

TEC2101-3 N2 Networked Single-Stage Thermostat

Installation Instructions

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Applications

The TEC2101-3 Thermostat is an N2 networked device that provides control of single-stage heating/cooling equipment. The technologically advanced TEC2101-3 Thermostat features a Building Automation System (BAS) N2 Bus communication capability that enables remote monitoring and programmability for efficient space temperature control.

IMPORTANT: The TEC2101-3 Thermostat is 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.

North American Emissions Compliance

United States

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.

Canada

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

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

Installation

Location Considerations

Locate the TEC2101-3 Thermostat:

- on a partitioning wall, approximately 5 ft (1.5 m) above the floor in a location of average temperature
- away from direct sunlight, radiant heat, outside walls, behind doors, air discharge grills, stairwells, or outside doors
- away from steam or water pipes, warm air stacks, unconditioned areas (not heated or cooled), or sources of electrical interference

Note: Allow for vertical air circulation to the TEC2101-3 Thermostat.

To install the thermostat:

1. Use a Phillips-head screwdriver to remove the security screw on the bottom of the thermostat cover.
2. Pull the bottom edge of the thermostat cover and open the thermostat as illustrated in Figure 1.

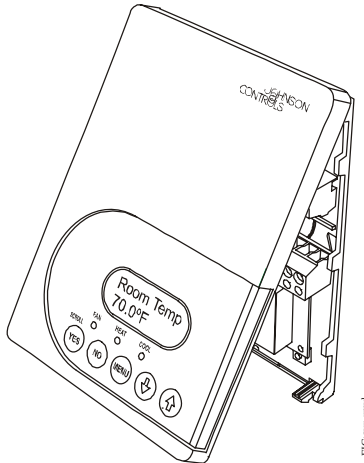


Figure 1: Removing the Thermostat Cover

3. Carefully pull the locking tabs on the right side of the thermostat mounting base and unlock the Printed Circuit Board (PCB). Open the PCB to the left as illustrated in Figure 2.

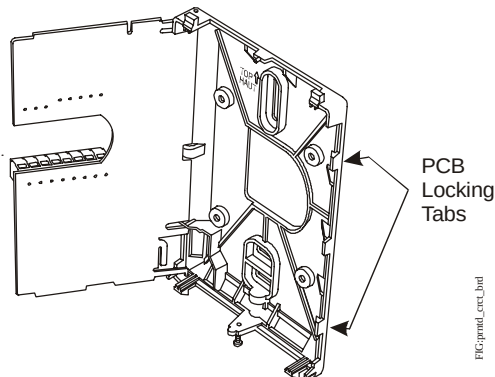


Figure 2: Opening the Thermostat PCB

4. Pull approximately 6 in. (152 mm) of wire from the wall and insert the wire through the hole in the thermostat mounting base.
5. Align the thermostat mounting base on the wall and use the base as a template to mark the two mounting hole locations.

Note: Be sure to position the thermostat mounting base so that the arrow on the base points upward to indicate the top of the thermostat.

6. Drill a 3/16 in. (5 mm) hole at each of the two marked locations and tap nylon anchors (included with the thermostat) flush to the wall surface.
7. Position the thermostat mounting base on the wall and use the two mounting screws (included with the thermostat) to secure the base to the surface as illustrated in Figure 3.

Note: Be careful not to overtighten the mounting screws.

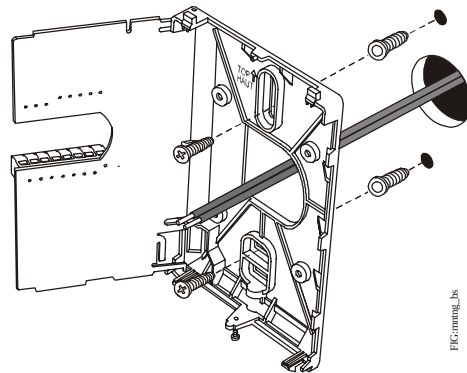


Figure 3: Securing the Thermostat Mounting Base to the Wall

8. Swing the PCB back to the right and carefully snap it into the locking tabs on the thermostat mounting base.
9. Pull the pull tabs on each of the connectors and remove the screw terminal blocks as illustrated in Figure 4.

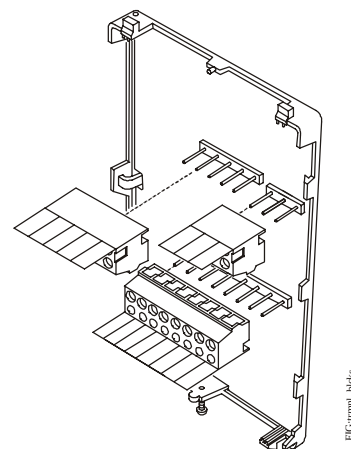


Figure 4: Removing the Screw Terminal Blocks

Wiring

When an existing thermostat is replaced, remove and label the wires to identify the terminal functions. When a TEC2101-3 Thermostat is replaced, simply remove the old screw terminal blocks and reinsert them onto the PCB of the replacement thermostat.



CAUTION: Risk of Electric Shock.

Disconnect power supply before making electric connections to avoid electric shock.



CAUTION: Risk of Property Damage.

Do not apply power to the system before checking all wiring connections. Short circuited or improperly connected wires may result in permanent damage to the equipment.

IMPORTANT: Make all wiring connections in accordance with local, national, and regional regulations. Do not exceed the electrical ratings of the TEC2101-3 Thermostat.

To wire the thermostat:

1. Strip the ends of each wire 1/4 in. (6 mm) and connect them to the appropriate screw terminals as indicated in Figure 5.
2. Carefully push any excess wire back into the wall. Seal the hole in the wall with fireproof material to prevent drafts from affecting the ambient temperature readings.
3. Reinsert the screw terminal blocks onto the PCB.
4. Reattach the thermostat cover to the mounting base (top side first).
5. Use a Phillips-head screwdriver to reinstall the security screw on the bottom of the thermostat cover.

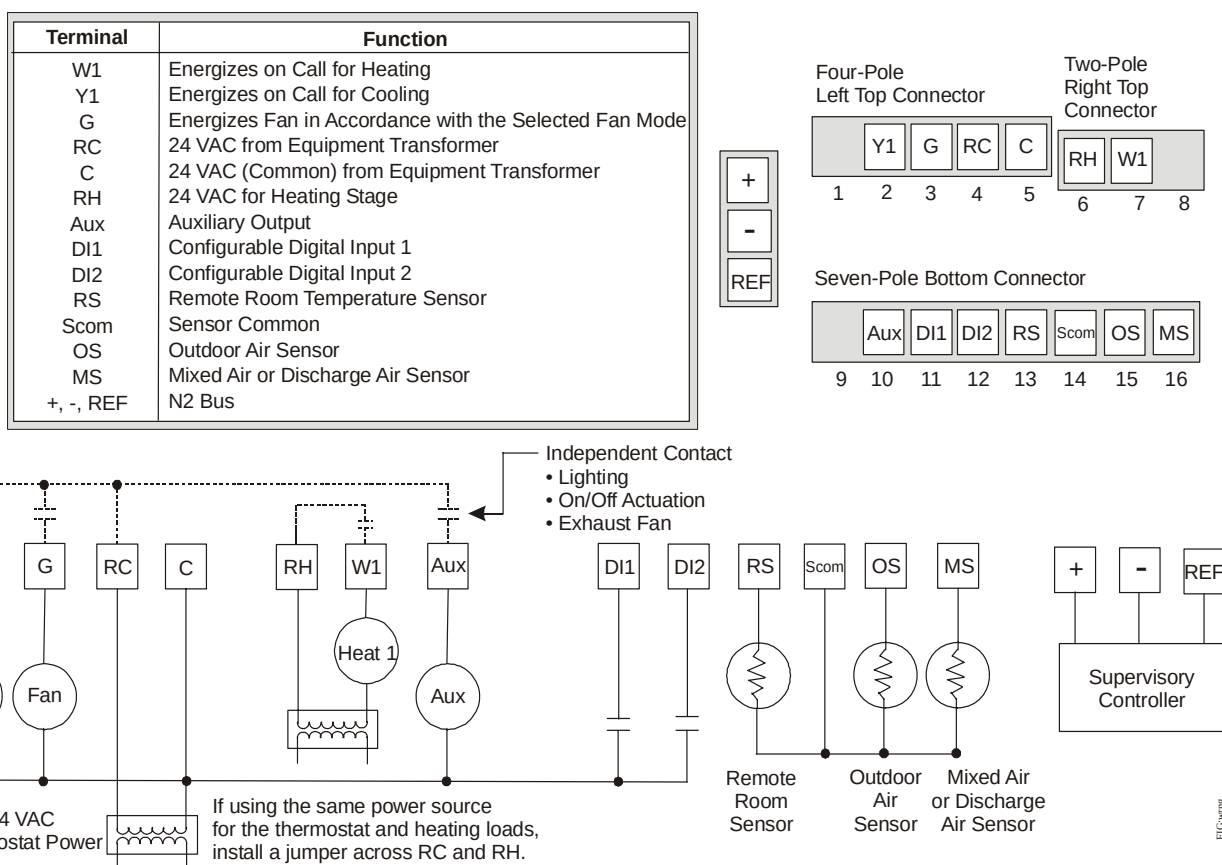


Figure 5: Wiring the TEC2101-3 Thermostat

Connecting the N2 Bus

To connect the N2 Bus:

1. Set the N2 address of the TEC2101-3 Thermostat per the engineering drawings prior to wiring the thermostat. (See the *Com addr* parameter in Table 2 to set the N2 address for the thermostat.) Also test for N2 voltage, polarity, and isolation prior to wiring the thermostat.
2. Observe the polarity when connecting the N2 Bus wires to the thermostat.
3. After the N2 Bus wires are connected to the first thermostat, continue in a daisy-chained fashion to the next thermostat.

Note: The thermostat N2 Bus is self-terminating. The N2 Bus wiring must be twisted-pair lines. Do not run the N2 Bus wiring in the same conduit as line voltage wiring (30 VAC or above) or other wiring that switches power to highly inductive loads (such as contactors, coils, motors, or generators).

For more N2 Bus overview information, refer to the *N2 Communications Bus Technical Bulletin (LIT-636018)* and *ASC and N2 Bus Networking and Troubleshooting Technical Bulletin (LIT-6363003)*.

N2 Device Mapping

Define the TEC2101-3 Thermostat as a Vendor Device (VND) when adding the thermostat to the supervisory controller.

The Thermostat Point (Type/Address) is the fixed-point definition inside the thermostat. The most recent N2 command received by any of the Object Types listed in Table 1 controls the thermostat.

Overrides take priority over any local adjustment or command in the thermostat.

If a setpoint is overridden, the thermostat adjusts the other setpoint, if necessary, to maintain the minimum deadband between the two setpoints. The setpoints can be spread farther apart but can never be adjusted closer than 2F°/1C° apart.

If a supervisory controller commands an override of an analog or binary object, all local changes attempted through the thermostat keypad for that object are ignored until the override is released. For example, if the supervisory controller sends an override message to turn System Mode Off, and then the user selects System Mode On at the thermostat keypad, the thermostat keeps the System Mode Off.

When an override is released, the object may once again be changed through the thermostat keypad, but the thermostat does not retain any data entered at the thermostat keypad during the override.

All overrides are released automatically after 10 minutes of no communications (for example, if the network cable is removed from the thermostat, causing a loss of network communications).

Metasys® System Person-Machine Interface (PMI)

Do not direct-map any points; instead, run control of these points through the Control System (CS) object. The supervisory controller Model Point Type is the definition inside the model file. Use a CS object to retrieve the data.

Metasys System Extended Architecture

There must not be a Relinquish Default for the setpoints if it is desired to change them from the thermostat display. If there is a Relinquish Default for the setpoints, the supervisory controller always has an Override for either an Adjusted value or the Relinquish Default value. Use the Operator Override and the Release Operator Override to command the setpoint and release it to local control. At that time, the user is able to change the setpoint from the local display.

Table 1: N2 Bus Objects (Part 1 of 2)

Point Name	Thermostat Point (Type/Address)	N2 Bus Object Type	Model Point Type	Range
Room Temp ¹	ADI-1	N2 AI	CSAD	32 to 122°F (0 to 50°C)
Aux Temp/Outdoor Temp ¹	ADI-2	N2 AI	CSAD	-40 to 122°F (-40 to 50°C)
Heating SP ^{1,2} (Occupied Heating SP)	ADI-3	N2 AO	CSAD	40 to 90°F (4.5 to 32°C)
Cooling SP ^{1,2} (Occupied Cooling SP)	ADI-4	N2 AO	CSAD	54 to 100°F (12 to 37.5°C)
Setback Heating SP ^{1,2} (Unoccupied Heating SP)	ADI-5	N2 AO	CSAD	40 to 90°F (4.5 to 32°C)

Table 1: N2 Bus Objects (Part 2 of 2)

Point Name	Thermostat Point (Type/Address)	N2 Bus Object Type	Model Point Type	Range
Setback Cooling SP^{1,2} (Unoccupied Cooling SP)	ADI-6	N2 AO	CSAD	54 to 100°F (12 to 37.5°C)
Minimum Heat SP	ADI-7	N2 AI	CSAD	40°F (4.5°C)
Maximum Heat SP¹	ADI-8	N2 AO	CSAD	40 to 90°F (4.5 to 32°C)
Minimum Cool SP¹	ADI-9	N2 AO	CSAD	54 to 100°F (12 to 37.5°C)
Maximum Cool SP	ADI-10	N2 AI	CSAD	100°F (37.5°C)
Mixed Air/Discharge Air Temperature (MS)	ADI-11	N2 AI	CSAD	-40 to 122°F (-40 to 50°C)
Fan¹	BD-1	N2 BO	CSBD	0 = Auto 1 = On
Mode¹	BD-2	N2 MSO ^{3,4}	CSMS	0 = Off 1 = Cool 2 = Heat 3 = Auto
Occupancy¹	BD-3	N2 BO	CSBD	0 = Unoccupied 1 = Occupied
W1 State	BD-4	N2 BI	CSBD	0 = Off 1 = On
Y1 State	BD-6	N2 BI	CSBD	0 = Off 1 = On
G State - Fan	BD-8	N2 BI	CSBD	0 = Off 1 = On
Temp Units^{1,5} (Local Display Only)	BD-9	N2 BO	See Footnote 5.	0 = °C 1 = °F
Occupancy Override	BD-10	N2 BI	CSBD	0 = No Override 1 = Override
Temporary Occupancy Time^{1,3}	BD-11	N2-MSO	CSMS	0 = 0 hours 1 = 1 hour 2 = 2 hours . . 12 = 12 hours
DI1^{6,7}	BI-1	N2 BI	CSBI	0 = Off 1 = On
Temp Alarm⁶	BI-2	N2 BI	CSBI	0 = Normal 1 = Alarm
DI2^{6,7}	BI-3	N2 BI	CSBI	0 = Off 1 = On

1. Commandable.
2. If one setpoint is overridden, the other setpoint may be automatically overridden by the TEC2101-3 thermostat to maintain the minimum deadband between the two setpoints.
3. The Multiple Command Output (MCO) object is used to schedule multiple Multi-State Objects (MSOs).
4. When defining the N2 MSO, select TEC Mode from the States Text Menu. Type 4 for the TEC2101-3 thermostat.
5. On the Metasys Network Control Module (NCM) system, map BD-9 **Temp Units Mode** as a Binary Output (BO) object with Auto Restore and Local Control set.
6. Can be a Change-of-State (COS) alarm to the BAS or N2 Dialer Module (NDM) to initiate a dial-out.
7. The state of DI1 and DI2 is communicated over the N2 network even if the digital inputs are configured as **None** through the local interface at the thermostat.

The Controller Point Type is the fixed-point definition inside the controller. The BAS Model Point type is the definition inside the model file. Use an NCM CS object to retrieve the data.

The most recent N2 command received by any of the N2 Bus Objects listed in Table 1 controls the thermostat.

If an Analog Data (AD) object is overridden by the Metasys system, all local changes attempted through the thermostat keypad for that AD object are ignored until the override is released. For example, if the Metasys system sends a write command to turn System Mode Off, and then the occupant selects System Mode On at the TEC keypad, the TEC ends up with the System Mode On; however, if the Metasys system sends an override command to turn System Mode Off, and then the occupant selects System Mode On at the TEC keypad, the TEC keeps the System Mode Off.

Once an override is released, the AD object may once again be changed through the thermostat keypad, but the thermostat does not retain any data entered at the TEC keypad during the override.

- The value for Heating SP (ADI-3) and Setback Heating SP (ADI-5) must stay within the limits established in the controller by Minimum Heat SP (ADI-7 read-only) and Maximum Heat SP (ADI-8).
- The value for Cooling SP (ADI-4) and Setback Cooling SP (ADI-6) must stay within the limits established in the controller by Minimum Cool SP (ADI-9) and Maximum Cool SP (ADI-10 read-only).

If a setpoint is overridden, the TEC, if necessary, adjusts the other setpoint to maintain the minimum deadband between the setpoints. The setpoints can be spread farther apart but can never be adjusted closer than the current minimum deadband value.

Failure to stay within the limits for a command results in an N2 Negative Acknowledge (NAK) error from the TEC2101-3 thermostat.

Overrides take precedence over any local adjustment or command in the TEC2101-3 thermostat.

You must not have a Relinquish Default for the setpoints if you want to change them from the thermostat display.

If there is a Relinquish Default for the setpoints, the Network Automation Engine (NAE) always has an Override for either an adjusted value or the Relinquish Default Value. You should use Operator Override and Release Operator Override if you want to command the setpoint and release it to local control.

Once all the NAE commands are released, the Override Status in the Hardware tab should be False. At that time, the user should be able to change the setpoint from the local display.

All overrides are released automatically after 10 minutes of no communications (for example, network cable is removed from the TEC, causing loss of network communications).

Setup and Adjustments

Thermostat Operation Overview

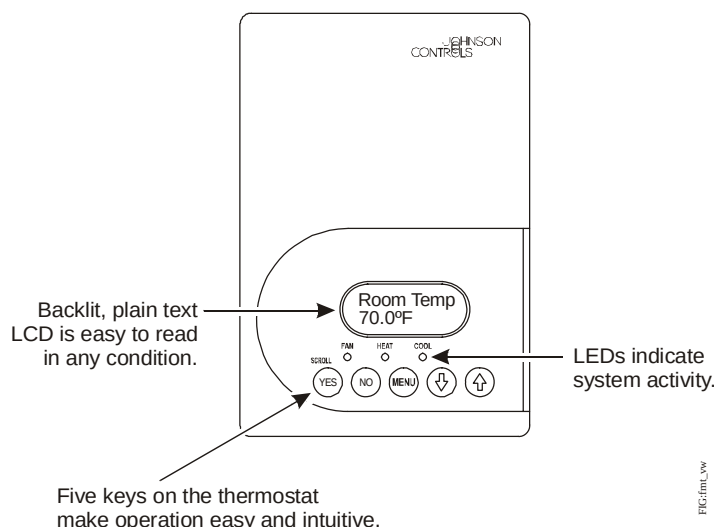


Figure 6: Front Cover of Thermostat

Thermostat User Interface Keys

The TEC2101-3 Thermostat user interface consists of five keys on the front cover (as illustrated in Figure 6). The function of each key is as follows:

- Use the **YES/SCROLL** key to:
 - confirm menu selections and to advance to the next menu item
 - stop the Status Display Menu from scrolling and to manually scroll to the next parameter on the menu

Note: When the thermostat is left unattended for 45 seconds, the thermostat display resumes scrolling.

- Use the **NO** key to decline a parameter change and to advance to the next menu item.
- Use the **MENU** key to:
 - access the Main User Menu or to exit the menu (See the *Programming Overview* section.)
 - access the Installer Configuration Menu or to exit the menu (See the *Configuring the TEC2101-3 Thermostat* section.)
- Use the **UP/DOWN** arrow keys to change the configuration parameters and to activate a setpoint adjustment.

Backlit Liquid Crystal Display (LCD)

The TEC2101-3 Thermostat includes 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.

Light-Emitting Diodes (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.

Programming Overview

There are three menus used to view, program, and configure the TEC2101-3 thermostat.

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
- Outdoor Temperature – An outdoor air temperature sensor must be connected.

- Applicable Alarms – The backlight lights up as an alarm condition is displayed.

Note: Press the **YES/SCROLL** key to temporarily stop this menu from scrolling.

The **Main User Menu** is used to access and change the basic operating parameters of the thermostat. Access this menu by pressing the **MENU** key during normal thermostat operation.

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

Configuring the TEC2101-3 Thermostat

The TEC2101-3 Thermostat comes from the factory with default settings for all configurable parameters. The default settings are shown in Table 2. To reconfigure the parameters via the thermostat, follow these steps:

1. To access the Installer Configuration Menu, press and hold the **MENU** key for approximately 8 seconds.

2. Once the Installer Configuration Menu begins, press the **NO** key to scroll through the parameters listed in Table 2.
3. When the desired parameter is displayed, use the **YES** key to choose the desired selection option.
4. Press the **YES** key and then the **NO** key to continue scrolling through the parameters.

To exit the Installer Configuration Menu at any time, press the **MENU** key and press the **YES** key at the exit prompt. To pass over a parameter without changing it, press the **NO** key.

When the thermostat is in the Installer Configuration Menu and left unattended for approximately 8 seconds, the thermostat reverts to the Status Display Menu.

Configuring Inputs DI1 and DI2

When DI1 and DI2 are configured for an alarm condition, an alarm condition is displayed locally when the input is closed. An alarm message is included on the scrolling Status Display Menu and when the message is displayed, the backlight momentarily lights up.

Both inputs can be configured to the Selection Options included in Table 2.

Table 2: Installer Configuration Menu (Part 1 of 4)

Parameter Appearing on Display	Description and Default	Selection Options
DI1	Configuration of Digital Input 1. Default: None	(None): No function is associated with an input. (Service): A Service alarm is displayed on the thermostat when the input is energized. This input can be tied into the air conditioning unit control card, which provides an alarm should there be a malfunction. (Filter): A Filter alarm is displayed. This alarm can be connected to a differential pressure switch that monitors a filter. (RemOVR): Temporary occupancy request via a remote input. This override function is controlled by a manual remote occupancy override. When enabled, this condition disables the override capability of the thermostat. (RemNSB): Remote Night Setback (NSB) via a time clock input, an occupancy sensor, or from a voltage-free contact. Contact open = Occupied; contact closed = Unoccupied.

Table 2: Installer Configuration Menu (Part 2 of 4)

Parameter Appearing on Display	Description and Default	Selection Options		
DI2	Configuration of Digital Input 2. Default: None	(None): No function is associated with an input. (Service): A Service alarm is displayed on the thermostat when the input is energized. This input can be tied into the air conditioning unit control card, which provides an alarm should there be a malfunction. (Filter): A Filter alarm is displayed. This alarm can be connected to a differential pressure switch that monitors a filter. (RemOVR): Temporary occupancy request via a remote input. This override function is controlled by a manual remote occupancy override. When enabled, this condition disables the override capability of the thermostat. (RemNSB): Remote Night Setback (NSB) via a time clock input, an occupancy sensor, or from a voltage-free contact. Contact open = Occupied; contact closed = Unoccupied.		
Lockout	Selectable Lockout Levels for limiting end user keypad interaction. Default: 0	Function	Level	
			(0)	(1)
		Resume/Occupancy Override Scheduling	Access	No Access
		Permanent Temperature Setpoints	Access	No Access
		Temporary Temperature Setpoints	Access	No Access
		System Mode Setting	Access	No Access
		Fan Mode Setting	Access	No Access
Pwr del¹	Sets the delay time period at thermostat powerup, or at each time power is removed and reapplied, before any operation (fan, heating, or cooling) is authorized. Also can be used to sequence the startup of multiple units in one location. Default: 10.0 sec	Range: 10.0 to 120.0 sec		
Frost pr	Provides a minimum heating setpoint of 42.0°F/5.5°C to prevent freezing in the zone controlled by the thermostat. Default: off	(on): Enabled (off): Disabled		
Heat max²	Sets the Occupied and Unoccupied maximum Heating setpoint values. Default: 90.0°F/32.0°C	Range: 40.0°F/4.5°C to 90.0°F/32.0°C		
Cool min²	Sets the Occupied and Unoccupied minimum Cooling setpoint values. Default: 54.0°F/12.0°C	Range: 54.0°F/12.0°C to 100.0°F/37.5°C		
Anticycl	Anti-Short Cycle timer sets the minimum on/off times for heating and cooling. Default: 2.0 min	Range: 0.0 to 5.0 min adjustable in 1-minute increments Set the anti-short cycle timer to 0.0 min for equipment that already has its own anti-short cycle timer.		
Heat cph	Sets the maximum number of Heating cycles per hour. Default: 4.0	Range: 3.0 to 8.0 cycles per hour		

Table 2: Installer Configuration Menu (Part 3 of 4)

Parameter Appearing on Display	Description and Default	Selection Options
Cool cph	Sets the maximum number of Cooling cycles per hour. Default: 4.0	Range: 3.0 or 4.0 cycles per hour
Deadband	Sets the minimum deadband between the heating and cooling setpoints. Default: 2.0F°/1.0C°	Range: 2.0F°/1.0C° to 4.0F°/2.0C° adjustable in 1.0F°/0.5C° increments
Fan cont	Determines how the fan is activated in response to a call for heating. <i>Fan cont</i> applies to W1 and Fan Mode <i>auto</i> only. <i>Fan cont</i> does not affect fan operation on a call for cooling (Y1). Default: on	(off) : The thermostat does not activate the fan in response to a call for heating. The fan is activated by the equipment fan and limit control. (on) : Enables the thermostat to control the fan.
Fan del	Fan delay extends fan operation after a heating or cooling cycle has ended. Default: off	(on) : Extends fan operation by 60 seconds after a heating or cooling cycle has ended. (off) : No extension of fan operation after a heating or cooling cycle has ended. The fan delay is only active when the fan is in the Auto mode.
Com addr	N2 network address at the thermostat; coincides with the address assigned at the supervisory controller. Default: 4	Range: 1 to 255
TOccTime	Sets the duration of the Temporary Occupancy Time (when the thermostat is in the Unoccupied mode) when a Schedule Override Function is enabled using either the Main User Menu or DI1 or DI2 configured as a temporary override remote contact (RemOVR). Sets the effective duration of the Temporary heating or cooling setpoints set using the up/down arrow keys. Default: 3.0 hrs	Range: 0.0 to 12.0 hrs adjustable in 1-hour increments
Cal RS	Sets the desired room air temperature sensor calibration (offset). The offset can be added to or subtracted from the actual displayed room temperature. Default: 0.0F°/0.0C°	Range: -5.0F°/-2.5C° to 5.0F°/2.5C° adjustable in 1.0F°/0.5C° increments
Cal OS	Sets the desired outdoor air temperature sensor calibration (offset). The offset can be added to or subtracted from the actual displayed room temperature. Default: 0.0F°/0.0C°	Range: -5.0F°/-2.5C° to 5.0F°/2.5C° adjustable in 1.0F°/0.5C° increments

Table 2: Installer Configuration Menu (Part 4 of 4)

Parameter Appearing on Display	Description and Default	Selection Options
H lock	Discontinues heating operation in response to the outdoor air temperature. Requires that an outdoor air temperature sensor be installed and connected. Default: 120°F/49°C	Range: -15°F/-26°C to 120°F/49°C adjustable in 5°F/5°C° increments
C lock	Discontinues cooling operation in response to the outdoor air temperature. Requires that an outdoor air temperature sensor be installed and connected. Default: -40°F/-40°C	Range: -40°F/-40°C to 95°F/35°C adjustable in 5°F/5°C° increments
Aux cont	Energizes peripheral devices (lighting equipment, exhaust fans, and economizers). Default: n.o.	(n.c.): Contact open = Occupied; contact closed = Unoccupied. (n.o.): Contact closed = Occupied; contact open = Unoccupied. The contact toggles with the internal Occupied/Unoccupied schedule (or the NSB contact on one of the digital inputs, if used).

1. When adjusting the numeric value, press the **UP** or **DOWN** arrow key to change the value by single increments; press and hold the **UP** or **DOWN** arrow key to change the numeric value in increments of ten.
2. When adjusting the temperature, press the **UP** or **DOWN** arrow key to change the value in 0.5°F/0.5°C° increments; press and hold the **UP** or **DOWN** arrow key to change the value in 5.0°F/5.0°C° increments.

Operation

Programming/Operating the TEC2101-3 Thermostat

Once the thermostat is configured via the Installer Configuration Menu, its operating parameters can be programmed via the Main User Menu. Access this menu by pressing the **MENU** key during normal thermostat operation. The Main User Menu contains the basic operating features of the thermostat.

The Main User Menu also uses Auto Help, which is displayed automatically in the menu when there is a pause in programming activity. To exit Auto Help, continue with the programming selection. When the thermostat is in the Main User Menu and is left unattended for 45 seconds, the menu reverts to the Status Display Menu.

Enabling Override Schedule

Note: Enabling Override Schedule only appears when in the Unoccupied Mode.

The override schedule prompt only appears when the thermostat is in the unoccupied state. This menu selection gives the user the option of overriding the unoccupied setpoints with the occupied setpoints for the amount of time specified under the **TOccTime** parameter. See the *Configuring the TEC2101-3 Thermostat* section.

Note: If one of the digital inputs is configured to operate as a remote override contact, this menu is disabled.

To override the unoccupied state while in the Main User Menu:

1. Press the **NO** key to all prompts until the Override Schedule prompt appears. If the thermostat is in the unoccupied state, this is the first prompt.
2. Press the **YES** key to enable the temporary override. The thermostat returns to the Status Display Menu.

When scrolling through the Status Display Menu, Override now appears for the occupancy status parameter.

Resuming the Programmed Schedule

This menu only appears when the thermostat is in the unoccupied override mode.

To resume the schedule while in the Main User Menu:

1. Press the **NO** key to all prompts until the Cancel ovrd Y/N prompt appears. If the thermostat is in the unoccupied override state, this is the first prompt.

2. Press the **YES** key to resume the programmed schedule.

The thermostat returns to the Status Display Menu.

Entering Permanent Temperature Setpoints

The first prompt appearing in the Main User Menu of the thermostat when in the occupied state is to set the permanent temperature setpoint.

To enter the permanent heating and cooling setpoints for the Occupied and Unoccupied Modes, follow the steps in Table 3. When changing the temperatures, press the keys once to change the temperature in 0.5F°/0.5C° increments; press and hold down the keys to change the temperature in 5.0F°/5.0C° increments.

Table 3: Entering Permanent Temperature Setpoints (Part 1 of 2)

Thermostat Display	Description
RoomTemp 75.0°F	Press the MENU key while in the Status Display Menu to enter the Main User Menu.
Temperat set? Y/N	Press the NO key to all prompts until the temperature setpoint prompt appears on the display (it may be the first prompt). Press the YES key to enter the temperature setting menu.
Cooling set? Y/N	Press the YES key to change the occupied cooling setpoint. Press the NO key to advance to the occupied heating setpoint menu.
Cooling 75.0°F	Press the UP/DOWN arrow keys to set the temperature. Press the YES key to store the value and advance to the next menu.
Heating set? Y/N	Press the YES key to change the occupied heating setpoint. Press the NO key to advance to the unoccupied cooling setpoint menu.
Heating 68.0°F	Press the UP/DOWN arrow keys to set the temperature. Press the YES key to store the value and advance to the next menu.
Unocc CL set? Y/N	Press the YES key to change the unoccupied cooling setpoint. Press the NO key to advance to the unoccupied heating setpoint.

Table 3: Entering Permanent Temperature Setpoints (Part 2 of 2)

Thermostat Display	Description
Unocc CL 80.0°F	Press the UP/DOWN arrow keys to set the temperature. Press the YES key to store the value and advance to the next menu.
Unocc HT set? Y/N	Press the YES key to change the unoccupied heating setpoint. Press the NO key to advance to the temperature display units.
Unocc HT 62.0°F	Press the UP/DOWN arrow keys to set the temperature. Press the YES key to store the value and advance to the next menu.
°F/°C set? Y/N	Press the YES key to set the display units to °F or °C. Press the NO key to advance to the temperature setpoint type menu.
Exit? Y/N	Press the YES key to return to the Status Display Menu or press the NO key to reenter the temperature setting menu.

Entering Temporary Temperature Setpoints

To temporarily change the setpoint, press the **UP/DOWN** arrow keys to change the temporary setpoint for the current mode of operation.

Note: Whether the thermostat is heating or cooling, the respective setpoint is temporarily adjusted. To toggle between the temporary heating and cooling setpoints, press the **NO** key while changing the temporary setpoints.

Ending Temporary Temperature Setpoints

The temporary setpoints remain in effect for the duration set in the **TOccTime** parameter or until manually released.

To release the temporary setpoint sooner, while in the Main User Menu:

1. Press the **YES** key to the first prompt that appears.
2. If the thermostat does not immediately return to the Status Display Menu, press the **MENU** key again and press the **YES** key to exit the Main User Menu.

The setpoint reverts to the Permanent Temperature Setpoint.

Selecting the System Mode

The thermostat has four system modes:

- **Automatic Mode (auto):** Automatic changeover between heating and cooling. This is the default setting.
- **Cooling Mode (cool):** Cooling operation only
- **Heating Mode (heat):** Heating operation only
- **Off Mode (off):** The thermostat is off; however, when frost protection (**Frost pr** parameter) is enabled, the thermostat still calls for heat (if required).

To set the system mode while in the Main User Menu:

1. Press the **NO** key to all prompts until the system mode prompt appears on the display. Press the **YES** key to select the desired system mode.
2. Press the **UP/DOWN** arrow keys to locate the desired system mode. Press the **YES** key to select the desired system mode.
3. Press the **YES** key to return to the Status Display Menu or press the **NO** key to return to the system mode selection menu.

Selecting the Fan Mode

The thermostat has three fan mode settings:

- **On Fan Mode (on):** Energizes the fan all the time for both occupied and unoccupied states, even if the system mode is set to off.
- **Automatic Fan Mode (auto):** Energizes the fan only on a call for heating or cooling, for both occupied and unoccupied states.
- **Smart Fan Mode (smart):** Energizes the fan all the time for occupied states, and only on a call for heating or cooling in unoccupied states. This is the default setting.

To select the fan mode while in the Main User Menu:

1. Press the **NO** key to all prompts until the fan mode prompt appears on the display. Press the **YES** key to set the fan mode.
2. Press the **UP/DOWN** arrow keys to locate the desired fan mode. Press the **YES** key to select the desired fan mode.
3. Press the **YES** key to return to the Status Display Menu or press the **NO** key to return to the fan mode selection menu.

Accessories

All the accessories in Table 4 include mounting hardware; contact the nearest Johnson Controls® representative to order any of these parts.

Note: Review the technical specifications of the optional accessories prior to their use in an application.

Table 4: Accessories (Order Separately)

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-6361M-1 ¹	Duct Mount Air Temperature Sensor
TE-6363P-1 ¹	Outdoor Air Temperature 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.

Repair Information

If the TEC2101-3 Thermostat fails to operate within its specifications, see Table 5 for troubleshooting details and Table 6 for alarm messaging. For a replacement thermostat, contact the nearest Johnson Controls representative.

Table 5: Troubleshooting Details

Error/Trouble Condition	Possible Cause	Solution
Thermostat Cycles Online and Offline	Two or more controllers have the same address.	Change each duplicate address to a unique number.
	There are Y or T taps on the N2 Bus, or the repeater has lost power or is wired incorrectly.	Refer to the <i>N2 Communications Bus Technical Bulletin (LIT-636018)</i> .
Thermostat Does Not Come Online	Two or more controllers have the same address.	Change each duplicate address to a unique number.
	The N2 Bus contains too many devices.	Do not exceed the maximum number of devices allowed on the N2 Bus per supervisory controller limitations.
	The thermostat does not have power.	Apply power to the thermostat.
	The N2 cable runs are broken.	Locate the break and correct the wiring.
	The thermostat device type is incorrect.	Change the thermostat device type to VND.
N2 Bus is Offline	The wiring on the N2 Bus is broken.	Repair the wiring.
	No point mapping has been entered.	Define the BAS dataset.

Table 6: Display Messages

Display	Function
Frost ON	Indicates that heating is energized by the low limit frost protection room temperature setpoint.
Service	Indicates that there is a service alarm in accordance with the programmable Digital Inputs (DI1 or DI2).
Filter	Indicates that the filter(s) is dirty in accordance with the programmable Digital Inputs (DI1 or DI2).

Technical Specifications

TEC2101-3 N2 Networked Single-Stage Thermostat

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)
Relay 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
Wire Size		18 AWG (1.0 mm Diameter) Maximum, 22 AWG (0.6 mm Diameter) Recommended
Temperature Sensor Type		Local 10k ohm Type II Negative Temperature Coefficient (NTC) Thermistor
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	±0.9°F/±0.5°C at 70.0°F/21.0°C Typical Calibrated
Default Minimum Deadband		2°F/1°C between Heating and Cooling
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	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, Class A
	Canada	UL Listed, File E27734, CCN XAPX7, Under CAN/CSA C22.2 No. 24, Temperature Indicating and Regulating Equipment
		Industry Canada, ICES-003
	Europe	CE Mark, EMC Directive 89/336/EEC
	Australia and New Zealand	C-Tick Mark, Australia/NZ Emissions Compliant
Shipping Weight		0.75 lb (0.34 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.



Building Efficiency

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