

# 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 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  |
| Function                    | Multiturn  |
| Transmission rate           | 10...1000 kBaud  |
| Profile conformity          | CANopen CIA DSP 406 V 3.0  |
| Operating mode              | Event-triggered / Time-triggered<br>Remotely-requested<br>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<br>11898  |
| Interference immunity       | DIN EN 61000-6-2   |
| Emitted interference        | DIN EN 61000-6-4   |
| Programmable parameters     | Operating modes<br>Total resolution<br>Scaling<br>Rotation speed monitoring              |
| Diagnostic functions        | Position or parameter error<br>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)<br>ø6 mm (synchro flange)                                       |
| Flange                  | Clamping or synchro flange   |
| Protection DIN EN 60529 | IP 54 without shaft seal<br>IP 65 with shaft seal  |
| Operating speed         | ≤10000 rpm (mechanical)<br>≤6000 rpm (electric)  |
| Starting torque         | ≤0.015 Nm IP 54<br>≤0.03 Nm IP 65  |
| Rotor moment of inertia | 20 gcm <sup>2</sup>  |
| Admitted shaft load     | ≤20 N axial<br>≤40 N radial  |
| Materials               | Housing: steel<br>Flange: aluminium  |
| Operating temperature   | -25...+85 °C<br>-40...+85 °C (optional)  |
| Relative humidity       | 95 % non-condensing  |
| Resistance              | DIN EN 60068-2-6<br>Vibration 10 g, 16-2000 Hz<br>DIN EN 60068-2-27<br>Shock 200 g, 6 ms |
| Weight approx.          | 500 g  |
| Connection              | Connector  |

# Absolute encoders - bus interfaces

Shaft with clamping or synchro flange

Multiturn encoder 18 bit ST / 14 bit MT, CANopen

## GBP5W - CANopen

### Part number

GBP5W. 

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

|  |    |  |    |   |
|--|----|--|----|---|
|  |    |  |    |   |
|  |    |  |    | <u>Interface</u>                            |
|  |    |  | 06 | CANopen DSP 406 / galvanically isolated     |
|  |    |  | 16 | CANopen DSP 406 not galvanically isolated   |
|  |    |  |    | <u>Connection</u>                           |
|  |    |  | 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             |
|  |    |  |    | <u>Voltage supply</u>                       |
|  | 10 |  |    | 10...30 VDC                                 |
|  |    |  |    | <u>Flange / Shaft</u>                       |
|  |    |  | 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

|           |  |
|-----------|--|
| 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, A-coded, 2 m cable                                      |
| Z 180.005 | Female connector M12, 5-pin, A-coded, 5 m cable                                      |
| Z 180.007 | Female connector M12, 5-pin, A-coded, 10 m cable                                     |
| Z 181.005 | Cable connector M12, 5-pin, A-codage, 5 m cable connection M2 / M3, continuative bus |

#### Mounting accessories

|           |  |
|-----------|--|
| 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                        |

# Absolute encoders - bus interfaces

## Shaft with clamping or synchro flange

### Multiturn encoder 18 bit ST / 14 bit MT, CANopen

#### GBP5W - CANopen

##### Terminal significance

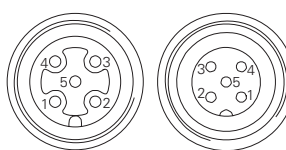
|         |  |
|---------|--|
| UB      | Encoder voltage supply   |
| GND B   | Encoder ground connection relating to UB   |
| CAN_L   | CAN bus signal (dominant Low)  |
| CAN_H   | CAN bus signal (dominant High)   |
| CAN_GND | GND relating to CAN interface.<br>Depending on model separated from GND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

##### CANopen features

|                    |  |
|--------------------|--|
| Bus protocol       | CANopen  |
| Device profile     | CANopen - CiA DSP 406, V 3.0<br>(Device Class 2, CAN 2.0B)   |
| Operating modes    | Event-triggered / Time-triggered<br>Remotely-requested<br>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:<br>- Position and parameter error<br>- Lithium battery voltage control (Multiturn)  |
| Node Monitoring    | Heartbeat or Nodeguarding  |
| Default            | 50 kbit/s, Node ID 1   |

##### Terminal assignment

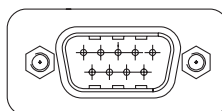
| M12-connector |             |            |
|---------------|-------------|------------|
| Connector     | Core colour | Assignment |
| Pin 1         | brown       | GND B      |
| Pin 2         | white       | UB         |
| Pin 3         | blue        | CAN_GND    |
| Pin 4         | black       | 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

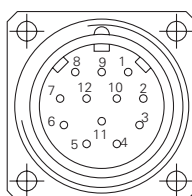
| Connector | Assignment |
|-----------|------------|
| Pin 1     | –          |
| Pin 2     | CAN_L      |
| Pin 3     | CAN_GND    |
| Pin 4     | –          |
| Pin 5     | –          |
| Pin 6     | GND B      |
| Pin 7     | CAN_H      |
| Pin 8     | –          |
| Pin 9     | UB         |



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.

# Absolute encoders - bus interfaces

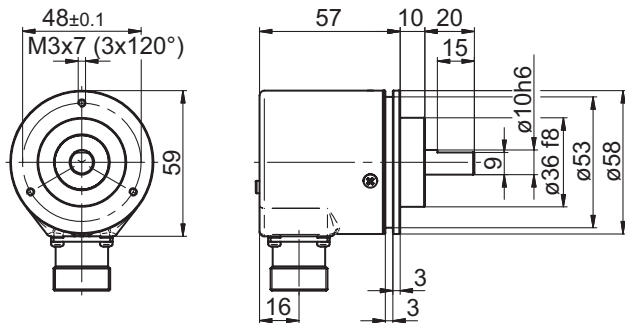
Shaft with clamping or synchro flange

Multiturn encoder 18 bit ST / 14 bit MT, CANopen

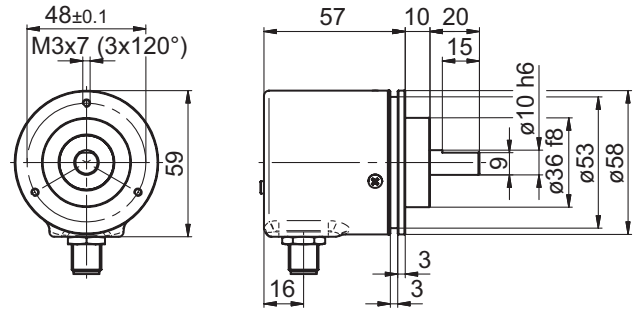
## GBP5W - CANopen

### Dimensions

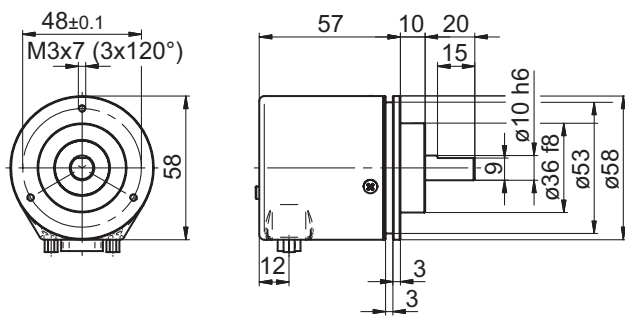
GBP5W clamping flange and connector M23



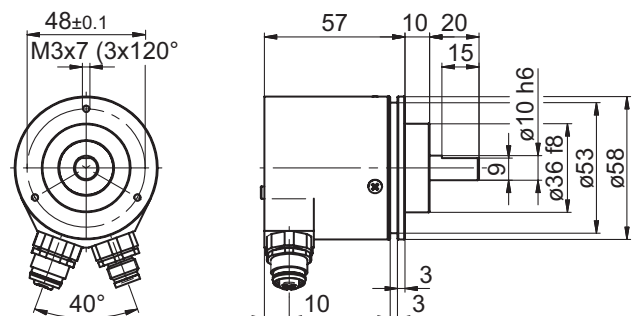
GBP5W clamping flange and connector M12



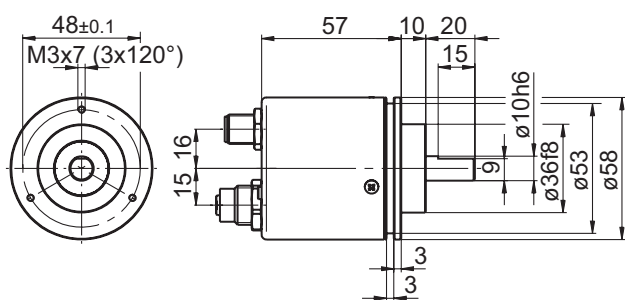
GBP5W clamping flange and D-SUB



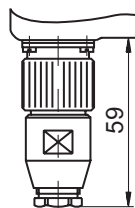
GBP5W clamping flange, 2 x connector M12, radial



GBP5W clamping flange, 2 x connector M12, axial



GBP5W connector dimensions



GBP5W synchro flange

