

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

Features

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

Technical data - electrical ratings

Voltage supply	8...30 VDC
Reverse polarity protection	Yes
Short-circuit proof	Yes
Consumption typ.	35 mA (24 VDC, w/o load)
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
Absolute accuracy	$\pm 1^\circ$
Sensing method	Magnetic
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°)
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
Diagnostic functions	Self-diagnosis Reading back voltage output

BMSH 58

Function	Singleturn
Teach range	10°...359.9°
Factory setting	1 revolution

BMMH 58

Technical data - electrical ratings

Function	Multiturn
Number of turns	≤ 65536 / 16 bit
Teach range	10°...32767 turns
Factory setting	10 revolutions

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

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 VDC
5				0.5...4.5 VDC
V				4...20 mA
7				0.5...4.5 VDC redundant
Y				0...10 VDC redundant
Z				4...20 mA redundant

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 VDC
5				0.5...4.5 VDC
V				4...20 mA
7				0.5...4.5 VDC redundant
Y				0...10 VDC redundant
Z				4...20 mA redundant

Accessories

Connectors and cables

10153968	Female connector M12, 5-pin, straight, without cable
11046266	Female connector M12, 5-pin, straight, 5 m cable
10156842	Cable with male/female M12, 5-pin, angled, A-coded, 5 m
11144306	Cable with male/female M12, 5-pin, straight, A-coded, 5 m

Mounting accessories

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

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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

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 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 on HIGH for 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.

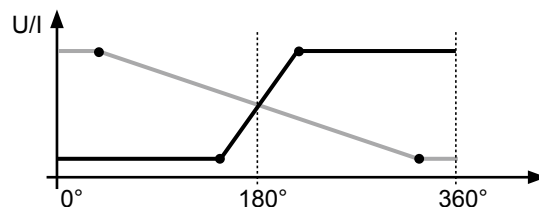
In the event of one out of both taught limits being beyond the sensing range or too close to each other, the DV/status output will oscillate shortly. There is no teaching of sensing range. The operation must be repeated under consideration of minimum teaching limit and sensing range.

Set / restore default

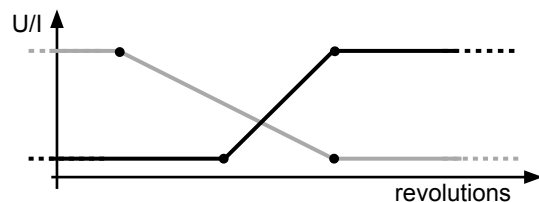
Set input on HIGH for 16 seconds. (After 5 seconds, the DV/status output will start oscillating while restoring default in second 15).

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

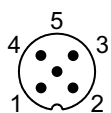
for connection reference -5

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

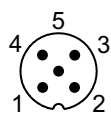
Connector	Analog signals		
	U/5	V	W
Pin 1	0 V	0 V	0 V
Pin 2	+Vs	+Vs	+Vs
Pin 3	d.u.	lout	lout
Pin 4	Uout	d.u.	Uout
Pin 5	Set	Set	Set



Connector M12, redundant, 2 x 5-pin

for connection reference -M

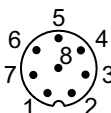
Connector	Connector 1	Connector 2
Pin 1	0 V	0 V
Pin 2	+Vs 1	+Vs 2
Pin 3	Uout 1 (Y/7) lout 1 (Z)	Uout 2 (Y/7) lout 2 (Z)
Pin 4	DV/Status 1	DV/Status 2
Pin 5	Set 1	Set 2



Connector M12, 8-pin

for connection reference -Q

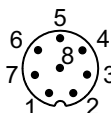
Connector	Analog signals		
	U/5	V	W
Pin 1	0 V	0 V	0 V
Pin 2	+Vs	+Vs	+Vs
Pin 3	d.u.	lout	lout
Pin 4	Uout	d.u.	Uout
Pin 5	Set	Set	Set
Pin 6	DV/Status	DV/Status	DV/Status
Pin 7	n.c.	n.c.	n.c.
Pin 8	n.c.	n.c.	n.c.



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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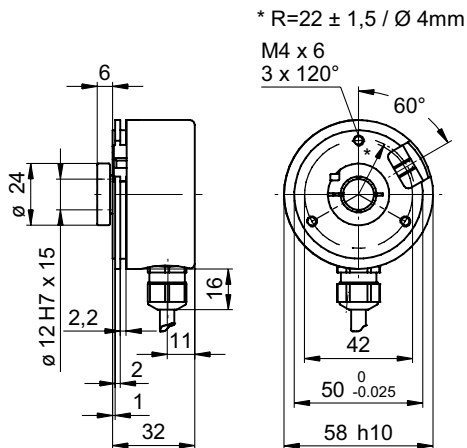
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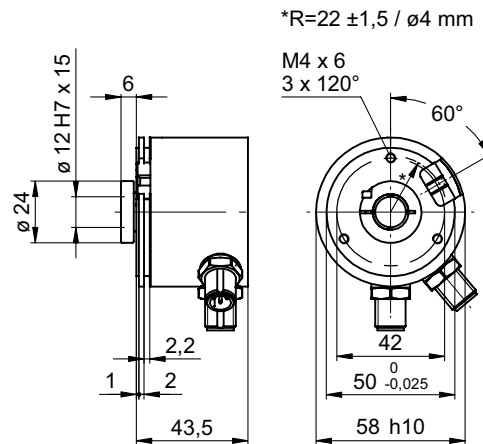
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Dimensions

BMSH 58/BMMH 58 analog cable radial



BMSH 58/BMMH 58 analog connector 2xM12 radial



BMSH 58/BMMH 58 analog connector M12 radial

