

COMMERCIAL MODEL

DIGITAL THERMOSTAT Up To 2 Heat & 2 Cool Stages with Humidity Control



OWNER'S MANUAL AND INSTALLATION INSTRUCTIONS

T4700





Follow the <u>Installation Instructions</u> before proceeding. Set the thermostat mode to "OFF" prior to changing settings in setup or restoring Factory Defaults.

FCC Compliance Statement

This equipment has been tested and found to comply with the limits for an intentional radiator, pursuant to Part 15, subpart C 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 in radio communications. However, there is no guarantee that the 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 of the receiver.
- Consult the dealer or an experienced radio or TV technician for help.

Notice: Only peripherals complying with FCC limits may be attached to this equipment. Operation with noncompliant peripherals or peripherals not recommended by Venstar, is likely to result in interference to radio and TV reception. Changes or modifications to the product, not expressly approved by Venstar could void the user's authority to operate the equipment.

FCC - INDOOR Mobile Radio Information:

To comply with FCC/IC RF exposure limits for general population / uncontrolled exposure, the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

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.



Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

Cet appareil est conforme avec Industrie Canada, exempts de licence standard RSS(s). Son fonctionnement est soumis aux deux conditions suivantes: 1) ce dispositif ne doit pas causer d'interférences, et 2) ce dispositif doit accepter toute interférence, y compris les interférences qui peuvent causer un mauvais fonctionnement de l'appareil.

En vertu des règlements d'Industrie Canada, cet émetteur de radio ne peut fonctionner en utilisant une antenne d'un type et maximale (ou moins) Gain approuvé pour l'émetteur par Industrie Canada. Pour réduire les interférences radio potentielles aux autres utilisateurs, le type d'antenne et son gain doivent être choisis afin que la puissance isotrope rayonnée équivalente (PIRE) ne est pas plus de ce qui est nécessaire pour une communication réussie.

We, Venstar, declare under our sole responsibility that the device to which this declaration relates: 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.

FCC ID: MUH-SKYPORT3

IC: 12547A-SKYPORT3

These numbers can be located on the inside of the thermostat backplate, in the upper right corner.

This Voyager thermostat has the ability to receive updates to its firmware. Periodically firmware updates are released by the manufacturer to add features and/or performance enhancements. This manual was produced reflecting the most current firmware/feature set at the time of publication, firmware rev. 1.0. Firmware releases after rev. 1.0 may not be adequately depicted in this manual. Please refer to the appropriate website or contact your place of purchase to learn about changes to the thermostat after firmware release 1.0.





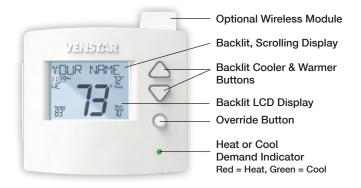


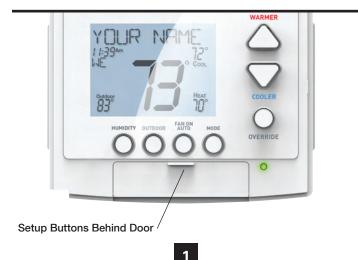
Glossary of Terms

- Auto-Changeover: A mode in which the thermostat will turn on the heating or cooling based on room temperature demand.
- **Cool Setpoint:** The warmest temperature that the space should rise to before cooling is turned on (without regard to deadband).
- **Deadband:** The number of degrees the thermostat will wait, once a setpoint has been reached, before energizing heating or cooling.
- Dehumidify: To reduce the amount of moisture in the air.
- **Differential:** The forced temperature difference between the *heat setpoint* and the *cool setpoint*.
- **Heat Setpoint:** The coolest temperature that the space should drop to before heating is turned on (without regard to deadband).
- Humidify: To increase the amount of moisture in the air.
- Icon: The word or symbol that appears on the thermostat display.
- **Mode:** The current operating condition of the thermostat (i.e. Off, Heat, Cool, Auto).
- Non-Programmable Thermostat: A thermostat that does not have the capability of running *Time Period Programming.*
- **Override:** During programmed unoccupied periods, pressing the Override button will force the thermostat into occupied settings. During programmed occupied periods, pressing the Override button will force the thermostat into unoccpied settings.
- **Programmable Thermostat:** A thermostat that has the capability of running *Time Period Programming.*
- **Reheat:** Running the cooling and 2nd stage strip heaters at the same time in order to *dehumidify* the air without significantly cooling down the room temperature.
- Temperature Swing: Same as Deadband.

Table of Contents

GET TO KNOW YOUR THERMOSTAT Get to Know Your Thermostat Quick Start	
INSTALLATION INSTRUCTIONS	
Installation Instructions	9
Sample Wiring Diagrams	13
Test Operation	
USER SETUP	
Backlight Operation	17
Scrolling Display Options	
Emergency Heat	
Wireless Modules	
Service Filter	
Runtimes	24
Available Modes	25
INSTALLER SETUP	
Setpoint Limits	
Timers and Deadbands	
Humidification & Dehumidification	
Dry Contact Operation	
Holiday	
Remote Sensor Operation	30
Factory Defaults	32
TECHNICIAN SETUP	
Sensor Calibration	
Equipment Testing	
Advanced Setup Table	
Troubleshooting	
INDEX	
WARBANTY	







2

Display Features



- 1 The scrolling display will be used to help you easily navigate the setup screens in the thermostat.
- 2 Clock with Day of the Week

Indicates the current time and day. This clock is also used to program the time period schedules.

3 Mode Indicators

Selects the operational mode of the equipment.

HEAT - Indicates the heating mode.

COOL - Indicates the air conditioning mode.

HEAT & COOL - Indicates the system will automatically change-over between heat and cool modes as the temperature varies. OFF - Indicates heating and cooling is turned off.

4 Room Temperature Display

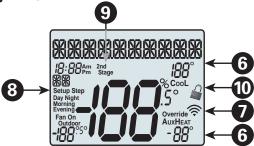
Indicates the current room temperature and displays the outdoor temperature when selected.

5 Outdoor icon

Indicates the temperature displayed is from the optional outdoor sensor.



Display Features





6 Desired SetTemperature

Indicates desired room temperature(s). Also displays the highest and lowest temperatures for the day.

7 Wi-Fi icons

One dot indicates the thermostat recognizes the wireless module. The "pull" icon indicates the thermostat is currently connected to the Local access point, via the optional Wi-Fi Module.



8 Setup Step icon

Indicates the step number when the thermostat is in the setup mode.

9 2nd Stage icon

Indicates what stage of cooling or heating is currently energized.

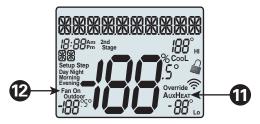


🕍 icon

Indicates the keypad has been locked.



Display Features





11 AuxHeat icon

Indicates 2nd stage electric strip heat is being used when the thermostat is programmed for Heat Pump operation. Only the Aux icon will appear during Cool to Dehumidify to indicate Reheat operation.



12 Fan On icon

Indicates constant, continuous fan operation. When Fan On is not lit - indicates the fan will only operate when necessary to heat or to cool.

Quick Start

During Setup and Programming:

Press the WARMER or COOLER buttons to modify the selection. Press the MODE button to advance and <u>confirm</u> through the setup steps.

Setting the Clock and Day

Not available when connected to a Skyport Account

Press the SET CLOCK button. Adjust the clock using the WARMER or COOLER buttons. Press MODE to advance to the day setting. Adjust the day using the WARMER or COOLER buttons. Press the SET CLOCK button to confirm settings.

TIP: To adjust the time by hours press and hold the FAN button while pressing the WARMER or COOLER buttons.



Selecting the Heat or Cool Mode

Select mode by pressing the MODE button.



Heating Only - Only the heating operation will be controlled by the thermostat in this mode.

Cooling Only - Only the cooling operation will be controlled by the thermostat in this mode.

Heating or Cooling (Auto-Changeover) - AUTO will automatically select heat or cool based on room temperature demand.

OFF - OFF indicates both heating and air conditioning systems are turned off.

Quick Start

Selecting your desired temperature

AUTO-CHANGEOVER MODE - Pressing the WARMER or COOLER buttons in Auto mode will adjust <u>both</u> the heat and cool setpoints simultaneously. To adjust heat and cool setpoints individually, choose HEAT mode to adjust the heat setpoint and COOL mode to adjust the cool setpoint, then return to AUTO mode.

HEAT OR COOL MODE - Pressing the WARMER or COOLER buttons in Heat or Cool mode will adjust only the heat <u>or</u> cool setpoints individually displayed.

Using the Fan Button

Fan On indicates constant fan operation. Fan On is not allowed when the thermostat is in the OFF mode. Pressing the FAN button toggles this feature on or off. Fan auto will allow the fan to run only when there is a heat or cool demand.

Using the Override Button

UNOCCUPIED OPERATION -

During a Dry Contact forced unoccupied period, pressing the OVERRIDE button will temporarily force the thermostat into the mode it was in before the Dry Contact forced it into the Unoccupied mode. For example: If the thermostat was in the Auto mode and the Dry Contact forced the thermostat into the Unoccupied mode, then pressing the OVERRIDE button will force the thermostat back into the Auto mode.

The remaining override time will be displayed in the upper left hand corner of the display. The override timer can be set up to a maximum of four (4:00) hours, in increments of 30 minutes. If the timer has been set for the maximum time, the next press of the OVERRIDE button will reset the timer, returning the thermostat to the Unoccupied mode.

To adjust the setpoints for the Unoccupied mode, see page 29.

Current Override Hours (Setup step 10) - This counter keeps track of the number of hours that the thermostat is overridden into Occupied settings. Press FAN to reset.

OVERRIDE



FAN ON

Quick Start

Viewing the Temperature Sensors

OUTDOOR TEMP - Press the OUTDOOR button to view the current outdoor temperature. If connected to a Skyport account, pressing outdoor button will show the temperatures for your location if you don't have a wired sensor connected.

Press the OUTDOOR button again to view any connected wired sensor (Remote or Supply).

Note: If no outdoor sensor is connected, and there isn't outdoor temperature via Wi-Fi, then 2 dashes [- -] will appear with the first button press.

REMOTE/SUPPLY TEMP - Press the **Accessory Status** button to view linked wireless and wired sensors and other accessories. Press the **Accessory Status** button to return to the main screen. Setup step #26 selects the use of the wired temperature sensor.

Viewing the Indoor Humidity Sensor

IMPORTANT: Allow at least 2 minutes after the thermostat is powered on for the humidity to read correctly.

Press the HUMIDITY button then the mode button to display the current humidity measured at the thermostat. The room's relative humidity is displayed in the top left corner. The humidification setpoint appears in the larger, center display and can be adjusted using the WARMER or COOLER buttons. Press the MODE button again to view and adjust the dehumidification setpoints. Press the HUMIDITY or MODE button again to confirm settings and return to normal operation.

Note: Due to variations in environmental and equipment conditions, it is not always possible to achieve the desired humidification or dehumidification setpoint.







Remove and Replace the old thermostat

To install the thermostat properly, please follow these step by step instructions. If you are unsure about any of these steps, call a qualified technician for assistance.

 Assemble tools: Flat blade screwdriver, wire cutters and wire strippers.



- Make sure your Heater/Air Conditioner is working properly before beginning installation of the thermostat.
- Carefully unpack the thermostat. Save the screws, any brackets, and instructions.
- Turn off the power to the Heating/Air Conditioning system at the main fuse panel. Most residential systems have a separate breaker for disconnecting power to the furnace.
- Remove the cover of the old thermostat. If it does not come off easily, check for screws.
- Loosen the screws holding the thermostat base or subbase to the wall and lift away.
- If you have a smart phone handy, take a photo of the wiring for future reference.
- Disconnect the wires from the old thermostat. Tape the ends of the wires as you disconnect them, and mark them with the letter of the terminal for easy reconnection to the new thermostat.
- Keep the old thermostat for reference purposes, until your new thermostat is functioning properly.

9

Wire Connections

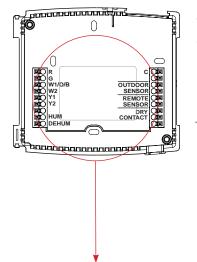
If the terminal designations on your old thermostat do not match those on the new thermostat, **refer to the chart below or the wiring diagrams that follow.**

Wire from the old thermostat terminal marked	Function	Install on the new thermostat connector marked
G or F	Fan	G
Y1,Y	Cooling	Y1
W1, W	Heating	W1/0/B
Rh, R, M, Vr, A	Power	R
С	Common	С
O/B	Rev. Valve	W1/O/B*
W2	2nd Stage Heat	W2
Y2	2nd Stage Cooling	Y2
H, Hum	Humidity	HUM
D, Dehum	Dehumidity	DEHUM
Ck1	Dry Contact Switch	DRY CONTACT
CKGND	Dry Contact Switch	DRY CONTACT

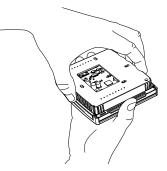
* O/B is used if your system is a Heat Pump.

10

The Voyager Thermostat Backplate



To remove the thermostat backplate: Gently separate the display from the base by pulling first from one side, then the other until the two pieces unsnap. A small screwdriver may be used, very carefully, to start seperating the two pieces.



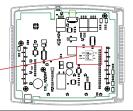
R	24 VAC return	С	24 VAC common
G	Fan relay	OUTDOOR	Outdoor sensor
W1/O/B	1st stage heat circuit	SENSOR	connections
W2	2nd stage heat circuit	REMOTE	Remote sensor
Y1	1st stage compressor relay	SENSOR	connections
Y2	2nd stage compressor relay	DRY	Dry Contact
HUM	Humidifier control circuit	CONTACT	connections
DEHUM	Dehumidifier control circuit		

IMPORTANT: This thermostat requires <u>both</u> R (24 VAC Return) and C (24 VAC Common) be connected to the backplate terminals.

Check Dip Switch

Ensure which switch is correct for your system. Dip switches are located on the back of the thermostat.





GAS	ELEC
-	



1. When GAS/EL or HP is set for GAS/EL: This switch (GAS or ELEC) controls how the thermostat will control the Fan (G) terminal in heating mode. When GAS is chosen, the thermostat will not energize the Fan (G) terminal in heating. When ELEC is chosen the thermostat will energize the fan in heating.

2. When GAS/EL or HP is set for HP: This switch (GAS or ELEC) defines the Aux Heat type. When GAS is chosen, the auxiliary heat will not be allowed to run during heat pump operation. When using a Dual Fuel system, set this switch for GAS. When ELEC is chosen, up to two stages of auxiliary strip heat will be allowed to run.

For Heat Pump Only

When the GAS/EL or HP dip switch is configured for HP, this dip switch (O or B) must be set to control the appropriate reversing valve. If O is chosen, the W1/O/B terminal will energize in cooling. If B is chosen, the W1/O/B terminal will energize in heating.

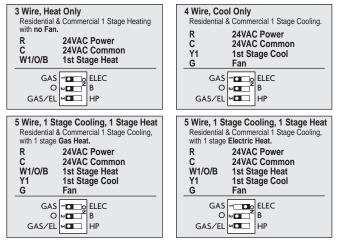


This dip switch configures the thermostat to control a conventional gas/electric system or a heat pump. If your system is anything other than a heat pump, leave this switch set for GAS/EL.



Sample Wiring Diagrams

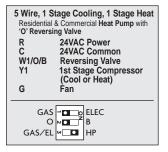
Conventional Heating and Cooling Systems

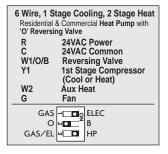




Sample Wiring Diagrams

Heat Pump Systems

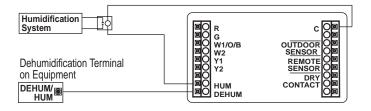




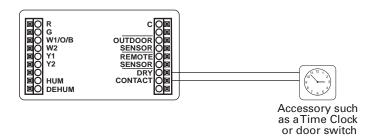


Sample Wiring Diagrams

Humidification or Dehumidification



Dry Contact





Installation Instructions: Test Operation

The Voyager thermostat has a diagnostic feature that enables testing of all outputs. This feature is contained in **Technician Setup**.

To enterTechnician Setup, press and hold the SETUP button for 10 seconds until all the icons appear. Follow the next steps to view settings and test equipment.

- 1. Press MODE to view the version numbers of the thermostat.
- 2. Press MODE again to view the jumper settings and current state of the Dry Contact terminal.
- 3. Press MODE again and the scrolling display will read "TURN ON EQUIPMENT?" Press WARMER for Yes or COOLER for No.

If Yes is chosen, press WARMER to turn on heat or COOLER to turn on Cooling. The scrolling display will read "NOTHING ON." Next:

Press WARMER to turn on and cycle up through the heating stages. Press COOLER to turn the heating stages off. Press MODE to exit.

Press COOLER to turn on and cycle down through the cooling stages. Press WARMER to turn the cooling stages off. Press MODE to exit.

- 4. Press MODE until "CALIBRATE SENSORS?" appears on the scrolling display. Press WARMER for Yes or COOLER for No. Press MODE to select which sensor to calibrate. Use WARMER or COOLER to modify your selection.
- 5. Press MODE until "CONTROL HUM?" appears on the scrolling display. Press WARMER for On or COOLER for Off. Press MODE to continue.
- 6. Press MODE until "CONTROL DEHUM?" appears on the scrolling display. Press WARMER for On or COOLER for Off. Press MODE to continue.

To exit Technician Setup at any time, press the SETUP button. Technician Setup will automatically exit after 10 minutes if no buttons are pressed.

User Setup - Backlight Operation

How to Change Settings in the Setup Screens

To enter Advanced Setup, press the SETUP button, then press MODE. Use the WARMER or COOLER buttons to adjust the value of your selection. Press MODE to advance to the next setup step. Press SETUP again to leave the setup screens.



Backlight (Setup Steps 2-7)

Backlight (setup step 2)

Off - Backlight turns on with any button press and turns off after 8 seconds.

On - Backlight is on continuously.

Backlight Intensity Level (setup step 3)

The backlight can be adjusted between Off and seven levels of brightness.

Night Dimmer (setup step 4) - Selecting On allows for automatic dimming of the display at night.

Night Dimmer Brightness (setup step 5)

Off through seven levels of brightness

Night Dimmer Start Time (setup step 6) - 12:00 am to 12:00 am

Night Dimmer Stop Time (setup step 7) - 12:00 am to 12:00 am

Language (setup step 17)

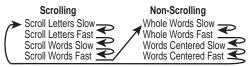
Setup step instructions on the scrolling display can be set for English, Spanish, or French. Press the SETUP button, then press MODE repeatedly until the Language setup step appears. Use the WARMER or COOLER buttons to make selection. Press MODE to advance to the next step. Press SETUP to leave the setup screens.

17

User Setup - Scrolling Screen & Display Options

Scrolling Display Method (Setup Step 18)

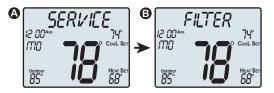
This option allows the user to choose how the scrolling text is displayed. Options are:



Press the SETUP button, then press MODE repeatedly until the Scrolling Method setup step appears. Use the WARMER or COOLER buttons to make selection. Press MODE to advance to the next step. Press SETUP to leave the setup screens.



Example of "Whole Words Centered":



Emergency Heat

The Emergency Heat function is only available if your thermostat is set to control a Heat Pump.

To initiate the Emergency Heat feature, Press the EMERGENCY button. During Emergency Heat operation the thermostat will turn on the fan and auxiliary stages of heat when there is a demand for heat. The 1st stage of heating and all stages of cooling will be unavailable. To exit Emergency Heat, press the EMERGENCY button.





Wireless Module



The **Accessory Status** button allows the user to view the status of wired and wireless accessories. For many of the wireless devices this status includes: Battery Level, Signal Strength & LastTime Updated.

If there is an optional wireless module installed, the **Accessory Setup** button allows the user to link or connect wireless devices to the thermostat, or the thermostat to the network.

Voyager theremostats may use 1 of 4 different types of modules. They are:

- 1. Wi-Fi Module
- 2. Z-Wave Module
- 3. ZigBee Module
- 4. Venstar RF Module

VENSTAR RF Module

Please follow the instructions included with the wireless accessory to start the linking process. The general instructions are below.

Press the <u>Accessory Setup</u> button to enter the linking/un-linking mode. Press the <u>Mode</u> button to initiate the linking or un-linking process. At any time press the <u>Accessory Setup</u> button to return to the main screen.

NOTE: A wired outdoor sensor is updated every 1 minute, a wireless outdoor sensor is updated every 5 minutes to conserve battery life.

Wi-Fi Module

Wi-Fi Module



Please follow the instructions included with the Wi-Fi module to connect to an Access Point or view status. The general instructions are below.

Wi-Fi Module

If the 🛜 is present on the display then the thermosat is connected to the Wi-Fi Access Point. If just the "dot" of this icon appears, then just the Wi-Fi module is recognized.

Press the **Accessory Status** button, then press either the <u>Cooler</u> button to view connected Wi-Fi sensors, OR press the <u>Warmer</u> button to view the Wi-Fi status and settings.

Press the <u>Mode</u> button to step through the connected sensors or the Wi-Fi status screens listed below.

a. Wi-Fi status (connecting, connected with duration of connection, etc.)

- b. Signal strength
- c. Access point name
- d. IP address
- e. MAC address
- f. Skyport status (connecting, connected with duration of connection, etc.)
- g. Local API status (Enabled, Disabled)
- h. Module version

• At any time press the Accessory Status button to leave the status screens.

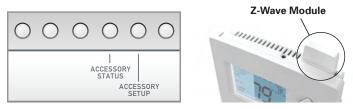
Press the <u>Accessory Setup</u> button to enter Wi-Fi or Skyport setup: Press the <u>Cooler</u> button to configure Wi-Fi settings.

Press the Warmer button to join this thermostat to a Skyport account. If the theremostat is connected to Wi-Fi and the Internet, a Device ID will appear on the scrolling display of the thermostat. You will enter this code to add this thermostat to your Skyport account via a browser or the Skyport mobile app.

Note: To connect to Skyport Cloud Services, Setup Step #48 must be set to on.



Z-Wave Module



Please follow the instructions included with the Z-Wave module to join the Network or view status. The general instructions are below.

Z-Wave Module

Press the **Accessory Status** button to view the status of the thermostat's connection to the Network.

Press the Accessory Setup button to enter the Z-Wave Network setup:

Press the <u>Cooler</u> button to join the Z-Wave Network and start the connection process on the Z-Wave controller.

Press the <u>Warmer</u> button to remove this thermostat from the Z-Wave network. When prompted, press the Mode button to remove the thermostat from a connected controller. If the controller is not present, press the Fan button to remove the thermostat forcefully from the network.

Please use this procedure only in the event that the network primary controller is missing or otherwise inoperable.

Notes regarding Voyager's Z-Wave plus module:

- The Voyager Z-Wave thermostat supports association group 1.
- This group supports up to 5 devices and is used for reporting setpoint changes performed by the user on the thermostat, and for reporting when the thermostat was reset locally by the user.
- The Z-Wave command set allows for the implementation of the thermostat's Home/Away and Vacation settings as described on page 19.
- Products from different manufactures and product categories can be part of the same network and non-battery powered nodes may act as repeaters, regardless of manufacturers.



ZigBee Module



Please follow the instructions included with the ZigBee module to join the Network or view status. The general instructions are below.

ZigBee Module

Press the **Accessory Status** button to view the status of the thermostat's connection to the Network.

Press the **Accessory Setup** button to enter the ZigBee Network setup: Press the <u>Cooler</u> button to join the ZigBee Network and start the connection process on the Z-Wave controller.

Press the <u>Warmer</u> button to remove this thermostat from the Network. When prompted, press the <u>Warmer</u> button again to confirm thermostat removal from the ZigBee network.

Note for WiFi, Z WAVE and Zigbee: In order for 3rd party devices (such as home automation systems) to communicate with your thermostat through its local API, Setup Step #49 must be set to ON.

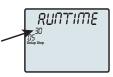
If desired both Skyport access and API access may be both set to on, allowing 3rd party device access as well as Skyport access.



User Setup - Service Filter

These setup steps allow the user to monitor equipment runtimes and program service alerts. Service alerts are displayed in the scrolling marquee.

Runtime hours or days appear in the clock display.





Press and hold FAN to clear service alert messages from the scrolling marquee.

Service Filter Runtime (setup steps 8-9, 13-14)

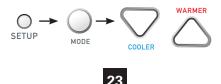
Current Service Filter Runtime Hours (Setup Step 8) -This counter keeps track of the number of hours of fan runtime in the Heating mode, Cooling mode, and in stand alone Fan operation. Press FAN to reset.

Current Service Filter Calendar Days (Setup Step 9) - This counter displays the total number of calendar days that have elapsed since the counter was reset to help the user track Fan runtime. Press FAN to reset.

Set Service Filter Runtime Hours (Setup Step 13) - This timer allows the user to specify the number of hours the fan will run before the "Replace Filter" alert will be displayed. Press COOLER continuously until ${\bf 0}$ is displayed to disable this alert.

Set Service Filter Calendar Days (Setup Step 14) - This timer allows the user to specify the number of calendar days that will elapse before the "Replace Filter" alert will be displayed. Press COOLER continuously until **0** is displayed to disable this feature.

Press the **SETUP** button, then press **MODE** repeatedly until the desired setup step appears. Use the **WARMER** or **COOLER** buttons to make selection. Press **MODE** to advance to the next step. Press **SETUP** to leave the setup screens.



User Setup - System Runtimes

To view, set, or reset System Runtimes, press the SETUP button, then press MODE. Press MODE to advance to the desired setup step. Use the WARMER or COOLER buttons to adjust the value of your selection. Press SETUP again to leave the setup screens.

UV Lamp Runtime (setup steps 11, 15)

Current UV Lamp Calendar Days (setup step 11) - This counter displays the total number of calendar days that have elapsed since last reset to help the user track UV lamp runtime. Press FAN to reset.

Set UV Lamp Calendar Days (setup step 15) - This timer allows the user to specify the number of calendar days the UV Lamp will operate before the "Replace UV Lamp" alert will be displayed. Press COOLER continuously until **0** appears to disable this alert.

Humidifier Runtime (setup steps 12, 16)

Current Humidifier Calendar Days (setup step 12) - This counter displays the total number of calendar days that have elapsed since last reset to help the user track the Humidifier run-time. Press FAN to reset.

Set Humidifier Calendar Days (setup step 16) -This timer allows the user to specify the number of calendar days the Humidifier will run before the "Service Humidifier" alert will be displayed. Press COOLER continuously until **0** appears to disable this alert.



User Setup - Available Modes

Selecting Your Available Modes (setup step 1)

Auto-Changeover - Allows the thermostat to turn on heating or cooling based on room temperature demand. Also allows the manual selection of HEAT only or COOL only and OFF.

Heat and Cool - Allows the thermostat to turn on heating or cooling depending on which one has been manually selected. Auto-Changeover is not available when this is selected.

Heat Only - Allows the thermostat to only turn on HEAT or OFF modes.

Cool Only - Allows the thermostat to only turn on COOL or OFF modes.



Setpoint Limits (setup step 19) When this feature is at any setting other than no setpoint limits', the heat and cool setpoints can be restricted to preset levels, set in steps 20 and 21.

This feature allows the user to set 3 different levels of security: (0 - 3). No Setpoint Limits (0) - When this level is selected, no restrictions are activated. Use Setpoint Limits (1) - When this level is selected, the heat and cool setpoints can be restricted to preset levels, set in setup steps 24 and 25.

Maximum Heat Setpoint (setup step 20) - (35° - 99°).

Minimum Cool Setpoint (setup step 21) - (35° - 99°).

Force Program Mode (2) - When this level is selected, the heat and cool setpoints can be restricted to preset levels, set in setup steps 20 and 21 and the thermostat is locked into the current mode and time period program setting and the FAN button is locked out.

Setpoints Frozen (3) - When this level is selected, the heat and cool setpoints, the current mode, the FAN button and time period program settings are locked.

Cycles Per Hour (setup step 22) The Cycles Per Hour setting may limit the number of times per hour your HVAC unit may energize. For example, at a setting of 6 cycles per hour the HVAC unit will only be allowed to energize once every 10 minutes. The Cycles Per Hour limit may be overridden and reset by pressing the WARMER or COOLER buttons on the thermostat. Settings are No Limit, 2, 3, 4, 5, or 6.

Compressor Minimum Off Minutes (setup step 23) This feature allows the user to set a minimum off time for the compressor. Settings are 5 mins., 3 mins., or 0 mins.

Minimum Heat/Cool Setpoint Difference (setup step 24) This feature allows the user to set the minimum gap between Heat and Cool setpoints in **AUTO** mode. Select from 0 to 6. If setup step 2 is not set for **AUTO-CHANGEOVER**, this step will not appear.

Number of Heat Stages (setup step 25) This setting assures proper stage callouts on the thermostat display for non-heat pump applications.

Number of Cool Stages (setup step 26) This setting assures proper stage callouts on the thermostat display for non-heat pump applications.

Number of Compressor Stages (setup step 27) *This feature is for heat pump application only.* This feature allows the thermostat to control 1 or 2 compressor stages when configured for heat pump.

Number of Aux Stages (setup step 28) This feature is for heat pump application only. This feature allows for proper Aux Heat Staging. (0-2 stages)



Deadband Settings (setup step 29)

The Deadband is the number of degrees or minutes that the thermostat waits before it initiates the stages of heating or cooling.

1st Stage Deadband (setup step 29) - Specifies the minimum temperature difference between the room temperature and the desired setpoint before the first stage of heating or cooling is allowed to turn on. (1 - 6 degrees) For example, if the heat setpoint is 68° and the 1st Stage deadband is set to 2 degrees, the room temperature will need to reach 66° before the heat turns on.

Fan Off Delay in Seconds (setup step 38)

This feature allows the user to increase the cooling or electric strip heating efficiency of the system. The thermostat may be programmed to continue running the fan after a call for cooling or electric strip heating has been satisfied. This delay can be set for 0, 30, 60, 90, or 120 seconds. If set to 0, the fan will not run after a call for cooling or electric strip heating has been satisfied.



Humidity and Dehumidity (setup steps 32 - 37, 45-47)

Humidity Only With Heat (Setup Step 32) - When this step is set to ON, Humidity will not run without a demand for Heat.

Fan With Humidity Demand (Setup Step 33) - Specifies if the fan should be turned on with a demand for Humidity. (This step will only appear if step 46 is set to OFF.)

Fan with Dehumidify (Set up Step 34) - Specifies if the fan should be turned on with a demand for Dehumidify. (This step will only appear if step 46 is set to OFF.)

Cool To Dehumidify (Setup Step 35) - Specifies if the cooling equipment is allowed to turn on exclusively to lower room humidity. (If set to OFF the following two steps will not appear.)

Max Dehum Overcool (Setup Step 36) - Specifies how many degrees below the Cool setpoint the air conditioning will run to satisfy a Cool to Dehumidify demand. $(0^{\circ} - 20^{\circ})$

Reheat Operation With Cool To Dehumidify (Setup Step 37) - Specifies if electric strip heat is allowed to turn on during a Cool to Dehumidify demand to help maintain desired room temperature. This step is not available if Electric Heat is not present.

Humidity Output Polarity (setup step 45)

Humidity Output Normally Open - means no voltage is sent to the HUM output when there is no demand for humidity.

Humidity Output Normally Closed - means voltage is sent to the HUM output when there is no demand for humidity.

Dehumidify Output Polarity (setup step 46)

Dehumidify Output Normally Open - means no voltage is sent to the DEHUM output when there is no demand to dehumidify.

Dehumidify Output Normally Closed - means voltage is sent to the DEHUM output when there is no demand to dehumidify.

Dehumidify Only with Cooling (setup step 47)

When set to ON, Dehumidify will only turn on with a 1st stage cooling demand. When set to OFF, Dehumidify will turn on at any time that the room humidity exceeds the dehumidification setpoint.



Dry Contact Operation (setup step 40 - 41)

Dry Contact Polarity (setup step 40)

Open (Normally Open) - The dry contact is open until the connected device closes the circuit.





Closed (Normally Closed) - The dry contact is closed until the connected device opens the circuit.





'Active'

Dry Contact Use (setup step 41)

CONDENSATE - If CONDENSATE is selected when the dry contact is active, the thermostat will lockout the compressor terminal(s) and "CONDENSATE PAN OVERFLOW" will appear on the display.

FORCE UNOCCUPIED - If FORCE UNOCCUPIED is selected, the thermostat will use unoccupied mode/ setpoints when they dry contact is active. In that state, the OVERRIDE button is available to return to the prior mode/setpoints for a limited amount of time. This setting is commonly used to emulate the function of a twist timer.

FDD - If FDD is selected when the dry contact is active, "EQUIPMENT FAULT" will appear on the display.

UNOCCUPIED MODE, UNOCCUPIED COOL STEPOINT, UNOCCUPIED HEAT SETPOINT (setup steps 37-39) – When prior step set for FORCE UNOCCUPIED, these three steps appear. Specify the desired mode and setpoints to be used when the dry contact is active.

Wired Sensor Type (setup step 30) - Specifies the use of the connected, wired sensor. The choices are: Remote or Supply. The remote option allows control to the sensor, the supply does not.



Control To Temp Source (setup step 31)

This feature allows the user to specify which temperature sensor source the thermostat will use to measure room temperature.

Thermostat: Uses the internal thermostat sensor only.

Remote Sensor: Uses wireless or wired sensors only.

Average of Remote Sensor and Thermostat: Averages the temperatures of the remote sensor(s) and the thermostat.

NOTE: If a remote sensor is being used, the degree icon on the large room temperature display will blink.

Fahrenheit or Celsius (setup step 39)

This feature allows the thermostat to display temperature in Fahrenheit or Celsius.

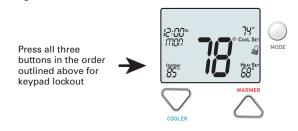
Press Fan To Clear All Messages (setup step 50)

This feature allows the user to clear all current error messages from the display.



Locking/Unlocking the Keypad

To prevent unauthorized use of the thermostat, the front panel buttons may be disabled. To disable, or 'lock' the keypad, press and hold the MODE button. While holding the MODE button, press the WARMER and COOLER buttons together. The $\widehat{\ensuremath{\mathcal{A}}}$ icon will appear on the display, then release the buttons.



To *unlock* the keypad, press and hold the MODE button. While holding the MODE button, press the WARMER and COOLER buttons together. The icon will disappear from the display, then release the buttons.



Resetting the Thermostat to the Factory Default Settings

(for default values see page 38-39)

If, for any reason, you desire to return all the stored settings back to the factory default settings, follow the instructions below.

WARNING: This will reset all Time Period and Advanced Programming to the default settings. Any information entered prior to this reset may be permanently lost. Additionally, if a Z-Wave module is installed, resetting the thermostat will not reset the Z-Wave module. To reset the Z-Wave module, please follow the instructions on Page 19.

1 Press and hold SETUP for 10 seconds. All icons will appear on the display.

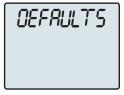
Keep pressing the SETUP button until you see this screen.





After all the icons appear, release SETUP. Press and hold FAN for 5 seconds. DEFAULTS will appear on the display.

Keep pressing the FAN button until you see this screen. FAN ON AUTO



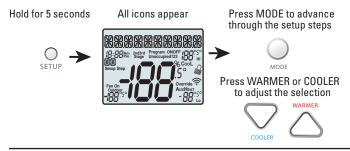
After DEFAULTS appears, release FAN. Press SETUP to return to normal operation.





Technician Setup

To enter Technician Setup, press and hold the SETUP button for 5 seconds. After all the icons appear, press MODE. The version number of the thermostat will appear in the scrolling text. Press MODE to advance to the next step. Use the WARMER or COOLER buttons to adjust the value of your selection. To leave Technician Setup, press SETUP.



Technician Setup is for diagnostic and testing purposes and is intended for use by a qualified technician. See page 14 for more detailed instructions.

Technician Setup contains the following options:

- · View the version number of the thermostat.
- · View the Dip Switch equipment type settings.
- · View the state of the Dry Contact.
- · Turn on equipment outputs for testing.
- · Calibrate thermostat, remote, and humidity sensors.
- · Control HUM output (On or Off)
- Control DEHUM output (On or Off)



Advanced Setup Table

Default = Factory Default Setting

Step#	Description	Pg#	Range	Default
1	Available Modes	25	Heat/Cool/Auto/Off, Heat/Cool/Off, Heat/Off, Cool/Off	Heat/Cool/ Auto/Off
2	Backlight	17	On, Off, 6pm-6am	Off
3	Backlight Level	17	Off thru 7 levels of brightness	Level 5
4	Night Dimmer	17	On/Off	Off
5	Night Dimmer Brightness	17	Off thru 7 levels of brightness	2 (20%)
6	Night Dimmer Start Time	17	12A-12A	8:00P
7	Night Dimmer StopTime	17	12A-12A	6:00A
8	Current Service Filter Runtime Hours	23	0-1999 Hours	0
9	Current Service Filter Calendar Days	23	0-720 Days	0
10	Current Override Hours	7	0-1999 Hours	0
11	Current UV Lamp Calendar Days	24	0-720 Days	0
12	Current Humidifier Calendar Days	24	0-720 Days	0
13	Set Service Filter Runtime Hours	23	0-1950 hours	0
14	Set Service Filter Calendar Days	23	0-720 Days	0
15	Set UV Lamp Calendar Days	24	0-720 Days	0
16	Set Humidifier Calendar Days	24	0-720 Days	0
17	Language	17	English, Espanol, Francais	English
18	Scrolling Method	18	"LR Slow, LR Fast, Word LR Slow, Word LR Fast, Whole Word L Slow, Whole Word R Slow, Whole Word Ctr. Fast, Whole Word Ctr. Slow"	English
19	Setpoint Limits	26	No, Use	No
20	Max Heat Setpoint	26	35 - 99 Degrees	74
21	Min Cool Setpoint	26	35 - 99 Degrees	70
22	Cycles Per Hour	26	No Limit, 2, 3, 4, 5, 6	6
23	Compressor Minimum Off Minutes	26	0, 3, 5 Minutes	5
24	Min. Heat/Cool Setpoint Difference	26	0 - 6 Degrees	2
25	Number of Heat Stages	26	0 - 2	2
26	Number of Cool Stages	26	0 - 2	1
27	Number Of Compressor Stages	26	1, 2	1
28	Number of Aux Stages	26	0, 1, 2	0
29	1st Stage Deadband	27	1 - 6 Degrees	2
30	Wired SensorType	29	Remote, Supply	Remote
31	Control to Temp Source	30	Thermostat, Remote, Average	Thermostat
32	Humidity Only With Heat	28	On, Off	Off
33	Fan With Humidity Demand	28	Fan On, Fan Off	Fan Off

cont. next page



Advanced Setup Table

Default = Factory Default Setting

Step#	Description	Pg#	Range	Default
34	Fan With Dehumidify Demand	28	Fan On, Fan Off	Fan Off
35	Cool To Dehumidify	28	On, Off	Off
36	Maximum Dehum Overcool	28	0 - 20 Degrees	2
37	Reheat Operation W/Cool To Dehum.	28	On, Off	Off
38	Fan Off Delay	27	0 - 120 Seconds	0
39	F/C	30	Fahrenheit (F), Celsius (C)	F
40	Dry Contact Polarity	29	Open, Closed	Open
41	Dry Contact Use	29	Condensate Pan, Unccupied, FDD	
42	Unoccupied Mode	35	Heat,Cool,Auto,Off	Off
43	Unoccupied Cool Setpoint	35	35 - 99 Degrees	85
44	Unoccupied Heat Setpoint	35	35 - 99 Degrees	55
45	Humidity Polarity	28	Open, Closed	Open
46	Dehumidify Polarity	28	Open, Closed	Open
47	Dehumidify only with Cooling	28	On, Off	On
48	Skyport	21	On, Off	On
49	Local API	23	On, Off	Off
50	Press Fan To Clear All Messages	30		

Troubleshooting

- SYMPTOM: The air conditioning does not attempt to turn on. CAUSE: The compressor timer lockout may prevent the air conditioner from turning on for a period of time. REMEDY: Consult the Owner's Manual in the Installer Setup section to defeat the Cycles Per Hour (page 26).
- SYMPTOM: The display is blank. CAUSE: Lack of proper power. REMEDY: Make sure the power is on to the furnace and that you have 24vac between R & C.
- SYMPTOM: The air conditioning does not attempt to turn on. CAUSE: The cooling setpoint is set too high. REMEDY: Lower the cooling setpoint or lower the cooling set-point limit. See Setpoint Limits (page 26).
- SYMPTOM: The heating does not attempt to turn on. CAUSE: The heating setpoint is set too low. REMEDY: Raise the heating setpoint or raise the heating set-point limit. See Setpoint Limits (page 26).
- SYMPTOM: When controlling a residential heat pump, and asking for cooling, the heat comes on.
 CAUSE: The thermostat reversing valve jumper is set for "B".
 REMEDY: Set the reversing valve jumper for "O".
- SYMPTOM: When calling for cooling, both the heat and cool come on. CAUSE: The thermostat equipment jumper is configured for "HP" and the HVAC unit is a Gas/Electric. REMEDY: Set the equipment jumper for "Gas".
- SYMPTOM: When the Program button is pressed, the display reads "DISABLED".
 CAUSE: Program mode is set to "NON PROGRAM".
 REMEDY: Set Program Mode (Setup 1) to 1, 5/2, or 7 Day. See Selecting Your Program Mode (page 25).





Alerts see Runtime

Auto

adjust temperature, 6 changeover, 7 fan, 5, 7 mode, 3, 7

Aux Icon, 5

AuxHeat icon, 5

Average thermostat sensor, 33



b reversing valve, 10, 11, 12, 14

Backplate, 11

Buttons

accessory, 2, 20, 21, 22, 23 cooler (down) 1, 7 emergency heat, 2, 19 front panel, 1 humidity, 1, 8 mode, 1, 6 outdoor, 1, 8 override 1, 7 program 1, 26 set clock, 1, 6 setup, 1, 17 up (warmer), 1, 7



C, 27 Calibration, 32 Celsius, 27 Clock

display, 2 setting, 5

Cool

1st stage deadband, see Deadband dehum, 25 minutes of runtime, 23 droop, see Deadband electric/heat pump, 10 icon, 2 indicator, 1 mode, 2, 5 overcool, see Overcool runtime, see Runtime setpoint, 3, 6, 20 to dehumidify, see Dehumidify

Condensate Drain Pan, 26

Cycles Per Hour, 22



Deadband

balance point, 23 1st stage, 23 2nd stage, 23 3rd stage, 23

Dehumidify

Aux icon, 2 cool to, 25 dehum settings, 25 setpoint, 25

Delay

fan-off, see Fan

Differential heat and cool, 22

Dip Switch, 12

ELEC, 10 electric heat, 10 gas electric, 10 heat pump, 10 reversing valve,10 viewing, 24

Disabled Keypad

see Keypad Lockout

Drain Pan Overflow Alarm, see Dry Contact

Dry Contact

operation, 26 polarity, 26 service pan, 26





EH, 32

Economizer, 28

Electric Heating

AuxHeat icon, 2 jumper setting, 10 reheat, 25

Emergency Heat, 17



Factory Defaults caution, i

settings, 34, 35 resetting, 31

Fahrenheit, 27

Fan

mode, 24 off time delay, 24 on during heat, *see Electric Heat* on icon, 4 runtime, 18 2nd stage heat, *see Emergency Heat* speed, see Dehumidify with humidity, 25



Gas/Electric Furnace dip switch, 12

Green Indicator, 1



Heat

1st stage deadband, see Deadhand emergency heat, 17 min. of runtime, 23 2nd stage deadband, see deadband emergency heat, 17 minutes of runtime 23 AuxHeat icon, 2 deadband, see Deadband droop, see Deadband electric/heat pump, 10 icon. 4 indicator, 1 mode, 2, 5 runtime, see Runtime setpoint, 6, 20

Heat Pump

AuxHeat, 12, 13, 26 Dip Switch Setting, 12 emergency heat, 17 multi-stage, 12, 22

Humidity

service, 19 setpoint, 25 with Fan, 25



Keypad Lockout, 30



LCD, 1

Language, 15

Locked Indication,

see Keypad Lockout Lo

icon, 4 temperature, 6





Manual changeover, 21 cool, 21 heat, 21 Maximum Outdoor Temperature, see Hi

Minimum Outdoor Temperature, see Lo

Mode, 2, 5, 21

Multi-stage Operation, 23



Non-Programmable Thermostat, 21

Normally Open/Closed, dry contact, 26 dehum terminal, 25



O Reversing Valve see Reversing Valve

Occupied 3, 20

Off Mode, 2, 5

Outdoor button, see Buttons icon, 1 sensor, 6 viewing temperature, 6

Overcool, 25

Override, 7



Pan, Service see Dry Contact

Polarity, see Dry Contact



Reheat during cool to dehumidify, 25 electric heating, 25 function, 25 Remote Sensor averaging with

Thermostat, 27 calibrate, 32 control to, 27 outdoor temperature, see Outdoor read to, 6 viewing, 6

Reset

Alert Messages, 18 thermostat settings, *see Factory Defaults* runtime fan/filter, 18 humidify, 19 UV light, 19

Reversing Valve, 10

Runtime

resetting, *see Reset* setting, humidifier, 19 service filter, 18 UV light, 19 viewing, cool, 19 heat, 19 humidification, 19 UV lamp, 19





2nd stage turn off temperature, 23

Sensor

outdoor, *see Outdoor* remote, *see Remote* thermostat, *see Thermostat*

Service

filter icon, see Reset humidify icon, see Reset pan icon, see Dry Contact UV light, see Reset

Set Clock, see Clock

Setpoint

cool, *see Cool* dehumidification, 25 heat, *see Heat* humidification, 25

Simplest Operation, 5

Stages

number of heat stages, 28 number of cool stages, 28



Technician Setup, 14, 33

Thermostat Sensor averaging, 27 calibrate, 14, 33

Time, see Clock

Time Delay,

compressor lockout, 22 cycles per hour, 22 1st to 2nd stage, 23



Unoccupied, 3, 6, 20

UV Light

resetting, 19 runtime, *see Runtime* setting, *see Runtime*



Warranty, 44

Wi-Fi, 21



Warranty

One-Year Warranty - This Product is warranted to be free from defects in material and workmanship. If it appears within one year from the date of original installation, whether or not actual use begins on that date, that the product does not meet this warranty, a new or remanufactured part, at the manufacturer's sole option to replace any defective part, will be provided without charge for the part itself provided the defective part is returned to the distributor through a qualified servicing dealer.

THIS WARRANTY DOES NOT INCLUDE LABOR OR OTHER COSTS incurred for diagnosing, repairing, removing, installing, shipping, servicing or handling of either defective parts or replacement parts. Such costs may be covered by a separate warranty provided by the installer.

THIS WARRANTY APPLIES ONLY TO PRODUCTS IN THEIR ORIGINAL INSTALLATION LOCATION AND BECOMES VOID UPON REINSTALLATION.

LIMITATIONS OF WARRANTIES – ALL IMPLIED WARRANTIES (INCLUDING IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE AND MERCHANTABILITY) ARE HEREBY LIMITED IN DURATIONTO THE PERIOD FOR WHICH THE LIMITED WARRANTY IS GIVEN. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE MAY NOT APPLYTO YOU. THE EXPRESSED WARRANTIES MADE INTHIS WARRANTY ARE EXCLUSIVE AND MAY NOT BE ALTERED, ENLARGED, OR CHANGED BY ANY DISTRIBUTOR, DEALER, OR OTHER PERSON WHATSOEVER.

ALL WORK UNDERTHETERMS OFTHIS WARRANTY SHALL BE PERFORMED DURING NORMAL WORKING HOURS. ALL REPLACEMENT PARTS, WHETHER NEW OR REMANUFACTURED, ASSUME ASTHEIR WARRANTY PERIOD ONLYTHE REMAINING TIME PERIOD OFTHIS WARRANTY.

THE MANUFACTURER WILL NOT BE RESPONSIBLE FOR:

- Normal maintenance as outlined in the installation and servicing instructions or owner's manual, including filter cleaning and/or replacement and lubrication.
- Damage or repairs required as a consequence of faulty installation, misapplication, abuse, improper servicing, unauthorized alteration or improper operation.
- Failure to start due to voltage conditions, blown fuses, open circuit breakers or other damages due to the inadequacy or interruption of electrical service.
- Damage as a result of floods, winds, fires, lightning, accidents, corrosive environments or other conditions beyond the control of the Manufacturer.
- 5. Parts not supplied or designated by the Manufacturer, or damages resulting from their use.
- 6. Manufacturer products installed outside the continental U.S.A., Alaska, Hawaii, and Canada.
- Electricity or fuel costs or increases in electricity or fuel costs for any reason whatsoever including additional or unusual use of supplemental electric heat.
- ANY SPECIAL INDIRECT OR CONSEQUENTIAL PROPERTY OR COMMERCIAL DAMAGE OF ANY NATURE WHATSOEVER. Some states do not allow the exclusion of incidental or consequential damages, so the above may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which may vary from state to state.



Patent Pending

