

Inclination sensors

2-dimensional, measuring range up to $\pm 60^\circ$

Analog

GIM140R - 2-dimensional, analog



GIM140R

Technical data - electrical ratings

Voltage supply	8...30 VDC 12...30 VDC
Reverse polarity protection	Yes
Short-circuit proof	Yes
Consumption typ.	8 mA (24 VDC, w/o load, voltage output) 12 mA (w/o load, current output)
Interface	Analog (4...20 mA / 0.5...4.5 V / 0...10 V)
Load resistor	Between Out/0 V $\geq 3 \text{ k}\Omega$ / voltage output 270 Ω at 10 VDC (500 Ω at 15 VDC) / current output
Measuring range	$\pm 10^\circ / \pm 30^\circ / \pm 45^\circ / \pm 60^\circ$
Resolution	0.05 $^\circ$
Accuracy (+25 $^\circ\text{C}$)	$\pm 0.4^\circ$
Sensing method	MEMS technology
Interference immunity	DIN EN 61000-6-2
Emitted interference	DIN EN 61000-6-3
Programmable parameters	Preset
Diagnostic function	Out-of-range diagnostics

Features

- Size 48 mm
- Interface Analog
- MEMS capacitive measuring principle
- Measuring range 2-dimensional: up to $\pm 60^\circ$
- Aluminium housing
- Protection IP 67/IP 69K
- Connection cable
- Teach input for adjustment of zero position

Optional

- Analog output with out-of-range diagnostic

Technical data - mechanical design

Dimensions W x H x L	48 x 14 x 45 mm
Protection DIN EN 60529	IP 67/IP 69K
Material	Housing: aluminium, anodised
Corrosion protection	ISO 9227:2017 salt mist according to ISO 12944-6:1998 C5-M (CX)
Operating temperature	-40...+85 $^\circ\text{C}$
Resistance	DIN EN 60068-2-6 Vibration 10 g, 10-2000 Hz DIN EN 60068-2-27 Shock 50 g, 11 ms
Weight approx.	50 g
Connection	Cable 0.3 m, radial

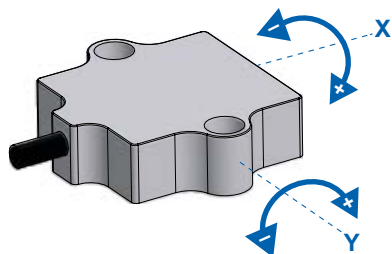
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Installation position



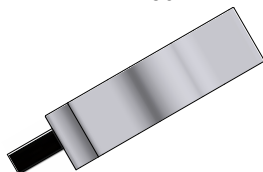
The 2-dimensional inclination sensor must be mounted with the base plate in horizontal position, i.e. parallel to the horizontal line.

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 $\pm 30^\circ$ with the zero passage being precisely in the horizontal line.

Y = 0°



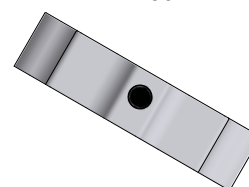
Y = -30°



X = +30°



X = +30°



Terminal assignment

Cable

Core color	Signal	Description
White	0 V	Ground relating to +Vs
Brown	+Vs	Voltage supply
Green	Out_X	Output
Yellow	Out_Y	Output
Grey	Teach	Teach-input

Cable data: 5 x 0.5 mm²

Teach process

The teach-in function enables rapid and easy commissioning in the field.

Setting zero:

- » Get inclinometer on position intended for zero position.
- » Set teach input for $5 < t < 10$ seconds on high level.

Teach-input signal level

High level: >2.1 V

Low level: <1 V

Maximum: +Vs

Inclination sensors

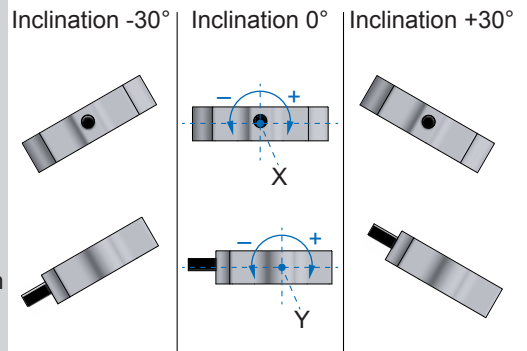
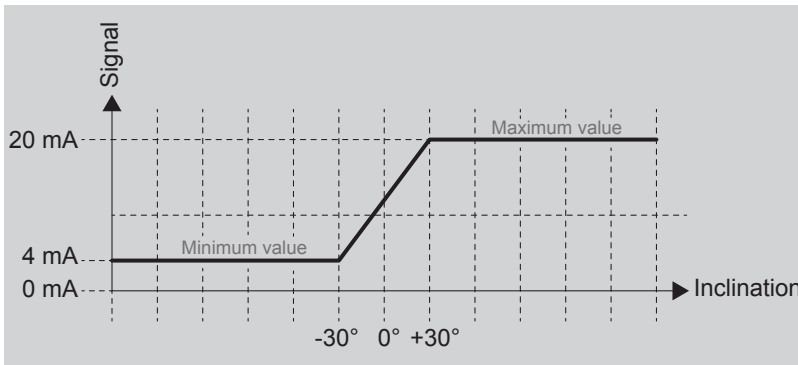
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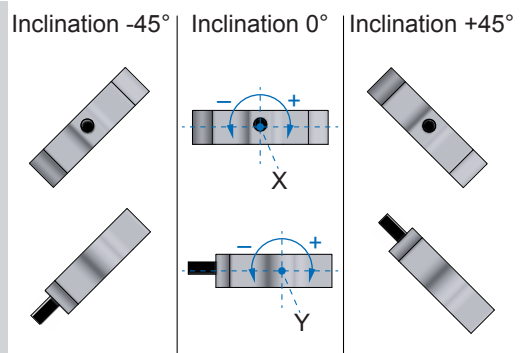
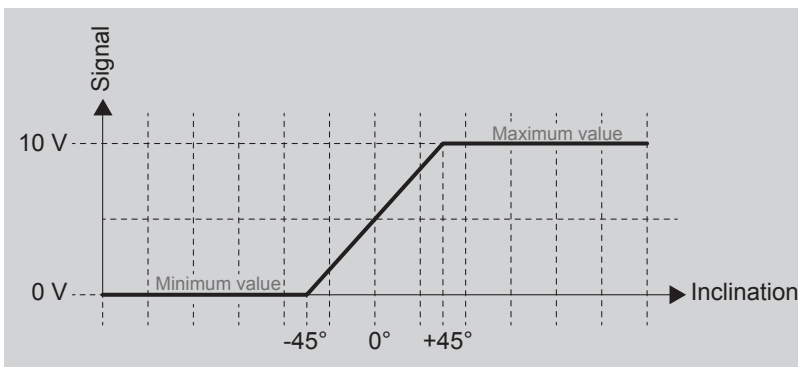
Output signals

Analog output

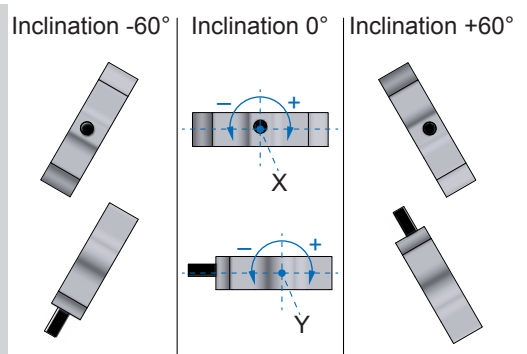
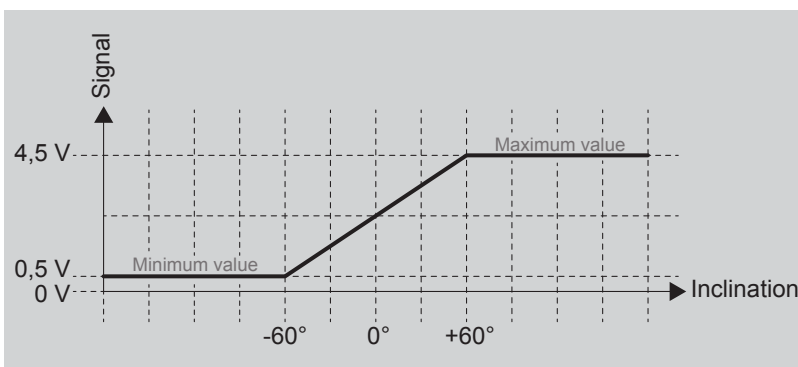
Measuring range $-30\dots+30^\circ$



Measuring range $-45\dots+45^\circ$



Measuring range $-60\dots+60^\circ$



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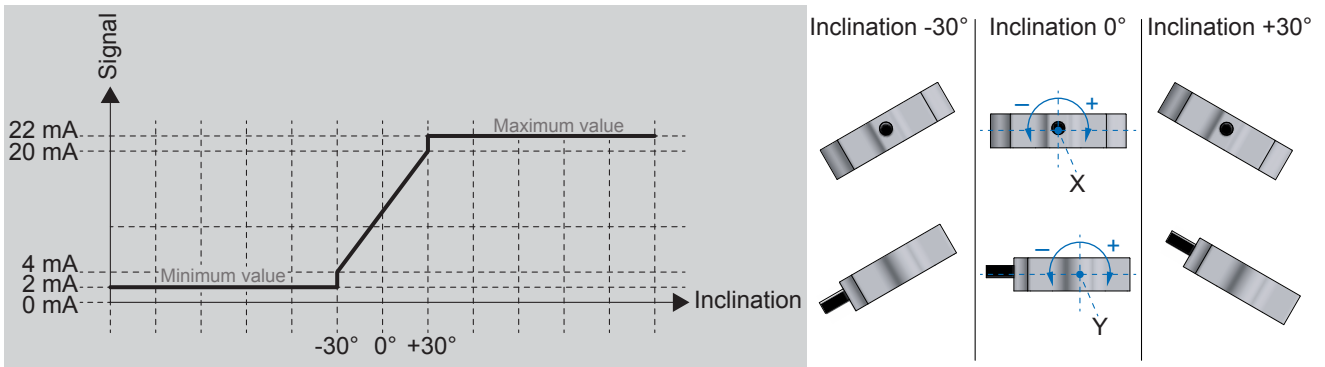
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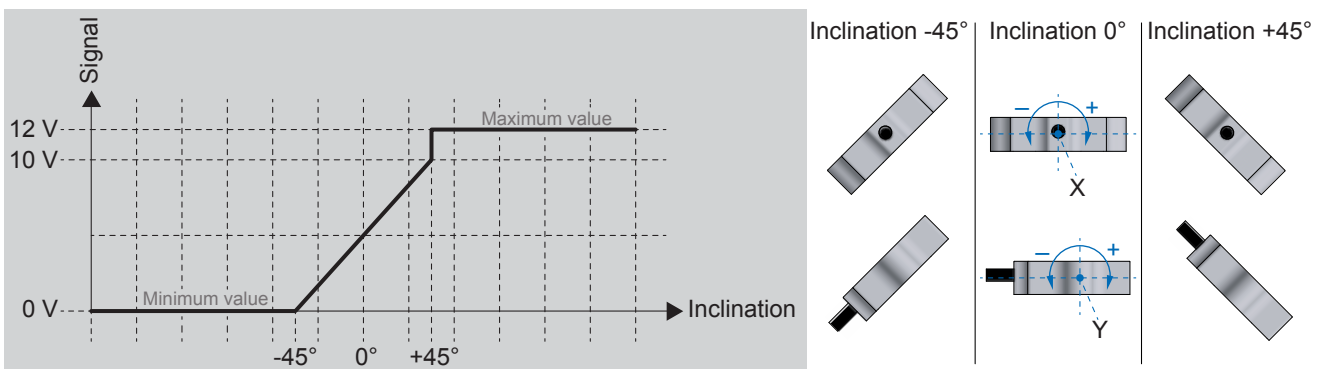
Output signals

Analog output with out-of-range diagnostic

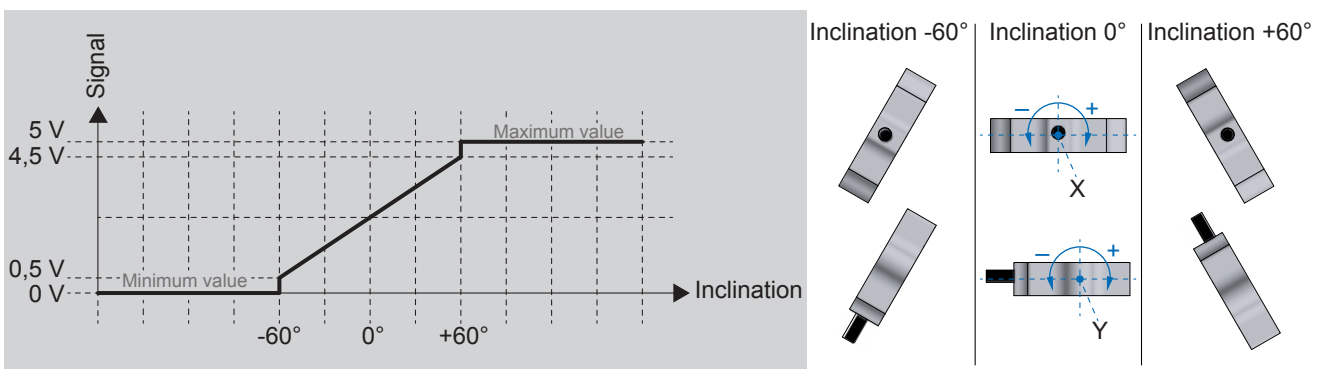
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Dimensions

