










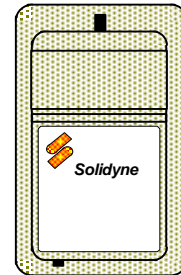
Solidyne Manufactures an entire line of accurate , reliable and cost effective temperature sensors for a variety Temperature Sensing applications in the Building Automation , HVAC and Temperature Control fields. Solidyne produces a line of sensors that meet or exceed the requirements of all of these fields.

-  Large selection of Sensors based on applications and temperature ranges.
-  All Sensors are precision to within 0.5 % accuracy.
-  Various selection of Zone Wall mounted Sensors .
-  Various selection of Plain , general Purpose Sensors
-  Various Duct and well mounted sensors.
-  Various Strap-on Sensors
-  Covers Entire range of temperature applications

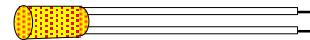
MODELS :

- ZTS** : Wall mounted 10 KΩ Thermistor
- ZTS-B** : ZTS with Override momentary Push button
- ZTS-A** : ZTS with Adjustable Comfort Set and Override momentary Push button
- TS-3K** : Plain Sensor 3KΩ, -22 TO +122 ° F
- TS-10K** : Plain Sensor 10KΩ, 23 TO +150 ° F
- TS-100K** : Plain Sensor 100KΩ, 113 TO +275 ° F
- OAT-3K** : Out Door Temperature Sensor
- STRP-3K** : Strap on 3KΩ Temp. Sensor
- STRP-10K** : Strap on 10KΩ Temp. Sensor
- STRP-100K** : Strap on 100KΩ Temp. Sensor
- DTS-4&8** : Duct / Well mount Sensor

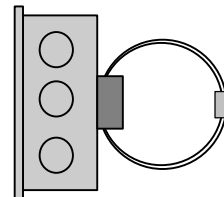
PRECISION TEMPERATURE SENSOR FAMILY



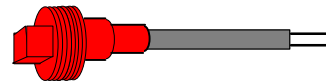
ZTS , ZTS-A , ZTS-B



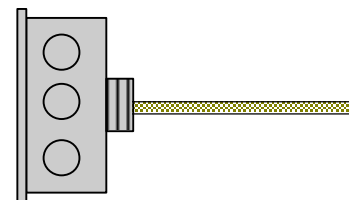
TS - 3K , 10K , 100K



STRP-3K , 10K , 100K



OAT-3K



DTS - 4 and 8



ZTS FAMILY WALL MOUNTED ZONE SENSORS :

GENERAL :

The ZTS family of Wall mounted Zone Temperature Sensors are used for measurement of space temperatures in various types of zones . Different models have different features and functions besides sensing zone temperature.

Model ZTS :

The ZTS is a plain temperature sensor enclosed in an attractive wall mounted enclosure . It is designed to be installed in public areas for sensing space temperature. It is mechanically designed so that it can be installed on an electrical junction box (2" x 4") behind a mounting surface . It has surface mounting holes for this purpose.

It has a 2 position terminal block inside the enclosure which can be wired to any of the IZAC's Sensor Inputs . Its internal sensor has no polarity so , there is no designation for it. Either one of the terminals can be mounted to the controller's sensor common terminal . The second sensor terminal should be wired to one of the available sensor inputs of the controller which is programmed to receive a 10 K thermistor temperature signal .

This sensor does not have any polarity. It can be located up to 50' away from the controller without shielding. However , shielded wire is recommended for distances greater than 50'. The ZTS can be located up to 500 feet away from the controller without any degradation of its accuracy or reliability, provided that it is not wired together with other signal carrying wires.

When any ZTS family of Sensors is wired to a controller's input, this input should be configured using PDC-832 Software as a 10 K thermistor for either ° F or ° C .

There are not jumpers to be installed for the thermistor inputs on the IZAC Controllers.

Figure 1a. shows the inside of plain ZTS Sensor.

Model ZTS-B :

The ZTS - B (shown in figure 1b)is identical to the ZTS sensor except that it has a built-in momentary push button switch, for an override . This switch is used for overriding an unoccupied zone, forcing it into an occupied state for after hours occupancy . The IZAC Controller has to be programmed to respond to override signals in order for the switch to perform this function. Additionally, controller sensor inputs can be programmed and configured for Local Override functions and their duration set in the PDC-832's Sensor /Detail screen.

The ZTS-B is show in Figure 1b .

Model ZTS-A :

The ZTS-A is the most featured member of the ZTS family of wall mounted Zone Sensors . It has all the capabilities of the ZTS-B along with :

- a. A built in comfort setting potentiometer for the occupants to set desirable comfort levels.
- b. A diagnostic LED and wiring terminal block for general purpose use.
- c. A jumper setting for connecting the temperature sensor and comfort adjustment in series.

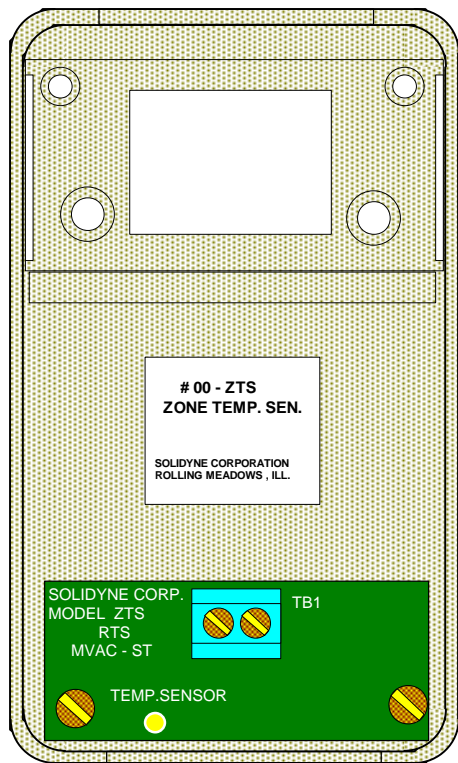
a. ADJUSTMENT :

The ZTS-A's adjustment is a very simple , yet effective and inexpensive, means for allowing the occupants to set warmer or cooler temperatures. This adjustment is a potentiometer and must be jumper selected on the ZTS-A before it can be wired into one of the IZAC Controller's input and configured as a ZTS-A (or 10 K ° for older versions) .

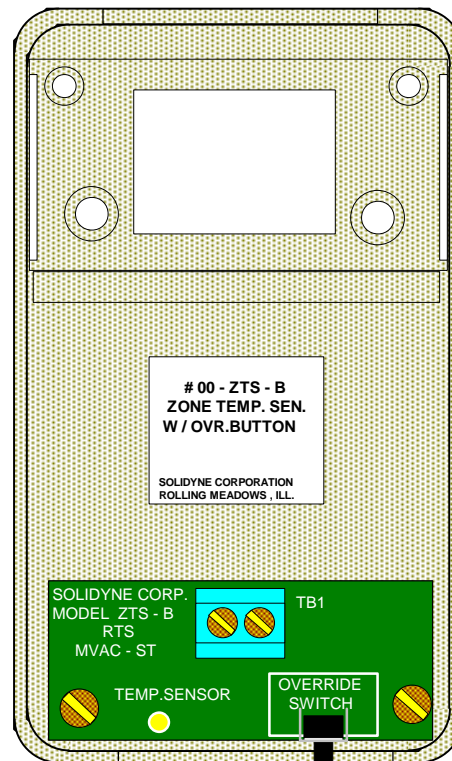
The adjustment potentiometer is factory set for a range of 55 ° F to 85 ° F . By changing the multiplier and offset values of this input, the comfort adjust range can be reduced.

Refer to **Fig. 1-c** , this adjustment is a 10K Ohm slide type potentiometer. It has a trim potentiometer in series with it. This trim potentiometer is set at the factory for a high temperature setting of 85 ° F (highest temperature setting) when the lever is moved all the way to the right (lowest resistance). The total resistance when the adjustment potentiometer is all the way to the left (highest resistance) corresponds to 55 ° F (lowest temperature set) .

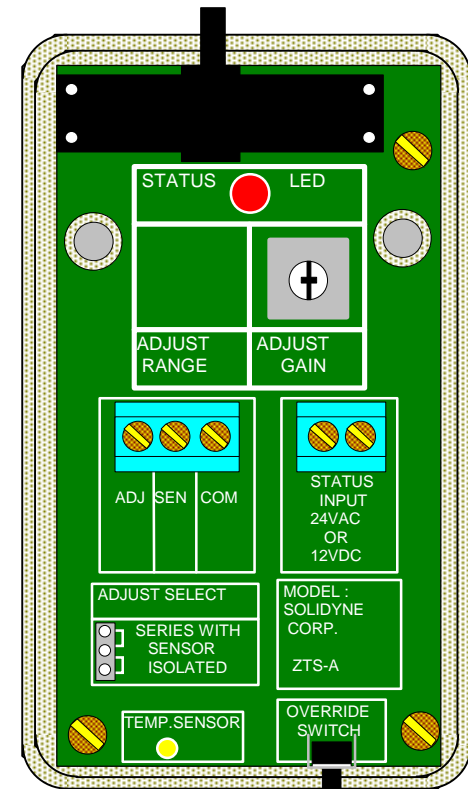
PDC-832 V5.35 and higher versions will allow you to select the IZAC input sensor as ZTS-A. Simply select the ZTS-A as your input and wire the ADJ and COM on the ZTS-A to the controller's sensor input and sensor common, respectively. By moving the adjust lever all the way to the left , you should read 55 ° F for the instantaneous reading of the corresponding sensor input . Similarly, moving the adjustment completely to the right will set the sensor to approximately 85 ° F.



a. ZTS



b. ZTS - B



c. ZTS - A

FIG. 1 INSIDE VIEW OF ZTS FAMILY OF WALL MOUNTED ZONE SENSORS.



If you wish to change the range of the adjust , you need to find the correct offset and multiplier values that will satisfy the new range requirements .

Example :

To find the offset and multiplier values for an adjustable input range, we must first decide what range we want the sensor to read. For this example the desired adjust range will be 65 ° F to 75 ° F.

Then, we must use the equation, $y = ax + b$, to calculate the multiplier .

$$y = ax + b$$

- y : desired reading
- x : actual reading without offset or multiplier change
- a : multiplier (unknown).
- b : offset (unknown) .

x = 55 when it is desired to be y = 65
 x = 85 when it is desired to be y = 75

Two formulas and 2 unknowns .

$$65 = a \cdot 55 + b$$

$$75 = a \cdot 85 + b$$

$$b = 65 - 55 \cdot a$$

$$75 = 85 \cdot a + 65 - 55 \cdot a = 65 + 30 \cdot a$$

$$30 \cdot a = 10 \rightarrow a = 0.3333$$

$$b = 65 - 55 \cdot 0.3333 = 65 - 18 = 47$$

a = 0.3333 multiplier
 b = 47 offset

Once the multiplier and offset values are calculated, they can be entered into the sensor/details for the sensor and the desired range will be read.

b. LED diagnostics :

Fig. 2 shows the LED diagnostic circuitry for monitoring the energized status of a load such as a running fan.

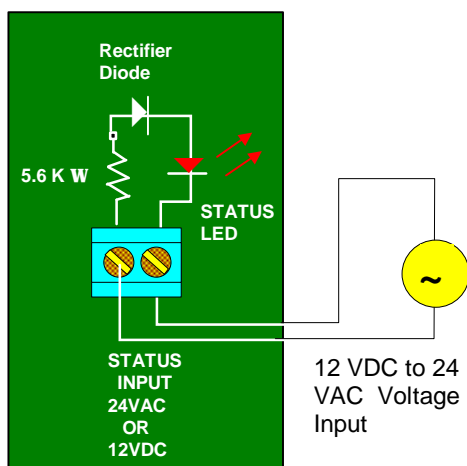


Fig. 2 LED Status Circuitry

c. Temperature Sensor And Comfort Adjust Jumpers :

Fig. 3 shows the Jumper selectable adjust circuitry schematics. This jumper select feature is incorporated in case the adjust potentiometer needs to be wired in series with the 10 K thermistor temperature sensor.

In general, **this method is not desired.** Adding this resistance will force a fixed minimum reading that will not represent the exact Zone space temperature. However , if there are no left over inputs to wire the adjust potentiometer separately into the IZAC , then adjustment potentiometer and Zone temp. sensor can be wired in series (Jumper in the **A** position) and wired to IZAC as input number one.

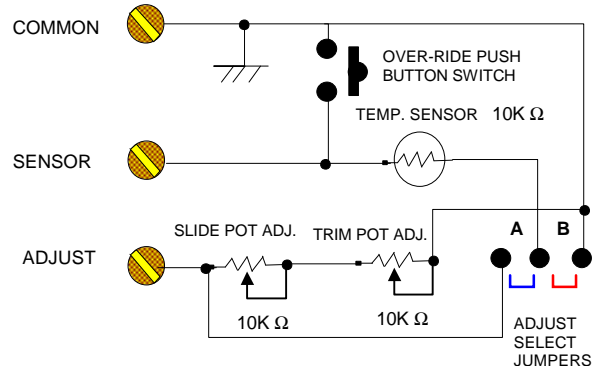


Fig. 3 Adjust select Jumper circuitry .

If the adjust pot. is wired in series with the sensor , the total value of the resistance will increase. The input reading on the IZAC should be checked for both ends of the adjust pot and the program corresponding to these readings should be entered to the controller.

VERRIDE PUSH BUTTON :

The Override push button included with the ZTS - B and ZTS - A was pre wired in parallel with the temperature sensor . To trigger an override , momentarily push the override button for 2 to 3 seconds. The override will work according to its corresponding local or global override program.

ELECTRICAL SPEC : (Applies to all ZTS sensors)

Output resistance : 42 KOhms @ +23 ° F and -5 ° C
 2 KOhms @ 150 ° F and 66 ° C

Stability : ± 0.5 ° C per 1000 Hr. of operation
 Accuracy : ± 0.2 ° C
 Operating temp. : +23 ° F to 150 ° F and -5 ° C to 66 ° C
 Storage temp. : - 40 ° F to 230 ° F

This sensor does not have any polarity . It can be located up to 50 ft. away from the controller , without shielding. However, shielded wire is recommended for distances above 50 ft. . if shielded wire is used , the shield should be grounded at the IZAC Controller location .



OUTDOOR TEMPERATURE SENSOR : OAT - 3 K

OAT - 3 K temperature sensor is designed in a special threaded plastic housing and to be mounted at the bottom of a watertight 2.00" x 4.00" electrical junction box (Fig. 4).

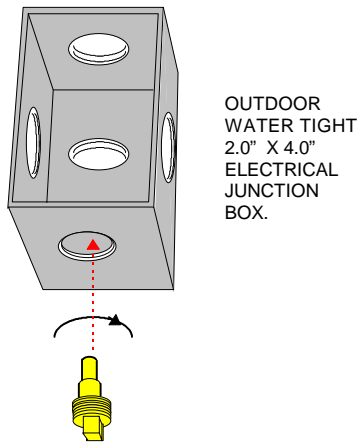


Fig. 4 Mounting OAT - 3k on to 2" x4" water tight outdoor Junction box.

ELECTRICAL SPEC :

Output resistance : 40 KOhms @ -22 °F and -30 ° C
1 KOhms @ 122 ° F and 50 ° C

Stability : ± 0.5 ° C per 1000 Hr. of operation

Accuracy : ± 0.2 ° C

Operating temp. : -22 ° F to 122 ° F and -30 ° C to 50 ° C

Storage temp. : - 40 ° F to 230 ° F

Dimensions : 0.8 " H x 1.0 " D

The IZAC Controller's sensor type must be programmed as a 3K thermistor for the OAT-3K. This setting is selected in the sensors/detail section of the PDC-832 software.

The hardware configuration at IZAC input does not require any jumper.

This sensor does not have any polarity. It can be located up to 50 ft. away from the controller without shielding. However, shielded wire is recommended for distances above 50 ft. If shielded wire is used, the shield should be grounded at the IZAC Controller location.

DUCT TEMPERATURE SENSOR : DTS - 4 , - 8

The duct sensors DTS - 4 and - 8 are designed to sense temperature in Air ducts.

Based on the application , these sensors are installed in Supply and/or Return air ducts . The DTS - 4 has a 4.0 " long temperature probe while DTS - 8 has an 8.0" long temperature probe .

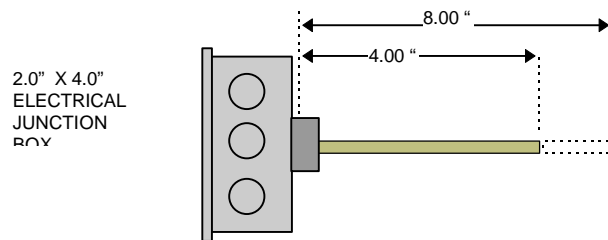


Fig. 5 DTS - 4 and - 8 Duct Temperature Sensors

The DTS - 4 and - 8 are mounted inside a 2.0" x 4.0 " electrical Junction box for ease of mounting and terminating sensor leads .

The internal sensor is a 10 K thermistor , identical to all other 10 K thermistor sensors incorporated in other Solidyne Sensor Products.

ELECTRICAL SPEC :

Output resistance : 42 KOhms @ +23 °F and -5 ° C
2 KOhms @ 150 ° F and 66 ° C

Stability : ± 0.5 ° C per 1000 Hr. of operation

Accuracy : ± 0.2 ° C

Operating temp. : +23 ° F to 150 ° F and -5 ° C to 66 ° C

Storage temp. : - 40 ° F to 230 ° F

The IZAC Controller 'sDTS-4 or DTS-8 input must be programmed as a 10 K ° F or ° C thermistor type. This setting is selected in the sensor/detail section of the PDC-832 software. .

The hardware configuration at IZAC input does not require any jumper.

This sensor does not have any polarity. It can be located up to 50 ft. away from the controller without shielding. However, shielded wire is recommended for distances above 50 ft. If shielded wire is used, the shield should be grounded at the IZAC Controller location.



PLAIN SENSORS : TS - 3K , -10K , - 100 K

The TS - Series of temperature sensors are general purpose thermistor type temperature sensors . Due to their size , cost , accuracy and repeatability , they are used in a variety of applications for control and monitoring . Typical TS - sensor is shown in Fig. 6 below .

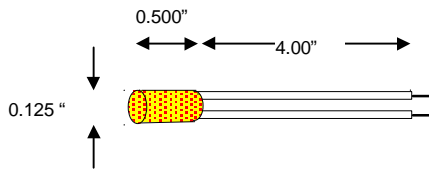


Fig. 6 TS-3K , -10K, 100K Sensor

ELECTRICAL SPEC :

TS-3K : 53 K Ω @ -22 ° F , -30 ° C
1 K Ω @ +122 ° F , 50 ° C

TS-10K : 42 K Ω @ +23 ° F , -5 ° C
2 K Ω @ +150 ° F , 66 ° C

TS-100K : 44 K Ω @ +113 ° F , 45 ° C
2.6 K Ω @ +275 ° F , 135 ° C

Stability : ± 0.5 ° C per 1000 hr. of operation
Accuracy : ± 0.2 % ° C

COLOR CODES :

| | |
|----------|--------|
| TS - 3K | ORANGE |
| TS - 10K | BLACK |
| TS-100K | WHITE |

The IZAC Controller's TS sensor input must be programmed as a 3K, 10K, or 100K (° F or ° C) for the respectively used sensor. This setting is selected in the sensor/detail screen using PDC-832.

The hardware configuration at IZAC input does not require any jumper.

This sensor does not have any polarity. It can be located up to 50 ft. away from the controller without shielding. However, shielded wire is recommended for distances above 50 ft. If shielded wire is used, the shield should be grounded at the IZAC Controller location.

STRAP ON SENSORS : STRP - 3K , -10K , -100K

STRP - Series of temperature sensors are primarily designed for measuring hot and chilled water temperatures in water pipes. Fig. 7 shows typical STRP - sensor .

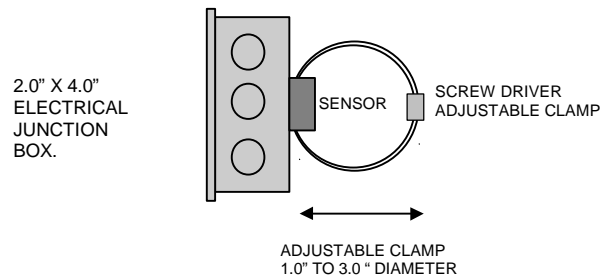


Fig. 7 STRP - 3K , -10K , - 100k Strap on Sensor

ELECTRICAL SPEC :

STRP-3K : 53 K Ω @ -22 ° F , -30 ° C
1 K Ω @ +122 ° F , 50 ° C

STRP-10K : 42 K Ω @ +23 ° F , -5 ° C
2 K Ω @ +150 ° F , 66 ° C

STRP-100K : 44 K Ω @ +113 ° F , 45 ° C
2.6 K Ω @ +275 ° F , 135 ° C

Stability : ± 0.5 ° C per 1000 hr. of operation
Accuracy : ± 0.2 % ° C

The IZAC Controller's STRP programmed as a 3K, 10K, or 100K (° F or ° C) for the respectively used sensor. This setting is selected in the sensor/detail screen using PDC-832.

The hardware configuration at IZAC input does not require any jumper.

This sensor does not have any polarity. It can be located up to 50 ft. away from the controller without shielding. However, shielded wire is recommended for distances above 50 ft. If shielded wire is used, the shield should be grounded at the IZAC Controller location.