

Absolute encoders - bus interfaces

Shaft with clamping or synchro flange

Multiturn encoder 18 bit ST / 14 bit MT, CANopen

GBP5W - CANopen



GBP5W with clamping flange

Features

- Encoder multiturn / CANopen
- Optical sensing
- Resolution: singleturn 18 bit, multiturn 14 bit
- Clamping flange or synchro flange
- High resistance to shock and vibrations
- LED status display
- CANopen Profile CIA DSP 406
- Permanent check of code continuity

Technical data - electrical ratings

| | |
|-----------------------------|--|
| Voltage supply | 10...30 VDC |
| Reverse polarity protection | Yes |
| Consumption w/o load | ≤50 mA (24 VDC) |
| Initializing time (typ.) | 250 ms after power on |
| Interface | CANopen |
| Transmission rate | 10...1000 kBaud |
| Profile conformity | CANopen CIA DSP 406 V 3.0 |
| Operating mode | Event-triggered / Time-triggered Remotely-requested Sync (cyclic) / Sync (acyclic) |
| Identifier | 11 bit |
| Steps per turn | 262144 / 18 bit |
| Number of turns | 16384 / 14 bit |
| Absolute accuracy | ±0.01° |
| Sensing method | Optical |
| Code | Binary |
| Code sequence | CW/CCW programmable |
| Output circuit | CAN bus standard ISO / DIS 11898 |
| Interference immunity | DIN EN 61000-6-2 |
| Emitted interference | DIN EN 61000-6-4 |
| Programmable parameters | Operating modes Total resolution Scaling Rotation speed monitoring |
| Diagnostic functions | Position or parameter error Multiturn sensing |
| Status indicator | DUO-LED integrated in housing |
| 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...+85 °C -40...+85 °C (optional) |
| 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. | 500 g |
| E-connection | Connector |

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Part number

GBP5W.

| | | | |
|--|----|--|--|
| | 10 | | |
|--|----|--|--|

Interface

- 06 CANopen DSP 406 / galvanically isolated
- 16 CANopen DSP 406 not galvanically isolated

E-connection

- A3 Connector M23, 12-pin, radial
- D3 Connector D-SUB, 9-pin, radial
- M1 Connector M12, 5-pin, radial
- M2 2 x connector M12, 5-pin axial
- M3 2 x connector M12, 5-pin radial

Voltage supply

- 10 10...30 VDC

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 148.001 | Female connector M23, 12-pin, less cable |
| Z 148.003 | Female connector M23, 12-pin, 2 m cable |
| Z 148.005 | Female connector M23, 12-pin, 5 m cable |
| Z 148.007 | Female connector M23, 12-pin, 10 m cable |
| Z 180.003 | Female connector M12, 5-pin, 2 m cable |
| Z 180.005 | Female connector M12, 5-pin, 5 m cable |
| Z 180.007 | Female connector M12, 5-pin, 10 m cable |
| Z 181.005 | Cable connector M12, 5-pin, 5 m cable Connection M2 / M3, continuative bus |

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 |

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Terminal significance

| | |
|---------|--|
| UB | Encoder voltage supply |
| GND B | Encoder ground connection relating to UB |
| CAN_L | CAN bus signal (dominant Low) |
| CAN_H | CAN bus signal (dominant High) |
| CAN_GND | GND relating to CAN interface. Depending on model separated from GND B either by galvanic isolation or by inductive earthing. |

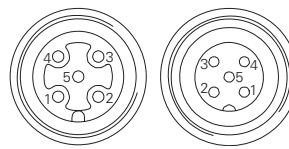
CANopen features

| | |
|--------------------|--|
| Bus protocol | CANopen |
| Device profile | CANopen - CiA DSP 406, V 3.0 (Device Class 2, CAN 2.0B) |
| Operating modes | Event-triggered / Time-triggered Remotely-requested Sync (cyclic) / Sync (acyclic) |
| Preset | Parameter for setting the encoder to a requested position value assigned to a defined shaft position of the system. The offset of encoder zero point and mechanical zero point is stored in the encoder. |
| Rotating direction | Parameter for defining the rotating direction in which there have to be ascending or descending position values. |
| Scaling | Parameter defining the steps per turn as well as the total resolution. |
| Diagnosis | The encoder supports the following error warnings: - Position and parameter error - Lithium battery voltage control (Multiturn) |
| Node Monitoring | Heartbeat or Nodeguarding |
| Default | 50 kbit/s, Node ID 1 |

Terminal assignment

M12-connector

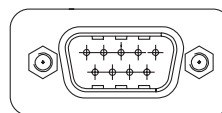
| Connector | Core colour | Assignment |
|-----------|-------------|------------|
| Pin 1 | brown | GND B |
| Pin 2 | white | UB |
| Pin 3 | blue | CAN_GND |
| Pin 4 | black | CAN_H |
| Pin 5 | grey | CAN_L |



Please use cores twisted in pairs (for example CAN_H / CAN_L) for extension cables of more than 10 m length.

D-SUB connector

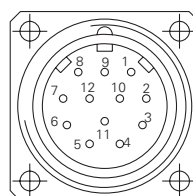
| Connector | Assignment |
|-----------|------------|
| Pin 1 | – |
| Pin 2 | CAN_L |
| Pin 3 | CAN_GND |
| Pin 4 | – |
| Pin 5 | – |
| Pin 6 | GND B |
| Pin 7 | CAN_H |
| Pin 8 | – |
| Pin 9 | UB |



Please use cores twisted in pairs (for example CAN_H / CAN_L) for extension cables of more than 10 m length.

M23-connector

| Connector | Core colour | Assignment |
|-----------|-------------|------------|
| Pin 1 | brown/green | UB |
| Pin 2 | white/green | GND B |
| Pin 3 | pink | CAN_L |
| Pin 4 | grey | CAN_H |
| Pin 5 | white | CAN_GND |
| Pin 6-12 | – | – |



Please use cores twisted in pairs (for example CAN_H / CAN_L) for extension cables of more than 10 m length.

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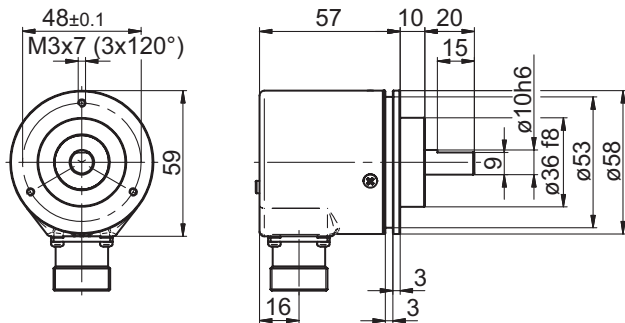
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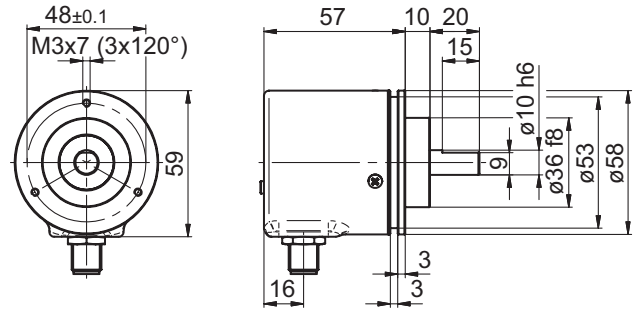
GBP5W - CANopen

Dimensions

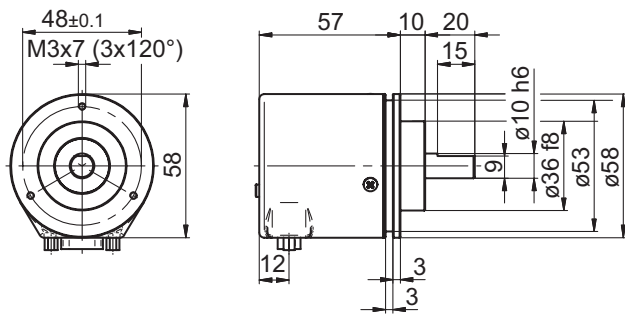
GBP5W clamping flange and M23 connector



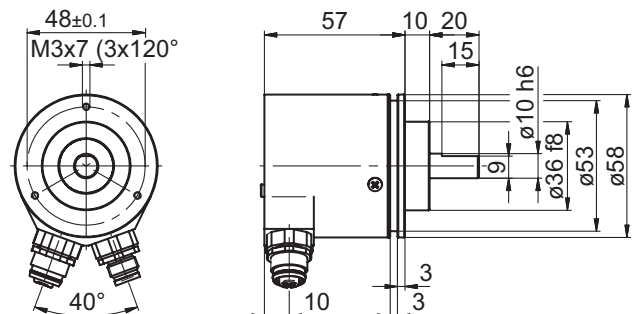
GBP5W clamping flange and M12 connector



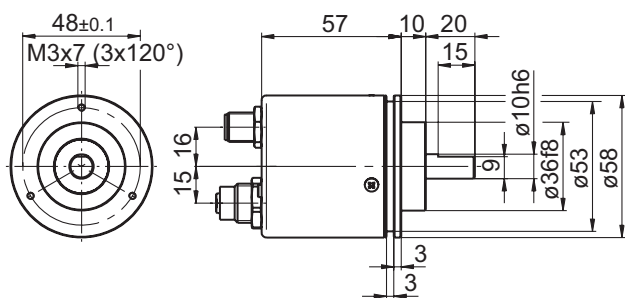
GBP5W clamping flange and D-SUB



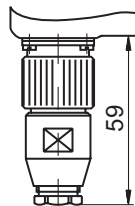
GBP5W clamping flange, 2 x M12 connector, radial



GBP5W clamping flange, 2 x M12 connector, axial



GBP5W connector dimensions



GBP5W synchro flange

