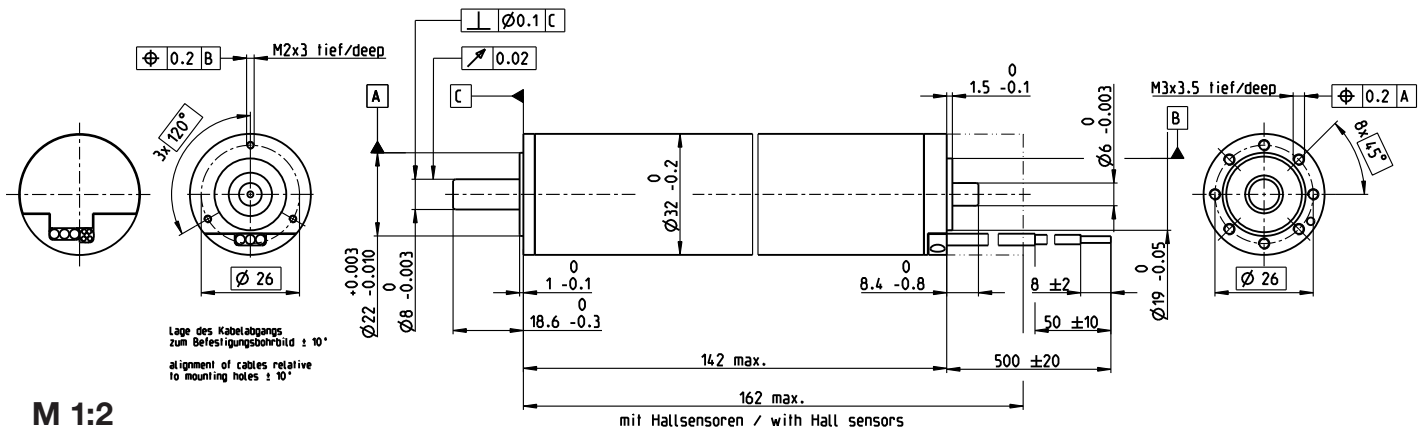


# EC-4pole 32 Ø32 mm, brushless, 220 Watt

Heavy Duty – for applications in air

A mit Hallensoren with Hall sensors  
 B sensorlos sensorless



M 1:2

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

Part Numbers	
A with Hall sensors	397798
B sensorless	393879

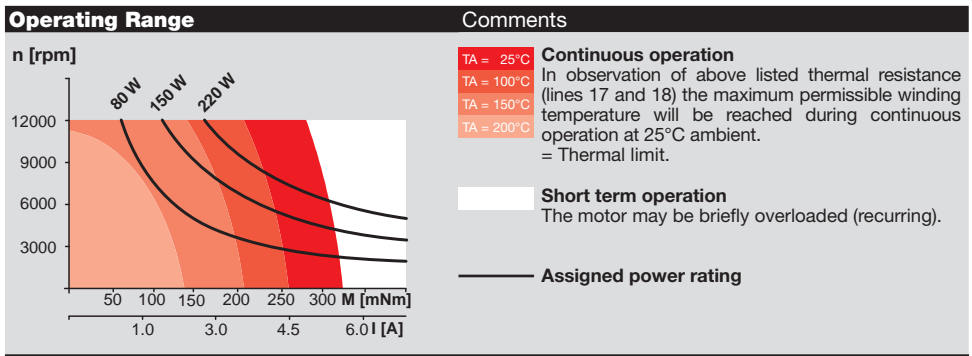
Motor Data (provisional)	25	100	150	200	
<b>Values at nominal voltage and ambient temperature °C</b>					
1 Nominal voltage	V	48	48	48	48
2 No load speed	rpm	6470	6650	6770	6890
3 No load current	mA	149	113	109	107
4 Nominal speed <sup>1)</sup>	rpm	5710	5870	6080	6470
5 Nominal torque (max. continuous torque) <sup>1)</sup>	mNm	339	261	196	104
6 Nominal current (max. continuous current)	A	4.87	3.85	2.98	1.67
7 Stall torque	mNm	3350	2520	2150	1860
8 Stall current	A	47.5	36.7	31.9	28.1
9 Max. efficiency	%	89	89	89	88
<b>Characteristics</b>					
10 Terminal resistance phase to phase	Ω	1.01	1.31	1.51	1.71
11 Terminal inductance phase to phase	mH	0.298	0.298	0.298	0.298
12 Torque constant	mNm/A	70.5	68.7	67.4	66.2
13 Speed constant	rpm/V	135	139	142	144
14 Speed / torque gradient	rpm/mNm	1.94	2.65	3.16	3.71
15 Mechanical time constant	ms	2.6	3.55	4.24	4.98
16 Rotor inertia	gcm <sup>2</sup>	128	128	128	128

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

Specifications	
<b>Thermal data</b>	
17 Thermal resistance housing-ambient	3.69 K/W
18 Thermal resistance winding-housing	0.734 K/W
19 Thermal time constant winding	23.5 s
20 Thermal time constant motor	1350 s
21 Ambient temperature	-55...+200°C
22 Max. winding temperature	+240°C
<b>Mechanical data (preloaded ball bearings)</b>	
23 Max. speed	12000 rpm
24 Axial play at axial load < 20 N	0 mm
> 20 N	0.14 mm
25 Radial play	preloaded
26 Max. axial load (dynamic)	16 N
27 Max. force for press fits (static)	80 N
(static, shaft supported)	3000 N
28 Max. radial load, 5 mm from flange	75 N

Other specifications	
29 Number of pole pairs	2
30 Number of phases	3
31 Weight of motor (sensorless)	860 g

- Connection A, motor cable PTFE (AWG 14)**  
 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 14)**  
 red Motor winding 1  
 black Motor winding 2  
 white Motor winding 3
- Wiring diagram for Hall sensors see p. 35



Application	Notice
<b>General</b> - 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 <b>Aerospace</b> - gas turbine starter/generators for aircraft engines - regulation of combustion engines <b>Oil &amp; Gas Industry</b> - oil, gas and geothermal wells <b>Robotics</b> - robotic exploration vehicles <b>Industry</b> - pumps and valves for liquid metal cooling systems/turbine fuel and steam control - valve adjustment for gas and steam power plants	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.