

# Absolute encoders - bus interfaces

Magnetic sensor bore max.  $\varnothing 6$  mm

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

## BMSK 42, BMMK 42 CANopen - MAGRES



BMMK 42 CANopen with end shaft

### Features

- Mini encoder / kit single- or multiturn / CANopen
- Magnetic sensing
- Resolution: singleturn 12 bit, multiturn 18 bit
- Housing  $\varnothing 42$  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.)	100 mA (24 VDC)
Initializing time (typ.)	170 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	$\leq 4096$ / 12 bit
Absolute accuracy	$\pm 1^\circ$
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>BMMK 42</b>	
Function	Multiturn
Number of turns	$\leq 262144$ / 18 bit
<b>BMSK 42</b>	
Function	Singleturn

### Technical data - mechanical design

Dimensions (flange)	$\varnothing 42$ mm
Shaft	Magnet hole 6 mm
Protection DIN EN 60529	IP 67
Operating speed	$\leq 12000$ rpm (mechanical) $\leq 6000$ rpm (electric)
Materials	Housing: steel Flange: aluminium
Operating temperature	$-20 \dots +85$ °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.	190 g
Connection	Connector M12, 5-pin Cable
Gap tolerance	$\leq 0.3$ mm axial $\leq 0.1$ mm radial

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### Part number

#### Multiturn

BMMK 42L1N 

24B	12/18	06	
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Connection  
5 Cable radial  
N Connector M12,  
5-pin, radial

Shaft  
06 Magnet hole  $\varnothing 6$  mm

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

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

#### Singleturn

BMSK 42L1N 

24B	12/00	06	
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Connection  
5 Cable radial  
N Connector M12,  
5-pin, radial

Shaft  
06 Magnet hole  $\varnothing 6$  mm

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

10112433 Hexagon wrench 2 mm

#### 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

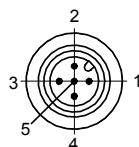
Bus protocol	CANopen
Device profile	CANopen - CiA DSP 406, V 3.0 (Device Class 2, CAN 2.0B)
Operating modes	- Event-triggered / Time-triggered - Remotely-requested - Sync (cyclic) / Sync (acyclic)
Preset	Parameter for setting the encoder to a requested position value assigned to a defined shaft position 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 <sup>2</sup>	

### Connector M12 male for connection reference -N

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)



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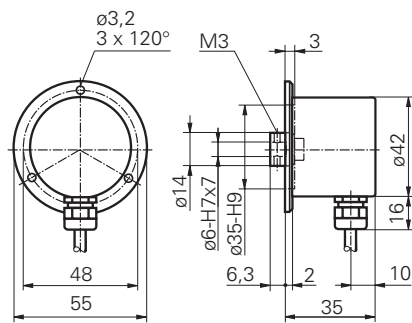
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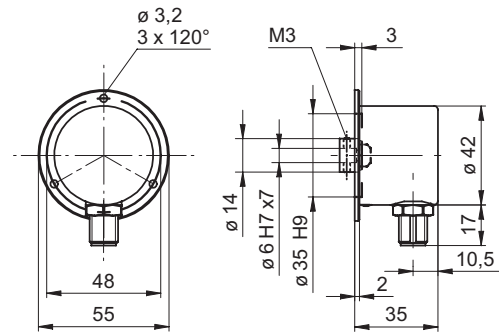
## BMSK 42, BMMK 42 CANopen - MAGRES

### Dimensions

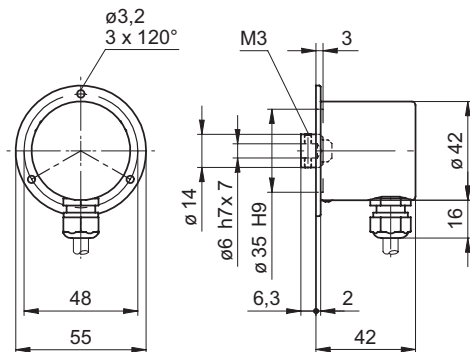
BMSK 42 CANopen cable radial



BMSK 42 CANopen connector M12 radial



BMMK 42 CANopen cable radial



BMMK 42 CANopen connector M12 radial

