Absolute encoders - bus interfaces

Blind or through hollow shaft ø12 mm

Optical singleturn encoders 13 bit, CANopen®

BFF, BFG CANopen®

BFF CANopen® with blind hollow shaft

Features

- **Encoder singleturn / CANopen®**
- **Optical sensing**
- **Resolution: 13 bit**
- **Integrated fieldbus interface**
- **Operating modes programmable**
- **Zero point configurable**
- **Blind or through hollow shaft**

Technical data - electrical ratings

Voltage supply	10...30 VDC
Consumption typ.	70 mA (24 VDC, w/o load)
Initializing time typ.	170 ms after power on
Interface	CANopen®
Function	Singleturn
Profile conformity	CANopen® CiA DSP 301 4.01, DSP 305 V1.0, DSP 406 V3.0
Steps per turn	≤8192 / 13 bit
Absolute accuracy	±0.025 °
Sensing method	Optical
Code	Binary
Code sequence	CW default, programmable
Interference immunity	DIN EN 61000-6-2
Emitted interference	DIN EN 61000-6-3
Programmable parameters	Operating modes Total resolution Scaling Rotation speed monitoring
Diagnostic functions	Position or parameter error Multiturn sensing
Approval	UL approval / E217823

Technical data - mechanical design

Size (flange)	ø58 mm
Protection DIN EN 60529	IP 42, IP 65
Operating speed	≤12000 rpm (mechanical) IP 42 ≤6000 rpm (mechanical) IP 65 ≤1830 rpm (electric)
Materials	Housing: aluminium Flange: aluminium
Operating temperature	-20...+85 °C
Relative humidity	95 % non-condensing
Resistance	DIN EN 60068-2-6 Vibration 10 g, 10-200 Hz DIN EN 60068-2-27 Shock 50 g, 11 ms
Weight approx.	300 g
Connection	Connector D-SUB, 9-pin
BFF	
Shaft type	ø12 mm (blind hollow shaft)
Operating torque typ.	0.009 Nm (IP 42) 0.037 Nm (IP 65)
BFG	
Shaft type	ø12 mm (through hollow shaft)
Operating torque typ.	0.0175 Nm (IP 42) 0.047 Nm (IP 65)

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Part number

Blind hollow shaft

BFF 1N. | **24B** | **8192** | **-** | | **-** | **F** |

- Connection
  - F Connector D-SUB, radial
- Blind hollow shaft
  - 12 ø12 mm, IP 42
  - B2 ø12 mm, IP 42, with clamping ring
  - E2 ø12 mm, IP 65, with clamping ring
  - L2 ø12 mm, IP 65
- Resolution
  - 8192 13 bit singleturn
- Voltage supply / signals
  - 24B 10...30 VDC / CANopen®

Through hollow shaft

BFG 1N. | **24B** | **8192** | **-** | | **-** | **F** |

- Connection
  - F Connector D-SUB, radial
- Through hollow shaft
  - B2 ø12 mm, IP 42, with clamping ring
  - E2 ø12 mm, IP 65, with clamping ring
- Resolution
  - 8192 13 bit singleturn
- Voltage supply / signals
  - 24B 10...30 VDC / CANopen®

Accessories

Mounting accessories	
10110616	Clamp set ø15 mm
10107540	Torque pin
10109520	Torque spring
10136635	Set of spring washers for encoders ø58 mm
10142556	Clamping ring set for 12 mm hollow shaft
Programming accessories	
10147362	CD-ROM with GSD-/EDS-/XML files and user manuals

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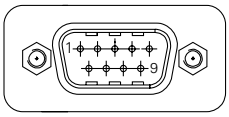
Terminal significance	
+Vs	Encoder supply voltage.
0 V	Encoder ground connection relating to +Vs.
CAN_L	CAN bus signal (dominant Low).
CAN_H	CAN bus signal (dominant High).
CAN_GND	GND relating to CAN interface.

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. Default setting: Ascending position values when looking at the flange and rotating the shaft clockwise.
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 (multiturn)
Node Monitoring	Heartbeat or Nodeguarding
Default	50 kbit/s, Node ID 1

Terminal assignment

Connector D-Sub male

Connector	Signals	Description
Pin 1	n.c.	–
Pin 2	CAN_L	Bus (dominant Low)
Pin 3	CAN_GND	CAN Ground
Pin 4	n.c.	–
Pin 5	n.c.	–
Pin 6	0 V	Supply voltage
Pin 7	CAN_H	Bus (dominant High)
Pin 8	n.c.	–
Pin 9	+Vs	Supply voltage



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Dimensions

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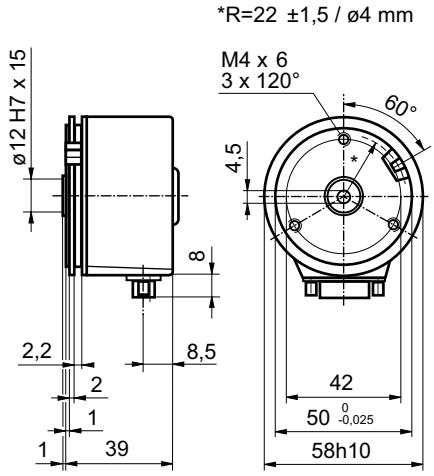

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