Features & Benefits

- Wide range of sensing element types
- Black bulb to measure radiant heat
- Greater comfort

Technical Overview

The TT-1015 range of black bulb temperature sensors are used for radiant heat in indoor spaces. Black bulb temperature sensors are used to calculate comfort temperature which is specified as the average of the conductive and the radiant temperature. Units contain either a high quality thermistor, Nickel or Platinum sensing element.

Product Codes

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TT-1015</td>
<td>Internal Black Bulb Sensor</td>
</tr>
</tbody>
</table>

Sensing Element (add type to above code)

Passive output:
- **A**: (10K3A1) Trend, Cylon, Distech
- **B**: (10K4A1) Andover, 
- **C**: (2K6A1) Honeywell
- **D**: (PT100a) Serck
- **E**: (PT1000a) Cylon
- **F**: (NI1000a) Sauter
- **G**: (NI1000a/TCR(LAN1)) Siemens
- **H**: (SAT1) Switchwell
- **K**: (STA1) Landis & Staefa
- **L**: (TAC) TAC
- **M**: (2.2K3A1) Johnson Controls
- **N**: (3K3A1) Alerton
- **P**: (3K6A1) Drayton
- **Q**: (5K6A1) Ambiflex
- **S**: (SAT2) Switchwell
- **T**: (SAT3) Switchwell
- **W**: (SIE1) Siebe
- **Y**: (STA2) Landis & Staefa
- **Z**: (10K NTC) Carel
- **DC**: (10K4A1) Delta Controls

Interface Options (add part code)

- **SP**: Resistive, set point 0-10kΩ or 11-1kΩ
- **FS3**: Resistive, 3-speed fan switch
- **F54**: Resistive, 5-speed fan switch
- **F55**: Resistive, 5-speed fan switch
- **LEDG**: 24V green LED
- **M5**: Momentary switch

Specified

Output types:
- Thermistor
- PT types
- NI types
- Set point
- Fan speed
- Momentary switch

Accuracy:
- Thermistor: ±0.2°C @ 0 to 70°C
- PT types: ±0.2°C @ 25°C
- NI types: ±0.4°C @ 0°C

Housing:
- Material: ABS (flame retardant)
- Dimensions: 115 x 85 x 28mm
- Colour: RAL 9003 polished white finish

Black bulb:
- Material: Anodised aluminium
- Dimensions: 17.5 x 37mm dia.

Protection: IP30

Ambient range: -10 to +60°C

Weight: 120g

Country of origin: UK

Comfort temperature measurement is best achieved by taking into account the radiant effect of surfaces within the controlled space. The comfort temperature is specified as the average of the conductive temperature and the radiant temperature.

\[ T_{comfort} = T_{radiant} + T_{conductive} \]
Installation

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.

3. Remove the front panel from the base.

4. 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.

5. 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.

6. Replace the housing to the base plate and re-fit the tamperproof screw (if required) through the lug at the bottom of the base plate.

Connections

All connections to BEMS controllers, data recorders etc. should be made using screened cable. Normally, the screen should be earthed at one end only (usually the controller end) to avoid earth hum loops which can create noise. Low voltage signal and supply cables should be routed separately from high voltage or mains cabling. Separate conduit or cable trays should be used. Where possible, the controller’s earth should be connected to a FUNCTIONAL EARTH, rather than the mains safety earth. This will provide better immunity to high frequency noise. Most modern buildings have a separate earth for this purpose.

All thermistor/RTD elements and options are polarity independent

- MS1 & MS2  Momentary switch
- LED+ & LED-  24V supply for LEDG
- T2 & T1  Temperature sensor
- P5 & P6  Set point, resistive 0-10kΩ
- P6 & P7  Set point, resistive 11-1kΩ
- FS1 & FS2  Fan speed, resistive

Set point, this is available in two standard values;
-  + (legend markings on housing fascia)
  0kΩ  10kΩ
  11kΩ  1kΩ

Using an external 1kΩ resistor (not supplied) on the 0-10k terminals 1-11kΩ can be achieved if required.
Potentiometer tolerances are ±30%

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

<table>
<thead>
<tr>
<th>Switch position</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Open circuit</td>
</tr>
<tr>
<td>1</td>
<td>22.7kΩ</td>
</tr>
<tr>
<td>2</td>
<td>26kΩ</td>
</tr>
<tr>
<td>3</td>
<td>29.3kΩ</td>
</tr>
<tr>
<td>Auto</td>
<td>32.6kΩ</td>
</tr>
</tbody>
</table>

Momentary switch, rated at 24Vac/dc @ 500mA max.

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.

Tel: +44 (0)1732 861200  -  E-mail: sales@sontay.com  -  Web: www.sontay.com
© 2017 Sontay Limited. All rights reserved
Page 2 of 2