

TEC Series Wireless Thermostat Controller System for Staged Equipment

Description

The TEC Series Wireless Thermostat Controller System provides wireless networked control of Heating, Ventilating, and Air Conditioning (HVAC) equipment on a Building Automation System (BAS) that enables remote monitoring and programming. This TEC Series System integrates into a supervisory controller using BACnet® Internet Protocol (IP) or BACnet Master-Slave/Token-Passing (MS/TP) communications.

TEC20 Coordinators allow the supervisory controller to communicate with multiple TEC Wireless Thermostat Controllers. TEC200x-3 Series Wireless Thermostat Controllers provide networked control of a variety of staged equipment:

- TEC2001-3 Single-Stage Wireless Thermostat Controllers control fan coil units, unit heaters, and single-stage packaged heating/cooling equipment
- TEC2002-3 Heat Pump Wireless Thermostat Controllers control heat pumps with up to three heating and two cooling stages
- TEC2003-3 Multi-Stage Wireless Thermostat Controllers control multi-stage packaged heating/cooling equipment
- TEC2004-3 Multi-Stage Economizer Wireless Thermostat Controllers control economizer operation for single- and multi-stage unitary rooftop equipment

The wireless mesh network uses ZigBee™ technology to enable remote monitoring and programming and to enhance reliability by providing redundant transmission paths through other TEC Wireless Thermostat Controllers, creating a resilient, self-healing mesh network.

Refer to the *TEC Series Wireless Thermostat Controller System for Staged Equipment Product Bulletin (LIT-12011400)* for important product application information.

Features

- wireless communication
- integral wireless signal strength testing built into wireless thermostat controllers and coordinators
- backlit Liquid Crystal Display (LCD)
- two configurable binary inputs on many models
- over 20 configurable parameters
- Economizer output (TEC2004-3 model)

Applications

The TEC Series Wireless Thermostat Controller System is ideal for any location where it is cost-prohibitive, difficult, or aesthetically unappealing to hard wire between BACnet devices, including supervisory controllers (such as NAE35/45/55 or NCE25 engines) and thermostat controllers.



TEC Wireless Thermostat Controller and TEC20 Coordinator with Direct-Mount Antenna and Remote Mount Antenna

Examples of these locations include the following:

- commercial structures with brick or solid concrete walls and/or ceilings that impede hard-wired TEC Series Thermostat Controller applications
 - office buildings, retail stores, and other commercial real estate where tenant turnover is frequent
 - museums, historical buildings, atriums, and other sites where building aesthetics and historical preservation are important
 - buildings with marble, granite, glass, mirrored, wood veneer, or other decorative surfaces that present challenges to hard-wired applications
 - buildings with asbestos or other hazardous materials that must not be penetrated or disturbed
 - buildings with occupants sensitive to disruptions to business
- Locations or applications that prohibit cellular telephones or Wireless Fidelity (WiFi) systems are unsuitable for the TEC Series Wireless Thermostat Controller System:
- operating rooms or radiation therapy rooms
 - validated environments
 - UL 864 applications

Repair Information

If the TEC Series Wireless Thermostat Controller System for Staged Equipment fails to operate within its specifications, replace the unit. For a replacement, contact the nearest Johnson Controls® representative.

Selection Charts

TEC200x-3 Wireless Thermostat Controllers for Staged Equipment Control

Product Code Number	Description	Applications
TEC2001-3	Single-Stage	Fan Coil Units, Unit Heaters, and Single-Stage Packaged Heating/Cooling Equipment
TEC2002-3	Heat Pump	Heat Pumps with Up to Three Heating and Two Cooling Stages
TEC2003-3	Multi-Stage	Multi-Stage Packaged Heating/Cooling Equipment
TEC2004-3	Multi-Stage Economizer	Economizer Operation for Single- and Multi-Stage Unitary Rooftop Equipment



TEC Series Wireless Thermostat Controller System for Staged Equipment (Continued)

TEC20 Coordinators

Product Code Number	Description
TEC20-3C-2	BACnet IP Wireless Coordinator; Requires 15 VDC Power Supply
TEC20-6C-2	BACnet MS/TP Wireless Coordinator; Requires 15 VDC Power Supply

Accessories

Product Code Number	Description
SEN-600-1	Remote Indoor Air Temperature Sensor
SEN-600-4	Remote Indoor Air Temperature Sensor with Occupancy Override and LED
TE-636S-1	Strap-Mount Temperature Sensor
TE-6361M-1 ¹	Duct-Mount Air Temperature Sensor
TEC20-A-1	Replacement Antenna for TEC20 Coordinator
TEC20-RA-1	Remote Antenna for TEC20 Coordinator when it is Installed Inside a Metal Cabinet or when Remote Antenna Mounting is Required by Physical Installation
TEC20-7X-1	24 VAC to 15 VDC Panel-Mounted Power Supply
TEC20-8X-1	120 VAC to 15 VDC Power Supply
TEC20-9B-1	Replacement Battery Pack for TEC20 Coordinator

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.

Technical Specifications

TEC20 Wireless Coordinators	
Product Code Numbers	TEC20-3C-2: BACnet IP Version TEC20-6C-2: BACnet MS/TP Version
Power Requirements	15 VDC, 6 W Maximum
Platform	IBM® PowerPC® 405EP 250 MHz Processor 64 MB SDRAM and 64 MB Serial Flash Battery Backup - Shutdown Begins within 10 Seconds Real-Time Clock - 3 Month Backup Maximum with Battery
Operating System	Niagra ^{AX}
Communications	Ethernet: Two 10/100 Mbps Ports (RJ-45 Connection) RS-232: 9-Pin D-Shell Connection RS-485: 3-Pin Non-Isolated Port
Transmission Range	Through Walls: 10 m (30 ft) Line-of-Sight (Open Space): 30 m (100 ft)
RF Band	Direct-Sequence, Spread-Spectrum Transmission; 2.4 Ghz Unlicensed Band
Transmission Power	10 mW Maximum
Wire Size	18 AWG Maximum, 22 AWG Recommended
Ambient Conditions	Operating: 0 to 50°C (32 to 122°F); 95% RH Maximum, Noncondensing Storage: -20 to 60°C (-4 to 140°F); 95% RH Maximum, Noncondensing
Compliance	United States: UL Listed, File E27734, CCN XAPX, Under UL 873, Temperature Indicating and Regulating Equipment FCC Compliant to CFR 47, Part 15, Subpart B and Part 15 Class A Canada: C-UL Listed, File E207782, CCN XAPX7, Under CAN/CSA C22.2 No. 24, Temperature Indicating and Regulating Equipment, and C22.2 No. 205-M1983 Signal Equipment Industry Canada, ICES-003
Dimensions (H x W x D)	122.4 x 160.4 x 61.9 mm (4.820 x 6.313 x 2.438 in.)
Shipping Weight	1.1 lb (0.499 kg)



TEC Series Wireless Thermostat Controller System for Staged Equipment (Continued)

TEC200x-3 Wireless Thermostat Controllers	
Power Requirements	19 to 30 VAC, 50/60 Hz, 2 VA (Terminals RC and C) at 24 VAC Nominal, Class 2 or Safety Extra-Low Voltage (SELV)
Economizer Output Rating	TEC2004-3 Model: 0 to 10 VDC into 2k ohm Resistance (Minimum)
Relay/Triac Contact Rating	30 VAC, 1.0 A Maximum, 3.0 A In-Rush, Class 2 or SELV
Digital Inputs	Voltage-Free Contacts across Terminal C to Terminals DI1 and DI2
Transmission Range	Through Walls: 10 m (30 ft) Line-of-Sight (Open Space): 30 m (100 ft)
RF Band	Direct-Sequence, Spread-Spectrum Transmission; 2.4 Ghz Unlicensed Band
Transmission Power	10 mW Maximum
Wire Size	18 AWG Maximum, 22 AWG Recommended
Temperature Sensor Type	Local 10k ohm Negative Temperature Coefficient (NTC) Thermistor
Resolution	±0.1C°/±0.2F°
Accuracy	Temperature: ±0.5C°/±0.9F° at 21.0°C/70.0°F Typical Calibrated
Temperature Range	Backlit Display: -40.0°C/ -40.0°F to 50.0°C/122.0°F Heating Control: 40.0°F/4.5°C to 32.0°C/ 90.0°F in 0.5° Increments Cooling Control: 54.0°F/12.0°C to 38.0°C/100.0°F in 0.5° Increments
Auxiliary/Outdoor Air Temperature Indication Range	-40.0°C/-40.0°F to 50.0°C/122.0°F
Minimum Deadband	1C°/2F° between Heating and Cooling
Ambient Conditions	Operating: 0 to 50°C (32 to 122°F); 95% RH Maximum, Noncondensing Storage:-30 to 50°C (-22 to 122°F); 95% RH Maximum, Noncondensing
Compliance	United States: UL Listed, File E27734, CCN XAPX, Under UL 873, Temperature Indicating and Regulating Equipment FCC Compliant to Part 15.247 Regulations for Low Power Unlicensed Transmitters Canada: UL Listed, File E27734, CCN XAPX7, Under CAN/CSA C22.2 No. 24, Temperature Indicating and Regulating Equipment Industry Canada, ICES-003
Dimensions (H x W x D)	125 x 86 x 29 mm (4-15/16 x 3-3/8 x 1-1/8 in.)
Shipping Weight	0.34 kg (0.75 lb)