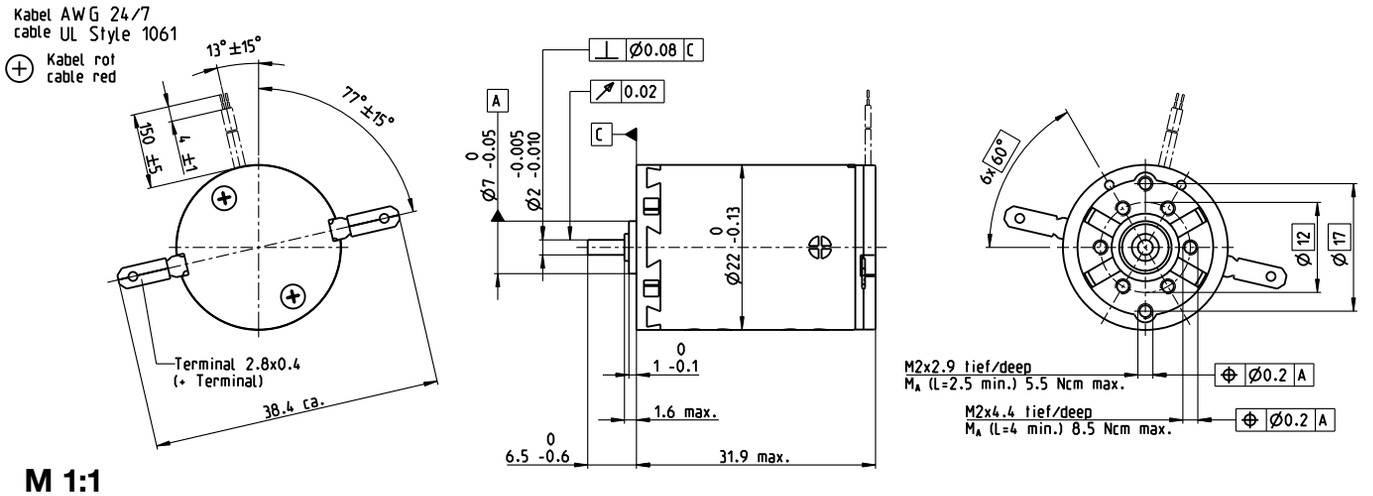
# A-max 22 ∅22 mm, Precious Metal Brushes CLL, 5 Watt






**M 1:1**

Stock program
Standard program
Special program (on request)

## Part Numbers

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| with terminals | 110117 | 110119 | 110120 | **110121** | 110122 | 110123 | 110124 | **110125** | 110126 | 110127 | **110128** | 110129 |
| with cables | 139838 | 218799 | 238798 | 202413 | 258367 | 137255 | 134267 | 134666 | 267423 | 137476 | 310003 | 342390 |

## Motor Data

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Values at nominal voltage** | | | | | | | | | | | | |
| 1 | Nominal voltage | V | 6 | 9 | 9 | 12 | 12 | 15 | 18 | 24 | 30 | 36 | 48 | 48 |
| 2 | No load speed | rpm | 9630 | 9970 | 8760 | 10400 | 9400 | 10300 | 9970 | 10700 | 10800 | 9800 | 9280 | 8370 |
| 3 | No load current | mA | 29.5 | 20.8 | 16.8 | 16.8 | 14.2 | 13.1 | 10.4 | 8.81 | 7.18 | 5.06 | 3.47 | 2.93 |
| 4 | Nominal speed | rpm | 7390 | 7300 | 6100 | 7770 | 6700 | 7530 | 7220 | 7970 | 8070 | 7000 | 6420 | 5520 |
| 5 | Nominal torque (max. continuous torque) | mNm | 4.81 | 6.22 | 6.3 | 6.24 | 6.18 | 6.1 | 6.05 | 6.02 | 5.98 | 5.94 | 5.83 | 5.9 |
| 6 | Nominal current (max. continuous current) | A | 0.84 | 0.745 | 0.661 | 0.586 | 0.523 | 0.451 | 0.362 | 0.291 | 0.234 | 0.175 | 0.122 | 0.111 |
| 7 | Stall torque | mNm | 20.1 | 22.9 | 20.5 | 24.3 | 21.4 | 22.9 | 22 | 23.5 | 23.5 | 20.8 | 19 | 17.4 |
| 8 | Stall current | A | 3.42 | 2.68 | 2.11 | 2.23 | 1.77 | 1.65 | 1.28 | 1.11 | 0.894 | 0.599 | 0.387 | 0.32 |
| 9 | Max. efficiency | % | 83 | 84 | 83 | 84 | 83 | 83 | 83 | 83 | 83 | 83 | 82 | 82 |
| | **Characteristics** | | | | | | | | | | | | | |
| 10 | Terminal resistance | Ω | 1.76 | 3.36 | 4.27 | 5.39 | 6.78 | 9.07 | 14 | 21.6 | 33.5 | 60.1 | 124 | 150 |
| 11 | Terminal inductance | mH | 0.106 | 0.222 | 0.288 | 0.362 | 0.445 | 0.584 | 0.89 | 1.37 | 2.1 | 3.68 | 7.29 | 8.95 |
| 12 | Torque constant | mNm/A | 5.9 | 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 | 482 | 438 | 430 | 432 | 443 | 451 | 458 | 459 | 465 | 474 | 494 | 486 |
| 15 | Mechanical time constant | ms | 20.5 | 19.8 | 19.7 | 19.7 | 19.8 | 20.2 | 20.1 | 20.2 | 20.3 | 20.3 | 20.5 | 20.4 |
| 16 | Rotor inertia | gcm² | 4.07 | 4.32 | 4.37 | 4.36 | 4.26 | 4.27 | 4.2 | 4.2 | 4.16 | 4.09 | 3.97 | 4.01 |

## Specifications

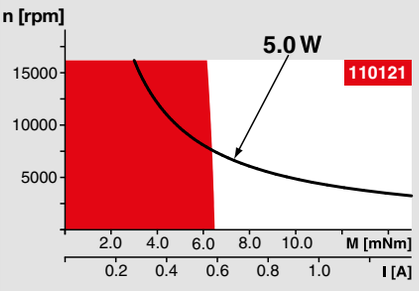
| | | |
|---|---|---|
| | **Thermal data** | |
| 17 | Thermal resistance housing-ambient | 20 K/W |
| 18 | Thermal resistance winding-housing | 6.0 K/W |
| 19 | Thermal time constant winding | 10.2 s |
| 20 | Thermal time constant motor | 313 s |
| 21 | Ambient temperatureC | -30…+65°C |
| 22 | Max. winding temperature | +85°C |
| | **Mechanical data (sleeve bearings)** | |
| 23 | Max. speed | 16000 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) | 80 N |
| 28 | Max. radial load, 5 mm from flange | 2.8 N |
| | **Mechanical data (ball bearings)** | |
| 23 | Max. speed | 16000 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) | 45 N |
| 28 | Max. radial load, 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 |

CLL = Capacitor Long Life

Values listed in the table are nominal.
Explanation of the figures on page 64.

**Option**
Ball bearings in place of sleeve bearings
Without CLL

## 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

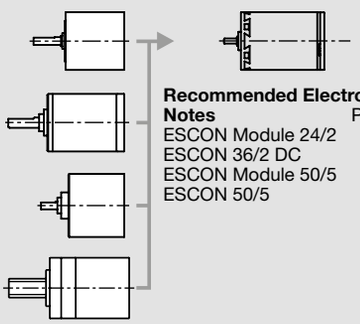
Overview on page 28–36

**Planetary Gearhead**
∅22 mm
0.1 - 0.6 Nm
Page 323/324

**Planetary Gearhead**
∅22 mm
0.5 - 2.0 Nm
Page 325/327

**Spur Gearhead**
∅24 mm
0.1 Nm
Page 331

**Spindle Drive**
∅22 mm
Page 364/365



**Recommended Electronics:**

| Notes | Page 30 |
|---|---|
| ESCON Module 24/2 | 426 |
| ESCON 36/2 DC | 426 |
| ESCON Module 50/5 | 427 |
| ESCON 50/5 | 428 |