

# TOX<sup>®</sup> ElectricPowerDrive type EXe-K cleanroom

Data sheet 40.56

2025 / 05



valid until: January 18, 2028

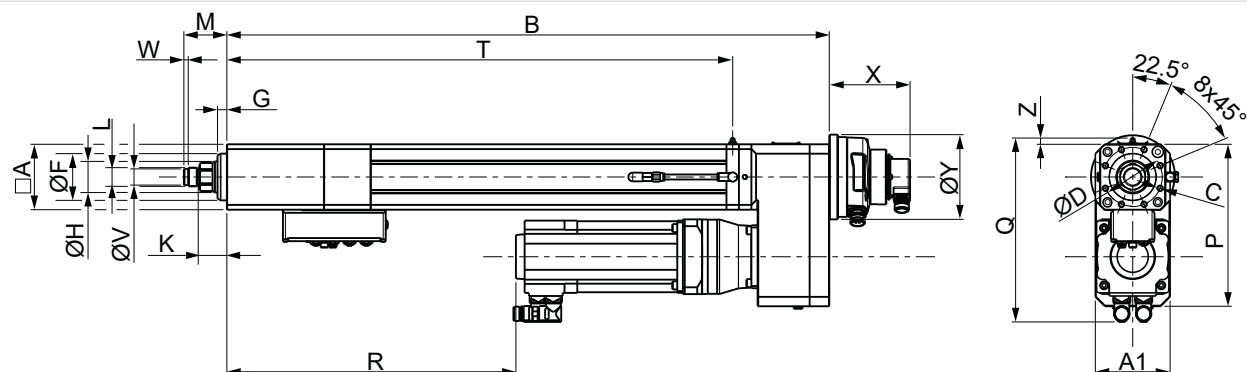
**Fraunhofer**

**TESTED<sup>®</sup>  
DEVICE**

TOX Pressotechnik  
EXe-K xxx.555.300.002  
Report No. TO 2404-1513

# TOX® ElectricPowerDrive Servo drive

Type EXe-K, 30-200kN for cleanroom classification according to ISO 14644-1, Class 5.



Information at: [www.tested-device.com/de/test/9142](http://www.tested-device.com/de/test/9142)



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**DEVICE**  
TOX Pressotechnik  
EXe-K xxx,555,300,002  
Report No. TO 2404-1513

| Type                  | EXe-K 030,555,300 | EXe-K 060,555,300 | EXe-K 100,555,300 | EXe-K 200,555,300 |
|-----------------------|-------------------|-------------------|-------------------|-------------------|
| A [mm]                | 90                | 105               | 130               | 160               |
| A1 [mm]               | 95                | 120               | 143               | 160               |
| B [mm]                | 853               | 967               | 1025              | 1150              |
| C                     | 8 x M8            | 8 x M10           | 8 x M12           | 8 x M16           |
| ØD [mm]               | 80                | 95                | 115               | 135               |
| ØF <sub>17</sub> [mm] | 65                | 75                | 90                | 105               |
| G [mm]                | 10                | 15                | 17                | 17                |
| ØH [mm]               | 40                | 50                | 60                | 75                |
| K [mm]                | 26                | 44                | 42                | 42                |
| L                     | M22 x 2           | M30 x 2           | M30 x 2           | M39 x 2           |
| M [mm]                | 46                | 69                | 67                | 77                |
| P [mm]                | 210               | 260               | 305               | 350               |
| Q [mm]                | 253               | 295               | 388               | 419               |
| R [mm]                | 393               | 464               | 482               | 525               |
| T [mm]                | 735               | 812               | 852               | 939               |
| ØV <sub>96</sub> [mm] | 18                | 26                | 26                | -                 |
| W [mm]                | 7                 | 7                 | 7                 | -                 |
| X [mm]                | 116               | 130               | 136               | 152               |
| ØY [mm]               | 108               | 136               | 154               | 174               |
| Z [mm]                | 10                | 10                | 20.5              | 20.5              |

# TOX® ElectricPowerDrive Servo drive

## Technical data

| Technical data                                       | EXe-K 030.555.300                                                                 | EXe-K 060.555.300 | EXe-K 100.555.300 | EXe-K 200.555.300 |
|------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------|-------------------|-------------------|
| Nominal pressing force [kN]                          | 30                                                                                | 60                | 100               | 200               |
| Nominal pulling force [kN]                           | 8                                                                                 | 17                | 30                | 60                |
| Maximum speed [mm/s]                                 | 280                                                                               | 250               | 200               | 120               |
| Stroke length [mm]                                   | 300                                                                               | 300               | 300               | 300               |
| Acceleration/deceleration [mm/s <sup>2</sup> ]       | 2000                                                                              | 2000              | 2000              | 1000              |
| Repeating accuracy [mm] <sup>1)</sup>                | 0.01                                                                              |                   |                   |                   |
| Weight [kg]                                          | 47                                                                                | 79                | 122               | 199               |
| Max. tool weight [kg] <sup>2)</sup>                  | 125                                                                               | 300               | 500               | 1000              |
| Force transducer (strain gauge) measuring range [kN] | 0.3 - 30                                                                          | 0.6 - 60          | 1 - 100           | 2 - 200           |
| System accuracy <sup>3)</sup>                        | <0.5% of the nominal force                                                        |                   |                   |                   |
| Resolution (theoretical) [mm]                        | 0.00185                                                                           | 0.00185           | 0.00185           | 0.00106           |
| Protection class                                     | IP 65                                                                             |                   |                   |                   |
| Power supply connection                              | See data sheet 40.15 System & Components                                          |                   |                   |                   |
| Climate                                              | +10 °C to +40 °C, from +40 °C power loss, max. +55 °C, humidity <75%, without dew |                   |                   |                   |

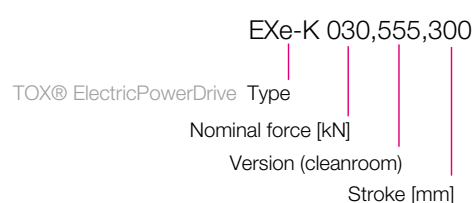
<sup>1)</sup> In thermally stabilized condition

<sup>3)</sup> Calibrated to compressive force, relative to TOX® calibration status

<sup>2)</sup> Higher tool weights available on request

## Breakdown of type key

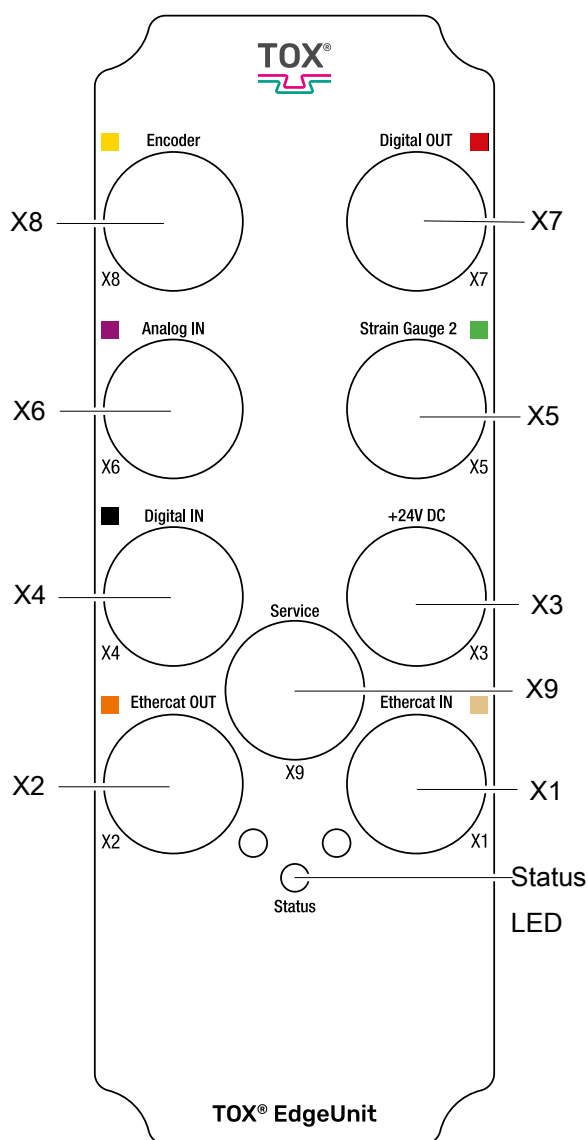
### Sample order



# TOX® EdgeUnit

## Connections TOX® EdgeUnit

TOX® EdgeUnit is the decentralized intelligence for every TOX® ElectricPowerDrive.



| Designation    | Interfaces                         |
|----------------|------------------------------------|
| <b>X1</b>      | EtherCAT IN, including status LED  |
| Connector type | M12 4-pin bushing, D-coded         |
| <b>X2</b>      | EtherCAT OUT, including status LED |
| Connector type | M12 4-pin bushing, D-coded         |

| Designation                   | Interfaces                                                                    |
|-------------------------------|-------------------------------------------------------------------------------|
| <b>X3</b>                     | Supply voltage                                                                |
| Voltage                       | + 24 V DC (18 - 28 V DC)                                                      |
| Current consumption           | US1 <0.25 A (without loads on Pin1, X4-7)<br>US2 ~0 A (without outputs to X7) |
| US1                           | Logic voltage + sensors                                                       |
| US2                           | Output voltage (not isolated)                                                 |
| Connector type                | M12 5-pin, connector A-coded not AIDA compliant                               |
| <b>X4</b>                     | Digital IN                                                                    |
| Digital IN 1 / Digital IN 2   | 24 V DC                                                                       |
| Logic level 0 (LOW)           | 0 V - 10 V                                                                    |
| Logic level 1 (HIGH)          | 16 V - 28 V                                                                   |
| Input current                 | max. 2 mA (at 24 V)                                                           |
| Connector type                | M12 5-pin bushing, A-coded                                                    |
| <b>X5*</b>                    | Strain gauge 2                                                                |
| measuring range               | 1.157 mV/V - 3.25 mV/V (adjustable gain)                                      |
| Voltage V DC                  | 5 V                                                                           |
| Bridge resistance             | 700 Ω                                                                         |
| Resolution                    | 16 bit                                                                        |
| Connector type                | M12 5-pin bushing, A-coded                                                    |
| <b>X6*</b>                    | Analog IN                                                                     |
| Analog IN 1                   | -10 - +10 V DC, 16 bit                                                        |
| Analog IN 2                   | 0 - 10 V DC, 12 bit                                                           |
| Connector type                | M12 5-pin bushing, A-coded                                                    |
| <b>X7</b>                     | Digital OUT                                                                   |
| Digital OUT 0 / Digital OUT 1 | 24 V DC, US2                                                                  |
| Output current                | max. 2 A (per channel) / excess current and short-circuit safe                |
| Connector type                | M12 5-pin bushing, A-coded                                                    |
| <b>X8*</b>                    | Encoder                                                                       |
| Connector type                | M12 8-pin bushing, A-coded                                                    |
| <b>X9</b>                     | Service plug                                                                  |
| Connector type                | M12 8-pin connector, A-coded                                                  |

\*Compatible sensor types available on request.

# TOX® EdgeUnit

## Technical data TOX® EdgeUnit

Pin assignment of TOX® EdgeUnit



M12 5-pin bushing, A-coded



M12 5-pin connector, A-coded



M12 4-pin bushing, D-coded



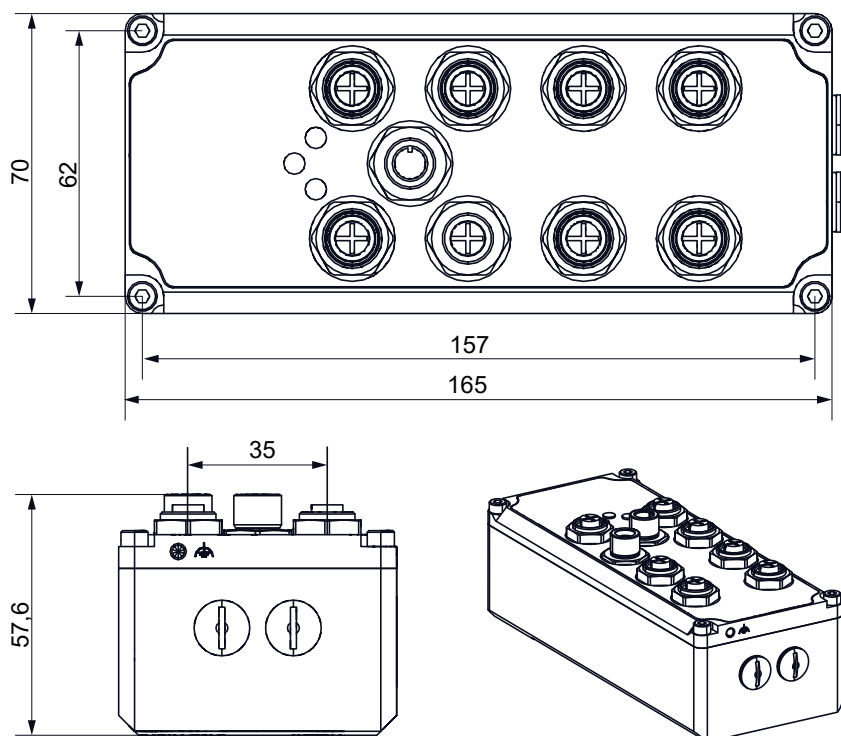
Bushing M12-8-pin



Connector M12 8-pin

### Technical data:

- Housing: aluminum
- The status LED shows different statuses of the TOX® EdgeUnit
- Integrated memory



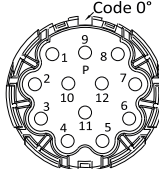
# Connection assignments

## TOX® EdgeUnit

| Model                                                                                                                   | Designation    | Description                                                                                                                                                                                                                                    |
|-------------------------------------------------------------------------------------------------------------------------|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| X1<br><br>Bushing M12 4-pin, D-coded   | EtherCAT In    | <ul style="list-style-type: none"> <li>Pin 1 = TD+</li> <li>Pin 2 = RD+</li> <li>Pin 3 = TD-</li> <li>Pin 4 = RD-</li> </ul>                                                                                                                   |
| X2                                                                                                                      | EtherCAT Out   | <ul style="list-style-type: none"> <li>Pin 1 = TD+</li> <li>Pin 2 = RD+</li> <li>Pin 3 = TD-</li> <li>Pin 4 = RD-</li> </ul>                                                                                                                   |
| X3<br><br>Connector M12 5-pin, A-coded | Power          | <ul style="list-style-type: none"> <li>Pin 1 = 24 V US2</li> <li>Pin 2 = GND US2</li> <li>Pin 3 = 24 V US1</li> <li>Pin 4 = GND US1</li> <li>Pin 5 = PE</li> <li>GND US1 = GND US2 = GND</li> <li>Connector not AIDA compliant</li> </ul>      |
| X4<br><br>Bushing M12 5-pin, A-coded  | Digital In     | <ul style="list-style-type: none"> <li>Pin 1 = 24 V US1</li> <li>Pin 2 = DIN.2 24 V</li> <li>Pin 3 = GND</li> <li>Pin 4 = DIN.1 24 V</li> <li>Pin 5 = PE</li> </ul>                                                                            |
| X5                                                                                                                      | Strain gauge 2 | <ul style="list-style-type: none"> <li>Pin 1 = S- signal strain gauge In</li> <li>Pin 2 = 5 V supply strain gauge</li> <li>Pin 3 = GND supply strain gauge</li> <li>Pin 4 = S+ signal strain gauge In</li> <li>Pin 5 = not occupied</li> </ul> |
| X6                                                                                                                      | Analog In      | <ul style="list-style-type: none"> <li>Pin 1 = 24 V US1</li> <li>Pin 2 = AIN2 0 V - +10 V</li> <li>Pin 3 = GND</li> <li>Pin 4 = AIN1 -10 V - +10 V</li> <li>Pin 5 = PE</li> </ul>                                                              |
| X7                                                                                                                      | Digital Out    | <ul style="list-style-type: none"> <li>Pin 1 = 24 V US1</li> <li>Pin 2 = DOUT.1 24 V US2 (2 A)</li> <li>Pin 3 = GND</li> <li>Pin 4 = DOUT.0 24 V US2 (2 A)</li> <li>Pin 5 = PE</li> </ul>                                                      |
| X8<br><br>Bushing M12 8-pin          | Encoder        | <ul style="list-style-type: none"> <li>Pin 1 = 5 V</li> <li>Pin 2 = APR</li> <li>Pin 3 = ANR</li> <li>Pin 4 = BPR</li> <li>Pin 5 = BNR</li> <li>Pin 6 = CPR</li> <li>Pin 7 = CNR</li> <li>Pin 8 = GND</li> </ul>                               |

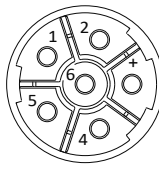
# Connection assignments

## Resolver

| Pin | Designation | Description                  | Connector                                                                           |
|-----|-------------|------------------------------|-------------------------------------------------------------------------------------|
| 1   | +Ref        | Transformer winding          |  |
| 2   | -Ref        |                              |                                                                                     |
| 3   |             | Not occupied                 |                                                                                     |
| 4   | +COS        | Stand winding Cosinus        |                                                                                     |
| 5   | -COS        |                              |                                                                                     |
| 6   | +SIN        | Stand winding Sinus          |                                                                                     |
| 7   | -SIN        |                              |                                                                                     |
| 8   |             | Not occupied                 |                                                                                     |
| 9   |             |                              |                                                                                     |
| 10  | Shield      | Housing shield of transducer |                                                                                     |
| 11  | +           | Temperature monitor PT1000   |                                                                                     |
| 12  | -           |                              |                                                                                     |

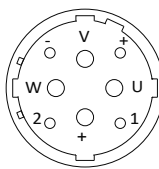
Type: Intercontec ICN-M23, 12-pin

## Motor EXe-K 030, 060

| Pin | Designation | Description            | Connector                                                                             |
|-----|-------------|------------------------|---------------------------------------------------------------------------------------|
| 1   | BD1         | Holding brake DC +/-AC |  |
| 2   | BD2         | Holding brake DC +/-AC |                                                                                       |
| PE  | PE          | Protective conductor   |                                                                                       |
| 4   | u           | Power strand U         |                                                                                       |
| 5   | v           | Power strand V         |                                                                                       |
| 6   | W           | Power strand W         |                                                                                       |

Type: Intercontec ICN-M23, 6-pin.

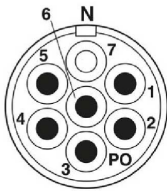
## Motor EXe-K 100, 200

| Pin | Designation | Description          | Connector                                                                             |
|-----|-------------|----------------------|---------------------------------------------------------------------------------------|
| u   | u           | Power strand U       |  |
| +   | BD1         | Holding brake +      |                                                                                       |
| -   | BD1         | Holding brake -      |                                                                                       |
| W   | W           | Power strand W       |                                                                                       |
| v   | v           | Power strand V       |                                                                                       |
| PE  | PE          | Protective conductor |                                                                                       |
| 1   |             | Not occupied         |                                                                                       |
| 2   |             |                      |                                                                                       |

Type: Intercontec ICN-M40, 8-pin.

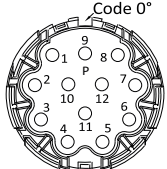
# Connection assignments

## Safety brake

| Pin | Designation | Description                  | Connector                                                                           |
|-----|-------------|------------------------------|-------------------------------------------------------------------------------------|
| 1   | 24 V        | Release brake V+             |  |
| 2   | 0 V         | Release brake V-             |                                                                                     |
| 3   | 24 V        | Sensor V+                    |                                                                                     |
| 4   | 0 V         | Sensor V-                    |                                                                                     |
| 5   | S + 24 V    | Sensor signal brake released |                                                                                     |
| 6   |             | Not occupied                 |                                                                                     |
| 7   |             |                              |                                                                                     |

Type: CA-06S1N128008-M23, 7-pin.

## Rotary encoder

| Pin | Designation | Description             | Connector                                                                            |
|-----|-------------|-------------------------|--------------------------------------------------------------------------------------|
| 1   | -B          | Track B inverse / - SIN |  |
| 2   |             | Not occupied            |                                                                                      |
| 3   |             |                         |                                                                                      |
| 4   |             |                         |                                                                                      |
| 5   | A           | Track A / + COS         |                                                                                      |
| 6   | -A          | Track A inverse / - COS |                                                                                      |
| 7   |             | Not occupied            |                                                                                      |
| 8   | -B          | Track B / + SIN         |                                                                                      |
| 9   |             | Not occupied            |                                                                                      |
| 10  | 0 V         | Ground 0 V DC           |                                                                                      |
| 11  |             | Not occupied            |                                                                                      |
| 12  | +V          | Supply voltage +V DC    |                                                                                      |

Type: Intercontec ICN-M23, 12-pin

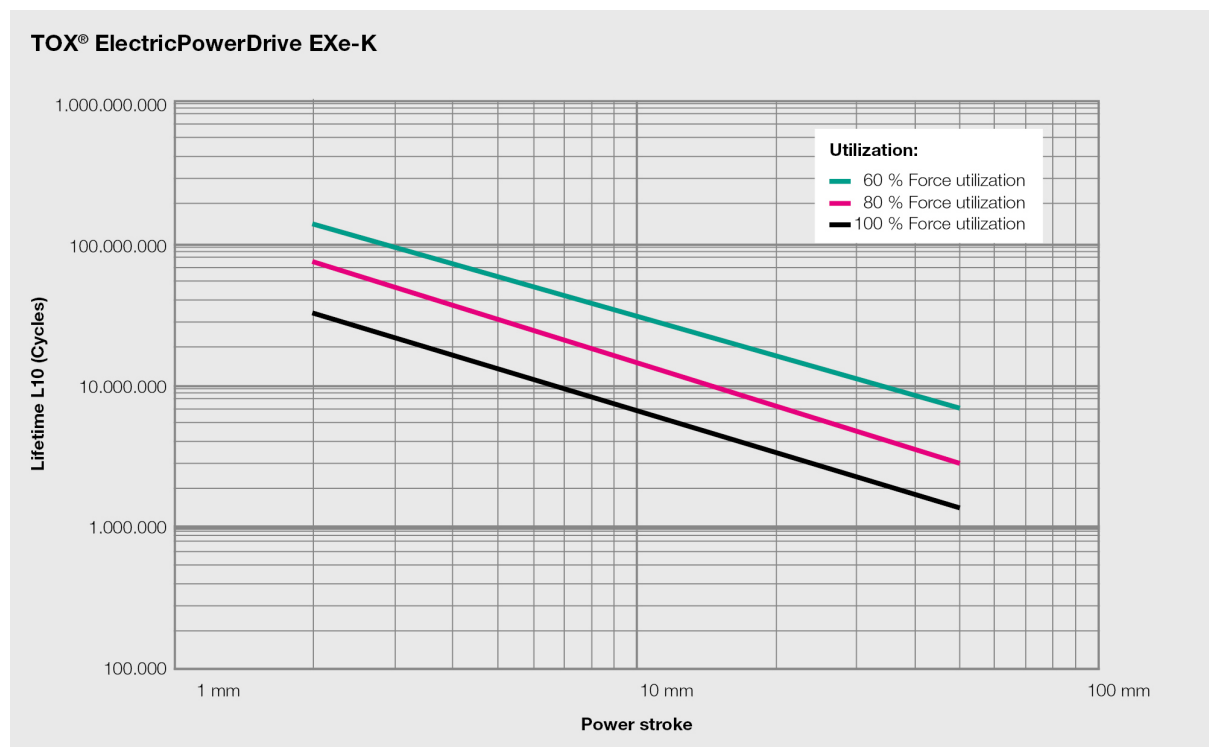


# Lifetime L10

Lifetime L10 is a complex calculation. The following factors can considerably influence the lifetime L10:

- The step-up in force
- Power stroke
- Stamping impacts
- Application
- Rotational speed

## Schematic diagram of lifetime L10



We perform the design for your application.

Please contact us.