

# Incremental encoders

## Solid shaft with clamping or synchro flange

### 100...5000 pulses per revolution

#### ExEIL580 - solid shaft



ExEIL580 with clamping flange

#### Technical data - electrical ratings

Voltage supply	5 VDC $\pm$ 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	$\leq$ 70 mA
Pulses per revolution	100...5000
Phase shift	$90^\circ \pm 10^\circ$
Scan ratio	40...60 %
Reference signal	Zero pulse, width $90^\circ \pm 10\%$
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
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
- Clamping or synchro flange
- 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)	$\varnothing$ 58 mm
Admitted shaft load	$\leq$ 40 N axial $\leq$ 80 N radial
Protection DIN EN 60529	IP 65
Operating speed	$\leq$ 12000 rpm (+20 °C) $\leq$ 11000 rpm (+40 °C) $\leq$ 8000 rpm (+60 °C)
Starting torque	$\leq$ 0.015 Nm (+20 °C)
Materials	Housing: aluminium die-cast Flange: aluminium Solid shaft: stainless steel
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 300 g, 6 ms
Explosion protection	II 3 D Ex tc IIIC T135°C Dc X (dust): Special conditions "X" on page 11
Connection	Flange connector M12, 8-pin Flange connector M23, 12-pin Cable
Weight approx.	300 g

#### ExEIL580 - clamping flange

Shaft type	$\varnothing$ 10 x 20 mm, solid shaft with flat (clamping flange)
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#### ExEIL580 - synchro flange

Shaft type	$\varnothing$ 6 x 10 mm, solid shaft with flat (synchro flange)
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## Solid shaft with clamping or synchro flange

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#### ExEIL580 - solid shaft

#### Part number

#### Clamping flange

ExEIL580-S C 10 . 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 solid shaft  
10 ø10 x 20 mm, with flat

Flange  
C Clamping flange, centering collar ø36 mm, M3/M4

#### 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



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#### 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 for ExEIL580 - clamping flange

11065915	Coupling CPS25 L=19 d1=04/d2=10
11065918	Coupling CPS25 L=19 d1=07/d2=10
11065920	Coupling CPS25 L=19 d1=08/d2=10
11065921	Coupling CPS25 L=19 d1=09/d2=10
11065922	Coupling CPS25 L=19 d1=10/d2=06
11065923	Coupling CPS25 L=19 d1=10/d2=10
11065924	Coupling CPS25 L=19 d1=10/d2=11
11065925	Coupling CPS25 L=19 d1=10/d2=12
10141132	Spring washer coupling D1=06 / D2=10
10141133	Spring washer coupling D1=10 / D2=10
11034138	Spring washer coupling D1=10 / D2=16
11034140	Spring washer coupling D1=10 / D2=14
11034141	Spring washer coupling D1=10 / D2=12
11050507	Bellows coupling aluminium/stainless steel D1=06 / D2=10
11101781	Double loops coupling D1=10 / D2=10
10125051	Mounting adaptor for encoders with clamping flange
11065545	Set of eccentric fixings type A

##### Mounting accessories for ExEIL580 - clamping flange

11101893	Tether arm
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##### Mounting accessories for ExEIL580 - synchro flange

11065916	Coupling CPS25 L=19 d1=06/d2=06
11065917	Coupling CPS25 L=19 d1=06/d2=08
11065922	Coupling CPS25 L=19 d1=10/d2=06
11065926	Coupling CPS25 L=19 d1=11/d2=06
11065928	Coupling CPS25 L=19 d1=12/d2=06
10141131	Spring washer coupling D1=06 / D2=06
10141132	Spring washer coupling D1=06 / D2=10
11034139	Spring washer coupling D1=06 / D2=16
11050507	Bellows coupling aluminium/stainless steel D1=06 / D2=10
10117667	Mounting adaptor for encoders with synchro flange
10117668	Set of eccentric fixings for mounting clamp (10117667): 3x eccentric fixings, screws and nuts
11065545	Set of eccentric fixings type A
10158124	Bearing flange for encoders with synchro flange (Z 119.035)

Matching measuring wheels available as accessories, see under "measuring wheels" (MR).

# Incremental encoders

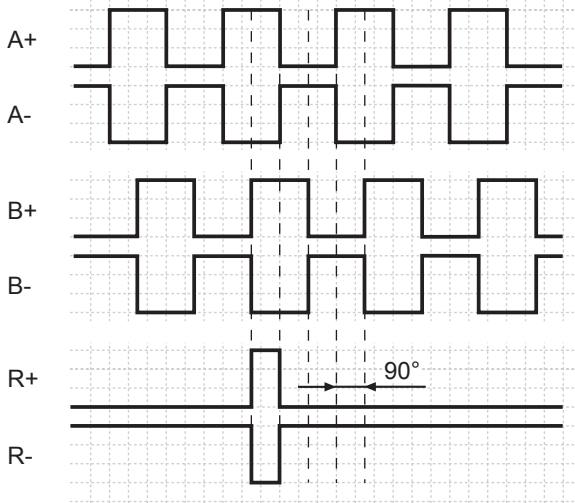
Solid shaft with clamping or synchro flange

100...5000 pulses per revolution

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

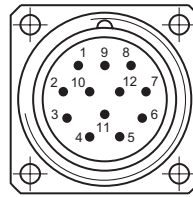
### Terminal assignment

#### 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

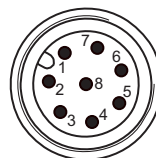
Screen: Connected to housing

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-



# Incremental encoders

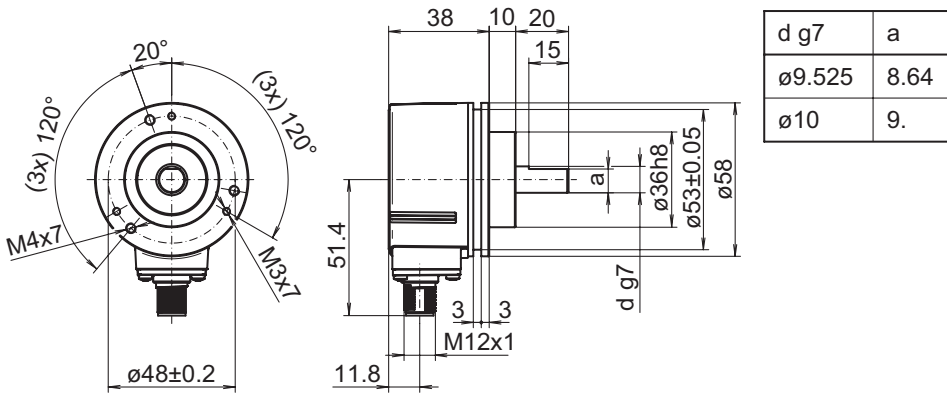
## Solid shaft with clamping or synchro flange

### 100...5000 pulses per revolution

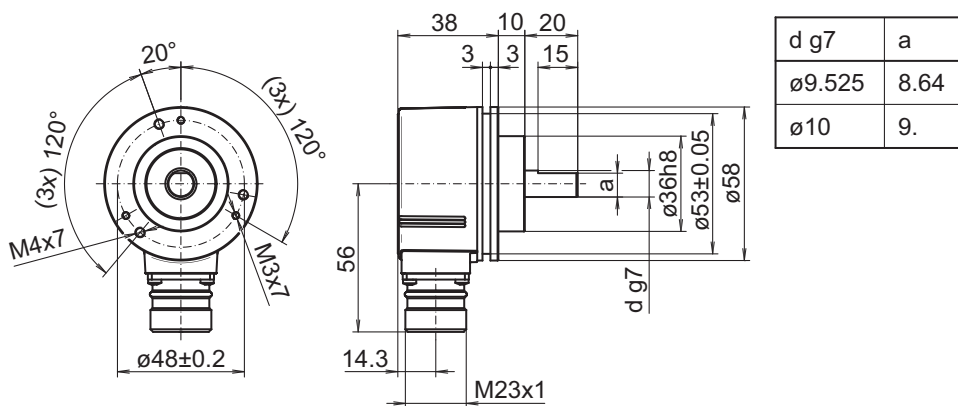
ExEIL580 - solid shaft

#### Dimensions

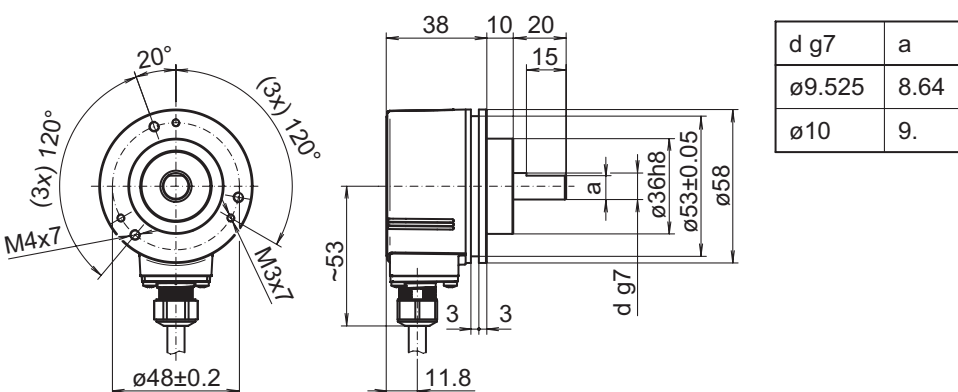
##### Clamping flange, flange connector M12, radial



##### Clamping flange, flange connector M23, radial



##### Clamping flange, cable radial



# Incremental encoders

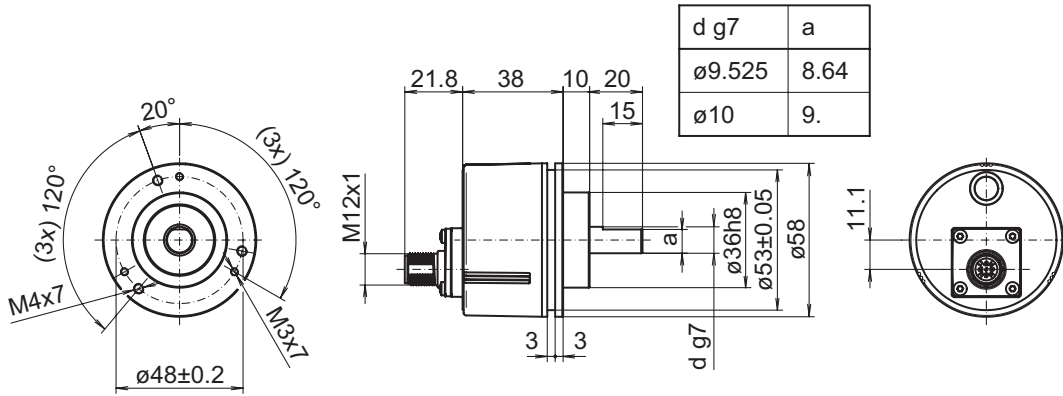
Solid shaft with clamping or synchro flange

100...5000 pulses per revolution

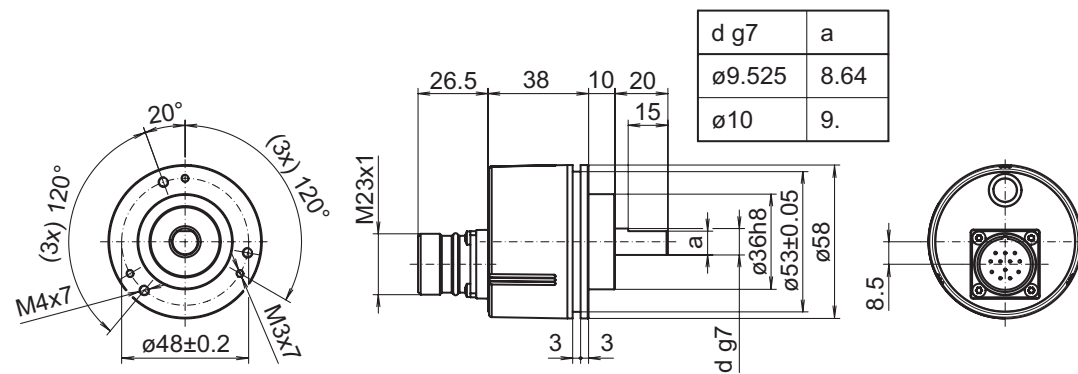
## ExEIL580 - solid shaft

### Dimensions

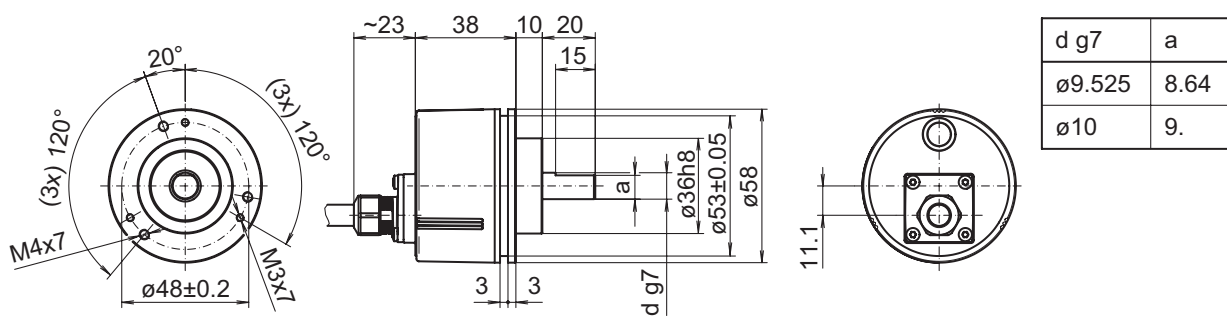
Clamping flange, flange connector M12, axial



Clamping flange, flange connector M23, axial



Clamping flange, cable axial



# Incremental encoders

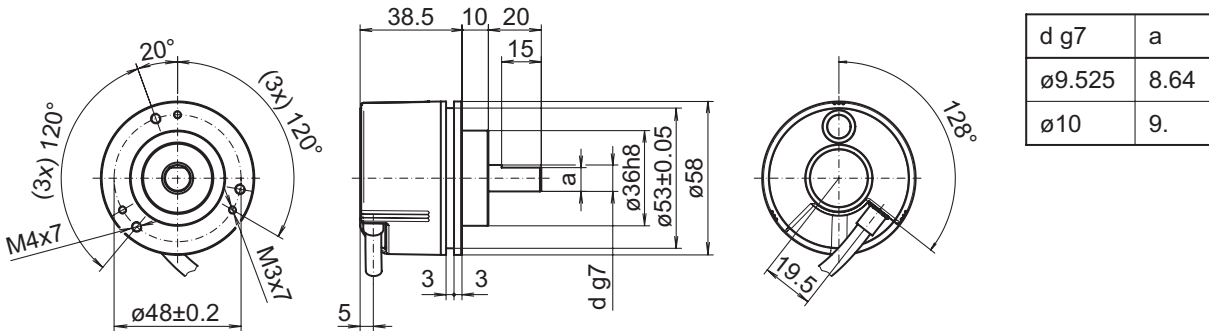
## Solid shaft with clamping or synchro flange

### 100...5000 pulses per revolution

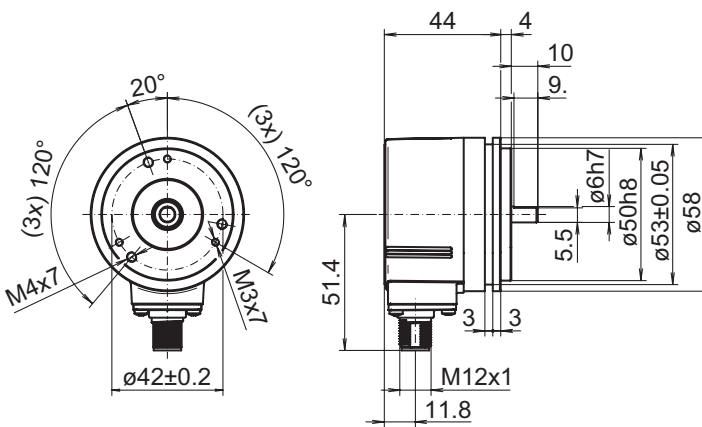
ExEIL580 - solid shaft

#### Dimensions

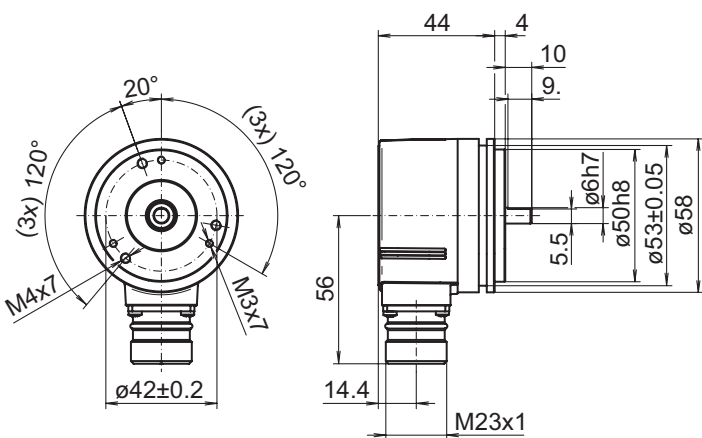
##### Clamping flange, cable tangential



##### Synchro flange, flange connector M12, radial



##### Synchro flange, flange connector M23, radial





# Incremental encoders

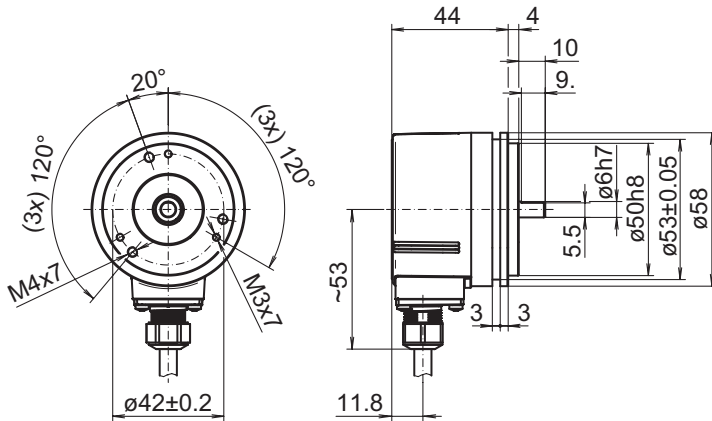
Solid shaft with clamping or synchro flange

100...5000 pulses per revolution

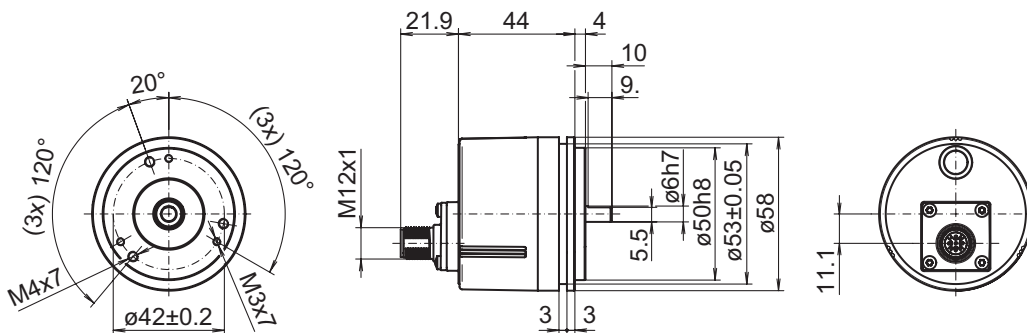
## ExEIL580 - solid shaft

### Dimensions

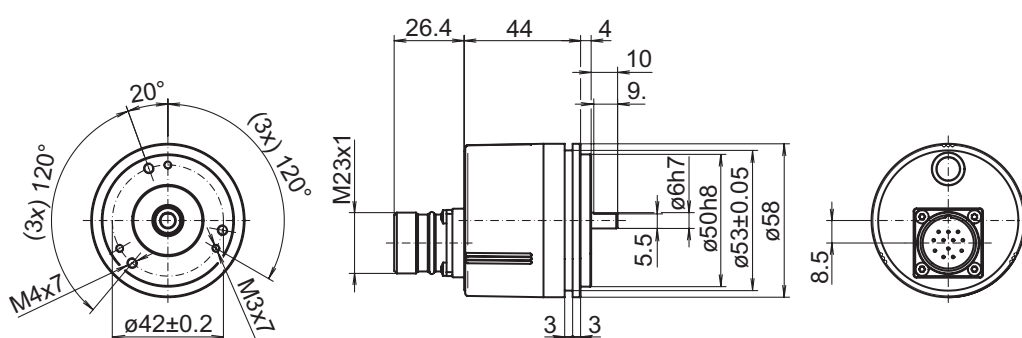
#### Synchro flange, cable radial



#### Synchro flange, flange connector M12, axial



#### Synchro flange, flange connector M23, axial



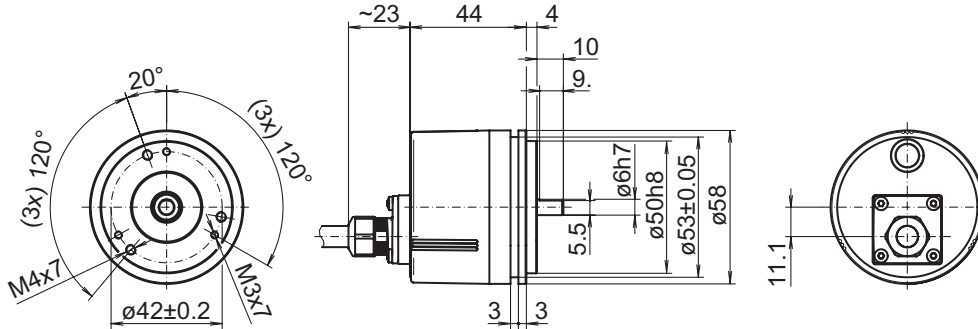
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Solid shaft with clamping or synchro flange  
100...5000 pulses per revolution

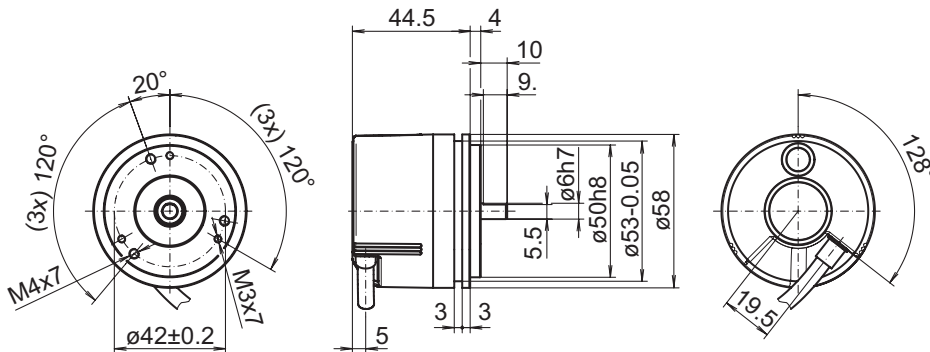
ExEIL580 - solid shaft

## Dimensions

### Synchro flange, cable axial



### Synchro flange, cable tangential



# Incremental encoders

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##### 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