TT-635
External Black Bulb Temperature Sensors

Features:

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

Benefits:

- Greater comfort
- Uniformity of sensors with other Sontay products

Technical Overview

The TT-635 range of black bulb temperature sensors are used for radiant heat in outdoor 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.

The -CVO active output option (TT-635 only) combines 4 pre-set ranges and selectable output mode, customised output range scaling enabling a choice of outputs and ranges on one unit.

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Specification:

Output types:

	Passive	Resistive
	Active (selectable)	Current 4-20mA *or*
		Voltage 0-10Vdc

Accuracy:

Thermistor	±0.2°C 0 to 70°C (32 to 158°F)
PT100a	±0.2°C @ 25°C (77°F)
PT1000a	±0.2°C @ 25°C (77°F)
NI1000	±0.4°C @ 0°C (32°F)
-CVO	±0.4°C @ 25°C (77°F)

Housing:

Material	ABS (flame retardant)
Dimensions	
TT-635	116 x 106 x 52mm (4.57 x 4.17 x 2.05")

Black bulb:

Material	Anodised aluminium
Dimensions	17.5 x 37mm dia. (0.69 x 1.46")

Protection:

TT-635	
Snap-shut lid	IP54 IP65 (see page 3 note 5)

Ambient range	-30 to +70°C (-22 to 158°F)
Weight	160g (0.35lb)
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.

$$\text{Tcomfort} = \frac{\text{Tradiant} + \text{Tconductive}}{2}$$

CE

The TT-635-CVO products referred to in this data sheet meet the requirements of EU Directive 2004/108/E

Part Codes:

TT-635 External Black Bulb Sensor

Sensing Element (add type to above code)

Passive output:

-A	(10K3A1) Trend, Cylon, Distech
-B	(10K4A1) Andover,
-C	(20K6A1) Honeywell
-D	(PT100a) Serck
-E	(PT1000a) Cylon
-F	(NI1000a) Sauter
-G	(Ni1000a/TCR(LAN1)) Siemens
-H	(SAT1) Satchwell
-K	(STA1) Landis & Staefa
-L	(TAC1) TAC
-M	(2.2K3A1) Johnson Controls
-N	(3K3A1) Alerton
-P	(30K6A1) Drayton
-Q	(50K6A1) Ambiflex
-S	(SAT2) Satchwell
-T	(SAT3) Satchwell
-W	(SIE1) Siebe
-Y	(STA2) Landis & Staefa
-Z	(10K NTC) Carel
-DC	(10K4A1) Delta Controls

Active output:

-CVO	4-20mA/0-10Vdc selectable output
-CVO-C	4-20mA/0-10Vdc selectable output with custom temp. scaling

Installation:

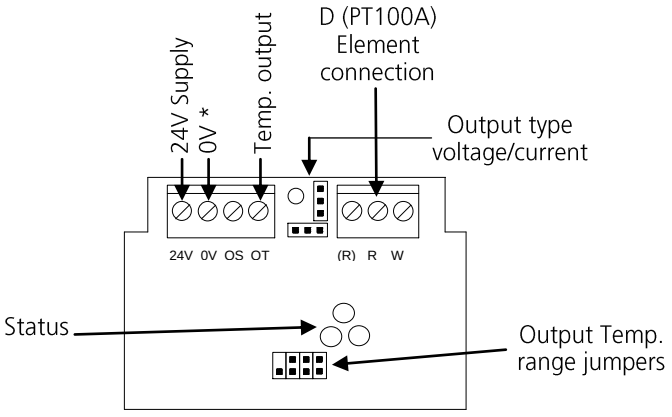
1. Release the snap-fit lid by gently squeezing the locking tab.
2. Feed the cable through the waterproof gland and terminate the cores at the terminal block. Leave some slack inside the unit, tighten the cable gland onto the cable to ensure water tightness.
3. If the sensor is to be mounted outside, it is recommended that the unit be mounted with the cable entry at the bottom. If the cable is fed from above then into the cable gland at the bottom, it is recommended that a rain loop be placed in the cable before entry into the sensor.
4. If the cable is fed from above then into the cable gland at the bottom, it is recommended that a rain loop be placed in the cable before entry into the sensor.
5. Fix the sensor to the wall using appropriate screws. And snap shut the lid after the connections have been made if IP65 protection is required, secure the lid with two screws provided.

Connections:

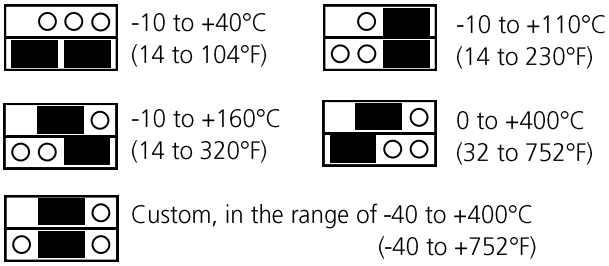
All connections to BEMS controllers, data recorders etc. should be made using screened cable. Normally, the screen should be earthed at one end only (usually the controller end) to avoid earth hum loops which can create noise. Low voltage signal and supply cables should be routed separately from high 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.

Passive output:
Connections are made via the 2-way terminal block. Connections for thermistor, platinum and nickel sensing elements are polarity independent.

Active output:



* Not required with 4-20mA output



Connections (Cont'd)

Notes:

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.

The selectable output temperature ranges are dependent on sensor type, ambient and application.

For full connection and specification please refer to the TT-CVO data sheet.

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