

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 ²
Starting torque	≤0.015 Nm (+25 °C, IP 54) ≤0.03 Nm (+25 °C, 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
Connection	Connector M12, 5-pin Connector M23, 12-pin Connector D-SUB, 9-pin

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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

Z 148.001	Female connector M23, 12-pin, without 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-coded, 5 m cable, CANopen®, connection 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 adaptor for clamping flange (M3)
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.

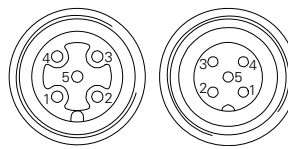
CANopen® features

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 mecha- nical zero point is stored in the encoder.
Rotating direction	Parameter for defining the rotating direc- tion 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

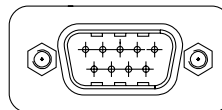
Connector	Core colour	Assignment
Pin 1	brown	GND B
Pin 2	white	UB
Pin 3	blue	CAN_GND
Pin 4	black	CAN_H
Pin 5	grey	CAN_L



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

D-SUB connector

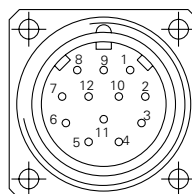
Connector	Assignment
Pin 1	–
Pin 2	CAN_L
Pin 3	CAN_GND
Pin 4	–
Pin 5	–
Pin 6	GND B
Pin 7	CAN_H
Pin 8	–
Pin 9	UB



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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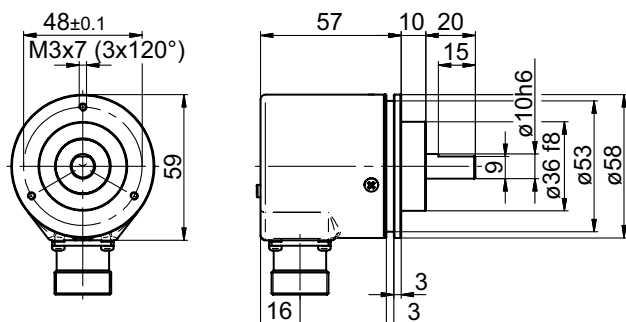
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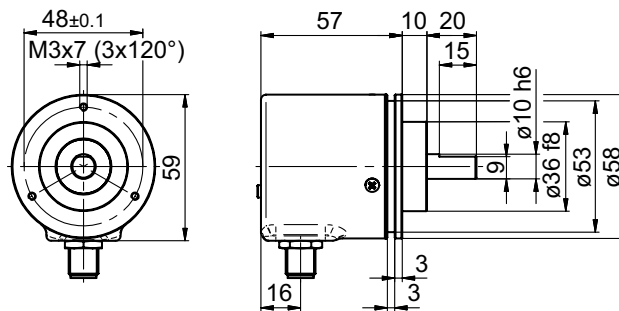
GBP5W - CANopen®

Dimensions

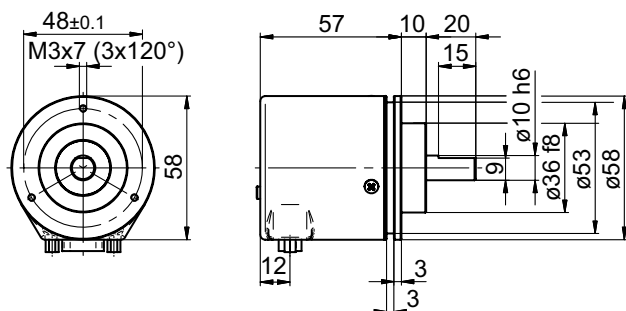
GBP5W - clamping flange / connector M23



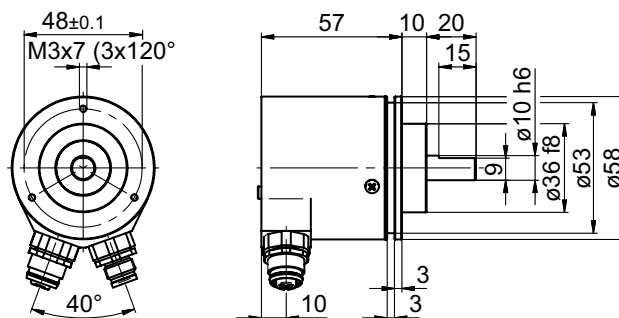
GBP5W - clamping flange / connector M12



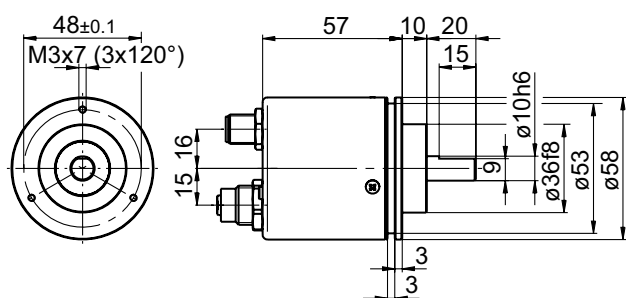
GBP5W - clamping flange / D-SUB



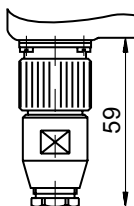
GBP5W - clamping flange, 2 x M12, radial



GBP5W - clamping flange, 2 x M12, axial



GBP5W - connector dimensions



GBP5W - synchro flange

