

# Incremental encoders

## With blind or through hollow shaft

### 1...65536 pulses per revolution programmable

#### EIL580P - hollow shaft - *OptoPulse*<sup>®</sup>



EIL580P with blind hollow shaft

#### Features

- Size  $\varnothing 58$  mm
- Precise optical sensing
- Output signal level programmable (TTL or HTL)
- Blind or through hollow shaft,  $\varnothing 8...15$  mm
- Connection axial, radial or tangential
- Pulses per revolution 1...65536, programmable
- High protection up to IP 67
- High resistance to shock and vibrations

#### Technical data - electrical ratings

Voltage supply	4.75...30 VDC
Reverse polarity protection	Yes
Short-circuit proof	Yes
Consumption w/o load	$\leq 70$ mA
Initializing time	$\leq 30$ ms after power on
Pulses per revolution	1...65536
Scan ratio	45...55 % typical at 2048 ppr
Reference signal	Zero pulse $90^\circ$ or $180^\circ$
Sensing method	Optical
Output frequency	$\leq 300$ kHz (TTL) $\leq 160$ kHz (HTL)
Output signals	A+, B+, R+, A-, B-, R-
Output stages	TTL/RS422 HTL/push-pull
Programmable parameters	Output level TTL/HTL Pulse number 1...65536 Zero pulse width $90^\circ/180^\circ$ Zero pulse position Signal sequence
Interference immunity	DIN EN 61000-6-2
Emitted interference	DIN EN 61000-6-3
Approval	UL 508 / CSA 22.2

#### Technical data - mechanical design

Size (flange)	$\varnothing 58$ mm
Motor shaft tolerance	0.2 mm axial 0.03 mm radial
Protection DIN EN 60529	IP 65 (without shaft seal), IP 67 (with shaft seal)
Starting torque	$\leq 0.02$ Nm (+20 °C, IP 65) $\leq 0.025$ Nm (+20 °C, IP 67)
Materials	Housing: aluminium die-cast Flange: aluminium
Operating temperature	$-40...+100$ °C
Relative humidity	90 % non-condensing
Resistance	DIN EN 60068-2-6 Vibration 30 g, 10-2000 Hz DIN EN 60068-2-27 Shock 250 g, 6 ms
Connection	Flange connector M12, 8-pin Flange connector M23, 12-pin Cable
Weight approx.	300 g

#### EIL580P - blind hollow shaft

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

#### EIL580P - through hollow shaft

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

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## With blind or through hollow shaft

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EIL580P - hollow shaft - *OptoPulse®*

#### Part number

#### Blind hollow shaft

EIL580P- **B** . . . **F** . **01024** . **B**

Operating temperature  
B -40...+100 °C

Pulses programmable  
01024 1...65536 programmable (factory setting: 1024)

Voltage supply / output stages  
F 4.75...30 VDC, TTL/RS422, 6 channels (Vout = 5 VDC) - Factory setting  
HTL/push pull 6 channel (Vout = Vin) - programmable by customer

#### Connection

- R Cable radial, 1 m**
- L Cable radial, 2 m
- F Flange connector M23, 12-pin, radial, male, ccw**
- B Flange connector M12, 8-pin, radial, male, ccw
- T Cable axial, 1 m
- U Cable axial, 2 m
- D Flange connector M23, 12-pin, axial, male, ccw
- A Flange connector M12, 8-pin, axial, male, 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 Torque pin 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).

(Factory setting: 1024 ppr, Vout = 5 VDC TTL, signal sequence A leading B (CW), zero pulse 90° A&B high)

#### Stock items

EIL580P-BT12.5FF.01024.B | EIL580P-BT14.5FF.01024.B

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

# Incremental encoders

With blind or through hollow shaft

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## Part number

Through hollow shaft

EIL580P- T . . . F . 01024 . B

Operating temperature  
B -40...+100 °C

Pulses programmable  
01024 1...65536 programmable (factory setting: 1024)

Voltage supply / output stages  
F 4.75...30 VDC, TTL/RS422, 6 channels (Vout = 5 VDC) - Factory setting  
HTL/push pull 6 channel (Vout = Vin) - programmable by customer

### Connection

- R Cable radial, 1 m**
- L Cable radial, 2 m
- F Flange connector M23, 12-pin, radial, male, ccw**
- B Flange connector M12, 8-pin, radial, male, 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           | <b>15 ø15 mm, clamping ring at A side</b>   |
| U3 ø3/8" (9,52 mm), clamping ring at A side | V3 ø3/8" (9,52 mm), clamping ring at B side |
| <b>10 ø10 mm, clamping ring at A side</b>   | B0 ø10 mm, clamping ring at B side          |
| <b>12 ø12 mm, clamping ring at A side</b>   | B2 ø12 mm, clamping ring at B side          |
| U4 ø1/2" (12.7 mm), clamping ring at A side | V4 ø1/2" (12.7 mm), clamping ring at B side |
| <b>14 ø14 mm, clamping ring at A side</b>   | B4 ø14 mm, clamping ring at B side          |

### Flange

- N Without stator coupling
- T With stator coupling ø63 mm**
- P Torque pin 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).

(Factory setting: 1024 ppr, Vout = 5 VDC TTL, signal sequence A leading B (CW), zero pulse 90° A&B high)

## Stock items

EIL580P-TT12.5FF.01024.B | EIL580P-TT14.5FF.01024.B

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

# Incremental encoders

## With blind or through hollow shaft

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#### EIL580P - hollow shaft - *OptoPulse*<sup>®</sup>

Accessories		Accessories	
<b>Connectors and cables</b>		11155325	Mounting plate, 1-arm, pitch circle diameter $\varnothing 95$ mm, mounting M6, isolated, rigid, suitable for Baumer torque arm size M6 (DMS 6) (mounting kit 099)
10127844	Connection cable 2 m shielded with female connector M12, 8-pin, straight (ESG 34FH0200G)	11129153	Torque arm, 1-arm open, bolt circle $\varnothing 41...54$ mm, mounting M4 (mounting kit 200)
10129332	Connection cable 5 m shielded with female connector M12, 8-pin, straight (ESG 34FH0500G)	11100198	Stator coupling, 2-armed, bolt circle $\varnothing 63$ mm, mounting M3 (mounting kit 046)
10129333	Connection cable 10 m shielded with female connector M12, 8-pin, straight (ESG 34FH1000G)	11106627	Fan cover clip 8 mm
11053961	Connection cable 2 m shielded with female connector M12, 8-pin, angled (ESW 33FH0200G)	11094674	Clamping ring 12/31/ 8 M3 8.8 for EIL580 hollow shaft $\varnothing 8...10$ mm for clamping at A or B side
11053962	Connection cable 5 m shielded with female connector M12, 8-pin, angled (ESW 33FH0500G)	11094675	Clamping ring 17/31/ 8 M3 8.8 for EIL580 hollow shaft $\varnothing 12...15$ mm for clamping at A side
10170054	Connection cable 10 m shielded with female connector M12, 8-pin, angled (ESW 33FH1000G)	11116921	Insulating sleeve $\varnothing 10$ mm/ $\varnothing 12$ mm/25 mm long
10164705	Connector M23, 12-pin	11116923	Insulating sleeve $\varnothing 12$ mm/ $\varnothing 14$ mm/25 mm long
11095302	Connection cable 1 m shielded with female connector M23, 12-pin	<b>Mounting accessories for EIL580P - through hollow shaft</b>	
11100408	Connection cable 2 m shielded with female connector M23, 12-pin	11066081	Torque arm, 1-arm, bolt circle $\varnothing 82$ mm, mounting M4 (mounting kit 003)
11100430	Connection cable 5 m shielded with female connector M23, 12-pin	11066083	Torque arm, 1-arm, bolt circle $\varnothing 74...94$ mm, mounting M4/M5 (mounting kit 006)
11100431	Connection cable 10 m shielded with female connector M23, 12-pin	11073119	Torque arm, 1-arm, bolt circle $\varnothing 65.5...281$ mm, mounting M4, can be cut to length (mounting kit 021)
11119280	Connection cable connector M12 / connector D-SUB, 0.2 m	11067367	Torque arm, 1-arm, bolt circle $\varnothing 74...94$ mm, mounting M6 (mounting kit 028)
11119720	Connection cable connector M12 / connector D-SUB, 1 m	11113210	Torque arm, 1-arm, bolt circle $\varnothing 63...94$ mm, mounting M4 (mounting kit 047)
11119257	Connection cable connector M23 / connector D-SUB, 0.2 m (S2BG12/K4SG9)	11155325	Mounting plate, 1-arm, pitch circle diameter $\varnothing 95$ mm, mounting M6, isolated, rigid, suitable for Baumer torque arm size M6 (DMS 6) (mounting kit 099)
11119723	Connection cable connector M23 / connector D-SUB, 1 m (S2BG12/K4SG9)	11129153	Torque arm, 1-arm open, bolt circle $\varnothing 41...54$ mm, mounting M4 (mounting kit 200)
<b>Mounting accessories for EIL580P - blind hollow shaft</b>		11100198	Stator coupling, 2-armed, bolt circle $\varnothing 63$ mm, mounting M3 (mounting kit 046)
11066081	Torque arm, 1-arm, bolt circle $\varnothing 82$ mm, mounting M4 (mounting kit 003)	11106627	Fan cover clip 8 mm
11066083	Torque arm, 1-arm, bolt circle $\varnothing 74...94$ mm, mounting M4/M5 (mounting kit 006)	11094674	Clamping ring 12/31/ 8 M3 8.8 for EIL580 hollow shaft $\varnothing 8...10$ mm for clamping at A or B side
11073119	Torque arm, 1-arm, bolt circle $\varnothing 65.5...281$ mm, mounting M4, can be cut to length (mounting kit 021)	11094675	Clamping ring 17/31/ 8 M3 8.8 for EIL580 hollow shaft $\varnothing 12...15$ mm for clamping at A side
11067367	Torque arm, 1-arm, bolt circle $\varnothing 74...94$ mm, mounting M6 (mounting kit 028)	11123483	Clamping ring 16/31/ 8 M3 8.8 for EIL580 hollow shaft $\varnothing 12...14$ mm for clamping at B side
11113210	Torque arm, 1-arm, bolt circle $\varnothing 63...94$ mm, mounting M4 (mounting kit 047)	11116921	Insulating sleeve $\varnothing 10$ mm/ $\varnothing 12$ mm/25 mm long

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1...65536 pulses per revolution programmable

## EIL580P - hollow shaft - *OptoPulse*<sup>®</sup>

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### Accessories

11116923	Insulating sleeve $\varnothing$ 12 mm/ $\varnothing$ 14 mm/25 mm long
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### Programming accessories

11120657	Handheld Programming Tool Z-PA-EI-H
11120547	PC Programming Tool Z-PA-EI-P

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# Incremental encoders

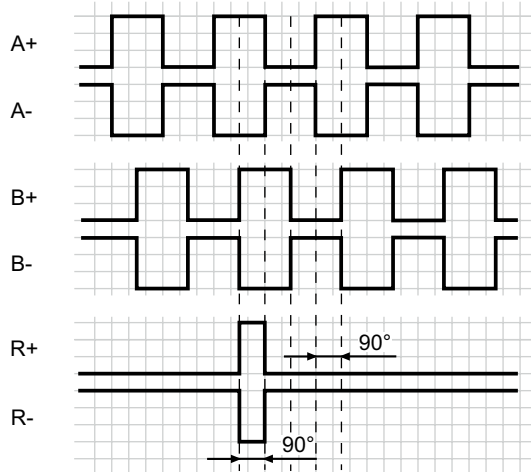
With blind or through hollow shaft

## 1...65536 pulses per revolution programmable

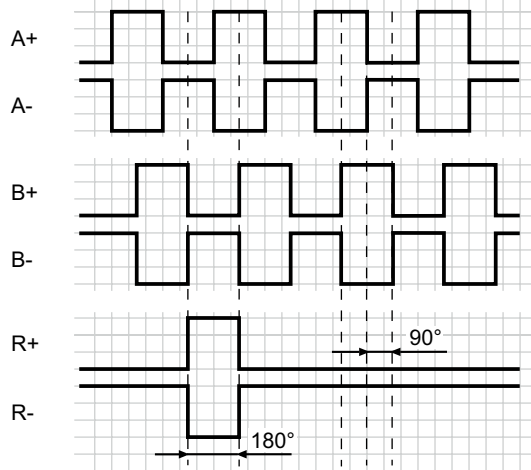
EIL580P - hollow shaft - *OptoPulse*<sup>®</sup>

### Output signals

Zero pulse electrical 90° A&B high  
(Factory setting at clockwise rotation (CW)  
in view of the encoder flange)



Zero pulse electrical 180° B low  
(at clockwise rotation (CW)  
in view of the encoder flange)



### Trigger level

Outputs	TTL/RS422
Output level High	≥2.5 V
Output level Low	≤0.5 V
Load	≤20 mA

Outputs	HTL/Push-pull
Output level High	≥UB -3 V
Output level Low	≤1.5 V
Load	≤20 mA

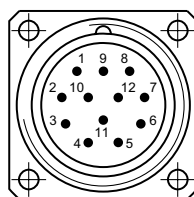
### Terminal assignment

#### 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	–	R-Set <sup>1)</sup>
8	grey	B+
9	–	–
10	white	GND
11	–	–
12	brown	UB

Screen: Connected to housing

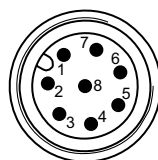
Cable data: PUR, [4x2x0,14 mm<sup>2</sup>], bending radius  
>45,8 mm, outer diameter 6.1 mm



<sup>1)</sup> The R-Set input is used to set the reference pulse (zero pulse) on the current shaft position.  
R-Set = UB ≥ 200 ms

#### Flange connector M12, 8-pin

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



# Incremental encoders

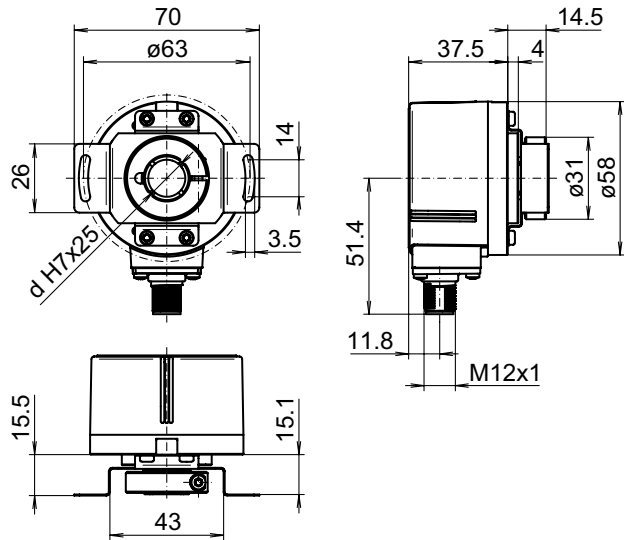
With blind or through hollow shaft

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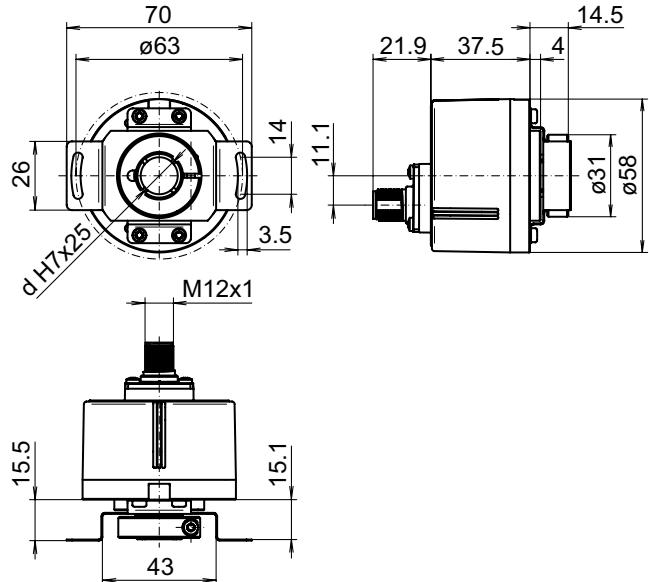
## EIL580P - hollow shaft - OptoPulse®

### Dimensions

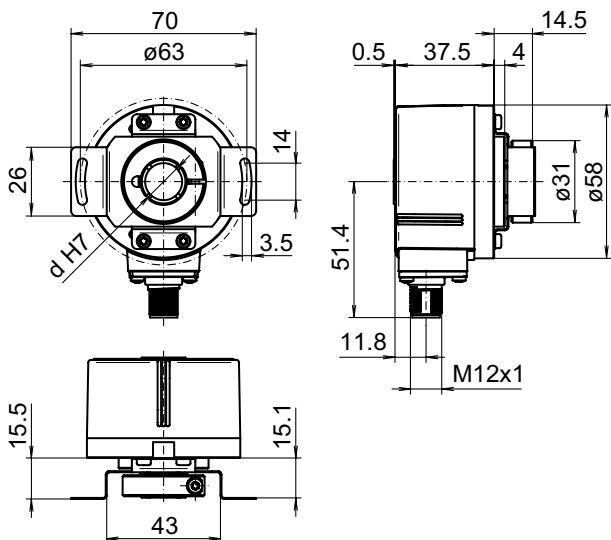
**Clamping ring at A-side:  
Blind hollow shaft, flange connector M12 radial**



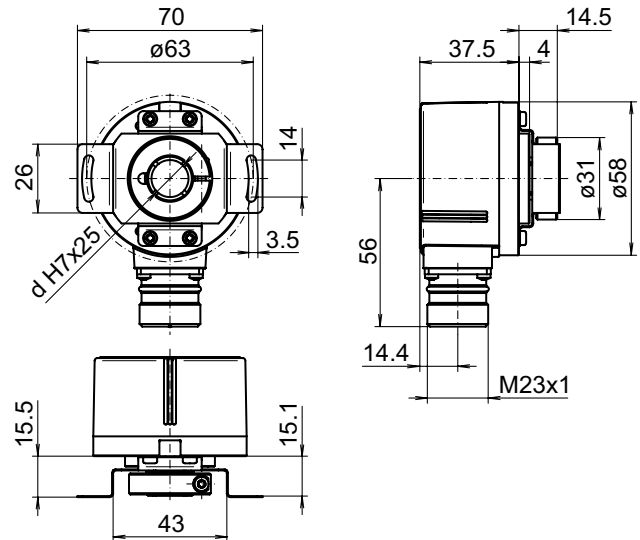
**Clamping ring at A-side:  
Blind hollow shaft, flange connector M12 axial**



**Clamping ring at A-side:  
Through hollow shaft, flange connector M12 radial**



**Clamping ring at A-side:  
Blind hollow shaft, flange connector M23 radial**



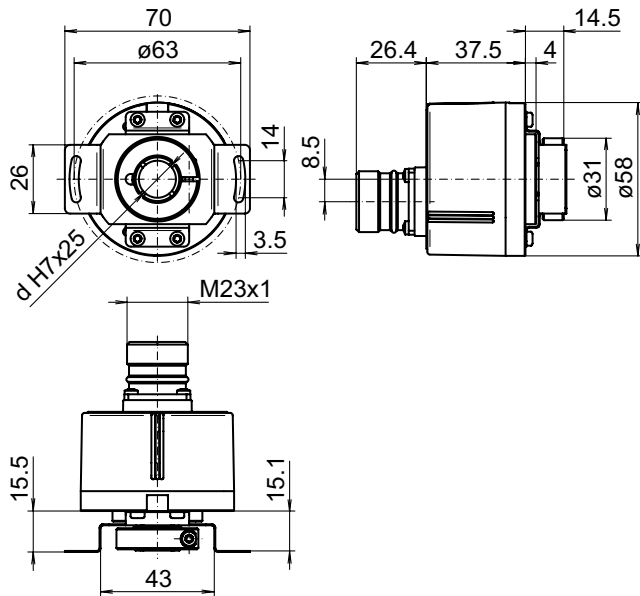
# Incremental encoders

With blind or through hollow shaft  
1...65536 pulses per revolution programmable

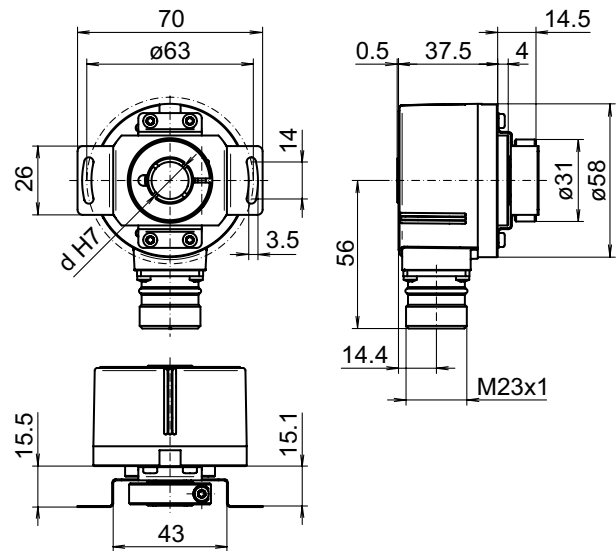
EIL580P - hollow shaft - *OptoPulse*<sup>®</sup>

## Dimensions

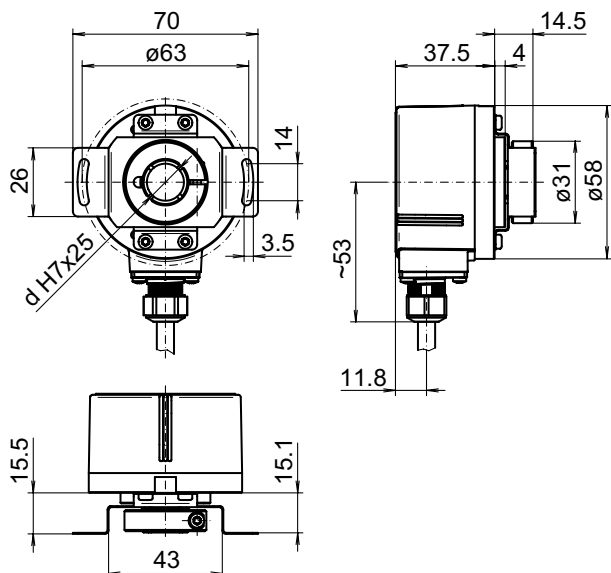
Clamping ring at A-side:  
Blind hollow shaft, flange connector M23 axial



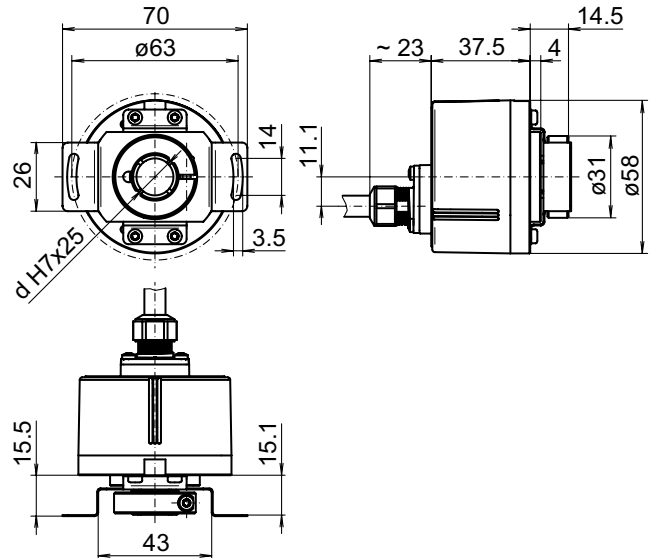
Clamping ring at A-side:  
Through hollow shaft, flange connector M23 radial



Clamping ring at A-side:  
Blind hollow shaft, cable radial



Clamping ring at A-side:  
Blind hollow shaft, cable axial





# Incremental encoders

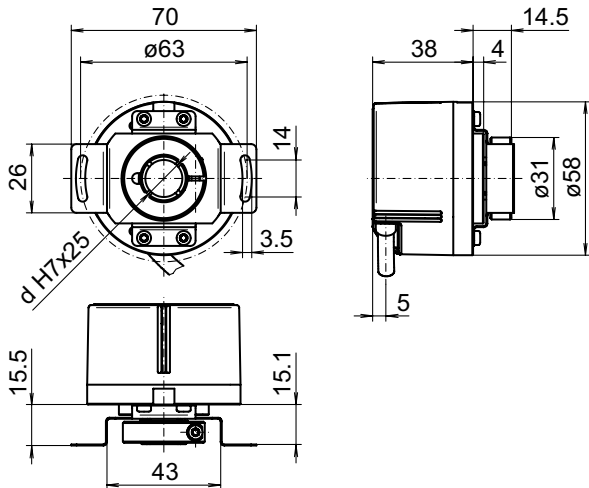
With blind or through hollow shaft

1...65536 pulses per revolution programmable

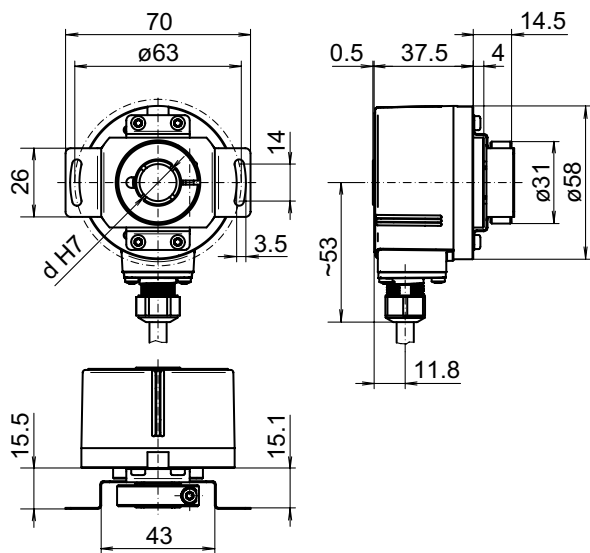
## EIL580P - hollow shaft - *OptoPulse*<sup>®</sup>

### Dimensions

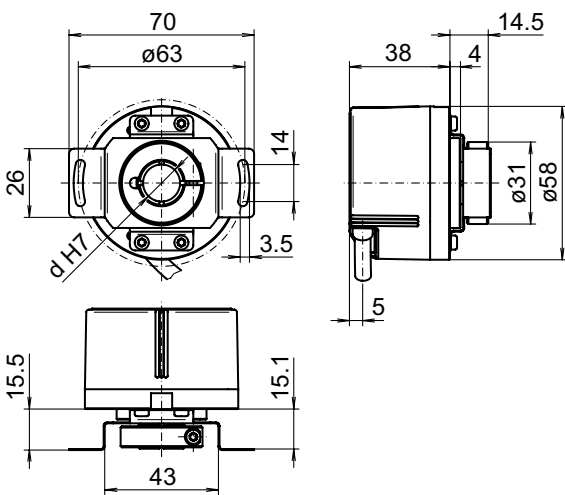
**Clamping ring at A-side:  
Blind hollow shaft, cable tangential**



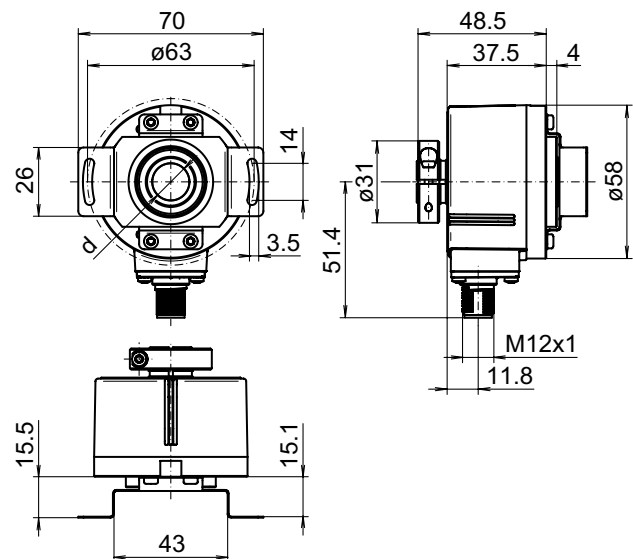
**Clamping ring at A-side:  
Through hollow shaft, cable radial**



**Clamping ring at A-side:  
Through hollow shaft, cable tangential**



**Clamping ring at B-side:  
Through hollow shaft, flange connector M12 radial**



d H7: ø10, ø12, ø14  
d G7: ø3/8" (ø9.52), ø1/2" (ø12.7)

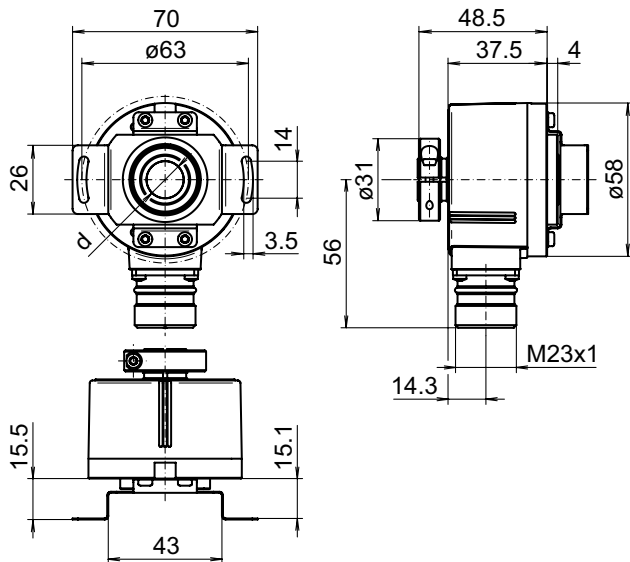
# Incremental encoders

With blind or through hollow shaft  
1...65536 pulses per revolution programmable

EIL580P - hollow shaft - *OptoPulse®*

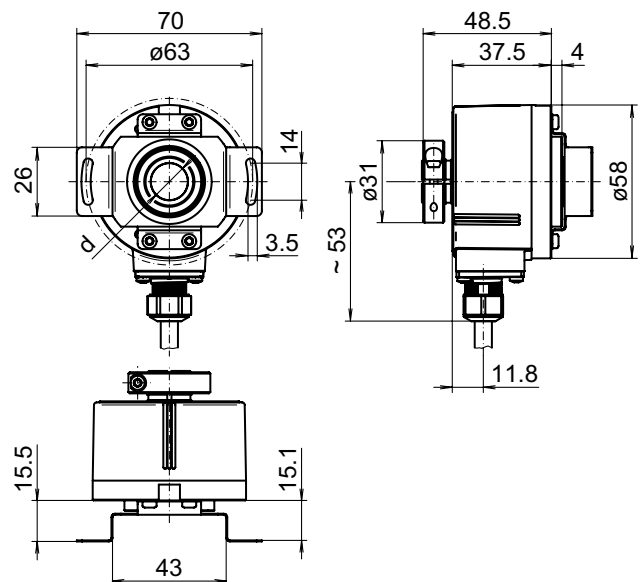
## Dimensions

Clamping ring at B-side:  
Through hollow shaft, flange connector M23 radial



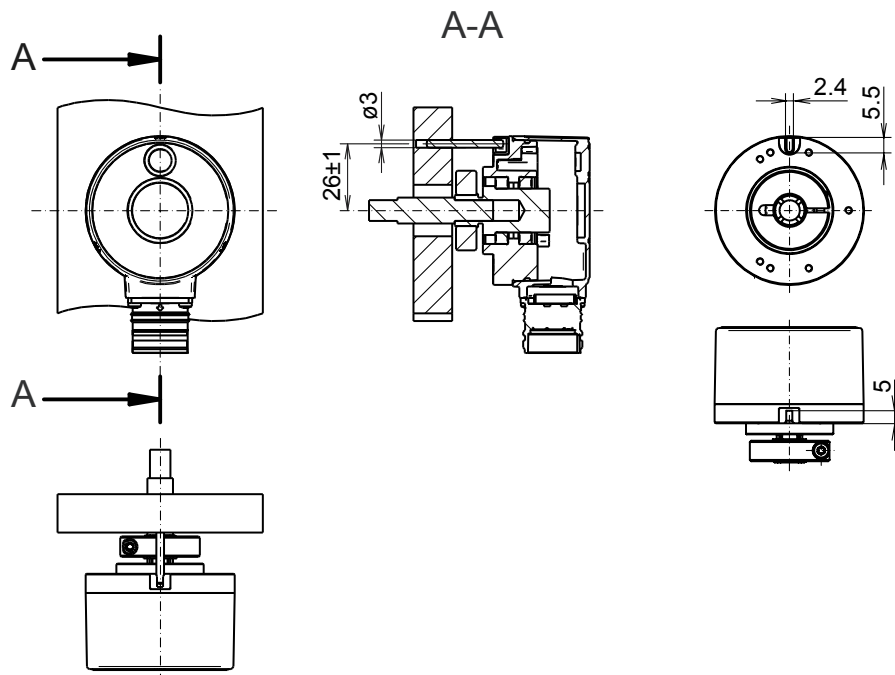
d H7:  $\varnothing 10$ ,  $\varnothing 12$ ,  $\varnothing 14$   
d G7:  $\varnothing 3/8''$  ( $\varnothing 9.52$ ),  $\varnothing 1/2''$  ( $\varnothing 12.7$ )

Clamping ring at B-side:  
Through hollow shaft, cable radial



d H7:  $\varnothing 10$ ,  $\varnothing 12$ ,  $\varnothing 14$   
d G7:  $\varnothing 3/8''$  ( $\varnothing 9.52$ ),  $\varnothing 1/2''$  ( $\varnothing 12.7$ )

Pin torque support, axial, clamping ring at A-side



# Incremental encoders

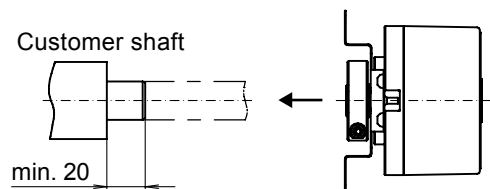
With blind or through hollow shaft

1...65536 pulses per revolution programmable

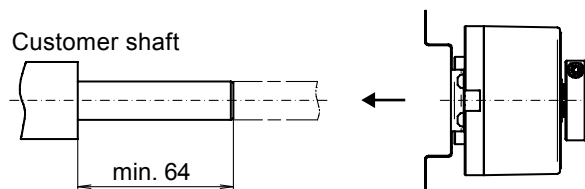
## EIL580P - hollow shaft - *OptoPulse*<sup>®</sup>

### Dimensions

Clamping ring at A-side: Through hollow shaft



Clamping ring at B-side: Through hollow shaft



Blind hollow shaft

