THX9321 Prestige® 2.0
THX9421 Prestige® IAQ 2.0 with EIM
With wireless accessories

Control for up to 4 Heat/2 Cool heat pump systems or up to 3 Heat/2 Cool conventional systems for residential and commercial applications.

Installation guide for:

• Prestige THX9321/9421 thermostat
• Equipment Interface Module (EIM)
• Portable Comfort Control
• Wireless Outdoor Sensor
• Wireless Indoor Sensor
• RedLINK™ Internet Gateway

Quick start guide

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DISCONNECT POWER BEFORE INSTALLATION. Can cause electrical shock or equipment damage.

MERCURY NOTICE: If this product is replacing a control that contains mercury in a sealed tube, do not place the old control in the trash. Contact the Thermostat Recycling Corporation at www.thermostat-recycle.org or 800-238-8192 for information on how and where to properly and safely dispose of your old thermostat.

Must be installed by a trained, experienced technician. Read these instructions carefully. Failure to follow these instructions can damage the product or cause a hazardous condition.
Your Honeywell advantage

RedLINK™ Compatible
Increase your content and profit per job by including RedLINK™ accessories that meet your customers' comfort and convenience needs. RedLINK accessories include the Wireless Outdoor Sensor, Portable Comfort Control (PCC), Equipment Interface Module (EIM), RedLINK Internet Gateway, Wireless Indoor Sensor, TrueSTEAM™ humidifier with Wireless Adapter, TrueZONE™ zoning panel with Wireless Adapter, Vent Boost Remote and Entry/Exit Remote.

Customizable Service Reminders
Set up to 10 service reminders. Choose from the pre-set options or customize your own. Reminders based on date, outdoor temperature or a dry contact input will alert customers with instructions to contact you for assistance.

Delta T Alerts and Diagnostics
Alerts give customers a sense of security while also enabling you to service or replace the equipment prior to a loss of heating or cooling. Based on limits you set at installation, customers can be alerted when their system is not operating as expected. The system alert will instruct customers to contact you for assistance. Requires EIM.

Delta T Installer Test
Save time by viewing Delta T while running a system test to verify proper operation. Requires EIM.

Universal Inputs – S1 and S2
Assignable inputs allow you to configure Indoor and Outdoor Temperature Sensors, Discharge and Return Air Sensors or Dry Contact Devices. Dry Contact Devices can be used to trip pre-set or customized alerts on the thermostat home screen. Requires EIM.

User Interactions Log
The interaction log stores history of thermostat setting changes including temperature, system and installer setup. You can use the interaction log to save time by determining if the issue is a system error or an accidental user error.

Configurable for Residential and Light Commercial Applications
One thermostat does it all to meet the needs of Residential and Light Commercial applications. Simply select Residential or Commercial during the installer setup. If Commercial is selected, the thermostat will use commercial language, meet building codes and offer 365 day holiday scheduling.

USB Port for Quick Installer Setup
Save time by using a USB stick to upload installer settings and service reminders in one simple step.

Selectable Sensors
When paired with a Wireless Indoor Sensor(s) you have the ability to choose which sensor(s) to use for temperature, humidification and dehumidification. They can be used in combination for temperature averaging—or individually—to condition humidity levels in separate spaces.
1 Install thermostat

- **THX9421**: Mount the thermostat and wire to C and R terminals of the Equipment Interface Module (EIM), or to a separate 24 volt transformer (not provided).
- **THX9321**: Install and wire as above if using EIM. If not, see pages 13-15.

When the THX9321 thermostat is used with the EIM, the relays in the thermostat do not function.

See pages 10-17 for detailed wiring guidelines

2 Install Equipment Interface Module (if used)

*If no EIM is used, skip to Section 3.*

Use screws & anchors as appropriate for the mounting surface. Mount the EIM near the HVAC equipment, or on the equipment itself.

NOTE: If you install more than one thermostat and EIM, the EIMs must be at least 2 feet apart.
3 Power optional accessories

[If no wireless accessories are used, skip to Section 4.]

Wireless Outdoor Sensor  Wireless Indoor Sensor  Portable Comfort Control

Install 2 fresh AAA alkaline batteries
Install 2 fresh AA lithium batteries
Install 3 fresh AA alkaline batteries

RedLINK™ Internet Gateway

The Honeywell RedLINK Internet Gateway gives your customers remote access to home climate-control systems from any location with Internet access.

Using a Web browser, users can review and adjust indoor temperature, system mode and other settings. The Gateway can also send alerts to as many as 6 email addresses if a problem occurs.

Connect power cord to an electrical outlet not controlled by a wall switch
Connect RedLINK Gateway to a router or modem with Ethernet cable (RJ45).
4 Link thermostat to the wireless network  
(if used with an EIM or TrueZONE Wireless Adapter)

Next, link all components and RedLINK™ accessories to the wireless network.

Initial powerup

When the thermostat is first activated, it will lead you through the steps necessary to define and set up your system. The steps will change depending on the type of system and thermostat you’re installing.

Setup options for THX9321

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Setup options for THX9421

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Link thermostat to EIM or TrueZONE® Wireless Adapter

Use the step-by-step thermostat menus to define your system type (above). When you reach the Wireless Setup screen, follow the steps below:

- Press and release the CONNECT button at the EIM or Wireless Adapter, and make sure the "Connected" light is flashing green.
- If the "Connected" light does not flash, make sure no other RedLINK devices are in Wireless Setup mode, then try again.
- If the power light at the wireless adapter does not turn on, consult the TrueZONE manual for help.

"Connected" status light

- Green flashing: In Wireless Setup mode.
- Green steady: RedLINK device(s) are communicating.
- Red: RedLINK device(s) not communicating. Check EIM and RedLINK devices.

While the EIM light is flashing, press NEXT to link the thermostat with the EIM. After a brief delay, the screen will display "Device Connected."

At any screen you can press HELP for more information, or press BACK to change earlier options.
Link optional accessories to wireless network

While the Add Device screen is displayed on the thermostat, **press and release** the **CONNECT** button on each wireless device, as described below. Accessories need to be at least 2 feet away from the thermostat or EIM during the linking process.

If you need to return to the "Add Device" screen to add devices later, press **MENU** and scroll down to press **INSTALLER OPTIONS**. Enter the date code (password) when prompted. The date code is printed on the back of the thermostat; or press **MENU > EQUIPMENT STATUS** to find the date code. After you enter the password, scroll down to press **WIRELESS DEVICE MANAGER** and then select **ADD DEVICE**.

**Wireless outdoor sensor**

Press and release **CONNECT**. After a short delay the thermostat will display "Wireless Outdoor Sensor added" on the Add Device screen.

**Wireless indoor sensor**

Press and release **CONNECT**. After a short delay, the status light will glow green for 15 seconds. If the status light turns red, the sensor did not link with the thermostat.

In normal operation, this light remains off. If it begins flashing red, batteries are low (power will be depleted after 2–3 weeks).

**Portable Comfort Control**

Press **CONNECT** on the Portable Comfort Control display screen. Press **DONE** when the screen displays "Connected," then exit or continue to link another thermostat.

**Error messages:**

- **E1 29** Incompatible device cannot be connected.
- **E1 34** Low RF signal. Move device to a different location and try again.
- **E1 38** Make sure the thermostat or the EIM is in Wireless Setup mode, and the Portable Comfort Control is at least 2 feet away (600 mm).

The linking procedure will time out if there is no keypress for 30 minutes. To begin again, press and hold in the lower right corner of the screen until the display changes (about 3 seconds).

**RedLINK Internet Gateway**

Press and release the button on the bottom of the Internet Gateway. After a short delay, the RedLINK status light will glow steady green.

The Internet Gateway must be registered online before use at www.mytotalconnectcomfort.com. Enter the MAC ID and MAC CRC numbers located on the bottom of the Internet Gateway. For additional information, see instructions provided with the device.
6 Install optional sensors

[If no sensors are used, skip to Section 7.]

To install outdoor air sensor

1. Mount the sensor on a vertical exterior wall, at least 6 inches below any overhang. Choose a location protected from direct sunlight.
2. Place sensor securely in bracket, facing away from wall.

To install indoor air sensor

1. Remove the wallplate and mount it 4 to 6 feet above the floor on an interior wall. Drill 3/16-inch holes for drywall, 7/32-inch for plaster.
2. Attach sensor securely to wallplate as shown.

7 Setup Installer options (ISU)

To setup the thermostat, press MENU and scroll down to press INSTALLER OPTIONS. Enter the date code (password) when prompted. The date code is printed on the back of the thermostat; or press MENU > EQUIPMENT STATUS to find the date code. After you enter the password, press CREATE SETUP to setup the thermostat.

A brief summary of installer options follows (pages 8–9). You can download a complete list of all options at http://customer.honeywell.com.
### Setup Installer options (ISU) - continued

**Create Setup:** Press **CREATE SETUP** to set all system settings one by one.

**View/Edit Current Setup:** Press **VIEW/EDIT CURRENT SETUP** to select a specific function and make quick changes.

**Set Up Diagnostics:** Press **SET UP DIAGNOSTICS** to setup and test Delta T diagnostics.

**Installer Test:** Press **INSTALLER TEST** to quickly determine if the heat, cool, fan and thermostat are operating properly. Minimum off timers are ignored during the test.

**Data Logs:** Press **DATA LOGS** to view the Alerts Log and User Interactions Log.

**Wireless Device Manager:** Press **WIRELESS DEVICE MANAGER** to add or remove wireless accessories.

**Advanced Options:** Press **ADVANCED OPTIONS** to setup the thermostat using a USB device or to restore the thermostat to the factory default settings.

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**R:** Residential  **C:** Commercial  **B:** Both

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**TIP:** You can use the thermostat USB port to download all system configuration and installer options, including your company name and contact information. You can upload this data to each thermostat you install, to save time.

**Thermostat functions marked in gray below require an EIM (see page 3).**
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<td>13020</td>
<td>Allow Delta T Diagnostics During Humidification</td>
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<td>13030</td>
<td>Allow Delta T Diagnostics During Dehumidification</td>
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<tr>
<td>13050-13080</td>
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<tr>
<td>15000-15020</td>
<td>Dealer name, phone, email, website, message</td>
</tr>
</tbody>
</table>
EIM wiring guide — conventional systems

Typical wiring of a conventional system with up to 3-stage heat and 2-stage cool with one transformer.

See guides on following pages for thermostat wiring and geothermal radiant heat wiring.

Wire a maximum of 2 sensors using the S1 and S2 terminals. See ISU 5000-6190 for options. S1 and S2 terminals can be connected to an indoor sensor, outdoor sensor, discharge sensor, return sensor, dry contact device to display an alert or an occupancy sensor for remote setback.

Remove jumper(s) if using separate transformers.

See Economizer wiring section.

See following pages for additional thermostat wiring guidelines for heat pumps, geothermal systems and optional Economizer.
EIM wiring guide — heat pump systems

Typical wiring of a heat pump system with up to four-stage heat and two-stage cool with one transformer.

See guides on following pages for thermostat wiring and geothermal radiant heat wiring.

Wire a maximum of 2 sensors using the S1 and S2 terminals. See ISU 5000-6190 for options. S1 and S2 terminals can be connected to an indoor sensor, outdoor sensor, discharge sensor, return sensor, dry contact device to display an alert or an occupancy sensor for remote setback.

L/A terminal sends continuous output when thermostat is set to EM HEAT mode, except when set up for Economizer or TOD. See Economizer wiring section.
EIM wiring guide — geothermal radiant heat

Typical wiring for geothermal radiant heat, geothermal forced-air, and backup heat with one transformer. See page 19 for operation.

- U1, U2 or U3 terminals must be used for geothermal radiant heat (ISU 2010). Thermostat allows 2 stages of radiant heat—geothermal (stage 1) and boiler (stage 2).
- “U” terminals are normally open dry contacts when set up for geothermal radiant heat. You must install a field jumper if radiant heat is powered by system transformer. Do NOT install a field jumper if radiant heat has its own transformer.
- L/A terminal sends continuous output when thermostat is set to EM HEAT mode except when set up for Economizer or TOD. See Economizer wiring section.
**Thermostat wiring guides — Prestige THX9321**

### Typical wiring of a 3-heat / 2-cool heat pump system with one transformer

- Transformer
- 120 VAC
- 24 VAC
- C
- R
- O/B
- AUX/E
- Y
- Y2
- G
- L/A
- K

- **CHANGEOVER VALVE**
- **BACKUP HEAT**
- **COMPRESSOR STAGE 1**
- **COMPRESSOR STAGE 2**
- **COMPRESSOR MONITOR OR ZONE PANEL**

- **MCR32948B**

### Typical wiring of a 3-heat / 2-cool heat pump system with two transformers (example - oil forced air backup heat)

- **Air Handler Transformer**
- 120 VAC
- 24 VAC
- C
- R
- O/B
- AUX/E
- Y
- Y2
- G
- L/A
- K

- **BACKUP HEAT**
- **COMPRESSOR STAGE 1**
- **COMPRESSOR STAGE 2**
- **COMPRESSOR MONITOR OR ZONE PANEL**

- **MCR32950A**

- **Backup Heat Transformer**
- 120 VAC
- 24 VAC
- C
- R
- O/B
- AUX/E
- Y
- Y2
- G
- L/A
- K

- **BACKUP HEAT**
- **COMPRESSOR STAGE 1**
- **COMPRESSOR STAGE 2**
- **COMPRESSOR MONITOR OR ZONE PANEL**

- **MCR32951A**

### Typical wiring of a 2-heat / 2-cool conventional system with one transformer

- Transformer
- 120 VAC
- 24 VAC
- C
- R
- O/B
- Y
- Y2
- G
- U1
- U2

- **HEAT STAGE 1**
- **HEAT STAGE 2**
- **COMPRESSOR STAGE 1**
- **COMPRESSOR STAGE 2**
- **COMPRESSOR MONITOR OR ZONE PANEL**

- **MCR32949A**

### Typical wiring for geothermal radiant heat, geothermal forced-air and backup heat with one transformer. See page 19 for operation.

- Transformer
- 120 VAC
- 24 VAC
- C
- R
- O/B
- Y
- Y2
- G
- U1
- U2

- **GEOTHERMAL RADIANT HEAT STAGE 1**
- **COMPRESSOR MONITOR OR ZONE PANEL**

- **MCR32951A**

- **U1 and U2 terminals are dry contacts.**
- **L/A terminal sends continuous output when thermostat is set to EM HEAT mode except when set up for Economizer or TOD. See Economizer wiring section.**
- **U1 or U2 terminals must be used for geothermal radiant heat (ISU 2010). Thermostat allows 2 stages of radiant heat—geothermal (stage 1) and boiler (stage 2).**
- **“U” terminals are normally open dry contacts when set up for geothermal radiant heat. You must install a field jumper if radiant heat is powered by system transformer. Do NOT install a field jumper if radiant heat has its own transformer.**
- **Remove jumper if using separate transformers.**
- **Connect the THP9045 Wireesaver Module to the K terminal in heating/cooling applications that do not have a common wire at the thermostat. The K terminal cannot be used in heat-only applications. See THP9045 installation instructions for more information.**
Prestige THX9321 or EIM:
Using universal relays to control heating or cooling

Powering universal relay with system transformer (THX9321 shown)

Powering universal relay with separate heating transformer (THX9321 shown)

⚠️ U1/U2/U3 terminals are normally open dry contacts when set up for a stage of heating or cooling.

⚠️ You must install a field jumper if the stage of heating or cooling is powered by system transformer. Do NOT install a field jumper if the stage of heating has its own transformer.

⚠️ U1/U2/U3 terminals are assigned to a stage of heating or cooling in the Installer Setup. Options are:

- THX9321 Thermostat (U1 and U2)
  - Cool Stage 3 (ISU 2080 - commercial only)
  - Cool Stage 4 (ISU 2090 - commercial only)
  - Conventional Heat Stage 3 (ISU 2100, 2140)
  - Backup Heat Stage 2 for Heat Pumps (ISU 2170)
  - Geothermal Radiant Heat (see wiring guide on pages 12-13)

- THX9421 Thermostat with EIM (U1, U2 and U3)
  - Cool Stage 3 (ISU 2080 - commercial only)
  - Cool Stage 4 (ISU 2090 - commercial only)
  - Geothermal Radiant Heat (see wiring guide on pages 12-13)

Dry Contact Alerts

⚠️ ❗️ EQUIPMENT DAMAGE HAZARD. Do not apply power to S1 or S2 terminals.

⚠️ The dry contact device must be rated for low voltage.

If you are not using the S1 and S2 terminals on the EIM, you can connect them to a dry contact device to display an alert. Dry contact alerts include Full Drain Pan, Dirty Filter, Water Leak, System Shutdown, Service Needed, Fan Failure and Custom Alert (ISU 6000).

⚠️ You can connect multiple Dry Contact devices in parallel to the S1 or S2 terminals.
Wiring guide — IAQ equipment (EIM or thermostat)

"U" terminals can be used for humidification, dehumidification or ventilation.

<table>
<thead>
<tr>
<th>With power supply</th>
<th>Without power supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical hookup of powered humidifier.</td>
<td>Typical hookup of non-powered humidifier.</td>
</tr>
</tbody>
</table>

```
M32393
```

**Typical hookup of powered ventilation.**

```
M32396
```

**Typical hookup of powered dehumidifier (whole house dehumidifier).**

```
M32398
```

**Typical hookup of variable speed blower for dehumidification in low speed.**

```
M32392
```

**KEY**

- ANY COMBINATION OF UNIVERSAL RELAYS (U1, U2, U3) CAN BE USED. THEY ARE SET IN THE THERMOSTAT INSTALLER SETUP.
- WIRE THE THERMOSTAT OR EIM UNIVERSAL RELAY TO THE LOW SPEED FAN FOR DEHUMIDIFICATION CONTROL AT THE EQUIPMENT. THE THERMOSTAT OR EIM RELAY CAN BE SET TO NORMALLY OPEN OR NORMALLY CLOSED IN THE THERMOSTAT INSTALLER SETUP.
- = NORMALLY OPEN, DRY CONTACTS
- = NORMALLY CLOSED, DRY CONTACTS
Economizer Module wiring guides

Typical wiring of a W7220 Economizer Module for a heat pump system, using a Prestige THX9321 thermostat or Equipment Interface Module.

Typical wiring of a W7220 Economizer Module for a conventional system, using a Prestige THX9321 thermostat or Equipment Interface Module.

“A” or “L/A” terminal must be configured for Economizer in the installer setup (ISU 2220).

These terminals are powered by the cooling transformer (Rc terminal).

Terminal AUX 2 is present only on the Equipment Interface Module.
Economizer Module wiring guides

Typical wiring of a W7213/W7214 Economizer Module for a heat pump system, using a Prestige THX9321 thermostat or Equipment Interface Module.

![Diagram of W7213/W7214 Economizer Module wiring]

Typical wiring of a W7212 Economizer Module for a conventional heating system, using a Prestige THX9321 thermostat or Equipment Interface Module.

![Diagram of W7212 Economizer Module wiring]

- "A" or "L/A" terminal must be configured for Economizer in the installer setup (ISU 2220).
- These terminals are powered by the cooling transformer (Rc terminal).
- Terminal AUX 2 is present only on the Equipment Interface Module.
Economizer and TOD operation (ISU 2220)
Commercial use only

The Economizer can greatly reduce energy costs if configured properly. In some climates the cooling system may run hundreds of hours, when it may not be required to maintain indoor comfort. In some conditions, ventilation with outdoor air can achieve the same level of comfort at lower cost. Tables below explain how the Economizer feature maintains comfort while minimizing costs.

<table>
<thead>
<tr>
<th>Thermostat Mode</th>
<th>Equipment Operation</th>
<th>A-L/A terminal: Economizer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occupied</td>
<td>Heat/Cool/Fan running</td>
<td></td>
</tr>
<tr>
<td>Occupied temporarily</td>
<td>Heat/Cool/Fan running</td>
<td></td>
</tr>
<tr>
<td>Occupied</td>
<td>Heat/Cool/Fan NOT running</td>
<td>ON</td>
</tr>
<tr>
<td>Occupied temporarily</td>
<td>Heat/Cool/Fan NOT running</td>
<td></td>
</tr>
<tr>
<td>Pre-occupancy purge</td>
<td>Fan running</td>
<td></td>
</tr>
<tr>
<td>Unoccupied</td>
<td>Cooling system running</td>
<td></td>
</tr>
<tr>
<td>Unoccupied temporarily</td>
<td>Cooling system running</td>
<td></td>
</tr>
<tr>
<td>Standby</td>
<td>Cooling system running</td>
<td></td>
</tr>
<tr>
<td>Unoccupied</td>
<td>Cooling system NOT running</td>
<td>OFF</td>
</tr>
<tr>
<td>Unoccupied temporarily</td>
<td>Cooling system NOT running</td>
<td></td>
</tr>
<tr>
<td>Standby</td>
<td>Cooling system NOT running</td>
<td>ON</td>
</tr>
<tr>
<td>Non-programmable</td>
<td>Fan running</td>
<td></td>
</tr>
<tr>
<td>Non-programmable</td>
<td>Fan NOT running</td>
<td>OFF</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Thermostat Mode</th>
<th>A-L/A terminal: TOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occupied</td>
<td>ON</td>
</tr>
<tr>
<td>Occupied temporarily</td>
<td></td>
</tr>
<tr>
<td>Temperature overrides</td>
<td></td>
</tr>
<tr>
<td>Unoccupied</td>
<td>OFF</td>
</tr>
<tr>
<td>Unoccupied temporarily</td>
<td></td>
</tr>
<tr>
<td>Standby</td>
<td></td>
</tr>
<tr>
<td>Non-programmable</td>
<td></td>
</tr>
</tbody>
</table>
The thermostat can be setup to control Geothermal Radiant Heat, Geothermal Forced Air Heat and Backup Heat, all from one thermostat. The thermostat stages the equipment starting with the Geothermal Radiant Heat followed by Geothermal Forced Air Heat and then Backup Heat as needed to maintain the desired temperature. The thermostat allows you to set differential temperature settings between each stage if you want the equipment to stage a certain way (see ISU 3030 to ISU 3090).

When the Backup Heat is fossil fuel, the Geothermal Forced Air Heat turns off when the Backup Heat turns on. Geothermal Radiant Heat stays on when the fossil fuel Backup Heat turns on.

When the Backup Heat is electric, Geothermal Radiant Heat and Geothermal Forced Air Heat stay on when the electric Backup Heat turns on.

<table>
<thead>
<tr>
<th>Backup Heat Type</th>
<th>Backup Heat Operation</th>
<th>Backup Heat Fan Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electric forced air</td>
<td>Allowed to run with heat pump</td>
<td>Thermostat controls fan</td>
</tr>
<tr>
<td>Gas or oil forced air</td>
<td>NOT allowed to run with heat pump</td>
<td>Equipment controls fan</td>
</tr>
<tr>
<td>Hot water radiant heat</td>
<td>Allowed to run with heat pump</td>
<td>[n/a]</td>
</tr>
<tr>
<td>Hot water fan coil</td>
<td>Selectable in installer setup</td>
<td>Thermostat controls fan</td>
</tr>
<tr>
<td>Other</td>
<td>Selectable in installer setup</td>
<td>Selectable in installer setup</td>
</tr>
</tbody>
</table>

Geothermal Radiant Heat

The thermostat can be setup to control Geothermal Radiant Heat, Geothermal Forced Air Heat and Backup Heat, all from one thermostat. The thermostat stages the equipment starting with the Geothermal Radiant Heat followed by Geothermal Forced Air Heat and then Backup Heat as needed to maintain the desired temperature. The thermostat allows you to set differential temperature settings between each stage if you want the equipment to stage a certain way (see ISU 3030 to ISU 3090).

When the Backup Heat is fossil fuel, the Geothermal Forced Air Heat turns off when the Backup Heat turns on. Geothermal Radiant Heat stays on when the fossil fuel Backup Heat turns on.

When the Backup Heat is electric, Geothermal Radiant Heat and Geothermal Forced Air Heat stay on when the electric Backup Heat turns on.

To turn off Radiant Heat during the shoulder seasons, install an outdoor reset control and connect to the Radiant Heat or switch the thermostat to Emergency Heat mode.
Basic and Advanced Temperature Control Options (ISU 3010)

Basic Options: The Installer Setup displays basic temperature control options which include Backup Heat Differential, Backup Heat Upstage Timer and Outdoor Temperature Lockouts. Note: Outdoor Temperature Lockouts only apply to Heat Pump applications.

Advanced Options: The Installer Setup displays both Basic and Advanced Options. Advanced temperature control options include Finish With High Cool Stage, Finish With High Heat Stage, Temperature Differential settings between all stages and Cycle Rate settings per stage.

Backup heat differential and upstage timer

A backup heat differential and backup heat upstage timer can be set on any system that has more than one type of heating equipment. See installer setup options (ISU 3070-3110).

Normal operation
When the Backup Heat Differential is set to Comfort, the thermostat uses backup heat as needed to keep the indoor temperature within 1° F (0.5° C) of the set-point.

When the Backup Heat Differential is set to 2° F or higher, backup heat is not used unless the indoor temperature drops to the Backup Heat Differential setting or the Backup Heat Upstage Timer expires, whichever occurs first. The upstage timer starts when the highest stage of the previous equipment type turns on.

Manual temperature change
When the Backup Heat Differential is set to Comfort, the thermostat uses backup heat as needed to keep the indoor temperature within 1° F (0.5° C) of the set-point.

When the Backup Heat Differential is set to 2° F or higher, if the primary heat is making progress as expected, backup heat will not be used to reach the new setpoint. Set to a higher number to use less backup heat (a greater difference between the current indoor temperature and the new setpoint is required to turn on backup heat). See notes below.

Programmed recovery
If the primary heat is making progress as expected, backup heat will not be used to reach the setpoint of the next program period. Backup heat is always restricted during a programmed recovery when the Adaptive Intelligent Recovery feature is used. See note below.

During a programmed recovery (or when the temperature setpoint is changed by the user), the thermostat waits to turn on the backup heat depending on system performance, load conditions and how many degrees the temperature setpoint is changed. Backup heat will be used ONLY when the temperature is not rising quickly enough to reach the setpoint in a reasonable time.

If the backup heat was used in the last 2 hours because the primary heat was not able to maintain the setpoint, the thermostat may turn on the backup heat earlier when the user raises the setpoint. This does NOT apply to heat pumps with fossil fuel backup heat.
Humidification

The thermostat reads the indoor humidity level and allows the user to set a humidification setting with or without window protection. The thermostat can be setup to control a humidifier in any system mode (Heat, Off, Cool [ISU 8060]). A discharge air sensor is required to humidify in the cool mode.

Humidification Control Options: (ISU 8070)

- Humidify Only When Heat is On
- Humidify Only When Fan is On
- Humidify on Demand: Thermostat Controls Fan
- Humidify on Demand: Humidifier Controls Fan

Residential dehumidification

The thermostat reads the indoor humidity level and allows the user to set a dehumidification setting. The thermostat controls the humidity level using the cooling system or a whole house dehumidifier.

Dehumidification Equipment Options: (ISU 9000)

- A/C with Low Speed Fan
- A/C with High Speed Fan
- Whole House Dehumidifier

When set for A/C with Low Speed Fan or A/C with High Speed Fan, an overcooling limit can be set from 0° to 3° F (ISU 9070). The thermostat uses the cooling system to reduce humidity by lowering the temperature up to 3° F below the current cool setpoint until the the desired humidity level is reached. If set for A/C with Low Speed Fan, configure U1, U2 or U3 as normally open or normally closed (ISU 9050) and wire the terminal to the Low Speed Fan terminal on the equipment. For example, if the U1, U2 or U3 terminal is normally closed, it will open when the thermostat calls for dehumidification.

Note: The thermostat will not lower the fan speed when the second stage of cooling is on.

The Whole House Dehumidifier option requires a dedicated unit for dehumidification. The thermostat can be setup to control dehumidification in all modes (Heat, Off, Cool [ISU 9120]).

If humidification and dehumidification are setup to operate in the same system mode (Heat, Cool, Off), and you are sensing humidity from one location, the thermostat will automatically enforce a 15% deadband between the humidification and dehumidification settings. The thermostat will automatically switch between humidification and dehumidification to maintain the desired humidity level.

If humidification and dehumidification are setup to operate in the same system mode (Heat, Cool, Off), and you are sensing humidity from two different locations using a remote wireless indoor sensor (for example, main level and crawl space), the thermostat will allow humidification and dehumidification to operate at the same time, and there is no deadband between humidification and dehumidification settings.
Commercial dehumidification

The thermostat reads the indoor humidity level and allows the user to set a dehumidification setting. The thermostat controls the humidity level using the cooling system or a dehumidifier.

Dehumidification Equipment Options: (ISU 9000)
- A/C with Low Speed Fan
- A/C with High Speed Fan
- Hot Gas Bypass
- Dehumidifier

When set for A/C with Low Speed Fan, A/C with High Speed Fan or Hot Gas Bypass, there are six methods of dehumidification control: (ISU 9080) See descriptions of each, below.

1 Basic: This option uses the cooling system to reach the desired humidity level. Minimum On Time, High Humidity Comfort Reset and Reheat are not used with this method. This setting is commonly used if your dehumidification equipment is Hot Gas Bypass.

2 Minimum On Time (ISU 9090): This option ensures that the compressor runs long enough to effectively reduce humidity when the cooling equipment is cycled on. The compressor will run for the minimum "on time" you set until the desired humidity level is reached.

3 High Humidity Comfort Reset (ISU 9100): This option uses the cooling system to lower the temperature up to 5° F below the current cool setpoint until the desired humidity is reached. The high humidity comfort range is from 1° to 5° F.

4 High Humidity Comfort Reset with Minimum On Time (ISU 9090 and 9100): This method uses both options above to reduce humidity while maintaining a comfortable temperature.

5 Reheat (ISU 9080): This option allows heating to run during dehumidification to help maintain a comfortable temperature. If only cooling stage 1 is used, during the "off" cycle, both cooling and heating run at the same time as needed to dehumidify without overcooling. This option cannot be used in the Heat mode. This option is effective only if using a system with the A-Coil located before the heating coil (heat exchanger).

6 Reheat with Minimum On Time (ISU 9080 and 9090): This method uses both Reheat and Minimum On Time options above to reach the desired humidity level.

The Dehumidifier option requires a dedicated unit for dehumidification. The thermostat can be setup to control dehumidification in all modes (Heat, Off, Cool [ISU 9120]).

Hot Gas Bypass - During a call for dehumidification, the cooling capacity will be used to remove more latent heat than sensible heat. The operation of Hot Gas Bypass varies by equipment. For more details, contact the equipment manufacturer.

Reheat can be used on heat pump applications that have a forced air backup heat source (gas, oil or electric). The thermostat will turn on the first stage of forced air backup heat during Reheat.
Southern Dehumidification Away Mode

Southern Dehumidification Away Mode protects the home when unoccupied for long periods of time during hot and humid weather by maintaining the desired humidity and temperature settings. Southern Dehumidification Away Mode options: (ISU 9180 to 9200)

- Fan Control: Auto, On or Circulate
- Low Limit Temperature Setting: The thermostat allows the cooling system to lower the indoor air to the Low Limit Temperature Setting to reach the Dehumidification Setting (ISU 9200).
- Temperature Setting: Temperature that is maintained when dehumidification is not needed.
- Dehumidification Setting: The desired humidity level while Southern Dehumidification Away Mode is active.

You can control humidity with a dehumidifier or a cooling system. If a cooling system is used, humidity is controlled by cooling indoor air to the Low Limit Temperature Setting. When the desired humidity level is reached, the system will maintain the Southern Dehumidification Away Mode temperature setting.

Ventilation

The thermostat can be set for the following ventilation types: (ISU 10000)

- ERV/HRV
- Passive (Fan Only)
- Fresh Air Damper

Ventilation Control Methods (ISU 10050)

Ventilation can be setup to meet ASHRAE or Percent On Time settings. To meet these settings, the thermostat will ventilate during calls for heat, cool and fan. If the required ventilation has not been achieved for ASHRAE or Percent On Time, the thermostat will force the ventilation equipment on.

- ASHRAE: The thermostat operates ventilation equipment to meet the ASHRAE 62.2 ventilation standard based on CFM, number of bedrooms, and square footage of the house. ASHRAE 62.2 can only be met if the ventilation equipment is running. If the ventilation equipment is off for any reason (outdoor ventilation lockouts, set up to turn Off during Sleep period, turned off by user etc.), ASHRAE 62.2 is not met during those times. See ISU 10125 to select a Ventilation Priority.
- Percent on Time: The ventilator runs based on a percentage set in the Installer Setup. For example: if set to 50%, the ventilator runs at random times during a 1 hour period until it reaches a 50% run time (approximately 30 minutes).
Indoor sensor operation

Temperature control
The thermostat can be set to respond to its internal temperature sensor, or to an optional remote indoor sensor. If multiple sensors are used, the thermostat will respond to an average of temperatures detected at each sensor.

Humidification control
If optional remote indoor sensors are installed, you can choose which sensor you want to use for humidification control. You can use a different sensor for dehumidification.

Dehumidification control
If optional remote indoor sensors are installed, you can choose which sensor you want to use for dehumidification control. For example, you can use one sensor for humidification control, and another for dehumidification.

Wireless indoor sensor

Battery level indicators (when batteries are inserted)
- **Good**: Status light flashes green for 5 seconds.
- **Low**: Status light flashes red for 5 seconds. Use fresh batteries.

Battery level indicators (during use)
- **Good**: Status light remains off.
- **Low**: Battery power will be depleted in about 2 months. Thermostat displays Low Battery warning. Status light remains off.
- **Critical**: Battery power will be depleted in about 2–3 weeks. Status light flashes red.

The Wireless Indoor Sensor is compatible only with RedLINK 2.0 thermostats. The thermostat can use up to 6 optional wireless sensors.
Alerts and diagnostics

Maintain close contact with your customers by providing more comfort and efficiency with alerts and diagnostics. Alerts and reminders can notify customers when maintenance or service is needed, and display your contact information to make it easy for them to reach you. The following are only a few of many options. Check the thermostat’s on-screen menus for more.

Alerts Log

*MENU > INSTALLER OPTIONS > DATA LOGS > ALERTS LOG*

The thermostat saves the most recent 25 alerts. It records the date, time, alert status (snoozed, dismissed, recovered), and diagnostic information to help you identify and correct problems.

User Interactions Log

*MENU > INSTALLER OPTIONS > DATA LOGS > USER INTERACTIONS LOG*

Check this log to find out if a problem was caused by an accidental user error. The log shows most changes made to thermostat settings, by time and date, and describes what change was made.

The thermostat records the most recent 250 changes. You can quickly search them by date and time, or by function. This feature can be turned off if necessary, so that no user interactions are recorded.

Examples:

* [date, time] Heat temperature set to 80° F
* [date, time] System mode set to Off
* [date, time] Installer setup changed — heating equipment type

Delta T Diagnostics

*MENU > INSTALLER OPTIONS > SET UP DIAGNOSTICS*

If a discharge and return air sensor is installed, the thermostat can track system performance over time. It measures this as "Delta T."

This can tell you if the system is performing above or below expected standards which would normally go unnoticed, and may cause unnecessary energy use. It can also detect and warn about problems early, before heating or cooling equipment fails.

The thermostat will measure and record Delta T of the system for each stage you test. This information can be used to set the proper Delta T fault limits of the system. When the system operates outside those limits multiple times, an alert is recorded in the log. If configured to do so, the system will then display an alert to the user.

Delta T Alert Sensitivity is adjustable in the Installer Setup (ISU 13180)

Delta T diagnostics is only for non-zoned forced air systems.
Replacing system components

To replace an Equipment Interface Module (EIM)
Follow steps below to disconnect the thermostat and RedLINK accessories. See pages 5-6 to re-link devices.

At the Thermostat
1. Press MENU > INSTALLER OPTIONS, then enter date code when prompted (printed on back of thermostat). Or press MENU > EQUIPMENT STATUS to find the date code.
2. Scroll down to select WIRELESS DEVICE MANAGER.
3. Press REMOVE DEVICE, then select THIS THERMOSTAT to remove.

At the Portable Comfort Control
1. Press and hold the blank space (or arrow if present) in the lower right hand corner of the screen until the display changes.
2. Press REMOVE, then YES to disconnect from the old EIM.

At the Indoor Sensor, RedLINK Internet Gateway, Entry/Exit Remote, Vent Boost Remote or TrueSTEAM Wireless Adapter
Press and hold the CONNECT button on the RedLINK accessory until the status light glows amber (hold for about 10 seconds). This will disconnect the device from the old EIM or thermostat.

To replace a thermostat
At the EIM (Skip this step if no EIM is used)
Press and hold the CONNECT button on the EIM until the status light glows amber (hold for about 10 seconds). This will disconnect ALL devices from the EIM.

At the Portable Comfort Control
1. Press and hold the blank space (or arrow if present) in the lower right hand corner of the screen until the display changes.
2. Press REMOVE, then YES to disconnect from the old thermostat.

At the Indoor Sensor, RedLINK Internet Gateway, Entry/Exit Remote, Vent Boost Remote or TrueSTEAM Wireless Adapter
Press and hold the CONNECT button on the RedLINK accessory until the status light glows amber (hold for about 10 seconds). This will disconnect the device from the old thermostat.

To remove accessories from an EIM or thermostat
At the Thermostat
1. Press MENU > INSTALLER OPTIONS, then enter date code when prompted (print on back of thermostat). Or press MENU > EQUIPMENT STATUS to find the date code.
2. Scroll down to select WIRELESS DEVICE MANAGER.
3. Press REMOVE DEVICE, then select the device you want to remove.

OR: At the EIM
Press and hold the CONNECT button on the EIM until the status light glows amber (hold for about 10 seconds). This will disconnect ALL devices from the EIM.

If the THX9321 thermostat is setup without an EIM, all thermostat settings must be reset before it can be used with an EIM. Press MENU > INSTALLER OPTIONS, scroll down to select ADVANCED OPTIONS, then press RESTORE FACTORY DEFAULTS.
Specifications & replacement parts

Operating Ambient Temperature
Thermostat: 32 to 120° F (0 to 48.9° C)
Portable Comfort Control: 32 to 120° F (0 to 48.9° C)
Wireless Outdoor Sensor: -40 to 140° F (-40 to 60° C)
Wireless Indoor Sensor: 0 to 120° F (-17.8 to 48.9° C)
   - For Optimal Battery Life: 35 to 114° F (1.7 to 45.6° C)
Equipment Interface Module: -40 to 165° F (-40 to 73.9° C)
Return Air Sensor: 0 to 200° F (-17.8 to 93.3° C)
Discharge Air Sensor: 0 to 200° F (-17.8 to 93.3° C)
RedLINK Internet Gateway: 32 to 120° F (0 to 48.9° C)

Operating Relative Humidity
Thermostat: 5% to 90% (non-condensing)
Portable Comfort Control: 5% to 90% (non-condensing)
Wireless Outdoor Sensor: 0% to 100% (condensing)
Wireless Indoor Sensor: 5% to 90% (non-condensing)
Equipment Interface Module: 5% to 95% (non-condensing)
RedLINK Internet Gateway: 5% to 95% (non-condensing)

Physical Dimensions (height, width, depth)
Thermostat: 3-7/8 x 6-13/16 x 1-7/16 inches (99 x 173 mm x 36 mm)
Equipment Interface Module: 9-5/16 x 4-13/16 x 1-19/32 inches (91 x 147 x 42 mm)
Wireless Outdoor Sensor: 5 x 3-1/2 x 1-11/16 inches (127 x 89 x 43 mm)
Wireless Indoor Sensor: 2-7/8 x 1-7/8 x 15/16 inches (74 x 48 x 24 mm)
Portable Comfort Control: 6-1/4 x 3-1/8 x 1-5/8 inches (158 x 80 x 38 mm)
RedLINK Internet Gateway: 6 x 4-7/8 x 2-1/2 inches (152 x 124 x 64 mm)

Electrical Ratings

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Voltage (50/60 Hz)</th>
<th>Max. Current Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>W - O/B</td>
<td>18 to 30 VAC</td>
<td>1.00A</td>
</tr>
<tr>
<td>Y (cooling)</td>
<td>18 to 30 VAC</td>
<td>1.00A</td>
</tr>
<tr>
<td>Q (fan)</td>
<td>18 to 30 VAC</td>
<td>0.50A</td>
</tr>
<tr>
<td>W2 - Aux 1 (heating)</td>
<td>18 to 30 VAC</td>
<td>0.60A</td>
</tr>
<tr>
<td>Y2 (cooling)</td>
<td>18 to 30 VAC</td>
<td>0.60A</td>
</tr>
<tr>
<td>W3 - Aux 2</td>
<td>18 to 30 VAC</td>
<td>1.00A</td>
</tr>
<tr>
<td>A-L/A (Output)</td>
<td>18 to 30 VAC</td>
<td>1.00A</td>
</tr>
<tr>
<td>U1, U1</td>
<td>30 VAC max.</td>
<td>0.50A</td>
</tr>
<tr>
<td>U2, U3</td>
<td>30 VAC max.</td>
<td>0.50A</td>
</tr>
</tbody>
</table>

Accessories & Replacement Parts

<table>
<thead>
<tr>
<th>Item</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equipment Interface Module</td>
<td>THM5421R1013</td>
</tr>
<tr>
<td>RedLINK Internet Gateway</td>
<td>THM6000R1002</td>
</tr>
<tr>
<td>Wireless Entry/Exit Remote</td>
<td>REM1000R1003</td>
</tr>
<tr>
<td>Wireless Vent and Filter Boost Remote</td>
<td>HVC20A1000</td>
</tr>
<tr>
<td>Portable Comfort Control</td>
<td>REM5000R1001</td>
</tr>
<tr>
<td>Occupancy Sensor for Remote Setback</td>
<td>WSK-24</td>
</tr>
<tr>
<td>Wireless Outdoor Sensor</td>
<td>C7089R1013</td>
</tr>
<tr>
<td>Wireless Indoor Sensor</td>
<td>C7189R1004</td>
</tr>
<tr>
<td>Wired Outdoor Sensor 10k ohm NTC</td>
<td>C7089U1006</td>
</tr>
<tr>
<td>Wired Wall-mount Indoor Sensor 10k ohm NTC</td>
<td>C7189U1005</td>
</tr>
<tr>
<td>Wired Flush-mount Indoor Sensor 20k ohm NTC</td>
<td>C7772A1004, C7772A1012</td>
</tr>
<tr>
<td>Wired Wall-mount Indoor Sensor 20k ohm NTC</td>
<td>TR21</td>
</tr>
<tr>
<td>Wired Wall-mount Indoor Sensor 10k ohm NTC</td>
<td>TR21-A</td>
</tr>
<tr>
<td>Discharge or Return Air Sensor 10k ohm NTC</td>
<td>C7735A1000</td>
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<tr>
<td>Discharge or Return Air Sensor 20k ohm NTC</td>
<td>C7041</td>
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<tr>
<td>Discharge or Return Air Sensor 20k ohm NTC</td>
<td>C7770A1006</td>
</tr>
<tr>
<td>Cover Plate (covers marks left by old thermostats)</td>
<td>50028399-001</td>
</tr>
<tr>
<td>Battery Pack (For demo use only)</td>
<td>THP1000A1007</td>
</tr>
<tr>
<td>Wire Saver Module</td>
<td>THP9045A1023</td>
</tr>
</tbody>
</table>
**Regulatory information**

**FCC Compliance Statement (Part 15.19) (USA only)**
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

**FCC Warning (Part 15.21) (USA only)**
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**FCC Interference Statement (Part 15.105 (b)) (USA only)**
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

**Equipment interface module, thermostats and outdoor sensor**
To comply with FCC and Industry Canada RF exposure limits for general population/ uncontrolled exposure, the antenna(s) used for these transmitters must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

**Portable Comfort Control**
This portable transmitter with its antenna complies with FCC and Industry Canada RF exposure limits for general population/ uncontrolled exposure. This device must not be co-located or operating in conjunction with any other antenna or transmitter.

**Section 7.1.2 of RSS-GEN**
Under Industry Canada regulations, this radio transmitter may only operate using an antenna of type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

**Section 7.1.3 of RSS-GEN**
Operation is subject to the following two conditions:
1. this device may not cause interference, and
2. this device must accept any interference, including interference that may cause undesired operation of the device.

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Need Help?
For assistance please visit [http://customer.honeywell.com](http://customer.honeywell.com), or call toll-free:
1-800-468-1502 (residential installation) • 1-888-245-1051 (commercial installation)

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