



Introduction>>

Iron Core AQM series linear motors have a low cogging force, a competitive cost advantage, exceptionally narrow width for dimensionally constrained applications, and are ideal for long travel strokes.

Fcn (Continuous force) = 20.3N ~ 405.0N

Fpk (Peak force) = 49.7N ~ 994.4N

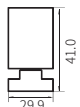
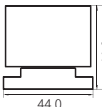
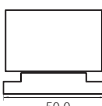
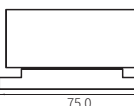
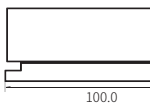
Features>>

- ▶ Iron core technology and low cogging force
- ▶ High continuous and peak force
- ▶ Optional hall sensors
- ▶ High motor constant
- ▶ Multiple coil lengths to select

Applications>

Applicable to point-to-point micron meter level positioning; unlimited travel stroke with top speed of 5m/s or faster (stroke of 100m or longer).

Applications & Industries: high speed positioning systems for product handling in semiconductor, photovoltaic and lithium battery, glass and LCD applications, as well as industrial printing machines, laser processing machines with demanding precision and motion control requirements.

	Series	Coil Length (mm)	Continuous Force (F _{cn}) / PeakForce (F _{pk})							Unit: N
			50	100	200	300	400	500		
	AQM8-B1	133	20.3	49.7						
	AQM24-B1	133	60.8	149.2						
	AQM30-B1	133	75.9	186.4						
	AQM30-B2	268			151.9	372.9				
	AQM50-B1	133			126.6	310.7				
	AQM50-B2	268					253.1	621.5		
	AQM80-B1	133				202.5	497.2			
	AQM80-B2	268							405.0	994.4

AQM8-B1

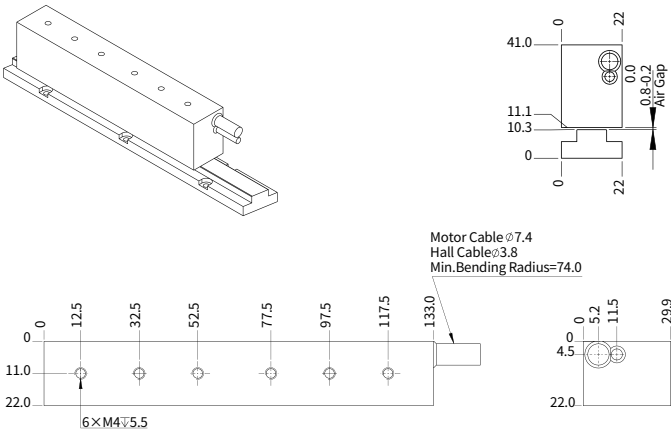
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Performance Parameters	Symbol	Unit	Series
Continuous Force (NC) @100°C	F _{cn}	N	20.3
Peak Force	F _{pk}	N	49.7
Force Constant ±10%	K _f	N/Arms	8.1
Back EMF Constant ±10%	K _e	Vpeak/(m/s)	6.6
Motor Constant @25°C	K _m	N/Sqrt(W)	3.8
Resistance (L-L) 25°C ±10%	R ₂₅	Ω	3.1
Inductance (L-L) ±30%	L	mH	22.7
Electrical Time Constant	τ _e	ms	7.3
Continuous Current (NC) @100°C	I _{cn}	Arms	2.5
Peak Current	I _{pk}	Arms	9.0
Continuous Power Dissipation (NC) @100°C	P _{cn}	W	37.5
Max. Coil Temperature	t _{max}	°C	100
Thermal Dissipation Constant (NC)	K _{thn}	W/°C	0.5
Max. Bus Voltage	U _{bus}	Vdc	600
Magnetic Period	τ _M	mm	30
Attraction Force	F _a	N	75

Mechanical Parameters			
Coil Mass (NC)	m _{cn}	kg	0.4
Coil Length (NC)	L _{cn}	mm	133
Track Mass Per Meter	m _{track}	kg/m	1.3

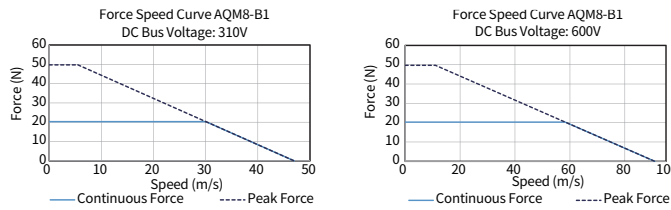
Other Information			
Insulation Class		Class B (130°C)	
Protection Grade		IP00	
Compliance with Global Standards		RoHS, CE	
Ambient Temperature	Operation	0°C to 40°C (non-freezing)	
	Storage	-15°C to 70°C (non-freezing)	
Ambient Humidity	Operation	10%RH to 80%RH (non-condensing)	
	Storage	10%RH to 90%RH (non-condensing)	
Recommended Ambience		Indoor (no direct sunlight); No corrosive gas, inflammable gas, oil mist or dust.	

● Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment.
Abbreviations:NC-Natural Cooling.
● Resistance is measured by DC current with standard 0.5 m cable.
● Inductance is measured by current frequency of 1 kHz.
The contents of datasheet are subject to change without prior notice.

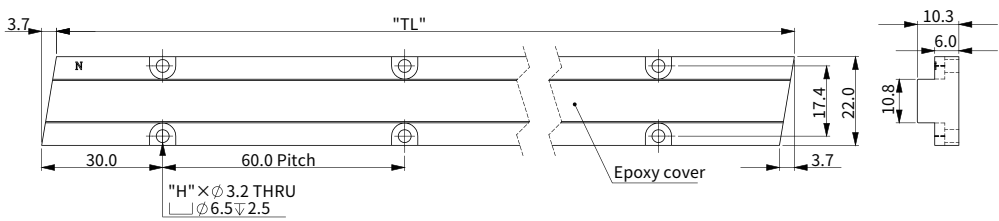
Dimension



Force-Speed Curve



AQM8 Track



Magnet Track P / N:	Track Length “TL”	No.of Holes “H”
AQM8-TL180-E	180.0	6
AQM8-TL300-E	300.0	10
AQM8-TL420-E	420.0	14

AQM24-B1

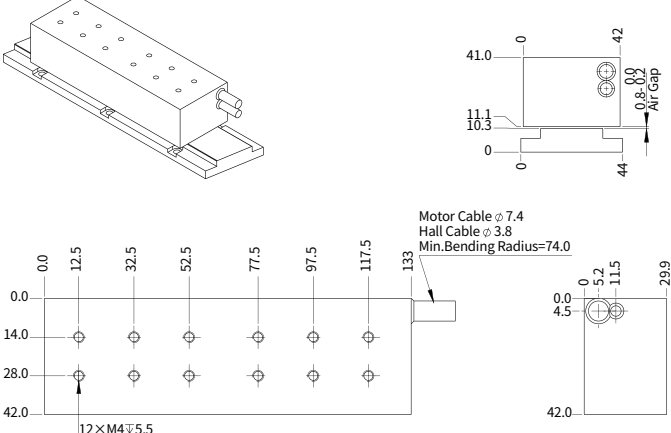
AQM24-B1			
Performance Parameters	Symbol	Unit	Parallel
Continuous Force (NC) @100°C	F _{cn}	N	60.8
Peak Force	F _{pk}	N	149.2
Force Constant ±10%	K _f	N/Arms	24.3
Back EMF Constant ±10%	K _e	Vpeak/(m/s)	19.8
Motor Constant @25°C	K _m	N/Sqrt(W)	8.8
Resistance (L-L) 25°C ±10%	R ₂₅	Ω	5.1
Inductance (L-L) ±30%	L	mH	39.1
Electrical Time Constant	τ _e	ms	7.7
Continuous Current (NC) @100°C	I _{cn}	Arms	2.5
Peak Current	I _{pk}	Arms	9.0
Continuous Power Dissipation (NC) @100°C	P _{cn}	W	61.6
Max. Coil Temperature	t _{max}	°C	100
Thermal Dissipation Constant (NC)	K _{thn}	W/°C	0.8
Max. Bus Voltage	U _{bus}	Vdc	600
Magnetic Period	τ _M	mm	30
Attraction Force	F _a	N	224

Mechanical Parameters			
Coil Mass (NC)	m _{cn}	kg	0.8
Coil Length (NC)	L _{cn}	mm	133
Track Mass Per Meter	m _{track}	kg/m	2.7

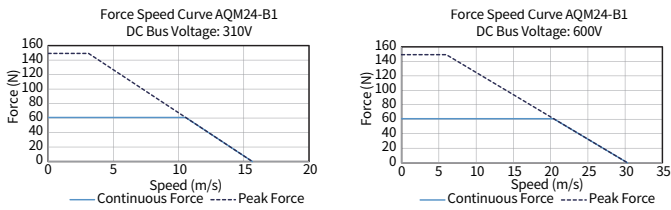
Other Information			
Insulation Class		Class B (130°C)	
Protection Grade		IP00	
Compliance with Global Standards		RoHS, CE	
Ambient Temperature	Operation	0°C to 40°C (non-freezing)	
	Storage	-15°C to 70°C (non-freezing)	
Ambient Humidity	Operation	10%RH to 80%RH (non-condensing)	
	Storage	10%RH to 90%RH (non-condensing)	
Recommended Ambience		Indoor (no direct sunlight); No corrosive gas, inflammable gas, oil mist or dust.	

● Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment.
Abbreviations:NC-Natural Cooling.
● Resistance is measured by DC current with standard 0.5 m cable.
● Inductance is measured by current frequency of 1 kHz.
The contents of datasheet are subject to change without prior notice.

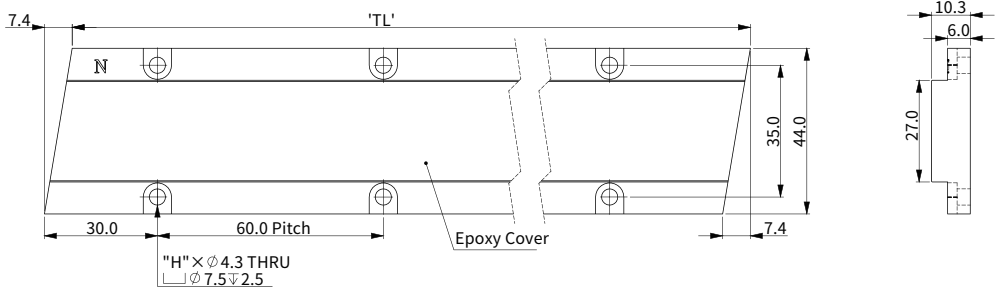
Dimension



Force-Speed Curve



AQM24 Track



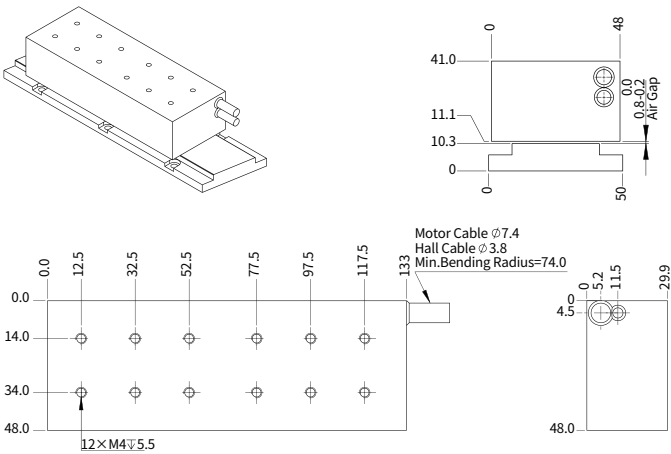
Magnet Track P / N:	Track Length “TL”	No.of Holes “H”
AQM24-TL180-E	180.0	6
AQM24-TL300-E	300.0	10
AQM24-TL420-E	420.0	14

AQM30-B1

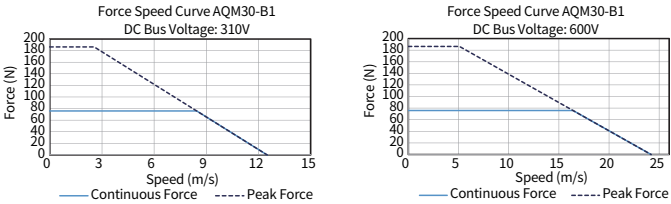
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Performance Parameters	Symbol	Unit	Series
Continuous Force (NC) @100°C	F _{cn}	N	75.9
Peak Force	F _{pk}	N	186.4
Force Constant ±10%	K _f	N/Arms	30.4
Back EMF Constant ±10%	K _e	Vpeak/(m/s)	24.8
Motor Constant @25°C	K _m	N/Sqrt(W)	10.3
Resistance (L-L) 25°C ±10%	R ₂₅	Ω	5.8
Inductance (L-L) ±30%	L	mH	47.1
Electrical Time Constant	τ _e	ms	8.2
Continuous Current (NC) @100°C	I _{cn}	Arms	2.5
Peak Current	I _{pk}	Arms	9.0
Continuous Power Dissipation (NC) @100°C	P _{cn}	W	69.6
Max. Coil Temperature	t _{max}	°C	100
Thermal Dissipation Constant (NC)	K _{thn}	W/°C	0.9
Max. Bus Voltage	U _{bus}	Vdc	600
Magnetic Period	T _{MN}	mm	30
Attraction Force	F _a	N	280
Mechanical Parameters			
Coil Mass (NC)	m _{cn}	kg	1.0
Coil Length (NC)	L _{cn}	mm	133
Track Mass Per Meter	m _{track}	kg/m	3.0
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.
② Resistance is measured by DC current with standard 0.5 m cable.
③ Inductance is measured by current frequency of 1 kHz.
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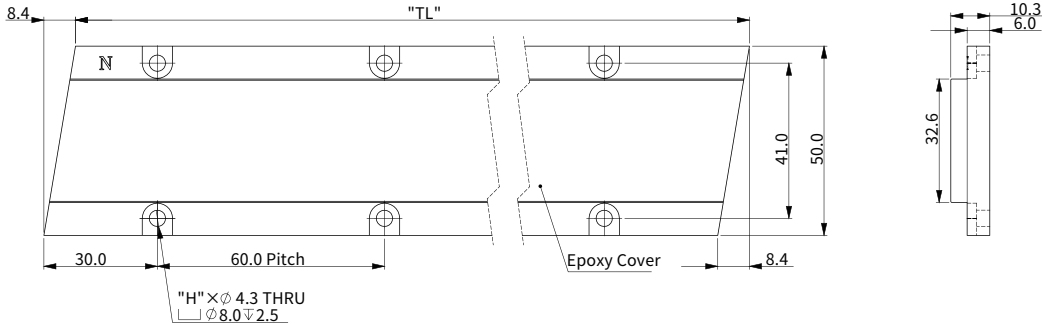
Dimension



Force-Speed Curve



AQM30 Track



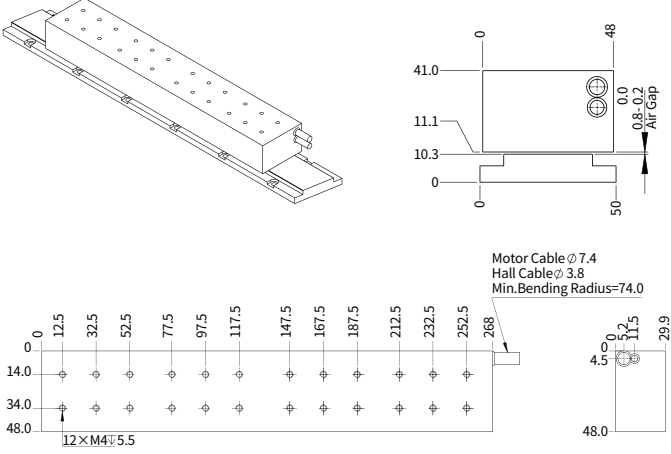
Magnet Track P / N:	Track Length "TL"	No.of Holes "H"
AQM30-TL180-E	180.0	6
AQM30-TL300-E	300.0	10
AQM30-TL420-E	420.0	14

AQM30-B2

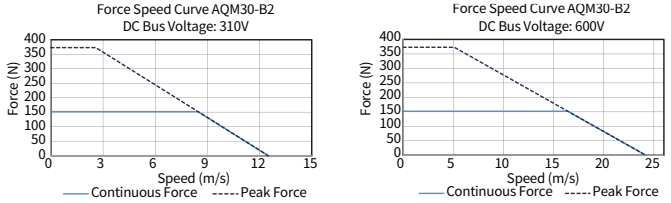
AQM30-B2			
Performance Parameters	Symbol	Unit	Parallel
Continuous Force (NC) @100°C	F _{cn}	N	151.9
Peak Force	F _{pk}	N	372.9
Force Constant ±10%	K _f	N/Arms	30.4
Back EMF Constant ±10%	K _e	Vpeak/(m/s)	24.8
Motor Constant @25°C	K _m	N/Sqrt(W)	14.6
Resistance (L-L) 25°C ±10%	R ₂₅	Ω	2.9
Inductance (L-L) ±30%	L	mH	23.6
Electrical Time Constant	τ _e	ms	8.2
Continuous Current (NC) @100°C	I _{cn}	Arms	5.0
Peak Current	I _{pk}	Arms	18.0
Continuous Power Dissipation (NC) @100°C	P _{cn}	W	139.2
Max. Coil Temperature	t _{max}	°C	100
Thermal Dissipation Constant (NC)	K _{thn}	W/°C	1.9
Max. Bus Voltage	U _{bus}	Vdc	600
Magnetic Period	T _{MN}	mm	30
Attraction Force	F _a	N	560
Mechanical Parameters			
Coil Mass (NC)	m _{cn}	kg	1.9
Coil Length (NC)	L _{cn}	mm	268
Track Mass Per Meter	m _{track}	kg/m	3.0
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.
② Resistance is measured by DC current with standard 0.5 m cable.
③ Inductance is measured by current frequency of 1 kHz.
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Dimension



Force-Speed Curve

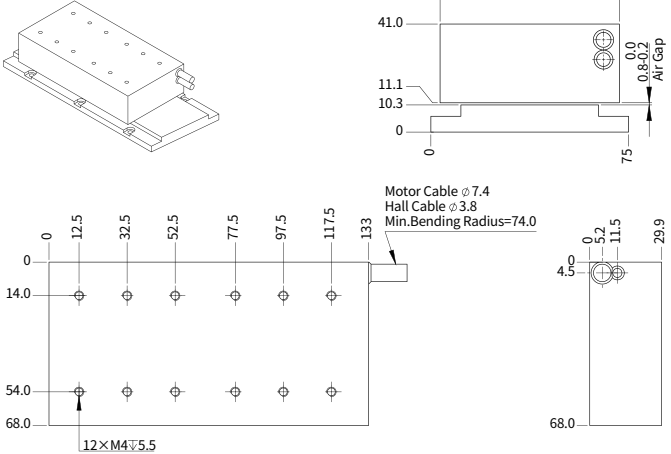


AQM50-B1

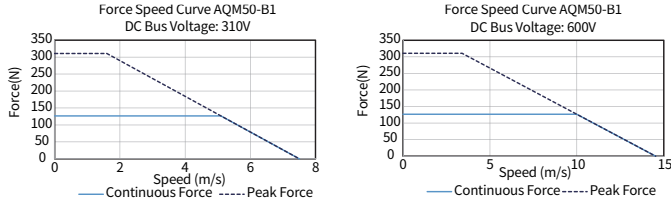
AQM50-B1			
Performance Parameters	Symbol	Unit	Series
Continuous Force (NC) @100°C	F _{cn}	N	126.6
Peak Force	F _{pk}	N	310.7
Force Constant ±10%	K _f	N/Arms	50.6
Back EMF Constant ±10%	K _e	Vpeak/(m/s)	41.3
Motor Constant @25°C	K _m	N/Sqrt(W)	14.5
Resistance (L-L) 25°C ±10%	R ₂₅	Ω	8.2
Inductance (L-L) ±30%	L	mH	68.3
Electrical Time Constant	τ _e	ms	8.3
Continuous Current (NC) @100°C	I _{cn}	Arms	2.5
Peak Current	I _{pk}	Arms	9.0
Continuous Power Dissipation (NC) @100°C	P _{cn}	W	98.8
Max. Coil Temperature	t _{max}	°C	100
Thermal Dissipation Constant (NC)	K _{thn}	W/°C	1.3
Max. Bus Voltage	U _{bus}	Vdc	600
Magnetic Period	T _{MN}	mm	30
Attraction Force	F _a	N	467
Mechanical Parameters			
Coil Mass (NC)	m _{cn}	kg	1.4
Coil Length (NC)	L _{cn}	mm	133
Track Mass Per Meter	m _{track}	kg/m	4.6
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.
② Resistance is measured by DC current with standard 0.5 m cable.
③ Inductance is measured by current frequency of 1 kHz.
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Dimension



Force-Speed Curve

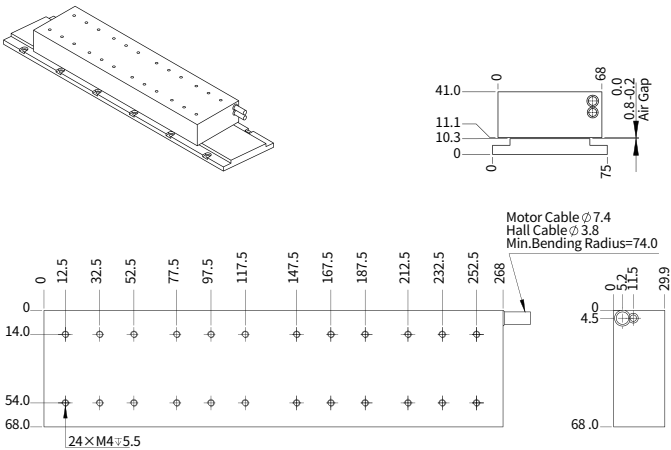


AQM50-B2

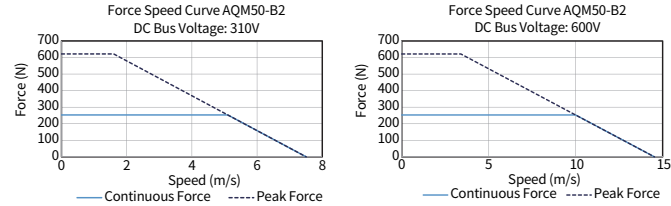
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Performance Parameters	Symbol	Unit	Parallel
Continuous Force (NC) @100°C	F _{cn}	N	253.1
Peak Force	F _{pk}	N	621.5
Force Constant ±10%	K _f	N/Arms	50.6
Back EMF Constant ±10%	K _e	Vpeak/(m/s)	41.3
Motor Constant @25°C	K _m	N/Sqrt(W)	20.4
Resistance (L-L) 25°C ±10%	R ₂₅	Ω	4.1
Inductance (L-L) ±30%	L	mH	34.2
Electrical Time Constant	τ _e	ms	8.3
Continuous Current (NC) @100°C	I _{cn}	Arms	5.0
Peak Current	I _{pk}	Arms	18.0
Continuous Power Dissipation (NC) @100°C	P _{cn}	W	197.7
Max. Coil Temperature	t _{max}	°C	100
Thermal Dissipation Constant (NC)	K _{thn}	W/°C	2.6
Max. Bus Voltage	U _{bus}	Vdc	600
Magnetic Period	T _M	mm	30
Attraction Force	F _a	N	934
Mechanical Parameters			
Coil Mass (NC)	m _{cn}	kg	2.7
Coil Length (NC)	L _{cn}	mm	268
Track Mass Per Meter	m _{track}	kg/m	4.6
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.	

- Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment.
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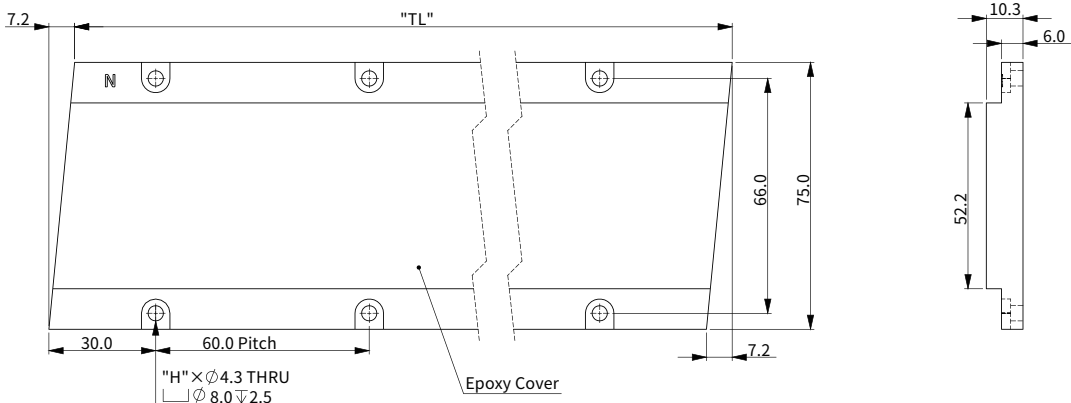
Dimension



Force-Speed Curve



AQM50 Track



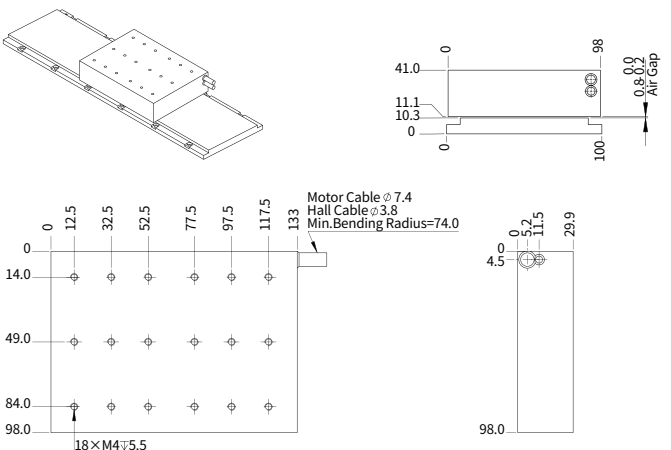
Magnet Track P / N:	Track Length "TL"	No.of Holes "H"
AQM50-TL180-E	180.0	6
AQM50-TL300-E	300.0	10
AQM50-TL420-E	420.0	14

AQM80-B1

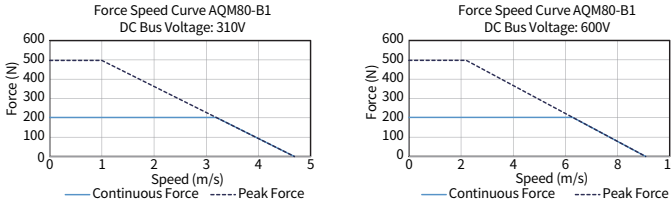
AQM80-B1			
Performance Parameters	Symbol	Unit	Series
Continuous Force (NC) @100°C	F _{cn}	N	202.5
Peak Force	F _{pk}	N	497.2
Force Constant ±10%	K _f	N/Arms	81.0
Back EMF Constant ±10%	K _e	Vpeak/(m/s)	66.1
Motor Constant @25°C	K _m	N/Sqrt(W)	19.5
Resistance (L-L) 25°C ±10%	R ₂₅	Ω	11.5
Inductance (L-L) ±30%	L	mH	100.0
Electrical Time Constant	τ _e	ms	8.7
Continuous Current (NC) @100°C	I _{cn}	Arms	2.5
Peak Current	I _{pk}	Arms	9.0
Continuous Power Dissipation (NC) @100°C	P _{cn}	W	138.9
Max. Coil Temperature	t _{max}	°C	100
Thermal Dissipation Constant (NC)	K _{thn}	W/°C	1.9
Max. Bus Voltage	U _{bus}	Vdc	600
Magnetic Period	T _M	mm	30
Attraction Force	F _a	N	747
Mechanical Parameters			
Coil Mass (NC)	m _{cn}	kg	1.9
Coil Length (NC)	L _{cn}	mm	133
Track Mass Per Meter	m _{track}	kg/m	6.1
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.	

- Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment.
Abbreviations:NC-Natural Cooling.
- Resistance is measured by DC current with standard 0.5 m cable.
- Inductance is measured by current frequency of 1 kHz.
- The contents of datasheet are subject to change without prior notice.

Dimension



Force-Speed Curve

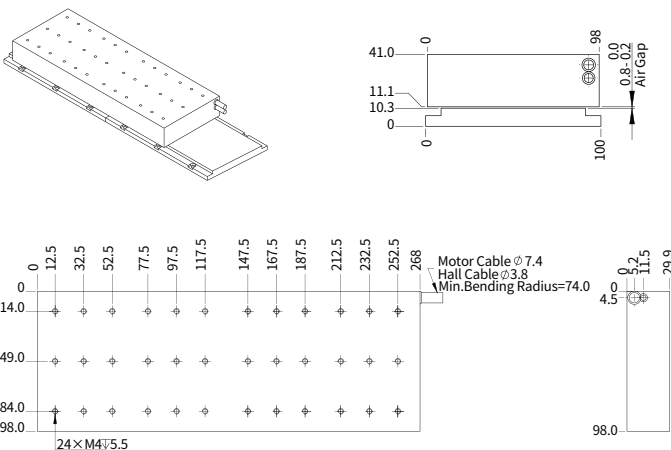


AQM80-B2

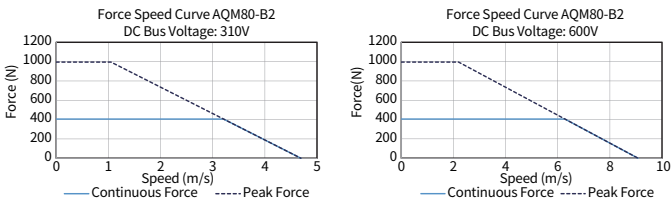
AQM80-B2			
Performance Parameters	Symbol	Unit	Parallel
Continuous Force (NC) @100°C	F _{cn}	N	405.0
Peak Force	F _{pk}	N	994.4
Force Constant ±10%	K _f	N/Arms	81.0
Back EMF Constant ±10%	K _e	Vpeak/(m/s)	66.1
Motor Constant @25°C	K _m	N/Sqrt(W)	27.6
Resistance (L-L) 25°C ±10%	R ₂₅	Ω	5.8
Inductance (L-L) ±30%	L	mH	50.0
Electrical Time Constant	τ _e	ms	8.7
Continuous Current (NC) @100°C	I _{cn}	Arms	5.0
Peak Current	I _{pk}	Arms	18.0
Continuous Power Dissipation (NC) @100°C	P _{cn}	W	277.9
Max. Coil Temperature	t _{max}	°C	100
Thermal Dissipation Constant (NC)	K _{thn}	W/°C	3.7
Max. Bus Voltage	U _{bus}	Vdc	600
Magnetic Period	T _M	mm	30
Attraction Force	F _a	N	1494
Mechanical Parameters			
Coil Mass (NC)	m _{cn}	kg	3.9
Coil Length (NC)	L _{cn}	mm	268
Track Mass Per Meter	m _{track}	kg/m	6.1
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.	

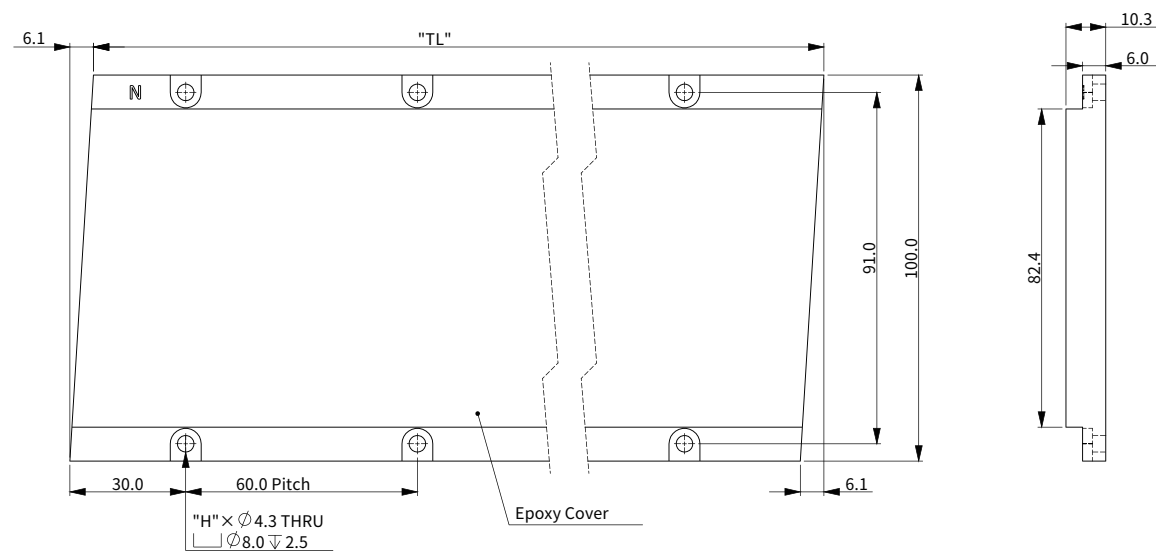
- Measurement is taken at ambient temperature 25°C. Value depends on the thermal environment.
Abbreviations:NC-Natural Cooling.
- Resistance is measured by DC current with standard 0.5 m cable.
- Inductance is measured by current frequency of 1 kHz.
- The contents of datasheet are subject to change without prior notice.

Dimension



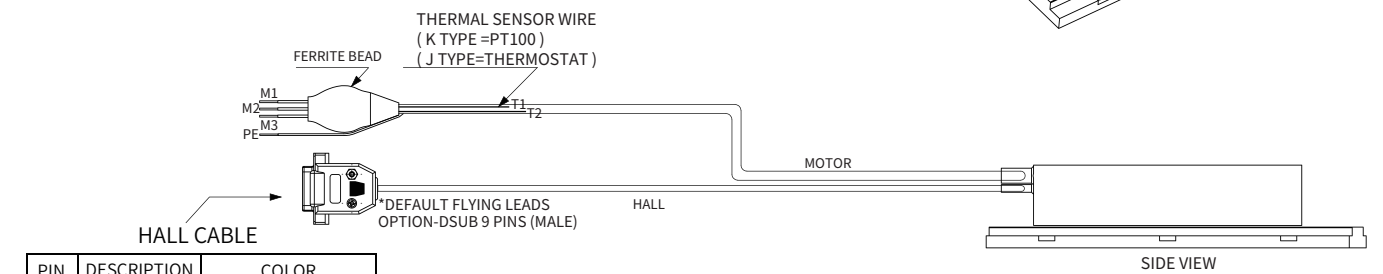
Force-Speed Curve



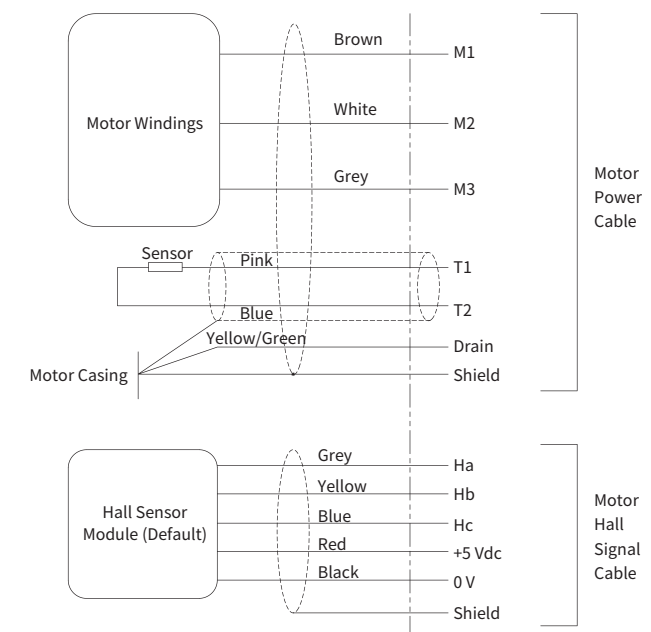


Magnet Track P / N:	Track Length “TL”	No. of Holes “H”
AQM80-TL180-E	180.0	6
AQM80-TL300-E	300.0	10
AQM80-TL420-E	420.0	14

PIN	DESCRIPTION	NO FERRITE BEAD	FERRITE BEAD
-	M1	BROWN	BLACK1
-	M2	WHITE	BLACK2
-	M3	GREY	BLACK3
-	PE	YELLOW/GREEN	YELLOW/GREEN
-	T1	PINK	PINK
-	T2	BLUE	BLUE



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



Part Numbering

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Motor Coil

AQM8-B1-J-NH-0.5-NFB

Model:
AQM8

Size:
B1 / B2

Thermal Sensor:
J=Thermostat(standard) / K=PT100(RTD)
(Contact us for other thermal sensor)

Motor Cable Option:
NFB / FB

Cable Length (m):
0.5 / 3.0
(Contact us for other lengths)

Hall Cable Option:
NH

1 NH = Without Built-in Hall Sensor but with Thermal Sensor

2 NFB = No ferrite bead

3 FB = Ferrite bead

AQM30-B1-J-HF-0.5-NFB

Model:
AQM24 / AQM30 / AQM50 / AQM80

Size:
B1 / B2

Thermal Sensor:
J=Thermostat(standard) / K=PT100(RTD)
(Contact us for other thermal sensor)

Motor Cable Option:
NFB / FB

Cable Length (m):
0.5 / 3.0
(Contact us for other lengths)

Hall Cable Option:
HF

1 HF = With Built-in hall sensor & hall cable comes with flying leads (Standard)

2 NFB = No ferrite bead

3 FB = Ferrite bead

Motor Track

AQM30-TL180-E

Model:
AQM8 / AQM24 / AQM30 / AQM50 / AQM80

Track Length:
TL180 / TL300 / TL420

Cover Type:
E

4 E=Epoxy cover