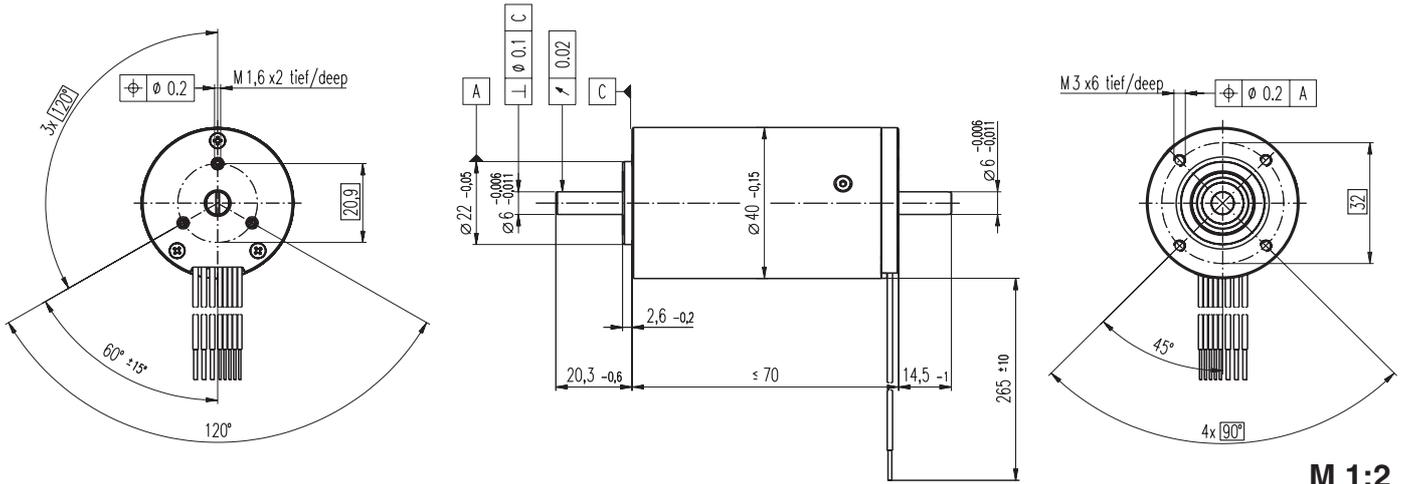


# EC 40 Ø40 mm, brushless, 120 Watt, CE approved



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
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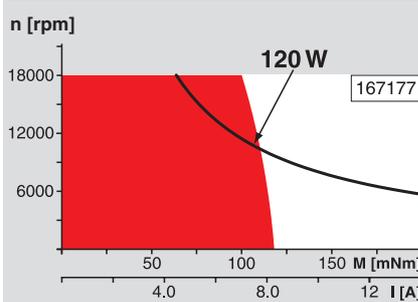
## Motor Data

Values at nominal voltage		167176	167177	118894	118895	167178	167179	118896	118897	167180	118898	167181	167183	118899	118901	
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	
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
<b>Characteristics</b>																
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 <sup>2</sup>	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
  - 25 Radial play > 8 N max. 0.14 mm preloaded
  - 26 Max. axial load (dynamic) 10 N
  - 27 Max. force for press fits (static) (static, shaft supported) 170 N
  - 28 Max. radial loading, 5 mm from flange 5000 N

## 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**

## 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 49.

## Connection Motor (Cable AWG 22)

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

## Connection Sensors (Cable AWG 26)

- white / grey Hall sensor 3
  - black / grey Hall sensor 2
  - blue GND
  - green V<sub>Hall</sub> 4.5 ... 24 VDC
  - red / grey Hall sensor 1
- Wiring diagram for Hall sensors see p. 26

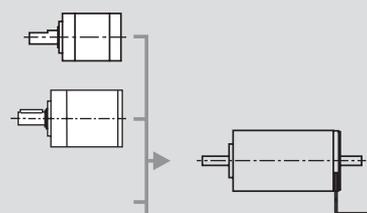
## maxon Modular System

### Planetary Gearhead

- Ø42 mm
- 3 - 15 Nm
- Page 232

### Planetary Gearhead

- Ø52 mm
- 4 - 30 Nm
- Page 235



## Overview on page 17 - 21

- Encoder HEDS 5540**  
500 CPT,  
3 channels  
Page 251
- Encoder HEDL 5540**  
500 CPT,  
3 channels  
Page 253
- Resolver Res 26**  
Ø26 mm  
10 V  
Page 260
- Brake AB 40**  
Ø40 mm  
24 VDC, 0.4 Nm  
Page 289

## Recommended Electronics:

- DECV 50/5 Page 271
- DEC 50/5 271
- DEC 70/10 271
- DES 50/5 272
- DES 70/10 272
- EPOS 24/5 278
- EPOS P 24/5 279
- EPOS 70/10 279
- MIP 50, MIP 100 281
- Notes 17