



Engineering Bulletin

#89.4.3

Over/Undertemperature Protection

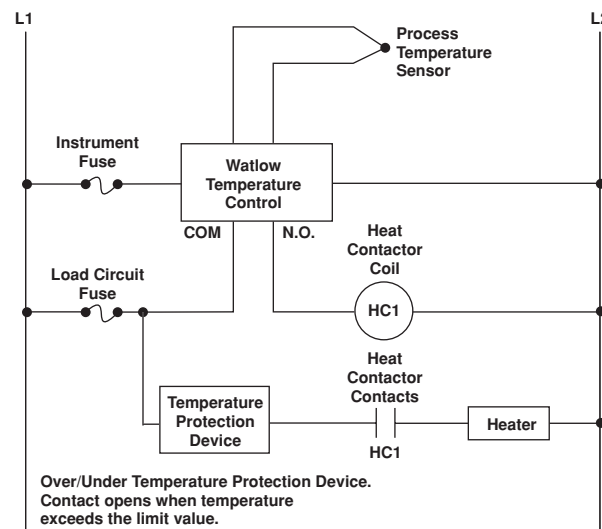
Failure of components in a temperature control loop, such as the sensor, heater control relay, or main temperature control, can result in damage to a product in process, a meltdown of a heater, and/or a damaging fire.

To protect against this possibility, over/undertemperature protection must be provided to interrupt or remove power from the heater circuit. A “thermal fuse line” at the heater, or a “mechanical thermostwitch” at the heater are examples of recommended over/under temperature protection. For precise, repeatable limit protection, an “electronic limit control” may be used. We recommend the temperature protection device have UL, CSA, or FM approval, and be applied in the classification for which it was tested and approved. An example of a single phase wiring line diagram appears below.



WARNING

Install high or low temperature control protection in systems where an overtemperature or undertemperature fault condition could present a fire hazard or other hazard. Failure to install temperature control protection where a potential hazard exists could result in damage to equipment and property, and injury to personnel.



Further information is available from Watlow Controls; ask for application assistance.

Disclaimer of Warranty

This document is a presentation of a general overview and statement of the safety-related need for and method of applying “over/undertemperature protection.” Because of the diversity of conditions and hazards under which control products may be applied and because of the differences in components and methods of their installation, **no representation or warranty of any kind, express or implied, is hereby made**, that the limit control protection discussed and presented herein will be effective in any particular application or set of circumstances, or that additional or different precautions will not be reasonably necessary for a particular application. We will be pleased to consult with any customer regarding a specific application upon written request.

(1826)

Watlow Controls

1241 Bundy Boulevard, P.O. Box 5580, Winona, Minnesota USA 55987-5580
Phone: 507-454-5300, Fax: 507-452-4507, Internet: <http://www.watlow.com>

Limit Controls from Watlow

Series L — LV / LF Limit

- Open board, potted case, DIN-rail mount or panel mount 1/8 DIN square package styles
- Fixed or push-to-set adjustable set point operation
- High or low limit with auto or manual reset on power loss
- Remote reset capability
- Celsius or Fahrenheit indication (factory selectable)
- Sensor break protection to de-energize system for safety
- Operating environment:
 - 0 to 70°C (32 to 158°F)
 - 0 to 90% RH, non-condensing
- Agency approvals:
 - Series LF (potted version only)
 - UL 991 recognized temperature limit for cooking industry
 - Series LV and Series LF (including potted version)
 - UL 873 recognized temperature regulator
 - ANSI Z21.23 Gas appliance thermostat approval
 - FM Class 3545 temperature limit switches



Series 97 — 1/16 DIN Limit

- Programmable messages to display user programmed limit and safe message
- Microprocessor-based for accurate set point settings and quick output response
- Remote reset capability
- Four outputs for high/low limit, alarms, communication, retransmit requirements
- Software and hardware lockouts for high security
- Aesthetic match of Series 96 temperature controller
- Operating environment:
 - 0 to 65°C, 32 to 149°F
 - 0 to 90% RH, non-condensing
- NEMA 4X, 12, IP65 case makes the control water and corrosion resistant
- Agency approvals: FM, CE, NEMA 4X, 12, and IP65



Series SD — Family of Limit Controllers

- Available in a 1/32, 1/16, 1/8 (horizontal or vertical) or 1/4 DIN package
- Up to three outputs (two on 1/32 DIN model) provide high and low limit/alarm capacity
- Lockout functions for increased security
- Flexible high/low alarm output notifies of trouble with flashing display message
- Programmable dual display default shows actual, limit, blank or alarm default display information
- Aesthetic match for Series SD, 96 and F4 PID controllers
- Operating environment:
 - -18 to 65°C (0 to 149°F)
 - 0 to 90% RH, non-condensing
- Agency approvals: FM, CE, NEMA 4X, 12, IP65, and NSF



TLM Series — Multi-Channel Limit Monitor

- Eight channel monitoring in a single compact package
- Multiple sensor types (one sensor type per TLM)
- Selectable limit set points for each channel. TLM-8P has field adjustable limit set points.
- Sub-panel mounting
- Flexible interlocks
- Self-test diagnostics
- Latching alarms
- Operating environment:
 - 0 to 60°C (32 to 140°F)
 - 0 to 90% RH, non-condensing
- Agency approvals: FM, CE, UL listed, C-UL listed



**TOTAL
CUSTOMER
SATISFACTION**

3 Year Warranty



Watlow Controls

1241 Bundy Boulevard, P.O. Box 5580
Winona, Minnesota 55987-5580
Ph: 507-454-5300, Fax: 507-452-4507
Internet: <http://www.watlow.com>

0600-0004-0001 Rev. D, September 2003



(2404)

Your Authorized Watlow Distributor is:

