

Absolute encoders - analog

Blind hollow shaft $\varnothing 12$ mm

Magnetic single- or multiturn encoders 12 bit ST / 16 bit MT

BMSH 58, BMMH 58 analog - MAGRES



BMMH 58 analog with blind hollow shaft

Technical data - electrical ratings

Voltage supply	8...30 VDC
Reverse polarity protection	Yes
Short-circuit proof	Yes
Consumption w/o load typ.	35 mA (24 VDC)
Initializing time	≤ 500 ms after power on
Response time	< 1 ms
Interface analog	0...10 V / 0.5...4.5 V / 4...20 mA Resolution: 12 bit
Steps per turn	≤ 4096 / 12 bit
Linearity	± 0.06 % of measuring range (10 revolutions) ± 0.17 % of measuring range (2 revolutions) ± 0.31 % of measuring range (360°) ± 0.6 % of measuring range (90°)
Absolute accuracy	$\pm 1^\circ$
Sensing method	Magnetic
Repeatability	0.3° (Sensorsystem)
Code sequence	CW: ascending values with clockwise sense of rotation; looking at flange
Interference immunity	DIN EN 61000-6-2
Emitted interference	DIN EN 61000-6-4
Programmable parameters	Measuring range teachable, min. 10°
Diagnostic functions	Self-diagnosis Reading back voltage output

BMMH 58

Function	Multiturn
Number of turns	≤ 65536 / 16 bit
Factory setting	10 revolutions

Features

- Encoder single- or multiturn / analog
- Magnetic sensing
- Resolution: singleturn 12 bit, multiturn 16 bit
- High resistance to shock and vibrations
- Teach inputs
- Redundant version

Technical data - electrical ratings

BMSH 58

Function	Singleturn
Factory setting	1 revolution

Technical data - mechanical design

Size (flange)	$\varnothing 58$ mm
Shaft type	$\varnothing 12$ mm (blind hollow shaft)
Protection DIN EN 60529	IP 42, IP 65
Operating speed	≤ 6000 rpm
Operating torque typ.	0.0093 Nm
Materials	Housing: aluminium Flange: aluminium
Operating temperature	-40...+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
Weight approx.	300 g
Connection	Connector M12, 5-pin Connector M12, 8-pin Cable 2 m

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Part number

Multiturn

BMMH 58S5N24 12/16

				<u>Connection</u>
			5	Cable 2 m, radial
			M	2 x connector M12, 5-pin, radial (redundant version)
			N	Connector M12, 5-pin, radial (not redundant version)
			Q	Connector M12, 8-pin, radial
				<u>Blind hollow shaft</u>
		B2		$\varnothing 12$ mm, IP 42, with clamping ring
		P2		$\varnothing 12$ mm, IP 65, with clamping ring
				<u>Resolution</u>
	12/16			12/16 bit single-/multiturn
				<u>Analog signals</u>
U				0...10 V
5				0.5...4.5 V
V				4...20 mA
W				4...20 mA and 0...10 V (not redundant)
7				0.5...4.5 V redundant
Y				0...10 V redundant
Z				4...20 mA redundant

Singleturn

BMSH 58S5N24 12/00

				<u>Connection</u>
			5	Cable 2 m, radial
			M	2 x connector M12, 5-pin, radial (redundant version)
			N	Connector M12, 5-pin, radial (not redundant version)
			Q	Connector M12, 8-pin, radial
				<u>Blind hollow shaft</u>
		B2		$\varnothing 12$ mm, IP 42, with clamping ring
		P2		$\varnothing 12$ mm, IP 65, with clamping ring
				<u>Resolution</u>
	12/00			12 bit singleturn
				<u>Analog signals</u>
U				0...10 V
5				0.5...4.5 V
V				4...20 mA
W				4...20 mA and 0...10 V (not redundant)
7				0.5...4.5 V redundant
Y				0...10 V redundant
Z				4...20 mA redundant

Accessories

Connectors and cables

10153968	Female connector M12, 5-pin, straight
11046266	Female connector M12, 5-pin, straight, shielded, 5 m
10156842	Cable with male/female M12, 5-pin, angled, A-coded, 5 m
10161399	Cable with male/female M12, 5-pin, shielded, straight, A-coded, 5 m

Mounting accessories

10136635	Set of spring coupling for encoders $\varnothing 58$ mm
10110616	Clamp set $\varnothing 15$ mm
10107540	Torque pin
10109520	Torque spring washer

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Terminal significance

+Vs	Encoder supply voltage. (Redundant configuration provides decoupled dual voltage supply (+Vs1/+Vs2) separated by diodes.
0 V	Encoder ground connection relating to +Vs.
Iout	Current output. Load: $< 500 \Omega$
Uout	Voltage output. Current output: max. 10 mA Load resistor: $> 1 \text{ k}\Omega$ between Uout / 0 V
Set	Teach input. Resting state: Low Level High: $> 0.7 \times +Vs$ Level Low: $> 0.3 \times +Vs$ Pull-Down resistor: 10 k Ω
DV/Status	Diagnostic output/Teach output. $R_L - Vs$: High: $> (+Vs - 1.0 \text{ V})$ Low: $< 3.0 \text{ V}$ $R_L - GND$: High: $> (+Vs - 3.0 \text{ V})$ Low: $< 1.0 \text{ V}$ $I_{Lmax} = 10 \text{ mA}$ Upon any short-time disturbance, DV will go on LOW for 1 second.
Drain	Housing.

Teach process

The teaching functionality will be disabled 5 minutes after encoder power. Time begins to start anew after each teaching operation.

1. Set input on HIGH for 6 seconds. DV/ status output reflects the reverted input and will start oscillating after 6 seconds. Now set input on LOW.
2. Get encoder in position 1 intended for voltage output 1/ current 1.
3. Set input 1 on HIGH for 1 second. DV/ status output will switch to LOW for 3 seconds and then start oscillating.
4. Get encoder in position 2 intended for voltage output 2/ current 2.
5. Set input 1 on HIGH for one 1 second. DV/Status output will switch to HIGH for 3 seconds and then shortly oscillate to signal that the teaching operation has been completed.

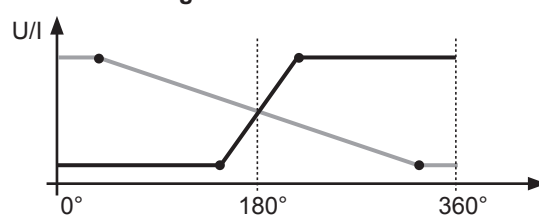
In the event of one out of both taught limits being beyond the sensing range or too close to each other, the DV/status output will oscillate shortly. There is no teaching of sensing range. The operation must be repeated under consideration of minimum teaching limit and sensing range.

Set / restore default

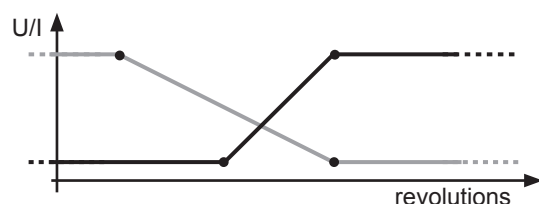
Set input on HIGH for 16 seconds. (After 5 seconds, the DV/status output will start oscillating while restoring default in second 15).

Note: Current position will be the new zero point.

Behavior – Singleturn



Behavior – Multiturn



— Teach in ccw direction
— Teach in cw direction

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Terminal assignment

Cable

for connection reference -5

Core color	Analog signals		
	U/5	V	W
white	0 V	0 V	0 V
brown	+Vs	+Vs	+Vs
green	d.u.	lout	lout
yellow	Uout	d.u.	Uout
grey	Set	Set	Set
pink	DV/Status	DV/Status	DV/Status
Screen	connected to housing		
Cable data	6 x 0.14 mm ²		

Cable redundant

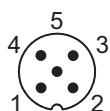
for connection reference -5

Core color	Analog signals	
	Y/7	Z
white	0 V	0 V
brown	+Vs 1	+Vs 1
green	Uout 1	lout 1
yellow	Uout 2	lout 2
grey	Set 1	Set 1
pink	DV/Status 1	DV/Status 1
blue	Set 2	Set 2
red	DV/Status 2	DV/Status 2
black	0 V	0 V
violet	+Vs 2	+Vs 2
Screen	connected to housing	
Cable data	10 x 0.14 mm ²	

Connector M12, 5-pin

for connection reference -N

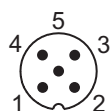
Connector	Analog signals		
	U/5	V	W
Pin 1	0 V	0 V	0 V
Pin 2	+Vs	+Vs	+Vs
Pin 3	d.u.	lout	lout
Pin 4	Uout	d.u.	Uout
Pin 5	Set	Set	Set



Connector M12, redundant, 2 x 5-pin

for connection reference -M

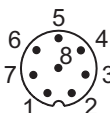
Connector	Connector 1	Connector 2
Pin 1	0 V	0 V
Pin 2	+Vs 1	+Vs 2
Pin 3	Uout 1 (Y/7) lout 1 (Z)	Uout 2 (Y/7) lout 2 (Z)
Pin 4	DV/Status 1	DV/Status 2
Pin 5	Set 1	Set 2



Connector M12, 8-pin

for connection reference -Q

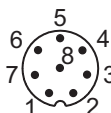
Connector	Analog signals		
	U/5	V	W
Pin 1	0 V	0 V	0 V
Pin 2	+Vs	+Vs	+Vs
Pin 3	d.u.	lout	lout
Pin 4	Uout	d.u.	Uout
Pin 5	Set	Set	Set
Pin 6	DV/Status	DV/Status	DV/Status
Pin 7	n.c.	n.c.	n.c.
Pin 8	n.c.	n.c.	n.c.



Connector M12, redundant, 8-pin

for connection reference -Q

Connector	Analog signals	
	Y/7	Z
Pin 1	0 V	0 V
Pin 2	+Vs	+Vs
Pin 3	Uout 1	lout 1
Pin 4	Uout 2	lout 2
Pin 5	Set 1	Set 1
Pin 6	DV/Status 1	DV/Status 1
Pin 7	Set 2	Set 2
Pin 8	DV/Status 2	DV/Status 2



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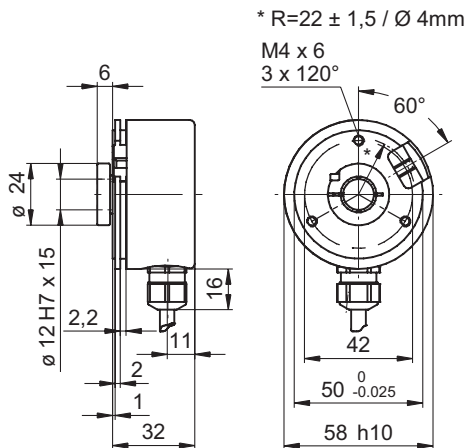
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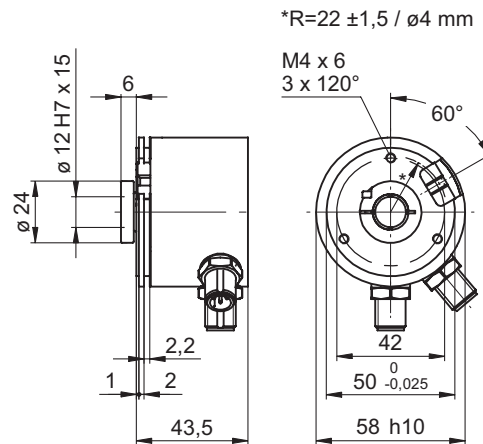
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Dimensions

BMSH 58/BMMH 58 analog cable radial



BMSH 58/BMMH 58 analog connector 2xM12 radial



BMSH 58/BMMH 58 analog connector M12 radial

