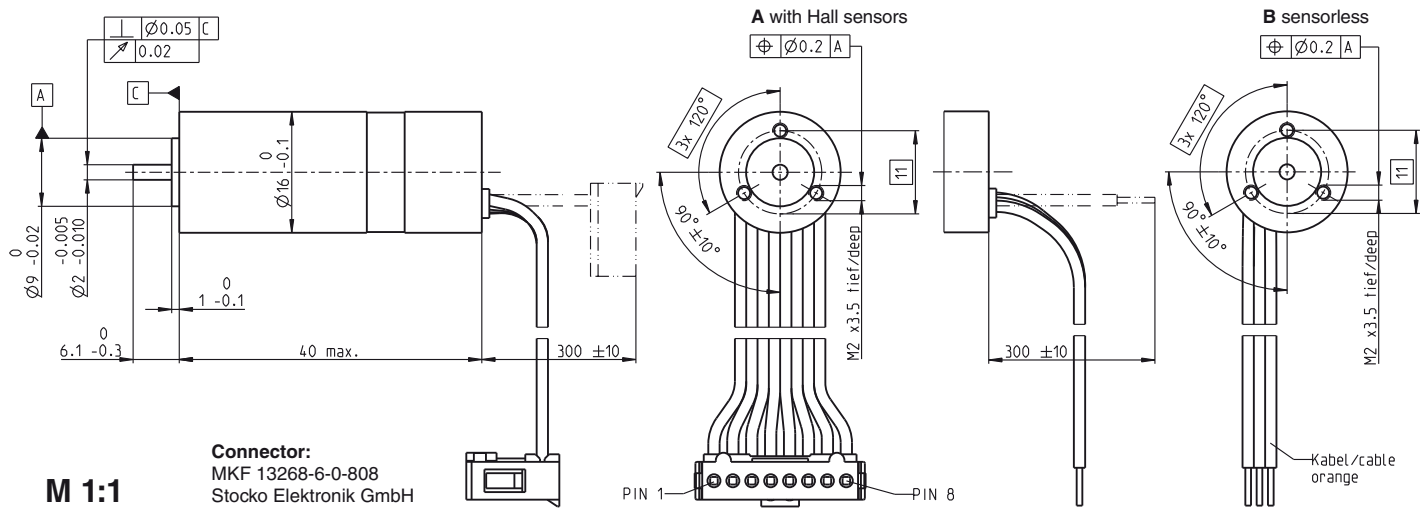
EC 16 ∅16 mm, brushless, 30 Watt



Stock program
Standard program
Special program (on request)

	Article Numbers								
A with Hall sensors	**400160**	405812	**400161**	**405813**	400162				
B sensorless	**404079**	405817	**404080**	405818	404081				
Motor Data									
Values at nominal voltage									
1 Nominal voltage	V	12	18	24	36	48			
2 No load speed	rpm	44500	42200	42800	45800	39600			
3 No load current	mA	397	241	185	139	80.8			
4 Nominal speed	rpm	39300	37400	38100	41100	34800			
5 Nominal torque (max. continuous torque)	mNm	7.85	8.01	8.09	7.56	7.87			
6 Nominal current (max. continuous current)	A	3.41	2.18	1.68	1.14	0.754			
7 Stall torque	mNm	75.5	78	82.7	82.3	72.5			
8 Starting current	A	29.8	19.4	15.6	11.1	6.35			
9 Max. efficiency	%	79	80	80	80	79			
Characteristics									
10 Terminal resistance phase to phase	Ω	0.403	0.928	1.53	3.24	7.56			
11 Terminal inductance phase to phase	mH	0.0235	0.059	0.102	0.2	0.477			
12 Torque constant	mNm/A	2.54	4.02	5.29	7.4	11.4			
13 Speed constant	rpm/V	3760	2380	1810	1290	836			
14 Speed/torque gradient	rpm/mNm	598	549	524	565	554			
15 Mechanical time constant	ms	4.54	4.17	3.98	4.29	4.21			
16 Rotor inertia	gcm²	0.725	0.725	0.725	0.725	0.725			

Specifications

Thermal data

17	Thermal resistance housing-ambient	16.3 K/W
18	Thermal resistance winding-housing	1.68 K/W
19	Thermal time constant winding	1.97 s
20	Thermal time constant motor	240 s
21	Ambient temperature	-20…+100°C
22	Max. permissible winding temperature	+155°C

Mechanical data (preloaded ball bearings)

23	Max. permissible speed		70000 rpm
24	Axial play at axial load	< 3.5 N	0 mm
		> 3.5 N	max. 0.14 mm
25	Radial play		preloaded
26	Max. axial load (dynamic)		3 N
27	Max. force for press fits (static)		35 N
	(static, shaft supported)		250 N
28	Max. radial loading, 5 mm from flange		10 N

Other specifications

29	Number of pole pairs	1
30	Number of phases	3
31	Weight of motor	34 g

Values listed in the table are nominal.

Connection A

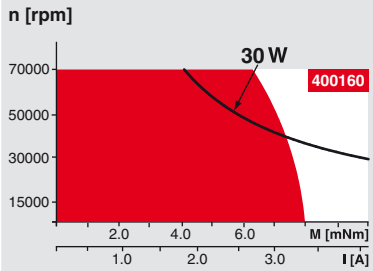
brown	Motor winding 1	Pin 1
red	Motor winding 2	Pin 2
orange	Motor winding 3	Pin 3
yellow	V_{Hall} 3…24 VDC	Pin 4
green	GND	Pin 5
blue	Hall sensor 1	Pin 6
violet	Hall sensor 2	Pin 7
grey	Hall sensor 3	Pin 8

Wiring diagram for Hall sensors see p. 27

Connection B (Cable AWG 24)

brown	Motor winding 1
red	Motor winding 2
orange	Motor winding 3

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

Overview on page 16 - 21

Planetary Gearhead
∅16 mm
0.1 - 0.6 Nm
Page 217/218

Planetary Gearhead
∅22 mm
0.5 - 1.0 Nm
Page 224

Spindle Drive
∅16 mm
Page 251/252

for type A:
Encoder MR
128/256/512 CPT,
Page 271

Recommended Electronics:

ESCON 50/5	Page 292
DECS 50/5	297
DEC Module 24/2	298
DEC 24/3	298
DEC Module 50/5	299
DES 50/5	306
EPOS2 24/2, Module 36/2	312
EPOS2 24/5, EPOS2 50/5	313
EPOS2 P 24/5	316
EPOS3 70/10 EtherCAT	319
Notes	**20**