



USER MANUAL

8093.1

Humidity-Temperature Sensor



Warranty

Please note the loss of warranty and non-liability by unauthorized manipulation of the system. You need a written permission of the 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 (e.g. false polarity) etc.
4. Damages which are caused by using the device beyond the specified operation conditions.

Function

The sensor 8093.1 is a precision measuring device for measuring relative humidity and air temperature. This compact sensor features energy-efficient electronics and high measurement accuracy. The high-quality capacitive sensing 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. the sensor shelter 8141.6 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.

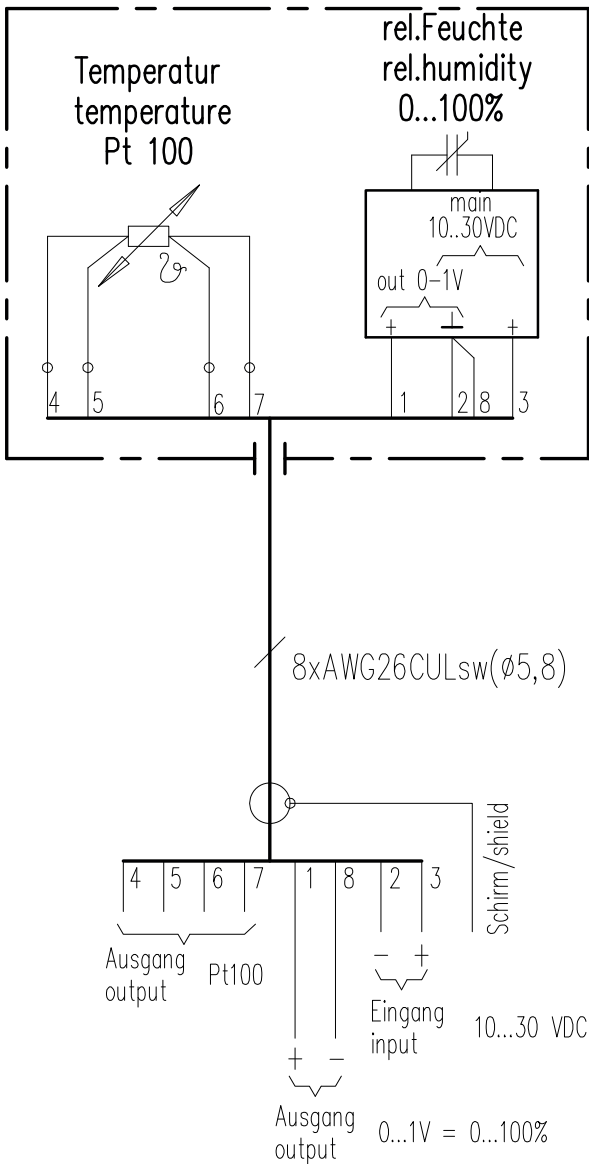
Electrical connection

! Incorrect voltage supplies and overloading of the outputs can destroy the sensor!

The sensor 8093.1 is connected to an external power supply and signal evaluation using the cable end (see wiring diagram).

Connection scheme

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+	 Pt100
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 Elektronikmasse galvanisch getrennt	housing ground and electronic ground electrically isolated
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Perform measurements

The sensor is adjusted on delivery and requires no further checking after commissioning.

The sensor is ready for operation just half a second after the supply voltage is applied.



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.

General sources of error

Humidity measurements are very sensitive to various influences:

TEMPERATURE ERRORS

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

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

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!

Maintenance and service

TEMPERATURE

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

HUMIDITY

The sensor is calibrated upon delivery to ensure optimal accuracy across the entire measurement range.



We recommend that you have the sensor checked at least once a year to maintain this accuracy.

DIRT

Dirty filters can cause measurement errors and extend the adjustment time. Depending on how dirty the filters are, they should be cleaned periodically or replaced if necessary.



To avoid damaging the measuring elements, the filter element must be unscrewed for cleaning.

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

Disposal

LAMBRECHT meteo GmbH is listed and registered at the Stiftung Elektro-Altgeräte Register under:

WEEE-Reg.-Nr. DE 45445814

In the category of monitoring and control instruments, device type: "Monitoring and control instruments for exclusively commercial use".

Within the EU



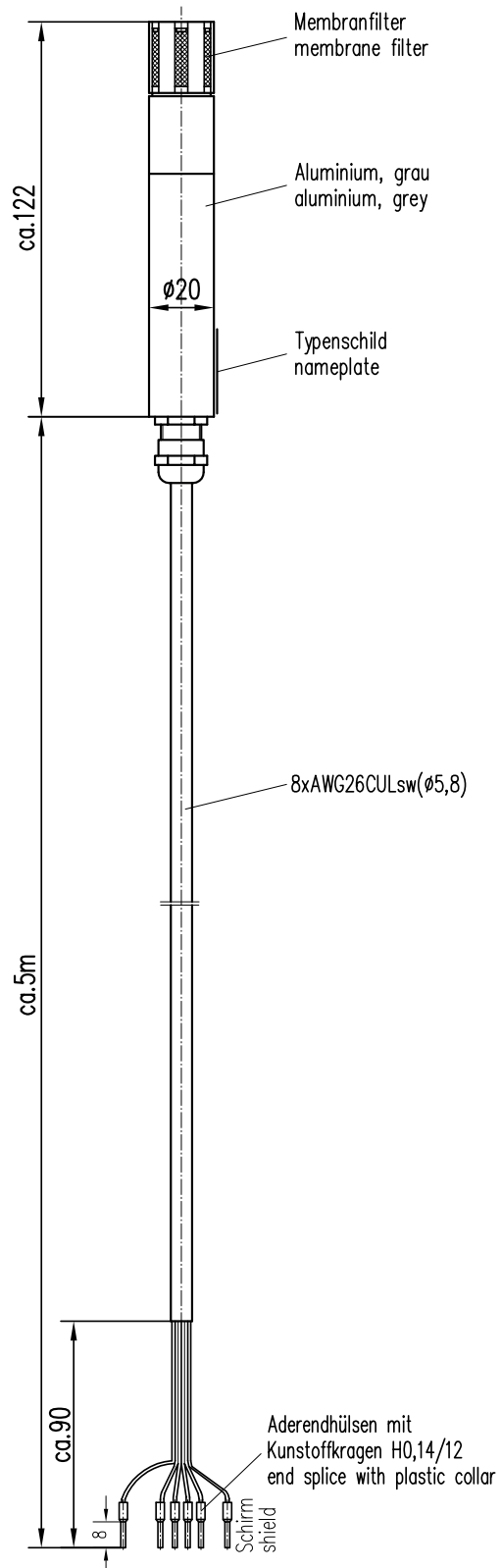
The device has to be disposed according to the European Directives 2002/96/EC and 2003/108/EC (Waste Electrical and Electronic Equipment). Do not dispose the old device in the household waste!
For an environmentally friendly recycling and disposal of your old device, contact a certified disposal company for electronic waste.

Outside the EU

Please follow the regulations in your country regarding the appropriate disposal of waste electronic equipment.



Dimensional drawing



Technical data

(8093.1) HUMIDITY-TEMPERATURE SENSOR	
Id-No.	00.08093.100000
Measuring elements	Humidity: Capacitive Temperature: Pt100 1/3 DIN (DIN EN 60571); IEC 751 Class B ($\pm 0.1\text{ }^{\circ}\text{C}$)
Range 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: $\pm 0.007\text{ }^{\circ}\text{C}/^{\circ}\text{C}$ at: < +10 $^{\circ}\text{C}$; > +40 $^{\circ}\text{C}$
Long term stability	Typical under normal conditions < 1% r. h./year
Response time	Humidity: < 20 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 signals	Humidity: 0...1VDC = 0...100 % r. h. ; Min. load resistance $\geq 2.5\text{ k}\Omega$ Temperature: Pt100 (4-wire circuit)
Supply voltage	10...30 VDC
Current consumption	< 1 mA
Sensor protection	Membrane filter for outdoor use $\varnothing 20 \times 25\text{ mm}$; M18 x 1
Cable	5 m; permanently connected
Housing	Aluminium, lacquered, grey; IP 65; sensor filter range IP30
Weight	Approx. 0.3 kg
CE/EMC	DIN 50082-2; EN 55011 Class B

ACCESSORIES (please order separately)

Id-No. 00.08141.600000	Sensor shelter 8141.6 To avoid radiation influences and to protect the sensor against dirt, wind, and precipitation, as well as for mounting on the mast
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Quality System certified by DQS according to
DIN EN ISO 9001:2015 Reg. No. 003748 QM15