

## Watlow

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## SERIES LV Limit Controller

Watlow's family of microprocessor-based limit controllers provides an economical solution for applications requiring temperature limit control. Limits are available in a broad range of packaging options, allowing selection of the best version for an application. Limits are available with an operator interface and can be ordered in 1/8 DIN-square panel mount or DIN-rail mount design configurations.

The SERIES LV limit family incorporates a microprocessor design platform. This design provides significant improvements in the performance, repeatability and accuracy offered by Watlow's current line of analog limit controllers.

The variable SERIES LV limit includes an operator interface for viewing and selecting the set point. A red, four-character seven segment LED displays the set point. Set point selection is made with a continuous turn rotary encoder. Operating range temperature values are customer defined in the product configuration part number.

The limit controllers are factory mutual (FM) approved with special UL® approval for the open board potted versions. Watlow's limit controllers include industry leading service and support and are protected by a three-year warranty.

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## Dimensions

- DIN-rail model can be DIN-rail or chassis mount DIN-rail spec DIN 50022, 1.38 in. x 0.30 in. (35 mm x 7.5 mm)

## Limit Controller

- Microprocessor-based limit controller
- Nominal switching hysteresis, typically 3°F (1.7°C)
- High or low limit, factory selectable
- Latching output requires manual reset upon over or under temperature condition
- Manual or automatic reset on power loss, factory selectable
- Internal front panel or external customer supplied momentary reset switch
- Input filter time: 1 second

## Operator Interface

- Four digit, seven segment LED displays, 0.28 in. (7 mm) high
- °F or °C indicator LED
- Alarm indicator LED
- Continuous turn, velocity sensitive rotary encoder for set point adjustment
- Front panel SET/RESET

## Standard Conditions For Specifications

- Rated line voltage, 50 to 60Hz, 0 to 90% RH non-condensing, 15-minute warm-up
- Calibration ambient range: 77°F (25°C) ±3°C

## Sensor Input

### Thermocouple

- Grounded or ungrounded
- Type E, J, K, T thermocouple
- >10 MΩ input impedance
- 250 nV input referenced error per 1Ω source resistance

### RTD

- 2-wire platinum, 100Ω
- DIN-curve (0.00385 curve)
- 125μA nominal RTD excitation current

## Input Accuracy Span Range

Type E: -328 to 1470°F (-200 to 800°C)

Type J: 32 to 1382°F (0 to 750°C)

Type K: -328 to 2282°F (-200 to 1250°C)

Type T: -328 to 662°F (-200 to 350°C)

RTD (DIN) -328 to 1472°F (-200 to 800°C)

## Thermocouple Input

- Calibration accuracy: ±1% of input accuracy span, ±1° at standard conditions and actual calibration ambient. Exception: Type T, ±2.4% of input accuracy span for -328 to 32°F (-200 to 0°C)
- Temperature stability: ±0.3° per degree change in ambient

## RTD Input

- Calibration accuracy ±1% of input accuracy span ±1° at standard conditions and actual calibration ambient
- Temperature stability: ±0.2° per degree change in ambient

## Allowable Operating Ranges

Type E: -328 to 1470°F (-200 to 800°C)

Type J: -346 to 1900°F (-210 to 1038°C)

Type K: -454 to 2500°F (-270 to 1370°C)

Type T: -454 to 750°F (-270 to 400°C)

RTD (DIN) -328 to 1472°F (-200 to 800°C)

## Electromechanical Relay, Form C

- Min. load current: 100mA
- 8A @ 240VAC or 30VDC max., resistive
- 250VA pilot duty, 120/240VAC max., inductive
- Use RC suppression for inductive loads
- Electrical life 100,000 cycles at rated current

## External Reset Switch

- Momentary, dry contact closure

## Agency Approvals

### SERIES LV (potted version only)

- UL® 991 recognized temperature limit for cooking industry
- UL® 60730-1

### SERIES LV (including potted version)

- UL® 873 recognized temperature regulator
- UL® 197 reviewed for use in cooking appliances
- UL® 991
- UL® 50 IP65 for tactile key models
- ANSI Z21.23 Gas appliance thermostat approval
- CSA C22.2#24 approved limit control
- FM Class 3545 temperature limit switches
- RoHS, WEEE

## Terminals

- 0.25 in. (6.3 mm) quick connect, push on terminal or removable screw terminals

## Power

- 24VAC +10%; -15%; 50/60Hz, ±5%
- 120VAC +10%; -15%; 50/60Hz, ±5%

- 230 to 240VAC +10%; -15%; 50/60Hz, ±5%
- 10VA max. power consumption
- Data retention upon power failure via nonvolatile memory

**Operating Environment**

- 32 to 158°F (0 to 70°C)
  - 0 to 90% RH, non-condensing
  - Storage temperature: -40 to 185°F (-40 to 85°C)
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**Adjustable set points**

- Offers control flexibility

**Four character LED display**

- Improves set point selection accuracy

**Multiple mounting options**

- Minimizes installation time

**High or low limit with auto or manual reset**

- Provides application flexibility

**Fahrenheit or Celsius operation with indication**

- Offers application flexibility

**Sensor break protection**

- Provides positive system shutdown

**Agency approvals**

- Meets certification requirements/compliance

**Microprocessor based technology**

- Ensures accurate, repeatable control
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