

TT-S-ACT

Active Space Temperature Sensors

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Features & Benefits

- $\pm 0.3^{\circ}\text{C}$ temperature accuracy
- Fully configurable LCD Display
- Base plate compatible for both EU & North America fixings
- Housing designed to maximize air flow through it, giving fast response times

Technical Overview

The TT-S-ACT uses a high accuracy 10K3A1 thermistor 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 are available as standard. A custom output range for temperature can be requested, between -20°C and $+50^{\circ}\text{C}$.

Product Codes

TT-S-ACT

Space temperature transmitter $\pm 0.3^{\circ}\text{C}$

Suffixes (add to part code)*

-SP	2-Wire resistive set point 0-10k Ω or 11-1k Ω
-MS	Momentary switch
-FS3	Resistive 3-speed fan switch
-FS4	Resistive 4-speed fan switch
-FS5	Resistive 5-speed fan switch
-LCD	Integral LCD
-TR	Custom temperature output range scaling
-5V	Output 0-5Vdc (instead of 0-10Vdc)

Accessories

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

* Interface Restrictions

- SP only
- MS only
- SP-MS only
- SP-FSx only

Specification

Outputs:

0-10Vdc (0-5V for -5V version) or 4-20mA

3-wire self detecting

4-20mA

2-wire, loop powering via DIP switch

Output range

0 to 40°C

Temp. accuracies

$\pm 0.3^{\circ}\text{C}$

Optional Passive Outputs:

Set point

0-10K Ω or 11-1K Ω linear

Momentary switch

VFC

Fan Speed

Resistive

Power Supply:

24Vac/dc $\pm 10\%$ (3-wire)

24Vdc $\pm 10\%$ (2-wire)

Supply current:

max. 30mA (3-wire)

Electrical connections:

Pluggable spring loaded terminal block
min. 0.2mm², max. 1.5mm²

Ambient:

Temperature

0 to 40°C

RH

0 to 95% RH, non-condensing

Housing:

Material

ABS (flame retardant)

Colour

RAL 9003 polished white finish

Dimensions

115 x 85 x 30mm

Environmental:

Temperature

0 to 50°C

0 to 95% RH non-condensing

Protection

IP30

Country of origin

UK

* 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).

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.



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.

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 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.

Active temperature transmitters are sensitive electronic devices and care should be taken at all times to ensure that they are not exposed to extreme ambient conditions or incorrect electrical connection. Transmitters should not be exposed to direct moisture contact (e.g. rain) and very high humidity should be avoided wherever possible.

Connections

24V	Supply 24Vac/dc	FS1	Fan speed resistive
0V	Supply 0V (Common 0V)	FS2	Fan speed resistive
OP1	Temperature output	P5	Set point
OP2	Not used	P6	Set point, wiper
OP3	Not used	P7	Set point
0V	Not used	MS1	Momentary switch
TH1	Direct Thermistor (-T only)	MS2	Momentary switch
TH2	Direct Thermistor (-T only)	OVR	0-10Vdc input to indicate occupancy or override on LCD* (3-wire mode only)

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 $>2k\Omega$, all the outputs will be set to 0-10Vdc and the green 0-10V LED will light.
- If ALL the loads are $>50\Omega$ and $<550\Omega$, all the outputs will be set to 4-20mA and the orange 4-20mA LED will light.
- If ANY of the loads are $<50\Omega$ or >550 and $<2k\Omega$, 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.

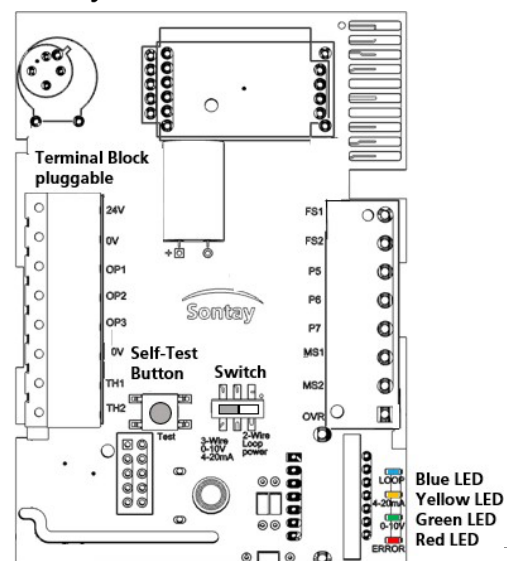
Self-Test Button:

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.

PCB Layout:



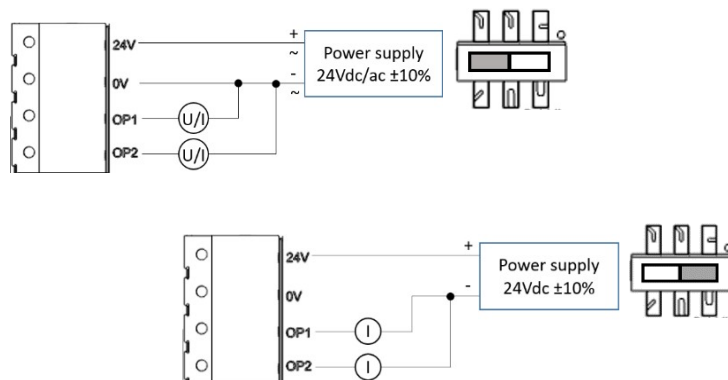
Fan speed (-FSx):

The position of the selector switch will cause the resistance between the terminals to alter as shown below.

0	Open circuit
1	22.7k Ω
2	26k Ω
3	29.3k Ω
Auto	32.6k Ω

Momentary switch (-MS):

max. 500mA @24Vac/dc



Set point (-SP):

	-	+
P5/P6	0k Ω	10k Ω
P7/P6	11k Ω	1k Ω

For 1-11k Ω use the 0-10k Ω and add an inline 1k Ω resistor on the controller input side

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