



Features and Benefits

- Slim design for room applications
- Easy installation with LED indication
- Supports 2-wire loop powering or 3-wire installation
- Built-in circuitry diagnostics
- Optional set point, momentary button and LCD available

Technical Overview

The RH-S series of precision humidity and temperature sensors are designed for accuracy and reliability. Choose from high ($\pm 2\%$) or standard ($\pm 3\%$) humidity accuracy, with optional resistive temperature output. Also available are enthalpy and dew point measurements, plus optional backlit LCD, setpoint adjustment, and momentary switch.

RH-S sensors can automatically select 4-20mA or 0-10Vdc outputs based on the controller input impedance in 3-wire mode, with easy DIP switch overrides and selectable 2-wire loop powering. Onboard LED indicators provide power status, output mode, and a handy self-test feature.

Product Codes

RH-S-AH	Space RH & T transmitter $\pm 2\%$
RH-S	Space RH & T transmitter $\pm 3\%$
RH-S-EN	Space Enthalpy & Dew point transmitter

Suffixes

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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-SP	Resistive set point 0-10k Ω or 11-1k Ω
-MS	Momentary switch
-LCD	Integral LCD
-TR	Custom temperature output range (between 0 & 50°C)
-5V	Output 0-5Vdc (instead of 0-10Vdc)
-BLK	Black housing (plain cover, no interface options)

Accessories

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

Note*:

When using the resistive output for temperature, they are **not** compensated for internal self heating.

Specification

Outputs:	3-wire	0-10Vdc (0-5V for -5V) or 4-20mA
	2-wire	4-20mA, loop powering
	(optional)	PTC/NTC resistive sensing element
Power Supply:		24Vac/dc $\pm 10\%$ (3-wire)
		24Vdc $\pm 10\%$ (2-wire)
Supply current:		30mA (3-wire) max.
Auto detection		4 minutes
Electrical connections		Pluggable spring loaded terminal block min. 0.2mm ² , max. 1.5mm ²
Output ranges;		
	RH	0 to 100%
	Temperature	0 to 40°C
	Enthalpy	-20 to +250 kJ/kg (-EN only)
	Dew point	-50 to +50°C (-EN only)
Environmental:		
	Housing:	-10 to 60°C
		0 to 95% non-condensing
Housing:		
	Material	ABS (flame retardant)
	Dimensions	115 x 85 x 30mm
Protection		IP30
Country of origin		UK
Conformity		EMC, CE & UKCA Marked

WEEE Directive:



At the end of the products useful life please dispose as per the local regulations. Do not dispose of with normal household waste. Do not burn.



Sensor Characteristics

Humidity

Measurement range	0 to 100% RH	
Type	ASIC	
Accuracy (20 to 80% RH):	Typical	Maximum
RH-S-AH	±2% RH	±3% RH
RH-S	±3% RH	±4% RH
Long term stability	<0.5% RH p.a.	
Response time	8 seconds (t 63%) @ 25°C 1 m/s Airflow	

Temperature

Measurement range	0 to 40°C
Accuracy (20 to 40°C)	±0.5°C
Long term stability	<0.02°C p.a.

Enthalpy

Measurement range	-20 to +250 kJ/kg
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Dew point

Measurement range	-50 to +50°C
Accuracy	1.2°C typical (4°C max)

Optional Passive Output

Type	Resistive PTC & NTC types
Accuracy:	
Thermistor	±0.2°C 0 to 70°C
Platinum types	±0.2°C @ 25°C
Nickel types	±0.4°C @ 25°C

Set point

Momentary switch	Resistive 0-10kΩ or 11-1kΩ ±30%
LCD	VFC 24Vac/dc 50mA max. Temp. & RH Temp., RH, DP and EN (-EN)

Installation

Handling & Precautions:

- Use **antistatic precautions** – static discharge can damage the PCB.
- **Do not use** in swimming pools or spas (chemicals shorten sensor life and void warranty).
- Mount on an **interior wall**, ~1.5 m high. Avoid sunlight, outside walls, and heat sources.
- Install **after construction/renovation** to avoid dust (warranty may be void if contaminated).

Installation Steps:

- 1) Remove tamperproof screw and front panel from the base.
- 2) Mount base (to conduit box, back box, or wall using base as template).
- 3) Feed cable through base and terminate wires (see "Electrical Connections").
- 4) Set PCB switch to 2-wire or 3-wire. Use A/B dipswitches to override auto detection (see "Selecting Output Mode").
Do not change while powered – may damage sensor or controller.
- 5) Connect outputs to controller and check supply voltage before powering.
- 6) Wait 4 minutes for initial check, 30 minutes before pre-commissioning

Calibration & Testing:

For accurate comparison with a reference, probes must be adjacent in a stable RH environment for at least 30 min. Avoid using mechanical hygrometers or "slings."

Terminal Block

Detachable for easy installation. For ferrules, no tools needed. For stranded wires, press the orange latch, insert the wire, and release.
Ensure the cable entry faces the sensor centre.

Electrical Connections

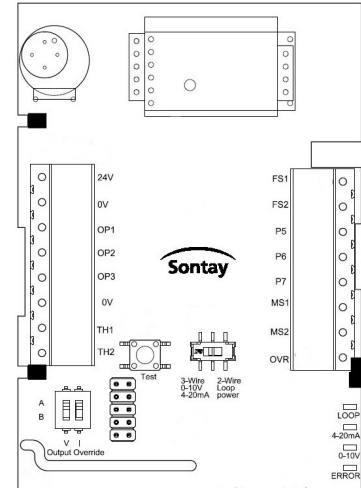
24V Supply 24Vac/dc
0V Supply 0V (Common 0V)
OP1 RH output (Enthalpy for -EN option)
OP2 Temp. output (Dew point for -EN option)
OP3 Not used
0V Not used
TH1 Direct Thermistor output (-T only)
TH2 Direct Thermistor output (-T only)

FS1 Not used
FS2 Not used
P5 Set point, 0 to 10k Ω
P6 Set point, wiper/common
P7 Set point, 11 to 1k Ω
MS1 Momentary switch
MS2 Momentary switch
OVR Override on LCD

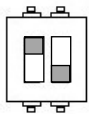
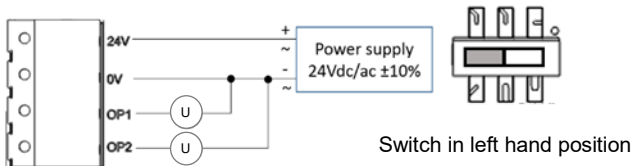
LED Indication:

LOOP Blue
4-20mA Yellow
0-10V Green
ERROR Red

Set Point Adjust		
	Anti-clockwise	Clockwise
P5 / P6	0k Ω	10k Ω
P6 / P7	11k Ω	1k Ω

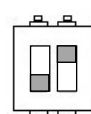
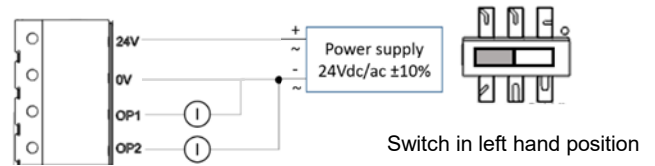


3-wire, 0-10Vdc / (0-5Vdc optional):



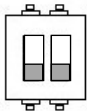
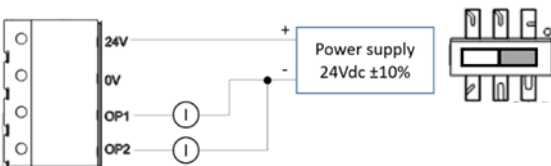
"V" (left) Switch UP

3-wire, 4-20mA:



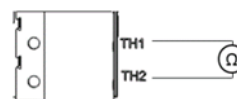
"I" (right) Switch UP

2-wire, 4-20mA:



"V & I" Switches DOWN

-T, direct resistive output:



Selecting Output Mode & LED Indication

Note: Power off before changing dip switches. Do **not** select 2-wire if 0V (3-wire) is connected, permanent damage may result.

3-Wire (Left Switch):

Auto-detect:

- Loads $>2.2k\Omega$ → 0-10Vdc (Green LED)
- Loads >50 & $<550\Omega$ → 4-20mA (Yellow LED)
- Loads $<50\Omega$ or $>550\Omega$ & $<2.2k\Omega$ → Outputs off (Red error LED)

Override DIP Switch:

- DIP1 ON → Voltage
- DIP2 ON → Current

If Sensor powered, reboots 5 seconds on change; error LED flashes.

2-Wire (Right Switch):

- Do **not** connect 0V
- **All** outputs must be connected
- Blue LOOP LED on

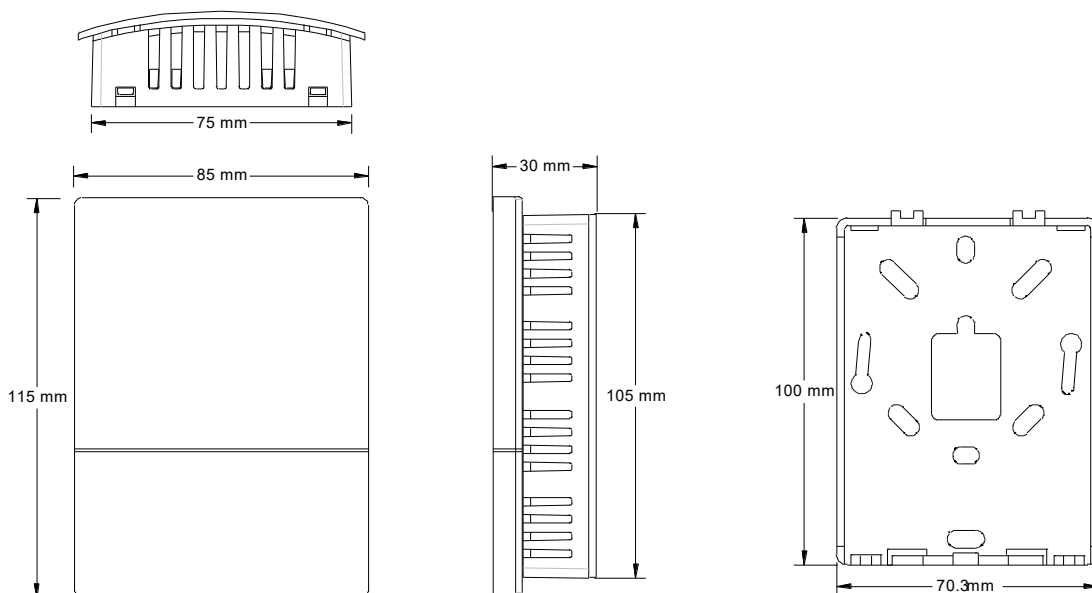
LEDs turn off after 15 minutes.

Self-Test Button

The self-test button allows the installer to verify wiring and commission the system. Pressing it cycles all outputs through 0%, 50%, 100%, then back to normal operation after 30 seconds.

Holding the button for over 3 seconds sets all outputs to 50%; releasing it returns them to normal operation.

Dimensions



Whilst every effort has been made to ensure the accuracy of this specification, Sontay cannot accept responsibility for damage, injury, loss or expense resulting from errors or omissions. In the interest of technical improvement, this specification may be altered without notice.