

## Thermistor Temperature Sensors



### Product Description

The I-100K Series temperature sensors are thermistor type sensors. These sensors provide a predictable output over a specified temperature range to meet each manufacturers' required input values. Thermistors offer a high accuracy and interchangeability over a wide temperature range.

A thermistors higher resistance relative to Platinum RTD's, create a larger signal with the same measuring current, negating most lead wire resistance problems and eliminating the need for signal conditioners.

These units are offered in Room, Room with Set Point, Room with Override, Room with Setpoint and Override, and Room w/ Setpoint, Override, and RJ11 or RS232 Jacks; Duct, Duct without Box, Immersion, Stainless Plate, Raw, Averaging, Strap-On, Bullet Probe, Averaging, and Outside Air Configurations.

Setpoint options include a linear 400 Ohm, 1K, 2K, 5K, 8.5K, 10K, 20K, or 100K slide potentiometer. An optional series resistor allows for any offset of the setpoint potentiometer. These may be either Direct or Reverse Acting.

Indication stickers for setpoint include Cool|Warm, 55 to 85, and 10 to 30°C. Others are available upon request.

Override options include a N/O switch in parallel with the sensor or a separate 2 pole terminal block for Tenant override.

These sensors also come with optional 4 or 6 pin RJ11 or RS232 communication jacks with terminal blocks for remote programming.

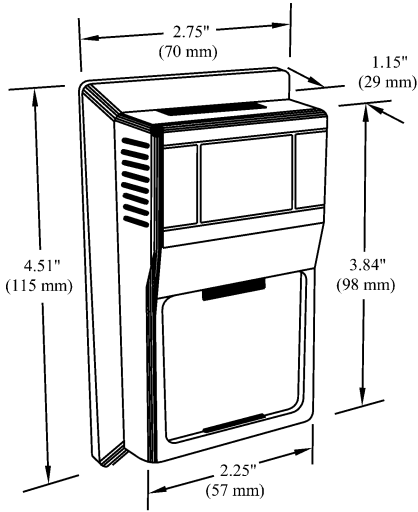
### Product Specifications

<b>Output</b>	100,000 Ohms @ 77°F (25°C)	<b>Dissipation Constant</b>	3 mW / °C
<b>Temperature Range</b>	-40 to 302°F (-40 to 150°C)	<b>Accuracy</b>	+/- 0.2°C (0 to 70°C)
<b>Interchangeability</b>	+/- 0.2°C (0 to 70°C)	<b>Operating Humidity</b>	10 to 90% RH non-condensing

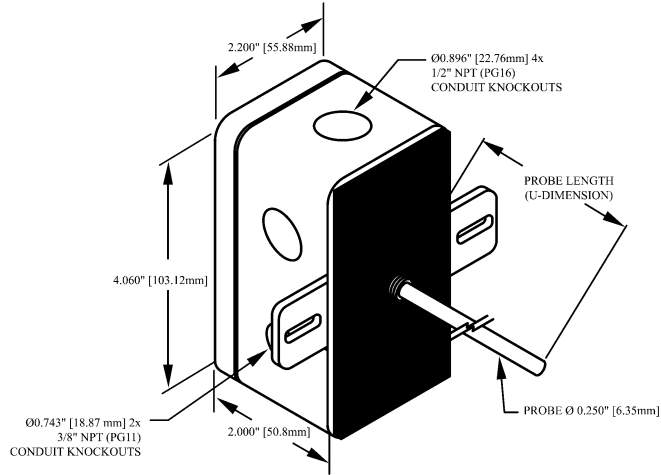
## I-100K Thermistor Resistance - Temperature Chart

		<b>I-100K</b>
<b>Temperature</b>		<b>Resistance</b>
°C	°F	<b>Ohms</b>
-40	<b>-40</b>	2,396,860.0
-35	<b>-31</b>	1,792,000.0
-30	<b>-22</b>	1,351,850.0
-25	<b>-13</b>	1,028,610.0
-20	<b>-4</b>	789,130.0
-15	<b>5</b>	610,200.0
-10	<b>14</b>	475,430.0
-5	<b>23</b>	373,130.0
0	<b>32</b>	294,900.0
5	<b>41</b>	234,570.0
10	<b>50</b>	187,800.0
15	<b>59</b>	151,300.0
20	<b>68</b>	122,630.0
25	<b>77</b>	100,000.0
30	<b>86</b>	81,940.0
35	<b>95</b>	67,520.0
40	<b>104</b>	55,920.0
45	<b>113</b>	46,550.0
50	<b>122</b>	38,930.0
55	<b>131</b>	32,710.0
60	<b>140</b>	27,600.0
65	<b>149</b>	23,390.0
70	<b>158</b>	19,900.0
75	<b>167</b>	17,000.0
80	<b>176</b>	14,580.0
85	<b>185</b>	12,550.0
90	<b>194</b>	10,840.0
95	<b>203</b>	9,393.0
100	<b>212</b>	8,168.0
105	<b>221</b>	7,126.0
110	<b>230</b>	6,236.0
115	<b>239</b>	5,473.0
120	<b>248</b>	4,818.0
125	<b>257</b>	4,253.0
130	<b>266</b>	3,764.0
135	<b>275</b>	3,340.0
140	<b>284</b>	2,972.0
145	<b>293</b>	2,651.0
150	<b>302</b>	2,370.0

## Room

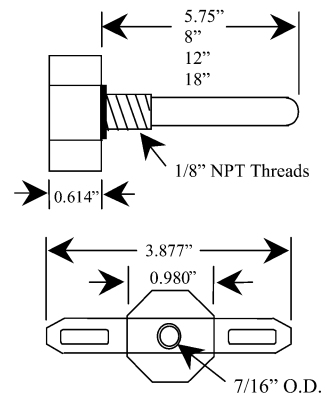


## Duct / Bendable & Rigid Averaging

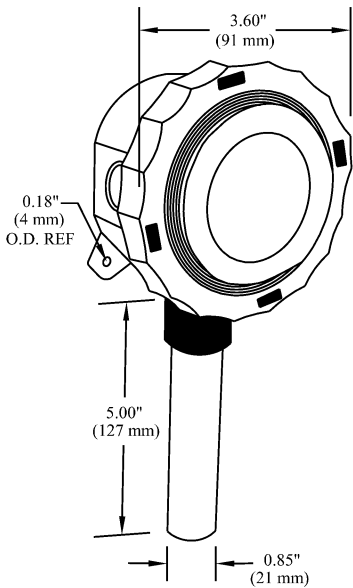


- Duct Insertion (U-Dimension)**  
 5.5" (89 mm)  
 7.5" (191 mm)  
 11.5" (292 mm)  
 17.5" (445 mm)
- Bendable Averaging**  
 8' (2.4 m)  
 12' (3.7 m)  
 24' (7.3 m)
- Rigid Averaging**  
 17.625" (448mm)  
 23.625" (600 mm)  
 35.625" (905mm)

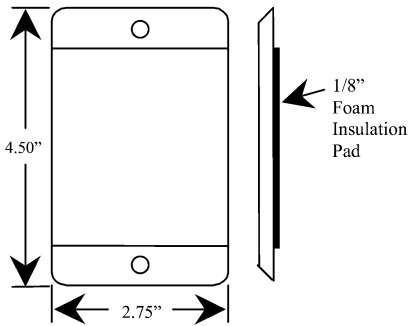
## Duct without Box



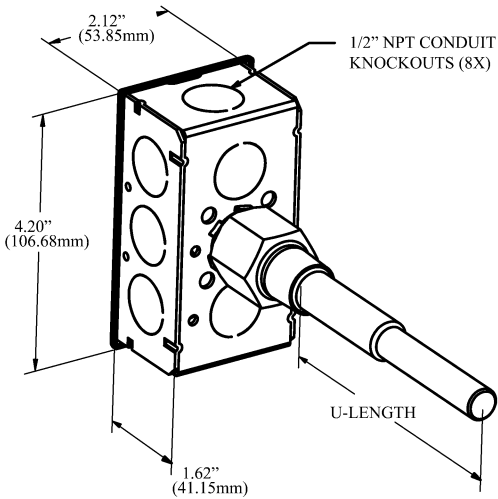
## Outside Air



## Stainless Plate

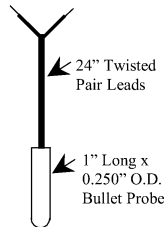


## Immersion

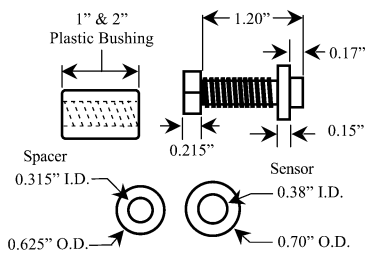


- Well Insertion (U-Length)**  
 2.50" (64 mm)  
 4.00" (102 mm)  
 6.25" (158.75 mm)

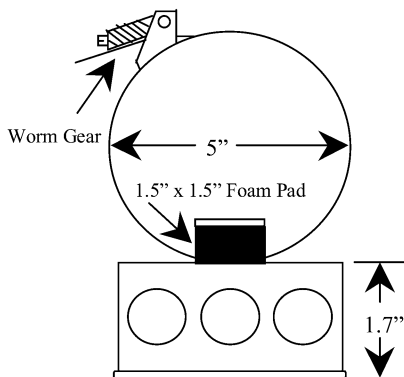
## Bullet Probe



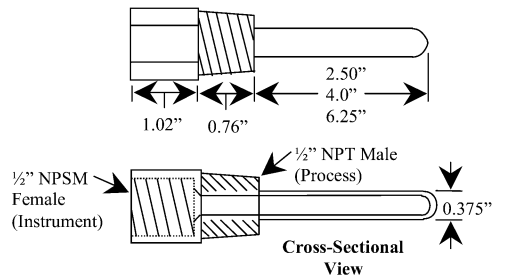
## Button Sensor



## Strap-On



## Thermowell



## Ordering Information

Sensor  
**I-** [ ]  
 ↑  
**100K**

Configuration  
**-**[ ]  
 ↑  
**R** - Room  
**RS** - Room w/ Setpoint\*\*\*  
**RO** - Room w/ Override  
**RSO** - Room w/ Setpoint & Override\*\*\*  
**D** - Duct 4", 8", 12", 18"  
**DO** - Duct without box 4", 8", 12", 18"  
**I** - Immersion 2.5", 4", 6"  
**A** - Bendable Copper Averaging 8', 12', 24'  
**FA** - Flexible Averaging Cable, 8', 12', 24'  
**RA** - Rigid Averaging 18", 24", 36"  
**S** - Strap On  
**O** - Outdoor Air  
**RP** - Remote Probe w/6' Leads  
**SP** - Stainless Plate  
**BP** - Bullet Probe  
**W** - Raw  
**W-6'** - Raw Sensor w/6' Leads  
**BBS** - Brass Button Sensor  
**SBS** - Stainless Button Sensor

Communication Jack<sup>1</sup>  
**-**[ ]  
 ↑  
**J4** (4 Pin RJ11)  
**J6** (6 Pin RJ12)  
**S232** (Stereo Jack)

Display<sup>1</sup>  
**-**[ ]  
 ↑  
**( )** No Display  
 (Standard)  
**(L)** LCD Display  
 (Degrees F)  
**(LC)** LCD Display  
 (Degrees C)

Housing Type<sup>2</sup>  
**-**[ ]  
 ↑  
 Add-On Options  
**(BB)** NEMA 3R  
**(4X)** NEMA 4X

<sup>1</sup>These Options are only available on INTEC's Room Configurations.

<sup>2</sup>Standard Housing Types:

- Plastic Housing for Duct and Averaging sensors
- Galvanized Junction Box for Immersion and Strap-On sensors

Add-on option (BB) NEMA 3R housing is not available for Strap-On sensors

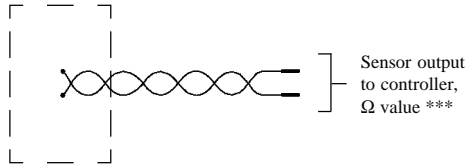
**RS / RSO\*\*\*** setpoint adjuster option requires additional ordering decisions for the following:

Pot Value <sup>1</sup>	Setpoint Indicator <sup>1</sup>	Pot Action <sup>1</sup>
<b>-</b> [ ]	<b>-</b> [ ]	<b>-</b> [ ]
↑	↑	↑
<b>400</b>	<b>Cool   Warm</b>	<b>DA</b> (Direct)
<b>1K</b>	<b>55 to 85°F</b>	<b>RA</b> (Reverse)
<b>2K</b>	<b>10 to 30°C</b>	
<b>3K</b>		
<b>5K</b>		
<b>8.5K</b>		
<b>10K</b>		
<b>20K</b>		
<b>100K</b>		

# Wiring Configuration

## Thermistor Temperature Sensor Types

- Duct • Immersion • Averaging
- Strap-On • Outdoor • Remote Probe
- Bullet Probe • Stainless Plate • Button Sensor

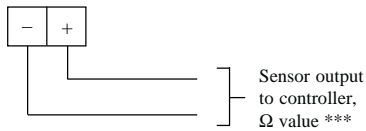


All non-room types are supplied with 22 AWG (0.34 mm<sup>2</sup>) lead wires and can be hooked up with any crimp style or wire nut wire connectors.

ill. 1

## Thermistor Temperature Room Sensors, without any options

Terminal connector block



ill. 2

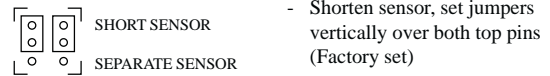
\*\*\* All sensor connections are **non-polarity** and **non-positive sensitive**.

\*\*\* It is recommended to use 18-22 AWG (0.75-0.34 mm<sup>2</sup>) twisted pair wires or shielded cable for all sensor installations.

## Thermistor Temperature Room Sensors with options:

- Tenant override
- Setpoint adjuster
- Communication jack

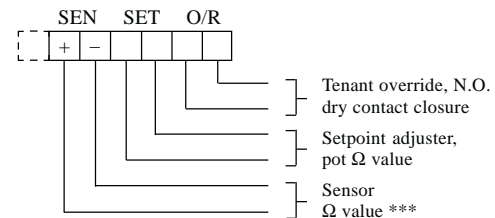
### Jumper Tenant Override Selector:



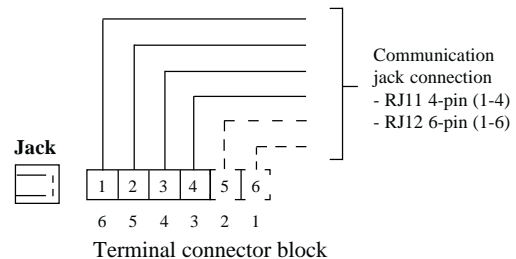
Override push-button SW1

- Shorten sensor, set jumpers vertically over both top pins (Factory set)
- Dry contact closure, set jumpers vertically over both bottom pins (requires separate wire connection to controller)

Terminal connector block

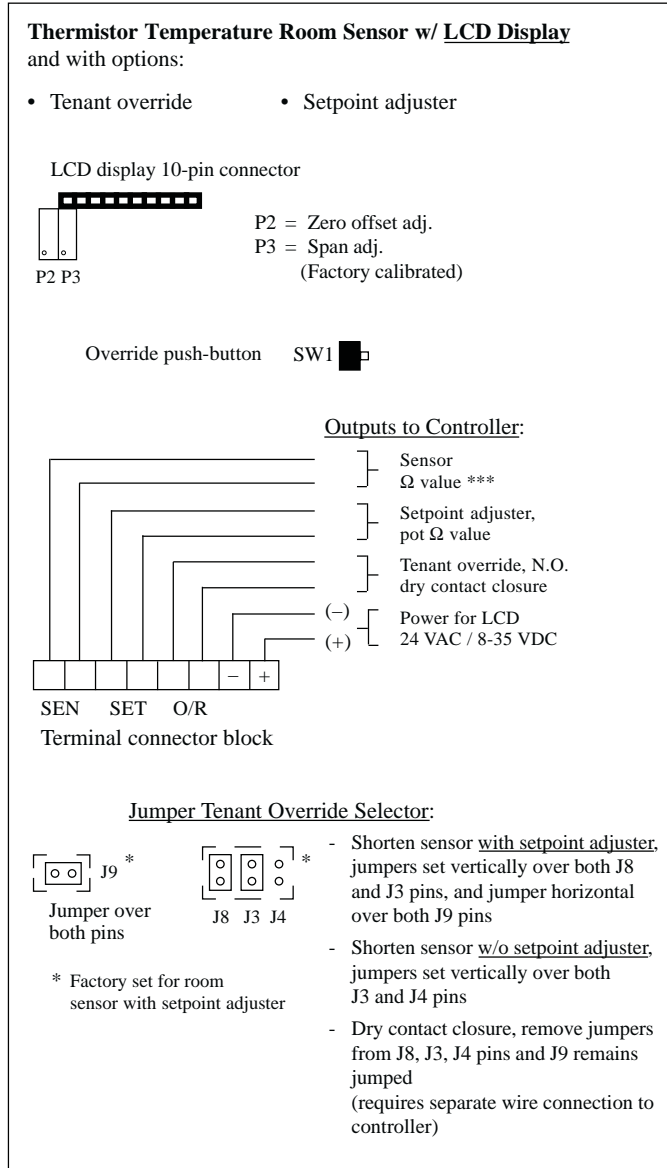


### Outputs to Controller:

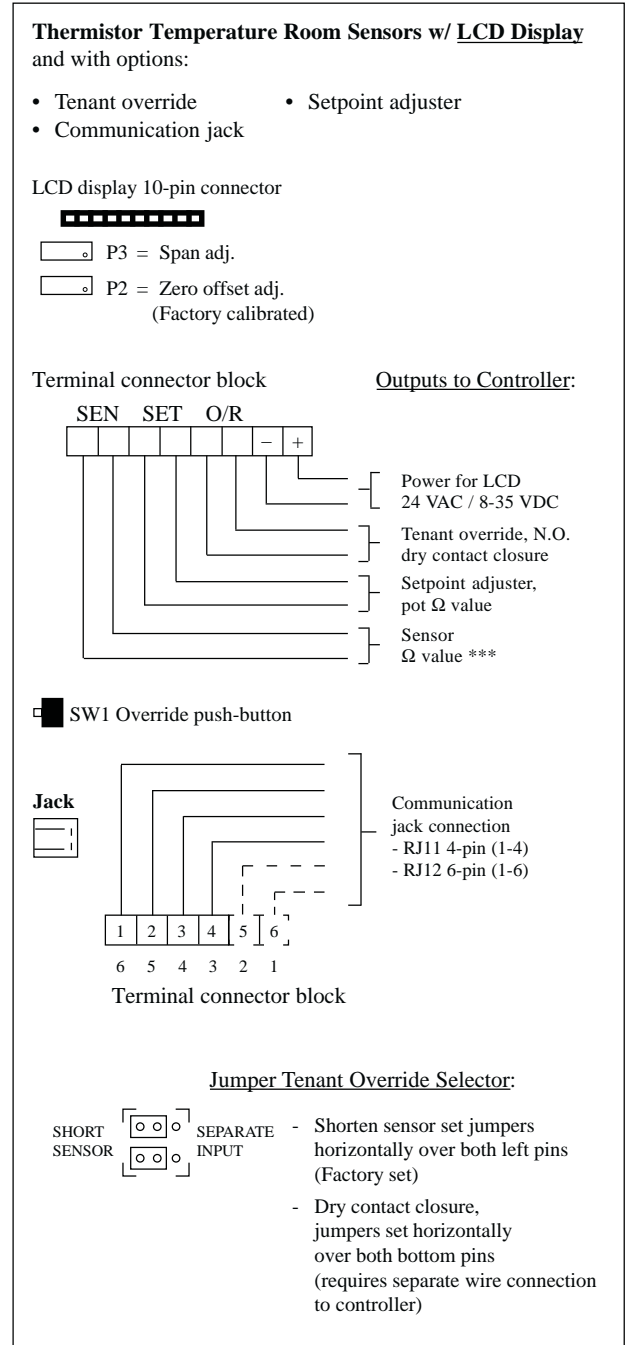


ill. 3

# Wiring Configuration



ill. 4



ill. 5