

Absolute encoders - SSI

Blind hollow shaft max. $\varnothing 6$ mm

Magnetic single- or multiturn encoders 12 bit ST / 13 bit MT

BMSH 30, BMMH 30 SSI - MAGRES



BMMH 30 SSI with blind hollow shaft

Features

- Mini encoder single- or multiturn / SSI
- Magnetic sensing method
- Resolution: singleturn 12 bit, multiturn 13 bit
- Housing $\varnothing 30$ mm
- High resistance to shock and vibrations
- Reset input

Technical data - electrical ratings

Voltage supply	5 VDC ± 10 % 10...30 VDC
Consumption typ.	100 mA (5 VDC, w/o load) 50 mA (24 VDC, w/o load)
Initializing time typ.	70 ms after power on
Interface	SSI
Steps per turn	4096 / 12 bit
Absolute accuracy	$\pm 1^\circ$
Sensing method	Magnetic
Code	Gray or binary
Code sequence	CW: ascending values with clockwise sense of rotation; looking at flange
Inputs	SSI clock Zero setting input
Output stages	SSI data: linedriver RS485
Interference immunity	DIN EN 61000-6-2
Emitted interference	DIN EN 61000-6-3
Approval	UL approval / E217823
BMSH 30	
Function	Singleturn
BMMH 30	
Function	Multiturn
Number of turns	8192 / 13 bit

Technical data - mechanical design

Size (flange)	$\varnothing 30$ mm
Shaft type	$\varnothing 4$ mm (blind hollow shaft) $\varnothing 6$ mm (blind hollow 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, 8-pin Cable 2 m
BMSH 30	
Weight approx.	60 g
BMMH 30	
Weight approx.	70 g

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Part number

Singleturn

BMSH 30D1 12/00

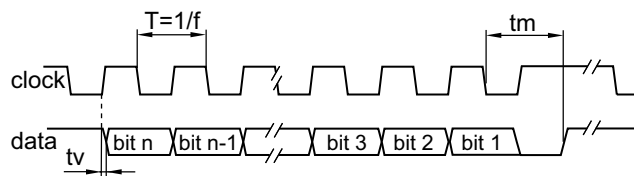
<p><u>Connection</u></p> <p>4 Cable 2 m, axial</p> <p>5 Cable 2 m, radial</p> <p>T Connector M12, 8-pin, axial</p> <p>N Connector M12, 8-pin, radial</p> <p><u>Blind hollow shaft</u></p> <p>P4 $\varnothing 4$ mm, IP 65, with clamping ring</p> <p>P6 $\varnothing 6$ mm, IP 65, with clamping ring</p> <p><u>Resolution</u></p> <p>12/00 12 bit singleturn</p> <p><u>Voltage supply / signals</u></p> <p>05C 5 VDC / SSI</p> <p>24C 10...30 VDC / SSI</p> <p><u>Code</u></p> <p>G Gray code</p> <p>N Binary code</p>	<p><u>Connection</u></p> <p>4 Cable 2 m, axial</p> <p>5 Cable 2 m, radial</p> <p>T Connector M12, 8-pin, axial</p> <p>N Connector M12, 8-pin, radial</p> <p><u>Blind hollow shaft</u></p> <p>P4 $\varnothing 4$ mm, IP 65, with clamping ring</p> <p>P6 $\varnothing 6$ mm, IP 65, with clamping ring</p> <p><u>Resolution</u></p> <p>12/13 12/13 bit single-/multiturn</p> <p><u>Voltage supply / signals</u></p> <p>05C 5 VDC / SSI</p> <p>24C 10...30 VDC / SSI</p> <p><u>Code</u></p> <p>G Gray code</p> <p>N Binary code</p>
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Multiturn

BMMH 30D1 12/13

<p><u>Connection</u></p> <p>4 Cable 2 m, axial</p> <p>5 Cable 2 m, radial</p> <p>T Connector M12, 8-pin, axial</p> <p>N Connector M12, 8-pin, radial</p> <p><u>Blind hollow shaft</u></p> <p>P4 $\varnothing 4$ mm, IP 65, with clamping ring</p> <p>P6 $\varnothing 6$ mm, IP 65, with clamping ring</p> <p><u>Resolution</u></p> <p>12/13 12/13 bit single-/multiturn</p> <p><u>Voltage supply / signals</u></p> <p>05C 5 VDC / SSI</p> <p>24C 10...30 VDC / SSI</p> <p><u>Code</u></p> <p>G Gray code</p> <p>N Binary code</p>	<p><u>Connection</u></p> <p>4 Cable 2 m, axial</p> <p>5 Cable 2 m, radial</p> <p>T Connector M12, 8-pin, axial</p> <p>N Connector M12, 8-pin, radial</p> <p><u>Blind hollow shaft</u></p> <p>P4 $\varnothing 4$ mm, IP 65, with clamping ring</p> <p>P6 $\varnothing 6$ mm, IP 65, with clamping ring</p> <p><u>Resolution</u></p> <p>12/13 12/13 bit single-/multiturn</p> <p><u>Voltage supply / signals</u></p> <p>05C 5 VDC / SSI</p> <p>24C 10...30 VDC / SSI</p> <p><u>Code</u></p> <p>G Gray code</p> <p>N Binary code</p>
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Data transfer



Clock frequency f	100...1000 kHz
Duty cycle of T	40...60 %
Delay time tv	200 ns
Monoflop time tm	20 μ s + T/2

Accessories

Connectors and cables

10146775 Female connector M12, 8-pin, straight, without cable

Mounting accessories

10164796 Set of spring washers

Subject to modification in technic and design. Errors and omissions excepted.

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Terminal significance

+Vs	Encoder supply voltage.
0 V	Encoder ground connection relating to +Vs.
Data+	Positive, serial data output of differential linedriver.
Data-	Negative, serial data output of differential linedriver.
Clock+	Positive SSI clock input. Clock+ together with Clock- forms a current loop. A current of approx. 7 mA towards Clock+ input means logic 1 in positive logic.
Clock-	Negative SSI clock input. Clock- together with Clock+ forms a current loop. A current of approx. 7 mA towards Clock- input means logic 0 in positive logic.
Zero	Input for setting a zero point anywhere within the encoder resolution. The zero setting operation is triggered by a Low impulse. Connect to +Vs after setting operation for maximum interference immunity. Impulse duration >2 ms.
Rot. direction	Ascending position values when looking at the flange and rotating the shaft clockwise.

Trigger level

Control inputs	Input circuit
Input level Low	<0,4 V (>2 ms)
Input level High	+Vs or open

Terminal assignment

Cable

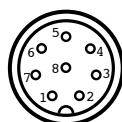
for connection references **-4** and **-5**

Core colour	Signals	Description
brown	+Vs	Supply voltage
white	0 V	Supply voltage
grey	Data+	Data signal
pink	Data-	Data signal
green	Clock+	Clock signal
yellow	Clock-	Clock signal
blue	Zero	Zero setting input
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	0 V	Supply voltage
Pin 2	+Vs	Supply voltage
Pin 3	Clock+	Clock signal
Pin 4	Clock-	Clock signal
Pin 5	Data+	Data signal
Pin 6	Data-	Data signal
Pin 7	Zero	Zero setting input
Pin 8	d.u.	do not use



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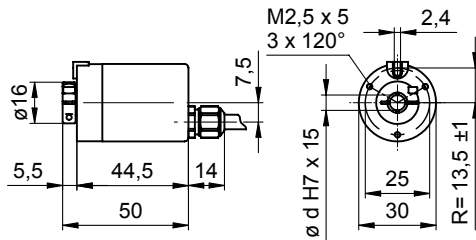
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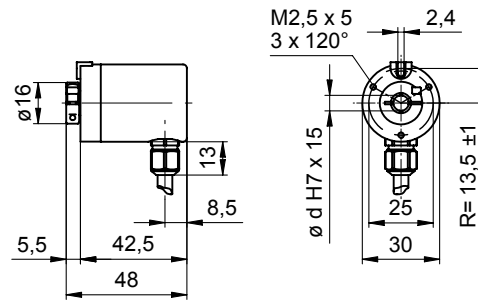
BMSH 30, BMMH 30 SSI - MAGRES

Dimensions

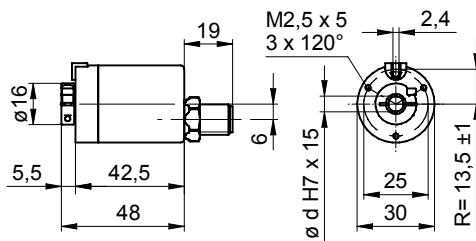
BMSH/BMMH 30 SSI, cable axial



BMSH/BMMH 30 SSI, cable radial



BMSH/BMMH 30 SSI, connector M12 axial



BMSH/BMMH 30 SSI, connector M12 radial

