

Absolute encoders - SSI

Shaft with clamping or synchro flange

Magnetic multiturn encoder 12 bit ST / 12 bit MT

GCM2W - SSI



GCM2W with clamping flange

Features

- Encoder multiturn / SSI
- Magnetic sensing
- Resolution: singleturn 12 bit, multiturn 12 bit
- Clamping flange or synchro flange
- Encoder for heavy-duty applications
- Extreme compact design
- New innovative sensing technology
- Electronic setting of zero point

Technical data - electrical ratings

Voltage supply	10...30 VDC
Reverse polarity protection	Yes
Consumption w/o load	≤60 mA (24 VDC)
Initializing time (typ.)	200 ms after power on
Interface	SSI
Steps per turn	4096 / 12 bit
Number of turns	4096 / 12 bit
Absolute accuracy	±1°
Sensing method	Magnetic
Code	Gray or binary
Code sequence	CW/CCW coded by connection
Inputs	SSI clock Control signals UP/DOWN and zero
Output circuit	SSI data linedriver RS485 Diagnostic outputs push-pull
Interference immunity	DIN EN 61000-6-2
Emitted interference	DIN EN 61000-6-4
Diagnostic functions	Self-diagnosis Code continuity check Multiturn sensing
Approval	UL approval / E63076

Technical data - mechanical design

Housing	ø58 mm
Shaft	ø10 mm (clamping flange) ø6 mm (synchro flange)
Flange	Clamping or synchro flange
Protection DIN EN 60529	IP 54 without shaft seal IP 65 with shaft seal
Operating speed	≤10000 rpm (mechanical) ≤6000 rpm (electric)
Starting torque	≤0.015 Nm IP 54 ≤0.03 Nm IP 65
Rotor moment of inertia	20 gcm ²
Admitted shaft load	≤20 N axial ≤40 N radial
Materials	Housing: steel Flange: aluminium
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.	400 g
E-connection	Connector, 12-pin

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Part number

GCM2W. 01

E-connection

- A0 Connector M23, 12-pin, axial
- A1 Connector M23, 12-pin, radial

Voltage supply / signals

- 10 10...30 VDC / gray code 22 bit
- 12 10...30 VDC / binary code 22 bit
- 20 10...30 VDC / gray code 24 bit
- 22 10...30 VDC / binary code 24 bit

Flange / Shaft

- 0 Clamping flange / ø10 mm IP 54
- A Clamping flange / ø10 mm IP 65
- 1 Synchro flange / ø6 mm IP 54
- B Synchro flange / ø6 mm IP 65

Accessories

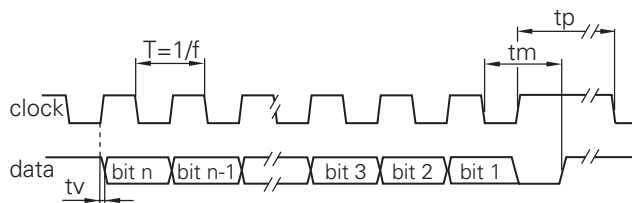
Connectors and cables (page %S)

Z 130.001	Female connector M23, 12-pin, less cable
Z 130.003	Female connector M23, 12-pin, 2 m cable
Z 130.005	Female connector M23, 12-pin, 5 m cable
Z 130.007	Female connector M23, 12-pin, 10 m cable

Mounting accessories (page %S)

Z 119.006	Eccentric fixing, single
Z 119.013	Adaptor plate for clamping flange for modification into synchro flange
Z 119.015	Mounting adaptor for synchro flange
Z 119.017	Mounting angle for clamping flange
Z 119.035	Bearing flange for encoders with synchro flange

Data transfer



Clock frequency f	62.5...1000 kHz
Scan ratio of T	40...60 %
Time lag tv	150 ns
Monoflop time tm	20 µs + T/2
Clock interval tp	25 µs

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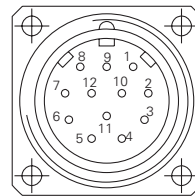
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Terminal significance	
UB	Encoder voltage supply.
GND	Encoder ground connection relating to UB.
Data+	Positive, serial data output of differential linedriver.
Data-	Negative, serial data output of differential linedriver.
Clock+	Positive SSI clock 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.
DATAVALID MT	Diagnostic output. Multiturn sensor supply control. Upon dropping below a defined voltage level the $\overline{\text{DV MT}}$ output is switched to Low.
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.

Terminal assignment		
Connector	Cable 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	internally reserved
Pin 9	pink	$\overline{\text{UP/DOWN}}$
Pin 10	black/yellow	$\overline{\text{DATAVALID MT}}$
Pin 11	–	–
Pin 12	–	–



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 inputs	
Input level High	$>0.7 \text{ UB}$
Input level Low	$<0.3 \text{ UB}$
Input resistance	$10 \text{ k}\Omega$
Diagnostic outputs	
Output circuit	
Push-pull circuit-proof	
Output level High	$>\text{UB} - 3.5 \text{ V}$ ($I = -20 \text{ mA}$)
Output level Low	$<0.7 \text{ V}$ ($I = 20 \text{ mA}$)
Load High	$<20 \text{ mA}$
Load Low	$<20 \text{ mA}$

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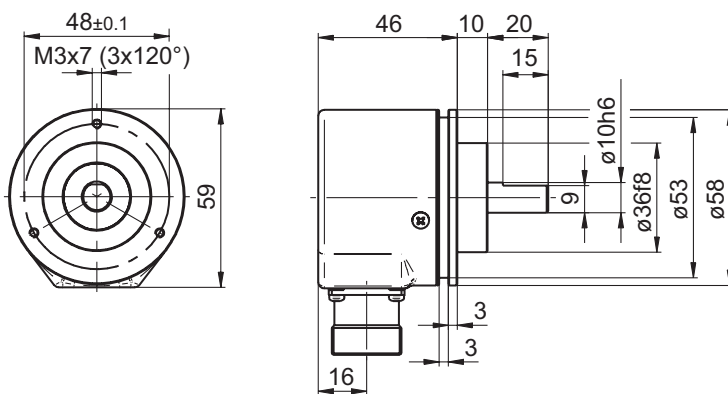
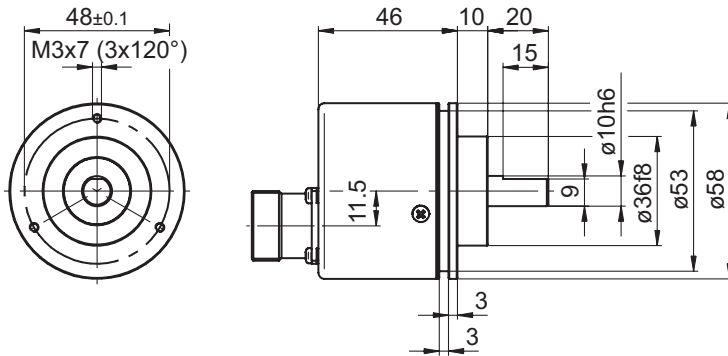
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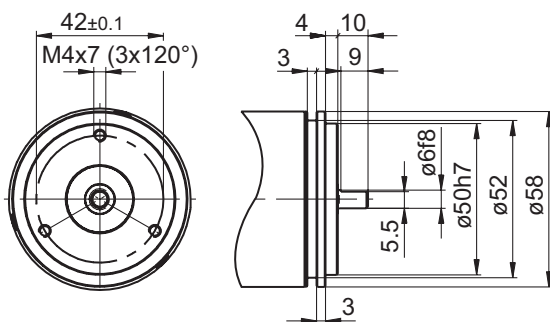
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Dimensions

GCM2W clamping flange



GCM2W synchro flange



GCM2W connector dimensions

