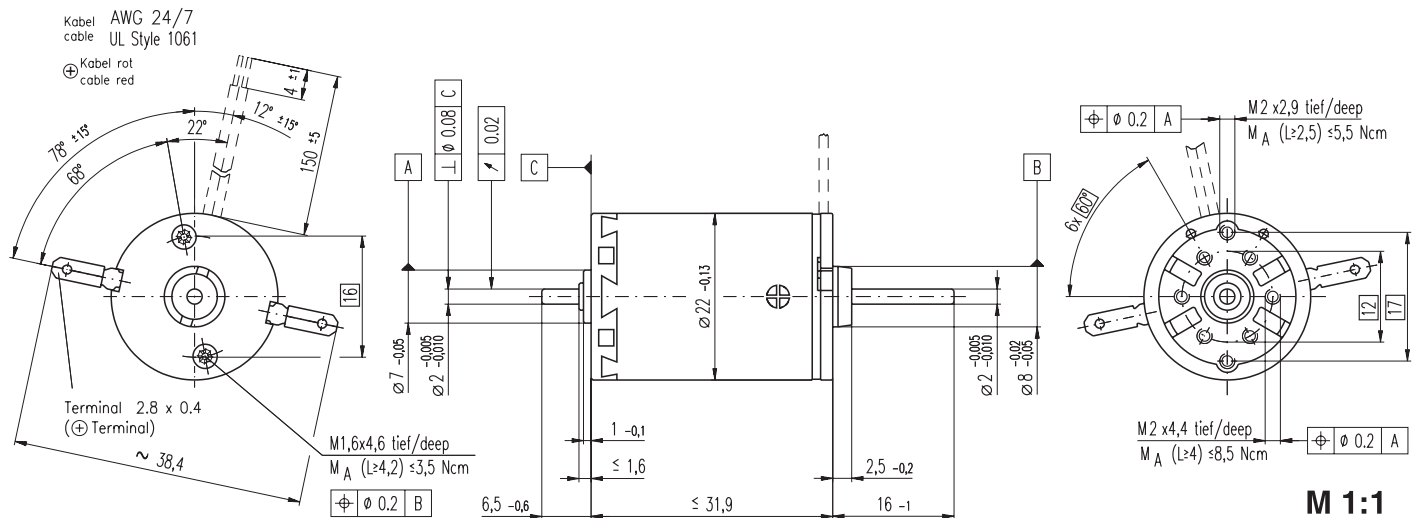


A-max 22 Ø22 mm, Graphite Brushes, 6 Watt

maxon A-max



- Stock program
- Standard program
- Special program (on request)

Order Number

| | | | | | | | | | | | | |
|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| with terminals | 110156 | 110158 | 110159 | 110160 | 110161 | 110162 | 110163 | 110164 | 110165 | 110166 | 110167 | 110168 |
| with cables | 139848 | 353023 | 353024 | 231171 | 353025 | 353026 | 231174 | 353027 | 353028 | 353029 | 316659 | 353603 |

Motor Data

| Values at nominal voltage | | | | | | | | | | | | | | | | | |
|---------------------------|---|------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|--|--|
| 1 | Nominal voltage | V | 6.0 | 9.0 | 9.0 | 12.0 | 12.0 | 15.0 | 18.0 | 24.0 | 24.0 | 36.0 | 48.0 | 48.0 | | | |
| 2 | No load speed | rpm | 9250 | 9710 | 8530 | 10200 | 9200 | 10100 | 9800 | 10500 | 8500 | 9650 | 9130 | 8220 | | | |
| 3 | No load current | mA | 83.2 | 57.9 | 49.7 | 45.9 | 40.5 | 36.0 | 29.0 | 23.7 | 18.4 | 14.2 | 10.0 | 8.85 | | | |
| 4 | Nominal speed | rpm | 5550 | 6370 | 5240 | 6990 | 5960 | 6880 | 6630 | 7430 | 5340 | 6500 | 5920 | 5020 | | | |
| 5 | Nominal torque (max. continuous torque) | mNm | 5.82 | 6.52 | 6.76 | 6.77 | 6.82 | 6.87 | 6.94 | 6.97 | 7.07 | 7.00 | 6.91 | 7.02 | | | |
| 6 | Nominal current (max. continuous current) | A | 1.06 | 0.816 | 0.741 | 0.664 | 0.602 | 0.529 | 0.433 | 0.350 | 0.287 | 0.214 | 0.150 | 0.138 | | | |
| 7 | Stall torque | mNm | 16.1 | 20.4 | 18.7 | 22.8 | 20.4 | 22.7 | 22.3 | 24.3 | 19.5 | 21.9 | 20.1 | 18.5 | | | |
| 8 | Starting current | A | 2.73 | 2.38 | 1.92 | 2.09 | 1.69 | 1.64 | 1.30 | 1.14 | 0.745 | 0.631 | 0.411 | 0.340 | | | |
| 9 | Max. efficiency | % | 65 | 70 | 69 | 72 | 71 | 72 | 72 | 73 | 71 | 72 | 71 | 70 | | | |
| Characteristics | | | | | | | | | | | | | | | | | |
| 10 | Terminal resistance | Ω | 2.20 | 3.78 | 4.69 | 5.74 | 7.12 | 9.15 | 13.8 | 21.0 | 32.2 | 57.1 | 117 | 141 | | | |
| 11 | Terminal inductance | mH | 0.106 | 0.222 | 0.288 | 0.362 | 0.445 | 0.584 | 0.890 | 1.37 | 2.10 | 3.68 | 7.29 | 8.95 | | | |
| 12 | Torque constant | mNm / A | 5.90 | 8.55 | 9.73 | 10.9 | 12.1 | 13.9 | 17.1 | 21.2 | 26.2 | 34.8 | 48.9 | 54.3 | | | |
| 13 | Speed constant | rpm / V | 1620 | 1120 | 981 | 875 | 790 | 689 | 558 | 450 | 364 | 274 | 195 | 176 | | | |
| 14 | Speed / torque gradient | rpm / mNm | 604 | 494 | 473 | 461 | 465 | 455 | 451 | 445 | 447 | 450 | 466 | 458 | | | |
| 15 | Mechanical time constant | ms | 25.2 | 21.8 | 21.2 | 20.6 | 20.3 | 19.9 | 19.4 | 19.1 | 19.0 | 18.9 | 18.9 | 18.8 | | | |
| 16 | Rotor inertia | gcm ² | 3.98 | 4.22 | 4.28 | 4.26 | 4.17 | 4.17 | 4.11 | 4.11 | 4.07 | 4.00 | 3.88 | 3.92 | | | |

Specifications

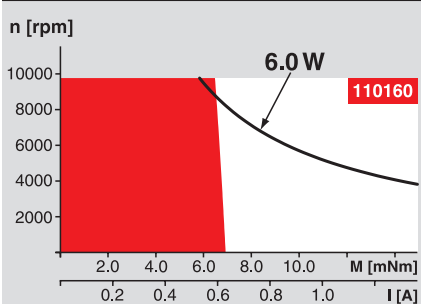
| Thermal data | | |
|-----------------------------------|--|----------------|
| 17 | Thermal resistance housing-ambient | 20 K / W |
| 18 | Thermal resistance winding-housing | 6.0 K / W |
| 19 | Thermal time constant winding | 10.1 s |
| 20 | Thermal time constant motor | 540 s |
| 21 | Ambient temperature | -30 ... +85°C |
| 22 | Max. permissible winding temperature | +125°C |
| Mechanical data (sleeve bearings) | | |
| 23 | Max. permissible speed | 9800 rpm |
| 24 | Axial play | 0.05 - 0.15 mm |
| 25 | Radial play | 0.012 mm |
| 26 | Max. axial load (dynamic) | 1 N |
| 27 | Max. force for press fits (static) (static, shaft supported) | 80 N / 440 N |
| 28 | Max. radial loading, 5 mm from flange | 2.8 N |
| Mechanical data (ball bearings) | | |
| 23 | Max. permissible speed | 9800 rpm |
| 24 | Axial play | 0.05 - 0.15 mm |
| 25 | Radial play | 0.025 mm |
| 26 | Max. axial load (dynamic) | 3.3 N |
| 27 | Max. force for press fits (static) (static, shaft supported) | 45 N / 440 N |
| 28 | Max. radial loading, 5 mm from flange | 12.3 N |
| Other specifications | | |
| 29 | Number of pole pairs | 1 |
| 30 | Number of commutator segments | 9 |
| 31 | Weight of motor | 54 g |

Values listed in the table are nominal.
Explanation of the figures on page 49.

Option

Ball bearings in place of sleeve bearings

Operating Range



Comments

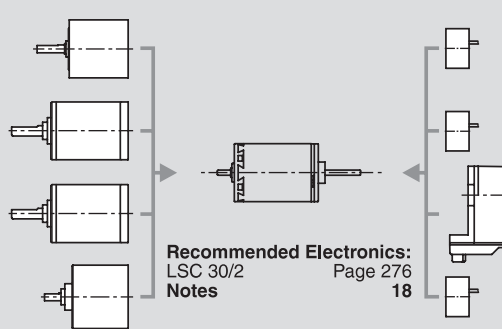
Continuous operation
In observation of above listed thermal resistance (lines 17 and 18) the maximum permissible winding temperature will be reached during continuous operation at 25°C ambient.
= Thermal limit.

Short term operation
The motor may be briefly overloaded (recurring).

— Assigned power rating

maxon Modular System

- Planetary Gearhead**
Ø22 mm
0.1 - 0.6 Nm
Page 228 / 229
- Planetary Gearhead**
Ø22 mm
0.5 - 1.0 Nm
Page 230
- Planetary Gearhead**
Ø22 mm
0.5 - 2.0 Nm
Page 231
- Spur Gearhead**
Ø24 mm
0.1 Nm
Page 234



Recommended Electronics:
LSC 30/2
Page 276
Notes 18

Overview on page 16 - 21

- Encoder MR**
32 CPT,
2 / 3 channels
Page 255
- Encoder MR**
128 / 256 / 512 CPT,
2 / 3 channels
Page 256
- Encoder Enc**
22 mm
100 CPT, 2 channels
Page 261
- Encoder MEnc**
Ø13 mm
16 CPT, 2 channels
Page 270