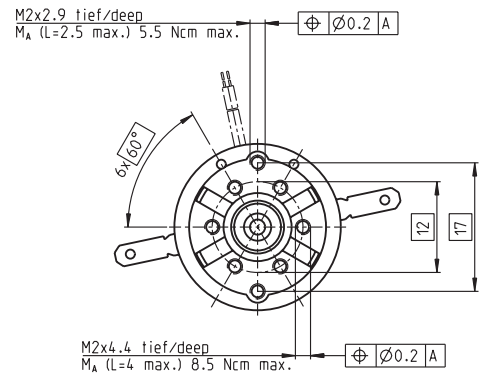
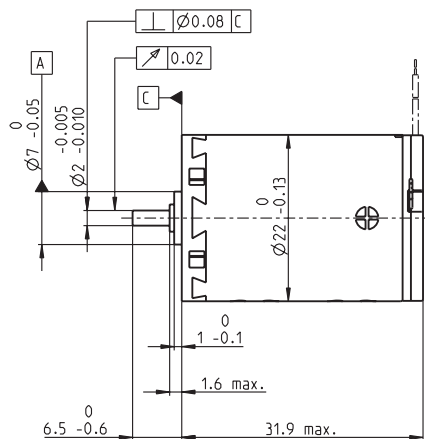
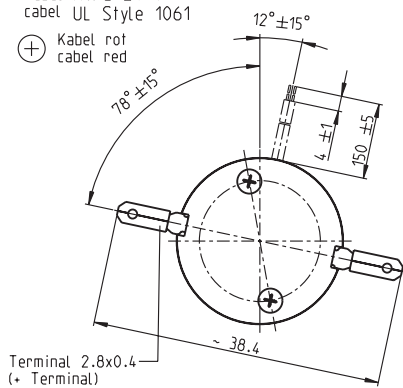


# A-max 22 Ø22 mm, Graphite Brushes, 6 Watt

Kabel AWG 24/7  
cabel UL Style 1061

⊕ Kabel rot  
cabel red



M 1:1

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

## Order Number

|                |        |        |        |        |        |        |        |        |        |        |        |        |
|----------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| with terminals | 110143 | 110145 | 110146 | 110147 | 110148 | 110149 | 110150 | 110151 | 110152 | 110153 | 110154 | 110155 |
| with cables    | 139840 | 353017 | 199807 | 320206 | 323856 | 108828 | 199424 | 202921 | 267433 | 325492 | 313302 | 353019 |

## 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               | 25.1  | 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 <sup>2</sup> | 3.97  | 4.22  | 4.28  | 4.26  | 4.17  | 4.17  | 4.11  | 4.11  | 4.07  | 4.00  | 3.88  | 3.92  |  |  |  |  |

## Specifications

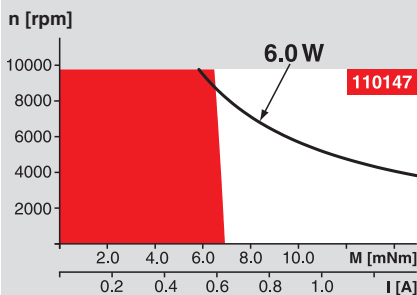
| Thermal data                      |                                       |                |
|-----------------------------------|---------------------------------------|----------------|
| 17                                | Thermal resistance housing-ambient    | 20 K / W       |
| 18                                | 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)    | 80 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)    | 45 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

Overview on page 16 - 21

### Planetary Gearhead

Ø22 mm  
0.1 - 0.6 Nm  
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### Planetary Gearhead

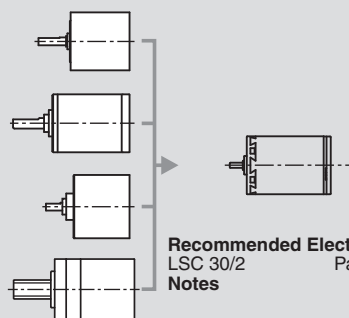
Ø22 mm  
0.5 - 2.0 Nm  
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### Spur Gearhead

Ø24 mm  
0.1 Nm  
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### Spindle Drive

Ø22 mm  
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**Recommended Electronics:**  
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