

## 5100 | SERIES

### HERMETICALLY SEALED THERMOSTAT PROBE

#### Introduction

The 5100 series is a single pole, single throw, snap-action, hermetically sealed temperature control designed for applications requiring high vibrational resistance in an isolated case. The snap-action disc is located in the very tip of the probe, assuring rapid and true response to temperature. The welded construction of this sealed thermostat ensures meeting thermal shock specifications of MIL-STD-202, method 107, test condition B. In addition, the tube will withstand a pressure exposure limit of 1500 PSI.



#### Features

- Hermetic glass seal, isolated-case only
- Ideal for immersion sensing
- Multiple mounting and terminations available
- UL and CSA recognized component

#### Applications

- Hydraulic Systems
- Degreasers
- Industrial and Portable Compressors
- Refrigeration Systems
- Generator Sets
- Chemical Baths
- Engine Coolant
- Oil and Transmission Protection



#### SPECIFICATIONS

| Contact Ratings                | <i>Cycles</i>                                                                                                                                       | <i>Voltage</i>              | <i>Amps</i>     | <i>Case Type</i> |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-----------------|------------------|
|                                | 100,000                                                                                                                                             | 120VAC / 32 VDC             | 3 (resistive)   | isolated case    |
|                                | 100,000                                                                                                                                             | 125VAC pilot duty to 240VAC | 1.5 (resistive) | isolated case    |
|                                | 6,000                                                                                                                                               | 240VAC                      | 2.5 (resistive) | isolated case    |
| <b>Contact Operations</b>      | Either close on rise (make) or open on rise (break), SPST (Single Pole, Single Throw)                                                               |                             |                 |                  |
| <b>Operating Temperature</b>   | +35°F to 480°F (+1.67°C to 249°C)                                                                                                                   |                             |                 |                  |
| <b>Dielectric Strength</b>     | 1800 Vrms, 60Hz terminals to case                                                                                                                   |                             |                 |                  |
| <b>Insulation Resistance</b>   | 60 megaohms at 500 VDC                                                                                                                              |                             |                 |                  |
| <b>Vibration</b>               | .06DA, 10-55 Hz, 20G 20-2000 Hz                                                                                                                     |                             |                 |                  |
| <b>Shock</b>                   | .75G 6ms duration (sawtooth)                                                                                                                        |                             |                 |                  |
| <b>Pressure Exposure Limit</b> | Standard tube will withstand 1500 psi max                                                                                                           |                             |                 |                  |
| <b>Approvals</b>               | UL E36687 and E66685, CSA LR25561-6 and LR25561-8                                                                                                   |                             |                 |                  |
| <b>Material</b>                | Stainless steel body and tube, compression glass seal, Mylar® sleeve, epoxy fill potting, stainless or plated steel terminals, fine silver contacts |                             |                 |                  |



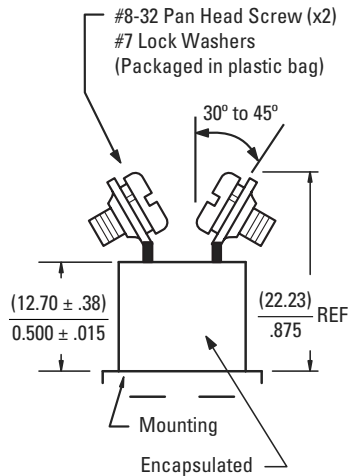
## CONTACT OPERATION

| CODE     | DESCRIPTION                |
|----------|----------------------------|
| <b>O</b> | Letter "O" = Open on Rise  |
| <b>C</b> | Letter "C" = Close on Rise |

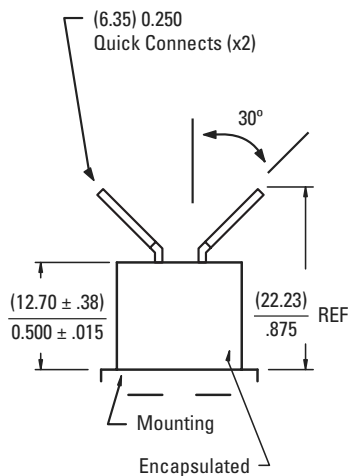


## TERMINAL SELECTION

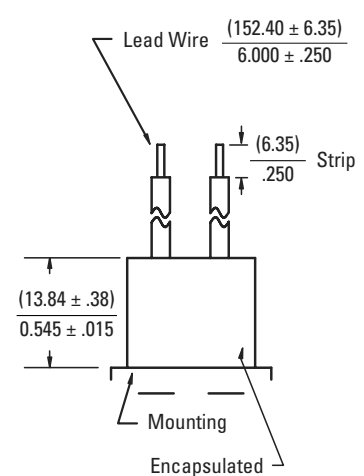
**A**



**B**



**C**



**D**

Same as terminal selection "C"

Except 2 Leads (304.80 ± 25.40)  
12.00 ± 1.00

See note 1 for lead specifications

**E**

Same as terminal selection "C"

Except 2 Leads (609.60 ± 25.40)  
24.00 ± 1.00

See note 1 for lead specifications

**F**

Same as terminal selection "C"

Except 2 Leads (1219.20 ± 25.40)  
48.00 ± 1.00

See note 1 for lead specifications

1. The standard lead wire (materials) for different temperature ranges are as follows:

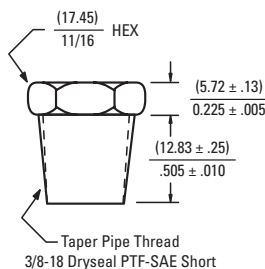
- A. Up to 220°F (104.4°C) = # 18 AWG stranded. UL Style 1015/CSA approved. (PVC insulation, color black)
- B. 221°F to 350°F (105°C to 176.6°C) = #18 AWG stranded. UL Style 1199/CSA approved. (Teflon® TFE insulation, color black)
- C. 351°F (177.2°C) and above = #18 AWG stranded. UL style 5288/CSA approved. (Composite of Teflon®, ceramic + glass braid, color brown)

2. The marking information on each thermostat will include either the name Sensata, contact operation (CLR) close on rise, (OPR) open on rise, top temperature and date code.

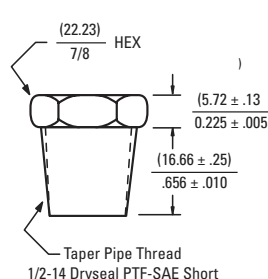


## MOUNTING THREAD SELECTION

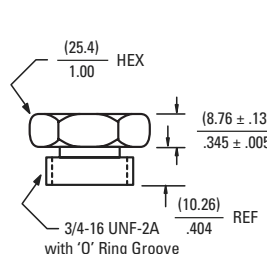
**A**



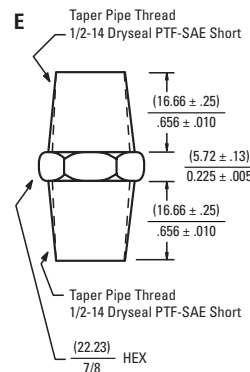
**B**



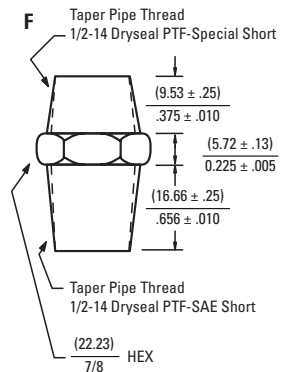
**C**



**E**



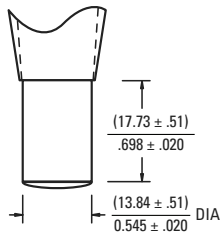
**F**



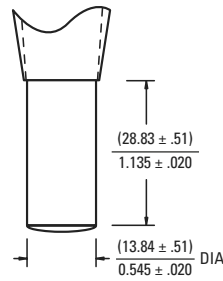


## TUBE LENGTH SELECTION

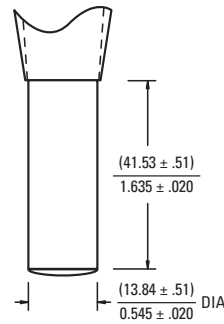
**A**



**B**



**C**



## TEMPERATURE CODES AND TOLERANCE

| Temperature Scale                                | Fahrenheit    | Celsius          | Fahrenheit     | Celsius            | Fahrenheit     | Celsius          |
|--------------------------------------------------|---------------|------------------|----------------|--------------------|----------------|------------------|
| <b>Top Temperature Settings</b>                  | 35°F to 250°F | 1.7°C to 121.1°C | 251°F to 400°F | 121.7°C to 204.4°C | 401°F to 480°F | 205°C to 248.9°C |
| <b>Standard Top Temperature Tolerance (code)</b> | ±5°F (A)      | ±2.8°C (A)       | ±10°F (C)      | ±5.6°C (C)         | ±25°F (N)      | ±13.9°C (N)      |
| <b>Nominal Temperature Differential</b>          | 20°F          | 11.1°C           | 40°F           | 22.2°C             | 40°F           | 22.2°C           |

### Note

- Select any temperature in the range of 35°F to 480°F. Standard choices fall on the 5°F increments, for example 140°F, 145°F, 150°F, 155°F... up to 475°F or 480°F
- Specify the °F temperature in the part numbering scheme as a three digit code without the '°F' in the part number. For example, for 200°F, put in code '200'
- Bottom Temperature in °F equals the "Top Temperature in °F" minus "Nominal Differential in °F". For example 310°F - 30°F = 280°F

| Tolerance Code | A      | C      | N       | Y ( Bottom Temp Only) |
|----------------|--------|--------|---------|-----------------------|
| ±°F            | ±5°F   | ±10°F  | ±25°F   | Minimum               |
| ±°C            | ±2.8°C | ±5.6°C | ±13.9°C | Minimum               |

### Note

- The standard tolerance for the top temperature is based on the temperature range the top temperature falls in, please refer to the temperature setting chart, and select the appropriate code for a standard top temperature tolerance
- For bottom temperature tolerance a "Y" = minimum trip, which indicates the "reset" trip occurs at or above the lower temperature set point.



## ORDERING OPTIONS

Example :C51CBA285C-245Y

Close contacts on temperature rise, 5100 series, isolated case 6" flying leads, 1/2-14 PTF threads, .698" tube length, 285°F top temperature with a  $\pm 10^\circ\text{F}$  standard top tolerance and a standard  $40^\circ\text{F}$  differential between top and bottom temperature for temperature range of  $251^\circ\text{F}$  to  $400^\circ\text{F}$ , differential helps calculate a bottom temperature of  $245^\circ\text{F}$  with a standard minimum reset for contacts to close at or above the bottom temperature set point.

|                                                                                           |   |    |   |   |   |   |   |   |   |   |   |   |   |   |
|-------------------------------------------------------------------------------------------|---|----|---|---|---|---|---|---|---|---|---|---|---|---|
|                                                                                           | C | 51 | C | B | A | 2 | 8 | 5 | C | - | 2 | 4 | 5 | Y |
| <b>Contact Operation</b>                                                                  |   |    |   |   |   |   |   |   |   |   |   |   |   |   |
| <b>O, C</b>                                                                               |   |    |   |   |   |   |   |   |   |   |   |   |   |   |
| See Contact Operation Table                                                               |   |    |   |   |   |   |   |   |   |   |   |   |   |   |
| <b>Family</b>                                                                             |   |    |   |   |   |   |   |   |   |   |   |   |   |   |
| 5100 Series                                                                               |   |    |   |   |   |   |   |   |   |   |   |   |   |   |
| <b>Terminal Selection</b>                                                                 |   |    |   |   |   |   |   |   |   |   |   |   |   |   |
| <b>A, B, C, D, E, F</b>                                                                   |   |    |   |   |   |   |   |   |   |   |   |   |   |   |
| See Terminal Selection Table                                                              |   |    |   |   |   |   |   |   |   |   |   |   |   |   |
| <b>Mounting Thread Selection</b>                                                          |   |    |   |   |   |   |   |   |   |   |   |   |   |   |
| <b>A, B, C, E, F</b>                                                                      |   |    |   |   |   |   |   |   |   |   |   |   |   |   |
| See Mounting Thread Selection Table                                                       |   |    |   |   |   |   |   |   |   |   |   |   |   |   |
| <b>Tube Length Selection</b>                                                              |   |    |   |   |   |   |   |   |   |   |   |   |   |   |
| <b>A, B, C</b>                                                                            |   |    |   |   |   |   |   |   |   |   |   |   |   |   |
| See Tube Length Table                                                                     |   |    |   |   |   |   |   |   |   |   |   |   |   |   |
| <b>Top Temperature (in °F)</b>                                                            |   |    |   |   |   |   |   |   |   |   |   |   |   |   |
| See Temperature Code and Tolerance Table                                                  |   |    |   |   |   |   |   |   |   |   |   |   |   |   |
| <b>Top Temperature Tolerance Code</b>                                                     |   |    |   |   |   |   |   |   |   |   |   |   |   |   |
| <b>A, C, N</b>                                                                            |   |    |   |   |   |   |   |   |   |   |   |   |   |   |
| See Temperature Codes and Tolerance Table (Available in Increments of $5^\circ\text{F}$ ) |   |    |   |   |   |   |   |   |   |   |   |   |   |   |
| <b>Bottom Temperature (in °F)</b>                                                         |   |    |   |   |   |   |   |   |   |   |   |   |   |   |
| See Temperature Codes and Tolerance Table                                                 |   |    |   |   |   |   |   |   |   |   |   |   |   |   |
| <b>Bottom Temperature Tolerance Code</b>                                                  |   |    |   |   |   |   |   |   |   |   |   |   |   |   |
| <b>A, C, N, Y</b>                                                                         |   |    |   |   |   |   |   |   |   |   |   |   |   |   |
| See Temperature Codes and Tolerance Table                                                 |   |    |   |   |   |   |   |   |   |   |   |   |   |   |



## WARNINGS



### RISK OF MATERIAL DAMAGE AND HOT ENCLOSURE

- The product's side panels may be hot, allow the product to cool before touching
- Follow proper mounting instructions including torque values
- Do not allow liquids or foreign objects to enter this product

**Failure to follow these instructions can result in serious injury, or equipment damage.**



### HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARCH FLASH

- Disconnect all power before installing or working with this equipment
- Verify all connections and replace all covers before turning on power

**Failure to follow these instructions will result in death or serious injury**

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