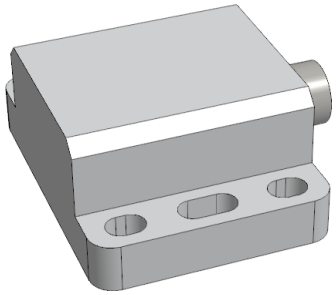
INCLINOMETER (TILT SENSOR) USER MANUAL

INC 110 E (Analog Output)

GENERAL INFORMATIONS



INC 110 series tilt sensors are used for inclination measurement for single (X) or two axes (XY). They have ±90^{o} measurement range. These sensors with 0.1-10VDC voltage output or 4-20mA current output option, can take measure ment with ±0.2° accuracy. Thanks to its compensated axis sensitivity, the effect of the axes on each other is minimized.

These sensors, especially used in machine and crane industries, can operate in outdoor environments with their high IP protection classes.

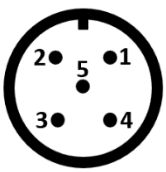
WARNINGS

- The installation of the product is carried out by the customer who purchases the product, according to the wiring diagrams, installation information, etc. in this manual.
- Maintenance and repair should be done by the technicians authorized by the manufacturer firm.
- There must be minimum distance between the sensor and control unit. Avoid additions except the suitable connector unless it needs.
- Keep away the sensor cable from as high power energy cables, contactor, motor, switched power supplies, inductive and capacitive noisy supplies.
- Not to damage the sensor, supply directions and voltage must be paid attention. Don't energize before all connections completed.
- Transport and storage should be at their original packaging and an ambient temperature of -30°C / +70°C in such a way that they will not be exposed to dust, humudity, impact, vibration, falling or water.
- Chemicals such as alcohol, thinner etc. should not be used for cleaning the product. The product should be wiped with a damp cloth.
- The product may be damaged and may become unusable if used outside of the specifications in the user manual.

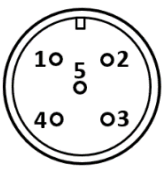
ELECTRICAL CONNECTION

Signal	M12 Socket	Cable
V+ (12..24VDC)	Pin 1	Red
Output 1 (0.1-10VDC / 4-20mA) (X axis)	Pin 2	Yellow
GND (0V)	Pin 3	Black
Output 2 (0.1-10VDC / 4-20mA) (Y axis)	Pin 4	Green
Reset	Pin 5	Pink

M12 - 5 PIN MALE SOCKET



M12 - 5 PIN FEMALE SOCKET



* Output 2 is only used on two-axis models. On single-axis models, Pin 4 (green cable) is empty.
* On analog output models, 1 pcs M12 5 pin male socket is used as standard.
* Different socket models can be requested optionally.

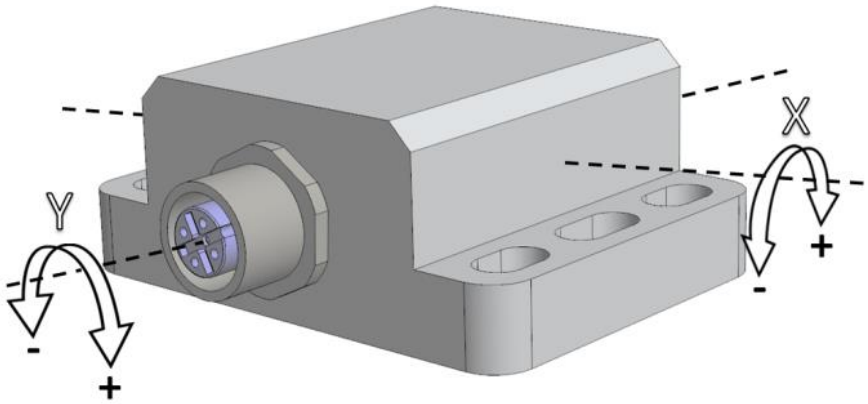
DETERMINING THE 0° POINT OF SENSOR

Pin 5 (pink cable) and pin 3 (black cable) are short-circuited once and then disconnected. Thus, the sensor recognizes that the position is 0 °. If the same operation is repeated a second time, the sensor is reset to the factory settings.

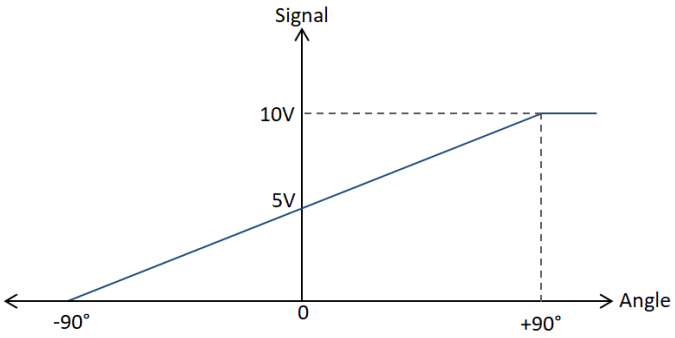
The reset pin (pin5/pink cable) should not be left idle. After the adjustment process is completed, it must be connected to the supply pin (pin1/red cable).

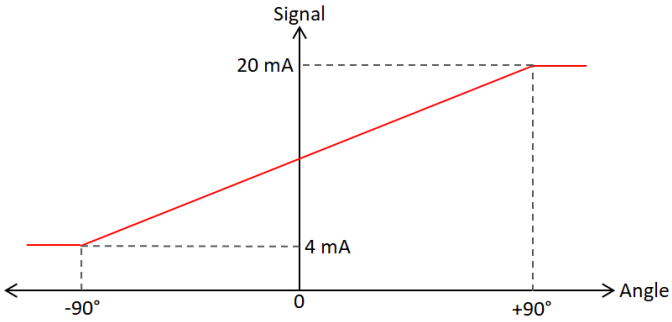
During the operations, the sensor position should be kept constant for approximately 4 seconds.

AXES AND OUTPUT SIGNAL DIAGRAM

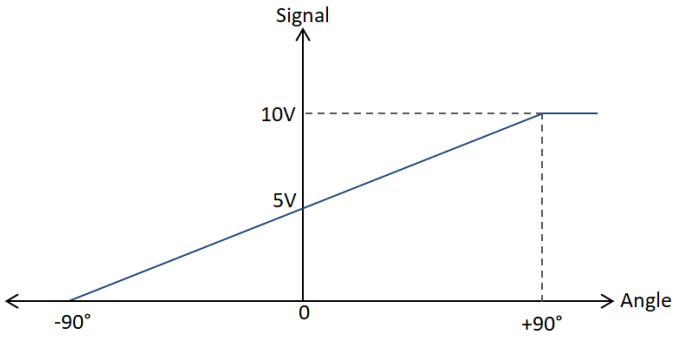


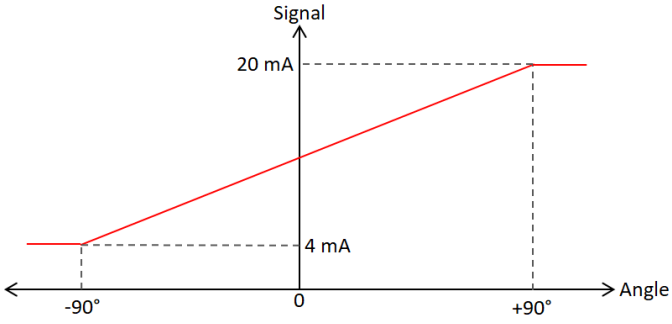
X Axis-Analog Signal Output



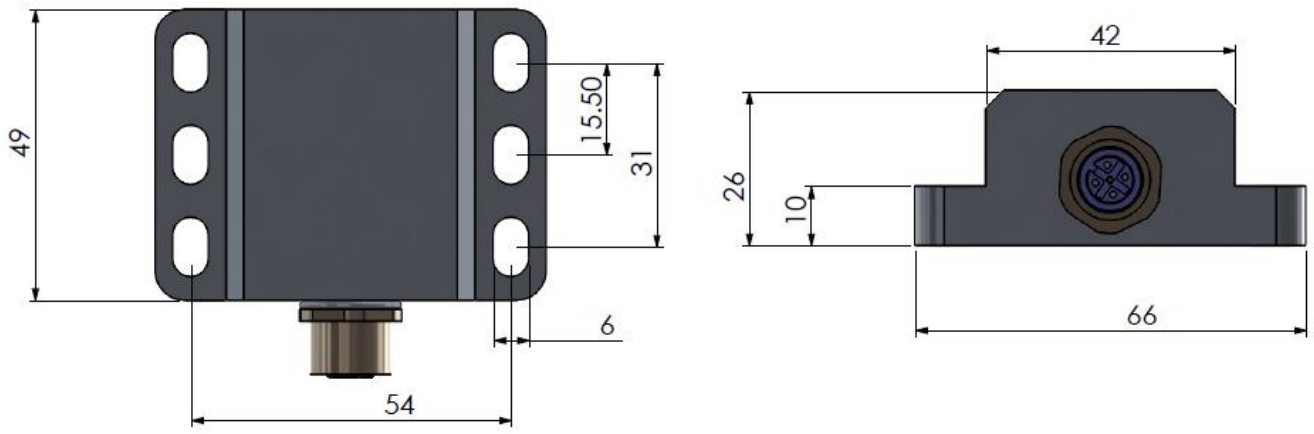


Y Axis-Analog Signal Output

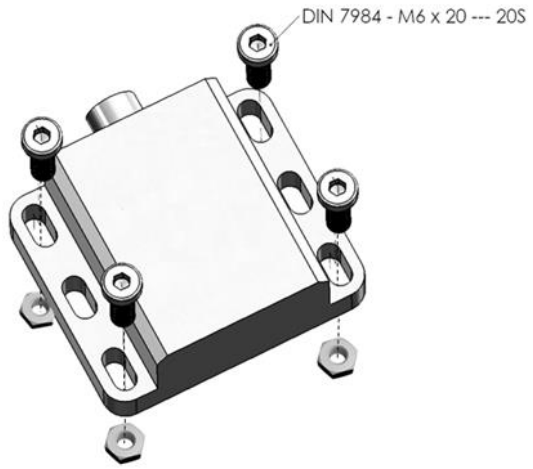




DIMENSIONS (in mm)



MECHANICAL MOUNTING



The product must be fixed to the area to be taken inclination measurement with 4 pcs M6 bolts and nuts.

Warning: All welding work in the relevant area must be completed before the product is installed. Otherwise, the device may be damaged during the welding process, and in this case, it will be out of warranty.

TECHNICAL SPECIFICATIONS

Supply Voltage	4-20 mA : 12 … 24 VDC 0-10 VDC: 15 … 24 VDC	**Protection Class**	IP67
***Measurement Range**	±90^{o}	**Operating Temperature**	- 30°C …+70°C
***Measurement Axes**	X, XY	**Relative Humudity**	%10 … %90
***Output Signals**	Analog 4-20 mA or 0-10 VDC	**Weight**	~140 gr
Resolution	12 bit	**Body Material**	Aluminium
Accuracy	±0,2^{o}	***Electrical Connection**	M12 5 pin (male) socket or cable output

Note: The specifications specified by (*) vary depending on the model selected. The detailed code table for product selection is shown on page 4.

BOX CONTENTS

Product	Description
INC 110	Inclinometer
User Manual	1 pcs.

PRODUCT CODE TABLE

Model
INC 110

Number of axes
01: Single axis
02: Two axes

Supply Voltage (1)
PP: 12…24VDC / 15…24VDC

Output Signal Direction
CW: Clockwise
CCW: Counter-Clockwise

Output Type
No code : Single Output

INC 110	-	X	-	XX	-	XX	-	XX	-	XXX	-	XX	-	XX	-	XX

Sensor Type
E: Inclination

Measurement Range (2)
90: ±90°
45: ±45°

Output Signals
V: 0-10 VDC
A: 4-20 mA

Electrical Connection (3)
3M : 3m cable
5M : 5m cable
10M : 10m cable
S13F : M12 5 pin female socket
S13M : M12 5 pin male socket

(1) The supply voltage is 12…24VDC for 4-20 mA output models, and 15…24VDC for 0-10 VDC output models.
(2) Optionally, different measurement values between ±90° can be requested. You should specify your non-standard measurement value at the order stage.
(3) The product can be requested with cable or socket.
As standard;
1 pcs M12 5 pin male socket (S13M) is used.
However, different socket combinations may be requested as in the examples below.
Please contact us for any other socket model other than M12.

Sample Code 1: INC110-E-01-90-PP-A-CW-S13F
INC 110 series, inclination, single axis, ±90° measurement, 12-24VDC supply, current output, clockwise, 1 pcs M12 5 pin female soke

Sample Code 2: INC110-E-02-45-PP-V-CCW-S13M
INC 110 series, inclination, two axes, ±45° measurement, 15-24VDC supply, volt output, counter-clockwise, 1 pcs M12 5 pin male socket

Manufacturer Firm's and Authorized Service's Title, Address Details
Manufacturer Firm: ATEK ELEKTRONİK SENSÖR TEKNOLOJİLERİ SANAYİ VE TİCARET A.Ş.
Address: Gebze OSB Mahallesi, 800. Sokak, No:814/1 Gebze, KOCAELİ/TÜRKİYE
TEL: +90 262 673 76 00 **FAX:** +90 262 673 76 08
Web: www.ateksensor.com **E-mail:** info@ateksensor.com

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Disposal of E-Waste: This device is in conformity with WEEE Directive and consists of recyclable materials. This product should not be disposed with general waste for preventing negative effects on enviroment and human health. This product should be disposed to collecting points of authorized recycling facilities. Further information can be reached from authorized unit.