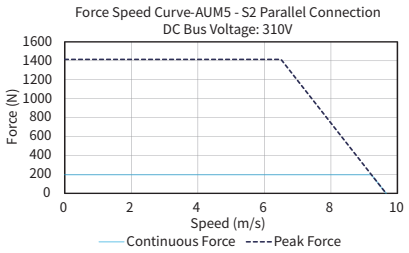
[1] For air or water cooled models, Coil Length and E are the same as the standard model.

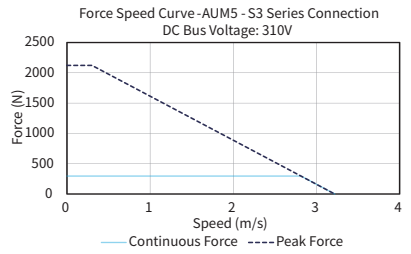
Motor Track			
Model No:	Track Length	G	H
AUM5-TL168	167.5	2	2
AUM5-TL252	251.5	3	3
AUM5-TL420	419.5	5	5

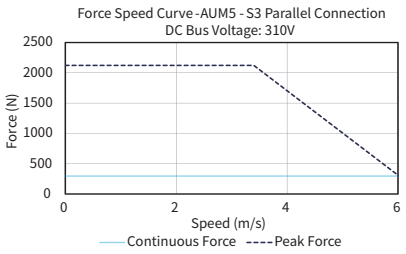
Force-Speed Curve

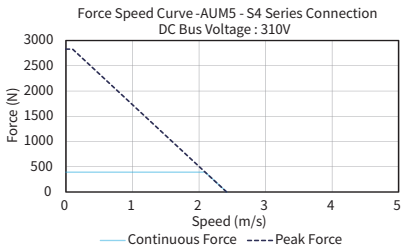


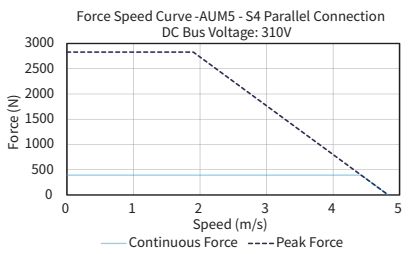


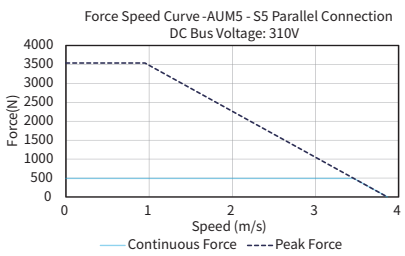


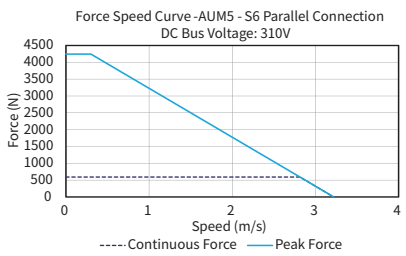


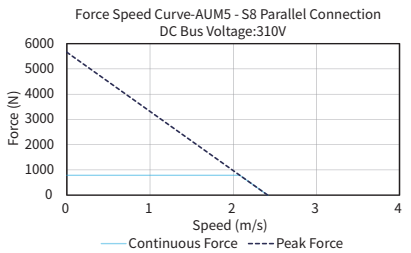


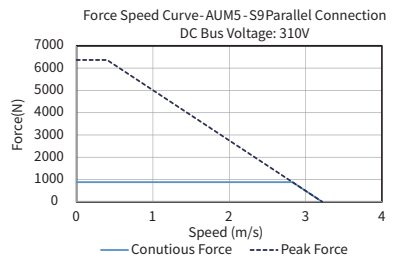


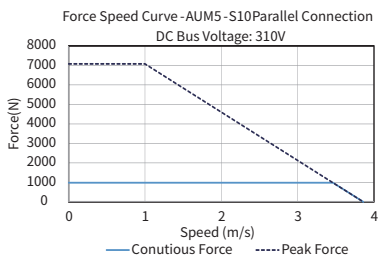


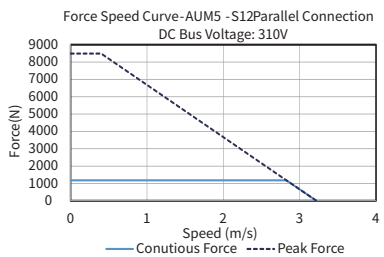






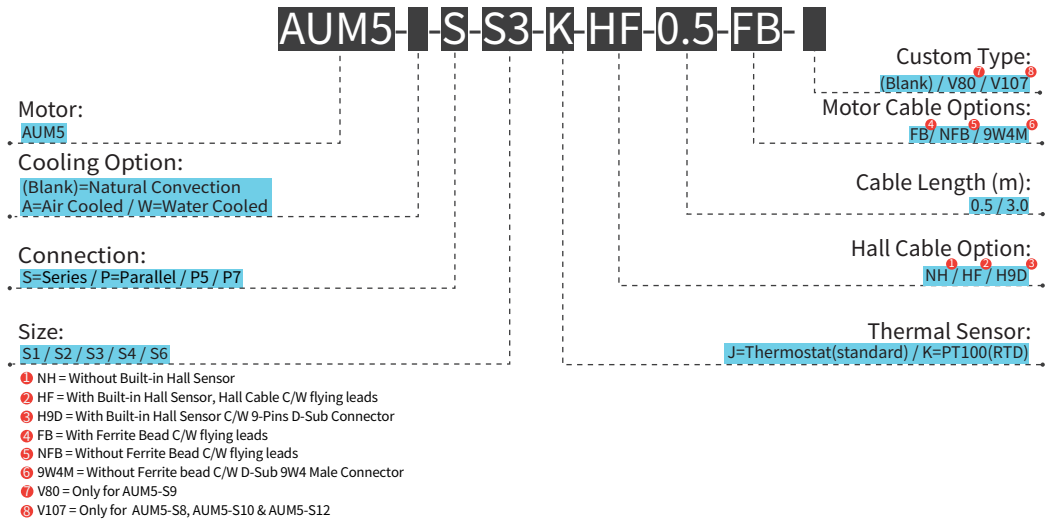






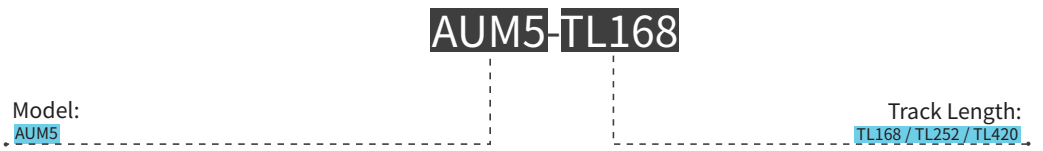
Part Numbering

Motor Coil



1. NH = Without Built-in Hall Sensor
2. HF = With Built-in Hall Sensor, Hall Cable C/W flying leads
3. H9D = With Built-in Hall Sensor C/W 9-Pins D-Sub Connector
4. FB = With Ferrite Bead C/W flying leads
5. NFB = Without Ferrite Bead C/W flying leads
6. 9W4M = Without Ferrite bead C/W D-Sub 9W4 Male Connector
7. V80 = Only for AUM5-S9
8. V107 = Only for AUM5-S8, AUM5-S10 & AUM5-S12

Motor Track



AUM6

			AUM6-P5-S4	AUM6-P8-S6	AUM6-P5-S8	AUM6-P8-S9	AUM6-P7-S10	AUM6-P8-S12
Performance Parameters	**Symbol**	**Unit**	**P5**	**P8**	**P5**	**P8**	**P7**	**P8**
Continuous Force (NC) @100°C[1]	F_{cn}	N	780	1170	1560	1755	1950	2340
Peak Force	F_{pk}	N	5400	8100	10800	12150	13500	16200
Force Constant ±10%	K_f	N/Arms	75.0	75.0	150.0	112.5	150.0	150.0
Back EMF Constant ±10%	K_e	Vpeak/(m/s)	61.2	61.2	122.5	91.9	122.5	122.5
Motor Constant @25°C	K_m	N/Sqrt(W)	50.0	61.2	71.9	75.0	79.1	86.6
Resistance (L-L) @25°C ±10%[2]	R_{25}	Ω	1.50	1.00	2.90	1.50	2.40	2.00
Inductance (L-L) ±40%[3]	L	mH	2.65	1.77	5.30	2.65	4.24	3.53
Electrical Time Constant	τ_e	ms	1.77	1.77	1.83	1.77	1.77	1.77
Continuous Current (NC) @100°C[1]	I_{cn}	Arms	10.4	15.6	10.4	15.6	13.0	15.6
Peak Current	I_{pk}	Arms	72.0	108.0	72.0	108.0	90.0	108.0
Continuous Power Dissipation (NC) @100°C[1]	P_{cn}	W	314	470	606	706	784	941
Max. Coil Temperature	t_{max}	°C	100	100	100	100	100	100
Thermal Dissipation Constant (NC)[1]	K_{thn}	W/°C	4.2	6.3	8.1	9.4	10.5	12.5
Max. Bus Voltage	U_{bus}	Vdc	330	330	330	330	330	330
Magnetic Period	τ_{NN}	mm	84	84	84	84	84	84
Attraction Force	F_a	kN	0	0	0	0	0	0
Mechanical Parameters								
Coil Mass (NC)	m_{cn}	kg	4.50	6.75	9.00	10.13	11.25	13.50
Coil Length (NC)	L_{cn}	mm	337.0	505.0	673.0	757.0	841.0	1009.0
Track Mass Per Meter	m_{track}	kg/m	66.67	66.67	66.67	66.67	66.67	66.67
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.					

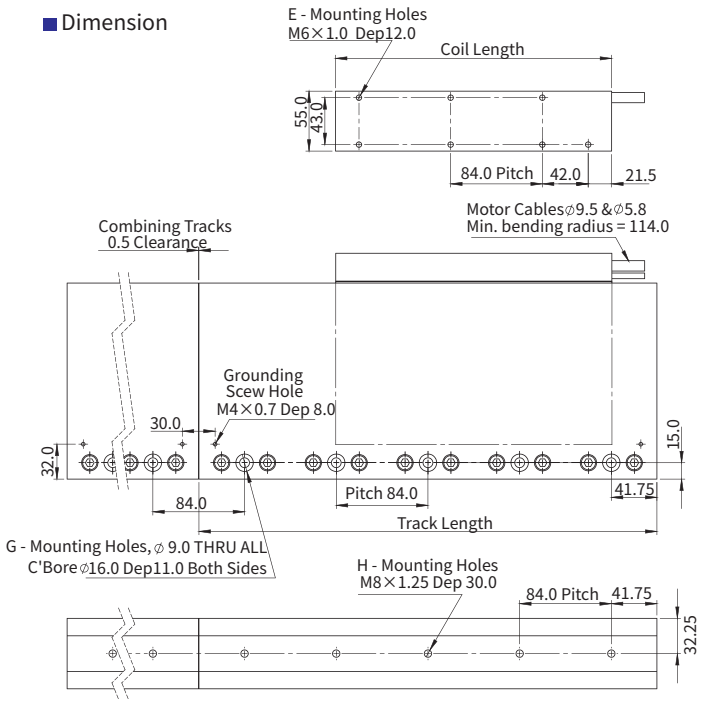
[1] Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment. Abbreviations: NC-Natural Cooling, AC-Air Cooling, WC-Water Cooling.

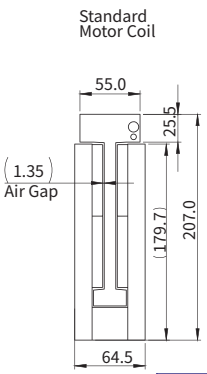
[2] Resistance is measured by DC current with standard 0.5 m cable.

[3] Inductance is measured by current frequency of 1 kHz. The variation range of AUM inductance is ±40% because three phase inductances are different. The value in the catalog is the average between the maximum and minimum values. For each phase, the variation range is ±20%.

The contents of datasheet are subject to change without prior notice.

■ Dimension

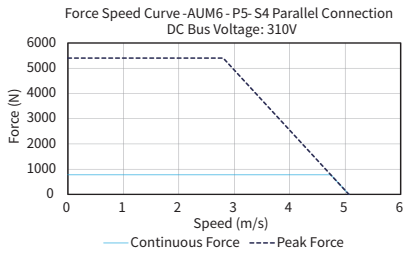


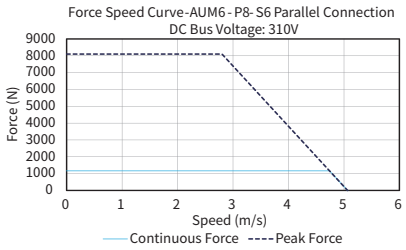


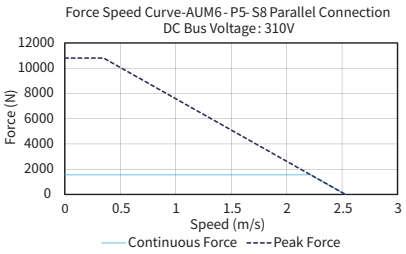
Motor Coil		
Model No:	Coil Length	E
AUM6-P5-S4	337.0	9
AUM6-P8-S6	505.0	13
AUM6-P5-S8	673.0	17
AUM6-P8-S9	757.0	19
AUM6-P7-S10	841.0	21
AUM6-P8-S12	1009.0	25

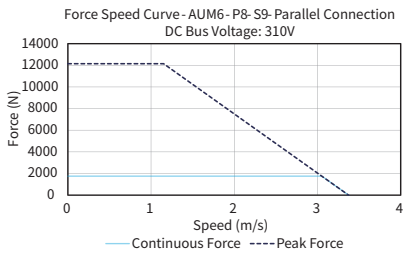
Motor Track			
Model No:	Track Length	G	H
AUM6-TL168	167.5	2	2
AUM6-TL252	251.5	3	3
AUM6-TL420	419.5	5	5

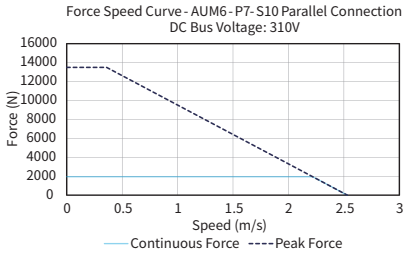
Force-Speed Curve

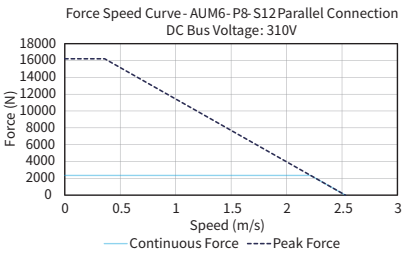












Part Numbering

Motor Coil

AUM6-P-S4-K-HF-0.5-FB

- Motor: AUM6
- Connection: P5 / P7 / P8
- Size: S4 / S6 / S8 / S9 / S10 / S12
- Thermal Sensor: J=Thermostat(standard) / K=PT100(RTD)
- Hall Cable Option: NH[1] / HF[2] / H9D[3]
- Cable Length (m): 0.5 / 3.0
- Motor Cable Options: FB[4] / NFB[5] / 9W4M[6]

1. NH = Without Built-in Hall Sensor
2. HF = With Built-in Hall Sensor, Hall Cable C/W flying leads
3. H9D = With Built-in Hall Sensor C/W 9-Pins D-Sub Connector
4. FB = With Ferrite Bead C/W flying leads
5. NFB = Without Ferrite Bead C/W flying leads
6. 9W4M = Without Ferrite bead C/W D-Sub 9W4 Male Connector

Motor Track

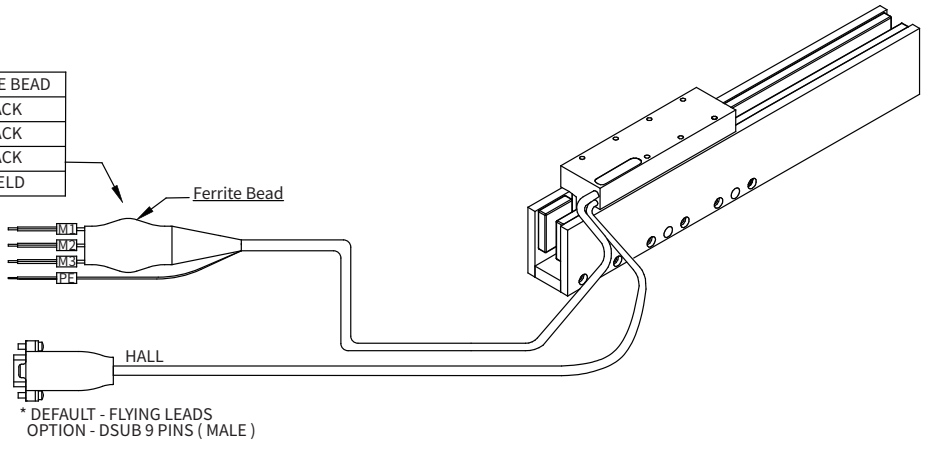
AUM6-TL168

- Model: AUM6
- Track Length: TL168 / TL252 / TL420

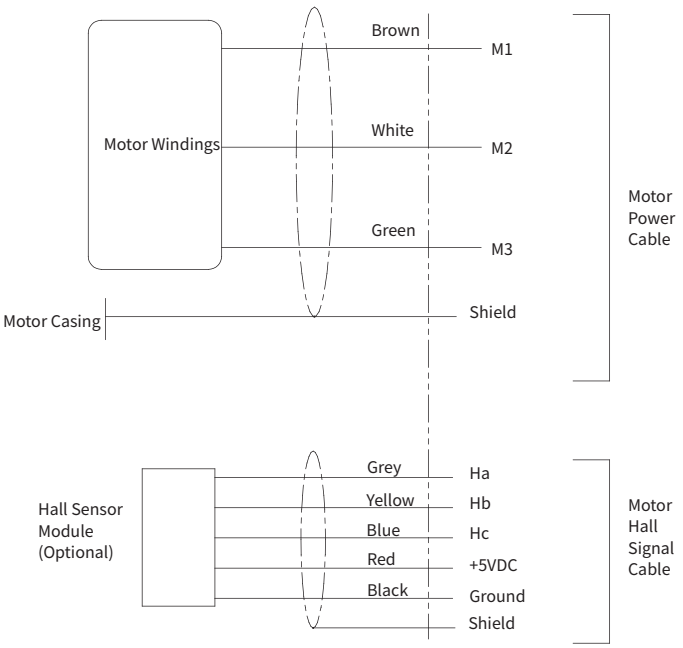
AUM1 Series Motor Cable Connection

MOTOR CABLE

PIN	DESCRIPTION	NO FERRITE BEAD	FERRITE BEAD
-	M1	BROWN	BLACK
-	M2	WHITE	BLACK
-	M3	GREEN	BLACK
-	PE	SHIELD	SHIELD



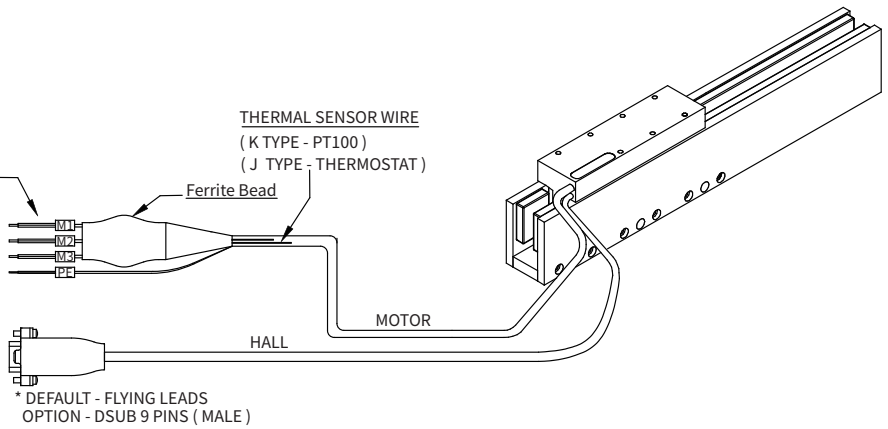
PIN	DESCRIPTION	COLOR
1	HA	GREY
2	HB	YELLOW
3	HC	BLUE
4	5VDC	RED
5	0VDC	BLACK



AUM2 / 3 / 4 / 5 Series Motor Cable Connection

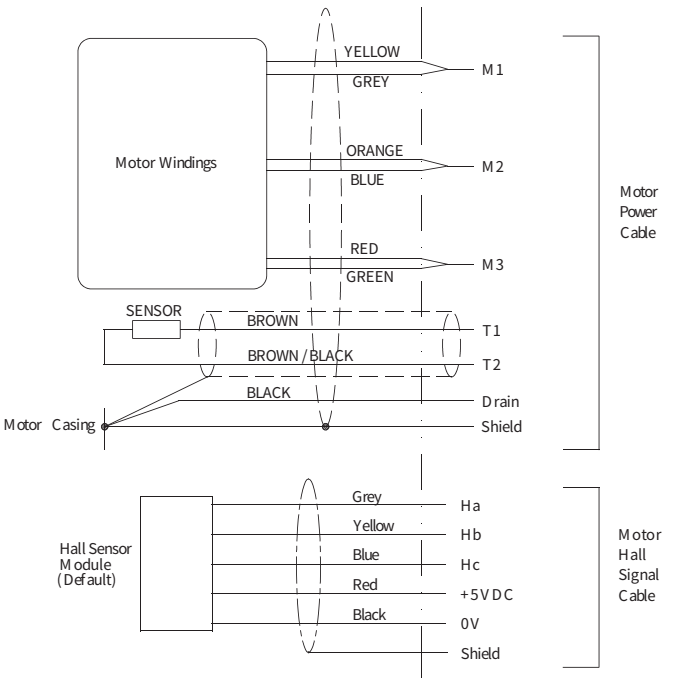
MOTOR CABLE

PIN	DESCRIPTION	NO FERRITE BEAD	FERRITE BEAD
-	M1	YELLOW / GREY	BLACK
-	M2	BLUE / ORANGE	BLACK
-	M3	RED / GREEN	BLACK
-	PE	BLACK	YELLOW / GREEN



HALL CABLE

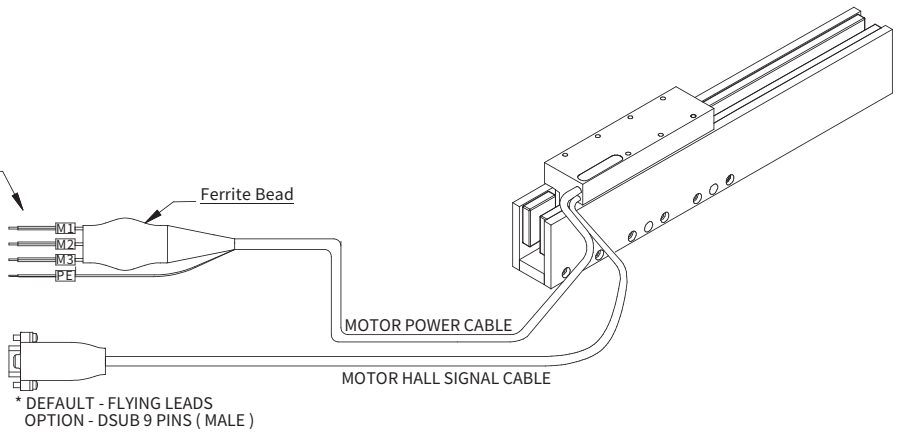
PIN	DESCRIPTION	COLOR
1	HA	GREY
2	HB	YELLOW
3	HC	BLUE
4	5VDC	RED
5	0VDC	BLACK



AUM5-V107 Series Motor Cable Connection

MOTOR CABLE

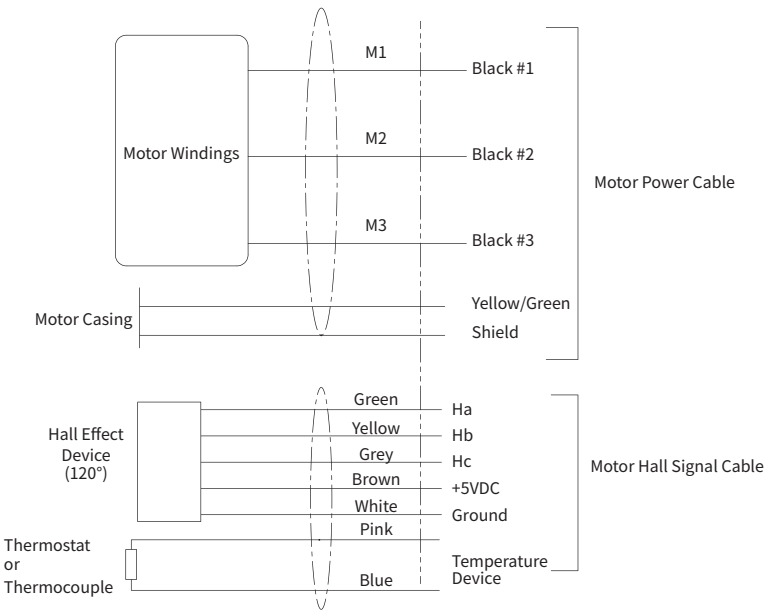
PIN	DESCRIPTION	NO FERRITE BEAD	FERRITE BEAD
-	M1	BLACK	BLACK1
-	M2	BLACK	BLACK2
-	M3	BLACK	BLACK3
-	PE	YELLOW / GREEN	YELLOW / GREEN



HALL CABLE

PIN	DESCRIPTION	COLOR
1	HA	GREEN
2	HB	YELLOW
3	HC	GREY
4	+5VDC	BROWN
5	0VDC	WHITE
8	T1	PINK
9	T2	BLUE

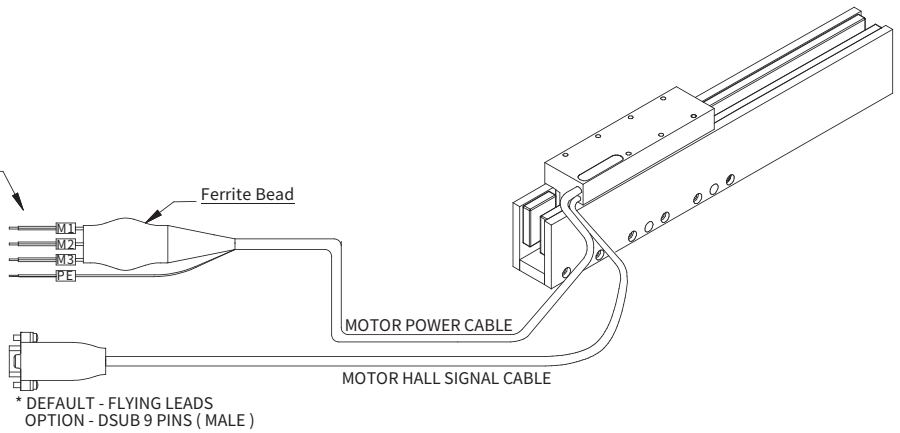
THERMAL SENSOR WIRE (T1/T2)
(K TYPE - PT100)
(J TYPE - THERMOSTAT)



AUM6 Series Motor Cable Connection

MOTOR CABLE

PIN	DESCRIPTION	NO FERRITE BEAD	FERRITE BEAD
-	M1	BLACK	BLACK1
-	M2	BLACK	BLACK2
-	M3	BLACK	BLACK3
-	PE	YELLOW / GREEN	YELLOW / GREEN



HALL CABLE

PIN	DESCRIPTION	COLOR
1	HA	GREEN
2	HB	YELLOW
3	HC	GREY
4	+5VDC	BROWN
5	0VDC	WHITE
8	T1	PINK
9	T2	BLUE

THERMAL SENSOR WIRE (T1/T2)
(K TYPE - PT100)
(J TYPE - THERMOSTAT)