



Sensor 8096-Z



Sensor shelter (accessory)

## Features

- ▶ Precision measuring instrument for high-quality use in building services or industry
- ▶ Capacitive humidity measuring element
- ▶ Low maintenance
- ▶ Special resistance to air pollutants
- ▶ High long term stability
- ▶ Signal output humidity: 0...1 V (linear 0...100 %)
- ▶ Measuring element temperature: Pt100 1/3 DIN
- ▶ Signal output temperature: Pt100 in 4-wire circuit
- ▶ For automatic weather stations in all climatic zones
- ▶ Shock- and vibration-tested in accordance with BV0230/ 0430 and BV0440/ 0240
- ▶ EMC-proved in accordance with VG 95373
- ▶ Sensor is supplied with Calibration Certificate

## Function

The sensor (8096-Z) is a precision measuring instrument for measuring relative humidity and air temperature.

The compact sensor is characterised by a power-saving electronic and high measuring accuracy.

A membrane filter reliably protects the high-quality capacitive measuring element from air pollutants.

The combined sensor (8096-Z) is designed for high-quality use in meteorology and industry.

If the device is handled properly the perfect function and long-term stability as well as high accuracy are ensured.

Please note the loss of warranty and non-liability by unauthorised 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 (false polarity) etc.
4. Damages which are caused by using the device beyond the specified operation conditions.

### Putting into operation

For climatic measurements the sensor should be mounted at a representative place. The sensor can be installed in any position.

The sensor must be protected against water splashes and rain. As a suitable weather and protection screen we recommend the sensor shelter (8141.5) plus the 15 mm adapter.

Dew formation and splashes do not damage the sensor, although corrupted measurement readings are recorded until all the moisture on the filter has dried up.

Inside a room you should avoid a place near heatings, windows and cold outer walls.

The protective filters should only be screwed off carefully to check functioning with the humidity standard. It is important not to touch the highly sensitive sensor element in the process.

When you screw them back on, bear in mind that sensors will not measure accurately again until they are completely dry.

### Mounting

First of all the protective screen has to be mounted without the incorporated sensor on a mast piece with a diameter of 25...50 mm at a selected installation place as mentioned before. The final fixing of the item has to be carried out by fastening the two butterfly screws carefully with suitable tools. When having inserted the sensor (8096-Z) bottom-up into the big support of sensor shelter (8141.5), the plastic nut must be fastened carefully with a wrench.

### Electrical connection

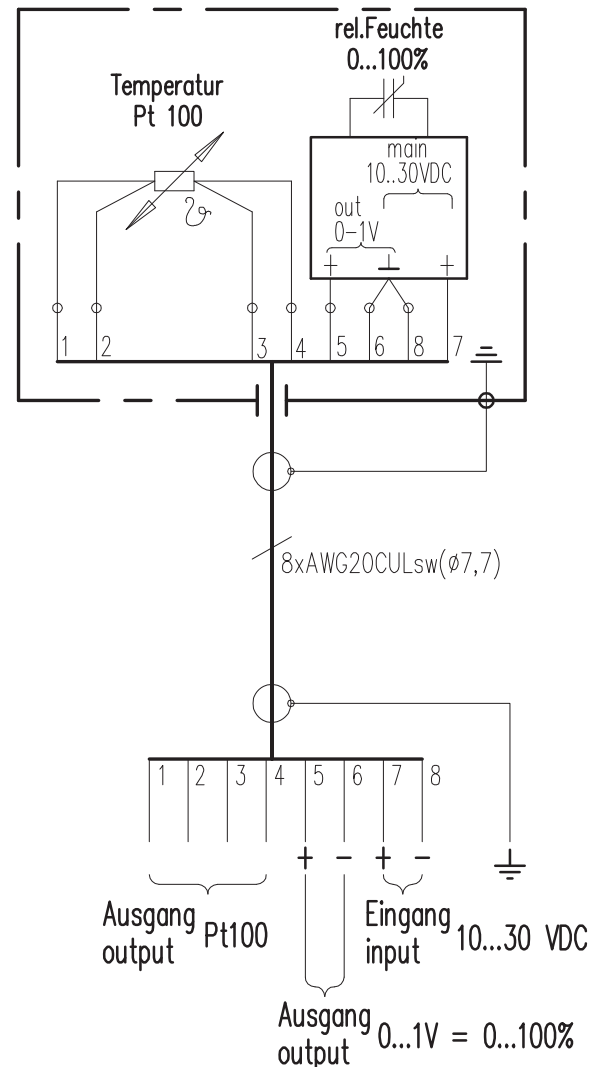


**Incorrect voltage supplies and overloading of the outputs can destroy the sensor!**

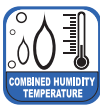
The sensor (8096-Z) has to be connected with the end of the cable to an external power supply and signal evaluation (see figure opposite).

### Connection diagram

Meßwertgeber für Lufttemperatur und rel.Feuchte  
sensor for air temperature and rel.humidity



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



## Measurements

The measuring probe is adjusted by delivery. For putting into operating another readjustment is not required. The probe 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!**

## Maintenance and service

### Definitions

**Calibration** = Control measurement with a humidity standard.

**Adjustment** = Calibration + additional readjustment of the probe to the setpoint value.

### Temperature

The probe is adjusted before delivery. A temperature readjustment is normally not required. In case of doubt please contact the producer.

### Humidity

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

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



**Please only use 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 obtainable as an accessory.

### Cleaning

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.



**The fault tracing and service work only should be carried out by a skilled technician having passed a factory training at our facilities or a similar course.**



## Service and maintenance

### Periodical visual checks

The producer recommends periodical visual checks of the sensor and shelter housing regarding outer damages, water-tightness and the fixing of the mounting screws, at intervals of four weeks.

### Change of spare parts

All spare parts or alternate devices can be replaced with regular tools such as wrenches, screw drivers etc.

### Accessories and spare parts list

No.	Description	Id-No.
1.	Sensor shelter NAV For the protection of the sensor against influences of radiation, wind and temperature as well as for mounting at a mast.	00.08141.620 000
2.	Sinter filter as sensor protection	37.08096.701 000

Sinter filter



## Storage and dispatch

The sensor should be stored in a clean and dust-free area between  $-40...+70$  °C (not condensing) in a cardboard box or similar container.

Alternative packing material should be adequate to the standard of the original packing of LAMBRECHT. It must ensure an optimal protection against mechanical or electrical influences as well as against other transport damages caused by liquids or by the weather.

## Safety instructions

This system is designed according to the state-of-the-art accepted safety regulations. However, please note the following rules:

1. Before set into operation, please read all appropriate manuals!
2. Please take notice of internal and state-specific guidelines and/or rules for the prevention of accidents (e.g. the professional association). If necessary ask your responsible safety representative.
3. Use the system according to the manual's regulations only.
4. Always leave the manual at hand at the place of work of the system.
5. Use the system in technically correct conditions only! You have to eliminate influences immediately, which impair the security .
6. Prevent the ingress of liquids into the devices .
7. Make sure that the system is free of power before cleaning of the devices. Do not use noxious or flammable detergents.

## Ordering of spares

The following information are required for a rapid and accurate exchange or replacement of the components:

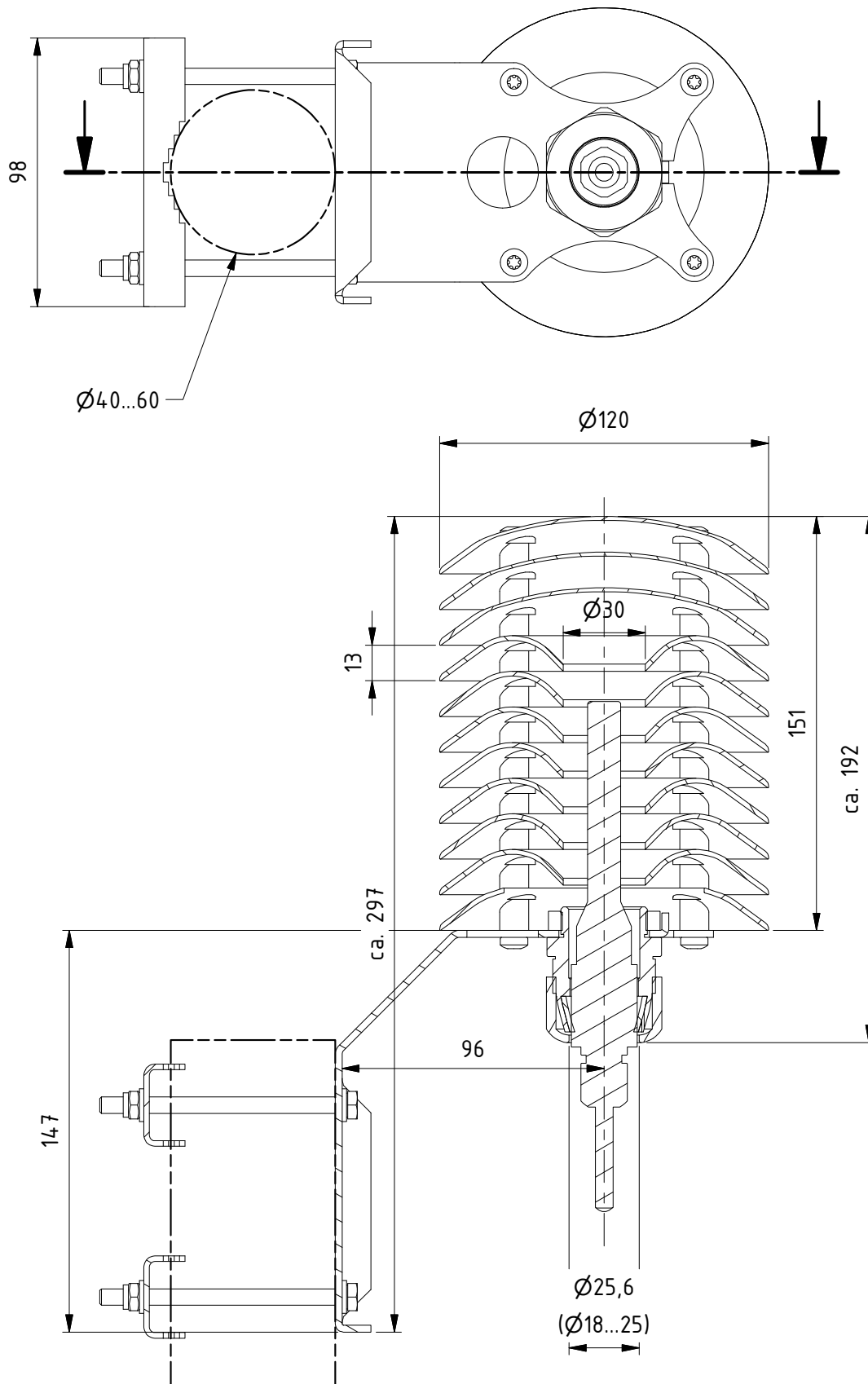
- Name of item and type number
- Ordering number/parts number
- Required quantity

### Optional

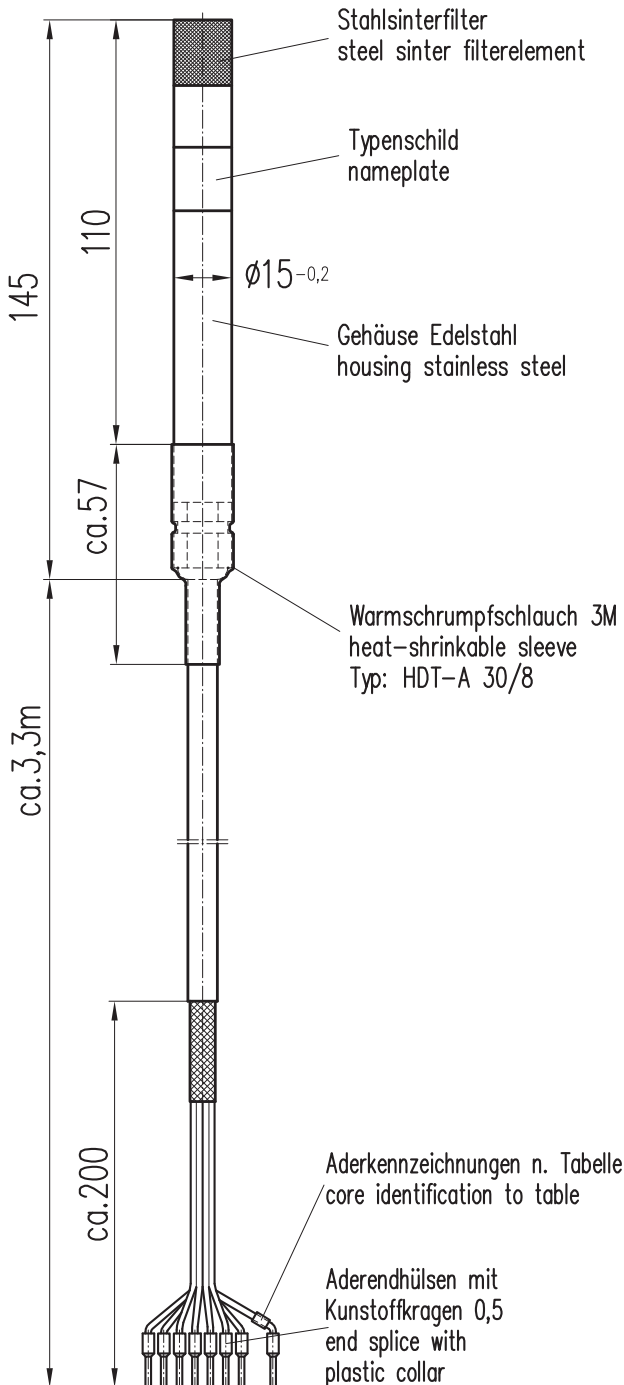
- Names of related or connected components
- Type of vessel and country of origin
- Reference number of LAMBRECHT wiring diagram designated with the bold letters SKF.... or SWF.... and a 3- or 4-digits running number.

Above mentioned data can be obtained from the designation label, from the spares list of this system component or from the order specific documentations.

Dimensional drawing



### Dimensional drawing



### Technical Data

#### (8096-Z) Humidity-Temperature-Sensor

**Id-No.** 00.08096.330 402

#### Measuring element

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

#### Range of application

· Humidity: 0...100 % r. h.  
 · Temperature:  $-40...+70^\circ\text{C}$

#### Measuring range

· Humidity: 0...100 % r. h.  
 · Temperature:  $-40...+70^\circ\text{C}$

#### Accuracy

· Humidity:  $\pm 2\%$  r. h. at: 5...95 % r. h. •  
 $+10...+40^\circ\text{C}$  (at  $\geq 0.5$  m/s)  
 plus:  $< 0.1\%$  r. h./ $^\circ\text{C}$   
 at:  $< +10^\circ\text{C}$  •  $> +40^\circ\text{C}$   
 · Temperature:  $\pm 0.1^\circ\text{C}$ , 1/3 DIN IEC 751 Class B

#### Response time

· Humidity:  $< 20$  s (without wind and without filter,  
 otherwise at 1.5 m/s: 1.5 min)

**Minimum air velocity:**  $\geq 0.5$  m/s

#### Output signal

· Humidity: 0...1 VDC = 0...100 % r. h.  
 min. load resistance  $\geq 2$  kOhm  
 · Temperature: Pt100 (4-wire circuit)

**Supply voltage:** 6...30 VDC

**Current consumption:**  $< 1$  mA

**Sensor protection:** membrane filter for outdoor use

**Cable:** 3.3 m · fixed cable

**Housing:** stainless steel ·  
 IP 65 • protection class of filter IP40

**Weight:** approx. 0.3 kg

**EMC:** DIN EN 60945 – Chapter 9, 10 +  
 VG 95 373

**Vibration:** BV0440/ 0240

**Shock:** BV0230/ 0430



Quality System certified by DQS according to  
 DIN EN ISO 9001:2008 Reg. No. 003748 QM08

Subject to change without notice.

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