RH-600

Duct, Wall & Outside RH & T Sensors

Features:

- ±2% and ±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°C and +50°C.

Sontays range of RH sensors are not suitable for use in swimming pool & spa applications. Sensors used in these types of applications are not covered under Sontays warranty terms.

Chemicals used in swimming pool & spas can contaminate the humidity element, which results in a reduced service life.

Specification:

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 (see notes on page 4)
- (no 0V): 20-26Vdc only @70mA max.
- (with 0V): 12-26Vac or 16-26Vdc @60mA 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

CE

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

Part Codes:

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-631-EN
Wall Enthalpy & Dew point transmitter

Outside

RH-632-AH
Outside RH & T transmitter ±2%

RH-632
Outside RH & T transmitter ±3%

RH-632-EN
Outside Enthalpy & Dew point transmitter

Suffixes (add to part code)

-T Direct resistive temperature output

Thermistor types:

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

Platinum types:
D (PT100a) **E** (PT1000a)

Nickel types:
F (NI1000a) **G** (NI1000a/TCR (LAN1))

-LCD Integral LCD
-TR Custom temperature output range scaling

Accessory

DPA Duct probe adjustment flange (RH-622 only)

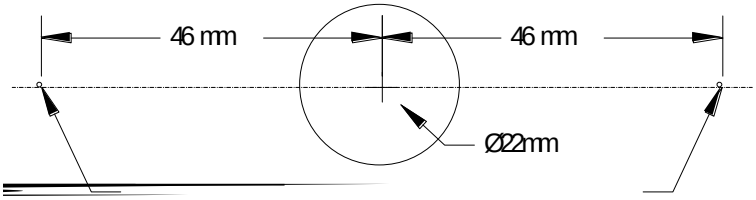
Installation:

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 the yellow dip-switches according to output type required (see page 4 for dip-switch 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.

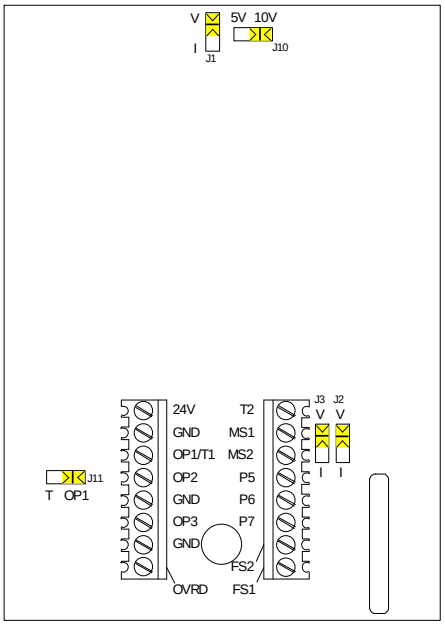
Connections & Jumper Settings:

Left Hand terminal Block:

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

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

T2	Direct thermistor output only (other half of OP1 if J11 is set to T)
MS1	Not used
MS2	Not used
P5	Not used
P6	Not used
P7	Not used
FS2	Not used
FS1	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	Loop powered (no 0V connection) 24Vdc supply ONLY. 3-wire (0V connection) 24Vac/dc Please see note in section 8 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/m²; 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.