# User manual
# technical specification

# Air humidity transmitter series

## LF-TD-ER
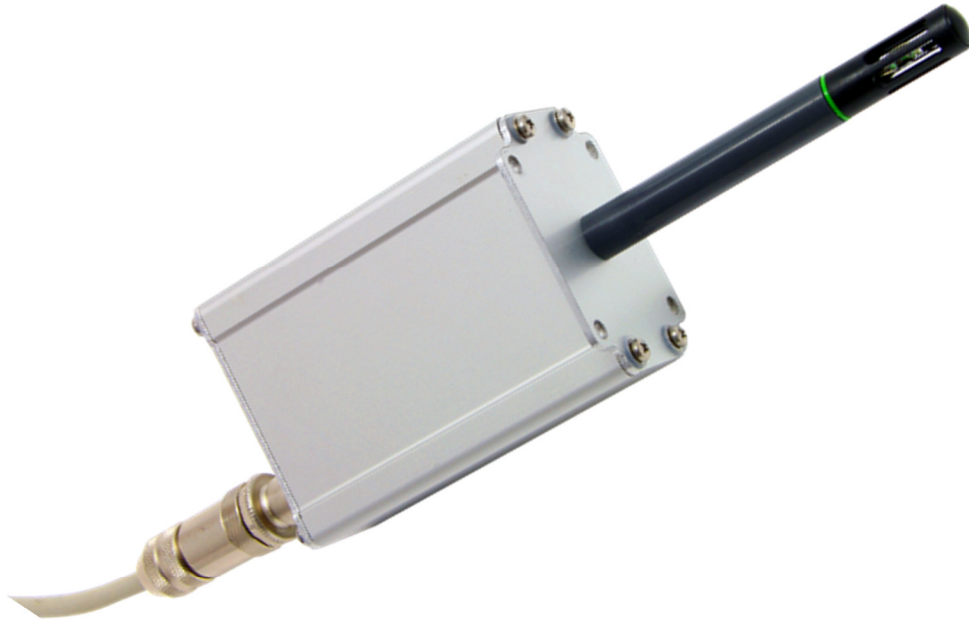
version 1.2
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# Air humidity and temperature transmitter

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

Input voltage 5VDC via USB mini-B jack.

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.**
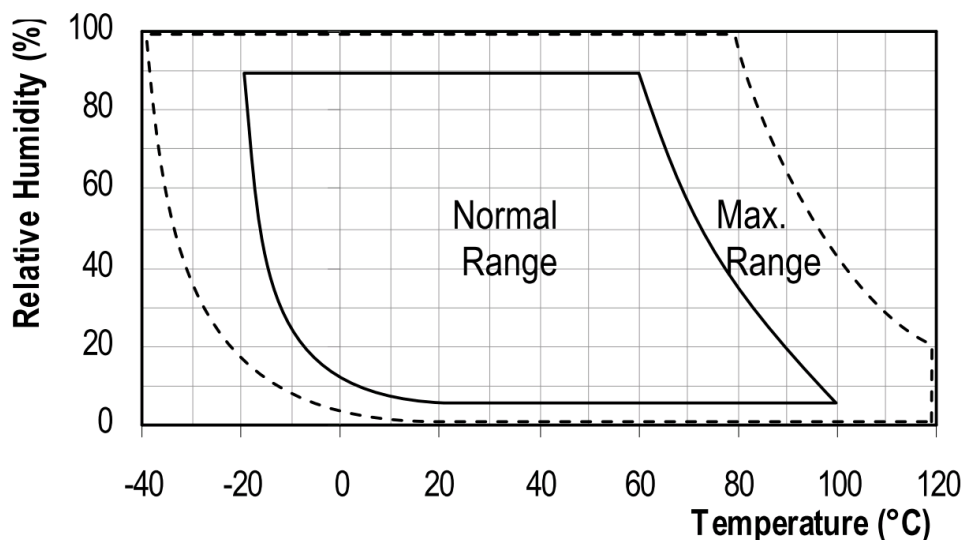


## Relative air humidity:

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.

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# 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:

| r.h. | 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.

## Mounting:

The delivered ferrite has to be mounted on the feed cable near the cable connection and has to be fixed using cable straps or something similar to prevent from shifting. The shield has to be earthed at the housing of the plug.

## 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.

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# Exemption from liability

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 Schaller GmbH (www.humimeter.com) or your retailer.

# Technical drawing LF-TD-ER
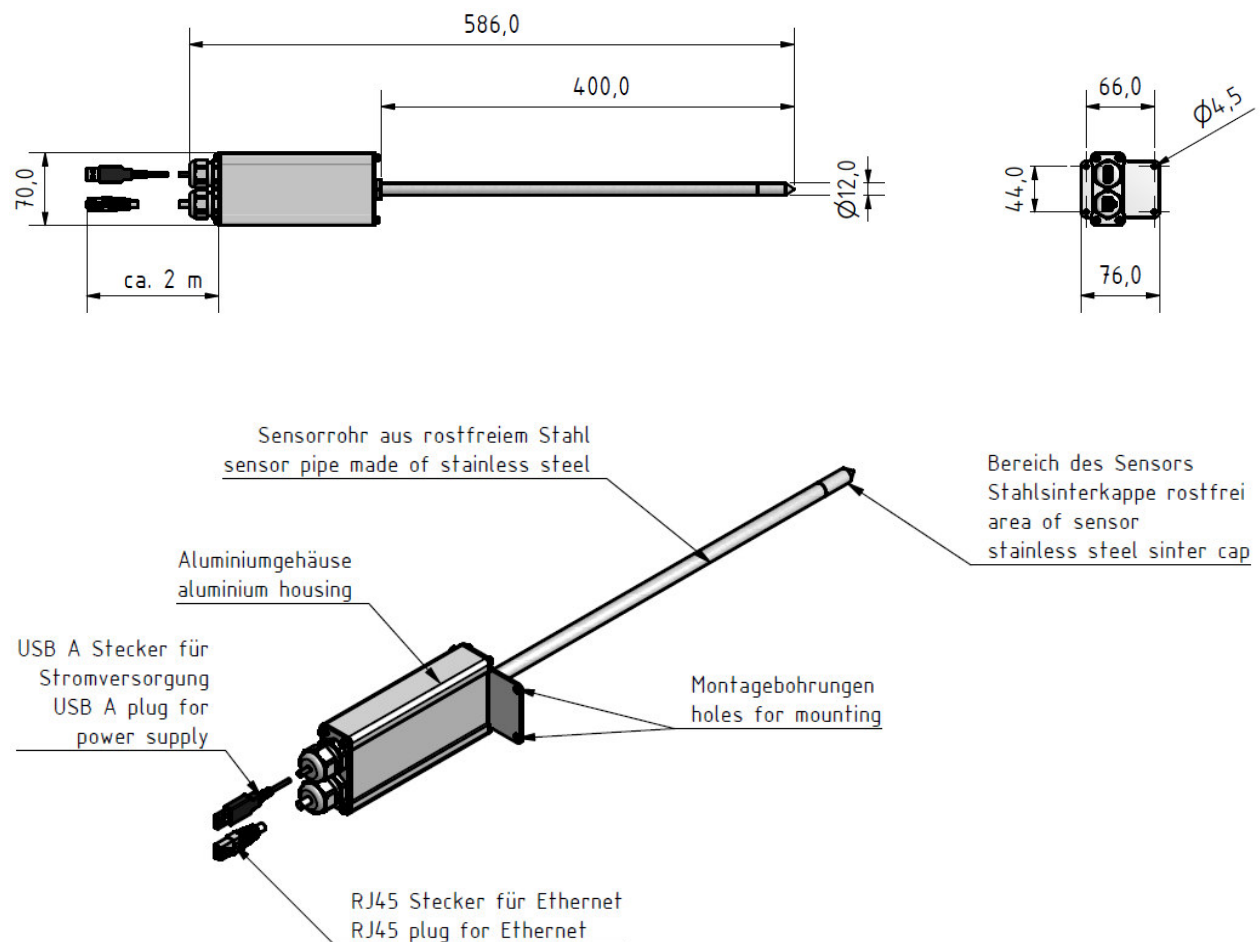


(no original illustration, differences because of the type and version possible)

# Technical data and available accessories

| type | LF-TD-ER |
|---|---|
| **article no.** | **13110** |
| | |
| **measuring range** | |
| relative air humidity | 0 to 100 % |
| temperature | -20°C to +90°C |
| **output** | |
| connector | 2m cable with RJ-45 plug |
| **accuracy factory calibration** | |
| relative air humidity | 10 to 90%: ± 2.0 % |
| temperature | +10 to +60°C: ± 0.3 °C |
| **operating temperature** | |
| sensor head | -20°C to +90°C |
| electronics | -20°C to +85°C |
| **power supply** | |
| voltage | 5VDC via USB-mini B |
| current consumption | 300mA |
| **dimensions & others** | |
| dimensions sensor head | Ø 12 x 400mm |
| material of sensor head | stainless steel |
| dimensions electronics housing | 70 x 32 x 120 mm |
| Dimensions LF-TD-ER | 586 x 76 x 70 mm |
| material electronics housing | anodised aluminium |
| protection class electronics housing | IP 65 |
| electrical connection | 2m USB with mini-B plug |

# Calibration accessories:

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

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# 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

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