Johnson Controls

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TEC3000 Series Wireless, Stand-Alone, and Field-Selectable BACnet® MS/TP or N2 Networked Thermostat Controllers Catalog Page

Description

The TEC3000 Series Thermostat Controllers are wireless, 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. The wireless thermostat controllers feature a connection to the ZFR Pro wireless network. 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.

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 UI with backlit display that makes setup and operation quick and easy. 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 without the Johnson Controls® logo.

Refer to the *TEC3000 Series Wireless, Stand-Alone, and Field-Selectable BACnet MS/TP or N2 Networked Thermostat Controllers Product Bulletin (LIT-12011954)* for important product application information.

Features

- **Two Configurable Binary Inputs**—Provide additional inputs for advanced functions such as remote night setback, service or filter alarms, motion detector, and window status.
- **Wireless Communication Protocol ZFR Pro (TEC-30xx-0x-000 Models)**—Reduces installation time and costs.
- **Field-Selectable BACnet MS/TP or N2 Networked Communication (TEC36xx-0x-000 Models)**—Simplifies the upgrade from N2 networked communication to BACnet MS/TP networked communication without changing hardware.
- **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.
- **Backlit Liquid Crystal Display (LCD)**—Offers real-time control status of the environment in easy-to-read, plain text messages with

adjustable backlight that brightens during user interaction.

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TEC3000 Series Thermostat Controller
Shown with Occupancy Sensor

- **Configurable Touchscreen UI**—Allows facility managers to limit the user interaction with the thermostat controller display based on specific energy policies.
- **End-of-Line Switch**—Simplifies the layout and installation ofcommunication buses.
- **Mobile Access Portal (MAP) Gateway Compatibility (MAP Release 4.0 or Later)**—Allows the user to view equipmentand control conditions using mobile devices.
- **Stand-Alone and BACnet MS/TP or N2 Networked Models**—Offer application flexibility.
- **Onboard Occupancy Sensor (TEC3xx1-0x-000 and TEC3xx3-0x-000 Models)**—Provides energy savings in high-energy usage commercial buildings without additionalinstallation time or cost.
- **On/Off, Floating, Proportional 0 to 10 VDC, and Single- or Two-Stage Control**—Offers additional application flexibility byproviding more advanced control signals.
- **Integral Humidity Sensor (TEC3xx2-0x-000 and TEC3xx3-0x-000 Models)**—Monitors space humidity and activatesdehumidification 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**— Provide field-selectable single-speed, multi-speed, andvariable-speed fan control capabilities.
- **Full Line of Remote TE-6300 Series Temperature Sensors**— Support a wide range of remote temperature sensing needs from asingle supplier.
- **Built-In Schedule Object**—Allows all wired models of thermostat controllers to be scheduled as stand-alone devices;
  allows BACnet MS/TP models to be defined and adjusted throughthe building automation system.
- **Optimal Start**—Allows each thermostat controller to anticipate theheating or cooling needs of a space by starting the equipment earlyenough to reach the setpoint at the beginning of the scheduled occupancy.
- **Auto-Tuned Control Loops**—Reduce commissioning time, eliminate change-of-season recommissioning, and reduce wearand tear of the mechanical devices.
- **Load Shed**—Commands a load shed input to offset the heating andcooling setpoints by a fixed amount on networked models. The change rate of the setpoints is adjustable. The load shed feature isin place to help satisfy the California Title 24 requirements that aredefined in joint appendix JA5, section JA5.2.4 for demand signal response. The trigger for this event is defined in another controllerand passed through the network command.

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TEC3000 Series Thermostat Controller Shown with Occupancy Sensor, Dimensions, in. (mm)
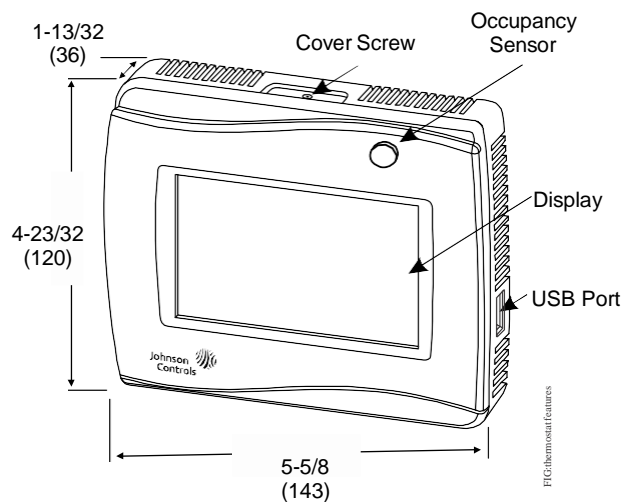
Selection Charts

Wireless Thermostat Controller Models[1]

Code Number	Johnson Controls Logo	Control Output	Onboard Occupancy Sensor	Dehumidification Capability
TEC3010-00-000	Yes	On/off or floating fan coil and zoning	No	No
TEC3010-01-000	No	On/off or floating fan coil and zoning	No	No
TEC3011-00-000	Yes	On/off or floating fan coil and zoning	Yes	No
TEC3011-01-000	No	On/off or floating fan coil and zoning	Yes	No
TEC3012-00-000	Yes	On/off or floating fan coil and zoning	No	Yes
TEC3012-01-000	No	On/off or floating fan coil and zoning	No	Yes
TEC3013-00-000	Yes	On/off or floating fan coil and zoning	Yes	Yes
TEC3013-01-000	No	On/off or floating fan coil and zoning	Yes	Yes
TEC3020-00-000	Yes	0 to 10 VDC proportional fan coil and zoning	No	No
TEC3020-01-000	No	0 to 10 VDC proportional fan coil and zoning	No	No
TEC3021-00-000	Yes	0 to 10 VDC proportional fan coil and zoning	Yes	No
TEC3021-01-000	No	0 to 10 VDC proportional fan coil and zoning	Yes	No
TEC3022-00-000	Yes	0 to 10 VDC proportional fan coil and zoning	No	Yes
TEC3022-01-000	No	0 to 10 VDC proportional fan coil and zoning	No	Yes
TEC3023-00-000	Yes	0 to 10 VDC proportional fan coil and zoning	Yes	Yes
TEC3023-01-000	No	0 to 10 VDC proportional fan coil and zoning	Yes	Yes
TEC3030-00-000	Yes	Single- or two-stage RTU/heat pump with economizer	No	No
TEC3030-01-000	No	Single- or two-stage RTU/heat pump with economizer	No	No
TEC3031-00-000	Yes	Single- or two-stage RTU/heat pump with economizer	Yes	No
TEC3031-01-000	No	Single- or two-stage RTU/heat pump with economizer	Yes	No

1. Multiple fan configurations are supported for fan coil equipment types.

TEC3000 Series Wireless, Stand-Alone, and Field-Selectable BACnet® MS/TP or N2 Networked Thermostat Controllers Catalog Page (Continued)

Stand-Alone Thermostat Controller Models[1]

Code Number	Johnson Controls Logo	Control Output	Onboard Occupancy Sensor	Dehumidification Capability
TEC3310-00-000	Yes	On/off or floating fan coil and zoning	No	No
TEC3310-01-000	No	On/off or floating fan coil and zoning	No	No
TEC3311-00-000	Yes	On/off or floating fan coil and zoning	Yes	No
TEC3311-01-000	No	On/off or floating fan coil and zoning	Yes	No
TEC3312-00-000	Yes	On/off or floating fan coil and zoning	No	Yes
TEC3312-01-000	No	On/off or floating fan coil and zoning	No	Yes
TEC3313-00-000	Yes	On/off or floating fan coil and zoning	Yes	Yes
TEC3313-01-000	No	On/off or floating fan coil and zoning	Yes	Yes
TEC3320-00-000	Yes	0 to 10 VDC proportional fan coil and zoning	No	No
TEC3320-01-000	No	0 to 10 VDC proportional fan coil and zoning	No	No
TEC3321-00-000	Yes	0 to 10 VDC proportional fan coil and zoning	Yes	No
TEC3321-01-000	No	0 to 10 VDC proportional fan coil and zoning	Yes	No
TEC3322-00-000	Yes	0 to 10 VDC proportional fan coil and zoning	No	Yes
TEC3322-01-000	No	0 to 10 VDC proportional fan coil and zoning	No	Yes
TEC3323-00-000	Yes	0 to 10 VDC proportional fan coil and zoning	Yes	Yes
TEC3323-01-000	No	0 to 10 VDC proportional fan coil and zoning	Yes	Yes
TEC3330-00-000	Yes	Single- or two-stage RTU/heat pump with economizer	No	No
TEC3330-01-000	No	Single- or two-stage RTU/heat pump with economizer	No	No
TEC3331-00-000	Yes	Single- or two-stage RTU/heat pump with economizer	Yes	No
TEC3331-01-000	No	Single- or two-stage RTU/heat pump with economizer	Yes	No

1. Multiple fan configurations are supported for fan coil equipment types.

Field-Selectable BACnet MS/TP or N2 Networked Thermostat Controller Models[1] (Part 1 of 2)

Code Number	Johnson Controls Logo	Control Output	Onboard Occupancy Sensor	Dehumidification Capability
TEC3610-00-000	Yes	On/off or floating fan coil and zoning	No	No
TEC3610-01-000	No	On/off or floating fan coil and zoning	No	No
TEC3611-00-000	Yes	On/off or floating fan coil and zoning	Yes	No
TEC3611-01-000	No	On/off or floating fan coil and zoning	Yes	No
TEC3612-00-000	Yes	On/off or floating fan coil and zoning	No	Yes
TEC3612-01-000	No	On/off or floating fan coil and zoning	No	Yes
TEC3613-00-000	Yes	On/off or floating fan coil and zoning	Yes	Yes
TEC3613-01-000	No	On/off or floating fan coil and zoning	Yes	Yes
TEC3620-00-000	Yes	0 to 10 VDC proportional fan coil and zoning	No	No
TEC3620-01-000	No	0 to 10 VDC proportional fan coil and zoning	No	No
TEC3621-00-000	Yes	0 to 10 VDC proportional fan coil and zoning	Yes	No
TEC3621-01-000	No	0 to 10 VDC proportional fan coil and zoning	Yes	No
TEC3622-00-000	Yes	0 to 10 VDC proportional fan coil and zoning	No	Yes
TEC3622-01-000	No	0 to 10 VDC proportional fan coil and zoning	No	Yes
TEC3623-00-000	Yes	0 to 10 VDC proportional fan coil and zoning	Yes	Yes
TEC3623-01-000	No	0 to 10 VDC proportional fan coil and zoning	Yes	Yes

TEC3000 Series Wireless, Stand-Alone, and Field-Selectable BACnet® MS/TP or N2 Networked Thermostat Controllers Catalog Page (Continued)

Field-Selectable BACnet MS/TP or N2 Networked Thermostat Controller Models[1] (Part 2 of 2)

Code Number	Johnson Controls Logo	Control Output	Onboard Occupancy Sensor	Dehumidification Capability
TEC3630-00-000	Yes	Single- or two-stage RTU/heat pump with economizer	No	No
TEC3630-01-000	No	Single- or two-stage RTU/heat pump with economizer	No	No
TEC3631-00-000	Yes	Single- or two-stage RTU/heat pump with economizer	Yes	No
TEC3631-01-000	No	Single- or two-stage RTU/heat pump with economizer	Yes	No

1. Multiple fan configurations are supported for fan coil equipment types.

Accessories (Order Separately)

Product Code Number	Description
TEC-WALLPLT	Wallplate for retrofitting existing installations or concealing mounting surface damage; can be used with any TEC3000 Series Thermostat Controller
MS-WNC1820-0A	WNC1800-0SZ with base, 120 to 230 VAC power, ZFR1820 ProCordFlag, with 3 ft (0.9 m) cable
MS-WNC1823-0A	WNC1800-0SZ with base, 120 to 230 VAC power, ZFR1823 ProCordWall, with 10 ft (3 m) cable
MS-WNC1820-0B	WNC1800-0SZ with base, 24 VAC power, ZFR1820 ProCordFlag, with 3 ft (0.9 m) cable
MS-WNC1823-0B	WNC1800-0SZ with base, 24 VAC power, ZFR1823 ProCordWall, with 10 ft (3 m) cable
MS-ZFR1821-0B	ZFR1821 Pro Flag Repeater, 24 VAC/DC power, with 3 ft (0.9 m) cable
MS-ZFR1822-0B	ZFR1822 Pro Wall Mount Repeater, 24 VAC/DC power, with 10 ft (3 m) cable
MS-ZFR1821-0	ZFR1821 Pro Flag Router, with 3 ft (0.9 m) cable
MS-ZFR1822-0	ZFR1822 Pro Wall Mount Router, with 10 ft (3 m) cable
ZFR-CBLEXT-0	10 ft (3 m) extension cable accessory, RJ12 F-F coupler
ZFR-WALLCOVER	ZFR Repeater wallplate cover
ZFR-USBHA-0	Wireless USB dongle
TE-6300 Series[1]	Remote temperature sensors
T-4000-119	Allen-head adjustment tool (30 per bag)

1. See Johnson Controls TE-6300 Series Temperature Sensors table for ordering details regarding Johnson Controls TE-6300 Series Remote Temperature Sensors.

Johnson Controls TE-6300 Series Temperature Sensors (Order Separately) (Part 6 of 2)

Sensor Type	Mounting Style	Probe Length	Product Code Number
Nickel (1k ohm)	Adjustable[1]	8 in. (203 mm)	TE-6311A-1
	Averaging	8 ft (2.4 m)	TE-6315M-1
			TE-6315V-2[1]
		17 ft (5.2 m)	TE-6316M-1
			TE-6316V-2[1]
	Duct	4 in. (102 mm)	TE-631GM-1
		8 in. (203 mm)	TE-6311M-1
			TE-6311P-1
		18 in. (457 mm)	TE-631JM-1
	Flange	4 in. (102 mm)	TE-631GV-2
		8 in. (203 mm)	TE-6311V-2
	Flush	N/A	TE-6310F-0
			TE-6310F-1
	Outside air	3 in. (76 mm)	TE-6313P-1
	Strap-mount	3 in. (76 mm)	TE-631S-1
	Wall[2]	N/A	TE-6314P-1
	Well	6 in. (152 mm)	TE-631AM-2
		8 in. (203 mm)	TE-6312M-1
Platinum (1k ohm)	Adjustable	8 in. (203 mm)	TE-6351-A
	Duct	4 in. (102 mm)	TE-635GM-1
		8 in. (203 mm)	TE-6351M-1
			TE-6351P-1
		18 in. (457 mm)	TE-635JM-1
	Flange	4 in. (102 mm)	TE-635GV-2
		8 in. (203 mm)	TE-6351V-2
	Flush	N/A	TE-6350F-0
			TE-6350F-1
	Strap-mount	3 in. (76 mm)	TE-635S-1
	Outside air	3 in. (76 mm)	TE-6353P-1
	Wall[2]	N/A	TE-6324P-1
	Well	6 in. (152 mm)	TE-635AM-2
		8 in. (203 mm)	TE-6352M-1
Platinum Equivalent	1k ohm averaging[1]	10 ft (3 m)	TE-6327P-1
		20 ft (6.1 m)	TE-6328P-1
	100 ohm averaging[1]	10 ft (3 m)	TE-6337P-1
		20 ft (6.1 m)	TE-6338P-1
Thermistor (2.2k ohm)	Adjustable	8 in. (203 mm)	TE-6341A-1
	Duct	8 in. (203 mm)	TE-6341P-1
	Flange	4 in. (102 mm)	TE-634GV-2
		8 in. (203 mm)	TE-6341V-2
	Outside air	3 in. (76 mm)	TE-6343P-1
	Wall[2]	N/A	TE-6344P-1
	Well	8 in. (203 mm)	TE-6342M-1
		6 in. (152 mm)	TE-634AM-2

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Johnson Controls TE-6300 Series Temperature Sensors (Order Separately) (Part 2 of 2)

Sensor Type	Mounting Style	Probe Length	Product Code Number
Thermistor (10k ohm) Type II	Adjustable	8 in. (203 mm)	TE-6361A-1
	Duct	4 in. (102 mm)	TE-636GM-1
		8 in. (203 mm)	TE-6361M-1
			TE-6361P-1
		18 in. (457 mm)	TE-636JM-1
	Flange	4 in. (102 mm)	TE-636GV-2
		8 in. (203 mm)	TE-6361V-2
	Flush	N/A	TE-6360F-0
			TE-6360F-1
	Outside air	3 in. (76 mm)	TE-6363P-1
	Strap-mount	3 in. (76 mm)	TE-636S-1
	Well	6 in. (152 mm)	TE-636AM-2
		8 in. (203 mm)	TE-6362M-1

1. Two TE-6001-8 Element Holders come with the platinum-equivalent averaging sensors. Order separately to use with a nickel averaging sensor.
2. Order the TE-1800-9600 Mounting Hardware separately to mount the wall unit to a wallbox.

Repair Information

If the TEC3000 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

TEC3000 Series Wireless, Stand-Alone, and Field-Selectable BACnet MS/TP or N2 Networked Thermostat Controllers (Part 1 of 2)		
Power Requirements		19 to 30 VAC, 50/60 Hz, 4 VA at 24 VAC nominal, Class 2 or safety extra-low voltage (SELV)
Analog Output Rating (Proportional Control Models)		0 to 10 VDC into 2k ohm resistance (minimum)
Relay Contact Rating (On/Off, Floating, or Staged Economizer Control Models)		19 to 30 VAC, 1.0 A maximum, 15 mA minimum, 3.0 A in-rush, Class 2 or SELV
Fan Relay Output Rating (On/Off, Floating, and Proportional Control Models)		19 to 30 VAC, 1.0 A maximum, 15 mA minimum, 3.0 A in-rush
Auxiliary Output Rating/Triac Output (On/Off, Floating, and Proportional Control Models)		19 to 30 VAC, 1.0 A maximum, 15 mA minimum, 3.0 A in-rush
Binary Inputs		Dry contact across terminal COM to terminals BI1, BI2, or COS
Analog Inputs		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
Temperature Sensor Type		Local 1k ohm platinum sensor
Wire Size		18 AWG (1.0 mm diameter) maximum, 22 AWG (0.6 mm diameter) recommended
MS/TP Network Guidelines		Up to 100 devices maximum per Network Automation Engine (NAE); 4,000 ft (1,219 m) maximum cable length (repeaters can be added to extend this length)
Wireless Band		Direct-sequence, spread-spectrum, 2.4 GHz ISM band
Transmission Power		10 mW maximum
Transmission Range		50 ft (15.2 m) practical average indoor
		250 ft (76.2 m) maximum indoor line of sight
Temperature Range	**Backlit Display**	-40.0°F/-40.0°C to 122.0°F/50.0°C in 0.5° increments
	Heating Control	40.0°F/4.5°C to 90.0°F/32.0°C
	Cooling Control	54.0°F/12.0°C to 100.0°F/38.0°C
Accuracy	**Temperature**	±0.9F°/±0.5C° at 70.0°F/21.0°C typical calibrated
	Humidity (On/Off, Floating, and Proportional Control Models)	±5% RH from 20 to 80% RH at 50 to 90°F (10 to 32°C)
Minimum Deadband		2F°/1C° between heating and cooling

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TEC3000 Series Wireless, Stand-Alone, and Field-Selectable BACnet MS/TP or N2 Networked Thermostat Controllers (Part 2 of 2)		
Occupancy Sensor Motion Detection (Occupancy Sensing Models)		Minimum of 94 angular degrees up to a distance of 15 ft (4.6 m); based on a clear line of sight
Ambient Conditions	**Operating**	32 to 122°F (0 to 50°C); 95% RH maximum, noncondensing
	Storage	-22 to 122°F (-30 to 50°C); 95% RH maximum, noncondensing
Compliance	**BACnet International**	BACnet Testing Laboratories™ (BTL) 135-2001 Listed BACnet Application Specific Controller (B-ASC)
	United States	UL Listed, File E27734, CCN XAPX, under UL60730
		Transmission complies with FCC Part 15.247 regulations for low power unlicensed transmitters; transmitter identification FCC: OEJ-WRZRADIO
	Canada	UL Listed, File E27734, CCN XAPX7 under E60730
		Industry Canada (IC) RSS-210; transmitter identification ZFR1810-1: IC: 279A-WRZRADIO
	Europe	CE Mark—Johnson Controls declares that this product is in compliance with the essential requirements and other relevant provisions of the Radio Equipment Directive (RED), the Low Voltage Directive (LVD), the EMC Directive, and the RoHS Directive.
	Australia and New Zealand	RCM Mark, Australia/NZ Emissions Compliant
Shipping Weight	**Models without Occupancy Sensor**	0.75 lb (0.34 kg)
	Models with Occupancy Sensor	0.77 lb (0.35 kg)

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