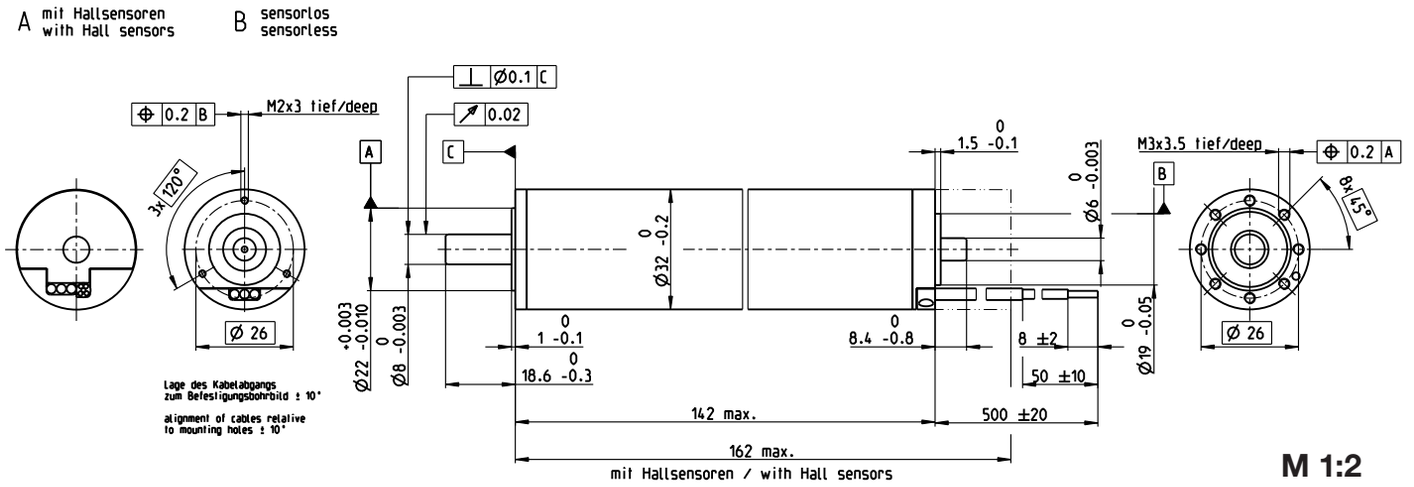
EC-4pole 32 ∅32 mm, brushless, 480 Watt

Heavy Duty – for applications in oil



Stock program
Standard program
Special program (on request)

Part Numbers

A with Hall sensors	397799
B sensorless	397800

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	6420	6630	6750	6860
3 No load current	mA	482	222	212	216
4 Nominal speed[1]	rpm	4350	4420	4700	5340
5 Nominal torque (max. continuous torque)[1]	mNm	961	762	596	379
6 Nominal current (max. continuous current)	A	13.5	10.9	8.75	5.78
7 Stall torque	mNm	3350	2520	2150	1860
8 Stall current	A	47.5	36.7	31.9	28.1
9 Max. efficiency	%	82	85	85	84
Characteristics					
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	2.85	3.88	4.64	5.45
16 Rotor inertia	gcm²	140	140	140	140

[1] Values for operation in thermal equilibrium.

Specifications

Thermal data

17	Thermal resistance housing-ambient	0.284 K/W
18	Thermal resistance winding-housing	0.305 K/W
19	Thermal time constant winding	9.78 s
20	Thermal time constant motor	104 s
21	Ambient temperature	-55…+200°C
22	Max. winding temperature	+240°C

Mechanical data (preloaded ball bearings)

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)

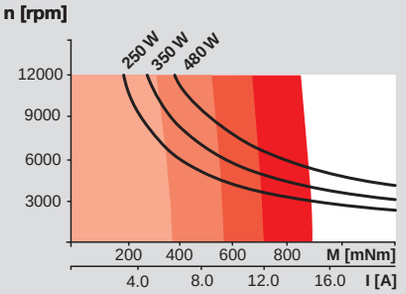
green	V_{Hall} 4.5…24 V
blue	GND
red	Hall sensor 1
black	Hall sensor 2
white	Hall sensor 3

Connection B, motor cable PTFE (AWG 14)

red	Motor winding 1
black	Motor winding 2
white	Motor winding 3

Wiring diagram for Hall sensors see p. 35

Operating Range



Comments

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

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

Application

General
– extreme temperature applications
– vibration tested (according to MIL-STD810F/Jan2000 Fig. 514.5C-10)
– operation in oil and high pressure (only minimal lubrication, therefore use under rated ambient conditions is not suggested)

Oil & Gas Industry
– oil, gas and geothermal wells

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.

Reference medium: Shell Tellus oil T15
Operation in oil of different viscosity will affect the motor data.

maxon Modular System

Overview on page 20–27

Planetary Gearhead
∅32 mm
3.0 - 8.0 Nm
Page 346

Planetary Gearhead
∅42 mm
10 - 50 Nm
Page 352