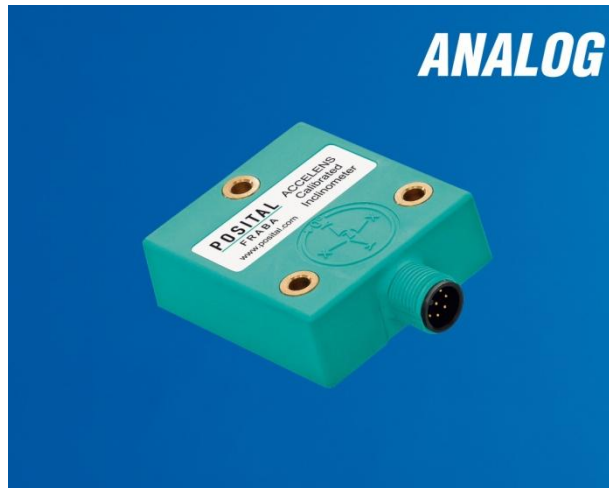


ACCELENS INDUSTRIAL INCLINOMETER ANALOG & RS232 INTERFACE



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 Measurement Range $\pm 80^\circ$
- Single Axis Measurement Range 360°
- High Resolution: 0.01°
- High Accuracy: 0.1°
- Rugged Glass Fiber Reinforced PBT Housing
- Active Linearization
- Temperature Compensation
- Digital Interface: RS232, Code ASCII
- Analog Interface: Voltage, Current
- Highest Protection Class: IP69K, IP68, IP67

Electrical Features

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

Programmable Parameters

- Preset
- Baud Rate
- Software Filters
- Resolution
- Analog Teach-In

Applications

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

ACCELENS INDUSTRIAL INCLINOMETER ANALOG & RS232 INTERFACE

Technical Data

Electrical Data

Model		ACS-080	ACS-360
Measurement Range		± 80°	360°
Number of Axes		2	1
Analog Interface	Voltage	0.5 to 4.5 V, 0° = 2.5 V Load ≥ 10 KΩ with 12 V DC	0.5 to 4.5 V, 0° = 0.5 V Load ≥ 10 KΩ with 12 V DC
	Current	4 mA to 20 mA, 0° = 12 mA Load ≤ 270 Ω ¹	4 mA to 20 mA, 0° = 4 mA Load ≤ 270 Ω ¹
Digital Interface		RS232 (ASCII Format)	
Baud Rate		Max. 115200 Baud (Programmable)	
Resolution		0.01°	
Accuracy (T = -10 °C to +40 °C) ²		0.1°	
Sensor Response Time		10 ms (Without Filter)	
Recommended Measurement Rate		Up to 10 Hz	
Supply Voltage ³		10 to 30 V DC (Absolute Maximum Ratings)	
Power Consumption		≤ 0.7 W	
EMC		Emitted Interference: EN 61000-6-4	
		Noise Immunity: EN 61000-6-2	
Connection		Connector Output, 8 Pin M12 male (A-coded)	

Mechanical Data

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

¹ R_L < 500Ω with 15 V DC

² Further data available on request

³ Inclinerometers should be connected only to subsequent electronics whose power supplies comply with EN 50178 (Protective Low Voltage)

ACCELENS INDUSTRIAL INCLINOMETER ANALOG & RS232 INTERFACE

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), IP68, IP67

MTBF Data

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

The data mentioned above 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

Default Factory Settings

Operational Mode	Continuous Mode
Resolution	0.01°
Output Transmission Rate	100 ms
Baud Rate	9600 Baud
Moving Average Filter	64
Angle Offset	0

ACCELENS INDUSTRIAL INCLINOMETER ANALOG & RS232 INTERFACE

Programmable Parameters

The parameters of ACS can be re-configured using the RS232 interface . Additionally Preset can also be done through a (soon to be available) Analog Teach-in. (Refer to User Manual for additional information.)

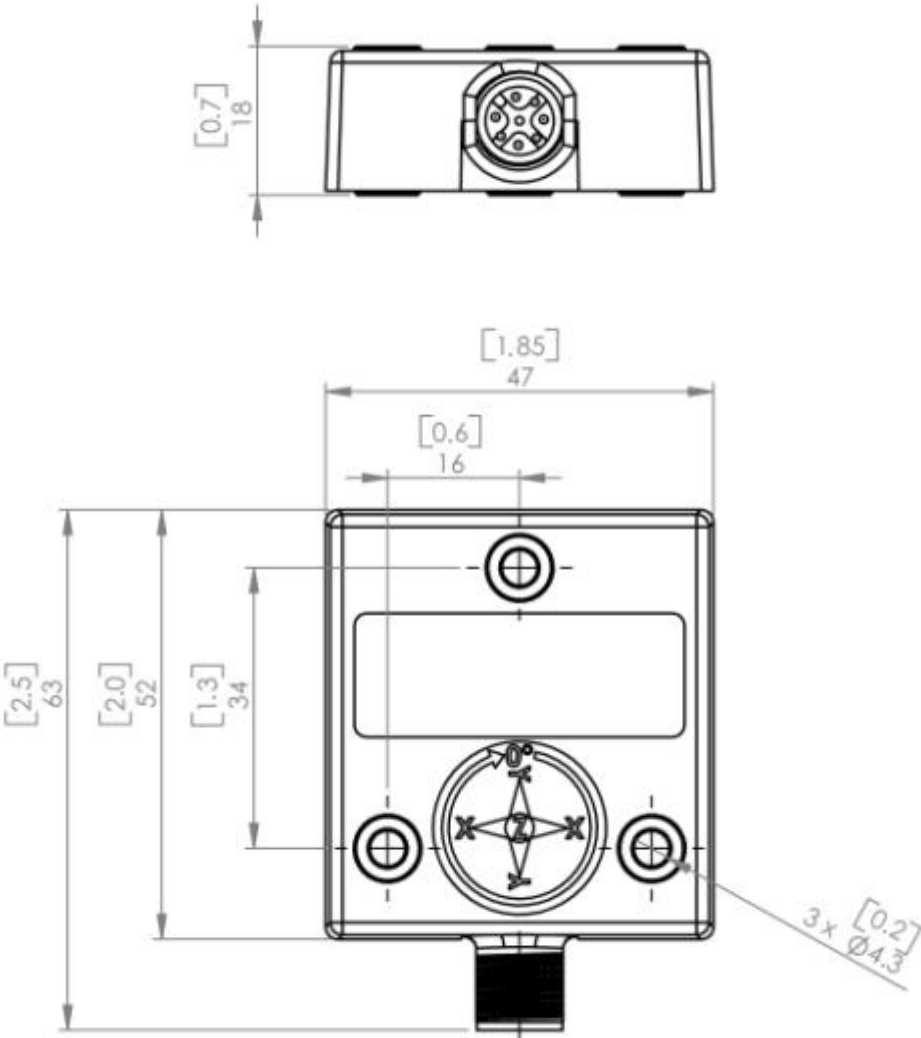
Modes of Operation	ACS can be switched between Polled Mode or Continuous mode.
Baud rate	The Baud rate can be programmed to lie between ranges of 2400 Baud and 115200 Baud.
Output Transmission Rate	The transmission rate of angular values can be adjusted to lie between 62.5ms and 10 seconds per value.
Moving Average Filter	Used to calculate the output position value as an average over last N values where N varies from 2 to 256 measurements in steps of $N = n^2$, $n = 1, 2, 3 \dots$
Preset Value	The current position value is set to the mid angle position by the parameter preset.

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ACCELENS INDUSTRIAL INCLINOMETER ANALOG & RS232 INTERFACE

Mechanical Drawing -Industrial Housing

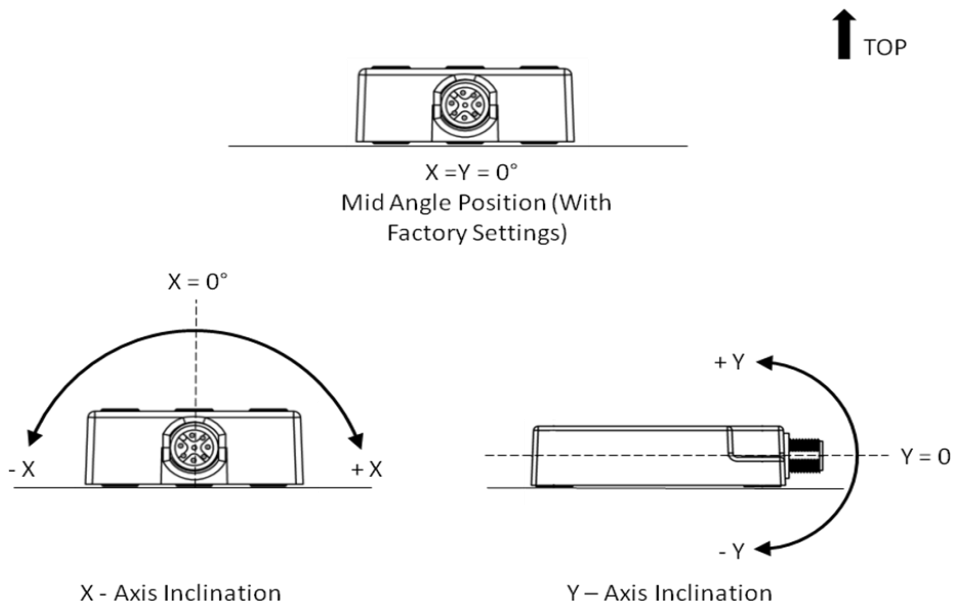


Dimensions in mm and [inches]

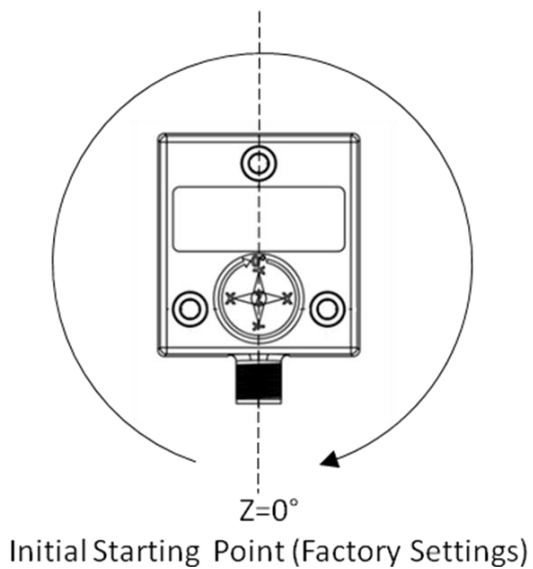
ACCELENS INDUSTRIAL INCLINOMETER ANALOG & RS232 INTERFACE

Measurement Axes

ACS-080 – Dual Axis Inclinometer



ACS-360 – Single Axis Inclinometer



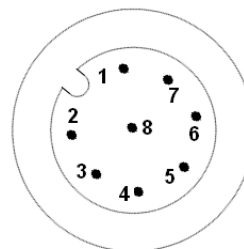
ACCELENS INDUSTRIAL INCLINOMETER ANALOG & RS232 INTERFACE

Pin Assignment

The inclinometer is connected via an 8 pin M12 A-coded round connector.

(Standard M12, Male side at sensor, Female at connector counterpart or connection cable).

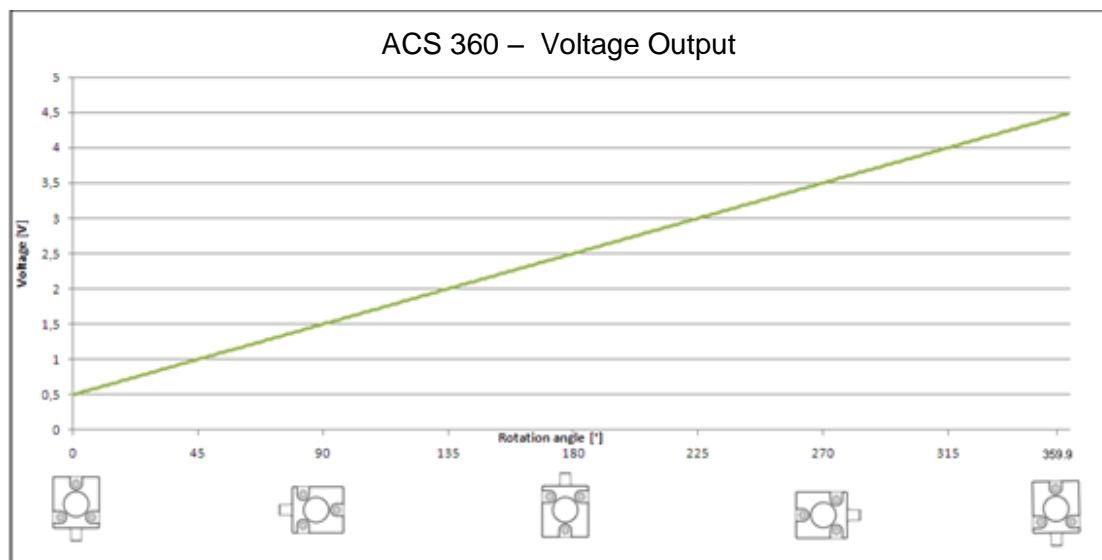
Pin	Description of ACS-080	Description of ACS-360
1	V _s Supply Voltage	V _s Supply Voltage
2	RxD (RS232 Receive)	RxD (RS232 Receive)
3	TxD (RS232 Transmit)	TxD (RS232 Transmit)
4	Ground	Ground
5	X-axis Analog Output	Z -Axis Analog Output
6	Preset/Set1 (Teach-In)	Preset/Set1 (Teach-In)
7	Y-axis Output Analog	Unused, Do Not Connect
8	DIR/Set 2 (Teach-In)	DIR/Set 2 (Teach-In)



For more detailed information about setup, measurement axes and programming, refer ACS-RS232_Analog Manual. [Click here](#)

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

ACS Voltage Output

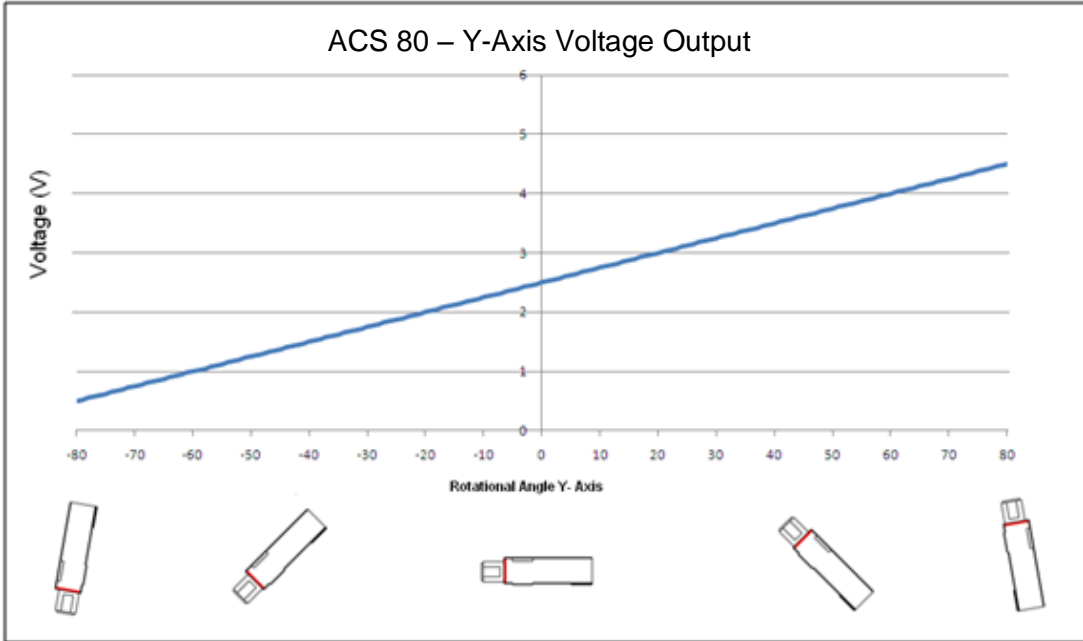
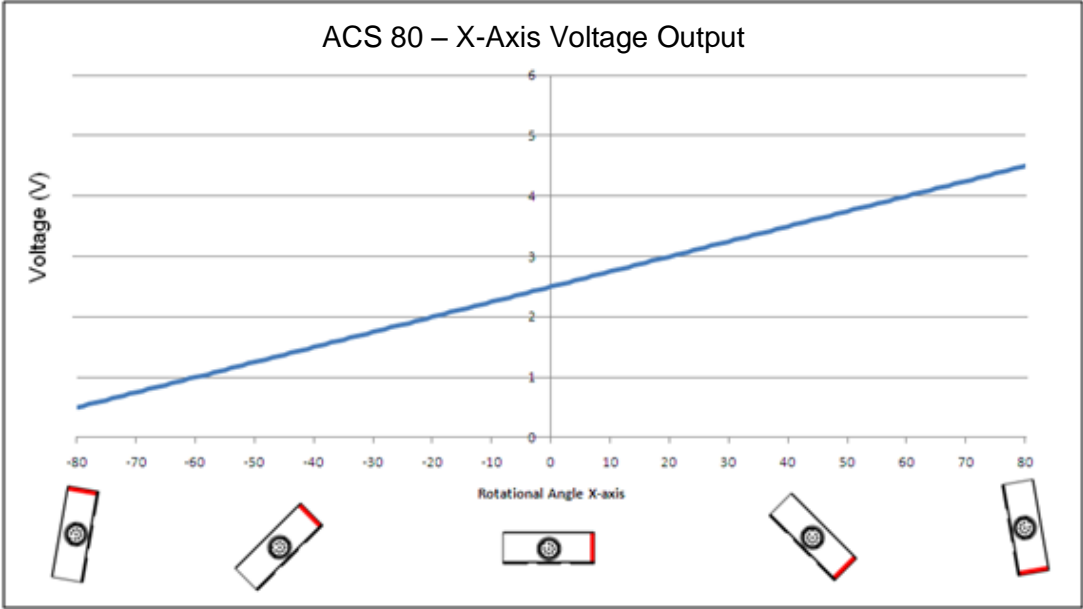


¹ Should not be connected

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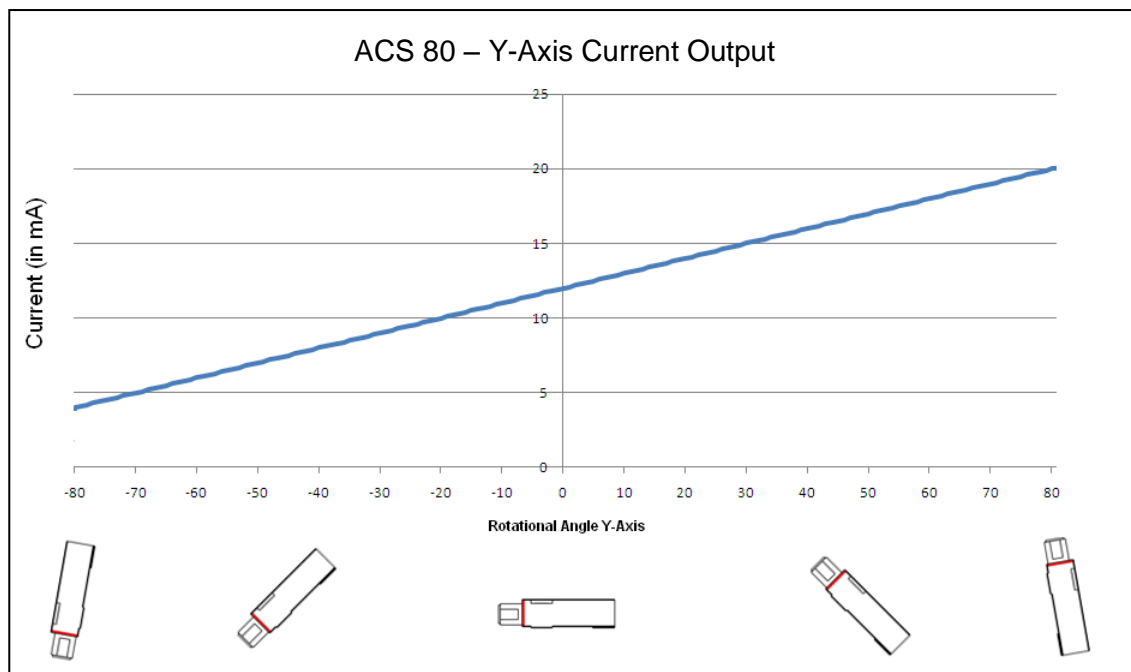
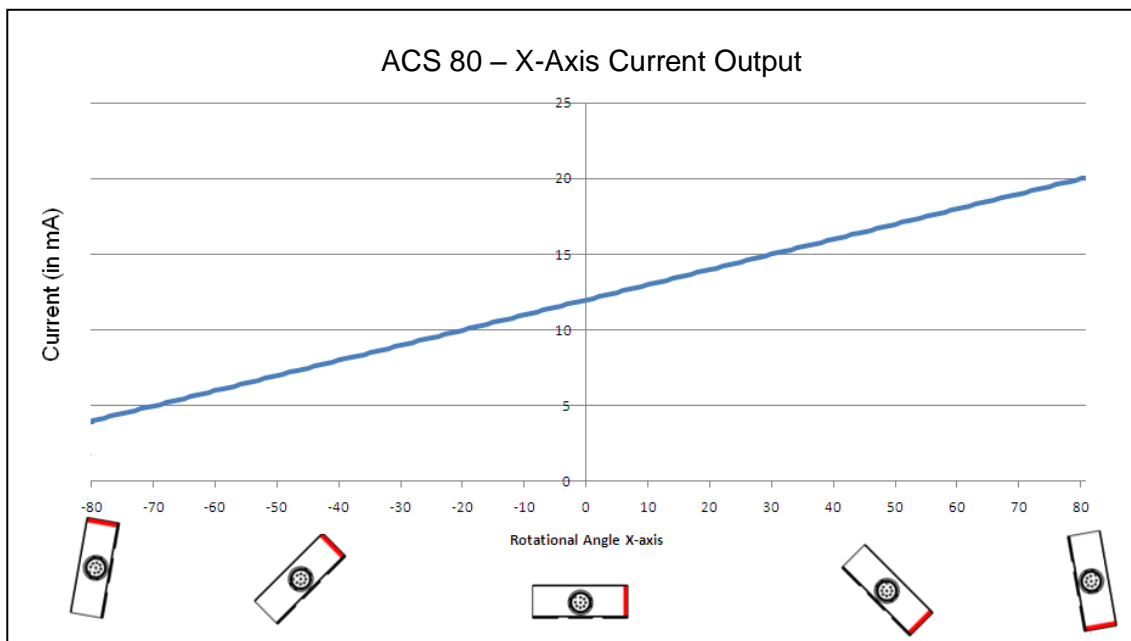
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ACCELENS INDUSTRIAL INCLINOMETER ANALOG & RS232 INTERFACE

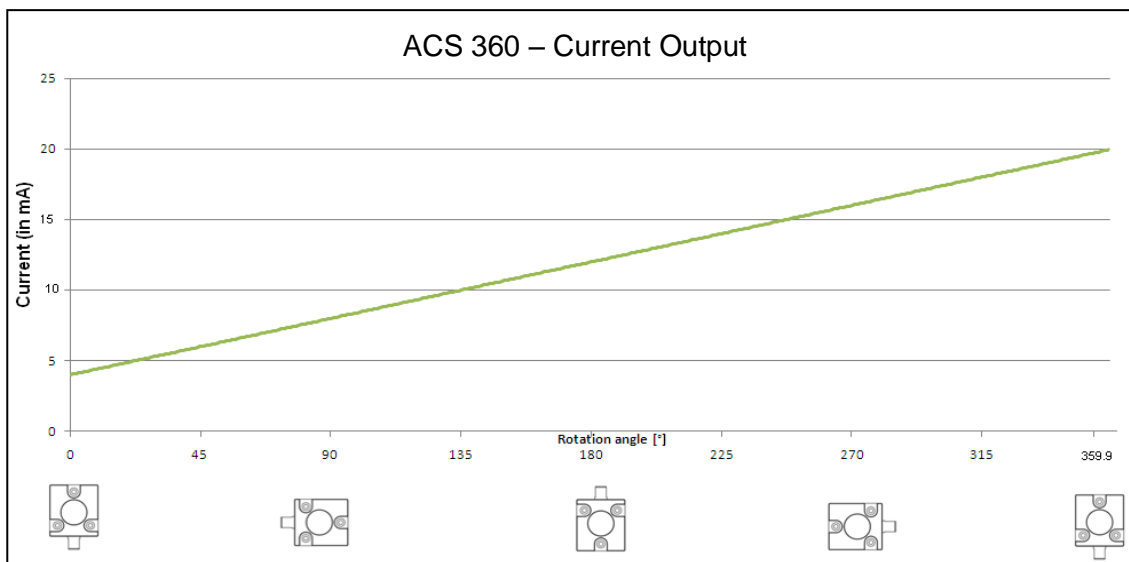


ACCELENS INDUSTRIAL INCLINOMETER ANALOG & RS232 INTERFACE

ACS Current Output



ACCELENS INDUSTRIAL INCLINOMETER ANALOG & RS232 INTERFACE



Models/Ordering Description

Description	Type key	ACS-	XXX-	X-	XX	XX-	X	X	X-	XX
Range	360° (1 axis) ± 80° (2 axis)		360 080							
Number of axis	One for 360° Version Two for ± 80° Version			1 2						
Interface	Voltage + RS232 Current + RS232				SV SC					
Version	Software Version					00				
Mounting	Vertical for 360° Version Horizontal for ± 80° Version						V H			
Housing Material	Industrial (PBT)							E		
Inclinometer Series	ACS II								2	
Connection	Connector									PM

Accessories

34500801	Female M12, 8pin A-coded connector with 2m PUR shielded cable
34500802	Female M12, 8pin A-coded connector with 5m PUR shielded cable

Disclaimer

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ACCELENS INDUSTRIAL INCLINOMETER ANALOG & RS232 INTERFACE

Check out some of the other POSITAL products

Draw Wire Sensor to Measure Linear Displacements



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](#)

Tilt Sensors to Measure Inclinations up to 360°



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](#)

ACCELENS INDUSTRIAL INCLINOMETER
ANALOG & RS232 INTERFACE

Typical Type-Keys

ACS-360-1-SV00-VE2-PM

ACS-080-2-SV00-HE2-PM

ACS-360-1-SC00-VE2-PM

ACS-080-2-SC00-HE2-PM