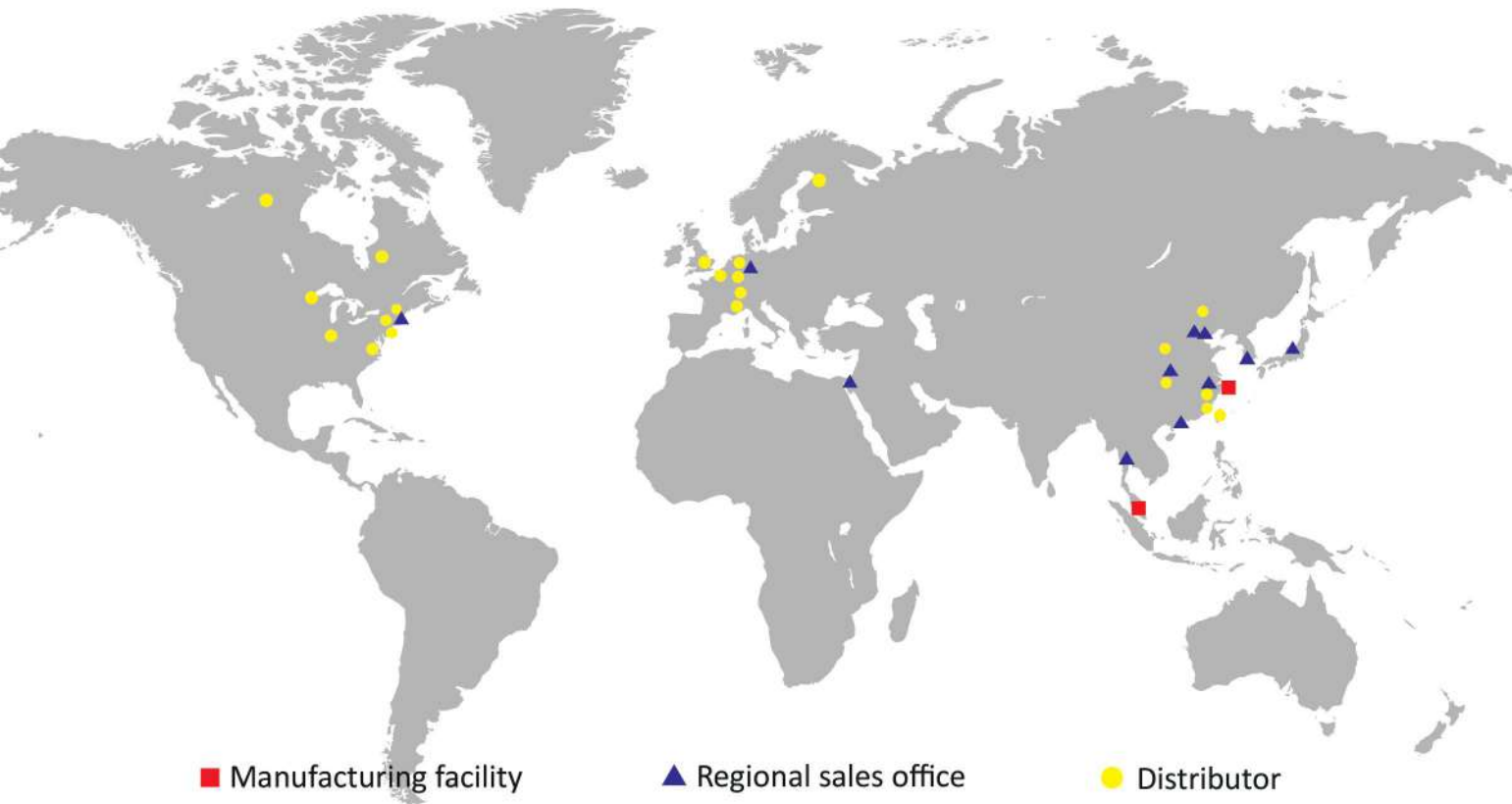


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ALM Series

Ironless Brushless Linear Motor

Ironless technology
Zero cogging force
Small end winding



where precision matters



ALM Series

- ▶ Ironless technology
- ▶ Zero cogging force
- ▶ Small end winding

ALM1

Specifications

Model		ALM1-S1	ALM1-S2	ALM1-S3	ALM1-S4
Performance Parameters	Unit	Series	Series	Series	Series
Continuous Force @100°C	N	5.5	10.9	16.4	21.9
Peak Force	N	27.3	54.7	82.0	109.4
Force Constant	N/Arms	7.02	14.0	21.0	28.1
Back EMF Constant	Vpeak/(m/s)	5.7	11.5	17.2	22.9
Motor Constant	N/Sqrt(W)	3.3	4.6	5.7	6.5
Resistance (Terminal to Terminal) ^①	Ω	3.1	6.1	9.2	12.3
Inductance (Terminal to Terminal)	mH	0.58	1.2	1.7	2.3
Electrical Time Constant	ms	0.19	0.19	0.19	0.19
Continuous Current @100°C ^②	Arms	0.8	0.8	0.8	0.8
Peak Current	Arms	3.9	3.9	3.9	3.9
Continuous Power Dissipation @100°C	W	3.6	7.2	10.8	14.4
Max. Coil Temperature	°C	100.0	100.0	100.0	100.0
Thermal Dissipation Constant	W/°C	0.05	0.10	0.14	0.19
Max. Bus Voltage	Vdc	330.0	330.0	330.0	330.0
Magnetic Period	mm	16.5	16.5	16.5	16.5
Cogging Force (pk to pk)	N	0.0	0.0	0.0	0.0
Attraction Force	N	0.0	0.0	0.0	0.0

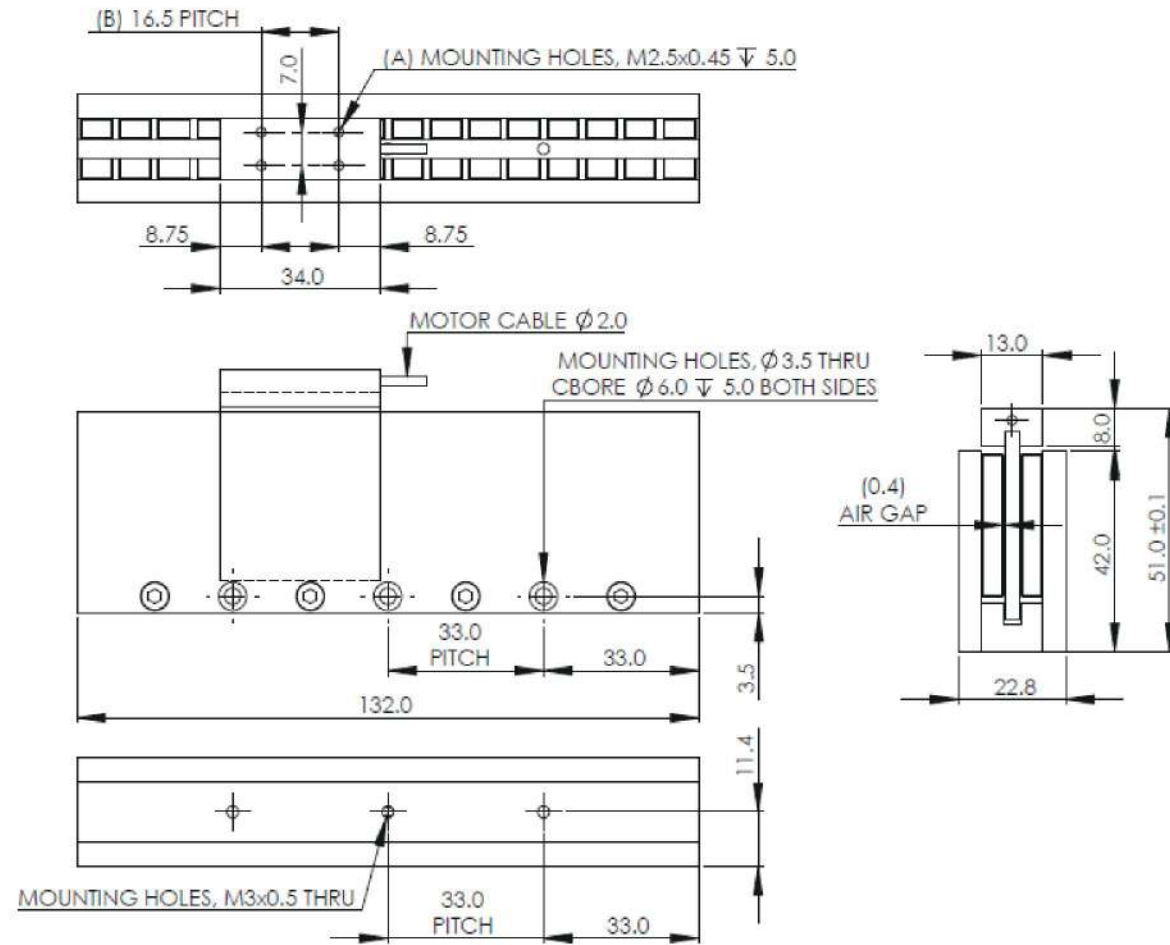
① In the measurement of resistance, the ambient temperature is 25°C.

② Continuous current is measured with coil mounted to an aluminium plate with same length as coil, 2x width, thickness 12mm and the ambient temperature is 25°C.

③ All parameters vary in the range of ± 10% except dimensions.

ALM1

Dimensions



Model	Coil Length	A	B
ALM1-S1	34.0	4	16.5
ALM1-S2	67.0	8	16.5
ALM1-S3	100.0	8	27.5
ALM1-S4	133.0	8	38.5

Model	Track Length
ALM1-TL132	132
ALM1-TL198	198
ALM1-TL231	231
ALM1-TL297	297
ALM1-TL594	594

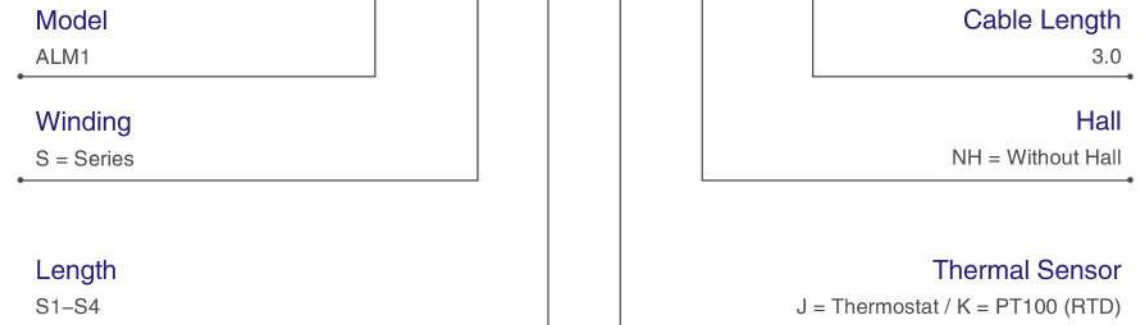
ALM1

Track



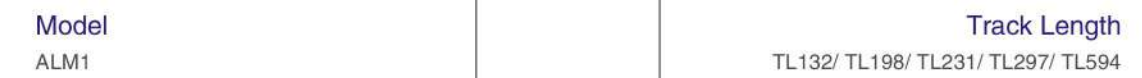
Coil

ALM1-S-S4-K-NH-3.0



Track

ALM1-TL132



ALM2

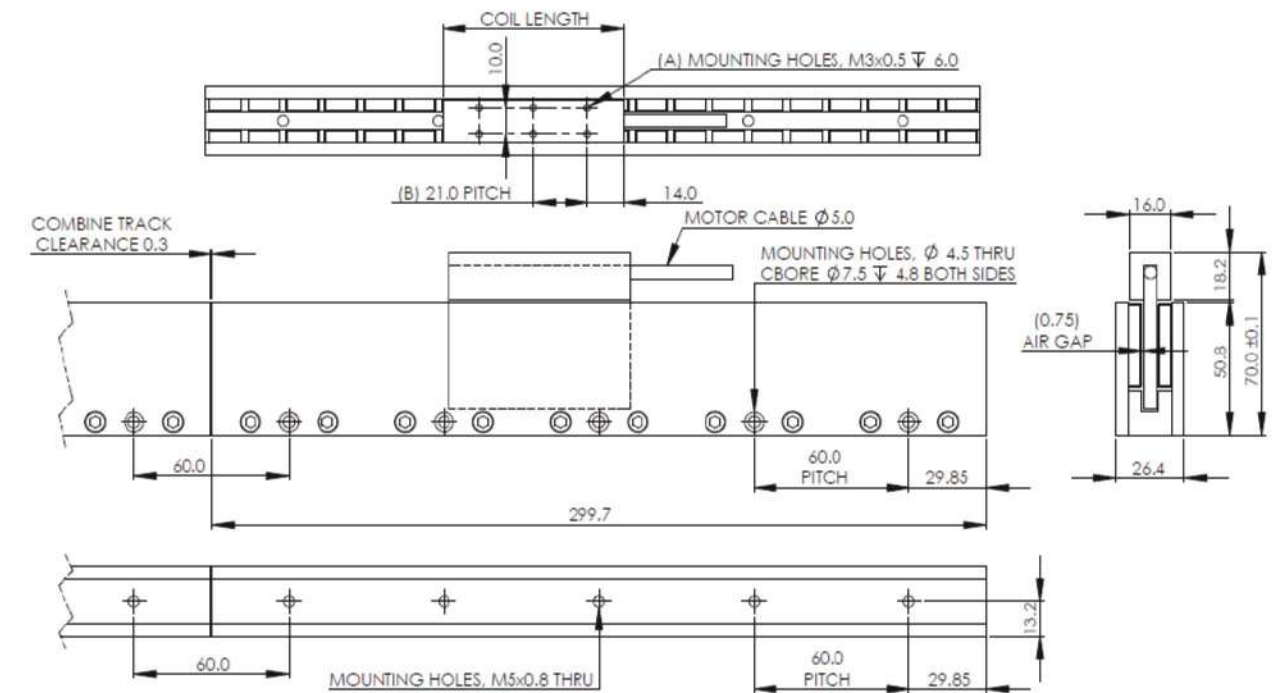
Specifications

Model		ALM2-S1	ALM2-S2	ALM2-S3	ALM2-S4
Performance Parameters	Unit	Series	Series	Series	Series
Continuous Force @100°C	N	17.0	34.0	51.1	68.1
Peak Force	N	85.1	170.2	255.3	340.4
Force Constant	N/Arms	7.74	15.5	23.2	30.95
Back EMF Constant	Vpeak/(m/s)	6.3	12.6	19.0	25.3
Motor Constant	N/Sqrt(W)	5.0	7.1	8.7	10.0
Resistance (Terminal to Terminal) ^①	Ω	1.6	3.2	4.8	6.3
Inductance (Terminal to Terminal)	mH	0.89	1.8	2.7	3.58
Electrical Time Constant	ms	0.56	0.56	0.56	0.56
Continuous Current @100°C ^②	Arms	2.2	2.2	2.2	2.2
Peak Current	Arms	11.0	11.0	11.0	11.0
Continuous Power Dissipation @100°C	W	15.0	29.9	44.9	59.0
Max. Coil Temperature	°C	100.0	100.0	100.0	100.0
Thermal Dissipation Constant	W/°C	0.2	0.4	0.60	0.79
Max. Bus Voltage	Vdc	330.0	330.0	330.0	330.0
Magnetic Period	mm	30.0	30.0	30.0	30.0
Cogging Force (pk to pk)	N	0.0	0.0	0.0	0.0
Attraction Force	N	0.0	0.0	0.0	0.0

- ① In the measurement of resistance, the ambient temperature is 25°C.
- ② Continuous current is measured with coil mounted to an aluminium plate with same length as coil, 2x width, thickness 12mm and the ambient temperature is 25°C.
- ③ All parameters vary in the range of ± 10% except dimensions.

ALM2

Dimensions



Model	Coil Length	A	B
ALM2-S1	70.0	6	21
ALM2-S2	130.0	8	34
ALM2-S3	190.0	8	54
ALM2-S4	250.0	8	74

Model	Track Length
ALM2-TL120	119.7
ALM2-TL180	179.7
ALM2-TL240	239.7
ALM2-TL300	299.7
ALM2-TL540	539.7

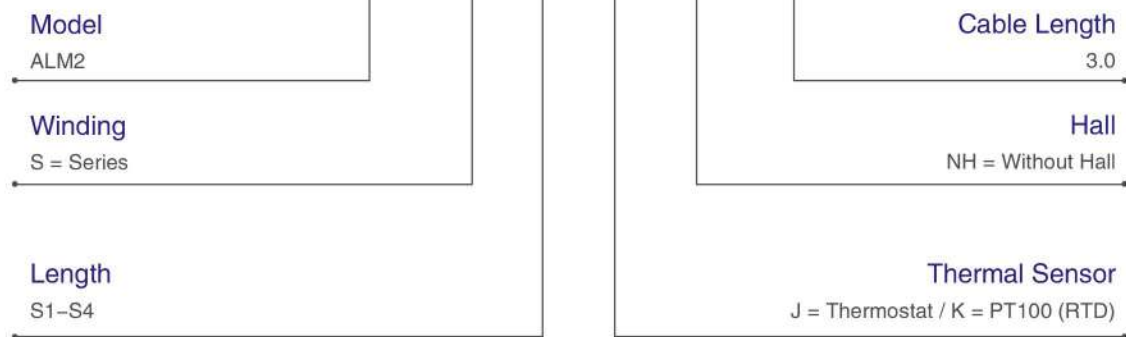
ALM2

Dimensions



Coil

ALM2-S-S4-K-NH-3.0



Track

ALM2-TL300



ALM3

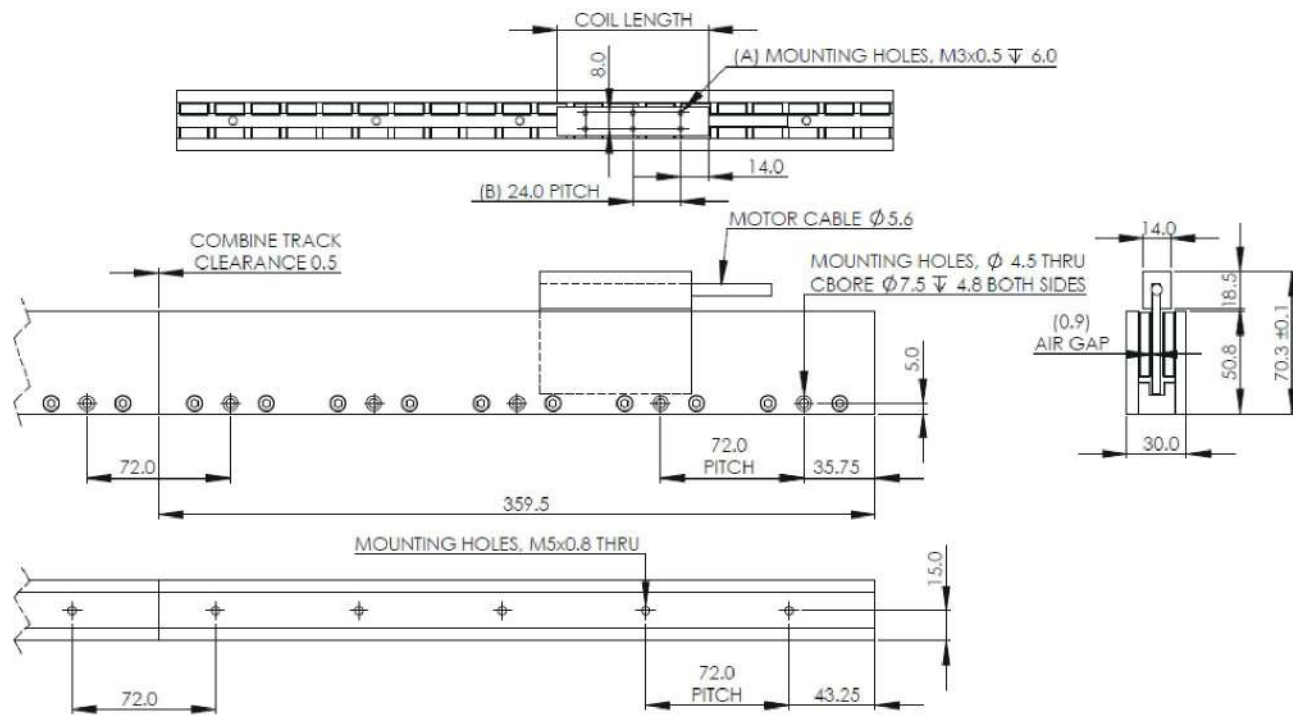
Specifications

Model		ALM3-S1	ALM3-S2	ALM3-S3	ALM3-S4
Performance Parameters	Unit	Series	Series	Series	Series
Continuous Force @100°C	N	18.0	36.1	54.1	72.2
Peak Force	N	50.5	101.0	151.6	202.1
Force Constant	N/Arms	7.22	14.4	21.7	28.9
Back EMF Constant	Vpeak/(m/s)	5.9	11.8	17.7	23.6
Motor Constant	N/Sqrt(W)	5.3	7.5	9.2	10.7
Resistance (Terminal to Terminal) ¹	Ω	1.2	2.4	3.7	4.9
Inductance (Terminal to Terminal)	mH	0.65	1.3	1.9	2.6
Electrical Time Constant	ms	0.53	0.53	0.53	0.53
Continuous Current @100°C ²	Arms	2.5	2.5	2.5	2.5
Peak Current	Arms	7.0	7.0	7.0	7.0
Continuous Power Dissipation @100°C	W	14.5	29.0	44.7	59.3
Max. Coil Temperature	°C	100.0	100.0	100.0	100.0
Thermal Dissipation Constant	W/°C	0.19	0.39	0.60	0.79
Max. Bus Voltage	Vdc	330.0	330.0	330.0	330.0
Magnetic Period	mm	36.0	36.0	36.0	36.0
Cogging Force (pk to pk)	N	0.0	0.0	0.0	0.0
Attraction Force	N	0.0	0.0	0.0	0.0

- ¹ In the measurement of resistance, the ambient temperature is 25°C.
- ² Continuous current is measured with coil mounted to an aluminium plate with same length as coil, 2x width, thickness 12mm and the ambient temperature is 25°C.
- ³ All parameters vary in the range of ± 10% except dimensions.

ALM3

Dimensions



Model	Coil Length	A	B
ALM3-S1	76.0	6	24
ALM3-S2	148.0	8	40
ALM3-S3	220.0	8	64
ALM3-S4	292.0	8	88

Model	Track Length
ALM3-TL144	143.5
ALM3-TL216	215.5
ALM3-TL360	359.5
ALM3-TL504	503.5

ALM3

Track



Coil

ALM3-S-S4-K-NH-3.0

Model

ALM3

Winding

S = Series

Length

S1-S4

Cable Length

3.0

Hall

NH = Without Hall

Thermal Sensor

J = Thermostat / K = PT100 (RTD)



Track

ALM3-TL360

Model

ALM3

Track Length

TL144/ TL216/ TL360/ TL504

ALM4

Specifications

Model		ALM4-S1	ALM4-S2	ALM4-S3	ALM4-S4
Performance Parameters	Unit	Series	Series	Series	Series
Continuous Force @100°C	N	42.4	84.8	127.2	169.6
Peak Force	N	141.3	282.7	424.0	565.4
Force Constant	N/Arms	17.67	35.3	53.0	70.67
Back EMF Constant	Vpeak/(m/s)	14.4	28.9	43.3	57.7
Motor Constant	N/Sqrt(W)	9.4	13.4	16.4	18.9
Resistance (Terminal to Terminal) ^①	Ω	2.3	4.7	7.0	9.3
Inductance (Terminal to Terminal)	mH	1.96	3.9	5.9	7.85
Electrical Time Constant	ms	0.84	0.84	0.84	0.84
Continuous Current @100°C ^②	Arms	2.4	2.4	2.4	2.4
Peak Current	Arms	8.0	8.0	8.0	8.0
Continuous Power Dissipation @100°C	W	25.6	52.4	77.9	103.6
Max. Coil Temperature	°C	100.0	100.0	100.0	100.0
Thermal Dissipation Constant	W/°C	0.34	0.70	1.04	1.38
Max. Bus Voltage	Vdc	330.0	330.0	330.0	330.0
Magnetic Period	mm	42.0	42.0	42.0	42.0
Cogging Force (pk to pk)	N	0.0	0.0	0.0	0.0
Attraction Force	N	0.0	0.0	0.0	0.0

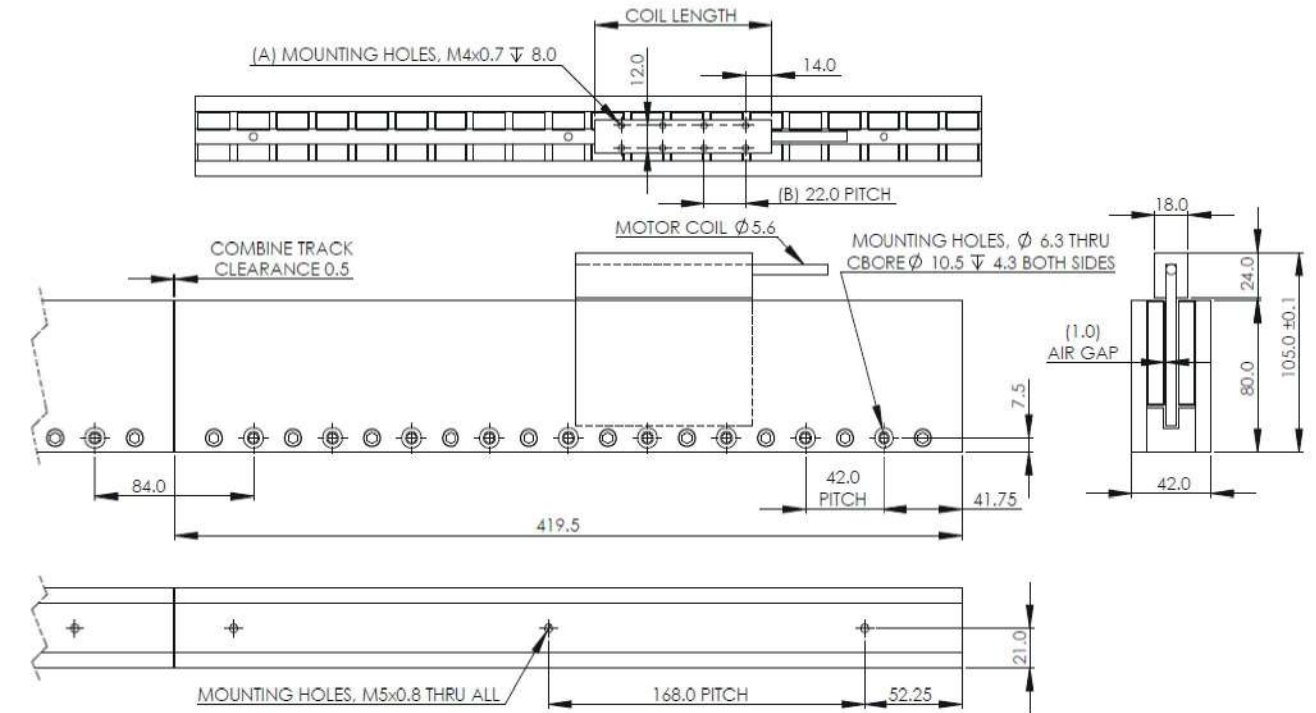
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ALM4

Dimensions



Model	Coil Length	A	B
ALM4-S1	94.0	8	22
ALM4-S2	178.0	8	50
ALM4-S3	262.0	10	78
ALM4-S4	346.0	10	79.5

Model	Track Length
ALM4-TL168	167.5
ALM4-TL252	251.5
ALM4-TL420	419.5
ALM4-TL588	587.5

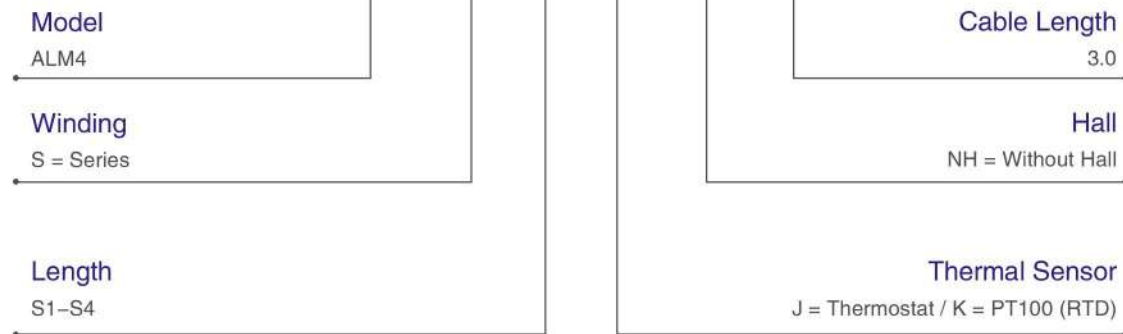
ALM4

Dimensions



Coil

ALM4-S-S4-J-NH-3.0



Track

ALM4-TL420



ALM12

Specifications

Model		ALM12-S1	ALM12-S2	ALM12-S3	ALM12-S4
Performance Parameters	Unit	Series	Series	Series	Series
Continuous Force @100°C	N	10.5	21.0	31.4	41.9
Peak Force	N	41.9	83.8	125.8	167.7
Force Constant	N/Arms	9.53	19.1	28.6	38.1
Back EMF Constant	Vpeak/(m/s)	7.8	15.6	23.3	31.1
Motor Constant	N/Sqrt(W)	4.3	6.1	7.5	8.6
Resistance (Terminal to Terminal) ^①	Ω	3.3	6.5	9.8	13.1
Inductance (Terminal to Terminal)	mH	1.15	2.3	3.5	4.6
Electrical Time Constant	ms	0.35	0.35	0.35	0.35
Continuous Current @100°C ^②	Arms	1.1	1.1	1.1	1.1
Peak Current	Arms	4.4	4.4	4.4	4.4
Continuous Power Dissipation @100°C	W	7.7	15.2	22.9	30.7
Max. Coil Temperature	°C	100.0	100.0	100.0	100.0
Thermal Dissipation Constant	W/°C	0.10	0.20	0.31	0.41
Max. Bus Voltage	Vdc	330.0	330.0	330.0	330.0
Magnetic Period	mm	33.0	33.0	33.0	33.0
Cogging Force (pk to pk)	N	0.0	0.0	0.0	0.0
Attraction Force	N	0.0	0.0	0.0	0.0

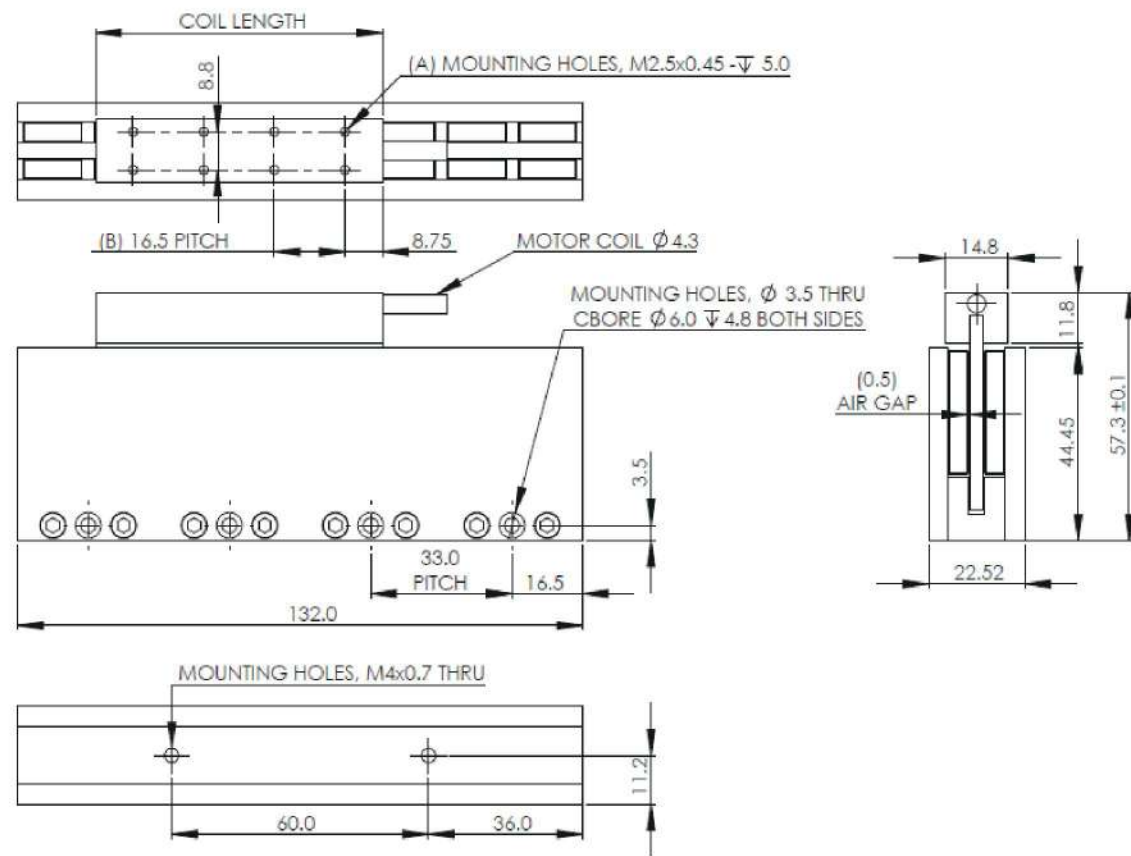
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ALM12

Dimensions



Model	Coil Length	A	B
ALM12-S1	67.0	8	16.5
ALM12-S2	133.0	8	38.5
ALM12-S3	199.0	8	60.5
ALM12-S4	265.0	8	82.5

Model	Track Length
ALM12-TL132	132
ALM12-TL198	198
ALM12-TL231	231
ALM12-TL297	297
ALM12-TL594	594

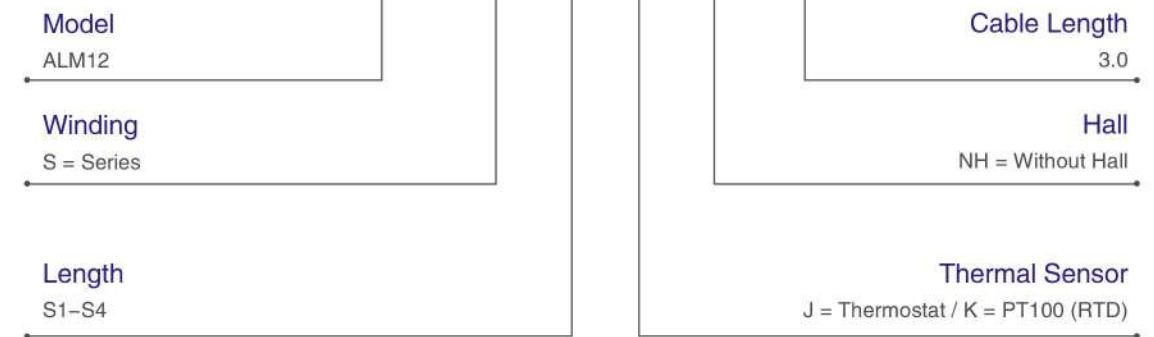
ALM12

Track



Coil

ALM12-S-S4-J-NH-3.0



Track

ALM12-TL132



■ ALM Motor Cable Wiring Diagram

■ Torque-Speed-Curve

