

# Absolute encoders - bus interfaces

Solid shaft with clamping or synchro flange

Optical multiturn encoders 18 bit ST / 14 bit MT, CANopen®

## GBP5W - CANopen®



GBP5W with clamping flange

### Features

- Encoder multiturn / CANopen®
- Optical sensing method
- Resolution: singleturn 18 bit, multiturn 14 bit
- Clamping or synchro flange
- High resistance to shock and vibrations
- LED status indicator
- CANopen® Profile CIA DSP 406
- Permanent check of code continuity
- Maximum resistant against magnetic fields

### 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 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 stages	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

Size (flange)	ø58 mm
Shaft type	ø10 mm solid shaft (clamping flange) ø6 mm solid shaft (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 acceleration	≤1000 U/s <sup>2</sup>
Starting torque	≤0.015 Nm (+25 °C, IP 54) ≤0.03 Nm (+25 °C, IP 65)
Rotor moment of inertia	20 gcm <sup>2</sup>
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
Connection	Connector M12, 5-pin Connector M23, 12-pin Connector D-SUB, 9-pin

· Subject to modification in technic and design. Errors and omissions excepted.

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#### Part number

GBP5W.   10    

#### Interface

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

#### Connection

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

#### Voltage supply

- 10 10...30 VDC

#### Flange / Solid shaft

- 0 Clamping flange / ø10 mm, IP 54
- A Clamping flange / ø10 mm, IP 65
- 1 Synchro flange / ø6 mm, IP 54
- B Synchro flange / ø6 mm, IP 65

#### Accessories

##### Connectors and cables

11034211	Female connector M23, 12-pin, without cable (Z 148.001)
11034212	Female connector M23, 12-pin, 2 m cable (Z 148.003)
11034213	Female connector M23, 12-pin, 5 m cable (Z 148.005)
11034214	Female connector M23, 12-pin, 10 m cable (Z 148.007)
11040255	Female connector M12, 5-pin, A-coded, 2 m cable (Z 180.003)
11034341	Female connector M12, 5-pin, A-coded, 5 m cable (Z 180.005)
11004569	Female connector M12, 5-pin, A-coded, 10 m cable (Z 180.007)
11034343	Cable connector M12, 5-pin, A-coded, 5 m cable, CANopen®, connection continuative bus (Z 181.005)

##### Mounting accessories

10117669	Eccentric fixing, single (Z 119.006)
10141255	Adaptor plate for clamping flange for modification into synchro flange (Z 119.013)
10117667	Mounting adaptor for encoders with synchro flange (Z 119.015)
10125051	Mounting adaptor for encoders with clamping flange (M3) (Z 119.017)
10158124	Bearing flange for encoders with synchro flange (Z 119.035)

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## GBP5W - CANopen®

### Terminal significance

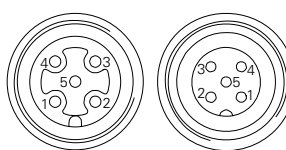
UB	Encoder voltage supply
GND B	Encoder ground connection relating to UB
CAN_L	CAN bus signal (dominant Low)
CAN_H	CAN bus signal (dominant High)
CAN_GND	GND relating to CAN interface. Depending on model separated from GND B either by galvanic isolation or by inductive earthing.

### 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

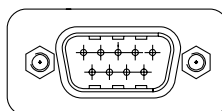
M12-connector		
Connector	Core colour	Assignment
Pin 1	brown	GND B
Pin 2	white	UB
Pin 3	blue	CAN_GND
Pin 4	black	CAN_H
Pin 5	grey	CAN_L



Please use cores twisted in pairs (for example CAN\_H / CAN\_L) for extension cables of more than 10 m length.

### D-SUB connector

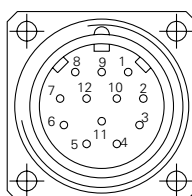
Connector	Assignment
Pin 1	–
Pin 2	CAN_L
Pin 3	CAN_GND
Pin 4	–
Pin 5	–
Pin 6	GND B
Pin 7	CAN_H
Pin 8	–
Pin 9	UB



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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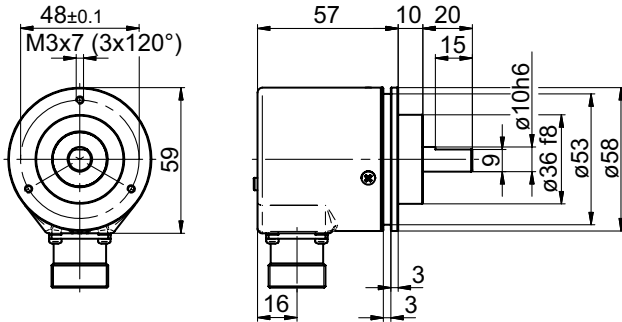
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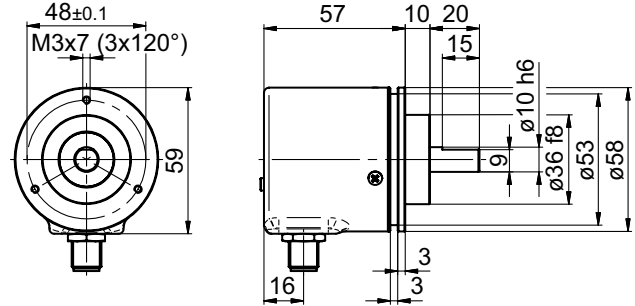
#### GBP5W - CANopen®

#### Dimensions

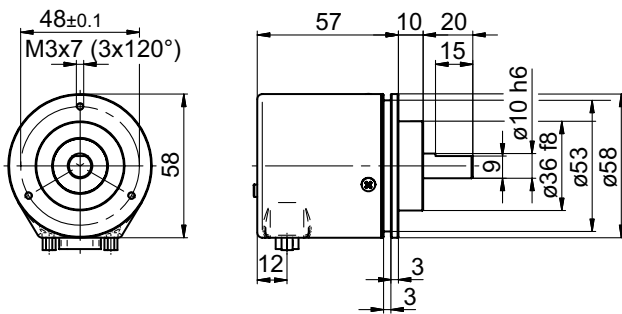
GBP5W - clamping flange / connector M23



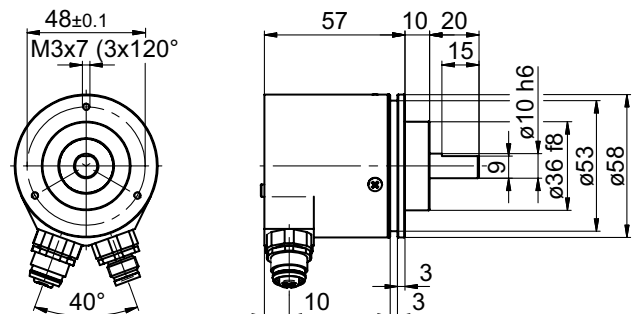
GBP5W - clamping flange / connector M12



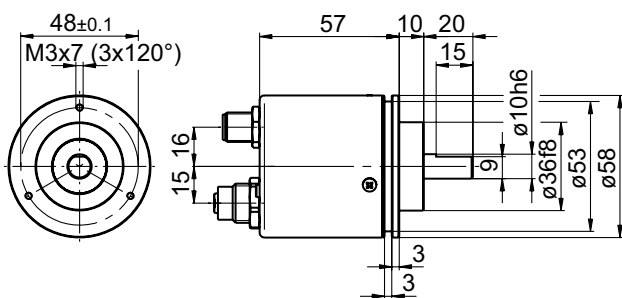
GBP5W - clamping flange / D-SUB



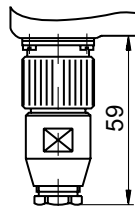
GBP5W - clamping flange, 2 x M12, radial



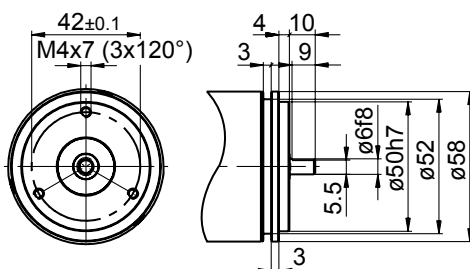
GBP5W - clamping flange, 2 x M12, axial



GBP5W - connector dimensions



GBP5W - synchro flange



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