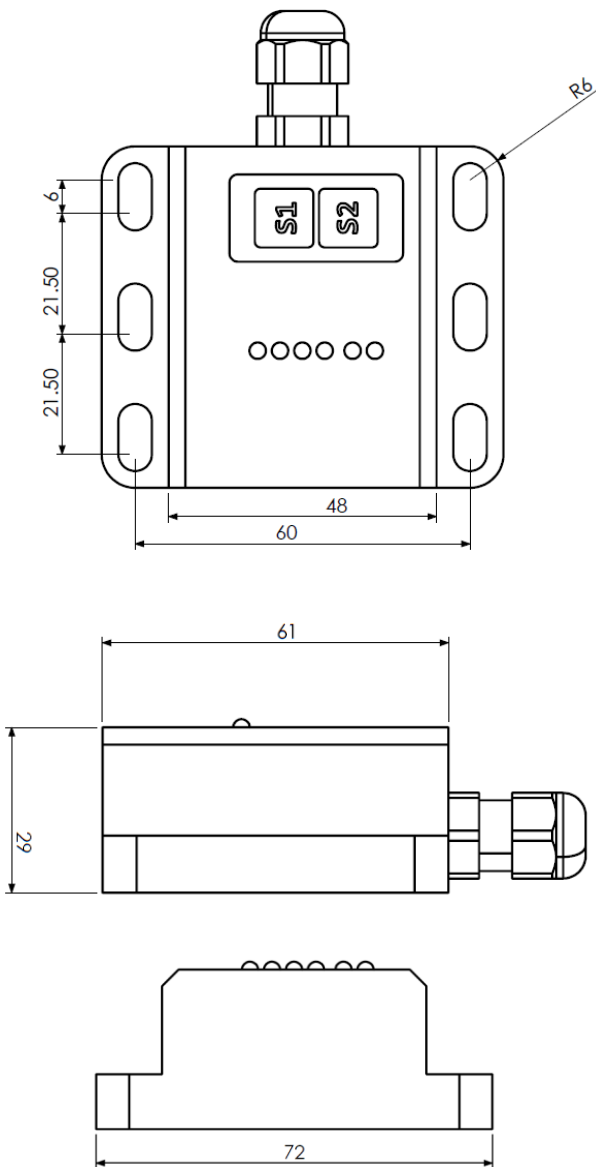




INS 110 SERIES INCLINOMETER

- Can measure two axes (XY)
- Four different set options (optionally changeable)
 - A: X= $\pm 2^\circ$ Y= $\pm 3^\circ$
 - B: X= $\pm 1.5^\circ$ Y= $\pm 1.5^\circ$
 - C: X= $\pm 1.5^\circ$ Y= $\pm 3^\circ$
 - D: X= $\pm 2^\circ$ Y= $\pm 2^\circ$
- Switching output (≤ 300 mA)
- PNP Open Collector output type
- High sensitivity $\pm 0.15^\circ$
- Ability to specify 0° point
- Easy installation
- IP67 protection class
- Small and robust metal housing
- Compact structure

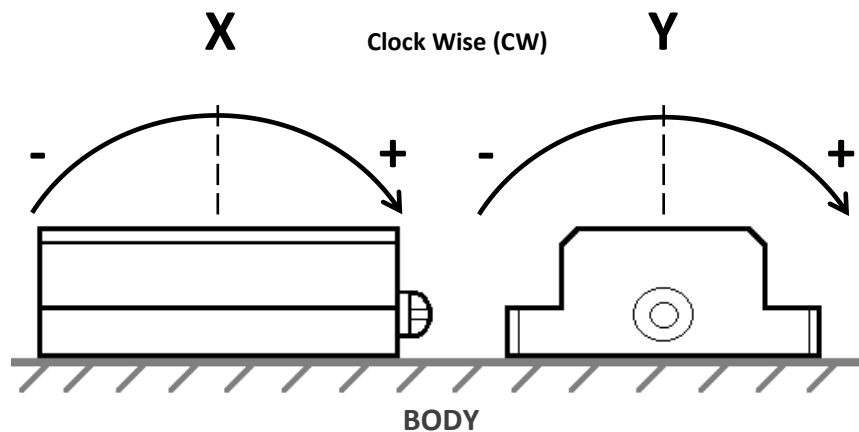
MECHANICAL DIMENSIONS



TECHNICAL SPECIFICATIONS

Supply Voltage	12..24VDC
Measurement Range	$\pm 90^\circ$
Set Ranges	A: X= $\pm 2^\circ$ Y= $\pm 3^\circ$ B: X= $\pm 1.5^\circ$ Y= $\pm 1.5^\circ$ C: X= $\pm 1.5^\circ$ Y= $\pm 3^\circ$ D: X= $\pm 2^\circ$ Y= $\pm 2^\circ$
Measurement Axes	XY
Output Type	PNP Open collector
Output Voltage	$\sim(U-1)$ Volt
Output Current	≤ 300 mA
Angle Resolution	$\pm 0,05^\circ$
Accuracy	$\pm 0,15^\circ$
Protection Class	IP67
Operating Temperature	- 30 °C ... +70 °C
Relative Humidity	%10 ... %90
Weight	200 gr
Electrical Connection	3 meter cable or M12 5 pin (male)

AXES



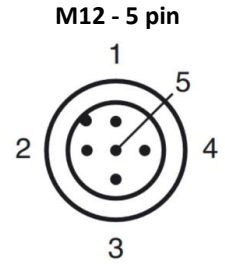
ELECTRICAL CONNECTIONS

For transistor output

Signal	M12 Socket	Cable Color
U+ (12..24VDC)	Pin 1	Red
Output	Pin 2	Yellow
GND (0V)	Pin 3	Black
-	Pin 4	Green
-	Pin 5	Pink

For relay output

Signal	M12 Socket	Cable Color
U+ (+ 24VDC)	Pin 1	Red
Relay Common Terminal	Pin 2	Pink
GND (0V)	Pin 3	Black
Relay Normally Closed Terminal	Pin 4	Yellow
Relay Normally Open Terminal	Pin 5	Green



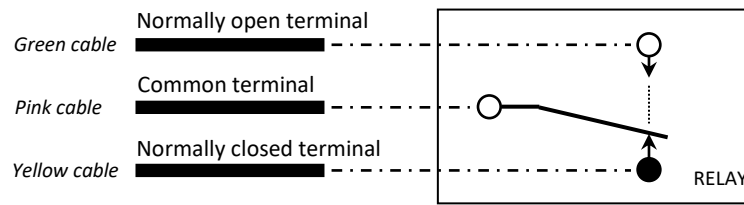
SETUP

Operating principle for transistor output : If the sensor angle is within the selected range, the output rises to the supply voltage level and the "Ok" led lights up. Otherwise, the output is 0 volts and "Al" led lights up. Four different ranges can be selected via the sensor, the zero point can be changed.

For example; The set range is selected as "A". If the angle on X axis is between $+2^\circ$ and -2° and at the same time, if the angle on Y axis is between $+3^\circ$ and -3° , Output = Supply voltage (U). Otherwise the output is 0 volts.

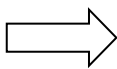
Operating principle for relay output : If the sensor angle is within the selected range, the output is in the "Normally Closed" position and the "Ok" led lights up. Otherwise, the output is in the "Normally Open" position and the "Al" led lights up. Four different ranges can be selected via the sensor, the zero point can be changed.

Relay Connection :



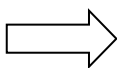
For example; The set range is selected as "A". If the angle on the X axis is between $+5^\circ$ and -5° and at the same time, if the angle on the Y axis is between $+5^\circ$ and -5° , Relay Output= between "Common terminal" and "Normally closed terminal". Otherwise it is between "Common terminal" and "Normally open terminal"

Changing the set range : The sensor has four predefined ranges. The desired set range is selected with the S1 button on the sensor.



- 1) Press and hold the S1 button to change the range,
- 2) Button is released when the range led (A,B,C,D) starts flashing,
- 3) The range is selected by pressing the S1 button one by one,
- 4) The flashing led is on continuously after a while. Thus the process is completed.

Changing the zero point : The zero point is where the sensor is parallel to the ground ($X = 0^\circ$, $Y = 0^\circ$). You can change the zero point using the S2 button.



- 1) The sensor is set to the position which can be accepted as zero point,
- 2) Press and hold the S2 button,
- 3) "Ok" and "Al" leds flash consecutively,
- 4) Press the S2 button once to accept the position,
- 5) When the "Ok" led stops flashing, the process is completed.

Reset Zero Point to Factory Setting :

- 1) Press and hold the S2 button,
- 2) "Ok" and "Al" leds flash consecutively,
- 3) Press the S1 button once to return to zero point in factory default,
- 4) When the "Al" led stops flashing, the process is completed.

Note: During all adjustments, the output becomes 0 volts.

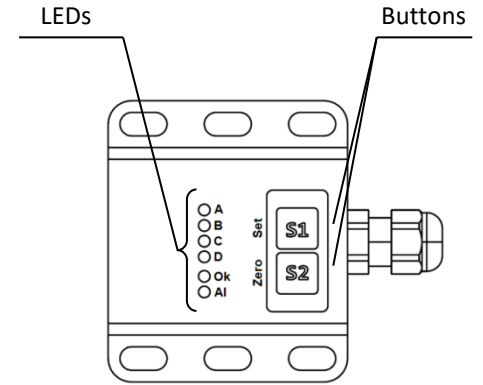


SAFETY WARNING:

This sensor can not be used especially in applications where the safety of goods and life depends on the operation of the device. The sensor must be mounted and installed by persons with technical competence. Our company can not be held liable for any Tangible and intangible damage caused by incorrect mounting or installation.

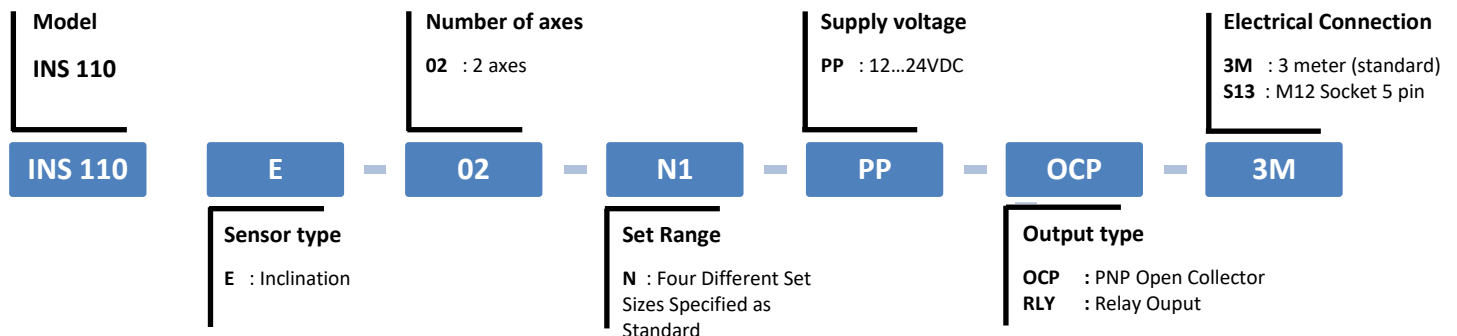
LED VE BUTTON FUNCTIONS

LED	Color	Function
A	Yellow	It indicates that the set range is $X = \pm 2^\circ$ and $Y = \pm 3^\circ$
B	Yellow	It indicates that the set range is $X = \pm 1.5^\circ$ and $Y = \pm 1.5^\circ$
C	Yellow	It indicates that the set range is $X = \pm 1.5^\circ$ and $Y = \pm 3^\circ$
D	Yellow	It indicates that the set range is $X = \pm 2^\circ$ and $Y = \pm 2^\circ$
Ok	Blue	The sensor is in the selected range while the "Ok" led lights up. In this case, the output is equal to the sensor supply.
Al	Red	The sensor isn't in the selected range while the "Al" led lights up. In this case the output is at 0 volt level.



Button	Color	Function
S1	Yellow	S1 button is used to change the set range. See "Changing the set range"
S2	Blue	S2 button is used to change the 0° point. See "Changing the zero point"

ORDER CODING



* Set values can be changed optionally

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