

# Absolute encoders - analog

## Solid shaft with clamping or synchro flange

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

#### BMSV 58, BMMV 58 analog - MAGRES



BMSV 58 analog with clamping flange

#### 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
- Clamping and synchro flange

#### 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	±1 °
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

#### BMSV 58K, BMSV 58S

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

#### BMMV 58K, BMMV 58S

#### 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)	ø58 mm
Protection DIN EN 60529	IP 65
Operating speed	≤12000 rpm (mechanical) ≤6000 rpm (electric)
Operating torque typ.	0.0023 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 500 g, 6 ms
Weight approx.	300 g
Connection	Connector M12, 5-pin Connector M12, 8-pin Cable 2 m

#### BMSV 58K, BMMV 58K

Shaft type	ø10 mm solid shaft
Flange	Clamping flange
Admitted shaft load	≤40 N axial ≤60 N radial

#### BMSV 58S, BMMV 58S

Shaft type	ø6 mm solid shaft
Flange	Synchro flange
Admitted shaft load	≤10 N axial ≤20 N radial





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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 Ω
Uout	Voltage output. Current output: max. 10 mA Load resistor: >1 kΩ between Uout / 0 V
Set	Teach input. Resting state: Low Level High: >0.7 x +Vs Level Low: >0.3 x +Vs Pull-Down resistor: 10 kΩ
DV/Status	Diagnostic output/Teach output. R <sub>L</sub> - Vs: High: >(+Vs -1.0 V) Low: <3.0 V R <sub>L</sub> - GND: High: >(+Vs -3.0 V) Low: <1.0 V I <sub>Lmax</sub> = 10 mA Upon any short-time disturbance, DV will go on LOW for 1 second.
Drain	Housing.

#### 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 for BMSV 58K, BMMV 58K

10252773	Clamp set ø15 mm
11053277	Bellows coupling aluminium/stainless steel 10 mm

##### Mounting accessories for BMSV 58S, BMMV 58S

10252773	Clamp set ø15 mm
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#### 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.

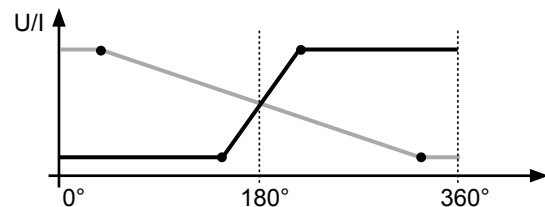
In the event of one out of both taught limits being beyond the sensing range or too close to each other, the DV/status output will oscillate shortly. There is no teaching of sensing range. The operation must be repeated under consideration of minimum teaching limit and sensing range.

#### Set / restore default

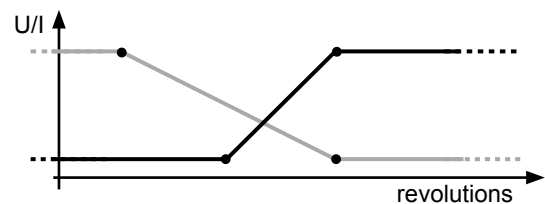
Set input on HIGH for 16 seconds. (After 5 seconds, the DV/status output will start oscillating while restoring default in second 15).

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 <sup>2</sup>		

###### Cable redundant

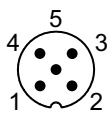
for connection reference -5

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 <sup>2</sup>	

###### Connector M12, 5-pin

for connection reference -N

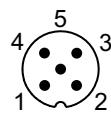
Connector	Analog signals		
	U/5	V	W
Pin 1	0 V	0 V	0 V
Pin 2	+Vs	+Vs	+Vs
Pin 3	d.u.	lout	lout
Pin 4	Uout	d.u.	Uout
Pin 5	Set	Set	Set



###### Connector M12, redundant, 2 x 5-pin

for connection reference -M

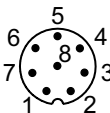
Connector	Connector 1	Connector 2
Pin 1	0 V	0 V
Pin 2	+Vs 1	+Vs 2
Pin 3	Uout 1 (Y/7) lout 1 (Z)	Uout 2 (Y/7) lout 2 (Z)
Pin 4	DV/Status 1	DV/Status 2
Pin 5	Set 1	Set 2



###### Connector M12, 8-pin

for connection reference -Q

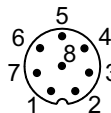
Connector	Analog signals		
	U/5	V	W
Pin 1	0 V	0 V	0 V
Pin 2	+Vs	+Vs	+Vs
Pin 3	d.u.	lout	lout
Pin 4	Uout	d.u.	Uout
Pin 5	Set	Set	Set
Pin 6	DV/Status	DV/Status	DV/Status
Pin 7	n.c.	n.c.	n.c.
Pin 8	n.c.	n.c.	n.c.



###### 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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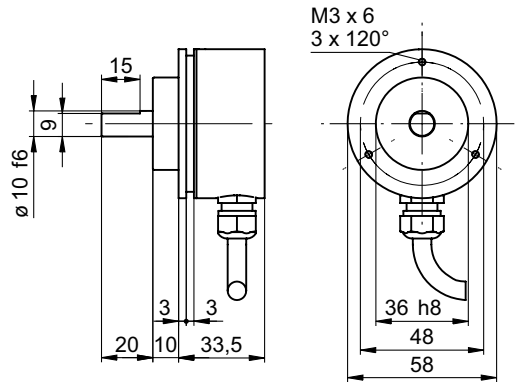
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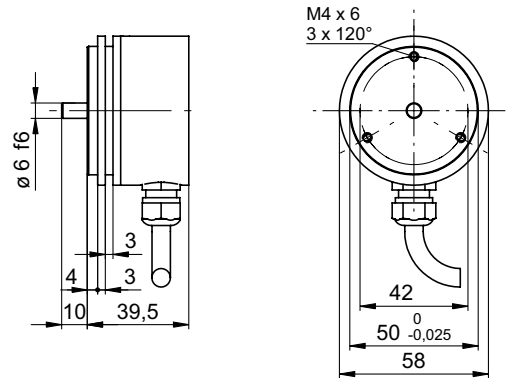
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#### Dimensions

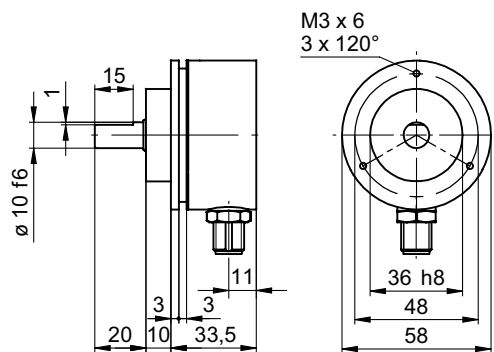
**BMSV 58/BMMV 58, clamping flange, cable radial**



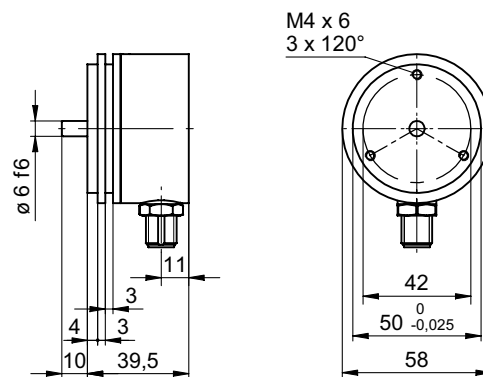
**BMSV 58/BMMV 58, synchro flange, cable radial**



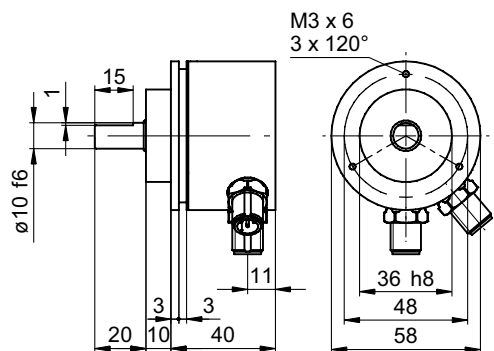
**BMSV 58/BMMV 58, clamping flange, connector M12**



**BMSV 58/BMMV 58, synchro flange, connector M12**



**BMSV 58/BMMV 58, clamping flange, connector 2xM12**



**BMSV 58/BMMV 58, synchro flange, connector 2xM12**

