**Features**

- Supports Radiant Floor Cooling
- Room Temperature Limiting
- 1 Auxiliary Sensor Input
- Floor warming (Slab Sensor 079)
- Equipment Exercising
- Freeze Protection
- Backlight
- Air Group member
- Outdoor temperature display
- CSA & US Approved for use in USA and Canada
- Pulse Width Modulation
- Requires 4 wires
- Compatibel with tekmarNet® 4 communication
- Auto Heating Cycle
- Scenes (Away override)
- Intelligent setback (Timer 033)
- Zone Post Purge
- Zone Synchronization

**Introduction**

The tekmarNet®4 Thermostat 538 provides operation for:

**One Stage Heat**
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.

**Important**

Improper installation and operation of this control could result in damage to the equipment and possibly even personal injury or death. It is your responsibility to ensure that this control is safely installed according to all applicable codes and standards. This electronic control 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.

**Caution**

Improper installation and operation of this control could result in damage to the equipment and possibly even personal injury or death. It is your responsibility to ensure that this control is safely installed according to all applicable codes and standards. This electronic control 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.

**Getting Started**

**Preparation**

Tools Required:
- tekmar or jeweler screwdriver
- Phillips head screwdriver
- Wire Stripper
- 2, #6 x 1" Wood Screws
- 18 AWG LVT Solid Wire (Low Voltage Connections)
- Optional Adapter Plate 007 (for installation on 2" x 4" gang box)

**Materials Required**
- 2, #6 x 1" Wood Screws
- 18 AWG LVT Solid Wire (Low Voltage Connections)
- Optional Adapter Plate 007 (for installation on 2" x 4" gang box)

**Installation**

Troubleshooting:
- The control circuit.

This control 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.

This manual will step through the complete installation, troubleshooting, and sequence of operation for this control.

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

Consider the following:

- **Interior Wall.**
  - Keep dry. Avoid potential leakages.
  - Relative Humidity max. 92% up to 104°F (40°C), 50% RH above 104°F (40°C).
  - No direct sun or other sources of electrical interference.

- **Installation Location**
  - Easy access for wiring, viewing, and adjusting the display screen.
  - Away from equipment, appliances, or other sources of electrical interference.
  - Non-condensing environment.

- **Mounting The Thermostat Base**
  - Fasten the base of the thermostat to the adaptor plate.
  - Feed the wiring through the openings in the back of the thermostat to the adaptor plate.
  - Fasten the base of the box.
  - Mount the thermostat to the box.
  - San Adaptor Plate 007 is required to mount the thermostat to a single gang switch box. If a single gang switch box is used, an Adaptor Plate 007 is required to mount the thermostat base.
  - If a single gang switch box is used, place a small slot screwdriver or similar tool into the slot located on the top of the thermostat and pull the thermostat away from the thermostat's base.
  - Push down on the plastic tab while pulling the thermostat away.

- **Removing The Thermostat Base**
  - Use Standard 4 conductor, 18 AWG wire.
  - Strip wire to 3/8” (10 mm) for all terminal connections.
  - The maximum length of wire is 500 feet (150 m).
  - Approximately 5 feet (1.5 m) of the finished floor.

- **Installation Location**
  - Easy access for wiring, viewing, and adjusting the display screen.
  - Away from equipment, appliances, or other sources of electrical interference.
  - Non-condensing environment.
  - Relative Humidity max. 92% up to 104°F (40°C), 50% RH above 104°F (40°C).
  - Keep dry. Avoid potential leakages onto the control.
  - Interior Wall. Avoid direct sun or other sources of electrical interference.

Consider the following:

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

---

**Mounting The Thermostat Base**

1. Pull the thermostat from the top of the thermostat.
2. While pushing down against the plastic tab, pull the thermostat away from the thermostat's base.

**Removing The Thermostat Base**

- Use Standard 4 conductor, 18 AWG wire.
- Strip wire to 3/8” (10 mm) for all terminal connections.
- The maximum length of wire is 500 feet (150 m).
- Approximately 5 feet (1.5 m) of the finished floor.

---

**Installation Location**

- Easy access for wiring, viewing, and adjusting the display screen.
- Away from equipment, appliances, or other sources of electrical interference.
- Non-condensing environment.
- Relative Humidity max. 92% up to 104°F (40°C), 50% RH above 104°F (40°C).
- Keep dry. Avoid potential leakages onto the control.
- Interior Wall. Avoid direct sun or other sources of electrical interference.

Consider the following:

- Choose the placement of the thermostats early in the construction process to enable proper wiring during rough-in.
If a switch box was not used, mount the thermostat directly to the wall. Feed the wiring through the openings in the back of the thermostat. 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.

86 x 86

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. The thermostat operates a single heating system zone.

Testing the Thermostat Wiring

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 Power

Connect the optional auxiliary sensor wires to the sensor terminals 5 and 6.
Connect the IN4 Wiring Center or Zone Manager.
Connect IN4, C, R, and W terminals on the thermostat to the IN4, C, R, and W terminals on the IN4 Wiring Center or Zone Manager.

The thermostat should enter a wall stud or similar rigid material. 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. Feed the wiring through the openings in the back of the thermostat. If a switch box was not used, mount the thermostat directly to the wall.
Mounting the Thermostat

To place the thermostat back on the mounting base:

1. Place thermostat bottom tabs on matching mounting base notches.
2. Pivot top of the thermostat towards wall, ensuring wires clear obstructions.
3. Pivot top clasp makes a clicking sound when properly closed.

Testing the Heat Relay

1. Remove the front cover from the thermostat.
2. Press the "button and set the heating temperature below the current room temperature. There should be no "H1" symbol on the display.
3. Set the electrical test meter to continuity.
4. Place probes between R (3) and W (4). There should be no continuity. If there is continuity then there may be a wiring fault or the relay may be faulty.
5. Press the "button and set the heating temperature above the current room temperature. Make sure the display does not show "WWSD". The "HI" symbol is shown on the display when communication is present. If there is continuity then there may be a wiring fault or the relay may be faulty.
6. There should be continuity between the R (3) and W (4) terminals.

Testing the tekmarNet®4 Bus

1. Remove the front cover from the thermostat.
2. To test for short circuits:
   - Disconnect the tN4 bus wires on one end.
   - Install wire nuts on each wire to ensure the wire ends are not touching.
   - Disconnect the tN4 bus wires on the other end.
   - Measure for continuity using an electrical meter.
   - If continuity is present, there is a short circuit fault along the wires. It is recommended to replace the tN4 bus wires.
3. To test for open circuits:
   - Disconnect the tN4 bus wires on one end and reconnect them together.
   - Disconnect the tN4 bus wires on the other end.
   - Use an electrical meter to measure for continuity.
   - If there is no continuity, there is an open circuit fault along the wires. It is recommended to replace the tN4 bus wires.

Mounting base:

To place the thermostat back on the mounting base:

- Place thermostat bottom tabs on matching mounting base notches.
- Pivot top of the thermostat towards wall, ensuring wires clear obstructions.
- Pivot top clasp makes a clicking sound when properly closed.
Switch Settings:

Switches are set to “On” position from the factory, and do not require changing for most applications.

Switch Position Action

1. SETBACK
   - ON: The thermostat follows a programmable setback schedule as a schedule member if available. Requires the installation of a Timer 033 to use this feature.
   - OFF: The thermostat does not follow a programmable setback schedule.

2. SCENE
   - ON: The thermostat responds to changes in the scene (system-wide manual overrides). Requires the installation of a User Switch 479 to use this feature.
   - OFF: The thermostat does not respond to scenes.

3. LOCK ACCESS LEVEL
   - ON: Locked to 'User' access level. Set to Lock when installation completed.
   - OFF: Unlock to allow 'User' and "Installer" access level. Set to Unlock during installation process.

4. UNLOCK ACCESS LEVEL
   - ON: Unlock to User access level. Set to Lock when installation completed.
   - OFF: The thermostat does not respond to scenes.

The thermostat's exterior can be cleaned using a damp cloth. Moisten the cloth with water and wipe off dirt. Do not use solvents or cleaning solutions.
### Symbols Description

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>°C</td>
<td>Temperture: Operating at the unoccupied temperature.</td>
</tr>
<tr>
<td>°F</td>
<td>Temperture: Operating at the occupied temperature.</td>
</tr>
<tr>
<td>🕒</td>
<td>Programmable schedule. Operating on a programmable schedule.</td>
</tr>
<tr>
<td>🔒</td>
<td>Access level locked to 'User' access level.</td>
</tr>
<tr>
<td>⚠️</td>
<td>Indicates an error is present.</td>
</tr>
<tr>
<td>🔥</td>
<td>Heat is turned on.</td>
</tr>
<tr>
<td>🔥</td>
<td>The heating system has been shut down for the summer.</td>
</tr>
<tr>
<td>🌞</td>
<td>Sun: Operating at the occupied temperature.</td>
</tr>
<tr>
<td>🌓</td>
<td>Moon: Operating at the unoccupied temperature.</td>
</tr>
<tr>
<td>🪐</td>
<td>Away: Operating at the Away scene temperature.</td>
</tr>
<tr>
<td>🌡️</td>
<td>The air group is cooling. Heating can start once the cooling is finished.</td>
</tr>
<tr>
<td>🛁</td>
<td>Warm weather shut down.</td>
</tr>
<tr>
<td>🏕️</td>
<td>The heating system is cooling.</td>
</tr>
</tbody>
</table>

### Button Operation

Press the ▼ or the ▲ button to select the room temperature.

### User Interface

#### Display

- **Main Display**
- **Secondary Display**

#### Button Operation

- Press the ▼ or the ▲ button to select the room temperature.
### Settings (1 of 7)

**Display**

- **SET ROOM HEAT**
  - **Range**: 40 to 95°F (4.5 to 35.0°C)
  - **Default**: 70°F (21.0°C)
  - **Access**: Installer, User
  - **Description**: SET ROOM HEAT
    - Set the room heating temperature while in the **event.

- **SET ROOM HEAT**
  - **Range**: 40 to 95°F (4.5 to 35.0°C)
  - **Default**: 65°F (18.5°C)
  - **Access**: Installer, User
  - **Description**: SET ROOM HEAT
    - Set the room heating temperature while in the **event.

- **SET ROOM HEAT AWAY**
  - **Range**: 40 to 95°F (4.5 to 35.0°C)
  - **Default**: 62°F (16.5°C)
  - **Access**: Installer
  - **Description**: SET ROOM HEAT AWAY
    - Set the room heating temperature while in the **Away** scene.

---

**Press**

- **^ and **v buttons for 2 seconds to change from one step to the next.
- Release both buttons once the step has been reached.
- Press the **^** or the **v** button to change the setting, if available.
- Press and hold down both the **^** and **v** buttons for 2 seconds to go to the next step, OR
- After 10 seconds of no button activity, the display goes back to normal operation.

**Note**: Set switch setting #3 and tekmarNet® system control to Unlock to change Access level to Installer.

---

Continued on next page.
## Settings (2 of 7)

<table>
<thead>
<tr>
<th>Display</th>
<th>Range</th>
<th>Access</th>
<th>Description</th>
<th>Set to</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="adjust_floor_set.png" alt="Adjust FLOOR SET" /></td>
<td>40 to 122°F (4.5 to 50.0°C) Default = 72°F (22.0°C)</td>
<td>Installer User</td>
<td>SET FLOOR HEAT ✴ Set the floor heating temperature while in the ✴ event. Available when: - A slab sensor is installed on the auxiliary sensor input AND Sensor setting in the Adjust menu is set to Floor AND Room Sensor setting in the Adjust menu is set to Off.</td>
<td></td>
</tr>
<tr>
<td><img src="adjust_floor_set.png" alt="Adjust FLOOR SET" /></td>
<td>40 to 122°F (4.5 to 50.0°C) Default = 65°F (18.5°C)</td>
<td>Installer User</td>
<td>SET FLOOR HEAT ⬜ Set the floor heating temperature while in the ⬜ event. Available when: - A slab sensor is installed on the auxiliary sensor input AND Sensor setting in the Adjust menu is set to Floor AND Room Sensor setting in the Adjust menu is set to Off.</td>
<td></td>
</tr>
<tr>
<td><img src="adjust_backlight.png" alt="Adjust BACKLIGHT" /></td>
<td>Off, 30 sec, On, On + ⬜ Default = 30 sec</td>
<td>Installer User</td>
<td>BACKLIGHT Select the backlight operation. Off = Permanently Off 30 = Temporary on for 30 seconds On = Permanently On On + ⬜ = On during ✴ and off during ⬜</td>
<td></td>
</tr>
</tbody>
</table>

Continued on next page.
### Settings (3 of 7)

<table>
<thead>
<tr>
<th>Display</th>
<th>Range</th>
<th>Access</th>
<th>Description</th>
<th>Set to</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEMPERATURE UNITS</td>
<td>°F or °C Default = °F</td>
<td>Installer User</td>
<td>Press the ▲ or the ▼ button to change from °F to °C and vice versa.</td>
<td></td>
</tr>
<tr>
<td>DEVICE TYPE</td>
<td>Device Type with Software Version, Address</td>
<td>Installer User</td>
<td>Display alternates between the Device Type (large number) with Software Version (upper right corner) and the thermostat address.</td>
<td></td>
</tr>
<tr>
<td>MAXIMUM SET ROOM HEAT</td>
<td>40 to 95°F (4.5 to 35.0°C) Default = 85°F (29.5°C)</td>
<td>Installer</td>
<td>Set the maximum room heating limit while in the event.</td>
<td></td>
</tr>
<tr>
<td>MAXIMUM SET ROOM HEAT</td>
<td>40 to 95°F (4.5 to 35.0°C) Default = 85°F (29.5°C)</td>
<td>Installer</td>
<td>Set the maximum room heating limit while in the event.</td>
<td></td>
</tr>
<tr>
<td>MINIMUM SET ROOM HEAT</td>
<td>40 to 95°F (4.5 to 35.0°C) Default = 45°F (7.0°C)</td>
<td>Installer</td>
<td>Set the minimum room heating limit.</td>
<td></td>
</tr>
</tbody>
</table>

Continued on next page.
<table>
<thead>
<tr>
<th>Display</th>
<th>Range</th>
<th>Access</th>
<th>Description</th>
<th>Set to</th>
</tr>
</thead>
</table>
| ![Image](image1) | Off, 40 to 122°F (Off, 4.5 to 50.0°C) Default = 72°F (22.0°C) | Installer User | **SET FLOOR MINIMUM ⚫**  
Set the floor minimum temperature while in the ⚫ event. The floor minimum heats the floor even when the room temperature is satisfied.  
The measured floor temperature is shown in the upper right hand corner of the display.  
Available when:  
• Room Sensor setting in the Adjust menu is set to On AND  
• A slab sensor is installed on the auxiliary sensor input AND  
• Sensor setting in the Adjust menu is set to Floor. |                       |
| ![Image](image2) | Off, 40 to 122°F (Off, 4.5 to 50.0°C) Default = Off | Installer User | **SET FLOOR MINIMUM ⚫**  
Set the floor minimum temperature while in the ⚫ event. The floor minimum heats the floor even when the room temperature is satisfied.  
The measured floor temperature is shown in the upper right hand corner of the display.  
Available when:  
• Room Sensor setting in the Adjust menu is set to On AND  
• A slab sensor is installed on the auxiliary sensor input AND  
• Sensor setting in the Adjust menu is set to Floor. |                       |

Continued on next page.
<table>
<thead>
<tr>
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<th>Access</th>
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<th>Set to</th>
</tr>
</thead>
</table>
| ![FLOOR MAX](image) | 40 to 122°F, Off (4.5 to 50.0°C, Off) Default = 85°F (29.5°C) | Installer | **FLOOR MAXIMUM**
Set the floor maximum temperature in order to protect the floor covering.
Available when:
- Room Sensor setting in the Adjust menu is set to On AND
- A slab sensor is installed on the auxiliary sensor input AND
- Sensor setting in the Adjust menu is set to Floor. | |
| ![SCHEDULE](image) | 1, 2, 3, 4 Default = 1 | Installer | **SCHEDULE**
Thermostat can follow schedule master 1, 2, 3, or 4.
Available when:
- Switch setting 1 is set to Setback (On Position). | |
| ![SUPPLY PUMP](image) | OFF or On Default = On | Installer | **HEAT SUPPLY PUMP**
During heating, select whether or not the system supply pump should turn on or be off to allow a zone group pump per manifold.
Available when:
- A reset control is present on the tekmarNet® system. | |

Continued on next page.
<table>
<thead>
<tr>
<th>Display</th>
<th>Range</th>
<th>Access</th>
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</tr>
</thead>
<tbody>
<tr>
<td>HEAT SUPPLY PUMP DELAY&lt;br&gt;OFF or On&lt;br&gt;Default = OFF</td>
<td>Installer</td>
<td>During heating, select whether or not the system supply pump should be delayed by 3 minutes before coming on (for thermal motor or wax actuator).&lt;br&gt;Available when:&lt;br&gt;• A reset control is present on the tekmarNet® system.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HEAT CYCLES PER HOUR&lt;br&gt;Auto, Synchronization&lt;br&gt;Default = Synchronization</td>
<td>Installer</td>
<td>Select either Auto cycle or Synchronize with other thermostats on the tekmarNet® system.&lt;br&gt;Choose Synchronize when zone heated using a boiler.&lt;br&gt;Choose Auto when zone is non-hydronic heating.&lt;br&gt;Available when:&lt;br&gt;• No reset control on the tekmarNet® system.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AIR GROUP&lt;br&gt;OFF, 1 to 16</td>
<td>Installer</td>
<td>Select if this thermostat should be an air group member.&lt;br&gt;Select off if the thermostat is not an air group member.&lt;br&gt;Select 1 though 16 to select the air group number.&lt;br&gt;Available when:&lt;br&gt;• The thermostat is connected to other thermostats using tekmarNet®.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROOM SENSOR&lt;br&gt;On or Off&lt;br&gt;Default = On</td>
<td>Installer</td>
<td>Select whether the built-in air temperature sensor is on or off.&lt;br&gt;Available when:&lt;br&gt;A floor sensor or room sensor is installed on the auxiliary sensor input.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Continued on next page.
<table>
<thead>
<tr>
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<th>Range</th>
<th>Access</th>
<th>Description</th>
<th>Set to</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AUXILIARY SENSOR</strong></td>
<td>Off, Room, Outdoor, Floor, Floor dSP</td>
<td>Installer</td>
<td>Select the type of auxiliary sensor. Off = no auxiliary sensor, Room = Indoor Sensor, Outdoor = Outdoor Sensor, Floor = Slab Sensor, Floor dSP = Floor sensor reading in upper number field. Available when: Auxiliary sensor automatically detected.</td>
<td></td>
</tr>
<tr>
<td><strong>tekmarNet® ADDRESS</strong></td>
<td>01 to 24 (no reset control), b:01 to b:24 (reset control - boiler), 1:01 to 1:24 (reset control - mixing)</td>
<td>Installer</td>
<td>The address is shown in the large number field. “Auto” is shown in the upper number field when using automatic addressing. Press the ▲ or the ▼ button to manually select an address. The address can be returned to automatic “Auto” addressing when address set above 24.</td>
<td></td>
</tr>
<tr>
<td><strong>FLOOR COOLING</strong></td>
<td>OFF or On Default = OFF</td>
<td>Installer</td>
<td>Select if the thermostat should operate the heating relay W for radiant floor cooling. Available when: • Connected to a tekmarNet® heat pump or chiller system control.</td>
<td></td>
</tr>
<tr>
<td><strong>ESCAPE</strong></td>
<td>None</td>
<td>Installer User</td>
<td>Press the ▲ or the ▼ button to return to normal operation.</td>
<td></td>
</tr>
</tbody>
</table>
Heating Operation

Section A

Sequence of Operation

When using only a room temperature sensor, the thermostat operates to maintain the Set Room Heat temperature. When using only a floor temperature sensor, the thermostat operates to maintain the Set Floor Heat temperature. In this case, the thermostat does not attempt to control the air temperature. This is ideal for bathrooms and some kitchen applications where the customer wants their feet to feel warm on the floor.

This is also ideal for garages so that the heating system is not affected by the opening of the garage door in cold outdoor weather.

When connected to a tekmarNet® system control, the thermostat operates a zone or thermal zone valve, the Heat Supply Pump.

Hydronic System Supply Pump

The thermostat operates the heat whenever the room or floor temperature falls below 40°F (4.5°C).

Exercising

When connected to a tekmarNet® reset 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.

Flush Feature

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. When connected to a tekmarNet® reset control, the thermostat will display the “FLUSH” icon on the display when the thermostat is flushing.
If the thermostat operates a thermal motor (wax actuator) zone valve, set the Heat Supply Pump Delay 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 Heat Supply setting can be set to Off, and the heat pump system control operates in a heat pump mode, all thermostats set for floor cooling on the tekmarNet© heat pumps will all activate the first stage heating contact (H1) at the same time to allow chilled water into the system. The thermostat continues to open the heat pump system control in cooling mode until the pilot is turned off. When set to On, the heat pump system control must be in Warm Weather Shut Down (WWSD).

The thermostat has the option to support radiant floor cooling when connected to a tekmarNet® heat pump system control. The floor cooling setting must be set to On. When the heat pump system control operates in cooling mode, all thermostats are set for floor cooling. When set to Cool, the heat pump system control must be in Warm Weather Shut Down (WWSD).

The DHW Tank Priority is determined by the DHW priority of the tekmarNet® reset control. When the heat pump system control operates in cooling mode, all thermostats are set for floor cooling. When set to Cool, the heat pump system control must be in Warm Weather Shut Down (WWSD).

Air Group Operation

In order to prevent heating and cooling at the same time, this thermostat can operate together with other thermostats on a tekmarNet© system to form an air group. One thermostat is assigned as the air group master. The air group master operates the cooling equipment for the group. The air group member thermostats can be set to be a member of the air group, and all air temperature readings of all the air group member thermostats are communicated to the air group master, and a temperature average is determined.

When the air group master is in cooling operation, the air group member thermostats do not operate the heating system for air heating. If the Set Room Heat temperature is adjusted while the air group is cooling, the snowflake icon is flashed to alert the user that the cooling system is present. Once the cooling shuts off, the heating can start operation.

Floor Cooling

When connected to a tekmarNet® heat pump system control, the floor cooling setpoint is 67°F (19.5°C). When the heat pump system control operates in cooling mode, all thermostats set for floor cooling on the tekmarNet© heat pumps will all activate the first stage heating contact (H1) at the same time to allow chilled water into the system. The thermostat continues to open the heat pump system control in cooling mode until the pilot is turned off. When set to Cool, the heat pump system control must be in Warm Weather Shut Down (WWSD).

When the heat pump system control operates in cooling mode, all thermostats are set for floor cooling. When set to Cool, the heat pump system control must be in Warm Weather Shut Down (WWSD).

Warm Weather Shut Down

When the outdoor air temperature exceeds the Warm Weather Shut Down (WWSD) temperature, the heating system is shut off. This is determined by the WWSD priority of the tekmarNet® reset control. If the WWSD temperature is exceeded, the heating system is shut off. When a tekmarNet® reset control is heating an indirect Domestic Hot Water (DHW) tank, the heating system is shut off. When the DHW tank priority is turned off, the DHW tank is not considered for heating priority. The DHW tank priority 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. In special applications with multiple zoning manifolds, the Heat Supply Pump setting can be set to Off. This provides a three minute delay to allow the pump to reach the target temperature. If the thermostats operate as a thermal motor (wax actuator), the heat supply pump is turned on.
Lowering the room temperature setting reduces the amount of fuel required to heat the building resulting in energy savings. This thermostat can follow a programmable schedule in order to automatically lower the room temperature setting. A schedule master such as a Timer 033 is required in order to gain programmable schedule functionality.

<table>
<thead>
<tr>
<th>Display Action</th>
<th>Scene</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occupied temperature.</td>
<td>1</td>
</tr>
<tr>
<td>Away temperature.</td>
<td>2</td>
</tr>
<tr>
<td>Operates at the occupied temperature schedule or follows programmable schedule.</td>
<td>3</td>
</tr>
</tbody>
</table>

**Room Temperature Setting**

This thermostat responds to the following scenes:

- 479 Provide scene adjustment.

Scenes provide an easy way to save energy while away. While in the Away scene, the room temperature cannot be changed using the or buttons. Change the scene from Away to or to change the temperature.

When a programmable schedule is selected, there is a time delay for the temperature to change from the temperature to the temperature. The thermostat uses Optimum Start to predict the heat up and cool off rate of the room. The optimum start feature allows the room to reach the set room temperature by the time set in the programmable schedule. This applies for both heating and cooling.

**Scenes (System Override)**

- While in the Away scene, the room temperature cannot be changed using the or buttons. Change the scene from Away to or to change the temperature.

When a programmable schedule is selected, the room temperature setting can be followed. A schedule master such as a Timer 033 is required in order to gain programmable schedule functionality. The building resulting in energy savings.

**Schedules**

- Lowering the room temperature setting reduces the amount of fuel required to heat the building.
### Troubleshooting

#### Error Messages (1 of 4)

<table>
<thead>
<tr>
<th>Error Message</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CONTROL ERROR</strong></td>
<td>The thermostat was unable to correctly read settings from memory and has reloaded the factory default settings. The thermostat does not operate the heating, cooling, or the fan while this error message is present. Error clears once all adjust menu settings in the Installer access level (unlocked) have been checked. Set thermostat’s switch setting #3 to unlock and unlock the tekmarNet® system control. Then press and hold ⬆️ and ⬇️ buttons together for 2 seconds to enter the adjust menu. Continue until all settings have been reviewed.</td>
</tr>
<tr>
<td><strong>BUS ERROR</strong></td>
<td>The tekmarNet® 4 communication bus has either an open or a short circuit. The result is that there are no communications. Check for loose wires. 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. Error clears automatically once wiring fault has been corrected. If the thermostat is intentionally removed from the tekmarNet® 4 bus, press the ⬆️ and ⬇️ buttons together to clear the error message.</td>
</tr>
<tr>
<td><strong>DEVICE LIMIT</strong></td>
<td>The number of devices on the tekmarNet® bus has exceeded 24. Devices include tekmarNet® Thermostats and Setpoint Controls. The device count must be lowered to 24 or less. If possible, move devices to other tekmarNet® buses. Error clears automatically once the number of devices on the tekmarNet® bus is at 24 or lower.</td>
</tr>
<tr>
<td>Error Message</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>ADDRESS ERROR</strong></td>
<td>This thermostat and another device have been manually given the same tekmarNet® address. Error clears automatically once this thermostat is given a new manually set address or if the thermostat is set to automatic addressing.</td>
</tr>
<tr>
<td><strong>ROOM SENSOR SHORT CIRCUIT</strong></td>
<td>The built-in air temperature sensor has a short circuit fault. Do not confuse this error with the auxiliary room sensor short circuit error. This error cannot be field repaired. Contact your wholesaler or tekmar sales representative for details on repair procedures.</td>
</tr>
<tr>
<td><strong>ROOM SENSOR OPEN CIRCUIT</strong></td>
<td>The built-in air temperature sensor has an open circuit fault. Do not confuse this error with the auxiliary room sensor short circuit error. This error cannot be field repaired. Contact your wholesaler or tekmar sales representative for details on repair procedures.</td>
</tr>
<tr>
<td><strong>AIR GROUP MEMBER ERROR</strong></td>
<td>The thermostat has been selected to join an air group as a member, yet there is no air group master thermostat. Error clears once the thermostat detects an air group master or the air group is set to OFF.</td>
</tr>
</tbody>
</table>
## Error Messages (3 of 4)

<table>
<thead>
<tr>
<th>Error Message</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FLOOR SENSOR SHORT CIRCUIT</strong></td>
<td>The auxiliary floor sensor has a short circuit. Check for damaged wires. Locate and repair the problem as described in the Data Brochure D072 or D079. Error clears once the floor sensor fault is corrected.</td>
</tr>
<tr>
<td><strong>FLOOR SENSOR OPEN CIRCUIT</strong></td>
<td>The auxiliary floor sensor has an open circuit. Check for loose or damaged wires. Locate and repair the problem as described in the Data Brochure D072 or D079. Error clears once the floor sensor fault is corrected. If the floor sensor was intentionally removed, locate the Room Sensor setting in the Adjust menu and set to On. Power the thermostat down and up to clear the error.</td>
</tr>
<tr>
<td><strong>OUTDOOR SENSOR SHORT CIRCUIT</strong></td>
<td>The auxiliary outdoor sensor has a short circuit. Check for damaged wires. Locate and repair the problem as described in the Data Brochure D070. Error clears after the outdoor sensor fault is corrected.</td>
</tr>
<tr>
<td><strong>OUTDOOR SENSOR OPEN CIRCUIT</strong></td>
<td>The auxiliary outdoor sensor has an open circuit. Check for loose or damaged wires. Locate and repair the problem as described in the Data Brochure D070. Error clears once the outdoor sensor fault is corrected. If the outdoor sensor was intentionally removed, power the thermostat down and up to clear the error.</td>
</tr>
</tbody>
</table>
### Error Messages (4 of 4)

<table>
<thead>
<tr>
<th>Error Message</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AUXILIARY ROOM SENSOR SHORT CIRCUIT</strong>&lt;br&gt; <img src="image" alt="SENSOR SHR" /></td>
<td>The auxiliary room sensor has a short circuit. Check for damaged wires. Locate and repair the problem as described in the Data Brochure D076, D077, or D084. Error clears after the auxiliary room sensor fault is corrected.</td>
</tr>
<tr>
<td><strong>AUXILIARY ROOM SENSOR OPEN CIRCUIT</strong>&lt;br&gt; <img src="image" alt="SENSOR OPN" /></td>
<td>The auxiliary room sensor has an open circuit. Check for loose or damaged wires. Locate and repair the problem as described in the Data Brochure D076, D077, or D084. Error clears once the auxiliary room sensor fault is corrected. If the auxiliary room sensor was intentionally removed, power the thermostat down and up to clear the error.</td>
</tr>
<tr>
<td>Symptom Look For...</td>
<td>Corrective Action</td>
</tr>
<tr>
<td>---------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>No Heat</td>
<td>H1 Symbol</td>
</tr>
<tr>
<td></td>
<td>H1 Symbol indicates heat is on. Check if zone valve or zone pump is operating.</td>
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</tbody>
</table>

**Frequently Asked Questions**

- **H1 Symbol**
  - **Heat** is on. Check if zone valve or zone pump is operating.
  - **Flashing WWSD**
    - Increase WWSD setting on tekmarNet® reset control.
  - **Flashing Away**
    - Change User Switch to Normal scene 1.

- **Max Floor**
  - Installer can increase the Maximum Set Temperature before scheduled time.
  - Floor temperature has reached the Floor Maximum setting. If the floor is not heated, then the floor sensor may be faulty and require replacement.

- **Min Floor**
  - Installer can decrease the Minimum Set Temperature.
  - Floor temperature not decrease button does not decrease.

- **Pressing**
  - Floor Minimum temperature not decrease.
  - Floor Minimum does not increase.

- **Optimum start**
  - “Learns” the heat up and cool off rate of the room and starts the heating or cooling early so that the room is comfortable at the scheduled time.

- **Floor Heat**
  - Installer can decrease the Minimum Set Temperature.
  - Floor temperature does not decrease.

- **Max Installer**
  - Installer can decrease the Minimum Set Temperature.
  - Floor temperature does not decrease.

- **Flashing Type**
  - Installer can increase the Maximum Set Temperature before scheduled time.
  - Floor temperature not increase button does not increase.

- **Pressing**
  - Floor Minimum temperature not increase.
  - Floor Minimum does not decrease.

- **Pressing**
  - Floor Heat type
  - Installer can decrease the Minimum Set Temperature.
  - Floor temperature does not decrease.

- **Pressing**
  - Floor Heat type
  - Installer can increase the Minimum Set Temperature.
  - Floor temperature does not increase.

- **Pressing**
  - Floor Heat type
  - Installer can decrease the Minimum Set Temperature.
  - Floor temperature does not decrease.

- **Pressing**
  - Floor Heat type
  - Installer can increase the Minimum Set Temperature.
  - Floor temperature does not increase.
**Technical Data**

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<th>Item Setting</th>
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<tbody>
<tr>
<td>Set Room Heat</td>
<td>Set Floor Heat</td>
<td>Min Room Heat</td>
</tr>
<tr>
<td>Max Room Heat</td>
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<tr>
<td>Room Sensor</td>
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<tr>
<td>Air Group</td>
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<td>Heat Cycles Per Hour</td>
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<td>Schedule Member</td>
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<tr>
<td>Set Floor Max</td>
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<td>Set Floor Min</td>
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<td>Enclosure</td>
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<td>White PVC plastic, NEMA Type 1</td>
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<tr>
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Limited Warranty and Product Return Procedure

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 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 of warranties by Purchaser to its customers.

The pass-through Limited Warranty is void 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 EXPIRES TWELVE (12) MONTHS AFTER THE PRODUCTION DATE. TO THE EXTENT THAT SUCH LIMITATION IS PROHIBITED BY THE GOVERNING LAW, THE TERM OF ANY OTHER WARRANTY IS TO EXPIRE TWENTY-FOUR (24) MONTHS FROM THE PRODUCTION DATE, TO THE EXTENT THAT SUCH LIMITATION IS ALLOWED BY THE GOVERNING LAW.