## Indicators

<table>
<thead>
<tr>
<th>Product</th>
<th>Mounting</th>
<th>Display Height</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>EZ-ZONE® PM</td>
<td>1/32, 1/16, 1/8, 1/4 DIN front panel</td>
<td>Upper/Left: 0.30 to 0.80 in. (8 to 20 mm)\ Lower/Right: 0.22 to 0.50 in. (6 to 13 mm)</td>
<td>347</td>
</tr>
<tr>
<td>EZ-ZONE RUI and Gateway</td>
<td>1/16 DIN front panel</td>
<td>Upper: 0.40 in. (10 mm)\ Lower: 0.24 in. (6 mm)</td>
<td>348</td>
</tr>
<tr>
<td>SERIES TM</td>
<td>DIN-rail, front panel, chassis</td>
<td>0.28 in. (7 mm)</td>
<td>349</td>
</tr>
</tbody>
</table>
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
- Drives output on open or shorted heater

**Serial communication capabilities**
- Provides a wide range of protocol choices including Modbus® RTU, EtherNet/IP™, Modbus® TCP, PROFIBUS DP, DeviceNet™ and J1939 CAN bus
- Supports network connectivity to a PC or PLC

**Dual-channel controller**
- Provides two PID controllers in one space-saving package

**EZ-LINK™ mobile application for iPhone® and Android™**
- Expedites controller setup with intuitive navigation
- Simplifies setting parameters with plain text names and descriptions
- Connects quickly and easily via Bluetooth® wireless communications

**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 used by COMPOSER® or 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 229 through 238.
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

For detailed product and ordering information, see the full EZ-ZONE RUI and Gateway product section located on pages 341 through 344.
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°F to 1470°F or -200°C to 800°C
- Type J: -32 to 1382°F or 0 to 750°C
- Type K: -328°F to 2282°F or -200°C to 1250°C
- Type T: -328°F to 662°F or -200°C to 350°C
- RTD (DIN): -328°F to 1472°F or -200°C 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°F to 32°F (-200°C to 0°C)
- Temperature stability: ±0.3° per degree change in ambient
SERIES TM

Specifications (Continued)

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

Indication Ranges
<table>
<thead>
<tr>
<th>Type</th>
<th>E</th>
<th>J</th>
<th>K</th>
<th>RTD (DIN)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-328</td>
<td>-346</td>
<td>-454</td>
<td>-454</td>
</tr>
<tr>
<td></td>
<td>to 1470°F</td>
<td>to 1900°F</td>
<td>to 2500°F</td>
<td>to 750°F</td>
</tr>
<tr>
<td></td>
<td>or -200</td>
<td>or -210</td>
<td>or -270</td>
<td>or -270</td>
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<tr>
<td></td>
<td>to 800°C</td>
<td>to 1038°C</td>
<td>to 1370°C</td>
<td>to 400°C</td>
</tr>
</tbody>
</table>

Agency Approvals
- UL® 873 recognized temperature indicator, File # E43684
- UL® 197 reviewed for use in foodservice appliances
- Temperature indicator CSA 22.2 No. 24, File # 30586
- Front panel mount models with gasket
  - UL® 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, ±5%
- 120VAC +10%; -15%; 50/60Hz, ±5%
- 230 to 240VAC +10%; -15%; 50/60Hz, ±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)

<table>
<thead>
<tr>
<th>Style</th>
<th>Width</th>
<th>Height</th>
<th>Depth</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIN-rail</td>
<td>3.08 in.</td>
<td>4.42 in.</td>
<td>3.57 in.</td>
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<tr>
<td>Panel</td>
<td>(78.1 mm)</td>
<td>(112.3 mm)</td>
<td>(90.7 mm)</td>
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<tr>
<td>1/8 DIN</td>
<td>2.85 in.</td>
<td>2.85 in.</td>
<td>Behind panel</td>
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<tr>
<td></td>
<td>(72.4 mm)</td>
<td>(72.4 mm)</td>
<td>2.04 in.</td>
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<tr>
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<td>(51.7 mm)</td>
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Overlay/Custom Options
- Standard with Watlow logo
- Standard without Watlow logo

Ordering Information
Indicator only, 4-character, 7-segment display

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Power Supply</th>
<th>Sensor Type &amp; Scale</th>
<th>Overlay/Custom Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>TM</td>
<td>B = 120VAC</td>
<td>H = T/C Type J °F (-346 to 1900°F)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>D = 230 to 240VAC</td>
<td>J = T/C Type J °C (-210 to 1038°C)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>F = 24VAC</td>
<td>K = T/C Type K °F (-454 to 2500°F)</td>
<td></td>
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<tr>
<td></td>
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<td>L = T/C Type K °C (-270 to 1370°C)</td>
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<tr>
<td></td>
<td></td>
<td>M = T/C Type T °F (-454 to 750°F)</td>
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<tr>
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<td>N = T/C Type T °C (-270 to 400°C)</td>
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<tr>
<td></td>
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<td>P = RTD °F (-328 to 1472°F)</td>
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<td></td>
<td>R = RTD °C (-200 to 800°C)</td>
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<td>S = T/C Type E °F (-328 to 1470°F)</td>
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<td>T = T/C Type E °C (-200 to 800°C)</td>
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<tr>
<td></td>
<td>A = Standard with Watlow logo</td>
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<tr>
<td></td>
<td>1 = Standard without Watlow logo</td>
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