

Absolute encoders - SSI

Solid shaft with clamping or synchro flange

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

BMSV 58, BMMV 58 SSI - MAGRES



BMSV 58K SSI with clamping flange

Technical data - electrical ratings

Voltage supply	5 VDC \pm 10 % 10...30 VDC
Consumption w/o load	\leq 150 mA (5 VDC) \leq 60 mA (24 VDC)
Initializing time typ.	170 ms after power on
Interface	SSI
Steps per turn	4096 / 12 bit
Sensing method	Magnetic
Angular accuracy	\pm 0.5 °
Repeatability	0.3 °
Code	Gray or binary
Code sequence	CW: ascending values with clockwise sense of rotation; looking at flange
Inputs	SSI clock: Linereceiver RS422 Zero setting input
Output stages	SSI data: Linedriver RS422
Interference immunity	DIN EN 61000-6-2
Emitted interference	DIN EN 61000-6-3
Approval	UL approval / E217823

BMSV 58K, BMSV 58S

Function	Singleturn
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BMMV 58K, BMMV 58S

Function	Multiturn
Number of turns	8192 / 13 bit

Features

- Encoder single- or multiturn / SSI
- Robust magnetic sensing
- Resolution: singleturn 12 bit, multiturn 13 bit
- Designed for harsh environmental conditions
- High resistance to shock and vibrations
- Operating temperature -40...+85 °C
- Solid shaft with clamping or synchro flange

Technical data - mechanical design

Size (flange)	\varnothing 58 mm
Protection DIN EN 60529	IP 65 (without shaft seal), IP 67 (with shaft seal)
Operating speed	\leq 6000 rpm
Starting torque	\leq 2 Ncm (+20 °C, IP 65) \leq 2.5 Ncm (+20 °C, IP 67)
Admitted shaft load	\leq 40 N axial \leq 80 N radial
Materials	Housing: steel zinc-coated Flange: aluminium Solid shaft: stainless steel
Operating temperature	-40...+85 °C (see general informations)
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 Shock 200 g, 3 ms (connector M23)
Weight approx.	300 g
Connection	Connector M12, 8-pin Connector M23, 12-pin Cable

BMSV 58K, BMMV 58K

Shaft type	\varnothing 10 x 20 mm, solid shaft with edge (clamping flange)
Flange	Clamping flange

BMSV 58S, BMMV 58S

Shaft type	\varnothing 6 x 10 mm, solid shaft with flat edge (synchro flange)
Flange	Synchro flange

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Part number

Singleturn clamping flange

BMSV 58K1 12/00 0

				5	<u>Connec- tion</u> Cable radial
				A	Con- nec- tor M23, radial
				N	Con- nec- tor M12, radial
			0		<u>Solid shaft</u> ø10 mm, clamping flange
			C		<u>Protection</u> IP 65
			N		IP 67
		12/00			<u>Resolution</u> 12 bit singleturn
					<u>Voltage supply / signals</u> 05C 5 VDC / SSI 24C 10...30 VDC / SSI
					<u>Code</u> G Gray code N Binary code

Multiturn clamping flange

BMMV 58K1 12/13 0

				5	<u>Connec- tion</u> Cable radial
				A	Con- nec- tor M23, radial
				N	Con- nec- tor M12, radial
			0		<u>Solid shaft</u> ø10 mm, clamping flange
			C		<u>Protection</u> IP 65
			N		IP 67
		12/13			<u>Resolution</u> 12/13 bit single-/multiturn
					<u>Voltage supply / signals</u> 05C 5 VDC / SSI 24C 10...30 VDC / SSI
					<u>Code</u> G Gray code N Binary code

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Part number

Singleturn synchro flange

BMSV 58S1 12/00 6

Connection
 5 Cable radial
 A Connector M23, radial
 N Connector M12, radial

Solid shaft
 6 ø6 mm, synchro flange

Protection
 C IP 65
 N IP 67

Resolution
 12/00 12 bit singleturn

Voltage supply / signals
 05C 5 VDC / SSI
 24C 10...30 VDC / SSI

Code
 G Gray code
 N Binary code

Multiturn synchro flange

BMMV 58S1 12/13 6

Connection
 5 Cable radial
 A Connector M23, radial
 N Connector M12, radial

Solid shaft
 6 ø6 mm, synchro flange

Protection
 C IP 65
 N IP 67

Resolution
 12/13 12/13 bit single-/multiturn

Voltage supply / signals
 05C 5 VDC / SSI
 24C 10...30 VDC / SSI

Code
 G Gray code
 N Binary code

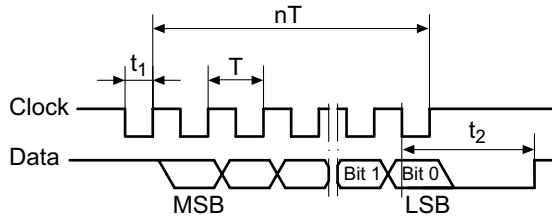
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Data transfer



$T = 1 \dots 10 \mu\text{s}$	$t_1 = 0.5 \dots 5 \mu\text{s}$
$t_2 \leq 12 \dots 26 \mu\text{s}$	$f \text{ max. } 1 \text{ MHz}$

Trigger level

Control inputs	Input circuit
Input level Low	$< 0.3 \times +V_s$
Input level High	$< 0.7 \times +V_s$

Accessories

Connectors and cables

10116717	Female connector M23, 12-pin, straight, without cable
10153334	Female connector M23, 12-pin, straight, 2 m cable
10153335	Female connector M23, 12-pin, straight, 5 m cable
10146775	Female connector M12, 8-pin, straight, without cable
11091511	Female connector M12, 8-pin, straight, 20 m cable

Mounting accessories for BMSV 58K, BMMV 58K

10252773	Clamp set $\varnothing 15 \text{ mm}$
11053277	Bellows coupling aluminium/stainless steel 10 mm

Mounting accessories for BMSV 58S, BMMV 58S

10252773	Clamp set $\varnothing 15 \text{ mm}$
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General informations

Self-heating interrelated to speed, protection, attachment method and ambient conditions as well electronics and supply voltage must be considered for precise thermal dimensioning. Self-heating is supposed to approximate 3 K (IP 65 protection) respectively 8 K (IP 67 protection) per 1000 rpm. Operating the encoder close to the maximum limits requires measuring the real prevailing temperature at the encoder flange.

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Terminal significance

+Vs	Encoder supply voltage.
0 V	Encoder ground connection relating to +Vs.
Data+	Positive data output.
Data-	Negative data output.
Clock+	Positive SSI clock input.
Clock-	Negative SSI clock input.
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.
Note	Include termination resistor R=120 Ohm between Data+ and Data- on control side.

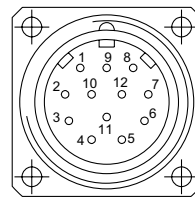
Terminal assignment

Cable / Connector M23 male
for connection references **-A** and **-5**

Connector	Core colour	Signals	Description
Pin 1	yellow	Clock-	Clock signal
Pin 2	green	Clock+	Clock signal
Pin 3	grey	Data+	Data signal
Pin 4	pink	Data-	Data signal
Pin 5	blue	Zero	Zero setting input
Pin 6	–	n.c.	–
Pin 7	–	n.c.	–
Pin 8	–	n.c.	–
Pin 9	red	d.u.	do not use
Pin 10	–	n.c.	–
Pin 11	brown	+Vs	Supply voltage
Pin 12	white	0 V	Supply voltage

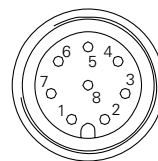
Screen: connected to housing

Cable data: 4 x 2 x 0.14 mm²



Connector M12 male
for connection reference **-N**

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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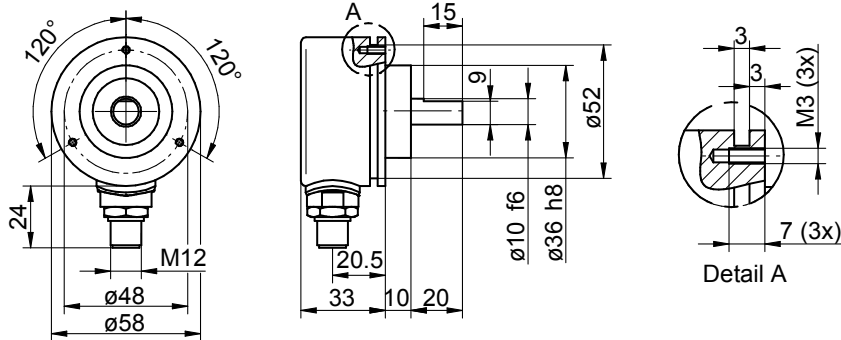
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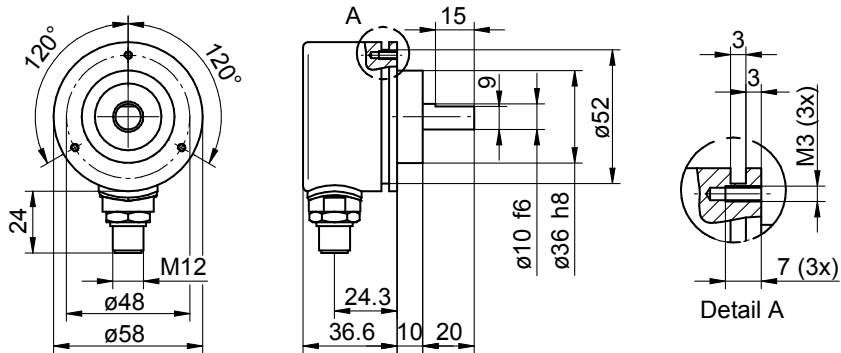
BMSV 58, BMMV 58 SSI - MAGRES

Dimensions

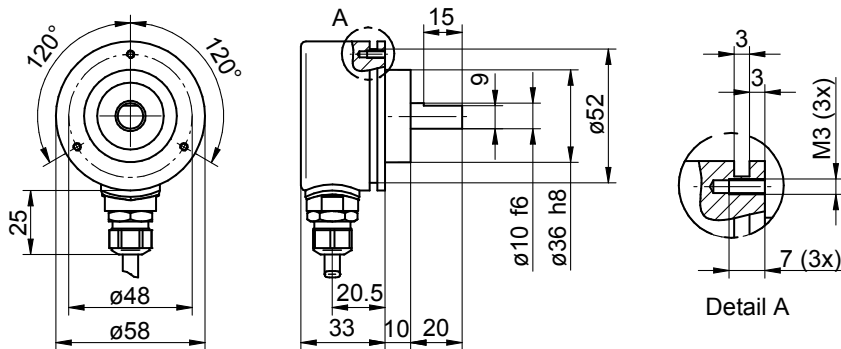
BMSV/BMMV 58 - clamping flange, connector M12, IP 65



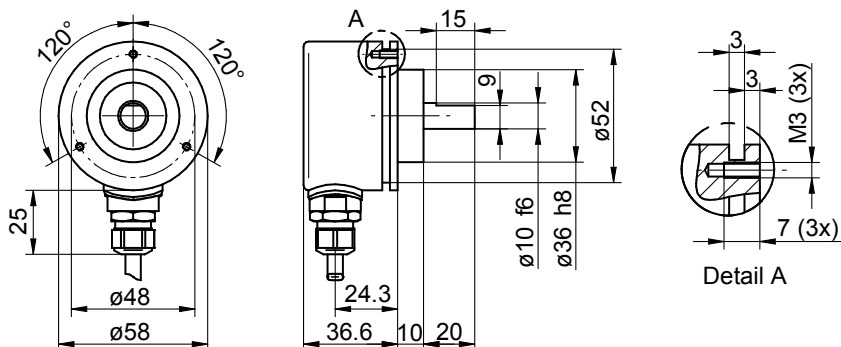
BMSV/BMMV 58 - clamping flange, connector M12, IP 67



BMSV/BMMV 58 - clamping flange, cable, IP 65



BMSV/BMMV 58 - clamping flange, cable, IP 67



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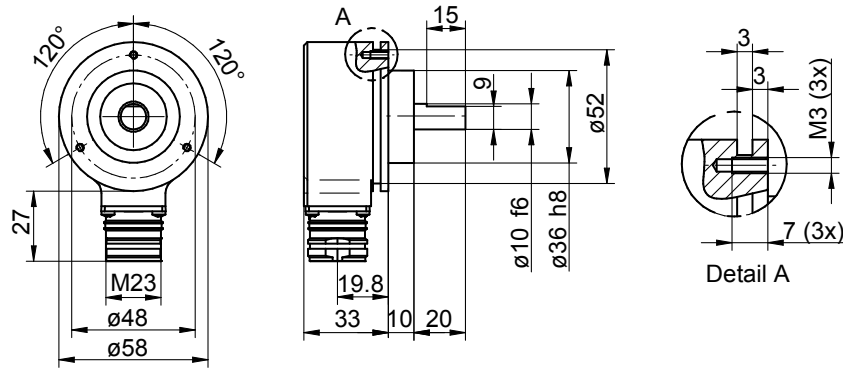
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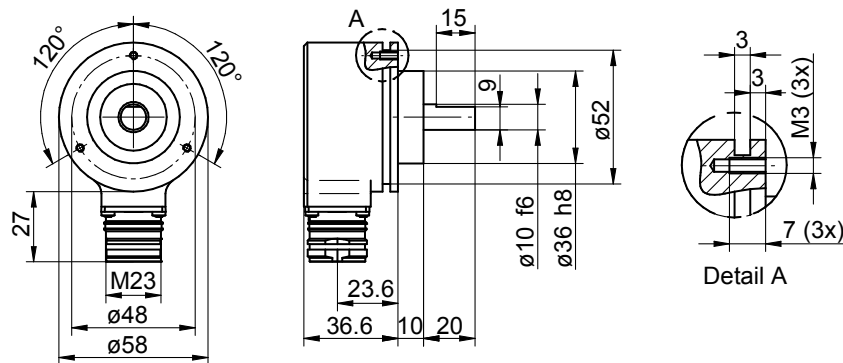
BMSV 58, BMMV 58 SSI - MAGRES

Dimensions

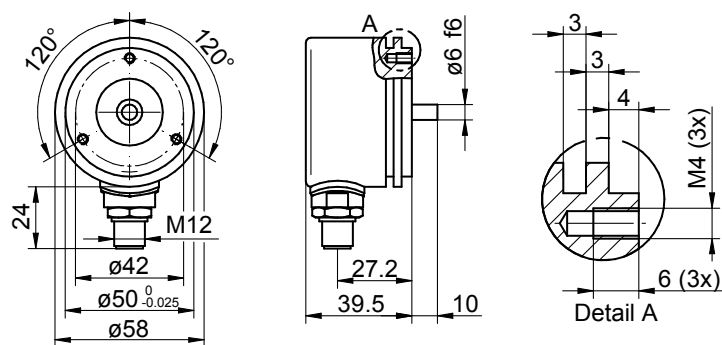
BMSV/BMMV 58 - clamping flange, connector M23, IP 65



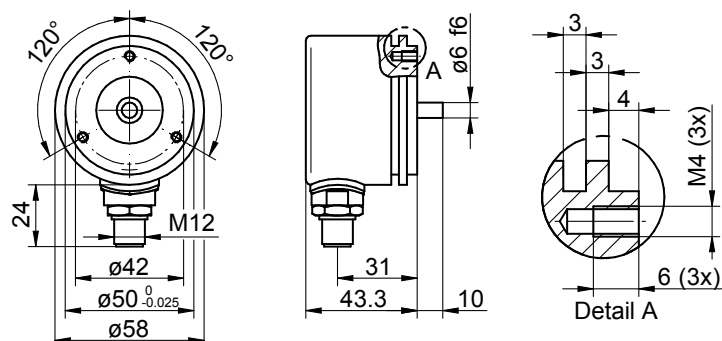
BMSV/BMMV 58 - clamping flange, connector M23, IP 67



BMSV/BMMV 58 - synchro flange, connector M12, IP 65



BMSV/BMMV 58 - synchro flange, connector M12, IP 67



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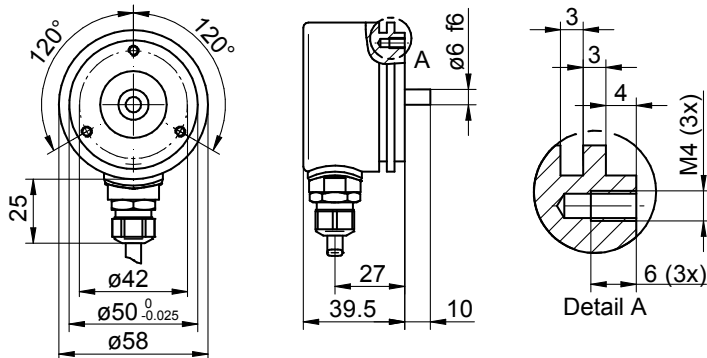
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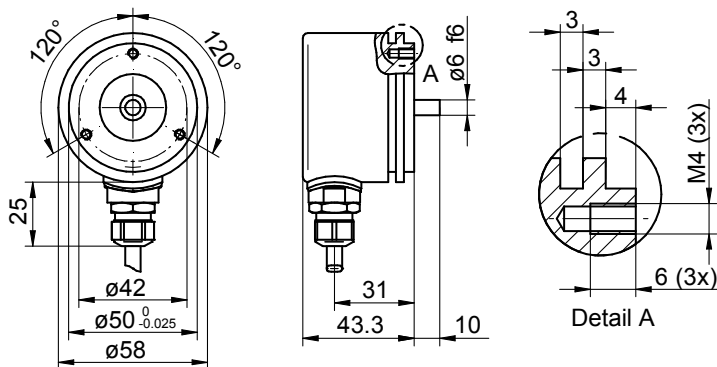
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Dimensions

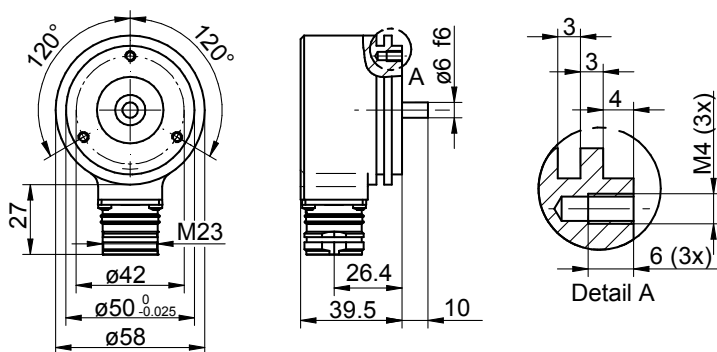
BMSV/BMMV 58 - synchro flange, cable, IP 65



BMSV/BMMV 58 - synchro flange, cable, IP 67



BMSV/BMMV 58 - synchro flange, connector M23, IP 65



BMSV/BMMV 58 - synchro flange, connector M23, IP 67

