# Absolute encoders - SSI
## Shaft max. ø8 mm
## Magnetic single- or multiturn encoders 10 bit ST / 15 bit MT

## BMSV 30, BMMV 30 SSI - *MAGRES*



BMMV 30 SSI with shaft

| Technical data - electrical ratings | |
| --- | --- |
| Voltage supply | 5 VDC ±10 %<br>10...30 VDC |
| Consumption w/o load (typ.) | 100 mA (5 VDC)<br>50 mA (24 VDC) |
| Initializing time (typ.) | 70 ms after power on |
| Initializing time | ≤70 ms after power on |
| Interface | SSI |
| Steps per turn | 1024 / 10 bit |
| Absolute accuracy | ±1 ° |
| Sensing method | Magnetic |
| Code | Gray or binary |
| Code sequence | CW: ascending values with clockwise sense of rotation (looking at flange) |
| Inputs | SSI clock<br>Reset input |
| Output circuit | SSI data: linedriver RS485 |
| Interference immunity | DIN EN 61000-6-2 |
| Emitted interference | DIN EN 61000-6-3 |
| Approval | UL approval / E217823 |
| **BMSV 30** | |
| Function | Singleturn |
| **BMMV 30** | |
| Function | Multiturn |
| Number of turns | 32768 / 15 bit |

| Technical data - mechanical design | |
| --- | --- |
| Housing | ø30 mm |
| Shaft | ø5 mm<br>ø6 mm<br>ø8 mm |
| Protection DIN EN 60529 | IP 65 |
| Operating speed | ≤6000 rpm |
| Operating torque typ. | 0.0075 Nm |
| Admitted shaft load | ≤10 N axial<br>≤10 N radial |
| Materials | Housing: steel<br>Flange: aluminium |
| Operating temperature | -20...+85 °C |
| Relative humidity | 95 % |
| Resistance | DIN EN 60068-2-6<br>Vibration 30 g, 10-2000 Hz<br>DIN EN 60068-2-27<br>Shock 500 g, 6 ms |
| Connection | Connector or cable |
| **BMSV 30** | |
| Weight approx. | 60 g |
| **BMMV 30** | |
| Weight approx. | 70 g |

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## Part number

### Singleturn

**BMSV 30S1**☐ ☐ **10/00** ☐ ☐

**Connection**
4  Cable 1 m, axial
5  Cable 1 m, radial
6  Connector M9, axial
9  Connector M9, radial

**Shaft**
C5  ø5 mm, IP 65
C6  ø6 mm, IP 65
C8  ø8 mm, IP 65

**Resolution**
10/00  10 bit singleturn

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

**Code**
G  Gray code
N  Binary code

### Multiturn

**BMMV 30S1**☐ ☐ **10/15** ☐ ☐

**Connection**
4  Cable 1 m, axial
5  Cable 1 m, radial
6  Connector M9, axial
9  Connector M9, radial

**Shaft**
C5  ø5 mm, IP 65
C6  ø6 mm, IP 65
C8  ø8 mm, IP 65

**Resolution**
10/15  10/15 bit single-/multiturn

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

**Code**
N  Binary code
G  Gray code

## Data transfer
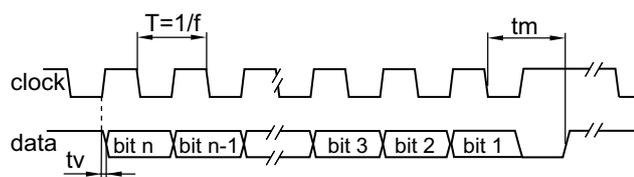


| Clock frequency f | 100...1000 kHz |
|---|---|
| Scan ratio of T | 40...60 % |
| Time lag tv | 200 ns |
| Monoflop time tm | 20 µs + T/2 |

## Accessories

### Connectors and cables

| 10132983 | Female connector M9, 8-pin, straight |
|---|---|
| 10123168 | Female connector M9, 8-pin, straight, 2 m cable |
| 10123169 | Female connector M9, 8-pin, straight, shielded, 5 m cable |

### Mounting accessories

| 10106004 | Clamp set |
|---|---|

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**Shaft max. ø8 mm**

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## BMSV 30, BMMV 30 SSI - *MAGRES*

| 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 Low impulse. Connect to +Vs after setting operation for maximum interference immunity. Impulse duration > 2 ms. |
| Rot. direction | Ascending position values when looking at the flange and rotating the shaft clockwise. |

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

### Terminal assignment

**Cable**
for connection references **-4** and **-5**

| Core colour | Signals | Description |
| --- | --- | --- |
| brown | +Vs | Supply voltage |
| white | 0 V | Supply voltage |
| 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 | connected to housing | |
| Cable data | $8 \times 0,14 \ mm^2$ | |

**Connector M9 male**
for connection references **-6** and **-9**

| 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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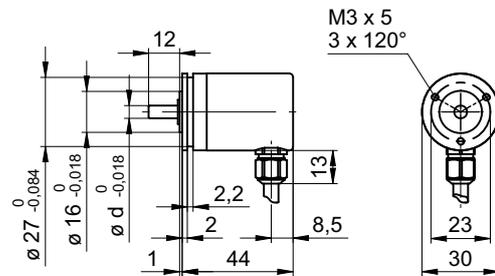### Magnetic single- or multiturn encoders 10 bit ST / 15 bit MT

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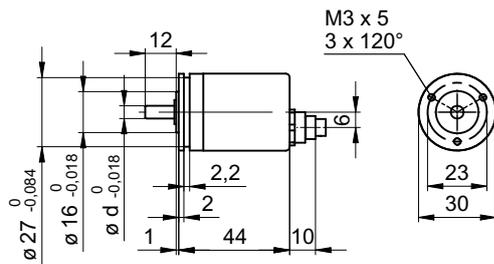
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**Dimensions**

**BMSV/BMMV 30 SSI cable axial**
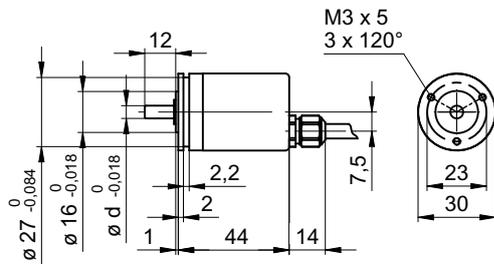


**BMSV/BMMV 30 SSI cable radial**



**BMSV/BMMV 30 SSI connector output axial**



**BMSV/BMMV 30 SSI connector output radial**