ACCELENS INDUSTRIAL INCLINOMETER
DEVICENET INTERFACE

The ACS industrial inclinometers are compact solutions for determining the inclination in both single and dual axes with remarkable precision and at a lower expense. The molded housing provides the mechanical stability and the fully encapsulated sensor has a high environmental protection making it ideal for measuring tilt / slope in industrial environments.

Main Features

- Dual Axis Inclinometer ± 80°
- Single Axis Inclinometer 0° to 360°
- High Resolution: 0.01°
- Accuracy: 0.1°
- Rugged Glass Fiber Reinforced PBT Housing
- High Mechanical Stability
- Active Linearization and Temperature Compensation
- Interface: DeviceNet
- Housing Protection Class: IP 69K, IP68, IP67

Electrical Features

- Highly Integrated Circuit In SMD-Technology
- Polarity Inversion Protection
- Over-Voltage-Peak Protection

Programmable Parameters

- Baud Rate
- Node ID
- Software Filters (Coming Soon)
- Preset (Coming Soon)
- Scaling Function (Coming Soon)
- Termination Resistor (Coming Soon)

Applications

- Measurement of Inclinations and Rotational Movements
- Cranes and Construction Machines
- Robotic Arms & Positioning Systems
- Mobile Platforms
- Marine & Offshore Machinery

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Technical Data

Electrical Data

Model	ACS-080	ACS-360
Measuring Range	± 80°	360°
Number of Axes	2	1
Resolution	0.01°	
Accuracy (T = –10 °C to +40 °C)*	0.1°	
Sensor Response Time	10 ms (without filter)	
Recommended Measurement	Up to 10 Hz	
Interface	DeviceNet Transceiver According to ISO 11898, Galvanically Isolated by Opto-Couplers	
Transmission Rate	Adjustable:125 KBaud, 250 KBaud, 500 KBaud Factory Setting : 125 kBaud	
Addressing	Programmable	
Supply Voltage	10 to 30 V DC (Absolute Maximum Ratings)	
Current Consumption	Max. 57 mA at 10 VDC, Max. 53 mA at 24 VDC	
EMC	Emitted interference: EN 61000-6-4*	
	Noise immunity: EN 61000-6-2*	
Connection	Connector Output, 5 Pin M12 male (A coded)	

Mechanical Data

Housing Material	Glass Fiber Reinforced PBT (Polybutylene Terephthalate)
Potting Material	PUR (Polyurethane)
Shock (EN 60068-2-27)*	≤ 100 g (half sine, 6 ms)
Vibration (EN 60068-2-6)*	1.5 mm (10 Hz to 58 Hz) & ≤ 20 g (58 Hz to 2000 Hz)
Weight	75 gm / 3 oz

Environmental Conditions

Operating Temperature	-40 °C to +85 °C / -40 °F to 185 °F
Humidity	98 % Relative Humidity, Non-Condensing
Protection Class (EN 60529)	IP 68 (With Appropriate Counter Connector) , IP68, IP67

*further data available on request

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MTBF Data

Failure Rate [FIT]	759
MTBF [Hours]	1,317,822
MTBF [Years]	150

The above mentioned data were calculated for ACS' electronics under the following conditions:
SNA: Non-mobile operation
Tu: 40°C - Mean component of ambient temperature
Zf: Continuous operation for 8760 h per year

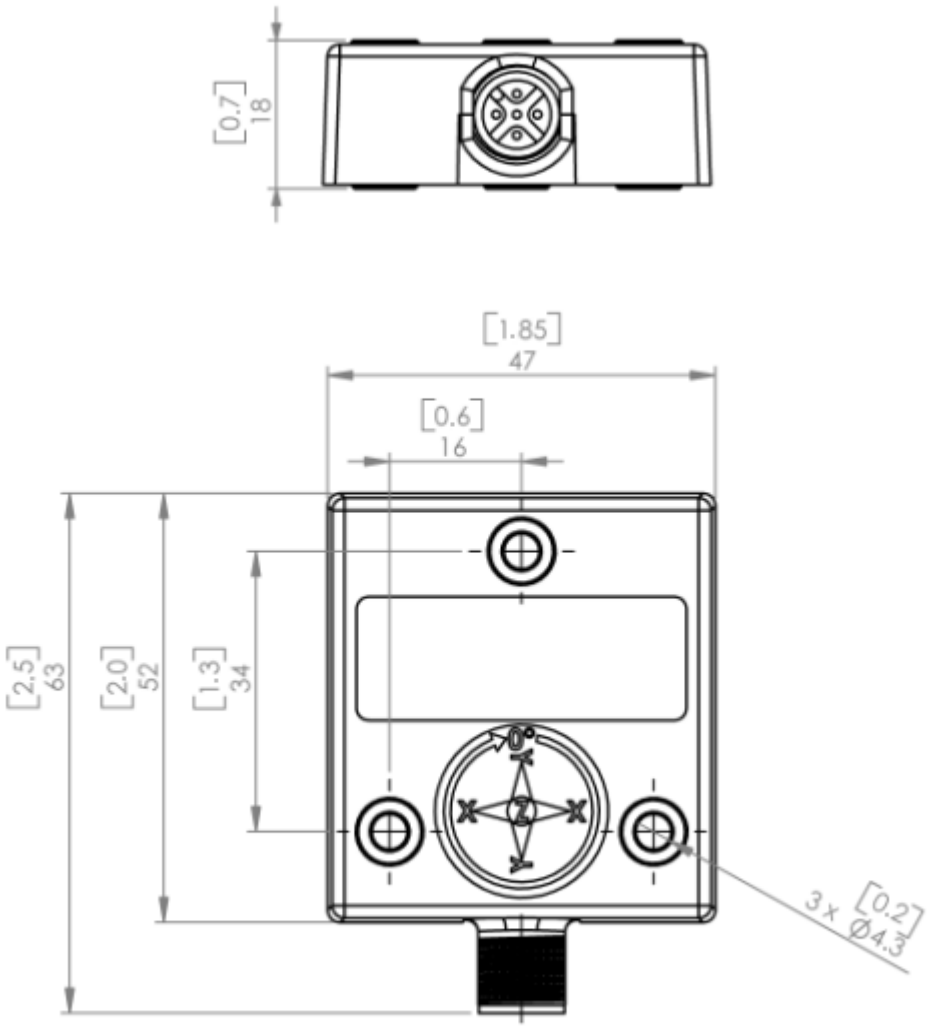
Programmable Parameters

Resolution per 1°	The resolution parameter per 1° is used to program the desired number of steps per 1°. The values 1, 10 and 100 can be programmed. Default setting: 100.
Preset Value	The Preset value is the desired position value, which should be reached at a certain physical position of the axis. The position value is set to the desired process value by the preset parameter.
Moving Avarage-Filter	This filter can be used to adjust the bandwidth of measuring values to minimize the influence of vibration. Factory Setting: Moving average filter activated for 20 subsequent readouts.
Digital Recursive Filter	This filter can be used for weighting the last measured value with the last previous value. This is useful to suppress sudden peaks in the angle measurement.
Transmission rate	Adjustable: 125 kBaud, 250 kBaud, or 500 kBaud Factory Setting: 125 KBaud
Address (MAC-ID)	Factory setting: Node ID = 63, Adjustable from 0 to 63

Programmable DeviceNet Tr**ansmission** Modes

Polled Mode	Through an I/O-request telegram the connected host calls for the current process value. The inclinometer reads the current inclination value, calculates the eventually set-parameters and sends back the obtained process value.
Cyclic Mode	The inclinometer transmits cyclically - without being called by the host - the current process value. The cycle time can be programmed in milliseconds for values between 1 ms and 65536
Change-of-State Mode	The inclinometer answers with current process value in case a change of inclination is detected.

Mechanical Drawing – Industrial Housing

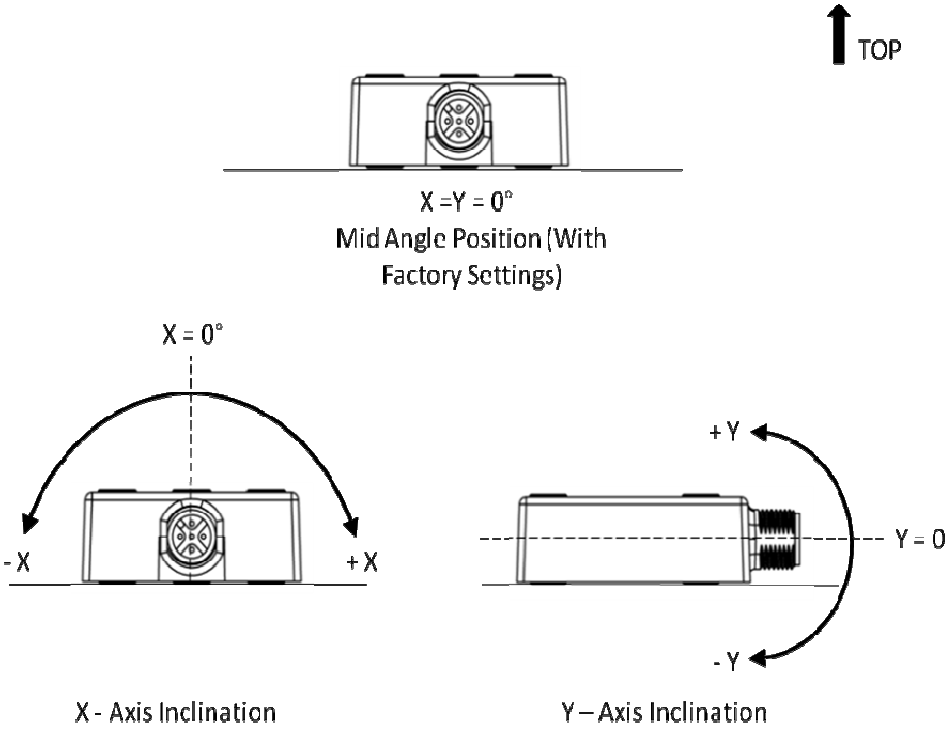


Dimensions in mm and [inches]

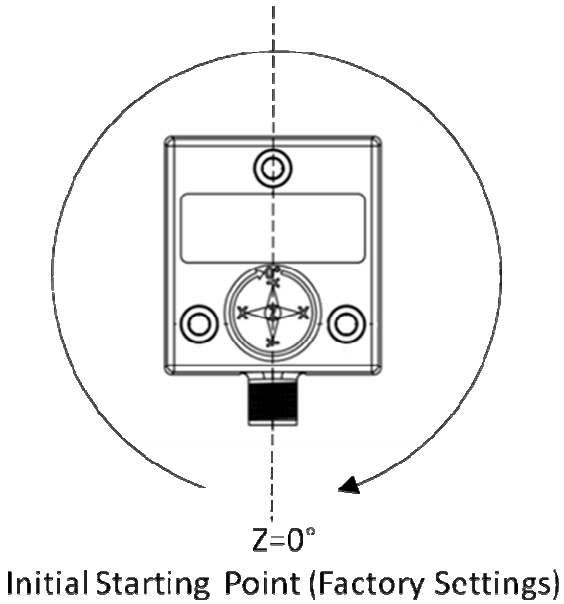
For more detailed drawings please refer website.

Measurement Axes

ACS-080 – Dual Axis Inclinometer



ACS-360 – Single Axis Inclinometer



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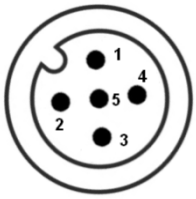
Pin Assignment

The inclinometer is connected via a 5 pin M12 A-coded round connector.
(Standard M12, Male side at sensor, Female at connector counterpart or connection cable)

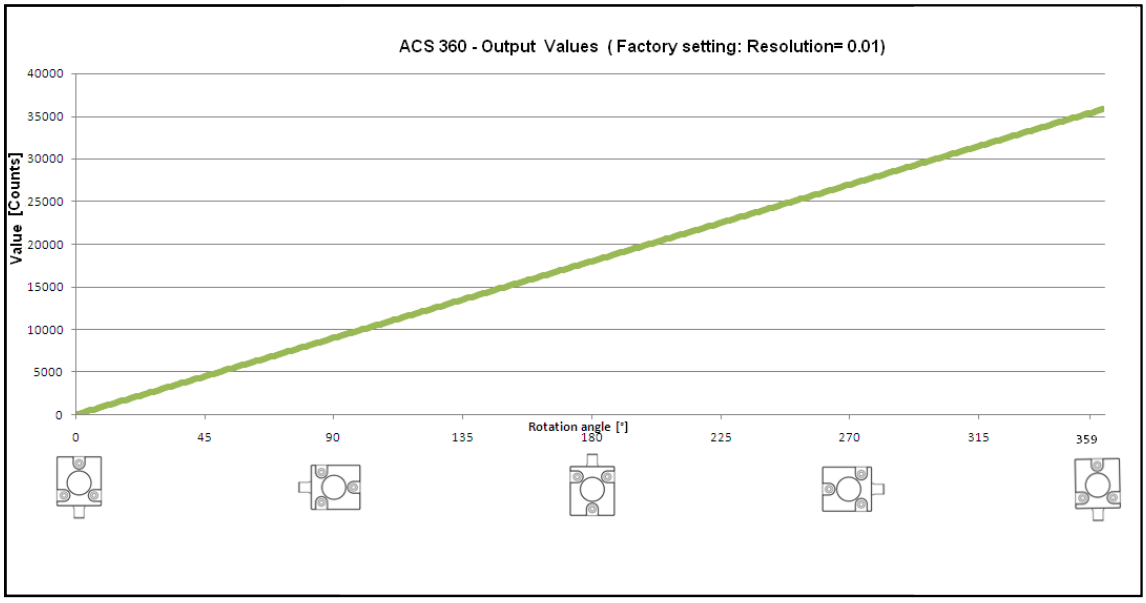
Signal	Pin
CAN Ground	1
V_S Supply Voltage	2
0 V Supply Voltage	3
CAN High	4
CAN Low	5



For more detailed information about setup, measurement axes and programming, refer ACS CANopen Manual. Click here

Please read the instruction leaflet carefully prior to installation. Click here

ACS- DeviceNet Output



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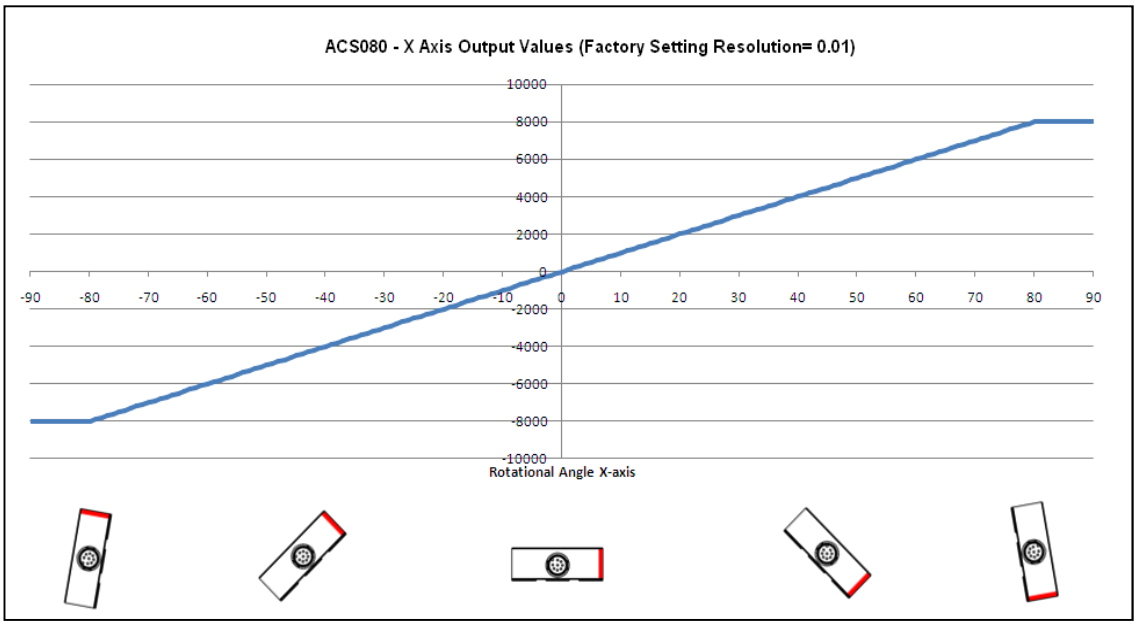

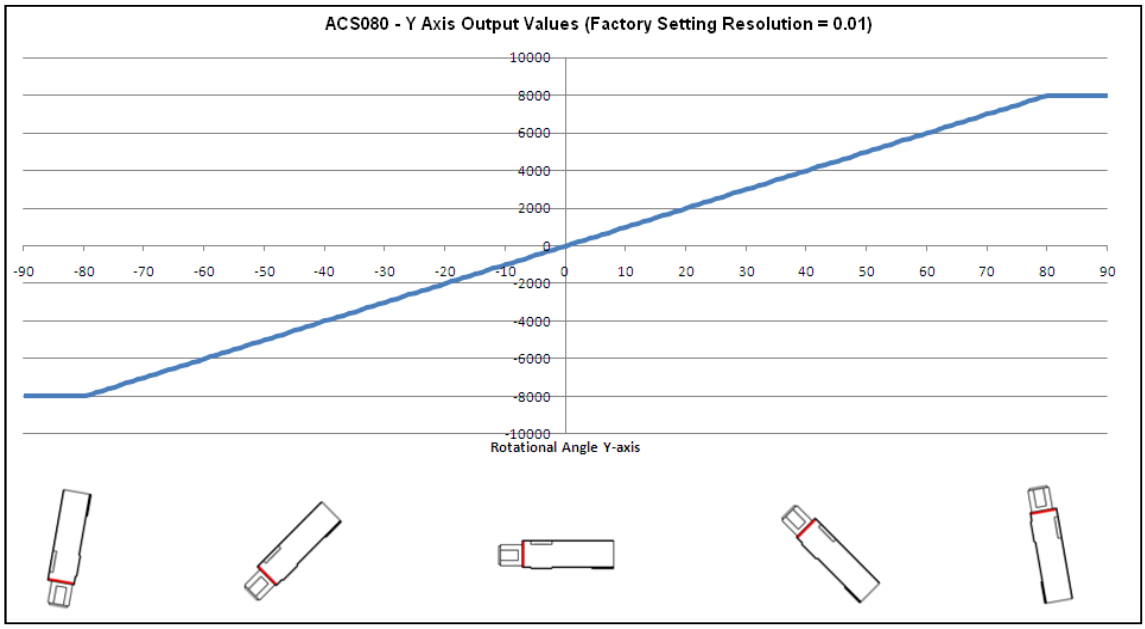

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Models/Ordering Description

Description	Type key								
	ACS-	XXX-	X-	XX	XX-	X	X	X-	XX
Range	360° (1 axis)	360							
	± 80° (2 axis)	080							
Number of axis	One for 360° Version		1						
	Two for ± 80° Version		2						
Interface	CANopen			D1					
Version	Software Version				00				
Mounting	Vertical for 360° Version					V			
	Horizontal for ± 80° Version					H			
Housing Material	Industrial (PBT)						E		
Inclinometer Series	ACS II							2	
Connection	Connector								PM

Accessories

Article No	Description
10001978	Female M12, 5pin A-coded connector, with 2m PUR shielded cable
10012182	Female M12, 5pin A-coded connector, with 5m PUR shielded cable
10005631	External terminal resistors for higher baud rate transmissions

Check out some of the other POSITAL products

Absolute Magnetic Encoders for Industrial Environment

To measure rotary movements or rotary displacements, an absolute magnetic rotary encoder can be used. The contact-free measuring sensor stage of the MCD Sensor does not have any abrasion. The Sensor can be connected directly to digital control units via SSI, CANopen or Analog Interface.
More Information

Heavy Duty Magnetic Encoder Line for Toughest Environments

To measure linear movements or linear displacements, an absolute magnetic rotary encoder can be combined with a draw wire sensor. The contact-free measuring sensor stage of the MCD Sensor doesn't have any abrasion. The sensor can directly be connected to digital control units via SSI- or CANopen or Analog Interface
More Information

Draw Wire Sensor to Measure Linear Displacements

ACS is developed on advanced MEMS technology based capacitance measurement. The sensor is a pre-calibrated device which can be put into immediate operation, upon simple and easy installation with a three point mount and setting of preset. Its compact design, installation "anywhere" and other versatile features makes it an ideal choice for very genuine and accurate measurement.
More Information

Typical Type-Keys

ACS-360-1-D100-VE2-PM
ACS-080-2-D100-HE2-PM