Absolute encoders - bus interfaces

End shaft max. ø6 mm

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

BMSH 30, BMMH 30 CANopen - *MAGRES*

BMMH 30 CANopen with end shaft

Features

- **Mini encoder single- or multiturn / CANopen**
- **Magnetic sensing**
- **Resolution: singleturn 12 bit, multiturn 18 bit**
- **Housing ø30 mm**
- **Integrated fieldbus interface**
- **High resistance to shock and vibrations**
- **Resolution and zero point programmable**

Technical data - electrical ratings	
Voltage supply	10...30 VDC
Consumption w/o load (typ.)	50 mA (24 VDC)
Initializing time (typ.)	70 ms after power on
Interface	CANopen
Profile conformity	CANopen CiA DSP 301 4.01, DSP 305 V1.0, DSP 406 V3.0
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
BMMH 30	
Function	Multiturn
Number of turns	≤262144 / 18 bit
BMSH 30	
Function	Singleturn

Technical data - mechanical design	
Dimensions (flange)	ø30 mm
Shaft	ø4 mm end shaft ø6 mm end shaft
Protection DIN EN 60529	IP 65
Operating speed	≤6000 rpm
Operating torque typ.	0.0075 Nm
Materials	Housing: steel Flange: aluminium
Operating temperature	-20...+85 °C
Relative humidity	95 %
Resistance	DIN EN 60068-2-6 Vibration 30 g, 10-2000 Hz DIN EN 60068-2-27 Shock 100 g, 6 ms
Connection	Connector M12, 5-pin Cable 1 m
BMMH 30	
Weight approx.	70 g
BMSH 30	
Weight approx.	60 g

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Part number

Multiturn

BMMH 30D1N | **24B** | **12/18** | | |

Connection
- 4 Cable 1 m, axial
- 5 Cable 1 m, radial
- T Connector M12, axial
- N Connector M12, 5-pin, radial

Shaft
- P4 End shaft ø4 mm, IP 65, with clamping ring
- P6 End shaft ø6 mm, IP 65, with clamping ring

Resolution
- 12/18 12/18 bit single-/multiturn

Voltage supply / signals
- 24B 10...30 VDC / CANopen

Singleturn

BMSH 30D1N | **24B** | **12/00** | | |

Connection
- 4 Cable 1 m, axial
- 5 Cable 1 m, radial
- T Connector M12, axial
- N Connector M12, 5-pin, radial

Shaft
- P4 End shaft ø4 mm, IP 65, with clamping ring
- P6 End shaft ø6 mm, IP 65, with clamping ring

Resolution
- 12/00 12 bit singleturn

Voltage supply / signals
- 24B 10...30 VDC / CANopen

Accessories

Connectors and cables

10153968	Female connector M12, 5-pin, A-coded, straight
10144720	Female connector M12, 5-pin, A-coded, straight, shielded, 2 m
10137485	Female connector M12, 5-pin, A-coded, straight, shielded, 5 m
10153969	Cable connector M12, CAN, 5-pin, straight
10153972	T-junction M12 CAN (1 male/2 female)
10153974	Terminating resistor CAN
10158249	Cable with male/female M12, 5-pin, angled, A-coded, 2 m
10156842	Cable with male/female M12, 5-pin, angled, A-coded, 5 m
10159388	Cable with male/female M12, 5-pin, shielded, straight, A-coded, 0.3 m (stub line)
10161398	Cable with male/female M12, 5-pin, shielded, straight, A-coded, 2 m
10161399	Cable with male/female M12, 5-pin, shielded, straight, A-coded, 5 m

Mounting accessories

10164796	Set of spring coupling

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 (multi-turn)
Node Monitoring	Heartbeat or Nodeguarding
Default	50 kbit/s, Node ID 1

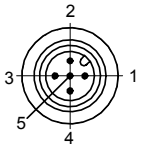
Terminal assignment

Cable
for connection reference **-5**

Core colour	Signals	Description
brown	+Vs	Supply voltage
white	0 V	Supply voltage
green	CAN_H	Bus (dominant HIGH)
yellow	CAN_L	Bus (dominant LOW)
grey	CAN_GND	CAN Ground
pink	n.c.	–
blue	d.u.	do not use
red	d.u.	do not use
Screen	connected to housing	
Cable data		8 x 0.14 mm^2

Connector M12 male
for connection reference **-N** and **-T**

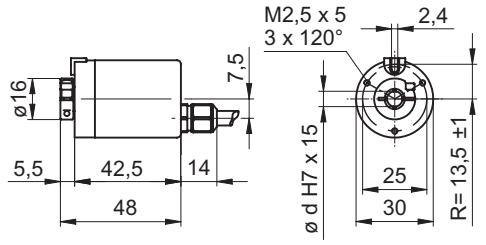
Connector	Signals	Description
Pin 1	n.c.	–
Pin 2	+Vs	Supply voltage
Pin 3	CAN_GND	CAN Ground / 0 V
Pin 4	CAN_H	Bus (dominant HIGH)
Pin 5	CAN_L	Bus (dominant LOW)



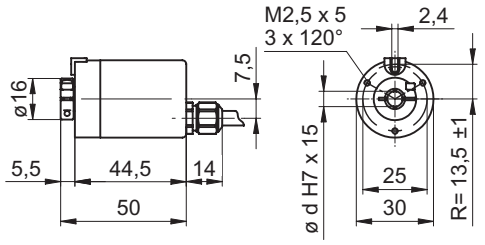
BMSH 30, BMMH 30 CANopen - *MAGRES*

Dimensions

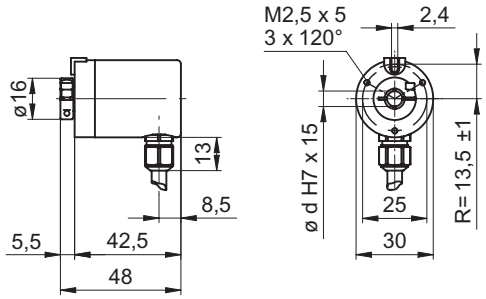
BMSH 30 CANopen, cable axial



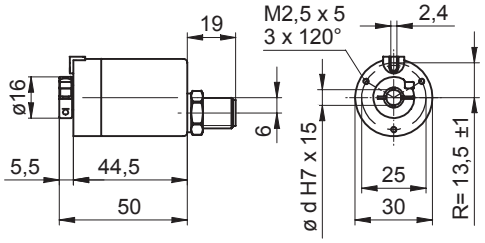
BMMH 30 CANopen, cable axial



BMSH/BMMH 30 CANopen, cable radial



BMSH/BMMH 30 CANopen connector output axial



BMSH/BMMH 30 CANopen connector output radial