

Absolute encoders - parallel

Shaft with clamping or synchro flange

Optical multiturn encoder 12 bit ST / 12 bit MT

GXP1W - parallel



GXP1W with clamping flange

Features

- Encoder multiturn / parallel
- Optical sensing
- Resolution: singleturn 12 bit, multiturn 12 bit
- Clamping flange or synchro flange
- Resolution, code and preset programmable
- Encoder programming by Windows software
- RS232 encoder programming interface

Technical data - electrical ratings

| | |
|-----------------------------|--|
| Voltage supply | 10...30 VDC |
| Reverse polarity protection | Yes |
| Consumption w/o load | ≤50 mA (24 VDC) |
| Initializing time (typ.) | 50 ms after power on |
| Interface | 24 parallel outputs |
| Steps per turn | 4096 / 12 bit |
| Number of turns | 4096 / 12 bit |
| Absolute accuracy | ±0.03° |
| Sensing method | Optical |
| Code | Gray, cut gray, BCD, binary programmable |
| Code sequence | CW/CCW coded and programmable by connection |
| Inputs | TxD, RxD (RS232) Control signals UP/DOWN and zero ENABLE STORE |
| Output circuit | PNP or NPN open collector |
| Interference immunity | DIN EN 61000-6-2 |
| Emitted interference | DIN EN 61000-6-4 |
| Programming interface | RS232 |
| Programmable parameters | Steps per revolution Number of revolutions Code 2 presets (limits) Rotation speed monitoring |
| Diagnostic functions | Self-diagnosis Code continuity check Multiturn sensing |
| Approval | UL approval / E63076 |

Technical data - mechanical design

| | |
|-------------------------|--|
| Housing | ø58 mm |
| Shaft | ø10 mm (clamping flange) ø6 mm (synchro flange) |
| Flange | Clamping or synchro flange |
| Protection DIN EN 60529 | IP 54 without shaft seal IP 65 with shaft seal |
| Operating speed | ≤10000 rpm (mechanical) ≤6000 rpm (electric) |
| Starting torque | ≤0.015 Nm IP 54 ≤0.03 Nm IP 65 |
| Rotor moment of inertia | 20 gcm ² |
| Admitted shaft load | ≤20 N axial ≤40 N radial |
| Materials | Housing: steel Flange: aluminium |
| Operating temperature | -25...+70 °C |
| Relative humidity | 95 % non-condensing |
| Resistance | DIN EN 60068-2-6 Vibration 10 g, 16-2000 Hz DIN EN 60068-2-27 Shock 200 g, 6 ms |
| Weight approx. | 600 g |
| E-connection | Connector D-SUB, 37-pin, 1 m cable |

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Part number

GXP1W. **C1**

E-connection

- 31 Cable 1 m axial, connector D-SUB, 37-pins
- 41 Cable 1 m radial, connector D-SUB, 37-pins

Voltage supply / signals

- 10 10...30 VDC / open collector NPN
- 20 10...30 VDC / open collector PNP

Flange / Shaft

- 0 Clamping flange / \varnothing 10 mm IP 54
- A Clamping flange / \varnothing 10 mm IP 65
- 1 Synchro flange / \varnothing 6 mm IP 54
- B Synchro flange / \varnothing 6 mm IP 65

Accessories

Connectors and cables (page %S)

- Z 140.001 Female connector D-SUB, 37-pin

Mounting accessories (page %S)

- Z 119.006 Eccentric fixing, single
- Z 119.013 Adaptor plate for clamping flange for modification into synchro flange
- Z 119.015 Mounting adaptor for synchro flange
- Z 119.017 Mounting angle for clamping flange
- Z 119.035 Bearing flange for encoders with synchro flange

Programming accessories (page %S)

- Z 139.005 Programming cable for parallel shaft encoders, CD with ProGeber software and manual
- Z 150.008 CD with software ProGeber & manual

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| Terminal significance | |
|-----------------------|---|
| UB | Encoder voltage supply. |
| GND | Encoder ground connection relating to UB. |
| Outputs D0-D23 | 24 parallel output signals. For PNP it is recommended to utilize pull-down resistors for every data line, for NPN pull-up resistors of 4.7 kΩ. |
| Outputs D19 - D23 | Special outputs With inferior resolutions these outputs may be configured as special outputs. |
| Zero setting | Input for setting a zero point anywhere within the programmed encoder resolution. The zero setting operation is triggered by a High impulse and has to be in line with the selected direction of rotation (UP/DOWN). Connect to GND after setting operation for maximum interference immunity. Impulse duration ≥ 100 ms. If there is an offset being entered by programming interface the offset will be activated by the zero input. |
| UP/DOWN | UP/DOWN counting direction input. This input is standard on High. UP/DOWN means ascending output data with clockwise shaft rotation when looking at flange. UP/DOWN-Low means ascending values with counterclockwise shaft rotation when looking at flange. |
| ENABLE | Input for activating the output drivers that are triggered by input level Low. Upon being on High (or less potential) the output drivers switch to high-impedance (Tristate). |
| STORE | Input for output data storage. Upon a Low input level the encoder data are stored in the intermediate memory. Upon being on High (or less potential) the current encoder position data are switched to the output drivers. This line must be applied for reliable data readout in binary code. |
| GND-Sense | Internally connected to GND and serves together with UB-Sense for measuring the encoder voltage supply. |
| UB-Sense | Internally connected to UB. In case the sensor line is not utilized the connection must be isolated (danger of short circuit). |

| Terminal assignment | | |
|---------------------|--------------|--------------|
| Connector | Core colour | Assignment |
| Pin 1 | white | Output D0 |
| Pin 2 | brown | Output D1 |
| Pin 3 | green | Output D2 |
| Pin 4 | yellow | Output D3 |
| Pin 5 | grey | Output D4 |
| Pin 6 | pink | Output D5 |
| Pin 7 | black | Output D6 |
| Pin 8 | violet | Output D7 |
| Pin 9 | grey/pink | Output D8 |
| Pin 10 | red/blue | Output D9 |
| Pin 11 | white/green | Output D10 |
| Pin 12 | brown/green | Output D11 |
| Pin 13 | white/yellow | Output D12 |
| Pin 14 | yellow/brown | Output D13 |
| Pin 15 | white/grey | Output D14 |
| Pin 16 | grey/brown | Output D15 |
| Pin 17 | white/pink | Output D16 |
| Pin 18 | pink/brown | Output D17 |
| Pin 19 | white/black | Output D18 |
| Pin 20 | brown/black | Output D19 |
| Pin 21 | grey/green | Output D20 |
| Pin 22 | yellow/grey | Output D21 |
| Pin 23 | pink/green | Output D22 |
| Pin 24 | yellow/pink | Output D23 |
| Pin 25 | – | – |
| Pin 26 | – | – |
| Pin 27 | yellow/blue | Zero setting |
| Pin 28 | brown/blue | ENABLE |
| Pin 29 | brown/red | STORE |
| Pin 30 | green/blue | UP/DOWN |
| Pin 31 | – | – |
| Pin 32 | – | – |
| Pin 33 | – | – |
| Pin 34 | white/blue | GND-Sense |
| Pin 35 | white/red | UB-Sense |
| Pin 36 | red | UB |
| Pin 37 | blue | GND |

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Terminal assignment programming cable

| Encoder function | Mating connector | Core colour | PC connector |
|------------------|------------------|-------------|---------------------------|
| – | Pin 1 | brown | – |
| RxD | Pin 2 | white | Pin 3 |
| GND | Pin 3 | blue | Pin 5 |
| P/R Mode | Pin 4 | black | Pin 5 |
| TxD | Pin 5 | grey | Pin 2 |
| | | | Jumper 4-6 and Jumper 7-8 |

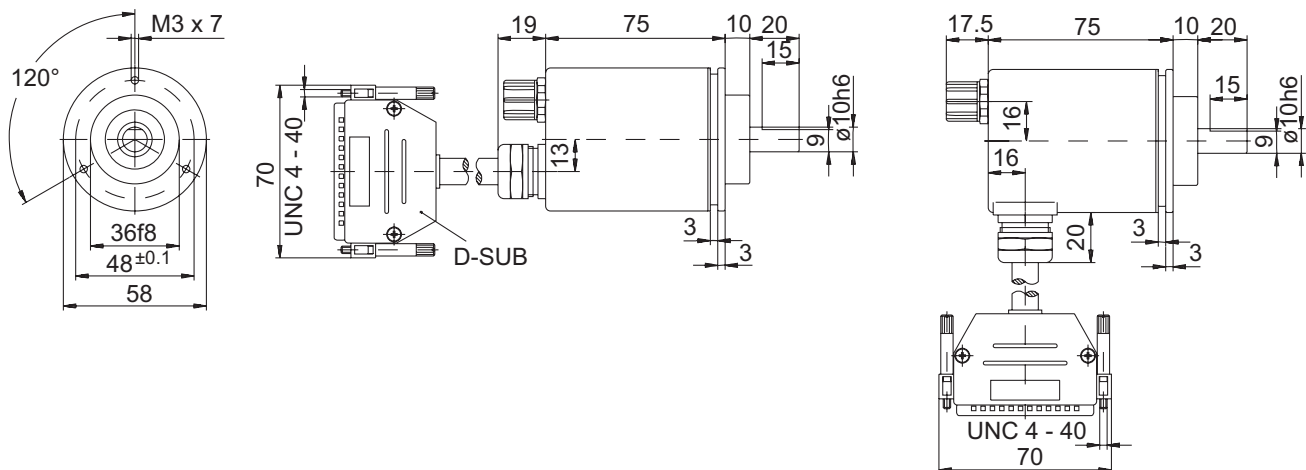
Connect encoder to voltage supply (UB/red/pin 36 and GND/blue/pin 37) using the supplementary 37-pin D-SUB connector.

Trigger level

| Control inputs | Input circuit |
|-------------------------|------------------------------|
| Input level High | >0.7 UB |
| Input level Low | <0.3 UB |
| Input resistance | 10 kΩ |
| Parallel outputs | Output circuit |
| | Open collector circuit-proof |
| Output level High (PNP) | >UB -4.5 V (I = -15 mA) |
| Output level Low (NPN) | <3.5 V (I = 15 mA) |
| Load High (PNP) | <-20 mA |
| Load Low (NPN) | <20 mA |
| Tristate | <200 μA |

Dimensions

GXP1W clamping flange



GXP1W synchro flange

