

FNC INPA Programmable Series Inclinometer

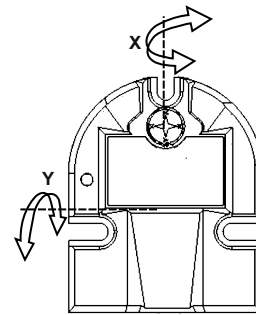


Features

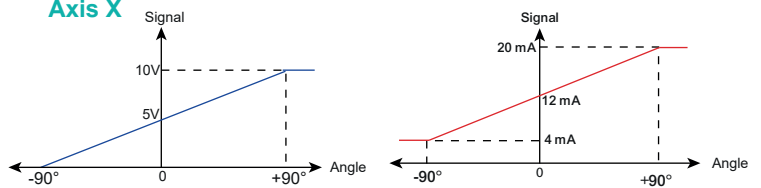
- 4 different analog output options
- Compensated axis sensitivity
- High sensitivity : $\pm 0.003^\circ$
- Ability to determine 0° point
- Easy installation
- IP67 protection
- Small and robust mechanical construction
- Compact design

Axis and analog output graphs

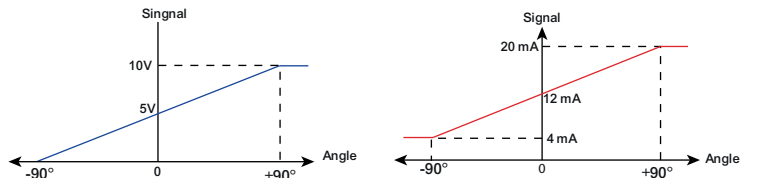
2 Axis ($\pm 90^\circ$)



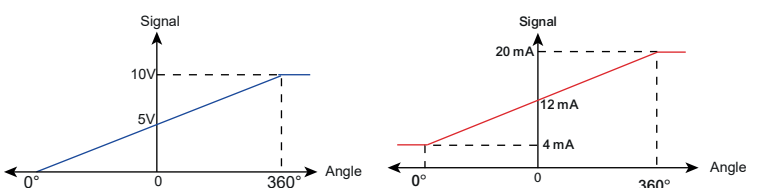
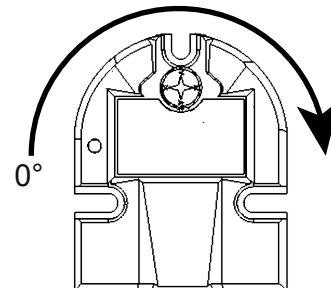
Axis X



Axis Y



1 Axis (360°)



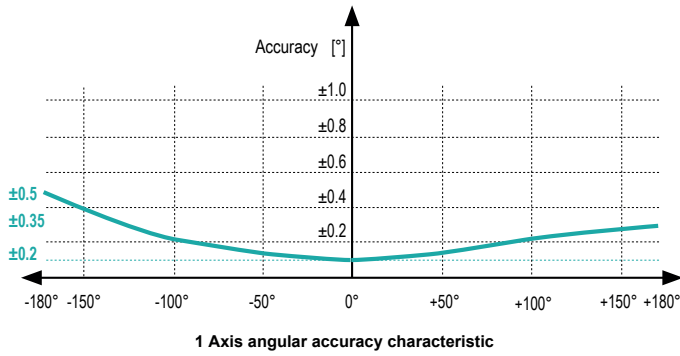
Technical data - electrical design

Voltage Supply	15VDC to 30VDC
Output options	4 - 20 mA analog output 0 - 20 mA analog output 0 - 10 Volt analog output 0 - 5 Volt analog output Digital Outputs (PNP)
Current consumption (no load)	32 mA
Reverse polarity protection of the supply voltage	Yes
Sampling rate	400 Hz (20 ms)
PowerON time	< 20 ms
Resolution	Internal sensor 0,003° D/A converter 11 bit
Accuracy at 25°C	1 - dimensional type $\pm 0.5^\circ$ 2 - dimensional type $\pm 1.0^\circ$
Temperature coefficient	0.01% / $^\circ\text{C}$
Cross-axis-sensitivity typ.	0.3 %
Measuring range	1 axis: 0 ... 360° 2 axis: $\pm 90^\circ$
Limit frequency	0.1 ... 10 Hz
Over Voltage Protection	Yes
Short Circuit Protection	Yes
Protection EN 60529	IP67
Operating temperature	-40°C to $+85^\circ\text{C}$
Storage temperature	-40°C to $+125^\circ\text{C}$

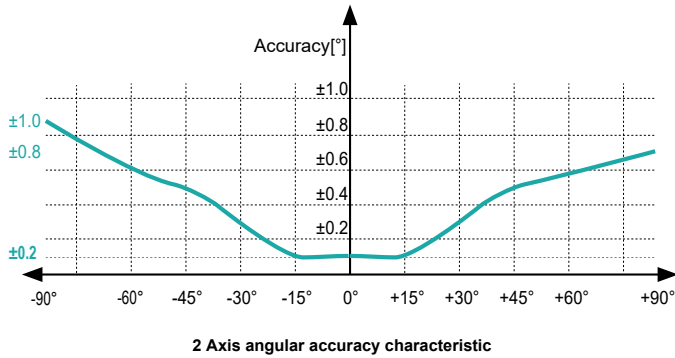
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Angular accuracy characteristic

1 Axis (360°)

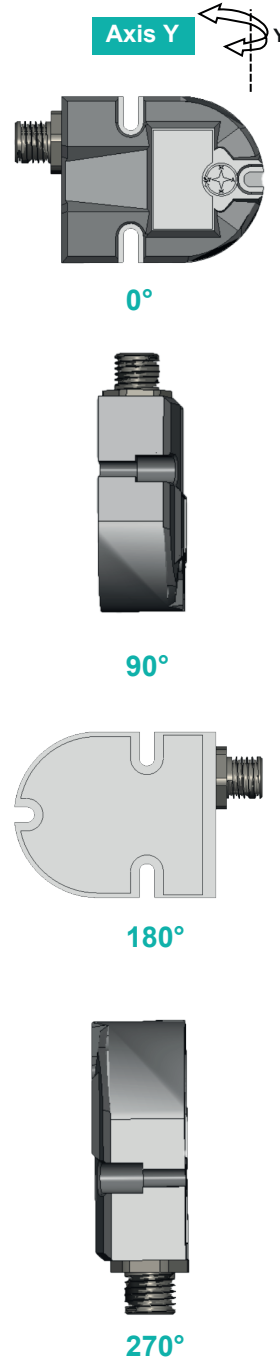


2 Axis (±90°)

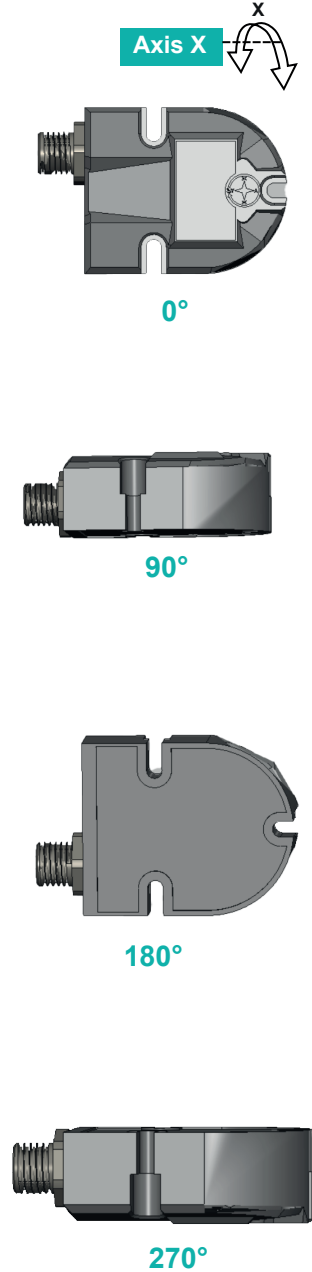


Sensor Orientation

Axis Y

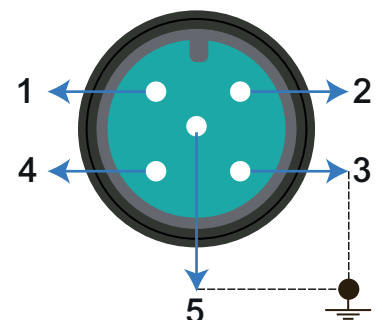


Axis X



Zero offset setting

Pins 5 and 3 are short-circuited for 4 seconds, causing the sensor to detect its position as 0°. The connection between the pins is then disconnected. The device stores the 0° position in memory during this time and does not revert to factory settings in the event of a power failure.



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Displays dependent on the operating stat	LED green: Power	LED yellow out 1	LED yellow out 2
Teach-in of switching points (X-axis):	off	flashes	off
Teach-in of switching points (Y-axis):	off	off	flashes
Activate teach-in mode for analog limits:	off	flashes	flashes
Teach-in of analog limit (X-axis)	off	flashes	off
Teach-in of analog limit (Y-axis)	off	off	flashes
Normal operation	on	switchings tate	switchings tate
Reset to factory settings: 2 s ... 10 s > 10 s ... end of reset process Followed by normal operation	off flashes	flashes off	flashes off

Axis definition

The definition of the X-axis and Y-axis is shown on the sensor housing by means of imprinted and labeled double arrows.

Teach-in of switching points (X-axis)

1. Press key Button 1 > 2 s (see LED display)
2. Move sensor to switching position 1
3. Press key Button 1 briefly. LED "out 1" lights stable as confirmation. Switching point 1 has been taught
4. Move sensor to switching position 2
5. Press key Button 1 briefly. LED "out 1" lights stable as confirmation. Switching point 2 has been taught
6. Sensor returns to normal operation (see LED display)



The NC (active output state) is always defined in the range from the 1st configured position to 2nd configured position.

As an example :

Case #1: configure position #1 at +45degree, configure position #2 at +90 degree; NC is from +45 ' +90 in the CW direction

Case #2: configure position #1 at +90degree ; configure position #2 at +45 degree; NC is from +90 ' +45 in the CW direction

Teach-in of switching points (Y-axis)

1. Press key Button 2 > 2 s (see LED display)
2. Move sensor to switching position 1
3. Press key Button 2 briefly. LED "out 2" lights stable as confirmation. Switching point 1 has been taught
4. Move sensor to switching position 2
5. Press key Button 2 briefly. LED "out 2" lights stable as confirmation. Switching point 2 has been taught
6. Sensor returns to normal operation (see LED display)



The NC (active output state) is always defined in the range from the 1st configured position to 2nd configured position.

See also the example, above.

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Teach-in of analog limits (X-axis)

1. Activate the teach-in mode for the analog limits by simultaneously pressing keys Button 1 and Button 2 > 5 s (see LED display)
2. Press key Button 1 > for 2 s (see LED display)
3. Move the sensor into the position of minimum evaluation limit
4. Press key Button 1 briefly. LED "out 1" lights stable as confirmation. The minimum evaluation limit has been taught. In this position the analog output will provide its minimum output value.
5. Move the sensor into the position of maximum evaluation limit
6. Press key Button 1 briefly. LED "out 1" lights stable as confirmation. The maximum evaluation limit has been taught. In this position the analog output will provide its maximum output value.
7. Sensor returns to normal operation (see LED display)



If the sensor inclination exceeds one of the analog limits, the last value of the analog output is retained.

Teach-in of analog limits (Y-axis)

1. Activate the teach-in mode for the analog limits by simultaneously pressing keys Button 1 and Button 2 > 5 s (see LED display)
2. Press key Button 2 > 2 s (see LED display)
3. Move the sensor into the position of minimum evaluation limit
4. Press key Button 2 briefly. LED "out 2" lights stable as confirmation. The minimum evaluation limit has been taught. In this position the analog output will provide its minimum output value.
5. Move the sensor into the position of maximum evaluation limit
6. Press key Button 2 briefly. LED "out 2" lights stable as confirmation. The maximum evaluation limit has been taught. In this position the analog output will provide its maximum output value.
7. Sensor returns to normal operation (see LED display)



If the sensor inclination exceeds one of the analog limits, the last value of the analog output is retained.

Resetting the sensor to factory settings

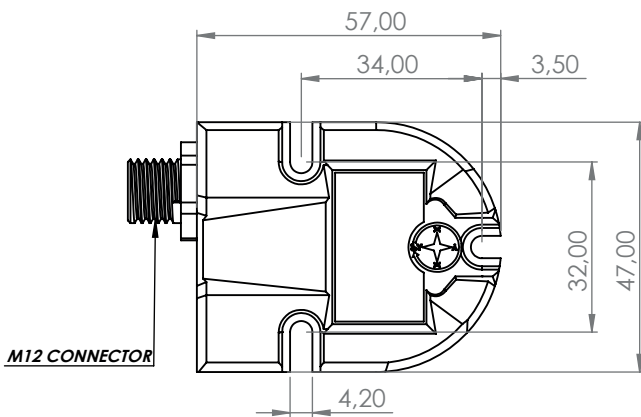
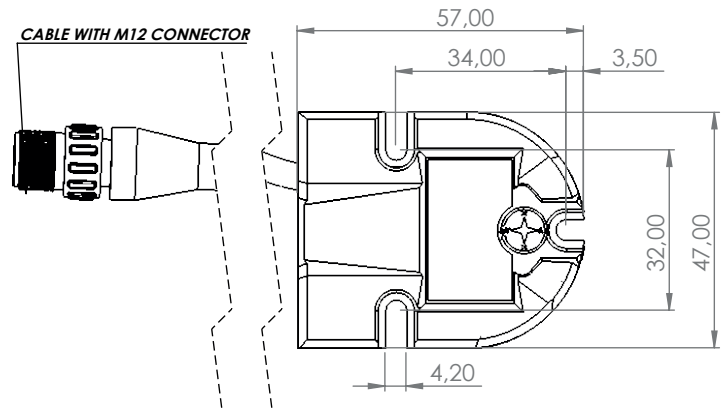
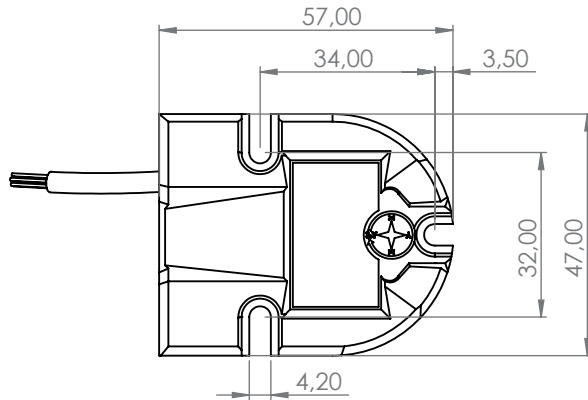
1. Press keys Button 1 and Button 2 > 10 s (see LED display)
2. The sensor has been reset when the green LED "Power" flashes after approx. 10 s.

Inclinometers

Cable / Connector Wiring,

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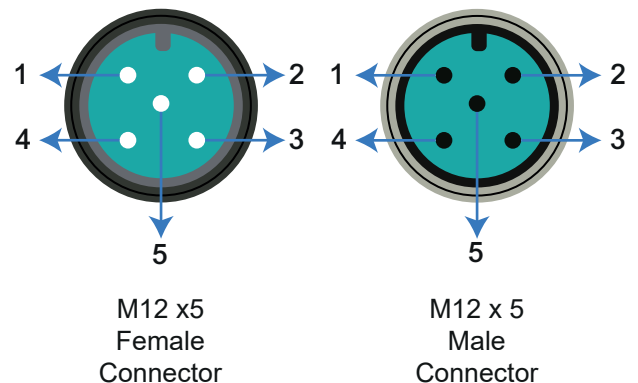
Mechanical Dimensions



Connection

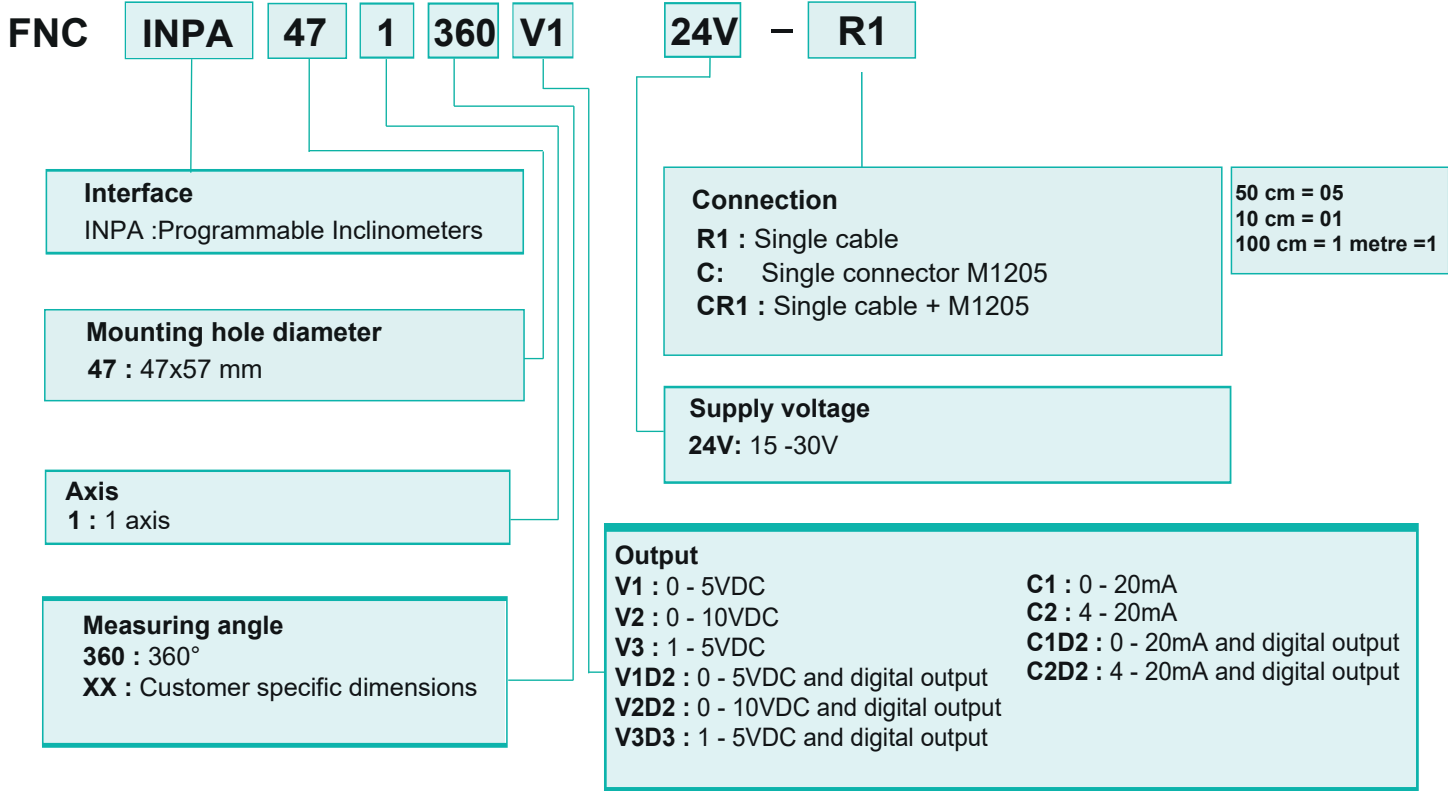
Pin	Color Pre- wired models only	Function
1	 Brown	+VDC
2	 Yellow	Analog OUT Y
3	 White	0V GND
4	 Green	Analog OUT X
5	 Gray	Referance / TEACH

M1205



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FNC INPA 1 Axis Part Number



FNC INPA 2 Axis Part Number

