

Incremental encoders

With blind or through hollow shaft

1...65536 pulses per revolution programmable (interpolated system)

EIL580P - hollow shaft - OptoPulse®



EIL580P with blind hollow shaft

Features

- Size ø58 mm
- Precise optical sensing (interpolated)
- Output signal level programmable (TTL or HTL)
- Blind or through hollow shaft, ø8...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	≤70 mA
Initializing time	≤30 ms after power on
Pulses per revolution	1...65536
Scan ratio	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)	ø58 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	≤0.02 Nm (+20 °C, IP 65) ≤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 - through hollow shaft

Shaft type	ø8...15 mm (through hollow shaft)
Operating speed	≤3000 rpm (+20 °C, IP 67) ≤6000 rpm (+20 °C, IP 65)

EIL580P - blind hollow shaft

Shaft type	ø8...15 mm (blind hollow shaft)
Operating speed	≤6000 rpm (+20 °C, IP 67) ≤8000 rpm (+20 °C, IP 65)

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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 channel (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	15 ø15 mm, clamping ring at A side
U3 ø3/8" (9,52 mm), clamping ring at A side	V3 ø3/8" (9,52 mm), clamping ring at B side
10 ø10 mm, clamping ring at A side	B0 ø10 mm, clamping ring at B side
12 ø12 mm, clamping ring at A side	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
14 ø14 mm, clamping ring at A side	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)

Incremental encoders

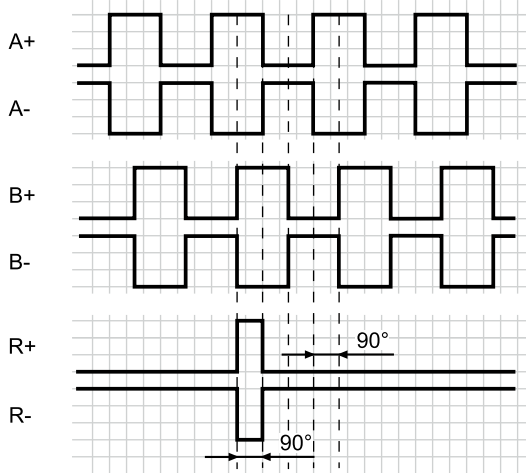
With blind or through hollow shaft

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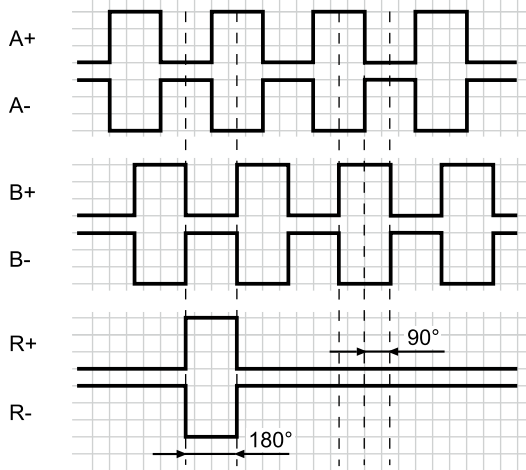
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Output signals

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	$\geq 2.5 \text{ V}$
Output level Low	$\leq 0.5 \text{ V}$
Load	$\leq 20 \text{ mA}$

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

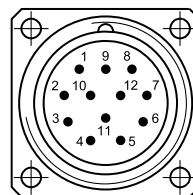
Terminal assignment

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	—	R-Set ¹⁾
8	grey	B+
9	—	—
10	white	GND
11	—	—
12	brown	UB

Screen: Connected to housing

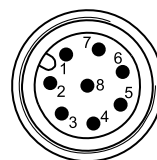
Cable data: PUR, [4x2x0,14 mm²], bending radius
>45,8 mm, outer diameter 6.1 mm



¹⁾ The R-Set input is used to set the reference pulse (zero pulse) on the current shaft position.
R-Set = UB $\geq 200 \text{ ms}$

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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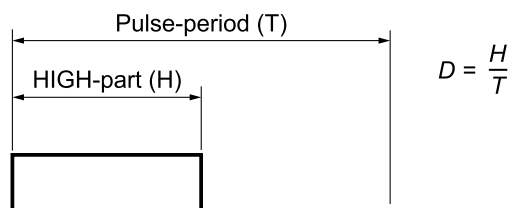
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Duty cycle

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.



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%	