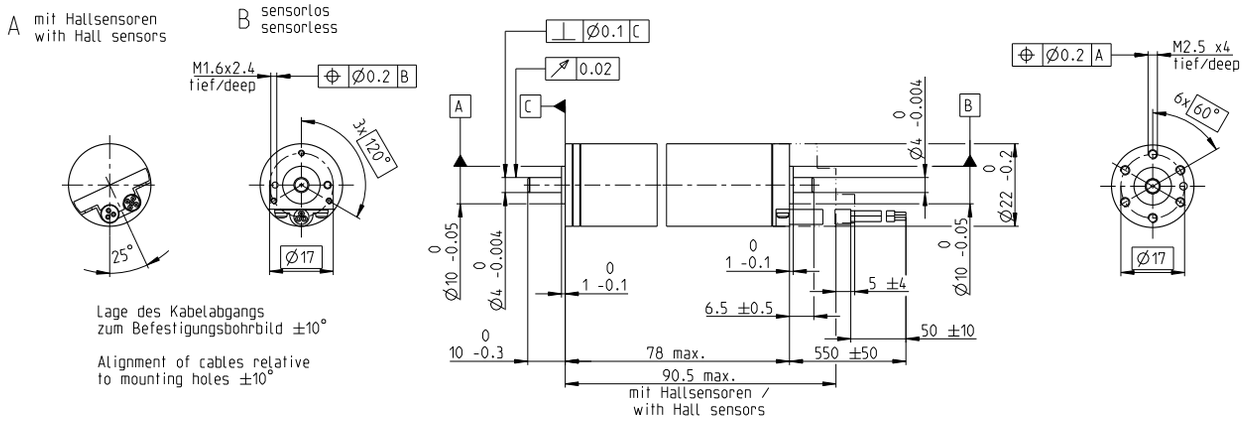
EC 22 ∅22 mm, brushless, 80 watt

Heavy Duty – for applications in air



M 1:2

Stock program
Standard program
Special program (on request)

	Part numbers
A with Hall sensors	426448
B sensorless	426449

Motor Data									
	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	13200	13600	13800	14100			
3	No load current	mA	83.1	53.4	54.9	56.5			
4	Nominal speed[1]	rpm	11400	11700	12200	13200			
5	Nominal torque[1]	mNm	56.6	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	%	85.2	86	85	84			
	Characteristics								
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	gcm²	7.63	7.63	7.63	7.63			

[1] 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		20 000 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	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)

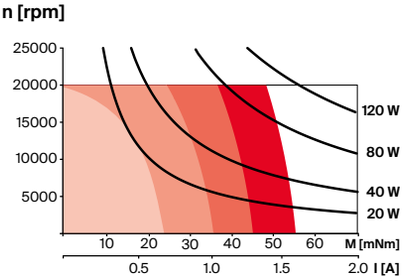
green	V_{Hall} 4.5...24 V
blue	GND
red	Hall sensor 1
black	Hall sensor 2
white	Hall sensor 3

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. 67

Operating range



TA = 25°C
TA = 100°C
TA = 150°C
TA = 200°C

Comments

Continuous operation
In observation of above listed thermal resistance (lines 17 and 18) and above listed ambient temperature, the maximum permissible winding temperature will be reached during continuous operation = thermal limit.

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

Assigned power rating

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.

*The Hall sensors in this motor are rated for ambient temperatures up to 150°C. The motor with Hall sensors is fully tested at 200°C in the final inspection. Nevertheless, the Hall sensors may temporarily fail below 200°C under certain conditions.