RH-1000

Space Mounted RH & T Sensors

Features:

- ±2% and ±3% Accuracy Versions
- Multi-function sensor
- Fully configurable LCD Display
- Direct thermistor temperature options available
- Blends into the fabric of any building

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-1000 uses the latest high accuracy RH & T element, and offers options such as set point adjust momentary switch and fan speed selection, together with a multi-line backlit LCD display. A 0-10Vdc override status input option is also available, allowing occupancy indication on the display.

4-20mA, 0-10Vdc or 0-5Vdc outputs for temperature and RH are available as standard. A custom output range for temperature can be requested, between 0 and +50°C.

A directly connected passive thermistor temperature output is also available, as an alternative to the standard active temperature output.

Specification:

Outputs:
- Voltage: 0-10Vdc or 0-5Vdc
- Current: 4-20mA (loop powered)

Output ranges;
- RH: 0 to 100%
- Temperature: 0 to 40°C (standard)
  -TR in range of 0 to 50°C
- Enthalpy: -20 to +250 kj/kg
- Dew point: -50 to +50°C

Accuracy:
- RH-1000-AH: ±2% (20 to 80%RH)
- RH-1000: ±3% (20 to 80%RH)
- Temp.: ±0.5°C (between 20 & 40°C)
- RH-1000-EN:
- Dew point: 1.2°C typical (4°C max)
- Enthalpy: 1.8kj/kg typical (27kj/kg max)

Optional Passive Outputs:
- -T: Resistive, PTC & NTC types
- -SP: 0-10KΩ or 11-1KΩlinear ±30%
- -MS: VFC 24Vac/dc 50mA max.
- -FS: Resistive

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: 0 to 50°C
- RH: 0 to 95% RH, non-condensing

Housing:
- Material: ABS (flame retardant)
- Colour: Polished white finish

Dimensions: 115 x 85 x 28mm
Ambient range: -10 to 60°C
Protection: IP30
Country of origin: UK

CE

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

Part Codes:

RH-1000-AH
Space RH & T transmitter ±2%

RH-1000
Space RH & T transmitter ±3%

RH-1000-EN
Space 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))

*Interface Options (add to part code)*******

-SP	Resistive set point 0-10kΩ or 11-1kΩ
-FS3	Resistive 3-speed fan switch
-FS4	Resistive 3-speed fan switch
-FS5	Resistive 5-speed fan switch
-MS	Momentary switch

Accessories

DECOR	Decorators trim plate
GASKET	Insulating gasket (pack of 10)

****** Interface Restrictions
- SP only
- MS only
- SP-MS only
- SP-FS only

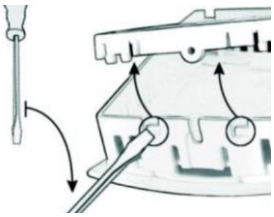
Note*:
When using the **-T** option, they are not compensated for internal heating.

Installation:

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

1. Select a location on a wall of the controlled space which will give a representative sample of the prevailing room condition. Avoid sitting the sensor in direct sunlight, on an outside wall or near heat sources. An idea mounting height is 1.5m from the floor.

2. Undo the tamperproof screw at the bottom of the housing, to remove the front panel from the base, twist a screwdriver as below and pull gently the front panel from the base.



3. Using the base as a template mark the hole centres and fix to the wall with suitable screws. Alternatively the base plate can be mounted on to a conduit box or standard recessed back box. The base plate is suitable for EU & North America fixings.

4. Feed cable through the hole in the base plate of the housing and terminate the cores at the terminal block as required. Leaving some slack inside the unit.

5. Set jumper links according to output type required (see page 4 for jumper details).

6. Replace the housing to the base plate and tighten the tamperproof screw (if required) through the lug at the bottom of the base plate.

7. 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 sequence, then you may see a higher reading than expected (can be as much as 55mA).

8. 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:

Left Hand terminal Block:

24V	Supply + 24Vac or Vdc
GND	Supply 0V
OP1	Temperature output (see J11 settings)
OP2	RH output
GND	Common 0v
OP3	Not used
GND	Common 0V
OVRD	0-10Vdc *input* to indicate occupancy or override. Note: that this can only be used if voltage output is used, as it needs a common 0V

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	Momentary switch VFC output
MS2	Momentary switch VFC output
P5*	Set point
P6*	Set point, wiper
P7*	Set point
FS2	Fan speed switch output, resistive
FS1	Fan speed switch output, resistive

Connections (continued):

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 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. When using the **-T** option, they are not compensated for internal heating.

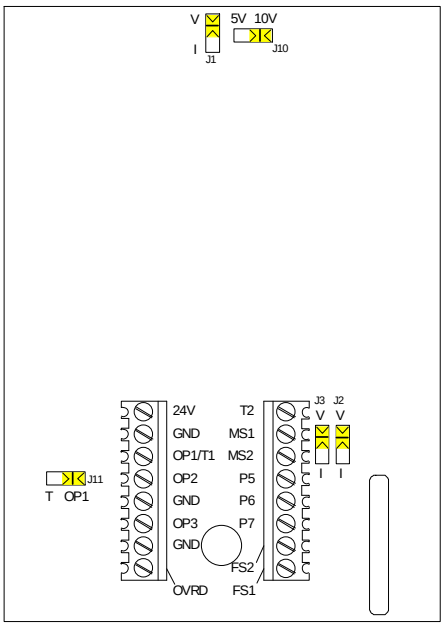
-EN — Terminal OP1 = Dew point Terminal OP2 – Enthalpy

-SP***** — 2-wire 11-1kΩ output is required use terminals P6 and P7
2-wire 0-10kΩ output is required, use terminals P5 and P6

Jumper Settings & Options:

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

Fan Speed *(if fitted)*
The position of the selector switch will cause the resistance between the terminals to alter as shown below.

Switch position	Output
0	Open circuit
1	22.7kΩ
2	26kΩ
3	29.3kΩ
Auto	32.6kΩ

Set point*(if fitted)*
This is available in two standard values:

-	+
0kΩ	10kΩ
11kΩ	1kΩ

Using an external 1kΩ resistor (not supplied) on the terminals 0-10kΩ, 1-11kΩ can be achieved if required.

Momentary switch *(if fitted)*
Rated at 24Vac/dc @ 500mA max.