

# Incremental encoders

With blind or through hollow shaft  
100...5000 pulses per revolution

## EIL580 - hollow shaft



EIL580 with blind hollow shaft

### Technical data - electrical ratings

|                             |  |
|-----------------------------|--|
| Voltage supply              | 5 VDC $\pm$ 5 %<br>8...30 VDC<br>4.75...30 VDC |
| Reverse polarity protection | Yes  |
| Short-circuit proof         | Yes (HTL)<br>Yes (TTL, max. 1 s and 1 signal)  |
| Consumption w/o load        | $\leq$ 70 mA                                   |
| Pulses per revolution       | 100...5000                                     |
| Phase shift                 | 90° $\pm$ 10°                                  |
| Duty cycle                  | 40...60 %                                      |
| Reference signal            | Zero pulse, width 90° $\pm$ 10 %               |
| Sensing method              | Optical  |
| Output frequency            | $\leq$ 300 kHz (TTL)<br>$\leq$ 160 kHz (HTL)   |
| Output signals              | A+, B+, R+, A-, B-, R-                         |
| Output stage                | TTL/RS422<br>HTL/push pull                     |
| Interference immunity       | DIN EN 61000-6-2                               |
| Emitted interference        | DIN EN 61000-6-3                               |
| Approval                    | UL 508 / CSA 22.2                              |

### Features

- Size  $\varnothing$ 58 mm
- Precise optical sensing
- Output signal level TTL or HTL
- Blind or through hollow shaft,  $\varnothing$ 8...15 mm
- Connection axial, radial or tangential
- Pulses per revolution up to 5000
- High protection up to IP67
- High shock and vibration resistance

### Technical data - mechanical design

|                         |  |
|-------------------------|--|
| Size (flange)           | $\varnothing$ 58 mm  |
| Motor shaft tolerance   | 0.2 mm axial<br>0.03 mm radial   |
| Protection DIN EN 60529 | IP 65 (without shaft seal),<br>IP 67 (with shaft seal)                                   |
| Starting torque         | $\leq$ 0.02 Nm (+20 °C, IP 65)<br>$\leq$ 0.025 Nm (+20 °C, IP 67)                        |
| Materials               | Housing: aluminium die-cast<br>Flange: aluminium   |
| Operating temperature   | -40...+85 °C   |
| Relative humidity       | 90 % non-condensing  |
| Resistance              | DIN EN 60068-2-6<br>Vibration 30 g, 10-2000 Hz<br>DIN EN 60068-2-27<br>Shock 250 g, 6 ms |
| Connection              | Flange connector M12, 8-pin<br>Flange connector M23, 12-pin<br>Cable                     |
| Weight approx.          | 300 g  |

### EIL580 - blind hollow shaft

|                 |  |
|-----------------|--|
| Shaft type      | $\varnothing$ 8...15 mm (blind hollow shaft)                       |
| Operating speed | $\leq$ 6000 rpm (+20 °C, IP 67)<br>$\leq$ 8000 rpm (+20 °C, IP 65) |

### EIL580 - through hollow shaft

|                 |  |
|-----------------|--|
| Shaft type      | $\varnothing$ 8...15 mm (through hollow shaft)                     |
| Operating speed | $\leq$ 3000 rpm (+20 °C, IP 67)<br>$\leq$ 6000 rpm (+20 °C, IP 65) |

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## Part number

### Blind hollow shaft

EIL580- **B** . . . . . **.A**

Pulse number - see table

Voltage supply / output circuit

- E 5 VDC, TTL/RS422, 6 channel**
- H 8...30 VDC, TTL/RS422, 6 channel
- N 8...30 VDC, HTL/push pull, 6 channel**
- Q 4.75...30 VDC, HTL/push pull, 6 channel

Connection

- R Cable radial, 1 m**
- L Cable radial, 2 m
- F Flange connector M23, 12-pin, radial, pin terminals, ccw**
- B Flange connector M12, 8-pin, radial, pin terminals, ccw
- T Cable axial, 1 m
- U Cable axial, 2 m
- D Flange connector M23, 12-pin, axial, pin terminals, ccw
- A Flange connector M12, 8-pin, axial, pin terminals, ccw
- P Cable tangential, 1 m
- Q Cable tangential, 2 m

Protection

- 5 IP 65**
- 7 IP 67

Specification hollow shaft

- 08 ø8 mm, clamping ring at A side | U4 ø1/2" (12.7 mm), clamping ring at A side
- U3 ø3/8" (9,52 mm), clamping ring at A side | **14 ø14 mm, clamping ring at A side**
- 10 ø10 mm, clamping ring at A side** | **15 ø15 mm, clamping ring at A side**
- 12 ø12 mm, clamping ring at A side**

Flange

- N Without stator coupling
- T With stator coupling ø63 mm**
- P Pin torque support 3 mm, axial/radial

Shaft type

- B Blind hollow shaft

Printed in **bold** = standard items (up to the quantity of 10 will be supplied within 5 working days).

| Pulse number |            |             |             |             | Stock items   |                         |
|--------------|------------|-------------|-------------|-------------|---|-------------------------|
| 100          | 300        | 720         | 1250        | 2500        | EIL580-BT12.5FE.01024.A   | EIL580-BT12.5FE.02048.A |
| 120          | <b>360</b> | 800         | 1440        | 3000        | EIL580-BT12.5FN.01024.A   | EIL580-BT12.5FN.02048.A |
| 150          | 400        | 900         | 1500        | <b>3600</b> | EIL580-BT14.5FE.01024.A   | EIL580-BT14.5FE.02048.A |
| 200          | 500        | <b>1000</b> | 1800        | 4000        | EIL580-BT14.5FN.01024.A   | EIL580-BT14.5FN.02048.A |
| 250          | 512        | <b>1024</b> | 2000        | <b>4096</b> | Numerous stock items in single quantity will be supplied within 24 hours respectively one day ex works. |                         |
| <b>256</b>   | 600        | 1200        | <b>2048</b> | 5000        |   |                         |

# Incremental encoders

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## EIL580 - hollow shaft

### Part number

### Through hollow shaft

EIL580- 

|   |  |  |   |  |  |  |   |  |  |    |
|---|--|--|---|--|--|--|---|--|--|----|
| T |  |  | . |  |  |  | . |  |  | .A |
|---|--|--|---|--|--|--|---|--|--|----|

Pulse number - see table

Voltage supply / output circuit

- E 5 VDC, TTL/RS422, 6 channel**
- H 8...30 VDC, TTL/RS422, 6 channel
- N 8...30 VDC, HTL/push pull, 6 channel**
- Q 4.75...30 VDC, HTL/push pull, 6 channel

Connection

- R Cable radial, 1 m**
- L Cable radial, 2 m
- F Flange connector M23, 12-pin, radial, pin terminals, ccw**
- B Flange connector M12, 8-pin, radial, pin terminals, ccw
- P Cable tangential, 1 m
- Q Cable tangential, 2 m

Protection

- 5 IP 65**
- 7 IP 67

Specification hollow shaft

- |   |   |
|---|---|
| 08 ø8 mm, clamping ring at A side           | U4 ø1/2" (12.7 mm), clamping ring at A side |
| U3 ø3/8" (9,52 mm), clamping ring at A side | <b>14 ø14 mm, clamping ring at A side</b>   |
| <b>10 ø10 mm, clamping ring at A side</b>   | <b>15 ø15 mm, clamping ring at A side</b>   |
| <b>12 ø12 mm, clamping ring at A side</b>   |   |

Flange

- N Without stator coupling
- T With stator coupling ø63 mm**
- P Pin torque support 3 mm, axial/radial

Shaft type

- T Through hollow shaft

Printed in **bold** = standard items (up to the quantity of 10 will be supplied within 5 working days).

### Pulse number

|            |            |             |             |             |
|------------|------------|-------------|-------------|-------------|
| 100        | 300        | 720         | 1250        | 2500        |
| 120        | <b>360</b> | 800         | 1440        | 3000        |
| 150        | 400        | 900         | 1500        | <b>3600</b> |
| 200        | 500        | <b>1000</b> | 1800        | 4000        |
| 250        | 512        | <b>1024</b> | 2000        | <b>4096</b> |
| <b>256</b> | 600        | 1200        | <b>2048</b> | 5000        |

### Stock items

|                         |                         |
|-------------------------|-------------------------|
| EIL580-TT12.5FE.01024.A | EIL580-TT12.5FE.02048.A |
| EIL580-TT12.5FN.01024.A | EIL580-TT12.5FN.02048.A |
| EIL580-TT14.5FE.01024.A | EIL580-TT14.5FE.02048.A |
| EIL580-TT14.5FN.01024.A | EIL580-TT14.5FN.02048.A |

Numerous stock items in single quantity will be supplied within 24 hours respectively one day ex works.

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## EIL580 - hollow shaft

### Accessories

#### Connectors and cables

|          |   |
|----------|---|
| 10127844 | Connection cable 2 m shielded with female connector M12, 8-pin, straight (ESG 34FH0200G)  |
| 10129332 | Connection cable 5 m shielded with female connector M12, 8-pin, straight (ESG 34FH0500G)  |
| 10129333 | Connection cable 10 m shielded with female connector M12, 8-pin, straight (ESG 34FH1000G) |
| 11053961 | Connection cable 2 m shielded with female connector M12, 8-pin, angled (ESW 33FH0200G)    |
| 11053962 | Connection cable 5 m shielded with female connector M12, 8-pin, angled (ESW 33FH0500G)    |
| 10170054 | Connection cable 10 m shielded with female connector M12, 8-pin, angled (ESW 33FH1000G)   |
| 10164705 | Connector M23, 12-pin   |
| 11095302 | Connection cable 1 m shielded with female connector M23, 12-pin                           |
| 11100408 | Connection cable 2 m shielded with female connector M23, 12-pin                           |
| 11100430 | Connection cable 5 m shielded with female connector M23, 12-pin                           |
| 11100431 | Connection cable 10 m shielded with female connector M23, 12-pin                          |

#### Mounting accessories

|          |  |
|----------|--|
| 11066081 | Torque arm, 1-arm, bolt circle $\varnothing 82$ mm, mounting M4 (mounting kit 003)                               |
| 11066083 | Torque arm, 1-arm, bolt circle $\varnothing 74...94$ mm, mounting M4/M5 (mounting kit 006)                       |
| 11073119 | Torque arm, 1-arm, bolt circle $\varnothing 64.5...281$ mm, mounting M4, can be cut to length (mounting kit 021) |
| 11067367 | Torque arm, 1-arm, bolt circle $\varnothing 74...94$ mm, mounting M6 (mounting kit 028)                          |
| 11113210 | Torque arm, 1-arm, bolt circle $\varnothing 63...94$ mm, mounting M4 (mounting kit 047)                          |
| 11100198 | Stator coupling, 2-armed, bolt circle $\varnothing 63$ mm, mounting M3 (mounting kit 046)                        |
| 11106627 | Fan Cover Clip 8 mm  |
| 11094674 | Clamping ring 12/31/ 8 M3 8.8 for EIL580 hollow shaft $\varnothing 8...10$ mm                                    |
| 11094675 | Clamping ring 17/31/ 8 M3 8.8 for EIL580 hollow shaft $\varnothing 12...15$ mm                                   |

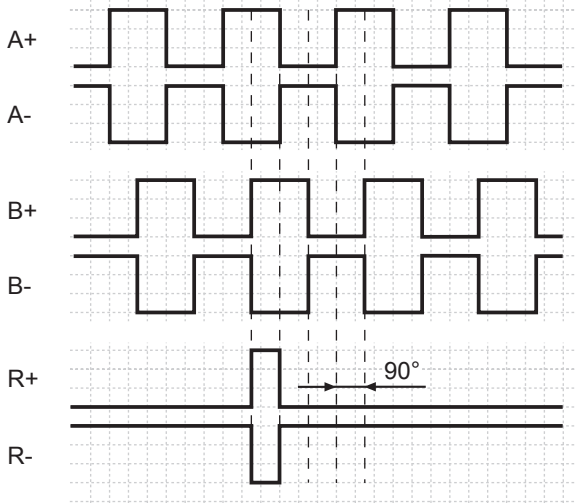
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## EIL580 - hollow shaft

### Output signals

Clockwise rotating direction when looking at flange.



### Trigger level

| Outputs           | TTL/RS422            |
|-------------------|----------------------|
| Output level High | $\geq 2.5 \text{ V}$ |
| Output level Low  | $\leq 0.5 \text{ V}$ |
| Load              | $\leq 20 \text{ mA}$ |

| Outputs           | HTL/Push-pull            |
|-------------------|--------------------------|
| Output level High | $\geq U_B - 3 \text{ V}$ |
| Output level Low  | $\leq 1.5 \text{ V}$     |
| Load              | $\leq 20 \text{ mA}$     |

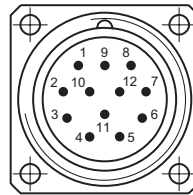
### Terminal assignment

#### Flange connector M23, 12-pin / cable

| Pin | Core color | Assignment |
|-----|------------|------------|
| 1   | pink       | B-         |
| 2   | –          | –          |
| 3   | blue       | R+         |
| 4   | red        | R-         |
| 5   | green      | A+         |
| 6   | yellow     | A-         |
| 7   | –          | –          |
| 8   | grey       | B+         |
| 9   | –          | –          |
| 10  | white      | GND        |
| 11  | –          | –          |
| 12  | brown      | UB         |

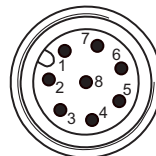
Screen: Connected to housing

Cable data: PVC, 4x2x0.14 mm<sup>2</sup>, bending radius >32.5 mm  
Outer diameter 6.5 mm



#### Flange connector M12, 8-pin

| Pin | Assignment |
|-----|------------|
| 1   | GND        |
| 2   | UB         |
| 3   | A+         |
| 4   | A-         |
| 5   | B+         |
| 6   | B-         |
| 7   | R+         |
| 8   | R-         |



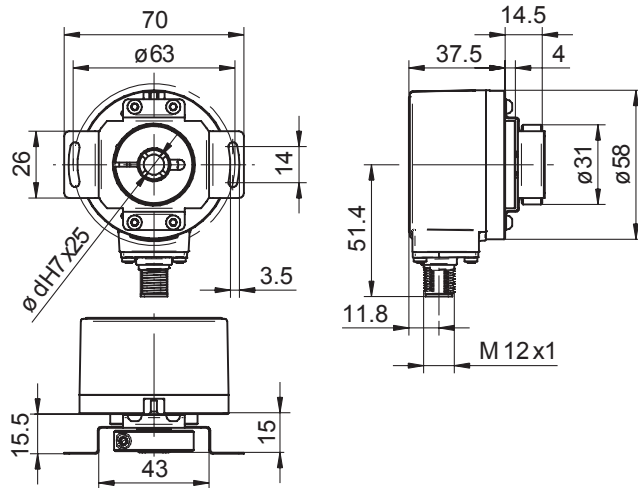
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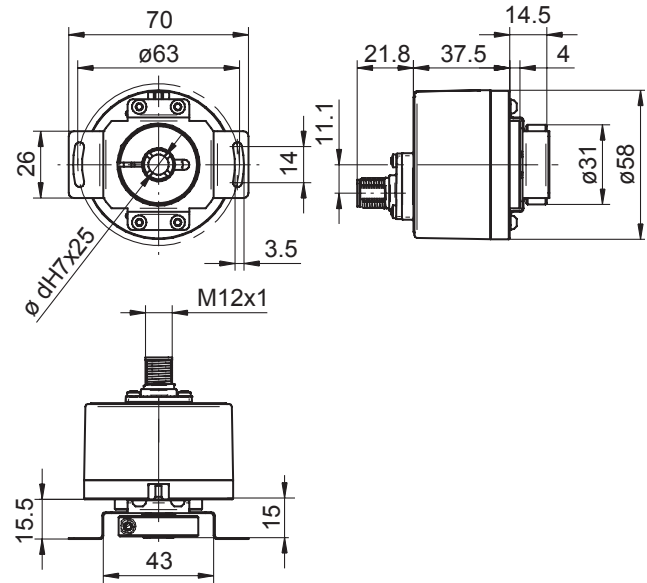
## EIL580 - hollow shaft

### Dimensions

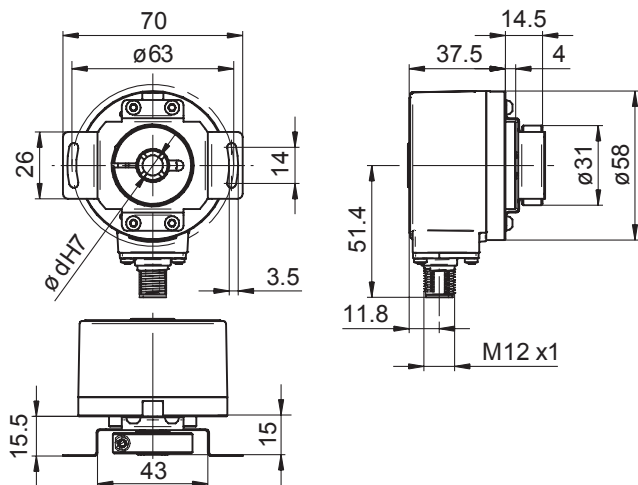
Blind hollow shaft, flange connector M12 radial



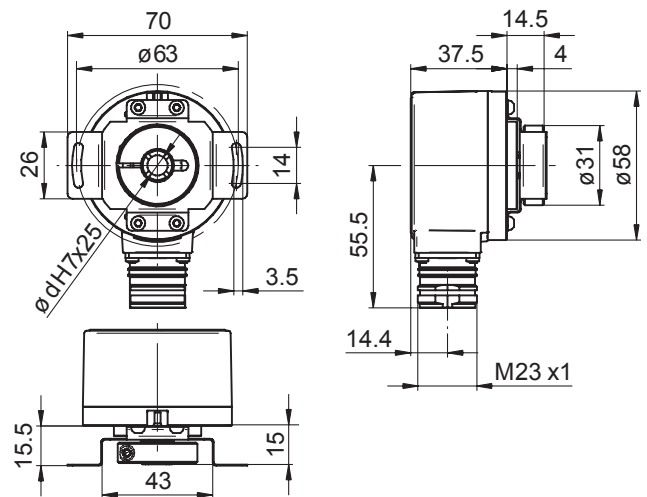
Blind hollow shaft, flange connector M12 axial



Through hollow shaft, flange connector M12 radial



Blind hollow shaft, flange connector M23 radial



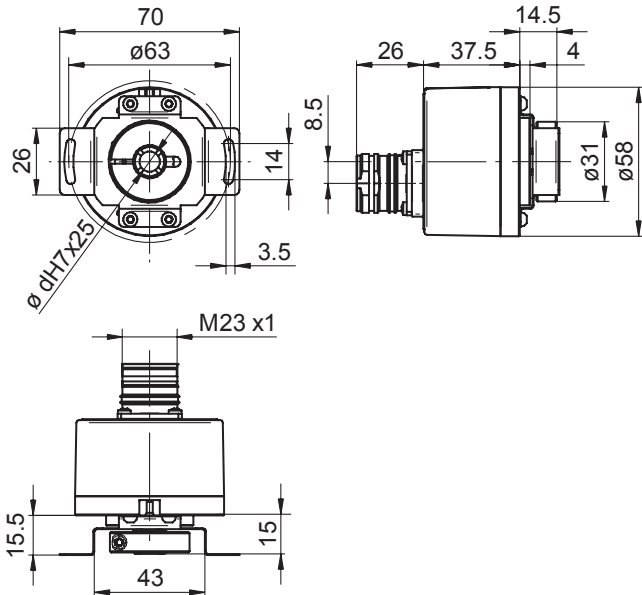
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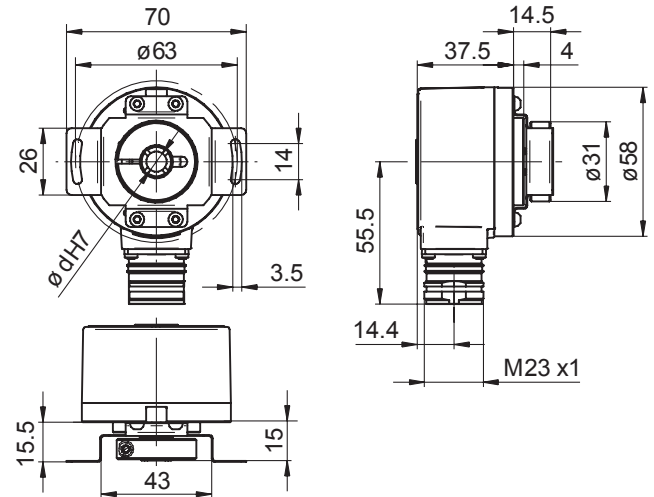
## EIL580 - hollow shaft

### Dimensions

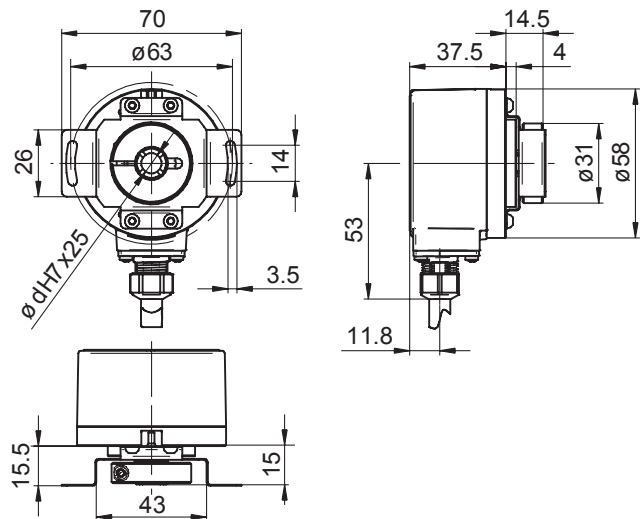
Blind hollow shaft, flange connector M23 axial



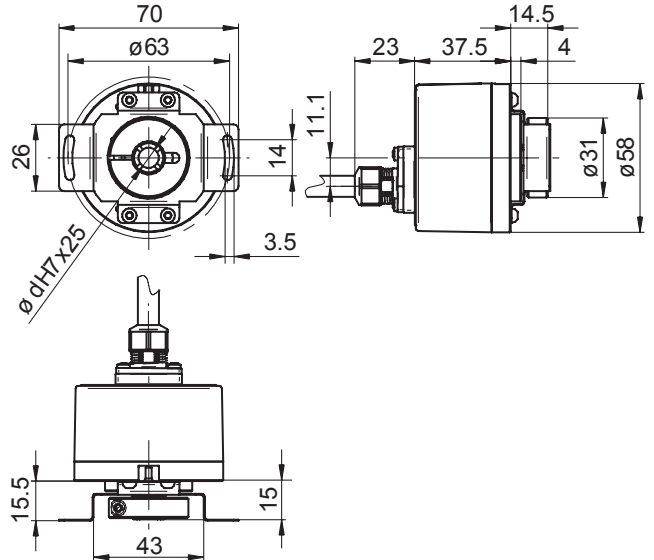
Through hollow shaft, flange connector M23 radial



Blind hollow shaft, cable radial



Blind hollow shaft, cable axial



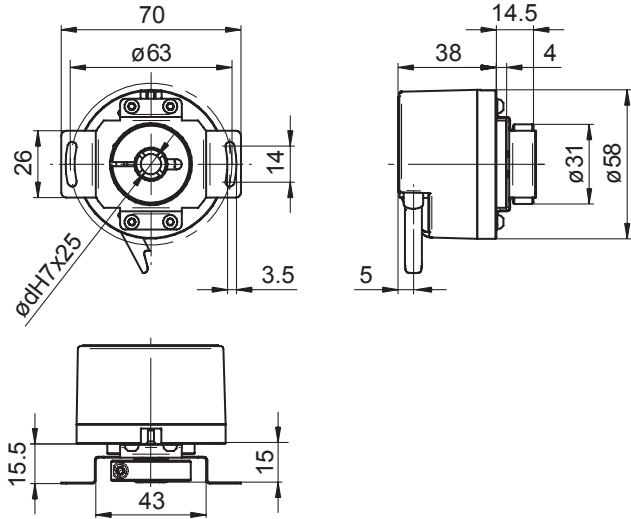
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With blind or through hollow shaft  
100...5000 pulses per revolution

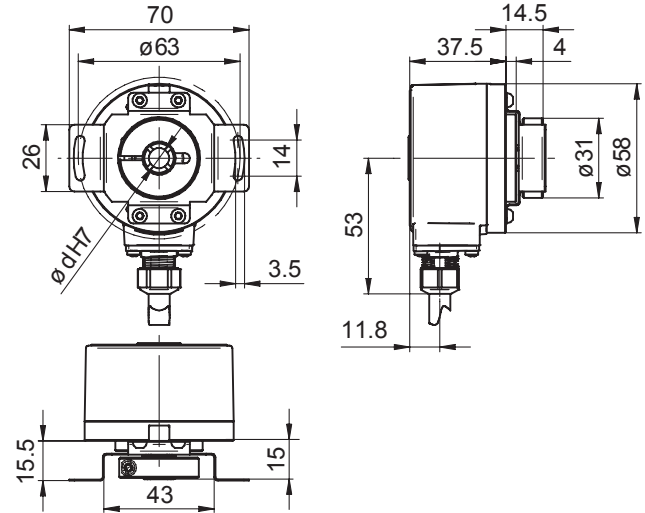
EIL580 - hollow shaft

## Dimensions

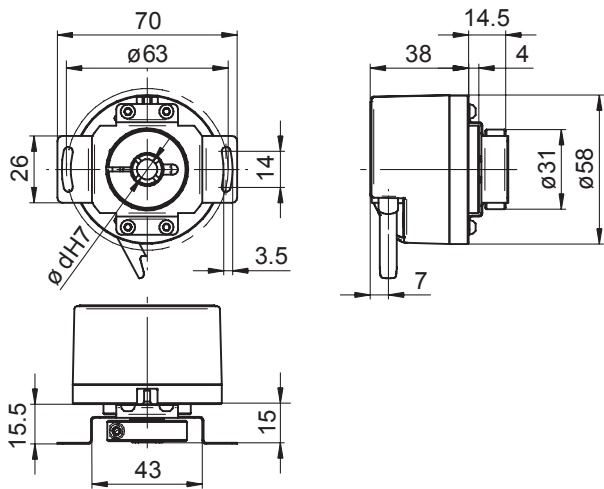
Blind hollow shaft, cable tangential



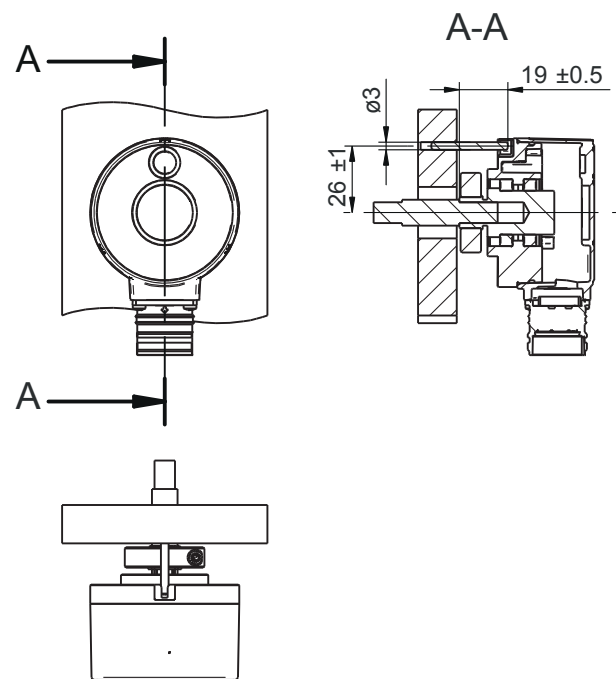
Through hollow shaft, cable radial



Through hollow shaft, cable tangential



Pin torque support, axial





# Incremental encoders

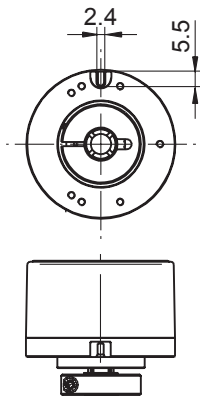
With blind or through hollow shaft  
100...5000 pulses per revolution

## EIL580 - hollow shaft

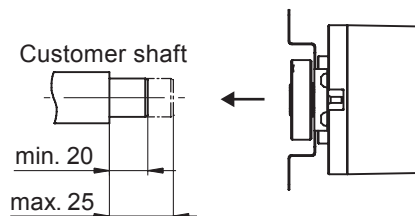
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### Dimensions

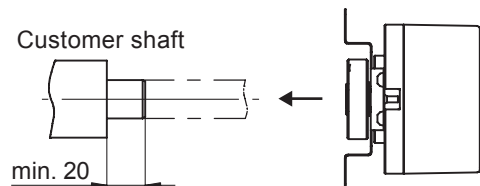
#### Pin torque support, radial



#### Blind hollow shaft



#### Through hollow shaft



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