

# 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)
Load resistor	$\geq 1$ k $\Omega$ (recommended 10 k $\Omega$ ) / voltage output $\leq 500$ $\Omega$ (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) 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 ( $+20^\circ\text{C}$ )
Materials	Housing: aluminium Shaft: stainless steel
Operating temperature	$-20...+85^\circ\text{C}$
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

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#### Part number

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

				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, $V_{in} = 12...30$ VDC			
	IE	Current output, extended, 0...20 mA, $V_{in} = 12...30$ VDC			
	US	Voltage output, standard, 0...+10 VDC, $V_{in} = 12...30$ VDC			
	UE	Voltage output, extended, -10...+10 VDC, $V_{in} = -12...-26$ VDC / 12...30 VDC			
	UT	Voltage output, 0...+5 VDC, $V_{in} = 12...30$ VDC			
	UR	Voltage output, reduced, -5...+5 VDC, $V_{in} = -12...-26$ 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

##### 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.	

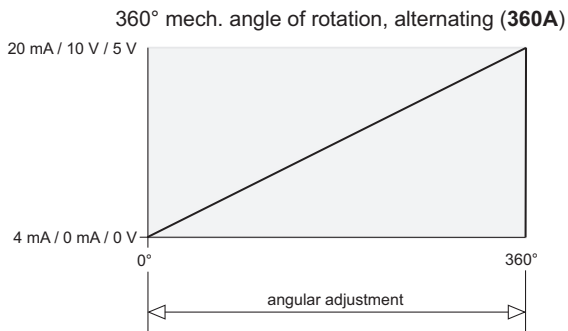
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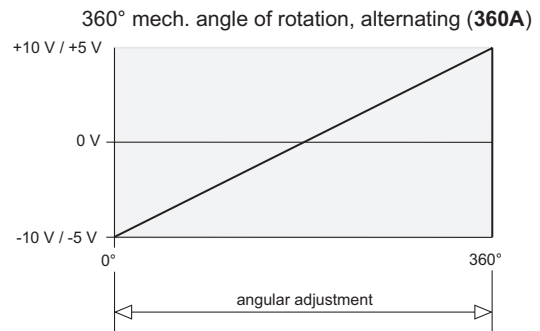
## ATD2AH00

### Output signals

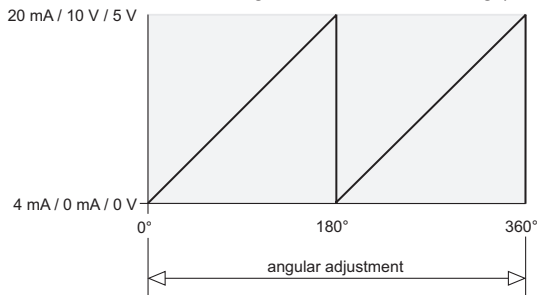
Unipolar Output  
(IS-/IE-/US-/UT-version)



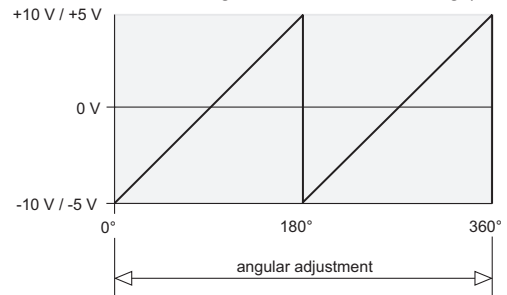
Bipolar Output  
(UE-/UR-version)



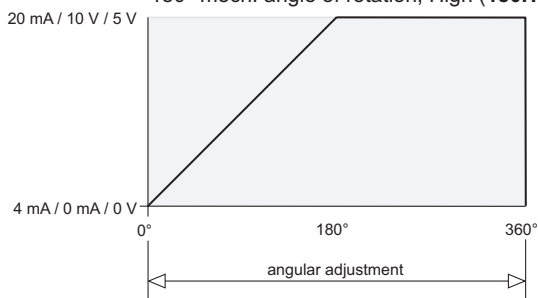
180° mech. angle of rotation, alternating (180A)



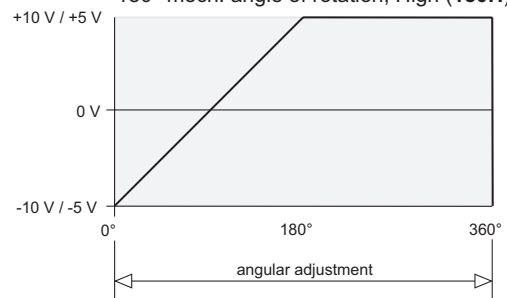
180° mech. angle of rotation, alternating (180A)



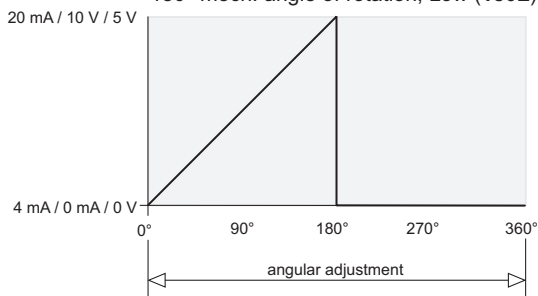
180° mech. angle of rotation, High (180H)



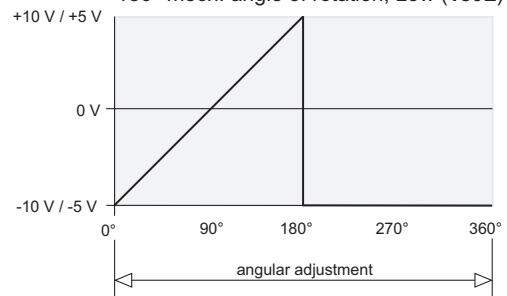
180° mech. angle of rotation, High (180H)



180° mech. angle of rotation, Low (180L)



180° mech. angle of rotation, Low (180L)



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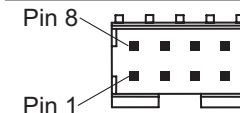
ATD2AH00

#### 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

