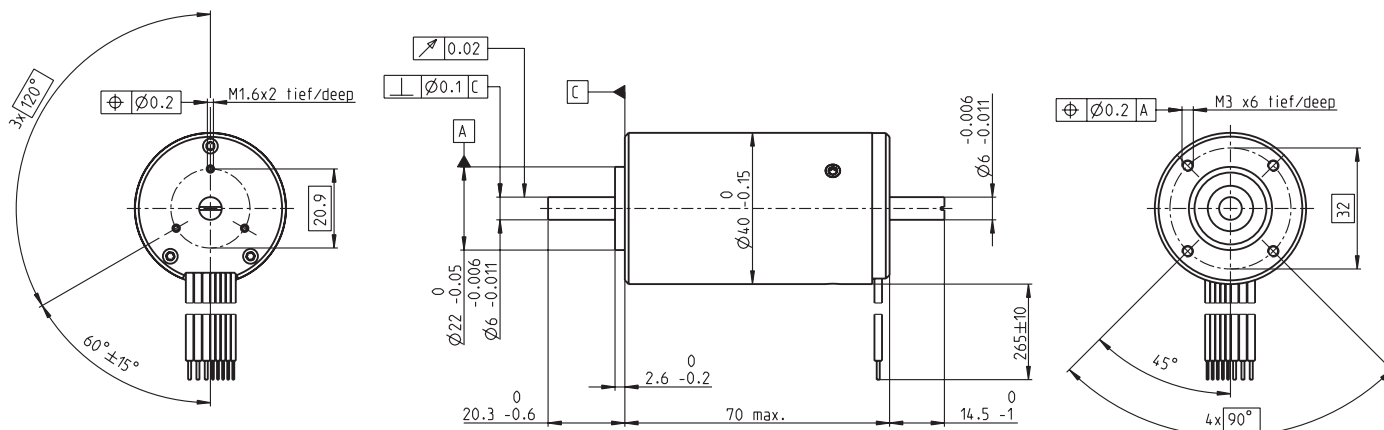


EC 40 Ø40 mm, brushless, 120 Watt, CE approved



M 1:2

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

Order Number

167176 167177 118894 118895 167178 167179 118896 118897 167180 118898 167181 167183 118899 118901

Motor Data

Values at nominal voltage															
1 Nominal voltage	V	12.0	18.0	21.0	30.0	24.0	36.0	42.0	48.0	48.0	48.0	48.0	48.0	48.0	48.0
2 No load speed	rpm	10300	12000	10400	11600	10300	9830	10400	7560	10300	5930	5420	3530	3110	2020
3 No load current	mA	886	754	515	426	443	275	258	139	222	97.8	86.2	48.6	41.3	24.4
4 Nominal speed	rpm	9050	10900	9240	10500	9160	8710	9290	6450	9190	4830	4290	2400	1990	893
5 Nominal torque (max. continuous torque)	mNm	107	113	116	120	120	123	122	127	123	130	126	127	129	129
6 Nominal current (max. continuous current)	A	10.4	8.62	6.46	5.24	5.78	3.76	3.40	2.22	2.96	1.77	1.57	1.03	0.920	0.599
7 Stall torque	mNm	985	1340	1150	1420	1210	1200	1280	940	1270	743	639	410	370	237
8 Starting current	A	89.2	94.4	60.1	57.9	55.0	34.6	33.5	15.7	28.8	9.72	7.65	3.21	2.56	1.07
9 Max. efficiency	%	81	83	83	84	83	83	84	82	84	81	80	77	76	72
Characteristics															
10 Terminal resistance phase to phase	Ω	0.134	0.191	0.349	0.518	0.436	1.04	1.25	3.07	1.66	4.94	6.28	14.9	18.8	44.8
11 Terminal inductance phase to phase	mH	0.0266	0.0439	0.0797	0.132	0.106	0.263	0.319	0.788	0.425	1.28	1.52	3.56	4.57	10.7
12 Torque constant	mNm / A	11.0	14.2	19.1	24.6	22.1	34.7	38.2	60.1	44.1	76.4	83.5	128	145	221
13 Speed constant	rpm / V	865	673	500	389	433	275	250	159	216	125	114	74.8	66.0	43.2
14 Speed / torque gradient	rpm / mNm	10.5	9.05	9.13	8.20	8.55	8.26	8.20	8.12	8.16	8.07	8.59	8.76	8.56	8.75
15 Mechanical time constant	ms	9.39	8.06	8.13	7.30	7.61	7.35	7.30	7.22	7.26	7.18	7.64	7.79	7.62	7.78
16 Rotor inertia	gcm ²	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0	85.0

Specifications

- Thermal data**
- 17 Thermal resistance housing-ambient 3.2 K / W
 - 18 Thermal resistance winding-housing 1.2 K / W
 - 19 Thermal time constant winding 17.1 s
 - 20 Thermal time constant motor 1050 s
 - 21 Ambient temperature -20 ... +100°C
 - 22 Max. permissible winding temperature +125°C
- Mechanical data (preloaded ball bearings)**
- 23 Max. permissible speed 18000 rpm
 - 24 Axial play at axial load < 8 N 0 mm
 - > 8 N max. 0.14 mm
 - 25 Radial play preloaded
 - 26 Max. axial load (dynamic) 10 N
 - 27 Max. force for press fits (static) 133 N
 - (static, shaft supported) 5000 N
 - 28 Max. radial loading, 5 mm from flange 70 N

Other specifications

- 29 Number of pole pairs 1
- 30 Number of phases 3
- 31 Weight of motor 390 g

Values listed in the table are nominal.
Explanation of the figures on page 137

Connection Motor (Cable AWG 22)

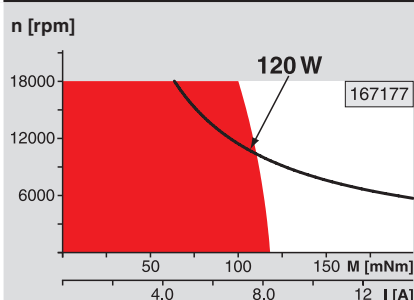
- red Motor winding 1
- black Motor winding 2
- white Motor winding 3

Connection sensors (Cable AWG 26)¹⁾

- green VHall 4.5 ... 24 VDC
 - blue GND
 - red / grey Hall sensor 1
 - black / grey Hall sensor 2
 - white / grey Hall sensor 3
- Wiring diagram for Hall sensors see p. 27

¹⁾ Not lead through in combination with resolver.

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**

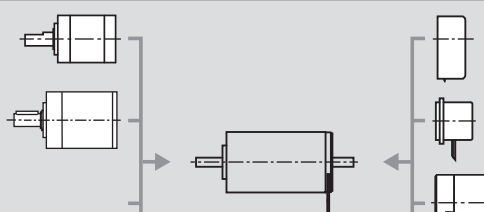
maxon Modular System

Planetary Gearhead

Ø42 mm
3 - 15 Nm
Page 238

Planetary Gearhead

Ø52 mm
4 - 30 Nm
Page 241



Recommended Electronics:

- DECS 50/5 Page 289
- DEC 50/5 291
- DEC Module 50/5 291
- DECV 50/5, DEC 70/10 297
- DES 50/5, DES 70/10 298
- EPOS2 24/5 305
- EPOS2 50/5 305
- EPOS2 70/10 305
- EPOS P 24/5 308
- Notes 20

Overview on page 16 - 21

Encoder HED_5540

500 Imp.,
3 channels
Page 267 / 269

Resolver Res 26

Ø26 mm
10 V
Page 277

Brake AB 28

24 VDC
0.4 Nm
Page 318