

## Space Mounted Temperature Sensor 4-20mA/0-10Vdc



### Features:

- $\pm 0.3^{\circ}\text{C}$  temperature accuracy
- Fully configurable LCD Display
- 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 TT-1000-CVO 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  $-20^{\circ}\text{C}$  and  $+50^{\circ}\text{C}$ .

## Specification:

## Part Codes:

### Outputs:

Voltage 0-10Vdc or 0-5Vdc  
Current 4-20mA\*

### Output range;

Temperature 0 to 40°C (standard)  
**-TR** in range of -20°C to 50°C

### Temp. accuracies

±0.3°C

### Optional Passive Outputs:

Set point 0-10KΩ or 11-1KΩlinear  
Momentary switch VFC  
Fan Speed Resistive

### Power Supply:

Voltage 12-26Vac or 16-26Vdc @ 60mA max.  
Current 20-26Vdc only @ 70mA 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

### TT-1000-ACT

Space temperature transmitter ±0.3°C

### Suffixes (add to part code)

**-SP** 2-Wire resistive set point 0-10kΩ or 11-1kΩ

**-MS** Momentary switch

**-FS3** Resistive 3-speed fan switch

**-FS5** Resistive 5-speed fan switch

**-LCD** Integral LCD

**-TR** Custom temperature output range scaling

\* 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).



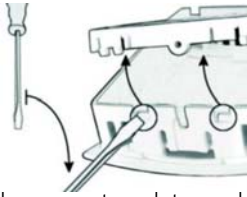
The products referred to in this data sheet meet the requirements of EU Directive 2004/108/E

## 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.

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:

Left Hand terminal Block:

<b>24V</b>	Supply + 24Vac or Vdc
<b>GND</b>	Supply 0V
<b>OP1</b>	Temperature output (see J11 settings)
<b>OP2</b>	Not used
<b>GND</b>	Common 0V
<b>OP3</b>	Not used
<b>GND</b>	Common 0V
<b>OVRD</b>	0-10Vdc <i>input</i> to indicate occupancy or override.

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

<b>T2</b>	Not used
<b>MS1</b>	Momentary switch VFC output
<b>MS2</b>	Momentary switch VFC output
<b>P5*</b>	Set point
<b>P6*</b>	Set point, wiper
<b>P7*</b>	Set point
<b>FS2</b>	Fan speed switch output, resistive
<b>FS1</b>	Fan speed switch output, resistive

**Note:** The OVRD input can only be used if voltage output is used, as a common 0V is required.

## Connections (continued):

- Voltage output    Nominal voltage 24Vac/dc.
- Current output    If using in current output mode, the sensor must only be used with a 24Vdc supply. The sensor may be damaged if supplied with AC. 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).
- SP\*                2-wire 11-1k $\Omega$  output is required use terminals P6 and P7  
                           2-wire 0-10k $\Omega$  output is required, use terminals P5 and P6

## 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

### 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	22.7k $\Omega$
2	26k $\Omega$
3	29.3k $\Omega$
Auto	32.6k $\Omega$

### Set point (if fitted)

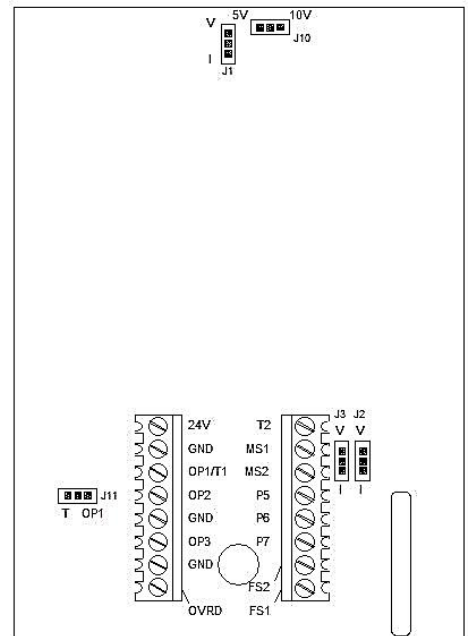
This is available in two standard values:

-	+
0k $\Omega$	10k $\Omega$
11k $\Omega$	1k $\Omega$

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

### Momentary switch (if fitted)

Rated at 24Vac/dc @ 500mA max.



## Commissioning:

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 ambient environment.

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.