

# TEC26x6(H)-4 and TEC26x6H-4+PIR Series BACnet® MS/TP Networked Thermostat Controllers with Dehumidification Capability, Fan Control, and Occupancy Sensing Capability

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## Product Bulletin

The TEC26x6(H)-4 and TEC26x6H-4+PIR Series Thermostat Controllers are BACnet® Master-Slave/Token-Passing (MS/TP) networked devices that provide control of two- or four-pipe fan coils, cabinet unit heaters, or other equipment using on/off, floating, or proportional 0 to 10 VDC control input, three speeds of fan control, and dehumidification capability. The TEC26x6H-4+PIR Series Thermostat Controllers have occupancy sensing capability built into the device. These devices maximize up to 30% energy savings in high-energy usage light commercial buildings, such as schools and hotels, during occupied times by using additional Stand-By setpoints.

The technologically advanced TEC26x6(H)-4 and TEC26x6H-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. Specific models are available to accommodate commercial and hospitality applications.



**Figure 1: TEC26x6(H)-4 and TEC26x6H-4+PIR Series BACnet MS/TP Networked Thermostat Controllers**

The TEC26x6(H)-4 and TEC26x6H-4+PIR Series Thermostat Controllers feature an intuitive User Interface (UI) with backlit display that makes setup and operation quick and easy. The thermostats also employ a unique, Proportional-Integral (PI) time-proportioning algorithm that virtually eliminates temperature offset associated with traditional, differential-based thermostat controllers.

**Table 1: Features and Benefits (Part 1 of 2)**

| 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>Onboard Occupancy Sensor (Passive Infrared [PIR] Models)</b>       | Provides energy savings without additional installation time and cost.  |
| <b>Password Protection Option</b>                                     | Protects against unwanted thermostat controller tampering.  |
| <b>Integral Humidity Sensing Capability (Dehumidification Models)</b> | Increases occupancy comfort by providing dehumidification.  |
| <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>Three Speeds of Fan Control</b>                                    | Provide easy <b>FAN</b> speed selection via the interface key, to meet the application requirements.  |
| <b>Single/Dual Setpoint Adjustment</b>                                | Enables user setpoint options to accommodate application.   |

**Table 1: Features and Benefits (Part 2 of 2)**

| Feature  | Benefit  |
|--|--|
| <b>Override Interface Key (Commercial Models)</b>          | Allows easy access for temporarily overriding the unoccupied mode.   |
| <b>Temperature Scale Selector Key (Hospitality Models)</b> | Offers guests the ability to select a Fahrenheit (°F) or Celsius (°C) temperature scale display.   |
| <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 controller 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 TEC26x6(H)-4 and TEC26x6H-4+PIR Series Thermostat Controllers are specifically designed for networked control of common two- or four-pipe heating and cooling equipment using on/off, floating, or proportional 0 to 10 VDC control. The TEC26x6H-4+PIR Series Thermostat Controllers have additional occupancy sensing capability built into the device which uses additional standby setpoints to maximize energy savings in high-energy usage light commercial buildings during occupied times.

In addition to superior temperature control, occupancy sensing, and application flexibility, the TEC26x6(H)-4 and TEC26x6H-4+PIR Series Thermostat Controllers 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 five interface keys make setup and operation quick and easy.

**IMPORTANT:** The TEC26x6(H)-4 and TEC26x6H-4+PIR Series Thermostat Controllers are intended to provide an input to equipment under normal operating conditions. Where failure or malfunction of the thermostat controller 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 controller.

## Additional Features

The TEC26x6(H)-4 and TEC26x6H-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°.
- **Adjustable Time Delay for Activating Unoccupied Setpoints**  
Allows the user to adjust time delay before unoccupied setpoints are enabled to maintain comfort temperatures while conserving energy.
- **Occupancy Sensing in Conjunction with Door Switch Toggle**  
Adds more efficiency by associating the door switch into the sequence of operation.
- **Remote Indoor Sensing**  
Accommodates remote indoor sensors. Up to three indoor sensors can be averaged.
- **Five Easy-to-Use Interface Keys**  
Allow for easy commissioning of the thermostat controller, and eliminate the need for DIP switches.
- **Six Levels of Keypad Lockout**  
Provide six 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 controller is set up.
- **Three Light-Emitting Diodes (LEDs)**  
Provide fan, 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 controller via a supervisory controller.

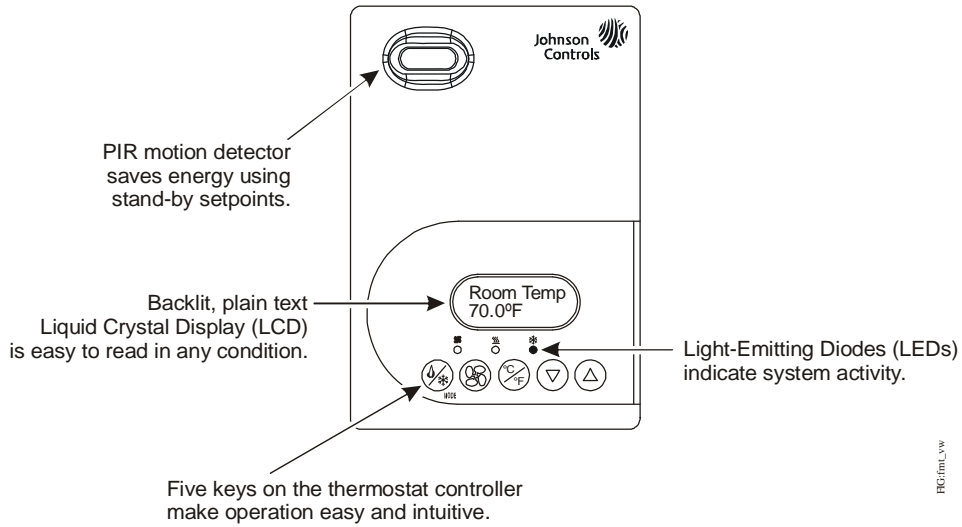
**Table 2: Thermostat Controller Models**

| Code Number    | Control Outputs              | Onboard Occupancy Sensor | Dehumidification Capability | Application        |
|----------------|------------------------------|--------------------------|-----------------------------|--------------------|
| TEC2616-4      | Two On/Off                   | No                       | No                          | Commercial Market  |
| TEC2616H-4     | Two On/Off                   | No                       | No                          | Hospitality Market |
| TEC2616H-4+PIR | Two On/Off                   | Yes                      | No                          | Hospitality Market |
| TEC2626-4      | Two On/Off or Floating       | No                       | No                          | Commercial Market  |
| TEC2626H-4     | Two On/Off or Floating       | No                       | No                          | Hospitality Market |
| TEC2626H-4+PIR | Two On/Off or Floating       | Yes                      | No                          | Hospitality Market |
| TEC2636-4      | Two On/Off or Floating       | No                       | Yes                         | Commercial Market  |
| TEC2636H-4     | Two On/Off or Floating       | No                       | Yes                         | Hospitality Market |
| TEC2636H-4+PIR | Two On/Off or Floating       | Yes                      | Yes                         | Hospitality Market |
| TEC2646-4      | Two Proportional 0 to 10 VDC | No                       | No                          | Commercial Market  |
| TEC2646H-4     | Two Proportional 0 to 10 VDC | No                       | No                          | Hospitality Market |
| TEC2646H-4+PIR | Two Proportional 0 to 10 VDC | Yes                      | No                          | Hospitality Market |
| TEC2656-4      | Two Proportional 0 to 10 VDC | No                       | Yes                         | Commercial Market  |
| TEC2656H-4     | Two Proportional 0 to 10 VDC | No                       | Yes                         | Hospitality Market |
| TEC2656H-4+PIR | Two Proportional 0 to 10 VDC | Yes                      | Yes                         | Hospitality Market |

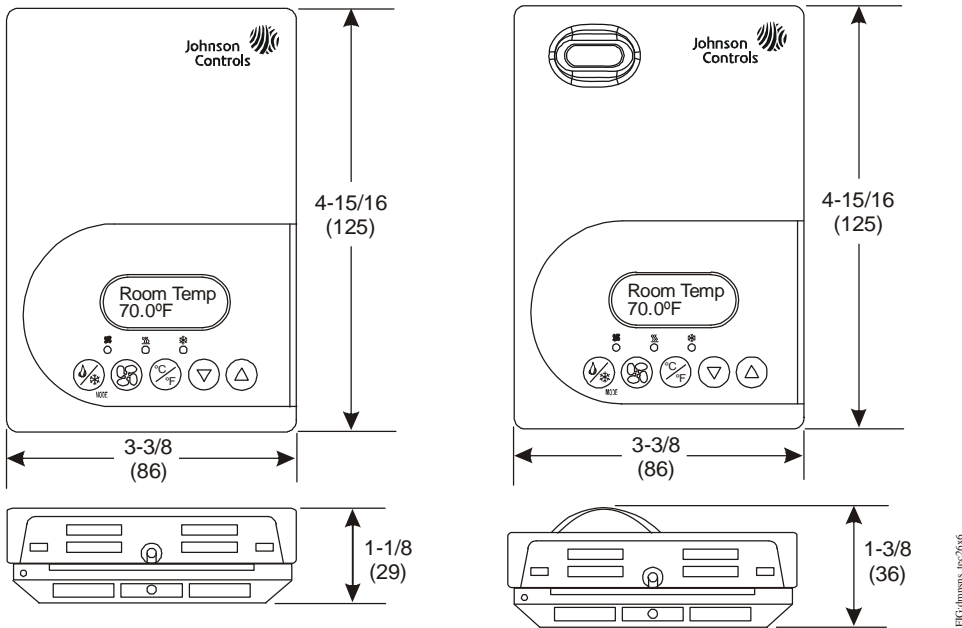
**Table 3: Accessories (Order Separately)**

| 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   |
| TEC-6-PIR <sup>2</sup>  | Commercial Fan Coil Cover with Occupancy Sensor                      |
| TEC-6H-PIR <sup>2</sup> | Hospitality Fan Coil Controller Cover with Occupancy Sensor          |

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.
2. The TEC-6-PIR and TEC-6H-PIR Accessory Covers can be used to replace the existing cover on a non-PIR TEC26x6(H)-4 Series Thermostat Controller to provide occupancy sensing capability.



**Figure 2: Front Cover of Thermostat Controller (TEC26x6H-4+PIR Model Shown)**



**Figure 3: Thermostat Controller Dimensions, in. (mm) (TEC26x6H-4 and TEC26x6H-4+PIR Models Shown)**

## Thermostat Controller User Interface Keys

The TEC26x6(H)-4 and TEC26x6H-4+PIR Series Thermostat Controllers user interface consists of five keys on the front cover (Figure 2). The function of each key is as follows:

- **MODE** key toggles among the system modes available, as defined by selecting the appropriate operation sequence in the Installer Configuration Menu (Off, Heat, Cool, Auto).
- **FAN** key toggles among the fan modes available, as defined by selecting the appropriate fan menu options defined in the Installer Configuration Menu (Low, Med, High, Auto).
- **OVERRIDE** key (commercial models) 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.)
- **°C/°F** key (hospitality models) changes the temperature scale to either Celsius or Fahrenheit and allows access to the Installer Configuration Menu. (See the [Installer Configuration Menu](#) section.)

**Note:** For hospitality models, binary inputs can override from the unoccupied mode to occupied mode.




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

## Backlit LCD

The TEC26x6(H)-4 and TEC26x6H-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 controller is left unattended for 45 seconds.

## LEDs

Three LEDs are included to indicate the fan status, call for heat, or call for cooling:

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

## Integrated PIR Sensor – TEC26x6H-4+PIR Series Thermostat Controllers

The integrated PIR sensor allows for automatic switching between fully adjustable Occupied and Stand-By temperature setpoints without user interaction. This feature generates incremental energy savings during scheduled occupied periods while the space is unoccupied.

## Menu Overview

There are two menus available to view and configure the TEC26x6(H)-4 and TEC26x6H-4+PIR Series Thermostat Controller:

- 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 controller operation. This menu continuously scrolls through the following parameters:

- Room Temperature (All Models) and Humidity (TEC2636 and TEC2656 Models)
- System Mode
- Occupancy Status (Occupied/Stand-By/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 controller for an application-specific operation. To access the menu, press and hold the center key for approximately 8 seconds.

**Note:** If the Password parameter is configured, the configured password is required to proceed.

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

- Password Protection
- 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
- Auto Mode
- °F and °C Temperature Scales
- % RH Display (Dehumidification Models)
- Six Keypad Lockout Levels
- Pipe No.
- Control Type for TEC2626 and TEC2636 Models (On/Off or Floating)
- Sequence of Operation

- Fan Menu
- Dehumidification Network Lockout (Dehumidification Models)
- Dehumidification Setpoint (Dehumidification Models)
- Dehumidification Hysteresis (Dehumidification Models)
- Maximum Dehumidification Cooling Output (Dehumidification Models)
- Stand-By Setpoint Timer Value
- Unoccupied Timer Value
- Stand-By Heating Setpoint/Stand-By Cooling Setpoint
- Unoccupied Heating Setpoint/Unoccupied Cooling Setpoint
- Maximum Heating Setpoint/Minimum Cooling Setpoint
- Proportional Band Adjustment
- Setpoint Type
- Single/Dual Setpoint Adjustment
- Temporary Occupancy Time
- Heating/Cooling Deadband
- Room Air Temperature Calibration
- Room Humidity Calibration (Dehumidification Models)
- Auxiliary Configuration
- Auto Fan Mode
- Floating Time (Floating Models)
- Direct/Reverse Acting
- Cycles per Hour (On/Off Models)
- Reheat Time
- Display UI3 Value

### **Repair Information**

If a TEC26x6(H)-4 or TEC26x6H-4+PIR Series Thermostat Controller fails to operate within its specifications, replace the unit. For a replacement thermostat controller, contact the nearest Johnson Controls® representative.

## Technical Specifications

### **TEC26x6(H)-4 and TEC26x6H-4+PIR Series BACnet MS/TP Networked Thermostat Controllers with Dehumidification Capability, Fan Control and Occupancy Sensing Capability**

|                                   |   |  |
|-----------------------------------|---|--|
| <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>  | 19 to 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>Fan Relay Output Rating</b>    |   | 19 to 30 VAC, 1.0 A Maximum, 15 mA Minimum, 3.0 A In-Rush  |
| <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>Binary 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>                   | <b>Temperature</b>  | ±0.9°F/±0.5°C at 70.0°F/21.0°C Typical Calibrated  |
|                                   | <b>Humidity</b>   | ±5% RH from 20 to 80% RH at 50 to 90°F (10 to 32°C)  |
| <b>Minimum Deadband</b>           |   | 2°F/1°C 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, EMC Directive 2004/108/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>TEC26x6(H)-4 Models:</b> 0.75 lb (0.34 kg)<br><b>TEC26x6H-4+PIR Models:</b> 0.77lb (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 is likely to cause harmful interference, in which case the user will be required to correct the interference at his/her 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.



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