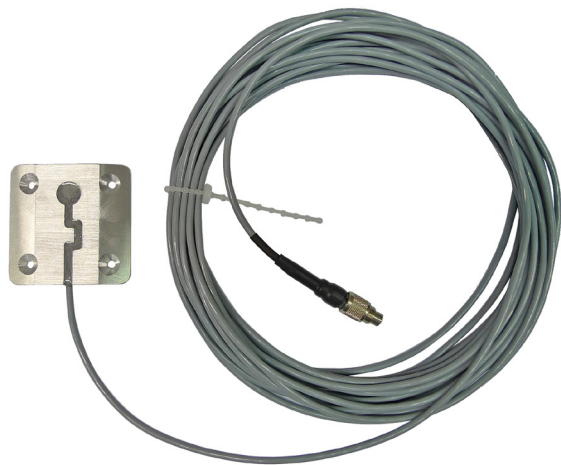


Manual

Additional Temperature- Sensors with analogue output



Soil / water temperature sensor
Version 3.0 and later



Road surface temperature sensor
Version 1.0 and later

**REINHARDT System- und
Messelectronic GmbH**

Bergstr. 33, D-86911 Dießen-Obermühlhausen
Tel. 0049 - 8196 - 934100 or 7001

E-Mail: wetter@reinhardt-testsystem.de
WEB: www.reinhardt-wetterstationen.de

Manual Temperature Sensors with analogue output

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Soil / water - temperature sensor
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1 Caution

1.1 Intended Use

REINHARDT Weather stations and sensors are exclusively built for measuring climatic and environmental parameters.

Any use other than described above may cause damage of the product or lead to other dangers.

Do not mount the sensor in reach of children and pets.

Carefully read the complete operating manual. It contains important information about the installation and operation.

1.2 Safety Regulations

The instruments are manufactured according to modern technical standards and can be operated without danger when used as directed.



Damage caused by non-observance of this operating manual can lead to forfeiture of warranty. We shall not assume any liability for subsequent damage.

We shall not assume any liability for damage of items or persons caused by improper handling or non-observance of the safety instructions! In such cases any guarantee claims shall become null and void.



Dear customer, the following safety and hazard notices not only serve the protection of your health but also the protection of the appliance. Please read the following points carefully.



The supply voltage is converted by isolated transformers into voltages of maximum 30VDC. Please do only use the supplied power supply units.



Do not leave the packaging material lying around. These parts are dangerous toys in the hands of children.



Handle the product with care. Blows or impact, or dropping it even from a small height will damage it.



The supply voltage must be in the range from 6 to 28VDC. The sensors will be permanently damaged in case of polarity reversal or when a voltage higher than 28VDC is applied.

1.3 Mounting

These sensors are either connected to a Reinhardt weather station as additional sensor or to any other measuring system which measures analog parameters.

When connected to a Reinhardt weather station, the interpolation is performed by the weather station. When connected to any other instrument, the interpolation has to be done by the customer with the enclosed calibration protocols.



The cable must be equipped with a strain relief at the connector.

These sensors are designed to measure temperature between -40°C and +75°C

2 Commissioning

2.1 Hardware Installation

Connect the sensor to the analog input of a Reinhardt weather station MWS or a Reinhardt sensor with data logger. The analog input is a 8-pole connector.

Please don't forget to attach a strain relief to the cable.

These sensors are equipped with a 10m cable by default. Different cable lengths are possible on request.



Safety instruction

The supply voltage must be within a range of 6 and 28VDC. the best voltage ist 18VDC!

2.2 Installation of Software

When the sensors are connected to a Reinhardt weather station you'll find the necessary software on the supplied CD.

Insert the CD in your CD-drive. It will start automatically. If you've disabled auto-play, please start STARTER.EXE in the root-directory of your CD.

If you don't connect these sensors to a Reinhardt weather station you don't need a software from the CD. In this case you need own software or measure equipment to measure.

3 The Sensors

3.1 Soil / water - temperature sensor

The soil / water temperature sensor measures temperatures within the range of -40°C to $+75^{\circ}\text{C}$. The sensor has got an output signal from 280mV ... 4.07V for this range (33mV/ $^{\circ}\text{C}$). For the exact values refer to the calibration document which you'll receive for each sensor if not ordered as additional sensor for a Reinhardt weather station but as stand alone sensor.

The sensor element is placed in the measuring head (brass tube with outer diameter of 6mm). The sensorelement is isolated from the measuring head and has got no potential.

The signal conditioning is placed in the plug so please don't pull on the cable but always grasp the plug when handling the cable!

The sensor can be used for measuring the soil temperature. In this case bury the measuring head in the desired depth.

For measuring fluid's temperatures the measuring head has to be immersed completely into the measured fluid.

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3.2 Road surface temperature sensor

The road surface temperature sensor measures temperatures within the range of -40°C to $+75^{\circ}\text{C}$. The sensor has got an output signal from 280mV ... 4.07V for this range (33mV/ $^{\circ}\text{C}$). For the exact values refer to the calibration document which you'll receive for each sensor if not ordered as additional sensor for a Reinhardt weather station but as stand alone sensor.

The sensor element is placed in the measuring head (aluminium board 60mm x 60mm). The sensorelement is isolated from the measuring head and has got no potential.

The signal conditioning is placed in the plug so please don't pull on the cable but always grasp the plug when handling the cable!

The sensor can be used for measuring temperatures of plane surfaces like asphalt, plane machine parts i.e. by mounting it onto the measured surface.

For quick measurement the aluminium board can be fixed with a tape.

For permanent mounting by screws the aluminium plate has got 4 holes (4.2mm) at each corner in a distance of 40mm each.

For optimized thermal transfer from the measured surface to the measuring head you may use thermal grease or thermal pads.

3.3 Sensor accuracy

Deviation at the calibration points:	$\pm 0.5^{\circ}\text{C}$ max. (at -30°C)
	$\pm 0.5^{\circ}\text{C}$ max. (at 0°C)
	$\pm 0.5^{\circ}\text{C}$ max. (at $+10^{\circ}\text{C}$)
	$\pm 0.5^{\circ}\text{C}$ max. (at $+25^{\circ}\text{C}$)
	$\pm 0.5^{\circ}\text{C}$ max. (at $+50^{\circ}\text{C}$)

Linearity:	$\pm 1.0^{\circ}\text{C}$ ($-40^{\circ}\text{C}..+75^{\circ}\text{C}$)
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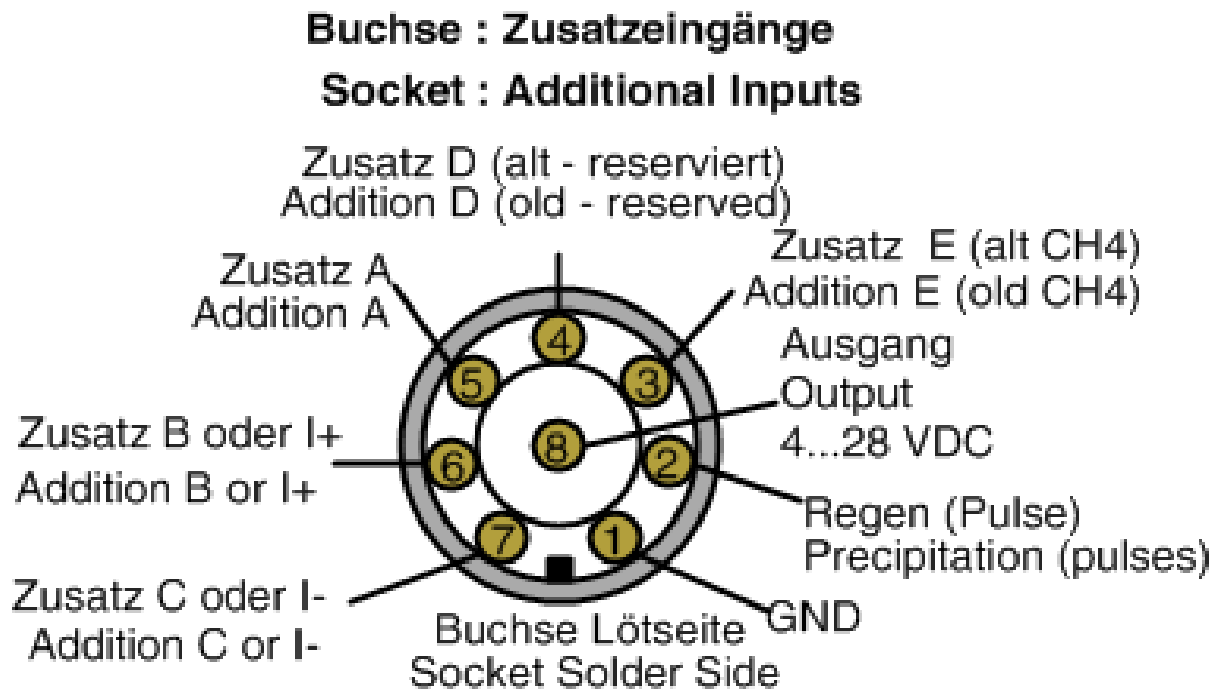
4 Pinout of the additional sensors connector

When used as additional sensor of a Reinhardt weather station a voltage range of 0 .. 4.095VDC is available.

The output signal of the sensor is measured at a 8-pole receptacle named "Sensoren".

This receptacle has got 4 analog input channels each usable as input for the sensor's signal. (electively pin 3, 5, 6 or 7).

Power supply is performed at pin 8 (VCC) and pin 1 (GND) which is also the lo-end of the sensor's signal.



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