

## RH-600

### Duct, Wall & Outside RH & T Sensors



#### Features:

- $\pm 2\%$  and  $\pm 3\%$  Accuracy Versions
- Snap fit cover
- Fully configurable LCD Display
- Direct thermistor temperature options available

#### Benefits:

- High stability & reliability
- Long term stability
- 4-20mA, 0-5Vdc and 0-10Vdc outputs for compatibility with a wide range of controllers

#### Technical Overview

The RH-600 range of humidity and temperature sensors offer the latest technology high precision and accuracy RH & T element, and installed in our robust 600 series housing. The housing has an added benefit of being easy to install with the hinged lid, which can also be screwed closed to make the unit tamperproof.

An optional multi-line backlit LCD display is available, along with a direct PTC/NTC sensing element. Also a custom output range for temperature can be requested, between  $-20^{\circ}\text{C}$  and  $+50^{\circ}\text{C}$ .

## Specification:

## Part Codes:

### Outputs:

Voltage	0-10Vdc or 0-5Vdc
Current	4-20mA
(optional -T)	PTC/NTC resistive sensing element

### Output ranges:

RH	0 to 100%
Temperature	-20 to +50°C (standard) -TR in range of -20 to +50°C
Enthalpy	-20 to +250 kJ/kg
Dew point	-50 to +50°C

### Accuracy:

RH-6xx-AH	±2% (20 to 80%RH)
RH-6xx	±3% (20 to 80%RH)
Temp.	±0.3°C (between +20 & 40°C)
RH-6xx-EN:	
Dew point	1.2°C typical (4°C max)
Enthalpy	1.8kJ/kg typical (27kJ/kg max)

### Long term stability

<0.5% RH p.a.

### Power Supply:

Voltage	12-26Vac or 16-26Vdc @60mA max.
Current	20-26Vdc only @70mA max.

### Ambient:

Temperature	-30 to 70°C (-22 to 158°F)
RH	0 to 95% RH, non-condensing

### Housing:

Material	ABS (flame retardant)
Dimensions	116 x 106 x 52mm

### Probe:

Material	Probe, PVC - End cap, Delrin
Dimensions;	
RH-622	210 x 19mm dia.
RH-631	90 x 19mm dia.
RH-632	200 x 118mm dia. (Shield)

### Protection:

RH-622	
Snap-shut lid	IP54 IP65 (see page 3 note 7)
RH-631	IP54
RH632	IP65 (see page 3 note 7)

### Country of origin

UK

### Duct

#### RH-622-AH

Duct RH & T transmitter ±2%

#### RH-622

Duct RH & T transmitter ±3%

#### RH-622-EN

Duct Enthalpy & Dew point transmitter

### Wall

#### RH-631-AH

Wall RH & T transmitter ±2%

#### RH-631

Wall RH & T transmitter ±3%

#### RH-622-EN

Wall Enthalpy & Dew point transmitter

### Outside

#### RH-632-AH

Outside RH & T transmitter ±2%

#### RH-632

Outside RH & T transmitter ±3%

#### RH-622-EN

Outside Enthalpy & Dew point transmitter

### Suffixes (add to part code)

**-T** Direct resistive temperature output

Thermistor types:

<b>A</b> (10K3A1)	<b>B</b> (10K4A1)	<b>C</b> (20K6A1)
<b>H</b> (SAT1)	<b>K</b> (STA1)	<b>L</b> (TAC1)
<b>M</b> (2.2K3A1)	<b>N</b> (3K3A1)	<b>P</b> (30K6A1)
<b>Q</b> (50K6A1)	<b>S</b> (SAT2)	<b>T</b> (SAT3)
<b>W</b> (SIE1)	<b>Y</b> (STA2)	<b>Z</b> (10K NTC)

Platinum types:

<b>D</b> (PT100a)	<b>E</b> (PT1000a)
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Nickel types:

<b>F</b> (NI1000a)	<b>G</b> (NI1000a/TCR (LAN1))
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**-LCD** Integral LCD

**-TR** Custom temperature output range scaling

### Accessory

**DPA** Duct probe adjustment flange (RH-622 only)



The products referred to in this data sheet meet the requirements of EU Directive 2004/108/EC

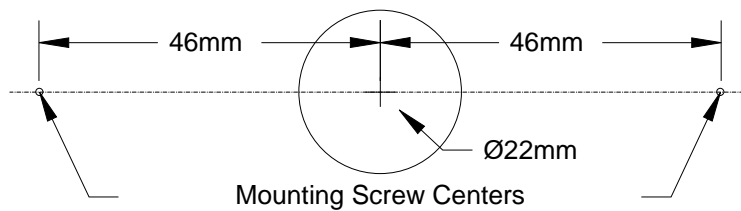
## Installation:



Antistatic precautions must be observed when handling these sensors. The PCB contains circuitry that can be damaged by static discharge.

### RH-622

1. Select a location in the duct where dust & contaminants are at a minimum (i.e. after filters etc.) and which will give a representative sample of the prevailing air condition.
2. Fix the housing to the duct with appropriate screws, or by using the optional duct mounting flange.



### RH-631

1. Select a location in the occupied space, or externally where contaminants are at a minimum, and which will give a representative sample of the prevailing room condition.
2. Fix the housing to the wall with appropriate screws.

### RH-632

1. Fix the radiation shield to a suitable mast using the U bolts supplied.
2. Insert the probe into the shield and tighten the gland (please see page 4 for notes on the shield).

### Common installation;

3. Release the snap-fit lid by gently squeezing the locking tab.
4. Feed the cable through the waterproof gland and terminate the cores at the terminal block (see page 4 for connection details). Leaving some slack inside the unit, tighten the cable gland onto the cable to ensure water tightness.
5. If the sensor is to be mounted outside, it is recommended that the unit be mounted with the cable entry at the bottom. If the cable is fed from above then into the cable gland at the bottom, it is recommended that a rain loop be placed in the cable before entry into the sensor.
6. Set jumper links according to output type required (see page 4 for jumper details).
7. Snap shut the lid after the connections have been made if IP65 protection is required, secure the lid with two screws provided.
8. Before powering the sensor, ensure that the supply voltage is within the specified tolerances.  
**Note:** When using the sensor with a 4-20mA output, it is important to make all electrical connections before applying the supply voltage. If the sensor is not connected in this sequence, then you may see a higher reading than expected (can be as much as 55mA).
9. Allow 3 minutes before checking functionality, and at least 30 minutes before carrying out pre-commissioning checks. This will allow the electronics time to stabilise.

To perform an accurate comparison between a transmitter output and a portable reference, it is essential that the two probes are held adjacent for a minimum of 30 minutes in a stable RH environment. Only in this way can speed of response and temperature factors be eliminated. It is not uncommon for test instruments and transmitters to disagree by 10% RH or more when site measurements are taken incorrectly. 'Slings' or other mechanical hygrometer should **not** be used as a reference.

## Connections & Jumper Settings:

Left Hand terminal Block:

<b>24V</b>	Supply + 24Vac or Vdc (see note below)
<b>GND</b>	Supply 0V
<b>OP1</b>	Temperature output (see J11 settings)
<b>OP2</b>	RH output
<b>GND</b>	Common 0V
<b>OP3</b>	Not used
<b>GND</b>	Common 0V
<b>OVRD</b>	Not used

Right Hand Terminal Block (if -T option is selected):

<b>T2</b>	Direct thermistor output only (other half of OP1 if J11 is set to T)
<b>MS1</b>	Not used
<b>MS2</b>	Not used
<b>P5</b>	Not used
<b>P6</b>	Not used
<b>P7</b>	Not used
<b>FS2</b>	Not used
<b>FS1</b>	Not used

### J1, J2, J3

These set the outputs to either voltage of current, V for voltage, I for current

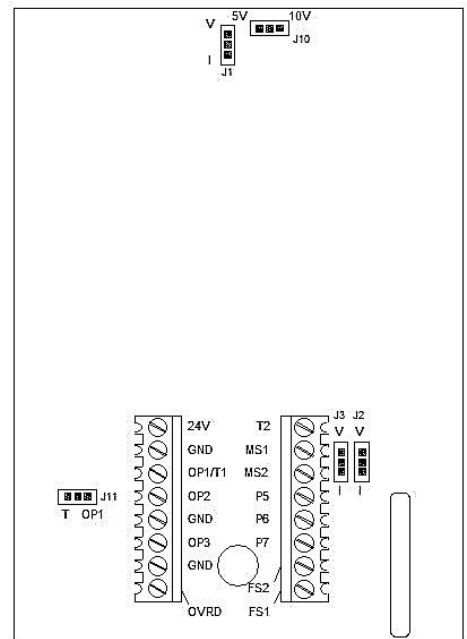
### J10

If the outputs are set to voltage (jumpers J1, J2 & J3 in the "V" position), the output can be set to either 0-10Vdc or 0-5Vdc.

### J11

Selects either active temperature output (current or voltage) or direct thermistor.

OP1	= active temperature output
T	= direct thermistor



### Notes

Voltage output Nominal voltage 24Vac/dc.

Current output If using in current output mode, the sensor must only be used with a 24Vdc supply. The sensor may be damaged if supplied with AC. Please see note in section 7 on previous page regarding connections.

If using the -LCD option, when in loop powered mode the back light will not be lit. The transmitter will require a 0V connection for the back light to work (3-wire).

-T Direct thermistor output (if fitted) is between terminals OP1 and T2, polarity is independent.

-EN Terminal OP1 = Dew point Terminal OP2 – Enthalpy

## Radiation Shield:

The plate profiles are shaped to allow the minimum restriction of airflow while providing the necessary shielding from solar radiation and precipitation.

All sensor shields produce an error due to temperature rise during high solar radiation; the error is reduced with higher wind speeds which provide ventilation. The figures given below are based on a radiation intensity of 1000W/m<sup>2</sup>; typical errors for the specified wind speeds would be:

0.4°C @ 3 m/s, 0.65°C @ 2 m/s, 1.4°C @ 1 m/s or slower.