

EN580E.ML-T - SSI

Through hollow shaft

Optical multiturn encoders 13 bit ST / 12 bit MT

Overview

- Absolute encoder multiturn
- Optical sensing method
- Resolution: singleturn 13 bit, multiturn 12 bit
- Maximum resistant against magnetic fields
- High connection flexibility thanks to flexible M12 and flylead connector M23



Technical data

Technical data - electrical ratings

| | |
|-----------------------------|--|
| Voltage supply | 8...30 VDC |
| Reverse polarity protection | Yes |
| Short-circuit proof | Yes |
| Consumption w/o load | ≤80 mA (24 VDC) |
| Interface | SSI |
| Function | Multiturn |
| Steps per revolution | 8192 / 13 bit |
| Number of revolutions | 4096 / 12 bit |
| Absolute accuracy | ±0.03 ° |
| Sensing method | Optical |
| Code | Gray or binary |
| Code sequence | CW: ascending values with clockwise sense of rotation; looking at flange |
| Input signals | SSI clock Zero setting input Counting direction |
| Output stages | SSI data: Linedriver RS422 |
| Output signals | SSI data |
| Interference immunity | EN 61000-6-2 |
| Emitted interference | EN 61000-6-4 |
| Approval | UL-Listing: E217823 |

Technical data - mechanical design

| | |
|---------------|--------|
| Size (flange) | ø58 mm |
|---------------|--------|

Technical data - mechanical design

| | |
|-----------------------|--|
| Shaft type | ø12 mm (through hollow shaft) ø14 mm (through hollow shaft) |
| Protection EN 60529 | IP 54 (flange side) IP 65 (housing side) |
| Operating speed | ≤6000 rpm (+25 °C) |
| Starting acceleration | ≤1000 U/s ² |
| Starting torque | ≤0.04 Nm |
| Motor shaft tolerance | ± 0.2 mm (axial offset) ≤ 0.1 mm (radial offset) ≤ 0.1 mm (concentricity) |
| Material | Housing: aluminium Shaft: stainless steel |
| Operating temperature | -25...+85 °C (see general information) |
| Relative humidity | 95 % non-condensing |
| Resistance | IEC 60068-2-6 Vibration ±0.75 mm - 10-58 Hz, 10 g - 58-2000 Hz EN 60068-2-27 Shock 100 g, 11 ms |
| Weight approx. | 400 g |
| Connection | Connector M12, 8-pin, flexible Flange connector M23, 12-pin Flylead connector M23, 12-pin, tangential, length 300 mm |

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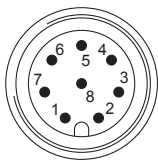
General information

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

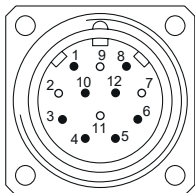
Connector M12, 8-pin

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



Flange socket M23, 12-pin, male contact, CCW

| Pin | Assignment |
|-----|------------|
| 1 | Data- |
| 2 | – |
| 3 | SET |
| 4 | DIR |
| 5 | Clock+ |
| 6 | Clock- |
| 7 | – |
| 8 | Data+ |
| 9 | – |
| 10 | 0 V |
| 11 | – |
| 12 | +Vs |

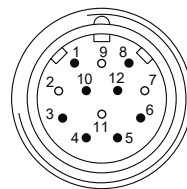


Terminal assignment

Flylead connector M23, 12-pin, male contacts, CCW

| Pin | Assignment |
|-----|------------|
| 1 | Data- |
| 2 | – |
| 3 | SET |
| 4 | DIR |
| 5 | Clock+ |
| 6 | Clock- |
| 7 | – |
| 8 | Data+ |
| 9 | – |
| 10 | 0 V |
| 11 | – |
| 12 | +Vs |

Screen: connected to housing



Terminal significance

| | |
|-----|---|
| SET | Zero setting input. Input for zero setting at any position. The zero setting operation is triggered by a high pulse and has to be in line with the selected direction of rotation (DIR). Impulse duration >100 ms. Connect to 0 V after zero setting for maximum interference immunity. |
| DIR | Counting direction input. This input is standard on high. DIR-High means ascending output data with clockwise shaft rotation when looking at flange. DIR-Low means ascending values with counterclockwise shaft rotation when looking at flange. For maximum interference immunity connect to +Vs respectively 0 V depending on counting direction. |

Trigger level

| SSI | Circuit |
|-----------|---------------------------------------|
| SSI-Clock | RS422 with terminating resistor 120 Ω |
| SSI-Data | RS422 |

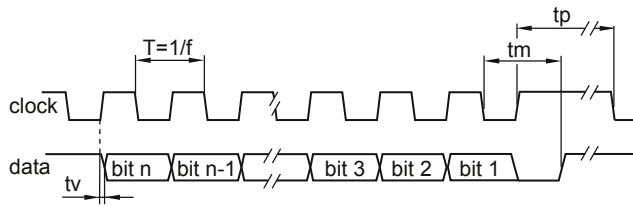
| Control inputs | Input circuit |
|------------------|---------------|
| Input level High | >0.7 UB |
| Input level Low | <0.3 UB |
| Input resistance | 10 kΩ |

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Data transfer



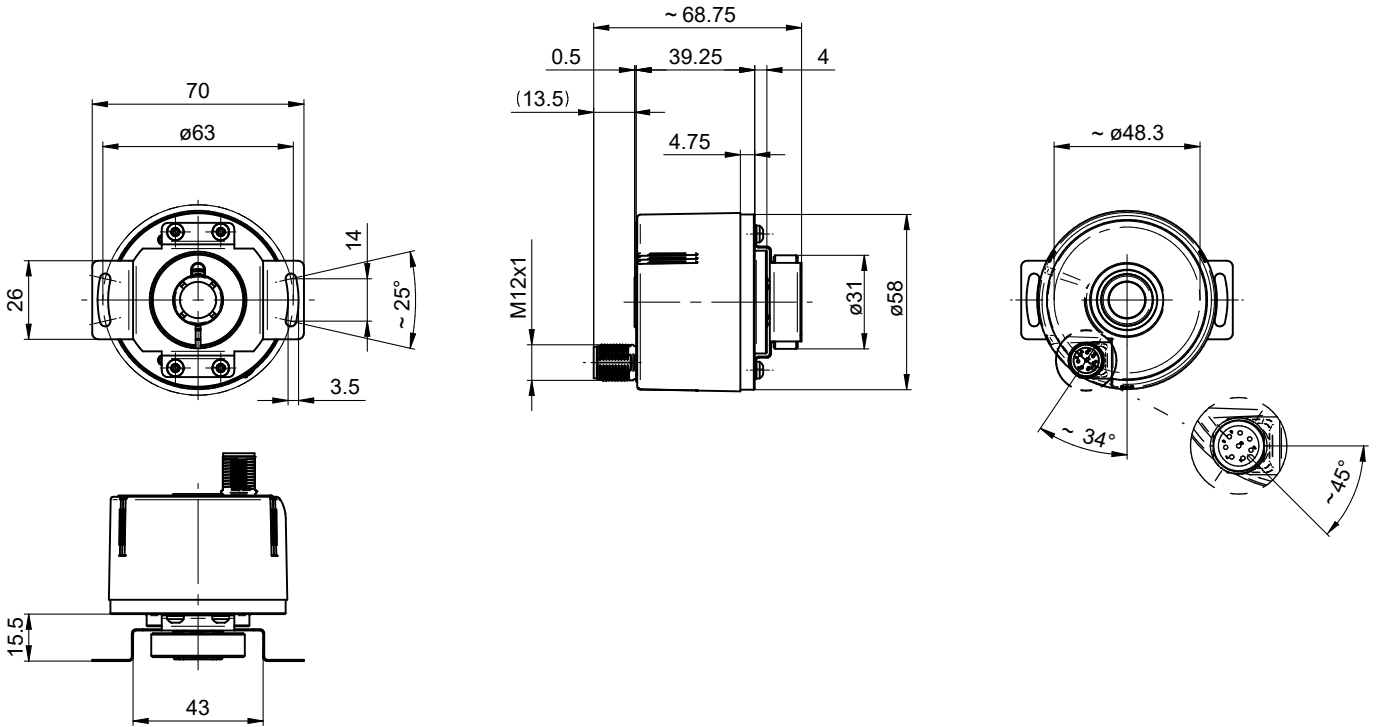
| | |
|----------------------|-------------------------|
| Clock frequency f | 80...2000 kHz |
| Delay time t_v | 70 ns (RL = 120 Ohm) |
| Monoflop time t_m | 16 ... 24 μ s + T/2 |
| Clock interval t_p | 30 μ s |

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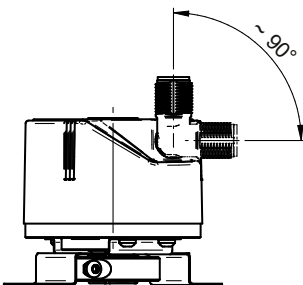
Through hollow shaft

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Dimensions



Through hollow shaft, connector M12



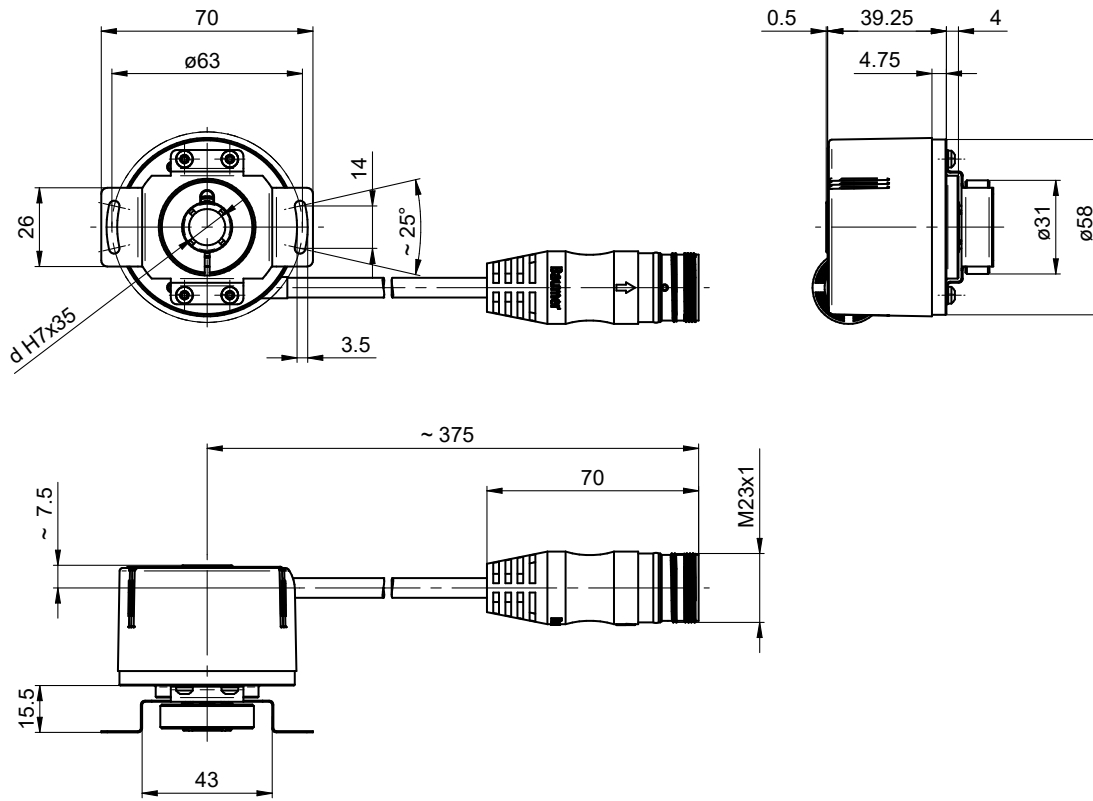
Through hollow shaft, flexible connector M12

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Through hollow shaft

Optical multiturn encoders 13 bit ST / 12 bit MT

Dimensions



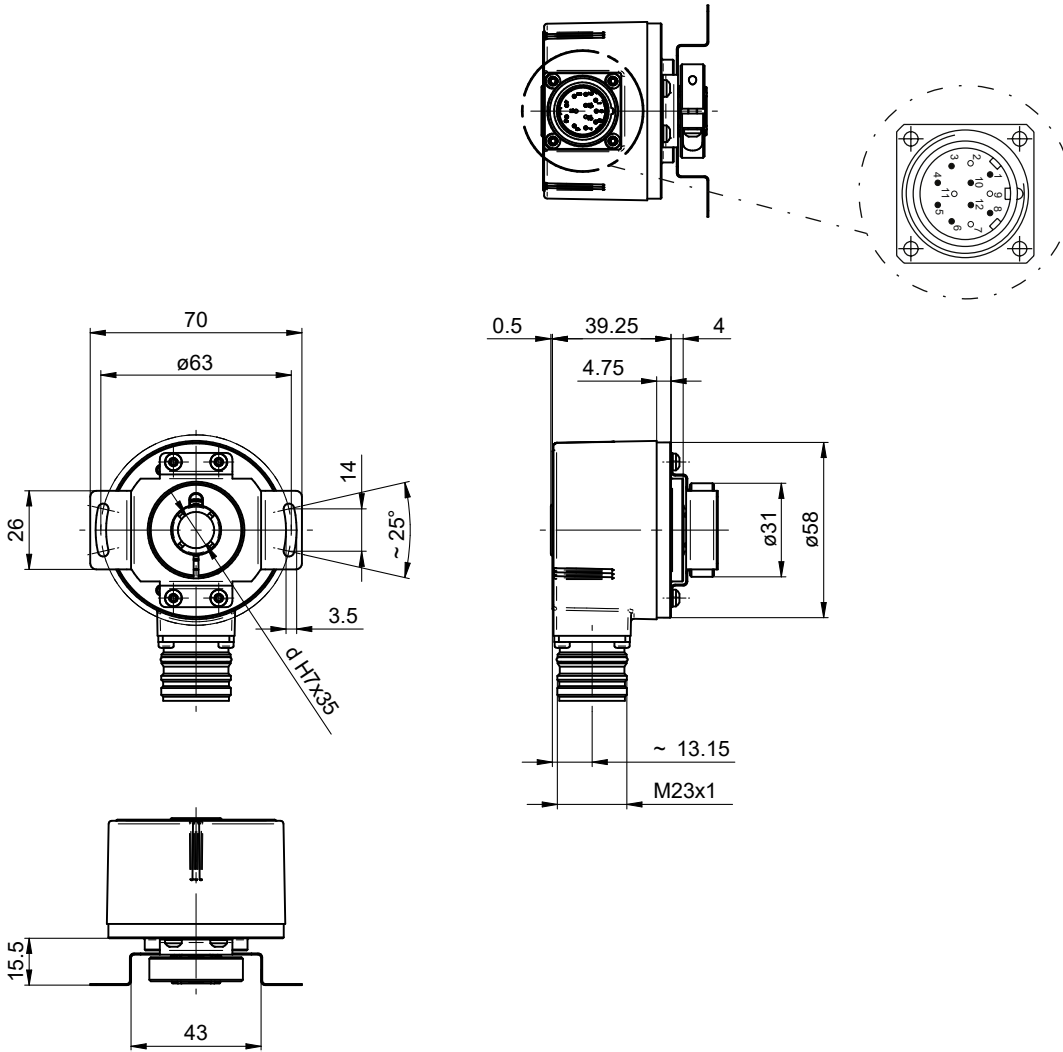
Through hollow shaft, flylead connector M23

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Dimensions



Through hollow shaft, flange socket M23

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Ordering reference

| | EN | 580 | E | . | M | L | - | T | T | ## | . | G | ## | ## | . | 13 | 12 | 0 | . | H |
|---|----|-----|---|---|---|---|---|---|---|----|---|---|----|----|---|----|----|---|---|---|
| Product | EN | | | | | | | | | | | | | | | | | | | |
| Encoder | EN | | | | | | | | | | | | | | | | | | | |
| Series | | 580 | | | | | | | | | | | | | | | | | | |
| 580 | | 580 | | | | | | | | | | | | | | | | | | |
| Focus | | | E | | | | | | | | | | | | | | | | | |
| Essential | | | E | | | | | | | | | | | | | | | | | |
| Function | | | | | M | | | | | | | | | | | | | | | |
| Multiturn | | | | | M | | | | | | | | | | | | | | | |
| Sensing | | | | | | L | | | | | | | | | | | | | | |
| Optical | | | | | | L | | | | | | | | | | | | | | |
| Shaft type | | | | | | | | T | | | | | | | | | | | | |
| Through hollow shaft | | | | | | | | T | | | | | | | | | | | | |
| Flange (Hollow shaft) | | | | | | | | | T | | | | | | | | | | | |
| With stator coupling ø63 mm | | | | | | | | | T | | | | | | | | | | | |
| Through hollow shaft | | | | | | | | | | | | | | | | | | | | |
| ø12 mm, clamping ring, A-side | | | | | | | | | | 12 | | | | | | | | | | |
| ø14 mm, clamping ring, A-side | | | | | | | | | | 14 | | | | | | | | | | |
| Protection class | | | | | | | | | | | | G | | | | | | | | |
| Flange: IP 54, Housing: IP 65 | | | | | | | | | | | | G | | | | | | | | |
| Connection | | | | | | | | | | | | | | | | | | | | |
| Connector moveable, M12, 8-pin, male contacts, CCW (A-cod) | | | | | | | | | | | | | A1 | | | | | | | |
| Flange socket radial, M23, 12-pin, male contacts, CCW | | | | | | | | | | | | | B1 | | | | | | | |
| Flylead connector, M23, 12-pin, male contacts, CCW, tangential, 0.3 m | | | | | | | | | | | | | E1 | | | | | | | |
| Voltage supply / interface | | | | | | | | | | | | | | | | | | | | |
| 8...30 VDC, SSI binary | | | | | | | | | | | | | | 1B | | | | | | |
| 8...30 VDC, SSI gray | | | | | | | | | | | | | | 1G | | | | | | |
| Resolution Singleturn | | | | | | | | | | | | | | | | | | | | |
| 13 Bit | | | | | | | | | | | | | | | | 13 | | | | |
| Resolution Multiturn | | | | | | | | | | | | | | | | | | | | |
| 12 Bit | | | | | | | | | | | | | | | | | 12 | | | |
| Resolution supplement | | | | | | | | | | | | | | | | | | | | |
| No option | | | | | | | | | | | | | | | | | | | | 0 |
| Operating temperature | | | | | | | | | | | | | | | | | | | | |
| -25...+85 °C | | | | | | | | | | | | | | | | | | | | H |

Accessories

Mounting accessories

| | |
|----------|--|
| 11066083 | Torque arm, 1-arm (mounting kit 006) |
| 11073119 | Torque arm, 1-arm (mounting kit 021) |
| 11067367 | Torque arm, 1-arm (mounting kit 028) |
| 11100198 | Stator coupling, 2-armed (mounting kit 046) |
| 11113210 | Torque arm, 1-arm (mounting kit 047) |
| 11124300 | Torque arm, 1-arm (mounting kit 048) |
| 11155325 | Rigid mounting plate, 1-arm (mounting kit 099) |