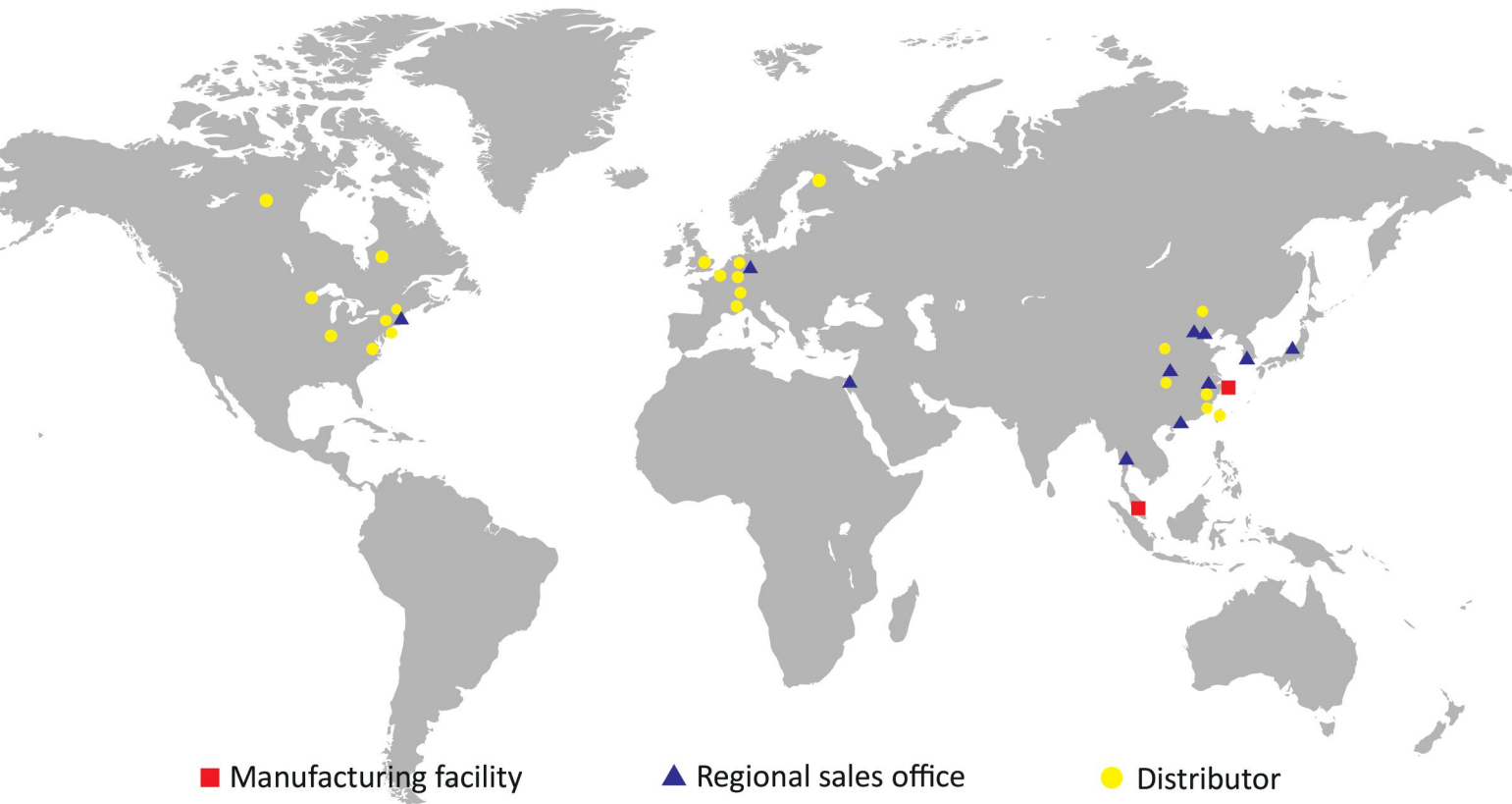


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ALM Series

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 |

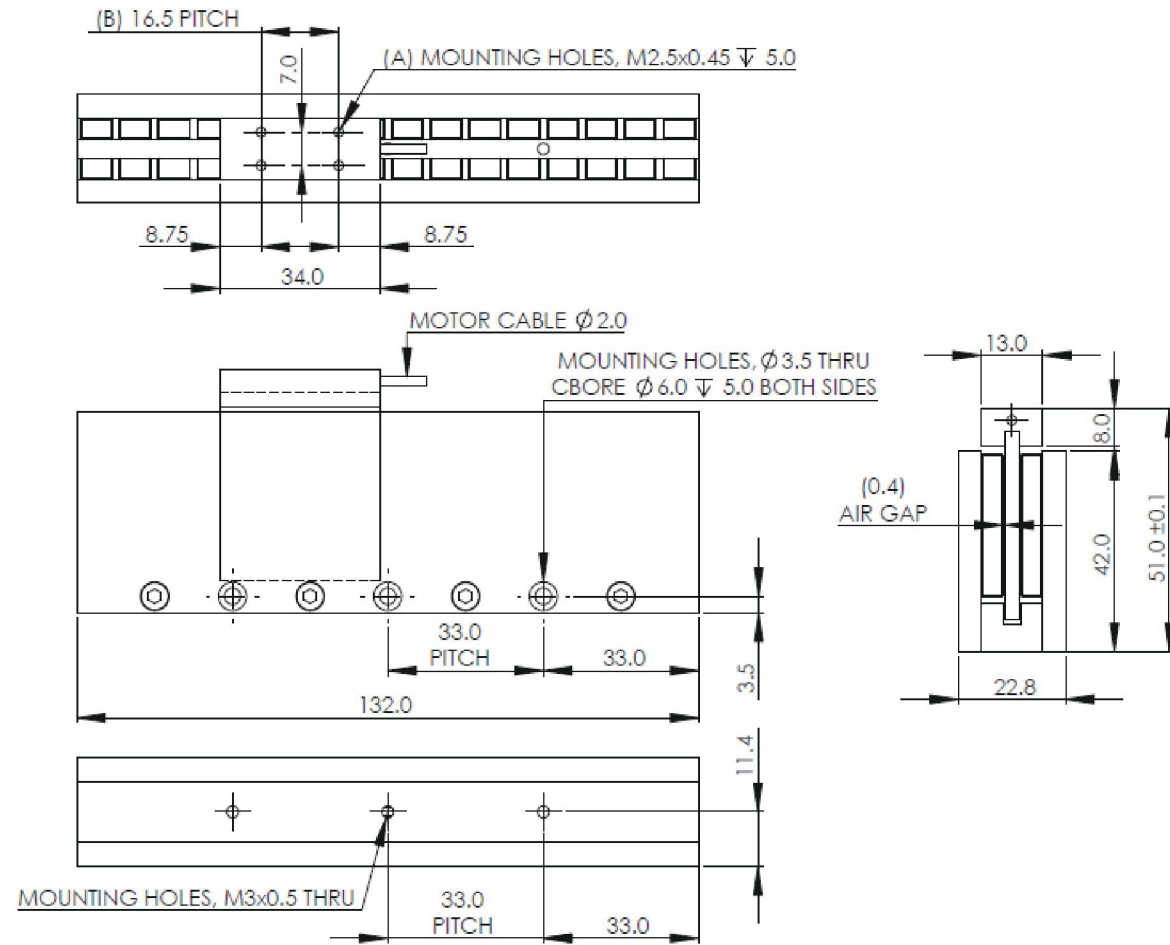
① In the measurement of resistance, the ambient temperature is 25°C.

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

Model

ALM1

Winding

S = Series

Length

S1-S4

Cable Length

3.0

Hall

NH = Without Hall

Thermal Sensor

J = Thermostat / K = PT100 (RTD)



Track

ALM1-TL132

Model

ALM1

Track Length

TL132/ TL198/ TL231/ TL297/ TL594

ALM2

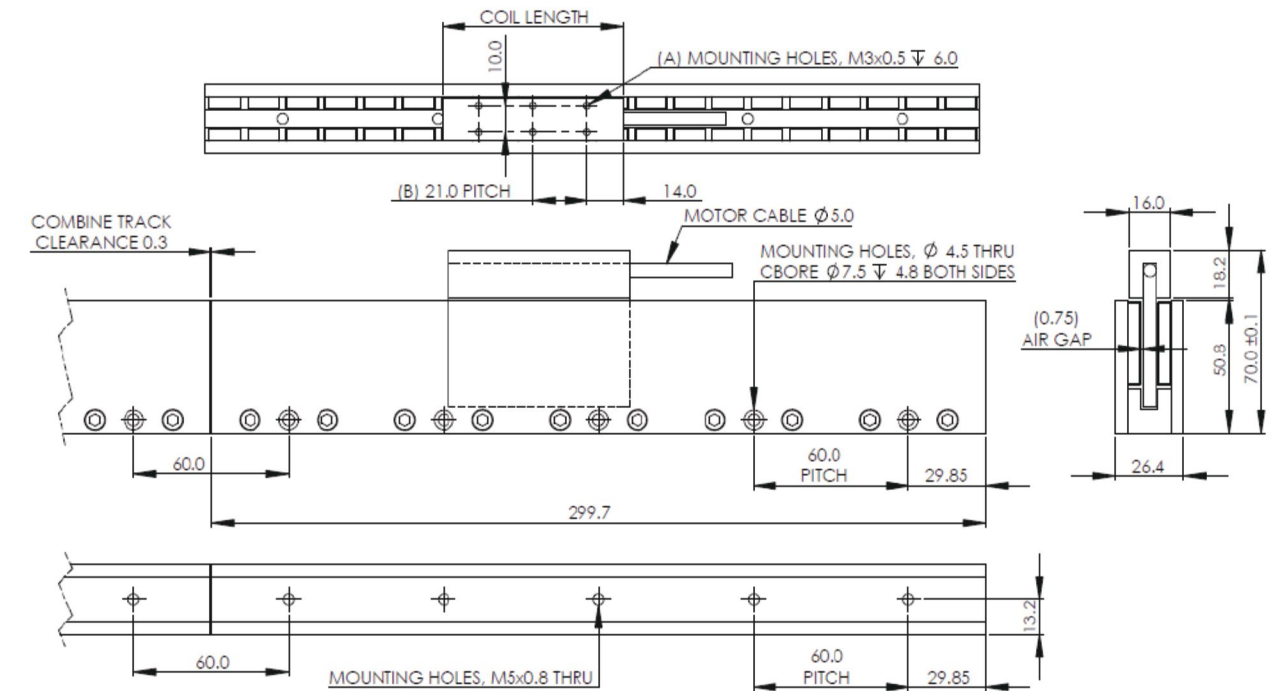
Specifications

| 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

Model

ALM2

Winding

S = Series

Length

S1-S4

Cable Length

3.0

Hall

NH = Without Hall

Thermal Sensor

J = Thermostat / K = PT100 (RTD)



Track

ALM2-TL300

Model

ALM2

Track Length

TL120/ TL180/ TL240/ TL300/ TL540

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 |

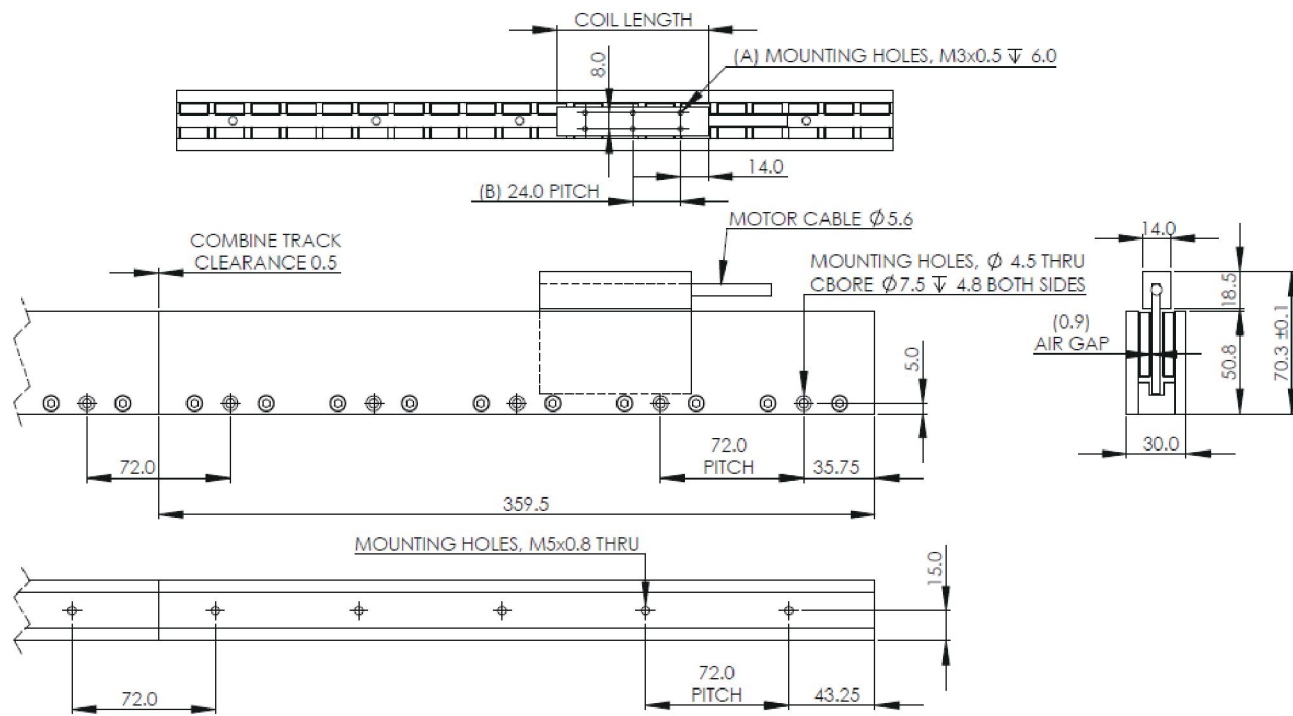
¹ In the measurement of resistance, the ambient temperature is 25°C.

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 |

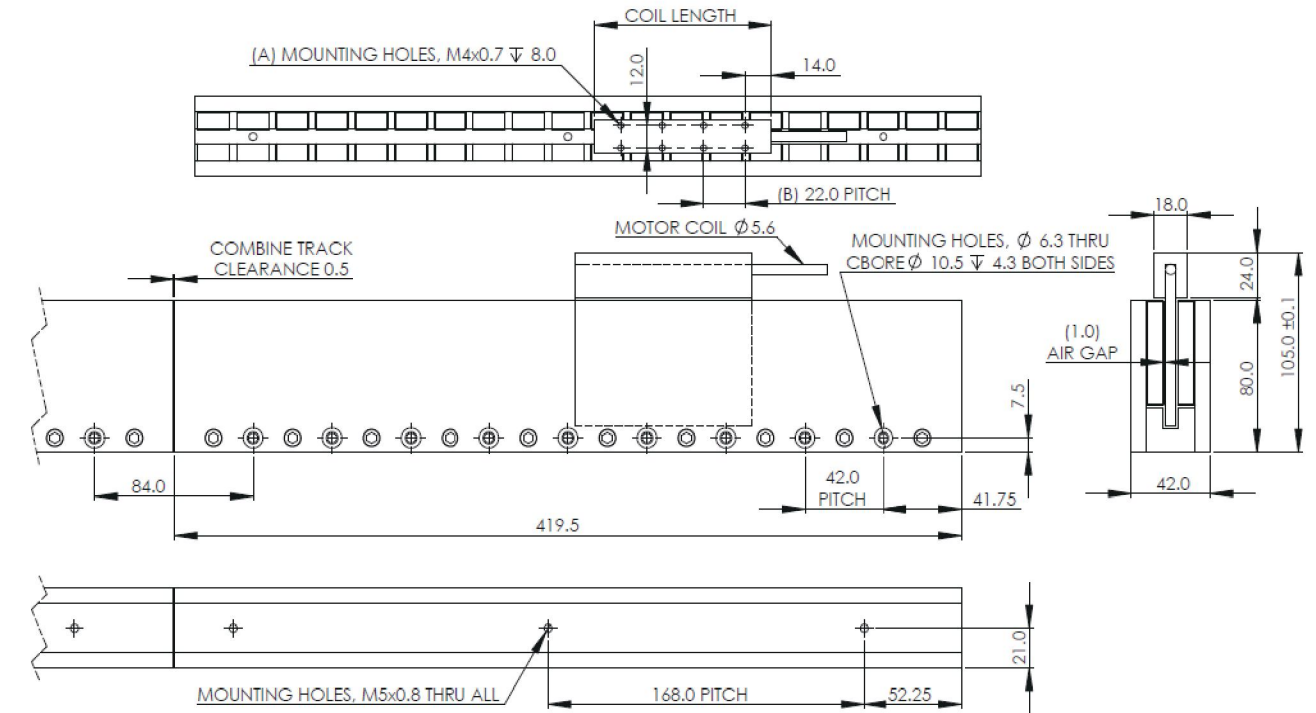
① In the measurement of resistance, the ambient temperature is 25°C.

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.

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 |

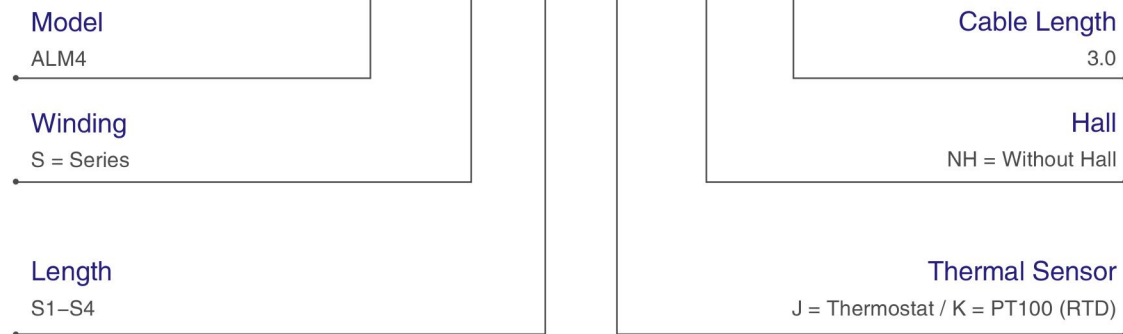
ALM4

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 |

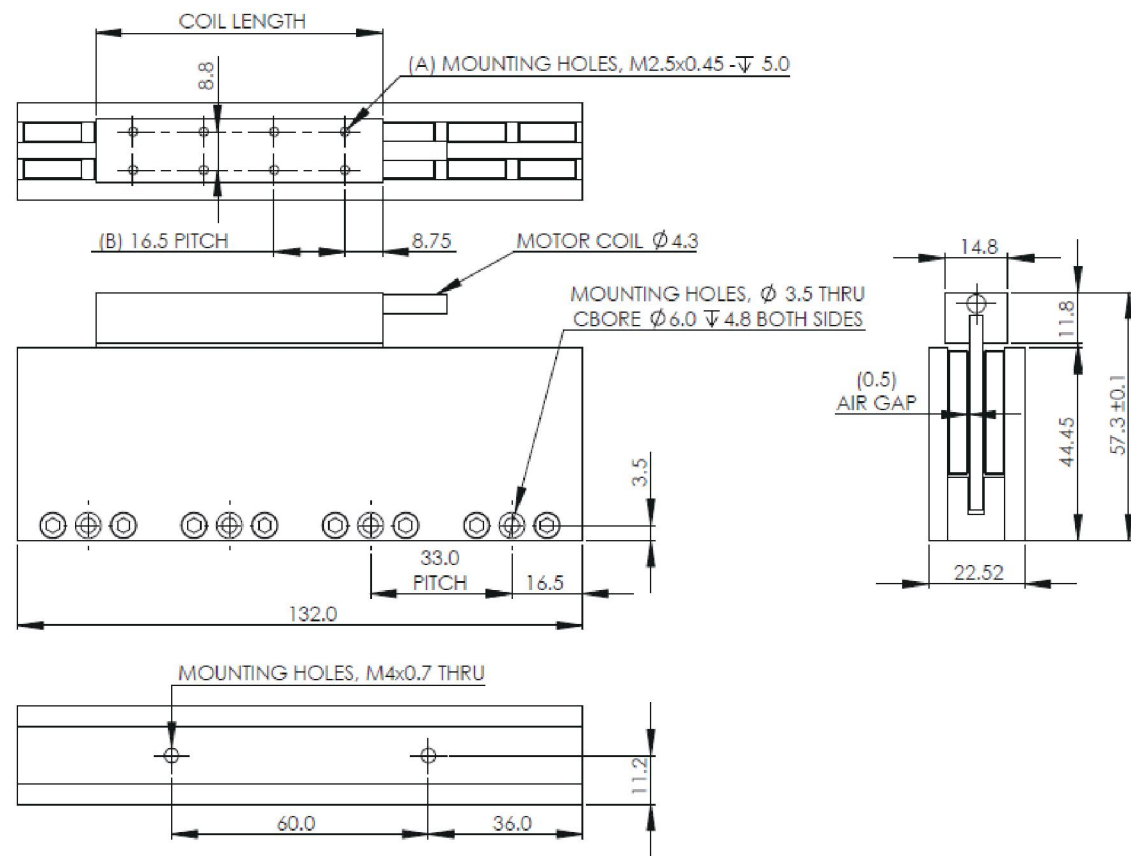
① In the measurement of resistance, the ambient temperature is 25°C.

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.

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

Model

ALM12

Winding

S = Series

Length

S1-S4

Cable Length

3.0

Hall

NH = Without Hall

Thermal Sensor

J = Thermostat / K = PT100 (RTD)



Track

ALM12-TL132

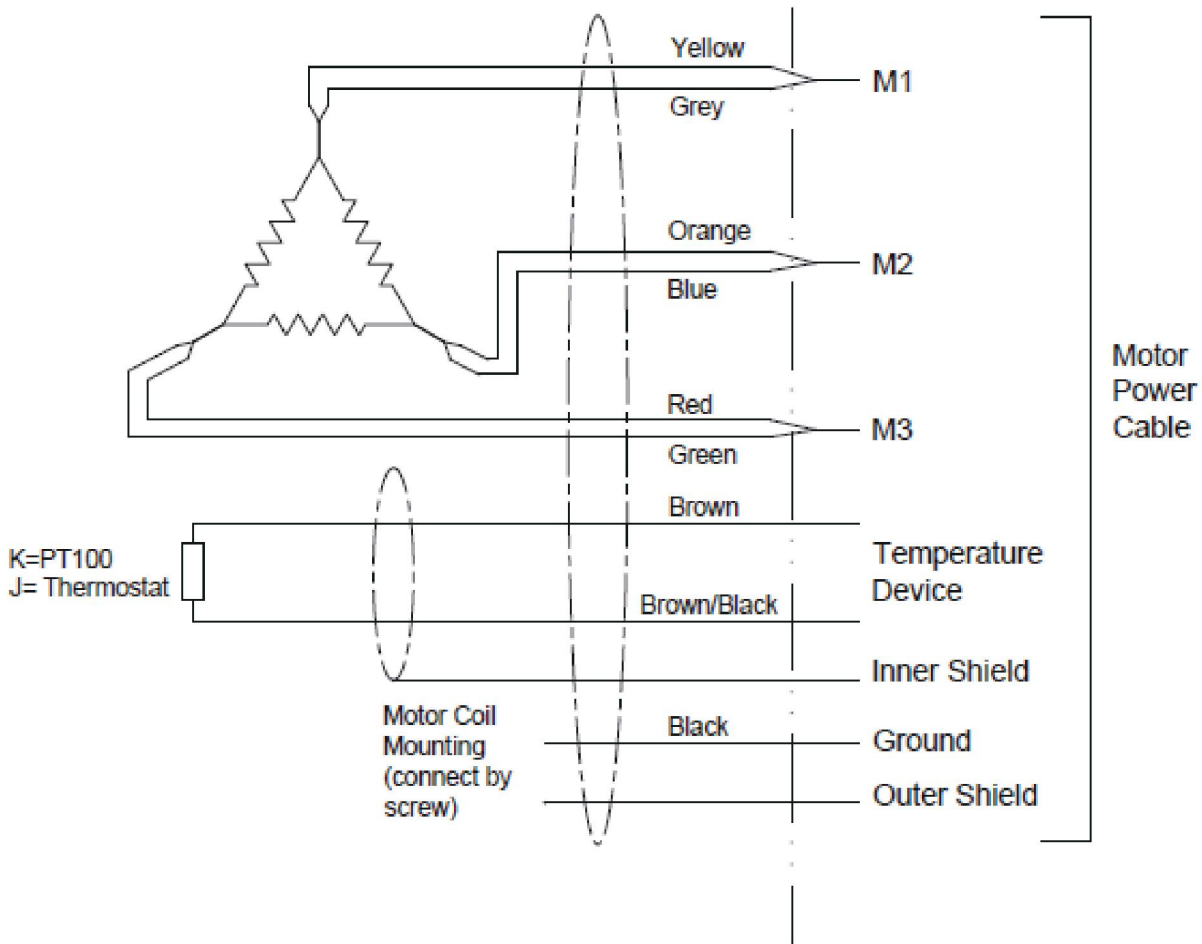
Model

ALM12

Track Length

TL132/ TL198/ TL231/ TL297/ TL594

■ ALM Motor Cable Wiring Diagram



■ Torque-Speed-Curve

