

Z-5010T

Z-Wave Thermostat

INSTALLATION AND PROGRAMMING GUIDE

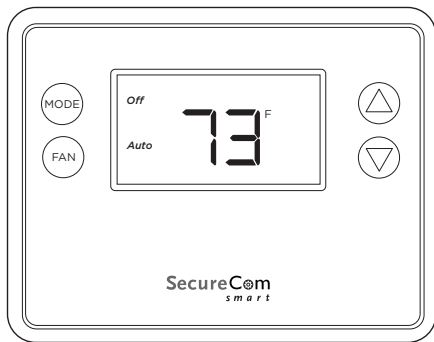


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ABOUT THE THERMOSTAT

The SecureCom™ Smart Z-5010T Thermostat is a programmable Z-Wave thermostat. With Virtual Keypad, users can remotely operate the thermostat, configure programming settings, and display current conditions in the home or office. The thermostat can be powered with 24 VAC, if return (R) and common (C) wires are present, or with four AA batteries.

The Z-5010T Thermostat offers flexible features and functionality such as:

- Multiple system type compatibility
- A backlit, fixed-format display
- Multiple system modes
- Fan mode control and display
- Changeover function for heat pump systems
- Simple on-screen setup
- Temperature display in Fahrenheit or Celsius
- Built-in sensor calibration capability

What is Included

- One Z-5010T Z-Wave Thermostat
- Hardware Pack
- One Sheet of Adhesive Wire Labels
- Four AA Batteries

Power Options

 **Warning:** Do not use this thermostat for line voltage controls rated at 120/240 VAC. Doing so may result in equipment damage or injury.

The thermostat can be powered by either 24 VAC or four AA batteries. Do not attempt to power the thermostat with both 24 VAC power and batteries. Batteries are not required for backup.

Powering the thermostat with 24 VAC power requires both the C (common) wire and the R (return wire). If there is no C and R wire, batteries are required.

The thermostat will operate for approximately two years on four AA alkaline batteries depending on the frequency of user operations and backlight operation. Do not mix different types of batteries. Do not mix old and new batteries. Dispose of used batteries properly.

If the thermostat is installed on a Z-Wave network with battery power, it will not work as a Z-Wave repeater. Do not install batteries and temporarily power the thermostat from 24 VAC to add it to a Z-Wave network or shortened battery life may occur when wired power is removed.

THERMOSTAT FEATURES

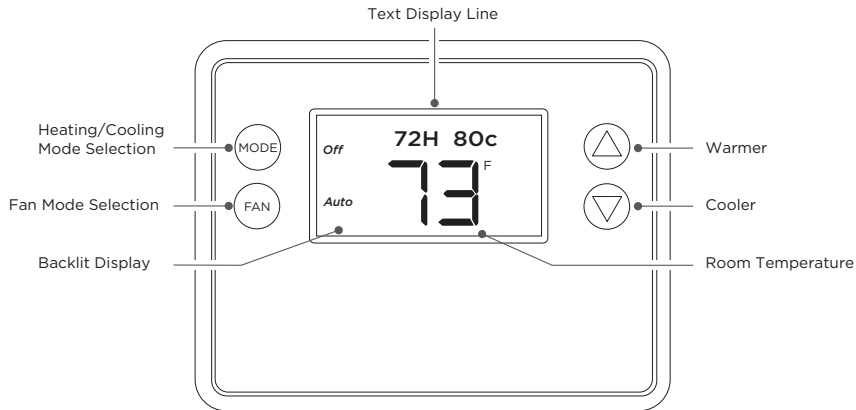


Figure 1: Thermostat Features

INSTALL THE THERMOSTAT

1 *Uninstall the Existing Thermostat*

1. Turn off any breakers and switches that are connected to the existing thermostat. Turn on the system and wait five minutes to make sure it doesn't start.
2. Remove the existing thermostat cover. Take a photo of the connections.
3. Label the wires according to their terminal markings as shown in Figure 2. Connections may differ from the example shown. Keep in mind that color alone is not a reliable indicator of wire purpose.
4. Disconnect all wiring from the existing thermostat, then remove the its base from the wall. If the thermostat contains mercury, dispose of it according to U.S. Environmental Protection Agency or Environment Canada guidelines.

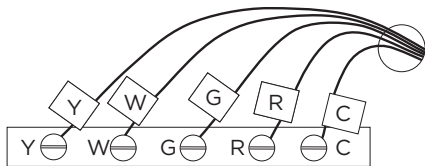


Figure 2: Labeling Existing Wires

2 *Mount and Connect the Thermostat*

1. Remove the cover and body from the thermostat base as shown in Figure 3.
2. Mount the base to the wall with the included wall anchors and screws. Refer to Figure 4.
3. Wire the thermostat according to the wire labels. The thermostat terminals have two sets of labels: Top labels apply to standard connections and lower labels apply to heat pump connections. For more information, refer to Table 1 and the following sections.

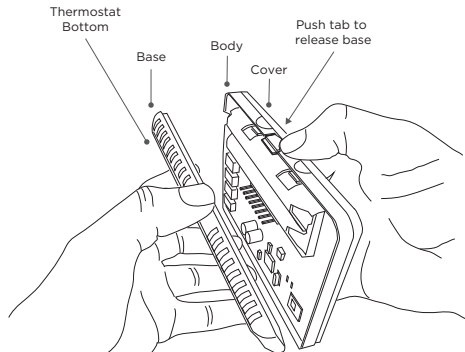


Figure 3: Removing the Base

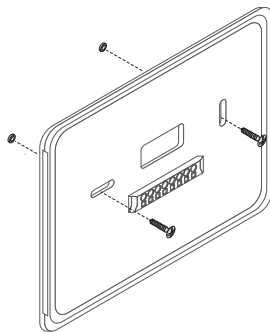


Figure 4: Mounting the Base

TERMINAL	FUNCTION	TYPICAL WIRE COLOR*
C	24 VAC common. Do not connect if batteries installed.	Blue or black
R	24 VAC return. Do not connect if batteries installed.	Red
RC	24 VAC return; power for cooling on dual transformer system. Do not connect if batteries installed.	Red
RH	24 VAC return; power for heating on dual transformer system. Do not connect if batteries installed.	Red
Y or Y1	Controls cooling/compressor; first stage cooling	Yellow
Y2	Second stage cooling	Varies
W or W1	Controls heating; first stage heating	White
W2	Second stage heating; auxiliary	Varies
G	Fan	Green
O or B	Changeover with cool (O) or heat (B)	Orange or blue

*Color alone is not a reliable indicator of wire purpose.

Table 1: Thermostat Terminal Functions

Single Transformer Systems

Most HVAC systems have a single 24 VAC transformer. These systems have only one R wire which is connected to either the RC or RH terminal because the terminals are jumped together. Connect the wires from the HVAC system to the corresponding terminals according to the top labels on the thermostat terminal block. Refer to Figure 5.

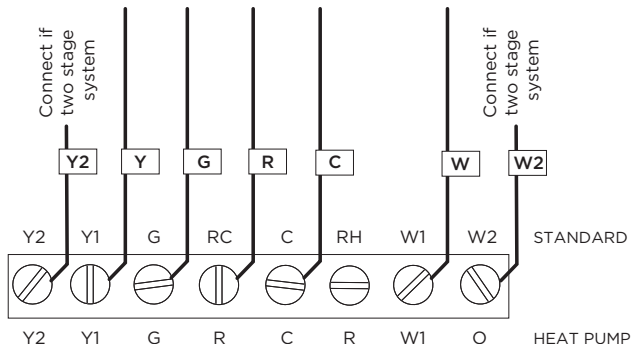


Figure 5: Single Transformer System Wiring

Dual Transformer Systems

For HVAC systems with two dedicated 24 VAC transformers, one R wire runs from the heating system (RH) and one runs from the cooling system (RC).

Connect the wires from the HVAC system to the corresponding terminals according to the top labels on the thermostat terminal block. Connect the cooling system C wire to the C terminal. Do not connect the C wire from the heating system. For systems with two R wires (RC and RH), cut the internal RC/RH jumper on the back of the thermostat PCB. Refer to Figure 6 and Figure 7.

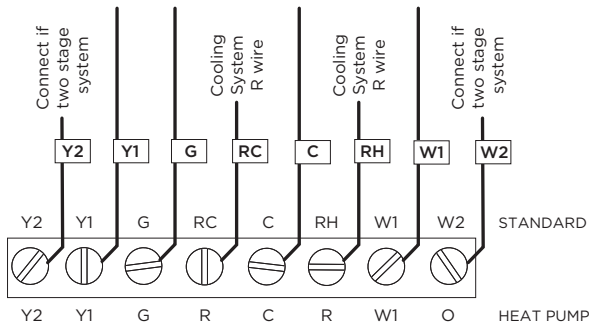


Figure 6: Dual Transformer System Wiring

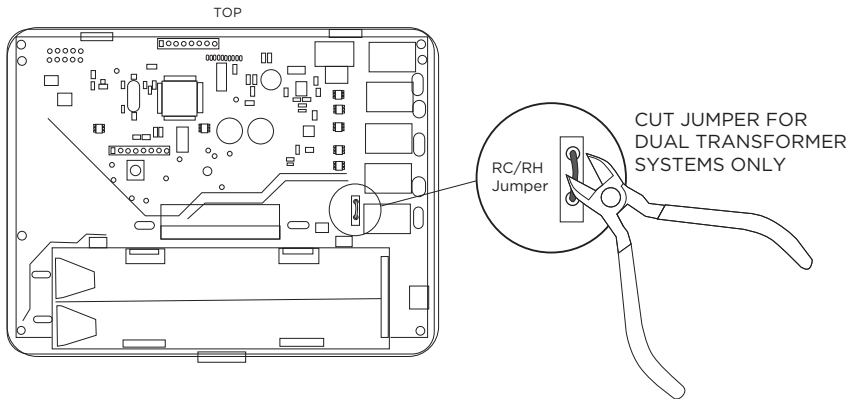


Figure 7: Cutting the RC/RH Jumper for Dual Transformer Systems

Heat Pump Systems

Connect the wires from the HVAC system to the corresponding terminals according to the bottom labels on the thermostat terminal block. Refer to Figure 8.

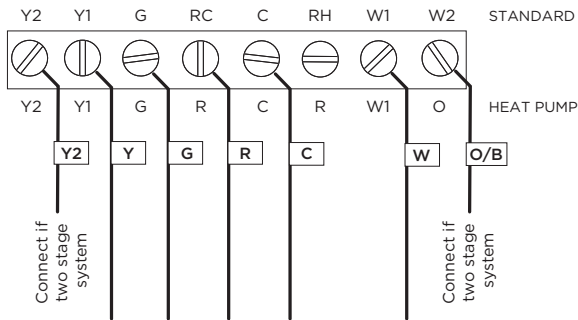


Figure 8: Heat Pump System Wiring

3 *Complete the Installation*

1. Ensure that the appropriate wires are screwed into the terminal blocks firmly. Push all excess wiring back into the wall opening.
2. Snap the body and cover onto the base. Refer to Figure 9.
3. If the thermostat is not connected to wired 24 VAC power, remove the cover and install the included batteries, then snap the cover onto the thermostat base. Refer to Figure 10.
4. Turn on power to the thermostat.

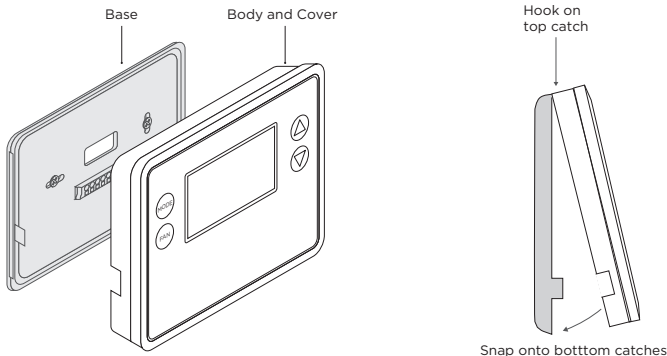


Figure 9: Base and Cover Installation

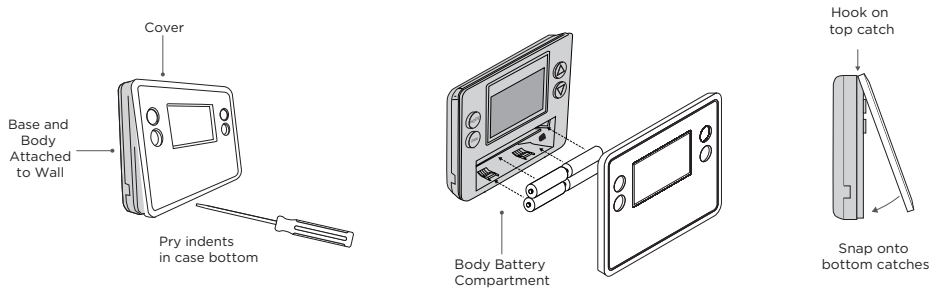


Figure 10: Battery Installation

PROGRAM THE THERMOSTAT

To enter Menu mode and navigate through the menu items, complete the following steps.

 **Note:** When the backlight is off, the first press of any button turns the backlight on but does not initiate any action.

1. Press and hold the FAN button to enter Menu mode.
2. Press the ▲▼ buttons to scroll through the menu items.
3. Press the key next to **SELECT** to change a setting.
4. The current setting for that selection flashes. Change settings with the ▲▼ buttons, then press the key next to **SELECT** to save it.
5. To exit, press the key next to **DONE**.

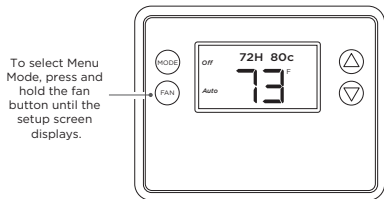


Figure 11: Entering Menu Mode

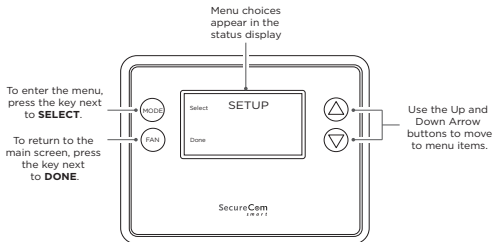


Figure 12: Navigating the Menu

Default Settings

The thermostat is defaulted to the following typical HVAC system configuration:

- System type: Standard (gas/electric)
- Fan type: Gas
- Heating stages: One
- Cooling stages: One

Minimum Off Time (MOT)

The thermostat has a Minimum Off Time (MOT) delay after any heating or cooling cycle ends. A MOT delay prevents rapid heating/cooling cycles and also provides short cycle protection for the system compressor. This delay may be noticeable when you change a setpoint and the system doesn't respond immediately because of the delay timer. For more information, refer to "Advanced Settings".

Minimum Run Time (MRT)

The thermostat has a delay after the start of any heating or cooling call. This feature is called Minimum Run Time (MRT) and ensures even heating and cooling cycles. The MRT will keep the system on until it expires, even if it reaches the setpoint room temperature or if the user changes the setpoint to a temperature that would satisfy the call. Changing the Mode to OFF will cancel the MRT and the system will turn off immediately. For more information, refer to "Advanced Settings".

SETUP

Setup

Configure user preference settings.

- **FAHRENHEIT OR CELSIUS** Select temperature units for the thermostat.
- **BACKLIGHT TIMEOUT** Choose how long the backlight stays on after the last button press. Range is 10 - 30 seconds.
- **SENSOR CALIBRATION** Change the temperature calibration by $\pm 7^{\circ}$.
- **STATUS LINE** Configure the status line to display either setpoints or the clock.

SYSTEM

System

Setup the thermostat for a specific HVAC system type.

- **SYSTEM TYPE** Select either a standard or heat pump system type.
- **FAN TYPE (Standard only)** Select gas or electric fan type. Applies only to standard systems.
- **CHANGEOVER** Select whether changeover occurs with cool (O) or with heat (B). Applies only to heat pump systems. If the opposite of the desired action occurs, choose the opposite changeover action.

Z-Wave

Connect to or disconnect from a Z-Wave mesh network.

1. At a the panel keypad, press **CMD** until **MENU? YES NO** appears, then press **YES**. Enter your user code, then press **CMD**.
2. Press **CMD** until **ZWAVE SETUP?** appears. Press any select key or area.
3. Select **ADD**. The screen displays **PROCESSING**. When prompted, press the button next to **YES** on the thermostat.
4. Press the button next to **SELECT** to add thermostat to network. If the Z-Wave connection is successful, the display flashes **SUCCESS**. If it doesn't connect, the display flashes **FAIL**. To retry connection, repeat the preceding steps.
5. When the thermostat information is received by the system, the keypad panel beeps once and displays **DEVICE FOUND**.
6. The panel keypad displays the type of device and the default device name. Press **CMD**.
7. Press any top row select key on the panel keypad and enter custom name for the device, then press **CMD**.

CLOCK

Clock

Set a time and day to be displayed on the thermostat.

- **DAY** Use the arrow keys to set the day.
- **TIME** Use the arrow keys to set the time.

INFO

Info

View firmware version and Z-Wave network information.

- **MODEL** Displays the thermostat model number.
- **VERSION** Displays the current thermostat firmware version number.
- **ZWAVE** Displays the current Z-Wave version number.
- **NODE ID** Displays the Z-Wave node ID.
- **HOME ID** Displays the Z-Wave home ID.
- **SYSTEM TYPE** Displays the current system type.
- **FAN TYPE** Displays the current fan type.
- **CHANGEOVER TYPE** Displays the current changeover type.

Advanced Settings

Advanced Settings contains additional system setup options. These settings can affect system operation and should only be changed by qualified HVAC installers.

Press and hold the FAN button to access the **SETUP** menu. To access Advanced Settings, press and hold the FAN button and ▼ button for 5 seconds.

TEST MODE

Test Mode

Shortens built-in system delays.

- **Y** Test mode on. Reduces all system delays to 10 seconds for quicker system testing.
- **N (default)** Test mode off. All system delays return to normal settings.

AUX HEAT ENABLE

Aux Heat Enable

Enable auxiliary heat operation for heat pump systems.

- **Y** Auxiliary heating enabled.
- **N (default)** Auxiliary heating disabled.

2ND STAGE HEAT ENABLE

2nd Stage Heat Enable

Enables the second stage heating operation.

- **Y** 2nd stage heating enabled.
- **N (default)** 2nd stage heating disabled.

2ND STAGE COOL ENABLE

2nd Stage Cool Enable

Enables the second stage cooling operation.

- **Y** 2nd stage cooling enabled.
- **N (default)** 2nd stage cooling disabled.

MINIMUM RUN TIME

Minimum Run Time (MRT)

Set the minimum delay before a heating or cooling cycle can turn off Range 1 - 9 minutes. Default is **3** minutes.

MINIMUM OFF TIME

Minimum Off Time (MOT)

Set the minimum delay before a heating or cooling cycle can turn off Range 5 - 9 minutes. Default is **5** minutes.

HEAT SETPOINT MAX

Heat Setpoint Max

Set the maximum heating setpoint value. Range is 55 °F to 90 °F (4 °C to 43 °C). Default is **90 °F (32 °C)**.

COOL SETPOINT MIN

Cool Setpoint Min

Set the minimum cooling setpoint value. Range is 60 °F to 95 °F (6 °C to 45 °C). Default is **60 °F (15 °C)**.

HEAT BLOWER OFF DELAY

Heat Blower Off Delay

Set the system blower delay off time after a heat call ends (fan purge).

COOL BLOWER OFF DELAY

Cool Blower Off Delay

Set the system blower delay off time after a cool call ends (fan purge).

HEAT-COOL DELTA

Heat-Cool Delta

Set the minimum difference between heating and cooling setpoints. Range is 3 ° to 15 °. Default is **3 °F (1 °C)**.

HEATING STAGE 1 ON THRESHOLD

Heating Stage 1 On Threshold

Set the delta from the setpoint where stage one heating starts. Range is 1 ° to 6 °. Default is **1 °**.

HEATING STAGE 1 OFF THRESHOLD

Heating Stage 1 Off Threshold

Set the delta from the setpoint where stage one heating stops. Stage one turns off at setpoint plus stage 1 delta. Range is 0 ° to 5 °. Default is **0 °**.

HEATING STAGE 2 ON THRESHOLD

Heating Stage 2 On Threshold

Set the delta from the setpoint where stage two heating starts. Range is 2 ° to 7 °. Default is **2 °**.

HEATING STAGE 2 OFF THRESHOLD

Heating Stage 2 Off Threshold

Set the delta from the setpoint where stage two heating stops. Stage two turns off at setpoint plus stage 2 delta. Range is 0 ° to 6 °. Default is **0** °.

AUX HEAT ON THRESHOLD

Aux Heat On Threshold

Set the delta from the setpoint where stage three heating starts. Range is 3 ° to 8 °. Default is **3** °.

AUX HEAT OFF THRESHOLD

Aux Heat Off Threshold

Set the delta from the setpoint where stage three heating stops. Stage three turns off at setpoint plus stage 3 delta. Range is 0 ° to 7 °. Default is **0** °.

COOLING STAGE 1 ON THRESHOLD

Cooling Stage 1 On Threshold

Set the delta from the setpoint where stage one cooling starts. Range is 1 ° to 7 °. Default is **1** °.

COOLING STAGE 1 OFF THRESHOLD

Cooling Stage 1 Off Threshold

Set the delta from the setpoint where stage one cooling stops. Stage one turns off at setpoint minus stage 1 delta. Range is 0 ° to 6 °. Default is **0** °.

COOLING STAGE 2
ON THRESHOLD

Cooling Stage 2 On Threshold

Set the delta from the setpoint where stage two cooling starts. Range is 2 ° to 8 °. Default is **2** °.

COOLING STAGE 2
OFF THRESHOLD

Cooling Stage 2 Off Threshold

Set the delta from the setpoint where stage two cooling stops. Stage two turns off at setpoint minus stage 2 delta. Range is 0° to 7°. Default is **0** °.

RESTORE DEFAULTS

Restore Defaults

Restore all settings to factory defaults.

END USER TRAINING

This section contains instructions on how users can read the thermostat display, set the system mode, change the setpoint, and set the fan mode.

Backlight and Button Operation

The thermostat backlight is normally set to turn off after 20 seconds to conserve battery power. If the backlight is off, the first button press will only turn on the backlight. Once the backlight is on, the buttons function normally.

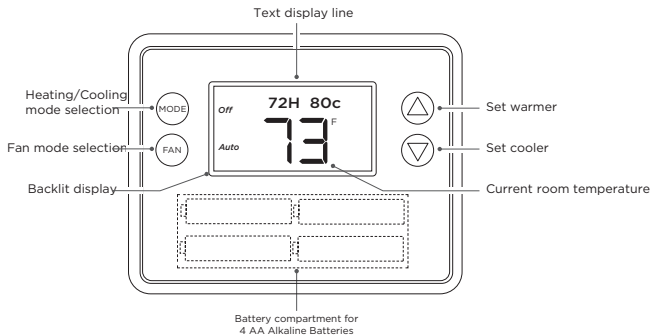


Figure 13: Button Operation

Display

The thermostat displays current room temperature and system settings like system mode, fan mode, and Z-Wave network status. Degrees Celsius (C) are shown in 0.5 ° increments. Degrees Fahrenheit (F) are shown in 1 ° increments. The thermostat also displays Heat and Cool icons to indicate when the system is heating or cooling.

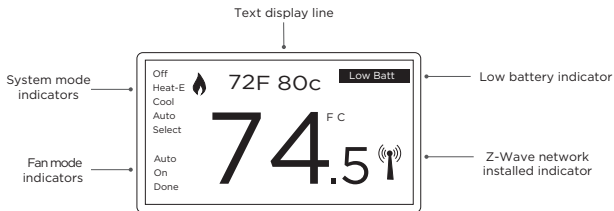


Figure 14: Thermostat Display



Heat Icon

- Solid: System is on and heating.
- Blinking: System is on and heating. Minimum Run Time (MRT) delay is active.



Cool Icon

- Solid: System is on and cooling.
- Blinking: System is on and cooling. Minimum Run Time (MRT) delay is active.

Stage Indicators

- **1:** Stage 1 heating or cooling is on
- **2:** Stage 2 heating or cooling is on
- **3:** Stage 3 heating (auxiliary heat) is on
- **Heat-E:** Emergency heat mode is active

System Modes

- **Off:** System is off. If system was on, it will turn off immediately.
- **Heat:** Only heating will occur.
- **Cool:** Only cooling will occur.
- **Auto:** Heating or cooling will come on according to the saved setpoints. The system will automatically switch between heating and cooling modes as needed to maintain the setpoints.
- **Heat-E:** If the heat pump compressor fails, setting the mode to Emergency Heat will allow the supplemental auxiliary heat to come on first whenever there is a call for heating. It also disables the compressor output to prevent further damage to the HVAC system.



Caution: Emergency heat should only be used for emergencies until the HVAC system can be repaired. Running the system in Emergency Heat mode is the most expensive because electric heat strips are used instead of the more efficient heat pump compressor.

Change the Setpoint

To change the setpoint, press the ▲▼ buttons. The screen will switch to the setpoint change screen and show the current setpoint of the current heating or cooling mode. Adjust the setpoint temperature up or down with the ▲▼ buttons.



Note: When in Change Setpoint mode, pressing the MODE button will switch between the Heat and Cool setpoints.

Automatic Setpoint Push

The thermostat automatically adjusts the setpoints to maintain a 3 ° separation between heating and cooling.

Set Fan Mode

Press the FAN button and use the ▲▼ buttons to select the system fan mode.

- **Auto:** Fan automatically operated by the HVAC system (normal setting).
- **On:** Manual Fan mode. The fan remains on independent of the heating or cooling system operation until the mode is changed back to Auto.

Set the Clock

To set the thermostat day and time, complete the following steps.

- Press any button to take thermostat out of sleep mode.
- Press FAN button for 5 seconds until **SETUP** appears in status display line.
- Use ▲▼ buttons to go to **CLOCK**.
- Press **SELECT**.
- **DAY** is displayed. Set the day with the ▲▼ buttons, then press the button next to **SELECT**.
- Press ▲▼ buttons.
- **TIME** is displayed. Set the time with the ▲▼ buttons, then press the button next to **SELECT**.
- Press the button next to **DONE**.

PRODUCT SPECIFICATIONS

Power	C-Wire Input: 20 VAC-30 VAC Battery Power: 4 AA Batteries
Operating Temperature	32 °F to 120 °F (0 °C to 49 °C)
Storage Temperature	-40 °F to 140 °F (-40 °C to 60 °C)
Setpoint Accuracy	± 1 °F (± 0.5 °C); Calibrates to ± -7 °
Ambient Temperature Accuracy	± 1 °F (± 0.5 °C)
Thermostat Connections	Uses standard 18 AWG C-Wire connections
Dimensions	5.75" W x 4.50" H x 1.00" D 146.0 mm W x 114.3 mm H x 25.4 mm D
Screen Size	2.7" x 1.4" (68.6 mm x 35.6 mm) LCD with white backlight
Messaging Capability	7 character alphanumeric display with message scroll
Regulator	United States: FCC Compliant to CFR47, Part 15B Canada: Industry Canada RSS 210, Issue 8
Certifications	FCC Part 15: WIBTZW011 Industry Canada: 9374A-TBZ48

COMPATIBILITY

- **Standard Gas, Oil, or Electric Systems (24 VAC, single or dual transformer)**
 - One stage heating with one stage cooling
 - Two stage heating with two stage cooling
- **Heat Pump Systems (24 VAC, single or dual transformer)**
 - One stage heating with one stage cooling
 - Two stage heating with two stage cooling
 - Three stage heating with two stage cooling
- **Gas Millivolt Systems (24 VAC)**
- **All DMP panels with built-in Z-Wave capability**
- **All DMP panels with 738Zplus Z-Wave Module**
- **Virtual Keypad app and VirtualKeypad.com**

FCC INFORMATION

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 made by the user and not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.



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, the user is 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 receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

INDUSTRY CANADA INFORMATION

This device complies with Industry Canada License-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.

LIMITED WARRANTY

This Digital Monitoring Products product is warranted against defects in material and workmanship for one (1) year. This warranty extends only to wholesale customers who buy direct from Digital Monitoring Products Inc. or through Digital Monitoring Products, Inc. normal distribution channels. Digital Monitoring Products, Inc. does not warrant this product to consumers. Consumers should inquire from their selling dealer as to the nature of the dealer's warranty, if any.

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This information is subject to change without notice.

