

## EAL580-T - PROFINET

Through hollow shaft

Optical multiturn encoders max. 18 bit ST / 16 bit MT, PROFINET IO

### Overview

- Absolute encoder multiturn
- Optical sensing method
- Max. resolution: singleturn 18 bit, multiturn 16 bit
- Through hollow shaft
- LED status display
- PROFINET IO
- Maximum resistant against magnetic fields



### Technical data

#### Technical data - electrical ratings

|                             |                                                                     |
|-----------------------------|---------------------------------------------------------------------|
| Voltage supply              | 10...30 VDC                                                         |
| Reverse polarity protection | Yes                                                                 |
| Consumption w/o load        | ≤100 mA (24 VDC)                                                    |
| Interface                   | PROFINET IO                                                         |
| Function                    | Multiturn                                                           |
| Steps per revolution        | ≤262144 / 18 bit (adjustable)                                       |
| Number of revolutions       | ≤65536 / 16 bit (adjustable)                                        |
| Total resolution            | ≤ 31 bit                                                            |
| Absolute accuracy           | ±0.01 ° (ST 18 bit / MT 13 bit)<br>±0.025 ° (ST 13 bit / MT 16 bit) |
| Sensing method              | Optical                                                             |
| Interference immunity       | EN 61000-6-2                                                        |
| Emitted interference        | EN 61000-6-4                                                        |
| Status indicator            | 4x LED integrated in housing                                        |
| Approval                    | UL approval / E63076                                                |

#### Technical data - mechanical design

|               |                                    |
|---------------|------------------------------------|
| Size (flange) | ø58 mm                             |
| Shaft type    | ø10...14 mm (through hollow shaft) |

#### Technical data - mechanical design

|                         |                                                                                                       |
|-------------------------|-------------------------------------------------------------------------------------------------------|
| Protection EN 60529     | IP 54<br>IP 65<br>IP 67                                                                               |
| Operating speed         | ≤6000 rpm (mechanical)<br>≤6000 rpm (electric)                                                        |
| Starting acceleration   | ≤1000 U/s <sup>2</sup>                                                                                |
| Starting torque         | ≤0.04 Nm (+25 °C, IP 54)                                                                              |
| Rotor moment of inertia | 20 gcm <sup>2</sup>                                                                                   |
| Material                | Housing: zinc diecast<br>Flange: aluminium                                                            |
| Operating temperature   | -40...+85 °C (see general information)                                                                |
| Relative humidity       | 95 % non-condensing                                                                                   |
| Resistance              | EN 60068-2-6<br>Vibration ±0.75 mm - 10-58 Hz 10 g - 58-2000 Hz<br>EN 60068-2-27<br>Shock 100 g, 2 ms |
| Weight approx.          | 500 g                                                                                                 |
| Connection              | Flange connector 3 x M12                                                                              |

### Optional

- B-side clamping
- Button for Preset/Reset

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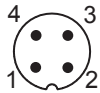
## General information

Self-heating interrelated to speed, protection, attachment method and ambient conditions as well electronics and supply voltage must be considered for precise thermal dimensioning. Self-heating is supposed to approximates 7 K (IP 54 protection) respectively 8 K (IP 65 / IP 67 protection) per 1000 rpm. Operating the encoder close to the maximum limits requires measuring the real prevailing temperature at the encoder flange.

## Terminal assignment

### Voltage supply

| Pin | Assigned | Significance   |
|-----|----------|----------------|
| 1   | UB       | Voltage supply |
| 2   | d.u.     | Do not connect |
| 3   | GND      | Ground         |
| 4   | d.u.     | Do not connect |



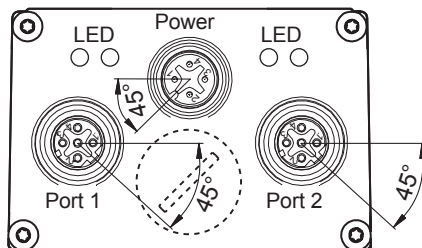
1 x flange connector M12 (male), A-coded

### PROFINET (data line)

| Pin | Assigned | Significance       |
|-----|----------|--------------------|
| 1   | TxD+     | Transmission data+ |
| 2   | RxD+     | Receiving data+    |
| 3   | TxD-     | Transmission data- |
| 4   | RxD-     | Receiving data-    |



2 x flange connector M12 (female), D-coded



## PROFINET features

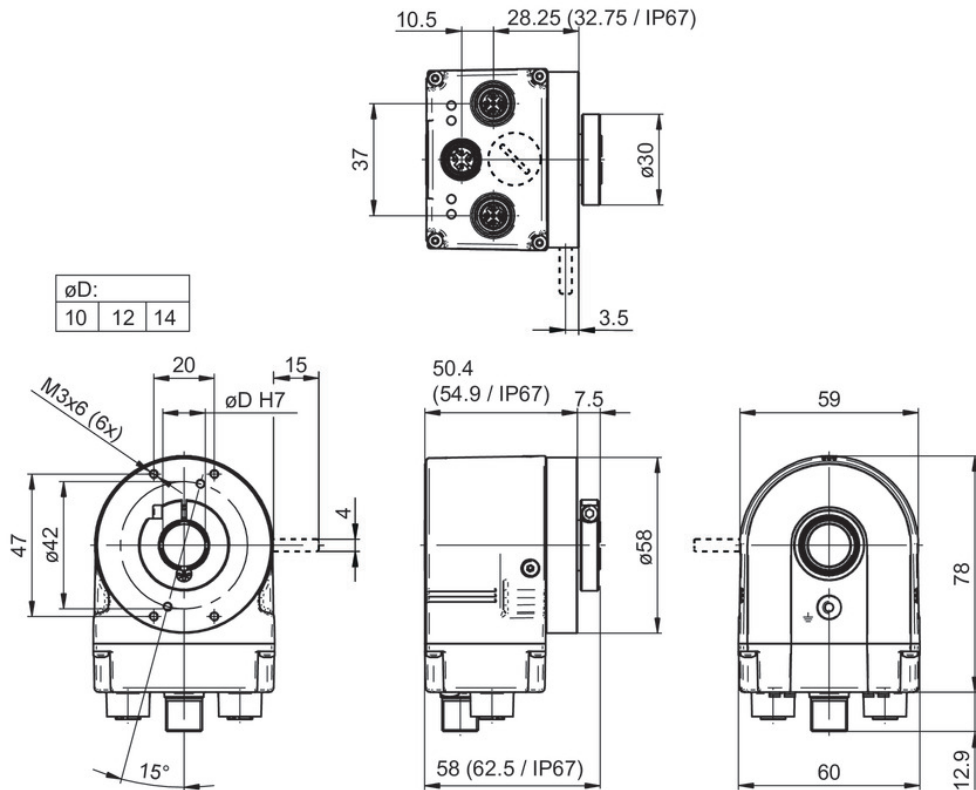
|                      |                                                                                                                                                                                                             |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Bus protocol         | PROFINET IO                                                                                                                                                                                                 |
| Device profile       | Encoder Profil PNO 3.162 V4.1 und V3.1<br>PROFIdrive Profil PNO 3.172 V4.1                                                                                                                                  |
| Real time classes    | Realtime (RT) Class 1, IRT Class 3                                                                                                                                                                          |
| Send clock           | RT: 1 ms, 2 ms, 4 ms<br>IRT: 250 µs, 500 µs, 1 ms, 2 ms, 4 ms                                                                                                                                               |
| Update time          | Min. 500 µs                                                                                                                                                                                                 |
| Features             | <ul style="list-style-type: none"> <li>- 100 MBaud Fast Ethernet</li> <li>- Device replacement without interchangeable media</li> <li>- Media redundancy MRP</li> <li>- Gear factor / Round axis</li> </ul> |
| Process data         | <ul style="list-style-type: none"> <li>- Position value 32 bit input data with/without rotation speed 16 or 32 bit</li> <li>- Telegrams 81-83 of PROFIdrive profile</li> </ul>                              |
| LED status indicator | Link/Activity, Status, Error                                                                                                                                                                                |

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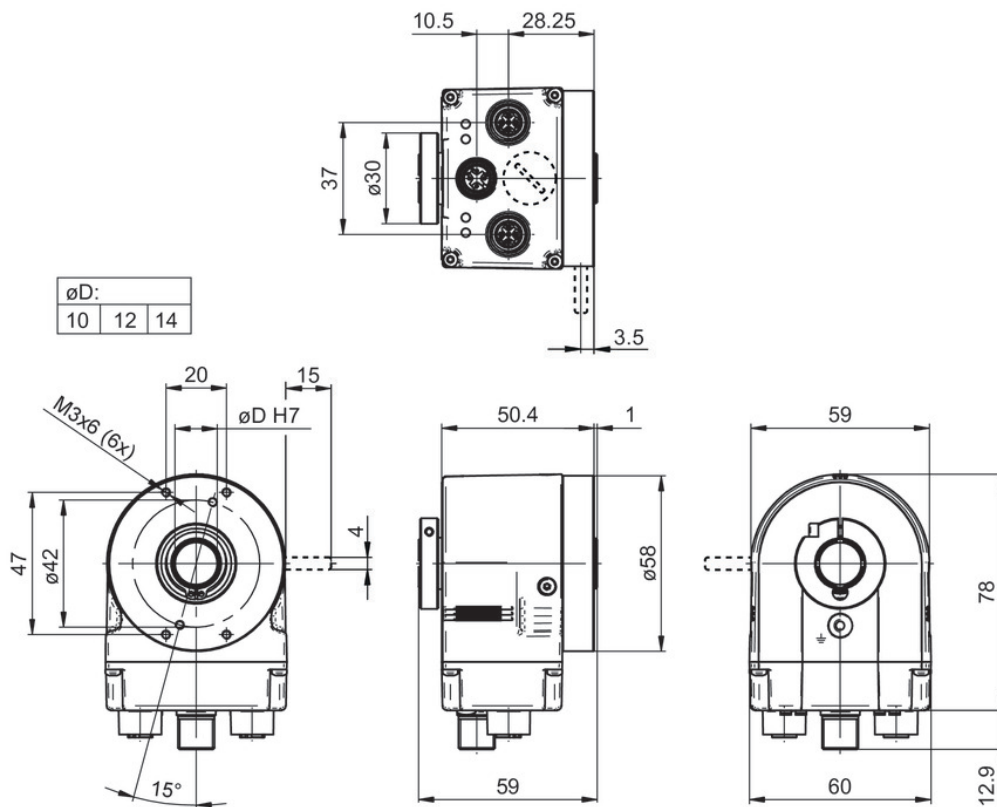
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### Dimensions



Through hollow shaft, clamping ring at A side



Through hollow shaft, clamping ring at B side

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## Ordering reference

|                                           | EAL580 | - | T | # | ## | . | # | W  | PT | . | ## | ## | 0 | . | A |
|-------------------------------------------|--------|---|---|---|----|---|---|----|----|---|----|----|---|---|---|
| <b>Product</b>                            | EAL580 |   |   |   |    |   |   |    |    |   |    |    |   |   |   |
| <b>Shaft type</b>                         |        |   |   |   |    |   |   |    |    |   |    |    |   |   |   |
| Through hollow shaft                      |        |   | T |   |    |   |   |    |    |   |    |    |   |   |   |
| <b>Flange (Hollow shaft)</b>              |        |   |   |   |    |   |   |    |    |   |    |    |   |   |   |
| Without stator coupling                   |        |   |   | N |    |   |   |    |    |   |    |    |   |   |   |
| Pin torque support 4 mm, radial           |        |   |   | B |    |   |   |    |    |   |    |    |   |   |   |
| <b>Through hollow shaft</b>               |        |   |   |   |    |   |   |    |    |   |    |    |   |   |   |
| ø 10 mm, clamping ring, A-side            |        |   |   |   | A  |   |   |    |    |   |    |    |   |   |   |
| ø 12 mm, clamping ring, A-side            |        |   |   |   | C  |   |   |    |    |   |    |    |   |   |   |
| ø 14 mm, clamping ring, A-side            |        |   |   |   | E  |   |   |    |    |   |    |    |   |   |   |
| ø 12 mm, clamping ring, B-side            |        |   |   |   | G  |   |   |    |    |   |    |    |   |   |   |
| ø 14 mm, clamping ring, B-side            |        |   |   |   | H  |   |   |    |    |   |    |    |   |   |   |
| <b>Protection class</b>                   |        |   |   |   |    |   |   |    |    |   |    |    |   |   |   |
| IP 54                                     |        |   |   |   |    |   | 4 |    |    |   |    |    |   |   |   |
| IP 65                                     |        |   |   |   |    |   | 5 |    |    |   |    |    |   |   |   |
| IP 67                                     |        |   |   |   |    |   | 7 |    |    |   |    |    |   |   |   |
| <b>Connection</b>                         |        |   |   |   |    |   |   |    |    |   |    |    |   |   |   |
| Flange socket radial,                     |        |   |   |   |    |   |   | W  |    |   |    |    |   |   |   |
| 2 x M12, 4-pin, female contacts, D-coded, |        |   |   |   |    |   |   |    |    |   |    |    |   |   |   |
| 1 x M12, 4-pin, male contacts, A-coded    |        |   |   |   |    |   |   |    |    |   |    |    |   |   |   |
| <b>Voltage supply / interface</b>         |        |   |   |   |    |   |   |    |    |   |    |    |   |   |   |
| 10...30 VDC, PROFINET IO                  |        |   |   |   |    |   |   | PT |    |   |    |    |   |   |   |
| <b>Resolution Singleturn</b>              |        |   |   |   |    |   |   |    |    |   |    |    |   |   |   |
| 13 Bit                                    |        |   |   |   |    |   |   |    |    |   | 13 |    |   |   |   |
| 18 Bit                                    |        |   |   |   |    |   |   |    |    |   | 18 |    |   |   |   |
| <b>Resolution Multiturn</b>               |        |   |   |   |    |   |   |    |    |   |    |    |   |   |   |
| 13 Bit                                    |        |   |   |   |    |   |   |    |    |   |    | 13 |   |   |   |
| 16 Bit                                    |        |   |   |   |    |   |   |    |    |   |    | 16 |   |   |   |
| <b>Resolution supplement</b>              |        |   |   |   |    |   |   |    |    |   |    |    |   |   |   |
| No option                                 |        |   |   |   |    |   |   |    |    |   |    |    | 0 |   |   |
| <b>Operating temperature</b>              |        |   |   |   |    |   |   |    |    |   |    |    |   |   | A |
| -40...+85 °C                              |        |   |   |   |    |   |   |    |    |   |    |    |   |   |   |

## Accessories

### Mounting accessories

|          |                                                                                   |
|----------|-----------------------------------------------------------------------------------|
| 10139345 | Torque support by rubber buffer for encoders with 15 mm pin (Z 119.041)           |
| 11066120 | Mounting kit 056                                                                  |
| 10165157 | Spring coupling for encoders with ø58 mm housing, hole distance 73 mm (Z 119.072) |
| 11034121 | Spring coupling for encoders with ø58 mm housing, hole distance 68 mm (Z 119.073) |
| 11034123 | Spring coupling for one-side attachment, length 115 mm (Z 119.076)                |
| 11003562 | Spring coupling for encoders with ø58 mm housing, hole distance 63 mm (Z 119.082) |
| 11177167 | Self-tapping grounding screw (Z 119.100)                                          |