Baumer
Passion for Sensors

Encoders without bearings - absolute

# EB360.MC-C.TM8A.V4GJN.13120N

Magnetic multiturn encoder, magnetic rotor with threaded screw

Article number: 11266757

## Overview

- Non contact absolute encoder / SSI
- Resolution up to 13 bit single- / 12 bit multiturn
- Precise magnetic sensing
- High resistance to shock and vibrations
- Flylead connector M12, 8-pin
- Magnetic rotor included in delivery (calibrated set)


## Technical data

| Technical data - electrical ratings | |
|---|---|
| Voltage supply | 4.5...30 VDC |
| Consumption typ. | 60 mA (5 VDC, w/o load)<br>20 mA (24 VDC, w/o load) |
| Initializing time | ≤ 170 ms after power on |
| Inputs | SSI clock: Linereceiver RS422<br>Zero setting input<br>Counting direction |
| Interface | SSI |
| Function | Multiturn |
| Steps per revolution | 8192 / 13 bit |
| Number of revolutions | 4096 / 12 bit |
| Output stages | SSI data: Linedriver RS422 |
| Absolute accuracy | ±0.3 ° (+20 ±15 °C)<br>±0.5 ° (-40...+85 °C) |
| Sensing method | Magnetic |
| Code | Gray |
| Code sequence | CW: ascending values with clockwise sense of rotation; looking at flange |
| Interference immunity | EN 61000-6-2 |
| Emitted interference | EN 61000-6-4 |

| Technical data - electrical ratings | |
|---|---|
| Approval | UL approval / E217823<br>CE |

| Technical data - mechanical design | |
|---|---|
| Size (flange) | ø36 mm |
| Magnet rotor | M8 x 8 mm, ø13 x 8 mm threaded screw |
| Protection EN 60529 | IP 67 (sensor housing) |
| Operating speed | ≤6000 rpm |
| Working distance | 0.9 ±0.8 mm (axial)<br>≤ 0.3 mm (radial) |
| Material | Housing: PA10T / GF30<br>Cable sheath: PUR<br>Magnet rotor: aluminium, anodised |
| Operating temperature | -40...+85 °C (see general information) |
| Relative humidity | 95 % |
| Resistance | EN 60068-2-6<br>Vibration 30 g, 10-2000 Hz<br>EN 60068-2-27<br>Shock 500 g, 1 ms |
| Weight approx. | 100 g |
| Connection | Flylead connector M12, 8-pin, length 300 mm |

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## General information

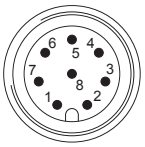
Self-heating correlated to installation and ambient conditions as well as to electronics and supply voltage must be considered for precise thermal dimensioning. Operating the encoder close to the maximum limits requires measuring the real prevailing temperature at the encoder flange.

## Terminal assignment

**Flylead connector M12, 8-pin, male, A-encoding**

| Pin | Signals |
|---|---|
| 1 | 0 V |
| 2 | +Vs |
| 3 | Clock+ |
| 4 | Clock- |
| 5 | Data+ |
| 6 | Data- |
| 7 | SET |
| 8 | DIR |

Cable data: 4 x 2 x 0.14 mm², shielded, twisted in pairs




## Terminal significance

| | |
|---|---|
| SET | Zero setting.<br>Input for zero setting at any position.<br>The zero setting operation is triggered by a high pulse and has to be in line with the selected direction of rotation (DIR).<br>Impulse duration >100 ms.<br>Connect to 0 V after zero setting for maximum interference immunity. |
| DIR | Counting direction input.<br>The input is standard on high. For maximum interference immunity connect to +Vs respectively 0 V depending on counting direction.<br>CW HIGH - CCW LOW<br>(Version with DATAVALID does not include the counting directon input). |

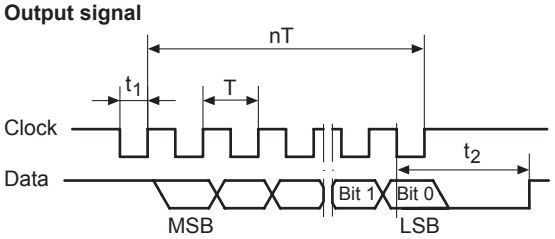
## Trigger level

| Control inputs | Input circuit |
|---|---|
| Maximal | 0...+Vs |
| Input level Low | <1 V |
| Input level High | >2.1 V |

Applies to standard cable lengths up to 2 m, for longer cables the voltage drop must be taken into account.

## Data transfer

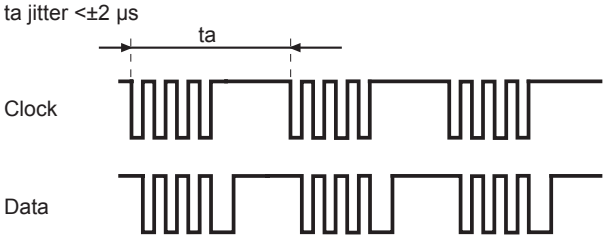
**Output signal**



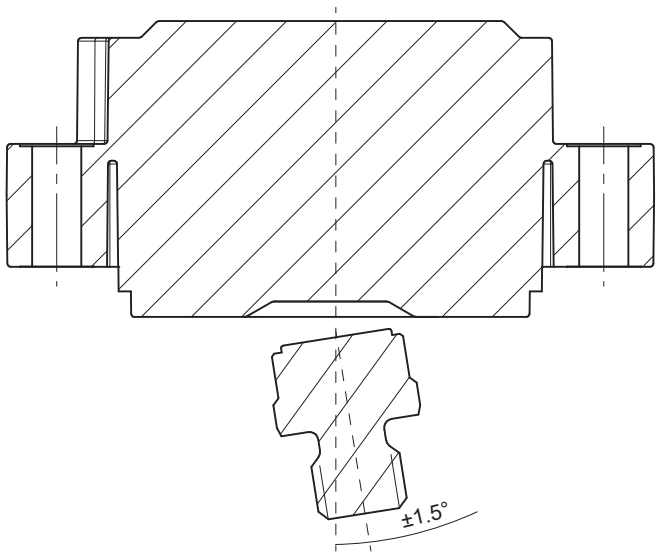

| | |
|---|---|
| T = 0.5...10 µs | $t_1$ = 0.25...5 µs |
| $t_2$ = 20 ±2 µs | f max. = 2 MHz |

**Data acquisition time ta**

Following timing of the SSI Masters is the requirement for a data refresh rate of typ. 2 µs. If this is not fulfilled the data refresh rate is <50 µs.
ta <5000 µs
ta jitter <±2 µs




## Angular misalignment



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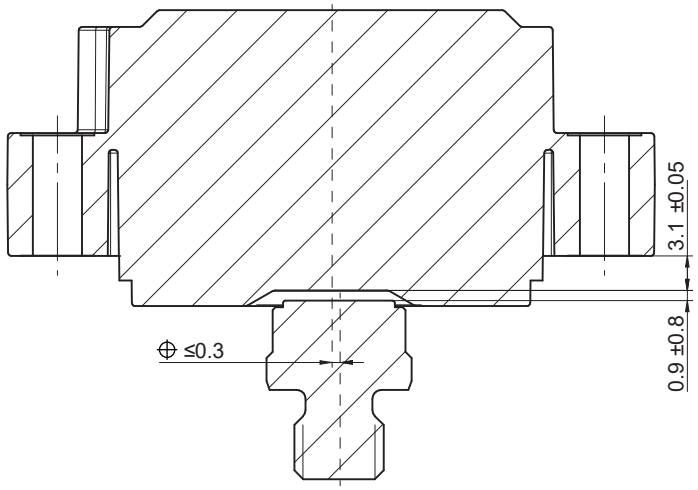
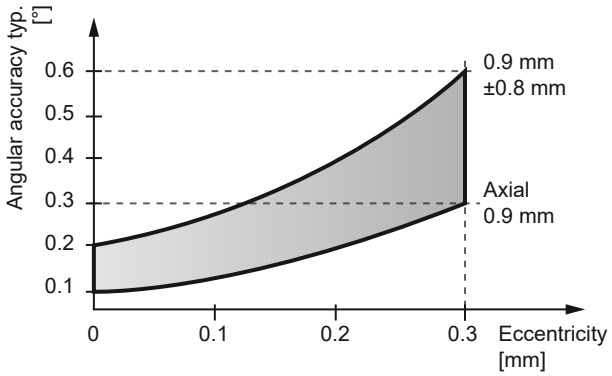
## Working distance




The ideal working distance of the magnet related to the encoder is at an eccentricity of 0 mm and an axial distance of 0.9 mm. Deviation affects the accuracy as shown in following diagram.



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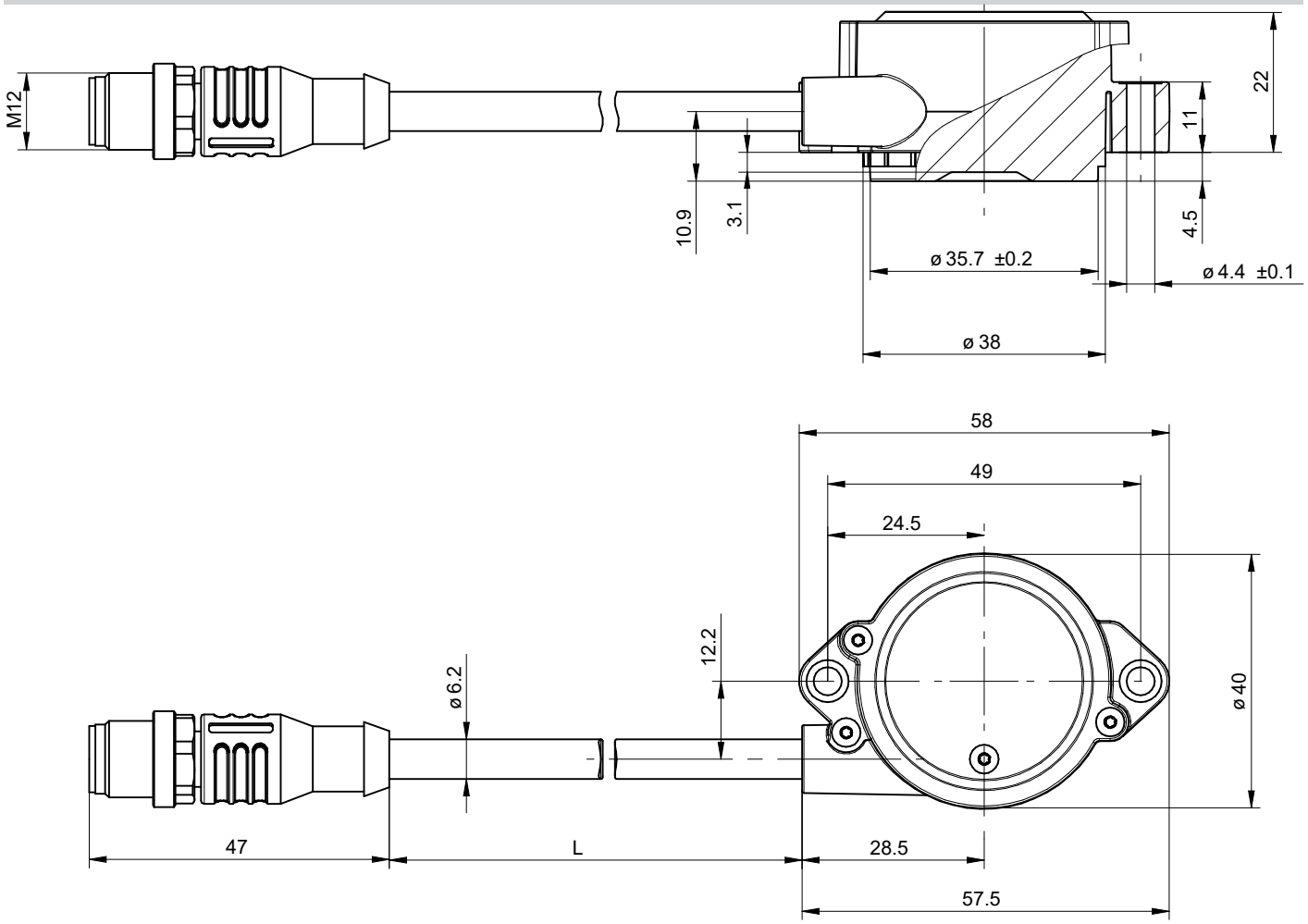
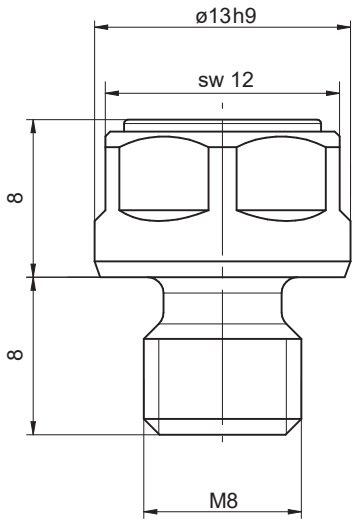
## Dimensions




Sensor with flylead connector M12




Threaded screw M8 x 8, ø13 x 8

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## Mounting recommendation