

TEC

# Zoning Control System for Stand-Alone and BACnet® MS/TP Networked Applications

## Description

The technologically advanced TEC Zoning Control System provides efficient space temperature control for constant volume zoning systems in multi-zone heating and cooling applications. This cost-effective zoning control system can operate as a stand-alone system, or it can be mapped into a supervisory controller via a BACnet® Master-Slave/Token-Passing (MS/TP) Bus to enable remote monitoring and programming within a Building Automation System (BAS). Typical applications include banks, retail facilities, churches, restaurants, office buildings, and other multi-tenant facilities.

A single TEC Zoning Control System comprises a TEC2664Z-3 Rooftop Controller and multiple TEC2647Z-3 and TEC2647Z-3+PIR Zone Controllers. The zone controller provides proportional 0 to 10 VDC control of pressure dependent Variable Air Volume (VAV) equipment with or without local reheat. The TEC2647Z-3+PIR Zone Controllers have the occupancy sensing capability built into the device for additional energy savings. The rooftop controller provides a proportional 0 to 10 VDC control output to the bypass damper of a rooftop unit based on the sensed pressure in the duct, and controls up to two stages of heating and two stages of cooling

Both the zone controller and the rooftop controller feature an intuitive user interface with backlit display that makes setup and operation quick and easy. These controllers also employ a unique, Proportional-Integral (PI) time-proportioning algorithm that virtually eliminates temperature offset associated with traditional, differential-based controllers.

Refer to the *TEC Zoning Control System for Stand-Alone and BACnet® MS/TP Networked Applications Product Bulletin (LIT-12011692)* for important product application information.

## Features

- fully scalable zoning control system – meets the requirements of small and large zoning control systems
- BACnet MS/TP communication – provides compatibility with a proven communication network; BACnet MS/TP is widely accepted by Heating, Ventilating, and Air Conditioning (HVAC) control suppliers
- true stand-alone zoning control system – offers additional application flexibility
- onboard occupancy sensor (Passive Infrared [PIR] Model) – provides energy savings without additional installation time or cost



**TEC2664Z-3 Rooftop Controller (Left) and TEC2647Z-3+PIR Zone Controller (Right) for Stand-Alone and BACnet MS/TP Networked Applications**

- PI time-proportioning algorithm – increases comfort, accuracy, and energy savings
- backlit Liquid Crystal Display (LCD) – offers real-time control status of the environment in easy-to-read, English plain text messages with constant backlight that brightens during user interaction
- simplified setpoint adjustment – enables the user to change the setpoint by simply pressing the UP/DOWN arrow keys
- configurable inputs – provide additional inputs for advanced functions, such as remote night setback, service or filter alarms, and motion detector
- over 20 configurable parameters – enable the zoning control system to adapt to applications with varying requirements, allowing the installer to access parameters without opening the controller cover

## Repair Information

If the TEC2664Z-3 Rooftop Controller or TEC2647Z-3 and/or TEC2647Z-3+PIR Zone Controller fails to operate within its specifications, replace the unit. For a replacement controller, contact the nearest Johnson Controls® representative.

## Selection Chart

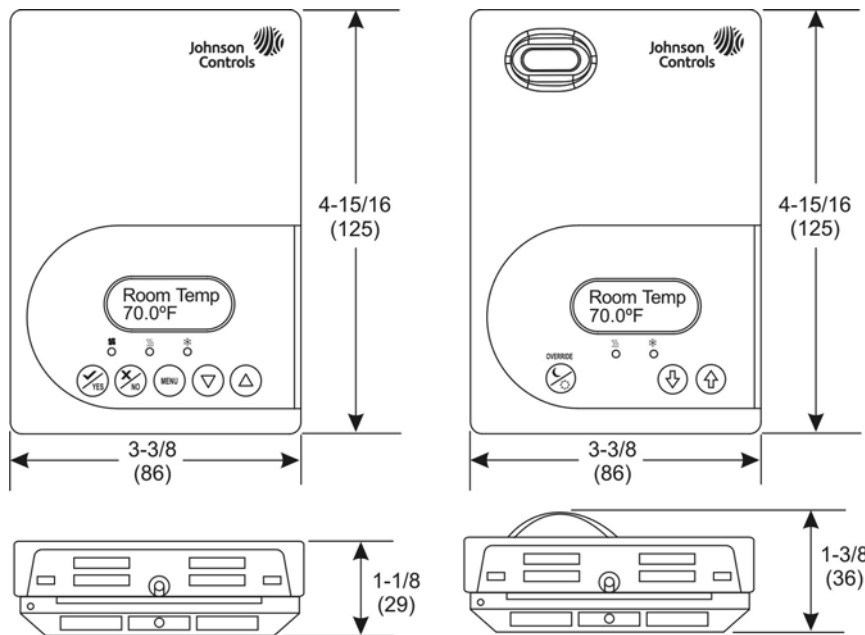
Code Number	Description
TEC2647Z-3	Zone Controller for Proportional Zone Damper, On/Off, or Proportional Reheat Control
TEC2647Z-3+PIR	Zone Controller with Occupancy Sensor for Proportional Zone Damper, On/Off, or Proportional Reheat Control
TEC2664Z-3	Rooftop Controller for Control of Up to Two Stages of Heating and Two Stages of Cooling in Rooftop, Proportional Bypass Damper, Fan, and Zone Demand Strategies

## TEC Zoning Control System for Stand-Alone and BACnet® MS/TP Networked Applications (Continued)

### Accessories

Code Number	Description
SEN-600-1	Remote Inside Air Temperature Sensor
TE-6361M-1 <sup>1</sup>	Duct Mount Air Temperature Sensor (Metal Enclosure)
TE-6363P-1 <sup>1, 2</sup>	Outside Air Temperature Sensor (Plastic Enclosure)
SEN-600-4	Remote Inside Air Temperature Sensor with Occupancy Override and LED
MS-BACEOL-0	RS485 End-of-Line Terminator
DPT2650-005D-AB	Duct Static Pressure Transmitter, 24 VAC Power, 0 in. W.C./0 Pa to 5 in. W.C./1,245 Pa Input, 0 to 5 VDC Output
ZOVSD- <b>wwwXhhh</b>	Rectangular damper with a factory-installed Johnson Controls® M9104-GGA-3S Electric Actuator for proportional zoning applications. Widths ( <b>www</b> ) are available from 8 in./20.3 cm ( <b>008</b> ) to 30 in./76.2 cm ( <b>030</b> ) in 1 in./2.5 cm increments. Heights ( <b>hhh</b> ) are available from 6 in./15.2 cm ( <b>006</b> ) to 30 in./76.2 cm ( <b>030</b> ) in 1 in./2.5 cm increments. Example: To order a rectangular damper assembly measuring 8 in./20.3 cm wide by 6 in./15.2 cm high, use code number <b>ZOVSD-008X006</b> .
RZGddPNNO	Round damper with a factory-installed Johnson Controls M9104-GGA-3 Electric Actuator for proportional zoning applications. Diameters ( <b>dd</b> ) are available from 6 in./15.2 cm ( <b>06</b> ) to 18 in./45.7 cm ( <b>18</b> ) in 1 in./2.5 cm increments. Example: To order a round damper assembly measuring 6 in./15.2 cm in diameter, use code number <b>RZG06PNNO</b> .
TEC-7-PIR <sup>3</sup>	Zone Controller Cover with Occupancy Sensor

1. Additional TE-63xx-x Series 10k ohm Johnson Controls Type II Thermistor Sensors are available; refer to the *TE-6300 Series Temperature Sensors Product Bulletin (LIT-216320)* for more details.
2. An outside air temperature sensor is recommended to allow the **H lock** and **C lock** parameters of the rooftop controller to discontinue heating or cooling operation in response to the outside air temperature. If an outside air temperature sensor is not installed, an ambiguous outside air temperature displays on the zone controller unless its **MenuScro** parameter is set to **off**.
3. This cover may replace a non-PIR TEC2647Z-3 cover to use the occupancy sensor capabilities.




TEC2664Z-3 Rooftop Controller (Left) and TEC2647Z-3+PIR Zone Controller (Right) Dimensions, in. (mm)



## TEC Zoning Control System for Stand-Alone and BACnet® MS/TP Networked Applications (Continued)

### Technical Specifications

TEC Zoning Control System for Stand-Alone and BACnet MS/TP Networked Applications		
<b>Product Codes</b>		<b>TEC2647Z-3 Zone Controller</b> for Proportional Zone Damper, On/Off, or Proportional Reheat Control <b>TEC2647Z-3+PIR Zone Controller</b> with Occupancy Sensor for Proportional Zone Damper, On/Off, or Proportional Reheat Control <b>TEC2664Z-3 Rooftop Controller</b> for Control of Up to Two Stages of Heating and Two Stages of Cooling in Rooftop, Proportional Bypass Damper, Fan, and Zone Demand Strategies
<b>Power Requirements</b>		19 to 30 VAC, 50/60 Hz, 2 VA (Terminals 4 and 5) at 24 VAC Nominal, Class 2 or Safety Extra-Low Voltage (SELV)
<b>Analog Output Rating</b>		0 to 10 VDC into 2k ohm Resistance (Minimum)
<b>Auxiliary Output Rating</b>	<b>Triac Output</b>	19 to 30 VAC, 15 mA to 1 A Continuous Current, 3 A Peak In-Rush Current
<b>Binary Inputs</b>	<b>TEC2647Z-3</b>	Voltage-Free Contacts across Terminal Scom to Terminals BI1 and BI2
<b>Digital Inputs</b>	<b>TEC2664Z-3</b>	Voltage-Free Contact across Terminal C to Terminal DI1
<b>Analog Inputs</b>	<b>TEC2647Z-3</b>	Resistive Inputs (RS and UI3) for 10k ohm Johnson Controls Type II Negative Temperature Coefficient (NTC) Thermistor Sensors
	<b>TEC2664Z-3</b>	Resistive Inputs (RS, OS, and DS) for 10k ohm Johnson Controls Type II NTC Thermistor Sensors Static Pressure: 0 to 5 VDC for Full Static Pressure Range Selected
<b>Temperature Sensor Type</b>		Local 10k ohm NTC Thermistor
<b>Wire Size</b>		18 AWG (1.0 mm Diameter) Maximum, 22 AWG (0.6 mm Diameter) Recommended
<b>TEC Zoning Control System Guidelines</b>		31 Zones Maximum per 1 Rooftop Controller
<b>MS/TP Network Guidelines</b>		32 Devices Maximum; 4,000 ft (1,219 m) Maximum Cable Length
<b>Temperature Range</b>	<b>Backlit Display</b>	-40.0°F/-40.0°C to 122.0°F/50.0°C in 0.5° Increments
	<b>Heating Control</b>	40.0°F/4.5°C to 90.0°F/32.0°C
	<b>Cooling Control</b>	54.0°F/12.0°C to 100.0°F/37.5°C
<b>Accuracy</b>		±0.9F°/±0.5C° at 70.0°F/21.0°C Typical Calibrated
<b>Minimum Deadband</b>		2F°/1C° between Heating and Cooling
<b>Ambient Conditions</b>	<b>Operating</b>	32 to 122°F (0 to 50°C); 95% RH Maximum, Noncondensing
	<b>Storage</b>	-22 to 122°F (-30 to 50°C); 95% RH Maximum, Noncondensing
<b>Compliance</b>  	<b>BACnet International</b>	BACnet Testing Laboratories™ (BTL) 135-2001 Listed BACnet Application Specific Controller (B-ASC)
	<b>United States</b>	UL Listed, File E27734, CCN XAPX Under UL 873, Temperature Indicating and Regulating Equipment FCC Compliant to CFR 47, Part 15, Subpart B, Class A
		<b>Canada</b>
	<b>Europe</b>	CE Mark – Johnson Controls, Inc., declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive 2004/108/EC.
	<b>Australia and New Zealand</b>	C-Tick Mark, AS/NZS CISPR 22 Compliant Supplier Code Number N10696
	<b>Shipping Weight</b>	

The performance specifications are nominal and conform to acceptable industry standards. For applications at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products. © 2012 Johnson Controls, Inc. [www.johnsoncontrols.com](http://www.johnsoncontrols.com)