Baumer
Passion for Sensors

Incremental encoders / OptoPulse®

EIL580P-SQ

Solid shaft with square flange

1…65536 pulses per revolution programmable (interpolated system)

Overview

- Size ø58 mm
- Precise optical sensing (interpolated)
- Output signal level programmable (TTL or HTL)
- Square flange 2.5" (63.5 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

Technical data - electrical ratings

Voltage supply	4.75...30 VDC
Reverse polarity protection	Yes
Short-circuit proof	Yes
Consumption w/o load	≤70 mA
Initializing time	≤30 ms after power on
Pulses per revolution	1 … 65536
Duty cycle	45…55 % typical at 1024, 2048 ppr (further see table Duty cycle)
Reference signal	Zero pulse 90° or 180°
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
Programmable parameters	Output level TTL/HTL Pulse number 1...65536 Zero pulse width 90°/180° 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)	2.5 x 2.5" (63.5 x 63.5 mm)
Shaft type	ø10 x 20 mm, solid shaft with flat ø3/8" x 4/5" (ø9.525 x 20.32 mm), solid shaft with flat
Admitted shaft load	≤40 N axial ≤80 N radial
Flange	Square flange 2.5" (63.5 mm)
Protection DIN EN 60529	IP 65 (without shaft seal) IP 67 (with shaft seal)
Operating speed	≤6000 rpm (+20 °C, IP 67) ≤12000 rpm (+20 °C, IP 65)
Starting torque	≤0,015 Nm (+20 °C, IP 65) ≤0,02 Nm (+20 °C, IP 67)
Material	Housing: aluminium die-cast Flange: aluminium Solid shaft: stainless steel
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 300 g, 6 ms
Connection	Flange connector M12, 8-pin Flange connector M23, 12-pin Cable
Weight approx.	370 g

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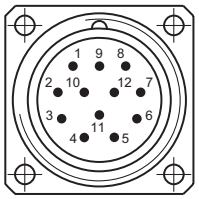
Terminal assignment

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 [1]
8	grey	B+
9	–	–
10	white	GND
11	–	–
12	brown	UB

Screen: Connected to housing

Cable data: PUR, [4x2x0,14 mm²], bending radius >45,8 mm, outer diameter 6.1 mm



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

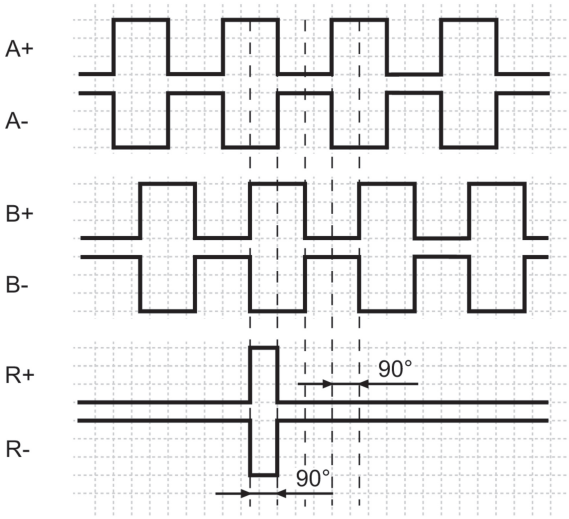
Flange connector M12, 8-pin

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

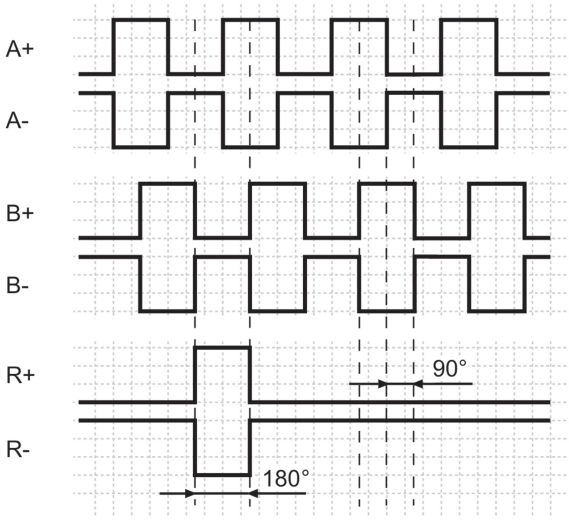


Output signals

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

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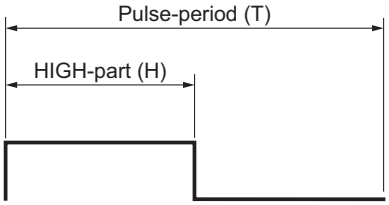
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Duty cycle

The duty cycle (D) is defined as the time ratio between the HIGH pulse duration (H) and the pulse period (T).
System-induced and depending on the pulse number, the measured values may vary which has an impact on speed and position acquisition.
Binary pulse numbers are recommended for speed feedback.



$$D = \frac{H}{T}$$

Programmed pulse number	Scan ratio (D) (maximum)	Jitter (+/-) (maximum)
1…1023	45...55 %	5%
1024, 2048	45...55 %	5%
1025…5000	40...60 %	10%
8192, 16384	35...85 %	15%
5001…10000	22...78 %	28%
32768	25...75 %	25%
65536	15...85 %	35%
all other	Jitter[%]=(programmed pulse number -10000)*0,0007%+28%	

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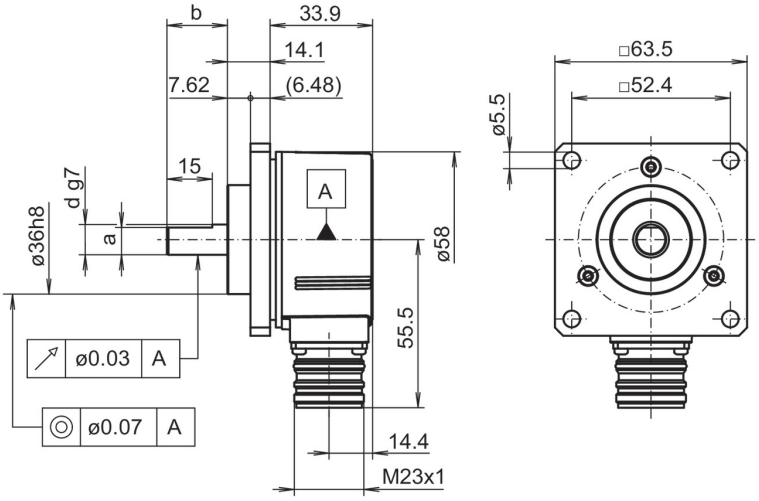
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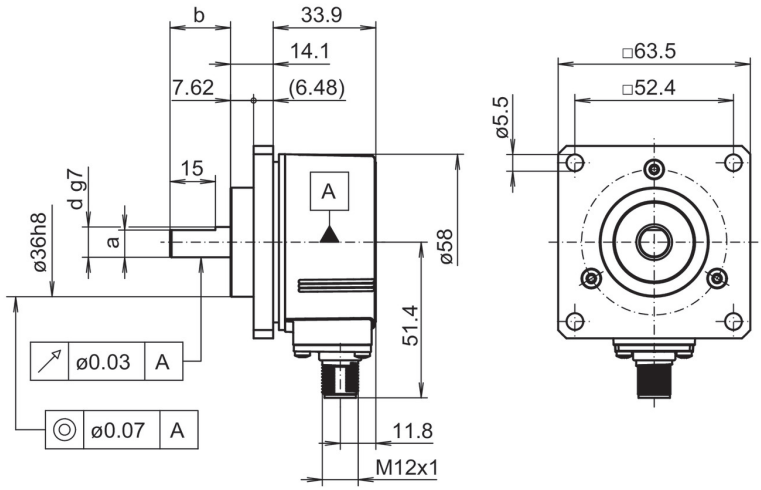
Dimensions

d g7	a	b
ø9.525	8.64	20.32
ø10	9.	20



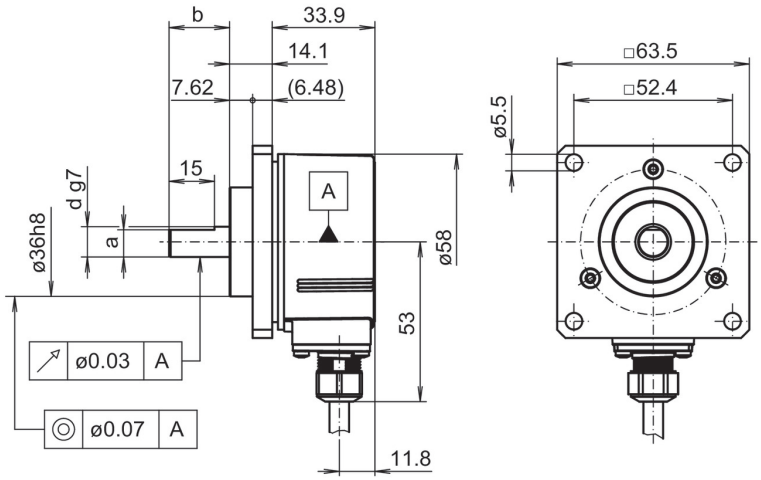
Square flange, flange connector M23, radial

d g7	a	b
ø9.525	8.64	20.32
ø10	9.	20



Square flange, flange connector M12, radial

d g7	a	b
ø9.525	8.64	20.32
ø10	9.	20



Square flange, cable radial

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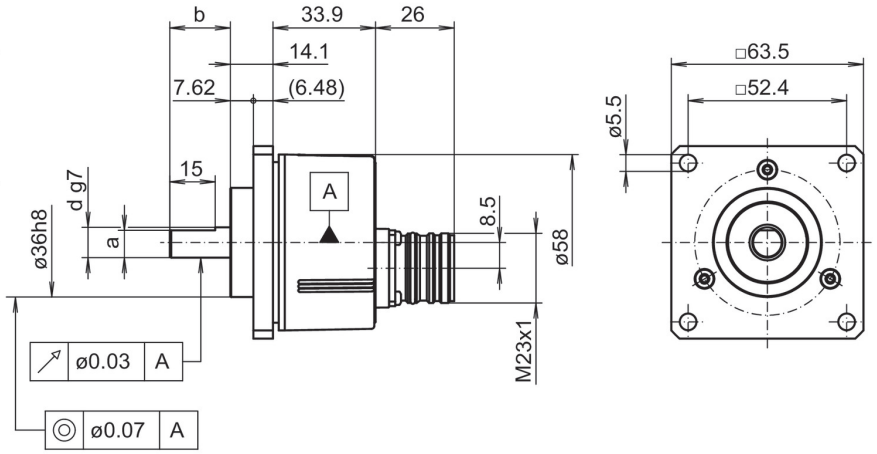
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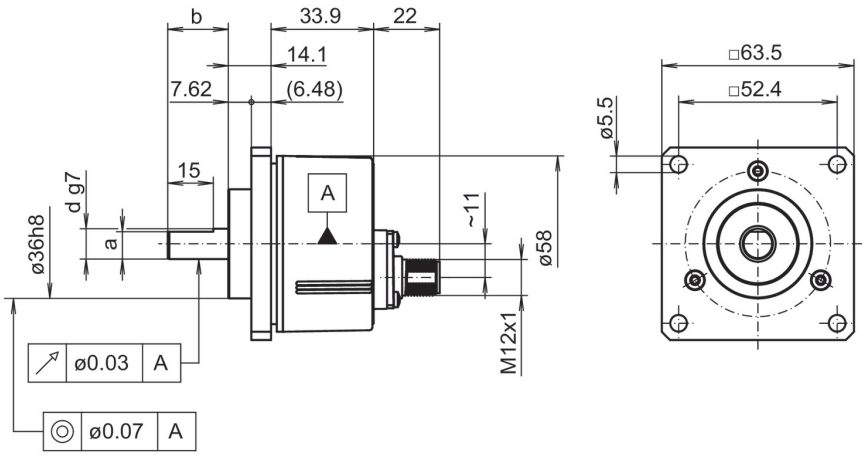
Dimensions

d g7	a	b
ø9.525	8.64	20.32
ø10	9.	20



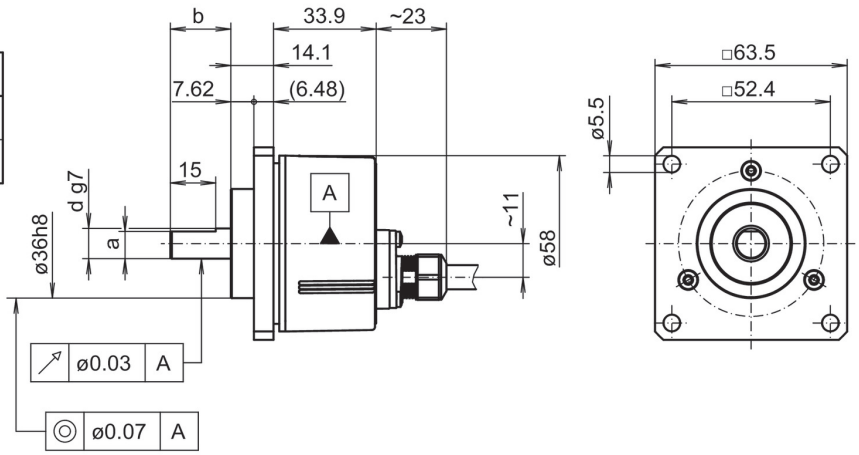
Square flange, flange connector M23, axial

d g7	a	b
ø9.525	8.64	20.32
ø10	9.	20



Square flange, flange connector M12, axial

d g7	a	b
ø9.525	8.64	20.32
ø10	9.	20



Square flange, cable axial

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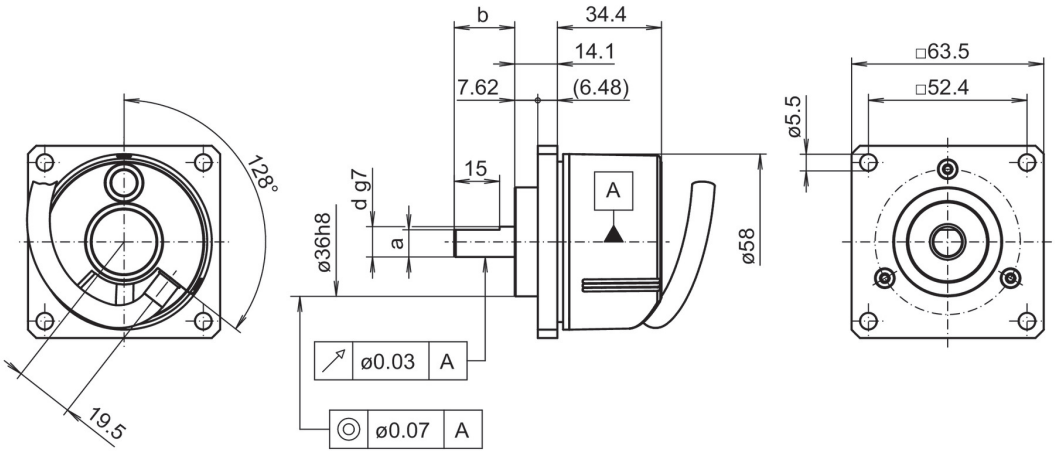
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Dimensions

d g7	a	b
ø9.525	8.64	20.32
ø10	9.	20



Square flange, cable tangential

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Ordering reference

	EIL580P	-	S	Q	##	.	#	##	#	.	01024	.	B
Product													
	EIL580P												
Shaft type													
Solid shaft			S										
Flange (shaft)													
Square flange 2.5 (63.5 mm), centering collar Ø1.417 x 0.3 (Ø36 x 7.62 mm), square mounting 4 x Ø5.5 / 52.4 x 52.4 mm				Q									
Shaft													
ø3/8" x 4/5" (Ø9.525 x 20.32 mm), with flat					U3								
ø10 x 20 mm, with flat					10								
Protection class													
IP 65							5						
IP 67							7						
Connection													
Cable radial, 1 m								R					
Cable radial, 2 m								L					
Flange socket radial, M23, 12-pin, male contacts, CCW								F					
Flange socket radial, M12, 8-pin, male contacts, CCW								B					
Cable axial, 1 m								T					
Cable axial, 2 m								U					
Flange socket axial, M23, 12-pin, male contacts, CCW								D					
Flange socket axial, M12, 8-pin, male contacts, CCW								A					
Cable tangential, 1 m								P					
Cable tangential, 2 m								Q					
Voltage supply / output													
4,75...30 VDC, TTL/RS422 6 channel (Vout=5V)									F				
4,75...30 VDC, HTL/push pull, 6 channel (Vout=Vin)									Q				
Pulses programmable													
1...65536 programmable (factory setting: 1024)											01024		
Operating temperature													
-40...+100 °C													B

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

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Accessories

Mounting accessories

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=6 / D2=10 (Z 121.C01)
10141133	Spring washer coupling D1=10 / D2=10 (Z 121.C03)
11034138	Spring washer coupling D1=10 / D2=16 (Z 121.C04)
11034140	Spring washer coupling D1=10 / D2=14 (Z 121.C06)
11034141	Spring washer coupling D1=10 / D2=12 (Z 121.C07)
11050507	Bellows coupling aluminium/stainless steel D1=06 / D2=10
11101781	Double loops coupling D1=10 / D2=10

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)
11212849	Female connector M23, 12-pin, CW, with cable 1 m - EIL580P
11212870	Female connector M23, 12-pin, CW, with cable 2 m - EIL580P
11212871	Female connector M23, 12-pin, CW, with cable 5 m - EIL580P
11212872	Female connector M23, 12-pin, CW, with cable 10 m - EIL580P
11119280	Connection cable connector M12 / connector D-SUB, 0.2 m
11119720	Connection cable connector M12 / connector D-SUB, 1 m

Programming accessories

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

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