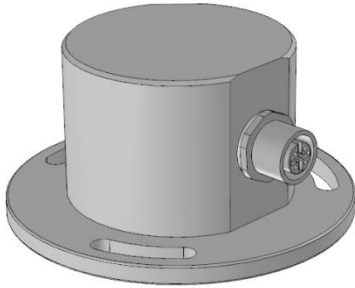


GENERAL INFORMATIONS



INC 210 series angle sensors are the sensors that show the angle of rotation of objects standing perpendicular to the earth. Angle measurement information between 0°-360° can be taken from these sensors. These sensors with 0.1-10VDC voltage output or 4-20mA current output option, can take measurement with $\pm 0.1^\circ$ 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. Optionally, sensors with redundant output can be produced.

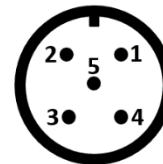
WARNINGS

- 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 $-30^\circ\text{C} / +70^\circ\text{C}$ in such a way that they will not be exposed to dust, humidity, 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.

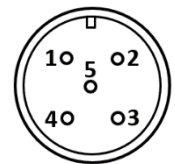
ELECTRICAL CONNECTION

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 single output models, 1 pcs M12 5 pin male socket is used as standard.

* Redundant models have two outputs. 1 pcs M12 5 pin male ve 1 pcs M12 5 pin female socket is used as standard.

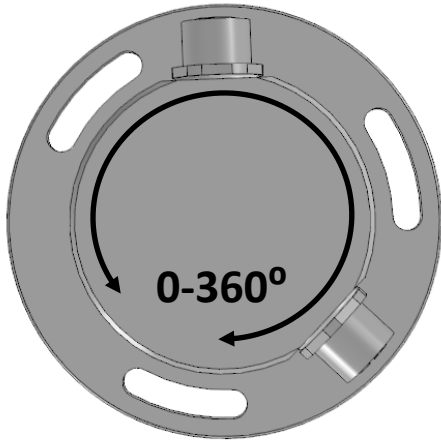
* Different socket models can be requested optionally.

DETERMINING THE 0° POINT OF SENSOR

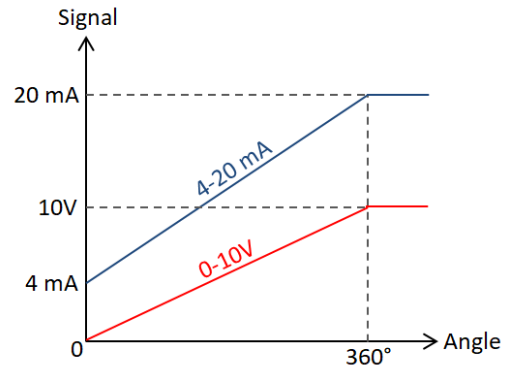
Pin 5 (pink cable) and pin 3 (black cable) are short-circuited for about 5 seconds and then disconnected. Thus, the sensor recognizes that the position is 0°. If the same operation is repeated a second time, the sensor is reset to the factory settings.

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

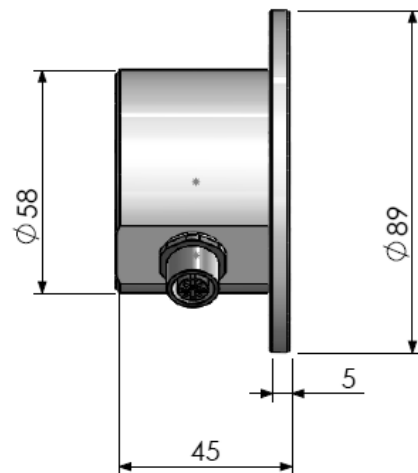
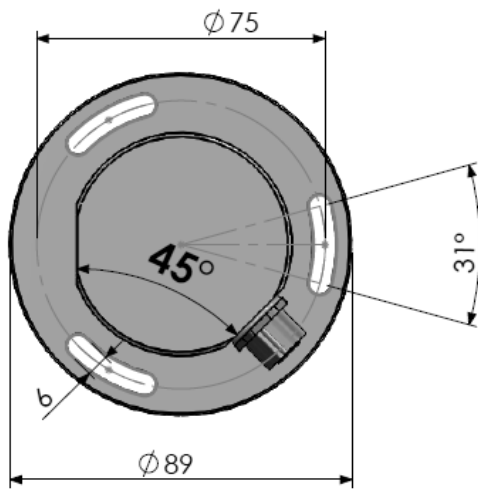
MEASUREMENT AXIS AND OUTPUT DIAGRAM



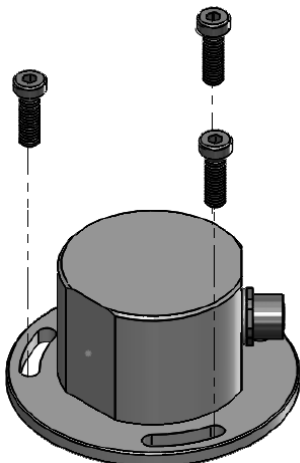
Analog Signal Output



DIMENSIONS (in mm)



MECHANICAL MOUNTING



The product must be fixed to the area to be taken inclination measurement with 3 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	0° ... 360°	Operating Temperature	- 30°C ... +70°C
		Relative Humidity	%10 ... %90
*Output Signals	Analog 4-20 mA or 0.1-10 VDC Optional Redundant Output	Weight	~250 gr
Resolution	12 bit	Body Material	Aluminium
Accuracy	±0,1°	*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 210	Angle Sensor
User Manual	1 pcs.

PRODUCT CODE TABLE

Model	Number of axes	Supply Voltage ⁽¹⁾	Output Signal Direction	Output Type
INC 210	01: Single axis	PP: 12...24VDC / 15...24VDC	CW: Clockwise CCW: Counter-Clockwise	No code : Single Output Dual : Redundant output
INC 210	X	XX	XX	XXX
Sensor Type	Measurement Range ⁽²⁾	Output Signals	Electrical Connection ⁽³⁾	
A : Angle	360: 0-360° 180: 0-180°	V: 0-10 VDC A: 4-20 mA	3M : 3m cable 5M : 5m cable 10M : 10m cable S13F : M12 5 pin female socket S13M : M12 5 pin male socket S13FM : M12 5 pin female + M12 5 pin male socket (redundant models)	

- (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 0-360° 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;
For single output models, 1 pcs M12 5 pin male socket (S13M) is used.
For redundant models, 1 pcs M12 5 pin female + 1 pcs M12 5 pin male socket (S13FM) 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: INC210-A-01-360-PP-A-CW-S13F

INC 210 series, angle, single axis, 0-360° measurement, 12-24VDC supply, current output, clockwise, 1 pcs M12 5 pin female socket, single output

Sample Code 2: INC210-A-01-180-PP-V-CCW-S13FM-DUAL

INC 210 series, angle, single axis, 0-180° measurement, 15-24VDC m, volt output, counter-clockwise, 1 pcs M12 5 pin female + 1 pcs M12 5 pin male socket, redundant output