

ECX SPEED 16 M Ø16 mm, brushless, BLDC motor

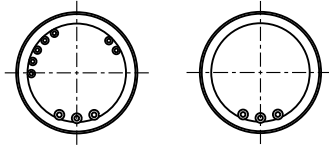
Key data: 20/22 W, 4.7 mNm, 55 000 rpm



ECX SPEED

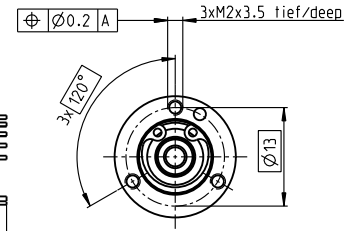
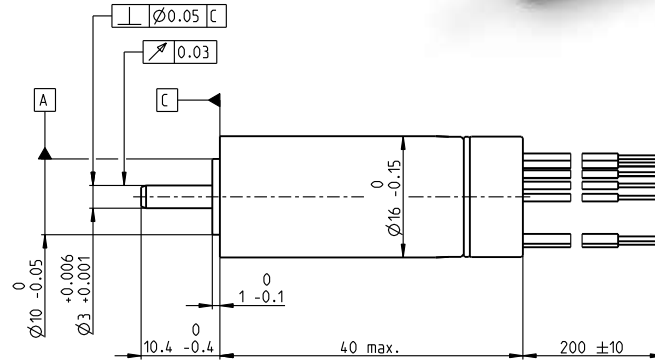
A mit Hallsensoren
with Hall sensors

B Sensorlos
sensorless



Lage des Kabelabganges
zum Befestigungsbohrbild ±25°

alignment of cables relative
to mounting holes ±25°



M 1:1

Motor data

1. Nominal voltage	V	18	24	36	48
2. No load speed	rpm	49000	49100	49100	49000
3. No load current	mA	231	173	116	86.7
4. Nominal speed	rpm	45000	45200	45400	45200
5. Nominal torque	mNm	4.34	4.54	4.68	4.38
6. Nominal current (max. continuous current)	A	1.46	1.14	0.781	0.553
7. Stall torque	mNm	58	64	68.7	60.7
8. Stall current	A	16.8	13.9	9.94	6.59
9. Max. efficiency	%	78.6	79.5	80.1	79
10. Terminal resistance	Ω	1.07	1.73	3.62	7.29
11. Terminal inductance	mH	0.0453	0.0805	0.181	0.322
12. Torque constant	mNm/A	3.45	4.61	6.91	9.21
13. Speed constant	rpm/V	2760	2070	1380	1040
14. Speed/torque gradient	rpm/mNm	858	778	725	820
15. Mechanical time constant	ms	7.25	6.57	6.12	6.92
16. Rotor inertia	gcm ²	0.806	0.806	0.806	0.806

Thermal data

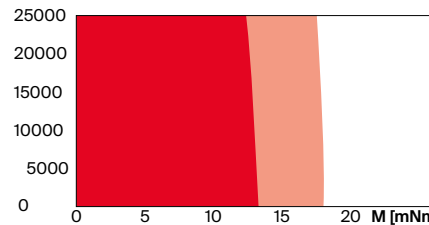
17. Thermal resistance housing-ambient	K/W	16.1
18. Thermal resistance winding-housing	K/W	1.52
19. Thermal time constant winding	s	1.83
20. Thermal time constant motor	s	391
21. Ambient temperature	°C	-20...+100
22. Max. winding temperature	°C	155

Mechanical data ball bearings

23. Max. speed	rpm	55 000
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]

Operating range

n [rpm] winding 36 V



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

Other specifications

29. Number of pole pairs	1
30. Number of phases	3
31. Weight of motor	g 49
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 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	

Modular system

Gear	Stages [opt.]	Sensor
381_GPX 16 A/C	1-2 [3-4]	for motor type A:
382_GPX 16 LN/LZ	1-2 [3-4]	514_ENX 16 EASY INT
383_GPX 16 HP	2-3 [4]	for motor type B:
385_GPX 16 SPEED	1-2	514_ENX 16 EASY INT Abs.
386_GPX 19 A/C	3-4	
387_GPX 19 LN/LZ	3-4	
388_GPX 19 HP	4	
389_GPX 19 SPEED	[3]	

Details on catalog page 44

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.

Motor Control
547_DEC Module 24/2
547_DEC Module 50/5
550_ESCON Module 24/2
551_ESCON 36/3 EC
551_ESCON Module 50/4 EC-S
551_ESCON Module 50/5
553_ESCON 50/5
557_ESCON2 Nano 24/2
557_ESCON2 Micro 60/5
563_EPOS4 Micro 24/5
564_EPOS4 Module 24/1.5
564_EPOS4 Module 50/5
565_EPOS4 Compact 24/5 3-axes
566_EPOS4 Compact 24/1.5
567_EPOS4 Compact 50/5
569_EPOS4 50/5
570_EPOS4 Disk 60/8