

Absolute encoders - SSI

Blind hollow shaft $\varnothing 12$ mm

Optical single- or multiturn encoders 18 bit ST / 18 bit MT

BOSH, BOMH SSI - Digitalizer



BOMH SSI with blind hollow shaft

Features

- High-resolution encoder single- or multiturn / SSI
- Optical sensing method
- Resolution: singleturn 18 bit, multiturn 18 bit
- SSI interface configurable
- Continuous self-test
- Blind hollow shaft $\varnothing 12$ mm
- Zero point configurable

Technical data - electrical ratings

Voltage supply	5 VDC ± 10 % 10...30 VDC
Consumption typ.	120 mA (5 VDC, w/o load) 50 mA (24 VDC, w/o load)
Initializing time typ.	170 ms after power on
Interface	SSI
Absolute accuracy	$\pm 0.025^\circ$
Sensing method	Optical
Repeatability	$\pm 0.012^\circ$
Code	Gray or binary
Code sequence	CW default, programmable
Inputs	Control signals UP/DOWN inv. and zero SSI clock
Output stages	SSI data: linedriver RS485
Interference immunity	DIN EN 61000-6-2
Emitted interference	DIN EN 61000-6-3
Diagnostic functions	Self-diagnosis Code continuity check Multiturn sensing
Approval	UL approval / E217823

BOSH

Function	Singleturn
Steps per revolution	≤ 262144 / 18 bit

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Function	Multiturn
Steps per revolution	262144 / 18 bit
Number of revolutions	≤ 262144 / 18 bit

Technical data - mechanical design

Size (flange)	$\varnothing 58$ mm
Shaft type	$\varnothing 12$ mm (blind hollow shaft)
Protection DIN EN 60529	IP 65
Operating speed	≤ 6000 rpm
Operating torque typ.	0.0175 Nm
Material	Housing: aluminium
Operating temperature	$-20 \dots +85^\circ\text{C}$
Relative humidity	95 % non-condensing
Resistance	DIN EN 60068-2-6 Vibration 10 g, 10-2000 Hz DIN EN 60068-2-27 Shock 50 g, 11 ms
Connection	Connector M23, 12-pin Cable 2 m

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Weight approx.	300 g
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Weight approx.	370 g
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Part number

Singleturn

BOSH 58S1

					<u>Connection</u>
				5	Cable 2 m, radial
				A	Connector radial
					<u>Blind hollow shaft</u>
		B2			ø12 mm, IP 42, with clamping ring
		P2			ø12 mm, IP 65, with clamping ring
		I2			ø12 mm, IP 42, with clamping ring and spring washer
		M2			ø12 mm, IP 65, with clamping ring and spring washer
					<u>Resolution</u>
		18/00			18 bit singleturn
		16/00			16 bit singleturn
		17/00			17 bit singleturn
		18/00			18 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

Clock frequency f	70...1100 kHz
Duty cycle of T	40...60 %
Delay time tv	600 ns
Monoflop time tm	2...20 µs

Trigger level

Control inputs	Input circuit
Input level Low	<0,4 V (>2 ms)
Input level High	+Vs or open

Multiturn

BOMH 58S1

					<u>Connection</u>
				5	Cable 2 m, radial
				A	Connector radial
					<u>Blind hollow shaft</u>
		B2			ø12 mm, IP 42, with clamping ring
		P2			ø12 mm, IP 65, with clamping ring
		I2			ø12 mm, IP 42, with clamping ring and spring washer
		M2			ø12 mm, IP 65, with clamping ring and spring washer
					<u>Resolution</u>
		18/18			18/18 bit single-/multiturn
		18/14			18/14 bit single-/multiturn
		18/18			18/18 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

Accessories

Connectors and cables

10116717	Female connector M23, 12-pin, straight, without cable
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Mounting accessories

10136635	Set of spring plate for encoders ø58 mm
10110616	Clamp set ø15 mm

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Blind hollow shaft $\varnothing 12$ mm

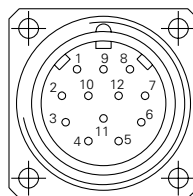
Optical single- or multiturn encoders 18 bit ST / 18 bit MT

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Terminal significance	
+Vs	Encoder supply voltage.
0 V	Encoder ground connection relating to +Vs.
Data+	Positive, serial data output of differential linedriver.
Data-	Negative, serial data output of differential linedriver.
Clock+	Positive SSI clock input. Clock+ together with Clock- forms a current loop. A current of approx. 7 mA towards Clock+ input means logic 1 in positive logic.
Clock-	Negative SSI clock input. Clock- together with Clock+ forms a current loop. A current of approx. 7 mA towards Clock- input means logic 0 in positive logic.
Zero	Input for setting a zero point anywhere within the encoder resolution. The zero setting operation is triggered by a High impulse. Connect to 0 V after setting operation for maximum interference immunity. Impulse duration > 100 ms.
UP/DOWN	UP/DOWN counting direction input. This input is standard on High. UP/DOWN means ascending output data with clockwise shaft rotation when looking at flange. UP/DOWN-Low means ascending values with counterclockwise shaft rotation when looking at flange.
DATAVALID	Diagnostic output. An error warning is given at level Low. Important: Interferences must be drained by the downstream electronics.
DATAVALID MT	Diagnostic output for monitoring the multiturn sensor voltage supply. Upon dropping below a defined voltage level the DV MT output is switched to Low.
Rot. direction	Ascending position values when looking at the flange and rotating the shaft clockwise.

Terminal assignment			
Cable / Connector M23 male for connection references -A and -5			
Conn.	Core colour	Signals	Description
Pin 1	yellow	Clock-	Clock signal
Pin 2	green	Clock+	Clock signal
Pin 3	pink	Data+	Data signal
Pin 4	grey	Data-	Data signal
Pin 5	black	Zero	Zero setting
Pin 6	red	DATAVALID	Diagnostic outp.
Pin 7	blue	UP/DOWN	Counting dir.
Pin 8	violet	DATAVALID MT ¹⁾	Diagnostic outp.
Pin 9	–	n.c.	–
Pin 10	–	n.c.	–
Pin 11	brown	+Vs	Supply voltage
Pin 12	white	0 V	Supply voltage
Screen	connected to housing		
Cable data	10 x 0,14 mm ²		

¹⁾ BOMH only



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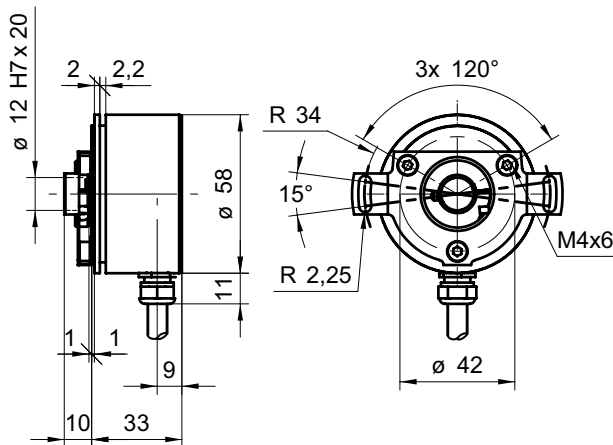
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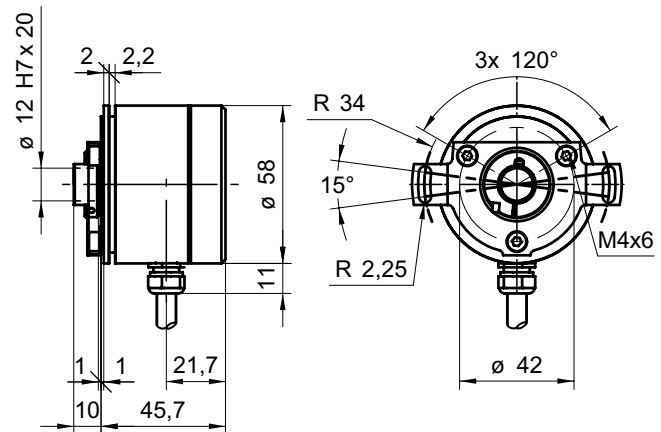
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Dimensions

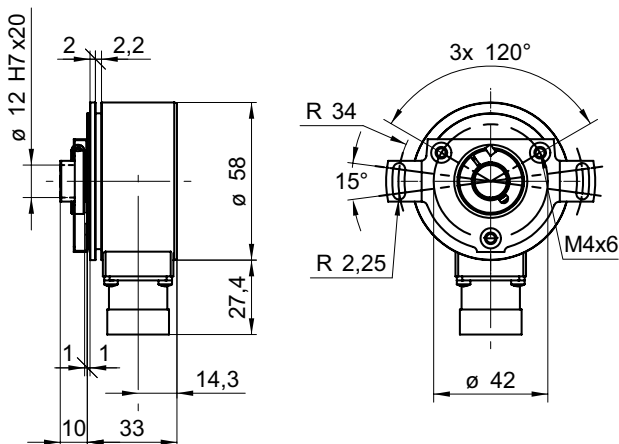
BOSH/BOMH SSI cable radial, 5 VDC



BOSH/BOMH SSI cable radial, 10 - 30 VDC



BOSH/BOMH SSI connector radial, 5 VDC



BOSH/BOMH SSI connector radial, 10 - 30 VDC

