Foundation

Foundation Smart Thermostat & Home Energy Gateway User Guide

Programmable Communicating Thermostat & In-Home Energy Use Display

AW000718-C

Legal Declarations

Foundation Smart Thermostat & Home Energy Gateway User Guide

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Table of Contents

1 How to use this guide

1.1 Purpose

This user guide describes the basic operation of Foundation and how to use Foundation to maximize your comfort and manage your electricity consumption.

1.2 Intended Audience

This user guide is intended for residential customers enrolled in an energy saving program offered by their electricity service provider.

1.3 Text Conventions

Bold text indicates important concepts, and menu options or button names in procedures. For example: Press the **Home** button to switch between the **Energy** mode and **Thermostat** mode home screens.

Text with initial capital letters indicates terminology that appears on Foundation screens, such as menu options or screen titles. For example, User Options Wizard or Set Temporary Hold.

1. Numbers identify multi-step procedures.

❖ This symbol identifies a single-step procedure.

This symbol identifies energy- and money-saving tips.

This symbol identifies warnings.

2 About Foundation

Foundation is a home energy control device that combines fundamental home climate control and energy consumption management. It provides two modes to allow you to control your home's temperature, and to manage your energy consumption and costs:

- Use the **Thermostat** mode to program the temperatures settings according to your schedule.
- Use the **Energy** mode to manage your home's energy consumption, and your energy costs based on utility price levels. You can choose to prioritize either cost savings or home comfort.

2.1 Operating Foundation

Foundation uses advanced climate control algorithms to control your central heating and cooling systems. It also determines and displays how much electricity you are using and how much it costs.

Button	Button Name	Functions
	Home	• Switches between the **Thermostat** and the **Energy** mode home screens. • Exits and cancels any changes within a menu, and returns to the last visited home screen. • Wakes up the unit.
	Menu/Select ✓	• Displays a menu. • Selects the highlighted item. • Navigates to the next step in a wizard. • Confirms messages • Wakes up the unit.
	Up ▲ **and** Down▼	• In the Thermostat mode, adjusts the target temperature. • In the Energy mode, adjusts conservation settings. • Moves the highlighted selection in a menu. • Wakes up the unit.

2.2 Sleep Mode

The display automatically enters sleep mode after a period of inactivity. In sleep mode, the screen dims, but still shows the home screen information for the currently selected mode.

❖ To wake up the system, press any button.
The screen lights up and displays the last home screen visited.

2.3 LED Indicators

Foundation has four light-emitting diodes (LED) that signal events from your utility. Each LED illuminates for the duration of the corresponding event.

The blue light indicates that the thermostat has adjusted your temperature setting to save energy in response to a utility event. As the price of electricity rises, the yellow, orange, and red lights illuminate in that order, to indicate increasing prices.

For more information about utility events and the LED Indicators, see 4.2 Utility Events.

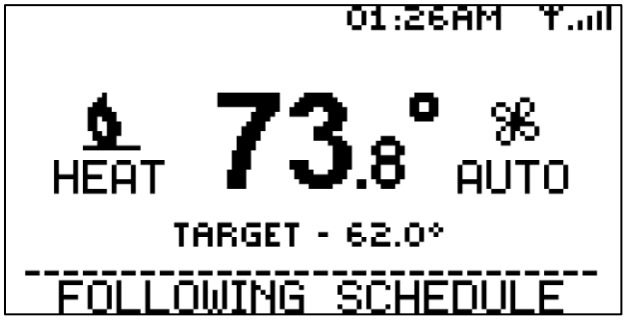
2.4 Thermostat and Energy Modes

Foundation operates in two modes: **Thermostat** mode and **Energy** mode.

2.4.1 Thermostat mode

The **Thermostat** mode provides climate control and comfort settings. You can adjust the temperature, program a schedule, and change the thermostat and fan settings. Review and adjust your schedule when the seasons change, or if you frequently make temporary overrides.

The **Thermostat** home screen provides direct access to the household climate control features.

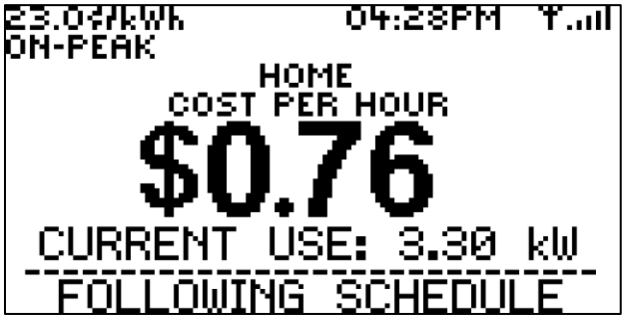


For more information about the **Thermostat** home screen, see 3.1 Thermostat Home Screen.

2.4.2 Energy mode

The **Energy** mode provides consumption and utility rate information. Use this information to make informed decisions about your home comfort and consumption settings. You can prioritize energy cost savings based on utility price levels and your personal comfort requirements.

The **Energy** home screen provides at-a-glance consumption data and access to historic data and energy consumption information to help you make informed decisions about your comfort and consumption settings.



For more information about the **Energy** home screen, see 4.1 Energy Home Screen.

2.5 Switch between Thermostat and Energy Modes

You can switch between the **Thermostat** mode and the **Energy** mode when either home screen is active.

- From a home screen, press the **Home** button to switch between the **Thermostat mode** and the **Energy** mode home screens.

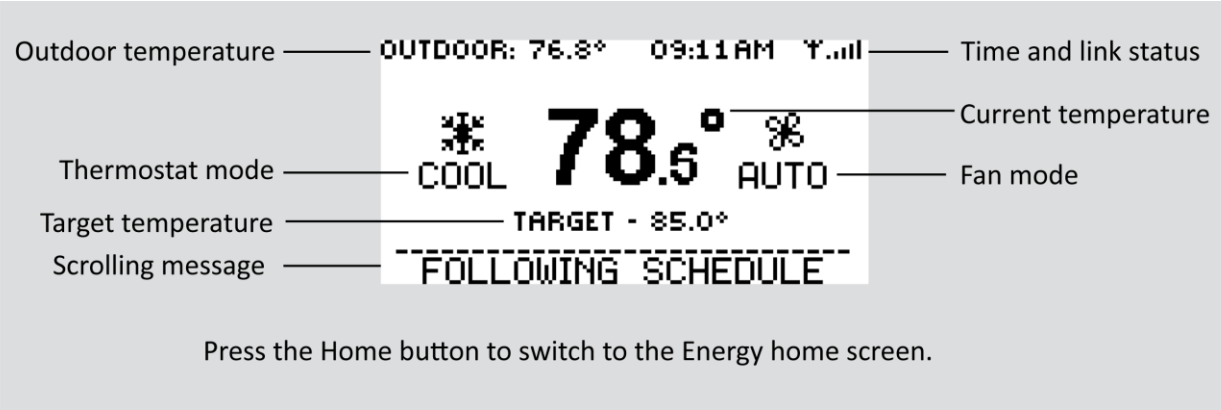
3 Thermostat Mode

The **Thermostat** mode provides climate control and comfort settings. You can adjust the target temperature, change the thermostat mode and fan settings, program a schedule, and set a temporary temperature hold.

You can also manage more advanced settings, such as creating a weekly schedule, setting temperatures for different occasions such as vacations, and configuring user options.

3.1 Thermostat Home Screen

The **Thermostat** home screen provides direct access to the household climate control features.



The scrolling message indicates what the thermostat is doing. For more information about the scrolling messages, see 3.1.4 Scrolling Messages.

3.1.1 Information below the Temperature

The following information can appear below the temperature:

- TARGET – 70.0°: The thermostat is operating normally, and following the schedule.
- ENERGY EVENT UNTIL 11:00 PM: The utility has sent an energy event to adjust your thermostat temperature.
- CONSERVATION UNTIL 11:00 PM: The thermostat has adjusted the temperature in response to a price increase.
- TEMPORARY UNTIL 11:00 PM: The temperature has been adjusted temporarily until the next schedule change.
- PERMANENT HOLD IN EFFECT: A permanent hold has been set.
- TIMED UNTIL 21 DEC 2012: A timed or vacation hold has been set.

3.1.2 Thermostat Mode Symbols

The following table describes the thermostat mode symbols that appear on the **Thermostat** home screen. For more information see 3.4.1 Thermostat Mode Settings and 6.1.4 Equipment Settings.

Symbol	Description
COOL	**COOL**: The Thermostat Mode is set to Cool. The symbol displays regardless of whether the cooling equipment is running. This setting is available only when one or more cool stages are enabled in the Equipment Settings.
COOL2	**COOL2**: The Thermostat Mode is set to Cool. The cooling equipment is running, and the second cool stage is enabled, either when the cooling equipment has run longer than the Recovery Time, or when you change the target cool temperature while the cooling equipment is running. This setting is available only when there are two cool stages enabled in the Equipment Settings.
HEAT	**HEAT**: The Thermostat Mode is set to Heat. The symbol displays regardless of whether the heating equipment is running. This setting is available only when one or more heat stages are enabled in the Equipment Settings.
HEAT2	**HEAT2**: The Thermostat Mode is set to Heat. The heating equipment is running, and the second heat stage is enabled, either when the furnace has run longer than the Recovery Time, or when you change the target heat temperature while the heating equipment is running. This setting is available only when two or more heat stages are enabled in the Equipment Settings.
HEAT3	**HEAT3**: The Thermostat Mode is set to Heat. The heating equipment is running. The symbol displays when the third heat stage is enabled, either when the heating equipment has run longer than the Recovery Time, or when you change the target heat temperature while the HEAT2 equipment is running. This setting is available only when three heat stages are enabled in the Equipment Settings.
AUTO	**AUTO (heat)**: The Thermostat Mode is set to Auto. The heating equipment is either running, or was the last equipment to run. This setting is available only when heat and cool stages are enabled in the Equipment Settings.
AUTO	**AUTO (cool)**: The Thermostat Mode is set to Auto. The cooling equipment is either running, or was the last equipment to run. This setting is available only when heat and cool stages are enabled in the Equipment Settings.
AUTO2	**AUTO2 (heat)**: The Thermostat Mode is set to Auto. The heating equipment is running, and the second heat stageis enabled, either when the furnace has run longer than the Recovery Time, or when you change the target heat temperature while the heating equipment is running. This setting is available only when heat and cool stages are enabled in the Equipment Settings, and when more than one heat stage is enabled.
AUTO2	**AUTO2 (cool)**: The Thermostat Mode is set to Auto. The cooling equipment is running and the second cool stage is enabled, either when the cooling equipment has run longer than the Recovery Time, or when you change the target cool temperature while the cooling equipment is running. This setting is available only when heat and cool stages are enabled in the Equipment Settings, and when more than one cool stage is enabled.
AUTO3	**AUTO3 (heat)**: The Thermostat Mode is set to Auto. The heating equipment is running, and the third heat stage is enabled, either when the furnace has run longer than the Recovery Time, or when you change the target heat temperature while the HEAT2 equipment is running. This setting is available only when heat and cool stages are enabled in the Equipment Settings, and when three heat stages are enabled.
OFF	**OFF**: The Fan Setting is set to Off. Use this setting to ensure that no equipment runs. This setting is available with any equipment setup.
EMERG	**EMERG**: The Fan Setting is set to Emergency Heating. The emergency heating equipment is running. This symbol displays only when you select emergency heating. This setting is available only when the Equipment Type is Heat Pump, and there are more heating stages than cooling stages.

3.1.3 Fan Symbols

The following table describes the fan symbols that appear on the **Thermostat** home screen.

Symbol	Description
	**ON**: The Fan Setting is set to On. The fan runs continuously.
	**AUTO**: The fan runs only when the heating or cooling systems are on.

For more information, see 3.4.2 Fan Settings.

3.1.4 Scrolling Messages

The following table shows the scrolling messages that appear at the bottom of the home screen:

Message	Description
Following Schedule	Displayed when the thermostat scheduled setpoint is the active setpoint.
No Hold active [*Heating/Cooling*] to [*target*]When hold active Hold at [*target*]	Displayed when there is a hold in progress, or when the system is running the equipment.
Anticipating for [*next setpoint*] °	Displayed when the equipment is anticipating a scheduled setpoint change.
[*Second / Third*] stage on	Displayed when more than one stage is on.
Aux. Heat On	Displayed when the emergency heat stage is engaged.
Rate: [*current price*][*]	Displayed when pricing information is available. The current price is displayed in either cents or dollars, depending on the current price. A star indicates that you manually entered the price and rate information in Foundation, and that it does not come from the meter.
Limiting [*heat/cool*] To [*active setpoint*]	Displayed when a conservation event is in progress.
Limiting [*heat/cool*] To [*active setpoint*]	Displayed when a utility event is in progress.
Limiting Usage To [*event duty cycle]*%	Displayed when a utility event is in progress, and the duty cycle is the limiting factor or is the only field that is specified in the event (no temperatures are specified).
Please Change Filter	Displayed when the filter reminder alarm is triggered.
Configuration Error	Displayed when there is a memory problem in the thermostat.
Short Circuit Detected	Displayed when a short circuit is detected on the output stages.
Low Battery	Displayed when the battery level is low.
Filter Fault Detected	Displayed when the filter hardware fault is detected.
Heat Pump Fault	Displayed when the heat pump hardware fault is detected.
Brown Out Fault	Displayed when there is a brown out.
Communication Error	Displayed when there is a problem communicating with the ZigBee module, or communicating over the ZigBee network.

3.2 Change the Current Temperature Temporarily

You can temporarily change the temperature at any time, without affecting the schedule. This is called a temporary temperature hold. The hold remains in effect until the next scheduled temperature change.

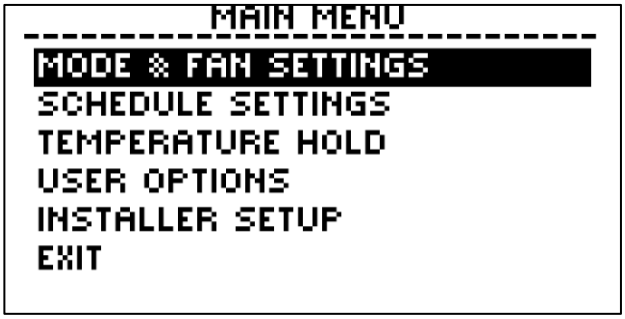
If you adjust the target temperature, and then leave the new temperature for three seconds, it becomes a temporary temperature hold.

- From the **Thermostat** home screen, press the Up ▲ or Down ▼ button to adjust the temperature.
  After three seconds the screen returns to the home screen.

For information about how to cancel a temporary temperature hold, see 3.6.5 Cancel a Hold.

3.3 Thermostat Main Menu

The **Thermostat** main menu lists the settings that you can configure.

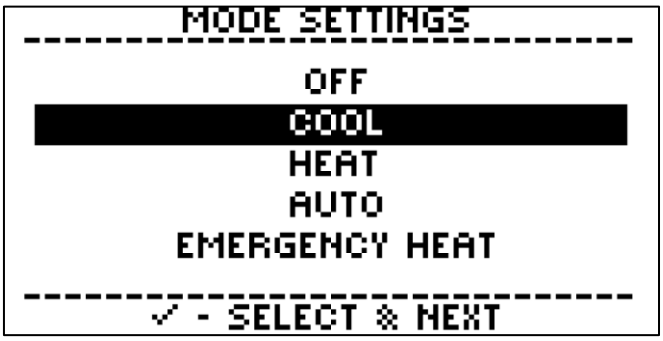


1. From the **Thermostat** home screen, press the Menu/Select ✓ button to display the main menu.
2. Press the Up ▲ and Down ▼ buttons to navigate through the menu options.

3.4 Thermostat Mode and Fan Settings

3.4.1 Thermostat Mode Settings

The Foundation thermostat operates in heat mode by default, but you can change the mode.



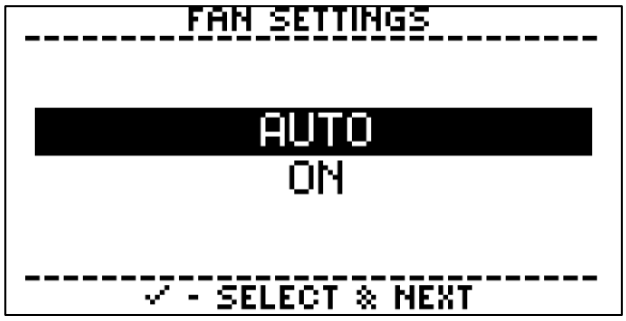
The available settings for the thermostat mode depend on the type of heating or cooling equipment that is used in your home:

- **Off**: Heating and cooling systems are off. The fan may still run for home ventilation.
- **Cool**: (Available only if you have cooling equipment.) The thermostat controls only the cooling system, which runs as needed to bring the home to the target cool temperatures in the schedule.
- **Heat**: (Available only if you have heating equipment.) The thermostat controls only the heating system, which runs as needed to bring the home to the target heat temperatures in the schedule.
- **Auto**: (Available only if you have both heating and cooling equipment.) The thermostat automatically selects heating or cooling, to bring the indoor home temperature to the target temperatures in the schedule.
- **Emergency Heat**: (Available only for heat pumps with auxiliary heat.) The thermostat controls only the emergency (auxiliary) heat, which locks out the heat pump's compressor. Use this setting only when you want to use only auxiliary heat.

For images and descriptions of the corresponding symbols that appear on the Thermostat home screen, see 3.1.2 Thermostat Mode Symbols.

3.4.2 Fan Settings

You can change the fan setting.

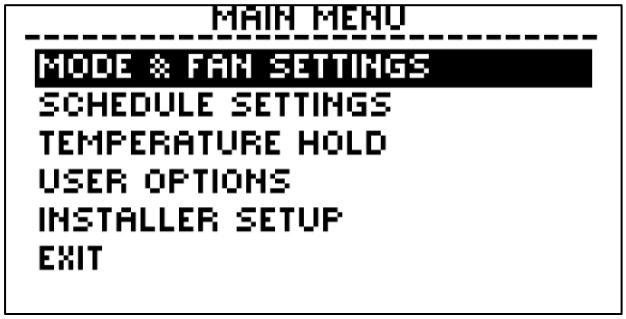


- **Auto**: The fan runs only when the heating or cooling systems are on.
- **On**: The fan runs continuously, even when the thermostat mode is set to **OFF**.

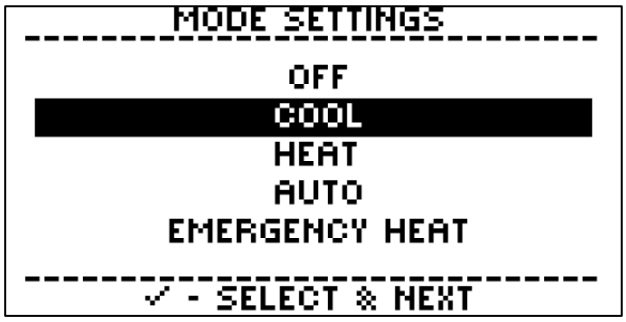
To save electricity costs, use the **Auto** setting. Your fan uses more electricity when it is set to **On** and runs continuously.

For images and descriptions of the corresponding symbols that appear on the **Thermostat** home screen, see 3.1.3 Fan Symbols.

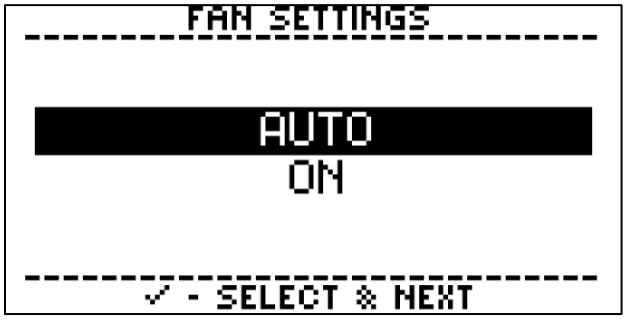
3.4.3 Change the Thermostat Mode and Fan Settings



1. From the **Thermostat** home screen, press the Menu/Select ✓ button to display the main menu.
2. Press the Menu/Select ✓ button to select **Mode & Fan Settings**.



3. On the Mode Settings screen, press the Up ▲ or Down ▼ button to highlight the thermostat mode that you want.
4. Press the Menu/Select ✓ button.

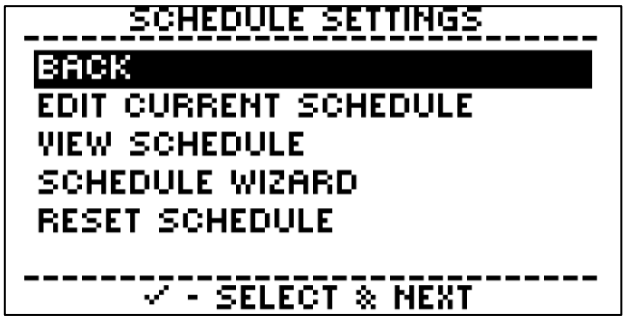


5. On the **Fan Settings** screen, press the Up ▲ or Down ▼ button to highlight the fan setting that you want.
6. Press the Menu/Select ✓ button.

3.5 Thermostat Schedule

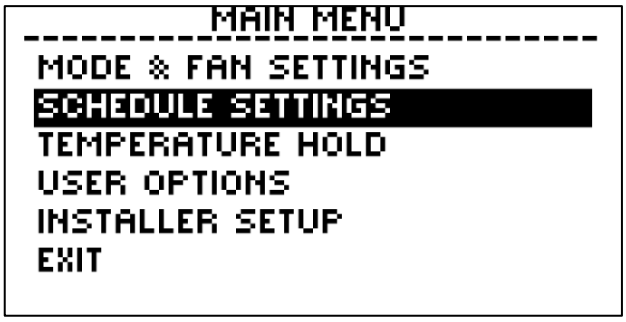
The **Thermostat Schedule** is available from the Thermostat home screen.

The **Schedule Settings** menu includes options for changing and viewing the schedule:

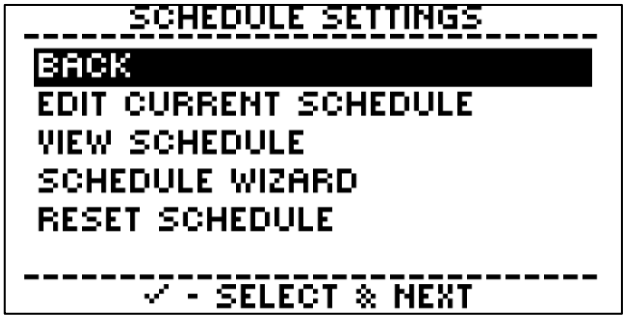


- **Edit Current Schedule**: Use this option to change specific settings in the weekly schedule.
- **View Schedule**: Displays the current schedule.
- **Schedule Wizard**: Use this option to program a new schedule.
- **Reset Schedule**: Use this option to reset the schedule to the default schedule.

3.5.1 Display the Schedule Menu



1. From the **Thermostat** home screen, press the Menu/Select ✓ button to display the main menu.



2. Press the Up ▲or Down ▼ button to highlight the **Schedule Settings** option, and then press the Menu/Select ✓ button.

   The **Schedule Settings** screen displays.

3.5.2 Default Schedule

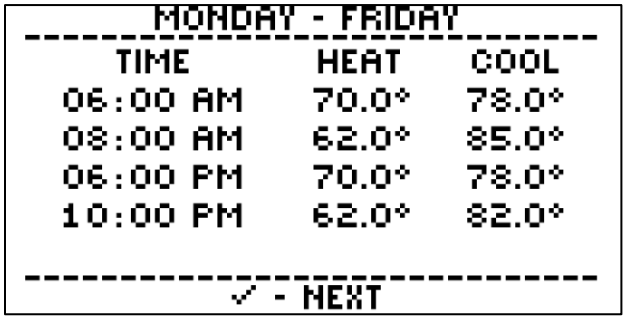
Foundation is pre-programmed with an energy-efficient temperature schedule. You can change the default schedule according to your comfort and schedule needs.

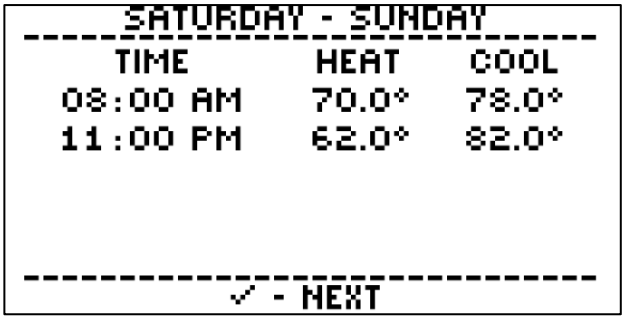
The default Foundation schedule uses up to four times, called **setpoints**, each day to adjust the target temperature. Generally, these times correspond to most people's daily schedules:
Wake, Leave, Return, and Sleep.

Each setpoint has a start time. Start times can vary for each day, but the default start times are different for weekdays and weekends.

You can change the target heating and cooling temperature for each setpoint. The thermostat determines the time required to reach the target temperature. It starts to run the equipment and adjust the temperature before the start time for the temperature change, so that it reaches the target temperature by the start time.

For more information about anticipation time, see 6.1.5 Control.





Note: Default schedule may not be as shown.

3.5.3 Set a Schedule with the Wizard

Use the **Schedule Wizard** to set a new schedule that is based on the values from the default schedule. If you need to change only specific settings, use the **Edit Current Schedule** option.

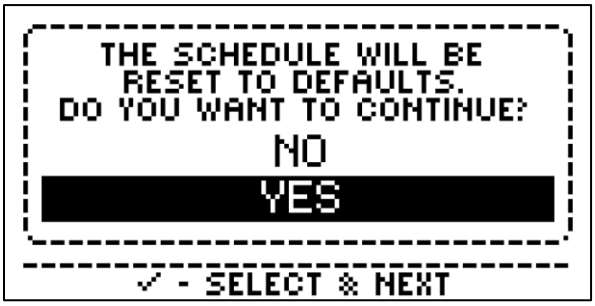
The **Schedule Wizard** is a step-by-step guide that schedules temperature settings for each setpoint. It allows you to set the heating and cooling temperatures for the Wake, Leave, Return, Sleep, and Weekend setpoints. It also allows you to set the start times for those setpoints.

To save electricity costs, adjust the temperature when you are away during the day. The thermostat adjusts the temperature back when you return. The more you adjust the temperature, the more you will save. Remember to adjust the temperature at night as well.

After you set a schedule, Foundation tells you that that the schedule is set for the entire week. You then have the option to set a schedule for specific days. You can set a different schedule for weekdays, weekends, or individual days.

1. On the **Schedule Settings** screen, press the Up ▲ or Down ▼ button to highlight the **Schedule Wizard** option, and then press the Menu/Select ✓ button.

2. Press the Down ▼ button to highlight **Begin**, and then press the Menu/Select ✓ button.



3. Press the Down ▼ button to highlight **Yes**, and then press the Menu/Select ✓ button.
4. Foundation uses the values from the default schedule, and the Schedule Wizard begins:
   - Press the Up ▲ and Down ▼ buttons to adjust the temperatures and times, and to highlight options.
   - Press the Menu/Select ✓ button to select options, and to move to the next setting.

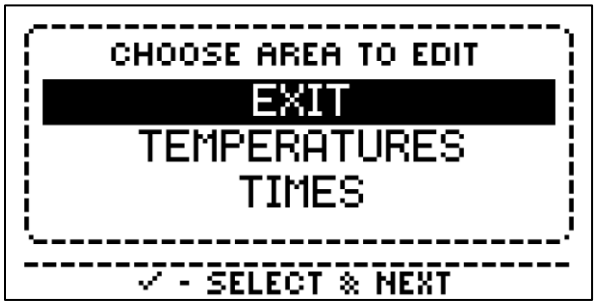
After you set the temperatures and times, the Schedule Wizard asks if you want to customize the schedule for weekdays, weekends, or specific days.

3.5.4 Change the Schedule

Use the **Edit Current Schedule** option when you want to change specific settings in the weekly schedule.

You can change either the target temperatures or the scheduled start times for the temperature changes.

1. On the **Schedule Settings** screen, press the Up ▲ or Down ▼ button to highlight the **Edit Current Schedule** option, and then press the Menu/Select ✓ button.

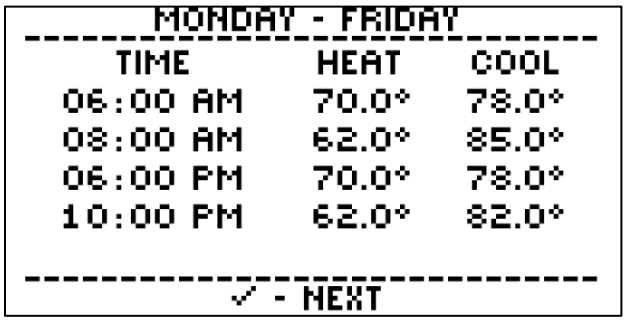


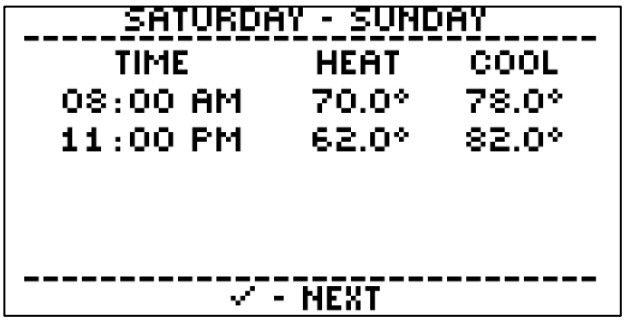
2. Press the Up ▲ or Down ▼ button to select either **Temperatures** or **Times**.
3. Press the Menu/Select ✓ button, and then adjust the temperatures or times:
   - Press the Up ▲ or Down ▼ button to adjust the temperatures and times, and to highlight options.
   - Press the Menu/Select ✓ button to select options, and to move to the next setting.

3.5.5 View the Schedule

Use the **View Schedule** option to show the current schedule settings in a chart.

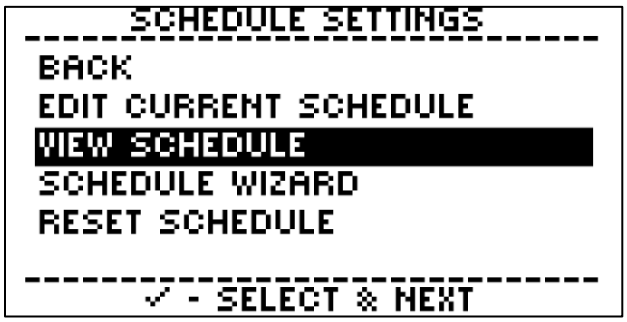
The chart displays the schedule on several screens, depending on your schedule. For example, if one screen shows the weekday (Monday to Friday) schedule, and another screen shows the weekend (Saturday to Sunday) schedule.





If your schedule uses different schedules for specific days of the week, you can have up to seven screens.

After you view the schedule, you can change it.

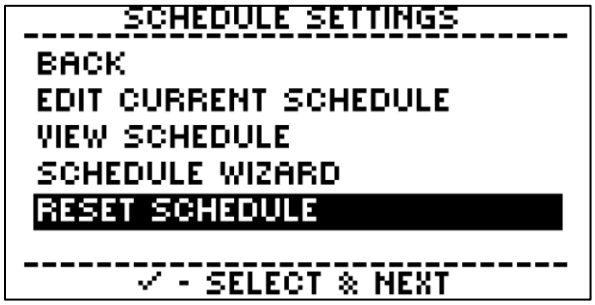


1. On the **Schedule Settings** screen, press the Up ▲ or Down ▼ button to highlight the **View Schedule** option.
2. Press the Menu/Select ✓ button to view the schedule and to move to the next screen.

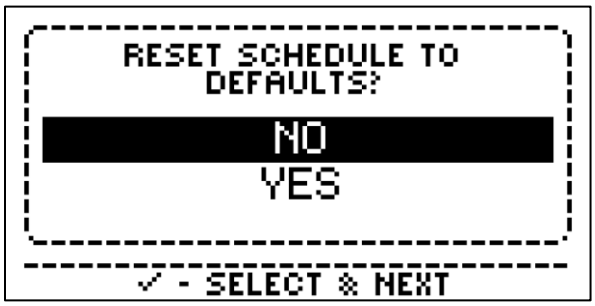
3.5.6 Reset the Schedule

You can reset the schedule to the default schedule.

For more information about the default schedule, see 3.5.2 Default Schedule.



1. On the **Schedule Settings** screen, press the Up ▲ or Down ▼ button to highlight the **Reset Schedule** option, and then press the Menu/Select ✓ button.



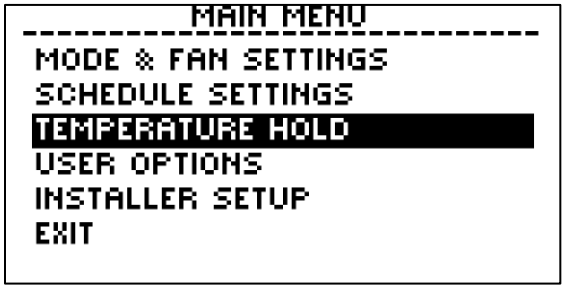
2. Press the Up ▲ or Down ▼ button to highlight either the **Yes** or **No** option, and then press the Menu/Select ✓ button.

3.6 Temperature Holds

Temperature holds are target temperatures changes that override the schedule, without actually changing the schedule. Only one hold can be programmed at a time.

3.6.1 Temperature Hold Menu

The Temperature Hold menu displays different options when a hold has already been set and when no holds are set.



1. From the **Thermostat** home screen, press the Menu/Select ✓ button to display the main menu.
2. Press the Up ▲ or Down ▼ button to highlight the **Temperature Hold** option, and then press the Menu/Select ✓ button.

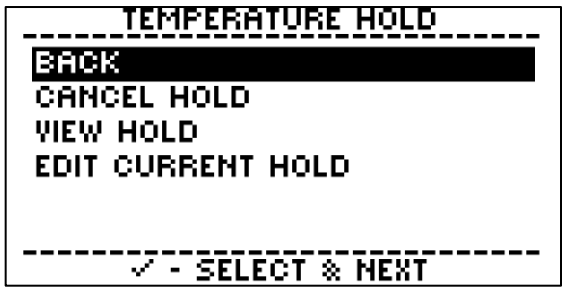
When no holds are set, the Temperature Hold menu allows you to set three types of holds.

Temporary Hold: Sets a new temperature and holds it until the next scheduled temperature change, or until it is cancelled.

Timed or Vacation Hold: Sets the temperature for a specified period of time, and then reverts to the schedule.

Permanent Hold: Overrides all schedules and events, and remains in effect until you cancel it.

When there is an existing hold, the Temperature Hold menu displays different options.



Cancel Hold: Cancels any existing hold (any type), and returns to the programmed schedule.

View Hold: Displays the hold details, including the type, time, and target temperatures.

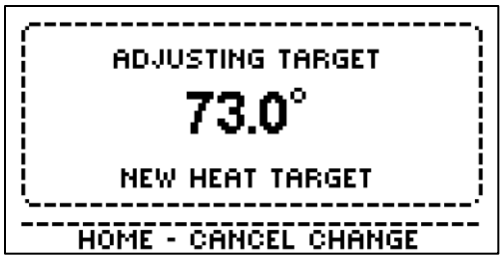
Edit Current Hold: Allows you to change the current hold times and target temperatures.

3.6.2 Temporary Temperature Holds

You can temporarily change the target temperature at any time, without affecting the schedule. The hold remains in effect until the next scheduled temperature change, or until you cancel it.

You can use a temporary hold to override voluntary energy or price conservation events from your electricity service provider.

3.6.2.1 Quickly set a temporary temperature hold



From the **Thermostat** home screen, press the Up ▲ or Down ▼ button to adjust the temperature.

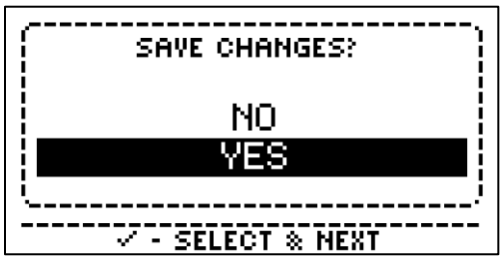
After three seconds, the change is accepted and the display returns to the home screen.

3.6.2.2 Set a hold from the Temperature Holds menu

You can also set a temporary hold from the **Temperature Hold** menu. You can set a hold for both the heating and cooling temperatures.

1. On the **Temperature Hold** menu, press the Up ▲ or Down ▼ button to highlight the **Set Temporary Hold** option, and then press the Menu/Select ✓ button.

2. Press the Down ▼ button to highlight **Begin**, and then press the Menu/Select ✓ button.
3. Press the Up ▲ or Down ▼ button to adjust the temperatures, and then press the Menu/Select ✓ button.



4. Ensure that **Yes** is highlighted, and then press the Menu/Select ✓ button to save the changes.

3.6.3 Timed or Vacation Holds

A timed or vacation hold sets the temperature for a specified period of time, and then returns to the schedule. The hold can last from several hours to several days. You can set a timed or vacation hold to start today or at a future date. After you set a timed or vacation hold, you cannot set a temporary temperature hold

The timed or vacation hold overrides the schedule until you cancel it, or until it reaches the end time. Energy and price conservation events from your utility can still affect your hold temperature.

When you set a timed or vacation hold, you specify the heating temperature, cooling temperature, start date, start time, end date, and end time.

To save electricity costs, adjust the temperature as much as you can while you are on vacation. At the end of the hold period, the thermostat returns the temperature to the scheduled setting.

1. On the **Temperature Hold** screen, press the Up ▲ or Down ▼ button to highlight **Set Timed Or Vacation Hold**, and then press the Menu/Select ✓ button.
2. Press the Down ▼ button to highlight **Begin**, and then press the Menu/Select ✓ button.
3. Follow the on-screen instructions:
   - Press the Up ▲ or Down ▼ button to adjust temperatures, times, and dates, and to highlight options.
   - Press the Menu/Select ✓ button to select options and to move to the next setting.

3.6.4 Permanent Temperature Holds

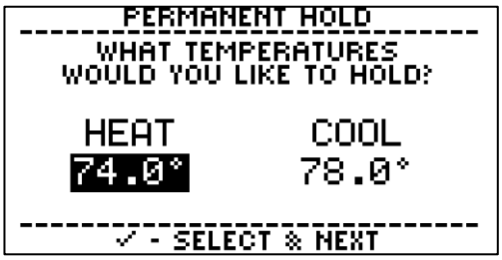
A permanent hold overrides all schedules, and remains in effect until you cancel it. When you set a permanent hold, you can set both a heating and a cooling temperature.

The permanent hold overrides the schedule until you cancel it. Energy and price conservation events from your utility can still affect your hold temperature.

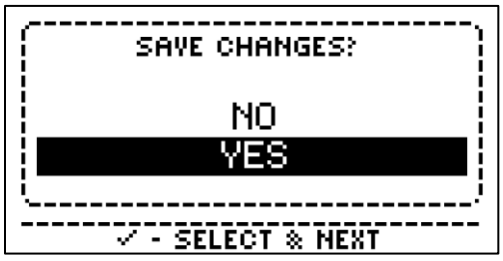
Note: Using the permanent hold may result in you consuming more energy than you would if you follow a schedule.

1. On the **Temperature Hold** screen, press the Up ▲ or Down ▼ button to highlight **Set Permanent Hold**, and then press the Menu/Select ✓ button.

2. Press the Up ▲ or Down ▼ button to highlight **Begin**, and then press the Menu/Select ✓ button.



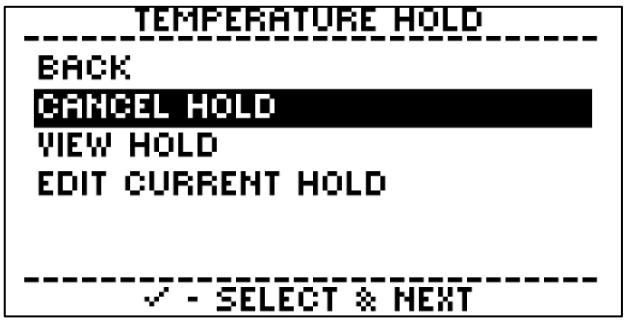
3. Press the Up ▲ or Down ▼ button to adjust the **Heat** temperature, and the press the Menu/Select ✓ button.
4. Press the Up ▲ or Down ▼ button to adjust the **Cool** temperature, and the press the Menu/Select ✓ button.



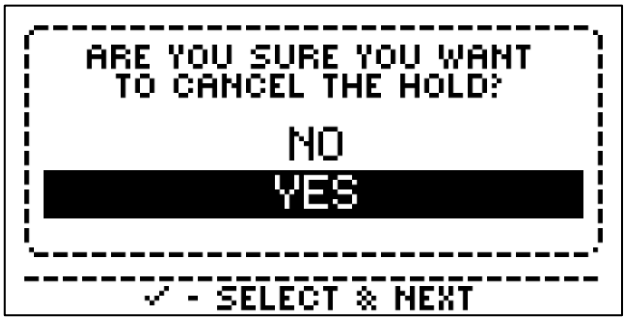
5. Ensure that **Yes** is highlighted, and the press the Menu/Select ✓ button to save the changes.

3.6.5 Cancel a Hold

Only one hold can be active at a time. Before you can set a new hold, you must cancel the existing hold, whether it is temporary, timed, or permanent.



1. On the **Temperature Hold** screen, press the Up ▲ or Down ▼ button to highlight **Cancel Hold**, and then press the Menu/Select ✓ button.



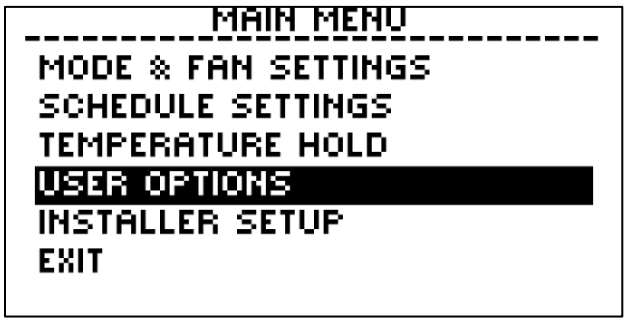
2. Ensure that **Yes** is highlighted, and then press the Menu/Select ✓ button.

3.7 User Options Wizard

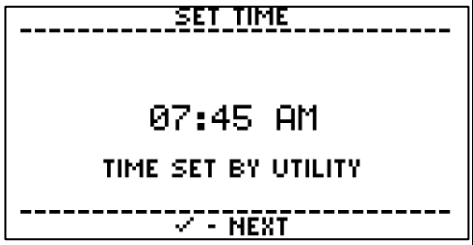
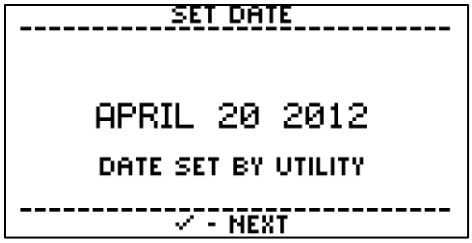
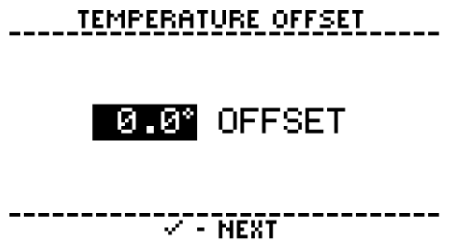
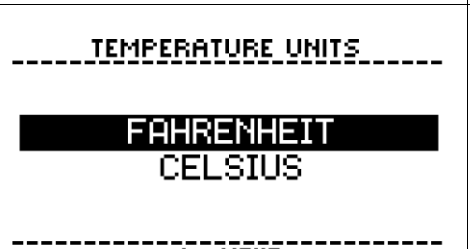
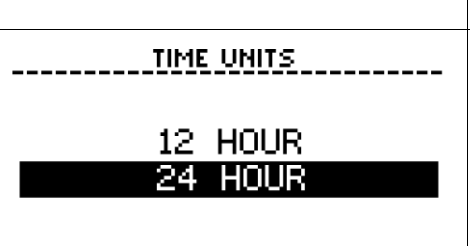
The **User Options** wizard is a step-by-step guide for setting the filter reminder, date, time, temperature offset, and temperature units.

To save costs, set a filter reminder, so that you remember to change the furnace filter. Your equipment uses more energy when the filter is dirty.

The User Options Wizard moves through the settings in sequence.



1. From the **Thermostat** home screen, press the Menu/Select ✓ button.
2. Press the Up ▲ or Down ▼ button to highlight **User Options**, and then press the Menu/Select ✓ button.
3. Press the Down ▼ button to highlight **Begin**, and then press the Menu/Select ✓ button.
4. Adjust the user options in sequence:
   - Press the Up ▲ or Down ▼ button to adjust the values and to highlight options.
   - Press the Menu/Select ✓ button to select options and to move to the next item.

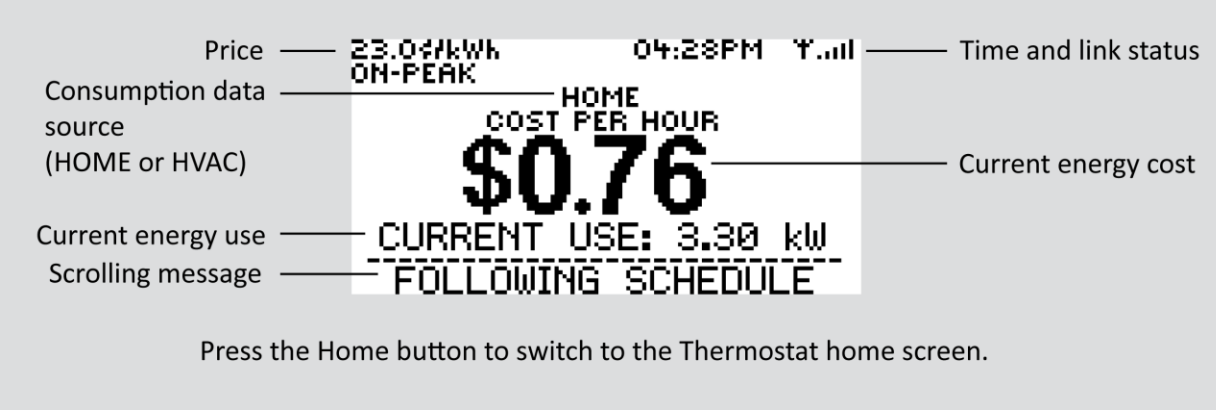
	Filter Reminder: The filter reminder is set (in months) to remind you to change the furnace filter. It can be set from 0 to 12 months. Setting it to 0 months effectively disables the reminder. After you enable the filter reminder, the value decreases each month. When it reaches 0, the change filter message appears. For more information about the change filter message, see 5.3.1 Scheduled Filter Reminder Message.
Time and Date: When there is an active communications link, the network periodically updates the date and time, and you are unable to modify these settings. If Foundation does not use the ZigBee network, you can set the date and time. If the power goes out, the battery saves the date and time.	
	
	**Temperature Offset**: Foundation is designed for precise temperature measurement and control. If there is another temperature measurement device in the home (such as a thermometer or another thermostat), and you want Foundation's temperature measurement display to match the other device, set the **temperature offset**. You can adjust Foundation's displayed temperature by up to +/- 5.4°F (+/- 3°C).
	**Temperature Units**: Foundation can display the temperature in either degrees Fahrenheit (°F) or Celsius (°C).
	**Clock Format**: Foundation can display the time using either a 12- or a 24-hour clock format.

4 Energy Mode

You can use Foundation to help manage your energy consumption. To avoid power outages and rising energy costs, your utility may send pricing information or energy events to manage energy use in your community. Customers who participate in these events can reduce their energy consumption and save money.

4.1 Energy Home Screen

The **Energy** home screen provides at-a-glance consumption data and access to historic data and energy consumption information to help you make informed decisions about your home comfort and energy consumption.



- A star next to the **price** indicates that you are not receiving price information from your electricity service provider. When the price comes from the electricity service provider, there is no star next to the price.
- **Link status**:
  - Indicates that the link is connected. The signal quality ranges from the lowest signal quality (1 bar) to the highest signal quality (5 bars).
  - Indicates that the link is not connected.
- The source for the energy consumption data is either **HOME** or **HVAC**:
  - **HOME**: The consumption data comes from the meter. Foundation displays the electricity consumption for the whole home.
  - **HVAC**: The consumption data comes from the thermostat. Foundation displays the electricity consumption for only the heating and cooling system. The data is based on the load information that is entered in the Energy Settings menu. For more information about the load information, see 4.7.3 Load Information for your HVAC.
- The **current energy use** reflects the amount of energy that is being used in the home in kilowatts (kW).

  To see how low your current energy use can go, turn off the lights and unplug your electronic devices when everyone is away or asleep. The lower this value is, the more you will save.
- The **cost per hour** is how much it costs you to consume that amount of energy for one hour.
- The **scrolling message** indicates what Foundation is doing. For more information about the scrolling messages, see 3.1.4 Scrolling Messages.

4.2 Utility Events

Utility events are signals sent from your energy utility to Foundation. Your energy utility typically uses events to inform you about higher energy prices, or to reduce the load on the electricity grid. These events are referred to as **energy events** and **price conservation events**. It is possible for both an energy event and a price conservation event to occur simultaneously.

An **energy event** is a signal that your utility sends when it needs to reduce energy consumption. It tells Foundation to adjust the target temperature or the amount of time that your heating and cooling equipment runs. The signal causes Foundation to reduce your energy consumption.

A **price conservation event** occurs when your thermostat responds to price increases by adjusting the temperature based on the Conservation Settings.

For more information, see 4.5 Conservation Settings.

4.2.1 Energy Events

During an energy event, your utility sends a signal to Foundation. The signal causes the thermostat to adjust the target temperature or the amount of time that your equipment runs. This reduces the amount of energy that your heating or air conditioning system uses.

Each energy event has a start and an end time, as well as a target temperature, a temperature offset, or a duty cycle. A temperature offset is a temperature adjustment in degrees above (for cool mode) or below (for heat mode) the programmed temperature. A duty cycle is a temperature adjustment that is shown as a percentage of the amount of time that the equipment is allowed to run.

When an energy event is in effect, a message displays on the home screen.

Energy events can be voluntary or mandatory.

4.2.1.1 Voluntary Energy Events

Participating in voluntary energy events saves you energy and money.

When there is a voluntary energy event, Foundation checks your Event Participation setting and responds accordingly. If Foundation is set to Participate, it automatically adjusts for the event. If it is set to **Ignore**, it disregards the event.

It is recommended that you set Foundation to participate in voluntary energy events. You will save more money if you participate in all voluntary events. However, if you want to change the temperature, you can create a temporary hold to override the event.

You will save more money when you participate in all events, and use a temporary hold only when necessary, than when you ignore all events.

For information about creating a temporary hold, see 3.2 Change the Current Temperature Temporarily or 3.6.2 Temporary Temperature Holds.

4.2.1.2 Mandatory Energy Events

Your utility may also send mandatory energy events, and Foundation cannot ignore these events.

4.2.2 Blue Utility Event LED

Foundation has four light-emitting diodes (LED) that signal events from your utility. Each LED illuminates for the duration of the corresponding event.

The **Blue LED** indicates that an energy saving or price conservation event is in effect and has triggered the thermostat to adjust the temperature. On the Thermostat home screen, Foundation displays an energy event or price conservation message under the temperature. The screen displays a message under the current temperature. During mandatory events, you will not be able to adjust the temperature until the event ends. If you set Event Participation to Participate, your ability to adjust the temperature may be restricted until the event ends. If you set Event Participation to Ignore All, the LED does not illuminate when your utility sends a voluntary event. For more information about Event Participation, see 4.7.1 Event Participation.

4.2.3 Price Conservation Events

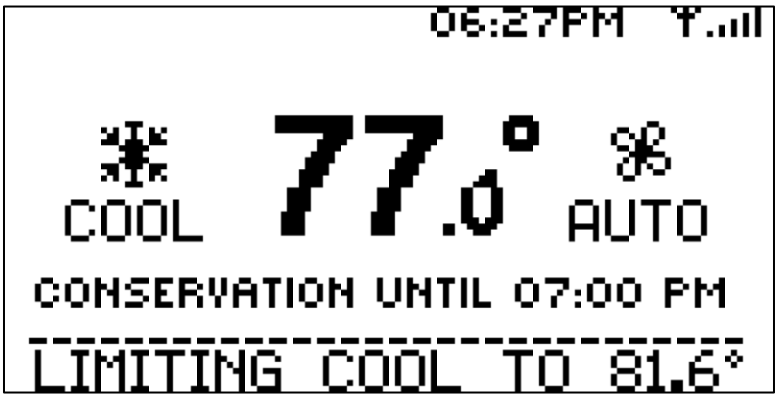
Foundation supports price-driven peak load reduction programs. For example, some utilities use time-of-use or peak pricing, where prices vary according to the time of day and the demand for energy.

The current price of energy can trigger a **price conservation event**. During a price conservation event, the thermostat responds according to the Conservation Settings, and adjusts the temperature for the duration of the event. You can set the **Conservation Settings** to determine how Foundation responds to dynamic pricing programs from your utility.

For more information about Conservation Settings, see 4.5 Conservation Settings.

Price conservation events are always voluntary. You can set a temporary hold during a price conservation event. If you do set a hold, the price conservation is suspended for the duration of the hold.

When a price conservation event is in effect, a message displays on the home screen.



4.2.4 LED Pricing Indicators

Foundation has four light-emitting diodes (LED) that signal events from your utility. Each LED illuminates for the duration of the corresponding event.

Your utility can send **price information events** during periods of peak demand. The pricing LEDs illuminate as the price increases. They enable you to see at-a-glance whether a peak pricing period is in effect. The pricing LEDs use the lowest price that was received from your utility today or yesterday. The prices that you enter manually do not cause the pricing LEDs to illuminate.

The yellow, orange, and red LEDs illuminate as the price of energy increases during a price information event:

Yellow ($$): Indicates an energy price increase of 1.5 to up to 2.5 times the lowest price.

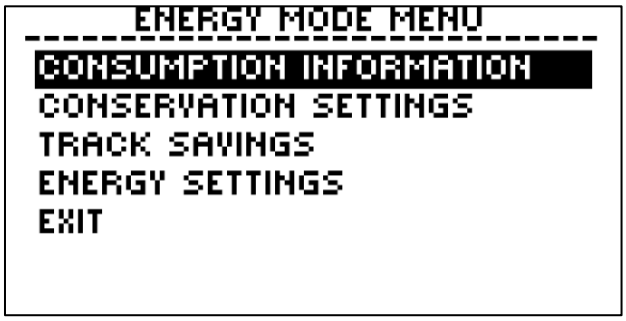
Orange ($$$): Indicates an energy price increase of 2.5 to up to 6.0 times the lowest price.

Red ($$$$): Indicates an energy price increase of 6.0 times the lowest price (or more).

To save electricity costs, avoid using your clothes dryer, washing machine, or dishwasher when the pricing LEDs are illuminated. Run these appliances, which consume a lot of electricity, when the price is lower.

4.3 Energy Mode Menu

The **Energy Mode** menu lists the consumption information, conservation settings, track savings, and energy settings that you can configure.



1. From the **Energy** home screen, press the Menu/Select ✓ button to display the main menu.
2. Press the Up ▲ or Down ▼ button to navigate through the menu options.

4.4 Consumption Information

Foundation displays the **Consumption Information** on a series of screens.

1. From the **Energy** home screen, press the Menu/Select ✓ button to display the main menu.
2. Press the Up ▲ or Down ▼ button to highlight **Consumption Information**, and then press the Menu/Select ✓ button.
3. Read the information, and then press the Menu/Select ✓ button to navigate to the next screen.

CURRENT ENERGY COST kW CURRENT: $0.76 3.30 7 DAY AVERAGE: $0.14 0.75 ✓ - NEXT	**Current Energy**: Shows the how much electricity you are currently using in kW, and the cost/hour for that consumption. It also shows the seven-day average hourly cost and consumption.
DAILY ENERGY COST TODAY SO FAR: $1.93 YESTERDAY: $4.31 7 DAY AVERAGE: $3.40 7 DAY MAXIMUM: $4.31 ✓ - NEXT	**Daily Energy Cost**: Shows the electricity cost for today and yesterday, and the average and the maximum cost for the last seven days.
DAILY ENERGY USE TODAY SO FAR: 9.10 kWh YESTERDAY: 29.40 kWh 7 DAY AVERAGE: 17.91 kWh 7 DAY MAXIMUM: 29.40 kWh ✓ - NEXT	**Daily Energy Use**: Shows the electricity usage for today and yesterday, and the average and maximum usage for the last seven days.
MONTHLY ENERGY COST JUL SO FAR: $81.60 JUL ESTIMATE: $105.41 JUN 2012: $102.76 JUL 2011: N/A ✓ - NEXT	**Monthly Energy Cost:** Shows the electricity cost for the month to date, the estimated cost for the entire month, the cost for the previous month, and the cost for the same month in the previous year.
MONTHLY ENERGY USE JUL SO FAR: 415 kWh JUL ESTIMATE: 538 kWh JUN 2012: 506 kWh JUL 2011: N/A ✓ - NEXT	**Monthly Energy Use**: Shows the total electricity consumption in kWh. Shows usage for the month to date, the estimated usage for the entire month, the usage the previous month, and the usage for the same month in the previous year.

Note: If Foundation does not have enough consumption history data, it displays N/A.

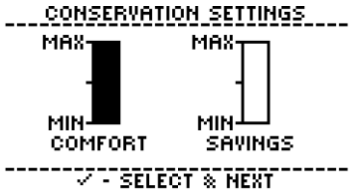
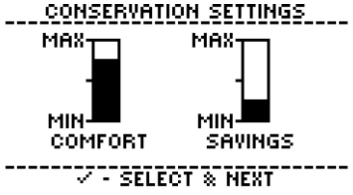
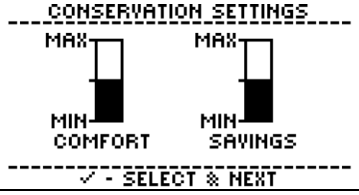
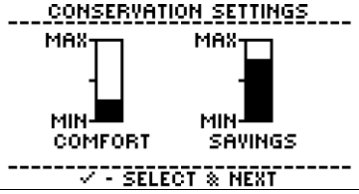
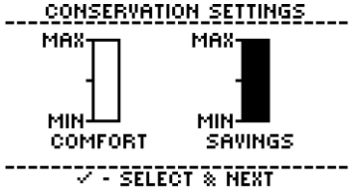
4.5 Conservation Settings

During pricing events, Foundation uses your **Conservation Settings** to determine how to adjust the temperature. It can adjust the temperature by up to 9°F (5°C). Foundation either adjusts the temperature to a nominal pricing rate, or keeps the temperature constant at the higher price level.

Note: Not all utilities provide pricing information over the communications link.

Use the **Conservation Settings** to prioritize either comfort or savings. The Conservation Settings screen uses two bars to show the balance between comfort and savings. Each bar indicates the comfort and savings levels. The two bars are linked, so that as one bar increases, the other bar decreases.

If your home is uncomfortable during price events and you frequently set a temporary hold, try increasing the comfort setting by one level.

Conservation Setting		Description
Maximum Comfort		Comfort is the most important, and price increases are ignored. Program settings are not affected by a price increase, and the temperature does not change. You pay the increased rates to maintain your desired comfort level.
Comfort		Comfort is prioritized over savings. There is little or no temperature adjustment when there is a small price increase, but higher price increases trigger a greater temperature adjustment.
Balanced		Price increases and temperature adjustments are balanced between comfort and savings.
Savings		Savings are prioritized over comfort. The temperature adjustments are greater for a given price increase.
Maximum Savings		Savings are the most important. Foundation responds to all price increases. A small price increase adjusts the target temperature very quickly towards the maximum offset temperature.

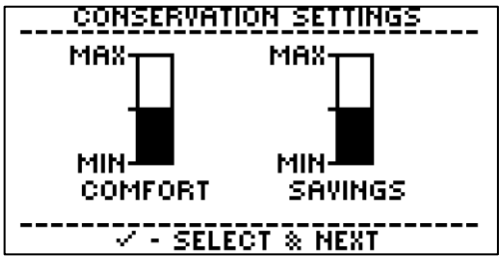
4.5.1 Prioritize Comfort or Savings

From the **Energy** home screen, you can use the conservation settings to prioritize either home comfort or cost savings.

Foundation follows your programmed schedule more closely when you prioritize home comfort. However, prioritizing home comfort will result in higher costs during price events.

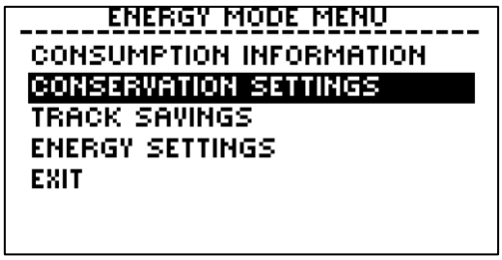
In the **Energy** mode, you can access the conservation settings from either the home screen or the main menu.

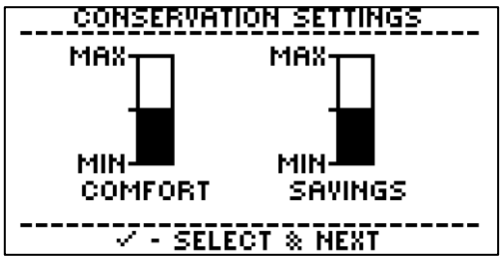
4.5.1.1 Quickly Set Conservation Settings from the Home Screen



1. From the **Energy** home screen, press the Up ▲ or Down ▼ button to display the Conservation Settings screen.
2. Adjust the balance between comfort and cost savings:
   - To prioritize savings over comfort, press the Up ▲ button.
   - To prioritize comfort over savings, press the Down ▼ button.
3. Press the Menu/Select ✓ button.

4.5.1.2 Set Conservation Settings from the Menu





1. From the **Energy** home screen, press the Menu/Select ✓ button to display the main menu.
2. Press the Up ▲ or Down ▼ button to highlight **Conservation Settings**, and then press the Menu/Select ✓ button.
3. Read the instructions, and then press the Menu/Select ✓ button to display the **Conservation Settings** screen.
4. Adjust the balance between comfort and cost savings:
   - To prioritize savings over comfort, press the Up ▲ button.
   - To prioritize comfort over savings, press the Down ▼ button.
5. Press the Menu/Select ✓ button.

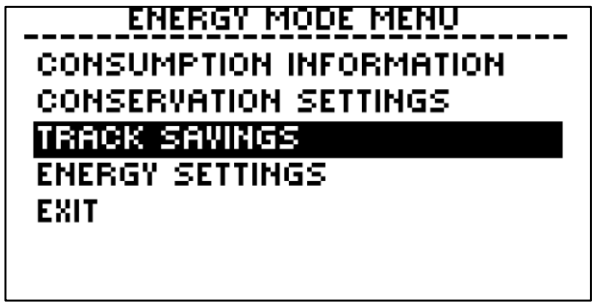
4.6 Track Savings

Foundation can track your energy consumption as it changes over a period of up to 30 days. Foundation projects a consumption estimate based on up to 30 days of consumption history. It uses that estimate as the baseline to compare with the consumption on the following days. Foundation uses that comparison to calculate your savings.

You must activate the track savings feature to generate records on cost savings. You can stop or restart the track savings feature at any time.

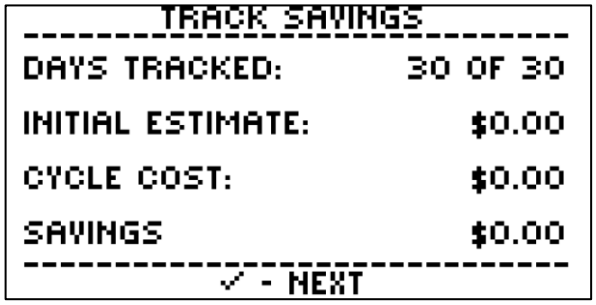
Use track savings to see how much you save after you change your schedule or comfort settings.

For example, you might want to track savings when you change your schedule or conservation settings.

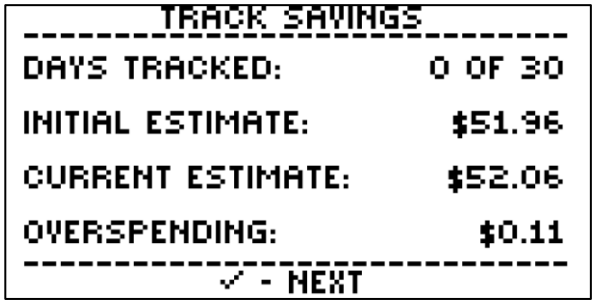


1. From the **Energy** home screen, press the Menu/Select ✓ button to display the main menu.
2. Press the Up ▲ or Down ▼ button to highlight **Track Savings**, and then press the Menu/Select ✓ button.
3. Read the information, and then press the Menu/Select ✓ button to navigate to the next screen.
4. To start or stop tracking, press the Up ▲ or Down ▼ button to highlight **Yes** or **No**, and then press the Menu/Select ✓ button.

When Track Savings is not running, this screen displays:

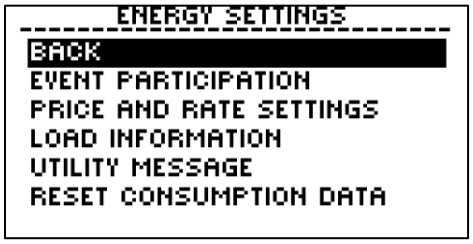


When Track Savings is already running, this screen displays:



4.7 Energy Settings

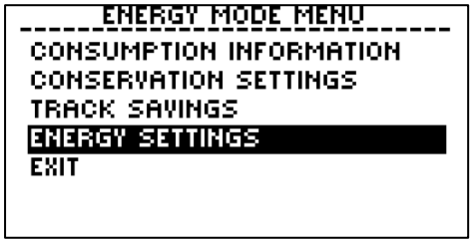
The **Energy Settings** menu is available from the Energy home screen.

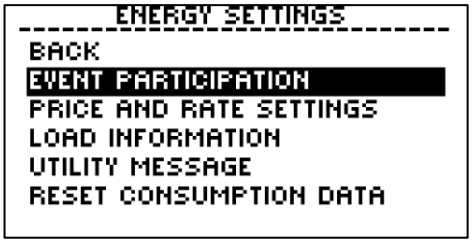


4.7.1 Event Participation

You can choose to participate in or to ignore **voluntary events** from your utility.

You will save more money when you participate in all events, and use a temporary hold only when necessary, than when you ignore all events.





1. From the **Energy** home screen, press the Menu/Select ✓ button to display the main menu.
2. Press the Up ▲ or Down ▼ button to highlight **Energy Settings**, and then press the Menu/Select ✓ button.
3. Press the Up ▲ or Down ▼ button to highlight **Event Participation**, and then press the Menu/Select ✓ button.
4. To navigate to the next screen, press the Menu/Select ✓ button.

A different screen appears, depending on whether an event is in progress.

When there is no event in progress, this screen displays:

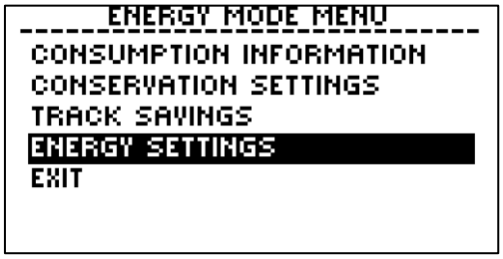
When there is an event in progress, this screen displays:

5. Press the Up ▲ or Down ▼ button to highlight **Participate, Ignore This Event,** or **Ignore All**, and then press the Menu/Select ✓ button.
6. Press the Menu/Select ✓ button to save the changes.

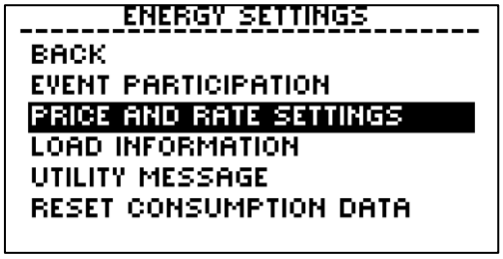
4.7.2 Price and Rate Information

If pricing information is available from your utility, you do not need to enter this information. If the price and rate information comes from the utility, the price in the top-left corner of the Energy home screen does not a have star. The information from your utility overrides any information that you enter.

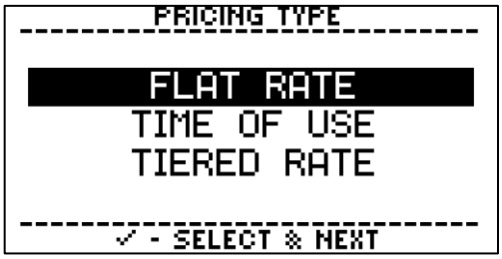
If it is not available from your utility, you can manually enter the price and rate settings in Foundation. When you manually enter the price and rate information, the price in the top-left corner of the Thermostat home screen has a star next to it.



1. From the **Energy** home screen, press the Menu/Select ✓ button to display the main menu.
2. Press the Up ▲ or Down ▼ button to highlight **Energy Settings**, and then press the Menu/Select ✓ button.



3. Press the Up ▲ or Down ▼ button to highlight **Price and Rate Settings**, and then press the Menu/Select ✓ button.
4. To enter the price and rate settings manually, press the Menu/Select ✓ button.
5. Press the Down ▼ button to highlight **Begin**, and then press the Menu/Select ✓ button.



6. Follow the on-screen instructions:
   - Press the Up ▲ or Down ▼ button to highlight options, and to adjust rates, times, and values.
   - Press the Menu/Select ✓ button to select options and to navigate to the next screen.

There are three rate types that your utility can use:

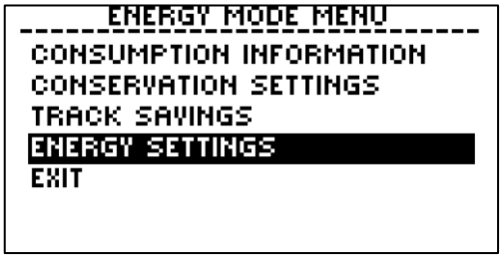
- **Flat Rate**: Charges a single constant rate in cents/kWh.
- **Time of Use**: Uses multiple tiers of price rates that change depending on the time of day. Times of heavy energy demand have a higher rate than times of lower demand. The tier pricing may also be different on weekdays and weekends.
- **Tiered Rate**: Charges a certain rate for the initial kilowatt hours of electricity usage, and then switches to a new rate for additional kilowatt hours. There may be multiple tiers.

Note: Consult your electricity provider for your current electricity rates.

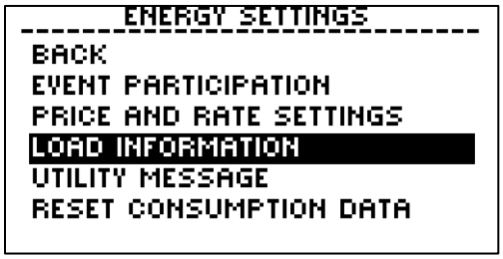
4.7.3 Load Information for your HVAC Equipment

You can enter detailed information about your heating and cooling system that enables Foundation to make more accurate estimates of your electricity consumption and costs.

The **Load Information** screens ask a series of questions about your HVAC equipment.



1. From the **Energy** home screen, press the Menu/Select ✓ button to display the main menu.
2. Press the Up ▲ or Down ▼ button to highlight **Energy Settings**, and then press the Menu/Select ✓ button.



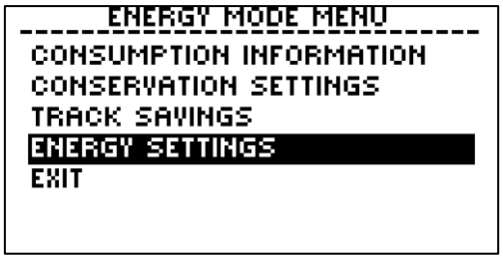
3. Press the Up ▲ or Down ▼ button to highlight **Load Information**, and then press the Menu/Select ✓ button.
4. Follow the on-screen instructions:
   - Press the Up ▲ or Down ▼ button to highlight options and to adjust values.
   - Press the Menu/Select ✓ button to select options and to navigate to the next screen.

4.7.4 Read Messages from your Utility

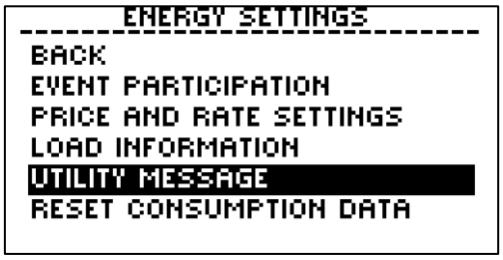
Your utility may send information messages to your thermostat. Foundation can display these messages. For example, your utility might send information about upcoming events.

When Foundation receives a message, it displays the message on the current home screen. The message displays until you acknowledge it or it no longer applies.

After you acknowledge the message, Foundation returns to the last home screen that you visited. Using Foundation, you can retrieve the last message that your utility sent, as long as the message still applies.



1. From the **Energy** home screen, press the Menu/Select ✓ button to display the main menu.
2. Press the Up ▲ or Down ▼ button to highlight **Energy Settings**, and then press the Menu/Select ✓ button.

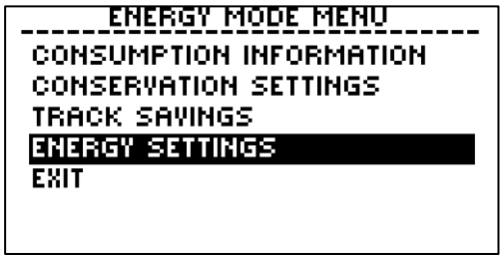


3. Press the Up ▲ or Down ▼ button to highlight **Utility Message**, and then press the Menu/Select ✓ button.
4. Read the message, and then press the Menu/Select ✓ button.

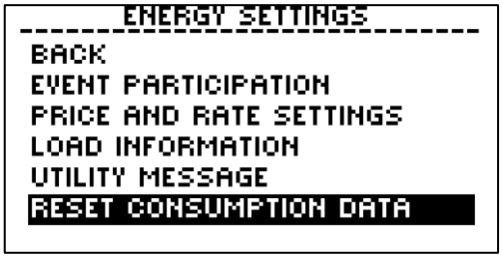
4.7.5 Reset the Data Used for Consumption Settings and Track Savings

You can reset the data that Foundation uses for the Consumption Settings and Track Savings features.

4.7.5.1 Reset the Consumption Data



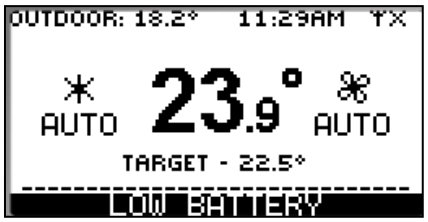
1. From the **Energy** home screen, press the Menu/Select ✓ button to display the main menu.
2. Press the Up ▲ or Down ▼ button to highlight **Energy Settings**, and then press the Menu/Select ✓ button.



3. Press the Up ▲ or Down ▼ button to highlight **Reset Consumption Data**, and then press the Menu/Select ✓ button.
4. Read the information, and then press the Menu/Select ✓ button.
5. Press the Down ▼ button to highlight **Yes**, and then press the Menu/Select ✓ button.

5 Error Messages

Foundation displays a message when certain kinds of service are required. The message displays in full-screen mode, and the backlight flashes on and off until you acknowledge the message. The message then appears in the status line of the home screens until the issue is resolved.



Foundation displays seven types of error messages:

- Battery Low
- Brown Out
- Change Air Filter (scheduled)
- Air Filter (from heating equipment)
- Heat Pump Fault
- Output Short Circuit
- Configuration Error

5.1 Low Battery Message

Foundation displays the message “Low Battery” when the battery falls below 10% of its rated capacity. The battery preserves the date and time when there is a power outage. When you replace the battery, Foundation does not lose any of your settings.

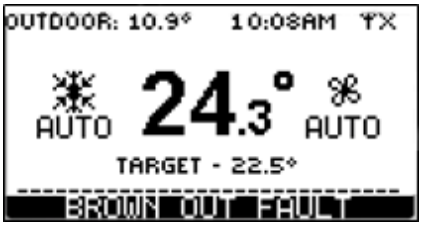
The message displays in full-screen mode, and the backlight flashes on and off until you acknowledge the message. The message then appears in the status line of the home screens until the issue is resolved.

Replace the battery with a CR-2032 battery. This message will clear after you replace the battery.

For information about how to replace the battery, see 7.2 Replacing the Battery.

5.2 Brown Out Message

Foundation displays the message “Brown Out Fault” when there is a dip in the voltage (for example, when your lights dim) in the form of a brown-out. The message displays in full-screen mode, and the backlight flashes on and off until you acknowledge the message. The message then appears in the status line of the home screens until the power levels return to normal.

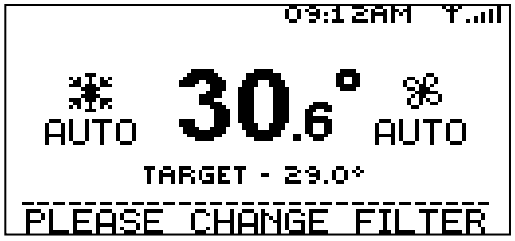


5.3 Air Filter Messages

Foundation can prompt you to change the air filter on your furnace. Either the scheduled Filter Reminder or the furnace can trigger the change filter message.

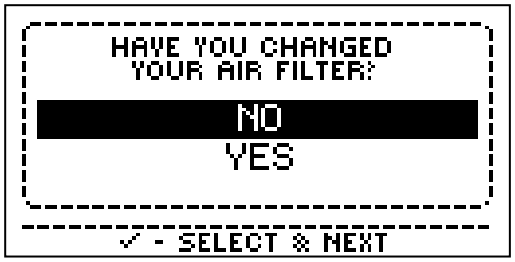
5.3.1 Scheduled Filter Reminder Message

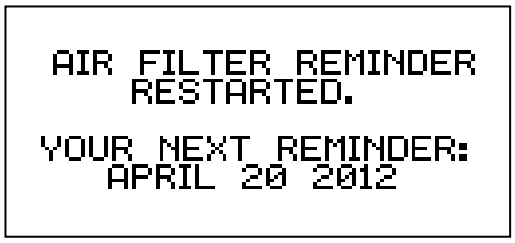
Foundation displays the message “Please Change Filter” on the scheduled Filter Reminder date. The message displays in full-screen mode, and the backlight flashes on and off until you acknowledge the message. The message then appears in the status line of the home screens until the issue is resolved.



For information about setting the Filter Reminder, see 3.7 User Options Wizard.

5.3.1.1 Clear the Filter Reminder message





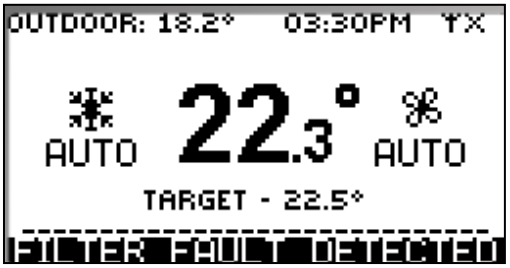
1. Press the Menu/Select ✓ button to acknowledge the full-screen air filter message and return to the home screen.
   The air filter message appears in the status line.
2. After you change the air filter on your furnace, press the Menu/Select ✓ button.
3. Press the Down ▼ button to highlight Yes, and then press the Menu/Select ✓ button.

   Foundation displays the date of the next scheduled filter reminder, which is calculated based on the Filter Reminder that you set in the User Options menu. You can change the Filter Reminder.

5.3.2 Furnace Filter Fault Message

Some furnaces can send a message to the thermostat when the air filter needs to be changed. The message displays in full-screen mode, and the backlight flashes on and off until you acknowledge the message. The message then appears in the status line of the home screens until the issue is resolved.

If your furnace uses that feature, Foundation displays the message “Filter Fault Detected” when the air filter needs to be changed. The message appears until you change the air filter on the furnace.



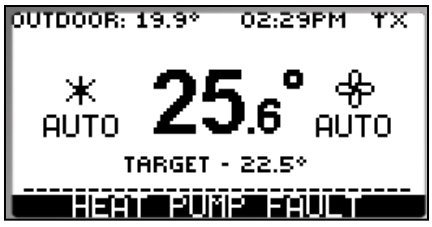
Note: If you use this feature, do not use the Filter Reminder on Foundation. Set the Filter Reminder to 0. For information about setting the Filter Reminder, see 3.7 User Options Wizard.

5.4 Heat Pump Message

Foundation displays the message “Heat Pump Fault” when your heat pump needs to be serviced. The heat pump communicates with the thermostat to trigger the message.

The message displays in full-screen mode, and the backlight flashes on and off until you acknowledge the message. After you acknowledge the message, you cannot clear this message from Foundation. The message then appears in the status line of the home screens until the issue is resolved. It clears only when the heat pump indicates that the issue is resolved.

Contact the person who installed your equipment, or a qualified HVAC technician, to help you resolve this problem.



5.5 Short Circuit Message

Foundation displays the message “Output Short Circuit” when it detects a short circuit in its wiring. The message displays in full-screen mode, and the backlight flashes on and off until you acknowledge the message. The message then appears in the status line of the home screens until the issue is resolved.

Contact the person who installed your equipment, or a qualified HVAC technician, immediately to avoid damage to your equipment.

Note: If you see this message, your HVAC equipment may not run correctly, even though the thermostat continues to operate.

5.6 Configuration Error Message

Foundation displays the configuration error message when there is an error with your thermostat.

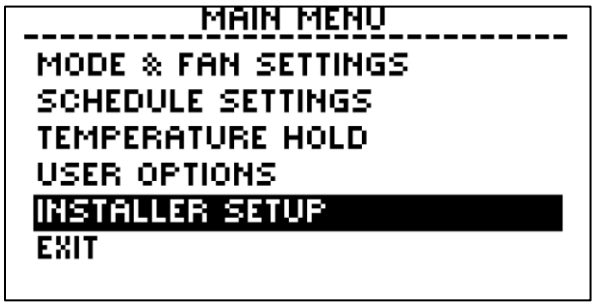
Contact your thermostat provider immediately.

6 Installation

6.1 Installer Setup Menu

The **Installer Setup** menu is available from the Thermostat home screen.

Changing settings in the **Installer Setup** menu can damage the Heating, Ventilation and Air Conditioning (HVAC) system, and should only be done by a qualified HVAC technician.



1. From the **Thermostat** home screen, press the Menu/Select ✓ button.
2. Press the Up ▲ or Down ▼ button to highlight **Installer Setup**, and then press the Menu/Select ✓ button.

The **Installer Setup** menu includes options for setting passwords, setting setpoint ranges, and viewing thermostat settings and information.

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6.1.1 Passwords

Foundation is programmed with two levels of password protection: the **Installer Password** and the **User Password**. Both passwords timeout 20 minutes after the last button was pressed, and force you to re-enter the password.

The passwords options are available from the **Installer Setup** menu.

6.1.1.1 Installer Password

The **Installer Password** is required to modify any of the installer settings in the **Installer Setup** menu. It limits access to changing critical thermostat settings, such as password, setpoint range, equipment type, equipment settings, control, and reset.

The default **Installer Password** is **INST**. Record this password in a safe place.

6.1.1.2 User Password

By default, there is no **User Password**. You can enable a **User Password** to protect against unwanted schedule changes, temperature holds, and other changes. When a User Password is enabled, you can only set a temporary temperature hold within the setpoint range, and you cannot change the user settings or schedule.

To change the User Password, you must first enable it.

1. Press the Down ▼ button to highlight **Begin**, and then press the Menu/Select ✓ button.
2. Follow the on-screen instructions:
   - Press the Up ▲ or Down ▼ button to highlight options and to adjust the password values.
   - Press the Menu/Select ✓ button to select options and to move to the next item.

6.1.2 ZigBee Link Info

The **ZigBee Link Info** screen is read-only, and is available from the **Installer Setup** menu. It displays troubleshooting information, such as your connection status and Media Access Control (MAC) address.

6.1.3 Setpoint Range

The **Setpoint Range** specifies the maximum and minimum temperatures that are allowed in the Heat and Cool thermostat modes. Adjusting these temperatures limits the temperature ranges that are allowed when setting a schedule and holds.

The cool setting must be 2°F above the heat temperature.

The default settings are:

Setpoint Range	Default Max	Default Min	Absolute Max	Absolute Min
Heat	91.0°F (32.8°C)	54.0°F (12.2°C)	111°F (43.9C°)	41°F (5°C)
Cool	93.0°F (33.9°C)	56.0°F (13.3°C)	113°F (45°C)	42.8°F (6°C)

6.1.4 Equipment Settings

The **Equipment Settings** specify the equipment type, and the number of heating and cooling stages. The **Equipment Settings** screen is available from the **Installer Setup** menu.

The thermostat must be configured correctly to match the equipment type. The number of heating and cooling stages must be defined in the Conventional or Heat Pump setting.

To save changes to the **Equipment Settings**, you must provide the **Installer Password**. Your installer configures the **Equipment Settings** when they install Foundation. After you save any changes, the equipment is disabled until the default on/off time has passed.

The following settings are available from the Equipment Settings menu:

Equipment Setting	Options		Default
TYPE	**CONVENTIONAL**	**HEAT PUMP**	**Conventional**
# OF COOL STAGES	0 – no AC 1 – 1 stage AC 2 – 2 stage AC	1 – 1 stage Heat Pump 2 – 2 stage Heat Pump	1
# OF HEAT STAGES	0 – no Furnace 1 – 1 stage Furnace 2 – 2 stage Furnace	1 – 1 stage Heat Pump 2 – 2 stage Heat Pump or 1 stage Heat Pump + Aux Heat 3 – 2 stage Heat Pump + Aux Heat	1
MIN ON/OFF TIME	1 to 6 minutes For a **furnace**, use a minimum of 2 minutes. For an **air conditioner**, use a minimum of 3 minutes.	1 to 6 minutes Use a minimum of 3 minutes.	3
FAN ON IN HEAT	**Yes/No** Set to **Yes** if the thermostat controls the fan (common in electric furnaces). Set to **No** if the furnace controls the fan (common in gas furnaces).	N/A	Yes
REV. VALVE	N/A	Reversing or Changeover valve: On In Cool/On In Heat	On In Cool
ALLOW HP+AUX ON	N/A	**Yes/No** Set to **Yes** if the heat pump and auxiliary heat can be on at the same time (common with auxiliary electric heat). Set to **No** if the heat pump should be off when the auxiliary heat is on (common with auxiliary fossil fuel heat).	Yes
BALANCE POINTS	N/A	**HEAT PUMP without outdoor temperature sensor**: Enter values from your specific device if available, otherwise accept the default values.	High: 122°F (50°C) Low: -40°F (-40°C)
		HEAT PUMP with outdoor temperature sensor: **HIGH**: Set to the temperature above which the auxiliary heat is disabled. The range is from -38°F (-39°C) to 122°F (50°C). A typical value is 50°F (10°C). **LOW**: Set to the temperature below which the heat pump is disabled. The range is from -40°F (-40°C) to 120°F (49°C). A typical value is 32°F (0°C).	

6.1.5 Control

The **Control** settings specify the hysteresis, anticipation time, and maximum recovery time for your heating and cooling equipment. The **Control** screen is available from the **Installer Setup** menu.

To save changes to the **Control** settings, you must provide the **Installer Password**. Your installer configures the **Control** settings when they install Foundation.

Control Setting	Description	Range	Default
HYSTERESIS	The number of degrees the temperature must go beyond a setpoint before changing between HEAT and COOL modes when in AUTO mode.	0°F to 6°F (0°C to 3°C)	2°F (1°C)
ANTICIPATION TIME	The amount of time the thermostat engages the equipment to reach the setpoint temperature before the scheduled setpoint time. If you do not want the equipment to turn on before the start times in the schedule, set the Anticipation Time to 0.	0 to 180 minutes	60 minutes
MAX RECOVERY TIME (for multiple stage equipment)	The amount of time the thermostat allows the equipment to reach the desired temperature in the current stage, before engaging the next heating or cooling stage.	0 to 180 minutes	90 minutes

6.1.6 Device Info

The **Device Info** screen is a read-only screen that is available from the **Installer Setup** menu. It provides troubleshooting information about the thermostat and the ZIGBEE radio module.

6.1.7 Service

The **Service** screen may display information about your service provider, or it may be blank.

6.1.8 Reset

You can reset your thermostat to factory default settings. You can reset the thermostat, user configuration settings, and security keys. The **Reset** options are available from the **Installer Setup** menu.

The Reset menu includes three options:

- User Configuration Reset
- Thermostat Reset
- Security Keys Reset

To perform a thermostat or security keys reset you must provide the **Installer Password**.

6.1.8.1 User Configuration Reset

The User Configuration Reset restores only the following settings to the default manufacturer settings:

- Schedule
- All Holds
- Comfort Setting
- Clock Format
- Temperature Units
- Filter Reminder

6.1.8.2 Thermostat Reset

The **Thermostat Reset** restores the thermostat to the default manufacturer settings. For example, you might reset the thermostat when you change your HVAC equipment, or move the thermostat to a new home.

Avoid resetting the thermostat unless necessary.

The following table shows the defaults for the **Thermostat** mode:

Section	Setting	Default Value				
Mode & Fan Settings	**Equipment Mode**	HEAT				
	Fan Mode	AUTO				
Schedule Settings	**Schedule**	**Monday-Friday**	**Setpoint Name**	**Time**	**Heat Setpoint**	**Cool Setpoint**
			WAKE	6:00am	70°F (21.11°C)	78°F (25.56°C)
			LEAVE	8:00am	62°F (16.67°C)	85°F (29.44°C)
			RETURN	6:00pm	70°F (21.11°C)	78°F (25.56°C)
			SLEEP	10:00pm	62°F (16.67°C)	82°F (27.78°C)
		Saturday-Sunday	**WAKE**	8:00am	70°F (21.11°C)	78°F (25.56°C)
			SLEEP	11:00pm	62°F (16.67°C)	82°F (27.78°C)
User Options	**Filter Reminder**	0 months				
	Time	12:00am				
	Date	January 1 2000				
	Temperature Offset	0.0°F				
	Temperature Units	Fahrenheit (°F)				
	Time Units	12 Hour				
Installer Setup	**Installer Password**	[INST]				
	User Password	[1234] disabled				
	Setpoint Range	HEAT	Max 91.0°F (33.89°C)			
			Min 54.0°F (12.22°C)			
		COOL	Max 93.0°F (32.78°C)			
			Min 56.0°F (13.33°C)			
	Equipment Setup	**Equipment Type**	Conventional			
		# of Cool stages	1			
		# of Heat stages	1			
		Minimum On/Off time	3 minutes			
		Fan on in Heat	YES			
	Control	**Hysteresis**	2°F (1°C)			
		Anticipation Time	60 minutes			
		Maximum Recovery Time	90 minutes			

The following table shows the defaults for the **Energy** mode:

Section	Setting	Default Value	
Conservation Settings		BALANCED	
Track Savings		OFF	
Energy Settings	**Event Participation**	Participate	
	Price & Rate Settings	Flat Rate	5.9¢/kWh
	Load Information	Electric Heating?	Yes
		Heating Stage #1	20.00kW
		Cooling Stage #1	3.00kW
		Fan	0.20kW

6.1.8.3 Security Keys Reset

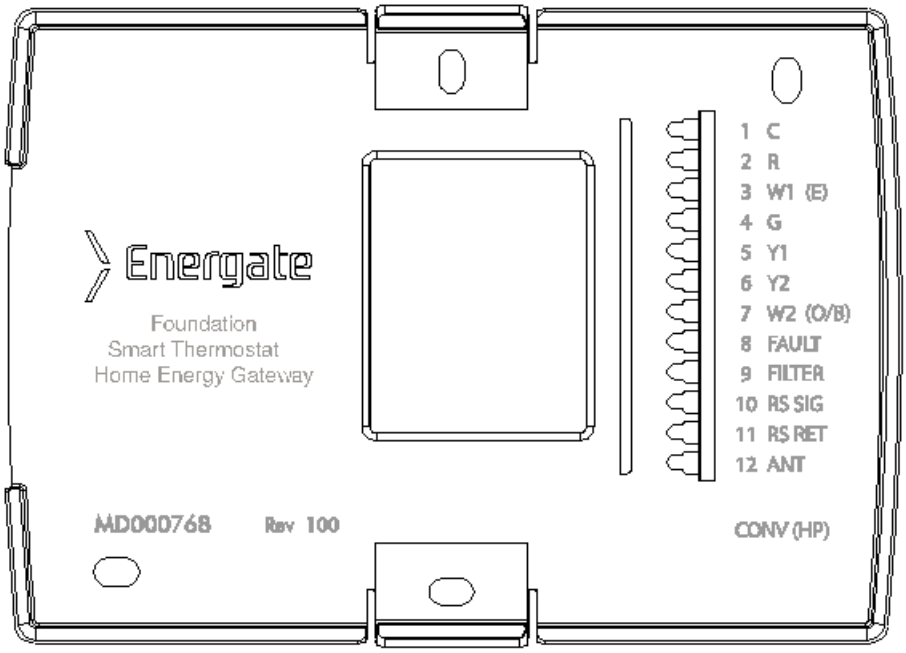
Do not reset the security keys unless directed to do so by your utility.

If the security keys are reset, the connection between the electricity meter and your Zip Connect device is lost.

Normally, you reset the security keys only when you change your electricity meter or your Zip Connect device.

6.2 Foundation Thermostat Wiring

The following diagram shows the backplate of the Foundation thermostat.



6.2.1 Conventional System Wiring

The following are the general wiring connections for a conventional system.

Common(GND)	C	1
Power (24VAC)	R	2
1st Stage Heat	W1	3
Fan	G	4
1st Stage Cool	Y1	5
2nd Stage Cool	Y2	6
2nd Stage Heat	W2	7
		8
Filter	FILTER	9
Outdoor Sensor Signal	RS SIG	10
Outdoor Sensor Return	RS RET	11
Not Used	ANT	12

6.2.2 Heat Pump Wiring

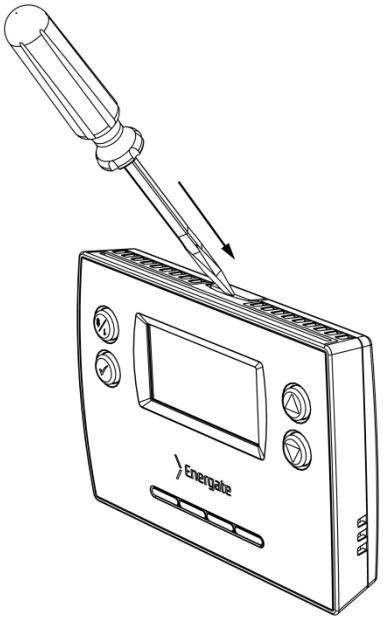
The following are the general wiring connections for a heat pump.

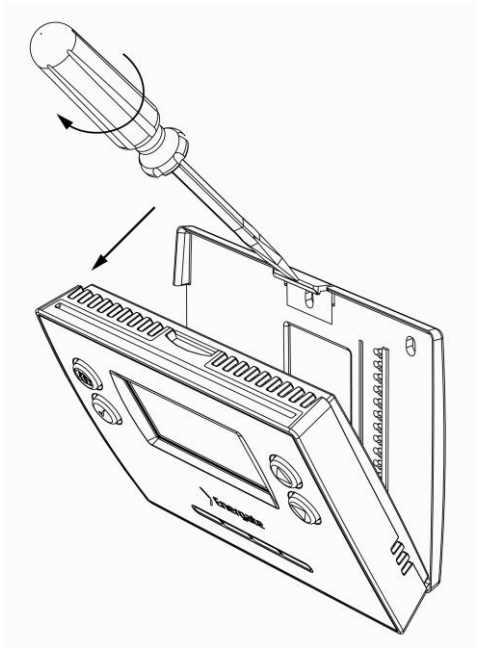
Common(GND)	C	1
Power (24VAC)	R	2
Auxiliary or Emergency Heat	E	3
Fan	G	4
1st Stage Heat Pump	Y1	5
2nd Stage Heat Pump	Y2	6
Reversing/Changeover Valve	W2	7
Heat Pump Fault	FAULT	8
Air Filter	FILTER	9
Outdoor Sensor Signal	RS SIG	10
Outdoor Sensor Return	RS RET	11
Not Used	ANT	12

7 Taking Care of Your Foundation

7.1 Removing Foundation from the Mounting Bracket

1. Use a flathead screwdriver to lift up the snap-fit tab located on top of the mounting bracket.



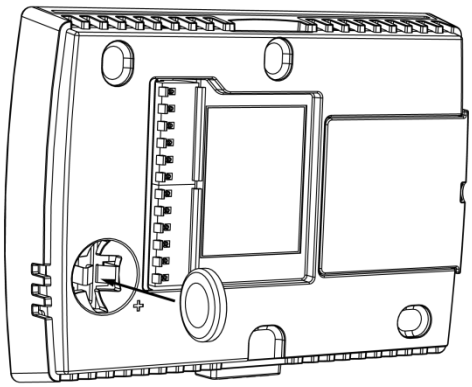


1. Lift the tab until Foundation is free to pull out.
2. Pull the top end of Foundation away from the mounting bracket until it is free of the snap-fit tab.
   You can lift Foundation free from the mounting bracket.

   Note: Be careful not to unplug any wiring that is still connected on the back.

7.2 Replacing the Battery

The battery slot is located on the back of Foundation. Foundation uses a CR-2032 battery.



Many government agencies have battery recycling programs. Contact your local jurisdictional government agency about available recycling programs.

To find a recycling facility near you, go to:
http://www.earth911.com/hazardous/single-use-batteries/lithium-manganese-batteries/

To find local regulations for disposing of the used battery, go to:
http://www.epa.gov/wastes/wyl/stateprograms.htm

The battery in the thermostat may contain perchlorate material, and special handling may apply. For more information, see http://www.dtsc.ca.gov/HazardousWaste/Perchlorate/index.cfm

7.3 Re-attaching Foundation to the Mounting Bracket

1. Rest Foundation with the bottom groove that is hooked to the bottom tab of the mounting bracket.
2. Push the top half of Foundation against the mounting bracket until the top tab snaps into place.

7.4 Cleaning

Clean Foundation with a soft cloth that is lightly dampened with isopropyl alcohol (IPA). Using too much IPA or using other solvents may damage the display.

Never submerge or immerse Foundation in any kind of liquid.

8 Impact of Power Outages

In the event of a power failure, Foundation retains the date and time information (if a battery is installed), and any information that is required for proper operation of your heating and cooling equipment. However, Foundation does not display information on the screen.

After power is restored, Foundation continues to operate according to the settings that you programmed.

9 End-of-Life & Safe Disposal

Foundation does not require any special action for disposal. However, as with any electronic equipment, please follow all applicable local, state or provincial, and national regulations for disposal.

10 Technical Specifications

Dimensions	6 ¼" x 4 ½" x 1 ¼" (156 mm x 113 mm x 31 mm)
Total Weight	0.56 lb. (255 g)
Voltage Requirements	24 VAC nominal, minimum 20 VAC, maximum 30 VAC, 60 Hz
Power Consumption	Typical 0.5 W, maximum 1 W
HVAC Control Outputs	Voltage: 30 VAC max, Current: 0.5A max
Accessories Included	Quick Start Guide, Hardware Kit
Warranty	1-year Warranty
Operating Temperature	0°C to +50°C
Maximum Relative Humidity	90%

Specifications are subject to change without notice.

10.1 Intended Use

Foundation is designed to control temperature and to optimize cost and comfort levels in an indoor environment.

Any changes or modifications that are not expressly approved by Energate Inc. could void your authority to operate this equipment.

10.2 Product Conformity

This equipment is RoHS compliant.

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

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.
Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This Class B digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

FCC ID: WUR-FZ100; WUR-FZ100C; Industry Canada IC: 8022A-FZ100

To comply with FCC and Industry Canada RF exposure compliance requirements, a separation distance of at least 20 cm must be maintained between the antenna of this device and all persons excluding hands, wrists). This device must not be co-located or operating in conjunction with any other antenna or transmitter.
Pour être en conformité avec les requis de conformité à l'exposition aux radiofréquences de la FCC et d'Industrie Canada, une distance minimale de 20 cm doit être maintenue entre l'antenne de cet appareil et toute personne à l'exception des mains ou des poignets. Cet appareil ne doit pas être localisé ou opéré en conjonction avec un autre antenne ou émetteur.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, you are encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Ensure that the equipment is not connected to the same circuit as the receiver.
- Consult the dealer or an experienced radio/TV technician for help.

11 Optional Accessories

The following optional accessories are available for Foundation:

- Auxiliary Switch: Use if you are missing a common wire, or if you have two transformers.
- Wall Plate: Use to cover holes in the wall.

Foundation is compatible with many commercially available outdoor temperature sensors. Energate recommends a 10 kOhm (at 25°C) thermistor with a B25/85 value of 3977, such as the Aprilaire 8052.