

TCAXRBN100

Black Bulb Temperature Sensor



Product Overview

The AX-TE-RBN range of Black bulb temperature sensors are used for radiant heat in indoor applications. They are designed to interface with a wide variety of HVAC control equipment. Units are available with a high quality thermistor element or with an active linear output.

Black bulb sensors are used to calculate comfort temperature which is specified as the average of the conductive and radiant temperatures.

Features

- Large Range of Sensor Options
- Accurate Sensing of Comfort Temperature
- Direct Fixing, No Extra Brackets Required
- Manufactured From Flame Retardant ABS

Product Specifications

Output:

Passive: Range of two wire thermistor and PTC platinum elements providing variable resistance.
Active - Current: 4-20mA representing -10°C to 40°C (unless specified otherwise)

Accuracy:

Thermistor: +/- 0.2°C between 0°C and 70°C
Platinum: +/- 0.35°C between 0°C and 100°C (PT100a and PT1000a)
Active: +/- 0.1% of range

Materials: Flame Retardant ABS
Terminals: Rising Clamp for 0.5-2.5mm² Cable
Ambient Temp: -10°C to 60°C
Dimensions: 85 x 85 x 52mm
Country of Origin: U.K.

Order Codes

AX-TE-RBN-xx - Black Bulb Temperature Sensor.

xx Denotes sensor type, please see table below. (eg. AX-TE-RBN-T)

-T	10K3A1 NTC Thermistor	-100	PT100a Platinum Element
-A	10K4A1 NTC Thermistor	-1K	PT1000a Platinum Element
-H	20K6A1 NTC Thermistor	-N1K	Ni1000a Nickel Element TCR curve
-3K	3K3A1 NTC Thermistor	-TAC	1K87A1 NTC Thermistor
-SAT	SAT1 NTC Thermistor	-TXI	Active 4-20mA Linear Output

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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

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

Installation

The AX-TE-RBN- sensor should be installed by a suitably qualified technician in conjunction with any guidelines for the equipment which it is to be connected to. Field wiring should be installed to satisfy the requirements set out by the manufacturer of the equipment that the sensor is being connected to. As a general rule, screened cable should be used to connect the sensor to a BMS or other controller. Please note that none of the AX-TE-RBN- sensors are suitable for use with mains voltage.

The AX-TE-RBN is designed to be fixed directly to an internal wall using the lugs at the base of the housing. The type of fixing used will depend on the material that the sensor is being mounted on.

Connection

Passive Sensors:

Passive sensors are polarity independent. Wires should be stripped and screwed into the two way terminal block in the main body of the sensor housing. Do not over-tighten the terminal screws as excessive force can cause damage to the terminal block and housing.

If screened cable is used, the shortest possible section of outer sheath should be removed to effect wiring. As there is no earth connection in the sensor, the screen must be connected to a functional earth elsewhere (often provided at the BMS or HVAC controller) in accordance with the instructions for the equipment that the AX-TE-RBN- is to be connected to.

Active Sensors - 4-20mA:

Two wires are required for this sensor type but, unlike the passive sensors, correct polarity must be observed and the device should be connected as follows.

