

Absolute encoders - SSI

Solid shaft with clamping flange, stainless steel housing

Optical singleturn encoders 14 bit

GE244



GE244 with clamping flange

Features

- Encoder singleturn / SSI
- Stainless steel design V4A
- Optical sensing method
- Resolution: max. 14 bit
- Clamping flange
- Extreme resistance to shock and vibration
- Electronic setting of zero point
- Available with additional incremental output
- Viton sealing resistant against chemical agents

Technical data - electrical ratings

Voltage supply	10...30 VDC
Reverse polarity protection	Yes
Consumption w/o load	≤50 mA (24 VDC)
Initializing time typ.	20 ms after power on
Interfaces	SSI, Incremental A 90° B (optional)
Function	Singleturn
Steps per turn	≤16384 / 14 bit
Incremental output	2048 pulses A90°B + inverted
Absolute accuracy	±0.025 °
Sensing method	Optical
Code	Gray or binary
Code sequence	CW/CCW coded by connection
Inputs	SSI clock Control signals UP/DOWN and zero
Output stages	SSI data: linedriver RS485 Diagnostic outputs push-pull Incremental: push-pull or linedriver RS422
Interference immunity	DIN EN 61000-6-2
Emitted interference	DIN EN 61000-6-4
Diagnostic function	Self-diagnosis
Approval	UL approval / E63076

Technical data - mechanical design

Size (flange)	ø58 mm
Shaft type	ø10 mm solid shaft
Flange	Clamping flange
Protection DIN EN 60529	IP 67
Operating speed	≤10000 rpm (mechanical) ≤6000 rpm (electric)
Starting torque	≤0.03 Nm (+25 °C)
Rotor moment of inertia	14.5 gcm ²
Admitted shaft load	≤20 N axial ≤40 N radial
Materials	Housing: stainless steel 1.4305 or 1.4404 Flange: stainless steel 1.4305 or 1.4404
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.	600 g
Connection	Connector M23, 12-pin

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Part number

Clamping flange

GE244. **A**

Pulses / Incremental output

- 05 No incremental output
- 14 2048 pulses / push-pull
- 16 2048 pulses / RS422
- 17 2048 periods / SinCos

Connection

- A1 Connector M23, 12-pin, radial
- A5 Connector M23, 12-pin, radial,
for incremental output 14/16/17

Voltage supply / signals

- 30 10...30 VDC / gray code 13 bit
- 32 10...30 VDC / binary code 13 bit
- 90 10...30 VDC / gray code 14 bit
- 92 10...30 VDC / binary code 14 bit

Flange / Solid shaft

- A Clamping flange / ø10 mm, IP 67

Accessories

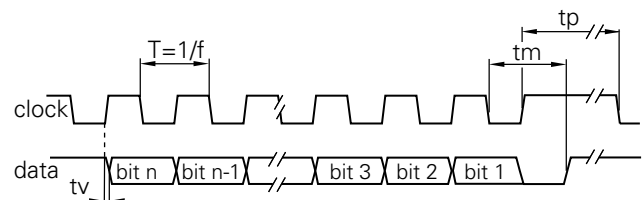
Connectors and cables

- Z 189.001 Female connector M23, 12-pin, stainless steel, without cable
- Z 189.007 Female connector M23, 12-pin, stainless steel, 10 m cable

Mounting accessories

- Z 119.017 Mounting adaptor for clamping flange (M3)

Data transfer



Clock frequency f	62.5...1500 kHz
Duty cycle of T	40...60 %
Delay time tv	150 ns
Monoflop time tm	26 µs + T/2
Clock interval tp	30 µs

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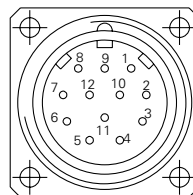
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Terminal significance	
UB	Encoder voltage supply.
GND	Encoder ground connection relating to UB.
Data+	Positive, serial data output of differential linedriver.
Data-	Negative, serial data output of differential linedriver.
Clock+	Positive SSI clock input. Clock+ together with clock- 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.
Zero setting	Input for setting a zero point anywhere within the programmed encoder resolution. The zero setting operation is triggered by a High impulse and has to be in line with the selected direction of rotation (UP/DOWN). Connect to GND after setting operation for maximum interference immunity. Impulse duration >100 ms.
UBminOK	Diagnostic output. Level low indicates the operating voltage has dropped below the minimum limit.
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 flange. UP/DOWN-Low means ascending values with counterclockwise shaft rotation when looking at flange.
Incremental Outputs	Incremental tracks A 90° B and inverted.

Terminal assignment		
GE244		
Connector	Core colour	Assignment
Pin 1	brown	UB
Pin 2	black	GND
Pin 3	blue	Clock+
Pin 4	beige	Data+
Pin 5	green	Zero setting
Pin 6	yellow	Data-
Pin 7	violet	Clock-
Pin 8	brown/yellow	UBminOK
Pin 9	pink	UP/DOWN
Pin 10	black/yellow	–
Pin 11-12	–	–

GE244 with incremental tracks		
Connector	Core colour	Assignment
Pin 1	brown	UB
Pin 2	white	GND
Pin 3	blue	Clock+
Pin 4	green	Data+
Pin 5	grey	Zero setting
Pin 6	yellow	Data-
Pin 7	red	Clock-
Pin 8	red/blue	Track B inv.
Pin 9	pink	UP/DOWN
Pin 10	violet	Track A inv.
Pin 11	black	Track A
Pin 12	grey/pink	Track B



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

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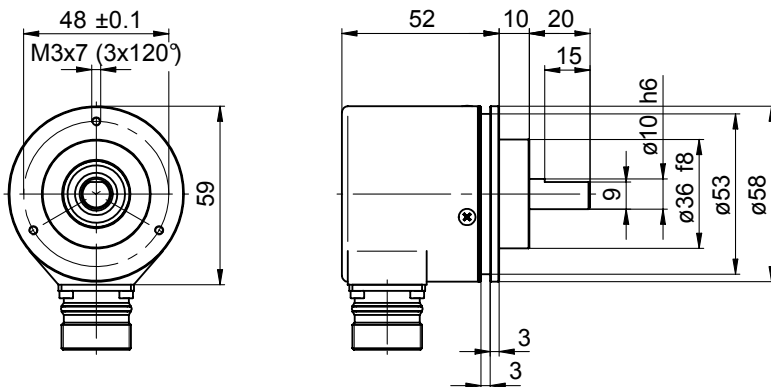
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Trigger level

Incremental outputs	Output circuit Push-pull circuit-proof	SSI	Circuit
Output level High	$>U_B - 3.5 \text{ V}$ ($I = -20 \text{ mA}$)	SSI-Clock	Optocoupler
Output level Low	$<0.5 \text{ V}$ ($I = 20 \text{ mA}$)	SSI-Data	Linedriver RS485
Load High / Low	$<20 \text{ mA}$		
Incremental outputs	Linedriver RS422	Control inputs	Input circuit
Output level High	$>2.5 \text{ V}$ ($I = -20 \text{ mA}$)	Input level High	$>0.7 U_B$
Output level Low	$<0.5 \text{ V}$ ($I = 20 \text{ mA}$)	Input level Low	$<0.3 U_B$
Load High / Low	$<20 \text{ mA}$	Input resistance	$10 \text{ k}\Omega$
Diagnostic output			
NPN-Open Collector – $10 \text{ k}\Omega$ to U_B internally connected			
Output level Low		$\leq 0.5 \text{ V}$ ($I = 20 \text{ mA}$)	
Load Low		$\leq 40 \text{ mA}$	

Dimensions

GE244 - clamping flange



GE244 - connector dimensions

