



#### 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:  $\pm 0.15^\circ$
- Easy installation
- IP64 protection class
- Small and robust housing
- Compact structure

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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  $\pm 0.15^\circ$  accuracy.

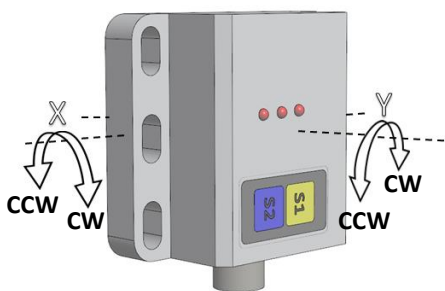
INS 130 series sensors with high precision, compact design and durable construction offers suitable solutions for angle measurement in industrial areas like crane and lifting systems, construction machinery and special purpose vehicles, solar energy and photovoltaic systems, wind farms and so on. Thanks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

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

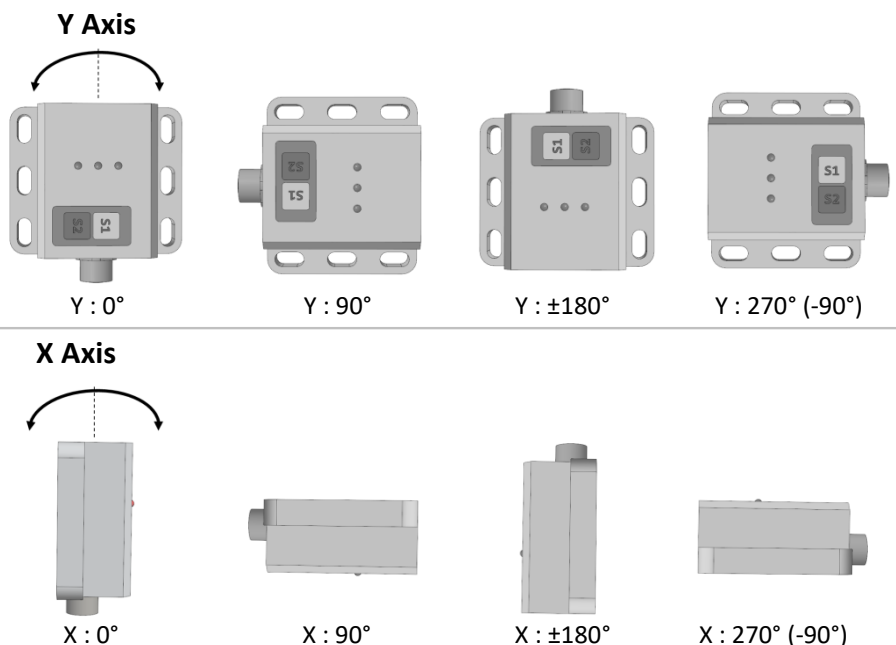
**Note:** The specifications specified by (\*) vary depending on the model selected. The detailed code table for product selection is shown on page 3.

#### ANGLE MEASUREMENT AXIS

##### Measurement Axis

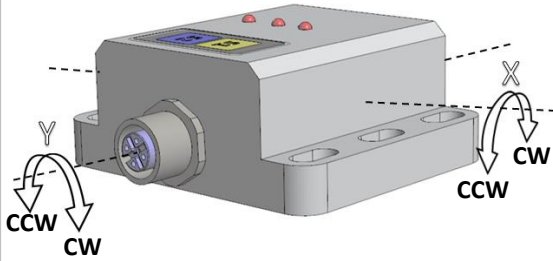


**CW:** Clockwise  
**CCW:** Counter clockwise



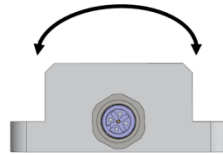
## INCLINATION MEASUREMENT AXIS

### Measurement Axis



**CW:** Clockwise  
**CCW:** Counter clockwise

### Y Axis



Y : 0°



Y : 90°

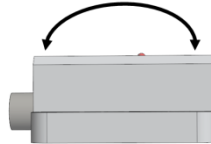


Y : ±180°



Y : 270° (-90°)

### X Axis



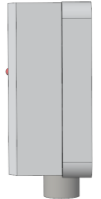
X : 0°



X : 90°



X : ±180°

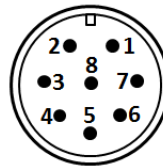


X : 270° (-90°)

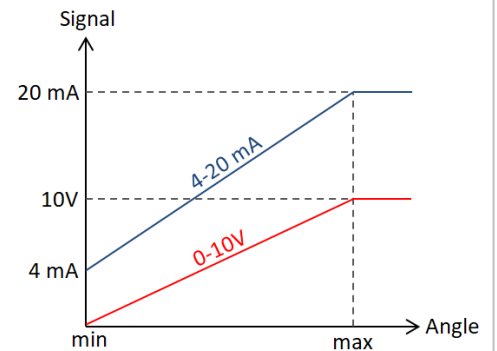
## ELECTRICAL CONNECTION

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

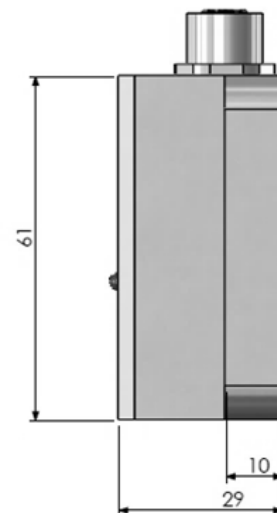
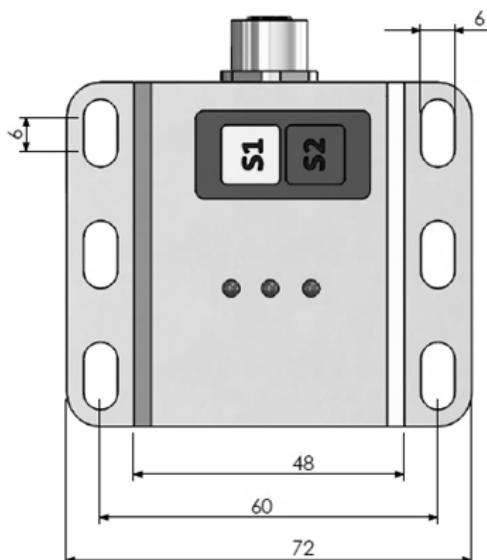
### M12 - 8 PIN MALE SOCKET



### Analog Signal Output

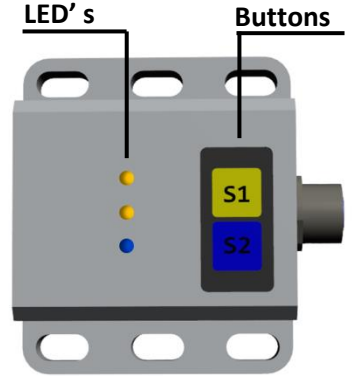


## MECHANICAL DIMENSIONS (mm)



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

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- (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 <sup>2</sup> extension cable + M12/8 pin female connector

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