

# Magnetic absolute single-turn encoder BMSH – MAGRES parallel

## features

- robust single-turn encoder up to 9 bit
- parallel interface
- miniature housing
- zero-point programmable

## general data

voltage supply	5 VDC $\pm$ 10% (05T)
max. supply current no load	typ. 100 mA
output circuit	parallel 5 VDC
max. measuring step	9 bit (1 step = 42' 11")
max error limit	$\pm$ 1°
repeatability	0,3°
max. switching frequency	51,2 kHz
input signal	zero (zero setting: < 0,4 V, > 2 ms off state: 3,3 V or open)
direction of rotation	looking at the <b>MAGRES</b> -flange, position counts up as the shaft rotates clockwise (CW)

## mechanical data

max. revolutions	12'000 rpm (mechanical) 6'000 rpm (electrical)
moment of inertia	typ. $12 \times 10^{-7}$ kgm <sup>2</sup>
torque	typ. 0,93 cNm (3'000 rpm / 20 °C / IP42)
product life	depending on ambient conditions (typ. 10 <sup>9</sup> revolutions)
max. protection class	shaft: IP 65 housing: IP 65
material	housing: steel/aluminum flange: aluminum
weight	approx. 120 g

## ambient conditions

temperature range	-20...+85 °C
relative humidity	max. relative humidity 95%
vibration	IEC 60068-2-6 ( $\leq 300$ m/s <sup>2</sup> / 10 - 2'000 Hz)
shock	IEC 60068-2-27 ( $\leq 1'000$ m/s <sup>2</sup> / 6 ms)
noise immunity	EN 61000-6-2
emitted interference	EN 61000-6-3



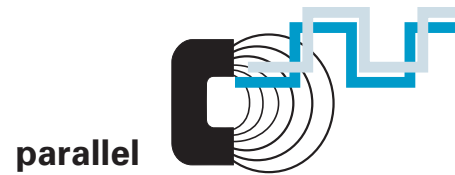
## order designation

**BMSH 42S1**  **05T09/00**  **5**

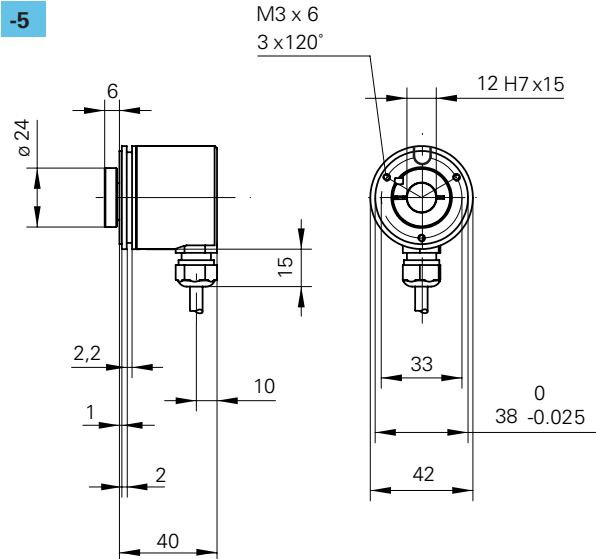
		connection
		<b>5</b> cable 1 m radial
		hollowshaft
		<b>B2</b> endshaft 12 mm IP 42 withclamping ring
		<b>P2</b> endshaft 12 mm IP 65 withclamping ring
	resolution	
	<b>09</b> 9 bit	
	voltage supply/output	
	<b>05T</b> 5 VDC output TTL	
	signal code	
	<b>N</b> binary code	
	<b>G</b> Gray code	

## accessories

clamp set	part nr. 110616
spring plate set	part nr. 138610
shaft adapter	see chapter accessories
clamping ring set 12 mm hollow shaft	part nr. 142556



**dimensions**



**Note**

Mounting drawings see end of chapter.

**assignment cable**

for connection reference **-5**

cable color	signal	description
brown	+Vs	voltage supply
white	0 V	voltage supply
green	bit 1 LSB	data
yellow	bit 2	data
grey	bit 3	data
pink	bit 4	data
blue	bit 5	data
red	bit 6	data
black	bit 7	data
purple	bit 8	data
grey/pink	bit 9 MSB	data
red/blue	zero	zero setting input
screen		housing
cable specs		16 x 0,14 mm <sup>2</sup>

# Magnetic absolute single-turn encoder BMSH – MAGRES SSI

## features

- robust single-turn encoder up to 12 bit
- SSI interface
- miniature housing
- zero-point programmable

## general data

voltage supply	5 VDC $\pm$ 10% <b>(05C)</b>
max. supply current no load	typ. 100 mA
output circuit	SSI, RS 422
max. resolution	12 bit (1 step = 5' 16")
max error limit	$\pm 1^\circ$
repeatability	0,3°
max. clock frequency	1 MHz
input signal	clock input, zero (zero setting: < 0,4 V, > 2 ms off state: 3,3 V or open)
direction of rotation	looking at the <b>MAGRES</b> -flange, position counts up as the shaft rotates clockwise (CW)

## mechanical data

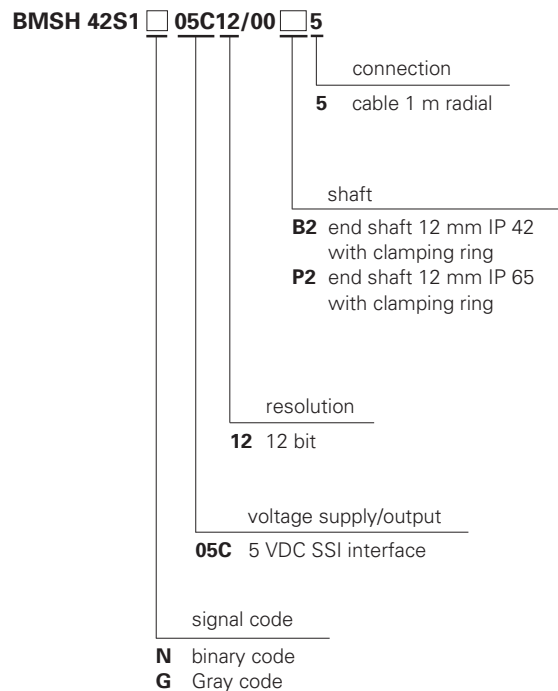
max. revolutions	12'000 rpm (mechanical) 6'000 rpm (electrical)
moment of inertia	typ. $12 \times 10^{-7}$ kgm <sup>2</sup>
torque	typ. 0,93 cNm (3'000 rpm / 20 °C / IP 42)
product life	depending on ambient conditions (typ. $10^9$ revolutions)
max. protection class	shaft: IP 65 housing: IP 65
material	housing: steel/aluminum flange: aluminum
weight	approx. 120 g

## ambient conditions

temperature range	-20...+85 °C
relative humidity	max. 95%
vibration	IEC 60068-2-6 ( $\leq 300$ m/s <sup>2</sup> / 10 - 2'000 Hz)
shock	IEC 60068-2-27 ( $\leq 1'000$ m/s <sup>2</sup> / 6 ms)
noise immunity	EN 61000-6-2
emitted interference	EN 61000-6-3



## order designation

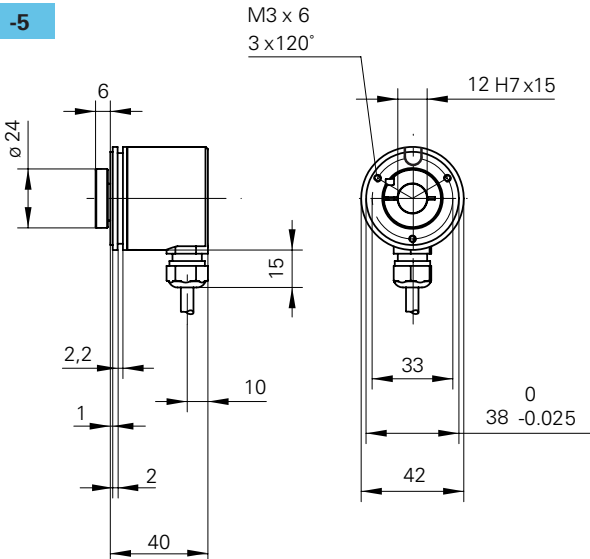


## accessories

clamp set	part nr. 110616
spring plate set	part nr. 138610
shaft adapter	see chapter accessories
clamping ring set 12 mm hollow shaft	part nr. 142556



**dimensions**



**Note**

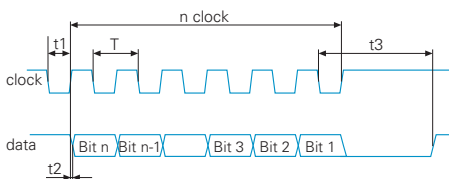
Mounting drawings see end of chapter.

**assignment cable**

for connection reference **-5**

cable color	signal	description
brown	+Vs	voltage supply
white	0 V	voltage supply
grey	data+	data signal
pink	data-	data signal
green	clock+	clock signal
yellow	clock-	clock signal
blue	zero	zero setting input
red	d.u.	do not use
screen		housing
cable		8 x 0,14 mm <sup>2</sup>

**read out of position values**



pulse times:

$T = 1 \mu\text{s to } 10 \mu\text{s} / t1 = 0,5 \text{ to } 5 \mu\text{s}$

$t2 < 0,2 \mu\text{s} / t3 > 12 \mu\text{s to } 25 \mu\text{s}$

# Magnetic absolute single-turn encoder BMSH – MAGRES CANopen

## features

- robust single-turn encoder up to 12 bit
- CANopen interface integrated
- miniature housing
- programmable resolution and preset values

## general data

voltage supply	10 - 30 VDC (24B)
max. supply current no load	typ. 100 mA (at 24 VDC)
output circuit	CAN-Bus, Standard ISO/DIS 11898
specification	CAN 2.0B
protocol/profile	CANopen/CIA, DS-301 V4.01, DSP-305 V1.0 (LSS), DS-406 V3.0
signal code	natural binary code
angular resolution	12 bit (1 step = 5'16'')
max error limit	±1°
repeatability	0,3°
max. baud rate	1 Mbit/s
direction of rotation	looking at the flange, position counts up as the shaft rotates clockwise (CW), programmable

## mechanical data

max. revolutions	12'000 rpm (mechanical) 6'000 rpm (electrical)
moment of inertia	12 x 10 <sup>-7</sup> kgm <sup>2</sup>
operation torque	typ. 0,93 cNm (3'000 rpm / 20 °C / IP 42)
product life	depending on ambient conditions (typ. 10 <sup>9</sup> revolutions)
max. protection class	IP 65
material	housing: steel flange: aluminum
weight	approx. 190 g



## order designation

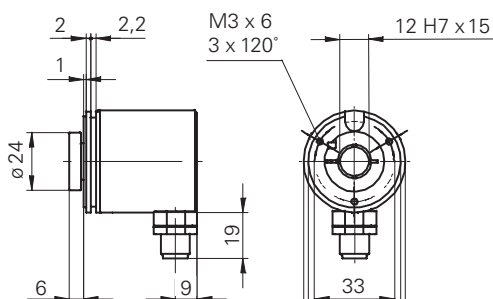
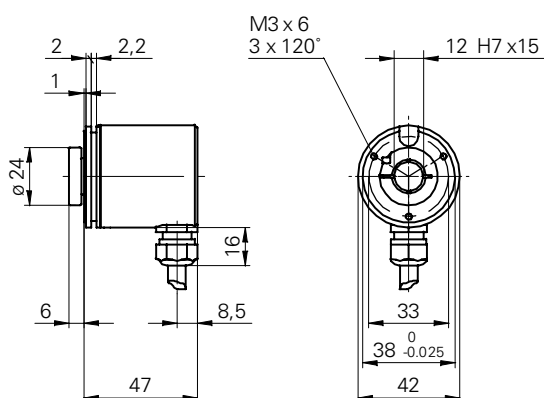
**BMSH 42S1N 24B12/00**

	connection
<b>5</b>	cable 1 m radial
<b>N</b>	connector radial M12
	shaft
<b>B2</b>	end shaft 12 mm IP 42 with clamping ring
<b>P2</b>	end shaft 12 mm IP 65 with clamping ring
	resolution single-turn
<b>12</b>	12 bit
	voltage range, output signals
<b>24B</b>	10 - 30 VDC, CANopen
	signal code
<b>N</b>	binary code

## ambient conditions

temperature range	-20...+85 °C
relative humidity	max. 95% non condensing
vibration	IEC 60068-2-6 (≤ 300 m/s <sup>2</sup> / 10 - 2'000 Hz)
shock	IEC 60068-2-27 (≤ 1'000 m/s <sup>2</sup> / 6 ms)
noise immunity	EN 61000-6-2
emitted interference	EN 61000-6-3

**dimensions**



**Note**

Mounting drawings see end of chapter.

**assignment cable**

cable color	signal	description
brown	+Vs	voltage supply
white	0 V	voltage supply
green	CAN_H	bus line (dominant HIGH)
yellow	CAN_L	bus line (dominant LOW)
grey	CAN_GND	CAN ground
pink	n.c.	
blue	d.u.	do not use
red	d.u.	do not use
screen		housing
cable data		8 x 0,14 mm <sup>2</sup>

**assignment 5-pin M12 male**

pin	signals	connector
1	n.c.	not connected
2	+Vs	voltage supply
3	CAN_GND	CAN ground / 0 VDC
4	CAN_H	bus line (dominant HIGH)
5	CAN_L	bus line (dominant LOW)

**accessories**

clamp set	part nr. 110616
spring plate set	part nr. 138610
shaft adapter	see chapter accessories
CD-ROM with GSD-/EDS-/XML-files and manuals	part nr. 147362
clamping ring set	
12 mm hollow shaft	part nr. 142556
connector (female) M12 CAN	part nr. 153968
connector (male) M12 CAN	part nr. 153969
T connector M12 CAN	part nr. 153972
terminating resistor	part nr. 153974

# Magnetic absolute single-turn encoder

## BMSH – MAGRES

### DeviceNet

#### features

- robust single-turn encoder up to 12 bit
- DeviceNet interface integrated
- miniature housing
- programmable resolution and preset values



#### general data

voltage supply	10 - 30 VDC
max. supply current no load	typ. 100 mA (at 24 VDC)
output circuit	CAN-Bus, Standard ISO/DIS 11898
protocol/profile	DeviceNet, Device Profile for Encoders V1.0
signal code	natural binary code
angular resolution	12 bit (1 step = 5'16'')
max error limit	±1°
repeatability	0,3°
max. baud rate	500 kbit/s
direction of rotation	looking at the flange, position counts up as the shaft rotates clockwise (CW), programmable

#### order designation

**BMSH 42S1N 24D12/00**

	connection
<b>5</b>	cable 1 m radial
<b>N</b>	connector radial M12
	shaft
<b>B2</b>	end shaft 12 mm IP 42 with clamping ring
<b>P2</b>	end shaft 12 mm IP 65 with clamping ring
	resolution single-turn
<b>12</b>	12 bit
	voltage range, output signals
<b>24D</b>	10 - 30 VDC, DeviceNet
	signal code
<b>N</b>	binary code

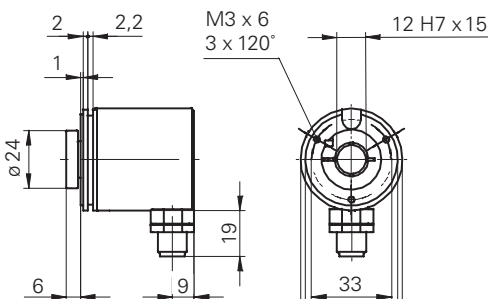
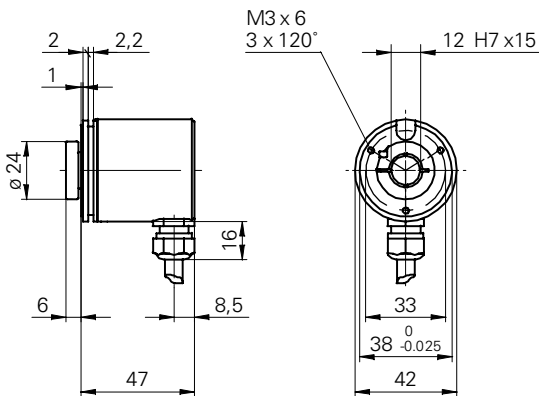
#### mechanical data

max. revolutions	12'000 rpm (mechanical) 6'000 rpm (electrical)
moment of inertia	12 x 10 <sup>-7</sup> kgm <sup>2</sup>
operation torque	typ. 0,93 cNm (3'000 rpm / 20 °C / IP 42)
product life	depending on ambient conditions (typ. 10 <sup>9</sup> revolutions)
max. protection class	IP 65
material	housing: steel flange: aluminum
weight	approx. 190 g

#### ambient conditions

temperature range	-20...+85 °C
relative humidity	max. 95% non condensing
vibration	IEC 60068-2-6 (≤ 300 m/s <sup>2</sup> / 10 - 2'000 Hz)
shock	IEC 60068-2-27 (≤ 1'000 m/s <sup>2</sup> / 6 ms)
noise immunity	EN 61000-6-2
emitted interference	EN 61000-6-3

**dimensions**



**Note**

Mounting drawings see end of chapter.

**assignment cable**

cable color	signal	description
brown	+Vs	voltage supply
white	0 V	voltage supply
green	CAN_H	bus line (dominant HIGH)
yellow	CAN_L	bus line (dominant LOW)
grey	CAN_GND	CAN ground
pink	n.c.	
blue	d.u.	do not use
red	d.u.	do not use
screen	CAN_SHLD	CAN shield
cable data		8 x 0,14 mm <sup>2</sup>

**assignment 5-pin M12 male**

pin	signals	connector
1	CAN_SHLD	CAN shield
2	+Vs	voltage supply
3	CAN_GND	CAN Ground / 0 VDC
4	CAN_H	bus line (dominant HIGH)
5	CAN_L	bus line (dominant LOW)

**accessories**

clamp set	part nr. 110616
spring plate set	part nr. 138610
shaft adapter	see chapter accessories
CD-ROM with GSD-/EDS-/XML-files and manuals	part nr. 147362
clamping ring set	
12 mm hollow shaft	part nr. 142556
connector (female) M12 CAN	part nr. 153968
connector (male) M12 CAN	part nr. 153969
T connector M12 CAN	part nr. 153972
terminating resistor	part nr. 153974