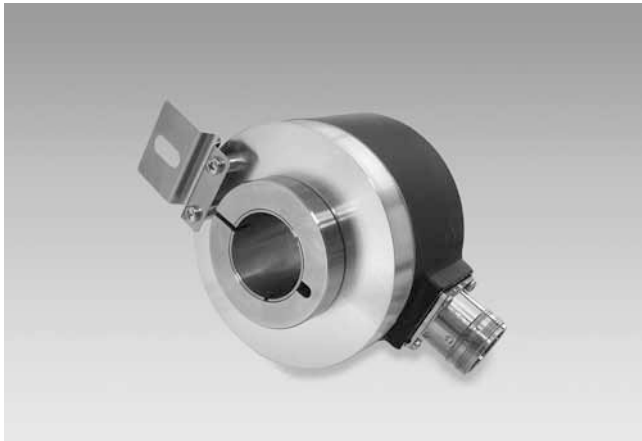


Absolute encoders - SSI

Hollow shaft $\varnothing 20$ to $\varnothing 27$ mm

Optical single- or multiturn encoders max. 15 bit ST / 24 bit MT

ATD 4S A 4 Y10



ATD 4S A 4 Y10 with hollow shaft

Features

- Encoder single- or multiturn / SSI
- Optical sensing
- Resolution: max. singleturn 15 bit, multiturn 24 bit
- Hollow shaft $\varnothing 20$ -27 mm
- Self-diagnostic
- Electronic zero point adjustment
- Flange socket radial

Optional

- Incremental signals

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	≤ 32768 / 15 bit
Number of turns	≤ 16777216 / 24 bit
Incremental output	4096 pulses A, B + inv. (optional) 4096 pulses A, B, sine 1 Vpp (optional)
Offset sine/cosine amplitude	≤ 1 Vss at Z0 (120 Ohms)
Overlaying constant share	≤ 2.5 V
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 Reset input
Output circuit	SSI data: linedriver RS485 Diagnostic output: error
Interference immunity	DIN EN 61000-6-2
Emitted interference	DIN EN 55011

Technical data - mechanical design

Dimensions (flange)	$\varnothing 80$ mm
Shaft	$\varnothing 20$ mm hollow shaft $\varnothing 22$ mm hollow shaft $\varnothing 25$ mm hollow shaft $\varnothing 27$ mm hollow shaft
Protection DIN EN 60529	IP 65
Operating speed	≤ 5000 rpm (mechanical) ≤ 7000 rpm (electric)
Starting torque	≤ 0.02 Nm
Materials	Housing: aluminium, black, powder-coated 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 30 g, 11 ms
Weight approx.	700 g
Connection	Connector M23 type 2, 12-pin Connector M23 type 2, 17-pin
Motor shaft tolerance	0.25 mm axial 0.1 mm radial
Mounting kit variant	056

Absolute encoders - SSI

Hollow shaft ø20 to ø27 mm

Optical single- or multiturn encoders max. 15 bit ST / 24 bit MT

ATD 4S A 4 Y10

Part number

ATD 4S A 4 Y10 SS S IP65 056

Mounting kit
056 Mounting accessory kit 056

Protection
IP65 IP 65

Hollow shaft
20 Hollow shaft ø20 mm clamping ring
22 Hollow shaft ø22 mm clamping ring
25 Hollow shaft ø25 mm clamping ring
27 Hollow shaft ø27 mm clamping ring

Operating temperature
S -20...+85 °C

Connection
D2SR12 Flange socket type 2, pin contacts, radial, 12-pin
D2SR17 Flange socket type 2, pin contacts, radial, 17-pin (SSI + incremental signals)

Output signals
GR Gray code
BI Binary code

Interface
SS Serial SSI

Resolution
9 9 bit singleturn
10 10 bit singleturn
11 11 bit singleturn
12 12 bit singleturn
13 13 bit singleturn
9/12 9/12 bit single-/multiturn
10/12 10/12 bit single-/multiturn
11/12 11/12 bit single-/multiturn
12/12 12/12 bit single-/multiturn
13/12 13/12 bit single-/multiturn

Accessories

Connectors and cables

11011122	Connector S2BG12 with cable (ATD) L = 1 m
11071747	Connector S2BG12 with cable (ATD) L = 2 m
11071749	Connector S2BG12 with cable (ATD) L = 5 m
11070261	Connector S2BG17 with cable (ATD) L = 1 m
11070262	Connector S2BG17 with cable (ATD) L = 2 m
11070263	Connector S2BG17 with cable (ATD) L = 5 m

Absolute encoders - SSI

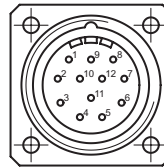
Hollow shaft $\varnothing 20$ to $\varnothing 27$ mm

Optical single- or multiturn encoders max. 15 bit ST / 24 bit MT

ATD 4S A 4 Y10

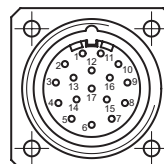
Terminal significance	
UB	Encoder supply voltage.
GND	Ground connection relating to UB.
Data+	Positive data output of differential linedriver.
Data-	Negative data output of differential linedriver.
Clock+	Positive clock input. Clock+ together with clock- forms a current loop. A current of approx. 7 mA towards clock+ input means logic 1 in positive logic.
Clock-	Negative 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	Resetting 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 (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 4S A 4 Y10	
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	not use
Pin 10	error
Pin 11	UB
Pin 12	GND



ATD 4S A 4 Y10 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	not use
Pin 10	error
Pin 11	UB
Pin 12	GND
Pin 13	–
Pin 14	track A+
Pin 15	track A-
Pin 16	Back
Pin 17	Back



Absolute encoders - SSI

Hollow shaft $\varnothing 20$ to $\varnothing 27$ mm

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ATD 4S A 4 Y10

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

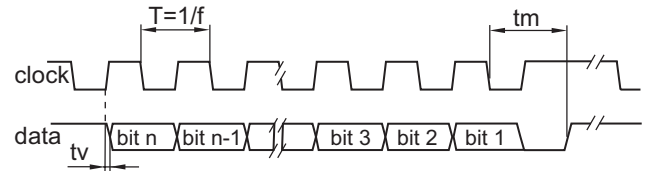
Incremental outputs

Incremental outputs	Line Driver short-circuit proof
Output level High	\geq UB -3 V
Output level Low	$\leq 0,5$ V
Load	≤ 30 mA

Outputs

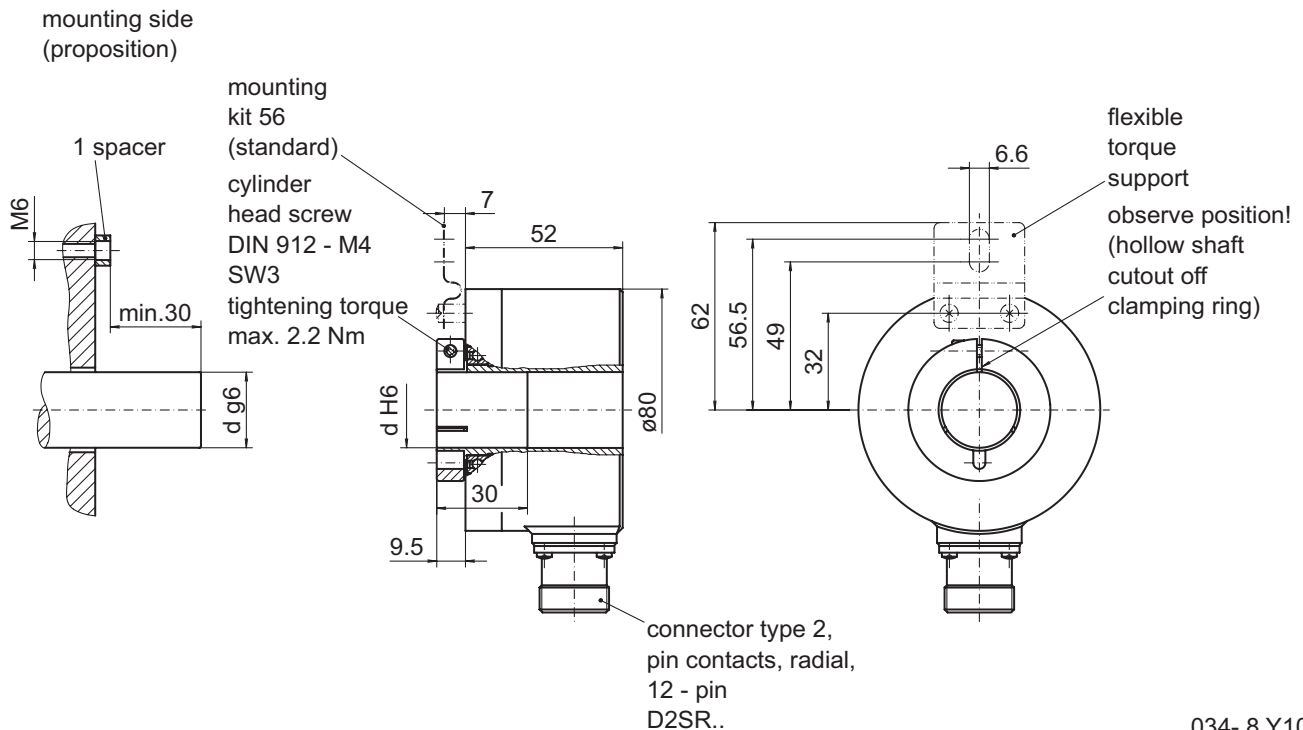
Outputs	Sine / Cosine
Output level	1 V _{PP} at Z ₀ = 120 Ω

Data transfer



Clock frequency f	80...1000 kHz
Scan ratio of T	40...60 %
Time lag tv	150 ns
Monoflop time tm	20 μ s + T/2
Clock interval tp	26 μ s

Dimensions



034- 8 Y10