

# Absolute encoders - analog

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

### Optical singleturn encoders with analog output

#### ATD2AH00



ATD2AH00 with through hollow shaft

#### Features

- 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 - electrical ratings

Voltage supply	+UB= 12...30 VDC (IS-/IE-/US-/UT-version) -UB= -12...-26 VDC / +UB 12...30 VDC (UE-/UR-version)
Reverse polarity protection	Yes
Consumption w/o load	$\leq 50$ mA (24 VDC)
Interface	Analog (4...20 mA / 0...20 mA / 0...+5 VDC / 0...+10 VDC / -5...+5 VDC / -10...+10 V)
Function	Singleturn
Measuring range	$90^\circ$ , $180^\circ$ , $360^\circ$
Load resistor	$\geq 1$ k $\Omega$ (recommended 10 k $\Omega$ ) / voltage output $\leq 500$ $\Omega$ (recommended 470 $\Omega$ ) / current output
Steps per turn	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) Current output (short-circuit proof)
Interference immunity	DIN EN 61000-6-2
Emitted interference	DIN EN 61000-6-3

#### Technical data - mechanical design

Size (flange)	$\varnothing 58$ mm
Shaft type	$\varnothing 10$ mm (through hollow shaft) $\varnothing 12$ mm (through hollow shaft) $\varnothing 14$ mm (through hollow shaft)
Protection	DIN EN 60529 IP 65
Operating speed	$\leq 6000$ rpm (mechanical) $\leq 6000$ rpm (electric)
Starting torque	$\leq 0.01$ Nm (+20 $^\circ$ C)
Materials	Housing: aluminium Shaft: stainless steel
Operating temperature	-20...+85 $^\circ$ C
Relative humidity	90 % non-condensing
Resistance	DIN EN 60068-2-6 Vibration 10 g, 55-2000 Hz DIN EN 60068-2-27 Shock 30 g, 11 ms
Weight approx.	150 g
Connection	Board connector, 8-pin
Motor shaft tolerance	0.25 mm axial 0.1 mm radial

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**ATD2AH00**

#### Part number

ATD2AH00   **S21SG8** **S**  **IP65**

		<b>S21SG8</b>	<b>S</b>		<b>IP65</b>	
						Protection IP65 IP 65
						Through hollow shaft 10 $\varnothing 10$ mm 12 $\varnothing 12$ mm 14 $\varnothing 14$ mm
						Operating temperature S -20...+85 °C
						Connection S21SG8 Board connector type 21, pin contacts, straight, 8-pin
						Interface IS Current output, standard, 4...20 mA, Vin = 12...30 VDC IE Current output, extended, 0...20 mA, Vin = 12...30 VDC US Voltage output, standard, 0...+10 VDC, Vin = 12...30 VDC UE Voltage output, extended, -10...+10 VDC, Vin = -12...-26 VDC / 12...30 VDC UT Voltage output, 0...+5 VDC, Vin = 12...30 VDC UR Voltage output, reduced, -5...+5 VDC, Vin = -12...-26 VDC / 12...30 VDC
						Resolution 360A 360° mech. angle of rotation, alternating (singleturn) 180A 180° mech. angle of rotation, alternating (singleturn) 180H 180° mech. angle of rotation, High (singleturn) 180L 180° mech. angle of rotation, Low (Singleturn)

Other adjustment on request.

#### Accessories

##### Connectors and cables

11072169	Connection cable with FCI, 8-pin / wire end sleeves (UL/CSA), 1 m
11093848	Connection cable with FCI, 8-pin / wire end sleeves (UL/CSA), 2 m
11092928	Connection cable with FCI, 8-pin / wire end sleeves (UL/CSA), 3 m
11077007	Connection cable with FCI, 8-pin / wire end sleeves (UL/CSA), 5 m
11080879	Connection cable with FCI, 8-pin / wire end sleeves (UL/CSA), 10 m
11079089	Connection cable with rear mount socket M23, 12-pin, 1 m
11106562	Connection cable with FCI, 8-pin / D-SUB, 9-pin, 0.3 m
11079111	Connection cable with FCI, 8-pin / D-SUB, 9-pin, 1 m
11079113	Connection cable with coupling M12, 8-pin, 1 m

#### Accessories

##### Mounting accessories

11066080	Torque arm, 1-arm, bolt circle $\varnothing 76$ ...80 mm, mounting M4 (mounting kit 002)
11066083	Torque arm, 1-arm, bolt circle $\varnothing 74$ ...94 mm, mounting M4/M5 (mounting kit 006)
11073114	Torque arm, 3-armed, bolt circle $\varnothing 76$ mm, mounting M3 (mounting kit 019)
11073119	Torque arm, 1-arm, bolt circle $\varnothing 65.5$ ...281 mm, mounting M4, can be cut to length (mounting kit 021)
11069239	Torque arm, 1-arm, bolt circle $\varnothing 110$ ...130 mm, mounting M5 (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

Further connection cable lengths see accessories.

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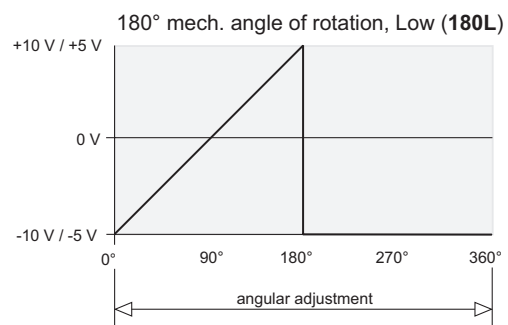
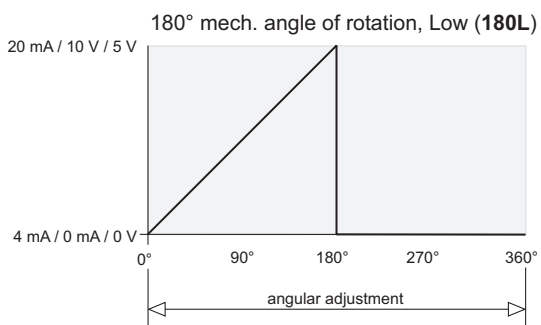
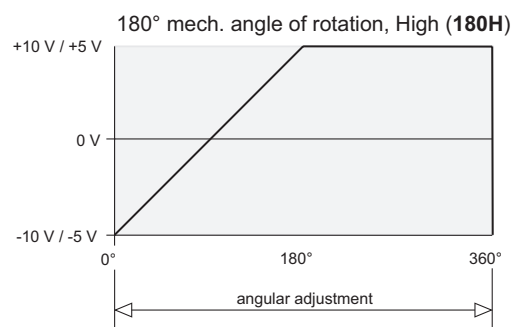
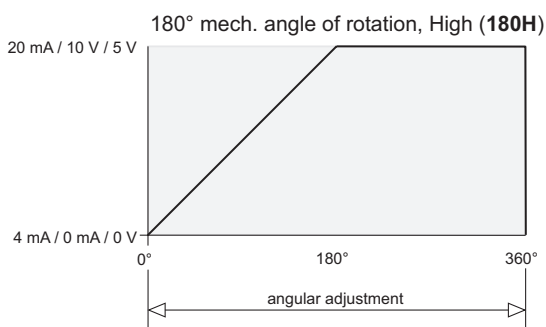
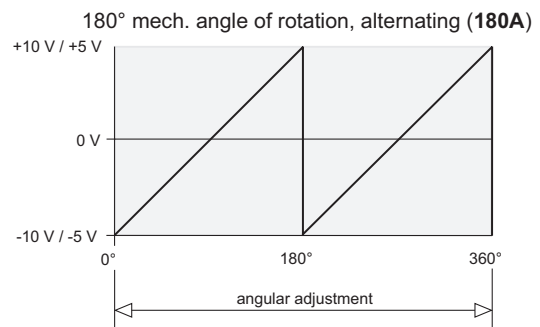
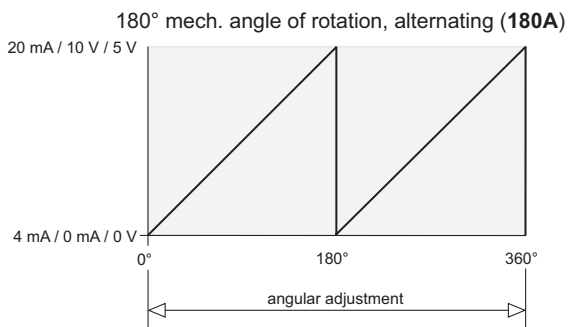
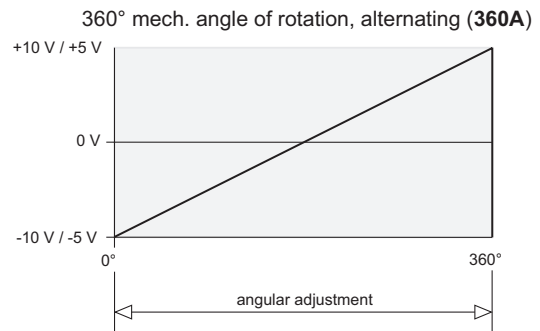
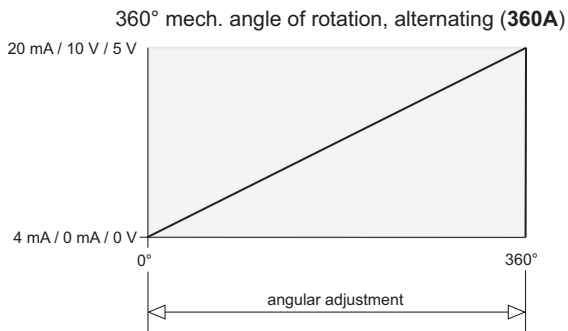
Through hollow shaft  $\varnothing 10$  to  $\varnothing 14$  mm  
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### Output signals

Unipolar Output  
(IS-/IE-/US-/UT-version)

Bipolar Output  
(UE-/UR-version)



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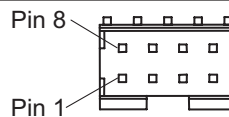
ATD2AH00

#### Terminal significance

+UB	Encoder supply voltage.
-UB	Negative encoder supply voltage -12 to -26 VDC (only at UE-/UR-version).
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. 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.

#### Terminal assignment

Connector	Assignment
Pin 1	+UB
Pin 2	GND
Pin 3	$U_{OUT}$ resp. $I_{OUT}$
Pin 4	$GND_{OUT}$
Pin 5	- / -UB (only at UE-/UR-version)
Pin 6	$V/\bar{R}$
Pin 7	error
Pin 8	reset



#### Dimensions

