

ACCELENS INCLINOMETER CANOPEN



Main Features

- Dual axis inclinometer
- Angle measurement range of $\pm 80^\circ$ (two axes)
- Or 360° (one axis)
- Resolution up to 0.01°
- Active linearization and temperature compensation
- Interface: CANopen
- specified according CANopen Profile 410
- horizontal and vertical mounting
- Rugged Aluminum Housing IP67

Electrical Features

- Highly integrated circuit in SMD-technology
- Polarity inversion protection
- Over-voltage-peak protection

Applications

- Structural engineering
- Leveling techniques
- Measuring techniques
- Inclinations
- Mechanical Structure

Programmable Parameters

- Resolution
- Preset value
- Offset
- Vibration filter
- Heartbeat Function
- Transmission mode: Polled mode, cyclic mode, sync mode

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Technical Data

Electrical Data

Model	ACS 080		ACS 360
Measuring range	+/- 80°		360°
Number of axes	2		1
Resolution	0°-45°	45°-80°	360°
	0,01°	< 0,03°	0,01°
Accuracy (T = -40 °C .. +85 °C)	< 0,2°		0,1°
Sensor Response Time	< 10 ms (without filter)		
Interface	Transceiver according ISO 11898, galvanically isolated by optocouplers		
Transmission rate	max. 1 MBaud; adjustable by BCD switches		
Addressing	BCD switches		
Supply voltage	10 – 30 V DC		
Current consumption	max. 100 mA with 10 V DC, max. 80 mA with 24 V DC		
EMC	Emitted interference: EN 61000-6-4		
	Noise immunity : EN 61000-6-3		
Electrical lifetime	> 10 ⁵ h		

(1) Supply voltage is applied.

(2) Inclometers should be connected only to subsequent electronics whose power supplies comply with EN 50178 (protective low voltage)

Mechanical Data

Housing	Aluminum
Lifetime	> 10 ⁵ h
Shock	A=30g; t= 11ms, halfsine (EN 60068-2-27)
Vibration	10 to 150 Hz, 2,5 mm amplitude, 5g const. Acceleration, 1 Octave /Minute (EN 60068-2-6)
Weight (standard version)	350 g

Environmental Conditions

Operating temperature	-40 °C.....+85 °C
Storage temperature	-40 °C.....+85 °C
Humidity	98 % (without liquid state)
Protection class	IP 67 (connected) (EN 60529)

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Installation

Electrical Connection

The inclinometer is connected via 5 pin round connector or a cable

Instructions to mechanically install and electrically connect the inclinometer



Do not connect the inclinometer under power!



Do not stand on the inclinometer!



Avoid mechanical load!

Bus Termination

If the inclinometer is connected at the end or beginning of the bus the termination resistor must be switched on. The termination resistor is switched on when the dip-switch is in the 'ON' position. To switch the resistor on, the cap of the inclinometer has to be unscrewed.

Signal	5 pin round connector; pin number
CAN Ground	1
24 V supply voltage	2
0 V supply voltage	3
CAN High	4
CAN Low	5

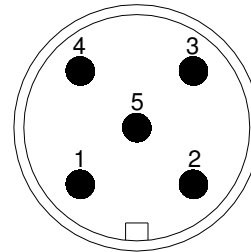
Table 1 Connector Assignment

Bus address

The setting of the node number is achieved via BCD switches. Possible (valid) addresses lie between 1 and 96 whereby every address can only be used once.



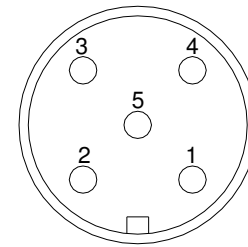
The CANopen inclinometer adds internal 1 to the adjusted device address.



Bus IN

5 Pin Male connector M12

Connector male inlay / counterpart **soldering side**



Bus OUT

5 Pin Female connector M12

Connector female inlay / counterpart **soldering side**

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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, 100 and 1000 can be programmed.
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.
Digital recursive filter	This filter can be used to adjust the bandwidth of measuring values to minimize the influence of vibration.

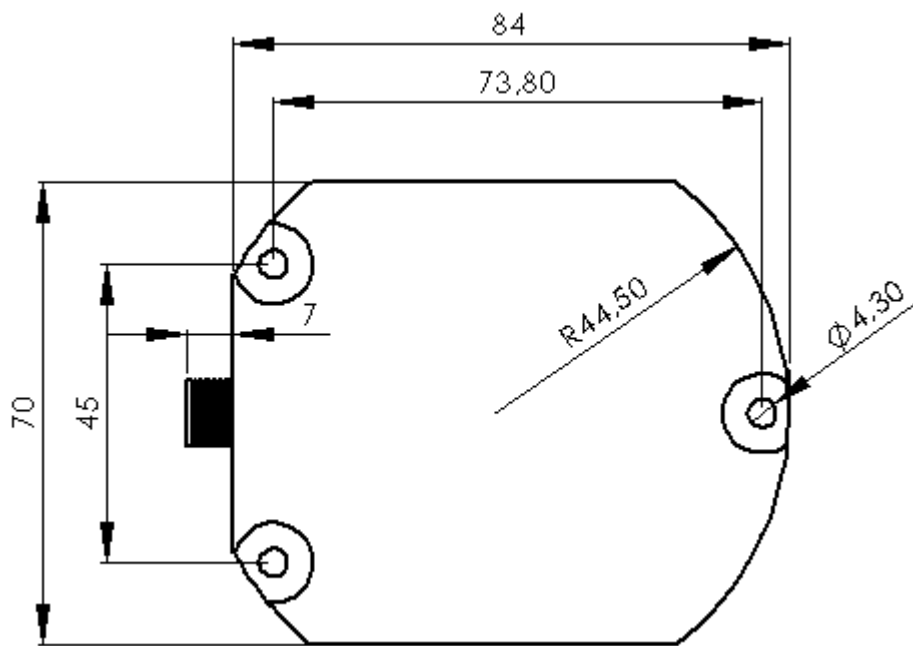
Programmable CAN Transmission Modes

Polled Mode	By a remote-transmission-request telegram the connected host calls for the current process value. The inclinometer reads the current position value, calculates eventually set-parameters and sends back the obtained process value by the same identifier.
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 ms.
Sync Mode	The inclinometer answers with current process value after receiving a sync telegram. The parameter sync counter can be programmed to skip a certain number of sync telegrams before answering again.
Heartbeat-Function	A node signals its communication status by cyclically transmitting a heartbeat message. This message is received by one or any number of members (Heartbeat Consumers) in the bus and so they can control the dedicated node (Heartbeat Producer).

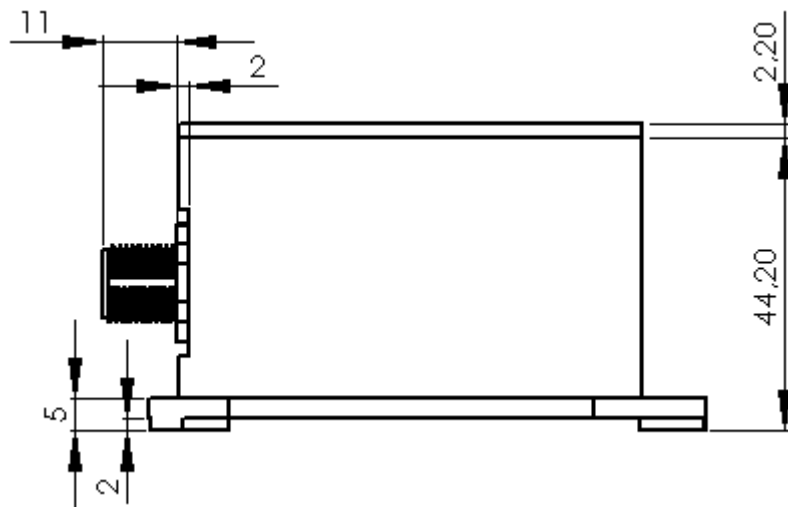
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Mechanical Drawings

Horizontal housing mounting
Bottom view

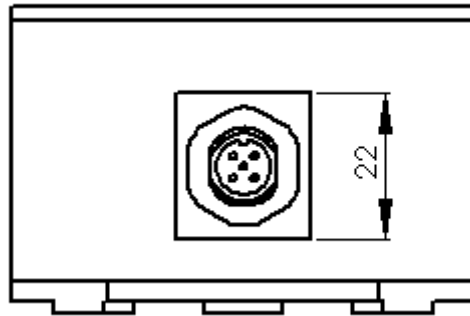


Side View

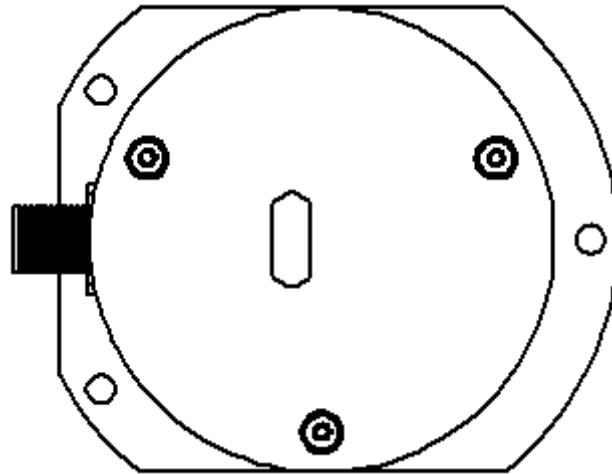


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Front View

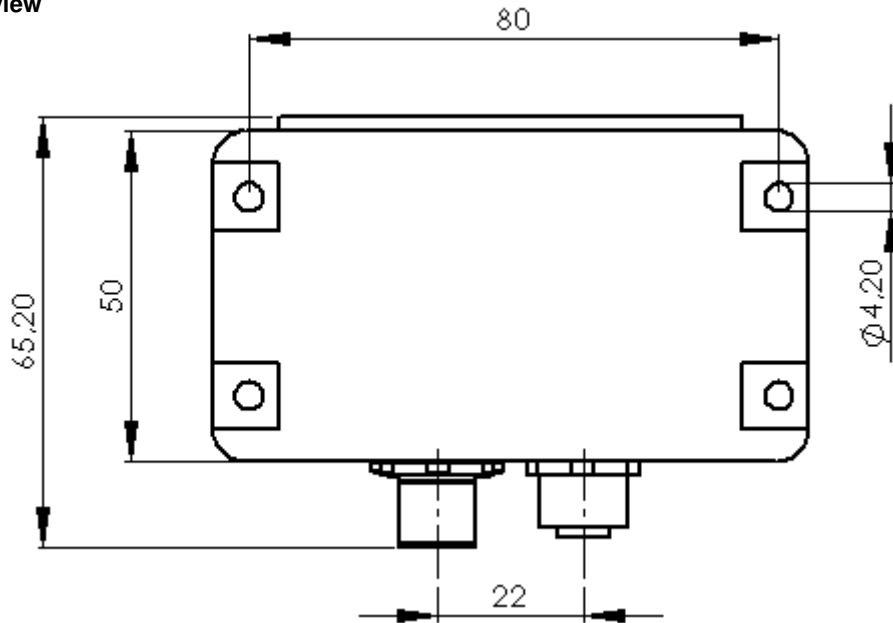


Top View

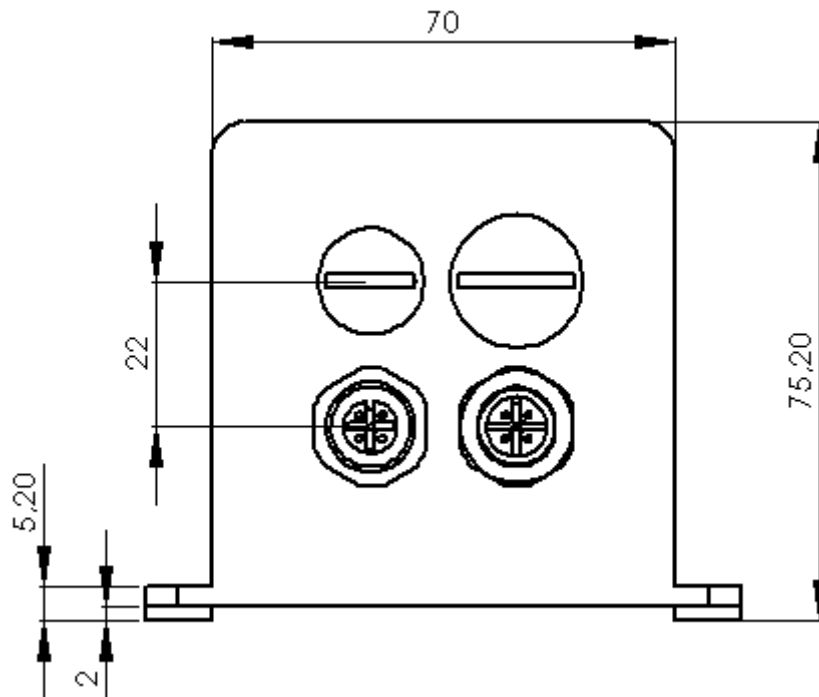


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Vertical housing mounting
Bottom view

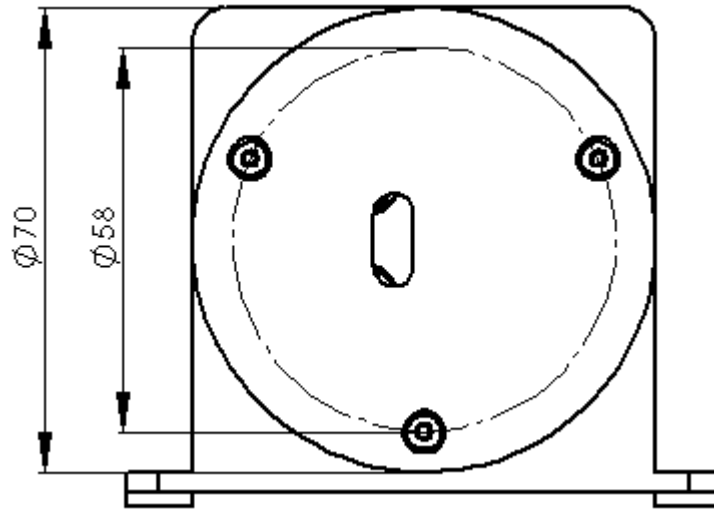


Side View

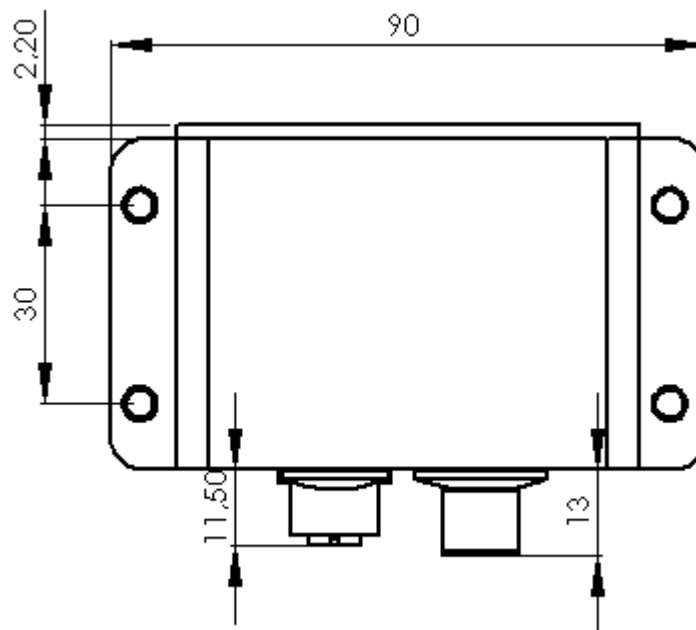


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Front View



Top View



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Mounting and Installation Instructions

Horizontal Mounting

For a horizontal mounting, the base plate of the inclinometer with the three mounting holes needs to be placed on the horizontal plane of the object to be measured. It can be mounted with M4 screw as a maximum.

The mounting surface must be plane and free of dust and grease.

We recommend cylinder head screws with metrical thread M4 for the mounting.

Maximum fastening torque for the mounting screws is 10 Nm.

Vertical Mounting

For a vertical mounting, the base plate of the inclinometer with the three mounting holes needs to be placed on the vertical plane of the object to be measured. It can be mounted with M4 screw as a maximum.

The measurement of the tilt angle of the single measurement axis is carried out over the respective longitudinal and lateral axis of the

Measurements

The mounting surface must be plane and free of dust and grease.

We recommend cylinder head screws with metrical thread M4 for the mounting.

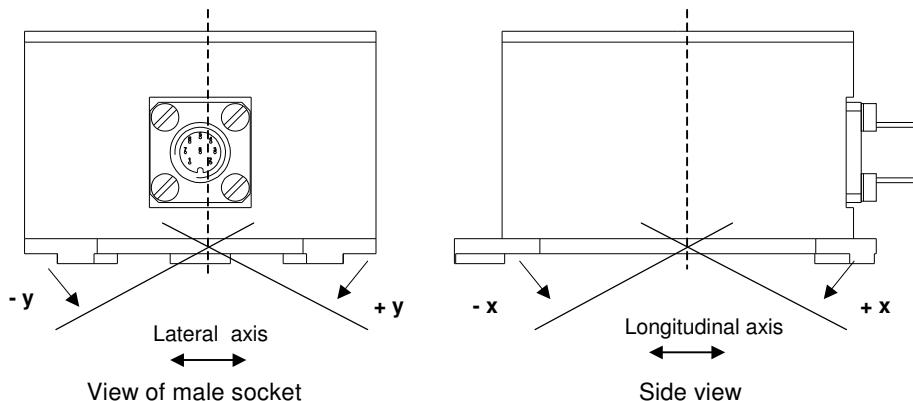
Maximum fastening torque for the mounting screws is 10 Nm.

Installation

Prior to installation, please check that all connection and mounting instructions are complied with. Please also observe the general rules and regulations on low voltage technical devices.

Avoid shock and vibration during measurement, as these could corrupt the measurement results.

inclination sensor. Reference is always the horizontal plane.



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Models/Ordering Description

Description	Type key
Accelens	ACS
Resolution	±80° (2 axes) 080 360° (1 axis) 360
Number of axis	1 2
Interface	CANopen CA
Version	00
Housing	Vertical V Horizontal H
Housing Material	Aluminium A
Inclinometer Series	High End H
Connection	5 pin connector male (M12) PM 1x 5 pin connector male (M12) + 1x 5 pin connector female (M12) TM

Table 2 Ordering Description

Accessories and documentation

Description	Type
User manual *	Installation and configuration manual, German UMD-ACS
User manual *	Installation and configuration manual, English UME-ACS

Table 3 Accessories

* These can be downloaded free of charge from our homepage www.posital.eu.

We do not assume responsibility for technical inaccuracies or omissions. Specifications are subject to change without notice.