

Outdoor Sensor Humidity, Temperature active with weather shield

Active humidity and temperature sensor (0...10 V) for outside applications. The radiation shield protects the outside sensors from rain and radiated heat. With the curved shape and color of the plates air flow is able to move across the sensors to keep radiated temperatures from rooftops and surrounding surfaces from affecting humidity readings.



Type Overview

| Type | Output signal active temperature | Output signal active humidity |
|------------|----------------------------------|-------------------------------|
| 22UTH-110X | DC 0...5 V, DC 0...10 V | DC 0...5 V, DC 0...10 V |

Technical Data

| | | |
|------------------------|---------------------------|--|
| Electrical data | Power supply DC | 15...24 V, ±10%, 0.4 W |
| | Power supply AC | 24 V, , ±10%, 0.8 VA |
| | Electrical connection | Removable spring loaded terminal block max. 2.5 mm ² |
| Functional data | Cable entry | Cable gland with strain relief Ø6...8 mm |
| | Sensor Technology | Polymer capacitive sensor with stainless steel wire mesh filter |
| | Multirange | 4 measuring ranges selectable |
| | Output signal active note | Output DC 0...5/10 V with Jumper adjustable Voltage output: min. 10 kΩ load |
| | Application | Air |

| | | | | |
|-----------------------------|---|--|------------|----------------------------|
| Measuring data | Measuring values | Temperature Relative humidity Dew point Enthalpies Absolute humidity | | |
| | Measuring range humidity | 0...100% r.H. non-condensing | | |
| | Measuring range temperature | Active sensor: range selectable Attention: max. measuring temperature is restricted by max. fluid temperature (see Safety data) | | |
| | | Setting | range [°C] | range [°F] Factory setting |
| | | S0 | -40...60°C | -40...160°F |
| | | S1 | 0...50°C | 40...140°F |
| | | S2 | -15...35°C | 0...100°F |
| | | S3 | -20...80°C | 0...200°F ✓ |
| | Measuring range absolute humidity | adjustable at the transducer: 0...50 g/m ³ (default setting) 0...80 g/m ³ | | |
| | Measuring range enthalpy | 0...85 kJ/kg | | |
| Measuring range dew point | adjustable at the transducer: 0...50°C (default setting) -20...80°C | | | |
| Accuracy humidity | ±2% between 10...90% r.H. @ 21°C | | | |
| Accuracy temperature active | ±0.5°C @ 25°C [±0.9°F @ 77°F] | | | |
| Materials | Cable gland | PA6, white | | |
| | Housing | Cover: Lexan, white Bottom: Lexan, white Seal: 0467 NBR70, black UV resistant | | |
| Safety data | Ambient humidity | Short-term condensation permitted | | |
| | Medium humidity | Short-term condensation permitted | | |
| | Ambient temperature | -35...50°C [-30...120°F] | | |
| | Fluid temperature | -35...50°C [-30...120°F] | | |
| | Operating condition air flow | max. 12 m/s | | |
| | Protection class IEC/EN | III Safety Extra-Low Voltage (SELV) | | |
| | Protection class UL | UL Class 2 Supply | | |
| | EU Conformity | CE Marking | | |
| | Certification IEC/EN | IEC/EN 60730-1 | | |
| | Certification UL | cULus acc. to UL60730-1A/-2-9/-2-13, CAN/CSA E60730-1:02/-2-9 | | |
| | Degree of protection IEC/EN | IP65 | | |
| | Quality Standard | ISO 9001 | | |

Safety notes



This device has been designed for use in stationary heating, ventilation and air-conditioning systems and must not be used outside the specified field of application. Unauthorised modifications are prohibited. The product must not be used in relation with any equipment that in case of a failure may threaten humans, animals or assets.

Ensure all power is disconnected before installing. Do not connect to live/operating equipment.

Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied during installation.

The device contains electrical and electronic components and must not be disposed of as household refuse. All locally valid regulations and requirements must be observed.

Remarks

General remarks concerning sensors

When using lengthy connection wires (depending on the cross section used) the measuring result might be falsified due to a voltage drop at the common GND-wire (caused by the voltage current and the line resistance). In this case, 2 GND-wires must be wired to the sensor - one for supply voltage and one for the measuring current.

Sensing devices with a transducer should always be operated in the middle of the measuring range to avoid deviations at the measuring end points. The ambient temperature of transducer electronics should be kept constant. The transducers must be operated at a constant supply voltage (± 0.2 V). When switching the supply voltage on/off, onsite power surges must be avoided.

Build-up of Self-Heating by Electrical Dissipative Power

Temperature sensors with electronic components always have a dissipative power which affects the temperature measurement of the ambient air. The dissipation in active temperature sensors shows a linear increase with rising operating voltage. The dissipative power should be taken into account when measuring temperature. In case of a fixed operating voltage (± 0.2 V) this is normally done by adding or reducing a constant offset value. As Belimo transducers work with a variable operating voltage, only one operating voltage can be taken into consideration, for reasons of production engineering. Transducers 0...10 V / 4...20 mA have a standard setting at an operating voltage of DC 24 V. That means, that at this voltage, the expected measuring error of the output signal will be the least. For other operating voltages, the offset error will be increased by a changing power loss of the sensor electronics. If a re-calibration should become necessary later directly on the sensor, this can be done by means of a trimming potentiometer on the sensor board.

Application Notice for Humidity Sensors

Refrain from touching the sensitive humidity sensor/element. Touching the sensitive surface will void warranty.

For standard environmental conditions the manufacturing accuracy specified in the datasheet will be covered by the calibration warranty for two years. When exposed to harsh environmental conditions such as high ambient temperature and/or high levels of humidity, or presence of aggressive gases (i.e. chlorine, ozone, ammonia) the sensor element may be affected and readings may be outside specified accuracy. Replacement of deteriorated humidity sensors due to harsh environmental conditions are not subject of the general warranty.

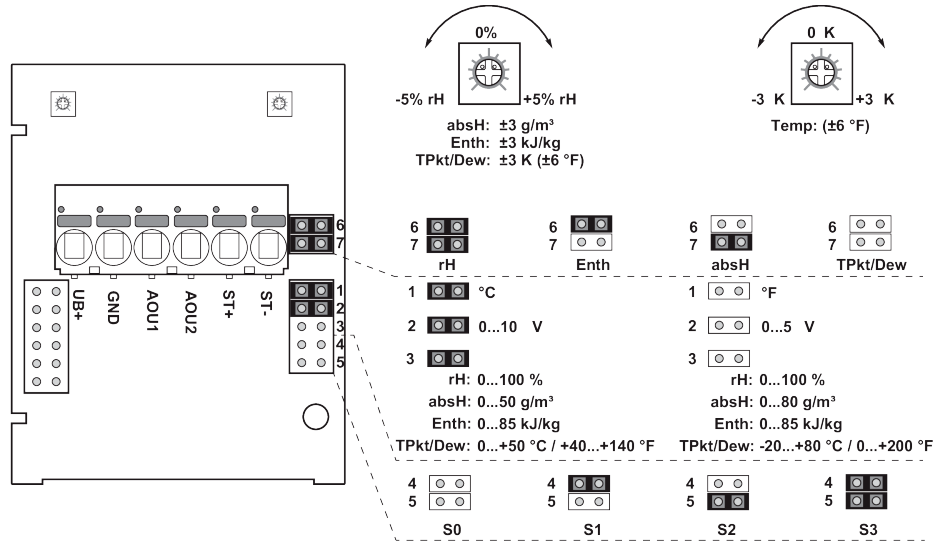
Scope of delivery

Dowel
Screws

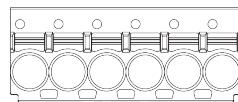
Accessories

| Optional accessories | Description | Type |
|----------------------|--|-----------|
| | Replacement filter, wire mesh, Stainless steel | A-22D-A06 |

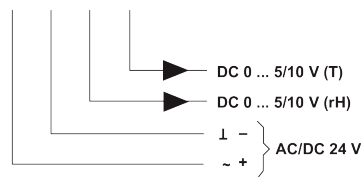
Wiring diagram



2 x 0...5/10 V



rH Relative humidity
absH Absolute humidity
Enth Enthalpy
TPkt/Dew Dew point
(Measurement value available on Output AOU1)



Connectors ST+ / ST- are only used for sensor types which additionally have a passive resistance sensor element for temperature measurement.

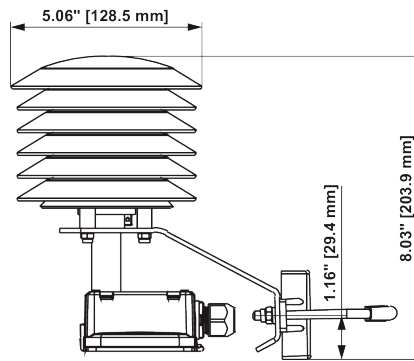
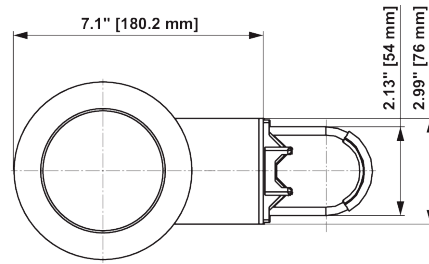
Correct temperature values are only available, when the humidity output AOU1 and both inputs UB + are connected.

The adjustment of the measuring ranges is made by changing the bonding jumpers. The output value in the new measuring range is available after 2 seconds.

| Setting | range [°C] | range [°F] | Factory setting |
|---------|------------|-------------|-----------------|
| S0 | -40...60°C | -40...160°F | |
| S1 | 0...50°C | 40...140°F | |
| S2 | -15...35°C | 0...100°F | |
| S3 | -20...80°C | 0...200°F | ✓ |

Dimensions

Dimensions



| Type | Weight |
|------------|---------|
| 22UTH-110X | 0.54 kg |