

## ATD2AH00

Through hollow shaft  $\varnothing 10$  to  $\varnothing 14$  mm

Optical singleturn encoders with analog output

### Overview

- Analog signals
- 14 bit singleturn
- Internal self-diagnostic
- Voltage output or current output
- Factory-set adjustable angle ( $0^\circ$  -  $360^\circ$ )
- Detachable cable – tangential outlet
- Easy signal processing



### Technical data

#### Technical data - electrical ratings

|                             |                                                                                                                                       |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Voltage supply              | +UB= 12...30 VDC (IS-/US-version)                                                                                                     |
| Reverse polarity protection | Yes                                                                                                                                   |
| Consumption w/o load        | $\leq 50$ mA (24 VDC)                                                                                                                 |
| Interface                   | Analog (4...20 mA or 0...10 V)                                                                                                        |
| Load resistor               | $\geq 1$ k $\Omega$ (recommended 10 k $\Omega$ ) / voltage output<br>$\leq 500$ $\Omega$ (recommended 470 $\Omega$ ) / current output |
| Function                    | Singleturn                                                                                                                            |
| Measuring range             | $90^\circ$ , $180^\circ$ , $360^\circ$                                                                                                |
| Steps per revolution        | 16384 / 14 bit                                                                                                                        |
| Sensing method              | Optical                                                                                                                               |
| Updating values             | $\leq 130$ $\mu$ s                                                                                                                    |
| Code sequence               | CW: ascending values with clockwise sense of rotation; looking at mounting surface                                                    |
| Output stages               | Voltage output (short-circuit proof)<br>Current output (short-circuit proof)                                                          |
| Interference immunity       | EN 61000-6-2                                                                                                                          |

#### Technical data - electrical ratings

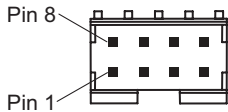
|                      |              |
|----------------------|--------------|
| Emitted interference | EN 61000-6-3 |
|----------------------|--------------|

#### Technical data - mechanical design

|                       |                                                                                                                                        |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Size (flange)         | $\varnothing 58$ mm                                                                                                                    |
| Shaft type            | $\varnothing 10$ mm (through hollow shaft)<br>$\varnothing 12$ mm (through hollow shaft)<br>$\varnothing 14$ mm (through hollow shaft) |
| Protection EN 60529   | IP 65                                                                                                                                  |
| Operating speed       | $\leq 6000$ rpm (mechanical)<br>$\leq 6000$ rpm (electric)                                                                             |
| Starting torque       | $\leq 0.01$ Nm ( $+20^\circ\text{C}$ )                                                                                                 |
| Material              | Housing: aluminium<br>Shaft: stainless steel                                                                                           |
| Operating temperature | $-20...+85^\circ\text{C}$                                                                                                              |
| Relative humidity     | 90 % non-condensing                                                                                                                    |
| Resistance            | EN 60068-2-6<br>Vibration 10 g, 55-2000 Hz<br>EN 60068-2-27<br>Shock 30 g, 11 ms                                                       |
| Weight approx.        | 150 g                                                                                                                                  |
| Connection            | Board connector, 8-pin                                                                                                                 |

## Terminal assignment

| Connector | Assignment                |
|-----------|---------------------------|
| Pin 1     | +UB                       |
| Pin 2     | GND                       |
| Pin 3     | $U_{OUT}$ resp. $I_{OUT}$ |
| Pin 4     | $GND_{OUT}$               |
| Pin 5     | NC                        |
| Pin 6     | $V/\bar{R}$               |
| Pin 7     | error                     |
| Pin 8     | reset                     |

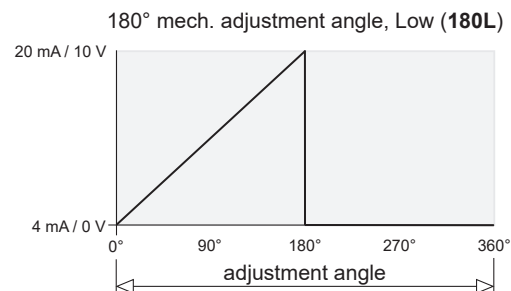
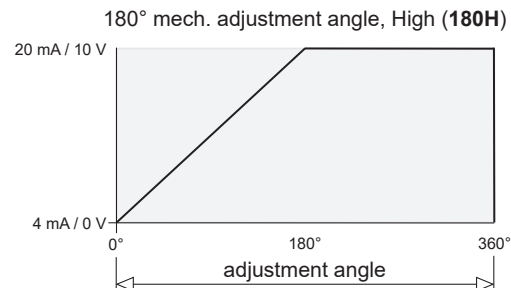
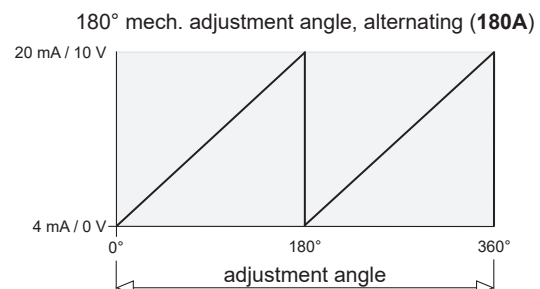
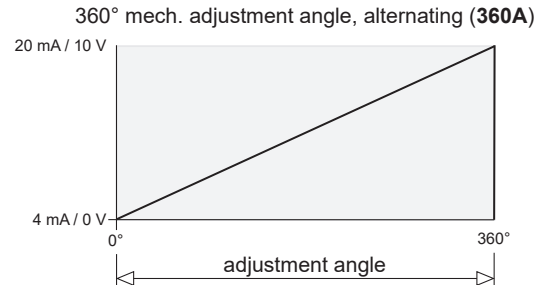


## Terminal significance

|             |                                                                                                                                                                                                                                                                                         |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| +UB         | Encoder supply voltage.                                                                                                                                                                                                                                                                 |
| GND         | Encoder ground connection relating to UB.                                                                                                                                                                                                                                               |
| $U_{OUT}$   | Voltage output increasing at clockwise rotation when looking at the mounting side.                                                                                                                                                                                                      |
| $I_{OUT}$   | Current output increasing at clockwise rotation when looking at the mounting side.                                                                                                                                                                                                      |
| $GND_{OUT}$ | Reference voltage for analogue output.                                                                                                                                                                                                                                                  |
| 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.<br>This input is standard on High. $V/\bar{R}$ means increasing values with clockwise shaft rotation when looking at the mounting side. $V/\bar{R}$ -Low means decreasing values with clockwise shaft rotation when looking at the mounting side. |
| Error       | Diagnostic output (Open Collector with internal 10 k $\Omega$ pullup-resistor). The output is low-active, that means if no fault submitted, the output is +UB.                                                                                                                          |

## Output signals

### Unipolar Output (IS-/US-version)



## Trigger level

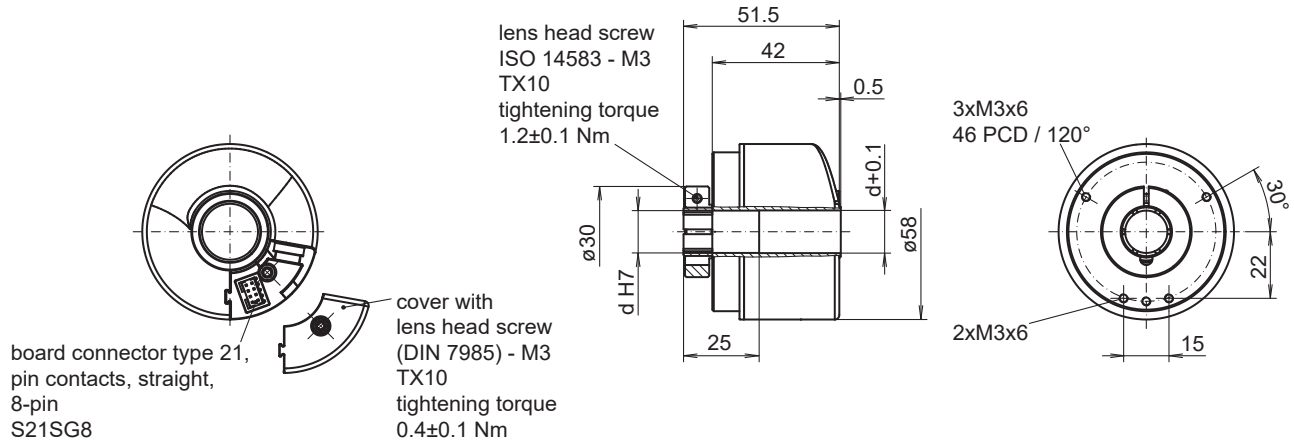
| Control input      | Input circuit                                                |
|--------------------|--------------------------------------------------------------|
| Input level High   | $\geq 0,7 \text{ UB}$                                        |
| Input level Low    | $\leq 0,3 \text{ UB}$                                        |
| Input resistance   | 10 k $\Omega$                                                |
| Diagnostic outputs | Output circuit                                               |
| Output level       | Open Collector with internal 10 k $\Omega$ PullUp-resistance |

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### Dimensions



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### Ordering reference

|                                                               | ATD2AH00 | #### | ## | S21SG8 | S | ## | IP65 |
|---------------------------------------------------------------|----------|------|----|--------|---|----|------|
| <b>Product</b>                                                | ATD2AH00 |      |    |        |   |    |      |
| <b>Resolution</b>                                             |          |      |    |        |   |    |      |
| 360° mech. adjustment angle, alternating (singleturn)         |          | 360A |    |        |   |    |      |
| 180° mech. adjustment angle, alternating (singleturn)         |          | 180A |    |        |   |    |      |
| 180° mech. adjustment angle, High (singleturn)                |          | 180H |    |        |   |    |      |
| 180° mech. adjustment angle, Low (singleturn)                 |          | 180L |    |        |   |    |      |
| <b>Interface</b>                                              |          |      |    |        |   |    |      |
| Current output, standard, 4...20 mA, $V_{in} = 12...30$ VDC   |          |      |    | IS     |   |    |      |
| Voltage output, standard, 0...+10 VDC, $V_{in} = 12...30$ VDC |          |      |    | US     |   |    |      |
| <b>Connection</b>                                             |          |      |    |        |   |    |      |
| Board connector type 21, pin contacts, straight, 8-pin        |          |      |    | S21SG8 |   |    |      |
| <b>Operating temperature</b>                                  |          |      |    |        |   |    |      |
| -20...+85 °C                                                  |          |      |    |        | S |    |      |
| <b>Through hollow shaft</b>                                   |          |      |    |        |   |    |      |
| $\varnothing 10$ mm                                           |          |      |    |        |   |    | 10   |
| $\varnothing 12$ mm                                           |          |      |    |        |   |    | 12   |
| $\varnothing 14$ mm                                           |          |      |    |        |   |    | 14   |
| <b>Protection</b>                                             |          |      |    |        |   |    |      |
| IP 65                                                         |          |      |    |        |   |    | IP65 |

Other adjustment on request.

### Accessories

#### Mounting accessories

|          |                                                                       |
|----------|-----------------------------------------------------------------------|
| 11066080 | Torque arm, 1-arm (mounting kit 002)                                  |
| 11066083 | Torque arm, 1-arm (mounting kit 006)                                  |
| 11073114 | Torque arm, 3-armed (mounting kit 019)                                |
| 11073119 | Torque arm, 1-arm (mounting kit 021)                                  |
| 11069239 | Torque arm, 1-arm (mounting kit 092)                                  |
| 11116921 | Insulating sleeve $\varnothing 10$ mm/ $\varnothing 12$ mm/25 mm long |
| 11116923 | Insulating sleeve $\varnothing 12$ mm/ $\varnothing 14$ mm/25 mm long |