

TGX 5 DATASHEET

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TGE 5, TGE 5-Ex, TGM 5, TGM 5-Ex, TGU 5, TGU 5-Ex Transmitter for angular position



Conversion of the angular position of the shafts of mechanical primary detectors into a load-independent direct current signal

High precision

- Non-linearity < 1 %

Simple conversion from 2, 3 or 4-wire operation (only 2-wire circuit in the case of devices with explosion protection)

Options

- Electrical isolation between output and power supply
- Marine version with German Lloyd approval
- Intrinsically safe version for operation in Zone 1
- Limitation of superimposed interference voltage peaks
- Plug connection Han 7 D

Version TGE 5, TGE 5-Ex for attachment to

- Pressure gauges (with mounting hardware)
- Scales etc.

Version TGM 5, TGM 5-Ex for attachment to shafts

- In heavy machinery
- On ships etc.

Version TGU 5, TGU 5-Ex for installation in

- Pressure gauges
- Rotameters

Installation in systems with very high mechanical and climatic stress

The customer's specific adjustments are effected at the factory, but can be changed subsequently

TGE 5, TGE 5-Ex, TGM 5, TGM 5-Ex, TGU 5, TGU 5-Ex Transmitter for angular position

10/14-1.23 EN

Technical data

Input (see ordering information for measuring range)

Zero: Approx. $\pm 5\%$ adjustable (referred to the output span)

Shaft: can be freely rotated

Output and power supply

Non-linearity

< 1 % (referred to the output span)

TGE 5, TGM 5 (measuring range < 90°):

< 0.5 % (referred to the output span)

Response time: < 50 ms (jump 0 %...100 %)

Long-term influence: < 0.2 % / year

Residual ripple (peak-peak)

Output signal < 1 %

Power supply < 1.5 V

General and safety data

Environment conditions

See table 2 for application class

Ambient temperature: -25... +80 °C

Transportation and storage temperature: -40... +80 °C

Relative atmospheric humidity

TGE 5: < 75 % annual average, condensing perm., occasional

TGM 5: < 90 % annual average, condensing permitted

TGU 5: < 75 % annual average, condensing perm., occasional

Mechanical stress capabilities

Tested to DIN IEC 68-2-27 and 68-2-6

Impact: 50 g/11 ms

Vibration: 5 g/± 10 mm/5...150 Hz

TGU 5

Interference proof acc. to NAMUR Recommendation for industrial standard in 2-wire circuit

TGE 5, TGM 5

Interference immunity acc. to NAMUR Recommendation for industrial standard (surge 1.2/50 1.5 kV). Devices with explosion protection (Ex devices) are only operated in 2-wire circuit.

Connection, housing, mounting and safety

TGE 5, TGE 5-Ex, TGM 5, TGM 5-Ex, TGU 5, TGU 5-Ex

Electrical connections

Screw terminals for 2.5 mm²

or plug connection Han 7 D (not for Ex)

TGU 5, TGU 5-Ex

4-conductor ribbon cable 150 mm long

Mounting orientation: any

Test voltage to DIN VDE 0411: 0.5 kV

Material of housing

Salt-water-proof cast aluminium

Surface anodized

TGE 5, TGE 5-Ex, TGU 5, TGU 5-Ex: plastic cover

Weight

TGE 5 approx. 0.5 kg

TGM 5 approx. 2.6 kg

TGU 5 approx. 0.2 kg

Version	Degree of protection of housing to DIN 40050	Application class to DIN 40040	Max. shaft load permitted		required torque
			radial	axial	
TGU 5	IP 30/IP 00 ²⁾	HQE			≈ 0.15 Ncm (15 cmp)
TGU 5-Ex		HSE			
TGE 5	IP 54/IP 50 ¹⁾	HQR			≈ 0.3 Ncm (30 cmp)
TGM 5					
With friction bearings + sealing ring	IP 66	HQR	300 N (30 kp)	900 N (90 kp)	Approx. 8 Ncm (800 cmp)
With friction bearings w. sealing ring	IP 66/IP 50 ¹⁾	HQR	300 N (30 kp)	900 N (90 kp)	Approx. 2 Ncm (200 cmp)
With ball bearing	IP 56/IP 50 ¹⁾	HQR	200 N (20 kp)	150 N (15 kp)	Approx. 0.6 Ncm (60 cmp)

1) On the shaft seal; seal for higher degree of protection

2) At cable end

3) only version V1443A-xx7xxxx

4) only version V1443A-xx73xxx

Electrical isolation	Power supply U _S	Max. current supply	Max. load	2-wire connection	3-wire connection	4-wire connection	Jumper Br3
No (nonly Ex)	12...20 V DC	24 mA	$\frac{U_S - 12V}{I_A}$	4...20 mA	—	—	open
No	13.2...36 V DC	24 mA	$\frac{U_S - 13,2V}{I_A}$	— — — 4...20 mA	0... 5 mA 0...10 mA 0...20 mA	0... 5 mA 0...10 mA 0...20 mA 4...20 mA ³⁾	closed closed closed open
No	13.2...26,4 V AC	24 mA	$\frac{U_S - 13,2V}{I_A} \cdot 1,4$	— — — —	— — — —	0... 5 mA 0...10 mA 0...20 mA 4...20 mA ³⁾	closed closed closed open
With	13.2...36 V DC	100 mA	600 Ω	— — — —	— — — —	0... 5 mA 0...10 mA 0...20 mA 4...20 mA ⁴⁾	closed closed closed open
With	13.2...26,4 V AC	100 mA	600 Ω	— — — —	— — — —	0... 5 mA 0...10 mA 0...20 mA 4...20 mA ⁴⁾	closed closed closed open

Technical data

Explosion protection

Only with 2-wire connection

TGU 5-Ex, TGE 5-Ex, TGM 5-Ex

Manufacturer's code

49/14-09 Ex

Certificate of Conformity

PTB-No. Ex-89.C.2148

Type of protection

Intrinsic safety „i“

Code

EEx ib IIC T4/T6

Hazardous area

Zone 1 or 2

Protection group

T6 at max. 40 °C ambient temperature

T4 at max. 70 °C ambient temperature

Transmitter TGx 5-Ex must be powered from an intrinsically safer certified current source, suitable for connection to the transmitter's power supply circuit.

In the case of a 2-wire connection, the output signal is shown as a change of the current consumption.

Power supply circuit

With type of protection „intrinsic safety“

EEx ib IIC

Rated values

Voltage 1 2...20 V DC

Current

With 2-wire connection up to 20 mA

For connection to an intrinsically safe certified circuit with the following max. values:

Open-circuit voltage 20 V

Short-circuit current to 35 mA

Power to 0.7 W

Effective internal inductance between the terminals and housing (earth) ≤ 6 nF.

Effective internal inductance is negligible.

Output circuit

With type of protection „Intrinsic safety“

EEx ib IIC

The power supply circuit and output circuit are identical for the 2-wire connection. In the event of a fault, the maximum values of the power supply circuit will also occur in the output circuit.

If active, intrinsically safe circuits are connected to the output circuit, the sum total of the maximum values of the active, intrinsically safe circuits, connected to the output circuit, including the maximum values of the power supply circuit may not exceed the following values:

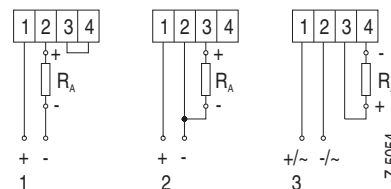
Voltage to 20 V

Current to 35 mA

Power to 0.7 W

Connection diagrams

Terminal connection TGE 5, TGM 5



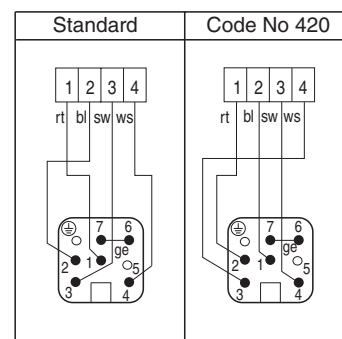
1 = Two-wire connection

2 = Three-wire connection

3 = Four-wire connection

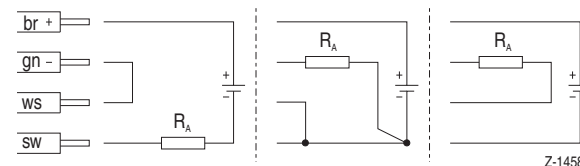
Plug connection TGE 5, TGM 5

TGE 5, TGM 5 only TGE 5



Z-13890 EN

TGU 5



Z-14586

Two-wire connection

Three-wire connection

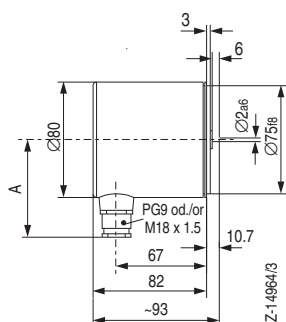
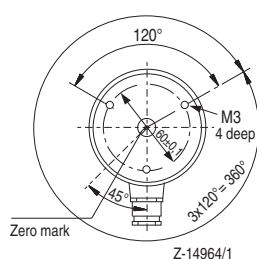
Four-wire connection

TGE 5, TGE 5-Ex, TGM 5, TGM 5-Ex, TGU 5, TGU 5-Ex
Transmitter for angular position

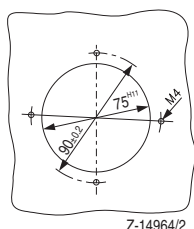
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Dimensional drawings (Dimensions in mm)

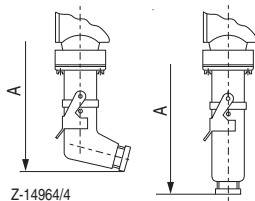
TGE 5, TGE 5-Ex



Drilling diagram for clamps



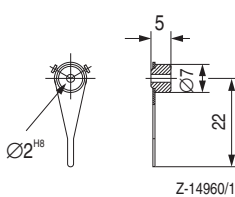
Version with plug connection



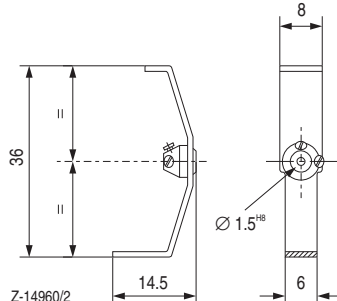
	Cable entry		Plug connection	
	D46320-C4-Pg9-7-7	D89280-KM18x1.5-Z10	angled	straight
A	62	97	132	146

Mounting hardware

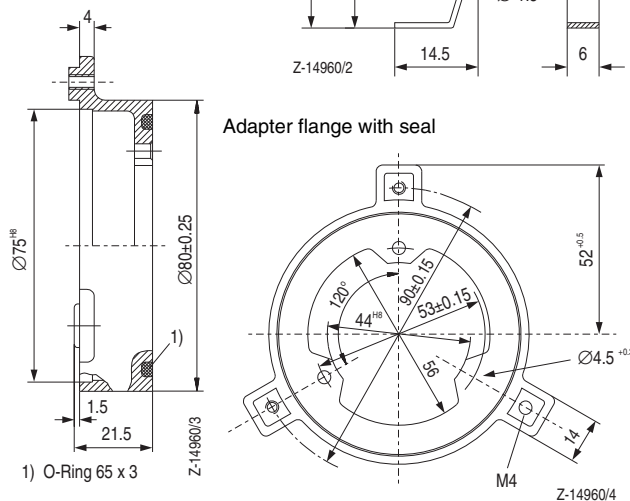
Level compl.



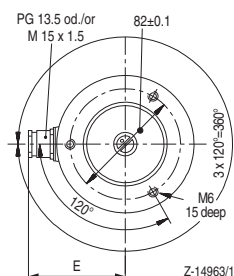
Driver compl.



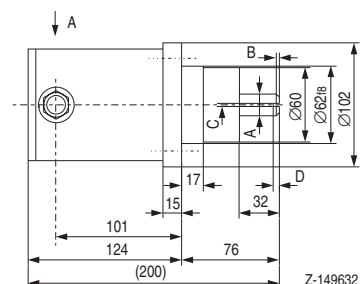
Adapter flange with seal



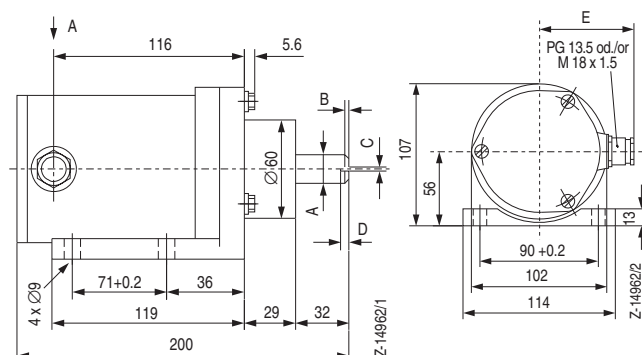
TGM 5



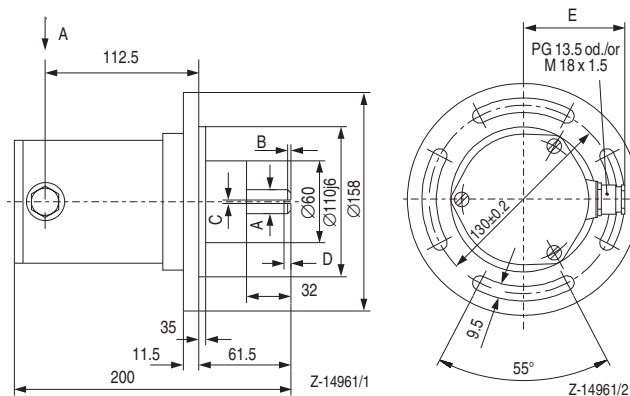
View A
Version with plug connection



TGM 5 base-mounted



TGM 5 flange-mounted

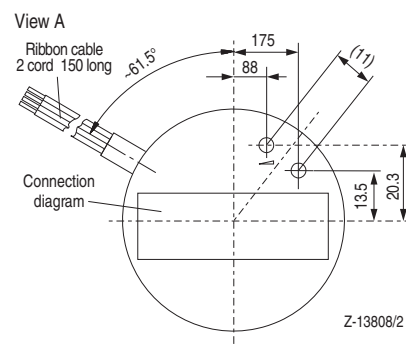
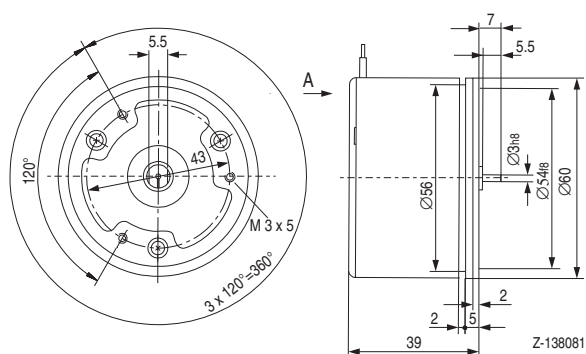


	TGM 5	
	friction bearing	ball bearing
A	$\varnothing 19_{f8}$	$\varnothing 10_{f8}$
B	$1 \times 45^\circ$	$0.5 \times 45^\circ$
C	3 ± 0.1	—
D	3.5 ± 0.1	—

	Cable entry		Plug connection	
	Pg13.5	M 18 x 1.5	angled	straight
E	71.5	90.5	≈ 143	≈ 157

Dimensional drawing (Dimensions in mm)

TGU 5, TGU 5-Ex



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