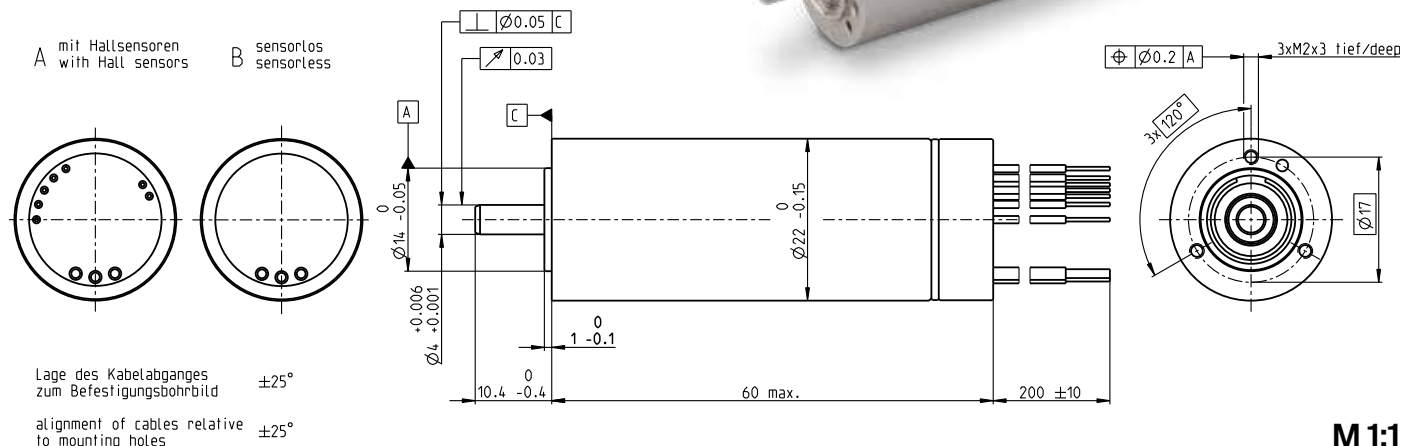


# ECX SPEED 22 L Ø22 mm, brushless, BLDC motor

Key data: 80/92 W, 25 mNm, 45 000 rpm



ECX SPEED



M 1:1

## Motor data

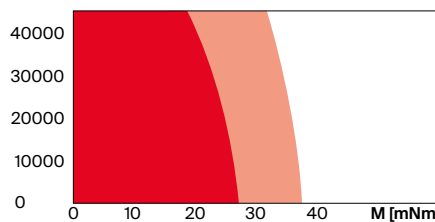
|                                              |                  |        |       |       |
|----------------------------------------------|------------------|--------|-------|-------|
| 1. Nominal voltage                           | V                | 24     | 36    | 48    |
| 2. No load speed                             | rpm              | 37300  | 36100 | 36700 |
| 3. No load current                           | mA               | 281    | 178   | 137   |
| 4. Nominal speed                             | rpm              | 34900  | 33700 | 34500 |
| 5. Nominal torque                            | mNm              | 22.6   | 23.9  | 25    |
| 6. Nominal current (max. continuous current) | A                | 3.94   | 2.67  | 2.12  |
| 7. Stall torque                              | mNm              | 391    | 415   | 470   |
| 8. Stall current                             | A                | 64     | 43.8  | 37.8  |
| 9. Max. efficiency                           | %                | 87.4   | 87.8  | 88.5  |
| 10. Terminal resistance                      | $\Omega$         | 0.375  | 0.823 | 1.27  |
| 11. Terminal inductance                      | mH               | 0.0295 | 0.071 | 0.122 |
| 12. Torque constant                          | mNm/A            | 6.11   | 9.48  | 12.4  |
| 13. Speed constant                           | rpm/V            | 1560   | 1010  | 769   |
| 14. Speed/torque gradient                    | rpm/mNm          | 96.1   | 87.5  | 78.5  |
| 15. Mechanical time constant                 | ms               | 3.91   | 3.56  | 3.2   |
| 16. Rotor inertia                            | gcm <sup>2</sup> | 3.89   | 3.89  | 3.89  |

## Thermal data

|                                        |     |            |
|----------------------------------------|-----|------------|
| 17. Thermal resistance housing-ambient | K/W | 9          |
| 18. Thermal resistance winding-housing | K/W | 0.62       |
| 19. Thermal time constant winding      | s   | 1.95       |
| 20. Thermal time constant motor        | s   | 456        |
| 21. Ambient temperature                | °C  | -20...+100 |
| 22. Max. winding temperature           | °C  | 155        |

## Mechanical data ball bearings

|                                        |     |           |
|----------------------------------------|-----|-----------|
| 23. Max. speed                         | rpm | 45 000    |
| 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) | N   | 110       |
| (static, shaft supported)              | N   | 6000      |
| 28. Max. radial load [mm from flange]  | N   | 16 [5]    |



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

## Other specifications

|                               |     |                  |               |                     |                          |                            |
|-------------------------------|-----|------------------|---------------|---------------------|--------------------------|----------------------------|
| 29. Number of pole pairs      | 1   | 390_GPX 22 A/C   | 1-2 [3-4]     | Sensor              | for motor type A:        | 547_DEC Module 50/5        |
| 30. Number of phases          | 3   | 391_GPX 22 LN/LZ | 1-2 [3-4]     | 516_ENX 22 EASY INT | for motor type B:        | 551_ESCON 36/3 EC          |
| 31. Weight of motor           | g   | 141              | 392_GPX 22 HP | 2-3 [4]             | for motor type B:        | 551_ESCON Module 50/4 EC-S |
| 32. Typical noise level [rpm] | dBA | 54 [45000]       | 394_GPX 22 UP | 1-4                 | 516_ENX 22 EASY INT Abs. | 551_ESCON Module 50/5      |

## 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 67. 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  $\pm 1\%$ , beta (25-85°C): 3490 K

## Modular system

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.