

# Absolute encoders - SSI

## Shaft $\varnothing 10$ mm with clamping flange

### Magnetic multiturn encoder 12 bit ST / 12 bit MT

#### ATD 2S B14 Y24 - MAGRES + Resolver



ATD 2S B14 Y24 with clamping flange

#### Features

- Encoder single- or multiturn / SSI + resolver
- Two-in-one measuring system
- Magnetic sensing
- Resolution: singleturn 12 bit, multiturn 12 bit
- Self-diagnostic
- Electronic zero point adjustment
- Built-in preset button

#### Optional

- Corrosion protection for offshore applications

#### Technical data - electrical ratings

|                             |   |
|-----------------------------|---|
| Voltage supply              | 10...30 VDC   |
| Reverse polarity protection | Yes   |
| Consumption w/o load        | $\leq 60$ mA (24 VDC)   |
| Interface                   | SSI   |
| Function                    | Multiturn   |
| Steps per turn              | 4096 / 12 bit   |
| Number of turns             | 4096 / 12 bit   |
| Sensing method              | Magnetic  |
| Code                        | Gray or binary  |
| Code sequence               | CW: ascending values with clockwise sense of rotation (looking at mounting surface) |
| Inputs                      | SSI clock<br>Reset input  |
| Output circuit              | SSI data: linedriver RS485<br>Diagnostic output: error                              |
| Interference immunity       | DIN EN 61000-6-2  |
| Emitted interference        | DIN EN 55011  |
| Diagnostic function         | Self-diagnosis  |
| Number of pole pairs        | 1 = 2 poles   |
| Input voltage               | 7 Vrms  |
| Input frequency             | 10 kHz  |
| Transformation ratio        | $0.5 \pm 5\%$   |
| Phase shift                 | $0^\circ \pm 10^\circ$  |
| Electr. errors max.         | $\pm 10$ Angular minutes  |

#### Technical data - mechanical design

|                         |  |
|-------------------------|--|
| Dimensions (flange)     | $\varnothing 58$ mm  |
| Shaft                   | $\varnothing 10$ mm  |
| Flange                  | Clamping flange  |
| Protection DIN EN 60529 | IP 65, IP 67 (at shaft entrance)   |
| Operating speed         | $\leq 5000$ rpm (mechanical)<br>$\leq 8000$ rpm (electric)                               |
| Starting torque         | $\leq 0.05$ Nm   |
| Shaft loading           | $\leq 40$ N axial<br>$\leq 60$ N radial  |
| Materials               | Housing: aluminium<br>Shaft: stainless steel   |
| Operating temperature   | $-30 \dots +85$ °C   |
| Relative humidity       | 90 % non-condensing  |
| Resistance              | DIN EN 60068-2-6<br>Vibration 10 g, 55-2000 Hz<br>DIN EN 60068-2-27<br>Shock 30 g, 11 ms |
| Weight approx.          | 400 g  |
| Connection              | Connector M23 type 2, 17-pin   |

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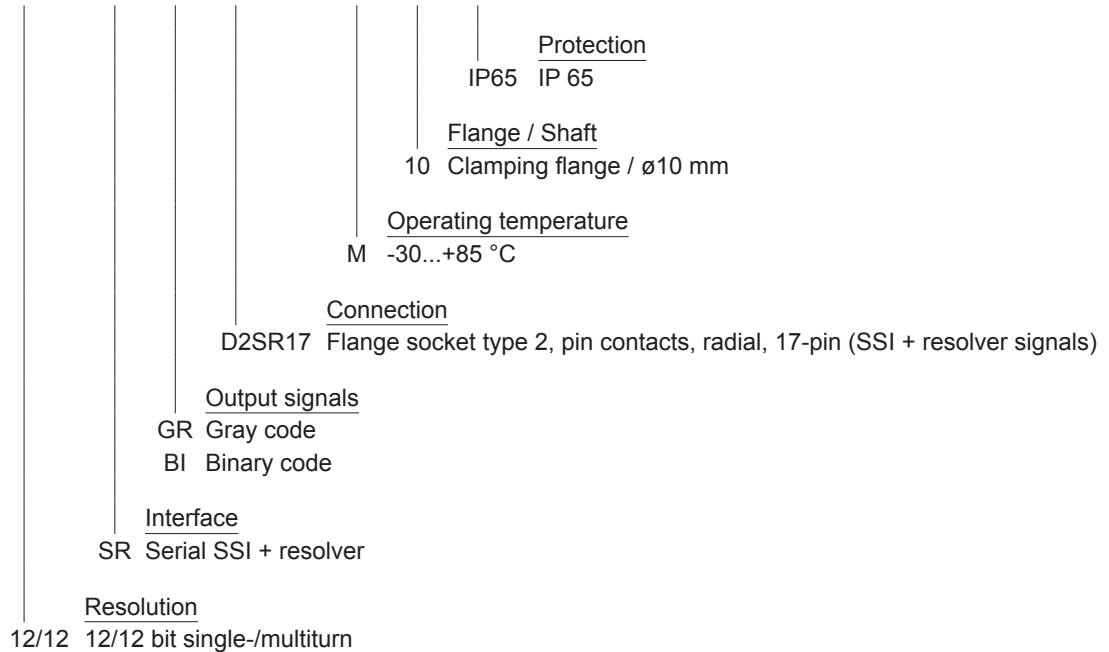
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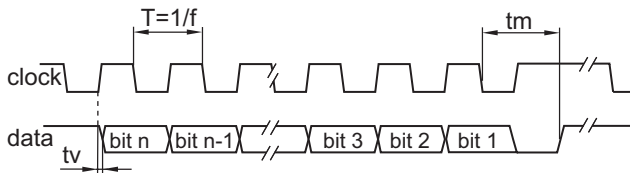
ATD 2S B14 Y24 - MAGRES + Resolver

#### Part number

ATD 2S B14 Y24 **12/12** **SR** **D2SR17** **M** **10** **IP65**



#### Data transfer



|                      |                  |
|----------------------|------------------|
| Clock frequency f    | 80...1000 kHz    |
| Scan ratio of T      | 40...60 %        |
| Time lag $t_v$       | 150 ns           |
| Monoflop time $t_m$  | $20 \mu s + T/2$ |
| Clock interval $t_p$ | 26 $\mu s$       |

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##### Terminal significance

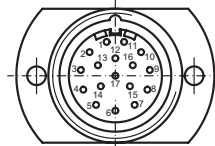
|                 |   |
|-----------------|---|
| UB              | Encoder supply voltage.   |
| GND             | Encoder ground connection relating to UB.   |
| Data+           | Positive, serial data output of differential linedriver.  |
| Data-           | Negative, serial data output of differential linedriver.  |
| Clock+          | Positive SSI clock input.<br>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.<br>Clock- together with clock+ forms a current loop. A current of approx. 7 mA towards clock- input means logic 0 in positive logic.                    |
| Preset (Button) | Preset input for setting mid-position at any desired point within the entire resolution.  |
| Error           | Diagnostic output (Open Collector with internal 10 k $\Omega$ pullup-resistor). The output is high-active, that means if no fault submitted, the output is to GND interconnected. |

##### Output signals

##### Terminal assignment

##### ATD 2S B14 Y24 with integrated resolver

| Connector | Assignment |
|-----------|------------|
| Pin 1     | R1         |
| Pin 2     | R2         |
| Pin 3     | S4         |
| Pin 4     | S3         |
| Pin 5     | –          |
| Pin 6     | –          |
| Pin 7     | error      |
| Pin 8     | clock-     |
| Pin 9     | data-      |
| Pin 10    | GND        |
| Pin 11    | UB         |
| Pin 12    | –          |
| Pin 13    | S2         |
| Pin 14    | S1         |
| Pin 15    | clock+     |
| Pin 16    | data+      |
| Pin 17    | –          |



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#### Trigger level

| SSI       | Circuit          |
|-----------|------------------|
| SSI-Clock | Optocoupler      |
| SSI-Data  | Linedriver RS485 |

#### Control input

| Control input    | Input circuit |
|------------------|---------------|
| Input level High | $\geq 0,7$ UB |
| Input level Low  | $\leq 0,3$ UB |
| Input resistance | 10 k $\Omega$ |

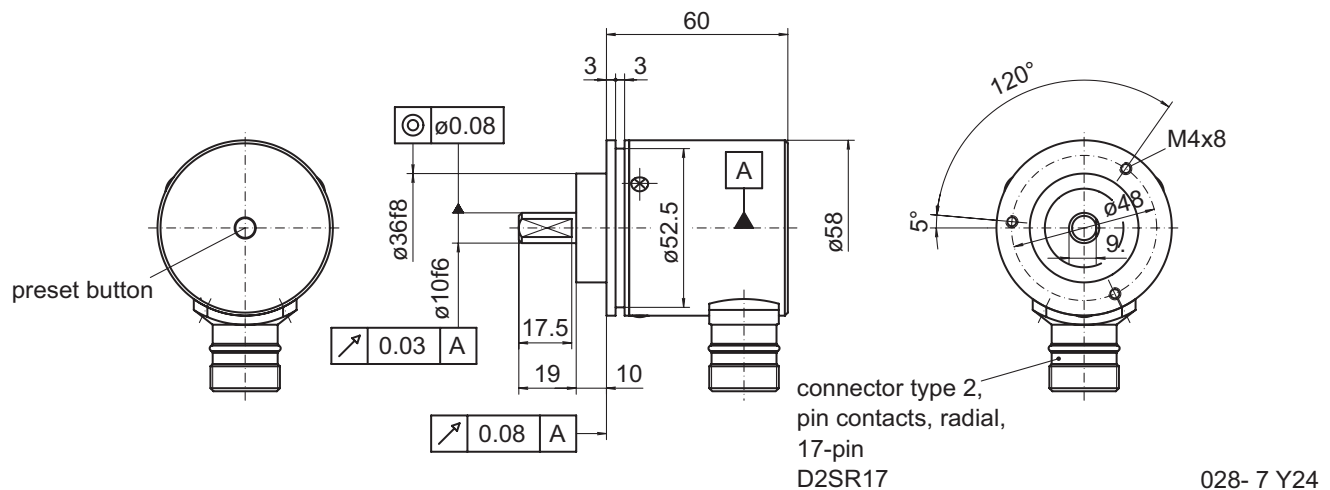
#### Diagnostic outputs

| Diagnostic outputs | Output circuit   |
|--------------------|--|
| Output level       | Open Collector with internal 10 k $\Omega$ PullUp-resistance |

#### Incremental outputs

| Incremental outputs | Line Driver short-circuit proof |
|---------------------|---------------------------------|
| Output level High   | $\geq$ UB -3 V                  |
| Output level Low    | $\leq 0,5$ V                    |
| Load                | $\leq 30$ mA                    |

#### Dimensions



028- 7 Y24