

Outdoor Humidity, Temperature Sensor with weather protection

Active sensor (0...10 V) for measuring the relative or absolute humidity and temperature in outdoor areas. Instead of the humidity signal, the enthalpy or the dewpoint can be selected as an output signal. NEMA 4X / IP65 rated enclosure.


Type Overview

Type	Output signal active temperature	Output signal active humidity	Output signal passive temperature
22UTH-11	DC 0...5 V, DC 0...10 V	DC 0...5 V, DC 0...10 V	-
22UTH-110M	-	DC 0...5 V, DC 0...10 V	NTC10k Pre (10k3)

Technical Data

Electrical data	Power Supply DC	15...24 V, ±10%, 0.3 W			
	Power Supply AC	24 V, ±10%, 0.5 VA			
	Electrical connection	Removable spring loaded terminal block max. 2.5 mm ²			
	Cable entry	cable gland PG11 Ø6...10 mm, with strain relief Ø6...8 mm			
Functional data	Sensor Technology	Polymer capacitive sensor with stainless steel wire mesh filter			
	Output signal active note	Output DC 0...5/10 V with Jumper adjustable Voltage output: min. 10 kΩ load			
	Media	Air			
Measuring data	Measured values	Temperature Humidity Dew point Enthalpies Absolute humidity			
	Measuring range humidity	0...100% rH non-condensing			
	Measuring range temperature	Passiv Sensor: depending on sensor type range selectable			
		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% rH @ 21 °C				
Accuracy temperature	±0.5 °C @ 25 °C NTC10k Pre (10k3): ±0.2 °C @ 25 °C				

Materials	Cable gland	PA6, white
	Housing	Cover: Lexan, white Bottom: Lexan, white Seal: 0467 NBR70, black
Safety data	Ambient Temperature	-20...50 °C [-5...122 °F]
	Medium temperature	-20...80 °C [-5...175 °F]
	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

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
General remarks concerning sensors

Due to self-heating with 2 wire passive sensors, the supply wire current affects the measurement accuracy, so it should not exceed 1 mA.

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 the 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. 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

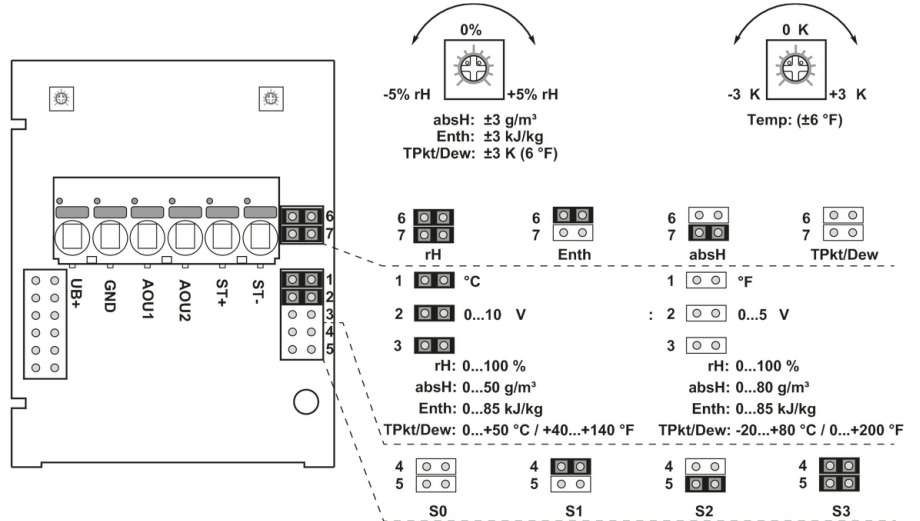
Refrain from touching the sensitive humidity sensor/element. Touching the sensitive surface will void warranty.

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

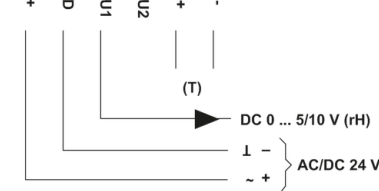
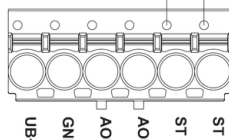
Scope of delivery Mounting plate
Dowel
Screws
Rain cover

Wiring diagram

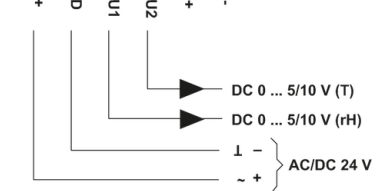
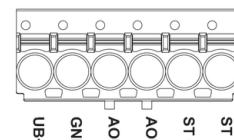


rH Relative humidity
absH Absolute humidity
Enth Enthalpy
TPkt/Dew Dew point

22..TH-..1..
0...5/10 V + ST



22..TH-..1..
2 x 0...5/10 V



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

