

# TEC26x7-4 and TEC26x7-4+PIR Series BACnet® MS/TP Networked Thermostat Controllers with Two Outputs

## Product Bulletin

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The TEC26x7-4 and TEC26x7-4+PIR Series Thermostat Controllers are BACnet® Master-Slave/Token-Passing (MS/TP) networked devices that provide control of local hydronic reheat valves, pressure-dependent Variable Air Volume (VAV) equipment with or without local reheat, or other zoning equipment using an on/off, floating, or proportional 0 to 10 VDC control input. The technologically advanced TEC26x7-4 and TEC26x7-4+PIR Series Thermostat Controllers feature a Building Automation System (BAS) BACnet MS/TP communication capability that enables remote monitoring and programming for efficient space temperature control.

The TEC26x7-4 and TEC26x7-4+PIR Series Thermostat Controllers feature an intuitive user interface with backlit display that makes setup and operation quick and easy. The thermostat controllers also employ a unique, Proportional-Integral (PI) time-proportioning algorithm that virtually eliminates temperature offset associated with traditional, differential-based thermostat controllers.



**Figure 1: TEC26x7-4 and TEC26x7-4+PIR Series BACnet MS/TP Networked Thermostat Controller with Two Outputs**

**Table 1: Features and Benefits**

Feature	Benefit
<b>BACnet MS/TP Communication</b>	Provides compatibility with a proven communication network; BACnet MS/TP is widely accepted by Heating, Ventilating, and Air Conditioning (HVAC) control suppliers.
<b>Password Protection Option</b>	Protects against unwanted thermostat controller tampering.
<b>Backlit Liquid Crystal Display (LCD)</b>	Offers real-time control status of the environment in easy-to-read, English plain text messages with constant backlight that brightens during user interaction.
<b>On/Off, Floating, or Proportional 0 to 10 VDC Control</b>	Offers additional application flexibility by providing more advanced control signals.
<b>Override Interface Key</b>	Allows easy access for temporarily overriding the unoccupied mode.
<b>Simplified Setpoint Adjustment</b>	Enables the user to change the setpoint by simply pressing the <b>UP/DOWN</b> arrow keys.
<b>Two Configurable Binary Inputs</b>	Provide additional inputs for advanced functions such as remote night setback, service or filter alarms, motion detector, and window status.
<b>Over 20 Configurable Parameters</b>	Enable the thermostat to adapt to any application, allowing installer parameter access without opening the thermostat cover.
<b>Optional Discharge Air Sensor</b>	Monitors unit efficiency.

## Product Overview

The TEC26x7-4 and TEC26x7-4+PIR Series Thermostat Controllers are specifically designed for networked control of common zoning equipment using on/off, floating, or proportional 0 to 10 VDC control. In addition to superior temperature control and application flexibility, the TEC26x7-4 and TEC26x7-4+PIR Series feature BACnet MS/TP communication capability, allowing the user to view operation or make adjustments from a remote workstation. Plain text menus, backlit display, and three interface keys make setup and operation quick and easy.

**IMPORTANT:** The TEC26x7-4 and TEC26x7-4+PIR Series Thermostat Controllers are intended to provide an input to equipment under normal operating conditions. Where failure or malfunction of the thermostat could lead to personal injury or property damage to the controlled equipment or other property, additional precautions must be designed into the control system. Incorporate and maintain other devices, such as supervisory or alarm systems or safety or limit controls, intended to warn of or protect against failure or malfunction of the thermostat.

## Additional Features

The TEC26x7-4 and TEC26x7-4+PIR Series Thermostat Controllers offer many other features, including:

- **Adjustable Heating/Cooling Deadband**  
Adjusts the minimum heating/cooling deadband from 2.0F°/1.0C° to 5.0F°/2.5C°.
- **Remote Indoor Sensing**  
Accommodates remote indoor sensors. Up to three indoor sensors can be averaged.
- **Three Easy-to-Use Interface Keys**  
Allow for easy commissioning of the thermostat, and eliminate the need for DIP switches.
- **Four Levels of Keypad Lockout**  
Provide four levels of keypad lockout that can be set up through the Installer Configuration Menu.
- **Accessible Configuration Parameters**  
Allow local access to all configurable parameters while limiting unwanted parameter tampering once the thermostat is set up.

- **Two Light-Emitting Diodes (LEDs)**  
Provide heating and cooling status at a glance.
- **Adjustable Temporary Occupancy Time**  
Adjusts the temporary occupancy time from 0 to 24 hours.
- **Auxiliary Contact**  
Provides 24 VAC control for reheat, lighting, and other auxiliary functions.
- **Adjustable Heating/Cooling Cycles per Hour (On/Off Control)**  
Configurable for the maximum number of heating and cooling cycles (3 to 8 cycles maximum) in a 1-hour period, balancing temperature control and equipment cycling.
- **Nonvolatile Electrically Erasable Programmable Read-Only Memory (EEPROM)**  
Prevents loss of adjusted parameters during a power failure.
- **Remote Access**  
Allows the user to read/write and access the parameters of the thermostat via a supervisory controller.

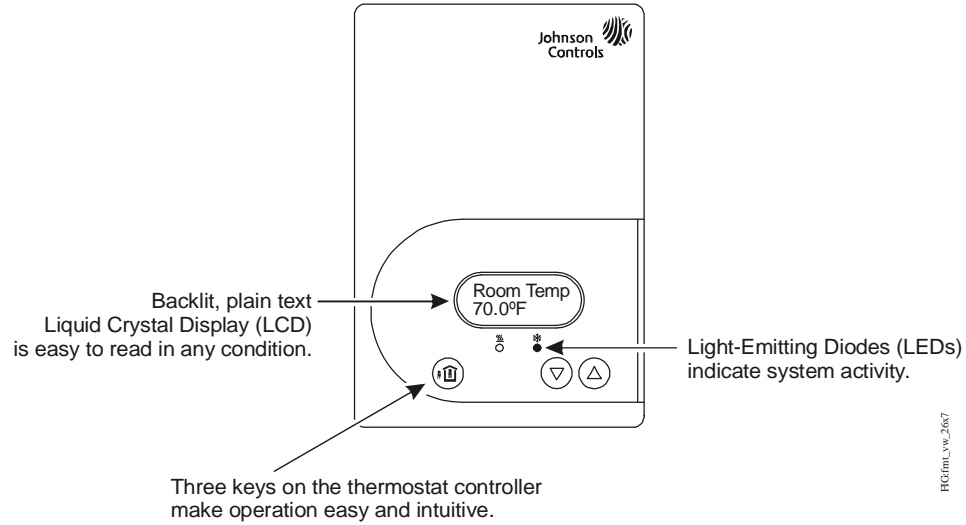
**Table 2: Thermostat Controller Models**

Code Number	Control Outputs
TEC2627-4	Two On/Off or Floating
TEC2647-4	Two Proportional 0 to 10 VDC
TEC2627-4+PIR	Two On/Off or Floating with Onboard Occupancy Sensor
TEC2647-4+PIR	Two Proportional 0-10 VDC with Onboard Occupancy Sensor

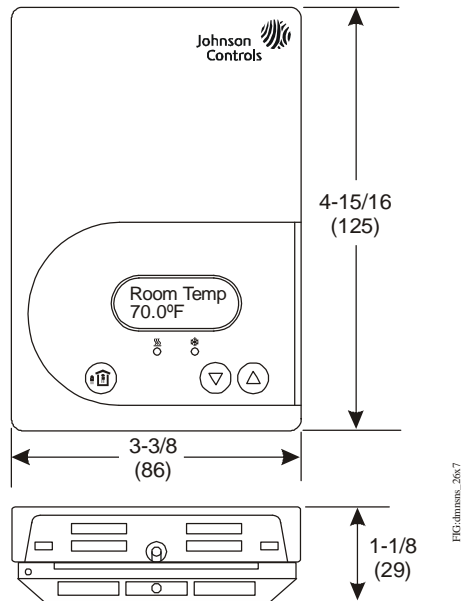
**Table 3: Accessories (Order Separately)**

Code Number	Description
SEN-600-1	Remote Indoor Air Temperature Sensor
TE-6361M-1 <sup>1</sup>	Duct-Mount Air Temperature Sensor
SEN-600-4	Remote Indoor Air Temperature Sensor with Occupancy Override and LED
TE-636S-1	Strap-Mount Temperature Sensor
MS-BACEOL-0	RS485 End-of-Line Terminator

1. Additional TE-636xx-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.



**Figure 2: Front Cover of Thermostat Controller**



**Figure 3: Thermostat Controller Dimensions, in. (mm)**

### Thermostat Controller User Interface Keys

The TEC26x7-4 and TEC26x7-4+PIR Series Thermostat Controllers user interface consists of three keys on the front cover (as illustrated in Figure 2). The function of each key is as follows:

- **OVERRIDE** key overrides the unoccupied mode to occupied at the local user interface for the specified TOccTime. (TOccTime is defined by selecting the appropriate time period in the Installer Configuration Menu.)

If one of the binary inputs is configured to operate as a remote override contact, this **OVERRIDE** function is disabled.

The **OVERRIDE** key also allows access to the Installer Configuration Menu. (See the *Installer Configuration Menu* section.)



- **UP/DOWN** arrow keys change the configuration parameters and activate a setpoint adjustment.

## Backlit LCD

The TEC26x7-4 and TEC26x7-4+PIR Series Thermostat Controllers include a 2-line, 8-character backlit display. Low-level backlighting is present during normal operation, and it brightens when any user interface key is pressed. The backlight returns to low level when the thermostat is left unattended for 45 seconds.

## LEDs

Two LEDs are included to indicate a call for heat or call for cooling:

- The heat LED  is on when heating is on.
- The cool LED  is on when cooling is on.

## Menu Overview

There are two menus available to view and configure the TEC26x7-4 and TEC26x7+PIR Series Thermostat Controllers:

- Status Display Menu
- Installer Configuration Menu

The following sections outline the functions and contents of each menu.

### **Status Display Menu**

The Status Display Menu is displayed during normal thermostat operation. This menu continuously scrolls through the following parameters:

- Room Temperature
- System Mode
- Occupancy Status (Occupied/Unoccupied/Override)
- Applicable Alarms (The backlight lights up as an alarm condition is displayed.)

**Note:** An option is available within the Installer Configuration Menu to lock out the scrolling display and show only the Room Temperature parameter.

### **Installer Configuration Menu**

The Installer Configuration Menu is used to set up the thermostat for an application-specific operation. To access the menu, press and hold the **VERRIDE** key for approximately 8 seconds.

**Note:** If the **Password** parameter is configured, Password 0 appears on the thermostat controller display indicating that the configured password is required to proceed. Use the **UP/DOWN** arrow keys to indicate the configured password, then press the **VERRIDE** key to proceed through the Installer Configuration Menu parameters.

The Installer Configuration Menu includes the following parameters that are accessed by pressing the same **VERRIDE** key:


- MS/TP Communication Address
- BI1 and BI2 Input Configuration
- UI3 Input Configuration to Locally Monitor Supply Air Temperature or Hot/Cold Water Changeover Switching
- Menu Scroll
- °F and °C Temperature Scales
- Four Keypad Lockout Levels
- Output 1 Configuration
- Control Type (TEC2627-4 Model)
- Sequence of Operation
- Standby Heating Setpoint/Standby Cooling Setpoint
- Unoccupied Heating Setpoint/Unoccupied Cooling Setpoint
- Maximum Heating Setpoint/Minimum Cooling Setpoint
- Proportional Band Adjustment
- Setpoint Type
- Temporary Occupancy Time
- Heating/Cooling Deadband
- Room Air Temperature Calibration
- Auxiliary Configuration
- Floating Time (TEC2627-4 Model)
- Direct/Reverse Acting (TEC2647-4 Model)
- Cycles per Hour (TEC2627-4 Model)
- Reheat Time
- Display UI3 Value

## Repair Information

If a TEC26x7-4 or TEC26x7-4+PIR Series Thermostat Controller fails to operate within its specifications, replace the unit. For a replacement thermostat, contact the nearest Johnson Controls representative.

## Technical Specifications

### **TEC26x7-4 and TEC26x7-4+PIR Series BACnet MS/TP Networked Thermostat Controllers with Two Outputs**

<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>Relay/Triac Contact Rating</b>	<b>On/Off and Floating Control</b>	30 VAC, 1.0 A Maximum, 15 mA Minimum, 3.0 A In-Rush, Class 2 or SELV
<b>Analog Output Rating</b>	<b>Proportional Control</b>	0 to 10 VDC into 2k ohm Resistance (Minimum)
<b>Auxiliary Output Rating</b>	<b>Triac Output</b>	19 to 30 VAC, 1.0 A Maximum, 15 mA Minimum, 3.0 A In-Rush
<b>Digital Inputs</b>		Voltage-Free Contacts across Terminal Scom to Terminals BI1, BI2, or UI3
<b>Analog Inputs</b>		Resistive Inputs (RS and UI3) for 10k ohm Johnson Controls Type II Negative Temperature Coefficient (NTC) Thermistor Sensors
<b>Temperature Sensor Type</b>		Local 10k ohm Negative Temperature Coefficient (NTC) Thermistor
<b>Wire Size</b>		18 AWG (1.0 mm Diameter) Maximum, 22 AWG (0.6 mm Diameter) Recommended
<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/38.0°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>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>	UL Listed, File E27734, CCN XAPX7, Under CAN/CSA C22.2 No. 24, Temperature Indicating and Regulating Equipment
		Industry Canada, ICES-003
	<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 and the RTTE Directive 1999/5/EC.
	<b>Australia and New Zealand</b>	C-Tick Mark, Australia/NZ Emissions Compliant
<b>BACnet International</b>	BACnet Testing Laboratories™ (BTL) 135-2001 Listed BACnet Application Specific Controller (B-ASC)	
<b>Shipping Weight</b>	<b>TEC26x7-4</b>	0.75 lb (0.34 kg)
	<b>TEC26x7-4+PIR</b>	0.77 lb (0.35 kg)

The performance specifications are nominal and conform to acceptable industry standards. For application 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.

**United States Emissions Compliance:**

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when this equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area cause harmful interference, in which case the users will be required to correct the interference at their own expense.

**Canadian Emissions Compliance:**

This Class (A) digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la Classe (A) respecte toutes les exigences du Règlement sur le matériel brouiller du Canada.



**Building Efficiency**

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