



Features & Benefits

- $\pm 2\%$ and $\pm 3\%$ Accuracy Versions
- Fully configurable LCD Display
- Direct thermistor temperature options available
- High stability & reliability
- Long term stability

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.

Product Codes

RH-1000-AH	Space RH & T transmitter $\pm 2\%$
RH-1000	Space RH & T transmitter $\pm 3\%$
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)
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Nickel types:

F (NI1000a)	G (NI1000a/TCR (LAN1))
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Interface Options (add to part code)**

-SP	Resistive set point 0-10k Ω or 11-1k Ω
-FS3	Resistive 3-speed fan switch
-FS4	Resistive 4-speed fan switch
-FS5	Resistive 5-speed fan switch
-MS	Momentary switch
-LCD	Integral LCD

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.

Specification

Outputs:	
Voltage	0-10Vdc or 0-5Vdc
Current	4-20mA (loop powered)
Output ranges;	
RH	0 to 100%
Temperature	0 to 40°C
Enthalpy	-20 to +250 kJ/kg
Dew point	-50 to +50°C
Accuracy:	
RH-1000-AH	$\pm 2\%$ (20 to 80%RH)
RH-1000	$\pm 3\%$ (20 to 80%RH)
Temp.	$\pm 0.5^\circ\text{C}$ (between 20 & 40°C)
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	0-10K Ω or 11-1K Ω linear $\pm 30\%$
-MS	VFC 24Vac/dc 50mA max.
-FS	Resistive
Power Supply:	
Voltage	12-26Vac or 16-26Vdc @60mA max.
Current	
(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	RAL 9003 polished white finish
Dimensions	115 x 85 x 28mm
Ambient range	-10 to 60°C
Protection	IP30
Country of origin	UK



The products referred to in this data sheet meet the requirements of EU Directive 2014/30/EU

Installation



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

Note: 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.

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 and remove 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 and replace the housing to the base plate and tighten the tamperproof screw (if required) through the lug at the bottom of the base plate.
6. 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).
7. 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

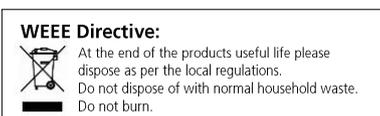
Right Hand Terminal Block (if -T option is selected);

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

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).



Jumper Settings & Options

J1, J2, J3

These set the outputs to either voltage or 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.

2-wire 11-1kΩ output is required use terminals P6 and P7

2-wire 0-10kΩ output is required, use terminals P5 and P6

Momentary switch (if fitted)

Rated at 24Vac/dc @ 500mA max.

Notes:

-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

