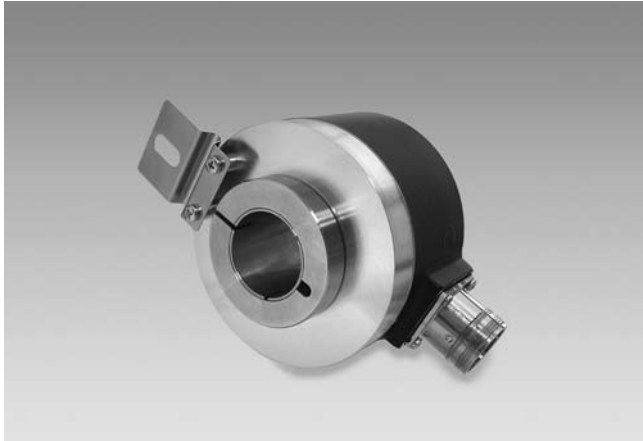


Absolute encoders - SSI

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

Optical multiturn encoders max. 15 bit ST / 24 bit MT

ATD 4S A 4 Y10



ATD 4S A 4 Y10 with hollow shaft

Technical data - electrical ratings

Voltage supply	10...30 VDC
Reverse polarity protection	Yes
Consumption w/o load	≤ 70 mA (24 VDC)
Interface	SSI
Function	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 Vpp at Z0 (120 Ohm)
Overlying 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 coded and programmable by connection
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
Programming interface	RS485
Programmable parameters	Steps per revolution Total resolution Rotational direction CW/CCW

Features

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

Optional

- Incremental signals

Technical data - mechanical design

Housing	$\varnothing 80$ 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
Starting torque	≤ 0.02 Nm
Materials	Housing: aluminium, black, powder-coated Shaft: stainless steel
Operating temperature	$-20 \dots +85$ °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 resp. 17-pin
Motor shaft tolerance	0.25 mm axial 0.1 mm radial
Mounting kit variant	56

Absolute encoders - SSI

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ATD 4S A 4 Y10

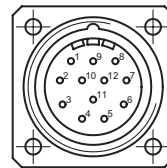
Terminal significance

UB	Encoder supply voltage.
GND	Encoder ground connection relating to UB.
Data+	Positive, serial data output of differential linedriver.
Data-	Negative, serial data output of differential-linedriver.
Clock+	Positive SSI 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 SSI 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	Reset input for setting zero position value at any desired point within the entire resolution. The resetting process is triggered by apply of UB.
UP/DOWN	UP/DOWN counting direction input. This input is standard on High. UP/DOWN means ascending output data with clockwise shaft rotation when looking at the mounting side. UP/DOWN-Low means ascending values with counterclockwise shaft rotation when looking at the mounting side.
Prog	Input don't wire (function only in association with the ATD xS-Programmer).
Error	Diagnostic output (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

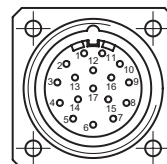
ATD 4S A 4 Y10

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	prog
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	prog
Pin 10	error
Pin 11	UB
Pin 12	GND
Pin 13	–
Pin 14	track A+
Pin 15	track A-
Pin 16	track B+
Pin 17	track B-



Absolute encoders - SSI

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

Optical multiturn encoders max. 15 bit ST / 24 bit MT

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

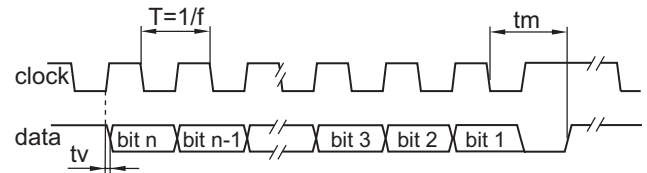
Incremental outputs

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

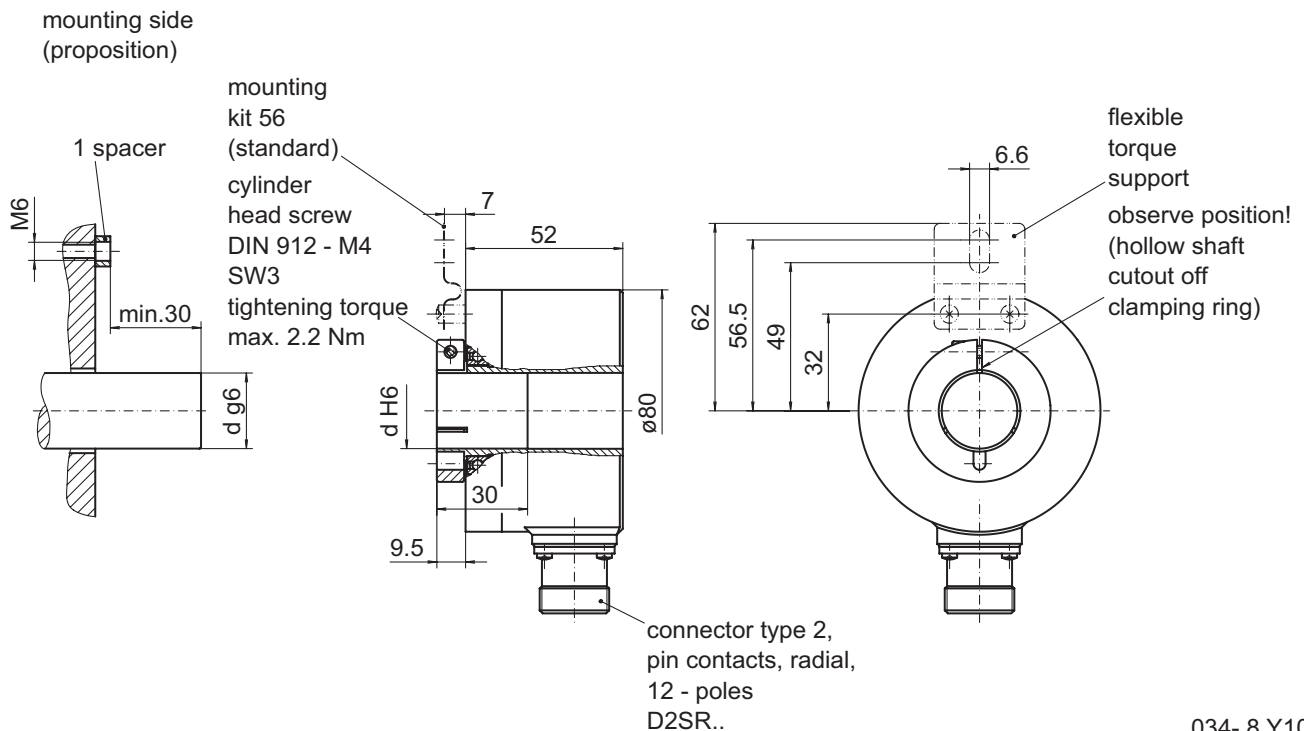
Outputs	Sine / Cosine
Output level	1 V _{PP} at Z ₀ = 120 Ω

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