

# Indicators

Product	Mounting	Display Height	Page
<b>EZ-ZONE® PM</b>	1/32, 1/16, 1/8, 1/4 DIN front panel	Upper/Left: 0.30 to 0.80 in. (8 to 20 mm) Lower/Right: 0.22 to 0.50 in. (6 to 13 mm)	<b>379</b>
<b>EZ-ZONE RUI and Gateway</b>	1/16 DIN front panel	Upper: 0.40 in. (10 mm) Lower: 0.24 in. (6 mm)	<b>380</b>
<b>SERIES TM</b>	DIN-rail, front panel, chassis	0.28 in. (7 mm)	<b>381</b>





# Indicators

## EZ-ZONE® PM

The EZ-ZONE® PM panel mount controller offers control options that reduce system complexity and thermal loop ownership cost. It can be ordered as a PID controller, an over/under limit controller or its functions can be combined into an integrated controller. An option to integrate a high amperage power controller output with a high-performance PID controller and an over/under limit controller in one space-saving, panel mount package is also available. Many communications options are offered to support connectivity needs.

Because the EZ-ZONE PM controller is highly scalable, pay only for what is needed. This controller is available in 1/32, 1/16, 1/8 and 1/4 DIN panel mount packages. The EZ-ZONE PM controller is easy to use and is ideal for PID, over/under limit or integrated controller needs.

### Features and Benefits

#### Integrated PID and limit controller

- Reduces wiring time and termination complexity compared with connecting discrete products
- Decreases required panel space
- Lowers installation costs
- Increases user and equipment safety for over/under temperature conditions

#### High amperage power control output

- Drives 15 ampere resistive loads directly
- Reduces component count
- Decreases cost of ownership

#### Current monitoring

- Detects heater current flow and provides alarm indication of a failed output device or heater load

#### Serial communication capabilities

- Provides a wide range of protocol choices including Modbus® RTU, EtherNet/IP™, Modbus® TCP, PROFIBUS DP and DeviceNet™
- Supports network connectivity to a PC or PLC

#### Dual-channel controller

- Provides two PID controllers in one space-saving package



#### Enhanced control options

- Easily handles complex process problems such as cascade, ratio, differential, square-root, motorized valve control without slidewire feedback, wet-bulb/dry-bulb, compressor control and peltier loads

#### Advanced PID control algorithm

- Offers TRU-TUNE®+ adaptive control to provide tighter control for demanding applications
- Provides auto-tune for fast, efficient startup

#### Configuration communications with software

- Includes Watlow standard bus communications and EZ-ZONE configurator software
- Saves time and improves reliability of controller setup

For detailed product and ordering information, see the full EZ-ZONE PM product section located on pages **249 through 257**.

# Indicators

## EZ-ZONE RUI and Gateway

The EZ-ZONE Remote User Interface (RUI and communications gateway) can be utilized as a communication gateway device to save cost, space and wiring when digital communications is being used with two or more EZ-ZONE controllers. The EZ-ZONE RUI can also serve as a display for showing all parameter values for up to 16 EZ-ZONE controllers, again saving cost, space and wiring expenses.

### Indicator Features and Benefits—Remote User Interface (RUI)

#### Single user interface device or location to access multiple controllers

- Easy accessibility to all controllers and all parameters from a central location by using one RUI display
- Reduces component material costs by using a single RUI to display multiple control zones
- Eliminates cost and complexity from bringing all controller related input and output wiring to the front panel

#### Flexible use of a display interface

- Can be used when needed during normal machine production, for OEM prototype design purposes or for remote troubleshooting scenarios
- Ability to use more than one RUI indicator to display additional data including temperature and current (ammeter) to improve user system interface

### Communications Gateway Features and Benefits

#### A single RUI and gateway provides field bus access for up to 16 EZ-ZONE controllers

- Lowers solution cost when field bus communications is required for multiple loops

#### Expand communication protocols to all EZ-ZONE controllers

- Ability to utilize multiple communication protocols for different user preferences. Flex between different communication protocols while still maintaining a reduced level of inventory



#### Delivers multiple communication protocol options

- Ability to connect EZ-ZONE controllers to communication networks utilizing
  - Modbus® RTU
  - DeviceNet™
  - Ethernet/IP™
  - Modbus® TCP
  - PROFIBUS DP

#### Additional Features

##### EZ-ZONE P3T armor sealing system

- Complies with NEMA 4X, IP65 RUI
- Offers water and dust resistance, can be cleaned and washed down

##### EZ-KEY (RUI)

- Programmable EZ-Key is a functional key programmable by the user to perform simple one-touch operation of repetitive user activities

##### Compact package

- Reduces required panel size for 1/6 DIN
- Utilizes less depth behind panel allowing for mounting in tight spaces

##### Touch-safe package

- Complies with IP2X which increases safety for user

**Agency approvals: UL® Listed, CSA, CE, RoHS, W.E.E., SEMI F47-0200, Class 1, Div. 2 rating on selected models**

- Meets applications requiring agency approvals

**For detailed product and ordering information, see the full EZ-ZONE RUI and Gateway product section located on pages 373 through 376.**

# Indicators

## SERIES TM

The SERIES TM temperature indicator from Watlow provides an economical solution for applications requiring temperature monitoring and display. Square 1/8 DIN panel mount and DIN-rail mount packaging options are available. A red, four-character, seven-segment LED display indicates the process value. The microprocessor-based design provides significant improvements in performance, repeatability and accuracy over analog indicators.

The indicators are UL® approved and include CE approvals. Panel mount indicators include NEMA 4X/IP65 seal protection. Watlow's SERIES TM temperature indicators include industry leading service and support and are backed by a three-year warranty.

### Features and Benefits

#### Four character LED display

- Improves accuracy

#### Multiple mounting options

- Minimizes installation time

#### Fahrenheit or Celsius operation with indication

- Offers application flexibility

#### Agency approvals

- Meets certification requirements/compliance

#### Microprocessor-based technology

- Ensures accurate repeatable indication

### Typical Applications

- Food preparation
- Industrial machinery
- Packaging
- Plastics processing



### Specifications

#### Operator Interface

- Four-digit, seven-segment LED displays, 7 mm (0.28 in.) high
- °F or °C indicator

#### 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

#### Thermocouple Input

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

#### RTD Input

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

#### Input Accuracy Span Range

Type E:	-328 to 1470°F	or	-200 to 800°C
Type J:	32 to 1382°F	or	0 to 750°C
Type K:	-328 to 2282°F	or	-200 to 1250°C
Type T:	-328 to 662°F	or	-200 to 350°C
RTD (DIN)	-328 to 1472°F	or	-200 to 800°C

#### Thermocouple Input Accuracy

- 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

# Indicators

## SERIES TM

### Specifications (Continued)

#### RTD Input Accuracy

- Calibration accuracy  $\pm 1\%$  of input accuracy span  $\pm 1^\circ$  at standard conditions and actual calibration ambient
- Temperature stability:  $\pm 0.2^\circ$  per degree change in ambient

#### Indication Ranges

Type E:	-328 to 1470°F	or	-200 to 800°C
Type J:	-346 to 1900°F	or	-210 to 1038°C
Type K:	-454 to 2500°F	or	-270 to 1370°C
Type T:	-454 to 750°F	or	-270 to 400°C
RTD (DIN)	-328 to 1472°F	or	-200 to 800°C

#### Agency Approvals

- CE<sup>①</sup>, W.E.E.E., RoHS EU Directive (2002-95-EC)
- UL<sup>®</sup> 873 recognized temperature indicator, File # E43684
- UL<sup>®</sup> 197 reviewed for use in foodservice appliances
- Temperature indicator CSA 22.2 No. 24, File # 30586
- Front panel mount models with gasket
  - UL<sup>®</sup> 50 Type 4X indoor use only
  - NEMA 4X/IP65 approved

#### Terminals

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

#### Power

- 24VAC +10%; -15%; 50/60Hz,  $\pm 5\%$
- 120VAC +10%; -15%; 50/60Hz,  $\pm 5\%$
- 230 to 240VAC +10%; -15%; 50/60Hz,  $\pm 5\%$
- 10VA max. power consumption

#### 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)

#### Dimensions

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

Style	Width	Height	Depth
DIN-rail	3.08 in. (78.1 mm)	4.42 in. (112.3 mm)	3.57 in. (90.7 mm)
Square 1/8 DIN Panel	2.85 in. (72.4 mm)	2.85 in. (72.4 mm)	Behind panel 2.04 in. (51.7 mm)

① See declaration of conformity.

## Ordering Information

Indicator only, 4-character, 7-segment display

Part Number

① ②	③	④	⑤	⑥	⑦ ⑧ ⑨ ⑩	⑪ ⑫ ⑬ ⑭	⑮
TM	Power Supply	Package	Sensor Type & Scale	A	AAAA	AAAA	Overlay/Custom Options

③	Power Supply
B =	120VAC
D =	230 to 240VAC
F =	24VAC

④	Package
1 =	Panel mount, 1/8 in. DIN square - spade terminals
2 =	DIN-rail mount - spade terminals
5 =	Panel mount, 1/8 in. DIN square - screw terminals
6 =	DIN-rail mount - screw terminals
A =	NEMA 4X panel mount, - spade terminals
C =	NEMA 4X panel mount, - screw terminals

⑤	Sensor Type & Scale
H =	T/C Type J °F (-346 to 1900°F)
J =	T/C Type J °C (-210 to 1038°C)
K =	T/C Type K °F (-454 to 2500°F)
L =	T/C Type K °C (-270 to 1370°C)
M =	T/C Type T °F (-454 to 750°F)
N =	T/C Type T °C (-270 to 400°C)
P =	RTD °F (-328 to 1472°F)
R =	RTD °C (-200 to 800°C)
S =	T/C Type E °F (-328 to 1470°F)
T =	T/C Type E °C (-200 to 800°C)

⑮	Overlay/Custom Options
A =	Standard with Watlow logo
1 =	Standard without Watlow logo