

Absolute encoders - bus interfaces

Blind hollow shaft up to $\varnothing 15$ mm

Magnetic single- or multiturn encoders 12 bit ST / 18 bit MT, CANopen®

BMSH 58, BMMH 58 CANopen® - MAGRES



BMMH 58 CANopen® with blind hollow shaft

Features

- Encoder single- or multiturn / CANopen®
- Robust magnetic sensing
- Resolution: singleturn 12 bit, multiturn 18 bit
- Designed for harsh environmental conditions
- High resistance to shock and vibrations
- Operating temperature -40...+85 °C
- Blind hollow shaft up to $\varnothing 15$ mm

Technical data - electrical ratings

Voltage supply	10...30 VDC
Consumption w/o load	≤ 80 mA (24 VDC)
Initializing time typ.	500 ms after power on
Interface	CANopen®
Profile conformity	CANopen® CiA DS 301, DSP 305, DS 406
Steps per turn	≤ 4096 / 12 bit
Sensing method	Magnetic
Angular accuracy	$\pm 0.5^\circ$
Repeatability	0.3°
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
Diagnostic functions	Multiturn sensing Position error
Approval	UL approval / E217823

BMSH 58

Function	Singleturn
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BMMH 58

Function	Multiturn
Number of turns	≤ 262144 / 18 bit

Technical data - mechanical design

Size (flange)	$\varnothing 58$ mm
Shaft type	$\varnothing 12$ mm (blind hollow shaft) $\varnothing 15$ mm (blind hollow shaft)
Protection DIN EN 60529	IP 65 (without shaft seal), IP 67 (with shaft seal)
Operating speed	≤ 6000 rpm
Starting torque	≤ 2 Ncm (+20 °C, IP 65) ≤ 2.5 Ncm (+20 °C, IP 67)
Materials	Housing: steel zinc-coated Flange: aluminium Hollow shaft: stainless steel
Operating temperature	-40...+85 °C (see general informations)
Relative humidity	95 %
Resistance	DIN EN 60068-2-6 Vibration 30 g, 10-2000 Hz DIN EN 60068-2-27 Shock 500 g, 6 ms
Weight approx.	300 g
Connection	Connector M12, 5-pin Cable

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Terminal significance

+Vs	Encoder voltage supply.
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 DS 406
Operating modes	- Event-triggered / Time-triggered - Sync (cyclic)
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	The rotating direction in which there have to be ascending or descending position values can be defined. 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 error - Lithium battery voltage (multiturn)
Node Monitoring	Heartbeat
Default	50 kbit/s, Node ID 1

General informations

Self-heating interrelated to speed, protection, attachment method and ambient conditions as well electronics and supply voltage must be considered for precise thermal dimensioning. Self-heating is supposed to approximate 6 K (IP 65 protection) respectively 12 K (IP 67 protection) per 1000 rpm. Operating the encoder close to the maximum limits requires measuring the real prevailing temperature at the encoder flange.

Terminal assignment

Cable

for connection reference -5

Core colour	Signals	Description
white	0 V	Supply voltage
brown	+Vs	Supply voltage
green	CAN_H	Bus (dominant High)
yellow	CAN_L	Bus (dominant Low)
grey	CAN_GND	CAN Ground
pink	n.c.	-
blue	n.c.	-
red	n.c.	-

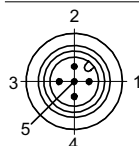
Screen: connected to housing

Cable data: 4 x 2 x 0.14 mm²

Connector M12

for connection reference -N

Conn.	Signals	Description
Pin 1	n.c.	-
Pin 2	+Vs	Supply voltage
Pin 3	CAN_GND	CAN Ground
Pin 4	CAN_H	Bus (dominant High)
Pin 5	CAN_L	Bus (dominant Low)



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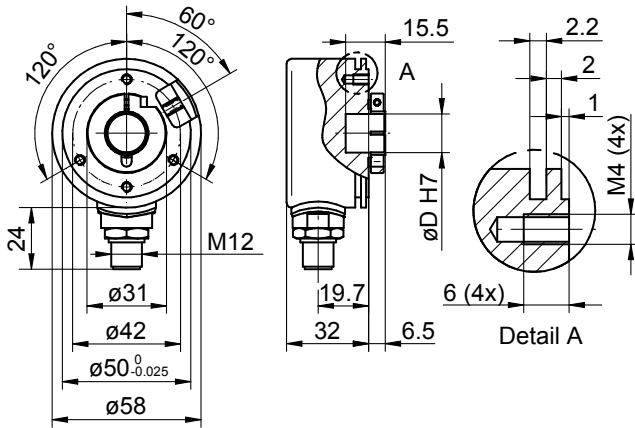
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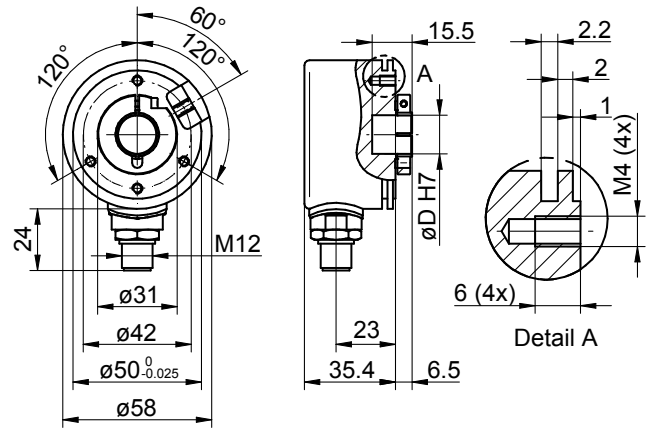
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Dimensions

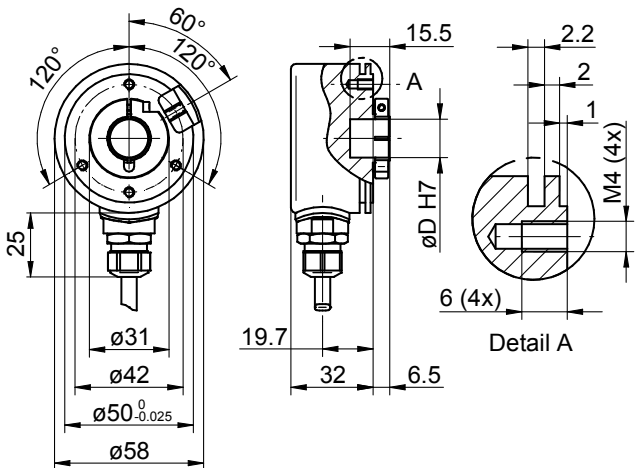
BMSH/BMMH 58 - connector M12 radial, IP 65



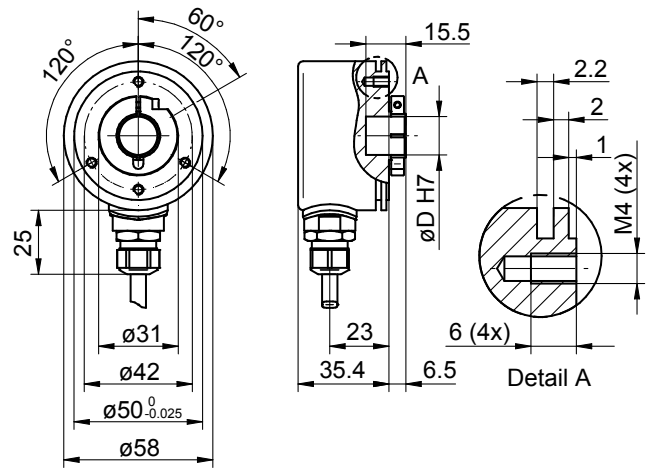
BMSH/BMMH 58 - connector M12 radial, IP 67



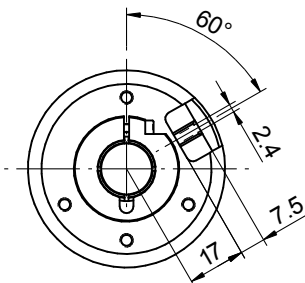
BMSH/BMMH 58 - cable radial, IP 65



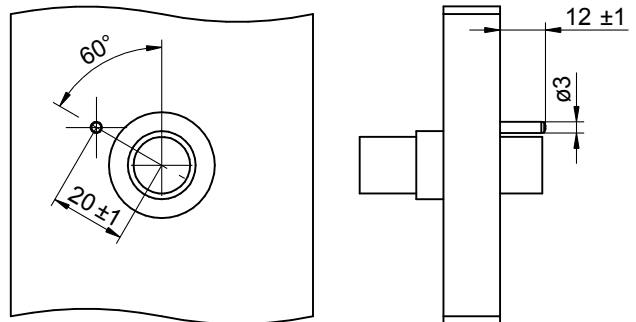
BMSH/BMMH 58 - cable radial, IP 67



Torque pin support



Bore torque pin



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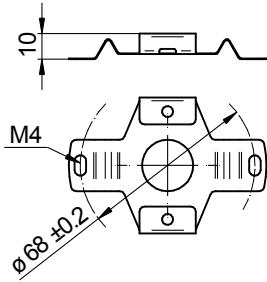
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Dimensions

Set of spring washers



Hollow shaft mounting

