

Incremental encoders

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

ExEIL580 - hollow shaft



ExEIL580 with blind hollow shaft

Technical data - electrical ratings

Voltage supply	5 VDC ±5 % 8...30 VDC 4.75...30 VDC
Reverse polarity protection	Yes
Short-circuit proof	Yes (HTL) Yes (TTL, max. 1 s and 1 signal)
Consumption w/o load	≤70 mA
Pulses per revolution	100...5000
Phase shift	90° ±10°
Scan ratio	40...60 %
Reference signal	Zero pulse, width 90° ±10 %
Sensing method	Optical
Output frequency	≤300 kHz (TTL) ≤160 kHz (HTL)
Output signals	A+, B+, R+, A-, B-, R-
Output stages	TTL/RS422 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 ø58 mm
- Precise optical sensing
- Output signal level TTL or HTL
- Blind or through hollow shaft, ø8...15 mm
- Connection axial, radial or tangential
- Pulses per revolution up to 5000
- High resistance to shock and vibrations
- Option 0122, Explosion protection zone 22

Technical data - mechanical design

Size (flange)	ø58 mm
Motor shaft tolerance	0.2 mm axial 0.03 mm radial
Protection DIN EN 60529	IP 65
Starting torque	≤0.02 Nm (+20 °C)
Materials	Housing: aluminium die-cast Flange: aluminium
Ambient temperature	-20...+60 °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
Explosion protection	II 3 D Ex tc IIIC T135°C Dc X (dust): Special conditions "X" on page 10
Connection	Flange connector M12, 8-pin Flange connector M23, 12-pin Cable
Weight approx.	300 g

ExEIL580 - blind hollow shaft

Shaft type	ø8...15 mm (blind hollow shaft)
Operating speed	≤8000 rpm (+20 °C) ≤8000 rpm (+40 °C) ≤5000 rpm (+60 °C)

ExEIL580 - through hollow shaft

Shaft type	ø8...15 mm (through hollow shaft)
Operating speed	≤6000 rpm (+20 °C) ≤4500 rpm (+40 °C) ≤2500 rpm (+60 °C)

Incremental encoders

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

ExEIL580 - hollow shaft

Part number

Blind hollow shaft

ExEIL580- **B** . **5** . **.F/** **0122**

Option

0122 ATEX Zone 22

Pulse number - see table

Voltage supply / output stages

- 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, 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

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 Torque pin 3 mm, axial/radial

Shaft type

B Blind hollow shaft

Pulse number

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

Incremental encoders

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

ExEIL580 - hollow shaft

Part number

Through hollow shaft

ExEIL580- T . 5 . .F/ 0122

Option

0122 ATEX Zone 22

Pulse number - see table

Voltage supply / output stages

- 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, 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

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 Torque pin 3 mm, axial/radial

Shaft type

T Through hollow shaft

Pulse number

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

Incremental encoders

With blind or through hollow shaft

100...5000 pulses per revolution

ExEIL580 - 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 65.5...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)
11129153	Torque arm, 1-arm open, bolt circle \varnothing 82...108 mm, mounting M4 (mounting kit 200)
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 for clamping at A or B side

Mounting accessories

11094675	Clamping ring 17/31/ 8 M3 8.8 for EIL580 hollow shaft \varnothing 12...15 mm for clamping at A side
11116921	Insulating sleeve \varnothing 10 mm/ \varnothing 12 mm/25 mm long
11116923	Insulating sleeve \varnothing 12 mm/ \varnothing 14 mm/25 mm long

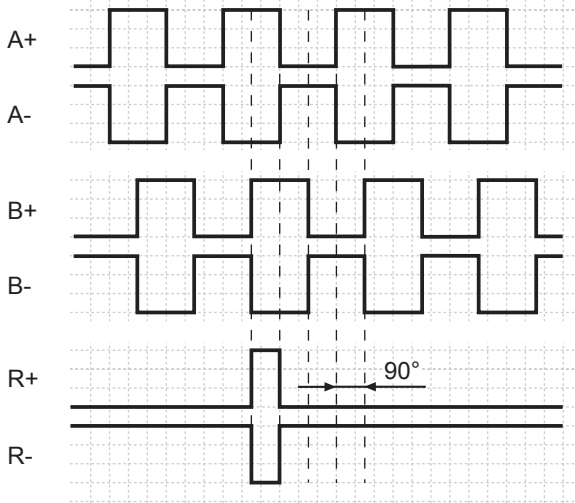
Incremental encoders

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

ExEIL580 - 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	$\leq 20 \text{ mA}$

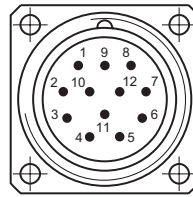
Terminal assignment

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

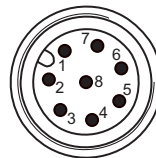
Screen: Connected to housing

Cable data: PVC, [4x2x0.14 mm²], 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-



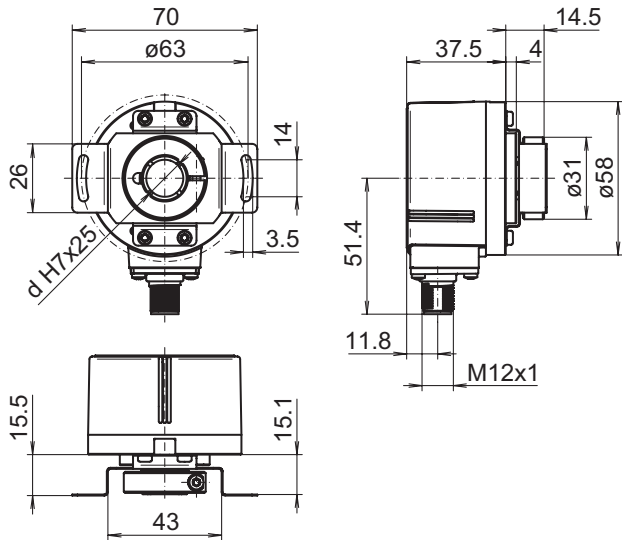
Incremental encoders

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

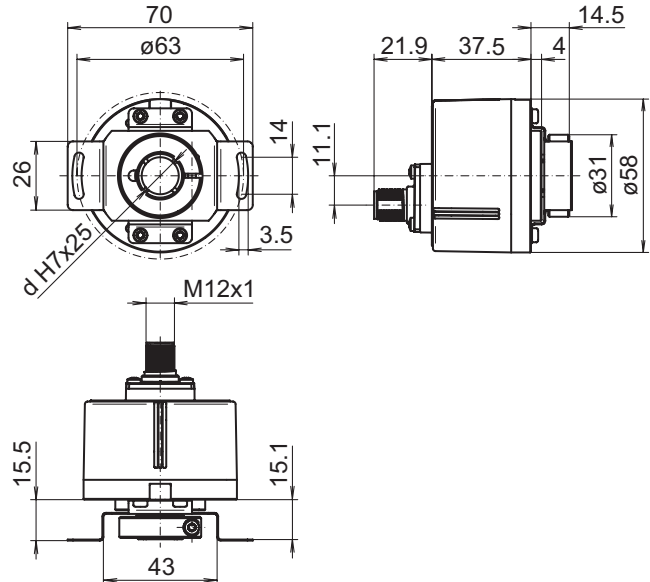
ExEIL580 - hollow shaft

Dimensions

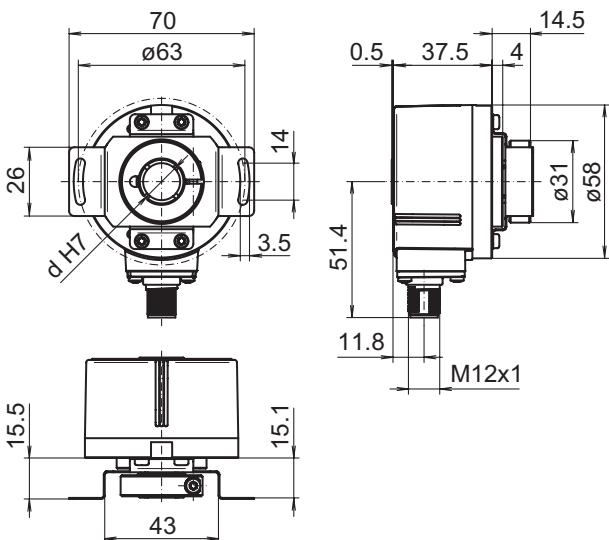
Clamping ring at A-side:
Blind hollow shaft, flange connector M12 radial



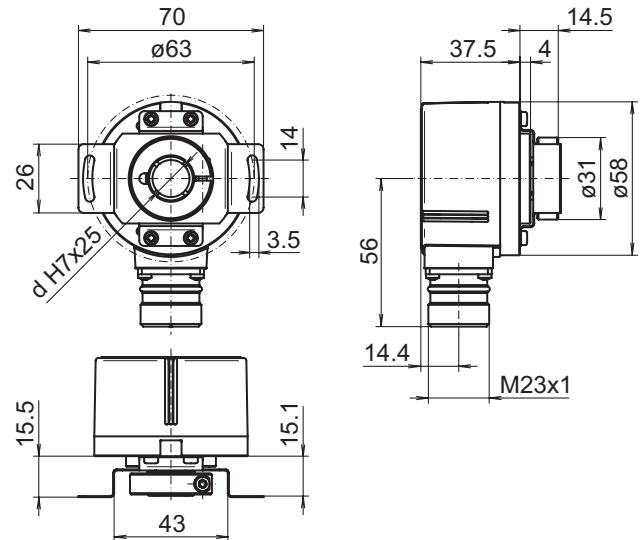
Clamping ring at A-side:
Blind hollow shaft, flange connector M12 axial



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



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



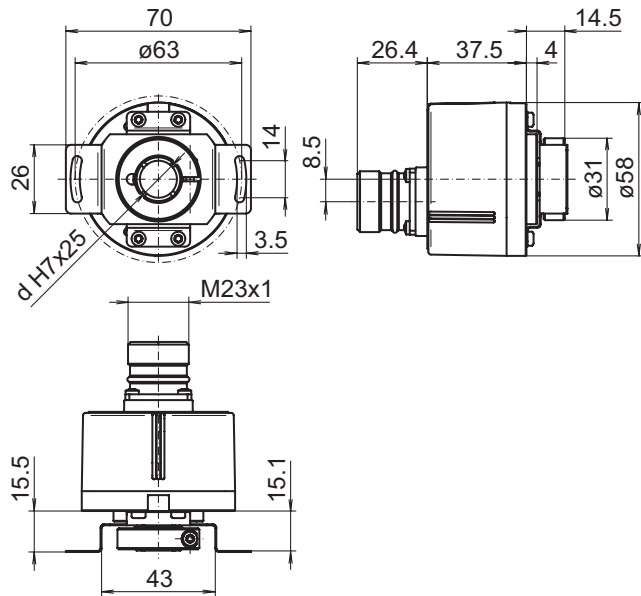
Incremental encoders

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

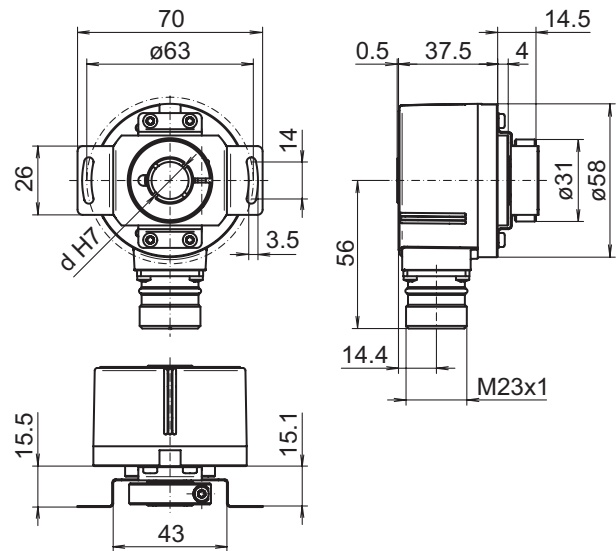
ExEIL580 - hollow shaft

Dimensions

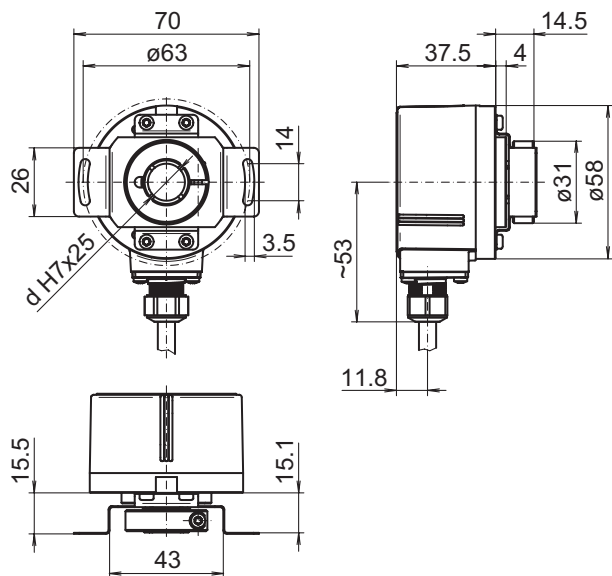
Clamping ring at A-side:
Blind hollow shaft, flange connector M23 axial



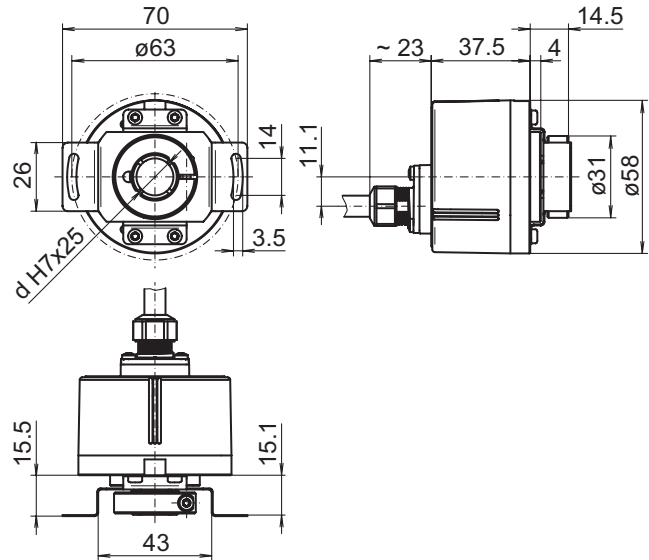
Clamping ring at A-side:
Through hollow shaft, flange connector M23 radial



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



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



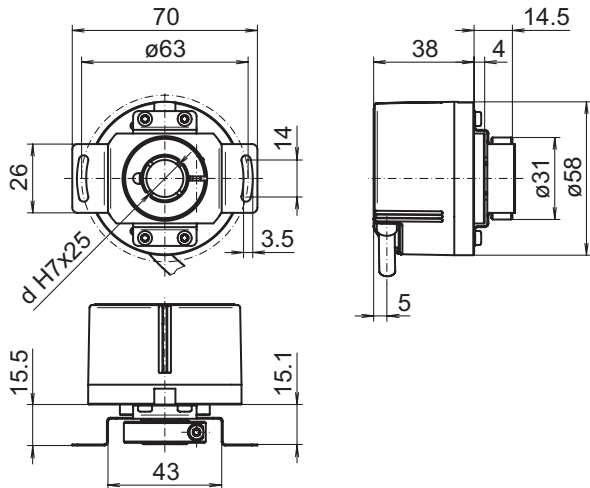
Incremental encoders

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

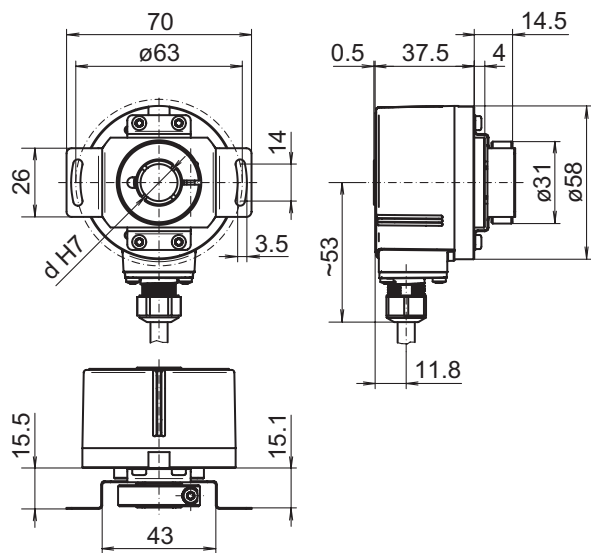
ExEIL580 - hollow shaft

Dimensions

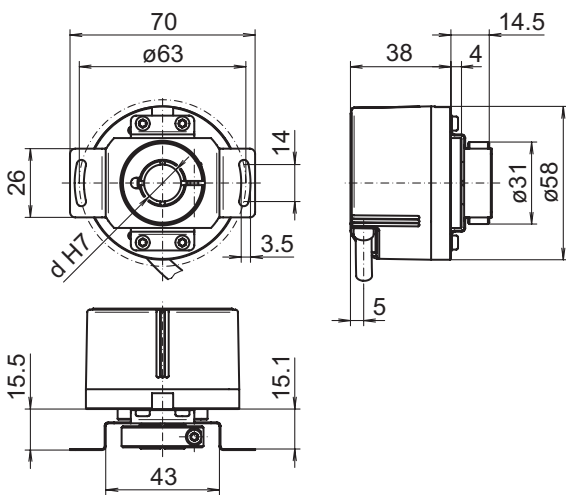
Clamping ring at A-side:
Blind hollow shaft, cable tangential



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



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



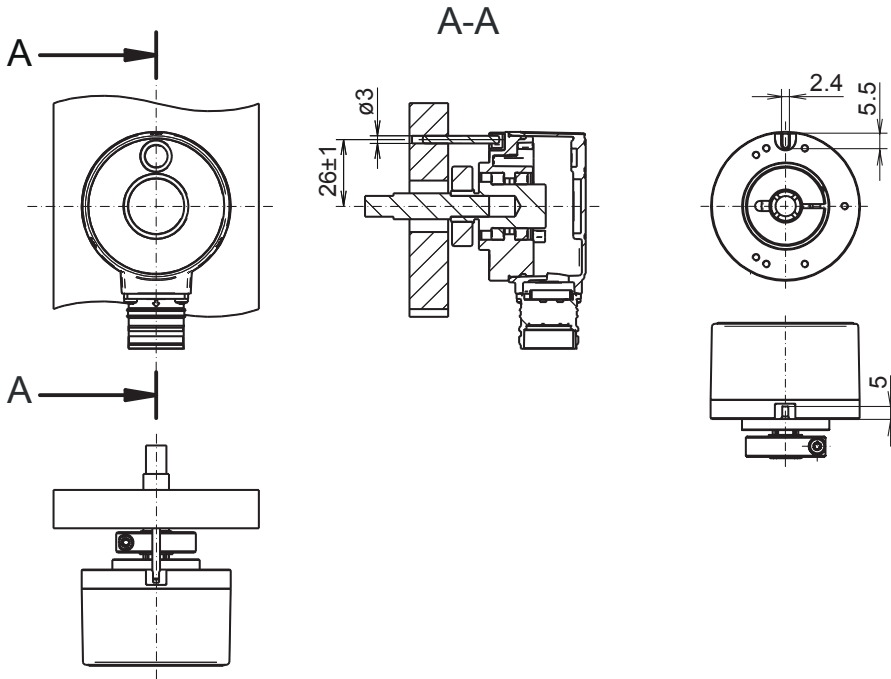
Incremental encoders

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

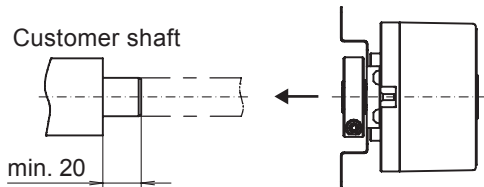
ExEIL580 - hollow shaft

Dimensions

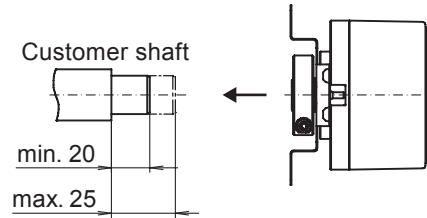
Pin torque support, axial, clamping ring at A-side



Clamping ring at A-side: Through hollow shaft



Blind hollow shaft



Incremental encoders

With blind or through hollow shaft

100...5000 pulses per revolution

ExEIL580 - hollow shaft

Explosion protection

⊕ II 3 D Ex tc IIIC T135°C Dc X (dust)

General- and Special conditions „X“:

Only put the device into operation if ...

- all necessary precautions have been taken by the operator to make sure device and connector are fully protected against mechanical impacts or shocks in compliance with EN 60079-0, section 26.4.2 (Special conditions „X“).
- the connection is mechanically or electrically secured to prevent any interrupt while the contact is live (Special conditions „X“).
- it has been ensured the electrical connection of product variants with cable outlet or cable couplings is outside zone 22 (Special conditions „X“).
- it has been ensured the maximum operating speed in relation to the ambient temperature is within the specifications on the table „Maximum rotation speed below“ (Special conditions „X“).
- the specifications on the product label match the on-site conditions for use in hazardous areas (EX) (device group, category, zone, temperature class resp. maximum surface temperature).
- the specifications on the product label comply with the prevailing grid conditions.
- the device shows no visible trace of damage (resulting from transport or storage), and
- it has been ensured no explosive atmosphere, oils, acids, gases, vapors, radiation etc. are present during installation.

Observe standard EN 60079-14 for installation and commissioning.

Device operation must observe the installation and operating instructions. The intended use and application of the device comes under the relevant legislation as well as applicable directives and standards.

Maximum rotation speed

	ambient temperature	rotation speed
solid shaft	20 °C	≤ 12000 rpm
	40 °C	≤ 11000 rpm
	60 °C	≤ 8000 rpm
through hollow shaft	20 °C	≤ 6000 rpm
	40 °C	≤ 4500 rpm
	60 °C	≤ 2500 rpm
blind hollow shaft	20 °C	≤ 8000 rpm
	40 °C	≤ 8000 rpm
	60 °C	≤ 5000 rpm