

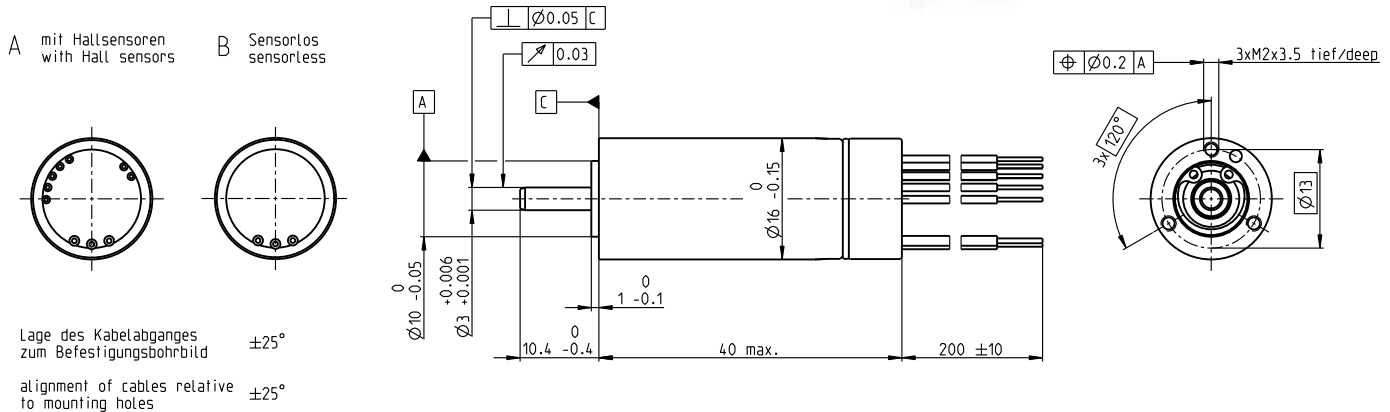
ECX SPEED 16 M $\varnothing 16$ mm, brushless, BLDC motor

Sterilizable, Ceramic Bearings

Key Data: 40/68 W, 6.6 mNm, 120 000 rpm



ECX SPEED



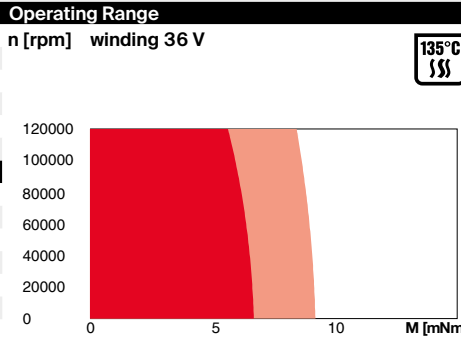
M 1:1

Motor Data

1_	Nominal voltage	V	18	24	36	48
2_	No load speed	rpm	61400	64900	57600	58800
3_	No load current	mA	328	271	147	114
4_	Nominal speed	rpm	56500	60000	52700	54000
5_	Nominal torque (max. continuous torque)	mNm	6.63	6.34	6.38	6.41
6_	Nominal current (max. continuous current)	A	2.67	2.04	1.2	0.927
7_	Stall torque	mNm	97.3	99.6	87.2	91
8_	Stall current	A	35.1	28.5	14.8	11.8
9_	Max. efficiency	%	82.1	82	81.6	81.8
10_	Terminal resistance	Ω	0.512	0.841	2.43	4.06
11_	Terminal inductance	mH	0.0341	0.0542	0.155	0.264
12_	Torque constant	mNm/A	2.77	3.49	5.9	7.7
13_	Speed constant	rpm/V	3450	2740	1620	1240
14_	Speed/torque gradient	rpm/mNm	638	659	668	654
15_	Mechanical time constant	ms	3.94	4.06	4.12	4.03
16_	Rotor inertia	gcm ²	0.589	0.589	0.589	0.589

Thermal data

17_	Thermal resistance housing-ambient	K/W	20.3
18_	Thermal resistance winding-housing	K/W	1.8
19_	Thermal time constant winding	s	2.16
20_	Thermal time constant motor	s	508
21_	Ambient temperature	$^\circ\text{C}$	-40...+135
22_	Max. winding temperature	$^\circ\text{C}$	155



Sterilization information

Sterilization cycles

Sensorless: typical 2000

Hall sensors: typical 1000

Sterilization with steam

Temperature +134 $^\circ\text{C}$ $\pm 4^\circ\text{C}$

Compression pressure up to 2.3 bar

Rel. humidity 100%

Cycle length 18 min.

Continuous operation
 Continuous operation with reduced thermal resistance R_{th2} 50%
 Short term operation

Mechanical data ball bearings

23_	Max. speed	rpm	120 000
24_	Axial play	mm	0.0-0.29
	Preload	N	1.5
	Direction of force		pull
25_	Radial play	preloaded	
26_	Max. axial load (dynamic)	N	1.5
27_	Max. force for press fits (static)	N	60
	(static, shaft supported)	N	2500
28_	Max. radial load [mm from flange]	N	10 [5]

Other specifications

29_	Number of pole pairs	1	
30_	Number of phases	3	
31_	Weight of motor	g	50
32_	Typical noise level [rpm]	dBA	50 [50 000]

Connection A and B, motor (Cable AWG 22)

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

Connection A, sensors (Cable AWG 26)

orange	V _{Hall} 3...24 VDC
blue	GND
yellow	Hall sensor 1
brown	Hall sensor 2
grey	Hall sensor 3

Wiring diagram for Hall sensors see page 57. In combination with the ENX EASY INT, the orange (V_{cc}) and blue (GND) connections are not used. Hall signals are then generated by an ENX EASY-INT sensor (no pull-up resistor required; output signals: CMOS compatible push-pull stage).

Connection NTC (Cable AWG 26)

purple	NTC
purple	NTC

Resistance 25 $^\circ\text{C}$: 10 kOhm $\pm 1\%$, beta (25-85 $^\circ\text{C}$): 3490 K

maxon Modular System

maxon gear	Stages [opt.]	maxon sensor	maxon motor control
344_GPX 16 SPEED 1-2		for motor type A:	500_ESCON Module 24/2
348_GPX 19 SPEED [3]		454_ENX 16 EASY INT	501_ESCON 36/3 EC
		for motor type B:	501_ESCON Module 50/4 EC-S
		454_ENX 16 EASY INT Abs.	501_ESCON Module 50/5
			503_ESCON 50/5
			505_DEC Module 24/2
			505_DEC Module 50/5
			509_EPOS4 Micro 24/5
			510_EPOS4 Mod./Comp. 50/5
			511_EPOS4 Comp. 24/5 3-axes
			515_EPOS4 50/5
			516_EPOS4 Disk 60/8
			520_EPOS2 P 24/5

Configuration

Flange front: thread holes/center thread

Flange back: plastic ring/external thread/with opening

Shaft front: length/diameter

Electric connection: cable length/pin connection

Temperature sensor: NTC-Thermistor (only for motor type A and only when not combined with an encoder).

Appropriate connectors and connecting cables are available for the configuration of the pin connection together with the external thread: see catalog, Accessories section.