Inclination sensors

Sensing range ±15°, ±30°, ±60°, 360°

CANopen / Profibus-DP

GNAMG

GNAMG with mounting plate 99 x 60 mm

Features

- **Inclination sensor / CANopen / Profibus**
- **Measuring range two-dimensional: ±15°, ±30°, ±60°**
- **Measuring range one-dimensional: 360°**
- **Resolution: 0.01° to 1°**
- **Precision: ±0.1° to 0.5°**
- **Programmable parameters**
- **Protection IP 66**

Optional

- **Stainless steel**

Technical data - electrical ratings

Voltage supply	10...30 VDC
Reverse polarity protection	Yes
Consumption w/o load	≤100 mA (24 VDC)
Initializing time (typ.)	250 ms after power on
Interfaces	CANopen, Profibus-DPV0
User address	Rotary switch in bus cover
Measuring range	±15°/±30°/±60° (two-dimensional) 360° (one-dimensional)
Resolution	0.01..1 ° (measuring range 15°, 30°, 60°) 0.1..1 ° (measuring range 360°)
Accuracy	±0.1 ° (measuring range 15°) ±0.2 ° (measuring range 30°) ±0.5 ° (measuring range 60°) ±0.5 ° (measuring range 360°)
Build-up time max.	0.5 s
Measuring cycle	10 Hz
Code	Binary
Interference immunity	DIN EN 61000-6-2
Emitted interference	DIN EN 61000-6-4
Programmable parameters	Resolution Preset and offset Moving average filter
Diagnostic function	Parameter error
Status indicator	DUO-LED integrated in bus cover
Approval	UL approval / E63076

Technical data - mechanical design

Housing	Mounting plate with bus cover
Dimensions mounting plate	99 x 60 x 5 mm
Protection DIN EN 60529	IP 66
Materials	Bus cover: zinc die-cast Mounting plate: 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.	250 g
Connection	Cable gland or connector M12

GNAMG

Part number

GNAMG. 0 | | |

Interface
- 5P32 CANopen / cable gland
- 5PA2 CANopen / connector M12
- 3P32 Profibus-DPV0 / cable gland
- 3PA2 Profibus-DPV0 / connector M12

Measuring range
- 21 Dual axes ±15°
- 22 Dual axes ±30°
- 23 Dual axes ±60°
- 15 Single axis 360° (no end stop)

Housing
- 0 Bus cover with mounting plate 99 x 60 mm

CD with file descriptions is not included in the delivery. You may order them on CD as accessory free-of-charge.

Accessories

Connectors and cables

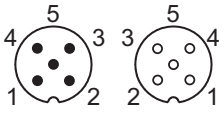
Z 180.005	Female connector M12, 5-pin, A-coded, 5 m cable
Z 180.007	Female connector M12, 5-pin, A-coded, 10 m cable
Z 181.005	Cable connector M12, 5-pin, A-codage, 5 m cable connection M2 / M3, continuative bus

Programming accessories

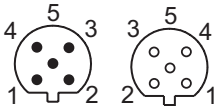
Z 150.022	CD with describing files & manuals

Terminal assignment

CANopen – M12 connector

Connector	Assignment	Description
Pin 1	GND	Ground connection relating to UB
Pin 2	UB	Voltage supply 10...30 VDC
Pin 3	–	–
Pin 4	CAN_H	CAN bus signal (dominant High)
Pin 5	CAN_L	CAN bus signal (dominant Low)
		M12 connector (male / female) A-coded

Profibus – M12 connector

Pin 1	UB	Voltage supply 10...30 VDC
Pin 3	GND	Ground connection relating to UB
		M12 connector (male) A-coded
Pin 2	A	Negative data line
Pin 4	B	Positive data line
		M12 connector (male / female) B-coded

Terminals of the same significance are internally connected and identical in their functions. Max. load on the internal terminal connections UB-UB and GND-GND is 1 A each.

Inclination sensors

Sensing range ±15°, ±30°, ±60°, 360°

CANopen / Profibus-DP

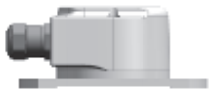
GNAMG

Installation position

Measuring range 15º, 30º, 60º

The two-dimensional inclination sensor with a configured range of 15°, 30° and 60° must be mounted with the base plate in horizontal position, i.e. parallel to the horizontal line. The inclination sensor may also be installed upside down, i.e. turned by 180°.

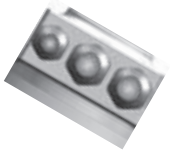
The sensor can be inclined both towards the X and Y axis at the same time. For each axis a separate measured value is provided. Default on delivery the inclination sensor will apply the selected sensing range to both axis, for example ±15° with the zero passage being precisely in the horizontal line.



Default 0º

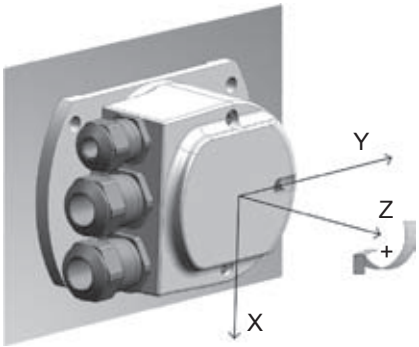
Measured inclination -30º

Default 0º



Measured inclination 30º

Measuring range 360º

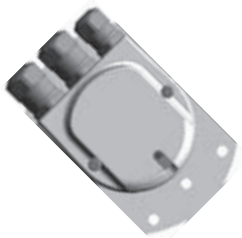


The inclination sensor with a configured range of 360º must be mounted in a way that the X-axis as in the following sketch is directed in a parallel way towards gravity. The deflection may not be more than ±3º.

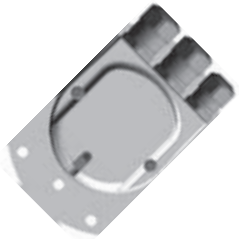
Please note also that the inclination sensor must evenly touch the contact surface and during inclination/rotation must not be subject to any inclination in X- or Y-direction since this would have a negative impact on the measuring accuracy.

The 360° inclination sensor default position is 0° as shown in the following illustration but may be configured at will by help of the preset function. The measuring direction may also be inverted. Default on delivery the inclination sensor's sensing direction is clockwise from 0...360°, in case of active inversion counter-clockwise.

Default 0º



Measured inclination 45º



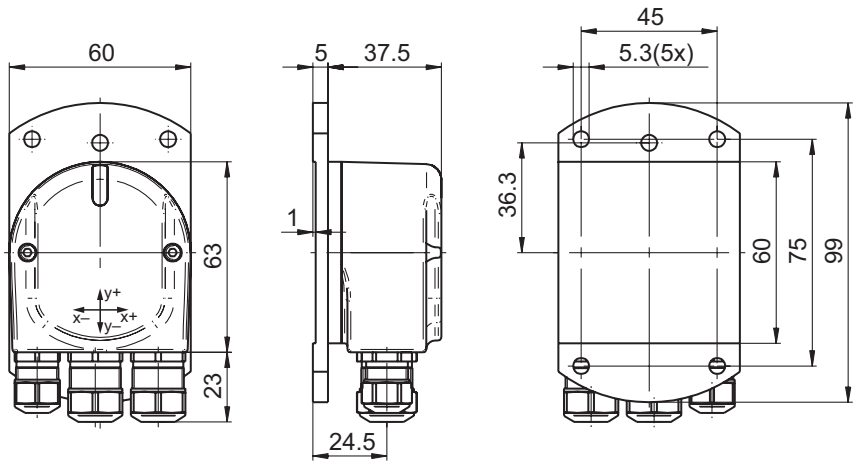
Measured inclination 135º

Measured inclination 180º

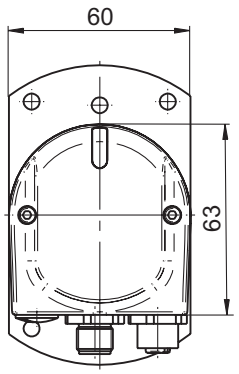
GNAMG

Dimensions

GNAMG cable gland



CANopen - M12



Profibus connector M12