



Sensor (8093.1)



Sensor shelter (accessory)

## Features

- Precision measuring instrument for high-quality use in meteorology and industry
- Capacitive humidity measuring element
- Low maintenance rate
- Special resistance to air pollutants
- High long term stability
- Signal output humidity: 0...1 V (linear 0...100 %)
- Temperature measuring element: Pt100 1/3 DIN
- Signal output temperature: 4-wire-circuit Pt100

## Function

The sensor (8093.1) is a precision measuring instrument for measuring relative humidity and air temperature.

A particular feature of this compact sensor is the sophisticated electronics and the guaranteed outstanding measuring accuracy.

The high-quality capacitive measuring element is reliably protected against air pollutants by a membrane filter.

The combined sensor (8093.1) is designed for high-quality use in meteorology and industry.

Correct function, long-term stability and reliably accurate measurements can be guaranteed at appropriate handling.



### Putting into operation

For climatological measures the sensor should be mounted at a represent place. The sensor can be installed in any position.

However, do not position it in a position where water ingress can occur. Dew formation and splashes do not damage the sensor, although corrupted measurement readings are recorded until all the moisture on and directly around the sensor element is vaporised.

Inside a room you should avoid a place in the near of heatings, windows and cold outer walls. Avoid direct sun radiation too.

The probe should be protected against water splashes and rain. A suitable weather and protection screen, e.g. screen (8141.4) is recommended.

The protective filter should only be screwed off carefully to check functioning with a humidity standard. Take care not to touch the highly sensitive sensor element. When you screw them back on, bear in mind that sensors will not measure accurately again until they are completely dry.

### Electrical connection



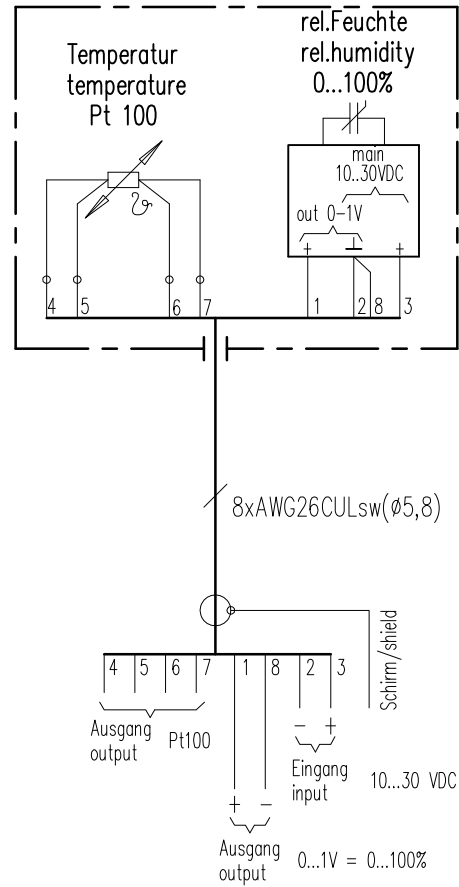
**Important!**

**Incorrect voltage supplies and overloading of the outputs can destroy the sensor.**

The sensor (8093.1) should be connected to an external power supply or signal processing with the open cable end (see wiring diagram) .

### Wiring diagram

Anschlußbild / wiring diagram



Kabelbelegung / cable design		
Ader core	AWG Farbcode AWG colorcode	Aus-Eingänge In - outputs
1	sw - blk	+ Ausg. output
8	li - purple/br - brn	- 0..1V
2	br - brn	- 10...30VDC
3	rt - red	+ Versorg. supply
4	or - ora	J+
5	ge - yel	U+
6	gn - grn	U-
7	bl - blu	J-
⊥	ge/gn - yel/grn	Schirm / shield

li - purple/br - brn = system ground (-)

⊥ Gehäusemasse und	housing ground and
⊥ Elektronikmasse	electronic ground
galvanisch getrennt	electrically isolated



## Measurements

The sensor is adjusted before delivery. For putting into operating another readjustment is normally not required.

The sensor is ready for use half a second after being switched on.



**Before a reliable measurement can be made, the measuring probe and medium to be measured must be in temperature and humidity equilibrium.**

The necessary adjustment time, which can last up to 30 minutes, depends upon several factors:

- Size of the humidity and temperature deviation of probe and medium before start of measurement
- Change of the measured values during the adjustment time.

The humidity measurement delivers a better picture of the progress of acclimatization since it reacts much more quickly and more sensitively than the temperature measurement. The 1/10 percent display is therefore very suitable as a trend display. If the display oscillates about mean value, then adjustment is completed.

### Sources of error

Humidity measurements are very sensitive to various influences:

#### - Temperature errors

due to too short adjustment time, sunshine during the measurement, heating, cold outer wall, air draft (e.g. fans), radiating hand and/or body heat etc..

#### - Humidity errors

due to steam, water splashes dripping water or condensation on the sensor etc.. Repeatability and long-term stability in operation are not impaired by this even if the probe has been exposed to high humidity or saturation with water vapor over a lengthy period.

#### - Contamination

of the humidity sensor can be largely avoided by using a corresponding filter. The filters must be cleaned or replaced periodically depending upon the degree of contamination of the measuring site.



**The sensor is insensitive to chemicals, when they occur in normal concentrations (MAK values = maximum workplace exposure). At higher concentrations or possibilities of contact with liquid chemicals, the manufacturer must always be consulted!**

**Please note the loss of warranty and non-liability by unauthorised manipulation of the system. You need a written permission from LAMBRECHT meteo GmbH for changes of system components. These activities must be operated by a qualified technician.**

### The warranty does not cover:

1. Mechanical damages caused by external impacts (e. g. icefall, rockfall, vandalism).
2. Impacts or damages caused by over-voltages or electromagnetic fields which are beyond the standards and specifications in the technical data.
3. Damages caused by improper handling, e. g. by wrong tools, incorrect installation, incorrect electrical installation (false polarity) etc.
4. Damages which are caused by using the device beyond the specified operation conditions.

## Maintenance and service

### Temperature

The probe is adjusted before delivery. A temperature readjustment is normally not required.

### Humidity

The probe is adjusted before delivery that the results in optimum accuracy over the full measuring range.

We recommend you to **subject the probe to a check at least once a year.**



**Note!**  
**Please use only the original humidity standards for this.**



**The humidity standards are not normally dangerous to humans, but can irritate sensitive skin. In the case of contact with the skin or the eyes, the solution must be washed out immediately and thoroughly with plenty of water. The humidity standards must not be consumed!**

The calibration device for calibration and adjustment and the required humidity standards are available on request.

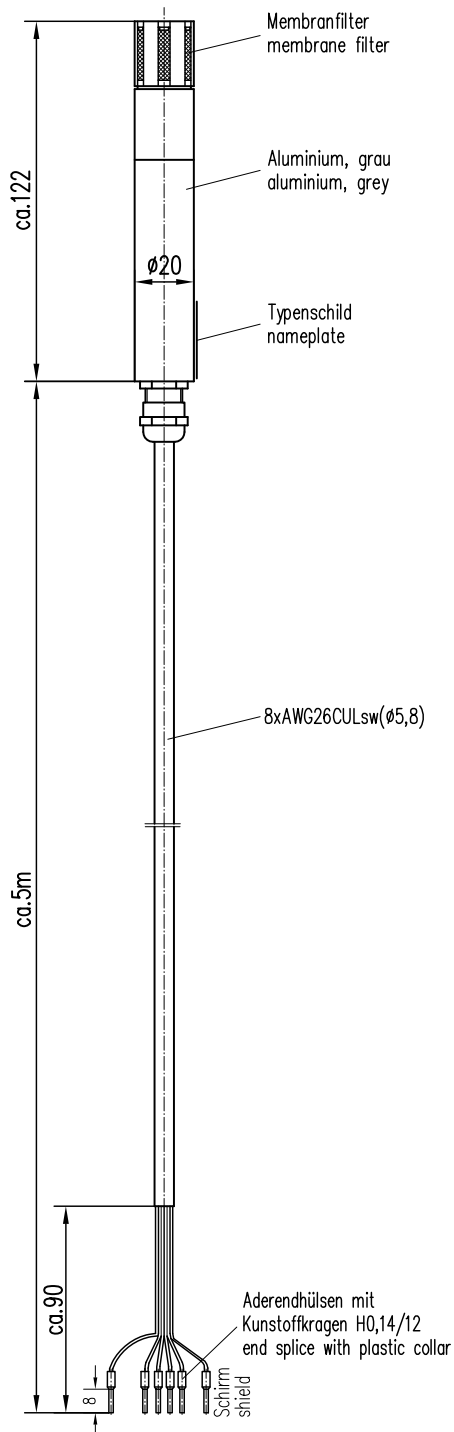
### Contamination

Contaminated filters can cause measuring errors and prolong the adjustment time. Depending upon the degree of contamination of the filter, this must be cleaned or if necessary replaced periodically.

**In order not to damage the sensors, unscrew the filter for cleaning.**

Clean the filter with soapy water, alcohol or a cleaning agent suitable for removing contamination and rinse thoroughly with water. Do not screw the filter back onto the probe until it is completely dry.

### Dimensional drawing



### Technical data

#### (8093.1) Humidity-Temperature-Sensor

**Id-No.** 00.08093.100 000

#### Measuring elements

Humidity Capacitive  
 Temperature Pt100 1/3 DIN (DIN EN 60571)  
 IEC 751 Class B ( $\pm 0.1\text{ }^{\circ}\text{C}$ )

#### Ranges of application

Humidity 0...100 % r. h. (...10 m/s)  
 Temperature -40...+80  $^{\circ}\text{C}$  (...10 m/s)

#### Measuring ranges

Humidity 0...100 % r. h.  
 Temperature -30...+70  $^{\circ}\text{C}$

#### Accuracies

Humidity  $\pm 2\%$  r. h. at 5...95 % r. h. • +10...+40 $^{\circ}\text{C}$   
 Plus:  $< 0.1\%$  r. h./ $^{\circ}\text{C}$  at  $< +10^{\circ}\text{C}$  •  $> +40^{\circ}\text{C}$   
 Temperature  $\pm 0.2\text{ }^{\circ}\text{C}$  at -27...+70  $^{\circ}\text{C}$   
 Plus:  $\pm 0.007^{\circ}\text{C}/^{\circ}\text{C}$  at  $< +10^{\circ}\text{C}$  •  $> +40^{\circ}\text{C}$

**Long term stability** typical under normal conditions  
 $< 1\%$  r. h./year

#### Response time

Humidity  $< 20\text{ s}$  (without wind and without filter,  
 otherwise at 1.5 m/s: 1.5 min)

#### Min. air velocity

$\geq 0.5\text{ m/s}$

#### Output signal

Humidity 0...1  $V_{\text{DC}}$  = 0...100 % r. h.  
 Min. load resistant  $\geq 2.5\text{ k}\Omega$   
 Temperature Pt100 (4-wire circuit)

**Supply voltage** 10...30  $V_{\text{DC}}$

**Current consumption**  $< 1\text{ mA}$

**Sensor protection** Membrane filter for outdoor applications  
 $\varnothing 20 \times 25\text{ mm}$  • M18 x 1

**Cable** 5 m · fixed

**Housing** Aluminium · lacquered · grey  
 IP 65 • Sensor filter area IP30

**Weight** Approx. 0.3 kg

**CE/EMC** DIN 50082-2 • EN 55011 class. B

### Accessories

#### Sensor shelter (8141.6)

**Id-No.** 00.08141. 600 000

For the protection of the sensor against influences of radiation,  
 wind and temperature as well as for the mounting at a mast

Further accessories on request, e. g.: Humidity standard