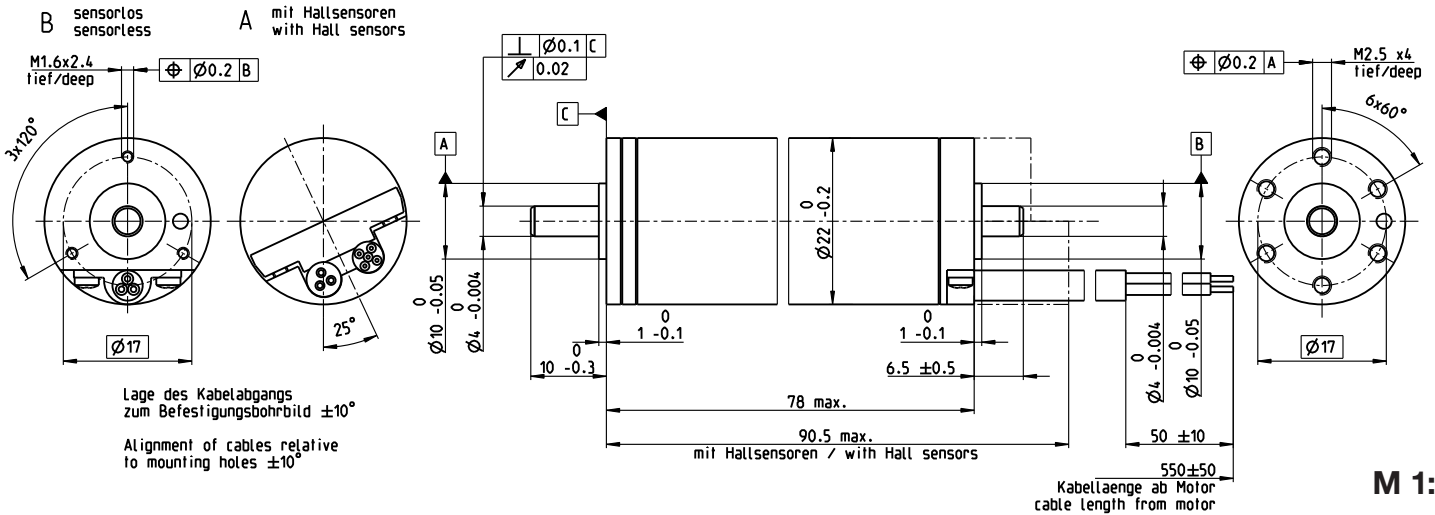


# EC 22 Ø22 mm, brushless, 80 Watt

Heavy Duty – for applications in air



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

## Part Numbers

A with Hall sensors	426448
B sensorless	426449

## Motor Data (provisional)

Values at nominal voltage and ambient temperature °C	25	100	150	200	
1 Nominal voltage	V	48	48	48	48
2 No load speed	rpm	13300	13600	13800	14100
3 No load current	mA	63.9	53.4	54.9	56.5
4 Nominal speed <sup>1)</sup>	rpm	11400	11700	12200	13200
5 Nominal torque (max. continuous torque) <sup>1)</sup>	mNm	57.9	44	32.4	14.9
6 Nominal current (max. continuous current)	A	1.72	1.35	1.03	0.515
7 Stall torque	mNm	460	346	295	256
8 Stall current	A	13.4	10.3	8.98	7.93
9 Max. efficiency	%	87	86	85	84
<b>Characteristics</b>					
10 Terminal resistance phase to phase	Ω	3.59	4.64	5.35	6.05
11 Terminal inductance phase to phase	mH	0.626	0.626	0.626	0.626
12 Torque constant	mNm/A	34.4	33.5	32.9	32.3
13 Speed constant	rpm/V	278	285	290	296
14 Speed / torque gradient	rpm/mNm	29	39.5	47.2	55.4
15 Mechanical time constant	ms	2.31	3.16	3.77	4.43
16 Rotor inertia	gcm <sup>2</sup>	7.63	7.63	7.63	7.63

<sup>1)</sup> Values for operation in thermal equilibrium.

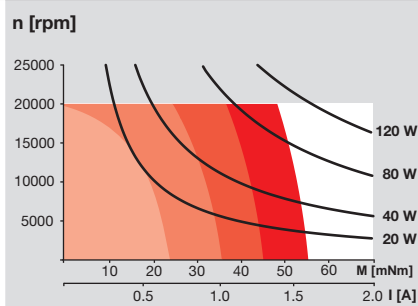
## Specifications

Thermal data	
17 Thermal resistance housing-ambient	9.12 K/W
18 Thermal resistance winding-housing	0.92 K/W
19 Thermal time constant winding	5.84 s
20 Thermal time constant motor	462 s
21 Ambient temperature	-55...+200°C
22 Max. winding temperature	+240°C
Mechanical data (preloaded ball bearings)	
23 Max. speed	20000 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)	8 N
27 Max. force for press fits (static)	98 N
(static, shaft supported)	250 N
28 Max. radial load, 5 mm from flange	16 N

Other specifications	
29 Number of pole pairs	1
30 Number of phases	3
31 Weight of motor (sensorless)	210 g

- Connection A, motor cable PTFE (AWG 19)**  
 red Motor winding 1  
 black Motor winding 2  
 white Motor winding 3
- Connection A, sensors cable PTFE (AWG 24)**  
 green V<sub>Hall</sub> 4.5...24 V  
 blue GND  
 red Hall sensor 1  
 black Hall sensor 2  
 white Hall sensor 3
- Connection B, motor cable PTFE (AWG 19)**  
 red Motor winding 1  
 black Motor winding 2  
 white Motor winding 3
- Wiring diagram for Hall sensors see p. 35

## 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).

## Application

- General**
- extreme temperature applications
  - vibration tested (according to MIL-STD810F/Jan2000 Fig. 514.5C-10)
  - ultra-high vacuum applications (modifications necessary). low outgassing, can be baked out at 240°C

- Aerospace**
- gas turbine starter/generators for aircraft engines
  - regulation of combustion engines

- Oil & Gas Industry**
- oil, gas and geothermal wells

- Robotics**
- robotic exploration vehicles

- Industry**
- pumps and valves for liquid metal cooling systems/turbine fuel and steam control
  - valve adjustment for gas and steam power plants

## Notice

This motor contains leaded solder. It therefore does not fulfill the requirements for the permitted maximum concentration of hazardous substances in accordance with the EC directive 2011/65/EC (RoHS) for all applications. The motor may therefore only be used for devices that are not subject to this directive.