

# Absolute encoders - bus interfaces

## Redundant encoders

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

#### BMSH 58, BMMH 58 CANopen® - MAGRES redundant



BMMH 58 CANopen® with blind hollow shaft

#### Features

- Encoder single- or multiturn / CANopen®
- Single- and multiturn part redundant with integrated control system
- Magnetic sensing method
- Resolution: singleturn 12 bit, multiturn 18 bit
- Integrated fieldbus interface
- High resistance to shock and vibrations
- Resolution and zero point programmable

#### Technical data - electrical ratings

Voltage supply	10...30 VDC
Consumption typ.	100 mA (24 VDC, w/o load)
Initializing time typ.	500 ms after power on
Interface	CANopen®
Profile conformity	CiA 301 V4.1, CiA 305 V1.0, CiA 406 V3.2 (Multi-Sensor Encoder Interface)
Steps per turn	≤4096 / 12 bit
Absolute accuracy	±1 °
Sensing method	Magnetic
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
<b>BMSH 58</b>	
Function	Singleturn
<b>BMMH 58</b>	
Function	Multiturn
Number of turns	≤262144 / 18 bit

#### Technical data - mechanical design

Size (flange)	ø58 mm
Shaft type	ø12 mm (blind hollow shaft)
Protection DIN EN 60529	IP 65
Operating speed	≤12000 rpm (mechanical) ≤6000 rpm (electric)
Operating torque typ.	0.0093 Nm
Materials	Housing: aluminium Flange: aluminium
Operating temperature	-20...+65 °C
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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##### Part number

##### Singleturn

BMSH 58S1N  12/00

				Connection
				5 Cable radial
			M	2 x connector M12, radial
			N	Connector M12, 5-pin, radial
<u>Blind hollow shaft</u>				
			B2	ø12 mm, IP 42, with clamping ring
			P2	ø12 mm, IP 65, with clamping ring
<u>Resolution</u>				
	12/00	12 bit singleturn		
<u>Voltage supply / signals</u>				
24B 10...30 VDC / CANopen®				
24R 10...30 VDC / CANopen® redundant				

##### Multiturn

BMMH 58S1N  12/18

				Connection
				5 Cable radial
			M	2 x connector M12, radial
			N	Connector M12, 5-pin, radial
<u>Blind hollow shaft</u>				
			B2	ø12 mm, IP 42, with clamping ring
			P2	ø12 mm, IP 65, with clamping ring
<u>Resolution</u>				
	12/18	12/18 bit single-/multiturn		
<u>Voltage supply / signals</u>				
24B 10...30 VDC / CANopen®				
24R 10...30 VDC / CANopen® redundant				

##### Accessories

##### Connectors and cables

10153968 Female connector M12, 5-pin, straight, without cable

10153969 Cable connector M12, 5-pin, CAN, straight

##### Mounting accessories

10136635 Set of spring washers for encoders ø58 mm

10110616 Clamp set ø15 mm

10107540 Torque pin

10109520 Torque spring

##### Programming accessories

10147362 CD-ROM with GSD-/EDS-/XML files and user manuals

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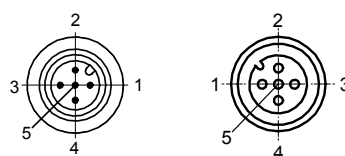
Terminal significance	
+Vs	Encoder supply voltage.
0 V	Encoder ground connection relating to +Vs.
CAN_L	CAN bus signal (dominant Low).
CAN_H	CAN bus signal (dominant High).
CAN_GND	GND relating to CAN interface.

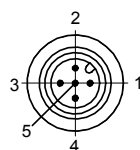
CANopen® features	
Bus protocol	CANopen®
Device profile	CANopen® - CiA DSP 406, V 3.0 (Multi-Sensor Encoder Interface Device Class 2, CAN 2.0B)
Operating modes	- Event-triggered / Time-triggered - Remotely-requested - Sync (cyclic) / Sync (acyclic)
Preset	Parameter for setting the encoder to a requested 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 error redundancy system - Position and parameter error - Lithium battery voltage (multiturn)
Node Monitoring	Heartbeat or Nodeguarding
Default	50 kbit/s, Node ID 1

Terminal assignment		
<b>Cable</b>		
for connection reference -5		
Core colour	Signals	Description
blue	d.u.	do not use
yellow	CAN_L	Bus (dominant LOW)
grey	CAN_GND	CAN Ground
red	d.u.	do not use
pink	n.c.	-
white	0 V	Supply voltage
green	CAN_H	Bus (dominant HIGH)
-	n.c.	-
brown	+Vs	Supply voltage
Screen	connected to housing	
Cable data	8 x 0.14 mm <sup>2</sup>	

Connector (2 x M12) male/female		
for connection reference -M		
Conn.	Signals	Description
Pin 1	CAN_GND	CAN Ground
Pin 2	+Vs	Supply voltage
Pin 3	0 V	Supply voltage
Pin 4	CAN_H	Bus (dominant HIGH)
Pin 5	CAN_L	Bus (dominant LOW)



Connector M12 male		
for connection reference -N		
Conn.	Signals	Description
Pin 1	CAN_GND	CAN Ground
Pin 2	+Vs	Supply voltage
Pin 3	0 V	Supply voltage
Pin 4	CAN_H	Bus (dominant HIGH)
Pin 5	CAN_L	Bus (dominant LOW)



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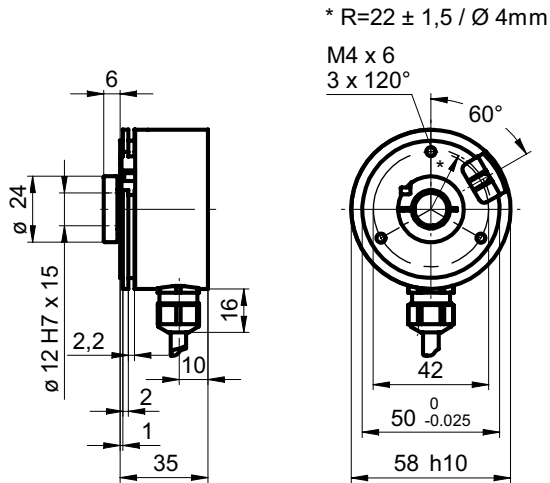
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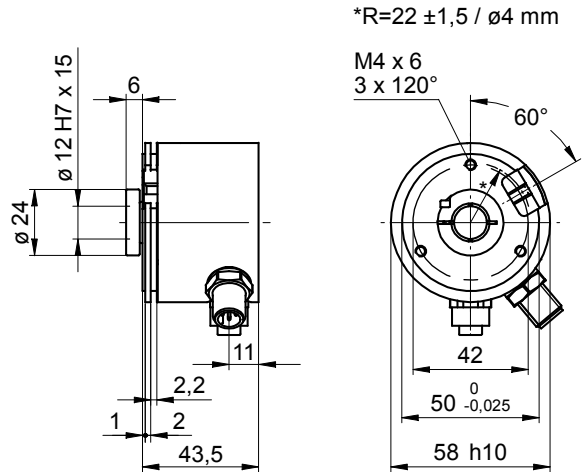
## BMSH 58, BMMH 58 CANopen® - MAGRES redundant

### Dimensions

#### BMSH/BMMH 58 CANopen® cable radial



#### BMSH/BMMH 58 CANopen® connector 2 x M12 radial



#### BMSH/BMMH 58 CANopen® connector 1 x M12 radial

