

# TEC3000 series

## Stand-alone and field-selectable BACnet® MS/TP or N2 networked thermostat controllers

### Product bulletin

The TEC3000 series thermostat controllers are stand-alone, and field-selectable BACnet® Master-Slave/Token-Passing (MS/TP) or N2 networked devices that provide on/off, floating, and proportional control of the following:

- Local hydronic reheat valves
- Pressure-dependent VAV equipment with or without local reheat
- Two- or four-pipe fan coils
- Cabinet unit heaters
- Other zoning equipment using an on/off, floating or 0 to 10 VDC proportional control input

Models also provide single- or two-stage control of unitary rooftop units (RTUs) with or without economizers and heat pumps.

The field-selectable BACnet MS/TP or N2 networked thermostat controllers enable remote monitoring and programming through the building automation system, for efficient space temperature control.

Diagnostic Warnings in full text, Trends and Setup menus make commissioning and servicing easy. All models include a USB port configuration that reduces installation time by allowing simple backup and restore features from a USB drive, which enables rapid cloning of configuration between like units.

Patented Auto-tuned control loop (PRAC) allows for easy tuning and avoids seasonal recommissioning.

Some models have occupancy sensing capability built into the device. These thermostat controllers maximize up to 30% energy savings in high-energy usage commercial buildings, such as schools and hotels, during occupied times by using additional standby setpoints.

All models feature an intuitive User Interface that makes setup and operation quick and easy.

The large touchscreen has an adjustable backlight, it can be customized to limit the information and command access to the user. User access can be set to suit the building energy policy. The user password option protects against unauthorized thermostat controller configuration changes.



Multiple fan configurations are supported for fan coil equipment types:

- Single-speed
- Multi-speed (two or three discrete speeds)
- Variable-speed/EC motors (0 to 10 VDC control)

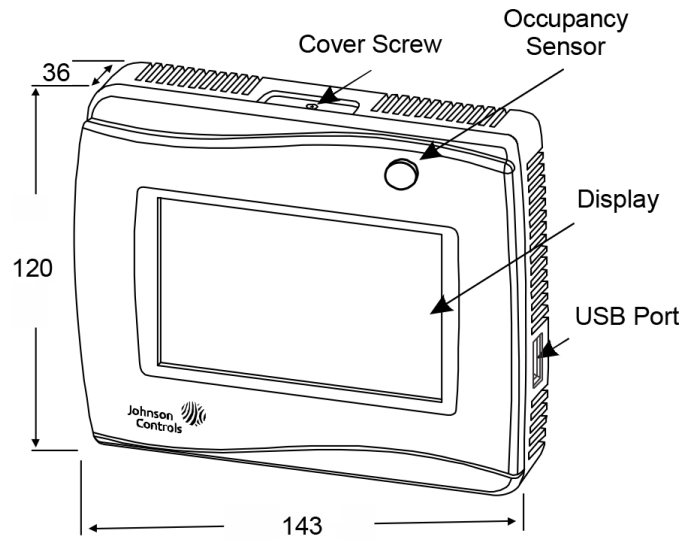
Some models support dehumidification on two-pipe fan coil units with reheat, and four-pipe fan coil units with or without reheat. When no heating is required, the thermostat controller monitors space humidity and activates dehumidification control as necessary. Heat and/or reheat is used as required to maintain the space temperature. For optimal dehumidification performance, use a fan coil unit that has a multi-speed or variable-speed fan (VSF).

Models are available with or optionally without the Johnson Controls® logo.

## Features

- **Large touchscreen display**  
Offers real-time control status of the environment in easy-to-read, plain text messages with adjustable backlight that brightens during user interaction.
- **Configurable user interface**  
Allows facility managers to limit the user interaction with the smart thermostat controller display based on specific energy policies and password.
- **On/Off, floating, proportional and single- or two-stage control**  
Offers additional application flexibility by providing more advanced control signals.
- **Integral humidity sensor**  
Monitors space humidity and activates dehumidification control on two-pipe fan coil units with reheat and four-pipe fan coil units with or without reheat.
- **Multiple fan configurations for fan coil equipment types**  
Provides field-selectable single-speed, multi-speed, and variable-speed fan control capabilities.
- **Onboard occupancy sensor**  
Provides energy savings in high-energy usage commercial buildings without additional installation time or cost.
- **Two configurable Binary Inputs**  
Provide additional inputs for advanced functions such as remote night setback, service or filter alarms, motion detector, and window status.
- **Auto-tuned control loops, PRAC**  
Reduce commissioning time, eliminate change-of-season recommissioning, and reduce wear and tear of the mechanical devices.
- **Stand-alone and networked models**  
Offer application flexibility. The TEC3000 has field-selectable BACnet MS/TP or N2 network communication this simplifies the migration from N2 to BACnet MS/TP networked communication without changing hardware.
- **Mobile Access Portal (MAP) gateway compatibility**  
Allows the user to view equipment and control conditions using mobile devices.
- **Built-in weekly schedule**  
Allows all smart thermostat controllers to be scheduled as stand-alone devices. The weekly schedule BACnet object enables access and control through the Building Automation System and Mobile Access Portal.
- **Optimal start**  
Allows each thermostat controller to anticipate the heating or cooling needs of a space by starting the equipment early enough to reach the setpoint at the beginning of the scheduled occupancy.
- **Display trends of the last 24 hours**  
TEC3000 inputs and outputs have built-in trends, Analog and Digital signals trend can be show in text and graphical mode, providing more operational data when commissioning and servicing.
- **Fault diagnostics**  
Fan feedback, fan run time and temperature error detection makes commissioning and servicing easy, protecting the business continuity.
- **Load shed**  
Commands a load shed input to offset the heating and cooling setpoints by a fixed amount on networked models. The change rate of the setpoints is adjustable. The load shed feature is in place to help satisfy the California Title 24 requirements that are defined in joint appendix JA5, section JA5.2.4 for demand signal response. The trigger for this event is defined in the Network Controller or BAS and passed through a network command.
- **USB Port configuration**  
Reduces installation time by allowing simple backup and restore features from a USB drive, which enables rapid cloning of configuration between like units. The USB ports offers the firmware update to preserve customer investment
- **On board end-of-line switch**  
Simplifies the layout and installation of communication buses.
- **Multilanguage and full text menus**  
Provides a clear an easy user interface.

## Dimensions (in mm)



TEC3000 series thermostat controller shown with Occupancy Sensor

**IMPORTANT:** The TEC3000 series thermostat controller is 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.

## Ordering codes

All models listed below are optionally available without the Johnson Controls® logo.

**Table 1: Stand-alone thermostat controller FCU (ON/OFF / floating) models<sup>1</sup>**

Codes	Control output	Onboard occupancy sensor	Dehumidification capability
TEC3310-00-000	On/off or floating fan coil and zoning	---	---
TEC3311-00-000		●	---
TEC3312-00-000		---	●
TEC3313-00-000		●	●

**Table 2: Stand-alone thermostat controller FCU (Proportional) models<sup>1</sup>**

Codes	Control output	Onboard occupancy sensor	Dehumidification capability
TEC3320-00-000	0 to 10 VDC proportional fan coil and zoning	---	---
TEC3321-00-000		●	---
TEC3322-00-000		---	●
TEC3323-00-000		●	●

**Table 3: Stand-alone single or two stage economizer**

Codes	Control Output	Onboard occupancy sensor	Dehumidification capability
TEC3330-00-000	Single- or two-stage RTU/heat pump with economizer	---	---
TEC3331-00-000		●	---

**Table 4: Field-selectable BACnet MS/TP or N2 networked thermostat controller FCU (ON/OFF / Floating) models<sup>1</sup>**

Codes	Control output	Onboard occupancy sensor	Dehumidification capability
TEC3610-00-000	On/off or floating fan coil and zoning	---	---
TEC3611-00-000		●	---
TEC3612-00-000		---	●
TEC3613-00-000		●	●

**Table 5: Field-selectable BACnet MS/TP or N2 networked thermostat controller FCU (Proportional) models<sup>1</sup>**

Codes	Control output	Onboard occupancy sensor	Dehumidification capability
TEC3620-00-000	0 to 10 VDC proportional fan coil and zoning	---	---
TEC3621-00-000		●	---
TEC3622-00-000		---	●
TEC3623-00-000		●	●

**Table 6: Field-selectable BACnet MS/TP or N2 networked single or two stage economizer**

Codes	Control output	Onboard occupancy sensor	Dehumidification capability
TEC3630-00-000	Single- or two-stage RTU/heat pump with economizer	---	---
TEC3631-00-000		●	---

### Note

<sup>1</sup> Multiple fan configurations are supported for fan coil equipment types.

## Related documentation

For more information please refer to:

<b>24-10787-6</b>	TEC3000 series On/Off or floating fan coil and zoning thermostat controllers with dehumidification capability	<b>Installation instructions</b> TEC3310-00-000, TEC3311-00-000, TEC3312-00-000, TEC3313-00-000, TEC3610-00-000, TEC3611-00-000, TEC3612-00-000, TEC3613-00-000
<b>24-10788-0</b>	TEC3000 series Proportional fan coil and zoning thermostat controllers with dehumidification capability	<b>Installation instructions</b> TEC3320-00-000, TEC3321-00-000, TEC3322-00-000, TEC3323-00-000, TEC3620-00-000, TEC3621-00-000, TEC3622-00-000, TEC3623-00-000
<b>24-10789-5</b>	TEC3000 series Single- or two-stage economizer thermostat controllers	<b>Installation instructions</b> TEC3330-00-000, TEC3331-00-000, TEC3630-00-000, TEC3631-00-000
<b>LIT-12011956</b>	TEC3000 series Field-selectable BACnet® MS/TP or N2 networked thermostat controllers	<b>Technical bulletin</b> with mapping tables N2 and BACnet for all models TEC36xx, troubleshooting and more.
<b>LIT-12012077</b>	Terminal Equipment Controller (TEC) protocol implementation conformance statement	<b>BACnet PICs and BIBBS:</b> TEC3610-00-000, TEC3611-00-000, TEC3612-00-000, TEC3613-00-000, TEC3620-00-000, TEC3621-00-000, TEC3622-00-000, TEC3623-00-000, TEC3630-00-000, TEC3631-00-000

## Technical specification

<b>Power requirements</b>	19 to 30 VAC, 50/60 Hz, 4 VA at 24 VAC nominal, Class 2 or safety extra-low voltage (SELV)
<b>Touch screen display</b>	4,2" backlit dimmable, with backlight time-out.
<b>Analog output rating (Proportional control models)</b>	0 to 10 VDC into 2k ohm resistance (minimum)
<b>Relay contact rating (On/Off, floating or staged economizer control models)</b>	19 to 30 VAC, 1.0 A maximum, 15 mA minimum, 3.0 A in-rush, Class 2 or SELV
<b>Fan relay output rating (On/Off, floating and proportional control models)</b>	19 to 30 VAC, 1.0 A maximum, 15 mA minimum, 3.0 A in-rush
<b>Auxiliary Output rating/triac output (On/Off, floating and proportional control models)</b>	19 to 30 VAC, 1.0 A maximum, 15 mA minimum, 3.0 A in-rush
<b>Binary Inputs</b>	Dry contact across terminal COM to terminals BI1, BI2 or COS
<b>Analog Inputs</b>	Nickel, platinum, A99B, 2.25k ohm negative temperature coefficient (NTC), 10k ohm NTC, 10k ohm NTC Type 3 across terminal COM to terminals R SEN or COS
<b>Temperature sensor type</b>	Local 1k ohm platinum sensor (Pt1000)
<b>Wire size</b>	18 AWG (1.0 mm diameter) maximum, 22 AWG (0.6 mm diameter) recommended
<b>MS/TP network guidelines</b>	Up to 100 devices maximum per Network Automation Engine (NAE); 1,219 m maximum cable length, repeaters can be added to extend this length
<b>Temperature range</b>	<b>Backlit display</b> -40.0°C to 50.0°C in 0.5° increments
	<b>Heating control</b> 4.5°C to 32.0°C
	<b>Cooling control</b> 12.0°C to 38.0°C
<b>Accuracy</b>	<b>Temperature</b> ±0.5°C at 21.0°C typical calibrated
	<b>Humidity (On/Off, floating and proportional control models)</b> ±5% RH from 20 to 80% RH at 10 to 32°C
<b>Minimum Deadband</b>	1C° between heating and cooling
<b>Occupancy sensor Motion detection (Occupancy sensing models)</b>	Minimum of 94 angular degrees up to a distance of 4.6 m; based on a clear line of sight
<b>Ambient Conditions</b>	<b>Operating</b> 0 to 50°C; 95% RH maximum, noncondensing
	<b>Storage</b> -30 to 50°C; 95% RH maximum, noncondensing
<b>Shipping Weight</b>	
<b>Models without occupancy sensor</b>	0.34 kg
<b>Models with occupancy sensor</b>	0.35 kg



### Compliance

<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 UL60730
<b>Canada</b>	UL Listed, File E27734, CCN XAPX7 under E60730
<b>Europe</b>	CE Mark—Johnson Controls declares that this product is in compliance with the essential requirements and other relevant provisions of the Low Voltage Directive (LVD), the EMC Directive, and the RoHS Directive.
<b>Australia and New Zealand</b>	RCM Mark, Australia/NZ Emissions Compliant

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 shall not be liable for damages resulting from misapplication or misuse of its products.