

Absolute encoders - analogue

Hollow shaft $\varnothing 10$ to $\varnothing 14$ mm

Optical single- or multiturn encoders with analogue output

ATD 2A A 4 Y 7



ATD 2A A 4 Y 7 with hollow shaft

Features

- Encoder multiturn / analogue output
- Voltage output or current output
- Control inputs reset and rotating direction
- Optical sensing
- Self-diagnostic
- Total resolution: 16 bit
- Factory-set adjustable angle (0° - 360° resp. up to $1024 \times 360^{\circ}$)
- Flange socket radial

Technical data - electrical ratings

Voltage supply	12...30 VDC
Reverse polarity protection	Yes
Consumption w/o load	≤ 70 mA (24 VDC)
Interface analog	IS (current output, 4...20 mA) IE (current output, 0...20 mA) US (voltage output, 0...10 VDC) UE (voltage output, -10...+10 VDC) UT (voltage output, 0...5 VDC) UR (voltage output, -5...5 VDC)
Function	Singleturn Multiturn
Measuring range	90° , 180° , 360° 2, 4, 8, 16...1024 revolutions
Load resistance	≥ 1 k Ω (recommended 10 k Ω) / voltage output ≤ 500 Ω (recommended 470 Ω) / current output
Resolution	16 bit
Steps per turn	16384 / 14 bit
Number of turns	1024 / 10 bit
Sensing method	Optical
Updating values	≤ 130 μ s
Code sequence	CW: ascending values with clockwise sense of rotation (looking at mounting surface)
Output circuit	Voltage output (short-circuit proof) Current output (short-circuit proof)
Interference immunity	DIN EN 61000-6-2
Emitted interference	DIN EN 55011

Technical data - mechanical design

Dimensions (flange)	$\varnothing 58$ mm
Shaft	$\varnothing 10$ mm hollow shaft $\varnothing 12$ mm hollow shaft $\varnothing 14$ mm hollow shaft
Protection DIN EN 60529	IP 65
Operating speed	≤ 8000 rpm (mechanical) ≤ 6000 rpm (electric)
Starting torque	≤ 0.02 Nm
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.	325 g
Connection	Connector M23 type 2, 12-pin
Motor shaft tolerance	0.25 mm axial 0.1 mm radial
Mounting kit variant	002

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Part number

ATD 2A A 4 Y 7

		D2SR12	S		IP65	002
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Mounting kit

002 Mounting accessory kit 002

Protection

IP65 IP 65

Hollow shaft

10 Hollow shaft ø10 mm

12 Hollow shaft ø12 mm

14 Hollow shaft ø14 mm

Operating temperature

S -20...+85 °C

Connection

D2SR12 Flange socket type 2, pin contacts, radial, 12-pin

Interface

IS Current output, standard, 4...20 mA

IE Current output, extended, 0...20 mA

US Voltage output, standard, 0...+10 VDC

UE Voltage output, extended, -10...+10 VDC

UT Voltage output, TTL, 0...+5 VDC

UR Voltage output, reduced, -5...+5 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)

2U 2 x 360° mech. angle of rotation (multiturn)

4U 4 x 360° mech. angle of rotation (multiturn)

8U 8 x 360° mech. angle of rotation (multiturn)

16U 16 x 360° mech. angle of rotation (multiturn)

Additional Adjustment on demand

Accessories

Connectors and cables

11070180	Connector S2BG12 with cable (ATD analogue) L = 10 m
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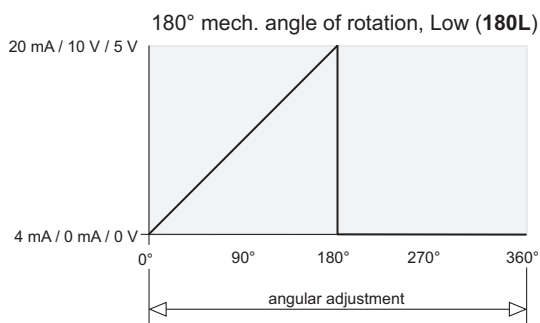
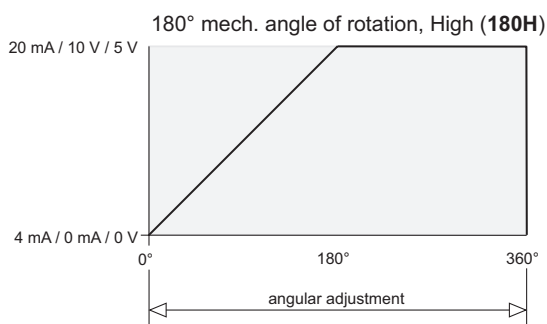
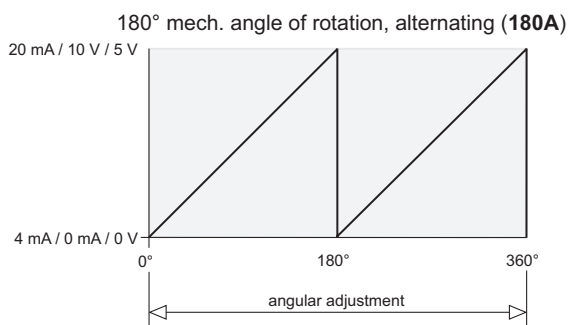
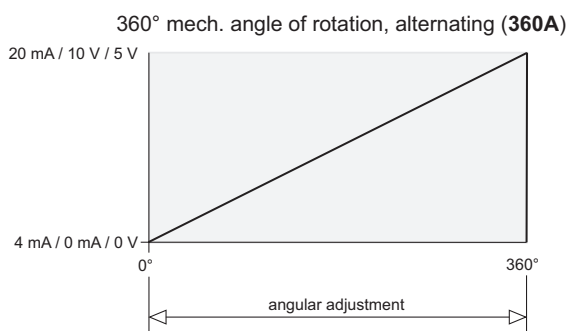
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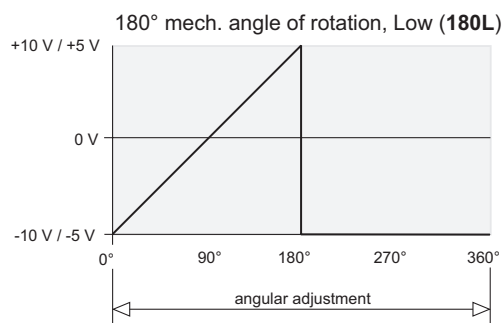
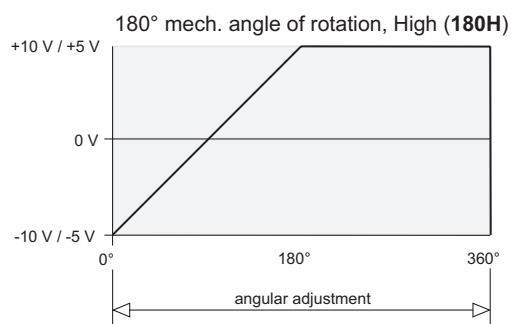
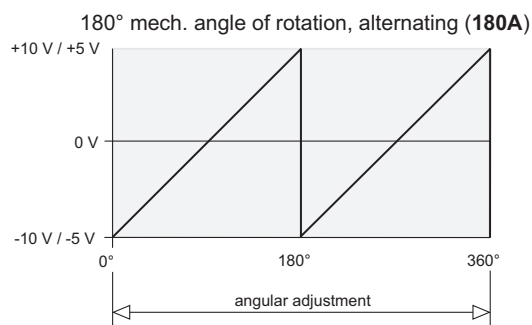
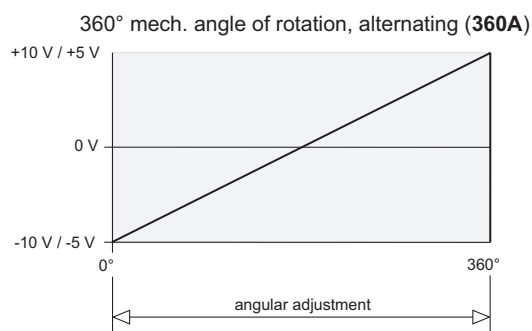
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Output signals

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



Bipolar Output (UE-/UR-version)



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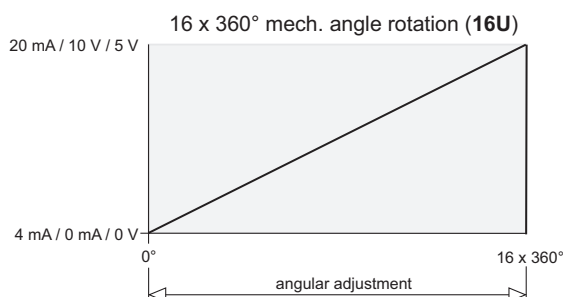
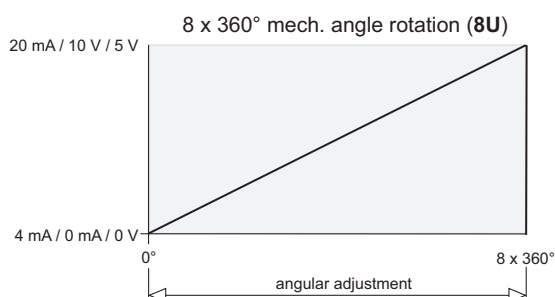
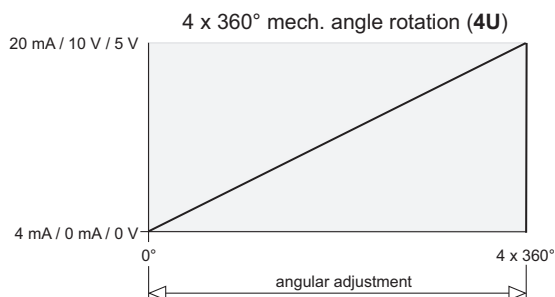
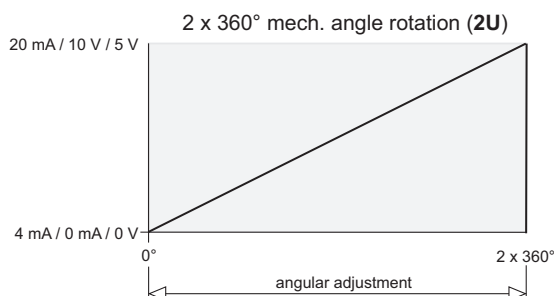
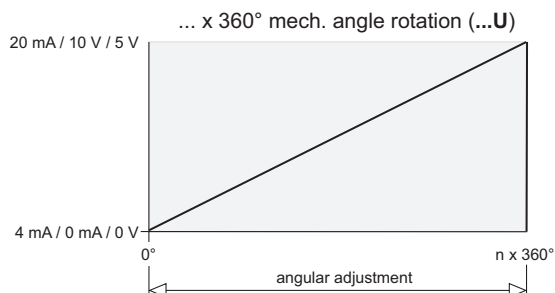
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Optical single- or multitrans encoders with analogue output

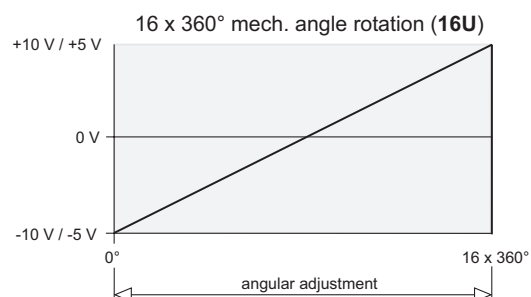
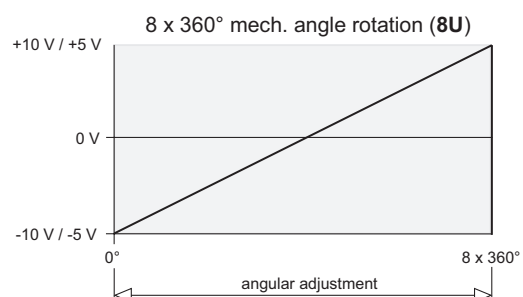
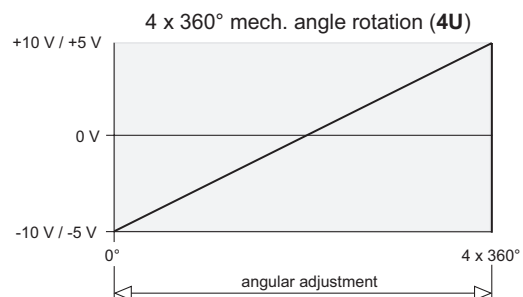
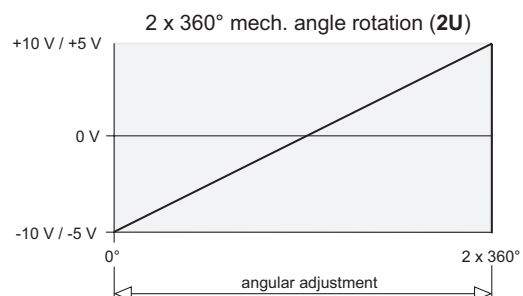
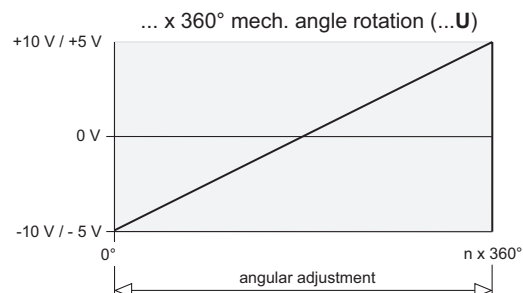
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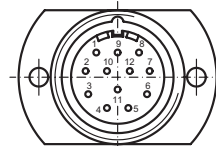
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Trigger level	
Control input	Input circuit
Input level High	$\geq 0,7 \text{ UB}$
Input level Low	$\leq 0,3 \text{ UB}$
Input resistance	10 k Ω

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

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 Ω pullup-resistor). The output is low-active, that means if no fault submitted, the output is +UB.

Terminal assignment	
ATD 2A A 4 Y 7	
Connector	Assignment
Pin 1	–
Pin 2	–
Pin 3	–
Pin 4	GND _{OUT}
Pin 5	U _{OUT} resp. I _{OUT}
Pin 6	–
Pin 7	reset
Pin 8	V/ $\bar{R}$
Pin 9	error
Pin 10	GND
Pin 11	– / -UB (only at UE-/UR-version)
Pin 12	+UB



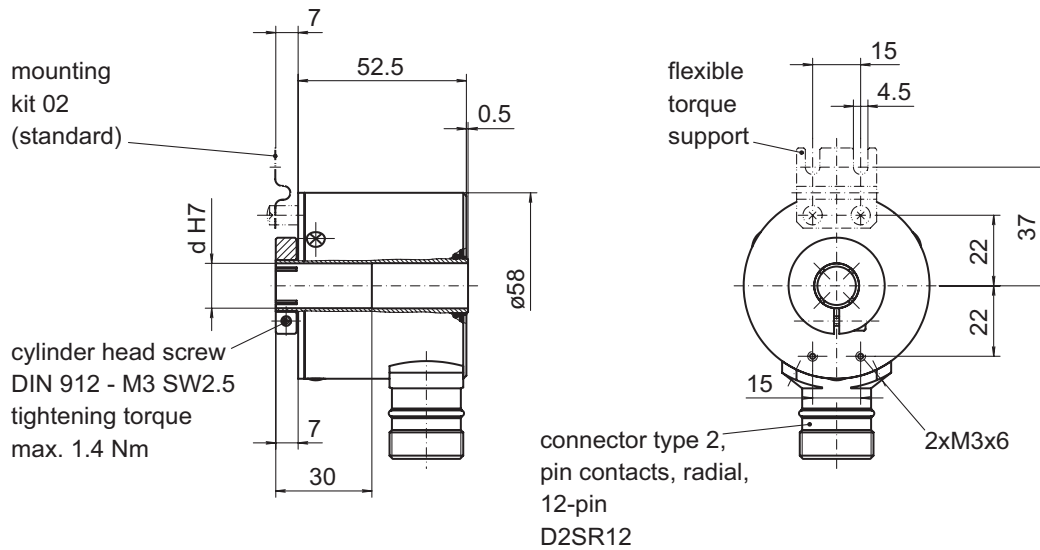
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Dimensions



028- 5 Y 7