VisionPRO® IAQ
Total Home Comfort System

FEATURES

- **Large, clear display with backlight shows the current and set temperature and time—even in the dark.**

- **Touchscreen interaction**

- **Real-time clock keeps time during power failures and automatically updates to daylight savings.**

- **Change/check reminders let you know when to service or replace filters.**

- **Various Hold options allow you to override the program schedule, as desired.**

- **Controls humidification to increase homeowner comfort while protecting woodwork and furnishings.**

- **Controls dehumidification using air conditioner with high or low speed fan or a whole house dehumidifier.**

- **Controls ventilation with other HRV, ERV, or Freshair damper. Vent on demand and automatically using patented advanced ventilation control.**

- **Advanced heat pump control featuring balance point plus temperature droop control to increase homeowner comfort.**

APPLICATION

The VisionPRO® IAQ Total Home Comfort System features an effortless, 7-Day programmable touchscreen thermostat that provides control of temperature, humidification, dehumidification, and ventilation.

Contents

SPECIFICATIONS

Thermostat Description:

Feature	Description
Powering method	• Common wire only
System types (up to 4 heat/2 cool)	• Gas, oil or electric heat with air conditioning • Warm air, hot water, high-efficiency furnaces, heat pumps, steam and gravity • Heat only with fan • Cool only
Changeover	Manual or Auto changeover selectable
System setting	Heat-Off-Cool-Auto
Fan setting	Auto-On-Circ

Electrical Ratings:

Terminal	Voltage (50/60 Hz)	Running Current
W1 Heating	20 - 30 Vac	.02 - 1.0A
W2/Aux Heating	20 - 30 Vac	.02 - 1.0A
W3/Aux2 Heating	20 - 30 Vac	.02 - 1.0A
Y Cooling	20 - 30 Vac	.02 - 1.0A
Y2 Cooling	20 - 30 Vac	.02 - 1.0A
G Fan	20 - 30 Vac	.02 - 1.0A

Temperature Setting Range:
Heating: 40°F to 90°F(4.5°C to 32°C).
Cooling: 50°F to 99°F (10°C to 37°C).

Operating Ambient Temperature:
VisionPRO® IAQ Thermostats: 0°F to 120°F (-18°C to 49°C).
THM5421C1008: -30°F to 150°F (-34°C to 66°C).
C7089U1006: -40°F to 120°F (-40°C to 49°C).
C7189U1005: 45°F to 88°F (7°C to 32°C).

Shipping Temperature:
VisionPRO® IAQ Thermostats: -30°F to 150°F (-34°C to 66°C).
THM5421C1008: -30°F to 150°F (-34°C to 66°C).

Operating Relative Humidity (Non-condensing):
VisionPRO® IAQ Thermostats: 5% to 90%.
THM5421C1008: 5% to 90%.
C7089U1006: 5% to 95%.
C7189U1005: 5% to 95%.

Humidification Setting Range:
Heating: 10% to 60% RH.

Dehumidification Setting Range:
Heating: 40% to 80% RH.

Humidity Display Range:
0% to 99%.

Cycle Rates (at 50% Load):
Heating: Selectable 1 - 12 cycles per hour.
Cooling: Selectable 1 - 6 cycles per hour.

Finish:
VisionPRO® IAQ Thermostats: Premier White® color.
THM5421C1008: Premier White® color.
C7189U1005 Wall Mount Remote Indoor Sensor: Premier White® color.

Clock Accuracy: +/- 1 minute per year.

Resistance Characteristics of Remote Sensors:
C7089U1006 Outdoor Sensor: Negative temperature coefficient (NTC) means that resistance decreases as the temperature increases. See Table 12 in the Operation section for sensor resistance characteristics.
C7189U1005 Remote Indoor Sensor: Negative temperature coefficient (NTC), means that resistance decreases as the temperature increases. See Table 13 in the Operation section for sensor resistance characteristics.

Cool Indication:
VisionPRO® IAQ Comfort Systems show "Cool On" on the thermostat screen when Cool is activated.

Heat Indication:
VisionPRO® IAQ Comfort Systems show "Heat On" on the thermostat screen when Heat is activated.

Auxiliary Heat Indication:
VisionPRO® IAQ Comfort Systems show "Aux. Heat On" on the thermostat screen when Auxiliary Heat is activated.

Calibration:
C7089U1006, C7189U1005 and VisionPRO® IAQ Comfort Systems are factory-calibrated and require no field calibration.

Interstage Differential:
VisionPRO® IAQ Comfort Systems operate with droopless control. Once the thermostat senses that 1st stage is running at 90% capacity, the thermostat energizes 2nd stage.

Mounting Means:
VisionPRO® IAQ Comfort System: Thermostat mounts directly on the wall in the living space using mounting screws and anchors provided. Fits a vertical or horizontal 2 x 4 in. junction box.
THM5421C1008 Equipment Interface Module (EIM) mounts on HVAC equipment or on a wall in the equipment room.
C7089U1006 Outdoor Sensor: Mounts outside of living space with mounting clip and screws provided.
C7189U1005 Remote Indoor Sensor: Mounts directly on the wall using mounting screws and anchors provided.

Cover Plate:
32003796-001 Cover Plate is used to cover marks left on the wall by the old thermostat.

Dimensions:
VisionPRO® IAQ Comfort System: see Fig. 1.
THM5421C1008: see Fig. 2
C7089U1006 Outdoor Sensor Mounting Clip: see Fig. 3.
32003796-001 Cover Plate: see Fig. 4.
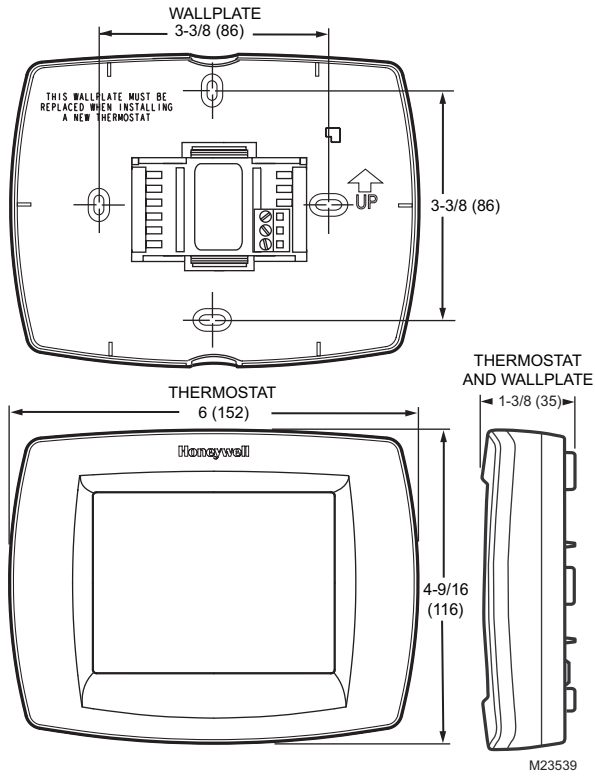C7189U1005 Remote Indoor Sensor: see Fig. 5.

WALLPLATE
3-3/8 (86)

THIS WALLPLATE MUST BE
REPLACED WHEN INSTALLING
A NEW THERMOSTAT

UP

3-3/8 (86)

THERMOSTAT
6 (152)

Honeywell

THERMOSTAT
AND WALLPLATE
1-3/8 (35)

4-9/16
(116)

M23539

Fig. 1. VisionPRO® IAQ Comfort System dimensions in in. (mm).

1-1/2 (38)

M4488
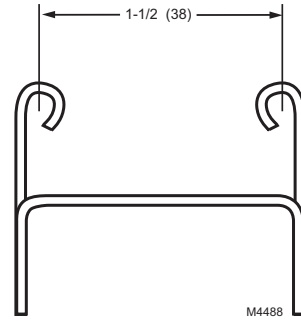
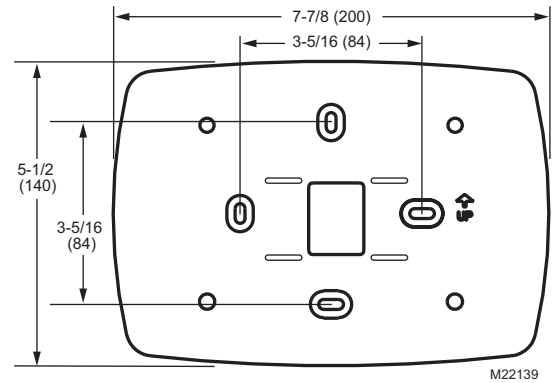**Fig. 3. C7089U1006 Outdoor Sensor Mounting Clip dimensions in in. (mm).**

7-7/8 (200)
3-5/16 (84)

5-1/2
(140)

3-5/16
(84)

M22139

Fig. 4. 32003796-001 Cover Plate dimensions in in. (mm).

Honeywell
Equipment Interface Module

7-9/32
(185)

6-57/64
(175)

4-35/64
(116)

1-21/64
(34)

FRONT VIEW

SIDE VIEW

M23544
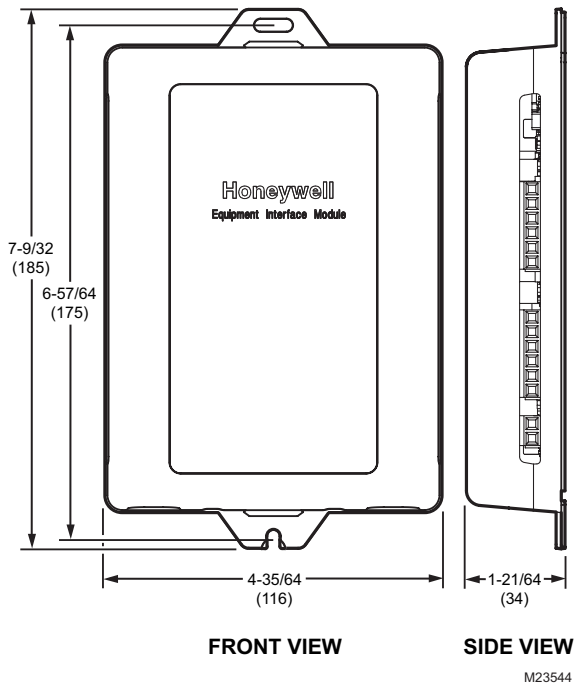
Fig. 2. THM5421C1008 Equipment Interface Module dimensions in in. (mm).

M23522   **FRONT VIEW**   **SIDE VIEW**   **FRONT VIEW (COVER OFF)**
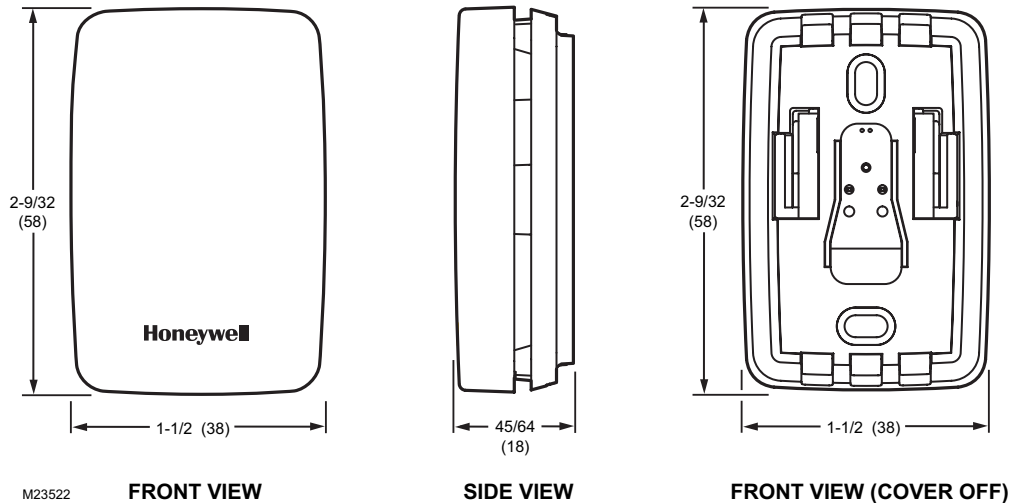
Fig. 5. C7189U1005 Remote Indoor Sensor dimensions in in. (mm).

INSTALLATION

When Installing this Product...

1. Read these instructions carefully. Failure to follow the instructions can damage the product or cause a hazardous condition.
2. Check the ratings given in the instructions to make sure the product is suitable for your application.
3. Installer must be a trained, experienced service technician.
4. After completing installation, use these instructions to verify the product operation.

Selecting Location

Install the thermostat about 5 ft. (1.5m) above the floor in an area with good air circulation at average temperature. See Fig. 6.
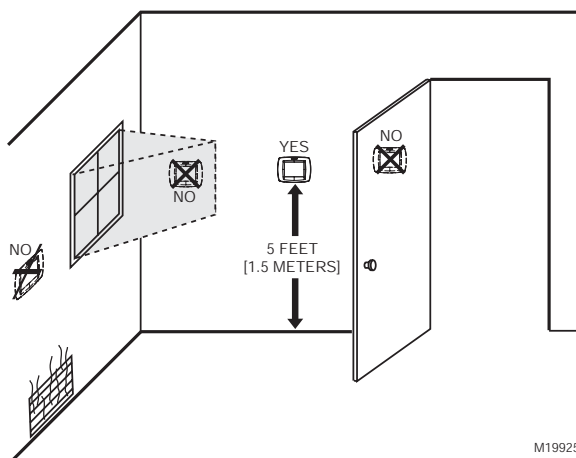

Fig. 6. Selecting thermostat location.

Do not install the thermostat where it can be affected by:
— Drafts or dead spots behind doors and in corners.
— Hot or cold air from ducts.
— Radiant heat from sun or appliances.
— Concealed pipes and chimneys.
— Unheated (uncooled) areas such as an outside wall behind the thermostat.

Installing Wallplate

⚠ **CAUTION**

Electrical Hazard.
Can cause electrical shock or equipment damage.
Disconnect power before wiring.

The thermostat can be mounted horizontally on the wall or on a 4 in. x 2 in. (101.6 mm x 50.8 mm) wiring box.

1. Position and level the wallplate (for appearance only).
2. Use a pencil to mark the mounting holes.
3. Remove the wallplate from the wall and, if drywall, drill two 3/16-in. holes in the wall, as marked. For firmer material such as plaster, drill two 7/32-in. holes. Gently tap anchors (provided) into the drilled holes until flush with the wall.

4. Position the wallplate over the holes, pulling wires through the wiring opening. See Fig. 7.
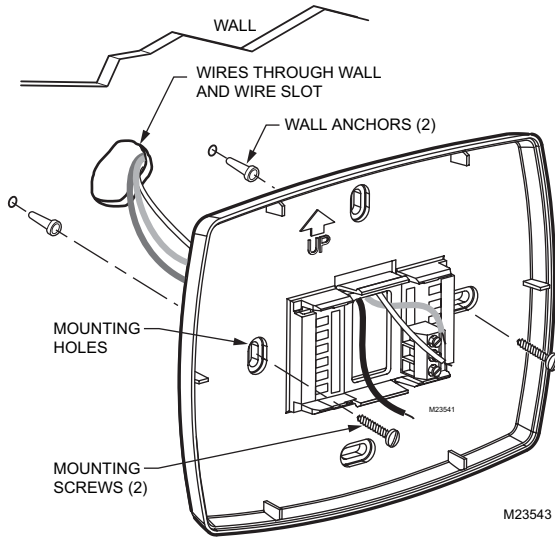5. Insert the mounting screws into the holes and tighten.

Fig. 7. Mounting wallplate.

Installing Equipment Interface Module (EIM)

⚠ **CAUTION**

Electrical Hazard.
Can cause electrical shock or equipment damage.
Disconnect power before wiring.

The EIM can be mounted vertically on the HVAC equipment or on a wall in the equipment room.

1. Position the EIM.
2. Use a pencil to mark the mounting holes.
3. Remove the wallplate from the wall and, if drywall, drill two 3/16-in. holes in the wall, as marked. For firmer material such as plaster, drill two 7/32-in. holes. Gently tap anchors (provided) into the drilled holes until flush with the wall.
4. Position the wallplate over the holes, pulling wires through the wiring opening.
5. Insert the mounting screws into the holes and tighten. See Fig. 8.

Communication LED

The EIM has an LED (see Fig. 8) that communicates the EIM status as follows.

- **LED blinks rapidly:** Normal information transfer.
- **LED blinks once:** Incoming message to EIM.
- **LED blinks continuously:** Wiring problem. Check wiring to terminals 1, 2, 3.
- **LED always off:** Wiring problem. Check wiring to terminals 1, 2, 3.
- **LED always on:** EIM may need replacement.

NOTE: It is normal for the LED to blink continuously during startup, and while checking equipment status (Auto Discover mode).
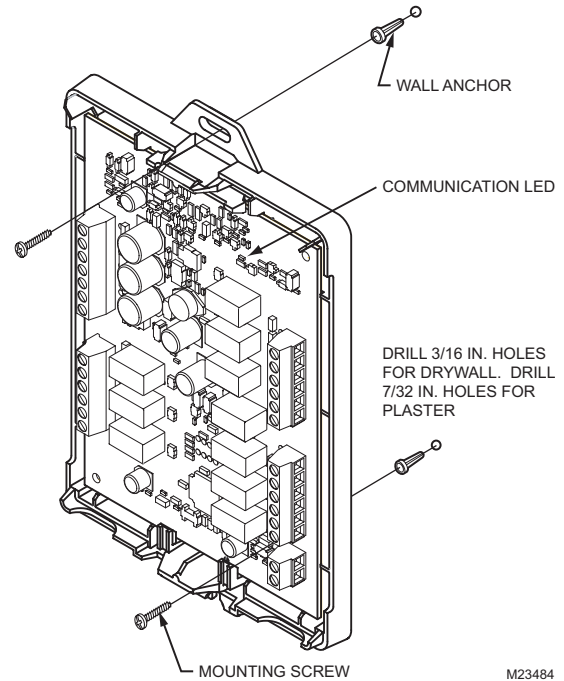

Fig. 8. Mounting EIM.

WIRING

All wiring must comply with local electrical codes and ordinances. See Fig. 10–20.

1. Select set of terminal identifications (Table 1) that corresponds with system type.
2. Loosen the screws for the appropriate system type selected; see Table 1. See Table 2 for terminal designation descriptions. Insert wires in the terminal block under the loosened screw. See Fig. 9.
3. Securely tighten each screw.
4. Push excess wire back into the hole.
5. Plug the hole with nonflammable insulation to prevent drafts from affecting the thermostat.
6. See Fig. 10–20 for typical wiring hookups.

Table 1. Selecting Terminal Identifications for System Type.

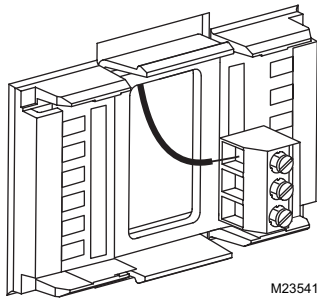| System Type	Wallplate Terminal Identifications	Wiring Diagram Reference
Standard Heat/Cool	Conventional	10, 11
Standard Multistage up to 3 Heat/2 Cool	Conventional	12
Heat Pump with Auxiliary Heat	Heat Pump	13

Fig. 9. Inserting wires in terminal block.

IMPORTANT
   Use 18-gauge thermostat wire.

Table 2. Terminal Designation Descriptions.

THM5421C1008 Terminal Designations	Function
1	Terminal 1—data to/from thermostat
2	Terminal 2—power from thermostat (24Vac)
3	Terminal 3—common from thermostat (24Vac)
C	24 Vac Transformer Common
R	24 Vac Transformer
RC	24 Vac Cooling Transformer
RH	24 Vac Heating Transformer
HUM1/HUM2	Humidification Connection (normally open)
DHM1/DHM2	Dehumidification Connection (normally open or closed based on installer setup)
VNT1/VNT2	Ventilation connection (normally open)
W1/O/B	Stage 1 Heating Relay (Conventional) Change-over Relay (Heat Pump)
W2/AUX	Stage 2 Heating Relay (Conventional) Auxiliary Heat (fossil fuel or electric) (Heat Pump)
W3/AUX2	Stage 3 Heating Relay (Conventional) Auxiliary Heat (fossil fuel or electric) (Heat Pump)
Y	Stage 1 Compressor Relay
Y2	Stage 2 Compressor Relay
G	Fan Relay
L	Heat Pump Equipment Monitor
OUT1/OUT2	Outdoor Temperature Sensor
IN1/IN2	Remote Indoor Temperature Sensor
DATS1/DATS2	Discharge Air Temperature Sensor

NOTES:
1. When used in a single-transformer system, leave the metal jumper wires in place between R and Rc, and Rc and Rh. If used on a two-transformer system, remove metal jumper wire between Rc and Rh.
2. If thermostat is configured for a heat pump system in the Installer Setup, configure changeover valve for cool (O-factory setting) or heat (B).

For wiring to a W8835 Zone panel please refer to the product data sheet included with the panel.
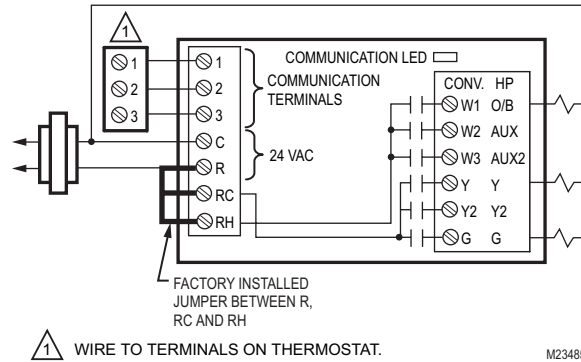

Fig. 10. Typical hookup of conventional single-stage heat and cool system with single transformer (1H/1C conventional).
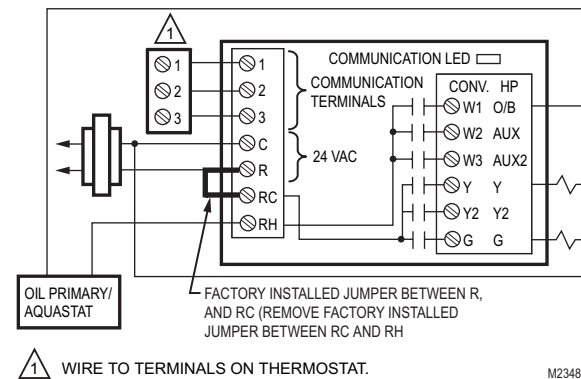

Fig. 11. Typical hookup of conventional single-stage heat and cool system with oil primary (1H/1C conventional).

KEY

⊣⌐ = NORMALLY OPEN, DRY CONTACTS

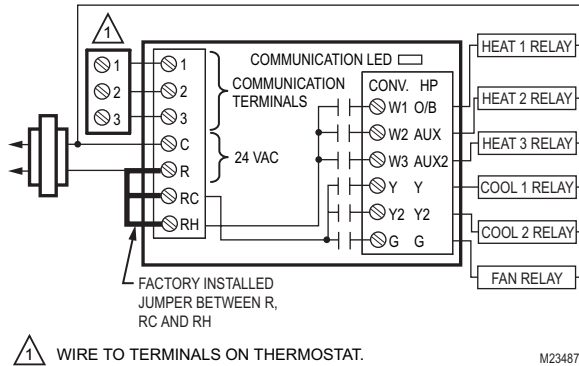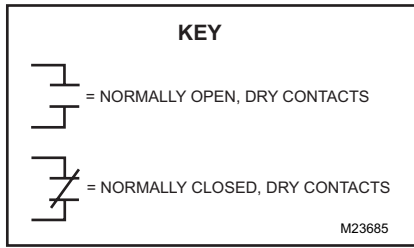⊣⌐ = NORMALLY CLOSED, DRY CONTACTS

M23685

Fig. 12. Typical hookup of conventional system with up to three-stage heat and two-stage cool with one transformer (3H/2C, 2H/2C, 2H/1C, 1H/2C, 1H/1C conventional).

△1 WIRE TO TERMINALS ON THERMOSTAT.

M23487
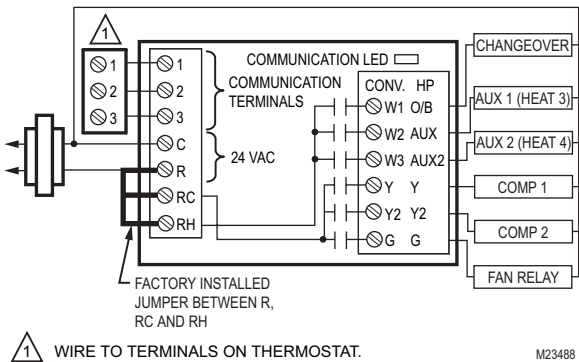
Fig. 13. Typical hookup of heat pump system (up to 4H/2C heat pump).

△1 WIRE TO TERMINALS ON THERMOSTAT.

M23488
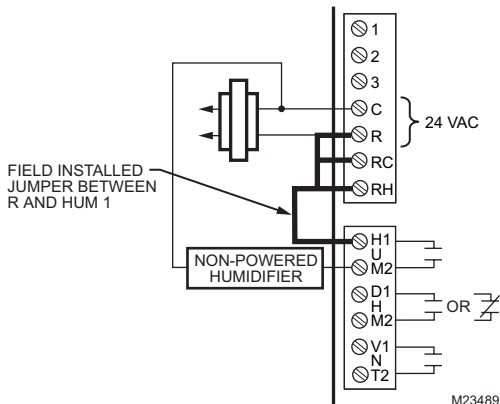
Fig. 14. Typical hookup of non-powered humidifier.

M23489

Fig. 15. Typical hookup of powered humidifier.

M23490

Fig. 16. Typical hookup of variable speed blower for dehumidification in low speed (contacts normally closed).

NOTE: Connect DHM2 to low-speed fan terminal on air handler for dehumidification with air conditioner and a low-speed fan.

M23491

Fig. 17. Typical hookup of powered whole house dehumidifier (contacts normally open).

M23492
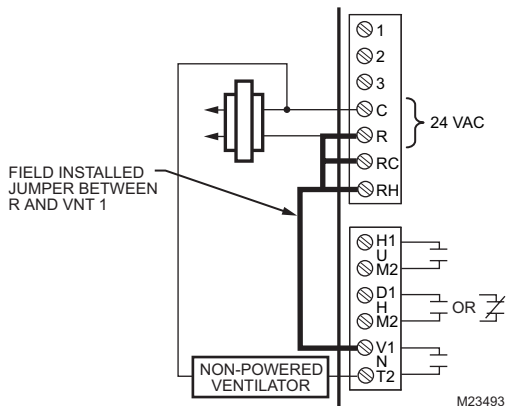
Fig. 18. Typical hookup of fresh air damper.

NOTE: Use this hookup for ventilation using a fresh air damper.

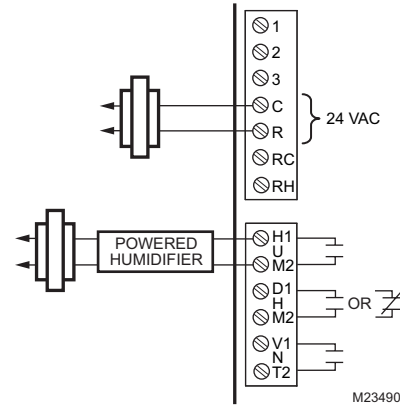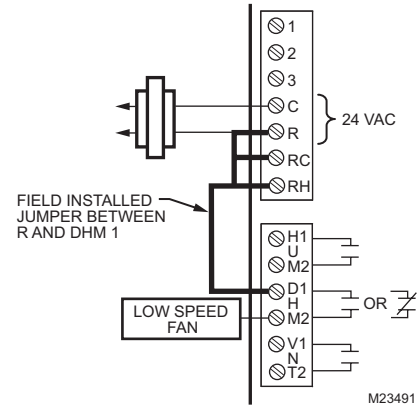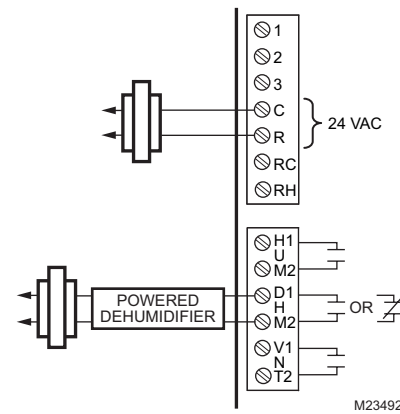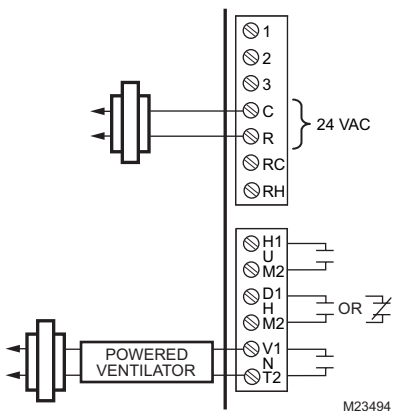**Fig. 19. Typical hookup of powered ventilation.**
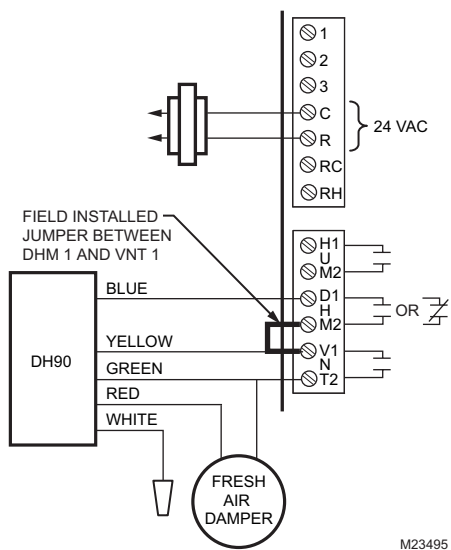
Fig. 20. Hookup of Honeywell DH90 with fresh air intake for ventilation.

POWER THE THERMOSTAT

- 24 Vac common wire only to EIM or zone panel.

Wiring 24 Vac Common

- Single-Transformer System—Connect the common side of the transformer to the C screw terminal of the EIM. Leave the metal jumper wires in place between R, Rc, and RH.
- Two-Transformer System—Connect the common side of the cooling transformer to the C screw terminal of the EIM. Remove the metal jumper wire between Rc and Rh. Connect the hot side of heating transformer to Rh and leave the jumper wire between R and Rc and connect the hot side of cooling transformer to R or Rc.

1. Locate and remove the tab labeled, Remove, in the lower left corner on the thermostat back. See Fig. 21.
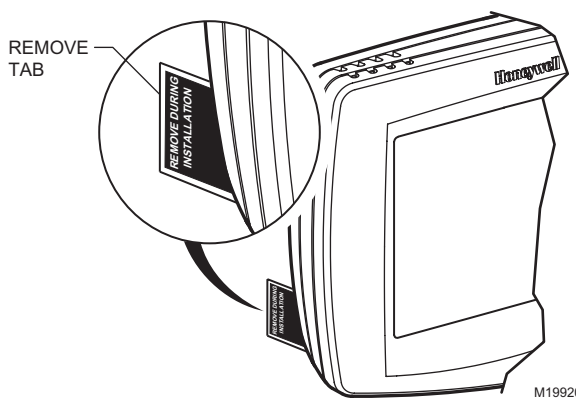
Fig. 21. Remove tab labeled, Remove, on thermostat back

Mount Thermostat to Wallplate

1. Align the terminal screw blocks with the pins on the back of the thermostat. Push the thermostat straight onto the wallplate until it snaps into place. See Fig. 22.
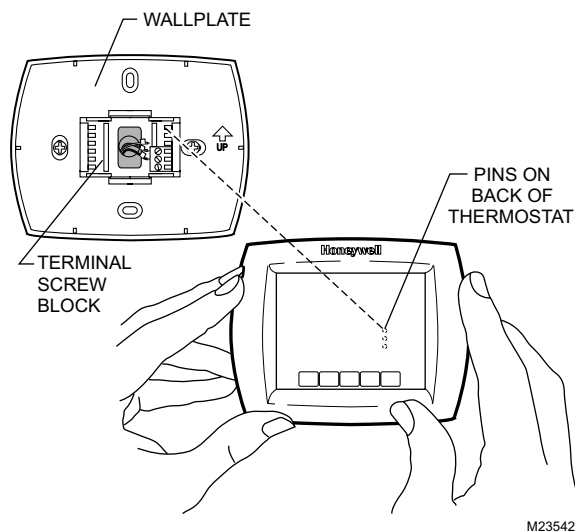
Fig. 22. Mount thermostat to wallplate.

Locate and Mount C7089U1006 Outdoor Temperature Sensor (Optional)

Mount the sensor where (see Fig. 23):
- cannot tamper with settings.
- there is good air circulation.
- it can measure true outdoor ambient temperature.
- surface is flat.
- wire distance between C7089U1006 and EIM is less than 200 feet.

Do *not* mount the sensor:
- in direct sunlight.
- where hot or cold air blows on the sensor. Discharge line from an outdoor compressor unit, vent or fan causes inaccurate temperature readings.
- where snow, ice or debris can cover it.

Use the following steps to mount the sensor:
1. Remove the sensor from the mounting clip.
2. Mark the area on the location selected for mounting the sensor mounting clip.
3. Mount the clip.
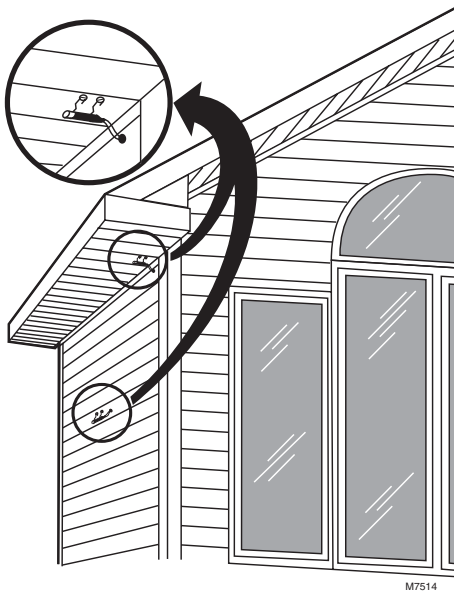
Fig. 23. Typical locations for C7089U1006 Outdoor Sensor.

Wire C7089U1006 Outdoor Sensor

⚠ **CAUTION**

Electrical Interference (Noise) Hazard.
Can cause erratic system operation.
Keep wiring at least one foot away from large inductive loads such as motors, line starters, lighting ballasts and large power distribution panels.
Use shielded cable to reduce interference when rerouting is not possible.

IMPORTANT

> *Erratic temperature readings from a sensor can occur as a result of any of the wiring practices described below. Avoid these practices to assure correct operation. Use shielded cable to reduce interference if rerouting sensor wiring is not possible.*
>
> *— Be sure wires have a cable separate from the thermostat cable.*
> *— Do not route temperature sensor wiring with building power wiring, next to control contactors or near light dimming circuits, electric motors or welding equipment.*
> *— Avoid poor wiring connections.*
> *— Avoid intermittent or missing building earth ground.*

⚠ **CAUTION**

Electrical Shock Hazard.
Can cause electrical shock or equipment damage.
Disconnect power supply before connecting wiring.

Wiring must comply with applicable codes, ordinances and regulations:

1. Wire C7089U1006 Outdoor Sensor to OUT1 and OUT2 terminals on the EIM. If leadwire provided is not long enough (60 in.), run a cable to a hole at C7089U1006 location.
   a. Using color-coded, 18-gauge thermostat wire is recommended. For example of general wiring of C7089U1006, see Fig. 24.
   b. Pigtail wiring can be used.
2. Mount C7089U1006 in its mounting clip.
3. Plug wiring hole using nonhardening caulk or putty.
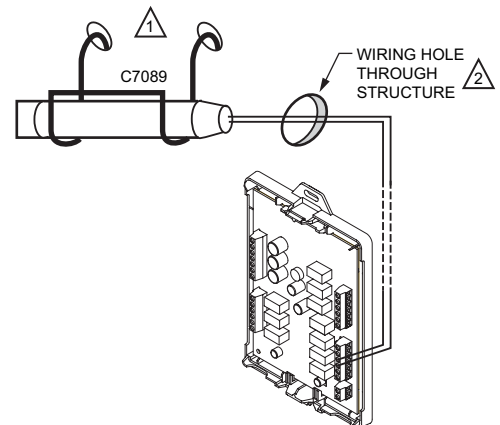
⚠1 USE APPROPRIATE MOUNTING MEANS FOR THE TYPE OF STRUCTURE.

⚠2 PLUG WIRING HOLE WITH NON-HARDENING CAULK OR PUTTY.

Fig. 24. Wire C7089U1006 Outdoor Sensor to the EIM.

If an outdoor temperature sensor is installed, the thermostat displays the outside temperature in the lower right corner of the Home Screen.
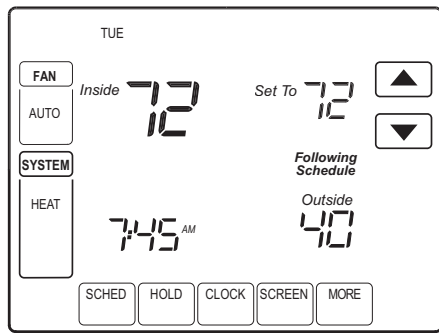
M22453

If thermostat is set to Auto Changeover System mode, press the More key until the outside temperature is shown on the screen.
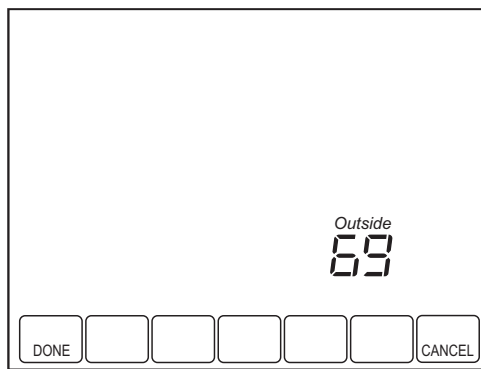
M22448

Locate and Mount C7189U1005 Remote Indoor Temperature Sensor (Optional)

1. Choose a location (see Fig. 25) for mounting the sensor on an inside wall about 5 ft (1.5m) above the floor.
2. Be sure wire distance between C7189U1005 and EIM is less than 200 feet.
3. Make sure there is good air circulation at average temperature at the chosen location. Avoid the following locations because they can introduce errors in sensor measurements. See Fig. 25.
    a. Hot areas caused by:
        (a) Concealed pipes or ducts.
        (b) Drafts from fireplaces or other heat sources.
        (c) Convection or radiant heat from the sun or electrical equipment.
    b. Cold areas caused by:
        (a) Concealed pipes or ducts.
        (b) Drafts from windows and doors.
        (c) Unheated areas on the other side of the wall location.
    c. Dead air areas:
        (a) Behind doors, furniture and curtains.
        (b) In corners and alcoves.
4. Mark the area on the wall selected for mounting the C7189U1005 Sensor.
5. Run wire cable to a hole at the selected wall location. Pull approximately three inches of wire through the opening. Color-coded, 18-gauge thermostat wire is recommended.
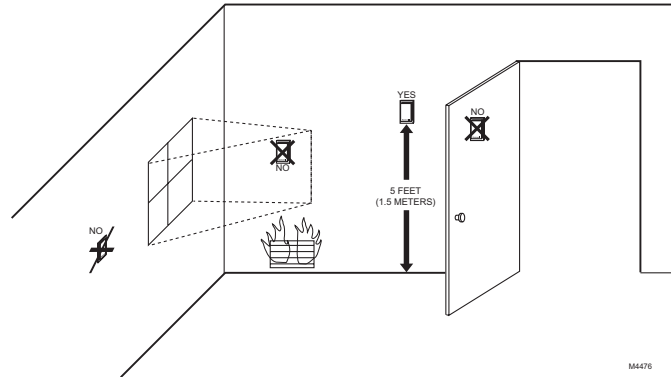
Fig. 25. Typical location for C7189U1005 Indoor Sensor.

Wire C7189U1005 Indoor Sensor

⚠ **CAUTION**

Electrical Interference (Noise) Hazard.
Can cause erratic system operation.
Keep wiring at least one foot away from large inductive loads such as motors, line starters, lighting ballasts and large power distribution panels.

IMPORTANT

> *Erratic temperature readings from a sensor can occur as a result of any of the wiring practices described below. Avoid these practices to assure correct operation.*
>
> — *Be sure wires have a cable separate from the thermostat cable.*
> — *Do not route temperature sensor wiring with building power wiring, next to control contactors or near light dimming circuits, electric motors or welding equipment.*
> — *Avoid poor wiring connections.*
> — *Avoid intermittent or missing building earth ground.*

⚠ **CAUTION**

Electrical Shock Hazard.
Can cause electrical shock or equipment damage.
Disconnect power supply before connecting wiring.

Wiring must comply with applicable codes, ordinances and regulations.

1. Wire C7189U1005 Indoor Sensor to IN1 and IN2 terminals on the EIM. For an example of general wiring of C7189U1005, see Fig. 26 to wire one sensor and Fig. 27 to wire multiple sensors.
2. Push excess wire back into the hole. Plug the hole using nonhardening caulk, putty or insulation to prevent drafts from affecting performance.
3. Remove C7189U1005 cover.
4. Mount C7189U1005 to the wall using the screws and anchors provided.
5. Level the C7189U1005 for appearance only. Device functions correctly even when not level.
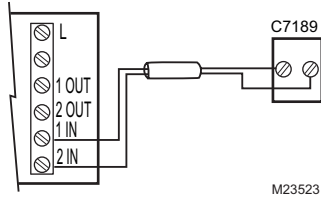6. Install C7189U1005 cover.

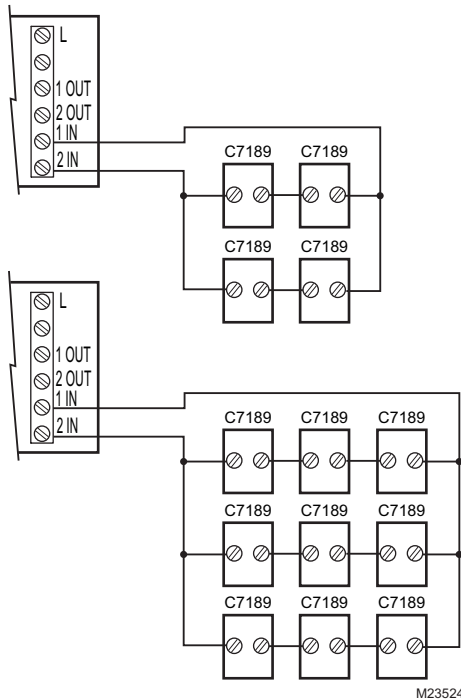**Fig. 26. Wiring a single C7189U1005 Indoor Sensor.**

Fig. 27. Wiring Multiple C7189U1005 Sensors.

If a remote indoor temperature sensor is installed, the thermostat has several options for displaying the current indoor temperature. This is configured in ISU 340. The thermostat can display either the temperature measured at the thermostat location, the sensor location, or a 50-50 average of both.

ONE REMOTE INDOOR SENSOR INSTALLED (OPTIONAL)
If one remote indoor temperature sensor is used, based on configuration during installer setup, either of the following options are available:

• The thermostat will display the temperature measured at the sensor location (internal thermostat sensor is disabled).
• The thermostat will display a 50-50 average of the temperature measured at the thermostat location and the remote indoor sensor location.

MULTIPLE REMOTE INDOOR SENSORS INSTALLED (OPTIONAL)
If more than one remote indoor sensor is used, based on configuration during installer setup, either of the following options are available:

• The thermostat will display the temperature measured at the sensor locations (internal thermostat sensor is disabled). Sensors must be in square numbers (e.g., 4, 9, 16, and so on) and the displayed temperature will be an average of the temperatures measured at each location.
• The thermostat will display a 50-50 average of the temperature measured at the thermostat location and the average of the temperatures measured at the remote indoor sensor locations. In this case, the thermostat sensor still carries a 50% weighting of the displayed temperature.

Install Discharge Air Temperature Sensor (Optional):
Prior to installing Discharge Air Temperature Sensor (DATS) refer to the installation instructions included with the product for more information on placement and wiring.

When using a DATS with network zoning the DATS will monitor the duct air temperature and communicate with the thermostat and will disable the heating and/or cooling if installer set high or low temperature limits are reached.

When using a DATS with an Equipment Interface Module the DATS is for testing only. When the installer is in any of the Installer Tests pressing the "More" button will display the temperature measured at the DATS. This allows the installer to view the temperature of each stage of heating and or cooling. The DATS will not be used for control and will not disable heating or cooling based on duct air temperature.

Set Calendar and Time
Thermostat keeps current time and day for up to ten years under normal use after the calendar is set.

When the thermostat is first powered, the display is ready to set the calendar and time.

NOTE: Calendar can also be set in the Installer Setup.

1.   Press the arrow keys to set the year, month and day.
2.   Press the Done key.
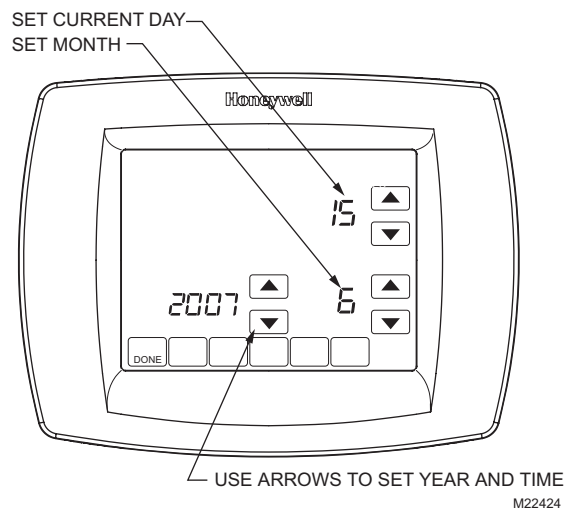
3.   Press the arrow keys to set the current time.
4.   Press the Done Key.
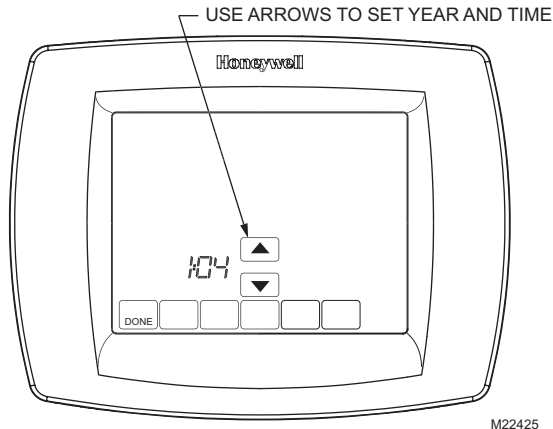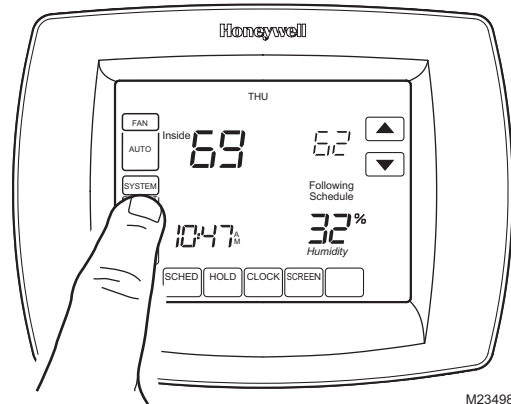
USE ARROWS TO SET YEAR AND TIME

M22425
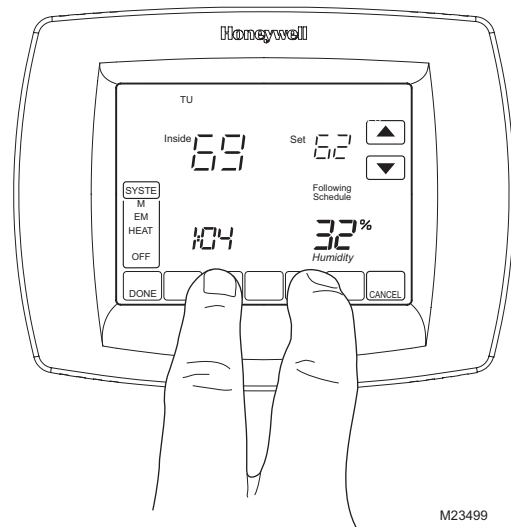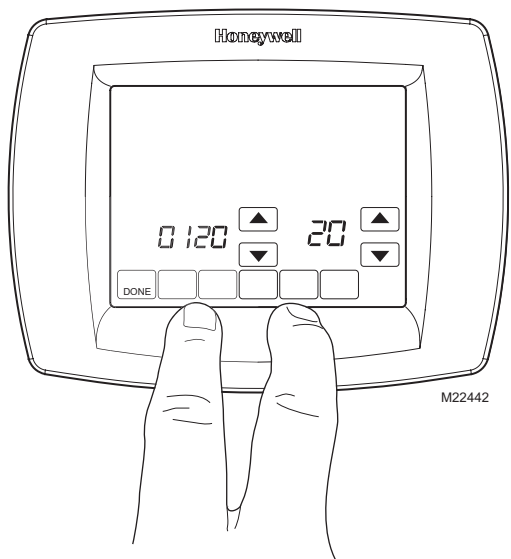
INSTALLER SETUP

Auto Discover is available when the TH9421C thermostat is connected to an EIM. The EIM communicates information to the thermostat. Thermostat settings can be specified using the up and down arrow keys on the screen or set to Auto Discover.

Using Auto Discover

Some Installer setups are defaulted to Auto Discover. If not defaulted, the installer can change the option to Auto Discover, however, it is always important that the installer verify that the auto discovered values are correct for the system that is present.

When using the thermostat with an equipment interface module, Auto Discover will discover factory default settings and will not receive communications as to proper system settings. The equipment interface module is preprogrammed at the factory as a one heat one cool product and the thermostat will "auto discover" those settings. The equipment interface module will be reprogrammed when the installer manually changes the configuration in the installer set up. It is not recommended to use Auto Discover with an equipment interface module.

When using the VisionPRO® IAQ thermostat with a W8835 zone panel, configure the zone panel, using the DIP switches on the panel, for the proper system settings. Enter the installer setup on each thermostat and assign zone numbers, and change the system settings (ISU 172–180) to Auto Discover (E) then press the discover button on the zone panel. The zone panel will then communicate those settings back to the thermostats and the thermostats will automatically configure the ISU settings in Auto Discover, again it is important to verify that the auto discovered values are correct.

NOTE: When a VisionPRO® IAQ thermostat is being added to an existing zoning system with T8635 Thermostats the new VisionPRO® IAQ must be set up as the Zone One Thermostat (master zone controller), and can only be used with a W8835 zone panel.

Follow these steps to enter the Installer Setup:

1. Press and release the System Key.

M23498

2. Press and hold the two blank keys on either side of the center blank key for approximately five seconds until screen changes.

M23499

3. Release the two blank keys when the screen on the thermostat matches the screen below.

M22442

4. See screen below to review how the thermostat keys are used during Installer Setup. See Table 3–4 for the Installer Setup Numbers and Settings.
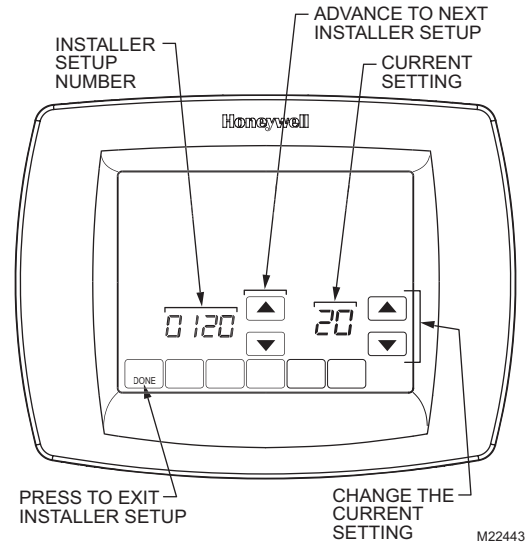
5. Press the Done key to exit the Installer Setup screen.

Table 3. Installer Setup Menu.

| ISU Parameter Number	Installer Setup Name	Settings (Factory Defaults Shown in Bold)		Notes
110	Zone Number	**0** 1–9	**Not zoned** Zone number	Select zone number. Zone 0 = not zoned Zone 1 = master zone controller* Zone 2–9 = satellite thermostat* *Only change if used with Envirazone Panel.
120 USU	Date (Year Upper)	**20** 21		Select first two digits of current calendar year (**20**06 for example) - (2001-2178 available).
130 USU	Date (Year Lower)	01-99	**Default = 06**	Select last two digits of current calendar year (20**06** for example) - (2001-2178 available).
140 USU	Date (Month)	1-12	**Default = 06** Select number that represents current calendar month.	
150 USU	Date (Day)	1-31	**Default = 15** Select number that represents current calendar date.	
160 USU	Schedule Options	4 0	**Seven-day programmable** Non-programmable	
165 USU	Restore Energy Star Schedule	**0** 1	**No** Yes	
172	System Selection	**1** 2 3 E	**Conventional** Heat Pump Heat Only No Fan Auto Discover	Selection of a specific system setting will automatically modify some default settings and/or hide other installer setup options that follow.
173	Heat Pump Type	**0** 1	**Air to Air heat pump** Geothermal heat pump	
174	Number of Cool/ Compressor Stages	**1** 0 2 E	**1** none 2 Auto Discover	Not shown if ISU172 = 3. Conventional systems = number of cooling stages. Heat Pump systems = number of compressor stages.
176	Number of Conventional Heat or Heat Pump Aux Stages	**1** 0 2 3 E	**1** none 2 3 Auto Discover	Conventional systems = number of heating stages (maximum of 3). Heat Pump systems = number of **auxiliary heat** stages (maximum of 2).
180	Fan Operation Conventional heat only	**0** 1 2 E	**Gas or oil furnace equipment controls fan in heating** Electric furnace—thermostat controls fan in heating Equipment controls stage 1; thermostat controls stage 2+ Auto Discover	Only shown if ISU172 = 1 (conventional system). Use 0 for fossil fuel systems (equipment controls fan). Use 1 for electric systems (thermostat controls fan). Use 2 if stage 1 is radiant heating and stage 2+ is a hot water fan coil.

Table 3. Installer Setup Menu. (Continued)

ISU Parameter Number	Installer Setup Name	Settings (Factory Defaults Shown in Bold)		Notes
190	Reversing Valve O/B	0 1	**Changeover valve—O/B terminal is energized in cooling** Changeover valve—O/B terminal is energized in heating	Only shown if ISU172 = 2.
200	Back-up Heat Source Applies to both Aux and EmHeat	E 0 1	**Auto Discover** Electric backup heat Fossil fuel backup heat	Only shown if ISU172 = 2 and ISU176 = 1 or greater.
210	External Fossil Fuel Kit	1 0	**External Fossil Fuel kit controls backup heat*** Thermostat controls backup heat	***Cannot control dual fuel when used with W8835 Envirazone Panel.** Only shown if ISU172 = 2 and ISU200 = 1.
220	CPH for 1st Stage Cool/ Compressor	1-6 E	**3—cph recommended for compressors** 1, 2, 4, 5, 6—other cycle rate settings Auto Discover	
230	CPH for 2nd Stage Cool/ Compressor	1-6 E	**3—cph recommended for compressors** 1, 2, 4, 5, 6—other cycle rate settings Auto Discover	Only shown if ISU174 = 2.
240	CPH for 1st Stage Conventional Heat or Auxiliary	1-12 E	1—1 cph used for steam and gravity 3—3 cph used for hot water system and high efficiency (90% or better) furnaces 5—5 cph used for standard fossil fuel forced air (less than 80% efficient) systems 9—9 cph used for electric furnaces 2, 4, 6, 7, 8, 10, 11, 12—other cycle rate settings Auto Discover	Only shown if ISU172 = 2 and ISU176 = 1 or higher. Default varies based on types of heating.
250	CPH for 2nd Stage Conventional Heat or 2nd Stage Auxiliary	1-12 E	1—1 cph used for steam and gravity 3—3 cph for hot water systems and high efficiency (90% or better) furnaces 5—5 cph for standard fossil fuel forced air (less than 90% efficient) systems 9—9 cph used for electric furnaces or electric auxiliary heat for heat pump systems 2, 4, 6, 7, 8, 10, 11, 12—other cycle rate settings Auto Discover	Only shown if ISU176 = 2 or for Heat Pump systems with 2 stages of Auxiliary Heat. Default varies based on types of heating.
260	CPH for 3rd Stage Heat	1-12 E	1—1 cph used for steam and gravity 3—3 cph for hot water systems and high efficiency (90% or better) furnaces 5—5 cph for standard fossil fuel forced air (less than 90% efficient) systems 9—9 cph used for electric furnaces or electric auxiliary heat for heat pump systems 2, 4, 6, 7, 8, 10, 11, 12—other cycle rate settings Auto Discover	Only shown if ISU176 = 3. Default varies based on types of heating.
270	CPH for Emergency Heat	9 1-12	**Default** Only shown if heat pump is selected.	
280 USU	Continuous Backlight	0 1	**Backlight not on continuously. Thermostat backlight comes on with each key press.** Backlight is on continuously.	If backlight is on continuously, it is low-intensity. Light changes to full brightness after pressing any key.
300	Changeover	0 1	**Manual** Auto	Auto Changeover allows user to choose heat, cool, off or auto. When set to Auto the thermostat will automatically choose heat or cool based on room temperature and heat/cool set points. Manual changeover allows the user to manually toggle between heat, cool and off.
310	Deadband	**3** **2.0** 2 1.5 4 2.5 5 3.0 6 3.5 7 4.0 8 4.5 9 5.0	**3°F** **2.0°C** 2°F 1.5°C 4°F 2.5°C 5°F 3.0°C 6°F 3.5°C 7°F 4.0°C 8°F 4.5°C 9°F 5.0°C Note: degrees C is not same as degrees F	Only shown if ISU300 = 0. The deadband indicates the minimum number of degrees that are allowed between the heat and cool settings when in auto changeover. For example, if the deadband is set to 3°F and the cool setpoint is 75°F the warmest heat setpoint allowed would be 72°F.
320 USU	Temperature Indication Scale	0 1	**Fahrenheit temperature display** Celsius temperature display	
330 USU	Daylight Saving	2 0 1	**Enabled (US 2007)** Disabled Enabled (US 1987)	Set to 0 in areas that do not follow daylight savings time.

Table 3. Installer Setup Menu. (Continued)

ISU Parameter Number	Installer Setup Name		Settings (Factory Defaults Shown in Bold)		Notes
340	Indoor Temp Sensor	**0** 1 2	**Thermostat location only** Remote indoor sensor(s) location(s) only Average between thermostat and sensor locations		Indoor temperature sensors will display the temperature at the sensor location or an average of two indoor temperature sensors, not including the temperature sensor in the thermostat. The temperature sensor in the thermostat is disabled when using remote indoor temperature sensor(s).
342	Outdoor Temp Sensor	**E** 0 1	**Auto Discover** None Yes		An outdoor temperature sensor is required for heat pump compressor lockout (ISU350), heat pump auxiliary lockout (ISU360), dual fuel heat pump balance point (ISU360) and Humidification with Frost Protection (ISU372).
345	Dual Fuel Heat Pump Control	**1** 0 2	**Droop Control** No Droop Control Droop Control with Auxiliary heat lockout		See Dual Fuel Heat Pump control on page 23.
346	Dual Fuel Heat Pump Upstage to Furnace Timer (in hours)	**1** 0 0.5 1.5 2 3 4 5 6 8 10 12 14 16	**1 hr.** Disabled 0.5 hrs. 1.5 hrs. 2 hrs. 3 hrs. 4 hrs. 5 hrs. 6 hrs. 8 hrs. 10 hrs. 12 hrs. 14 hrs. 16 hrs.		See Dual Fuel Heat Pump control on page 23.
347	Droop Temperature	**2** 3 4 5	**2°F** **1.0°C** 3°F 1.5°C 4°F 2.0°C 5°F 2.5°C		The fossil fuel will turn on when the outdoor temperature is above the balance point if the room temperature droops below the selected droop temperature setting, and the compressor will be disabled.
350	Heat Pump Balance Point (also compressor lockout) Temperature	**40** **4.5** 0 5 -15 10 -12 15 -9.5 20 -6.5 25 -4 30 -1 35 1.5 45 7 50 10 55 13 60 15.5	**40°F** **4.5°C** No heat pump compressor lockout 5°F -15.0°C 10°F -12.0°C 15°F -9.5°C 20°F -6.5°C 25°F -4.0°C 30°F -1.0°C 35°F 1.5°C 45°F 7.0°C 50°F 10.0°C 55°F 13.0°C 60°F 15.5°C (Show 1/2 degree C)		Only shown for heat pump applications with an outdoor temperature sensor present. If electric backup is selected then the default is No Compressor lockout.
360	Heat Pump Auxiliary Heat Lockout Temperature	**0** 5 -15 10 -12 15 -9.5 20 -6.5 25 -4 30 -1 35 1.5 40 4.5 45 7 50 10 55 13 60 15.5 65 18.5	**No heat pump auxiliary lockout** 5°F -15.0°C 10°F -12.0°C 15°F -9.5°C 20°F -6.5°C 25°F -4.0°C 30°F -1.0°C 35°F 1.5°C 40°F 4.5°C 45°F 7.0°C 50°F 10.0°C 55°F 13.0°C 60°F 15.5°C 65°F 18.5°C (Show 1/2 degree C)		Only shown for heat pump applications with an outdoor temperature sensor present.
365	Discharge Temp Sensor	**E** 0 1	**Auto Discover** None Remote		
366	Zoning High Temperature Limit	**160** 0 110–170	**160°F (71°C)** Disabled 110°F to 170°F (43.5°C to 76.5°C)		Only Shown if ISU110 = 1 (Master Zone Controller) and Discharge Temperature Sensor is available.
367	Zoning Low Temperature Limit	**40** 0 35-50	**160°F (71°C)** Disabled 35°F to 50°F (1.5°C to 10°C)		Only Shown if ISU110 = 1 (Master Zone Controller) and Discharge Temperature Sensor is available.

Table 3. Installer Setup Menu. (Continued)

ISU Parameter Number	Installer Setup Name	Settings (Factory Defaults Shown in Bold)		Notes
368	Staging Discharge Temperature High Limit	**110** 0 80-130	**110°F (43.5°C)** Disabled 80°F to 130°F (26.5°C to 54.5°C)	Only Shown if ISU110 = 1 (Master Zone Controller) and ISU174 = 2 or more. Must have Discharge Temperature Sensor present.
369	Staging Discharge Temperature Low Limit	**55** 0 50-60	**55°F (13°C)** Disabled 50°F to 60°F (10°C to 15.5°C)	Only Shown if ISU110 = 1 (Master Zone Controller) and ISU176 = 2. Must have Discharge Temperature Sensor present.
370	Indoor Humidity Sensor	**1** 0 2 E	**Internal—sensor in thermostat** Disabled Remote Auto Discovered	If there is a remote sensor installed and the setting is either auto discover or "remote" the internal thermostat humidity sensor is disabled. If set to "internal" the internal thermostat sensor is presented on the screen. If set to "disabled" the internal sensor and any remote sensors are disabled, there will be no humidity displayed and will have no humidification/dehumidification control.
372	Indoor Humidification Control	**E** 0 1 3 8 9	**Auto Discover** Off Humidify (no frost protection) Humidify (with frost protection) Desert Humidity Control on heat, cool, and off (no frost protection)* Desert Humidity Control on heat, cool, and off (with frost protection)*	Shown only if ISU370 = 1, 2 or E. * DATS required for Desert Humidification
374	Hum Fan Action	**0** 1 2 3	**Humidify only while fan or heat is on** Humidify will force fan on Humidify only when heat is on Humidifier operates independent of fan	Setting 0 will run the humidifier only during a call for heat or if the fan is running. Setting 1 will force the fan to run if there is a call for humidification. Setting 2 will humidify only during a call for heat. Setting 3 assumes the humidifier has it own internal fan and will not require the system fan or heat to be operating during a call for humidification.
379	Dehumidification Control	**0** 1 3	**None** Dehumidify with Air Conditioning Whole house Dehumidifier	Option 1 uses dehum terminal as a normally closed relay to wire to a low-speed fan terminal. Option 3 uses dehum terminal as a normally open relay to wire to a whole-house dehumidifier.
382	Dehumidification system modes	**0** 2 3	**Dehumidifier in Cool or Auto** (when last call was for cooling) Dehumidifier in Cool, Off, Heat, EmHeat, or Auto Dehumidifier in Cool, Off, or Auto (when last call was for cooling)	
383	Over-Cooling Limit	**3** **1.5** 1 0.5 2 1.0	**3°F 1.5°C** 1°F 0.5°C 2°F 1.0°C (Show 1/2 degree C)	Only shown if ISU379 = 1.
384	Dehumidification Fan Action	**0** 1	**System fan turns on with dehumidifier** Dehumidifier operates independent of system fan	Only shown if ISU379 = 3.
386	Whole house dehumidification lockout	**0** 1	**Disabled** Enabled	
390	Southern Dehumidification Away Mode	**0** 1	**No** Yes	Not shown if ISU379 = 0. ISU 391-394 will only be shown if ISU390 = 1.
391	Southern Dehumidification Away Mode Fan Setting	**0** 1 2	**Fan Auto** Fan On Fan Circulate	If ISU391 = 1 or 2 to help remove condensation from the air handler and the A-coil, some humidity may be re-introduced into the living space.
392	Southern Dehumidification Away Mode Low Limit Temperature Setting	**76** 70-80	**Default = 76°F** 70°F–80°F	The air conditioner will be allowed to cool the living space to this temperature to meet the humidity setting that set in ISU394.
393	Southern Dehumidification Away Temperature Setting	**85** 70-99	**Default = 85°F** 70°F–99°F	The A/C will maintain this temperature provided the humidity setting is satisfied. This temperature setting can not be set lower than the temperature set in ISU 392.

Table 3. Installer Setup Menu. (Continued)

ISU Parameter Number	Installer Setup Name	Settings (Factory Defaults Shown in Bold)		Notes
394	Southern Dehumidification Away Dehumidification Setting	**65** 40-70	**Default = 65%** 40%–70% relative humidity	Set the desired humidity level to maintain within the living space
400	Ventilation control	**0** 1 2 3 4	**No ventilation** Ventilation on at all times Ventilation on except during sleep period Vent all with lockouts Vent off sleep with lockouts	If ISU300 = 0, ISU401-405 will not be shown. Not ASHRAE Not ASHRAE
401	Number of bedrooms	**2** 1-6	**Default = 2** 1–6 bedrooms	
402	Total house Sq. Ft.	**10** 10-50	**Default = 1000 sq. ft.** 1000–5000 sq. ft. in increments of 100	
403	Ventilation CFM	**160** 30-195	**Default = 160 CFM** 30–195 CFM in increments of 5	
404	Max ventilation percentage limit	50 30-60 100	**Default = 50%** 30%–60% unlimited	The thermostat will determine if ventilation is meeting ASHRAE standard 62.2. The display will show a P above the setup number if the setting passes the ASHRAE standard, or F if it does not. Best practice is to move the setting down until F is displayed, then move up one setting to the minimum passing value.
405	Ventilation Fan Action	**1** 2	**Vent on will force fan on also** Vent will not force fan ON	
406	Ventilation in High Humidity	**1** 0	**On** Off	Only shown if ISU372 and ISU400 are not set to 0. When set to On will use ventilation to remove humidity when thermostat is in the heat mode.
430	Ventilation lockout	**0** 1 2 3	**Disabled** Lockout for high temperatures Lockout for low temperatures Lockout for high and low temperatures	Outdoor temperature sensor required for high and low temperature lockouts.
431	Ventilation lockout high temperature	**100** **38** 90 32 95 35 105 40.5 110 43.5	**100°F** **38°C** 90°F 32°C 95°F 35°C 105°F 40.5°C 110°F 43.5°C	
432	Ventilation lockout low temperature	**-10** **-23.5** -20 -29 -15 -26 -5 -20.5 -0 -18	**-10°F** **-23.5°C** -20°F -29.0°C -15°F -26.0°C -5°F -20.5°C 0°F -18.0°C	
450	DATS Inhibit	**0** 35 1.5 40 4.5 45 7 50 10 55 13 60 15.5 65 18.5	**Disabled** 35°F 1.5°C 40°F 4.5°C 45°F 7.0°C 50°F 10.0°C 55°F 13.0°C 60°F 15.5°C 65°F 18.5°C	The DATS will cycle the cooling off at the selected temperature to prevent coil freezing.
500 USU	Furnace Filter Change Reminder	**E** 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14	**Auto Discover** Disabled 10 R.T. Days 30 R.T. Days 60 R.T. Days 90 R.T. Days 120 R.T Days 180 R.T. Days 270 R.T. Days 365 R.T. Days 30 C Days 60 C Days 90 C Days 120 C Days 180 C Days 365 C Days	
502	Furnace filter reminder run time equipment counts	**0** 1	**Counts runtime Heat and Cool** Counts runtime Cool only	

Table 3. Installer Setup Menu. (Continued)

ISU Parameter Number	Installer Setup Name		Settings (Factory Defaults Shown in Bold)	Notes
510 USU	Humidifier Pad Replacement Reminder	E 0 1 2 3	**Auto Discover** Disabled 90 C Days or 30 R.T. Days 180 C Days or 60 R.T. Days 365 C Days or 90 R.T. Days	Display will show Calendar Days if ISU372 = 0; Run Time Days if ISU372 = 1 or 3.
520 USU	UV Lamp Replacement Reminder	E 0 1 2	**Auto Discover** Disabled 365 Days 730 Days (2 years)	
530 USU	Adaptive Intelligent Recovery	1 0	**Adaptive** Conventional	See Temperature Recovery on page 32.
540 USU	Number of Periods	4 2	**4 Periods** 2 Periods	4 periods = Wake, Leave, Return, and Sleep 2 periods = Wake and Sleep
550	Number of Periods: Weekdays	4 2	**4 Periods** 2 Periods	
560	Number of Periods: Weekend Days	4 2	**4 Periods** 2 Periods	
580	Min Compressor Off Time	5 0 1 2 3 4	**5 minutes** Off 1 minute 2 minutes 3 minutes 4 minutes	
600	Heat Temp Range Stops	90 40-90	**Default = 90°F** 40°F–90°F (Show 1/2 degree C)	
610	Cool Temp Range Stops	60 60-99	**Default = 60°F** 60°F–99°F (Show 1/2 degree C)	
640 USU	Clock Format	12 24	**12 Hour** 24 Hour	
650	Extended Fan on time Heat (Blower Off Delay Heat)	0 30 60 90 120	**Off** 30 seconds 60 seconds 90 seconds 120 seconds	
660	Extended Fan on time Cool (Blower Off Delay Heat)	0 30 60 90 120	**Off** 30 seconds 60 seconds 90 Seconds 120 Seconds	This can be used to remove condensation from A-coil; however, could re-introduce humidity into the living space.
670 USU	Keypad Lockout	0 1 2	**Unlocked** Partial Locked Full Locked	
680	Temp Control Heat	2 1 3	**Standard (recommended)** Less Aggressive temp control (may cause temp undershoot) More Aggressive temp control (may cause temp overshoot)	
690	Temp Control Cool	2 1 3	**Standard (recommended)** Less Aggressive temp control (may cause temp undershoot) More Aggressive temp control (may cause temp overshoot)	
700	Temperature Display Offset	0 -3 -2 -1 1 2 3	**0°F 0 °C — (no difference in displayed temperature and actual room temperature)** -3°F -1.5°C -2°F -1°C -1°F -.5°C 1°F .5°C 2°F 1°C 3°F 1.5°C	

Table 3. Installer Setup Menu. (Continued)

ISU Parameter Number	Installer Setup Name	Settings (Factory Defaults Shown in Bold)		Notes
701	Humidity Display Offset	**0**	**0%**	
		-12	-12%	
		-11	-11%	
		-10	-10%	
		-9	-9%	
		-8	-8%	
		-7	-7%	
		-6	-6%	
		-5	-5%	
		-4	-4%	
		-3	-3%	
		-2	-2%	
		-1	-1%	
		1	1%	
		2	2%	
		3	3%	
		4	4%	
		5	5%	
		6	6%	
		7	7%	
		8	8%	
		9	9%	
		10	10%	
		11	11%	
		12	12%	
710	Restore Factory Defaults	**0** 1	**No** Yes	Restoring factory defaults will re-set installer setup and programming.

INSTALLER SYSTEM TEST

Use the Installer System Test to test the heating, cooling and fan (and emergency heat for heat pump systems).

⚠ **CAUTION**

Equipment Damage Hazard.
Minimum compressor off time is bypassed during Installer System Test
Avoid cycling compressor quickly.

How to Use the Installer System Test

The Installer Test is part of the Installer Setup Menu.

1. Enter the Installer System Test by entering the Installer Setup.
2. Note that the test appears at the end of the Installer Setup Numbers.
3. See Fig. 28 to review how the thermostat buttons are used during the Installer System Test. See Table 6 for available Installer System Tests.
4. If installed with a Discharge Air Temperature Sensor (ISU365=1) press the "MORE" button to view the discharge temperature, and press Cancel to return to the Installer test screen.
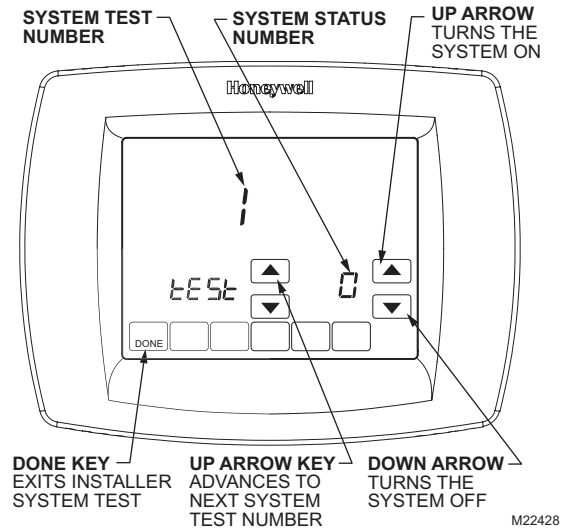

SYSTEM TEST NUMBER **SYSTEM STATUS NUMBER** **UP ARROW** TURNS THE SYSTEM ON

Honeywell

test

DONE KEY EXITS INSTALLER SYSTEM TEST **UP ARROW KEY** ADVANCES TO NEXT SYSTEM TEST NUMBER **DOWN ARROW** TURNS THE SYSTEM OFF

M22428

Fig. 28. Review thermostat buttons used during Installer System Test.

Installer System Tests

Table 4. Installer System Test.

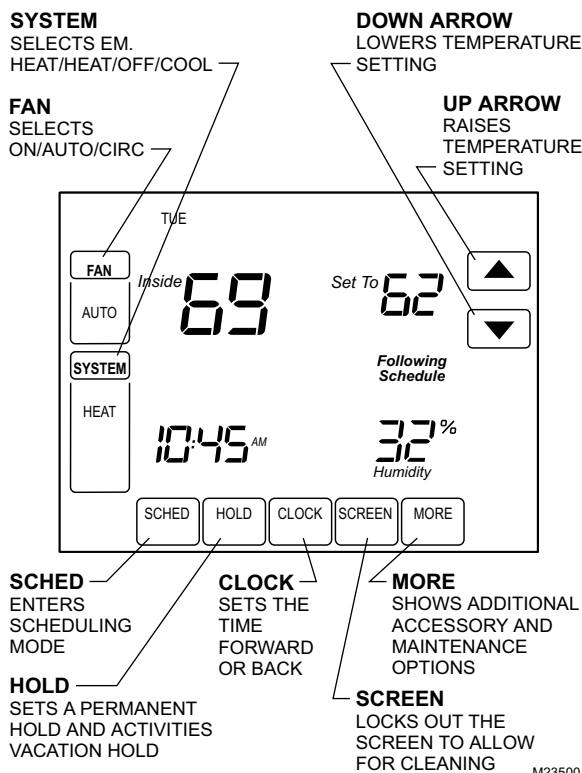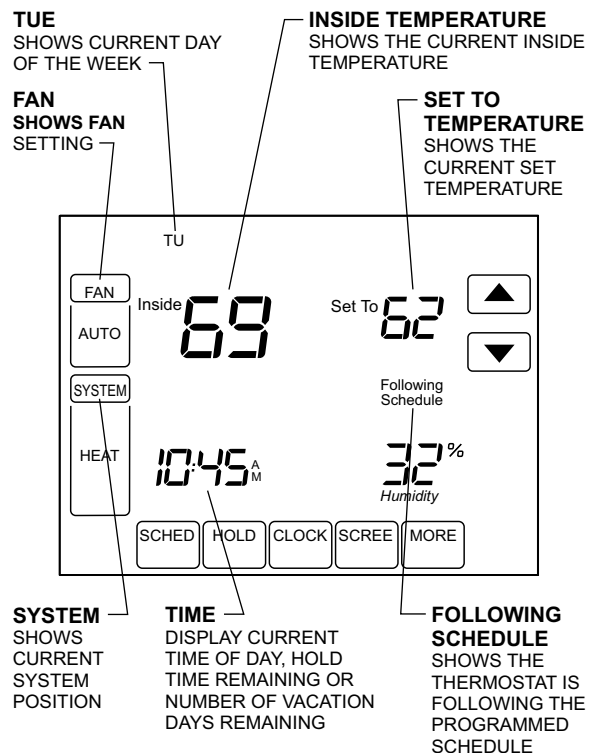| System Test Number	Test Type	ISU Value	System Status Number and Description
Test 1	Installer Test Cool	**0** 1 2	**Off** Cool Stage 1 Cool Stages 1 & 2
Test 2	Installer Test Fan	**0** 1	**Off** Fan On
Test 3	Installer Test Heat	**0** 1 2 3 4	**Off** Heat Stage 1 Heat Stages 1, 2 Heat Stages 1,2,3 Heat Stages 1,2,3,4
Test 4	Emergency Heat Test	**0** 1 2	**Off** AUX Heat Stage 1 AUX Heat Stages 1 and 2
Test 5	Installer Test Humidifier	**0** 1	**Off** Humidifier On
Test 6	Installer Test Dehumidifier	**0** 1	**Off** Dehumidifier On
Test 7	Installer Test Ventilator	**0** 1	**Off** Ventilator On
Err	Diagnostic Recall	00-99	See "Communication Error Codes" on page 35
Press the Next button to go to the beginning of the Installer Setup or press the Done button to exit the Installer System Test.			

When VisionPRO® IAQ is used in a zoning system you must exit the installer test on one thermostat before entering the installer test on another thermostat.

OPERATION

Thermostat Keys

SYSTEM
SELECTS EM.
HEAT/HEAT/OFF/COOL

FAN
SELECTS
ON/AUTO/CIRC

DOWN ARROW
LOWERS TEMPERATURE
SETTING

UP ARROW
RAISES
TEMPERATURE
SETTING

SCHED
ENTERS
SCHEDULING
MODE

HOLD
SETS A PERMANENT
HOLD AND ACTIVITIES
VACATION HOLD

CLOCK
SETS THE
TIME
FORWARD
OR BACK

SCREEN
LOCKS OUT THE
SCREEN TO ALLOW
FOR CLEANING

MORE
SHOWS ADDITIONAL
ACCESSORY AND
MAINTENANCE
OPTIONS

M23500

Thermostat Display

TUE
SHOWS CURRENT DAY
OF THE WEEK

FAN
SHOWS FAN
SETTING

INSIDE TEMPERATURE
SHOWS THE CURRENT INSIDE
TEMPERATURE

**SET TO
TEMPERATURE**
SHOWS THE
CURRENT SET
TEMPERATURE

SYSTEM
SHOWS
CURRENT
SYSTEM
POSITION

TIME
DISPLAY CURRENT
TIME OF DAY, HOLD
TIME REMAINING OR
NUMBER OF VACATION
DAYS REMAINING

**FOLLOWING
SCHEDULE**
SHOWS THE
THERMOSTAT IS
FOLLOWING THE
PROGRAMMED
SCHEDULE

M23501

System and Fan Settings

System

The System key selections vary based on your heating and/or cooling system type.

Heat — Thermostat controls the heating system.

Off — Both heating and cooling systems are off.

Cool — Thermostat controls the cooling system.

Auto — Thermostat automatically changes between heating and cooling operation, depending on indoor temperature.

Em. Heat — Emergency heat cycles to maintain temperature. Compressor is locked out and auxiliary heat turns on as needed.

Fan

The Fan key selections vary based on the heating and/or cooling system type.

On — Fan runs continuously. Use this setting for improved air circulation or for more efficient central air cleaning.
Auto — fan follows the fan program schedule.
Circ — fan runs randomly approximately 35% of the time. Use this setting for improved air circulation or for more efficient central air cleaning when you do not want the fan running continuously.

Control Humidification Level

The VisionPRO® IAQ Touchscreen Thermostat reads the inside humidity level and allows for a humidification setting with or without frost protection.

WITH FROST PROTECTION

Controlling humidification with frost protection requires an outdoor temperature sensor. The Frost Index (scale 1–10) will limit the amount of humidity added to the air based on outdoor temperature, with 1=most dry and 10=most humid. This prevents frost from accumulating on windows.

M23518
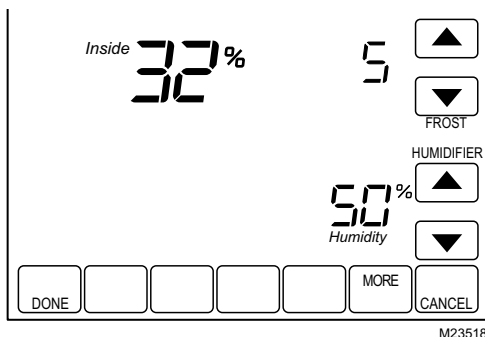
WITHOUT FROST PROTECTION

The frost setpoint is not displayed, but a humidity setpoint can still be set.

1. Press the More key until the inside humidity level set-point is shown.
2. Use Up and Down arrow keys, located to the right of the humidity setpoint, to set desired humidity level.
3. Press Done key.

Control Dehumidification Level

The VisionPRO® IAQ Touchscreen Thermostat reads the inside humidity level and allows for a dehumidification setting, and can be set to dehumidify using the air conditioner or a whole house dehumidifier.

M23496
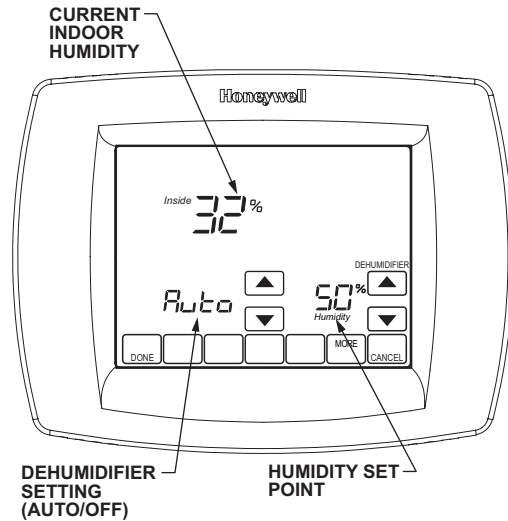
With Air Conditioner

The set range for dehumidification is 40 to 80%, and can be set in 5% increments. The thermostat must be in Cool mode or Auto mode when the previous call was a call for cooling.

M23514
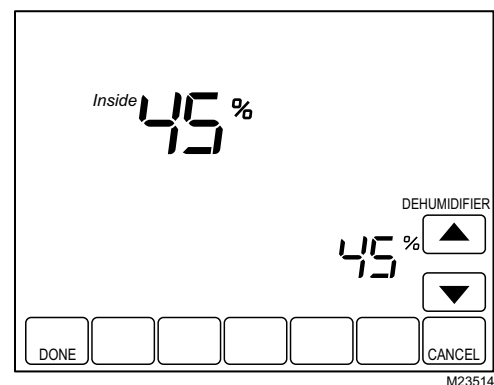
Dehumidifying in this manner runs the air conditioner longer than simply cooling the house would require, and can be set to run 1, 2, or 3°F below the temperature setpoint. This feature is called Dehumidification Droop Control.

NOTE: You must use this setting if:

— No powered, whole house dehumidifier is present, and
— The system uses the air conditioner as the dehumidifier.

DEHUMIDIFICATION DROOP CONTROL

In extremely high humidity conditions, the thermostat keeps the air conditioner running (energizing Y/Y2 and G) for up to 3°F below the temperature setpoint. It does this while trying to achieve the desired humidity setpoint and balancing that with the temperature setpoint. The thermostat controls up to 3° F below the temperature setting until either the humidity setpoint is satisfied or conditions change.

With Whole House Dehumidifier

Controls humidity levels in the house by dehumidifying without the use of the air conditioner. This setting requires a dedicated unit for dehumidification. Dehumidification with a whole house dehumidifier will take place when the thermostat is in the Cool, Off, Auto, Heat or Em.Heat modes. If the system is installed with a whole house humidifier, dehumidification with a whole house dehumidifier will only take place when the thermostat is in Cool, Off or Auto modes (Auto only if the previous call was a call for cooling).

When controlling a whole-house dehumidifier the user can toggle between auto (dehumidify when needed based on setpoint and current humidity level) and off (see Fig. 29).
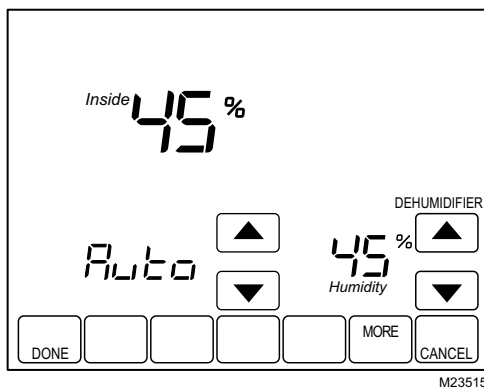
Fig. 29. Display when controlling a whole-house dehumidifier.

1. Press the More key until the inside humidity percent and dehumidification setpoint are shown.
2. Use Up and Down arrow keys, located to the right of the dehumidifier setpoint, to set desired humidity level for dehumidification in the summer.
3. Press Done key.

Ventilation Control

Ventilation setup options include ISUs 400, 401, 402, 403, and 404. Combined, these will determine a percentage of maximum ventilation limit. The thermostat will calculate whether or not this level of ventilation meets ASHRAE standard 62.2. If ASHRAE 62.2 is met a P will appear in the display above the setup number. If ASHRAE 62.2 is not met an F will appear in the display above the setup number.

Passing ASHRAE 62.2 is only applicable when vent is running. For example, if installer has set to not vent during sleep period, ASHRAE 62.2 would be met at all times except during sleep period.
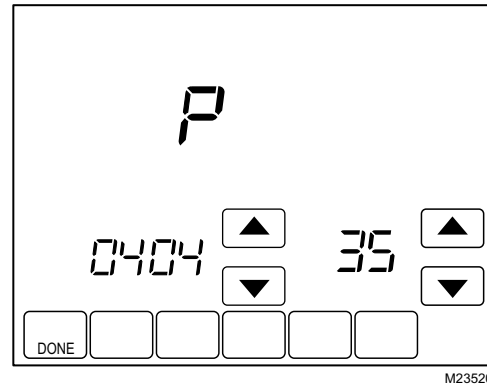

Ventilation occurs two ways:

AUTOMATIC

Uses installer setup to determine amount of ventilation required based on house and equipment size. To disable automatic ventilation, switch the ventilation setting to Off. The user can still use the timer to request ventilation.

ON DEMAND

User can also set a vent timer that will circulate fresh air into the home for a set period of time from 20 to 180 minutes in 20-minute increments. The vent timer is enabled whether ventilation is set to "Auto" or "Off."
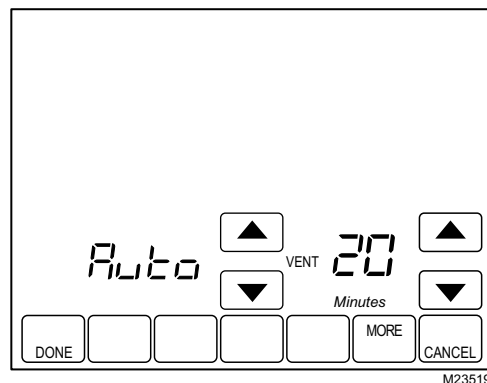
VENTILATION IN HIGH HUMIDITY CONDITIONS (SETUP FUNCTION 0406)

If Ventilation Control is available (setup function 0400 set to 1 or 2), this allows the ventilation equipment to turn on if the humidity rises approximately 10% above the RH setting in heating mode to exhaust the extra humidity.

HEAT PUMP OPERATION

Heat Pump LED Indication

A red LED indication is located in the upper right corner of the thermostat. It is only visible when lighted.

When the L terminal is wired to an equipment monitor, the LED signals when a check or fail signal is sent to the thermostat from the system. This is operational in the Heat, Off, Cool or Auto positions.

Heat Pump Emergency Heat LED Indication

The thermostat uses a red LED indicator that lights when the thermostat is in the Emergency Heat mode. The LED is located in the upper right corner of the thermostat. It is visible only when on.

Heat Pump Temperature Lockouts

Dual Fuel Heat Pump and Outdoor Temperature Sensor

In this operation, there is no external fossil fuel kit (dual fuel kit) installed; the thermostat controls this function.

1. Choose correct heat pump application in Installer Setup Number 0172.
2. Choose **Fossil Fuel Option** as the backup heat source in Installer Setup Number 0200.
3. Choose **No External Fossil Fuel Kit Option** is controlling back up heat in Installer Setup Number 0210.
4. Choose **Outdoor Temperature Sensor for Heat Pump Temperature Lockouts** in Installer Setup Number 0342.
5. Choose appropriate **Balance Point Temperature** in Installer Setup Number 0350.

Dual Fuel Heat Pump Control

Balance Point Only (ISU345 = 0)

NOTE: System must have an outdoor temperature sensor.

When the outdoor temperature is above the selected balance point temperature, only the compressor operates and the fan (G terminal) energizes when the thermostat calls for heat. See Fig. 30. When the outdoor temperature is below the selected balance point temperature, only the fossil fuel (auxiliary heat) operates and the fan (G terminal) does not energize when the thermostat calls for heat.
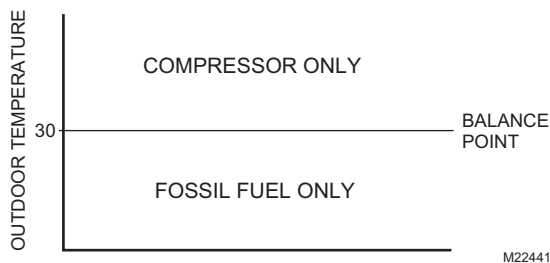

Fig. 30. Dual Fuel Heat Pump Operation in Heat mode with Balance Point Set.

Balance Point Plus Droop (ISU345 = 1)

The fossil fuel will turn on when the outdoor temperature is above the balance point if the room temperature droops below the selected droop temperature setting, and the compressor will be disabled.

Balance Point/Auxiliary Heat Lockout Plus Droop (ISU 345 = 2)

When the outdoor temperature is above the Auxiliary Heat Lockout Temperature only the compressor operates; below the balance point temperature (setup function 0360) only the fossil fuel operates. Between the balance point temperature and auxiliary heat lockout temperature the compressor will operate. However, the fossil fuel will turn on if the room temperature droops below the selected droop temperature setting, compressor will be disabled.
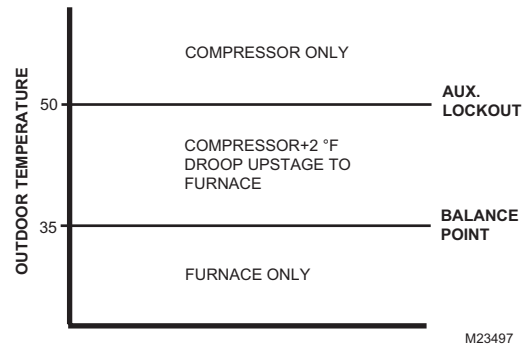

Fig. 31. Balance Point with Auxiliary Lockout Temperature.

AUXILIARY LOCKOUT FOR ELECTRIC HEAT BACKUP
Heat Pump systems with electric heat backup can select a compressor lockout temperature (function 0350) and/or auxiliary heat lockout temperature (function 0360). When the outdoor temperature is below the compressor lockout temperature, only the auxiliary heat operates. When the outdoor temperature is between the compressor and auxiliary lockout temperatures, both the compressor and auxiliary heat can operate.

NOTE: System must have an outdoor temperature sensor.

Heat Pump with Electric Auxiliary (Backup) Heat and Outdoor Temperature Sensor

1. Choose correct heat pump application in Installer Setup Number 0172.
2. Choose Electric as **Auxiliary (Backup) Heat Source** in Installer Setup Number 0200.
3. Choose **Outdoor Temperature Sensor** in Installer Setup Number 0342.
4. Choose **Compressor Lockout Temperature** in Installer Setup Number 0350.
5. Choose **Auxiliary Lockout Temperature** in Installer Setup Number 0360.

NOTE: There is a 5°F deadband between the Compressor and Auxiliary Heat Lockout Temperatures.

Operation in Heat Mode

When the outdoor temperature is below the Compressor Lockout Temperature, only the Auxiliary Heat operates.

When the outdoor temperature is above the Auxiliary Lockout Temperature, only the Compressor operates. See Fig. 32.
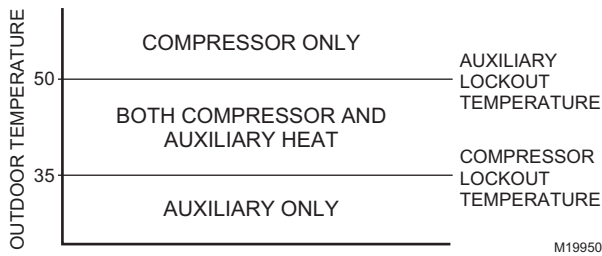
Fig. 32. Heat Pump Operation with Lockout Temperatures Set.

When the outdoor temperature is between the two temperatures, both the Compressor and Auxiliary Heat operate.

Operation in Emergency Heat Mode

Once the thermostat is placed into the Emergency Heat mode, the compressor and auxiliary lockout features are turned off. In the Emergency heat mode, the compressor is locked out. The first stage of heat is whatever is connected to the AUX terminal. The second stage of heat is connected to the AUX2. terminal.

Operating Sequence

The thermostat energizes specific terminal(s), depending on the demand for heating, cooling or fan. The thermostat screen shows the time, inside temperature, system and fan selections. Additional indicators are shown when the heating, cooling or fan is energized. See Table 5 and 6 for specification information.

Table 5. Sequence of Operation for Conventional Systems.

System Setting	Fan Setting	Call for Action	Energize Terminals	Screen Message
Off	Auto	None	None	None
Cool or Auto	Auto	None	None	None
Cool or Auto	Auto	Stage 1 Cooling	Y, G	Cool On
Cool or Auto	Auto	Stage 1 and Stage 2 cooling	Y, Y2[b], G	Cool On
Heat or Auto	Auto	None	None	None
Heat or Auto	Auto	Stage 1 heating	W1, G[a]	Heat On
Heat or Auto	Auto	Stage 1 and Stage 2 heating	W1, W2[c], G[e]	Heat On
Heat or Auto	Auto	Stage 1, Stage 2 and Stage 3 heating	W1, W2[c], W3[d], G[e]	Heat On

[a] G energizes only if Installer set up number 180 is set to Option 1 (Electric Heat).

[b] If installer setup (ISU174) is configured for two stages of cooling.

[c] If installer setup (ISU 176) is configured for two or more stages of heating.

[d] If installer setup (ISU 176) is configured for three stages of heating.

[e] G energizes only if Installer set up number 180 is set to Option 1 (Electric Heat) or 2 (Hot water coil).

Table 6. Sequence of Operation for Heat Pump Systems.

System Setting	Fan Setting	Call for Action	Energize Terminals	Screen message
Off	Auto	none	O/B[a]	None
Cool or Auto	Auto	none	O/B[a]	None
Cool or Auto	Auto	Stage 1 cooling	Y, G, O/B[a]	Cool On
Cool or Auto	Auto	Stage 1 and Stage 2 cooling	Y, Y2[c], G, O/B[a]	Cool On
Heat or Auto	Auto	none	O/B[a]	None
Heat or Auto	Auto	Stage 1 heating	Y, G, O/B[a]	Heat On
Heat or Auto	Auto	Stage 1 and Stage 2 heating	Y, Y2[c], G, O/B[a]	Heat On
Heat or Auto	Auto	Stage 1, Stage 2 and Stage 3 heating	Y[f], Y2[c,f], AUX[d], G, O/B[a]	Aux Heat On
Heat or Auto	Auto	Stage 1, Stage 2, Stage 3 and Stage 4 heating	Y[f], Y2[c,f], AUX[d], AUX2[e], G, O/B[a]	Aux Heat On
Em.Heat[b]	Auto	None	O/B[a]	None
Em.Heat[b]	Auto	Stage 1 Heating	AUX[d], G, O/B[a]	Aux Heat On
Em.Heat[b]	Auto	Stage 1 and Stage 2 heating	AUX[d], AUX2[e], G, O/B[a]	Aux Heat On

[a] Configure O/B in Installer Setup. Based on last piece of equipment called (cooling = O or Heating = B).

[b] Red LED is on. See LED indication section for more details (page 22).

[c] If installer setup (ISU 174) is configured for 2 compressor stages.

[d] If installer setup (ISU 176) is configured for one or more stages of Auxiliary Heat.

[e] If installer setup (ISU 176) is configured for two stages of Auxiliary Heat.

[f] If thermostat is controlling backup heat, see temperature lockout section (page 23).

Table 7. Indoor Air Quality Operation.

| System Setting | Call For Action | Last call | | Energize terminals |
		Heat	Cool	
Auto	Humidification	HUM1 and HUM2 Close[a]	Nothing[a]	None
Auto	Dehumidification	Nothing[b]	DHM1 and DHM2 close[e]	None
Auto	Dehumidification	Nothing[b]	DHM1 and DHM2 open[c]	Y[c] and G[c]
Auto	Ventilation	VNT1 and VNT2 Close	VNT1 and VNT2 Close	None
Heat or Em.Heat	Humidification	HUM1 and HUM2 Close	NA	None
Heat or Em.Heat	Dehumidification	VNT1 and VNT2 Close[d]	NA	None
Heat or Em.Heat	Ventilation	VNT1 and VNT2 Close	NA	None
Cool	Humidification	NA	Nothing[a]	None
Cool	Dehumidification	NA	DHM1 and DHM2 close[e]	None
Cool	Dehumidification	NA	DHM1 and DHM2 open[c]	Y[c] and G[c]
Cool	Ventilation	NA	VNT1 and VNT2 Close	None

[a] Humidification only operates in heating or when last call was for heating.

[b] Dehumidification only operates in cooling or when last call was for cooling.

[c] Must be set up in installer setup (ISU 379) for dehumidification with air conditioning.

[d] Installer setup (ISU 406) must be setup for Ventilation in high humidity or nothing will happen.

[e] Only with whole house dehumidifier.

Multi-Stage Heat and Cool Control

In a multi-stage system, while maintaining setpoint, several factors affect when the next stage energizes, such as load conditions, environmental conditions, P+I control, and home insulation. The next stage energizes when the thermostat senses the previous stage is running at 90% capacity. This operation is droopless control.
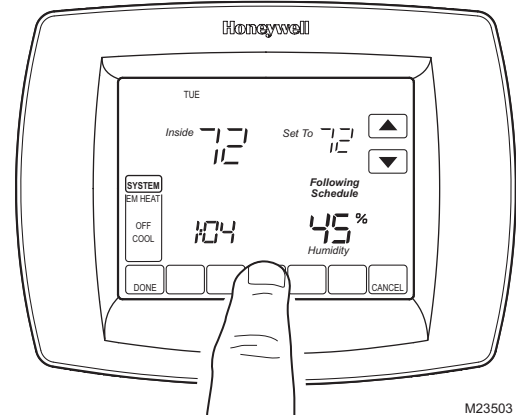
User Setup

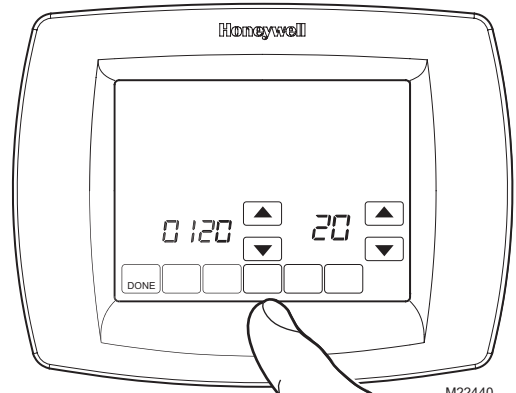Follow these steps to enter the User Setup:

1. Press and release the System key.
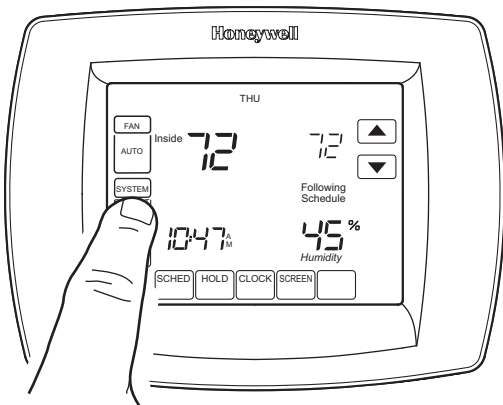
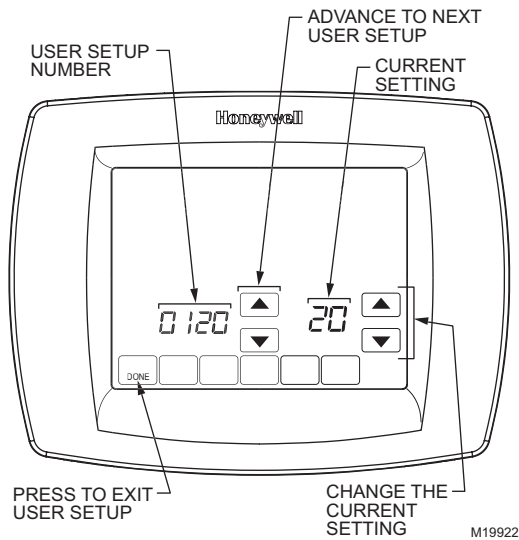2. Press and hold the center blank key for approximately five seconds until the screen changes.

3. Release the center blank key when the screen on the thermostat matches the screen below.

4. See the screen below to review how the thermostat keys are used during the User Setup. See Table 8 for the User Setup numbers and settings.

5. Press the Done key to exit the User Setup screen.

Table 8. User Setup Menu.

User Setup No.	User Setup Name		Settings
120	Date (Year Upper)	**20** 21	
130	Date (Year Lower)	01-99	**Default = 06**
140	Date (Month)	1-12	Select number that represents current calendar month. **Default = 06**
150	Date (Day)	1-31	Select number that represents current calendar date. **Default = 15**
160	Schedule Options	**4** 0	**Seven-day programmable** Non-programmable
165	Restore Energy Star Schedule	**0** 1	**No** Yes
280	Continuous Backlight	**0** 1	**Backlight not on continuously. Thermostat backlight comes on with each key press.** Backlight is on continuously.
320	Temperature Indication Scale	**0** 1	**Fahrenheit temperature display** Celsius temperature display
330	Daylight Saving	0 **1** 2	Disabled **Enabled (US 1987)** Enabled (US 2007)
400	Ventilation control	**0** 1 2	**No ventilation** Ventilation on at all times Ventilation on except during sleep period

Table 8. User Setup Menu. (Continued)

User Setup No.	User Setup Name		Settings
500	Furnace Filter Change Reminder	0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 **E**	Disabled 10 R.T. Days 30 R.T. Days 60 R.T. Days 90 R.T. Days 120 R.T Days 180 R.T. Days 270 R.T. Days 365 R.T. Days 30 C Days 60 C Days 90 C Days 120 C Days 180 C Days 365 C Days **Auto Discover**
510	Humidifier Pad Replacement Reminder	0 1 2 3 **E**	Disabled 90 C Days 180 C Days 365 C Days **Auto Discover**
520	UV Lamp Replacement Reminder	0 1 2 **E**	Disabled 365 Days 730 Days (2 years) **Auto Discover**
530	Adaptive Intelligent Recovery	0 **1**	Conventional **Adaptive**
540	Number of Periods	2 **4**	2 Periods **4 Periods**
640	Clock Format	**12** 24	**12 Hour** 24 Hour
670	Keypad Lockout	**0** 1 2	**Unlocked** Partial Locked Full Locked

PROGRAMMING

Preprogrammed Energy Star Settings

Table 9 shows default program settings. Visit the Energy Star web site at www.energystar.gov for additional education and resources on programmable touchscreen thermostats.

Table 9. Energy Star Default Program Settings.

Schedule Period	Time	Setpoints		Fan Setting
		Heat	Cool	
Wake	6:00AM	70°F (21°C)	78°F (25.5°C)	Auto
Leave	8:00AM	62°F (16.5°C)	85°F (29.5°C)	Auto
Return	6:00PM	70°F (21°C)	78°F (25.5°C)	Auto
Sleep	10:00PM	62°F (16.5°C)	82°F (28°C)	Auto

Program Heating and Cooling Schedule

Your thermostat can control up to four different schedule periods per day:

Wake—Period when you awaken and want your home at a comfortable temperature.

Leave—Period when you are away from home and want an energy-saving temperature.

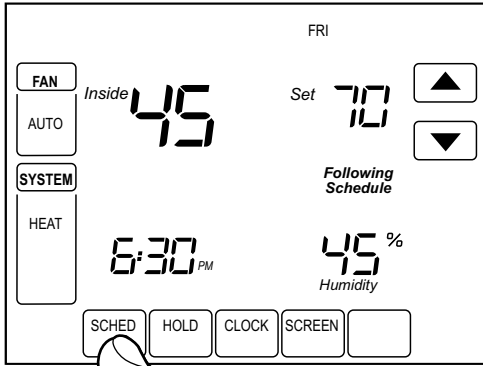**Return**—Period when you return home and want your home

back to a comfortable temperature.
Sleep—Period when you are asleep and want an energy-saving temperature.

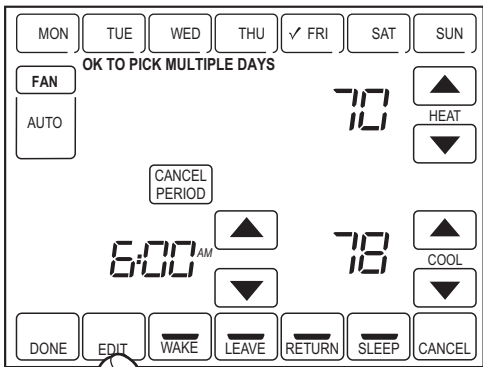NOTE: Schedule times are in 15-minute intervals.
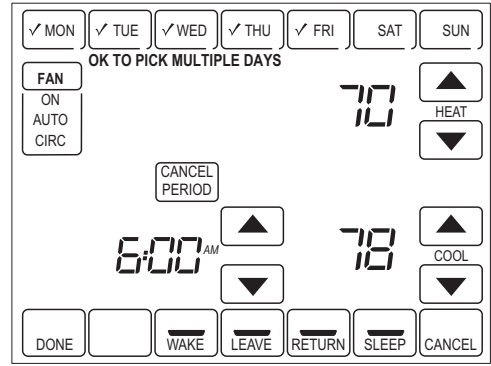
Edit Schedule

1.   Press Sched key.

M23504

2.   Press Edit key.

M22553

3.   It is OK *to pick multiple days.* Select any combination of days to edit. These days are scheduled with the same times and temperatures. Check marks appear next to days selected.
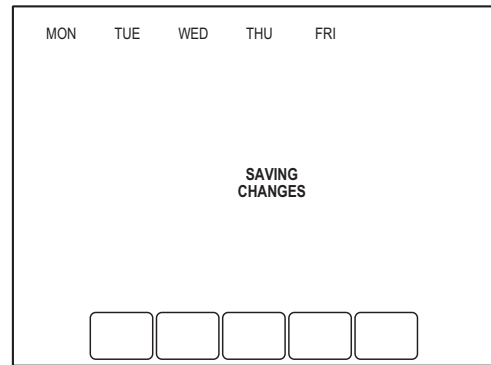

M19955

4.   Press Wake key. Once pressed, Wake flashes to show it is selected.
5.   Press Up and Down keys to modify time and heat and cool temperatures from this screen.

NOTE: The Fan setting can be programmed for On, Auto, or Circ for each period selected. See Fan Schedule section for more information.

6.   Press Leave key and repeat step 5.
7.   Press Return key and repeat step 5.
8.   Press Sleep key and repeat step 5.
9.   When complete, press Done key. "Saving Changes" appears on the screen to indicate changes are being saved to the day(s) modified.


M19956

NOTE: To set a Program Schedule for the remaining days of the week, repeat steps 1–9. Example: If Mon–Fri was selected first, go back and repeat steps 1–9 for Sat and Sun.

10.   To exit schedule without saving changes, press Cancel key any time.
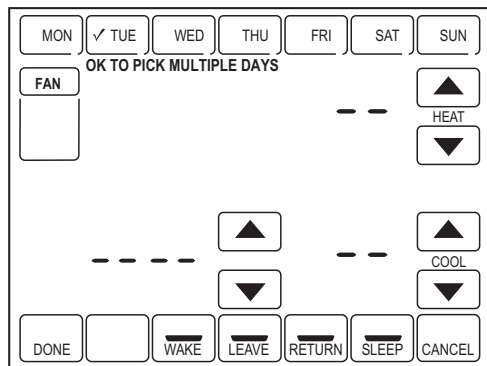
Cancel a Schedule Period

1.   Press Sched key.
2.   Press Edit key.
3.   Select the Day(s) of the week desired.
4.   Press schedule period you want to cancel (Wake, Leave, Return or Sleep). Once selected, the period flashes.
5.   Press Cancel Period key.
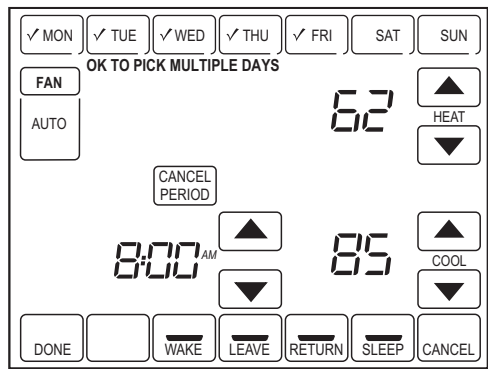
M22446

6. The time, temperature(s) and fan setting disappear. The bar above the selected period is removed, indicating the scheduled period was cancelled.

NOTE: To reinstate a schedule period, press arrow keys to set desired time and temperatures.


M19957

7. Press Done key.

Fan Schedule

Press Fan key while in the Scheduling Screen to program the System Fan. Choices available from the Scheduling Screen:
Auto (default position)—fan runs with equipment. Programmable for all schedule periods (Wake, Leave, Return and Sleep).
**On**—fan runs continuously (programmable for all schedule periods).
Circ—fan runs randomly for approximately 35% of schedule period (programmable for all schedule periods).
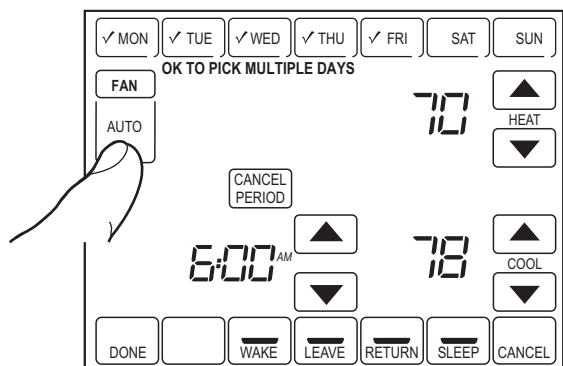
M22447

Fan Control

If the Fan program is scheduled, Auto is shown and any programmable mode that is set; for example, if during Wake period, Fan is set to Auto, only Auto is shown in the Fan area. However, if during the Wake period, fan is scheduled to On, both Auto and On are shown. Auto indicates fan is running its schedule; On indicates Fan schedule is set to On.
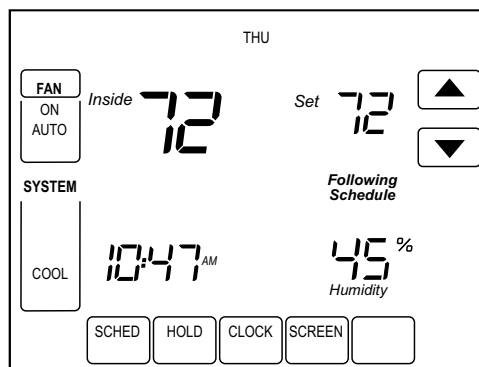
M23505

Table 10. Fan Program Operation and Screen Status.

Fan Setting	Fan Program Schedule	Call for Action	Energize Terminal	Fan Status shown on Screen
Auto	Auto	None	None	Auto
Auto	On	Fan	G	Auto/On
Auto	Circ	None	None	Auto/Circ
Auto	Circ	Fan	G	Auto/Circ

Manual Override of Fan Schedule

Auto—fan is automatically following the Fan schedule (choices are Auto, On or Circulate).
On—overrides Fan schedule. Fan is continuously On.
Circ—overrides Fan schedule. Fan circulates randomly for approximately 35% of time until the Auto position is selected.

**Table 11. Manual Override of Fan Schedule Operation.**

Fan Setting	Fan Schedule Override Setting	Call for Action	Energize Terminal	Screen Message Under Fan Setting
Auto	On	Fan	G	On
Auto	Circ	None	None	Circ
Auto	Circ	Fan	G	Circ
On	Auto[a]	—	—	—
On	Circ	None	None	Circ
On	Circ	Fan	G	Circ
Circ	Auto[a]	—	—	—
Circ	On	Fan	G	On

[a]Auto Override resumes the Fan Program in each schedule period (Wake, Leave, Return and Sleep)

OPERATE VISIONPRO® IAQ

Set Time

1. Press Clock.
2. Use arrows to set current time.

M19958
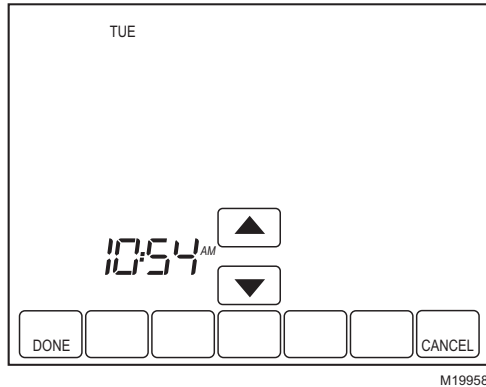
3. Press Done key.

IMPORTANT

The current day of the week should already be set correctly. If not, see Installer Setup to set the day.

Set Temperature Overrides

The thermostat has four temperature override options: Hold Temperature Until, Permanent Hold, Vacation Hold, and Southern Dehumidification Away Setting.
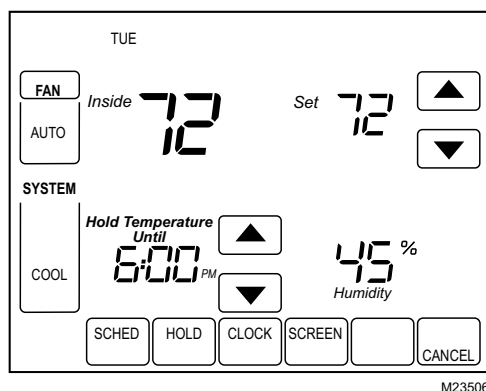
HOLD TEMPERATURE UNTIL (TEMPORARY HOLD)

Holds temperature temporarily until the next scheduled period time or until the time the user sets.

1. Press Up or Down arrow next to the temperature you want to adjust. "Hold Temperature Until" time appears on the screen. The Hold Temperature Until time defaults to the start time of the next scheduled period.

NOTE: The Time Up and Down arrows are shown for approximately seven seconds. Pressing on the screen time (where the Hold Temperature Until time is shown) allows the arrows to reappear.

2. Press Up or Down arrow next to the Time key to set desired time for the thermostat to resume schedule.

M23506

3. Press the Cancel or Sched key to cancel "Hold Temperature Until" and resume schedule.

NOTE: Once "Hold Temperature Until" time is reached, the thermostat shows "Following Schedule" on the screen to indicate that "Temporary Hold" has ended.

PERMANENT HOLD

Permanent Hold changes the temperature setting until Permanent Hold is cancelled.

1. Press Hold key. "Permanent Hold" appears on the screen.
2. Press Up or Down arrow next to the temperature you want to set during "Hold."

M23507
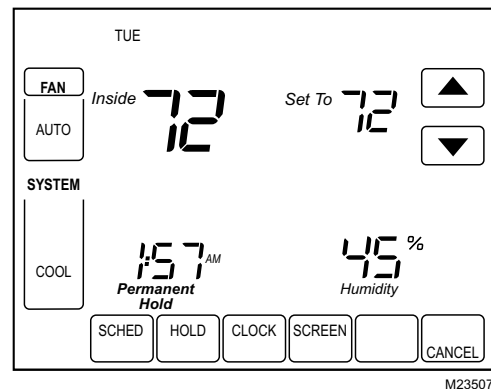
3. Press Cancel key to cancel "Permanent Hold" and resume the schedule.

VACATION HOLD

Changes temperature setting for a designated number of days.

1. Press the Up and Down arrow keys to set the desired temperature while away on vacation. Notice that "Hold Temperature Until" time is shown on the screen. (This is the time the Vacation Hold override expires after the number of days ends.)
2. Press Hold key twice. Screen shows "Hold Temperature Until" one day.
3. Press Up and Down arrow keys to change the number of Days you desire thermostat to override the schedule.

NOTE: Days Up and Down arrows appear for approximately seven seconds. Pressing just below Hold Temperature Until on the screen allows the Days Up and Down arrows to reappear.

M23508
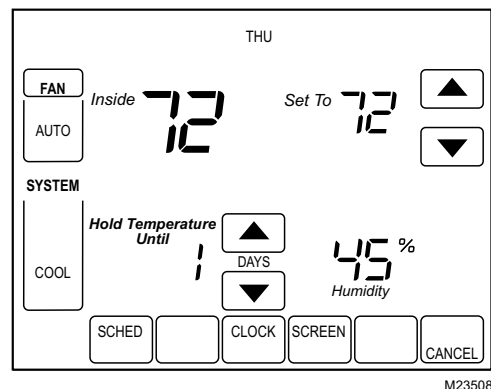
4. To cancel the Vacation Hold override early, press the Cancel key.

NOTE: When the number of days of Vacation Hold expires, the screen shows "Following Schedule" to indicate that Vacation Hold has ended.

SOUTHERN DEHUMIDIFICATION AWAY SETTING
Southern Dehumidification Away Setting is an option that only appears if ISU number 390 is set to yes. It can be used to maintain the desired humidity level and temperature in the living space while away for extended periods of time. See ISU Numbers 390–394 for more information.
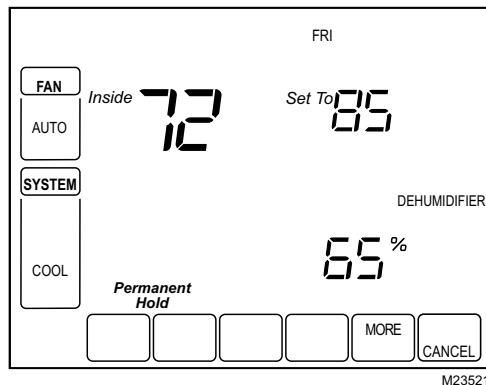

1. Press Hold three times to enter the Southern Dehumidification Away Setting.
2. These settings can only be changed in installer setup.

Clean Thermostat Screen

The thermostat has a touch screen interaction. Follow these steps to clean the screen without making thermostat changes:
1. Press the Screen key. Thermostat locks out all touch keys for 30 seconds to allow for cleaning.
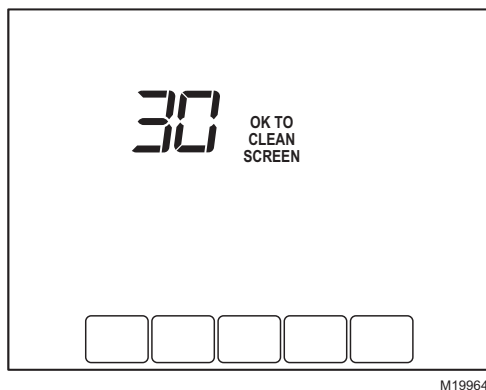

2. Use damp cloth slightly moistened with water or household glass cleaner to clean the screen.
3. Repeat the above steps, as necessary.

IMPORTANT

> *Do not spray any type of liquid directly on the thermostat itself. If using household glass cleaner, spray cleaner on cloth. Then use a cloth to clean the thermostat screen.*

4. Press the Done key to return to the Home Screen and normal operation.

Screen Locks
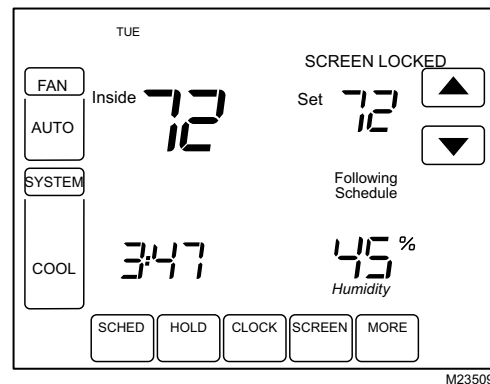
Partially Locked Screen

When partially locked, the screen indicates Screen Locked for 5 to 7 seconds whenever the user attempts to press a key that is locked. Pressing a locked key, while Screen Locked is shown, flashes "Screen Locked" on the screen.

In this mode, all keys are locked except the Temperature Up and Down arrow keys:

— User can change temperature up or down but cannot change schedule settings.
— Temporary temperature change lasts until next scheduled period and that time shows on screen.
— To cancel temperature override and begin following schedule, press Cancel key.
— To unlock screen, see Installer Setup section.

Fully Locked Screen

In this mode, all keys are locked and not functional. To unlock screen, see Installer Setup section. The screen continuously displays "Screen Locked."

Humidification Control

If you have a humidifier and outdoor temperature sensor, you can use Frost Control to reduce window condensation.

1. Press MORE until the humidifier screen is displayed.
2. Press the Up or Down arrow to set the humidity and Frost Control level. (Use a lower Frost Control level if frost appears on windows. Use a higher setting if the air is too dry.)
3. Press DONE to save and exit, or press CANCEL to exit without saving changes.

NOTE: If you do not have an outdoor temperature sensor, the Frost Control level will not be displayed.

Dehumidification Control

If installed to control a dehumidifier, the thermostat can activate it as needed to reduce humidity.

If you don't have a dehumidifier, the thermostat activates the air conditioner to reduce humidity (may cool as much as 3°F lower than your temperature setting).

1. Press MORE until the dehumidifier screen is displayed.
2. Press the Up or Down arrow to set the desired humidity level and operation (Auto or Off).
3. Press DONE to save and exit, or press CANCEL to exit without saving changes.

Ventilation Control

You can ventilate your home at any time:

1. Press MORE until the ventilation screen is displayed.
2. Press the Up or Down arrow to set the ventilation timer. You can set the timer to ventilate from 20 to 180 minutes, in 20-minute increments. To turn off the ventilator, select 0.
3. Press DONE to save and exit, or press CANCEL to exit without saving changes.

If programmed for auto-ventilation by the installer, the thermostat will ventilate your home as needed.

Indoor Air Quality Reminders

Filter Change Reminder

The filter change reminder must be turned on from the Installer Setup. Once expired, the screen flashes, "Change Filter" and a Reset key appears. Press the Reset key to reset the change reminder. The installer can configure the Filter Change Reminder to display remaining run-time or calendar days.
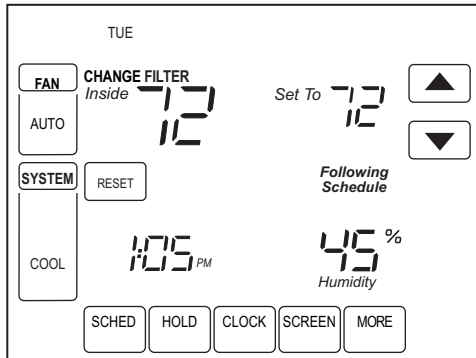

M23511

NOTE: When using run-time days, the days are counted as fan run time, so anytime the fan is running, the reminder is counting that time against the number of days selected.
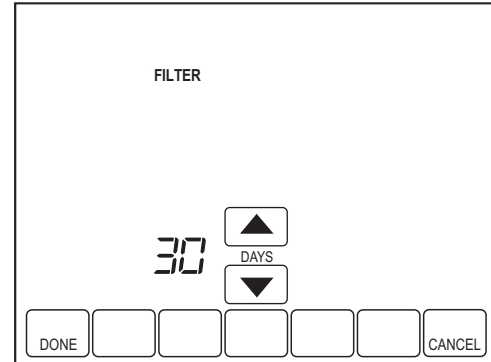
The remaining days can be viewed by pressing the More key; the remaining days can be edited using the More key or from the Installer Setup. To view or reset the reminder before it expires, follow these steps using the More key:

1. Press the More key until the filter reminder appears on the screen. This is the number of fan run-time or calendar days remaining on the filter reminder.
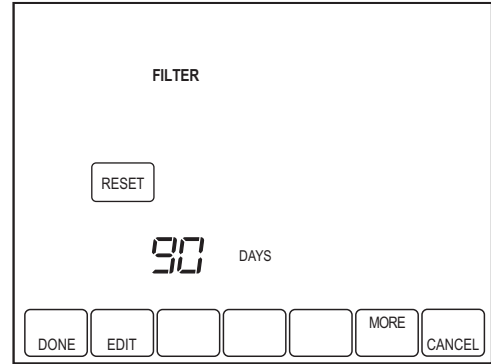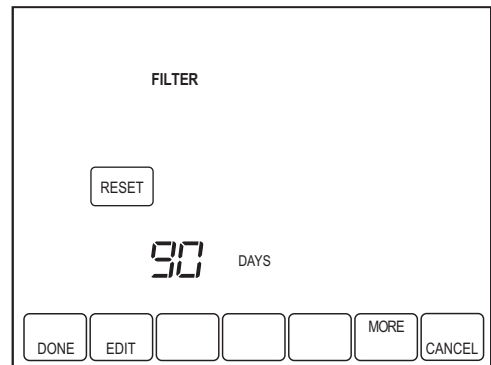

M22449

2. Press the Edit key.
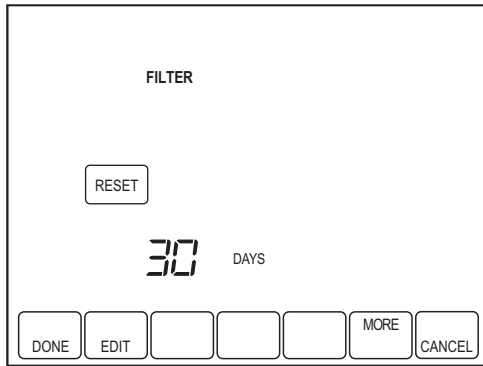3. Use the Up and Down keys to change the number of run-time or calendar days.

M22450

4. Press the Done key to go back to the viewing screen.

M22449

5. Press the Reset key to activate the new number of days selected in the previous screen.

FILTER

RESET

30 DAYS

DONE | EDIT | | | | MORE | CANCEL

M22451

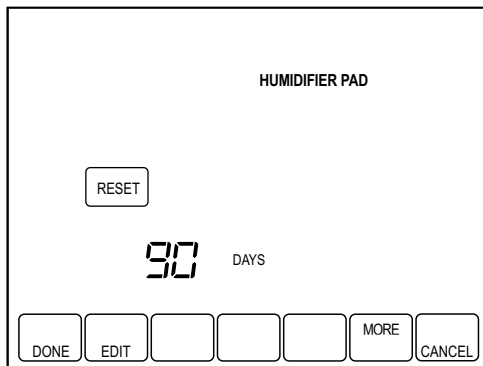**6.** Press the Done key to return to the Home screen.

Humidifier Pad Reminder

The Humidifier Pad change reminder must be turned on from the Installer Setup. Once expired, the screen flashes, "Change Humidifier Pad" and a Reset key appears. Press the Reset key to reset the change reminder.

The remaining calendar or run time days can be viewed by pressing the More key. The remaining days can be edited using the More key or from the Installer Setup.

HUMIDIFIER PAD

RESET

90 DAYS

DONE | EDIT | | | | MORE | CANCEL

M23516

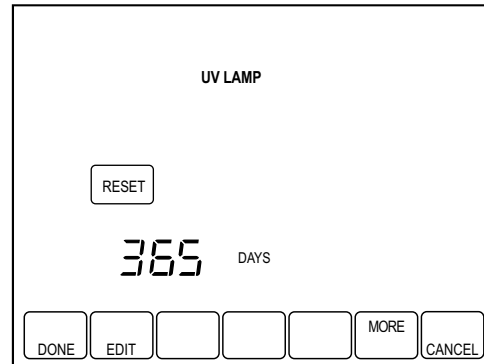To view or reset the reminder before it expires, follow these steps using the More key:

1. Press the More key until the Humidifier Pad change reminder appears on the screen. This is the number of calendar days remaining on the Humidifier Pad reminder.
2. Press the Edit key.
3. Use the Up and Down keys to change the number of calendar or run time days.
4. Press the Done key to go back to the viewing screen.
5. Press the Reset key to activate the new number of days selected in the previous screen.
6. Press the Done key to return to the Home Screen.

UV Lamp Reminder

The UV Lamp change reminder must be turned on from the Installer Setup. Once expired, the screen flashes, "Change UV Lamp" and a Reset key appears. Press the Reset key to reset the change reminder.

The remaining calendar days can be viewed by pressing the More key.

NOTE: While the reminder is set according to calendar days, the display shows the equivalent run time days.

UV LAMP

RESET

365 DAYS

DONE | EDIT | | | | MORE | CANCEL

M23517

The remaining days can be edited using the More key or from the Installer Setup. To view or reset the reminder before it expires, follow these steps using the More key:

1. Press the More key until the UV Lamp change reminder appears on the screen. This is the number of run time days remaining on the UV Lamp reminder.
2. Press the Edit key.
3. Use the Up and Down keys to change the number of calendar days.
4. Press the Done key to go back to the viewing screen.
5. Press the Reset key to activate the new number of days selected in the previous screen.
6. Press the Done key to return to the Home Screen.

Temperature Recovery

The thermostat feature, Adaptive Intelligent Recovery™, eliminates all guesswork when setting the thermostat schedule.

Simply set the program schedule to the time that the comfort temperature is desired. The thermostat then turns on the heating or cooling at just the right time to have the home reach the scheduled temperature at the scheduled time.

For example—get up at 6:00 AM and want the temperature to be 70°F. Set the Wake period for 6:00 AM and 70°F. The thermostat then turns on the heat before 6:00 AM to raise the temperature to 70°F by 6:00 AM.

The thermostat alerts that the heating or cooling system is coming on before a scheduled time by showing "Recovery" on the screen.

TUE

FAN
AUTO

Inside 69

Set To 74

SYSTEM
HEAT

5:37 PM

Following Schedule
Recovery

32 %
Humidity

SCHED | HOLD | CLOCK | SCREEN | MORE
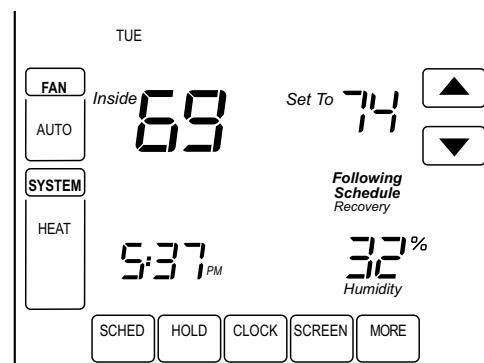
M23512

NOTE: It takes about a week for the thermostat to adjust to local weather, the schedule, the construction of the home and the heating and/or cooling system. Each day it adjusts the next day's recovery start time accordingly.

P+I Control

The thermostat microprocessor-based control requires that the user understands temperature control and thermostat performance. A conventional mechanical or electronic thermostat does not control temperature precisely at setpoint. Typically there is an offset (droop) in the control point as the system load changes. This is a phenomenon that most people in the industry know and accept. Many factors contribute to offset including switch differential, thermal lag, overshoot, cycle rates and system load.

The thermostat microprocessor simultaneously gathers, compares and computes data. Using this data, it controls a wide variety of functions. The special proprietary algorithm (program) in the thermostat eliminates the factors causing offset. This makes temperature control more accurate than the conventional mechanical or electronic thermostats. The temperature control algorithm is called proportional plus integral (P+I) control.

The thermostat sensor, located on the thermostat or remote, senses the current space temperature. The proportional error is calculated by comparing the sensed temperature to the programmed setpoint. The deviation from the setpoint is the proportional error.

The thermostat also determines integral error, which is a deviation based on the length of error time. The sum of the two errors is the (P+I) error. The cycle rate used to reach and maintain the setpoint temperature is computed using the P+I. The addition of the integral error is what differentiates the thermostat from many other electronic and mechanical thermostats. See Fig. 33.
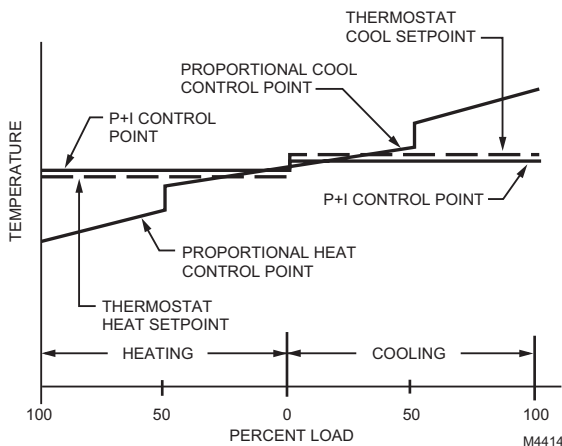

Fig. 33. Proportional temperature control versus P+ I temperature control.

Minimum Off-Timer

The Thermostat has built-in compressor protection (minimum-off timer) that prevents the compressor from restarting too early after a shutdown. The minimum-off timer is activated after the compressor turns off.

If there is a call during the minimum-off timer, the thermostat shows "Wait" in the display.
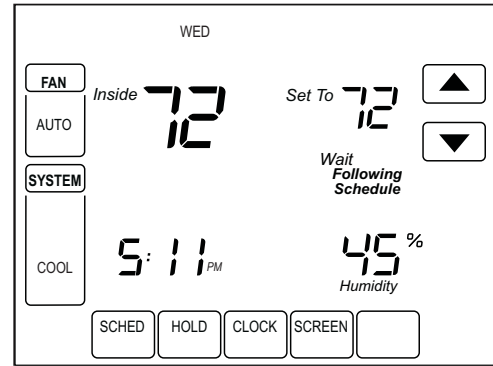
When the minimum-off timer expires, "Cool On" or "Heat On"[a] appears in the display and the compressor and fan turn on.

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[a]Heat Pumps only.

Inside Humidity Level

The humidity level in the home is shown in the lower right corner of the Home Screen.

NOTE: If an outdoor temperature sensor is present, the outdoor temperature will be displayed in this location rather than the indoor humidity. To see indoor humidity, display the humidity settings menu.
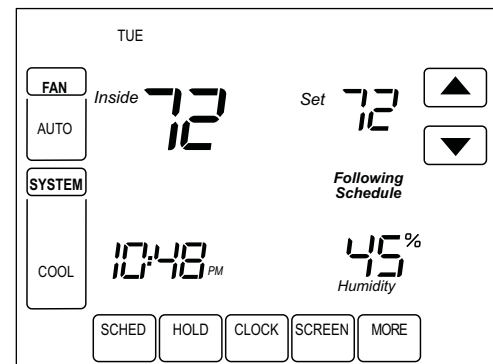
If thermostat is set to Auto Changeover System mode, press the More key until the humidity level is shown on the screen.

M23679

C7089U1006 Outdoor Temperature Sensor

Operation

When installed with Thermostat Installer Setup Number 0342 set to 1, the outside temperature can be displayed on the thermostat. See Fig. 34.

M22453

Fig. 34. Outside temperature reading on VisionPRO® IAQ Thermostat.

The C7089U1006 Outdoor Sensor converts outdoor ambient temperature to a resistance that the thermostat can interpret.

The C7089U1006 has a negative temperature coefficient (NTC), which means that resistance decreases as the temperature increases. See Table 12.
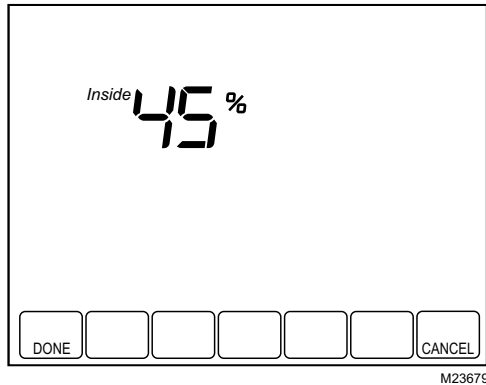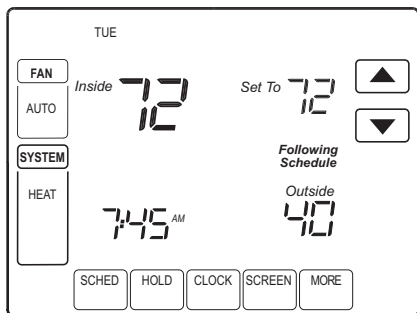
Checkout

Allow C7089U1006 Outdoor Sensor to absorb outdoor air for a minimum of twenty minutes before taking a reading.

With an accurate thermometer (±1°F [0.5°C]) measure the temperature at the sensor location, allowing time for the thermometer to stabilize before reading.

To verify sensor resistance, remove one wire from one of the C7089U1006 60-in. leadwires. Use an ohmmeter to measure the resistance across the sensor. Then verify the sensor accuracy with the temperature/resistance in Table 12.

Calibration

The C7089U1006 Outdoor Sensor is calibrated at the factory and cannot be recalibrated in the field.

Table 12. Sensor Resistance at Outdoor Temperature.

Outdoor Temperature		Ohms of Resistance	Outdoor Temperature		Ohms of Resistance
°F	°C		°F	°C	
-20	-28.9	106926	52	11.1	17136
-18	-27.8	100923	54	12.2	16387
-16	-26.7	95310	56	13.3	15675
-14	-25.6	90058	58	14.4	14999
-12	-24.4	85124	60	15.6	14356
-10	-23.3	80485	62	16.7	13743
-8	-22.2	76137	64	17.8	13161
-6	-21.1	72060	66	18.9	12607
-4	-20.0	68237	68	20.0	12081
-2	-18.9	64631	70	21.1	11578
0	-17.8	61246	72	22.2	11100
2	-16.7	58066	74	23.3	10644
4	-15.6	55077	76	24.4	10210
6	-14.4	53358	78	25.6	9795
8	-13.3	49598	80	26.7	9398
10	-12.2	47092	82	27.8	9020
12	-11.1	44732	84	28.9	8659
14	-10.0	42506	86	30.0	8315
16	-8.9	40394	88	31.1	7986
18	-7.8	38400	90	32.2	7672
20	-6.7	36519	92	33.3	7372
22	-5.6	34743	94	34.4	7086
24	-4.4	33063	96	35.6	6813
26	-3.3	31475	98	36.7	6551
28	-2.2	29975	100	37.8	6301
30	-1.1	28558	102	38.9	6062
32	0.0	27219	104	40.0	5834
34	1.1	25949	106	41.1	5614
36	2.2	24749	108	42.2	5404
38	3.3	23613	110	43.3	5203
40	4.4	22537	112	44.4	5010
42	5.6	21516	114	45.6	4826
44	6.7	20546	116	46.7	4649
46	7.8	19626	118	47.8	4479
48	8.9	18754	120	48.9	4317
50	10.0	17926	—		

C7189U1005 Remote Indoor Temperature Sensor

Operation

When installed with Thermostat Installer Setup Number 0340 set to 1, the remote inside temperature is displayed on the thermostat home screen as Inside Temperature. The thermostat internal temperature sensor is not used. When

installed with Thermostat Installer Setup Number 340 set to 2, the temperature displayed on the thermostat home screen as Inside Temperature will be a 50/50 average between the temperature sensed at the remote sensor location and the temperature sensed at the thermostat location.

The C7189U1005 Wall Mount Temperature Sensor converts room temperature to a resistance that the thermostat can interpret.

The C7189U1005 has a negative temperature coefficient (NTC), which means that resistance decreases as the temperature increases. See Table 13.

The C7189U1005 can be used to provide one remote sensor input (see Fig. 26) or as a temperature averaging network with multiple C7189U1005 Sensors connected, as shown in Fig. 27.

Checkout

For best results, allow C7189U1005 Wall Mount Temperature Sensor to absorb the air moving through the room for a minimum of twenty minutes before taking a resistance measurement.

With an accurate thermometer (±1°F [0.5°C]) measure the temperature at the sensor location, allowing time for the thermometer to stabilize before reading.

To verify sensor resistance, remove one wire from one of C7189U1005 wiring terminals. Use an ohmmeter to measure the resistance across the sensor. Then verify the sensor accuracy with the temperature/resistance in Table 13.

Calibration

The C7189U1005 Wall Mount Temperature Sensor is calibrated at the factory and cannot be recalibrated in the field.

Table 13. Sensor Resistance at Room Temperature.

Room Temperature		Ohms of Resistance	Room Temperature		Ohms of Resistance
°F	°C		°F	°C	
40	4.4	22537	72	22.2	11100
42	5.6	21516	74	23.3	10644
44	6.7	20546	76	24.4	10210
46	7.8	19626	78	25.6	9795
48	8.9	18754	80	26.7	9398
50	10.0	17926	82	27.8	9020
52	11.1	17136	84	28.9	8659
54	12.2	16387	86	30.0	8315
56	13.3	15675	88	31.1	7986
58	14.4	14999	90	32.2	7672
60	15.6	14356	92	33.3	7372
62	16.7	13743	94	34.4	7086

Table 13. Sensor Resistance at Room Temperature.

Room Temperature		Ohms of Resistance	Room Temperature		Ohms of Resistance
°F	°C		°F	°C	
64	17.8	13161	96	35.6	6813
66	18.9	12607	98	36.7	6551
68	20.0	12081	100	37.8	6301
70	21.1	11578			—

COMMUNICATION ERROR CODES

VisionPRO® IAQ can alert the homeowner and installer to problems with the HVAC equipment, thermostat, or equipment interface module by using error codes. Please see Table 14 for a list of error codes. When an error is active (the condition causing the error is still present) it will be displayed in the time field on the thermostat home screen. The home screen can display up to 5 active errors. The time field will flash the time, "Err," and a list of up to 5 error codes, beginning with the most critical, and repeat until the errors have been remedied.

A log of error codes can be viewed at the end of the installer setup after the system tests. Active errors will be shown first. The Error Log will log the last ten errors (active and inactive). Pressing the reset button will clear all inactive errors from the error log; active errors can not be cleared until the condition has been remedied.

Table 14. VisionPRO® IAQ Error Codes.

Error Code	Meaning
027	Faulty thermostat (must be replaced)
035	Duplicate thermostat zone detected
036	Duplicate UV timer
037	Duplicate filter timer
038	Duplicate humidifier pad timer
039	Duplicate indoor humidity sensor
040	Compressor should be running but it is not
050	Duplicate outdoor temperature sensor
052	Faulty post-coil air discharge sensor
053	Faulty outdoor temperature sensor
054	Faulty indoor humidity sensor
089	Heating/cooling equipment is missing
090	Data interface is continuously busy
091	Thermostat is not receiving data from other equipment
118	Faulty discharge air temperature sensor
119	Faulty temperature sensor
121	Duplicate post-coil air discharge sensor

TROUBLESHOOTING

Table 15. Troubleshooting.

Symptom	Possible Cause	Action
Display does not come on	Thermostat is not being powered	Check if the thermostat is mounted and latched on the wall plate. If not: — Mount and latch the thermostat on the wallplate. Check if the circuit breaker is tripped or the fuse is blown; if it is: — Reset the circuit Breaker or replace the fuse. Check if the power switch at the equipment is in the off position; if it is: — Set to the on position. Check for 24 Vac between terminals 2 and 3 at the thermostat. — Replace any broken wires if 24Vac is not present. — Replace thermostat if 24Vas is present. Check for 24 Vac between terminals R and C at the Equipment interface module. — If 24Vac is not present consult electrician. — If 24 Vac is Present replace Equipment interface module.
Temperature setting does not change	The upper and lower temperature limits reached	Check temperature setpoints. Check installer setup Numbers 0600 and 610; modify as needed.
	Keypad is fully locked	Check Installer Setup Number 670 to change keypad locked options.
Heating or cooling does not come on and thermostat is not calling for heat or cool.	Thermostat minimum off timer is activated	Wait up to 5 minutes for the system to respond (Wait is displayed on the Thermostat home screen.
	System selection is not set to Heat or Cool	Set system selection to correct setting.
Heating or cooling does not come on and thermostat is calling for heat or cool.	Heating or cooling equipment is not operating	Check Wiring. Check installer setup number 172 and verify the correct system type is chosen. Verify operation of equipment in system test mode.
Heat does not turn on ("Heat On" is solid in the display)	Heating Equipment failure	Check for 24 Vac at the equipment on the secondary side of the transformer between power and common. If voltage is not present check the heating equipment to find the cause of the problem. Check for 24 Vac between the heat terminal(s) on the equipment interface Module and transformer common. If present check heating equipment to find the cause of the problem.
	Loose or broken wire connection between Equipment Interface Module and heating equipment.	Check for 24 Vac between the heat terminal(s) on the HVAC equipment and system transformer common. If voltage is not present check for loose or broken wires between the EIM and heating equipment.
	Communication is not being completed	End the call for heat at the thermostat then repeat the call for heat. Check the communication LED on the EIM board. — If the LED does not blink, check communication wiring (wire between terminal 1 on both the EIM and thermostat. — If the LED does blinks correctly, check for 24 Vac between heating terminals on the EIM and the system common. If 24 Vac is not present check the R to Rh connection on the EIM, if the connection is good replace the EIM.

Table 15. Troubleshooting. (Continued)

Symptom	Possible Cause	Action
Cooling does not turn on ("Cool On" is solid in the display)	Cooling Equipment failure	Check for 24 Vac at the equipment on the secondary side of the transformer between power and common. If voltage is not present check the cooling equipment to find the cause of the problem. Check for 24 Vac between the cool terminal(s) on the equipment interface Module and transformer common. If present check cooling equipment to find the cause of the problem.
	Loose or broken wire connection between Equipment Interface Module and cooling equipment.	Check for 24 Vac between the cool terminal(s) on the cooling equipment and system transformer common. If voltage is not present check for loose or broken wires between the EIM and cooling equipment.

	Communication is not being completed	End the call for cool at the thermostat then repeat the call for cool. Check the communication LED on the EIM board.
		  — If the LED does not blink, check communication wiring (wire between terminal 1 on both the EIM and thermostat.
		  — If the LED does blinks correctly, check for 24 Vac between heating terminals on the EIM and the system common.
		If 24 Vac is not present check the R to Rh connection on the EIM, if the connection is good replace the EIM.

2nd stage heat or cool does not energize	Stage configuration is not set correctly to match the number of selected stage	Set the stage configuration in installer setup for additional stages of cool (ISU 174) or additional stages of heat (ISU 176).
	Terminals not connected properly at EIM	Check that 24 Vac is present at W2/AUX and W3/AUX2 for 2nd and 3rd stages of conventional heating and for 3rd and 4th stages of heat pump heating. Also check that 24VAC is present at Y2 for 2nd stage of cooling or 2nd stage heat in heat pump applications.
"Err" appears in time field of home screen on thermostat	Thermostat has detected an error on the communication bus	Refer to error code section for more information.
Fan does not turn on in a call for heat (electric furnace).	Fan Control in Heating is set to Gas or Oil Furnace (Setting 0180).	Set Fan Control in Heating to Electric Furnace (Setting 0180).
Heat pump puts out cool air in the heat mode and warm air in the cool mode.	Changeover Valve (Installer Setup Number 0190) is not configured to match the changeover required by the installed heat pump.	Set Changeover Valve (Installer Setup Number 0190) to match the changeover required by the installed heat pump.
Both the heating and cooling equipment are running at the same time.	The heating equipment is not a heat pump but the System Type (Installer Setup Number 0172) is set to Heat Pump.	Set System Type (Installer Setup Number 0172) to match the installed heating and/or cooling equipment.
	Heating and cooling wires are shorted together.	Separate the shorted heating and cooling wires.
Heating equipment is running in the cool mode.	Heating equipment is not a heat pump but System Type (Installer Setup Number 0172) is set to Heat Pump.	Set System Type (Installer Setup Number 0172) to match the installed heating and/or cooling equipment.
Heating equipment does not turn off and heat temperature setting is set below room temperature (Heat On is not in the display).	Heating equipment is not a heat pump but System Type (Installer Setup Number 0172) is set to Heat Pump.	Set System Type (Installer Setup Number 0172) to match the installed heating and/or cooling equipment.
Cannot set the system setting to Heat.	System Type (Installer Setup Number 0172) is set to Cool Only.	Set System Type (Installer Setup Number 0172) to match the installed heating and/or cooling equipment.
Cannot set the system setting to Cool.	System Type (Installer Setup Number 0172) is set to Heat Only or Heat Only with Fan.	Set System Type (Installer Setup Number 0172) to match the installed heating and/or cooling equipment.

Table 15. Troubleshooting. (Continued)

Symptom	Possible Cause	Action
Heat On is not in the display.	System setting is not set to Heat and/or temperature setting is not set above room temperature.	Set the system setting to Heat and set the temperature setting above the room temperature.
Cool On is not in the display.	System setting is not set to Cool and/or the temperature setting is not set below room temperature.	Set the system setting to Cool and set the temperature setting below the room temperature.
Wait is in the display.	Compressor minimum off timer is active.	Wait up to five minutes for the cooling or heating (heat pump) equipment to turn on.
"Screen Locked" appears on the screen and all or some of the keys do not respond.	The keypad is fully or partially locked.	Check Installer Setup Number 0670 to change keypad locked options.

COMPATIBILITY

Recommend the following products for use with the VisionPRO® IAQ.

Table 16. Humidifiers

HE440A1005—Powered Steam Humidifier with 13 gpd capacity
HE365A1006—Powered Bypass Flow-through humidifier with 18 gpd capacity
HE265A1007—Bypass Flow-through humidifier with 17 gpd capacity
HE225A1006—Bypass Flow-through humidifier with 12 gpd capacity

Table 17. Dehumidifier

DH90A1007—90 Pint Whole House Dehumidifier

Table 18. Ventilation

HR150B1005—heat recovery ventilator 150cfm with built in defrost
HR200B1005—heat recovery ventilator 200cfm with built in defrost
ER150B2006—energy recovery ventilator 150cfm with built in defrost
ER150C2004—energy recovery ventilator 150cfm with no defrost
ER200B2006—heat recovery ventilator 200cfm with built in defrost
ER200C2004—heat recovery ventilator 200cfm with no defrost
EARD5—5" round damper NC Power Open/Spring Close
EARD6—6" round damper NC Power Open/Spring Close
EARD7—7" round damper NC Power Open/Spring Close
EARD8—8" round damper NC Power Open/Spring Close

Following is a list of compatible communicating products.

Table 19. Communicating Products

THM5421C—Equipment Interface Module Universal up to 4H2C systems
T8635L1013*—3H3C communicating Thermostat
W8635A1006—Equipment Interface Module for 2H2C conventional systems
W8635B1004—Equipment Interface Module for 2H2C heat pump systems
W8735A1005—EnviraCOM Serial Port Adapter
W8735B1003—Telephone Access Module
W8735D1009—Telephone Access Module two Channel communicating
W8735D1017—Telephone Access Module four channel communicating
W8835A1004—Envirazone Zone Panel
C7835A1009—Communicating Discharge Air Sensor
W8703A1003—Damper Interface Module
L7224C1004—120VAC Electronic Aquastat
L7248—Aquastat
R7184—Oil Primary

* T8635L thermostats used with TH9421C thermostats must be used with a W8835A Zone Panel and the TH9421C must be the Master Zone Controller (zone 1 thermostat)

Table 20. UV Lights

UV100E2009
UV100E1043
UV100E3007

Honeywell

Printed in U.S.A. on recycled
paper containing at least 10%
post-consumer paper fibers.