

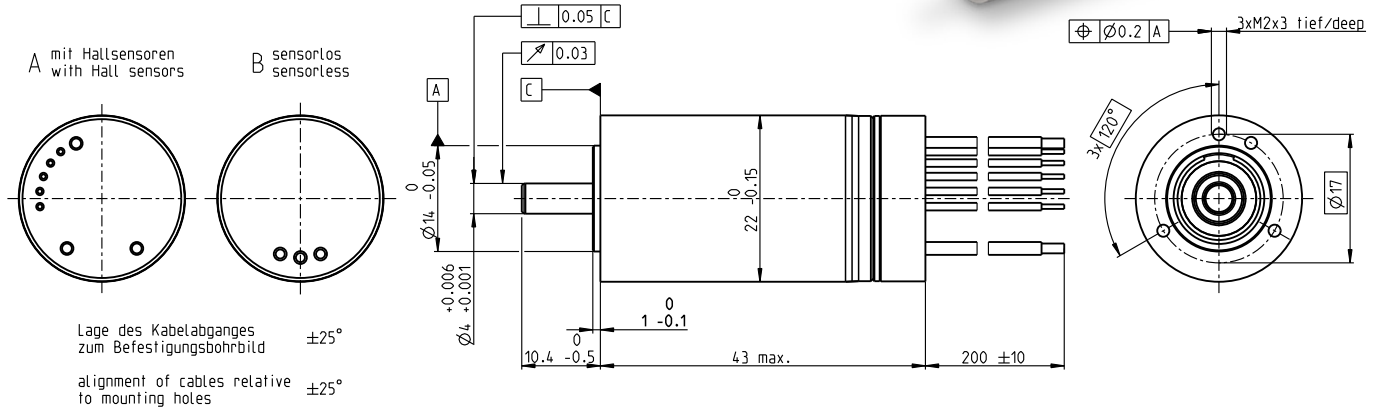
# ECX TORQUE 22 M brushless BLDC motor $\varnothing 22$ mm

**NEW**

**Key Data: 30/43 W, 32.4 mNm, 16 000 rpm**



**ECX TORQUE**



**M 1:1**

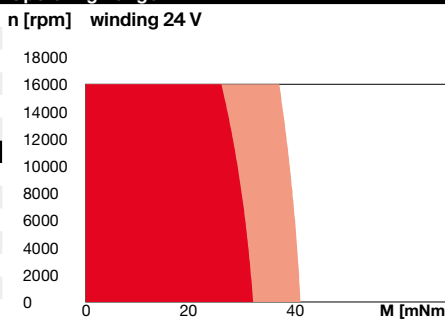
**Motor Data**

|     |   |                  |       |       |       |       |
|-----|---|------------------|-------|-------|-------|-------|
| 1_  | Nominal voltage                           | V                | 18    | 24    | 36    | 48    |
| 2_  | No load speed                             | rpm              | 14300 | 15300 | 15100 | 13000 |
| 3_  | No load current                           | mA               | 175   | 145   | 94.8  | 56.5  |
| 4_  | Nominal speed                             | rpm              | 12200 | 13100 | 12900 | 10900 |
| 5_  | Nominal torque (max. continuous torque)   | mNm              | 29.4  | 28.6  | 29.7  | 32.4  |
| 6_  | Nominal current (max. continuous current) | A                | 2.41  | 1.88  | 1.28  | 0.885 |
| 7_  | Stall torque                              | mNm              | 439   | 466   | 494   | 461   |
| 8_  | Stall current                             | A                | 371   | 31.5  | 21.9  | 13.2  |
| 9_  | Max. efficiency                           | %                | 86.9  | 87.1  | 87.4  | 87.5  |
| 10_ | Terminal resistance                       | $\Omega$         | 0.486 | 0.763 | 1.64  | 3.63  |
| 11_ | Terminal inductance                       | mH               | 0.274 | 0.428 | 0.988 | 2.38  |
| 12_ | Torque constant                           | mNm/A            | 11.8  | 14.8  | 22.5  | 34.9  |
| 13_ | Speed constant                            | rpm/V            | 806   | 645   | 424   | 273   |
| 14_ | Speed/torque gradient                     | rpm/mNm          | 33.1  | 33.2  | 31    | 28.4  |
| 15_ | Mechanical time constant                  | ms               | 0.596 | 0.599 | 0.558 | 0.512 |
| 16_ | Rotor inertia                             | gcm <sup>2</sup> | 1.72  | 1.72  | 1.72  | 1.72  |

**Thermal data**

|     |                                    |     |            |
|-----|------------------------------------|-----|------------|
| 17_ | Thermal resistance housing-ambient | K/W | 15.7       |
| 18_ | Thermal resistance winding-housing | K/W | 4.48       |
| 19_ | Thermal time constant winding      | s   | 18.4       |
| 20_ | Thermal time constant motor        | s   | 644        |
| 21_ | Ambient temperature                | °C  | -40...+100 |
| 22_ | Max. winding temperature           | °C  | 155        |

**Operating Range**



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

**Mechanical data ball bearings**

|     |  |           |          |
|-----|--|-----------|----------|
| 23_ | Max. speed   | rpm       | 16 000   |
| 24_ | Axial play   | mm        | 0...0.24 |
|     | Preload  | N         | 4.0      |
|     | Direction of force   |           | pull     |
| 25_ | Radial play  | preloaded |          |
| 26_ | Max. axial load (dynamic)                                    | N         | 4.0      |
| 27_ | Max. force for press fits (static) (static, shaft supported) | N         | 110      |
| 28_ | Max. radial load [mm from flange]                            | N         | 22 [5]   |

**Other specifications**

|     |                           |                 |
|-----|---------------------------|-----------------|
| 29_ | Number of pole pairs      | 4               |
| 30_ | Number of phases          | 3               |
| 31_ | Weight of motor           | g 82.1          |
| 32_ | Typical noise level [rpm] | dBA 54 [12 000] |

**maxon Modular System**

| maxon gear       | Stages [opt.] |
|------------------|---------------|
| 339_GPX 22 A/C   | 1-2           |
| 340_GPX 22 LN/LZ | 1-2           |
| 341_GPX 22 HP    | 2-3           |
| 342_GPX 22 UP    | 1-4           |
| 344_GPX 26 A/C   | 3             |
| 345_GPX 26 LN/LZ | 3             |
| 346_GPX 26 HP    | 4             |

| maxon sensor             |
|--------------------------|
| for motor type A:        |
| 442_ENX 22 EASY INT      |
| for motor type B:        |
| 442_ENX 22 EASY INT Abs. |

**Details on catalog page 32**

| maxon motor control         |
|-----------------------------|
| 486_ESCON Module 24/2       |
| 487_ESCON 36/3 EC           |
| 487_ESCON Module 50/4 EC-S  |
| 487_ESCON Module 50/5       |
| 489_ESCON 50/5              |
| 491_DEC Module 24/2, 50/5   |
| 495_EPOS4 Micro 24/5        |
| 496_EPOS4 Module/Comp. 50/5 |
| 504_EPOS2 P 24/5            |

**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>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.

**Connection Temperature sensor (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/center thread  
 Shaft front: length/diameter  
 Electric connection: cable length/pin connection/connector  
 Temperature Sensor: without/NTC-Thermistor

Appropriate connectors and connecting cables are available for the configuration of the pin connection together with the external thread: see catalog, Accessories section.

[xdrives.maxongroup.com](http://xdrives.maxongroup.com)

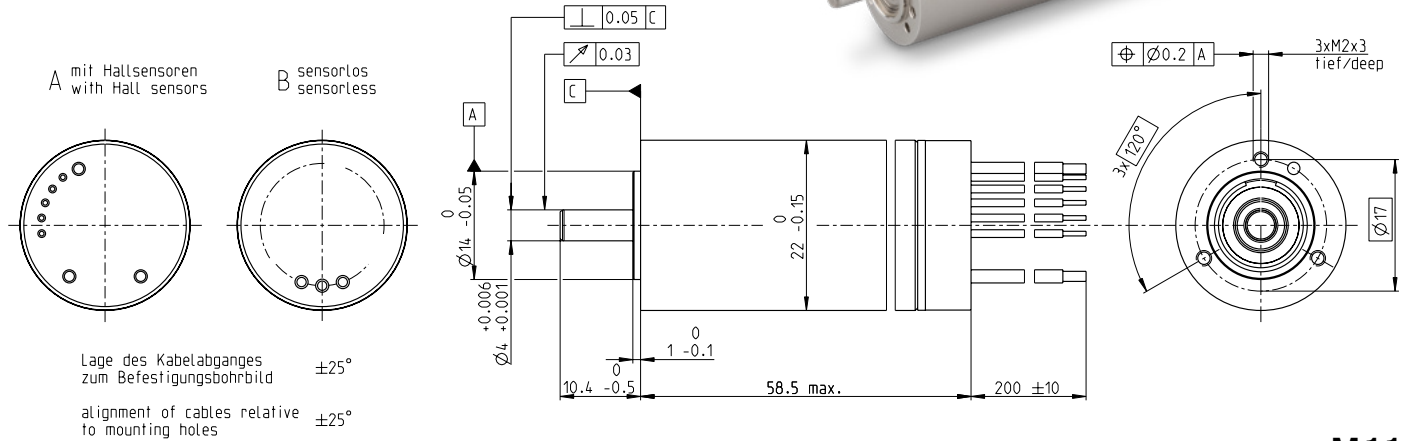
# ECX TORQUE 22 L brushless BLDC motor $\varnothing 22$ mm

**NEW**



**ECX TORQUE**

**Key Data: 35/48 W, 48.8 mNm, 11000 rpm**



**M 1:1**

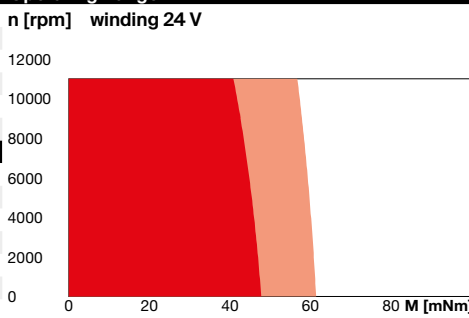
**Motor Data**

|  |                  |       |       |       |
|--|------------------|-------|-------|-------|
| 1_ Nominal voltage                           | V                | 12    | 24    | 48    |
| 2_ No load speed                             | rpm              | 9380  | 10300 | 10900 |
| 3_ No load current                           | mA               | 224   | 129   | 69.9  |
| 4_ Nominal speed                             | rpm              | 7930  | 8850  | 9380  |
| 5_ Nominal torque (max. continuous torque)   | mNm              | 45.7  | 48.1  | 48.8  |
| 6_ Nominal current (max. continuous current) | A                | 3.7   | 2.13  | 1.14  |
| 7_ Stall torque                              | mNm              | 528   | 684   | 766   |
| 8_ Stall current                             | A                | 43.6  | 31.1  | 18.3  |
| 9_ Max. efficiency                           | %                | 86.4  | 87.7  | 88.2  |
| 10_ Terminal resistance                      | $\Omega$         | 0.275 | 0.771 | 2.62  |
| 11_ Terminal inductance                      | mH               | 0.148 | 0.49  | 1.77  |
| 12_ Torque constant                          | mNm/A            | 12.1  | 22    | 41.8  |
| 13_ Speed constant                           | rpm/V            | 789   | 434   | 228   |
| 14_ Speed/torque gradient                    | rpm/mNm          | 17.9  | 15.2  | 14.3  |
| 15_ Mechanical time constant                 | ms               | 0.575 | 0.488 | 0.459 |
| 16_ Rotor inertia                            | gcm <sup>2</sup> | 3.06  | 3.06  | 3.06  |

**Thermal data**

|  |     |            |
|--|-----|------------|
| 17_ Thermal resistance housing-ambient | K/W | 13.4       |
| 18_ Thermal resistance winding-housing | K/W | 3.8        |
| 19_ Thermal time constant winding      | s   | 25         |
| 20_ Thermal time constant motor        | s   | 757        |
| 21_ Ambient temperature                | °C  | -40...+100 |
| 22_ Max. winding temperature           | °C  | 155        |

**Operating Range**



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

**Mechanical data ball bearings**

|  |     |           |
|--|-----|-----------|
| 23_ Max. speed                         | rpm | 11000     |
| 24_ Axial play                         | mm  | 0...0.24  |
| Preload                                | N   | 4.0       |
| Direction of force                     |     | pull      |
| 25_ Radial play                        |     | preloaded |
| 26_ Max. axial load (dynamic)          | N   | 4.0       |
| 27_ Max. force for press fits (static) | N   | 110       |
| (static, shaft supported)              | N   |           |
| 28_ Max. radial load [mm from flange]  | N   | 29 [5]    |

**Other specifications**

|                               |     |            |
|-------------------------------|-----|------------|
| 29_ Number of pole pairs      |     | 4          |
| 30_ Number of phases          |     | 3          |
| 31_ Weight of motor           | g   | 113        |
| 32_ Typical noise level [rpm] | dBA | 56 [9 000] |

**maxon Modular System**

| maxon gear       | Stages [opt.] |
|------------------|---------------|
| 339_GPX 22 A/C   | 1-2           |
| 340_GPX 22 LN/LZ | 1-2           |
| 341_GPX 22 HP    | 2-3           |
| 342_GPX 22 UP    | 1-4           |
| 344_GPX 26 A/C   | 3             |
| 345_GPX 26 LN/LZ | 3             |
| 346_GPX 26 HP    | 4             |

| maxon sensor             |
|--------------------------|
| for motor type A:        |
| 442_ENX 22 EASY INT      |
| for motor type B:        |
| 442_ENX 22 EASY INT Abs. |

**Details on catalog page 32**

| maxon motor control         |
|-----------------------------|
| 486_ESCON Module 24/2       |
| 487_ESCON 36/3 EC           |
| 487_ESCON Module 50/4 EC-S  |
| 487_ESCON Module 50/5       |
| 489_ESCON 50/5              |
| 491_DEC Module 24/2 , 50/5  |
| 495_EPOS4 Micro 24/5        |
| 496_EPOS4 Module/Comp. 50/5 |
| 504_EPOS2 P 24/5            |

**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>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.

**Connection Temperature sensor (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/center thread  
 Shaft front: length/diameter  
 Electric connection: cable length/pin connection/connector  
 Temperature Sensor: without/NTC-Thermistor

Appropriate connectors and connecting cables are available for the configuration of the pin connection together with the external thread: see catalog, Accessories section.

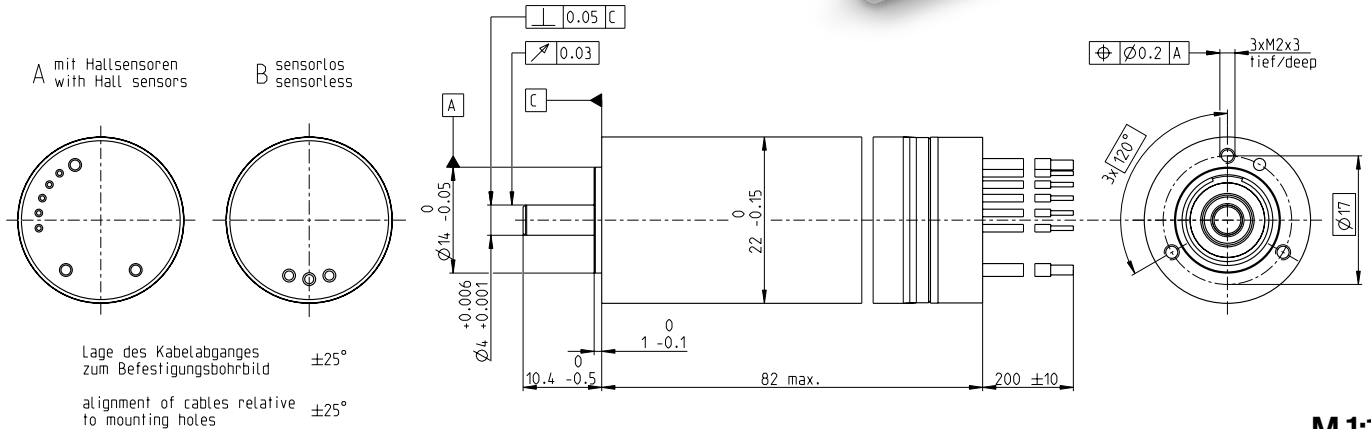
# ECX TORQUE 22 XL brushless BLDC motor $\varnothing 22$ mm

NEW

Key Data: 40/55 W, 79.9 mNm, 8000 rpm



ECX TORQUE



M 1:1

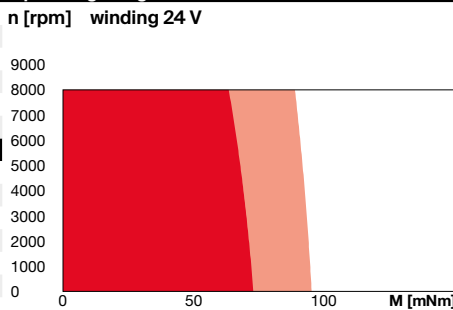
### Motor Data

|     |   |                  |       |       |
|-----|---|------------------|-------|-------|
| 1_  | Nominal voltage                           | V                | 24    | 48    |
| 2_  | No load speed                             | rpm              | 6030  | 6350  |
| 3_  | No load current                           | mA               | 96.8  | 52    |
| 4_  | Nominal speed                             | rpm              | 5000  | 5320  |
| 5_  | Nominal torque (max. continuous torque)   | mNm              | 77.5  | 79.9  |
| 6_  | Nominal current (max. continuous current) | A                | 2.01  | 1.09  |
| 7_  | Stall torque                              | mNm              | 730   | 832   |
| 8_  | Stall current                             | A                | 19.4  | 11.6  |
| 9_  | Max. efficiency                           | %                | 86.5  | 87.2  |
| 10_ | Terminal resistance                       | $\Omega$         | 1.24  | 4.13  |
| 11_ | Terminal inductance                       | mH               | 0.798 | 2.88  |
| 12_ | Torque constant                           | mNm/A            | 37.7  | 71.6  |
| 13_ | Speed constant                            | rpm/V            | 253   | 133   |
| 14_ | Speed/torque gradient                     | rpm/mNm          | 8.33  | 7.7   |
| 15_ | Mechanical time constant                  | ms               | 0.434 | 0.401 |
| 16_ | Rotor inertia                             | gcm <sup>2</sup> | 4.97  | 4.97  |

### Thermal data

|     |                                    |              |            |
|-----|------------------------------------|--------------|------------|
| 17_ | Thermal resistance housing-ambient | K/W          | 10.9       |
| 18_ | Thermal resistance winding-housing | K/W          | 2.46       |
| 19_ | Thermal time constant winding      | s            | 26.1       |
| 20_ | Thermal time constant motor        | s            | 883        |
| 21_ | Ambient temperature                | $^{\circ}$ C | -40...+100 |
| 22_ | Max. winding temperature           | $^{\circ}$ C | 155        |

### Operating Range



### Mechanical data ball bearings

|     |  |           |          |
|-----|--|-----------|----------|
| 23_ | Max. speed   | rpm       | 8000     |
| 24_ | Axial play   | mm        | 0...0.24 |
|     | Preload  | N         | 4.0      |
|     | Direction of force   |           | pull     |
| 25_ | Radial play  | preloaded | 1000     |
| 26_ | Max. axial load (dynamic)                                    | N         | 4.0      |
| 27_ | Max. force for press fits (static) (static, shaft supported) | N         | 110      |
| 28_ | Max. radial load [mm from flange]                            | N         | 33 [5]   |

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

### Other specifications

|     |                           |               |
|-----|---------------------------|---------------|
| 29_ | Number of pole pairs      | 4             |
| 30_ | Number of phases          | 3             |
| 31_ | Weight of motor           | g 162         |
| 32_ | Typical noise level [rpm] | dBA 60 [5000] |

### maxon Modular System

| maxon gear       | Stages [opt.] |
|------------------|---------------|
| 339_GPX 22 A/C   | 1-2           |
| 340_GPX 22 LN/LZ | 1-2           |
| 341_GPX 22 HP    | 2-3           |
| 342_GPX 22 UP    | 1-4           |
| 344_GPX 26 A/C   | 3             |
| 345_GPX 26 LN/LZ | 3             |
| 346_GPX 26 HP    | 4             |

| maxon sensor             |
|--------------------------|
| for motor type A:        |
| 442_ENX 22 EASY INT      |
| for motor type B:        |
| 442_ENX 22 EASY INT Abs. |

### Details on catalog page 32

| maxon motor control         |
|-----------------------------|
| 486_ESCON Module 24/2       |
| 487_ESCON 36/3 EC           |
| 487_ESCON Module 50/4 EC-S  |
| 487_ESCON Module 50/5       |
| 489_ESCON 50/5              |
| 491_DEC Module 24/2, 50/5   |
| 495_EPOS4 Micro 24/5        |
| 496_EPOS4 Module/Comp. 50/5 |
| 504_EPOS2 P 24/5            |

### 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 | $V_{cc}$ 5 $\pm$ 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 ( $V_{cc}$ ) and blue (GND) connections are not used.

### Connection Temperature sensor (Cable AWG 26)

|   |     |
|---|-----|
| purple  | NTC |
| purple  | NTC |
| Resistance 25 $^{\circ}$ C: 10 kOhm $\pm$ 1%, beta (25-85 $^{\circ}$ C): 3490 K |     |

### Configuration

Flange front: Thread holes/center thread  
 Flange back: plastic ring/center thread  
 Shaft front: length/diameter  
 Electric connection: cable length/pin connection/connector  
 Temperature Sensor: without/NTC-Thermistor

Appropriate connectors and connecting cables are available for the configuration of the pin connection together with the external thread: see catalog, Accessories section.