



HUMIDITY



TEMPERATURE



FLOW



CONDUCTIVITY

K5-W

Capacitive Humidity Sensor

For low humidity measurement

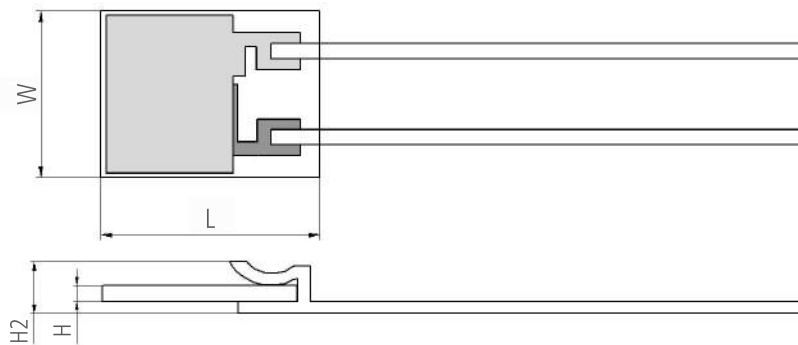


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Benefits & Characteristics

- Very stable at low humidity
- High chemical resistance
- Wide temperature range
- Condensation resistant
- Very low drift
- Customer specific sensor available upon request

Illustration¹⁾



1) For actual size, see dimensions

Technical Data

Dimensions (L x W x H / H2 in mm):	5 x 3.81 x 0.4 / 1.2
Operating humidity range:	0 % RH to 100 % RH
Operating temperature range:	-40 °C to +150 °C
Capacitance (C ₃₀):*	200 pF ±50 pF (at 30 % RH and +23 °C)
Sensitivity (at C ₃₀ = 200 pF):	0.4 pF/% RH (15 % RH to 90 % RH)
Loss factor:	< 0.01 (at 23 °C, at 10 kHz, at 90 % RH)
Linearity error:	< 1.5 % RH (15 % RH to 90 % RH at +23 °C after one point calibration)
Hysteresis:	< 1.5 % RH
Response time t ₆₃ :	< 5 s (50 % RH to 0 % RH at +23 °C)
Temperature dependence (nominal):	$\Delta \% RH = (B1 \times \% RH + B2) \times T [^{\circ}C] + (B3 \times \% RH + B4)$ B1 = 0.00004 [1/°C] B2 = 0.1842 [% RH/°C] B3 = -0.0010 B4 = -4.2370 [% RH]
Measurement frequency range:	1 kHz to 100 kHz (recommended 10 kHz)
Maximal supply voltage:	< 12 V _{pp} AC
Signal form:	alternating signal without DC bias
Connection:*	CuP-SIL wire post-plated with Sn, 10 mm

* Customer specific alternatives available

The calibration of the sensor must be done 5 days after soldering at the earliest.



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Order Information - SIL (CuP-SIL wire post-plated with Sn, 10 mm)

Order code	K5 (200pF \pm 50pF) 040.00146
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All mechanical dimensions are valid at 25 °C ambient temperature, if not differently indicated • All data except the mechanical dimensions only have information purposes and are not to be understood as assured characteristics • Technical changes without previous announcement as well as mistakes reserved • The information on this data sheet was examined carefully and will be accepted as correct; No liability in case of mistakes • Load with extreme values during a longer period can affect the reliability • The material contained herein may not be reproduced, adapted, merged, translated, stored, or used without the prior written consent of the copyright owner • Typing errors and mistakes reserved • Product specifications are subject to change without notice • All rights reserved



K5-W

Capacitive Humidity Sensor

Handling guidelines

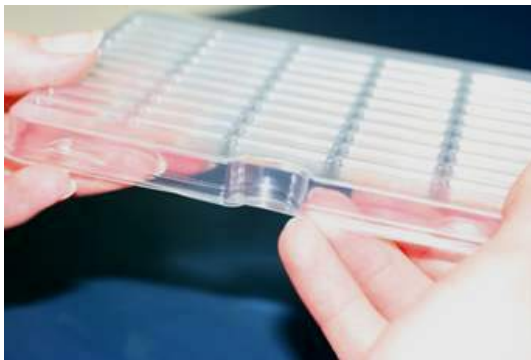


Packaging

The wired humidity sensors are packaged in blisters. Please be careful when opening the blisters to avoid any damages to the sensors.

To avoid damages please handle as follows:

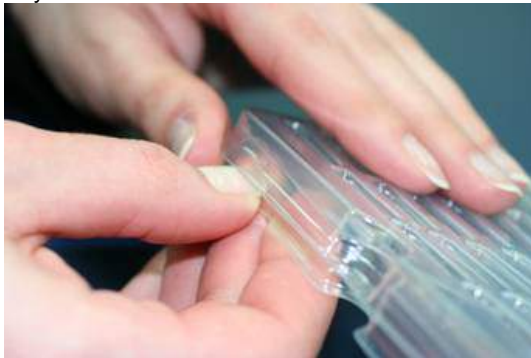
1. Side with curve has to face you.



2. Push your thumb beneath cover and press carefully lock system until cover removes smoothly.



3. Press lock system on second side on the same way.



4. Remove cover slowly.



Storage

Sensors have to be stored only in the original blisters.

Storage environment

-20°C...+50°C / -4...122°F (temperature range of blister)





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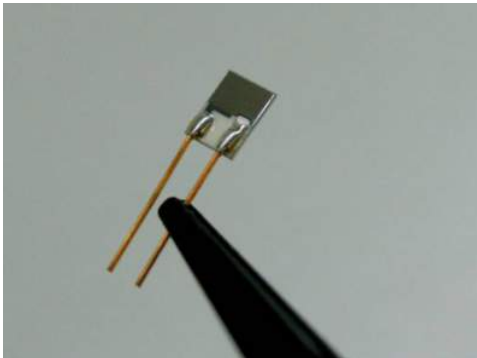
Handling guidelines



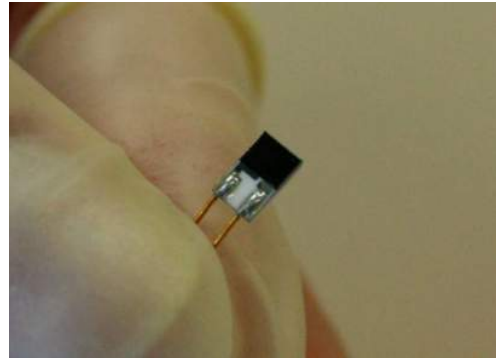
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Sensor handling

Hold the sensor with **plastic tweezers** or with **gloves** on the **wires** only.



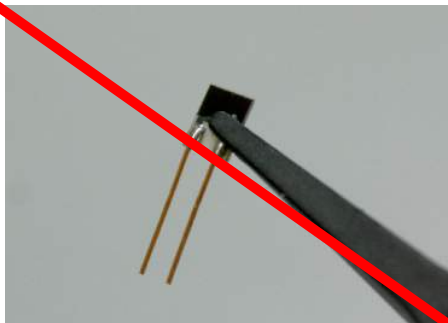
Picture 3: Sensor held on wires with plastic tweezers



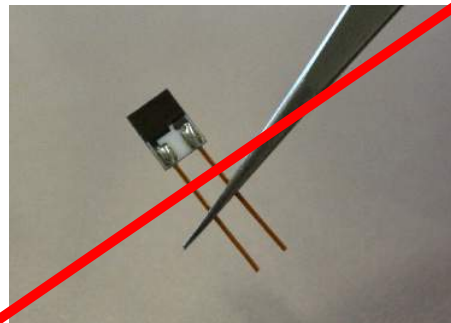
Picture 4: Sensor held with gloves

- Do not touch the **active area** of the sensor.
- Do not use **metal tweezers** to handle the sensors.
- Never handle the sensor by hand **without gloves**.

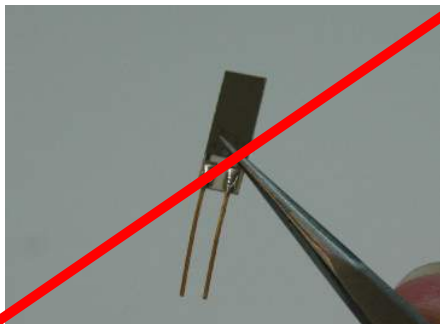
Pictures 5-8 are examples for forbidden handlings.



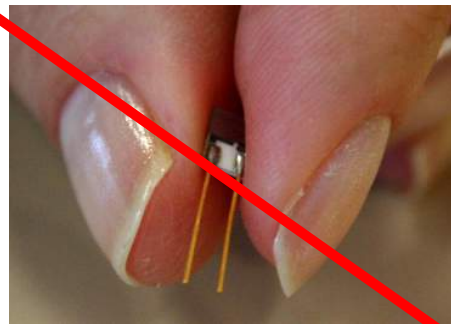
Picture 5: Sensor picked on the active area



Picture 6: Sensor picked on wires with metal tweezers



Picture 7: Sensor picked on the active area with metal tweezers



Picture 8: Sensor held with fingers without gloves on the active area



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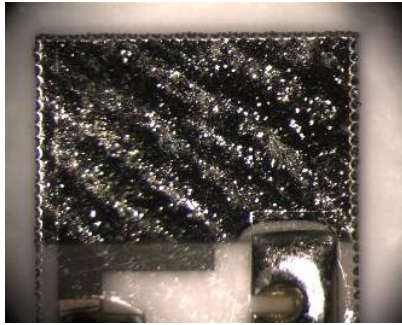
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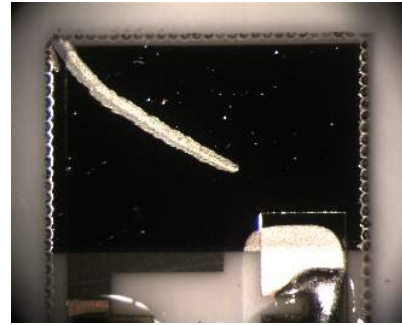


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Do not touch or scratch the active area of the sensors. Scratches and contaminations can degrade the sensor characteristic (see bad samples in pictures 9 and 10 below).



Picture 9: Sensor with contaminations



Picture 10: Sensor with a scratch

- **Avoid mechanical stress** to the sensors, e.g. bending or touching with sharp objects.
- Hold the sensors with **plastic tweezers** on the side edges only.

Soldering of the sensor

- The maximum temperature of the soldering iron of **320°C** may not be exceeded. Maximum heat apply with the iron must be below 10 seconds **at the very end** of the connecting wires.
- The calibration of the sensors has to be done **5 days after soldering at earliest**. This time is needed to provide a relaxation after the heat induces during the soldering process.
- **Avoid soldering flux residues**, caused by the soldering process, or any other contaminations inside the active area of the sensor.
- Soldering flux residues on the outside of the sensor's active area are not critical.
- If the sensor is mounted with glue we recommend baking the sensor at 80 °C for 1 hour after the gluing process.

Cleaning of the sensor

- Any residues can be easily removed with isopropanol at room temperature. Apply of low ultrasonic energy might improve the cleaning process. The sensor has to be dried after the cleaning process.
- The sensor cannot be cleaned mechanically with cotton swabs for instance.
- It is possible to clean the sensor with oil free and filtered clean air, e.g. for removing dust particles.



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