

Absolute encoders - SSI

Solid shaft $\varnothing 10$ mm with clamping flange

Magnetic multiturn encoder 12 bit ST / 12 bit MT

ATD 2S B14 Y24 - MAGRES + Resolver



ATD 2S B14 Y24 with clamping flange

Features

- Encoder single- or multiturn / SSI + resolver
- Two-in-one measuring system
- Magnetic sensing method
- Resolution: singleturn 12 bit, multiturn 12 bit
- Self-diagnostic
- Electronic zero point adjustment
- Built-in preset button

Optional

- Corrosion protection for offshore applications

Technical data - electrical ratings

Voltage supply	10...30 VDC
Reverse polarity protection	Yes
Consumption w/o load	≤ 60 mA (24 VDC)
Interface	SSI
Function	Multiturn
Steps per revolution	4096 / 12 bit
Number of revolutions	4096 / 12 bit
Sensing method	Magnetic
Code	Gray or binary
Code sequence	CW: ascending values with clockwise sense of rotation; looking at mounting surface
Output stages	SSI data: linedriver RS485 Diagnostic output: error
Interference immunity	DIN EN 61000-6-2
Emitted interference	DIN EN 61000-6-3
Diagnostic function	Self-diagnosis
Number of pole pairs	1 = 2 poles
Input voltage U_i	7 Vrms
Input frequency	≤ 10 kHz
Transformation ratio	$0.5 \pm 5\%$
Phase shift	$0^\circ \pm 10^\circ$
Electrical error max.	10 Angular minutes

Technical data - mechanical design

Size (flange)	$\varnothing 58$ mm
Shaft type	$\varnothing 10$ mm solid shaft
Flange	Clamping flange
Protection DIN EN 60529	IP 65, IP 67 (at shaft entrance)
Operating speed	≤ 5000 rpm (mechanical) ≤ 8000 rpm (electric)
Starting torque	≤ 0.05 Nm (+20 °C)
Admitted shaft load	≤ 40 N axial ≤ 60 N radial
Materials	Housing: aluminium Shaft: stainless steel
Operating temperature	-30...+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.	400 g
Connection	Connector M23 type 2, 17-pin

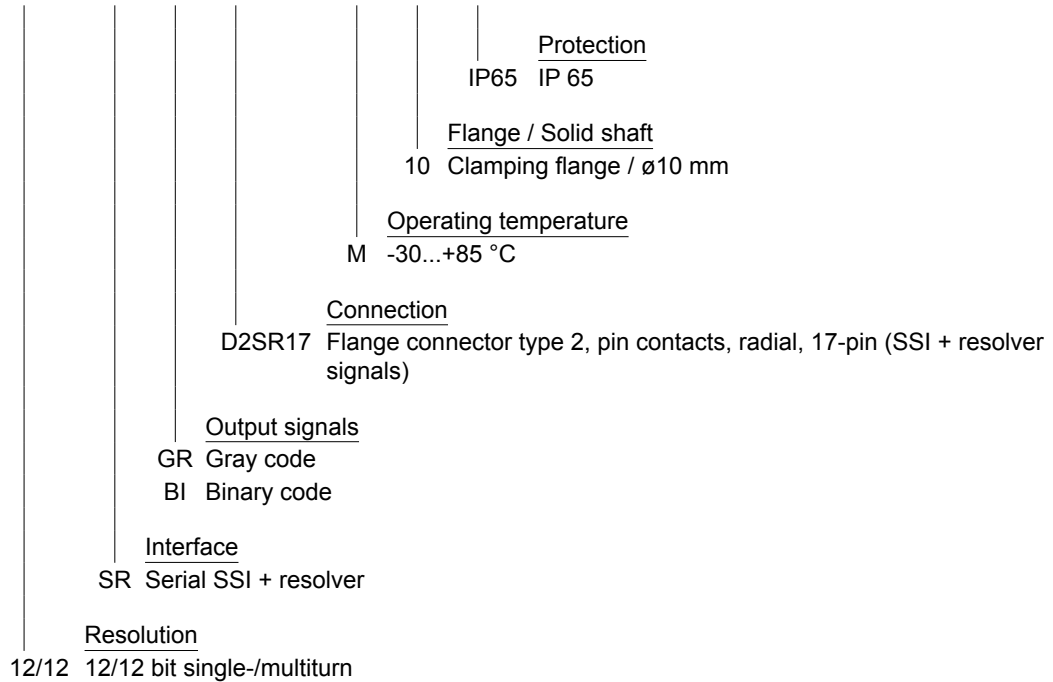
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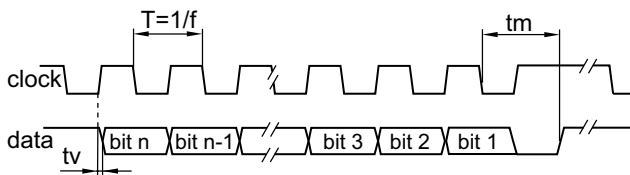
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Part number

ATD 2S B14 Y24 **12/12** **SR** **D2SR17** **M** **10** **IP65**



Data transfer



Clock frequency f	80...1000 kHz
Duty cycle of T	40...60 %
Delay time tv	150 ns
Monoflop time tm	20 µs + T/2
Clock interval tp	26 µs

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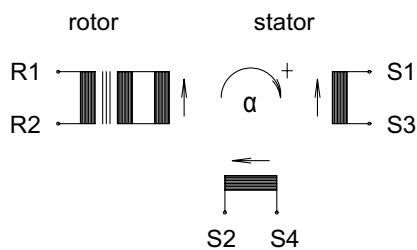
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Terminal significance	
UB	Encoder supply voltage.
GND	Encoder ground connection relating to UB.
Data+	Positive, serial data output of differential linedriver.
Data-	Negative, serial data output of differential linedriver.
Clock+	Positive SSI clock 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.
Preset (Button)	Preset input for setting mid-position at any desired point within the entire resolution.
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 2S B14 Y24 with integrated resolver	
Connector	Assignment
Pin 1	R1
Pin 2	R2
Pin 3	S4
Pin 4	S3
Pin 5	–
Pin 6	–
Pin 7	error
Pin 8	clock-
Pin 9	data-
Pin 10	GND
Pin 11	UB
Pin 12	–
Pin 13	S2
Pin 14	S1
Pin 15	clock+
Pin 16	data+
Pin 17	–

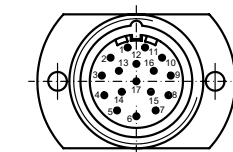
Output signals



$$U_{S1-S3} = TR \cdot U_{R1-R2} \cdot \cos \alpha$$

$$U_{S2-S4} = TR \cdot U_{R1-R2} \cdot \sin \alpha$$

Schematic diagram, diagrammed during direction of rotation against counter-clockwise direction (ccw) when looking at the end of the mounting side.



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Trigger level

SSI	Circuit
SSI-Clock	Optocoupler
SSI-Data	Linedriver RS485

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

Dimensions

