

# Absolute encoders - bus interfaces

Shaft with clamping or synchro flange

Optical multiturn encoders 13 bit ST / 12 bit MT, RS485

## GXM7W - RS485



GXM7W with clamping flange

### Features

- Encoder multiturn / RS485
- Optical sensing
- Resolution: singleturn 13 bit, multiturn 12 bit
- Clamping flange or synchro flange
- Fieldbus protocol
- Max. 4 bus users
- Bus access according to master/slave principle

### Optional

- Integration of customer-specific RS485 protocols

### Technical data - electrical ratings

|                             |                            |
|-----------------------------|----------------------------|
| Voltage supply              | 10...30 VDC                |
| Reverse polarity protection | Yes                        |
| Consumption w/o load        | ≤50 mA (24 VDC)            |
| Initializing time (typ.)    | 250 ms after power on      |
| Interface                   | RS485                      |
| Transmission rate           | 38.4 kBAud                 |
| User address                | Coded by connection        |
| Steps per turn              | 8192 / 13 bit              |
| Number of turns             | 4096 / 12 bit              |
| Absolute accuracy           | ±0.025°                    |
| Sensing method              | Optical                    |
| Code                        | Binary                     |
| Code sequence               | CW/CCW coded by connection |
| Output circuit              | RS485                      |
| Interference immunity       | DIN EN 61000-6-2           |
| Emitted interference        | DIN EN 61000-6-4           |
| Approval                    | UL approval / E63076       |

### Technical data - mechanical design

|                         |  |
|-------------------------|--|
| Housing                 | ø58 mm   |
| Shaft                   | ø10 mm (clamping flange)<br>ø6 mm (synchro flange)                                       |
| Flange                  | Clamping or synchro flange   |
| Protection DIN EN 60529 | IP 54 without shaft seal<br>IP 65 with shaft seal  |
| Operating speed         | ≤10000 rpm (mechanical)<br>≤6000 rpm (electric)  |
| Starting torque         | ≤0.015 Nm IP 54<br>≤0.03 Nm IP 65  |
| Rotor moment of inertia | 20 gcm <sup>2</sup>  |
| Admitted shaft load     | ≤20 N axial<br>≤40 N radial  |
| Materials               | Housing: steel<br>Flange: aluminium  |
| Operating temperature   | -25...+85 °C<br>-40...+85 °C (optional)  |
| Relative humidity       | 95 % non-condensing  |
| Resistance              | DIN EN 60068-2-6<br>Vibration 10 g, 16-2000 Hz<br>DIN EN 60068-2-27<br>Shock 200 g, 6 ms |
| Weight approx.          | 400 g  |
| E-connection            | Connector or cable   |



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### Optical multiturn encoders 13 bit ST / 12 bit MT, RS485

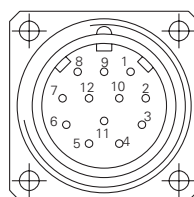
#### GXM7W - RS485

| Terminal significance |  |
|-----------------------|--|
| UB                    | Encoder voltage supply.  |
| GND                   | Encoder ground connection relating to UB.  |
| T,R IN<br>T,R OUT     | Serial data lines.<br>To avoid stub lines the data lines are guided outside on a pair of 2 wires. The arriving bus is on T,R+ IN and T,R- IN, the departing bus on T,R+ OUT und T,R-. If the encoder serves as bus termination or is the only user, only the pair of wires T,R+ IN and T,R- IN is utilized. Note: External connection of terminating resistor 150 Ω to final user. |
| Zero setting          | Input for setting a zero point anywhere within the programmed encoder resolution. The zero setting operation is triggered by a High impulse and has to be in line with the selected direction of rotation (UP/DOWN). Connect to GND after setting operation for maximum interference immunity. Impulse duration $\geq 100$ ms.   |
| UP/DOWN               | UP/DOWN counting direction input.<br>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.  |
| Ident 1...2           | Ident 1...2 are utilized for setting the encoder addresses (identifiers). Less potential the inputs are internally against UB (=“1”) by pull-up resistors what equals address 2.   |

|         |   |   |   |   |
|---------|---|---|---|---|
| Address | 2 | 3 | 4 | 5 |
| Ident 1 | 1 | 0 | 1 | 0 |
| Ident 2 | 1 | 1 | 0 | 0 |

| Terminal assignment |              |              |
|---------------------|--------------|--------------|
| Connector           | Core colour  | Assignment   |
| Pin 1               | brown        | UB           |
| Pin 2               | black        | GND          |
| Pin 3               | blue         | T,R+ IN      |
| Pin 4               | beige        | Ident 1      |
| Pin 5               | green        | T,R- OUT     |
| Pin 6               | yellow       | Ident 2      |
| Pin 7               | violet       | T,R- IN      |
| Pin 8               | brown/yellow | UP/DOWN      |
| Pin 9               | pink         | T,R+ OUT     |
| Pin 10              | black/yellow | Zero setting |
| Pin 11              | –            | –            |
| Pin 12              | –            | –            |



Please use cores twisted in pairs (for example T,R+ / T,R-) for extension cables of more than 10 m length.

| Trigger level |                  |
|---------------|------------------|
| Interface     | Circuit          |
| Data          | Linedriver RS485 |

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

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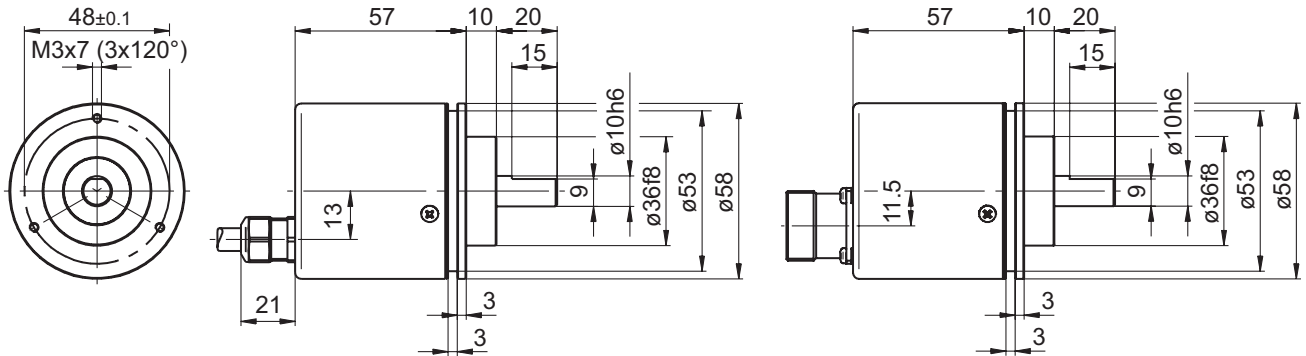
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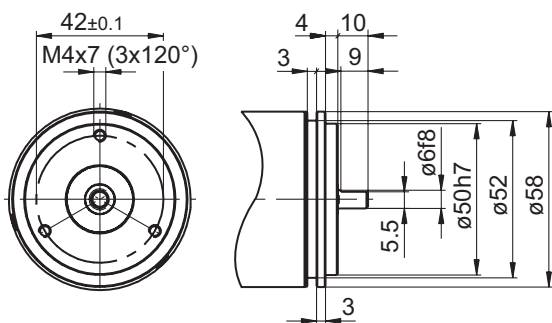
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#### Dimensions

##### GXM7W clamping flange



##### GXM7W synchro flange



##### GXM7W connector dimensions

