

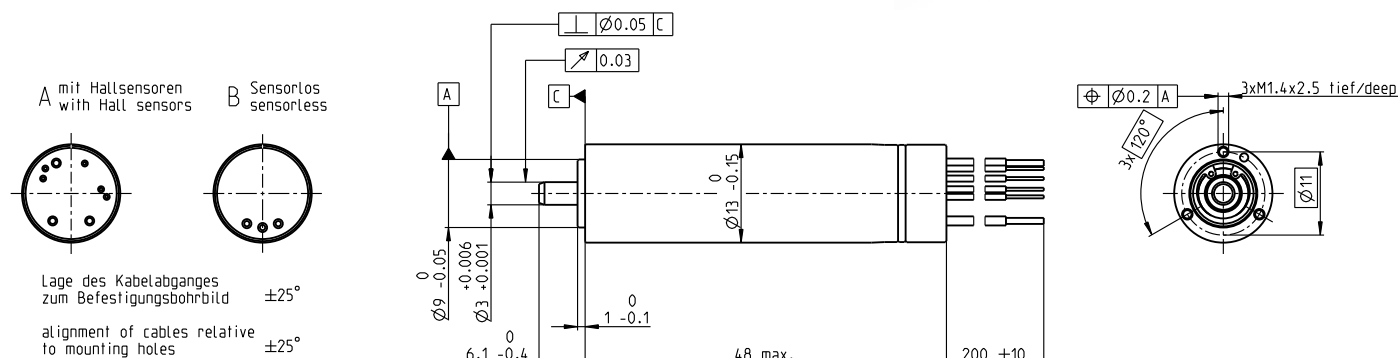
# ECX SPEED 13 L Ø13 mm, brushless, BLDC motor

Sterilizable

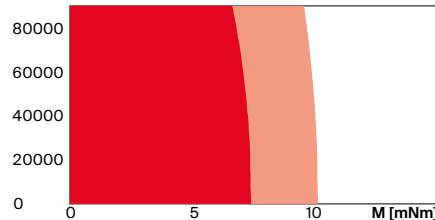
Key Data: 50/62 W, 7.8 mNm, 90 000 rpm



ECX SPEED



M 1:1

| Motor Data                    |                                           |                  |                                                                                      |                                                      |                                                                                       |                            |           |
|-------------------------------|-------------------------------------------|------------------|--------------------------------------------------------------------------------------|------------------------------------------------------|---------------------------------------------------------------------------------------|----------------------------|-----------|
| 1_                            | Nominal voltage                           | V                | 18                                                                                   | 24                                                   | 36                                                                                    | 48                         |           |
| 2_                            | No load speed                             | rpm              | 71000                                                                                | 69500                                                | 71000                                                                                 | 65100                      |           |
| 3_                            | No load current                           | mA               | 225                                                                                  | 162                                                  | 112                                                                                   | 72.1                       |           |
| 4_                            | Nominal speed                             | rpm              | 66800                                                                                | 65600                                                | 67400                                                                                 | 61500                      |           |
| 5_                            | Nominal torque                            | mNm              | 6.66                                                                                 | 6.92                                                 | 6.63                                                                                  | 6.95                       |           |
| 6_                            | Nominal current (max. continuous current) | A                | 2.96                                                                                 | 2.25                                                 | 1.47                                                                                  | 1.05                       |           |
| 7_                            | Stall torque                              | mNm              | 126                                                                                  | 143                                                  | 149                                                                                   | 142                        |           |
| 8_                            | Stall current                             | A                | 52.3                                                                                 | 43.4                                                 | 30.8                                                                                  | 20.2                       |           |
| 9_                            | Max. efficiency                           | %                | 87.3                                                                                 | 88.1                                                 | 88.2                                                                                  | 88.3                       |           |
| 10_                           | Terminal resistance                       | Ω                | 0.344                                                                                | 0.552                                                | 1.17                                                                                  | 2.38                       |           |
| 11_                           | Terminal inductance                       | mH               | 0.0128                                                                               | 0.0238                                               | 0.0512                                                                                | 0.108                      |           |
| 12_                           | Torque constant                           | mNm/A            | 2.41                                                                                 | 3.29                                                 | 4.82                                                                                  | 7.01                       |           |
| 13_                           | Speed constant                            | rpm/V            | 3960                                                                                 | 2910                                                 | 1980                                                                                  | 1360                       |           |
| 14_                           | Speed/torque gradient                     | rpm/mNm          | 567                                                                                  | 489                                                  | 480                                                                                   | 462                        |           |
| 15_                           | Mechanical time constant                  | ms               | 1.87                                                                                 | 1.61                                                 | 1.58                                                                                  | 1.52                       |           |
| 16_                           | Rotor inertia                             | gcm <sup>2</sup> | 0.315                                                                                | 0.315                                                | 0.315                                                                                 | 0.315                      |           |
| Thermal data                  |                                           |                  | Operating Range                                                                      |                                                      | Sterilization information                                                             |                            |           |
| 17_                           | Thermal resistance housing-ambient        | K/W              | 22                                                                                   | n [rpm] winding 36 V                                 |  | Sterilization cycles       |           |
| 18_                           | Thermal resistance winding-housing        | K/W              | 2.04                                                                                 |                                                      |                                                                                       | Sensorless: typical 2000   |           |
| 19_                           | Thermal time constant winding             | s                | 2.13                                                                                 |                                                      |                                                                                       | Hall sensors: typical 1000 |           |
| 20_                           | Thermal time constant motor               | s                | 448                                                                                  |                                                      |                                                                                       |                            |           |
| 21_                           | Ambient temperature                       | °C               | -40...+135                                                                           |                                                      |                                                                                       |                            |           |
| 22_                           | Max. winding temperature                  | °C               | 155                                                                                  |                                                      |                                                                                       | Sterilization with steam   |           |
| Mechanical data ball bearings |                                           |                  |  |                                                      |                                                                                       |                            |           |
| 23_                           | Max. speed                                | rpm              |                                                                                      |                                                      |                                                                                       |                            | 90 000    |
| 24_                           | Axial play                                | mm               |                                                                                      |                                                      |                                                                                       |                            | 0...0.28  |
|                               | 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                |                                                                                      |                                                      |                                                                                       |                            | 50        |
|                               | (static, shaft supported)                 | N                |                                                                                      |                                                      |                                                                                       |                            | 1500      |
| 28_                           | Max. radial load [mm from flange]         | N                |                                                                                      |                                                      |                                                                                       |                            | 6 [5]     |
| Other specifications          |                                           |                  | Modular System                                                                       |                                                      | Details on catalog page 40                                                            |                            |           |
| 29_                           | Number of pole pairs                      | 1                | Gear 363_GPX 13 SPEED                                                                | Stages [opt.] 1-3                                    | Sensor for motor type A:<br>481_ENX 13 EASY INT                                       | 533_ESCON 36/3 EC          |           |
| 30_                           | Number of phases                          | 3                |                                                                                      |                                                      |                                                                                       | 533_ESCON Module 50/4 EC-S |           |
| 31_                           | Weight of motor                           | g                | 41                                                                                   | Sensor for motor type B:<br>481_ENX 13 EASY INT Abs. | 533_ESCON Module 50/5<br>535_ESCON 50/5                                               |                            |           |
| 32_                           | Typical noise level [rpm]                 | dBA              | 47 [50 000]                                                                          |                                                      |                                                                                       |                            |           |
|                               |                                           |                  |                                                                                      |                                                      |                                                                                       |                            |           |

## Connection A and B, motor (Cable AWG A: 26, B: 22)

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

## Connection A, sensors (Cable AWG 28)

|        |                          |
|--------|--------------------------|
| orange | V <sub>CC</sub> 5 ±0.5 V |
| blue   | GND                      |
| yellow | Hall sensor 1            |
| brown  | Hall sensor 2            |
| grey   | Hall sensor 3            |

Output signals: CMOS compatible push-pull stage. No pull-up resistor required. Hall signals are generated by an EASY INT sensor. In combination with the ENX EASY INT, the orange (V<sub>CC</sub>) and blue (GND) connections are not used.

## Configuration

Flange front: thread holes/center thread  
Flange back: metal ring/external thread  
Shaft front: length/diameter  
Electric connection: cable length/pin connection  
Appropriate connectors and connecting cables are available for the configuration of the pin connection together with the external thread: see catalog, Accessories section.