



Operating Instructions


**Baumer**  
 Passion for Sensors

## Safety

### Intended use

This product is a precision device designed for the detection of objects, the acquisition of physical measuring units and for the evaluation of measured values for output in the form of electrical signals for the higher-level system. Unless not especially labelled, the product must not be used in potentially explosive atmospheres.

### Commissioning

Installation, mounting and adjustment of this product may only be executed by skilled and authorized personnel.

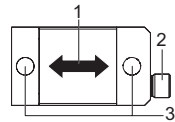
### Installation

Only use the provided mounting devices and accessories for product installation. Outputs not used must not be assigned. Unused strands must be isolated. Do not exceed the cable's maximum permissible bending radius. Prior to electrical connection of the product, the system must be down and not live. Where mandatory, use shielded cables for protection against electromagnetic interference. Where using pre-assembled connectors at shielded cables, customer must ensure the connector is EMC-compliant. The cable shield must rest on the connector with a sufficiently large contact surface.

## Scope of delivery

Article	Quantity
Sensor	1
Screw, stainless (M8 x 35, A4-80)	2

## Construction and function



- 1 Strain direction
- 2 Connector plug (M12 x 1; 5-pin, male)
- 3 Mounting holes

The sensor is screwed to a machine element and measures its strain. Changes in strain are measured using strain gauges and converted into an electric signal. If the sensor experiences a tensile force, the signal is positive, and it is negative in case of a compression.

## Signal word

**ATTENTION** In situations that can lead to property damage.

## Transport and storage

### ATTENTION

Damage to the sensor due to falling.

- ▶ Do not drop the sensor in its unpackaged condition.

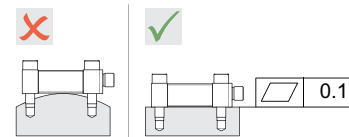
- ▶ Check packaging and sensor for damage.
- ▶ In the event of damage: Do not use sensor.
- ▶ Transport or store the sensor only in its original packaging.
- ▶ Store sensor where it will be secure against shock.  
Storage temperature:  $-40 \dots +85 \text{ }^{\circ}\text{C}$

## Preparing for mounting

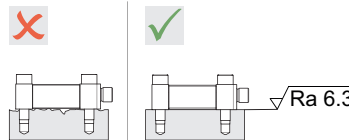
### Important

The sensor provides inaccurate measurement results when the measuring surface is dirty or when the sensor is incorrectly mounted.

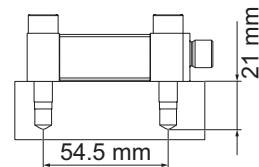
- ▶ Avoid contamination from grease or oil.
- ▶ Mount the sensor on a machined, flat surface.
- ▶ Observe surface roughness.



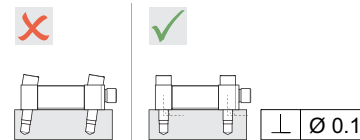
- ▶ Check for evenness tolerance.  
Evenness tolerance  $\leq 0.1 \text{ mm}$



- ▶ Check for surface roughness.  
 $Ra \leq 6.3 \text{ }\mu\text{m}$

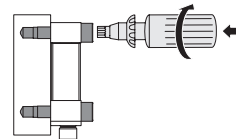


- ▶ Drill 2 threads in machine element.  
Depth boreholes: min. 21 mm  
Distance between boreholes:  $54.5 \text{ mm} \pm 0.1 \text{ mm}$   
Screws: M8 x 35



- ▶ Make sure that boreholes are drilled perpendicular to the contact surface of the sensor.

## Mounting



- ▶ Make sure that the machine element is not loaded.
- ▶ Hand-tighten the fastening screws.
- ▶ Tighten the SW6 hexagonal socket fastening screws using a torque wrench.  
Tightening torque: 22 Nm

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 2019-01-14:  
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## Electrical connection

### Important

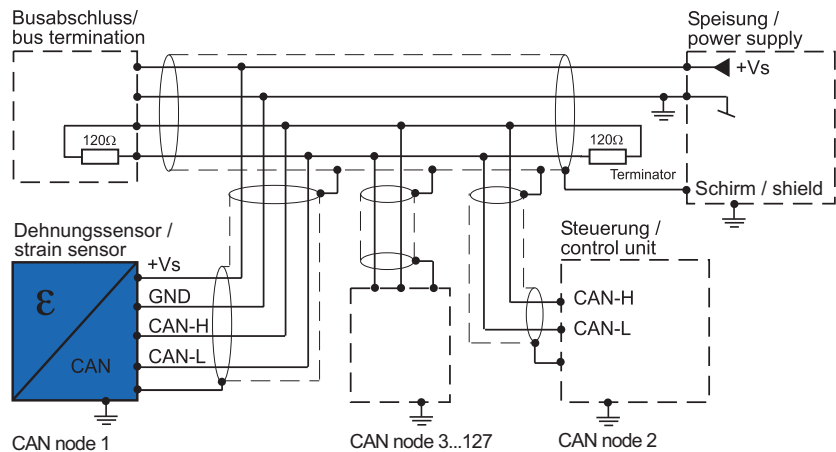
For stable measurement results, the sensor must be mounted correctly.

- ▶ Provide a supply voltage of 10 to 33 VDC (UL class 2).  
For a UL 1310 installation, the device must be protected using a UL-listed fuse (nominal current: max. 5 A at 20 VDC or  $\leq 100$  W/VDC [A]).
- ▶ Switch off the supply voltage before connecting.
- ▶ Connect the sensor according to pin assignment.  
Use shielded connection cables with a maximum length of 10 m.

### Pin assignment

	1	n.c.
	2	+V <sub>s</sub>
	3	GND
	4	CAN-H
	5	CAN-L
	Housing Shield	

In order to meet the PELV requirements according to EN 60204-1, § 6.4.1, it is recommended to connect GND to protective earth at one point. Details of the configuration are included in the separate operating instructions for CANopen strain sensors.

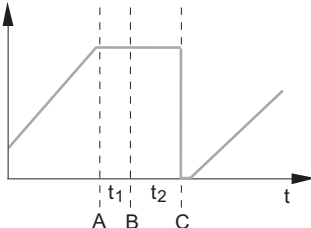


Output signal: CANopen DS404  
Factory settings: ID = 1, baudrate = 125 kBaud

## Initial commissioning

- ▶ Connect sensor.
- ▶ For a stable zero point: screw on sensor firmly.
- ▶ To minimize the impact of setting behavior, load the sensor to full load 10 times if possible.
- ▶ Tare the sensor at zero load via CANopen interface to compensate for signal changes during mounting.

Prozesswert /  
process value  
[ $\mu\epsilon$ ]



- A Sending of the zero adjustment command
- B Zero adjustment command is received by sensor
- C Zero adjustment terminated
- t<sub>1</sub> Response time of CANopen bus and sensor
- t<sub>2</sub> Internal zero adjustment time

## Operation

Depending on the application, the sensor can be cyclically tared by the machine control to compensate for zero drift or temperature influences.

- ▶ Make sure that the sensor does not experience a change in strain.
- ▶ Make sure that the machine is in the correct zero position.
- ▶ Tare the sensor at zero load via CANopen.

## Maintenance and repair

### Maintenance

Regular maintenance is not required.

### Repair

- ▶ Do not repair the sensor yourself.
- ▶ Send damaged sensor to Baumer.  
Contact addresses can be obtained from [www.baumer.com](http://www.baumer.com).

## Disposal

- ▶ Do not dispose of in household waste.
- ▶ Separate materials and dispose of in compliance with nationally applicable regulations.

## Applicable documents

For general information, see insert.

For technical data, see data sheet:  
[www.baumer.com](http://www.baumer.com)

For accessories see [www.baumer.com](http://www.baumer.com)

Operating instructions strain sensors CANopen DS 404, see [www.baumer.com](http://www.baumer.com)

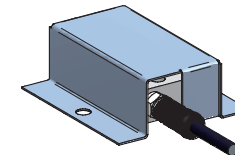
## FAQ

### The sensor does not output a stable signal. Why is that?

The sensor is not firmly screwed on. To obtain stable measurement results, the sensor must be firmly screwed onto a machine element.

### Is an additional protective housing required?

The sensor is protected against ingress of dust and water. In case of excess mechanical load, through flying stones, for example, a mechanical protective housing is recommended.



### Can I also use other screws?

The enclosed screws are high-strength, stainless screws (M8 x 35 mm, A4-80) with strength class 80. To obtain an accurate strain measurement, the same screws must be used.