

# Absolute encoders - bus interfaces

Through hollow shaft up to  $\varnothing 14$  mm

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

## GBP5H - CANopen®



GBP5H with through hollow shaft

### Features

- Encoder multiturn / CANopen®
- Optical sensing method
- Resolution: singleturn 18 bit, multiturn 14 bit
- Through hollow shaft up to  $\varnothing 14$  mm
- 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	$\leq 50$ 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 revolution	$\leq 262144$ / 18 bit
Number of revolutions	$\leq 16384$ / 14 bit
Absolute accuracy	$\pm 0.01^\circ$
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)	$\varnothing 58$ mm
Shaft type	$\varnothing 10...14$ mm (through hollow shaft)
Protection DIN EN 60529	IP 54, IP 65 (optional)
Operating speed	$\leq 6000$ rpm (mechanical) $\leq 6000$ rpm (electric)
Starting acceleration	$\leq 1000$ U/s <sup>2</sup>
Starting torque	$\leq 0.015$ Nm (+25 °C, IP 54)
Rotor moment of inertia	20 gcm <sup>2</sup>
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 100 g, 4 ms
Weight approx.	500 g
Connection	Connector M12, 5-pin Connector M23, 12-pin

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

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#### Part number

GBP5H.   10   06

					<u>Interface</u>
					06 CANopen® DSP 406 / galvanically isolated
					<u>Connection</u>
				A3	Connector M23, 12-pin, radial
				M1	Connector M12, 5-pin, radial
					<u>Voltage supply</u>
				10	10...30 VDC
					<u>Through hollow shaft</u>
8					$\varnothing 10$ mm, without pin
9					$\varnothing 10$ mm, pin 15 mm
0					$\varnothing 12$ mm, without pin
1					$\varnothing 12$ mm, pin 15 mm
B					$\varnothing 12$ mm, pin 9.5 mm
4					$\varnothing 14$ mm, without pin
5					$\varnothing 14$ mm, pin 15 mm
F					$\varnothing 14$ mm, pin 9.5 mm

#### 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 male M12, 5-pin, A-coded, 5 m cable, CANopen®, connection continuative bus (Z 181.005)

##### Mounting accessories

10140347	Torque support and spring washer for encoders with 9.5 mm pin (Z 119.024)
10139345	Torque support by rubber buffer for encoders with 15 mm pin (Z 119.041)
10147837	Spring coupling for one-side attachment, length 35 mm (Z 119.050)
11034106	Spring coupling for motor's fan guard (Z 119.053)
10165157	Spring coupling for encoders with $\varnothing 58$ mm housing, hole distance 73 mm (Z 119.072)
11034121	Spring coupling for encoders with $\varnothing 58$ mm housing, hole distance 68 mm (Z 119.073)
11034123	Spring coupling for one-side attachment, length 115 mm (Z 119.076)
11003562	Spring coupling for encoders with $\varnothing 58$ mm housing, hole distance 63 mm (Z 119.082)
11098229	Clamping ring set 16/30x6 - stainless steel (Z 119.092)

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### Terminal significance

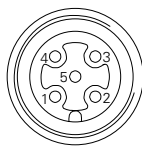
UB	Encoder voltage supply
GND B	Encoder ground connection relating to UB
CAN_L	CAN bus signal (dominant Low)
CAN_H	CAN bus signal (dominant High)
CAN_GND	GND relating to CAN interface. Depending on model separated from GND B either by galvanic isolation or by inductive earthing.

### 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

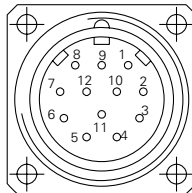
M12-connector		
Connector	Core colour	Assignment
Pin 1	brown	GND B
Pin 2	white	UB
Pin 3	blue	CAN_GND
Pin 4	black	CAN_H
Pin 5	grey	CAN_L



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

### 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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## Dimensions

