

Absolute encoders - SSI

Solid shaft $\varnothing 10$ mm with clamping flange

Optical single- or multiturn encoders max. 14 bit ST / 24 bit MT

ATD 2S B14 Y23



ATD 2S B14 Y23 with clamping flange

Technical data - electrical ratings

| | |
|-----------------------------|---|
| Voltage supply | 10...30 VDC |
| Reverse polarity protection | Yes |
| Consumption w/o load | < 70 mA (24 VDC) |
| Interface | SSI |
| Function | Singleturn Multiturn |
| Steps per turn | ≤ 16384 / 14 bit |
| Number of turns | ≤ 16777216 / 24 bit |
| Incremental output | 2048 pulses A90°B + inv. HTL (optional) 2048 pulses A90°B + inv. TTL (optional) 2048 sine periods A, B, sine 1 Vpp (optional) |
| Sensing method | Optical |
| Code | Gray or binary |
| Code sequence | CW: ascending values with clockwise sense of rotation; looking at mounting surface CW/CCW be selectable by input V/R |
| Inputs | SSI clock Zero setting input |
| Output stages | SSI data: linedriver RS485 Diagnostic output: error |
| Interference immunity | DIN EN 61000-6-2 |
| Emitted interference | DIN EN 61000-6-3 |

Features

- Encoder single- or multiturn / SSI
- Optical sensing
- Resolution: max. singleturn 14 bit, multiturn 24 bit
- Centering alignment $\varnothing 36$ mm, mounting screw hole circle $\varnothing 48$ mm
- Self-diagnostic
- Electronic zero point adjustment
- Flange socket radial

Optional

- HTL or TTL incremental signals
- Sine signals

Technical data - mechanical design

| | |
|-------------------------|--|
| Size (flange) | $\varnothing 58$ mm |
| Shaft type | $\varnothing 10$ mm solid shaft (clamping flange) |
| Flange | Clamping flange |
| Protection DIN EN 60529 | IP 65 |
| Operating speed | ≤ 8000 rpm (mechanical) ≤ 8000 rpm (electric) |
| Starting torque | ≤ 0.012 Nm (+20 °C) |
| Shaft loading | ≤ 20 N axial ≤ 40 N radial |
| Materials | Housing: aluminium Shaft: stainless steel |
| Operating temperature | -20...+85 °C |
| Relative humidity | 90 % non-condensing |
| Resistance | DIN EN 60068-2-6 Vibration 10 g, 55-2000 Hz DIN EN 60068-2-27 Shock 200 g, 6 ms |
| Weight approx. | 380 g |
| Connection | Connector M23 type 2, 12-pin Connector M23 type 2, 17-pin |

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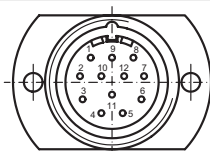
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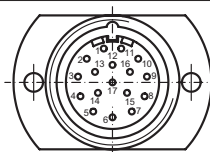
ATD 2S B14 Y23

| 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. 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. |
| Reset | Reset input for setting zero position value at any desired point within the entire resolution. The resetting process is triggered by apply of UB. |
| V/\bar{R} | V/\bar{R} counting direction input. This input is standard on High. V/\bar{R} means increasing values with clockwise shaft rotation when looking at the mounting side (CW). V/\bar{R} -Low means decreasing values with clockwise shaft rotation when looking at the mounting side (CCW). |
| Error | Diagnostic output (Open Collector with internal 10 k Ω pullup-resistor). The output is high-active, that means if no fault submitted, the output is to GND interconnected. |

| Terminal assignment | |
|-----------------------|----------------|
| ATD 2S B14 Y23 | |
| Connector | Assignment |
| Pin 1 | clock- |
| Pin 2 | clock+ |
| Pin 3 | data+ |
| Pin 4 | data- |
| Pin 5 | – |
| Pin 6 | – |
| Pin 7 | reset |
| Pin 8 | V/\bar{R} |
| Pin 9 | – (do not use) |
| Pin 10 | error |
| Pin 11 | UB |
| Pin 12 | GND |



| ATD 2S B14 Y23 with incremental output signals | |
|--|----------------|
| Connector | Assignment |
| Pin 1 | clock- |
| Pin 2 | clock+ |
| Pin 3 | data+ |
| Pin 4 | data- |
| Pin 5 | – |
| Pin 6 | – |
| Pin 7 | reset |
| Pin 8 | V/\bar{R} |
| Pin 9 | – (do not use) |
| Pin 10 | error |
| Pin 11 | UB |
| Pin 12 | GND |
| Pin 13 | – |
| Pin 14 | track A+ |
| Pin 15 | track A- |
| Pin 16 | track B+ |
| Pin 17 | track B- |



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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 Ω |

Diagnostic outputs

| Diagnostic outputs | Output circuit |
|--------------------|--|
| Output level | Open Collector with internal 10 k Ω PullUp-resistance |

Incremental outputs HTL - Line Driver short-circuit proof

| | |
|-------------------|----------------|
| Output level High | \geq UB -3 V |
| Output level Low | $\leq 0,5$ V |
| Load | ≤ 30 mA |

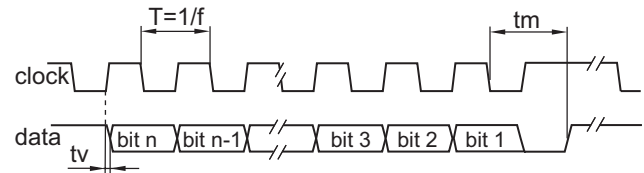
Incremental outputs TTL - Line Driver short-circuit proof

| | |
|-------------------|--------------|
| Output level High | $\geq 2,4$ V |
| Output level Low | $\leq 0,5$ V |
| Load | ≤ 30 mA |

Outputs

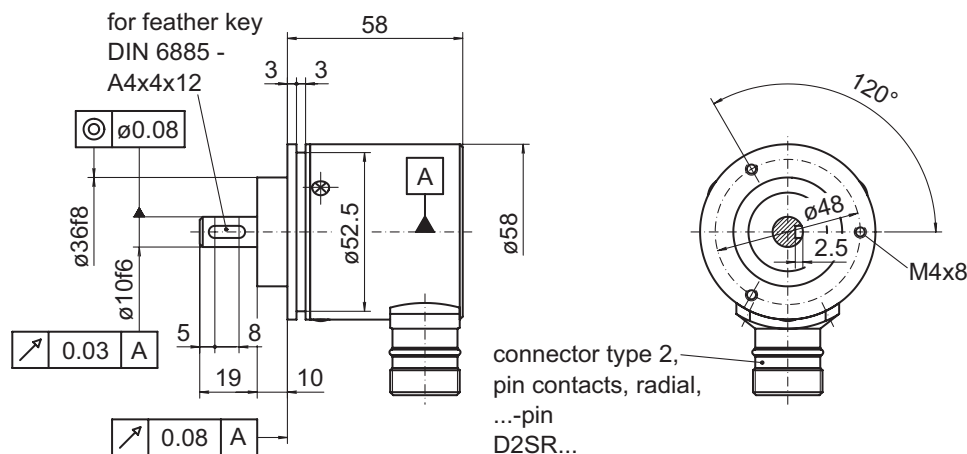
| | |
|------------------|--|
| Output amplitude | 1 V _{PP} at Z ₀ = 120 Ω |
|------------------|--|

Data transfer



| | |
|-------------------|------------------|
| Clock frequency f | 80...1000 kHz |
| Duty cycle of T | 40...60 % |
| Delay time tv | 150 ns |
| Monoflop time tm | 20 μ s + T/2 |
| Clock interval tp | 26 μ s |

Dimensions



028- 7 Y23