ANGLE SENSOR USER MANUAL

INS 120 (Analog Output)

GENERAL INFORMATIONS

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 ±0.15° 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.
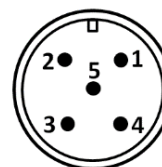
WARNINGS

- 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°C / +70°C in such a way that they will not be exposed to dust, humudity, 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.
- The product will be out of warranty if used outside of the specifications in the user manual and opened or repaired other than authorized services.
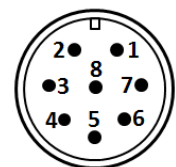
ELECTRICAL CONNECTIONS

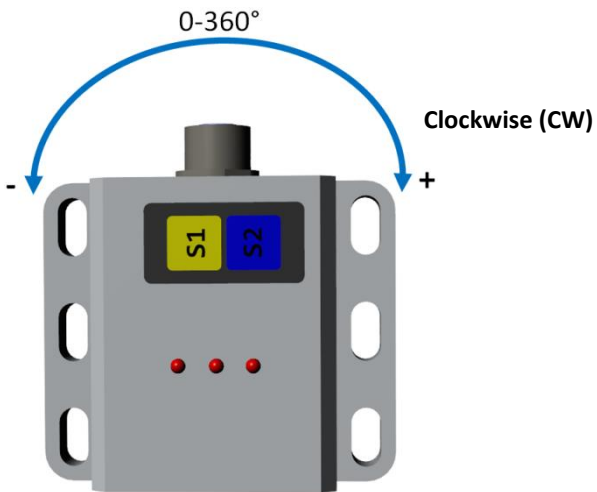| Signal	M12-8 Pin Socket	M12-5 Pin Socket	Cable
V+ (12...24VDC)	Pin 1	Pin 1	Red
Transistor Output 1	Pin 2	Pin 2	Yellow
GND (0V)	Pin 3	Pin 3	Black
Transistor Output 2	Pin 4	Pin 4	Green
-	Pin 5	-	Blue
Analog Output 1	Pin 6	Pin 5	Pink
Analog Output 2	Pin 7	-	White
-	Pin 8	-	Grey

M12 - 5 PIN MALE SOCKET

M12 - 8 PIN MALE SOCKET

MEASUREMENT AXIS AND SIGNAL

0-360°

Clockwise (CW)

Analog Signal Output
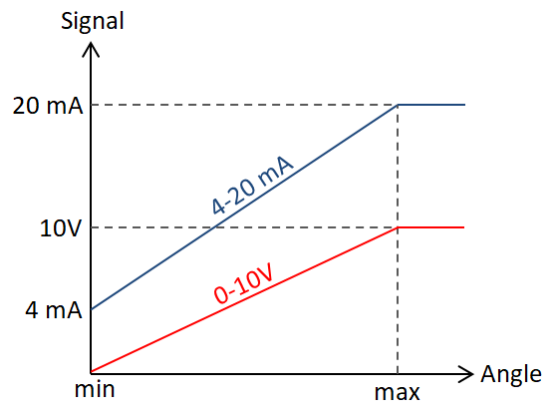
MECHANICAL DIMENSIONS (mm)
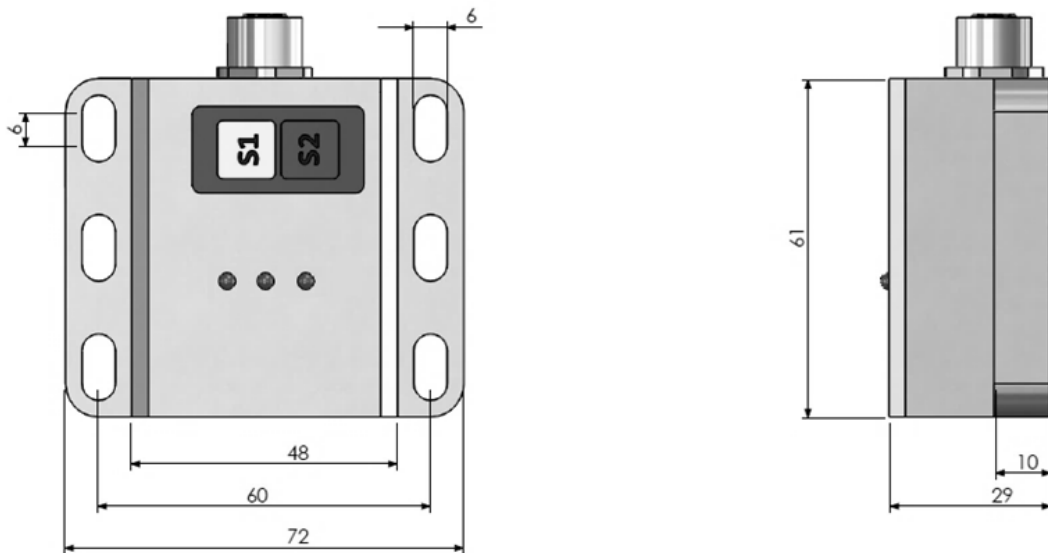
MECHANICAL MOUNTING

DIN 7984 - M6 x 20 --- 20S
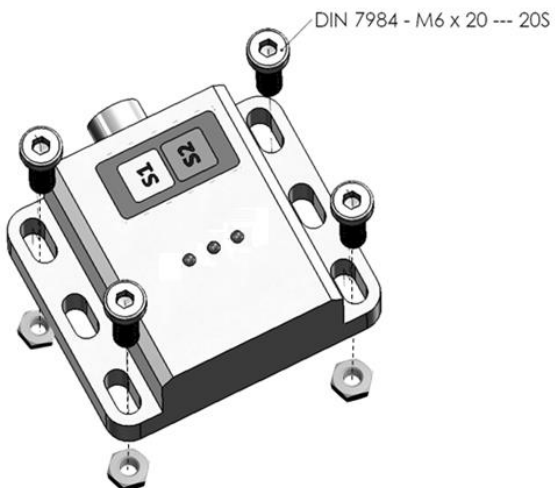
The product must be fixed to the area to be taken inclination measurement with 4 pcs M6 bolts and nuts.

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 (V)	12 … 24 VDC	**Resolution**	±0,05º
*Measurement Range	0º…360º	**Accuracy**	±0,15º
		Protection Class	IP67
*Output Type	PNP 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 — ≤300 mA	**Weight**	~200 gr
Analog Ouputs	0-10 VDC or 4-20 mA	**Body Material**	Aluminum
Response Time	10 Hz	***Electrical Connection**	3 m cable or M12 male socket

Note: The specifications specified by (*) vary depending on the model selected. The detailed code table for product selection is shown on page 4.

SETUP

Working Principle : If the sensor angle is within the selected range, switching output goes up to " Supply Voltage" level. Otherwise the output is 0 volts. The sensor has two switching outputs as well as two analog outputs. Analog outputs can be be selected from 0,1…10V or 4…20mA. Switching and analogue are akk programmable(adjustable).

For example; In case of the angle range for output 1 is set to "+30º" with "+45;

Output1 = "Supply Voltage" (+U)becomes and its LED is constanly ON

Otherwise, the output is 0 volts and "Out 1" LED goes OFF

Analog outputs and switching outputs can be independently programmed(adjustable). For example, if the switching output is operating in this range for the above example, the analog outputs can be programmed to work between different angle values (adjustable).

Setting of Out 1 :

1) S1 button is hold as pressed ,when the "Out 1" LED starts blinking, the buton is being left free.
2) The sensor is brought to limit position 1.
3) S1 button is pressed again. The "Out 1" LED will light continuously 2 seconds and then start flashing again so 1st position is set.
4) The sensor is brought to 2nd limit position.
5) S1 button is pressed again, so 2nd position is being set.
6) Sensor returns to its normal operation

The output is always in the active state between the 1st limit position and 2nd limit position.

Example: In case of position 1 is +30 and the position 2is +45, the output is active between +30° and + 45 °.

S1 ⟹

Setting of Out 2 :

1) S2 button is hold as pressed ,when the "Out 2" LED starts blinking, the buton is being left free.
2) The sensor is brought to limit position 1.
3) S2 button is pressed again. The "Out 2" LED will light continuously 2 seconds and then start flashing again so 1st position is set.
4) The sensor is brought to 2nd limit position.
5) 2 button is pressed again, so 2nd position is being set.
6) Sensor returns to its normal operation

The output is always in the active state between the 1st limit position and 2nd limit position.

Example: In case of position 1 is +30 and the position 2is +45, the output is active between +30° and + 45 °.

S2 ⟹

Setting Of Analog Output 1 :

1) At the same time S1 and S2 buttons are hold as pressed. When the "Out 1 and Out 2" LEDs start blinking the buttons are being left free.
2) The sensor is brought to the position to receive the minimum analog signal output.
3) S1 button is pressed again, The "Out 1" LED will light continuously 2 seonds and then start flashing again , so that the minimum values point is being set.
4) The sensor is brought to the position to receive the maximum analog signal output.
5) S1 button is pressed again, The "Out 1" LED will light continuously 2 seonds and then start flashing again , so that the minimum values point is being set.
6) Sensor returns to its normal operation

Setting Of Analog Output 2:

1) At the same time S1 and S2 buttons are hold as pressed. When the "Out 1 and Out 2" LEDs start blinking the buttons are being left free.
2) The sensor is brought to the position to receive the minimum analog signal output.
3) S2 button is pressed again, The "Out 2" LED will light continuously 2 seonds and then start flashing again , so that the minimum values point is being set.
4) The sensor is brought to the position to receive the maximum analog signal output.
5) S2 button is pressed again, The "Out 2" LED will light continuously 2 seonds and then start flashing again , so that the minimum values point is being set.
6) Sensor returns to its normal operation

Reset to Factory Settings:

1) At the same time S1 and S2 buttons are hold as pressed, When the "Status" LED starts blinking, the buttons are being left free.
2) The "Status" LED stops blinking after 10 seconds, so the sensor returns to factory settings.

LED 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

LEDs   Buttons

O Out 1   S1
O Out 2
O Status S2
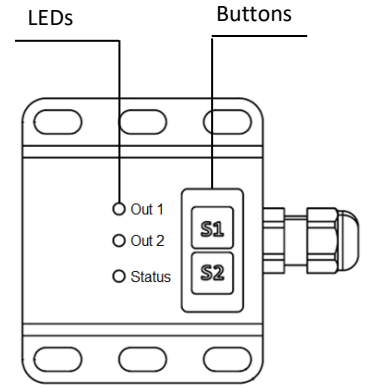
BOX CONTENTS

Product	Description
INS 120	Angle Sensor
User Manual	1 pcs.

PRODUCT CODE TABLE

Model

Number of Axis
01: Single Axis

Supply Voltage
PP: 12…24VDC

Transistor Output Type
OCP: PNP Open Collector
No Code: No transistor output

Electrical Connection[3]
3M: 3m cable(std)
S13: M12 5 pin Socket
S14: M12 8 pin Socket

| INS 120 | – | X | – | XX | – | XX | – | XX | – | XXX | XX | – | XX | – | XX |

Sensor Type
A: Angle

Measurement Range[1]
030: ±30°
*It can be produced at desired valueup to 360°

Analog Output Type [2]
A: 4-20 mA
V: 0-10 V
No Code: No analog output

Output Signal Direction
CW: Clockwise
CCW: Counter clockwise

(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).

Manufacturer Firm's and Authorized Service's Title, Address Details
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Web: www.ateksensor.com **E-mail:** info@ateksensor.com

Disposal of Packagings: Packaging materials consist of recyclable materials. For providing recycling, please dispose waste packagings to collecting points of authorized recycling facilities.
Disposal of E-Waste: This device is in conformity with WEEE Directive and consists of recyclable materials. This product should not be disposed with general waste for preventing negative effects on enviroment and human health. This product should be disposed to collecting points of authorized recycling facilities. Further information can be reached from authorized unit.

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