Miniature Temperature and Temp/Level Switches
Index: Temperature and Temperature / Level Switches

Custom Temperature Switches

Custom Temp/Level Switches

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T150 Adjustable Miniature Temperature Switch

FEATURES
- Miniature size.
- Reliable performance with repeatability of ± 2% of sensor capacity.
- Will withstand over temperatures without affecting set point or life of switch.
- External setting scale with full range adjustment.
- External lock screw for easy adjustment of set point.
- Narrow reset point range.
- Resistant to vibration.
- Direct mount offers thermal isolation between electrical switch and sensor.
- Capillary models not influenced by ambient temperatures.
- The limit filled, saturated vapor sensor is in direct contact with the temperature sensing outer shell producing fast response and accurate temperature control.

GENERAL SPECIFICATIONS
Temperature Range
- 45 degrees F to +510 degrees F.
Temperature Sensor
Limit filled, saturated vapor sensor.
Ambient Temperature Limits
- Switch Body: 65 degrees F to +225 degrees F.
Cycling
- Not to exceed 20 CPM:
Set Point Option
- Field Adjustment Only.
Construction Materials
- Wetted parts-temperature sensor. 316 stainless steel.
Non-Wetted Parts
- Body: 303 stainless steel.
- Lock ring-zinc alloy, chromate finish.
- Switch housing-zinc alloy, chromate finish.
- Caps & accessories-black valox and brass terminals.
- Indicator-303 stainless steel. Indicator Ring-black nylon.
Wire Interface
- 2 or 3 wire pigtail, furnished in 1.2" length standard.
- #20 AWG insulated with polyvinyl chloride 300 volts.
- Color code: Black - Common, White - N.O., Red - N.C.
Max System Temp
- 800 degrees F.
Max System Pressure
- 1000 PSI @ 800 degrees F.

TEMPERATURE RANGE CODE

<table>
<thead>
<tr>
<th>CODE TEMP RANGE</th>
<th>ADJUSTABLE SET POINT RANGE</th>
<th>REPEATABILITY F</th>
<th>MAXIMUM TEMPERATURE* F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-45 TO +20</td>
<td>+/-1.3</td>
<td>200</td>
</tr>
<tr>
<td>2</td>
<td>-15 TO +65</td>
<td>+/-1.6</td>
<td>250</td>
</tr>
<tr>
<td>3</td>
<td>+25 TO +95</td>
<td>+/-1.4</td>
<td>300</td>
</tr>
<tr>
<td>4</td>
<td>+80 TO +160</td>
<td>+/-1.6</td>
<td>350</td>
</tr>
<tr>
<td>5</td>
<td>+130 TO +220</td>
<td>+/-1.8</td>
<td>450</td>
</tr>
<tr>
<td>6</td>
<td>+180 TO +260</td>
<td>+/-1.6</td>
<td>500</td>
</tr>
<tr>
<td>7</td>
<td>+240 TO +350</td>
<td>+/-2.2</td>
<td>600</td>
</tr>
<tr>
<td>8</td>
<td>+345 TO +450</td>
<td>+/-2.1</td>
<td>700</td>
</tr>
<tr>
<td>9</td>
<td>+390 TO +510</td>
<td>+/-2.4</td>
<td>800</td>
</tr>
</tbody>
</table>

* Maximum temperature is the temperature the sensing bulb may be subjected to without causing changes in the operating characteristics of the switch.
**T150**

**Set Point Adjustments**

**Construction of Part Number**

**RESET POINT**
The reset point is the point at which the electrical switch snaps to the original position after the initial actuation, and will be approximately 3 degrees F.

**SET POINT ADJUSTMENT**
All switches are easy to adjust. First, loosen the knurled locking ring. Now, set the sliding gauge pointer to the desired temperature point. Tighten the locking ring and the temperature switch is locked and ready to use.

**CONSTRUCTION OF PART NUMBER**

<table>
<thead>
<tr>
<th>MODEL</th>
<th>TEMPERATURE RANGE CODE</th>
<th>CONTACT SELECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>T150D</td>
<td>5</td>
<td>1 = SPST</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 = SPDT (standard)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SPECIAL WIRE LENGTH INCHES</th>
</tr>
</thead>
<tbody>
<tr>
<td>L 18</td>
</tr>
</tbody>
</table>

**ELECTRICAL INTERFACE**
SEE OPTIONS BELOW

**ELECTRICAL SWITCH CODE**
TABLE B

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**Electrical Switch Selection**

**Interface Options**

**ELECTRICAL SWITCH SELECTION**

<table>
<thead>
<tr>
<th>SWITCH CODE</th>
<th>VOLTS AC/DC</th>
<th>AMP RESISTIVE</th>
<th>AMP INDUCTIVE</th>
<th>CONTACT MATERIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>115/28</td>
<td>1/1</td>
<td>1/5</td>
<td>GOLD</td>
</tr>
<tr>
<td>5</td>
<td>250/28</td>
<td>5/5</td>
<td>5/3</td>
<td>SILVER</td>
</tr>
</tbody>
</table>

For dry circuitry, i.e. 5VDC-50mA or less, use gold contact switch (Code 1). Above switches are SPDT, but may be used as SPST.

**OPTIONAL ELECTRICAL INTERFACES**

- **TB**
  2 or 3 Standard
  1/4" Quick Connect Terminals

- **TS**
  2 or 3 #6-32
  Pan Head Screw Terminals

- **2 or 3 Hook-up Wires Standard**
  20 AWG PVC

**Color Code:**
Black = Common
White = N.O.
Red = N.C.

**Optional 144-027**
Bored Through
Fitting / Adaptor
Ordered Separately

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**L10 Series**

- **Wires are 20 AWG 24" Long**
- **Sealed to Meet NEMA 6**
- **1/4" NPT 5/8" Hex**
- **Float**
  - 1 1/4" Dia x
  - 1 3/4" Tall
- **Brass Stem with Buna Float & 316 SS Clip**

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**General Specifications:**
- **Operating Temp:** -40°F to +180°F in Water
  - -40°F to +225°F in Oil
- **Temp Settings:** +100°F to +225°F
  - in 25°F increments, Specials Available
- **Repeatability:** ± 5°F
- **Wetted Material:** Brass, Buna & 316 SS
- **Fitting:** 1/4" NPT Male
- **Electrical Ratings:**
  - Level Switch: 50 Volt Amps, 1/4 A at 150 VAC
  - Temp Switch: 8 Amps at 12 VDC
  - 2.8 Amps at 120 VAC
- **Minimum Media Specific Gravity:** 0.75
- **Crush Pressure:** 160 psig
- **Lead Wires:** 20 AWG 24" PVC
- **Patent Pending Thermally Conductive Potting**
  - Enhances Response Time to Temp Changes.

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**Temperature/Level Vertical Mount Brass**

- **Response time curve of properly immersed temperature/level sensor.**
  - Response time is about 1°F/second.
  - Tests conducted in exothermal EX-250HT oil bath.
  - Media is Dow Corning 200-50 cSt silicone oil.
  - Response rates vary by media and conditions.

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**WIRING SCHEMATIC**

- **Note:** Bottom of unit stem must be submerged a minimum of 2 3/4" for level switch actuation.

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**PART NUMBER CONSTRUCTION:**

```
LXX - 06 - C3 - NX - XX
```

- **O = Level N/O**
- **B = Temp N/O**
- **C = Level N/C**
- **C = Temp N/C**

<table>
<thead>
<tr>
<th>LXX</th>
<th>O</th>
<th>B</th>
<th>C</th>
<th>XX</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
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<td>N</td>
<td>N</td>
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<tr>
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<td>N</td>
<td>P</td>
</tr>
<tr>
<td>18</td>
<td>2</td>
<td>N</td>
<td>C</td>
<td>P</td>
</tr>
</tbody>
</table>

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**Caution:** Customer media and environment must be compatible with construction materials as outlined above.

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TP Series

ECONOMICAL STAINLESS STEEL TEMPERATURE SWITCH

Temperature Ratings:
Units are available from 50°F to 250°F in 25°F increments as standard. The standard accuracy is ±5°F. Other temperatures are available on request. Maximum system temperature is 275°F.

Electrical Ratings:
- 6 Amps at 120 VAC
- 4 Amps at 240 VAC
- 8 Amps at 12 VDC
- 4 Amps at 24 VDC

Pressure Rating:
1,000 PSIG

Construction Materials:
- Wetted Parts: 316L Stainless Steel machined one piece construction.
- Non-wetted Parts:
  - Wires: 36", 20 AWG, Green, crosslinked, irradiated polyethylene.

General Specifications:
A Creep Action Thermostat / Thermal Protector Switch with almost no differential between opening and closing temperatures. The TP Series is available in either in Normally Closed to Open on increasing temperature or Normally Open to Close on increasing temperature. Temperatures are preset and NOT Field Adjustable.

Part Number Construction: TP - XXX - NX
- Customer Temp in °F i.e. 075 or 225
- NO = Normally Open
- NC = Normally Closed

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ECONOMICAL BRASS TEMPERATURE SWITCH

Temperature Ratings:
Units are available from 100°F to 250°F in 25°F increments as standard. The standard accuracy is ±5°F. Other temperatures are available on request. Maximum system temperature is 275°F.

Electrical Ratings:
- 8 Amps at 12 VDC
- 4 Amps at 24 VDC
- 2.6 Amps at 120 VAC

Pressure Rating:
1,000 PSIG

Construction Materials:
- Wetted Parts: Brass
- Non-wetted Parts:
  - Wires: 36", 20 AWG, Green, crosslinked, irradiated polyethylene.

General Specifications:
A Creep Action Thermostat / Thermal Protector Switch with almost no differential between opening and closing temperatures. The T10 Series is available in either in Normally Closed to Open on increasing temperature or Normally Open to Close on increasing temperature. Temperatures are preset and NOT Field Adjustable.

Part Number Construction: T10 - XXX - NX

Customer Temp in °F
i.e. 075 or 225

NO = Normally Open
NC = Normally Closed
3-Year Million Cycle Limited Warranty

The proven quality and reliability of Whitman Controls Corporation products is backed by our 3 year / one million cycle warranty - whichever comes first. Our complete warranty statement is available on request.

All Product Manufactured by Whitman Controls Corporation is RoHS Compliant and C E Conformant. Whitman Controls is an ISO 9001:2000 Registered Company.