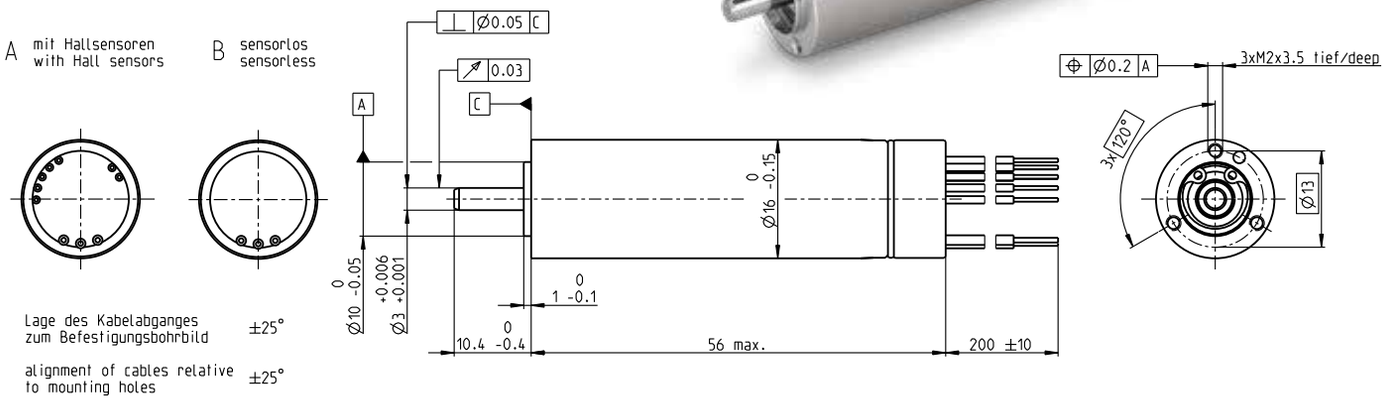
ECX SPEED 16 L ∅16 mm, brushless, BLDC motor

Sterilizable

Key data: 80/103 W, 15.6 mNm, 70 000 rpm



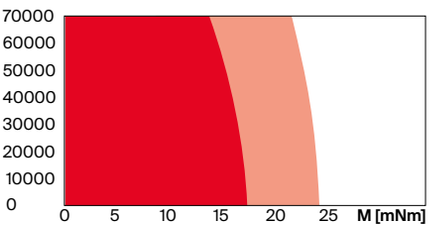
M 1:1

	Motor data					
1_	Nominal voltage	V	18	24	36	48
2_	No load speed	rpm	64600	64600	64600	64600
3_	No load current	mA	482	361	241	181
4_	Nominal speed	rpm	61200	61500	61700	61700
5_	Nominal torque	mNm	15	15.6	15	14.4
6_	Nominal current (max. continuous current)	A	6.08	4.71	3.03	2.19
7_	Stall torque	mNm	346	408	414	396
8_	Stall current	A	131	115	78.1	56
9_	Max. efficiency	%	88.5	89.3	89.4	89.2
10_	Terminal resistance	Ω	0.138	0.208	0.461	0.858
11_	Terminal inductance	mH	0.01	0.0178	0.04	0.0712
12_	Torque constant	mNm/A	2.65	3.53	5.3	7.07
13_	Speed constant	rpm/V	3600	2700	1800	1350
14_	Speed/torque gradient	rpm/mNm	187	159	157	164
15_	Mechanical time constant	ms	1.87	1.59	1.56	1.63
16_	Rotor inertia	gcm²	0.952	0.952	0.952	0.952

	Thermal data		
17_	Thermal resistance housing-ambient	K/W	13.5
18_	Thermal resistance winding-housing	K/W	0.58
19_	Thermal time constant winding	s	1.28
20_	Thermal time constant motor	s	490
21_	Ambient temperature	°C	-40...+135
22_	Max. winding temperature	°C	155
	Mechanical data ball bearings		
23_	Max. speed	rpm	70 000
24_	Axial play	mm	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	73
32_	Typical noise level [rpm]	dBA	52 [50 000]

Operating range

n [rpm] winding 36 V



Sterilization information

135°C SSS

Sterilization cycles
Sensorless: typical 2000
Hall sensors: typical 1000

Sterilization with steam

Temperature	+134°C ±4°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

Modular system Details on catalog page 44

Gear	Stages [opt.]
384_GPX 16 HP	1–3
385_GPX 16 SPEED	1–2
389_GPX 19 SPEED	[3]

Sensor
for motor type A:
514_ENX 16 EASY INT
for motor type B:
514_ENX 16 EASY INT Abs.

Motor Control
547_DEC Module 50/5
551_ESCON 36/3 EC
551_ESCON Module 50/4 EC-S
551_ESCON Module 50/5
552_ESCON Module 50/8 HE
553_ESCON 50/5
553_ESCON 70/10
557_ESCON2 Micro 60/5
558_ESCON2 Module 60/12
559_ESCON2 Compact 60/12
563_EPOS4 Micro 24/5
564_EPOS4 Module 50/5
565_EPOS4 Compact 24/5 3-axes
565_EPOS4 Module 50/8
567_EPOS4 Compact 50/8
567_EPOS4 Compact 50/5
569_EPOS4 50/5
569_EPOS4 70/15
570_EPOS4 Disk 60/8
571_EPOS4 Disk 60/12

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 67. 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°C: 10 kOhm ±1%, beta (25–85°C): 3490 K

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.