

User manual

Technical specification

Air humidity transmitter

LF 120, LF 150





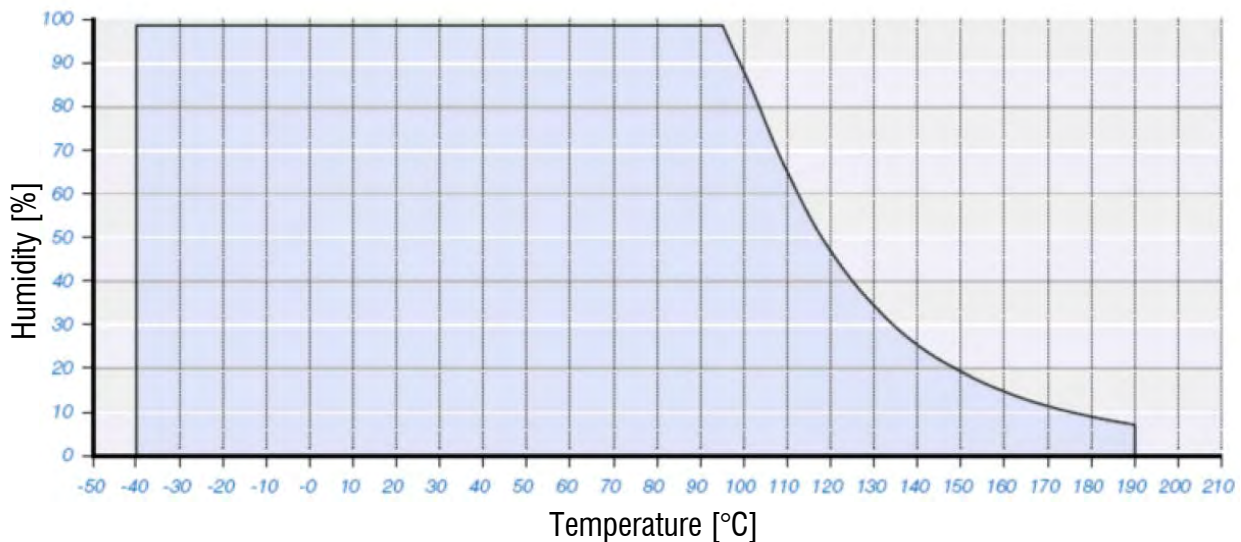
Air humidity and temperature transmitter

Measuring transducer for recording and transferring relative humidity and temperature in fixed installations.

Input voltage 12VDC to 29VDC (due to existing power supply)

The used sensor technology enables to quickly and reliably realise even little moisture fluctuations and their tendencies, so that preventive actions can be effected in time. Some applications (e.g. installation in a sewage duct) make it necessary to separate the measuring probe from the housing because of the temperature conditioning.

The intervals for checking the instrument depend on your operational demands and the required level of accuracy.



Relative air humidity

Indicates the relation between the current water vapour pressure and the maximal possible water vapour pressure (called saturation vapour pressure).

The relative humidity shows the degree the air is saturated with water vapour. For example: 50% relative humidity indicates that at the current temperature and the current pressure the air is saturated with water vapour for half of its value, 100% relative humidity means that the air is totally saturated. When the relative humidity is more than 100%, the excessive moisture would condense or form fog.



Common sources of error

Accurate moisture measurements depend on several different factors. Here is a list of common reasons for incorrect readings:

- Danger of condensation because of changing temperature (changing from cold to warm)
- Sunlight or other sources of heat or cold that do not correspond to the surrounding temperature
- Irreversible damage of the sensor due to aggressive gases
- Dripping or sprayed water
- Pollution of the sensor with dust or salts
- No check of calibration during operation!
- Measuring errors due to too short conditioning time
- The following chart displays the effects of a temperature difference of 1°C:

Rel. F	10°C	20°C	30°C
10%	±0,7%	±0,6%	±0,6%
50%	±3,5%	±3,2%	±3,0%
90%	±6,3%	±5,7%	±5,4%

Illustration: Assuming a relative humidity of 50%, at room temperature a temperature difference between the measuring sensor and the ambient air of 1°C causes a measuring error of 3.2% r.h.; with a temperature difference of 3°C the measuring error is more than 10% r.h.

Installation of the transmitter

- Make sure that the cable for power supply resp. data transfer is not installed in the area of interference fields!
- Observe the permitted cross sections for the installation!
- In general it is necessary to keep the cable length as short as possible.
- If an extension of the feed cable is required, the cross section of the extension must not be lower than 0.25mm².
- Also the transmitter must not be operated in the area of electromagnetic interference fields.
- If the electronics housing and the electronic display unit are earthed, make sure that also a voltage equalising cable is installed.



Fitting of the sensor head

The measuring sensor has to be positioned at a representative place for collecting measuring values.

Don't twist off the sensor caps. Shifting the sensor head may endanger the leak tightness. In case of possibly emerging condensation water the sensor head has to be installed slightly upturned. This ensures that condensation water can drain off from the sensor head (sensor cap) down to the housing resp. cable and can drip off there.

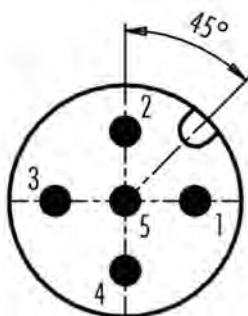
Installation of the plug

Colour of cable	Pin no.	function
brown	1	GND
white	2	12-29VDC power supply
blue	3	rel. humidity I_{out} 4-20mA
black	4	n.c.
grey	5	temperature I_{out} 4-20mA
yellow-green	housing	shielding

Attention!

Incorrect PIN assignments can cause serious damage to the electronics!

View from the outside of the plug:



- 1 braun/brown
- 2 weiß/white
- 3 blau/blue
- 4 schwarz/black
- 5 grau/grey





Disclaimer

For miss-readings and wrong measurements and of this resulting damage we refuse any liability. This is a device for quick determination of moisture. The moisture depends on multiple conditions and multiple materials. Therefore we recommend a plausibility check of the measuring results. Each device includes a serial number and the guarantee stamp. If those are broken, no claims for guarantee can be made. In case of a faulty device, please contact **Sensor Control GmbH**.



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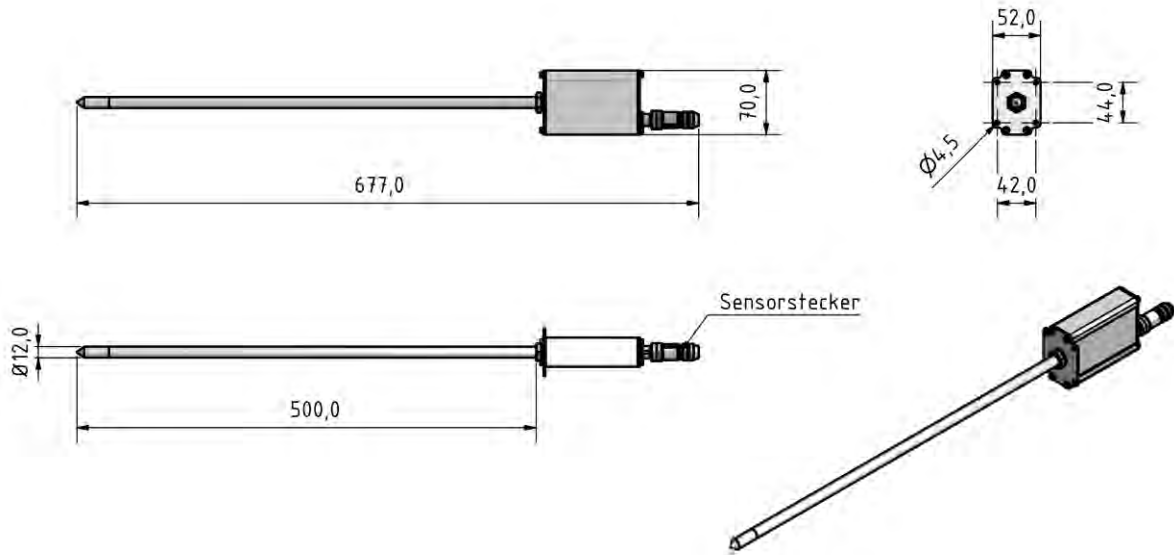


Technical Data and available accessories

type	LF 120	LF 150
article no.	1254011	1254012
measuring range		
relative air humidity	0 to 100 %	0 to 100 %
temperature	-20°C to +120°C	-20°C to +150°C
output		
relative air humidity	4 - 20mA	4 - 20mA
scaling air humidity	0 to 100 %	0 to 100 %
temperature	4 - 20mA	4 - 20mA
scaling temperature	-20°C to +120°C	-20°C to +150°C
working resistance	< 500 Ohm (UB 24V)	< 500 Ohm (UB 24V)
accuracy		
factory calibration		
relative air humidity	10 to 90%: ± 2.0 %	10 to 90%: ± 2.0 %
temperature	+10 to +60°C: ± 0.3 °C	+10 to +60°C: ± 0.3 °C
operating temperature		
sensor head	-20°C to +120°C	-20°C to +150°C
electronics	-20°C to +85°C	-20°C to +85°C
power supply		
voltage	24 VDC (12 to 29VDC)	24 VDC (12 to 29VDC)
current consumption	approx. 18 mA ¹⁾	approx. 18 mA ¹⁾
dimensions & others		
dimensions sensor head	Ø 12 x 500 mm	Ø 12 x 750 mm
material sensor head	stainless steel	stainless steel
sensor cap	stainless steel sinter	stainless steel sinter
dimensions electronics housing	70 x 32 x 120 mm	70 x 32 x 120 mm
material electronics housing	anodised aluminium	anodised aluminium
protection class	IP 65	IP 65
electronics housing		
electrical connection	sensor plug	sensor plug
options/accessories		
display		
relay output for moisture		
RS232 interface		
USB interface		
Bluetooth (only with USB interface)		
Profinet interface		
Ethernet interface		
Modbus interface		

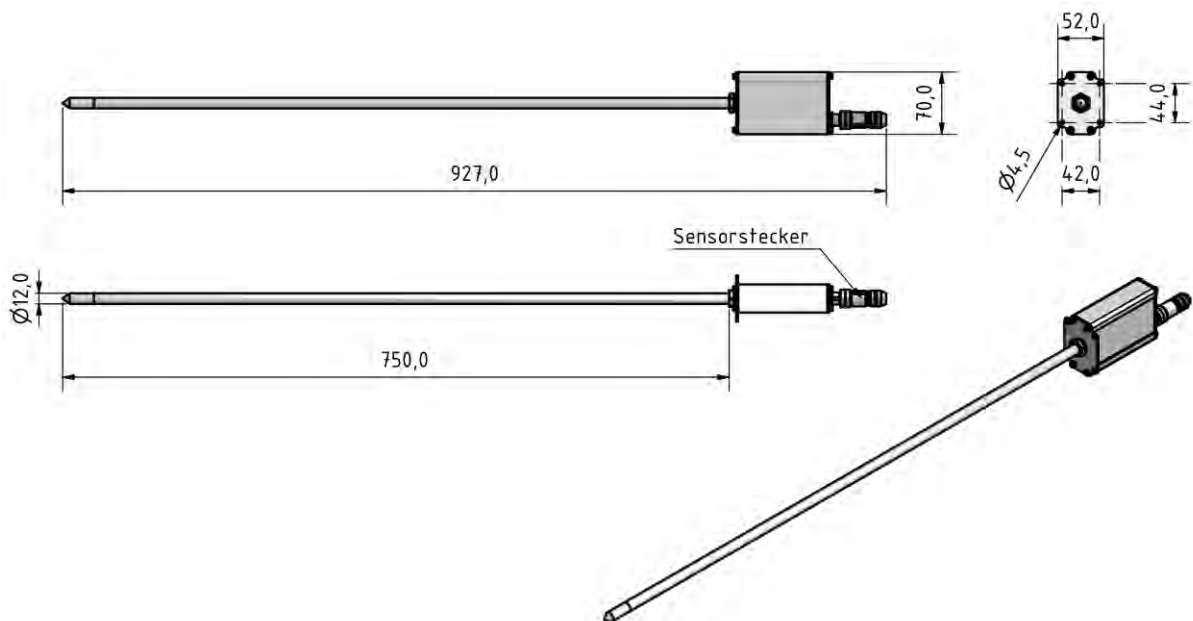


Technical drawing LF 120



(no original illustration, differences because of the type and version possible)

Technical drawing LF 150



(no original illustration, differences because of the type and version possible)



Calibration accessories

Calibration certificate, calibration equipment, certified calibration ampoules with 35%/50%/80% r.h., reference devices for continuous monitoring on request

IMPORTANT!

Common reasons for incorrect measurements

- Danger of condensation because of changing temperature (changing from cold to warm)
- Sunlight or other sources of heat or cold that do not correspond to the surrounding temperature
- Irreversible damage of the sensor due to aggressive gases
- Dripping or sprayed water
- Pollution of the sensor with dust or salts
- Foreign particles on the sensor
- Measuring errors due to too short conditioning time