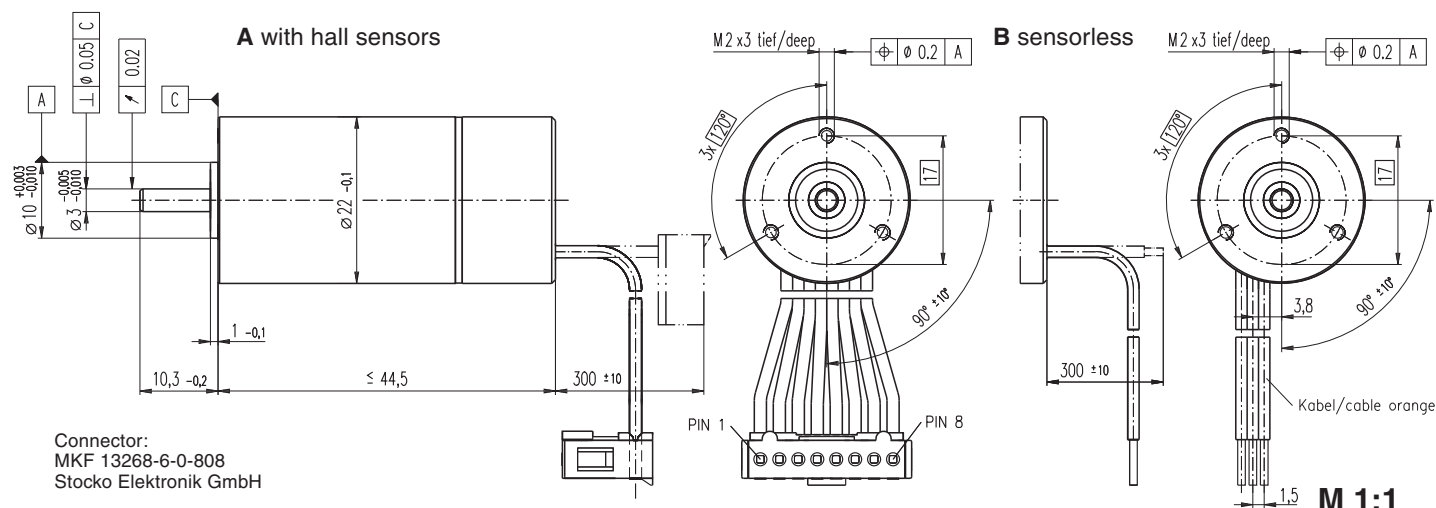


**EC 22** Ø22 mm, brushless, 20 Watt

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

**Order Number**

A with Hall sensors  
B sensorless

169007	169008	200685	200118
200859	200857	200860	200858

**Motor Data**

Values at nominal voltage					
1	Nominal voltage	V	24.0	24.0	24.0
2	No load speed	rpm	35500	20500	16700
3	No load current	mA	168	74.1	55.6
4	Nominal speed	rpm	30900	16500	12700
5	Nominal torque (max. continuous torque)	mNm	15.8	16.9	15.9
6	Nominal current (max. continuous current)	A	2.48	1.51	1.16
7	Stall torque	mNm	195	117	82.7
8	Starting current	A	30.4	10.5	6.08
9	Max. efficiency	%	86	84	82
Characteristics					
10	Terminal resistance phase to phase	Ω	0.789	2.28	3.95
11	Terminal inductance phase to phase	mH	0.071	0.214	0.322
12	Torque constant	mNm / A	6.40	11.1	13.6
13	Speed constant	rpm / V	1490	861	702
14	Speed / torque gradient	rpm / mNm	184	177	204
15	Mechanical time constant	ms	5.78	5.56	6.40
16	Rotor inertia	gcm <sup>2</sup>	3.00	3.00	3.00

**Specifications**

- Thermal data**
- 17 Thermal resistance housing-ambient 10 K / W
- 18 Thermal resistance winding-housing 2.0 K / W
- 19 Thermal time constant winding 4.93 s
- 20 Thermal time constant motor 300 s
- 21 Ambient temperature -20 ... +100°C
- 22 Max. permissible winding temperature +125°C
- Mechanical data (preloaded ball bearings)**
- 23 Max. permissible speed<sup>1)</sup> 50000 rpm
- 24 Axial play at axial load < 5 N 0 mm
- > 5 N max. 0.14 mm
- 25 Radial play preloaded
- 26 Max. axial load (dynamic) 4 N
- 27 Max. force for press fits (static) 60 N
- (static, shaft supported) 250 N
- 28 Max. radial loading, 5 mm from flange 16 N
- 1) in combination with encoder MR  $n_{max} = 37500$  rpm
- Other specifications**
- 29 Number of pole pairs 1
- 30 Number of phases 3
- 31 Weight of motor 85 g

Values listed in the table are nominal.

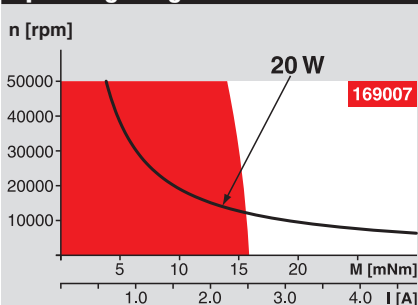
**Connection A**

- brown Motor winding 1 Pin 1  
 red Motor winding 2 Pin 2  
 orange Motor winding 3 Pin 3  
 yellow V<sub>Hall</sub> 4.5 ... 24 VDC Pin 4  
 green GND Pin 5  
 blue Hall sensor 1\* Pin 6  
 violet Hall sensor 2\* Pin 7  
 grey Hall sensor 3\* Pin 8

\*Internal pull-up (7 ... 13 kΩ) on pin 4

**Connection B** (Cable AWG 24)

- brown Motor winding 1  
 red Motor winding 2  
 orange Motor winding 3
- Wiring diagram for Hall sensors see page 27

**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  
0.5 - 3.4 Nm  
Page 226 / 227

**Spindle Drive**  
Ø22 mm  
Page 249 / 250

**Overview on page 16 - 21**

**for type A:**  
Encoder MR  
128 / 256 / 512 CPT,  
Page 263

**for type B:**  
Resolver  
on request

**Recommended Electronics:**

DECS 50/5, DEC 24/1	p. 288
DEC 24/3, DEC 50/5	289
DEC Module 24/2	289
DECV 50/5	295
DES 50/5	296
EPOS2 Module 36/2	302
EPOS 24/1	302
EPOS2 24/5, EPOS2 50/5	303
EPOS P 24/5	306
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