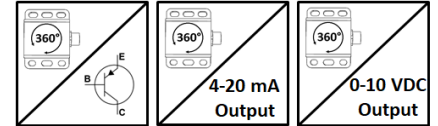




### GENERAL FEATURES

- Single-axis 360° angle measurement
- Programmable measurement ranges
- Compensated axis sensitivity
- 0-10VDC or 4-20mA analog output options (Dual analog output option)
- PNP Open Collector output
- High Sensitivity:  $\pm 0.15^\circ$
- Easy installation
- IP67 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°-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.

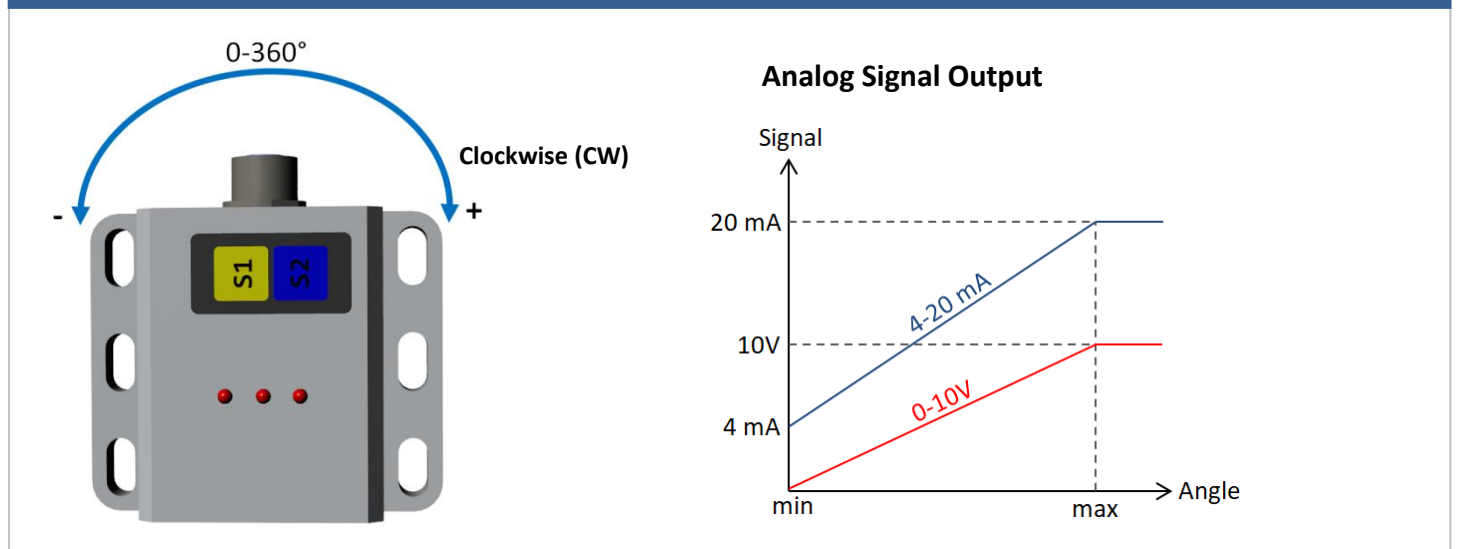
INS 120 angle sensors with high precision, compact design and durable construction; crane and lifting systems, construction machinery and special purpose vehicles, solar energy and photovoltaic systems, wind farms and so on. offers suitable solutions for angle measurement in industrial areas. Thanks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

### TECHNICAL SPECIFICATIONS

<b>Supply Voltage (V)</b>	12 ... 24 VDC	<b>Resolution</b>	$\pm 0,05^\circ$	
<b>*Measurement Range</b>	0...360°	<b>Accuracy</b>	$\pm 0,15^\circ$	
<b>Measurement Axis</b>	X	<b>Protection Class</b>	IP67	
<b>*Output Type</b>	PNP Open Collector or Analog Signal Output	<b>Operating Temp.</b>	- 30°C...+70 °C	
		<b>Relative Humidity</b>	%10...%90	
<b>Open Collector Specifications</b>	<b>Output Voltage</b>	$\sim(V-1)$ Volt	<b>Weight</b>	$\sim 200$ gr
	<b>Current Consumption</b>	$\leq 300$ mA	<b>Body Material</b>	Aluminum
<b>Analog Outputs</b>	0-10 VDC or 4-20 mA	<b>*Electrical Connection</b>	8x0,14 mm <sup>2</sup> shielded cable or M12 male socket	
<b>Response Time</b>	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.

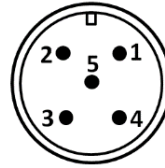
### MEASUREMENT AXIS AND SIGNAL OUTPUT



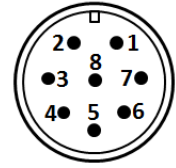
## ELECTRICAL CONNECTION

Signal	M12-8 Pin Socket	M12- 5 Pin Socket	Cable
V+ (12..24VDC)	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

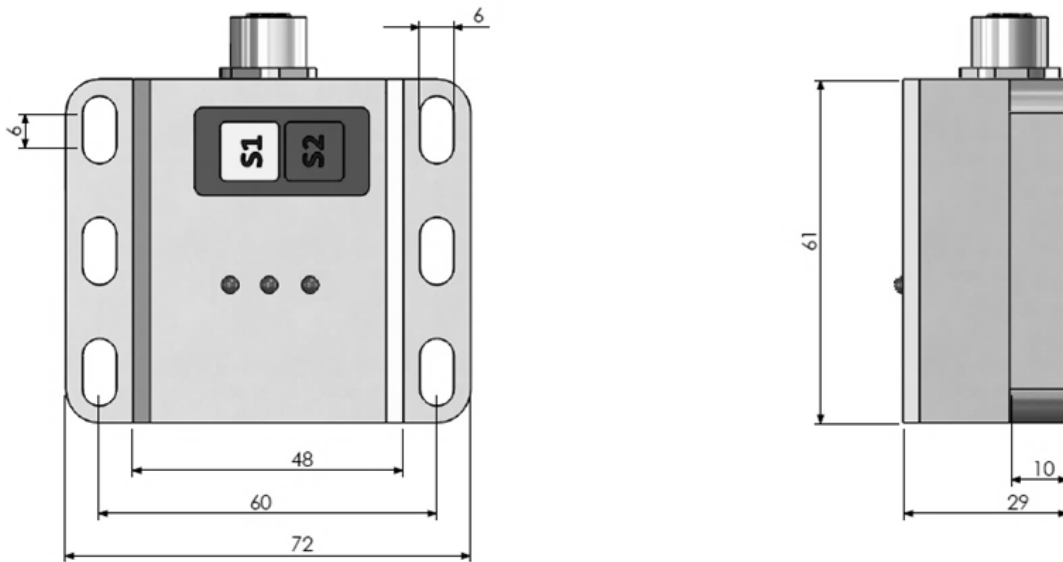
**M12 - 8 PIN SOKET**



**M12 - 5 PIN SOKET**

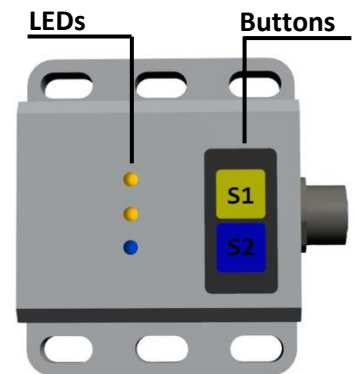


## MECHANICAL DIMENSIONS



## LED AND BUTTON FUNCTIONS

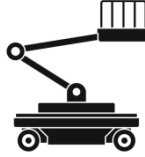
Working Status	Blue LED Status	Yellow LED Out 1	Yellow LED Out 2
During setting of switching output for OUT 1	light goes out	starts blinking	light goes out
During setting of switching output for OUT 2	light goes out	light goes out	starts blinking
While switching to analogue setting mode	light goes out	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 seconds--10 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



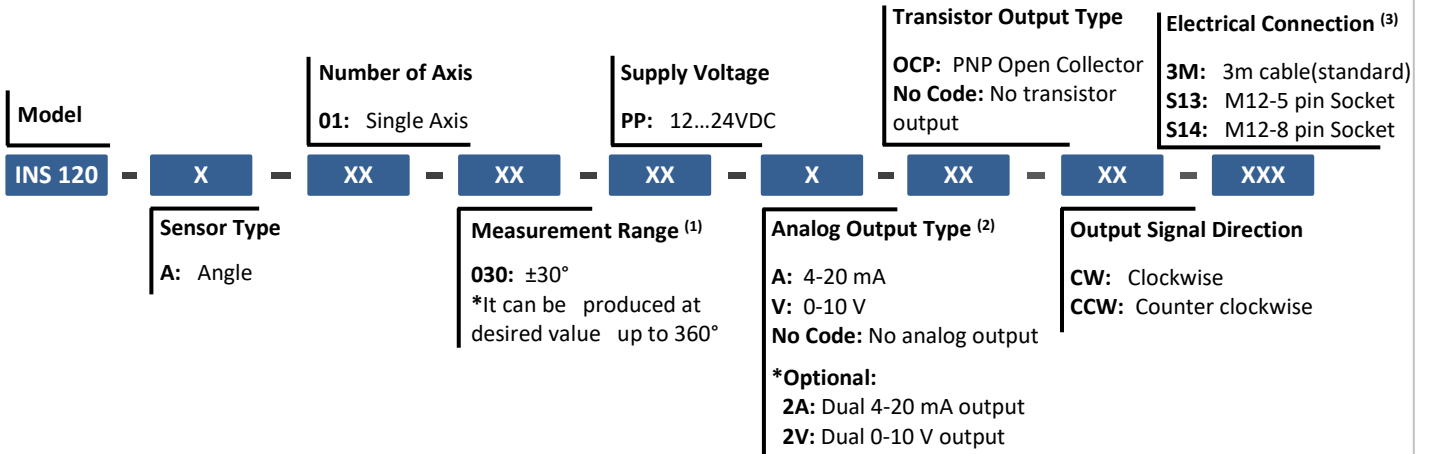
Button	Color	Function
S1	Yellow	Used to change the set range for switching Out1 and analog outputs. Please refer to the user manual for detailed information.
S2	Mavi	Used to change the set range for switching Out2 and analog outputs. Please refer to the user manual for detailed information.

## 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



- (1) The angle measurement range can be selected differently for transistor output and analog output. For example, the measuring range can be selected 0-360° for the analog output and 0-50° for the transistor output. You need to specify your different measurement range requirements at the order stage.
- (2) 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.
- (3) If dual analog output is desired, the electrical connection must be selected as 3M (cable) or S14 (M12-8 pin Socket).

**Sample Code 1:** INS 120-A-01-030-PP-A-OCP-CW-S13

INS 120 series, angle, single axis, ±30°, PP supply, 4-20 mA analog output, PNP open collector output, output signal direction clockwise, M12-5 pin socket

**Sample Code 2:** INS 120-A-01-030-PP-2A-OCP-CW-S14

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

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