

Black Bulb Sensors

Features



- Wide range of elements
- Set point option

Specification

Output types:

Thermistor	Resistive
PT100a	Resistive
PT1000a	Resistive
NI1000a	Resistive
Active	4-20mA or 0-10Vdc (selectable)

Accuracy:

Thermistor	±0.2°C (0 to 70°C)
PT100a	±0.2°C @ 25°C
PT1000a	±0.2°C @ 25°C
NI1000a	±0.4°C @ 0°C

Housing:

Material	ABS (flame retardant)
Dimensions	85 x 85 x 50mm

Black bulb:

Material	Anodised aluminium
Dimensions	17.5 x 37mm dia.

Ambient range -10 to 60°C

Country of origin UK

Product Codes

TT-915-A	(10K3A1) Trend, Seachange, Cylon
TT-915-B	(10K4A1) Andover, Delta Controls
TT-915-C	(20K6A1) Honeywell
TT-915-D	(PT100a) Serck
TT-915-E	(PT1000a) Cylon
TT-915-F	(NI1000a) Sauter
TT-915-G	(Ni1000a/TCR(LAN1)) Siemens
TT-915-H	(SAT1) Satchwell
TT-915-K	(STA1) Landis & Staefa
TT-915-L	(TAC1) TAC
TT-915-M	(2.2K3A1) Johnson Controls
TT-915-N	(3K3A1) Alerton
TT-915-P	(30K6A1) Drayton
TT-915-Q	(50K6A1) Ambiflex
TT-915-S	(SAT2) Satchwell
TT-915-T	(SAT3) Satchwell
TT-915-W	(SIE1) Siebe
TT-915-Y	(STA2) Landis & Staefa
TT-915-Z	(10K) Carel, Distech

Interface Option:

-SP 2 Wire 1-11KΩ set point

Active output:

TT-915-CVO

4-20mA/0-10Vdc selectable output

TT-915-CVO-C

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

Comfort Temperature

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.

$$T_{\text{comfort}} = \frac{T_{\text{radiant}} + T_{\text{conductive}}}{2}$$

Technical Overview

The TT-915 is a black bulb temperature sensor 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 temperature and the radiant temperature.

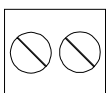
Units contain either a high quality thermistor, Platinum or Nickel sensing element. Sensor types compatible with most controls manufacturers' equipment are available.

Installation

1. Undo the tamperproof screw at the bottom of the housing and gently pull the front panel from the base.
2. 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 a standard recessed back box.
3. Feed cable through the 22mm knockout in the base of the housing and terminate the cores at the terminal block as required. Leaving some slack inside the unit.
4. Replace the housing to the base plate.
5. Fit the tamperproof screw (if required) through the lug at the bottom of the base plate.

Connections

Resistive output:



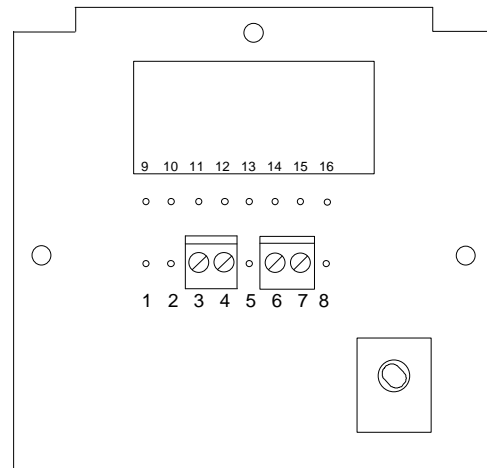
Connections are made via the 2-way terminal block. Connections for the thermistor/platinum and nickel elements are polarity independent.

4-20mA/0-10Vdc:

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

Connections (continued)

Resistive output & 1-11KΩ set point:



- 3 Passive
- 4 temperature
- 6 Setpoint (1-11KΩ)
- 7 Setpoint (1-11KΩ)

Trend Scaling

IQ1xx and early IQ2x series (without type 5, characterise)
Thermistor A (10K3A1 TYPE 2 linearise thermistor volts)

	(-10 to +40°)
Brange	-10
Trange	40
F	8.47
G	7.42
H	6.11
I	4.73
J	3.48

Trend Scaling (continued)

Q2xx and early IQ3 series (with type 5, characterise)

(-10 to +40°C)

	Resistance input	Temp. Output
1	5.32	40.0
2	5.89	37.5
3	6.53	35.0
4	7.24	32.5
5	8.05	30.0
6	8.96	27.5
7	10.00	25.0
8	11.16	22.5
9	12.49	20.0
10	14.00	17.5
11	15.71	15.0
12	17.67	12.5
13	19.90	10.0
14	22.47	7.5
15	25.40	5.0
16	28.79	2.5
17	32.66	0.0
18	37.18	-2.5
19	42.35	-5.0
20	55.30	-10.0

Upper	40.0
Lower	-10.0
Exp	3
Points used	20
Input type	3(kohms)