Monitor and control temperature in heating and cooling applications with the Series TCS Thermocouple Switch. The Series TCS offers a wide temperature range, two selectable alarm sets, and an internal buzzer indicating alarm condition or error. The user can define set point, heating/cooling regulation, cycle time, alarm configuration, load status, and ambient probe adjustment. The thermocouple switch features password protection and error/alarm messaging. Temperature and output status is indicated on the bright red LED display. Use the configuration key (sold separately) to quickly program multiple units. The Series TCS includes a fitting clip for panel mounting, gasket, rear terminal cover and instruction manual.

INSTALLATION

Note: Unit must be mounted away from vibration, impacts, water and corrosive gases.

• Cut hole in panel 2.80 x 1.14 inches (71 x 29 mm).
• Apply silicone (or rubber gasket) around the perimeter of the hole to prevent leakage.
• Insert unit into hole of panel.
• Slide removable fitting clips onto unit from the back until secure to panel.
• Remove back cover to wire unit.
• Wiring diagram is displayed on the top of the unit.
• (Note: PROBE CABLE LENGTH MUST NOT EXCEED 238 ft (100 m). DO NOT INSTALL PROBE CABLE NEAR POWER CABLES).
• Replace cover once wiring is complete.

SPECIFICATIONS

Probe Range: 32 to 999°F (0 to 700°C) for Type J thermocouple; 32 to 999°F (0 to 999°C) for Type K or S thermocouples.
Input: Type J, K or S thermocouple.
Output: SPDT relay rated 16A @ 240 VAC resistive.
Horsepower Rating (HP): 1 HP.
Control Type: ON/OFF.
Power Requirements: 115 VAC, 230 VAC, 12 VAC/VDC or 24 VAC/VDC (depending on model).
Accuracy: ±1% FS.
Display: 3-digit, red, 1/2˝ (12.7 mm) digits, plus sign.
Resolution: 1°.
Memory Backup: Nonvolatile memory.
Temperature Limits:
• Ambient: 32 to 158°F (0 to 70°C);
• Storage Temperature: -4 to 176°F (-20 to 80°C).
Weight: 2.3 oz (65 g).
Front Panel Rating: IP64.
Agency Approvals: CE, cUR, UR.

WIRING DIAGRAM
PARAMETERS

<table>
<thead>
<tr>
<th>Description</th>
<th>Units</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP</td>
<td>Degrees</td>
<td>r1 to r2</td>
</tr>
<tr>
<td>r0</td>
<td>Degrees</td>
<td>1 to 99°</td>
</tr>
<tr>
<td>r1</td>
<td>Degrees</td>
<td>0 to 999°</td>
</tr>
<tr>
<td>r2</td>
<td>Degrees</td>
<td>0 to 999°</td>
</tr>
<tr>
<td>d0</td>
<td>Option</td>
<td>Hi/Co</td>
</tr>
<tr>
<td>c0</td>
<td>Minutes</td>
<td>0 to 59</td>
</tr>
<tr>
<td>c2</td>
<td>Option</td>
<td>0/1 Off/On</td>
</tr>
<tr>
<td>P1</td>
<td>Degrees</td>
<td>-10 to 10°</td>
</tr>
<tr>
<td>P5</td>
<td>Option</td>
<td>tcJ, tcH, tcS</td>
</tr>
<tr>
<td>P6</td>
<td>Numeric</td>
<td>0 to 3</td>
</tr>
<tr>
<td>H5</td>
<td>Numeric</td>
<td>0 to 255</td>
</tr>
<tr>
<td>A0</td>
<td>Degrees</td>
<td>1 to 999°</td>
</tr>
<tr>
<td>A1</td>
<td>Degrees</td>
<td>0 to 999°</td>
</tr>
<tr>
<td>A2</td>
<td>Seconds</td>
<td>0 to 999</td>
</tr>
<tr>
<td>A3</td>
<td>Option</td>
<td>0, 1, or 2</td>
</tr>
<tr>
<td>A4</td>
<td>Degrees</td>
<td>1 to 999°</td>
</tr>
<tr>
<td>A5</td>
<td>Degrees</td>
<td>0 to 999°</td>
</tr>
<tr>
<td>A6</td>
<td>Seconds</td>
<td>0 to 999</td>
</tr>
<tr>
<td>A7</td>
<td>Option</td>
<td>0, 1, or 2</td>
</tr>
</tbody>
</table>

PARAMETER DESCRIPTIONS
- **SP**: Set Point- Desired Regulation Temperature
- **r0**: Differential or Hysteresis
- **r1**: Lower Set Point Limit
- **r2**: Higher Set Point Limit
- **d0**: Heating or Cooling Control
- **c0**: Min. Stop Time for Load
- **c2**: Load Status During Probe Error
- **P1**: Ambient Probe Adjustment
- **P5**: Ambient Probe Type
- **P6**: Probe Response Time
- **H5**: Parameter Access code
- **A0**: Alarm 1 Hysteresis
- **A1**: Alarm 1 Threshold
- **A2**: Alarm 1 Exclusion Time
- **A3**: Alarm 1 Configuration
- **A4**: Alarm 2 Hysteresis
- **A5**: Alarm 2 Threshold
- **A6**: Alarm 2 Exclusion Time
- **A7**: Alarm 2 Configuration

PARAMETER PROGRAMMING

**Set Point (SP)** is the only parameter the user can access without code protection.
- **Press SET**. SP text will appear on the display.
- **Press SET** again. The real value is shown on the display.
- **The value can be modified with the UP and DOWN arrows.**
- **Press SET** to enter any new values.
- **Press SET and DOWN at the same time to quit programming or wait one minute and the display will automatically exit programming mode.**

**Access to all code protected parameters.**
- **Press SET** for 8 seconds. The access code value 00 is shown on the display.
- **With the UP and DOWN arrows, code can be set to user needs.**
- **Press SET** to enter the code. If code is correct, the first parameter label is shown on the display (SP).
- **Move to the desired parameter with the UP and DOWN keys.**
- **Press SET** to view the value on the display.
- **The value can be modified with the UP and DOWN arrows.**
- **Press SET** to enter the value and exit to text parameter.
- **Repeat until all necessary parameters are modified.**
- **In the event of alarm or error condition, the internal buzzer is activated. To silence the buzzer, press and hold the SET and Down keys.**

**LED INDICATIONS**

- **OUT** This indicates the load is connected. The system waits for the programmed minimum stop time of the load.

**DISPLAY MESSAGES**

In normal operation, the probe temperature will be shown on the display. In case of alarm or error, the following messages will be shown:
- **Er** = Memory Error
- **oo** = Short-Circuit Probe Error (output determined by c2).

**MAINTENANCE/REPAIR**

After final installation of the TCS Series Digital Thermocouple Switch, no routine maintenance is required. A periodic check of system calibration is recommended. The devices are not field repairable and should be returned to the factory if recalibration or other service is required. After first obtaining a Returned Goods Authorization (RGA) number, send the material, freight prepaid, to the following address. Please include a clear description of the problem plus any application information available.

Dwyer Instruments
Attn: Repair Department
102 Highway 212
Michigan City, IN 46360 U.S.A

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