

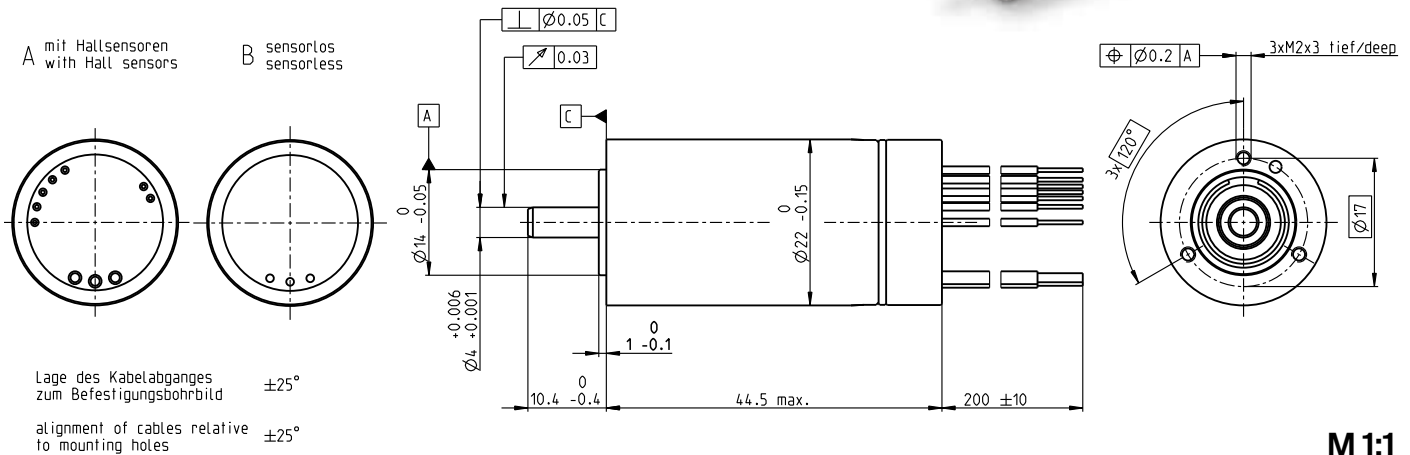
# ECX SPEED 22 M Ø22 mm, brushless, BLDC motor

High Power

Key Data: 80/115 W, 20.3 mNm, 60 000 rpm



ECX SPEED



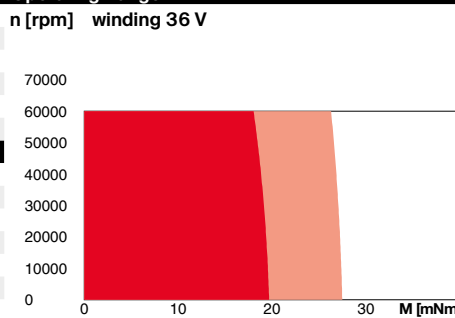
### Motor Data

1_	Nominal voltage	V	18	24	36	48
2_	No load speed	rpm	50900	58100	55500	52500
3_	No load current	mA	324	302	186	128
4_	Nominal speed	rpm	48200	55600	53000	49900
5_	Nominal torque (max. continuous torque)	mNm	20.3	20.1	20	18.3
6_	Nominal current (max. continuous current)	A	6.28	5.36	3.4	2.21
7_	Stall torque	mNm	454	549	537	425
8_	Stall current	A	135	140	87	48.8
9_	Max. efficiency	%	90.6	91	91.1	90.2
10_	Terminal resistance	Ω	0.133	0.172	0.414	0.983
11_	Terminal inductance	mH	0.00978	0.0133	0.0329	0.0653
12_	Torque constant	mNm/A	3.37	3.93	6.18	8.7
13_	Speed constant	rpm/V	2830	2430	1550	1100
14_	Speed/torque gradient	rpm/mNm	112	106	104	124
15_	Mechanical time constant	ms	2.53	2.39	2.33	2.79
16_	Rotor inertia	gcm <sup>2</sup>	2.15	2.15	2.15	2.15

### Thermal data

17_	Thermal resistance housing-ambient	K/W	15
18_	Thermal resistance winding-housing	K/W	0.6
19_	Thermal time constant winding	s	1.22
20_	Thermal time constant motor	s	417
21_	Ambient temperature	°C	-20...+100
22_	Max. winding temperature	°C	155

### Operating Range



### Mechanical data ball bearings

23_	Max. speed	rpm	60 000
24_	Axial play	mm	0...0.24
	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) (static, shaft supported)	N	110 6000
28_	Max. radial load [mm from flange]	N	16 [5]

### Other specifications

29_	Number of pole pairs	1
30_	Number of phases	3
31_	Weight of motor	g 98
32_	Typical noise level [rpm]	dBA 53 [50 000]

### Connection A and B, motor (Cable AWG 18)

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

### Connection A, sensors (Cable AWG 26)

orange	V <sub>Hall</sub> 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<sub>cc</sub>) 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

### maxon Modular System

maxon gear	Stages [opt.]
349_GPX 22 A/C	1–2 [3–4]
350_GPX 22 LN/LZ	1–2 [3–4]
351_GPX 22 HP	2–3 [4]
352_GPX 22 UP	1–4
353_GPX 22 SPEED	1–2
354_GPX 26 A/C	3
355_GPX 26 LN/LZ	3
356_GPX 26 HP	4

maxon sensor
for motor type A:
456_ENX 22 EASY INT
for motor type B:
456_ENX 22 EASY INT Abs.

### maxon motor control

501_ESCON Module 50/4 EC-S
501_ESCON Module 50/5
502_ESCON Module 50/8 HE
503_ESCON 50/5
503_ESCON 70/10
505_DEC Module 50/5
510_EPOS4 Mod./Comp. 50/5
511_EPOS4 Mod./Comp. 50/8
515_EPOS4 50/5
515_EPOS4 70/15
516_EPOS4 Disk 60/8
517_EPOS4 Disk 60/12
520_EPOS2 P 24/5

### Configuration

Flange front: thread holes/center thread  
Flange back: plastic ring/external thread/with opening  
Shaft front: length/diameter  
Shaft rear: length  
Electric connection: cable length/pin connection/connector  
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.