Inclinometer CANopen

For reliable and accurate angle measurement in real-time

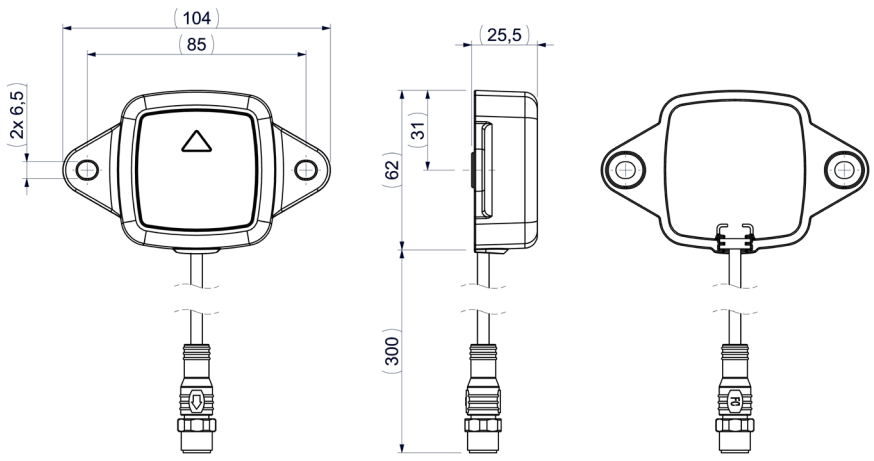
Olsbergs single-axis MEMS Inclinometer with dynamically adapting filters for reliable and accurate measurement of inclination in real-time with a resolution of 1.0 or 0.1 degree depending on model. Full 360 degree inclination range. The interface is CANopen Safety, in accordance with CiA 410 and the supported baudrate is 250 kbit/s.

The Inclinometer can be mounted on any type of applications where angle monitoring is needed. Each unit provides a measurement of the inclination between itself and the horizontal plane (orthogonal to gravity). The unit must be mounted with its backside in a vertical plane and is fully functional within a 5 degree tilt between the backside and the nearest vertical plane.

By default, the unit sends inclination data with 50 ms between SRDO's. The period time is settable between 50 ms and 1000 ms. At startup the unit will perform a series of initial checks and then go into Pre-operational mode, in which no inclination data is sent. The unit can now be switched to Operational mode by the CANopen Master. While the unit is in Operational mode, it will send SRDO's containing the inclination data.

The inclinometer is easily integrated into overall safety system by using standard M12 connector and CANopen communication. Other types of connector and cable length are available on request. Requirement: Feed voltage 8-32V, Ground, CAN H and CAN L.

Dimensions approx. (mm)



Information in this document is tentative and subject to change without further notice.

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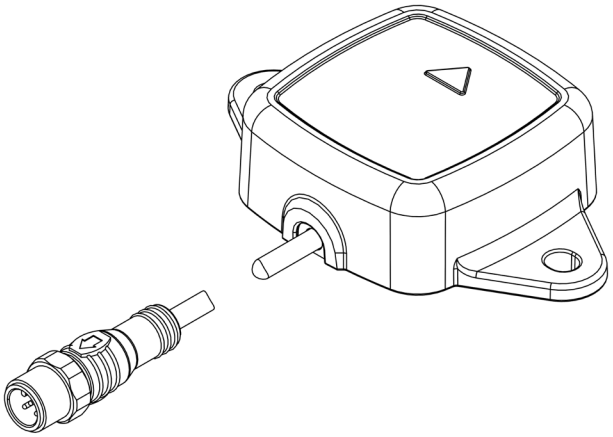
Casing - Compact reinforced plastic

Technical data

Power supply	Voltage	Current consumption
Min.	+8 Volt DC	approx.18 mA
Norm.	+24 Volt DC	approx. 7 mA
Max.	+32 Volt DC	approx. 6 mA

Connector	Male M12x1
	Connector code A
Operating temperature	-30 to +80 ˚C
High protection rating	IP68
Total weight	124 g (±10%)



Safety

Dual, offset sensors
CANopen Safety, Black channel

Safety rating: PLd (CAT2)

PFHd: 4.2 x 10^{-8} (excluding EN ISO13849-1 limitation of 100 years maximum for CATb, CAT1, CAT2 architectures)

MTTFd: 1 793 years (excluding EN ISO13849-1 limitation for 100 years maximum for CATb, CAT1, CAT2 architectures)

Diagnostic error remedy: Revert to CANopen Pre-operational < 450 ms (angle data transmission stops)

Node-ID

The inclinometer must have a unique node-ID on the bus. The default node-ID is 36 (0x24).
The node-ID can be set using the LSS service.
Olsbergs Electronics provides a tool for changing the node-IDs of Inclinometer units.

Communication

Protocol: CANopen Safety, in accordance with CiA-410
Communication bitrate: 250 kbit/s
Angle reading presentation interval: 50 ms (20 Hz)

Interfaces

CANopen CiA 301, (EN 50325-4)
Device profile CiA DSP-410
CANopen Safety CiA 304 (EN 50325-5)
Node-ID/output interval via SDO/LSS
Termination resistor: No
EDS-files and CAN manual available.

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