



Series 988LF Single Channel Temperature Controller Provides High Performance Easier Than Ever

Watlow's Series 988LF controller offers reliable high performance temperature control in a new user-friendly model. This simplified version of the Series 988 provides users with an easy-to-use and operate, high performance, 1/2 DIN panel-mount temperature controller. The features of the 988LF were specifically developed to fulfill the need for a single input, dual output, auto-tuning PID controller that is easy to set up and operate. Even though the 988LF offers a simple to use and set up operator interface, the high performance operating characteristics of Watlow's most advanced temperature controllers has been maintained.

The 988LF offers an optional remote set point input feature along with both manual and automatic modes of control with bumpless transfer and auto-tuning. Output two can be used as either a secondary heat/cool output or a process/deviation alarm. The display key enables selectable viewing of the control set point, deviation from set point and percentage of power being supplied to the primary output.

The Series 988LF also features a three-year warranty and four day delivery on all model numbers in limited quantities.

Features

- Simple to use operator interface
- 10Hz sampling rate
- ± 0.1 percent of span calibration accuracy
- NEMA 4X front panel seal
- Universal signal conditioner input
- Universal power supply

Benefits

- Reduced training and set up time
- Control accuracy
- High reliability performance
- Reduced downtime
- Sensor input flexibility
- Worldwide installation

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Specifications—W988-LSPN Rev A01

Line Voltage/Power

- 100-240V \approx (ac/dc) +10%, -15%; 50/60Hz, \pm 5%
- 24-28V \approx (ac/dc) +10%, -15%; 50/60Hz, \pm 5%
- Power consumption 16VA maximum

Operating Environment

- 32 to 149°F (0 to 65°C)
- 0 to 90% RH, non-condensing

Agency Approvals

- UL® 873, C-UL File #43684
- CE: 89/336/EEC Electromagnetic Compatibility Directive
EN 50081-2: 1994 Emissions
EN 50082-2: 1995 Immunity
- 73/23/EEC Low-Voltage Directive
EN 61010-1: 1993 Safety
- NEMA 4X

Accuracy

- Calibration accuracy and sensor conformity: \pm 0.1% of span, \pm 1 LSD, 77°F \pm 5°F (25°C \pm 3°C) ambient and rated line voltage \pm 10%
- Accuracy span: 1000°F (540°C) minimum
- Temperature stability: \pm 0.2°F/°F (0.1°C/°C) change in ambient

Mechanical

- $\frac{1}{8}$ DIN panel mount, NEMA 4X (IP65 equivalent) front panel
- Overall width x height x depth
Horizontal; 4.03 in x 2.18 in x 4.74 in (102 mm x 55 mm x 120 mm)
Vertical; 2.18 in x 4.03 in x 4.74 in (55 mm x 102 mm x 120 mm)
- Depth behind panel; 4.06 in (103 mm)
- Weight less than or equal to 14.0 oz (0.40 kg)

Input Range

Specified temperature ranges represent the controller's operational span.

Thermocouple

(Available with basic or universal signal conditioner)

Type C ²	32 to 4200°F	(0 to 2316°C)
Type D ²	32 to 4200°F	(0 to 2316°C)
Type E	-328 to 1470°F	(-200 to 799°C)
Type J	32 to 1500°F	(0 to 816°C)
Type K	-328 to 2500°F	(-200 to 1371°C)
Type N	32 to 2372°F	(0 to 1300°C)
Type T	-328 to 750°F	(-200 to 399°C)
Pt 2 ²	32 to 2543°F	(0 to 1395°C)

(Available with universal signal conditioner)

Type B	1598 to 3300°F	(870 to 1816°C)
Type R	32 to 3200°F	(0 to 1760°C)
Type S	32 to 3200°F	(0 to 1760°C)

RTD Resolution (DIN or JIS)

1° (DIN)	-328 to 1472°F	(-200 to 800°C)
1° (JIS)	-328 to 1166°F	(-200 to 630°C)
0.1° (DIN and JIS)	-99.9 to 999.9°F	(-73.3 to 537.7°C)

Process

0-50mV \approx (dc)	-999 to 9999 units
0-5V \approx (dc)	-999 to 9999 units
1-5V \approx (dc)	-999 to 9999 units
0-10V \approx (dc)	-999 to 9999 units
0-20mA \approx (dc)	-999 to 9999 units
4-20mA \approx (dc)	-999 to 9999 units

Ordering Information—W988-LMNN Rev A00

Series 988LF

Single channel $\frac{1}{8}$ DIN temperature controller, vertical or horizontal mount

Hardware

- 6 = 24-28V \approx (ac/dc) vertical mounting
- 7 = 24-28V \approx (ac/dc) horizontal mounting
- 8 = 100-240V \approx (ac/dc) vertical mounting
- 9 = 100-240V \approx (ac/dc) horizontal mounting

Software

- L = Standard

#1 Input

- 1 = Basic thermocouple signal conditioner (excluding types B, R, and S)
- 2 = Universal signal conditioner (see Range Information)

Remote Set Point Input

- 0 = None
- 2 = Universal signal conditioner (Remote set point)

#1 Output

- B = Solid state relay, Form A, 0.5A, with RC suppression
- C = Switched dc or open collector, isolated
- D = Electromechanical relay¹, Form C, 5A, with RC suppression
- E = Electromechanical relay¹, Form C, 5A, without contact suppression
- F = Universal process. 0-5V \approx (dc), 1-5V \approx (dc), 0-10V \approx (dc), 0-20mA \approx (dc), 4-20mA \approx (dc), isolated
- K = Solid state relay, Form A, 0.5A, without contact suppression

#2 Output

- A = None
- B = Solid state relay, Form A, 0.5A, with RC suppression
- C = Switched dc or open collector, isolated
- D = Electromechanical relay¹, Form C, 5A, with RC suppression
- E = Electromechanical relay¹, Form C, 5A, without contact suppression
- K = Solid state relay, Form A, 0.5A, without contact suppression

Display/Overlay

- GG = Green/Green display
- GR = Green/Red display
- RG = Red/Green display
- RR = Red/Red display

¹ Electromechanical relays are warranted for 100,000 closures only. Solid-state switching devices are recommended for applications requiring fast cycle times or extended service life.

² Not an ANSI symbol.