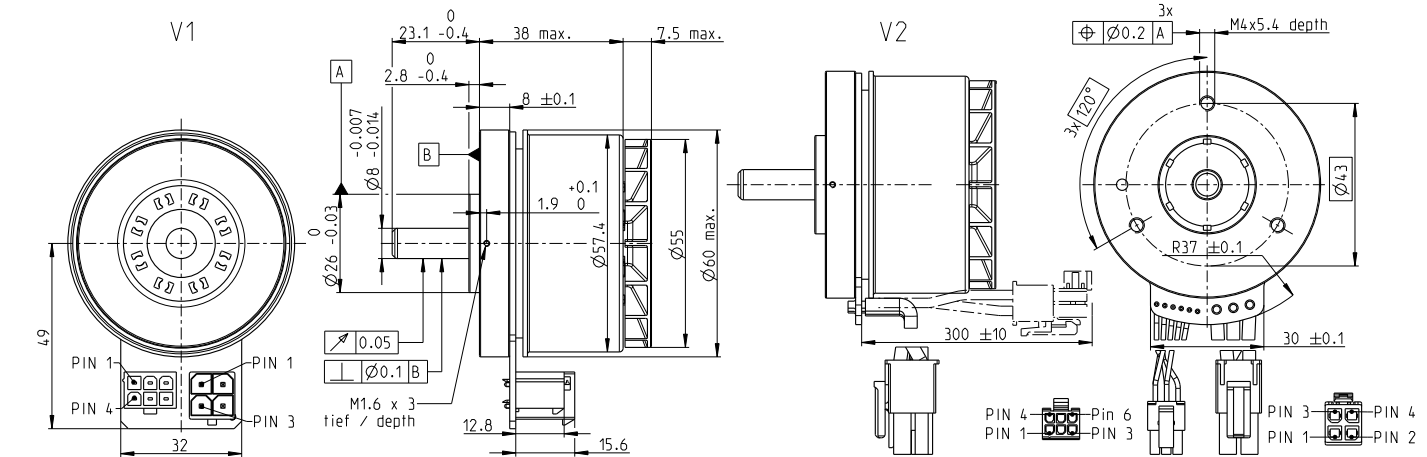


# EC 60 flat Ø60 mm, brushless, 200 Watt

Ventilated

NEW

maxon flat motor



M 1:2

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

## Part Numbers

V1 with Hall sensors  
V2 with Hall sensors and cables

|        |        |        |
|--------|--------|--------|
| 625860 | 614949 | 625861 |
| 647696 | 642221 | 647697 |

## Motor Data

| Values at nominal voltage                   |                  |        |       |       |
|---|------------------|--------|-------|-------|
| 1 Nominal voltage                           | V                | 12     | 24    | 48    |
| 2 No load speed                             | rpm              | 3760   | 4300  | 4020  |
| 3 No load current                           | mA               | 815    | 497   | 224   |
| 4 Nominal speed                             | rpm              | 2790   | 3240  | 3020  |
| 5 Nominal torque (max. continuous torque)   | mNm              | 492    | 536   | 577   |
| 6 Nominal current (max. continuous current) | A                | 15.1   | 9.28  | 4.6   |
| 7 Stall torque <sup>1</sup>                 | mNm              | 3340   | 4300  | 4870  |
| 8 Stall current                             | A                | 111    | 81.9  | 43.2  |
| 9 Max. efficiency                           | %                | 83.8   | 85.2  | 86.3  |
| Characteristics                             |                  |        |       |       |
| 10 Terminal resistance phase to phase       | Ω                | 0.108  | 0.293 | 1.11  |
| 11 Terminal inductance phase to phase       | mH               | 0.0911 | 0.279 | 1.28  |
| 12 Torque constant                          | mNm/A            | 30     | 52.5  | 113   |
| 13 Speed constant                           | rpm/V            | 318    | 182   | 84.8  |
| 14 Speed/torque gradient                    | rpm/mNm          | 1.14   | 1.01  | 0.837 |
| 15 Mechanical time constant                 | ms               | 9.95   | 8.83  | 9.29  |
| 16 Rotor inertia                            | gcm <sup>2</sup> | 832    | 832   | 832   |

## Specifications

| Thermal data  |                  |
|---|------------------|
| 17 Thermal resistance housing-ambient                           | 1.22 K/W         |
| 18 Thermal resistance winding-housing                           | 0.843 K/W        |
| 19 Thermal time constant winding                                | 9.19 s           |
| 20 Thermal time constant motor                                  | 44 s             |
| 21 Ambient temperature  | -40...+100°C     |
| 22 Max. winding temperature                                     | +125°C           |
| Mechanical data (preloaded ball bearings)                       |                  |
| 23 Max. speed   | 6000 rpm         |
| 24 Axial play at axial load < 12.0 N                            | 0 mm             |
|   | > 12.0 N 0.14 mm |
| 25 Radial play  | preloaded        |
| 26 Max. axial load (dynamic)                                    | 12 N             |
| 27 Max. force for press fits (static) (static, shaft supported) | 170 N 8000 N     |
| 28 Max. radial load, 5 mm from flange                           | 112 N            |

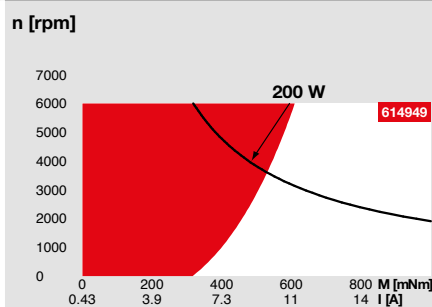
| Other specifications                    |       |
|---|-------|
| 29 Number of pole pairs                 | 7     |
| 30 Number of phases                     | 3     |
| 31 Weight of motor                      | 360 g |
| Values listed in the table are nominal. |       |

| Connection V1                             |                                | V2 (sensors, AWG 24)           |
|---|--------------------------------|--------------------------------|
| Pin 1                                     | Hall sensor1                   | Hall sensor1                   |
| Pin 2                                     | Hall sensor 2                  | Hall sensor 2                  |
| Pin 3                                     | V <sub>Hall</sub> 4.5...24 VDC | Hall sensor 3                  |
| Pin 4                                     | Hall sensor 3                  | GND                            |
| Pin 5                                     | GND                            | V <sub>Hall</sub> 4.5...24 VDC |
| Pin 6                                     | N.C.                           | N.C.                           |
|   |                                | V2 (Motor, AWG 14)             |
| Pin 1                                     | Motor winding 1                | Motor winding 1                |
| Pin 2                                     | Motor winding 3                | Motor winding 2                |
| Pin 3                                     | Motor winding 2                | Motor winding 3                |
| Pin 4                                     |                                | N.C.                           |
| Wiring diagram for Hall sensors see p. 47 |                                |                                |

| Connector        | Part number |
|------------------|-------------|
| Molex 46015-0606 | 43025-0600  |
| Molex 76829-0104 | 171692-0104 |

Connection cable for V1  
Connection cable Universal, L = 500 mm **651900**  
<sup>1</sup>Calculation does not include saturation effect (p. 57/162)

## 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.

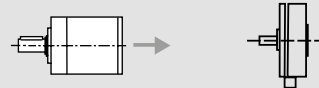
**Short term operation**  
The motor may be briefly overloaded (recurring).

Assigned power rating

## maxon Modular System

Details on catalog page 36

Planetary Gearhead  
Ø52 mm  
4 - 30 Nm  
Page 367



| Recommended Electronics: |         |
|--------------------------|---------|
| Notes                    | Page 36 |
| ESCON Module 50/5        | 455     |
| ESCON Mod. 50/8 (HE)     | 456     |
| ESCON 50/5               | 457     |
| ESCON 70/10              | 457     |
| DEC Module 50/5          | 459     |