BELIMO

# Sensor Datasheet 22UTH-160X

**Outdoor Humidity, Temperature Sensor with weather shield**

**Protected humidity and temperature sensor 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. The measured values are transmitted over Modbus.**

5 YEAR WARRANTY

BACnet

## Type Overview

| Type | Output Signal | Output signal active temperature | Output signal active humidity |
|---|---|---|---|
| **22UTH-160X** | BACnet | 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%, 0.7 W |
| | Power Supply AC | 24 V, ±10%, 1.8 VA |
| | Electrical connection | Removable spring loaded terminal block max. 2.5 mm² |
| | Cable entry | Cable gland M20 2 x Ø6 mm, with strain relief 2 x Ø6 mm |
| **Functional data** | Sensor Technology | Polymer capacitive sensor with stainless steel wire mesh filter |
| | Communicative control | BACnet MS/TP (Details see seperate document "Sensor BACnet PICS") |
| | Output signal active note | Output DC 0...5/10 V selectable with switch |
| | Media | Air |
| **Measuring data** | Measured values | Temperature<br>Humidity<br>Dew point<br>Enthalpies<br>Absolute humidity |
| | Measuring range humidity | 0...100% rH<br>selectable via BACnet |
| | Measuring range temperature | -35...90 °C -31...194 °F selectable via BACnet |
| | Measuring range absolute humidity | 0...80 g/m³<br>selectable via BACnet |
| | Measuring range enthalpy | 0...85 kJ/kg<br>selectable via BACnet |
| | Measuring range dew point | -20...80 °C<br>selectable via BACnet |
| | Accuracy humidity | ±2% between 10...90% r.H. @ 21 °C |
| | Accuracy temperature | ±0.5 °C @ 25 °C |
| | Accuracy temperature | ±0.5 °C @ 25 °C |
| | Operating condition air flow | max. 12 m/s |
| **Materials** | Cable gland | PA6, white |
| | Housing | Cover: Lexan, white<br>Bottom: Lexan, white<br>Seal: 0467 NBR70, black |

**Safety data**

| | |
|---|---|
| Ambient humidity | 85% r.H., non-condensing |
| Ambient temperature | -20...50 °C [-5...122 °F] |
| Medium temperature | -20...80 °C [-5...175 °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 and IEC/EN 60730-2-13 |
| Certification UL | pending |
| Degree of protection IEC/EN | IP65 |
| Degree of protection NEMA/UL | NEMA 4X |
| Quality Standard | ISO 9001 |
| Weight | 0.24 kg |

## Safety notes

The installation and assembly of electrical equipment should only be performed by authorized personnel.

The product should only be used for the intended application. Unauthorised modifications are prohibited! The product must not be used in relation with any equipment that in case of a failure may threaten, directly or indirectly, human health or life or result in danger to human beings, animals or assets. Ensure all power is disconnected before installing. Do not connect to live/operating equipment.

Please comply with
- Local laws, health & safety regulations, technical standards and regulations
- Condition of the device at the time of installation, to ensure safe installation
- This data sheet and installation manual

## Remarks

**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. This 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 sensor due to harsh environmental conditions are not subject of the general warranty.

## Accessories

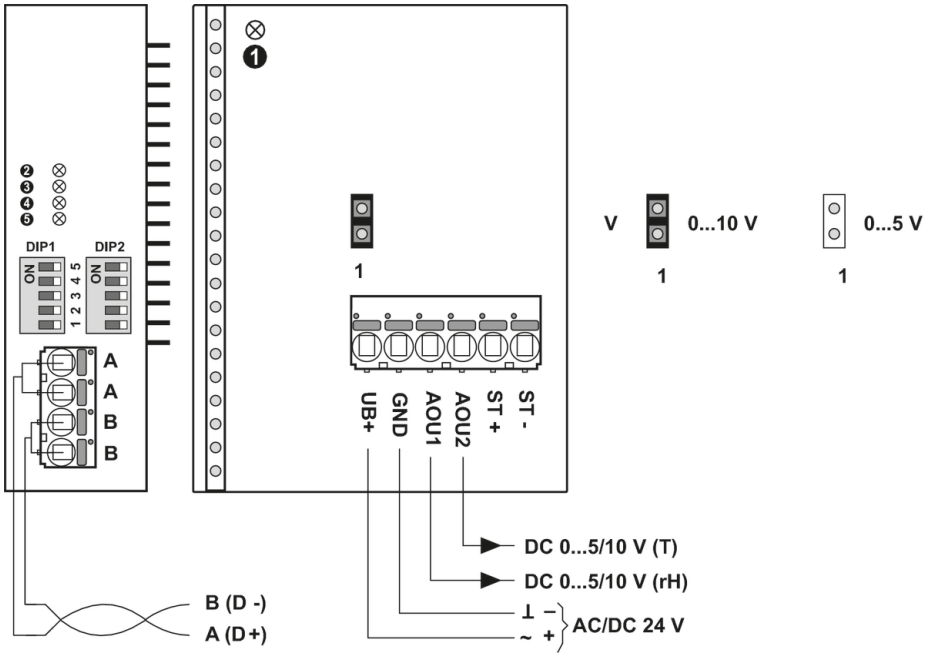
**Scope of delivery**

Dowel
Screws
Cable Gland Nut PG11, Ø6...10 mm
Strain relief Ø6...8 mm

**Optional accessories**

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

## Wiring diagram




① and ⑤: Status LED
② red: Error
③ yellow: Tx
④ yellow: Rx

**Detailed documentation**

The separate document, BACnet PICS, informs about the PICS, MAC addressing and bus Termination (DIP1 & DIP2).

**Notes Wiring RS485**

Connection via safety isolating transformer.

Parallel connection of other actuators possible. Observe the performance data.

The wiring of the line for Modbus (RTU) / BACnet (MS/TP) is to be carried out in accordance with applicable RS485 regulations.

Modbus / BACnet: Supply and communication are not galvanically isolated. Connect earth signal of the devices with one another.

## Dimensions