



**HRTT 010**  
ABS plastic enclosure without LCD display



**HRTT 010 SS**  
stainless steel enclosure

stainless steel enclosure, vandalism secure version  
for schools, military barracks and public buildings

**Features**

- **Outputs**
  - Humidity and temperature  
2 x 0-10 Vdc or 2 x 4-20 mA
  - On request passive (direct) temperature output  
PT100, PT1000, Nickel, NTC 10K, NTC 1.8K, NTC 20K etc.
- **Measuring ranges**
  - Humidity 0 to 100% r.H.
  - Temp. 0 to +50°C
- **Accuracy**
  - Humidity +/- 3% (20 to 80% r.H.), @ +20°C,  
otherwise +/- 5%
  - Temp. +/- 0.8K @ +20°C
- Digital humidity sensor with integrated temperature sensor
- Dew-proof
- Small hysteresis
- High long-term stability
- With or without LCD display (ABS plastic enclosure)
- Stainless steel enclosure,  
vandalism secure version  
for schools, military barracks and public buildings

**Ordering**

Type no.	Humidity output	Temp. output	Enclosure	LCD display
<b>HRTT 010</b>	0-10 Vdc	0-10 Vdc	ABS plastic	no
<b>HRTT 420</b>	4-20 mA	4-20 mA	ABS plastic	no
<b>HRTT 010D</b>	0-10 Vdc	0-10 Vdc	ABS plastic	yes
<b>HRTT 420D</b>	4-20 mA	4-20 mA	ABS plastic	yes
<b>HRTT 010 SS</b>	0-10 Vdc	0-10 Vdc	stainless steel	no
<b>HRTT 420 SS</b>	4-20 mA	4-20 mA	stainless steel	no

On request, extra passive output such  
PT100, PT1000, NI1000, NTC 1.8K, NTC 10K, NTC 20K.  
Ordering example: HRTT 010 PT1000.

**Technical data**

<b>Measuring range humidity</b>	0 to 100% r.H. (output corresponding to 0-10 Vdc or 4-20 mA)
<b>Operation range humidity</b>	0 to 95% r.H. (non-precipitating air)
<b>Accuracy humidity</b>	+/-3 % r.H. (20 to 80% ) @ +20°C, otherwise +/-5%
<b>Output humidity</b>	0-10 Vdc or 4-20 mA, see ordering. working resistance < 800ohm, see loading resistance diagram
<b>Measuring range temp.</b>	0 to +50°C (output corresponding to 0-10 Vdc or 4-20 mA or Ohm value)
<b>Operation range temp.</b>	0 to +50°C
<b>Accuracy temp.</b>	+/-0.8K @ +20°C, under standard conditions
<b>Output temp.</b>	0-10 Vdc or 4-20 mA or Ohm value
<b>Ambient range temp.</b>	-25 to +50°C (storage) -5 to +55°C (working)
<b>Power supply</b>	24 Vac (+/-20%) or 15-36 Vdc (+/-10%) for 0-10 Vdc output versions 15-36 Vdc (+/-10%) for 4-20 mA output versions (depending on working resistance)
<b>Power consumption</b>	< 1.1 VA / 24Vdc: < 2.2 VA / 24 Vac
<b>Long-term stability</b>	+/-1% per year
<b>Protection class</b>	III (according to EN 60730)
<b>Protection type</b>	IP30 (according to EN 60529)
<b>Standards</b>	CE conformity according to EMC directive 2004/108/EC according to EN 61326-1:2006 according to EN 61326-2-3:2006

**Application/Description**

The room humidity and temperature transmitter HRTT measures the relative humidity and temperature of air.

It converts the measurands humidity and temperature into standard signals of 0-10 Vdc or 4-20 mA and is optional available with or without display.

Display show actual humidity and actual temperature.

The elegant enclosure is made of plastic, with snap-on lid, base with 4-hole attachment for installation on vertically or horizontally installed in-wall flush boxes, with predetermined breaking point for on-wall cable entry.

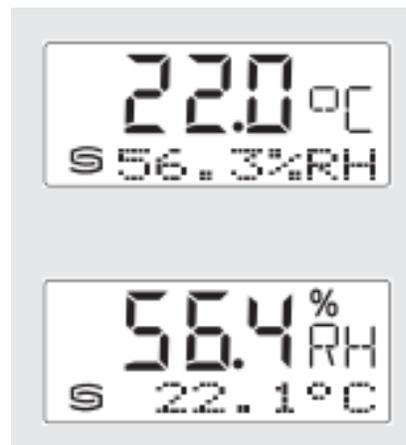
The enclosures can also be supplied stainless steel, top and bottom part are of stainless steel, the lid is screwed on, vandalism-secure version e.g. for schools, military barracks, and public buildings.

Relative humidity (in % r.H.) is the quotient of water vapour partial pressure divided by the saturation vapour pressure at the respective gas temperature.

HRTT are applied in non-aggressive dust-free ambiances in refrigeration, air conditioning, ventilation and clean room technology, in interior rooms such as residential rooms, offices, hotels, technical rooms, meeting rooms and convention centres.

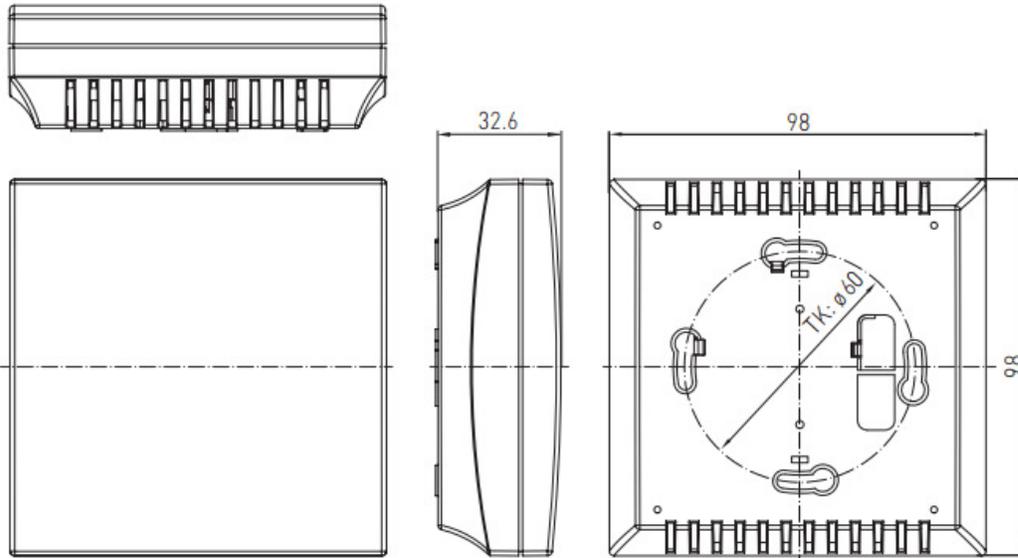
These measuring transducers are designed for exact detection of air temperature and humidity.

A digital long-term stable sensor is used as measuring element for humidity and temperature measurement.

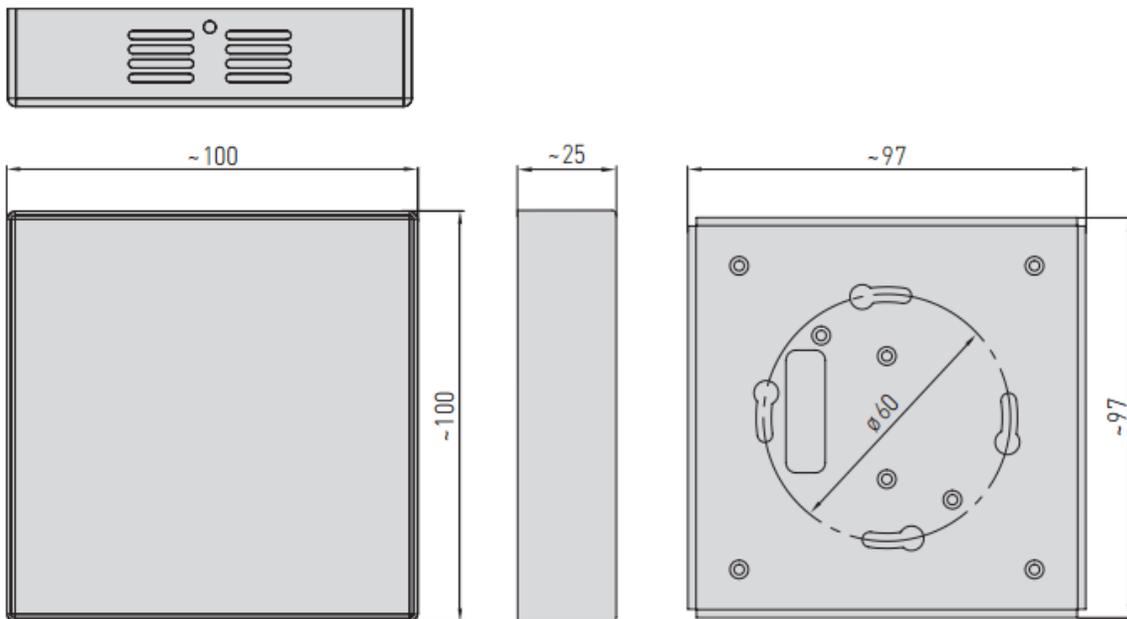
**Display, connection and readout**


The two-line display readout switches between the ACTUAL humidity reading in % r. H. and the ACTUAL temperature reading in °C. Backlighting is installed for better instrument readability.

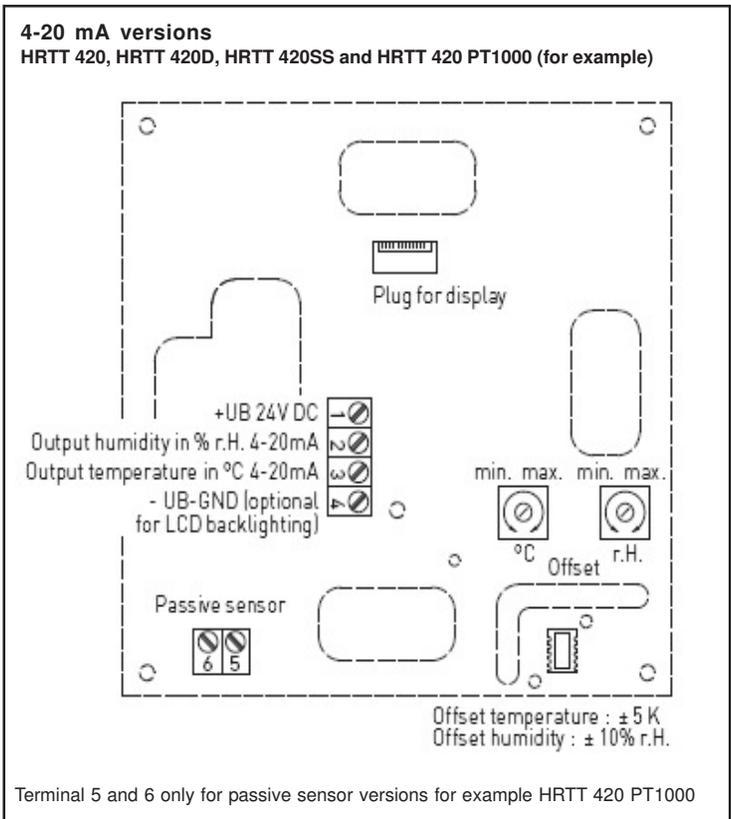
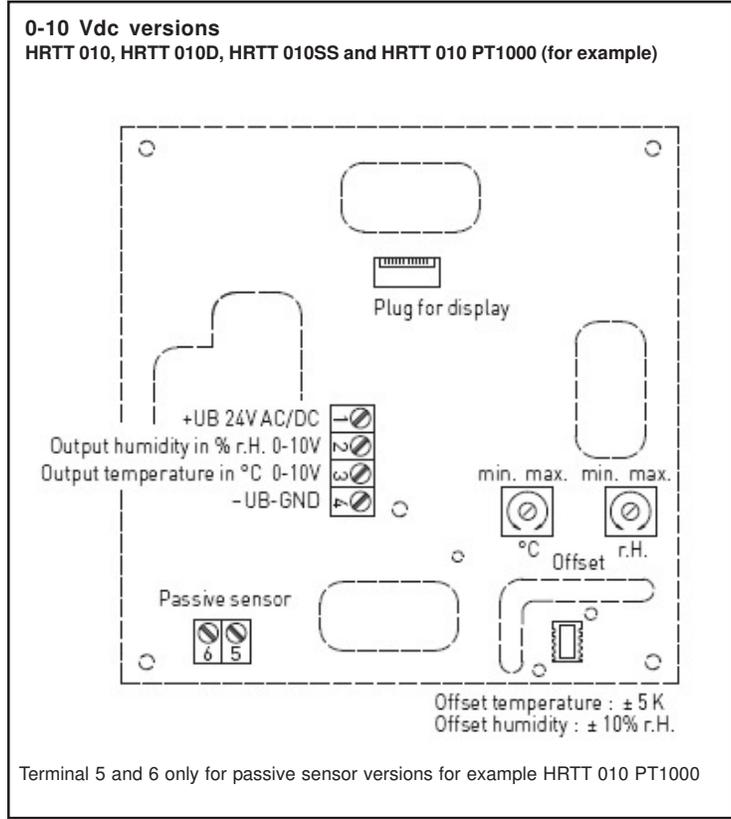
**Dimensions in mm for ABS plastic housing**



**Dimensions in mm for stainless steel housing**



**Electrical connections**



**Humidity schedule**

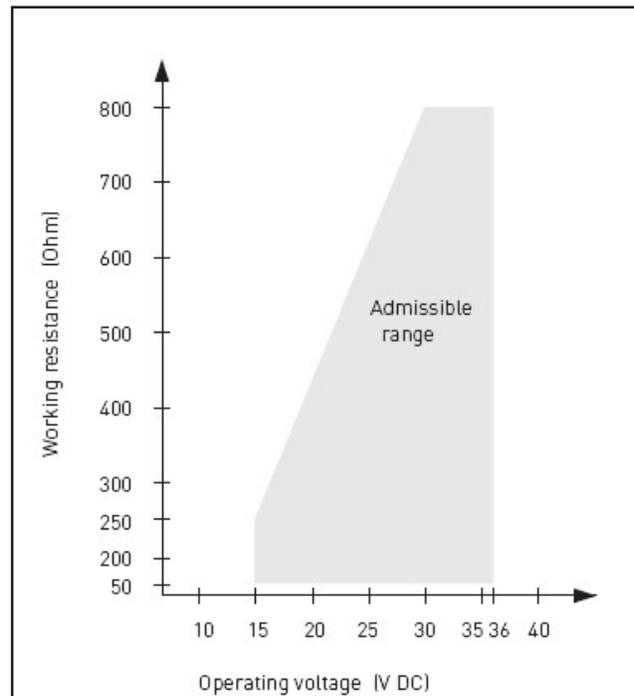
% r. H.	V	m A
0	0	4,0
5	0,5	4,8
10	1,0	5,6
15	1,5	6,4
20	2,0	7,2
25	2,5	8,0
30	3,0	8,8
35	3,5	9,6
40	4,0	10,4
45	4,5	11,2
50	5,0	12,0
55	5,5	12,8
60	6,0	13,6
65	6,5	14,4
70	7,0	15,2
75	7,5	16,0
80	8,0	16,8
85	8,5	17,6
90	9,0	18,4
95	9,5	19,2
100	10,0	20,0

**Temperature schedule**

°C	V	m A
0	0	4,0
5	1	5,6
10	2	7,2
15	3	8,8
20	4	10,4
25	5	12,0
30	6	13,6
35	7	15,2
40	8	16,8
45	9	18,4
50	10	20,0

See separate schedule for passive sensors, temperature vs resistance schedule.

**Loading resistance diagram**



**Note**

For 4-20 mA devices, DC voltage must be used (without residual ripple, see permissible range of load resistance diagram). Do not use pulsating DC voltage.

**Notes regarding products HRTT**

This device may only be used in non-precipitating air without any above-atmospheric or below atmospheric pressure at the sensor element.

Dust and contamination distort the measurement result and are to be avoided.  
Minor contaminations and dust deposits can be removed using compressed air.

Touching the humidity sensor element must absolutely be avoided as this would cause significant measurement errors.

In case of contamination we recommend cleaning and recalibration at the factory.

Chemicals or other cleaning agents must under no circumstances get onto the sensor.

Relative humidity in the range of 0 to 100 % is indicated by the output signal of 0-10 Vdc or 4-20 mA.  
The operating range of the device comprises 0.0 to 95.0 % r.H.; beyond that range measurement errors respectively deviations increased may occur.

When connecting several sensors (0-10 Vdc) to one common power supply of 24 Vac (alternating voltage) correct polarity must be observed as otherwise the alternating voltage source may be short-circuited.

The voltage outputs are short-circuit proof, applying overvoltage at the voltage output can destroy the device.

If these devices are operated beyond the specified range, all warranty claims are forfeited.

We reserve the right to make changes in our products without any notice which may effect the accuracy of the information contained in this leaflet.