# tekmar®

## tekmarNet® Thermostat 554

Zoning

554_D

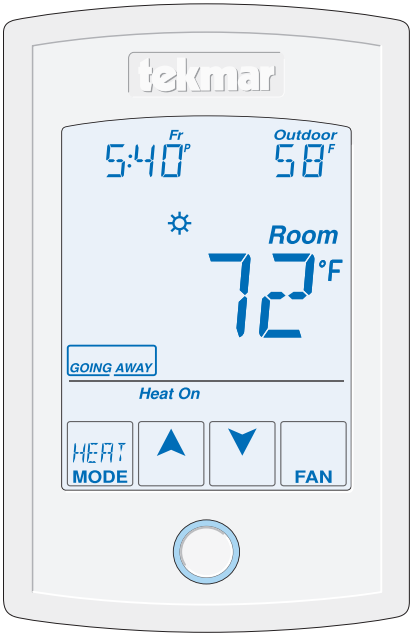
02/15

Replaces: New

# Installation & Operation Manual

## Introduction

The tekmarNet® Thermostat 554 is a communicating touchscreen thermostat designed to operate one heating stage, one cooling stage, and a fan.




## Features

- tekmarNet® communication compatible
- Touchscreen technology
- Radiant floor heating
- Programmable schedule
- Network schedule master or member
- Optimum start
- Air group master
- Room temperature limiting
- Temporary hold
- 2 auxiliary sensor inputs
- Away scene key

## Table of Contents

## Important Safety Information

It is your responsibility to ensure that this thermostat is safely installed according to all applicable codes and standards. tekmar is not responsible for damages resulting from improper installation and/or maintenance.

This is a safety-alert symbol. The safety alert symbol is shown alone or used with a signal word (DANGER, WARNING, or CAUTION), a pictorial and/or a safety message to identify hazards.

When you see this symbol alone or with a signal word on your equipment or in this manual, be alert to the potential for death or serious personal injury.

This pictorial alerts you to electricity, electrocution, and shock hazards.

**⚠ WARNING** This symbol identifies hazards which, if not avoided, could result in death or serious injury.

**⚠ CAUTION** This symbol identifies hazards which, if not avoided, could result in minor or moderate injury.

***NOTICE*** This symbol identifies practices, actions, or failure to act which could result in property damage or damage to the equipment.

**⚠ WARNING**


Read manual and all product labels BEFORE using the equipment. Do not use unless you know the safe and proper operation of this equipment. Keep this manual available for easy access by all users. Replacement manuals are available at tekmarControls.com

**⚠ WARNING**

- It is the installer's responsibility to ensure that this thermostat is safely installed according to all applicable codes and standards.
- Improper installation and operation of this thermostat could result in damage to the equipment and possibly even personal injury or death.
- This thermostat is not intended for use as a primary limit control. Other controls that are intended and certified as safety limits must be placed into the control circuit.

***NOTICE***

Do not attempt to service the thermostat. There are no user serviceable parts inside the thermostat. Attempting to service the thermostat voids the warranty.

## Getting Started

Congratulations on the purchase of your new tekmar® thermostat.

This manual will step through the complete installation, programming and sequence of operation for this control. At the back, there are tips for control and system troubleshooting.

# Installation

## Preparation

### Tools Required

- tekmar or jeweller screwdriver
- Phillips head screwdriver
- Wire stripper
- Drill (for wall anchor)
- 3/16" drill bit

### Materials Required

- 18 AWG LVT Solid Wire (low-voltage connections)

### Installation Location

Choose the placement of the thermostats early in the construction process to enable proper wiring during rough-in.

***NOTICE***

- Install the thermostat on an interior wall.
- Keep the thermostat dry. Avoid potential leakage onto the control.
- Maintain relative humidity less than 90% in a non-condensing environment.
- Avoid exposure to extreme temperatures beyond 32-122°F (0-50°C).
- Avoid drafts, direct sun and anything else that could cause inaccurate temperature readings.
- Install away from equipment, appliances, or other sources of electrical interference.
- Install to allow easy access for wiring, viewing, and adjusting the display screen.
- Install approximately 5 feet (1.5 m) off the finished floor.
- The maximum length of wire is 500 feet (150 m).
- Strip the wire to 3/8" (10 mm) for all terminal connections.
- Use standard 8 conductor, 18 AWG wire.

**⚠ WARNING**

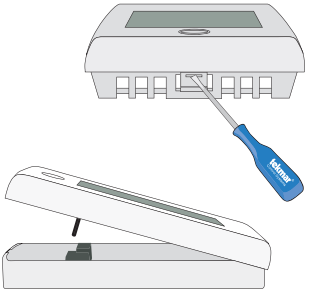
To prevent the risk of personal injury and/or death, make sure power is not applied to the thermostat until it is fully installed and ready for final testing. All work must be done with power to the circuit being worked on turned off.

Please be aware local codes may require this thermostat to be installed or connected by an electrician.

## Removing the Thermostat Base

To remove the thermostat base:

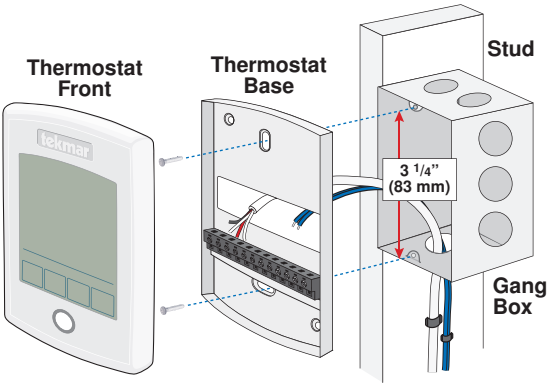
- Locate the tab on the bottom of the thermostat.
- Push the tab with either your thumb or with a screwdriver.
- Lift the thermostat front away from the thermostat's base.



## Mounting the Thermostat Base

If a single gang box is used:

- Feed the wiring through the large hole of the thermostat base.
- Fasten the base of the thermostat to the gang box.
- Terminate wiring to the wiring strip.
- Push the thermostat front onto the thermostat base.

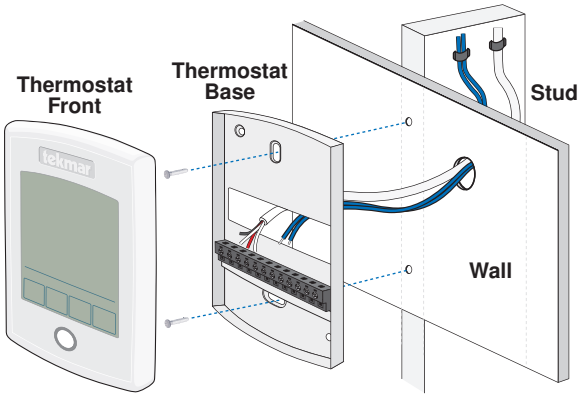



***NOTICE***

Do not over-tighten wiring screws. Hand-tighten only.

If a gang box is not used:

- Feed the wiring through the large hole in the thermostat base.
- Mount the thermostat base directly to the wall.
- Use screws in the screw holes to fasten the thermostat to the wall. At least one of the screws should enter a wall stud or similar rigid material.
- Terminate wiring to the wiring strip.
- Push the thermostat front onto the thermostat base.




**NOTICE**

Do not over-tighten wiring screws. Hand-tighten only.

## Thermostat Wiring

The thermostat can be wired in three different ways.

**Stand Alone** — Similar to tekmarNet®4 wiring with tN4 wiring terminal not used. First stage heating relay (Rh - W) can be wired directly to switching relays.

**tekmarNet®4** — Allows the thermostat to be wired using 4 wires to a tN4 Wiring Center or Zone Manager point-to-point. Alternatively, the thermostat can operate the heating and cooling equipment locally and the tN4 communication bus can be daisy-chained from one thermostat to another.

**tekmarNet®2** — Allows the thermostat to be wired point-to-point using 2 wires to a tN2 Wiring Center, House Control, or Zone Manager. This makes wiring easy for retrofit applications.

***Application specific wiring diagrams are provided in the 554_A brochure.***

## Compatible Sensors

The thermostat is compatible with Indoor Sensor 076, 077, and 084, Slab Sensor 072, 073, and 079, Outdoor Sensor 070, Universal Sensor 082 and Duct Sensor 083.

**⚠ CAUTION**

Only qualified personnel should perform testing procedures. A licensed electrician is recommended.

## Testing the Thermostat Wiring

### Testing tekmarNet®2 Wiring

#### Testing the Power

If the thermostat display turns on, this indicates that the thermostat is operating correctly and there are no electrical issues. In the event that the display is off, or the display is cycling on and off:

1. Remove the thermostat wiring cover.
2. Check to ensure that the tN2 wires on the thermostat are connected to a zone on a House Control, Wiring Center, or Zone Manager.
3. Use an electrical meter to measure DC voltage between the tN2 terminals.

- If the DC voltage is 0 V (dc) for at least 20 seconds, then there is an open or short circuit in the tN2 wires.
- If the DC voltage is 0 V (dc) for 10 seconds and then is 23 to 24 V (dc) for 5 seconds, this indicates the wiring is correct.

4. If the thermostat display is off or is cycling on and off, move the thermostat to the next available zone on the House Control, Wiring Center, or Zone Manager.

- If the thermostat display remains permanently on, there may be a fault with the previously tried zone on the House Control, Wiring Center, or Zone Manager.
- If the thermostat display continues to be off, or is cycling on and off, there may be a fault on the thermostat.

If a fault is suspected, contact your tekmar sales representative for assistance.

## Testing tekmarNet®4 and Stand Alone Wiring

### Testing the Power

1. Remove the front cover from the thermostat.
2. Use an electrical test meter to measure (ac) voltage between the R and C terminals. The reading should be 24 V (ac) ±10%.
3. Install the front cover.

## Testing the Relay Outputs

### Testing the Heat W Relay

1. Set the Mode to Heat and increase the Set Heat temperature above the Room temperature.

2. The “Heat On” symbol will appear on the display.

3. Use an electrical test meter to measure (ac) voltage between the W and C terminals at the heating equipment location. The reading should be 24 V (ac) ±10%.

### Testing the Cooling Y Relay

1. Set the Mode to Cool and decrease the Set Cool temperature above the Room temperature.

2. The “Cool On” symbol will appear on the display.

3. Use an electrical test meter to measure (ac) voltage between the Y and C terminals at the cooling equipment location. The reading should be 24 V (ac) ±10%.

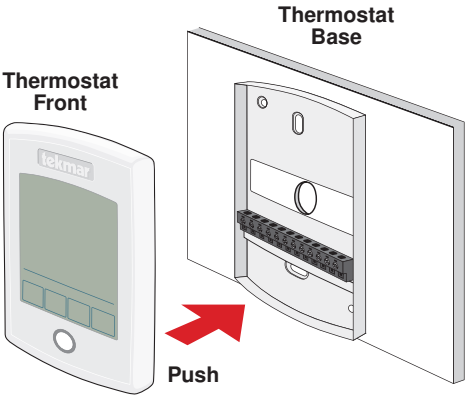
### Testing the Fan G Relay

1. Touch the Fan key to set the Fan to “On”.

2. Use an electrical test meter to measure (ac) voltage between the G and C terminals at the blower fan equipment location. The reading should be 24 V (ac) ±10%.

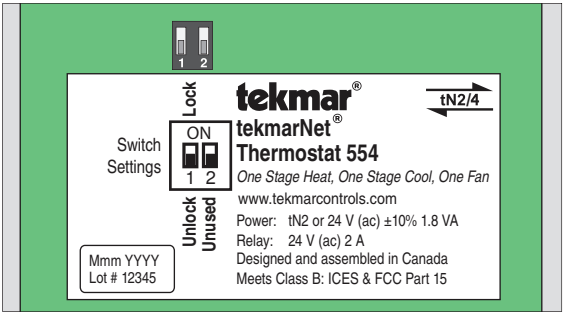
## Mounting the Thermostat

Push the thermostat front onto the thermostat base. Installation is now complete.




# Switch Settings

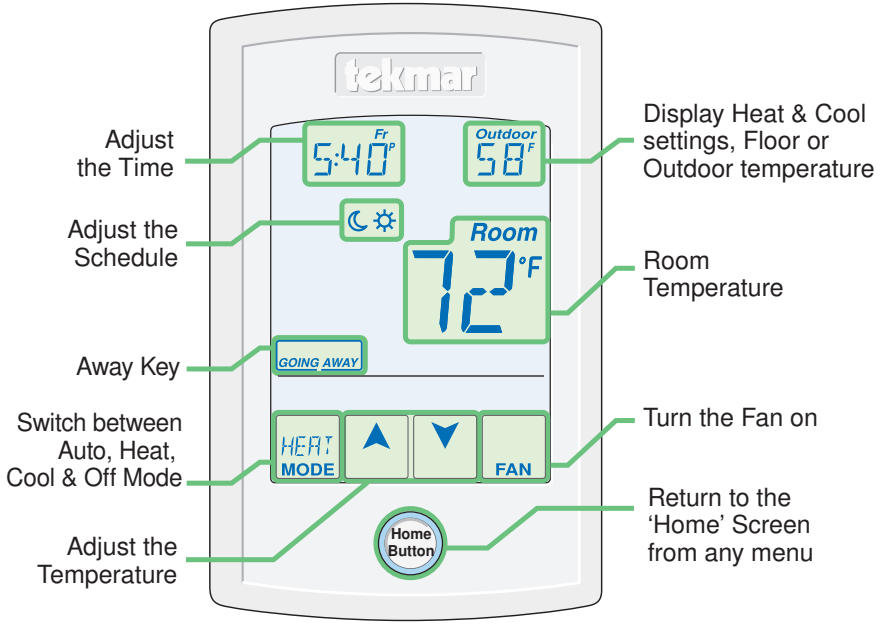
Back of Thermostat




| Switch | Position | Action |
|---|---|---|
| 1 | ON | **LOCK ACCESS LEVEL**<br>Thermostat is locally locked and the access level cannot be changed. Set to Lock when installation has been completed. |
| | OFF | **UNLOCK ACCESS LEVEL**<br>Thermostat is unlocked and the access level may be changed. Go to the Toolbox menu to change the access level. Set to Unlock during the installation process.<br>**tekmarNet® system controls include a Global Lock that locks all connected thermostats. Set the tekmarNet® system control to unlock to allow access level adjustment on all connected thermostats.** |
| 2 | ON | Not used |
| | OFF | Not used |

# User Interface

## Home Screen



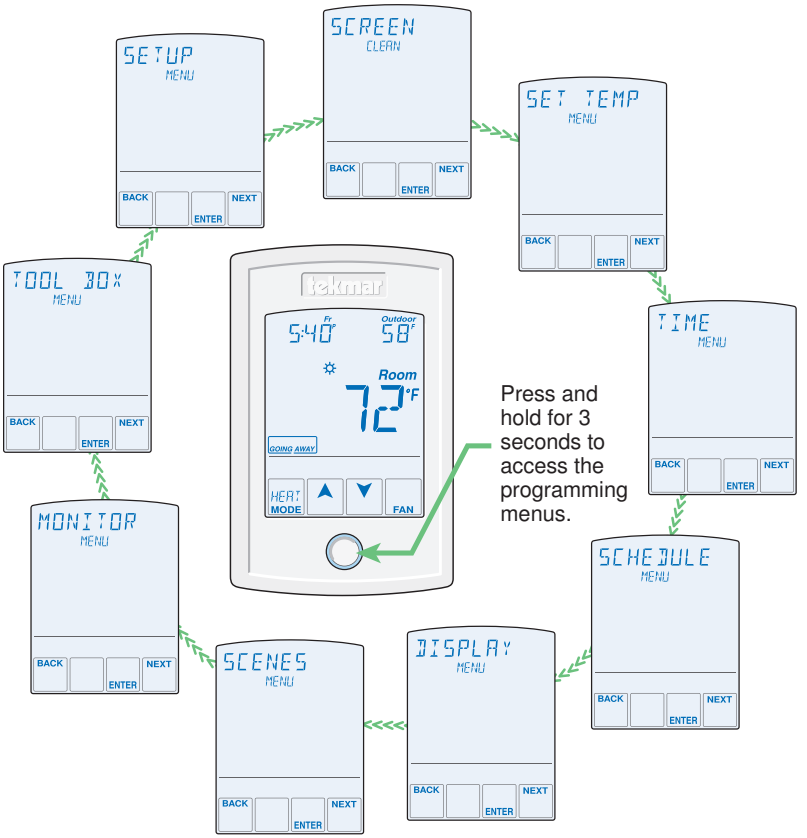

## Symbols Description

| | |
|---|---|
| *Heat On* **HEAT ON**<br>Heat is turned on. | ▲▼ **ARROWS**<br>Adjust the displayed setting. |
| *Cool On* **COOL ON**<br>Cooling is turned on. | SCENE AWAY **SCENE AWAY**<br>Operating at Away temperature. |
| **FAN**<br>The fan is turned on. | HOLD 3hr **TEMPORARY HOLD**<br>Holds temperature for 3, 6, 9 or 12 hours. |
| **SUN**<br>Operating at the occupied (day) temperature. | WWSD **WWSD**<br>Warm Weather Shut Down. |
| **MOON**<br>Operating at the unoccupied (night) temperature. | COOL **COOL**<br>Cooling system is on. |
| **tekmarNet®**<br>Communication is present. | MIN MAX **MIN or MAX**<br>Reached the room min or max. |
| **WARNING SYMBOL**<br>Indicates an error is present. | MIN FL MAX FL **MIN FL or MAX FL**<br>Reached the floor min or max. |

# Programmable Settings

## Programming Menus

Press and hold the Home button for 3 seconds to enter the programming menus. The thermostat returns to the last programming menu previously used.

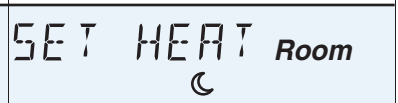
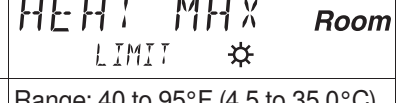
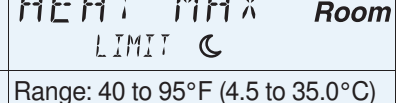
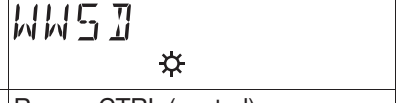



### Select a Programming Menu

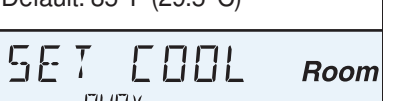
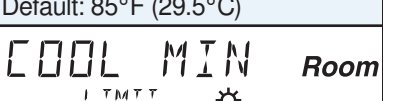
- Touch “NEXT” to advance (clockwise in above illustration) to the next menu.
- Touch “BACK” to go backwards (counterclockwise in above illustration) through the menus.
- Touch “ENTER” to enter a menu.

### Setting Items

- Touch ▲ or ▼ arrow to adjust the setting if required.
- Touch “NEXT ITEM” to advance to the next item within the menu.
- Touch “BACK ITEM” to go backwards to the previous item within the menu.
- To return to the parent menu after changing a setting, press and release the Home button.
- To return to the Home screen, press and release the Home button twice or wait 30 seconds to automatically return to the Home screen.

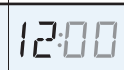
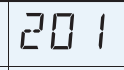
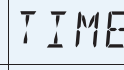
| Set Temp Menu (1 of 4) | |
|---|---|
| **Setting** | **Display** |
| **SET HEAT ROOM ☼**<br>Set the room heating temperature for the ☼ event. |  |
| Access Level: Installer, User | Range: 40 to 95°F (4.5 to 35.0°C) |
| Conditions: Always available. | Default: 70°F (21.0°C) |
| **SET HEAT ROOM ☾**<br>Set the room heating temperature for the ☾ event. |  |
| Access Level: Installer, User | Range: 40 to 95°F (4.5 to 35.0°C) |
| Conditions: Schedules are in use or Scenes are set to All or Guest. | Default: 65°F (18.5°C) |
| **SET HEAT ROOM AWAY**<br>Set the room heating temperature for the Away scene. |  |
| Access Level: Installer, User | Range: 40 to 95°F (4.5 to 35.0°C) |
| Conditions: Scenes is set to Away, All or Guest. | Default: 62°F (16.5°C) |
| **HEAT MINIMUM ROOM LIMIT**<br>Set the minimum room heating limit. |  |
| Access Level: Installer | Range: 40 to 95°F (4.5 to 35.0°C) |
| Conditions: Always available. | Default: 40°F (4.5°C) |
| **HEAT MAXIMUM ROOM LIMIT ☼**<br>Set the maximum room heating limit for the ☼ event. |  |
| Access Level: Installer | Range: 40 to 95°F (4.5 to 35.0°C) |
| Conditions: Always available. | Default: 85°F (29.5°C) |
| **HEAT MAXIMUM ROOM LIMIT ☾**<br>Set the maximum room heating limit for the ☾ event. |  |
| Access Level: Installer | Range: 40 to 95°F (4.5 to 35.0°C) |
| Conditions: Schedules are in use or Scenes are set to All or Guest. | Default: 85°F (29.5°C) |
| **WARM WEATHER SHUT DOWN ☼**<br>Set the outdoor air temperature at which heating is suspended during the ☼ event. |  |
| Access Level: Installer | Range: CTRL (control),<br>40 to 100°F (4.5 to 38.0°C), OFF |
| Conditions: An outdoor sensor must be available. | Default: CTRL (with tN System Control or 70°F (21°C) (Standalone) |

## Set Temp Menu (2 of 4)

| Setting | Display |
|---|---|
| **WARM WEATHER SHUT DOWN ☾**<br>Set the outdoor air temperature at which heating is suspended during the ☾ event. |  |
| Access Level: Installer | Range: CTRL (control),<br>40 to 100°F (4.5 to 38.0°C), OFF |
| Conditions: An outdoor sensor must be available and Schedules are in use or Scenes is set to All or Guest. | Default: CTRL (with tN System Control or 60°F (15.5°C) (Standalone) |
| **SET COOL ROOM ☼**<br>Set the room cooling temperature for the ☼ event. |  |
| Access Level: Installer, User | Range: 50 to 100°F<br>(10.0 to 38.0°C) |
| Conditions: Always available. | Default: 78°F (25.5°C) |
| **SET COOL ROOM ☾**<br>Set the room cooling temperature for the ☾ event. |  |
| Access Level: Installer, User | Range: 50 to 100°F<br>(10.0 to 38.0°C) |
| Conditions: Schedules are in use or Scenes is set to All or Guest. | Default: 85°F (29.5°C) |
| **SET COOL ROOM AWAY**<br>Set the room cooling temperature during the Away scene. |  |
| Access Level: Installer | Range: 50 to 100°F<br>(10.0 to 38.0°C) |
| Conditions: Scenes is set to Away, All or Guest. | Default: 85°F (29.5°C) |
| **COOL MINIMUM ROOM LIMIT ☼**<br>Set the minimum room cooling limit while in the ☼ event. |  |
| Access Level: Installer | Range: 50 to 100°F (10.0 to 38.0°C) |
| Conditions: Always available. | Default: 50°F (10.0°C) |
| **COOL MINIMUM ROOM LIMIT ☾**<br>Set the minimum room cooling limit while in the ☾ event. |  |
| Access Level: Installer | Range: 50 to 100°F (10.0 to 38.0°C) |
| Conditions: Schedules are in use or Scenes is set to All or Guest. | Default: 50°F (10.0°C) |

| Set Temp Menu (3 of 4) | |
|---|---|
| **Setting** | **Display** |
| **COOL MAXIMUM ROOM LIMIT**<br>Set the maximum room cooling limit. | COOL MAX<br>LIMIT<br>***Room*** |
| Access Level: Installer | Range: 50 to 100°F (10.0 to 38.0°C) |
| Conditions: Always available. | Default: 100°F (38.0°C) |
| **FLOOR MINIMUM ☼**<br>Set the floor heating temperature while in the ☼ event. | FLOOR MIN<br>☼ |
| Access Level: Installer | Range: OFF, 40 to 122°F<br>(4.5 to 50.0°C) |
| Conditions: Sensor 1 or 2 is set to Floor, and W Terminal is set to HRF1, HRF2 or OTHR. | Default: 72°F (22.0°C) |
| **FLOOR MINIMUM ☾**<br>Set the floor heating temperature while in the ☾ event. | FLOOR MIN<br>☾ |
| Access Level: Installer | Range: OFF, 40 to 122°F<br>(4.5 to 50.0°C) |
| Conditions: Sensor 1 or 2 is set to Floor, and W Terminal is set to HRF1, HRF2 or OTHR & Schedules are in use or Scenes are set to All or Guest. | Default: OFF |
| **FLOOR MAXIMUM**<br>Set the floor maximum temperature in order to protect the floor covering.<br>Suggested settings: Tile = 90°F (32°C)<br>Hardwood Floor = 85°F (29°C) | FLOOR MAX |
| Access Level: Installer | Range: 40 to 122°F<br>(4.5 to 50.0°C), OFF |
| Conditions: Sensor 1 or 2 is set to Floor, & W Terminal is set to HRF1, HRF2 or OTHR. | Default: 85°F (29.5°C) |
| **TEMPORARY HOLD**<br>Temperature adjustment in the home menu can result in either permanent temperature setting change or temporary temperature setting change that lasts 3, 6, 9, 12 hours or until the next scheduled event. | TEMPORARY<br>HOLD |
| Access Level: Installer | Range: OFF or ON |
| Conditions: None | Default: OFF |

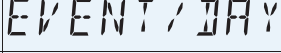
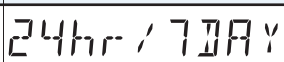
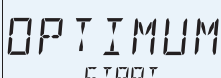
| Set Temp Menu (4 of 4) | |
|---|---|
| **Setting** | **Display** |
| **FAN** ☼<br>Set the minimum percentage of time the fan should operate while in the ☼ event. This provides ventilation for the building. Each 10% is 6 minutes per hour. | FAN ☼ |
| Access Level: Installer, User | Range: Auto, 10 to 90%, ON |
| Conditions: 10 to 90% available if Ventilation Mode is On. | Default: Auto |
| **FAN** ☾<br>Set the minimum percentage of time the fan should operate while in the ☾ event or Away scene. This provides ventilation for the building. Each 10% is 6 minutes per hour. | FAN ☾ |
| Access Level: Installer, User | Range: Auto, 10 to 90%, ON |
| Conditions: Schedules used or Scenes set to Guest or All. 10 to 90% available if Ventilation Mode is On. | Default: Auto |

| Time Menu (1 of 1) | |
|---|---|
| **Setting** | **Display** |
| **MINUTES**<br>Select the current time minutes. |  |
| Access Level: Installer, User | Range: 00 to 59 |
| Conditions: Always available. | Default: 00 |
| **HOURS**<br>Select the current time hours. |  |
| Access Level: Installer, User | Range: 12 AM to 11 PM or 00 to 23 |
| Conditions: Always available. | Default: 12 AM |
| **DAY OF WEEK**<br>Select the current day of the week. |  |
| Access Level: Installer, User | Range: Sunday to Saturday |
| Conditions: Always available. | Default: Sunday |
| **MONTH**<br>Select the current month. |  |
| Access Level: Installer, User | Range: JANUARY to DECEMBER |
| Conditions: Always available. | Default: JANUARY |
| **DAY OF MONTH**<br>Select the day of the current month. |  |
| Access Level: Installer, User | Range: 1 to 31 |
| Conditions: Always available. | Default: 1 |
| **YEAR**<br>Select the current year. |  |
| Access Level: Installer, User | Range: 2011 to 2255 |
| Conditions: Always available. | Default: 2011 |
| **DAYLIGHT SAVINGS TIME**<br>Select if daylight savings time is observed. |  |
| Access Level: Installer, User | Range: OFF or ON |
| Conditions: Always available. | Default: ON |
| **TIME MODE**<br>Select either 12-hour or 24-hour time format. |  |
| Access Level: Installer, User | Range: 12 or 24 hour |
| Conditions: Always available. | Default: 12 hour |
| **CLOCK**<br>Select whether to show the time clock on the display. |  |
| Access Level: Installer, User | Range: OFF or ON |
| Conditions: The time is always shown when a schedule is used and the clock setting option is hidden. | Default: OFF |

## Schedule Menu (1 of 2)

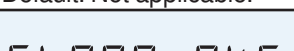
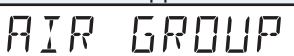
The schedule menu can operate on a 24-hour or 7-day repeating schedule. When a 24-hour schedule is selected, “SuMoTuWeThFrSa” is shown on the top of the screen to show that the event time applies to all days of the week. When a 7-day schedule is selected, each individual day of the week is shown with the event time.

| Setting | Display |
|---|---|
| **EVENT 1**<br>The first programmable schedule time period of the day. The ☼ temperature settings are used during this time period. |  |
| Access Level: Installer, User | Range: 12:00 AM to 11:50 PM, SKIP or 00:00 to 23:50, SKIP |
| Conditions: Schedule setting is set to Zone or Master 1, 2, 3, 4 and Event/Day is set to 2 or 4. | Default: 6:00 AM |
| **EVENT 2**<br>The second programmable schedule time period of the day. The ☾ temperature settings are used during this time period. |  |
| Access Level: Installer, User | Range: 12:00 AM to 11:50 PM, SKIP or 00:00 to 23:50, SKIP |
| Conditions: Schedule setting is set to Zone or Master 1, 2, 3, 4 and Event/Day is set to 2 or 4. | Default:<br>10:00 PM when Event/Day is 2<br>8:00 AM when Event/Day is 4 |
| **EVENT 3**<br>The third programmable schedule time period of the day. The ☼ temperature settings are used during this time period. |  |
| Access Level: Installer, User | Range: 12:00 AM to 11:50 PM, SKIP or 00:00 to 23:50, SKIP |
| Conditions: Schedule setting is set to Zone or Master 1, 2, 3, 4 and Event/Day is set to 4. | Default: 6:00 PM |
| **EVENT 4**<br>The fourth programmable schedule time period of the day. The ☾ temperature settings are used during this time period. |  |
| Access Level: Installer, User | Range: 12:00 AM to 11:50 PM, SKIP or 00:00 to 23:50, SKIP |
| Conditions: Schedule setting is set to Zone or Master 1, 2, 3, 4 and Event/Day is set to 4. | Default: 10:00 PM |

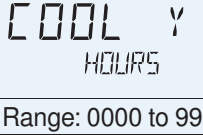
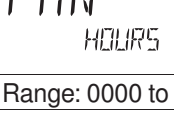
| Schedule Menu (2 of 2) | |
|---|---|
| **Setting** | **Display** |
| **SCHEDULE**<br>Select if the thermostat should change the temperature automatically using a programmable schedule.<br>OFF = Programmable schedule is not used.<br>Zone = Applies to this thermostat only.<br>Master 1, 2, 3, 4 = In charge of one of four available network schedules.<br>Member 1, 2, 3, 4 = Follows selected network schedule. |  |
| Access Level: Installer, User | Range: OFF, Zone, Master 1, 2, 3, 4, Member 1, 2, 3, 4 |
| Conditions: In a tekmarNet® system, settings adjustable in Installer access level only. | Default: OFF |
| **EVENT PER DAY**<br>Select the number of temperatures per day. |  |
| Access Level: Installer, User | Range: 2 or 4 |
| Conditions: Schedule setting is set to Zone or Master 1, 2, 3, 4. | Default: 2 |
| **24 HOUR / 7 DAY** |  |
| Access Level: Installer, User | Range: 24-hour or 7-day |
| Conditions: Schedule setting is set to Zone or Master 1, 2, 3, 4. | Default: 24-hour |
| **OPTIMUM START**<br>Select whether to use optimum start. The thermostat learns the heat up and cool down rates of the room and starts heating or cooling in advance of Event 1 or Event 3. |  |
| Access Level: Installer, User | Range: OFF or ON |
| Conditions: A schedule must be in use. | Default: ON |

| Display Menu (1 of 1) | |
|---|---|
| **Setting** | **Display** |
| **UNITS**<br>Select Fahrenheit or Celsius as the temperature units. |  |
| Access Level: Installer, User | Range: °F or °C |
| Conditions: Always available. | Default: °F |
| **BACKLIGHT**<br>Select how the display backlight operates.<br>DIM = Dim when inactive, on when touched.<br>ON = Always full brightness.<br>DIM ☼ = Dim in ☼, off in ☾. On when touched.<br>ON ☼ = On in ☼, off in ☾. On when touched.<br>OFF = Off when inactive, on when touched. |  |
| Access Level: Installer, User | Range: DIM, ON, DIM ☼, ON ☼, OFF |
| Conditions: Always available. | Default: DIM ☼ |
| **SECONDARY ITEM**<br>Determine the default item in the upper right corner of the Home screen. |  |
| Access Level: Installer, User | Range: NONE, OUT (outdoor), FLOR (floor), TEMP (heat and cool temperature) |
| Conditions: Always available. | Default: OUT (outdoor) |

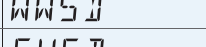
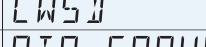
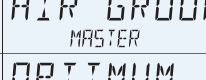
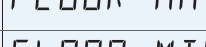
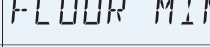
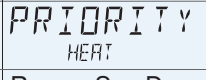
| Scenes Menu (1 of 1) | |
|---|---|
| **Setting** | **Display** |
| **SCENES**<br>Enable or disable the use of scenes (building overrides) on this thermostat. | SCENES |
| Access Level: Installer, User | Range: NONE, AWAY, ALL, GUEST |
| Conditions: Settings ALL and GUEST only available in Installer access level. | Default: NONE |
| **SCENE 4**<br>Select how the thermostat should respond to scene 4. | SCENE 4 |
| Access Level: Installer | Range: SCHD, ☼, ☾, Away |
| Conditions: Scenes is set to All. | Default: SCHD (Schedule) |
| **AWAY KEY**<br>Enable or disable the away touch key on the home screen. | AWAY KEY |
| Access Level: Installer, User | Range: OFF or ON |
| Conditions: Scenes is set to ALL, AWAY, or GUEST. | Default: OFF |
| **LOCAL NETWORK GROUP**<br>Select if scenes and time clock are shared when connected to a tekmarNet® system.<br>OFF = Send and receive messages.<br>ON = Receive messages only. | LOCAL NET<br>GROUP |
| Access Level: Installer | Range: OFF or ON |
| Conditions: Always available. | Default: OFF |

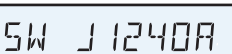
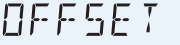
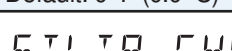
| Monitor Menu (1 of 3) | |
|---|---|
| **Setting** | **Display** |
| **ROOM AVERAGE**<br>Current room temperature. Displays the average if there are multiple room sensors. |  |
| Access Level: Installer | Range: -58 to 212°F<br>(-50.0 to 100.0°C) |
| Conditions: Sensor 1 or 2 is set to ROOM. | Default: Not applicable. |
| **FLOOR AVERAGE**<br>Current floor temperature. Displays the average if there are multiple floor sensors. |  |
| Access Level: Installer | Range: -58 to 212°F<br>(-50.0 to 100.0°C) |
| Conditions: Sensor 1 or 2 is set to FLOR. | Default: Not applicable. |
| **AIR GROUP AVERAGE**<br>Average room temperature of the thermostat and all air group member thermostats. |  |
| Access Level: Installer | Range: -58 to 212°F<br>(-50.0 to 100.0°C) |
| Conditions: Setup menu setting Air Group Master must be set to 1 through 16. | Default: Not applicable. |
| **W SUPPLY**<br>First stage heating supply water temperature. |  |
| Access Level: Installer | Range: -22 to 266°F<br>(-30.0 to 130.0°C) |
| Conditions: W TERM set to HRF1, HRF2, CONV or COIL. | Default: Not applicable. |
| **ROOM LOCAL**<br>The built-in room sensor temperature measurement. |  |
| Access Level: Installer | Range: -58 to 212°F<br>(-50.0 to 100.0°C) |
| Conditions: Setup menu setting Room Sensor is set to ON. | Default: Not applicable. |
| **SENSOR 1**<br>The temperature measurement from the sensor 1 input wiring terminals. |  |
| Access Level: Installer | Range: -58 to 212°F<br>(-50.0 to 100.0°C) |
| Conditions: Sensor 1 is set to ROOM, FLOR, COIL or DUCT. | Default: Not applicable. |

| Monitor Menu (2 of 3) | |
|---|---|
| **Setting** | **Display** |
| **SENSOR 2**<br>The temperature measurement from the sensor 2 input wiring terminals. | SENSOR-2 |
| Access Level: Installer | Range: -58 to 212°F<br>(-50.0 to 100.0°C) |
| Conditions: Sensor 2 is set to ROOM, FLOR, or OUT. | Default: Not applicable. |
| **OUTDOOR HIGH**<br>The highest recorded outdoor air temperature measurement. Touch the number and the ENTER key to reset. | OUTDOOR<br>HIGH |
| Access Level: Installer, User | Range: -76 to 149°F<br>(-60.0 to 65.0°C) |
| Conditions: An outdoor temperature is available. | Default: Not applicable. |
| **OUTDOOR LOW**<br>The lowest recorded outdoor air temperature measurement. Touch the number and the ENTER key to reset. | OUTDOOR<br>LOW |
| Access Level: Installer, User | Range: -76 to 149°F<br>(-60.0 to 65.0°C) |
| Conditions: An outdoor temperature is available. | Default: Not applicable. |
| **ROOM HIGH**<br>The highest recorded room temperature measurement. Touch the number and the ENTER key to reset. | ROOM<br>HIGH |
| Access Level: Installer, User | Range: -76 to 149°F<br>(-60.0 to 65.0°C) |
| Conditions: Room Sensor is set to ON or Sensor 1 or 2 is set to ROOM. | Default: Not applicable. |
| **ROOM LOW**<br>The lowest recorded room temperature measurement. Touch the number and the ENTER key to reset. | ROOM<br>LOW |
| Access Level: Installer, User | Range: -76 to 149°F<br>(-60.0 to 65.0°C) |
| Conditions: Room Sensor is set to ON or Sensor 1 or 2 is set to ROOM. | Default: Not applicable. |
| **FLOOR HIGH**<br>The highest recorded floor temperature measurement. Touch the number and the ENTER key to reset. | FLOOR<br>HIGH |
| Access Level: Installer, User | Range: -76 to 149°F<br>(-60.0 to 65.0°C) |
| Conditions: Sensor 1 or 2 is set to FLOR. | Default: Not applicable. |

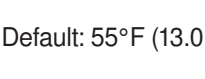
| Monitor Menu (3 of 3) | |
|---|---|
| **Setting** | **Display** |
| **FLOOR LOW**<br>The lowest recorded floor temperature measurement. Touch the number and the ENTER key to reset. |  |
| Access Level: Installer, User | Range: -76 to 149°F<br>(-60.0 to 65.0°C) |
| Conditions: Sensor 1 or 2 is set to FLOR. | Default: Not applicable. |
| **FILTER HOURS**<br>The total number of hours the fan has been operating since the air filter was last replaced. Touch the number and the ENTER key to reset and clear the Change Filter warning message. |  |
| Access Level: Installer, User | Range: 0000 to 9999 hours |
| Conditions: Always available. | Default: 0000 hours |
| **HEAT W HOURS**<br>The total number of hours the heat W relay has been operated for heating. Touch the number and the ENTER key to reset. |  |
| Access Level: Installer, User | Range: 0000 to 9999 hours |
| Conditions: Always available. | Default: 0000 hours |
| **COOL Y HOURS**<br>The total number of hours the cooling Y relay has been in cooling operation. Touch the number and the ENTER key to reset. |  |
| Access Level: Installer, User | Range: 0000 to 9999 hours |
| Conditions: Always available. | Default: 0000 hours |
| **FAN HOURS**<br>The total number of hours the fan G relay has been operated. Touch the number and the ENTER key to reset. |  |
| Access Level: Installer, User | Range: 0000 to 9999 hours |
| Conditions: Always available. | Default: 0000 hours |

## Toolbox Menu (1 of 2)

| Setting | Display |
|---|---|
| **ACCESS LEVEL**<br>Selects the access level of the thermostat, which determines which menus and items are available. |  |
| Access Level: Installer (INST), User, Limited (LTD), Secure (SEC) | Range: INST, USER, LTD, SEC |
| Conditions: Adjustable only when thermostat switch setting set to UNLOCK OR tekmarNet® system control switch setting set to UNLOCK. | Default: INST |
| **STATUS INFO**<br>Toggles between "Status Info" and the current status including any overrides from the tekmarNet® system control. |  |
| **System Normal** = Thermostat operating normally. |  |
| **Override W** = The tekmarNet® system control is either forcing the W relay on or off. |  |
| **WWSD** = Warm Weather Shut Down is in effect. |  |
| **CWSD** = Cold Weather Shut Down is in effect. |  |
| **Air Group Master Cool** = The air group master thermostat is cooling. |  |
| **Optimum Start Heat or Cool** = Heating or cooling system starts early in order to meet ☼ setpoint at Event 1 or 3. |  |
| **Floor Max** = The floor has reached its maximum temperature. Some under heating could occur. |  |
| **Floor Min** = The floor is operating at its minimum temperature. Some over heating could occur. |  |
| **Baseload On** = Baseload heating is on even though the room temperature is satisfied. Reduces heat up time when the sun sets in the evening. |  |
| **Hydronic Heat Off** = The air group master is in cooling mode and air group member thermostats' heating is shut off. |  |
| **Interlock Wait** = The thermostat is switching between heating to cooling or from cooling to heating. |  |
| **Priority Heat** = Air group members are calling for heat. Cooling is suspended. |  |
| Access Level: Installer, User | Range: See Description |
| Conditions: Always available. | Default: System Normal |

| Toolbox Menu (2 of 2) | |
|---|---|
| **Setting** | **Display** |
| **ADDRESS**<br>The tekmarNet® address of this thermostat. To manually set the address, use the up or down arrow buttons. |  |
| Access Level: Installer | Range: AUTO, 01 to 24, b:01 to b:24, 1:01 to 1:24, 2:01 to 2:24, 3:01 to 3:24 |
| Conditions: tekmarNet®2 or 4 detected. | Default: AUTO |
| **SOFTWARE AND TYPE VERSION**<br>Displays the software version and the tekmar type number. |  |
| Access Level: Installer, User, Limited, Secure | Range: 554 |
| Conditions: Always available. | Default: 554 |
| **DEVICE COUNT**<br>Provides a count of all the tekmarNet® thermostats and setpoint controls on the tekmarNet® system. |  |
| Access Level: Installer | Range: 1 to 24 |
| Conditions: Must be connected to a tekmarNet® system. | Default: 1 |
| **OFFSET ROOM**<br>Manual offset correction of the room temperature. |  |
| Access Level: Installer | Range: -5 to +5°F (-3.0 to +3.0°C) |
| Conditions: Always available. | Default: 0°F (0.0°C) |
| **FILTER CHANGE HOURS**<br>Select the amount of time the fan operates before the air filter requires maintenance. |  |
| Access Level: Installer | Range: OFF, 200 to 2000 hours |
| Conditions: Always available. | Default: OFF |
| **LOAD FACTORY DEFAULTS**<br>Touch Enter to load the factory defaults settings. |  |
| Access Level: Installer | Range: None |
| Conditions: Always available. | Default: Keep existing settings |
| **ERROR HISTORY 1 THROUGH 5**<br>Displays a history of the last 5 errors that have occurred on the thermostat in the past 30 days. Touch Enter to manually clear the error code. |  |
| Access Level: Installer | Range: See Troubleshooting section |
| Conditions: An error must have occurred. | Default: Not applicable |

| Setup Menu (1 of 4) | |
|---|---|
| **Setting** | **Display** |
| **SENSOR 1**<br>Select the auxiliary sensor input 1 type. | SENSOR 1 |
| Access Level: Installer | Range: OFF, ROOM, FLOR (floor), COIL, DUCT |
| Conditions: Coil sensor option available when W TERMINAL is set to COIL.<br>Duct sensor option available when W TERMINAL is set to FURN or COIL.<br>Floor sensor option not available when W TERMINAL is set to FURN or COIL. | Default: OFF |
| **SENSOR 2**<br>Select the auxiliary sensor input 2 type. | SENSOR 2 |
| Access Level: Installer | Range: OFF, ROOM, FLOR (floor), OUT (outdoor) |
| Conditions: Floor sensor option not available when W TERMINAL is set to FURN or COIL. | Default: OFF |
| **ROOM SENSOR**<br>Select whether the built-in room temperature sensor is on or off. | ROOM<br>SENSOR |
| Access Level: Installer | Range: OFF or ON |
| Conditions: Only available when Sensor 1 or 2 is set to ROOM. | Default: ON |
| **W TERMINAL UNIT**<br>Select the heating equipment the W relay operates.<br>HRF1 & 2 = High & low mass hydronic radiant floor<br>CONV = Baseboard convectors<br>COIL = Fan coil<br>FURN = Furnace<br>OTHR = Other than hydronic heating | W TERM |
| Access Level: Installer | Range: HRF1, HRF2, CONV, COIL, FURN, OTHR |
| Conditions: HRF1, HRF2, CONV, COIL only available when connected to a tekmarNet® System Control. | Default:<br>OTHR (standalone)<br>HRF1 (tekmarNet® System Control) |
| **W PUMP**<br>Select whether the primary or mix system pump on a tekmarNet® system control should operate while the first stage of heat W is operating. | W PUMP |
| Access Level: Installer | Range: OFF or ON |
| Conditions: Available when a tekmarNet® system control is connected and W TERMINAL is set to HRF1, HRF2, CONV or COIL. Also available when connected to a tN2 Wiring Center and W TERMINAL set to OTHR. | Default: ON |

| Setup Menu (2 of 4) | |
|---|---|
| **Setting** | **Display** |
| **W THERMAL MOTOR**<br>Select whether the first stage of heat W operates a thermally actuated zone valve (wax actuator). When set to ON, there is a 3-minute delay before operating the pump and any heat sources. |  |
| Access Level: Installer | Range: OFF or ON |
| Conditions: Available when a tekmarNet® system control is connected and W TERMINAL is set to HRF1, HRF2, CONV or COIL. Also available when connected to a tN2 Wiring Center and W TERMINAL set to OTHR. | Default: OFF |
| **Y MINIMUM OFF**<br>Select the compressor minimum off time. |  |
| Access Level: Installer | Range: 0:30 to 10:00 minutes |
| Conditions: Always available. | Default: 5:00 minutes |
| **COOLING CWSD**<br>Select the outdoor temperature below which the cooling system is disabled. |  |
| Access Level: Installer | Range: OFF, 35 to 75°F<br>(OFF, 1.5 to 24.0°C) |
| Conditions: Requires an outdoor sensor to be connected to sensor 2 or connected a tekmarNet® system with an outdoor sensor. | Default: 55°F (13.0°C) |
| **INTERLOCK**<br>Select the amount of time for the heat-cool interlock. Applies only when Mode is set to Auto. Reduces excessive heat-cool switchovers. |  |
| Access Level: Installer | Range: 10 to 180 minutes |
| Conditions: Always available. | Default: 30 minutes |
| **W CYCLES PER HOUR**<br>Select the number of heating cycles per hour.<br>SYNC = 20 minute zone synchronization.<br>AUTO = Automatic cycles per hour to minimize temperature swings. |  |
| Access Level: Installer | Range: SYNC, AUTO, 2 to 12 |
| Conditions: W TERMINAL is set to OTHR or the thermostat is not connected to a tekmarNet® system control. | Default: SYNC |

| Setup Menu (3 of 4) | |
|---|---|
| **Setting** | **Display** |
| **BASELOAD**<br>Select the level of radiant floor baseload heating. This warms the floor so that solar gain and/or air heating systems do not cause cold floors. | BASELOAD |
| Access Level: Installer | Range: OFF, LOW, MED, HIGH |
| Conditions: Only available when a tekmarNet® system control is connected and W TERMINAL is set to HRF1 or HRF2 and SENSOR 1 or 2 is not set to FLOR (floor). | Default: OFF |
| **AIR GROUP MASTER**<br>Select if the thermostat is a master of an air group. | AIR GROUP<br>MASTER |
| Access Level: Installer | Range: NONE, 1 to 16 |
| Conditions: The thermostat must be connected to other thermostats using tekmarNet®. | Default: NONE |
| **PRIORITY**<br>Select either heating or cooling priority. | PRIORITY |
| Access Level: Installer | Range: HEAT or COOL |
| Conditions: Air Group Master is set to 1 to 16. | Default: COOL |
| **VENTILATION MODE**<br>Select whether the fan provides ventilation. | VENT MODE |
| Access Level: Installer | Range: OFF or ON |
| Conditions: Always available | Default: OFF |
| **HEAT PURGE**<br>Select the fan coil or furnace heating purge based upon either time or on duct air temperature. | HEATPURGE |
| Access Level: Installer | Range: 0:00 to 3:00 minutes (no duct sensor) or 70 to 160°F, OFF (21.0 to 71.0°C, OFF) (with duct sensor) |
| Conditions: W TERMINAL is set to COIL or FURN. | Default: 0:30 min or 100°F (38.0°C) |
| **COOL PURGE**<br>Select the air cooling purge based upon either time or on duct air temperature. | COOLPURGE |
| Access Level: Installer | Range: 0:00 to 3:00 minutes (no duct sensor) or OFF, 40 to 70°F (OFF, 4.5 to 21.0°C) (duct sensor required) |
| Conditions: Always available. | Default: 0:00 min or 60°F (15.5°C) |

| Setup Menu (4 of 4) | |
|---|---|
| **Setting** | **Display** |
| **FAN DELAY**<br>Select the time delay to allow the fan coil or furnace to warm up prior to activating the fan. This avoids blowing cold air. |  |
| Access Level: Installer | Range: NONE, 0:10 to 6:00 minutes |
| Conditions: Sensor 1 is not set to COIL and W TERMINAL is set to COIL or FURN. | Default: 0:30 minutes |
| **HEAT COIL MINIMUM**<br>Select the minimum coil temperature before operating the fan for heating. |  |
| Access Level: Installer | Range: OFF, 70 to 180°F (OFF, 21.0 to 82.0°C) |
| Conditions: Sensor 1 is set to COIL and W TERMINAL is set to COIL. | Default: 110°F (43.5°C) |

# Sequence of Operation

## Heating Operation

### Set Heat Temperature

When using only a room temperature sensor, the thermostat operates the heating system to maintain the Set Heat Room temperature. The “Heat On” symbol is shown on the display when the thermostat is heating.

### Floor Heating

When using both a room and a floor temperature sensor, the floor is heated at least to the Floor Minimum setting. If the room air temperature requires additional heating, the floor temperature is increased until the air temperature reaches the Set Heat Room setting. At no time is the floor heated above the Floor Maximum setting. This protects the floor covering. A combination of floor and air temperature sensors is recommended for areas with south facing windows with large solar gains and to protect wood floor from over heating.

***NOTICE***

Suggested Floor Maximum settings are 90°F (32°C) for tile, stone, or concrete floors and 85°F (29°C) for wood floors.

### Radiant Floor Baseload

When the terminal unit is a Hydronic Radiant Floor (HRF1 or HRF2) and no floor temperature sensor is installed, the thermostat can optionally provide baseload heating. This allows the radiant floor to be heated even though the room air temperature is satisfied. This is useful in areas where a radiant floor heating zone is overlapped by an air heating system. The radiant floor heating is overwhelmed by the quick heat-up rate of the air heating system, resulting in a radiant floor heating zone that rarely turns on. The radiant baseload option allows the radiant floor to counteract the air heating system by heating the floor at a reduced output even when the room air temperature is satisfied. This is also useful in areas that experience large solar gains through windows. The radiant baseload is automatically shut off in the summer by the Warm Weather Shut Down feature.

### Warm Weather Shut Down

When the outdoor air temperature exceeds the Warm Weather Shut Down (WWSD) setting on the tekmarNet® main control, the heating system is shut off.

### Freeze Protection

The thermostat operates the heat whenever the room or floor temperature falls below 40°F (4.5°C) even when the mode is set to off.

## Cooling Operation

### Set Cool Temperature

The thermostat operates an air conditioner to provide cooling. The “Cool On” symbol is shown on the display when the thermostat is cooling.

### Cooling Cold Weather Shut Down

When the outdoor air temperature falls below the Cooling Cold Weather Shut Down (CWSD) setting on the thermostat, the cooling system is shut off.

## Room Min and Max Limits

Heating and cooling minimum and maximum temperature settings are available in the Set Temp menu. These allow the installer to select start and stop limits for the temperature settings in both heating and cooling for the User and Limited access levels. This is useful in commercial installations and child/guest bedrooms where availability of the full temperature setting range may not be desirable.

## Mode Operation

The thermostat includes a mode key. Available modes are:

- **Heat —** Allows heating
- **Cool —** Allows air cooling
- **Auto** — Automatically switches between heating and cooling as necessary. The interlock time is applied when switching from heating to cooling or from cooling to heating.

## Hydronic Pump and Valve Operation

### Exercising

When connected to a tekmarNet® system control, the thermostat exercises the heat relay for 10 seconds every 3 days. Exercising helps prevent zone valves or zone pumps from failing due to precipitate buildup. During exercising, the thermostat shows “TEST” on the display.

### Flushing

The flushing feature is for open-loop systems that use a domestic hot water tank as a heat source. Flushing ensures that fresh potable water is circulated through the system once each day. If the thermostat is connected to a tekmarNet® system control with the Flushing feature turned on, the thermostat will display “FLUSHING” for the duration of the flushing operation.

### Hydronic System Supply Pump

When connected to a tekmarNet® system control, the thermostat's W Pump setting affects the operation of the primary pump or mix pump on the system control. When the thermostat is connected to the boiler bus, the boiler system or primary pump is operated. When the thermostat is connected to the mix bus, the mix system pump is operated.

If the thermostat operates a motorized or thermal motor zone valve, the W Pump setting should be set to On.

If the thermostat operates a thermal motor (wax actuator) zone valve, set the W Thermal Motor setting to On. This provides a three-minute delay to allow the zone valve to open before the primary or mix pump is turned on.

In special applications with multiple zoning manifolds, the W Pump setting can be set to Off. This allows a Zone Group Pump located on the Zone Manager, or Wiring Center to operate the pump for the manifold.

### DHW Tank Priority

When a tekmarNet system control is heating an indirect Domestic Hot Water (DHW) tank, the thermostat may shut off the heating zones to allow the DHW tank to recover quickly. Priority is determined by the DHW priority setting on the tekmarNet system control.

## Fan Operation

The fan operates together with the air heating or cooling systems. The user can also select to operate the fan manually by pressing the Fan button. This allows the user to choose between Auto and On. "Auto" allows the fan to operate with heating or cooling, but normally the fan is off. "On" forces the fan to operate continuously.

### Ventilation Fan

In order to provide ventilation to a building, the fan can operate beyond the time required for the heating and cooling systems. Vent Mode allows the user to set the fan to operate for 10 to 90% of an hour, in 10% (6 minutes per hour) increments, as well as in Auto and On mode. This is available when the Vent Mode setting in the Setup menu is set to On.

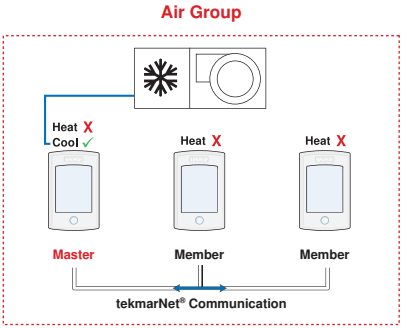
Once Ventilation is set to On, the Fan minimum run time percentage during the ☼ and ☾ events can be set so that the fan can operate on a schedule and/or together with scenes.

### Fan Post Purge

The fan relay includes a post purge feature that operates the fan after the heating or cooling system has shut off. When a duct temperature sensor is installed the length of post purge is based on the air duct temperature and the Heat Purge or Cool Purge temperature settings. When there is no duct temperature sensor installed, the length of post purge is based upon the Heat Purge and Cool Purge time settings.

## Air Group Operation

To prevent heating and cooling at the same time, this thermostat can operate with other thermostats on a tekmarNet system to form an air group. The 554 can be set up as the air group master. Other heat-only thermostats can be set up as an air group member. When operating as an air group, the air temperature readings of all the air group member thermostats are communicated to the air group master thermostat and an average air temperature is determined. The cooling operates based on the average temperature reading. When the air group master is in cooling operation, the air group member thermostats do not operate the heating system for air heating.




## Time Clock

The thermostat includes a time clock that is automatically visible in the Home menu when a programmable schedule is used. If the schedule is not used, the user has the option to indicate that the time should be shown in the Home menu.

**During a loss of power, the thermostat continues to keep the correct time and date for at least 4 hours.** If the power is off for more than 4 hours, the user will need to set the time.

The thermostat supports automatic update for daylight savings time. Simply set Daylight Save to On together with the correct day, month, and year and the time is automatically updated each spring and fall.

When a thermostat is connected to a tekmarNet system, adjustment of the time on one thermostat updates all connected thermostats. This option can be disabled by selecting the Local Network Group setting to On.

## Temperature Adjustment

### Permanent Adjustment — No Schedule

When no programmable schedule is used, touch the up or down arrows to permanently set the “Set Heat Room” or “Set Cool Room” temperature. This thermostat is capable of controlling both air and floor temperature.

### Permanent Adjustment — With Schedule

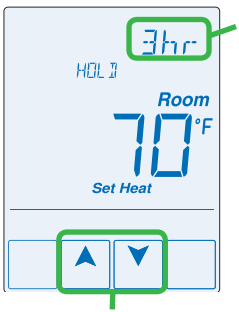
When a programmable schedule is used, there are two room heating temperatures available, one for the ☼ time period and another for the ☾ time period. When touching the ▲ or ▼ arrow to change the temperature, only the temperature for the current time period is changed.

1. To adjust the temperature for both time periods, press and hold the Home button for 3 seconds to enter the programming menus.
2. Enter the “SET TEMP” menu to adjust the following settings:
   - Set Heat Room ☼ (air heating or air heating with floor sensor)
   - Set Heat Room ☾ (air heating or air heating with floor sensor)
   - Set Heat Room AWAY (air heating or air heating with floor sensor)
   - Floor Min ☼ (air heating with floor sensor)
   - Floor Min ☾ (air heating with floor sensor)
   - Set Cool Room ☼ (air cooling)
   - Set Cool Room ☾ (air cooling)
   - Set Cool Room AWAY (air cooling)

### Temporary Hold

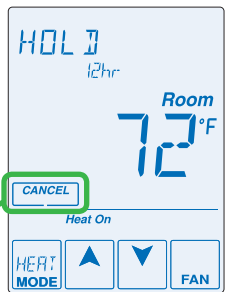
Temporary hold allows a user to change the temperature for a period of time and then automatically return to the permanent temperature setting. This is especially useful in commercial buildings that are in use for short amounts of time. When Temporary Hold is selected, touching the up or down arrow changes the temperature for either 3, 6, 9 or 12 hours. If the thermostat is using a schedule, ‘Schd’ provides a temporary hold until the next schedule event time. After the temporary hold time expires, the thermostat returns to normal operation. By default, the temporary hold feature is off.


When the temporary hold feature is enabled, touching the up or down arrow displays ‘TEMPORARY HOLD’.




Tap the hour setting until the preferred length of time is displayed.

Use the Up or Down arrow to select a temperature.




Cancel the temporary hold.

‘HOLD’ is displayed while the thermostat is operating at the temporary hold temperature.

## Programmable Schedules

Energy savings can be achieved by lowering the heating temperature and increasing the cooling temperature, for example, at night, or at other times when the building is unoccupied.

When operating on a programmable schedule, a ☼ or a ☾ symbol is shown in the Home menu. The ☼ or ☾ indicates the current operating temperature.

**All schedules are stored in permanent memory and are not affected by a loss of power.**

| Display | Action |
|---|---|
| ☼ | Day temperature |
| ☾ | Night temperature |

This thermostat can operate on a programmable schedule in order to automatically lower the room temperature setting. Options include:

- Turning off the schedule (OFF)
- Operating on a schedule that applies only to this thermostat zone (ZONE)
- Operating one of the four systemwide schedules as a master (Schedule Master 1 through 4*)
- Joining one of the four systemwide schedules as a member (Schedule Member 1 though 4*)

*Requires the thermostat to be connected to a tekmarNet® system.

Once the type of schedule has been selected, the thermostat can support schedules that have either:

- 2 events per day
- 4 events per day

Schedules with 4 events per day are common for residential use while 2 events per day are common for commercial installations.

The schedules can be repeated every:

- 24 hours
- 7 days (week)

A 7-day schedule allows a unique time to be set to change the temperature for each day of the week.

The schedule also includes a “SKIP” option that allows the programmable schedule to skip a temperature change and remain at the previous temperature setting. The “SKIP” setting can be found between 11:50 PM (23:50 hours) and 12:00 AM (0:00 hours).

When a programmable schedule is selected, there is a time delay while the room warms up or cools down from the ☾ temperature to the ☼ temperature. The thermostat has the option of using Optimum Start to predict the heat up or cool down rate of the room. When Optimum Start is set to On, the heating or cooling is started in advance to allow the room to reach the Set Room ☼ temperature at the time set in the programmable schedule.

## Scenes (System Override)

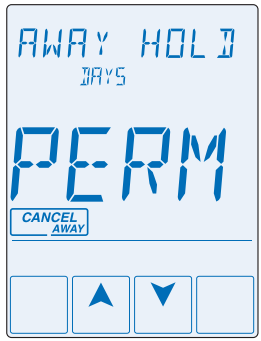
Scenes provide an easy way to save energy, when building residents are on vacation, for example, or override a programmable schedule when plans change.

### Away Key

This thermostat includes an Away Key to set the thermostat to quickly turn down the heating temperatures and increase the cooling temperatures on all thermostats and suspend heating the domestic hot water tank to maximize energy savings. To enable, go the Scene menu and set Away Key to on.


To activate the Away scene, touch “Going Away” on the screen.

- Select PERM (permanent) or a number of days using the ▲ or ▼ arrow. The range is 1 to 180 days.
- Press the home button to accept the setting or leave the screen untouched for several seconds.
- “Scene Away” is displayed on the home screen until the number of days expires.
- Touch “Cancel Away” to cancel at any time.




**The temperature is not adjustable while the thermostat is in Away.**

### Additional Scenes

Additional energy saving scenes are available when a User Switch or Gateway is installed. A complete listing of each scene is shown below.

| Scene Number | Scenes = None Operation | Scenes = Away Operation | Scenes = All Operation | Scenes = Guest Operation |
|---|---|---|---|---|
| 1 | Permanent ☼ or Schedule | Permanent ☼ or Schedule | Permanent ☼ or Schedule | Permanent ☾ |
| 2 | Scene 1 | Away | Away | Away |
| 3 | Scene 1 | Scene 1 | Permanent ☾ | Permanent ☾ |
| 4 | Scene 1 | Scene 1 | Configurable | Permanent ☾ |
| 5 | Scene 1 | Scene 1 | Permanent ☼ or Schedule | Permanent ☼ or Schedule |
| 6 | Scene 1 | Scene 1 | Temporary ☼ 3 Hours | Permanent ☾ |
| 7 | Scene 1 | Scene 1 | Temporary ☾ 4 Hours | Permanent ☾ |
| 8 | Scene 1 | Scene 1 | Temporary ☼ 8 Hours | Permanent ☾ |

### Recommendation on How to Use Scenes

Deciding how to use scenes depends on the needs and lifestyle of the customer using the building.

### Multi-Tenant Apartments

Scenes should be disabled (None) in multi-tenant buildings where each occupant has differing heating requirements.

### Residential Homes

Some residential customers may not require scenes. In that case, scenes can be disabled (None). Homeowners who wish to save on energy costs should consider using the Away scene to save energy while they are away from their property (example, on vacation or on holidays).

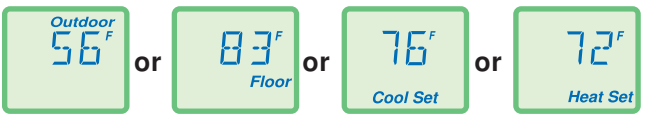
The use of the Guest scene is useful in residential applications where a number of spare bedrooms are occupied infrequent. Each spare bedroom would be set up to operate on the Guest scene. The remaining thermostats can be set up to operate on the None, Away or All scene configuration. Normally, the spare bedrooms would operate at the moon temperature settings. When guests arrive, scene 5 can be activated through a User Switch or Gateway. The spare bedroom then operates at the ☼ temperature settings or operates on a programmable schedule if a schedule has been set up. When guests depart, the scene can be changed back to scene 1 and the spare bedrooms resume operation at the ☾ temperature settings.

### Commercial Buildings

Commercial buildings are typically in use on a predictable schedule and normally can operate in scene 1. In order to accommodate staff working overtime or cleaning staff, a 3-hour or 8-hour temporary override is available when installed in conjunction with a User Switch or Gateway. In these cases, the thermostats should be set up to use the All scene configuration. At the touch of a button, the whole building changes from operating on a programmable schedule (typically at the ☾ temperature setting when not occupied) to operating at the ☼ temperature settings for 3 hours (scene 6) or 8 hours (scene 8). After the timer counts down and expires, the scene changes back to the previous scene.

## Secondary Temperature Display

This thermostat can display the outdoor, floor, or room heating and cooling temperature settings in the smaller number area at the top right of the screen. To toggle the item currently displayed, touch the secondary temperature. Display of the floor or outdoor temperature requires a connection to an outdoor or floor temperature sensor, or the thermostat is connected to a tekmarNet® system that includes an outdoor sensor. The reading of the outdoor sensor connected directly to the thermostat takes precedence over any outdoor sensor reading available on the tekmarNet® system.



## Access Levels

The thermostat Toolbox menu supports four access levels: Installer (INST), User (USER), Limited (LTD), and Secure (SEC). The access level can be adjusted when the thermostat is unlocked. There are two locations to lock the thermostat:

1. Locally on the thermostat using the Lock switch located in the wiring area.
2. Globally on the tekmarNet® system control using the Lock switch or Access level (if installed)

Both the local and global lock settings must be set to unlock before the thermostat access level is adjustable.

The selection of the access level is dependent on the use of the building and the type of occupants.

**Installer** — Suitable for HVAC installers only. Times out to User access level after 24 hours.

**User** — Suitable for most residential homeowners.

**Limited** — Suitable for rental properties or commercial buildings where some level of temperature adjustment is required.

**Secure** — Suitable for schools, churches, and other public buildings where temperature adjustment is not desired.

## tekmarNet® Address

When connected to a tekmarNet® system, each thermostat will be automatically given an address. The address is useful as a troubleshooting tool to locate thermostats with errors and allows room naming on a Gateway.

The address consists of the bus water temperature followed by the thermostat device number. Available buses are b (boiler), 1, 2 and 3. Device numbers range from 01 to 24. If the thermostat is used without a tekmarNet® system control, the bus number is not shown.

When using the thermostat with a Gateway, it is important that each address be changed to be manually set. This allows each thermostat to be named on the Gateway.

If two thermostats are manually set to the same address, an error message will appear. The error remains until one of the addresses is manually changed to a vacant address or to Auto.

Keeping a documented list of thermostat addresses is highly recommended. This is extremely helpful when troubleshooting errors. The tekmarNet® system control will display the addresses of thermostats that have errors. Refer to the address documentation to simplify the process of locating and correcting error messages.

## Cleaning the Thermostat

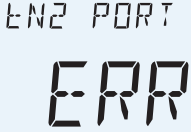
Entering the Screen Clean menu allows 30 seconds to clean the thermostat and display with a moist cloth. Do not use solvents to clean the thermostat.

# Troubleshooting

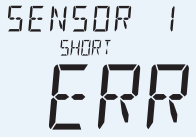
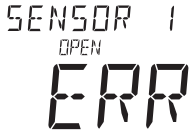
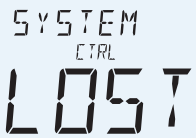
## Error Messages (1 of 4)

| Error Message | Description |
|---|---|
|  | **SETUP MENU SAVE ERROR**<br>The thermostat failed to read the Setup menu settings from memory and has reloaded the factory default settings. The thermostat stops normal operation until all settings in the Setup menu are checked except to provide freeze protection. To clear the error, set the access level to Installer and check all settings in the Setup menu. |
|  | **SET TEMP MENU SAVE ERROR**<br>The thermostat failed to read the Set Temp menu settings from memory and has reloaded the factory default settings. The thermostat stops normal operation until all settings in the Set Temp menu are checked except to provide freeze protection. To clear the error, set the access level to Installer and check all settings in the Set Temp menu. |
|  | **MONITOR MENU SAVE ERROR**<br>The thermostat failed to read the Monitor menu settings from memory and has reloaded the factory default settings. The thermostat continues to operate normally while displaying this error. To clear the error, set the access level to Installer and check all settings in the Monitor menu. |
|  | **SCHEDULE MENU SAVE ERROR**<br>The thermostat failed to read the Schedule menu settings from memory and has reloaded the factory default settings. The thermostat continues to operate normally while displaying this error. To clear the error, set the access level to Installer and check all settings in the Schedule menu. |
|  | **TOOLBOX MENU SAVE ERROR**<br>The thermostat failed to read the Toolbox menu settings from memory and has reloaded the factory default settings. The thermostat continues to operate normally while displaying this error. To clear the error, set the access level to Installer and check all settings in the Toolbox menu. |
|  | **TIME MENU SAVE ERROR**<br>The thermostat failed to read the Time menu settings from memory and has reloaded the factory default settings. The thermostat continues to operate normally while displaying this error. To clear the error, set the access level to Installer and check all settings in the Time menu. |
|  | **SCENES MENU SAVE ERROR**<br>The thermostat failed to read the Scenes menu settings from memory and has reloaded the factory default settings. The thermostat continues to operate normally while displaying this error. To clear the error, set the access level to Installer and check all settings in the Scenes menu. |

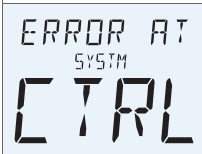
## Error Messages (2 of 4)

| Error Message | Description |
|---|---|
|  | **DISPLAY MENU SAVE ERROR**<br>The thermostat failed to read the Display menu settings from memory and has reloaded the factory default settings. The thermostat continues to operate normally while displaying this error.<br>To clear the error, set the access level to Installer and check all settings in the Display menu. |
|  | **tN2 PORT ERROR**<br>The thermostat has been connected to a tN2 zone already in use by a 2-stage thermostat. This error may also occur if 24 V (ac) is incorrectly wired to the tN2 wiring terminals.<br>To clear the error, move the thermostat's tN2 wires to an unused tN2 port on the zoning control or check the tN2 wires for 24 V (ac). |
|  | **tekmarNet® COMMUNICATION ERROR**<br>The tekmarNet® communication bus has either an open or a short circuit. The result is that there are no communications. Check for loose wires between tN4 and C. Check for short circuits between the tN4 and C wires on the House Control, Wiring Center, or Zone Manager. Check for correct polarity between the C and R wires.<br>The error clears automatically once the wiring fault has been corrected.<br>To force the error to clear while allowing a short or open circuit to continue, touch the Cancel key. |
|  | **ADDRESS ERROR**<br>Two thermostats have been manually set to the same address. The thermostat continues to operate with this error but does not communicate with the tekmarNet® system.<br>To clear this error, select an unused tekmarNet® address or select automatic addressing. |
|  | **DEVICE LIMIT**<br>More than 24 devices (thermostats or setpoint controls) have been connected to the tekmarNet® communication bus. To clear the error, remove and relocate devices to other available buses until the device count is 24 or less. |
|  | **ROOM SENSOR SHORT CIRCUIT ERROR**<br>Due to a short circuit, the thermostat is unable to read the built-in room temperature sensor. If Sensor 1 or 2 is set to Room, or the thermostat is connected to a tekmarNet® system control, the thermostat continues to operate; otherwise operation stops.<br>The error cannot be field repaired. Contact your tekmar® sales representative for repair procedures. |

## Error Messages (3 of 4)

| Error Message | Description |
|---|---|
|  | **ROOM SENSOR OPEN CIRCUIT ERROR**<br>Due to an open circuit, the thermostat is unable to read the built-in room temperature sensor. If Sensor 1 or 2 is set to Room, or the thermostat is connected to a tekmarNet® system control, the thermostat continues to operate; otherwise operation stops.<br>The error cannot be field repaired. Contact your tekmar® sales representative for repair procedures. |
|  | **SENSOR 1 OR 2 SHORT CIRCUIT ERROR**<br>Due to a short circuit, the thermostat is unable to read auxiliary Sensor 1 or 2. The thermostat stops normal operation if the Sensor is the only active Room or Floor sensor or if a Floor Maximum temperature has been set.<br>Check the auxiliary sensor wire for short circuits according to the sensor installation manual. It may be necessary to replace the auxiliary sensor. Once the error has been corrected, the error message automatically clears. |
|  | **SENSOR 1 OR 2 OPEN CIRCUIT ERROR**<br>Due to an open circuit, the thermostat is unable to read auxiliary Sensor 1 or 2. The thermostat stops normal operation if the Sensor is the only active Room or Floor sensor or if a Floor Maximum temperature has been set.<br>Check the auxiliary sensor wire for short circuits according to the sensor installation manual. It may be necessary to replace the auxiliary sensor. Once the error has been corrected, the error message automatically clears.<br>If the auxiliary sensor has been intentionally removed, set the applicable Sensor 1 or 2 setting in the Setup menu to Off. |
|  | **SYSTEM CONTROL LOST ERROR**<br>The thermostat can no longer communicate to the tekmarNet® system control. Check for open or short circuits in the tekmarNet® communication wiring. The error automatically clears once the tekmarNet® system control has been detected.<br>If the tekmarNet® system control was intentionally removed from the thermostat, remove and then re-apply power to clear the error. |
|  | **AIR GROUP MASTER ERROR**<br>Two thermostats have been assigned to be the master of the same air group number.<br>To clear the error, go to the Setup menu and either select a different air group master number or set the air group master to None. |

## Error Messages (4 of 4)

| Error Message | Description |
|---|---|
|  | **SCHEDULE MASTER ERROR**<br>Two thermostats on the tekmarNet® system have been set to the same Schedule Master number. The thermostat operates at the ☼ temperature settings while this error is present.<br>To clear the error, select a different Schedule Master number, set a different Schedule Member number, set the Schedule to Zone, or set the Schedule to None. |
|  | **SCHEDULE MEMBER ERROR**<br>The thermostat can not longer detect its schedule master. The thermostat operates at the ☼ temperature settings while this error is present.<br>To clear the error, select a different Schedule Member number, set the Schedule to Zone, or set the Schedule to None. |
|  | **CHANGE FILTER**<br>The air filter requires cleaning or replacement. Once this has been completed, touch the Cancel key in the Toolbox menu. Alternatively, go to the Monitor menu and clear the Filter Hours by touching the number and then touch the ENTER key. |
|  | **ERROR AT THERMOSTAT**<br>There is an error on a different thermostat, setpoint control, or snow melting control connected to the tekmarNet® system and not on this thermostat.<br>01 to 24 = Thermostat only network<br>Go to the thermostat with the listed address to correct the error. |
|  | **ERROR AT THERMOSTAT**<br>There is an error on a different thermostat, setpoint control, or snow melting control connected to the tekmarNet® system and not on this thermostat.<br>b:01 to b:24 = boiler bus<br>1:01 to 1:24 = bus 1 or mix 1 bus<br>2:01 to 2:24 = bus 2 or mix 2 bus<br>3:01 to 3:24 = bus 3 or mix 3 bus<br>Go to the thermostat with the listed address to correct the error. |
|  | **ERROR AT SYSTEM CONTROL**<br>There is an error on the tekmarNet® system control connected to the tekmarNet® system and not on this thermostat. |

## Technical Data

| **tekmarNet® Thermostat 554;** *One Stage Heat, One Stage Cool, One Fan* | |
|---|---|
| Literature | 554_A, 554_C, 554_D, 554_J, 554_Q, 554_U |
| Control | Microprocessor control. This is not a safety (limit) control. |
| Packaged weight | 0.8 lb. (350 g) |
| Dimensions | 5" H x 3-1/4" W x 15/16" D (127 x 82 x 23 mm) |
| Enclosure | White PVC plastic, NEMA Type 1 |
| Approvals | Meets Class B: ICES & FCC Part 15 |
| Ambient conditions | Indoor use only, 32 to 122°F (0 to 50°C), RH ≤90% non-condensing |
| Power supply | 24 V ±10%, 60 Hz, 1.8 VA standby, NEC/CEC Class 2 |
| Relays | 24 V (ac), 2 A |
| Temperature sensor | NTC thermistor, 10 kΩ @ 77°F (25°C ±0.2°C) ß=3892 |
| – Included | None |
| – Optional | tekmar type # 070, 071, 072, 073, 076, 077, 079, 082, 083, 084 |

# Limited Warranty and Product Return Procedure

**Limited Warranty** ***The liability of tekmar under this warranty is limited. The Purchaser, by taking receipt of any tekmar product ("Product"), acknowledges the terms of the Limited Warranty in effect at the time of such Product sale and acknowledges that it has read and understands same.***

**The tekmar Limited Warranty to the Purchaser on the Products sold hereunder is a manufacturer's pass-through warranty which the Purchaser is authorized to pass through to its customers. Under the Limited Warranty, each tekmar Product is warranted against defects in workmanship and materials if the Product is installed and used in compliance with tekmar's instructions, ordinary wear and tear excepted. The pass-through warranty period is for a period of twenty-four (24) months from the production date if the Product is not installed during that period, or twelve (12) months from the documented date of installation if installed within twenty-four (24) months from the production date.**

The liability of tekmar under the Limited Warranty shall be limited to, at tekmar's sole discretion: the cost of parts and labor provided by tekmar to repair defects in materials and / or workmanship of the defective product; or to the exchange of the defective product for a warranty replacement product; or to the granting of credit limited to the original cost of the defective product, and such repair, exchange or credit shall be the sole remedy available from tekmar, and, without limiting the foregoing in any way, tekmar is not responsible, in contract, tort or strict product liability, for any other losses, costs, expenses, inconveniences, or damages, whether direct, indirect, special, secondary, incidental or consequential, arising from ownership or use of the product, or from defects in workmanship or materials, including any liability for fundamental breach of contract.

The pass-through Limited Warranty applies only to those defective Products returned to tekmar during the warranty period. This Limited Warranty does not cover the cost of the parts or labor to remove or transport the defective Product, or to reinstall the repaired or replacement Product, all such costs and expenses being subject to Purchaser's agreement and warranty with its customers.

Any representations or warranties about the Products made by Purchaser to its customers which are different from or in excess of the tekmar Limited Warranty are the Purchaser's sole responsibility and obligation. Purchaser shall indemnify and hold tekmar harmless from and against any and all claims, liabilities and damages of any kind or nature which arise out of or are related to any such representations or warranties by Purchaser to its customers.

The pass-through Limited Warranty does not apply if the returned Product has been damaged by negligence by persons other than tekmar, accident, fire, Act of God, abuse or misuse; or has been damaged by modifications, alterations or attachments made subsequent to purchase which have not been authorized by tekmar; or if the Product was not installed in compliance with tekmar's instructions and / or the local codes and ordinances; or if due to defective installation of the Product; or if the Product was not used in compliance with tekmar's instructions.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, WHICH THE GOVERNING LAW ALLOWS PARTIES TO CONTRACTUALLY EXCLUDE, INCLUDING, WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, DURABILITY OR DESCRIPTION OF THE PRODUCT, ITS NON-INFRINGEMENT OF ANY RELEVANT PATENTS OR TRADEMARKS, AND ITS COMPLIANCE WITH OR NON-VIOLATION OF ANY APPLICABLE ENVIRONMENTAL, HEALTH OR SAFETY LEGISLATION; THE TERM OF ANY OTHER WARRANTY NOT HEREBY CONTRACTUALLY EXCLUDED IS LIMITED SUCH THAT IT SHALL NOT EXTEND BEYOND TWENTY-FOUR (24) MONTHS FROM THE PRODUCTION DATE, TO THE EXTENT THAT SUCH LIMITATION IS ALLOWED BY THE GOVERNING LAW.

**Product Warranty Return Procedure** All Products that are believed to have defects in workmanship or materials must be returned, together with a written description of the defect, to the tekmar Representative assigned to the territory in which such Product is located. If tekmar receives an inquiry from someone other than a tekmar Representative, including an inquiry from Purchaser (if not a tekmar Representative) or Purchaser's customers, regarding a potential warranty claim, tekmar's sole obligation shall be to provide the address and other contact information regarding the appropriate Representative.

WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. For more information: www.watts.com/prop65