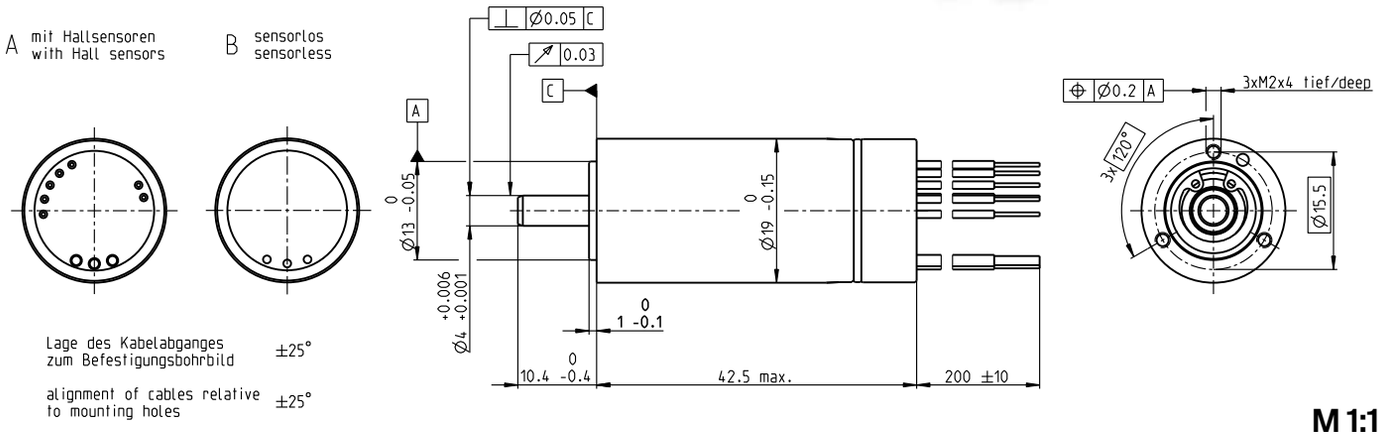
ECX SPEED 19 M ∅19 mm, brushless, BLDC motor

Sterilizable, ceramic bearings

Key Data: 60/92 W, 10.9 mNm, 100 000 rpm

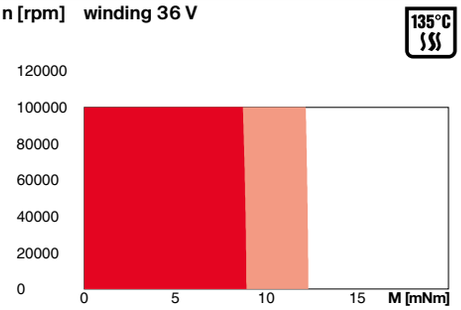


M 1:1

	Motor Data					
1_	Nominal voltage	V	18	24	36	48
2_	No load speed	rpm	64700	64600	64600	63400
3_	No load current	mA	247	185	123	90.1
4_	Nominal speed	rpm	59800	59500	59700	58600
5_	Nominal torque (max. continuous torque)	mNm	10.9	9.65	9.98	10.2
6_	Nominal current (max. continuous current)	A	4.31	2.87	1.97	1.48
7_	Stall torque	mNm	179	150	164	169
8_	Stall current	A	67.7	42.4	31	23.5
9_	Max. efficiency	%	88.4	87.4	87.9	88.1
10_	Terminal resistance	Ω	0.266	0.566	1.16	2.04
11_	Terminal inductance	mH	0.0234	0.0438	0.0986	0.182
12_	Torque constant	mNm/A	2.64	3.53	5.3	7.2
13_	Speed constant	rpm/V	3610	2700	1800	1330
14_	Speed/torque gradient	rpm/mNm	363	433	396	376
15_	Mechanical time constant	ms	4.38	5.22	4.77	4.53
16_	Rotor inertia	gcm²	1.15	1.15	1.15	1.15

	Thermal data		
17_	Thermal resistance housing-ambient	K/W	16.8
18_	Thermal resistance winding-housing	K/W	1.6
19_	Thermal time constant winding	s	2.36
20_	Thermal time constant motor	s	696
21_	Ambient temperature	°C	-40...+135
22_	Max. winding temperature	°C	155
	Mechanical data ball bearings		
23_	Max. speed	rpm	100 000
24_	Axial play	mm	0...0.29
	Preload	N	4
	Direction of force		pull
25_	Radial play		preloaded
26_	Max. axial load (dynamic)	N	4
27_	Max. force for press fits (static)	N	70
	(static, shaft supported)	N	5000
28_	Max. radial load [mm from flange]	N	12 [5]
	Other specifications		
29_	Number of pole pairs		1
30_	Number of phases		3
31_	Weight of motor	g	78
32_	Typical noise level [rpm]	dBA	48 [50 000]

Operating Range



Sterilization information

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

maxon Modular System Details on catalog page 34

maxon gear	Stages [opt.]
348_GPX 19 SPEED	1–2
353_GPX 22 SPEED	[3]

maxon sensor
for motor type A:
455_ENX 19 EASY INT
for motor type B:
455_ENX 19 EASY INT Abs.

maxon motor control
501_ESCON 36/3 EC
501_ESCON Module 50/4 EC-S
501_ESCON Module 50/5
503_ESCON 50/5
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

Connection A and B, motor (Cable AWG 20)

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°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.

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