

# Magnetic absolute multi-turn hollow shaft encoder

## BMMH – MAGRES

### SSI

#### features

- robust multi-turn encoder
  - 10 bit single-turn resolution
  - 15 bit multi-turn resolution
- SSI Interface
- zero point programmable
- miniature housing

#### general data

voltage supply	5 VDC $\pm$ 10% ( <b>05C</b> ) 10 - 30 VDC ( <b>24C</b> )
max. supply current no load	typ. 100 mA (at 5 VDC) ( <b>05C</b> ) typ. 50 mA (at 24 VDC) ( <b>24C</b> )
output circuit	SSI, complementary RS 422
resolution single-turn multi-turn	10 bit (1 step = 21'06'') 15 bit (32'768 revolutions)
max. error limit	$\pm 1^\circ$
repeatability	0,3°
max. clock frequency	1 MHz
zero input signal	zero setting: < 0,4 V, > 2 ms off state: +Vs or open
counter buffering	with Lithium cell typ. 19 years
direction of rotation	looking at the flange, position counts up as the shaft rotates clockwise (CW)

#### mechanical data

max. revolutions	6'000 rpm
moment of inertia	typ. $3 \times 10^{-7}$ kgm <sup>2</sup>
torque	typ. 0,75 cNm (3'000 rpm / 20 °C)
bearings lifetime	depending on ambient conditions (typ. 10 <sup>9</sup> revolutions)
protection class	IP 65
material	housing: steel flange: aluminum
weight	approx. 70 g



#### order designation

**BMMH 30D1**   **10/15**

	connector
<b>4</b>	cable 2 m axial
<b>5</b>	cable 2 m radial
<b>6</b>	M9 connector axial
<b>9</b>	M9 connector radial
	shaft
<b>P4</b>	end shaft 4 mm IP 65 with clamping ring
<b>P6</b>	end shaft 6 mm IP 65 with clamping ring resolution multi-turn
<b>15</b>	15 bit resolution single-turn
<b>10</b>	10 bit voltage range, output signals
<b>05C</b>	SSI interface, 5 VDC
<b>24C</b>	10 - 30 VDC SSI interface
	signal code
<b>N</b>	binary code
<b>G</b>	Gray code

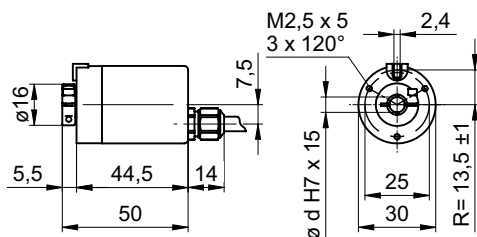
#### ambient conditions

temperature range	-20...+85 °C
relative humidity	max. 95%
vibration	IEC 60068-2-6 ( $\leq 300$ m/s <sup>2</sup> / 10 - 2'000 Hz)
shock	IEC 60068-2-27 ( $\leq 1'000$ m/s <sup>2</sup> / 6 ms)
noise immunity	EN 61000-6-2
emitted interference	EN 61000-6-3

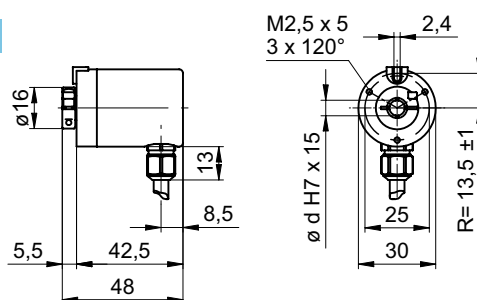


**dimensions**

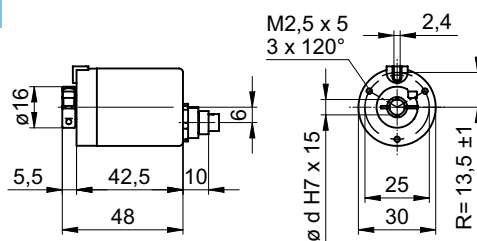
**-4**



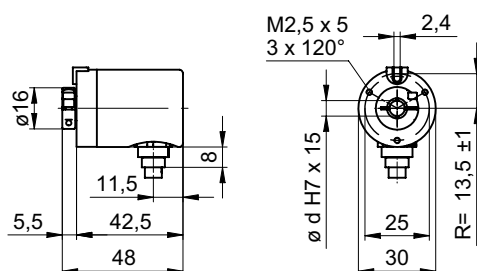
**-5**



**-6**



**-9**



**assignment cable**

for connection reference **-4** and **-5**

cable color	signal	description
brown	+Vs	voltage supply
white	0 V	voltage supply
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
cable data		8 x 0,09 mm <sup>2</sup>

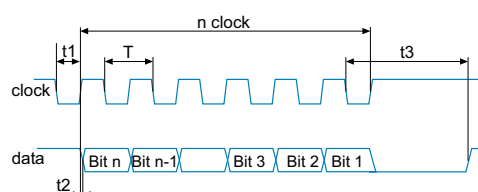
**assignment connector M9 male**

for connection reference **-6** and **-9**



pin number	signals	description
1	0 V	voltage supply
2	+Vs	voltage supply
3	clock+	clock signal
4	clock-	clock signal
5	data+	data signal
6	data-	data signal
7	zero	zero setting input
8	d.u.	do not use

**read out of position values**



pulse times:  
 $T = 1 \mu\text{s to } 10 \mu\text{s}$  /  $t_1 = 0,5 \text{ to } 5 \mu\text{s}$   
 $t_2 < 0,2 \mu\text{s}$  /  $t_3 > 12 \mu\text{s to } 25 \mu\text{s}$

**accessories**

cable with connector M9 female (pre-assembled) ref. <b>-6</b> and <b>-9</b>	
2 m	part nr. 123168 (ES62FB2)
5 m	part nr. 123169 (ES62FB5)
connector M9 female ref. <b>-6</b> and <b>-9</b>	part nr. 132983
spring plate set	part nr. 164796
couplings	see chapter accessories