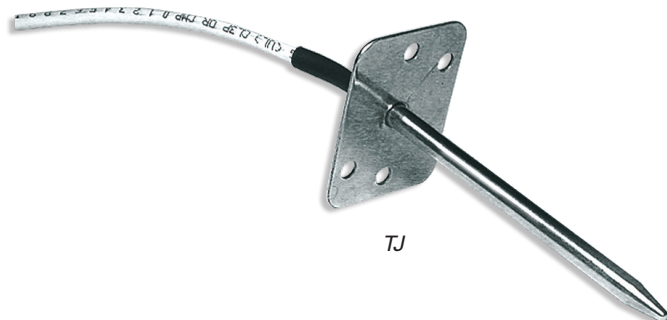


# VAV Discharge Temperature Sensors

## TJ Series



### SPECIFICATIONS



|                          |                                                                                                                                                                        |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Wiring</b>            | 22 AWG; 2-wire: RTD/Thermistor                                                                                                                                         |
| <b>Probe</b>             | Stainless Steel                                                                                                                                                        |
| <b>LINITEMP OPTION</b>   |                                                                                                                                                                        |
| <b>Input Power</b>       | 5 to 30VDC                                                                                                                                                             |
| <b>Output</b>            | 10mV/°C                                                                                                                                                                |
| <b>Operating Temp</b>    | -25° to 105°C (-13° to 221°F)*                                                                                                                                         |
| <b>Calibration Error</b> | 1.5°C (2.7°F) typical; 2.5°C (4.5°F) max. at 25°C (77°F)**                                                                                                             |
| <b>Error over Temp</b>   | 1.8°C (3.24°F) typical; 3.0°C (5.4°F) max. over 0° to 70°C (32° to 158°F) range;<br>2.0°C (3.6°F) typical; 3.5°C (6.3°F) max. over -25° to 105°C (-13° to 221°F) range |

Increased cable length affects the readings of lower resistance RTDs (100R platinum, RTD).

\* For RTD and thermistor accuracies and ranges, see the table at right.

\*\*Room temperature error documented on each unit.

## VAV Discharge Air Sensor For Reheat Applications

### FEATURES

- Stainless steel duct probe with mounting flange...quick, easy installation
- Plenum rated cable standard
- 4" or 8" (102 mm or 204 mm) duct probes for application flexibility
- 2-wire installation (optional quick disconnect)...installs in just a few short minutes
- Installation ready for VAV systems and plenum areas...saves money on job commissioning and warranty service

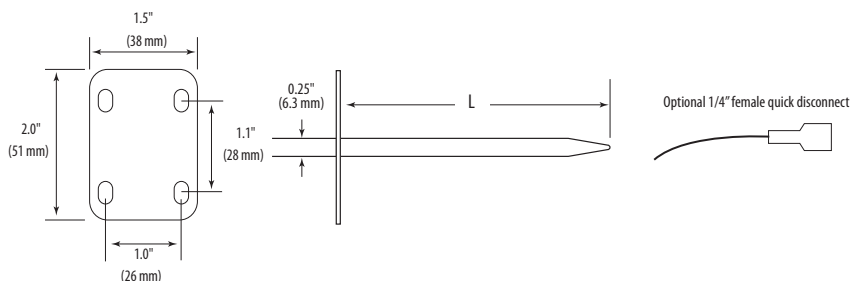
### DESCRIPTION

The **TJ Series** temperature sensors are highly accurate and cost effective, with trouble-free installation. The sensor is encased in a sturdy corrosion-resistant stainless steel probe. A variety of RTD/thermistor sensor and probe length options are available for maximum versatility in applications.

### APPLICATIONS

- VAV reheat boxes
- Dual duct boxes
- Fan coils
- Prove that the hot water valve or electric heat is functioning properly
- Check individual reheating stages
- Check for hot water valve leaks
- Determine if damper actuators are functioning on dual duct boxes

## DIMENSIONAL DRAWING



## To compute Linitemp Temperature

$$mV \text{ reading} / 10 - 273.15 = \text{Temperature in } ^\circ\text{C}$$

| Class           | Pt RTD                                   |                                          | Balco RTD                      | THERMISTOR                        |                                   |                                      |                                   |                                     |                                   |                                   |                    |                    |                    |                                                                   |                                   |
|-----------------|------------------------------------------|------------------------------------------|--------------------------------|-----------------------------------|-----------------------------------|--------------------------------------|-----------------------------------|-------------------------------------|-----------------------------------|-----------------------------------|--------------------|--------------------|--------------------|-------------------------------------------------------------------|-----------------------------------|
| Type            | 100 Ohm                                  | 1000 Ohm                                 | 1000 Ohm                       | 2.2k                              | 3k                                | 10k Type 2                           | 10k Type 3                        | 10k Dale                            | 10k 3A221                         | 10k "G" US                        | 20k                | 20k "D"            | 100k               | 10k Type 2                                                        | 10k Type 3                        |
| Accuracy        | $\pm 0.3^\circ\text{C}$<br>0.00385 curve | $\pm 0.3^\circ\text{C}$<br>0.00385 curve | $\pm 1\%$ @ $70^\circ\text{C}$ | $\pm 0.2^\circ\text{C}$<br>0/70°C | $\pm 0.2^\circ\text{C}$<br>0/70°C | $\pm 1.0^\circ\text{C}$<br>-50/150°C | $\pm 0.2^\circ\text{C}$<br>0/70°C | $\pm 0.2^\circ\text{C}$<br>-20/70°C | $\pm 1.1^\circ\text{C}$<br>0/70°C | $\pm 0.2^\circ\text{C}$<br>0/70°C | Consult<br>Factory | Consult<br>Factory | Consult<br>Factory | $\pm 0.1^\circ\text{C}$ 20/70°C<br>$\pm 0.2^\circ\text{C}$ 0/20°C | $\pm 0.1^\circ\text{C}$<br>0/70°C |
| Temp. Response* | PTC                                      | PTC                                      | PTC                            | NTC                               | NTC                               | NTC                                  | NTC                               | NTC                                 | NTC                               | NTC                               | NTC                | NTC                | NTC                | NTC                                                               | NTC                               |
|                 |                                          |                                          |                                |                                   |                                   |                                      |                                   |                                     |                                   |                                   |                    |                    |                    | High Accuracy                                                     |                                   |

\*PTC: Positive Temperature Coefficient

\*NTC: Negative Temperature Coefficient

STANDARD RTD AND THERMISTOR VALUES (Ohms  $\Omega$ )

| STANDARD RTD AND THERMISTOR VALUES (OHMS/°F) |     |         |          |          |         |         |            |            |          |           |            |           |         |           |            |            |
|----------------------------------------------|-----|---------|----------|----------|---------|---------|------------|------------|----------|-----------|------------|-----------|---------|-----------|------------|------------|
| °C                                           | °F  | 100 Ohm | 1000 Ohm | 1000 Ohm | 2.2k    | 3k      | 10k Type 2 | 10k Type 3 | 10k Dale | 10k 3A221 | 10k "G" US | 20k NTC   | 20k "D" | 100k      | 10k Type 2 | 10k Type 3 |
| -50                                          | -58 | 80.306  | 803.06   | 740.46   | 154,464 | 205,800 | 692,700    | 454,910    | 672,300  | -         | 441,200    | 1,267,600 | -       | -         | 692,700    | 454,910    |
| -40                                          | -40 | 84.271  | 842.71   | 773.99   | 77,081  | 102,690 | 344,700    | 245,089    | 337,200  | 333,562   | 239,700    | 643,800   | 803,200 | 3,366,000 | 344,700    | 245,089    |
| -30                                          | -22 | 88.222  | 882.22   | 806.02   | 40,330  | 53,730  | 180,100    | 137,307    | 177,200  | 176,081   | 135,300    | 342,000   | 412,800 | 1,770,000 | 180,100    | 137,307    |
| -20                                          | -4  | 92.160  | 921.60   | 841.00   | 22,032  | 29,346  | 98,320     | 79,729     | 97,130   | 96,807    | 78,910     | 189,080   | 220,600 | 971,200   | 98,320     | 79,729     |
| -10                                          | 14  | 96.086  | 960.86   | 877.46   | 12,519  | 16,674  | 55,790     | 47,843     | 55,340   | 55,252    | 47,540     | 108,380   | 122,400 | 553,400   | 55,790     | 47,843     |
| 0                                            | 32  | 100.000 | 1,000.00 | 913.66   | 7,373   | 9,822   | 32,770     | 29,588     | 32,660   | 32,639    | 29,490     | 64,160    | 70,200  | 326,600   | 32,770     | 29,588     |
| 10                                           | 32  | 103.903 | 1,039.03 | 952.25   | 4,487   | 5,976   | 19,930     | 18,813     | 19,900   | 19,901    | 18,780     | 39,440    | 41,600  | 199,000   | 19,930     | 18,813     |
| 20                                           | 68  | 107.794 | 1,077.94 | 991.82   | 2,814   | 3,750   | 12,500     | 12,272     | 12,490   | 12,493    | 12,260     | 24,920    | 25,340  | 124,900   | 12,500     | 12,272     |
| 25                                           | 77  | 109.735 | 1,097.35 | 1,013.50 | 2,252   | 3,000   | 10,000     | 10,000     | 10,000   | 10,000    | 10,000     | 20,000    | 20,000  | 100,000   | 10,000     | 10,000     |
| 30                                           | 86  | 111.673 | 1,116.73 | 1,035.18 | 1,814   | 2,417   | 8,055      | 8,195      | 8,056    | 8,055     | 8,194      | 16,144    | 15,884  | 80,580    | 8,055      | 8,195      |
| 40                                           | 104 | 115.541 | 1,155.41 | 1,077.68 | 1,199   | 1,598   | 5,323      | 5,593      | 5,326    | 5,324     | 5,592      | 10,696    | 10,210  | 53,260    | 5,323      | 5,593      |
| 50                                           | 122 | 119.397 | 1,193.97 | 1,120.52 | 811.5   | 1,081   | 3,599      | 3,894      | 3,602    | 3,600     | 3,893      | 7,234     | 6,718   | 36,020    | 3,599      | 3,894      |
| 60                                           | 140 | 123.242 | 1,232.42 | 1,166.13 | 561.0   | 747     | 2,486      | 2,763      | 2,489    | 2,486     | 2,760      | 4,992     | 4,518   | 24,880    | 2,486      | 2,763      |
| 70                                           | 158 | 127.075 | 1,270.75 | 1,210.75 | 395.5   | 527     | 1,753      | 1,994      | 1,753    | 1,751     | 1,990      | 3,512     | 3,100   | 17,510    | 1,753      | 1,994      |
| 80                                           | 176 | 130.897 | 1,308.97 | 1,254.55 | 284.0   | 378     | 1,258      | 1,462      | 1,258    | 1,255     | 1,458      | 2,516     | 2,168   | 12,560    | 1,258      | 1,462      |
| 90                                           | 194 | 134.707 | 1,347.07 | 1,301.17 | 207.4   | -       | 919        | 1,088      | 917      | 915       | 1,084      | 1,833     | 1,542   | 9,164     | 919        | 1,088      |
| 100                                          | 212 | 138.506 | 1,385.06 | 1,348.38 | 153.8   | -       | 682        | 821        | 679      | 678       | 816.8      | 1,356     | 1,134   | 6,792     | 682        | 821        |
| 110                                          | 230 | 142.293 | 1,422.93 | 1,397.13 | 115.8   | -       | 513        | 628        | 511      | 509       | 623.6      | 1,016     | 816     | 5,108     | 513        | 628        |
| 120                                          | 248 | 146.068 | 1,460.68 | 1,447.44 | 88.3    | -       | 392        | 486        | 389      | 388       | 481.8      | 770       | 606     | 3,894     | 392        | 486        |
| 130                                          | 266 | 149.832 | 1,498.32 | 1,496.28 | 68.3    | -       | 303        | 380        | 301      | 299       | 376.4      | 591       | 456     | 3,006     | 303        | 380        |
| Sensor Codes                                 |     | B       | C        | I        | E       | F       | D          | H          | J        | S         | R          | M         | U       | T         | W          | Y          |

## ORDERING INFORMATION

| Probe Length "L"                 | Sensor Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Output      | Cal Certificate                                          | Option                                                                                                                                      |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| TJ                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | R           |                                                          |                                                                                                                                             |
| B = 4" (102mm)<br>D = 8" (204mm) | B = 100R platinum, RTD<br>C = 1k platinum, RTD<br>D = 10k T2, Thermistor<br>E = 2.2k, Thermistor<br>F = 3k, Thermistor<br>G = 10k CPC, Thermistor<br>H = 10k T3, Thermistor<br>I = 1k Balco (Nickel-iron) RTD<br>J = 10k Dale, Thermistor<br>K = 10k w/11k shunt, Thermistor<br>M = 20k NTC, Thermistor<br>N = 1800 ohm, Thermistor<br>P = 10mV/°C, Linitemp<br>R = 10k US, Thermistor<br>S = 10k 3A221, Thermistor<br>T = 100k, Thermistor<br>U = 20k "D", Thermistor<br>W = 10k T2 high accuracy, Thermistor<br>Y = 10k T3 high accuracy, Thermistor<br>Z = 10k E1, Thermistor<br>CC = 15k, Thermistor | = Resistive | 0 = None<br>1 = 1 Point Cal Cert<br>2 = 2 Point Cal Cert | 0 = Standard 5 ft. cable, No QDs<br>1 = 1/4" Female Quick Disconnects (QD)<br>2 = 1/4" QDs with 8 ft. leadwires<br>3 = 10 ft. cable, no QDs |

Example:  
TJ B D R 2 1

## ACCESSORIES

Temperature range converter (AA10xxxx)



AA10xxxx