312-2939

Space Mounted RH & T Sensor

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Features & Benefits

- Slim design for room applications
- Easy installation with LED indication, test button and auto-output mode detection (3-wire)
- Supports 2-wire loop powering or 3-wire installation
- Pluggable terminal blocks and tool free installation

Technical Overview

The 312-2939 uses the latest high accuracy RH & T element. It allows effective control strategies to improve indoor environment, save energy and protect building fabric from moisture and condensation.

A valuable feature of this sensor is, when in 3-wire mode, it automatically detects the controller input type, 4-20mA or 0-10Vdc. This removes the requirement for output jumpers. 2-wire loop powered is selectable via a DIP switch. It also provides on-board LED indication for power up status and set output mode. The terminal blocks are pluggable and allow tool free installation (ferrules required).

Product Code

312-2939	Space RH & T transmitter ±3%

General Specification

Outputs:		
	0-10Vdc or 4-20mA	3-wire self-detecting
	4-20mA	2-wire, loop powering via DIP switch
Power Supply:	24Vac/dc ±10%	(3-wire)
	24Vdc ±10%	(2-wire)
Supply current:	max. 30mA (3-wire)	
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
Environmental:		
	Temperature	-10 to 60°C
	Humidity	0 to 95% non-condensing
Housing:		
	Material	ABS (flame retardant)
	Colour	RAL 9003 polished white finish
Dimensions	115 x 85 x 30mm	
Protection	IP30	
Country of origin	UK	

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.

CE

The product referred to in this data sheet meets the requirements of EU Directive 2014/30/EU

Sensor Characteristics

Humidity		
Measurement range	0 to 100% RH	
Type	ASIC	
Accuracy (at 25°C)	20 to 60% RH	10 to 90% RH
	±3% RH	±4% RH
Long term stability	<0.5% RH p.a.	
Response time	8 sec. (τ 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.
Response time	5 to 30 seconds (τ 63%)

Installation

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

This is not suitable for use in swimming pool & spa applications. Sensors used in these types of applications are not covered under the 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, unplug the terminal block from the PCB and terminate the cores at the loose terminal block. Leave some slack inside the unit as required.

5. Set the switch on the PCB either to the 3-wire or 2-wire position.

IMPORTANT! Do not alter the switch position while sensor is powered up. Do not select 2-wire if a 0v connection (3-wire) is made. Permanent damage to the sensor or BMS controller may result.

6. Plug the terminal block on the pins header on the PCB. Check polarity and orientation. Replace the housing to the base plate and tighten the tamperproof screw (if required) through the lug at the bottom of the base plate.

IMPORTANT! Make sure the Terminal Block is fitted the correct position and direction. The cable entry faces the centre of the sensor.

7. Connect all sensor outputs to the controller inputs or to the device, the sensor output(s) are connected to.

8. Before powering the sensor, ensure that the supply voltage is within the specified tolerances

IMPORTANT! It is important to make all electrical output connections before applying the supply voltage. If the sensor is not connected in this sequence, damage may be caused to the input circuitry of the controller or device the sensor output(s) are connected to.

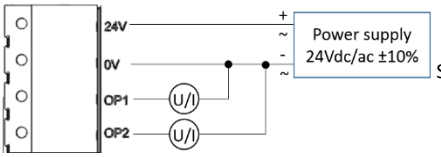
9. Allow 3 minutes before checking functionality, and at least 30 minutes before carrying out pre-commissioning checks. This will allow the electronics time to stabilise.

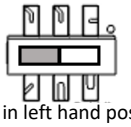
To perform an accurate comparison between a transmitter output and a portable reference, it is essential that the two probes are held adjacent for a minimum of 30 minutes in a stable RH environment. Only in this way can speed of response and temperature factors be eliminated. It is not uncommon for test 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.

Electrical Connections:

24V	Supply 24Vac/dc
0V	Supply 0V (Common 0V)
OP1	RH output
OP2	Temperature output

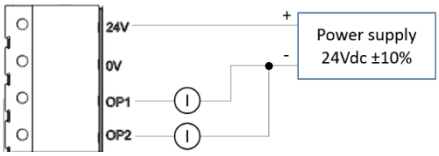
3-wire, 0-10Vdc or 4-20mA

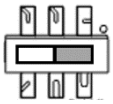




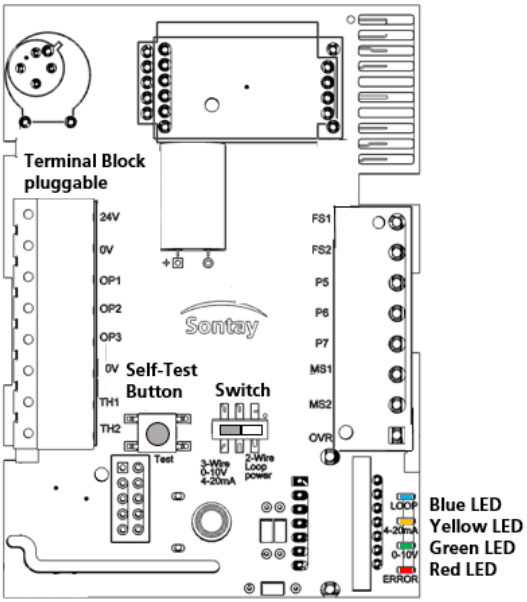
Switch in left hand position

2-wire, 4-20mA





Switch in right hand position



Terminal Block:

For easier installation, the terminal block can be detached from the PCB.

When used with ferrules it doesn't require any tools to release the spring loaded terminal block. When used with stranded cable, push in the orange latch to compress the spring load. Feed in the wire and release the spring to secure the wire connection.

IMPORTANT! Make sure the Terminal Block is fitted the correct position and direction. The cable entry faces the centre of the sensor.

Selecting output mode and LED indication:

IMPORTANT! Do not alter the switch position while sensor is powered up. Do not select 2-wire if a 0v connection (3-wire) is made. Permanent damage to the sensor or BMS controller may result.

3-wire connection:
Ensure there is no power to the sensor before changing the switch. Set the switch in the left hand position. The sensor automatically sets the outputs to 0-10V or 4-20mA based on the resistive load on the outputs. All outputs MUST be connected to the same type of load:

- If ALL the loads are >2k2Ω, all the outputs will be set to 0-10Vdc and the green 0-10V LED will light.
- If ALL the loads are >50Ω and <550Ω, all the outputs will be set to 4-20mA and the orange 4-20mA LED will light.
- If ANY of the loads are <50Ω or >550 and < 2k2Ω, all the outputs will be switched off and the red ERROR LED will light.

Output 1 is checked first, and if it has determined what this output is set to it will assume that all other enabled outputs are connected to similar loads. The LEDs will switch off after 15 minutes.

2-wire connection:
Ensure there is no power to the sensor before changing the switch and do not connect 0V. Set the switch in the right hand position. All outputs MUST be connected. The blue LOOP LED will light.

Self-Test Button:

The self-test button helps the installer to validate the wiring for each output and helps to commission the system.
When self-test button is pushed it cycles all outputs as follows: 0%, 50%, 100%, normal operation. After 30 seconds in any mode the system resets to normal operation.

When self-test button is held for more than 3 seconds, it sets all outputs to 50%, when released the outputs return to normal operation.