

Absolute encoders - SSI

Hollow shaft max. $\varnothing 20$ mm, SIL3 standard

Optical multiturn encoders 13 bit ST / 12 bit MT

G1S2B - SSI



G1S2B with hollow shaft

Features

- Encoder multiturn / 2 x SSI
- Optical sensing
- Resolution: singleturn 13 bit, multiturn 12 bit
- For safety-relevant applications according SIL3
- Hollow shaft with $\varnothing 20$ mm and stud screw groove
- Redundancy by two separate SSI signals
- High reliability by self-diagnostics
- Additional incremental output signals
- SIL Approval: 793480

Technical data - electrical ratings

Voltage supply	10...30 VDC
Reverse polarity protection	Yes
Consumption w/o load	≤ 60 mA (24 VDC)
Initializing time (typ.)	1000 ms after power on
Interfaces	SSI, Incremental A, B + inverted
Function	Multiturn
Steps per turn	8192 / 13 bit
Number of turns	4096 / 12 bit
Incremental output	4096 pulses A90°B
Output signals	A, B + inverted
Absolute accuracy	$\pm 0.025^\circ$
Sensing method	Optical
Code	Binary
Code sequence	CW: ascending values with clockwise sense of rotation (looking at flange)
Inputs	2 x SSI clock (optocoupler input)
Output circuit	SSI data: linedriver RS485 Incremental: push-pull or linedriver RS422
Interference immunity	DIN EN 61000-6-2
Emitted interference	DIN EN 61000-6-4
Diagnostic functions	Self-diagnosis Code continuity check Multiturn sensing Temperature control
Approval	UL approval / E63076

Technical data - mechanical design

Housing	$\varnothing 90$ mm
Shaft	$\varnothing 20$ mm hollow shaft
Protection DIN EN 60529	IP 54
Operating speed	≤ 3800 rpm (mechanical) ≤ 6000 rpm (electric)
Rotor moment of inertia	2000 gcm ²
Materials	Housing: steel Flange: steel
Operating temperature	-25...+85 °C -40...+85 °C (optional)
Relative humidity	95 % non-condensing
Resistance	DIN EN 60068-2-6 Vibration 10 g, 16-2000 Hz DIN EN 60068-2-27 Shock 200 g, 6 ms
Weight approx.	1600 g
Connection	Connector M23, 16-pin Connector M23, 17-pin

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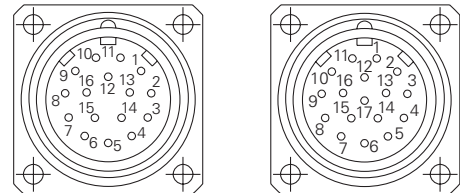
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Terminal significance	
UB	Encoder voltage supply.
GND	Encoder ground connection relating to UB.
Data+	Positive, serial data output of differential linedriver.
Data-	Negative, serial data output of differential linedriver.
Clock+	Positive SSI clock input. Clock+ together with clock- is forming 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+ is forming a current loop. A current of approx. 7 mA towards clock- input means logic 0 in positive logic.
Incremental Outputs	Incremental tracks A 90° B and inverted signals.

LED status	
yellow	Ready for operation, less data
green	Ready for operation, with data
red	DV (Display position error 2.5 s)
green or yellow flashing	DV-BAT (battery low)
red with pulsing in green	After power on: Self-test error, not ready for operation

Terminal assignment		
Connector	Assignment (16-pin)	Assignment (17-pin)
Pin 1	Clock- (1)	Clock- (1)
Pin 2	Clock+ (1)	Clock+ (1)
Pin 3	Data+ (1)	Data+ (1)
Pin 4	Data- (1)	Data- (1)
Pin 5	–	–
Pin 6	–	–
Pin 7	Clock- (2)	Clock- (2)
Pin 8	Clock+ (2)	Clock+ (2)
Pin 9	Data+ (2)	Data+ (2)
Pin 10	Data- (2)	Data- (2)
Pin 11	Track A	Track A
Pin 12	Track A inv.	Track A inv.
Pin 13	Track B	Track B
Pin 14	Track B inv.	Track B inv.
Pin 15	UB	–
Pin 16	GND	UB
Pin 17		GND



Please use cores twisted in pairs (for example clock+ / clock-) for extension cables of more than 10 m length.

Trigger level	
SSI	Circuit
SSI-Clock	Optocoupler
SSI-Data	Linedriver RS485
Control input	Input circuit
Input level High	>0.7 UB
Input level Low	<0.3 UB
Input resistance	10 k Ω
Incremental outputs	Output circuit
	Linedriver RS422
Output level High	>2.5 V (I = -20 mA)
Output level Low	<0.5 V (I = 20 mA)
	Push-pull circuit-proof
Output level High	>UB 3.5 V (I = -20 mA)
Output level Low	<0.5 V (I = 20 mA)
Load High / Low	<20 mA

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Dimensions

