# **ANGLE SENSOR**

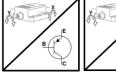
"Transistor and Analog Output"

**INS 120** 



### **GENERAL FEATURES**

- Single-axis 360° angle measurement
- Programmable measurement ranges
- Compensated axis sensitivity
- 0-5VDC, 0-10VDC or 4-20mA analog output options (Dual analog output option)
- 2 x PNP Open Collector output
- High Sensitivity: ±0.15°
- Easy installation
- IP64 protection class
- Small and robust housing
- Compact structure



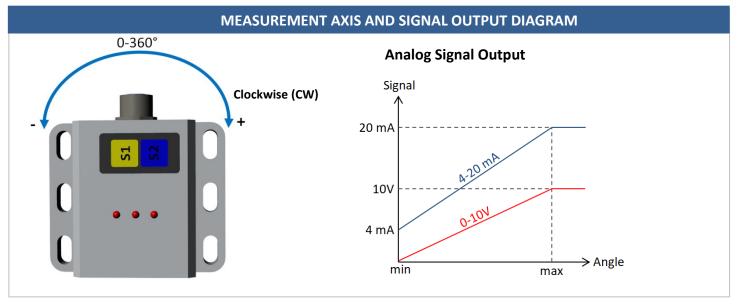


INS 120 series angle sensors are the sensors that show the angle of rotation of objects standing perpendicular to the earth. Angle measurement information between  $0^{\circ}$ -360° can be taken from these sensors. The measurement limits can be set according to the user request. These sensors which can offer both analog output and open collector output, can take measurement with  $\pm 0.15^{\circ}$  accuracy.

INS 120 angle sensors with high precision, compact design and durable construction; crane and lifting systems, construction machinery and special purpose vehicles, solar energy and photovoltaic systems, wind farms and so on. offers suitable solutions for angle measurement in industrial areas. Thanks to their high IP protection class, they can work easily in outdoor environments.

TECHNICAL SPECIFICATIONS				
Supply Voltage (V)	0-10 VDC & 0-5 VDC: 1524 VDC		Resolution	
¥2.2			Accuracy	±0,15°
*Measurement Range	0360°		<b>Protection Class</b>	IP64
Measurement Axis	X		Operating Temp.	- 30°C+70 °C
*Output Type	2 x PNP Open Collector and Analog Signal		Relative Humudity	%10%90
	<b>Output Voltage</b>	~(V-1) Volt	Weight	~200 gr
Open Collector Specifications	<b>Switching Function</b>	NO	<b>Body Material</b>	Aluminum
<b></b>	<b>Current Consumption</b>	<200 mA		
<b>Analog Ouputs</b>	0-5 VDC, 0-10 VDC or 4-20 mA		*Electrical Connection	8x0,14 mm <sup>2</sup> shielded cable or M12 male socket
Response Time	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.



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## **ELECTRICAL CONNECTION**

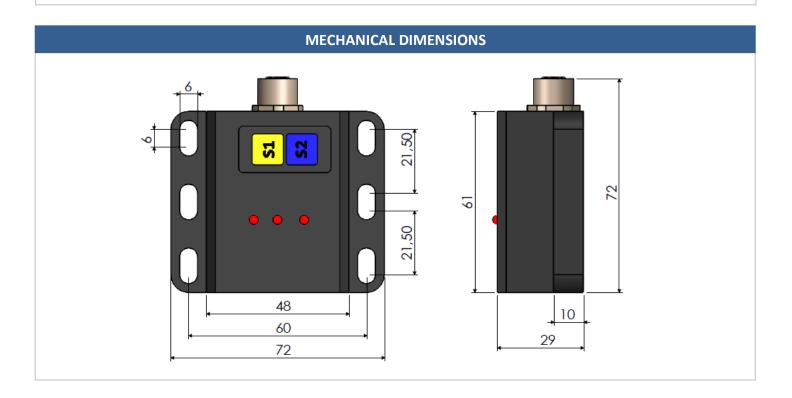
Signal	M12-8 Pin Socket	M12- 5 Pin Socket	Cable
V+	Pin 1	Pin 1	Red
Transistor Output 1	Pin 2	Pin 2	Yellow
GND (0V)	Pin 3	Pin 3	Black
Transistor Output 2	Pin 4	Pin 4	Green
-	Pin 5	-	Blue
Analog Output 1	Pin 6	Pin 5	Pink
Analog Output 2	Pin 7	-	White
-	Pin 8	-	Grey

M12 - 5 PİN SOCKET

M12 - 8 PİN SOCKET

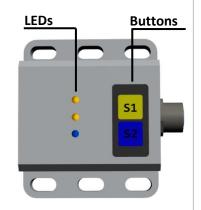






## **LED AND BUTTON FUNCTIONS**

Working Status	Blue LED Status	Yellow LED Out 1	Yellow LED Out 2
During setting of switching output for OUT 1	light goes out	starts blinking	light goes out
During setting of switching output for OUT 2	light goes out	light goes out	starts blinking
While switching to analogue setting mode	light goes out	starts blinking	starts blinking
During setting of analogue output for OUT 1	light goes out	starts blinking	light goes out
During setting of analogue output for OUT 2	light goes out	light goes out	starts blinking
During normal operation	intermittent blinking	switching mod status	switching mod status
Reset to factory settings Between 5 seconds10 seconds	light goes out	starts blinking	starts blinking
>10 seconds the end of the process of returning to factory settings its continue is normal operation mode	starts blinking	light goes out	light goes out



But	ton	Color	Function
S	1	Yellow	Used to change the set range for switching Out1 and analog outputs. Please refer to the user manual for detailed information.
S	2	Mavi	Used to change the set range for switching Out2 and analog outputs. Please refer to the user manual for detailed information.

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### **SAMPLE APPLICATION AREAS**

- Agricultural and forestry machinery
- Construction machinery and special-purpose vehicles
- Solar thermal energy and photovoltaics



Model

**INS 120** 



**Number of Axis** 

01: Single Axis

XX





Automated guided systems

Crane and lifting technology

Wind power plant



## PRODUCT CODE

Supply Voltage<sup>(2)</sup>

Measurement Range (1)

\*It can be produced at

desired value up to 360°

**PP:** 12...24VDC / 15...24VDC

XX

**Transistor Output Type** 

XX

**OCP:** 2 x PNP Open Collector **No Code:** No transistor

output

**3M:** 3m cable (standard)

**\$13M:** M12-5 pin male

Socket

**\$14M:** M12-8 pin male

Socket

Output Signal Direction

**CCW:** Counter clockwise

CW: Clockwise

Analog Output Type (3)

**A:** 4-20 mA **V:** 0-10 V

V1: 0-5 VDC

No Code: No analog output

\*Optional:

2A: Dual 4-20 mA output 2V: Dual 0-10 V output 2V1: Dual 0-5 VDC output

(1) The angle 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.

XX

- (2) The supply voltage is 12...24 VDC for 4-20 mA & transistor output models, and 15...24 VDC for 0-10 VDC and 0-5 VDC output models.
- (3) Optionally **Dual Analog Output** can be requested. In this case, it is necessary to add "2" at the beginning of the desired signal output at order coding.
- (4) If dual analog output is desired, the electrical connection must be selected as 3M (cable) or S14M (M12-8 pin male socket).

### Sample Code 1: INS 120 A 01 030 PP A OCP CW S13M

Sensor Type

A: Angle

INS 120 series, angle, single axis, 0...30°, PP supply, 4-20 mA analog output, 2xPNP open collector output, output signal direction clockwise, M12-5 pin male socket

### Sample Code 2: INS 120 A 01 -30...+30 PP 2A OCP CW S14M

INS 120 series, angle, single axis, -30°...+30°, PP supply, 2 pieces 4-20 mA analog output, 2xPNP open collector output, output signal direction clockwise, M12-8 pin male socket

### **OPTIONAL PRODUCTS**

Product	Code	Description
	CB5 5M / S13F	5 meters 5x0,14 mm <sup>2</sup> extension cable + M12/5 pin female connector
	CB8 5M / S14F	5 meters 8x0,14 mm <sup>2</sup> extension cable + M12/8 pin female connector

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