The Series TSF Thermocouple FM Approved Limit Control provides audible alarm status along with a robust 16 amp relay output. Unit allows the user to easily select automatic or manual reset along with 13 other parameters. The TSF series has a built in reset button on the front panel or can accept an external reset.

The ease of programming and low price make the TSF series the best value limit control on the market.

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).
- Use the included gasket, or apply silicone around the perimeter of the hole to prevent leakage.
- Insert unit into the hole in panel, and secure using the included mounting clips.
- Wire the unit per the wiring diagram on the product label or in IOM.

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; manual/automatic reset.
Power Requirements: 115 VAC, 230 VAC, 12 VAC/VDC or 24 VAC/VDC (depending on model).
Power Consumption: 4 VA.
Accuracy: ±1% FS.
Display: 3-digit, red, 1/2˝ (12.7 mm) digits and sign.
Resolution: 1°.
Memory Backup: Nonvolatile memory.
Ambient Operating Temperature: 32 to 150°F (0 to 65°C).
Storage Temperature: -4 to 176°F (-20 to 80°C).
Weight: 2.3 oz (65 g).
Front Panel Rating: IP64.
Agency Approvals: CE, FM, cUR, UR.

Wiring Diagram

* Use ungrounded thermocouples only with 12 VAC/VDC and 24 VAC/VDC models.
List of Parameters

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<td>Numeric</td>
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Parameter Descriptions

SP = Set Point. Temperature we wish to activate relay output.

r0 = Differential or hysteresis.
r1 = Lower value for SP.
r2 = Higher value for SP.
r3 = Alarm reset.

Aut = Automatic

hoL = Manual

PuP = Reset on Power Up

d0 = High or low limit control.

Where TS is the probe input temperature.

If d0 = Hi, r3 = Aut, c3 = No:
- If TS ≥ SP relay output OFF, buzzer ON, AL displayed.
- If TS ≤ SP-r0 relay output ON, buzzer OFF, TS displayed.

If d0 = Lo, r3 = Aut, c3 = No:
- If TS ≤ SP relay output OFF, buzzer ON, AL displayed.
- If TS ≥ SP+r0 it waits for reset to turn relay output ON, buzzer OFF, TS displayed.

If d0 = Hi, r3 = PuP, c3 = No:
- When the device is powered up relay output OFF, buzzer ON, AL displayed.
- If TS ≥ SP relay output OFF, buzzer ON, AL displayed.
- If TS ≤ SP-r0 it waits for reset to turn relay output ON, buzzer OFF, TS displayed.

If d0 = Lo, r3 = PuP, c3 = No:
- When the device is powered up relay output OFF, buzzer ON, AL displayed.
- If TS ≤ SP relay output OFF, buzzer ON, AL displayed.
- If TS ≥ SP+r0 it waits for reset to turn relay output ON, buzzer OFF, TS displayed.

The reset is accepted when the probe temperature TS ≤ SP - r0.

The keyboard security code can be reset to ZERO by turning off the controller and turning it on again while keeping the SET key depressed.

Reset an alarm:

When the parameter r3 = Aut, the alarm condition will automatically reset once the probe temperature reading returns to non-alarm conditions. When the parameter r3 = hoL, the alarm condition will remain activated until a reset signal is received either by pressing the RST key on the front face of the control or by closing contact to the rear input.

- When d0 = Hi
  - The reset is accepted when the probe temperature TS ≤ SP - r0.
- When d0 = Lo
  - The reset is accepted when the probe temperature TS ≥ SP + r0.

LED indication, buzzer and display messages:

The LED Alarm indicates if the relay output is connected or not. When the relay output is connected the message AL is displayed alternated with the temperature ambient of the probe.

In normal operation the probe temperature will be shown on the display.

In case of alarm or error, the following messages can be shown:

- Erl = memory error
- ooo = open probe error
- --- = ambient temperature out to range

In case of alarm or error the internal buzzer is activated. The buzzer can be silenced by pressing the SET and DOWN arrows at the same time (when a new alarm or error occurs the buzzer will sound again).

Maintenance:

Upon final installation of the Series TSF Thermocouple Limit Control, no routine maintenance is required. A periodic check of the system calibration is recommended. The Series TSF is not field serviceable and should be returned if repair is needed (field repair should not be attempted and may void warranty). Be sure to include a brief description of the problem plus any relevant application notes. Contact customer service to receive a return goods authorization number before shipping.

Cleaning and Repair:

Clean the surface of the display controller with a soft damp cloth. Never use abrasive detergents, petrol, alcohol or solvents.