

## 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  $\pm 80^\circ$
- Single Axis Inclinometer  $0^\circ - 360^\circ$
- High Resolution:  $0.01^\circ$
- Accuracy:  $0.1^\circ$
- Rugged Glass Fiber Reinforced PBT Housing
- High Mechanical Stability
- Active Linearization and Temperature Compensation
- Interface: DeviceNet
- Housing Protection Class: IP 69K

### 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	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 69K (With Appropriate Counter Connector)

\*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

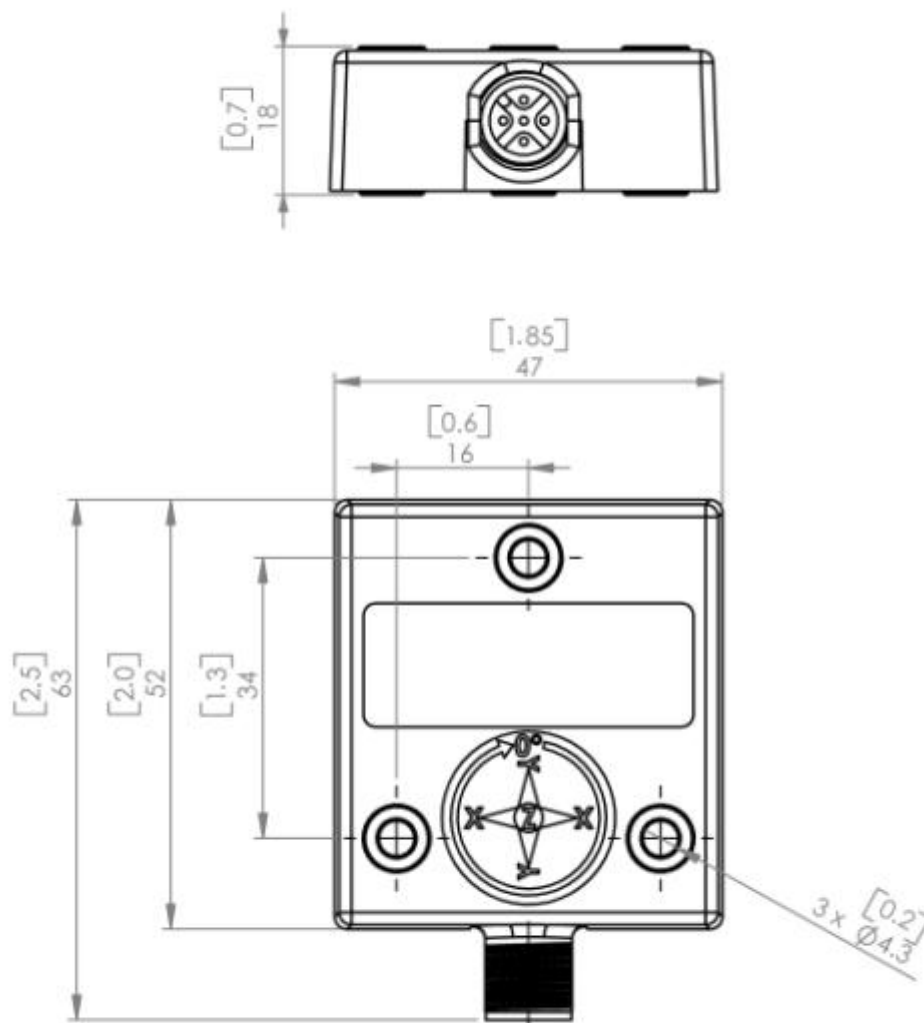
Resolution per 1° (Coming Soon)	The resolution parameter per 1° is used to program the desired number of steps per 1°. The values 1, 10 and 100 can be programmed. Default setting: 100.
Preset Value (Coming Soon)	The Preset value is the desired position value, which should be reached at a certain physical position of the axis. The position value is set to the desired process value by the preset parameter.
Digital recursive filter (Coming Soon)	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.
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 Transmission 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 (Coming Soon)	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 (Coming Soon)	The inclinometer answers with current process value in case a change of inclination is detected.

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**Mechanical Drawing – Industrial Housing**



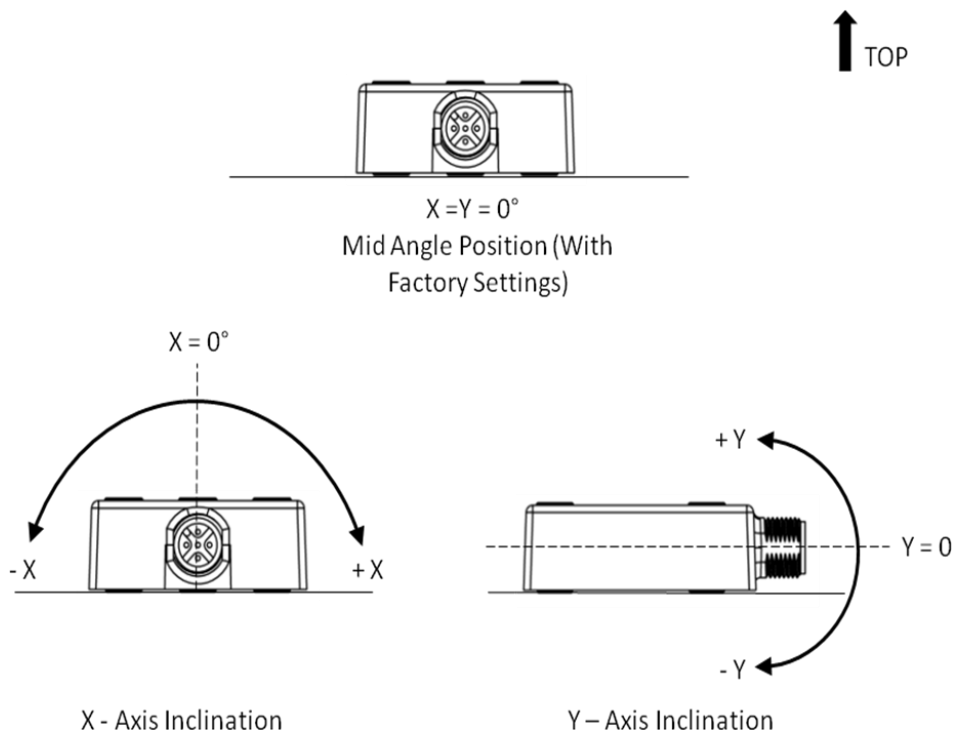
Dimensions in mm and [inches]

For more detailed drawings please refer website.

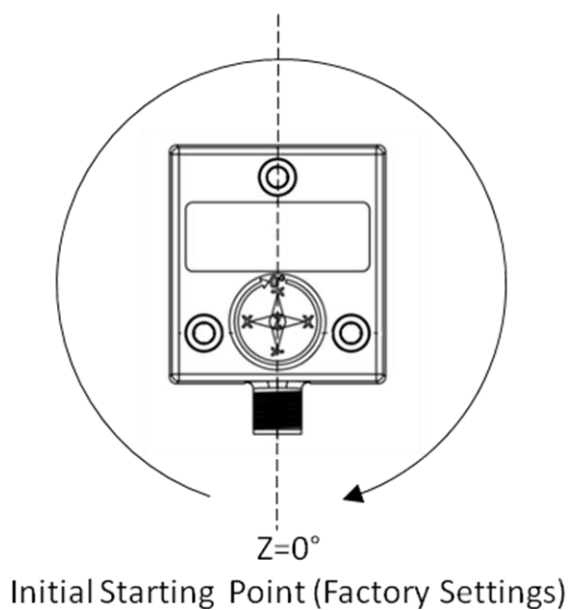
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**Measurement Axes**

**ACS-080 – Dual Axis Inclinometer**



**ACS-360 – Single Axis Inclinometer**



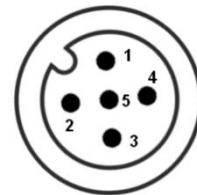
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### Pin Assignment

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 <sub>S</sub> Supply Voltage	2
0 V Supply Voltage	3
CAN High	4
CAN Low	5

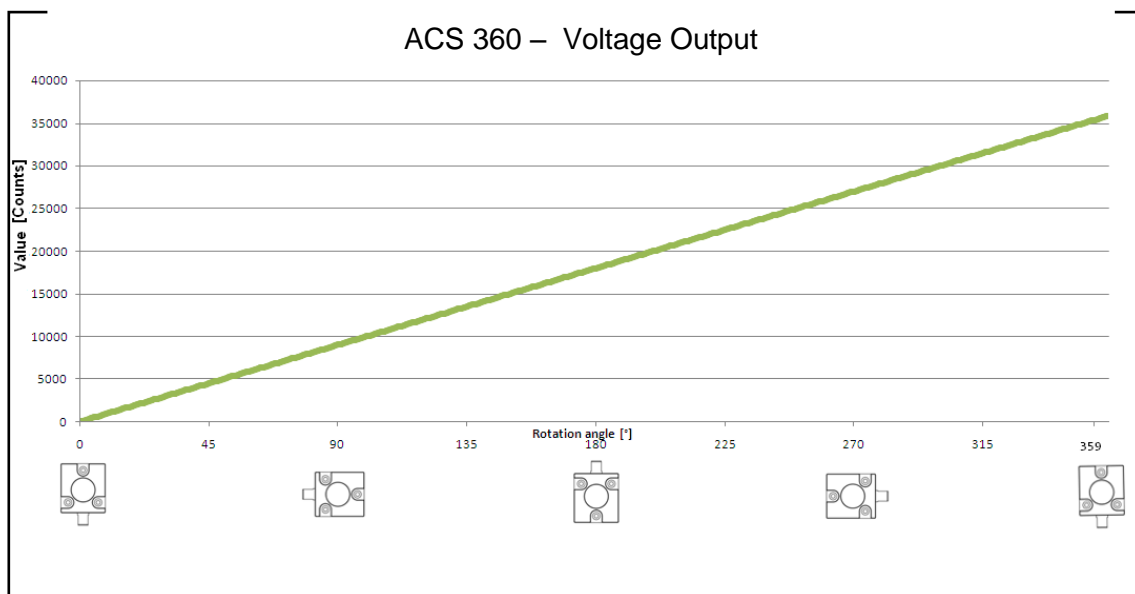


For more detailed information about setup, measurement axes and programming, refer ACS CANopen Manual. Click [here](#)

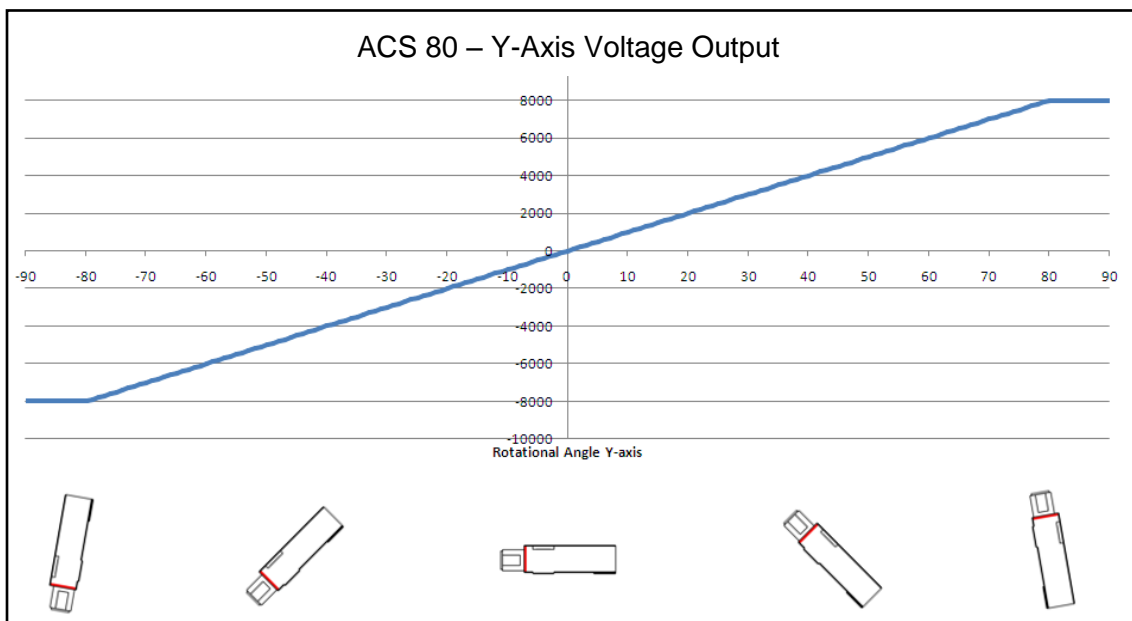
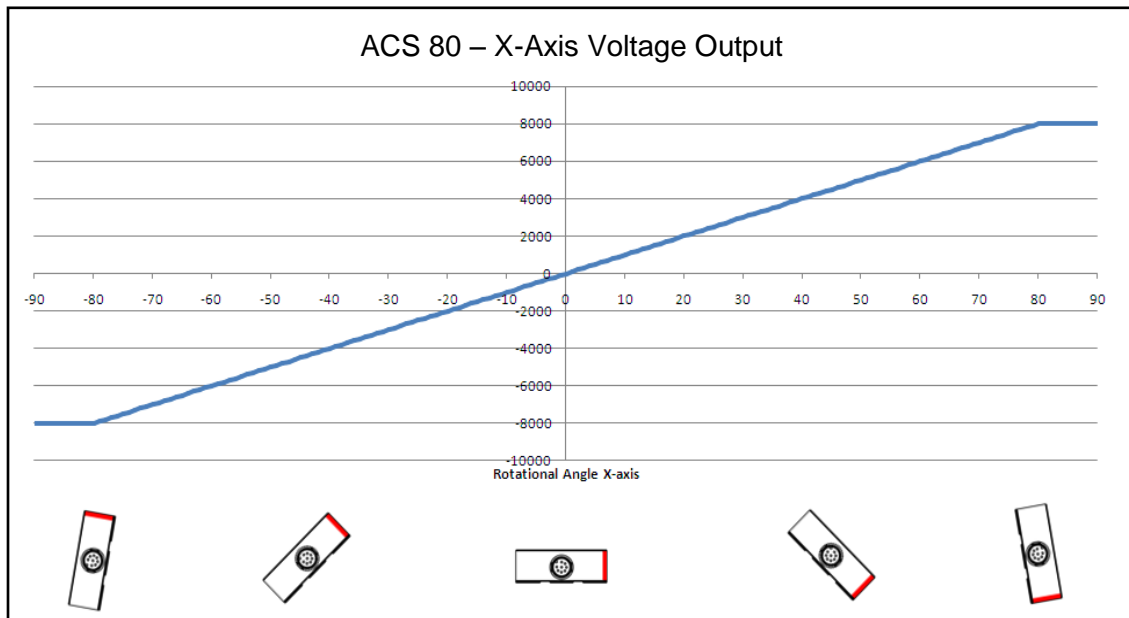


Please read the instruction leaflet carefully prior to installation. Click [here](#)

### ACS- DeviceNet Output



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**Models/Ordering Description**

Description	Type	Key
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

Disclaimer

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