ANGLE AND INCLINATION SENSOR
"Transistor and Analog Output"

INS 130

GENERAL FEATURES

- Two axis measurement
- Angle and inclination measurement from 0 to 360°
- Programmable measurement ranges
- Analog output options : 0…5VDC, 0…10VDC or 4…20mA
- Programmable Switching output
- PNP Open Collector output
- High Sensitivity: ±0.15°
- Easy installation
- IP64 protection class
- Small and robust housing
- Compact structure

INS 130 series angle and inclination sensors are the sensors that show the inclination and angle of rotation of objects standing perpendicular to the earth. Measurement information can be obtained from these sensors between 0-360°. The measurement limits can be set according to the user request. These sensors which can offer both analog output and open collector output, can take measurement with ±0.15° accuracy.

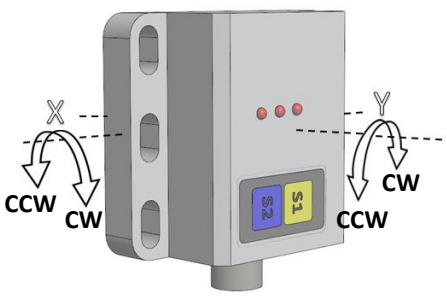
INS 130 series sensors with high precision, compact design and durable construction offers suitable solutions for angle measurement in industrial areas like crane and lifting systems, construction machinery and special purpose vehicles, solar energy and photovoltaic systems, wind farms and so onThanks to their high IP protection class, they can work easily in outdoor environments.

Supply Voltage (V)	4-20 mA & Transistor: 12…24 VDC 0-10 VDC & 0-5 VDC: 15…24 VDC		**Resolution**	0,05°
***Measurement Range**	0…360°		**Accuracy**	±0,15°
Measurement Axis	XY		**Protection Class**	IP64
***Output Type**	2xPNP Open Collector or Analog Signal Output		**Operating Temp.**	- 30°C…+70 °C
Open Collector Specifications	**Output Voltage**	~(V-1) Volt	**Relative Humudity**	%10…%90
	Current Consumption	<200 mA	**Weight**	~200 gr
Analog Ouputs	0-5 VDC, 0-10 VDC or 4-20 mA		**Body Material**	Aluminum
Response Time	10 Hz		***Electrical Connection**	8x0,14 mm² shielded cable or M12 / 8 pin male socket

Note: The specifications specified by (*) vary depending on the model selected. The detailed code table for product selection is shown on page 3.

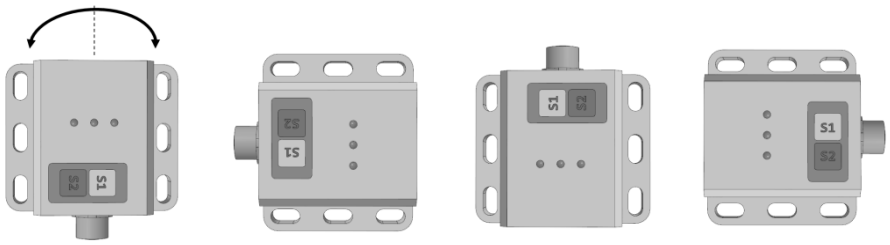
ANGLE MEASUREMENT AXİS

Measurement Axis



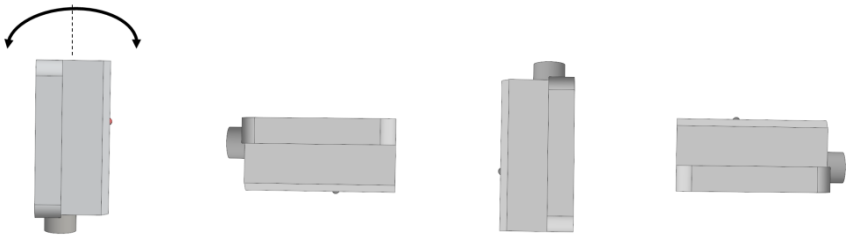
CW: Clockwise
CCW: Counter clockwise

Y Axis



Y : 0° | Y : 90° | Y : ±180° | Y : 270° (-90°)

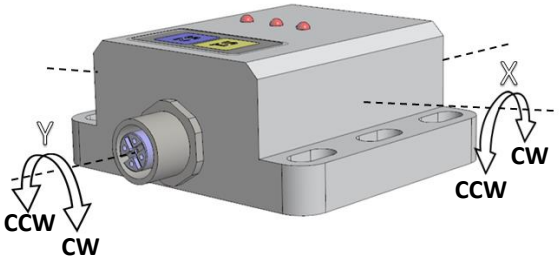
X Axis



X : 0° | X : 90° | X : ±180° | X : 270° (-90°)

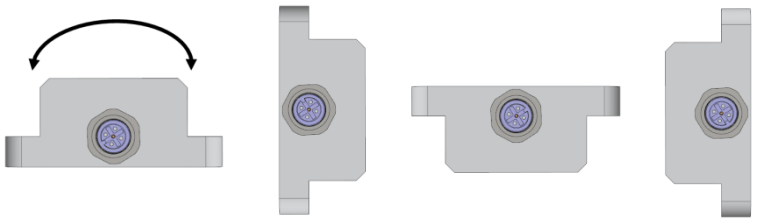
INCLINATION MEASUREMENT AXİS

Measurement Axis



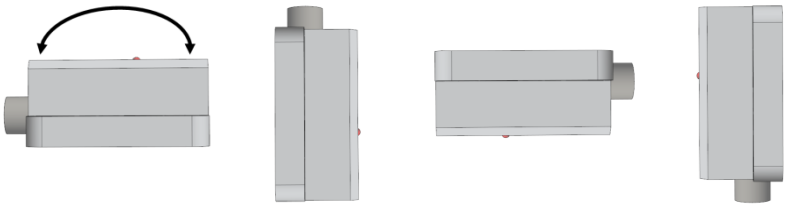
CW: Clockwise
CCW: Counter clockwise

Y Axis



Y : 0° | Y : 90° | Y : ±180° | Y : 270° (-90°)

X Axis

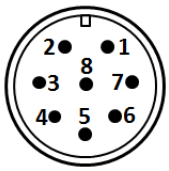


X : 0° | X : 90° | X : ±180° | X : 270° (-90°)

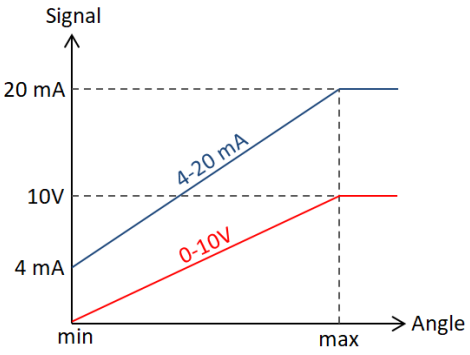
ELECTRICAL CONNECTION

Signal	M12-8 Pin Male Socket	Cable
V+	Pin 1	Red
Transistor Output X	Pin 2	Yellow
GND (0V)	Pin 3	Black
Transistor Output Y	Pin 4	Green
-	Pin 5	Blue
Analog Output X	Pin 6	Pink
Analog Output Y	Pin 7	White
-	Pin 8	Grey

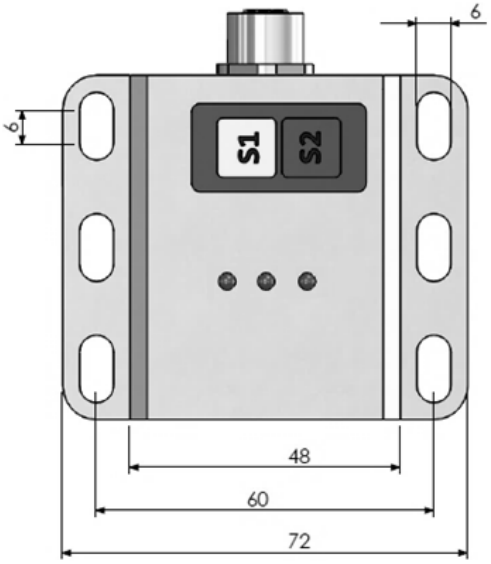
M12 - 8 PIN MALE SOCKET

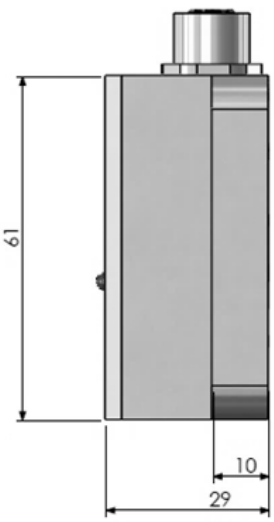


Analog Signal Output



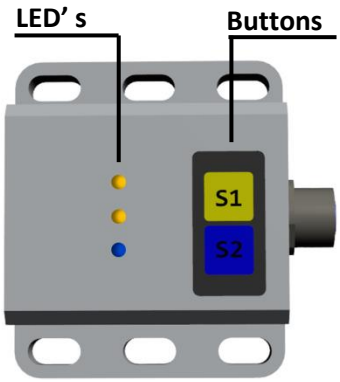
MECHANICAL DIMENSIONS (mm)





LED AND BUTTON FUNCTIONS

Working Status	BLUE LED Status	Yellow LED Out X	Yellow LED Out Y
During setting of switching output for X Axis	Light goes OFF	Starts blinking	Light goes OFF
During setting of switching output for Y Axis	Light goes OFF	Light goes OFF	Starts blinking
While switching to analogue setting mode	Light goes OFF	Starts blinking	Starts blinking
During setting of switching output for X Axis	Light goes OFF	Starts blinking	Light goes OFF
During setting of switching output for Y Axis	Light goes OFF	Light goes OFF	Starts blinking
During normal operation	Intermittent blinking	switching mode Status	switching mode Status
Reset to Factory settings : Between 5 seconds- 10 seconds	Light goes OFF	Starts blinking	Starts blinking
>10 seconds the end of the process of returning to factory setting, its continue is normal operating mode	Starts blinking	Light goes OFF	Light goes OFF



S1	Yellow	Used to change the set range for switching and analog outputs of X axis. Please refer to the user manual for detailed information.
S2	Blue	Used to change the set range for switching and analog outputs of Y axis. Please refer to the user manual for detailed information.

SAMPLE APPLICATION AREAS

- Agricultural and forestry machinery
- Construction machinery and special-purpose vehicles
- Solar thermal energy and photovoltaics
- Automated guided systems
- Crane and lifting technology
- Wind power plant

PRODUCT CODE

Model		Sensor Type*		Number of Axis		Measurement Range (1)		Supply Voltage(2)		Analog Output Type		Transistor Output Type		Output Signal Direction		Electrical Connection (3)
INS 130	-	X	-	XX	-	XX	-	XX	-	X	-	XX	-	XX	-	XXX
		E: Inclination **A:** Angle *See : Page 1- Angle Measurement Axis Page 2- Inclination Measurement Axis		**02:** Two Axis		*It can be produced at any desired value up to 360 ° **Exmp: 030** : 0…30°		**PP:** 12…24VDC / 15…24VDC		**A:** 4-20 mA **V:** 0-10 V **V1:** 0-5 VDC **No Code:** No analog output		**OCP:** PNP Open Collector **No Code:** No transistor output		**CW:** Clockwise **CCW:** Counter clockwise		**3M:** 3m cable(standard) **S14M:** M12-8 pin Male Socket

(1) The angle and inclination measurement range can be selected differently for transistor output and analog output. You need to specify your different measurement range requirements at the order stage.
(2) The supply voltage is 12…24VDC for 4-20 mA & transistor output models, and 15…24VDC for 0-10VDC and 0-5VDC output models.
(3) Different cable lengths can be requested upon user request.

Sample Code 1: INS 130 E 02 -30…+30 PP A OCP CW S14M
INS 130 series, inclination, two axis, -30°…+30°, PP supply, 4-20 mA analog output, PNP open collector output, output signal direction clockwise, M12-8 pin male socket
Örnek Kod 2: INS 130 A 02 030 PP A OCP CW S14M
INS 130 series, angle, two axis, 0…30°, PP supply, 4-20 mA analog output, PNP open collector output, output signal direction clockwise, M12-8 pin male socket

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OPTIONAL PRODUCTS

Product	Code	Description
	CB8 5M / S14F	5 meters 8x0,14 mm^2 extension cable + M12/8 pin female connector

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