Inclinometers

Inclinometer MEMS / capacitive	IS40, 2-dimensional	Analog



The inclinometer IS40 permits 2-dimensional inclinations to be measured.

Versions are available for the measuring ranges ±10°, ±45° or ±60°. The compact robust construction makes this sensor the ideal device for measuring angles in harsh environments.



Output | High protection level | Shock / vibration resistant | Reverse polarity protection

Innovative

- Rugged construction.
- High resolution and accuracy.
- Current or voltage interface.
- High shock resistance.
- Zero point adjustment.

Compact / Many applications

- Small design – minimal space requirement.
- For use in vehicle technology, solar installations, commercial vehicles, cranes and hoists.

Order code Inclinometer IS40

8.IS40	.	2	X	X	X	1
Type		a	b	c	d	e

a *Measuring direction*
2 = 2-dimensional x/y

b *Measuring range*
1 = ±10°
2 = ±45°
3 = ±60°

c *Interface*
1 = 4 ... 20 mA [1)]
3 = 0.1 ... 4.9 V DC [1)]
4 = ratiometric 2 % ... 98 % [2)]

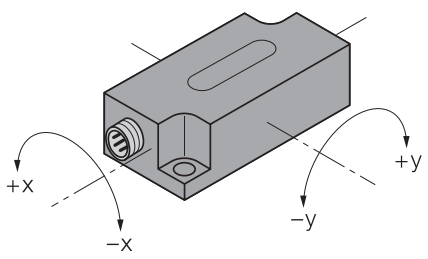
d *Power supply*
1 = 5 V DC
2 = 10 ... 30 V DC

e *Type of connection*
1 = M12 connector

Cables and connectors		Order no.
Preassembled cables	M12 female connector with coupling nut, 5-pin, straight 2 m [6.56'] PVC cable	**05.00.6081.2211.002M**
Connectors	M12 female connector with coupling nut, 5-pin, straight	**8.0000.5116.0000**

Further Kübler accessories can be found at: kuebler.com/accessories
Further Kübler cables and connectors can be found at: kuebler.com/connection-technology

Direction of inclination



1) Available only in combination with power supply 10 ... 30 V DC
2) In relation to the power supply 5 V DC (available only in combination with power supply 5 V DC)

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Technical data

Mechanical characteristics

Connection	M12 connector
Weight	50 g [1.76 oz]
Protection acc. to EN 60529	IP68 / IP69k
Working temperature range	-30 °C ... +70 °C [-22 °F ... +158 °F]
Material	plastic PBT-GF20-V0
Shock resistance	300 m/s², 11 ms
Vibration resistance	100 m/s², 10 ... 2000 Hz
Dimensions	60 x 30 x 20 mm [2.36 x 1.18 x 0.79“]

Electrical characteristics

Power supply		5 V DC ±0.25 V or 10 ... 30 V DC (depending on version)
Power consumption (no load)		≤ 20 mA
Reverse polarity protection		yes
Measuring axes		2 (x/y)
Measuring range		±10°, ±45°, ±60°
Resolution	for version ±10°	≤ 0.05°
	for version ±45°	≤ 0.1°
	for version ±60°	≤ 0.15°
Repeat accuracy		≤ 0.2 % of measuring range ≤ 0.1 % after a warm-up period of 30 min
Absolute accuracy		
	for version ±10°	0.3°
	for version ±45° and ±60°	0.5°
Cross sensitivity		3 %
Temperature drift		
	for version ±10°	typ. 0.01°/K
	for version ±45° and ±60°	0.03°/K
Reaction time		0.1 s – time that the output signal requires to reach 90 % full scale, if the angle is changed from -60° to +60°
Zero point adjustment		
	for version ±10°	±5°
	for version ±45° and ±60°	±15°

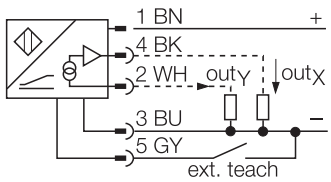
Interface characteristics

Voltage output		
	at +V 10 ... 30 V DC	0.1 ... 4.9 V short-circuit protected to +V
	at +V 5 V DC	2 ... 98 % ratiometric (in relation to +V)
Load resistance voltage output		≥ 40 kΩ
Output impedance voltage output		99 ... 105 Ω
Current output		4 ... 20 mA
Load resistance current output		≤ 200 Ω

Approvals

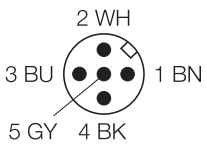
CE compliant in accordance with EMC Directive	2014/30/EU

Connections



ext. teach: if this input is connected to 0 V, then the output of the inclinometer is reset to 0°.

Terminal assignment



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Dimensions
Dimensions in mm [inch]

