VENSTAR®

COMMERCIAL
SCHOOL THERMOSTAT
T2900SCH

DIGITAL THERMOSTAT

PROGRAMMABLE

UP TO 3-HEAT & 2-COOL

HEAT COOL & HEAT PUMP

- Energy Saving Operation
- Morning Warm-up Period
- Programmable Override
- Unoccupied until button press
- Perfect for Classroom Operation
- Setpoint Limiting Security
- Separate Weekend/Weekday Programs
- 99 Days of Configuration Holiday Mode

- Soft Start Capability
- Back-Lit Display
- One for All™ Works with Virtually All Equipment
- Non-Volatile Memory
- Keypad Lockout
- 3 Security Levels
- Remote Sensor Ready
- 48 Hour Clock Backup
- Compressor Protection
- Economizer Operation

Designed Specifically for the School Environment

- Use with most Air Conditioning & Heating Systems including: 1 or 2 Stage Electric Cooling & 3 Stage Gas Heating, Heat Pump, Electric or Hydronic Heat.

ENERGY STAR

OWNER'S MANUAL

VENSTAR®

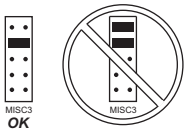
CAUTION

Follow the Installation Instructions before proceeding. Set the thermostat mode to “OFF” prior to changing settings in setup or restoring Factory Defaults.

CAUTION

NEVER PUT MORE THAN ONE JUMPER ON THE SAME MISC JUMPER BLOCK!

THIS MAY DAMAGE YOUR THERMOSTAT AND VOID YOUR WARRANTY.



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

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.

c UL us LISTED 4Z95

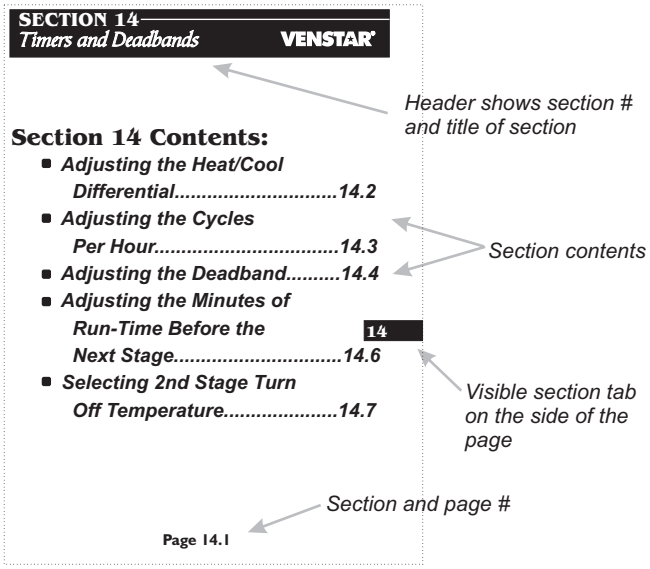
Thermostat T2900SCH
Tested to Comply with FCC Standards
FOR HOME OR OFFICE USE

How to Use This Manual

VENSTAR®

The Table of Contents divides the thermostat features into sections making it easier to quickly find information.

The first page of each section contains a more detailed list of the contents within that section, such as the example page shown below.



In addition, this manual also has an Index to help you find any information regarding this thermostat quickly.

Glossary of Terms

VENSTAR®

Auto-Changeover: A mode in which the thermostat will turn on the heating or cooling based on room temperature demand.

Configurable Output Jumper: Using jumpers on the thermostat you can configure the MISC1, MISC2, and MISC3 terminals to control humidification, dehumidification, 2nd stage cooling, 3rd stage heating, and a programmable output.

Cool Setpoint: The warmest temperature that the space should rise to before cooling is turned on (without regards to deadband).

Deadband: The number of degrees the thermostat will wait, once 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 regards 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, Program On).

Non-Programmable Thermostat: A thermostat that does not have the capability of running the *Time Period Programming.*

Programmable Thermostat: A thermostat that has the capability of running the *Time Period Programming.*

Reheat: Running the cooling and 2nd stage strip heaters at the same time in order to *dehumidify* the air without cooling down the room temperature.

Temperature Swing: *Same as Deadband.*

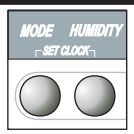
Time Period Programming: A program that allows the thermostat to automatically adjust the *heat setpoint* and/or the *cool setpoint* based on the time of day.

Table of Contents

VENSTAR®

Section 1 Contents:

Note: *Following the instructions in this section will allow you to operate your thermostat using the factory default settings. These settings are depicted in the illustrations throughout this manual.*



Press the MODE and HUMIDITY buttons at the same time

During Setup & Programming:

Pressing the UP or DOWN buttons will modify the flashing selection.

Setting the Clock

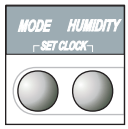
To adjust the Clock or Day use

Press **MODE**

Buttons.

Setting the Day

Press the MODE and HUMIDITY buttons at the same time to return to normal operation.



1 Selecting the Heat or Cool Mode

Select Mode by Pressing the MODE Button

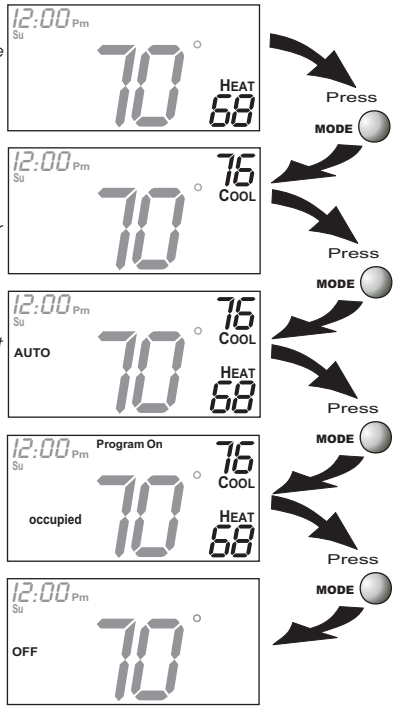
Heating Only
*The **HEAT** setting indicates the temperature the room has to reach before the furnace will turn on to heat the room.*

Cooling Only
*The **COOL** setting indicates the temperature the room has to reach before the air conditioner will turn on to cool the room.*

Heating or Cooling
***AUTO** will automatically select heat or cool based on room temperature demand.*

Time Schedule for Heating or Cooling
***Program On** will activate the stored timer operation for the heating and cooling setpoints (occupied or unoccupied periods).*

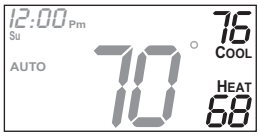
Off
***OFF** indicates both heating and air conditioning systems are turned off.*



Selecting Your Desired Temperature
(adjusting the setpoints)

AUTO OR PROGRAM MODE

Pressing the UP or DOWN buttons in Auto **or** Program mode will adjust **both** the heat and cool set temperatures simultaneously.



Adjust the desired set temperature with the

buttons.

HEAT OR COOL MODE

Pressing the UP or DOWN buttons in Heat **or** Cool mode will adjust only the heat **or** cool set temperature.

Adjust the desired set temperature with the

buttons.

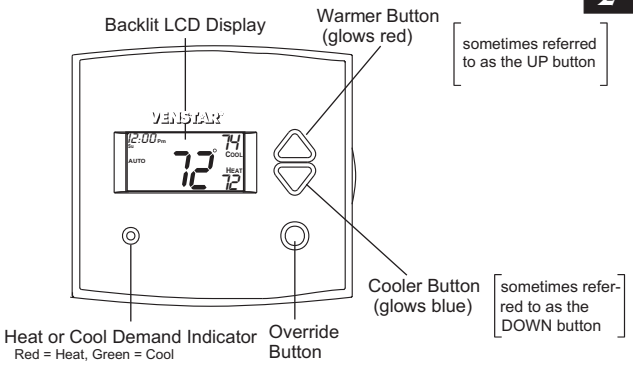
Using the Fan Button

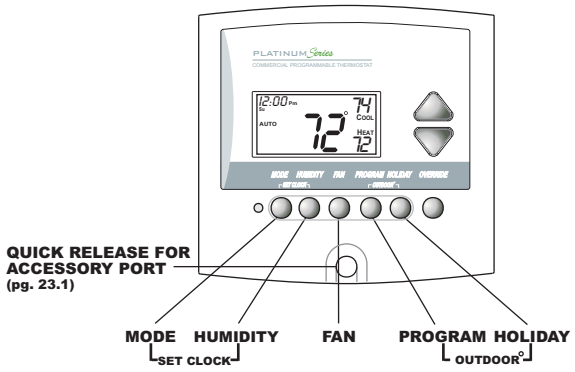
Press FAN

Fan On indicates constant fan operation. If Fan On is selected the fan will run continuously at all times, except in Off, **and** will only run if there is a heating or cooling demand in Unoccupied periods. Pressing the FAN button toggles this feature on or off.

Section 2 Contents:

Front Panel


Backlit LCD Display
Warmer Button
(glows red)
sometimes referred
to as the UP button
VENSTAR
12:00 Pm
AUTO
72°
74
COOL
HEAT
72
Cooler Button
(glows blue)
sometimes refer-
red to as the
DOWN button
Heat or Cool Demand Indicator
Red = Heat, Green = Cool
Override
Button


PLATINUM Series
COMMERCIAL PROGRAMMABLE THERMOSTAT
12:00 Pm
AUTO
72°
74
COOL
HEAT
72
MODE HUMIDITY FAN PROGRAM HOLIDAY OVERRIDE
QUICK RELEASE FOR
ACCESSORY PORT
(pg. 23.1)
MODE
HUMIDITY
SET CLOCK
FAN
PROGRAM
HOLIDAY
OUTDOOR°

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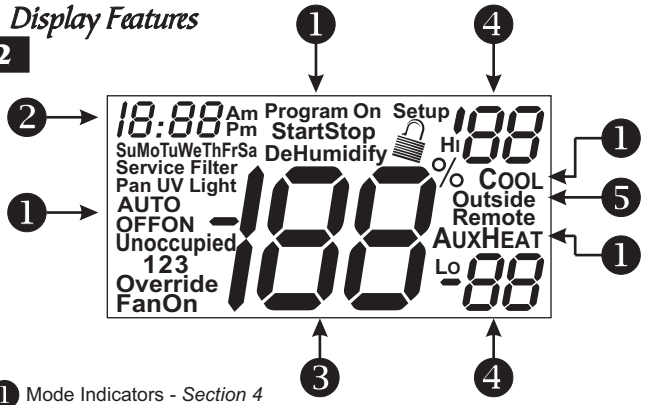
Display Features

2



❶ Mode Indicators - *Section 4*
Selects the operational mode of the equipment.
HEAT - Indicates the heating mode.
COOL - Indicates the air conditioning mode.
AUTO - Indicates the system will automatically changeover between heat and cool modes as the temperature varies.
OFF - Indicates heating and cooling is turned off.
PROGRAM ON - Indicates the time period program is enabled to run.

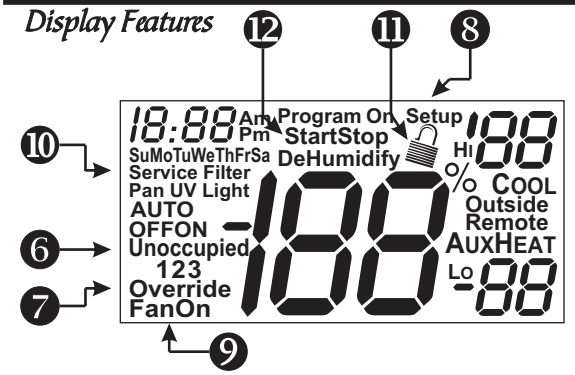
❷ Clock with Day of the Week - *Section 3*
Indicates the current time and day. This clock is also used to program the time period schedules.

❸ Room Temperature Display - *Section 5*
Indicates the current room temperature and displays the outdoor temperature when selected.

❹ Desired Set Temperature - *Section 4/5*
Indicates desired room temperature(s). Also displays the highest and lowest outdoor temperatures for the day.

❺ **Outside** icon - *Section 5*
Indicates the temperature displayed is from the optional outdoor sensor.

Display Features



6 **Occupied** & **Unoccupied** icons - *Section 6*
Indicates the program: Occupied or Unoccupied.

7 **Override** icon - *Section 6*
Indicates the program is currently being overridden.

8 **Setup** icon - *Sections 7-20*
Indicates the thermostat is in the setup mode.

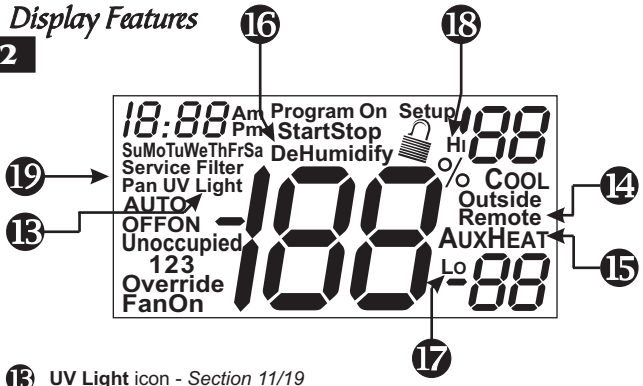
9 **Fan On** icon - *Section 7*
Indicates constant, continuous fan operation. When **Fan On** is not lit - indicates the fan will only operate when necessary to heat or to cool.

10 **Service Filter** icon - *Section 19*
Appears when the filter should be serviced under normal conditions. Adjustable from 0 - 1950 hours of blower operation.

11 icon - *Section 8*
Indicates keypad has been locked.

12 **StartStop** icon - *Section 6*
Appears when programming occupied time periods.

Display Features



13 **UV Light** icon - *Section 11/19*
Appears when the UV bulb should be serviced under normal conditions. Adjustable from 0 - 1950 days of operation.

14 **Remote** icon - *Page 22.4*
Indicates the remote sensor reading of the thermostat is being viewed.

15 **AuxHeat** icon - *Pages 10.5 & 13.4*
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.

16 **Humidify/DeHumidify** icon - *Sections 9-10*
Indicates the system is currently humidifying/dehumidifying the air.

17 **Lo** icon - *Section 5*
Indicates the lowest recorded outdoor temperature for the day.

18 **Hi** icon - *Section 5*
Indicates the highest recorded outdoor temperature for the day.

19 **Service Pan** icon - *Section 16*
Indicates that a sensor (accessory) has detected the condensate drain pan is full and the compressor (Y1) has been locked out.

Section 3 Contents:

Note: *During setup & programming pressing the UP or DOWN buttons will modify the flashing selection.*

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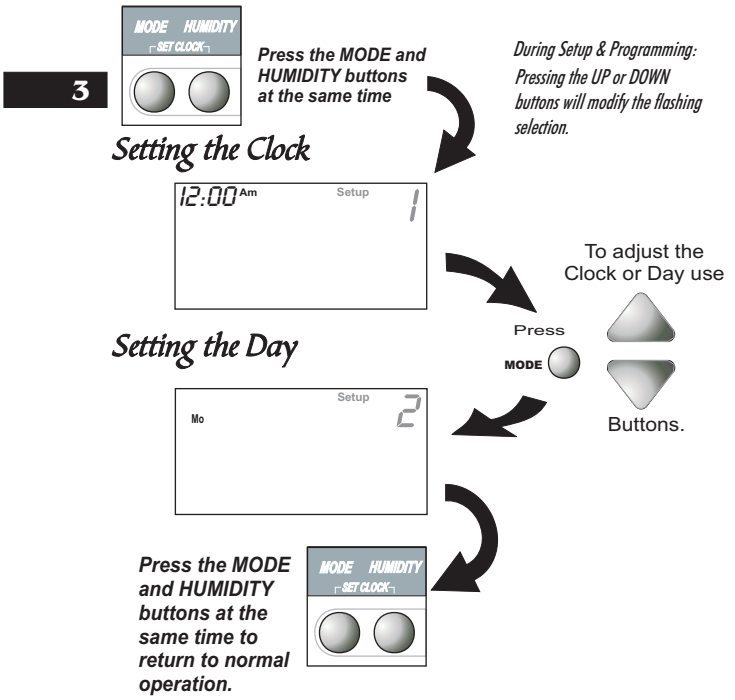
3


MODE HUMIDITY
SET CLOCK
Press the MODE and HUMIDITY buttons at the same time
During Setup & Programming: Pressing the UP or DOWN buttons will modify the flashing selection.
Setting the Clock
12:00 Am
Setup
1
To adjust the Clock or Day use
Press
MODE
Buttons.
Setting the Day
Setup
2
Mo
Press the MODE and HUMIDITY buttons at the same time to return to normal operation.
MODE HUMIDITY
SET CLOCK

Section 4 Contents:

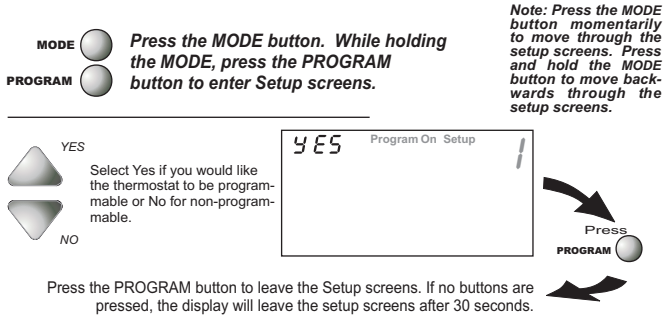
Note: *During setup & programming pressing the UP or DOWN buttons will modify the flashing selection.*

Programmable or Non-Programmable Thermostat

4 When the very simplest operation is desired, this thermostat may be configured to be non-programmable, with or without Auto-Changeover. Follow the step below.

If 'NO' is selected, the thermostat will lockout the Program On screen; only the Off, Heat, Cool, and Auto screens may be accessed by pressing the MODE button.

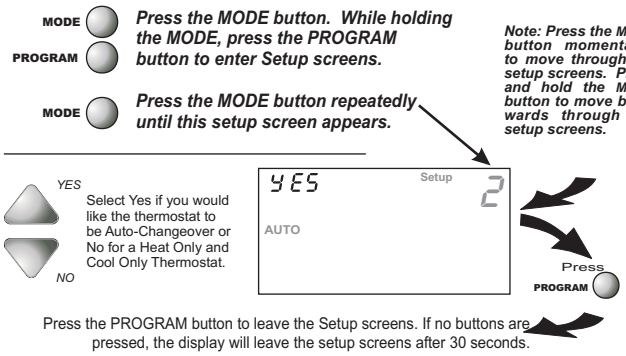
Select 'YES' if you would like your thermostat to be **programmable**, then the Program mode will be accessible through the use of the MODE button.



Manual or Auto-Changeover Thermostat

When the very simplest operation is desired, this thermostat may be configured to be a manual heat and cool thermostat, with or without time period programmability. Follow the step below.

The thermostat may be programmed to function as a Heat Only or Cool Only thermostat by selecting 'NO' in the setup screen below. This will lockout the Auto-Changeover screen and only allow the Off, Heat, Cool, and Program On screens to be accessed.



Operating Mode when the Thermostat is Configured to be:

4

NON-PROGRAMMABLE WITH MANUAL-CHANGEOVER - If the thermostat is configured to be a non-programmable thermostat with Manual-Changeover, the following screens will be available by pressing the MODE button.

Select the Mode by Pressing the MODE Button

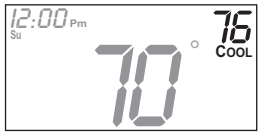
Heating Only

*The **HEAT** setting indicates the temperature the room has to reach before the furnace will turn on to heat the room.*

Press MODE

Cooling Only

*The **COOL** setting indicates the temperature the room has to reach before the air conditioner will turn on to cool the room.*



Press MODE

Off

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

Operating Mode when the Thermostat is Configured to be:

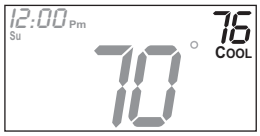
NON-PROGRAMMABLE WITH AUTO-CHANGEOVER - If the thermostat is configured to be a non-programmable thermostat with Auto-Changeover, the following screens will be available by pressing the MODE button

Select the Mode by Pressing the MODE Button

Heating Only
*The **HEAT** setting indicates the temperature the room has to reach before the furnace will turn on to heat the room.*

Press MODE

Cooling Only
*The **COOL** setting indicates the temperature the room has to reach before the air conditioner will turn on to cool the room.*



Press MODE

Heating or Cooling
***AUTO** will automatically select heat or cool based on room temperature demand.*

Press MODE

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

Operating Mode when the Thermostat is Configured to be:

PROGRAMMABLE WITH MANUAL-CHANGEOVER - If the thermostat is configured to be a programmable thermostat with Manual-Changeover, the following screens will be available by pressing the MODE button.

4

Select the Mode by Pressing the MODE Button

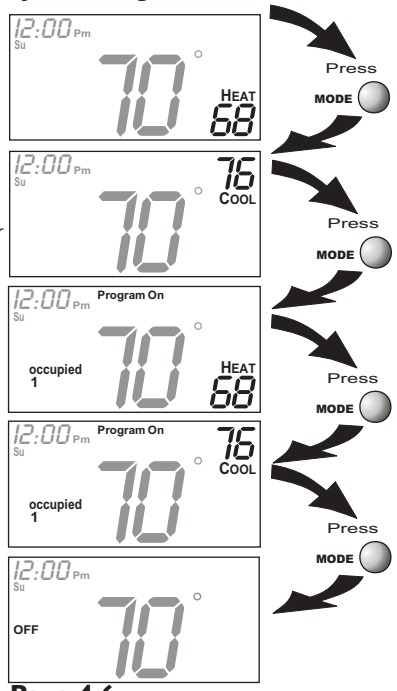
Heating Only
*The **HEAT** setting indicates the temperature the room has to reach before the furnace will turn on to heat the room.*

Cooling Only
*The **COOL** setting indicates the temperature the room has to reach before the air conditioner will turn on to cool the room.*

Time Schedule for Heating Only
*The **HEAT Program On** setting will activate the time period program for the heating setpoint ONLY (occupied or unoccupied periods).*

Time Schedule for Cooling Only
*The **COOL Program On** setting will activate the time period program for the cooling setpoint ONLY (occupied or unoccupied periods).*

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



Operating Mode when the Thermostat is Configured to be:

PROGRAMMABLE WITH AUTO-CHANGEOVER - If the thermostat is configured to be a programmable thermostat with Auto-Changeover, the following screens will be available by pressing the MODE button.

Select the Mode by Pressing the MODE Button

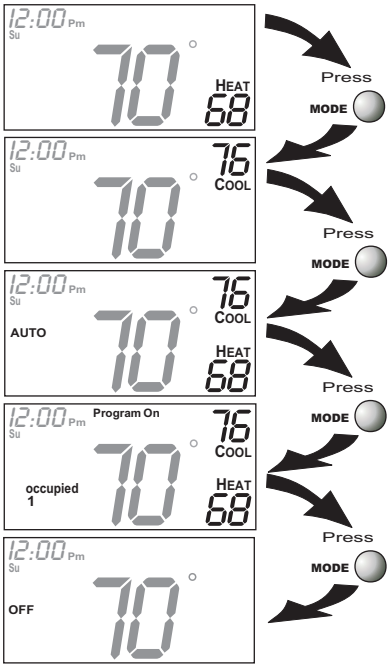
Heating Only
*The **HEAT** setting indicates the temperature the room has to reach before the furnace will turn on to heat the room.*

Cooling Only
*The **COOL** setting indicates the temperature the room has to reach before the air conditioner will turn on to cool the room.*

Heating or Cooling
***AUTO** will automatically select heat or cool based on room temperature demand.*

Time Schedule for Heating or Cooling
***Program On** will activate the time period program for the heating and cooling setpoints. (occupied or unoccupied periods)*

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



Selecting Your Desired Temperature (adjusting setpoints)

4

AUTO OR PROGRAM MODE

Pressing the UP or DOWN buttons in Auto **or** Program modes will adjust **both** the heat and cool set temperatures simultaneously. For more information on this see page 13.2.

Adjust the desired set temperature with the

buttons.

HEAT OR COOL MODE

Pressing the UP or DOWN buttons in Heat **or** Cool modes will adjust only the heat **or** cool set temperature.

Adjust the desired set temperature with the

buttons.

Section 5 Contents:

Viewing the Outdoor Temperature

Requires an outdoor sensor (optional accessory) to be installed (*see page 15.2 for wiring instructions)*. To read the temperature from the outdoor sensor, press the PROGRAM and HOLIDAY buttons. The display will then show the current outdoor temperature along with the highest and lowest temperatures for the day.

5

Press the PROGRAM button. While holding PROGRAM, press the HOLIDAY button to view the Outdoor temperature.

The highest and lowest temperatures for the day will be displayed along with the current outdoor temperature.
This reading is from the sensor connected to RS2.

High temperature for the day.

Current outdoor temperature.

Low temperature for the day.

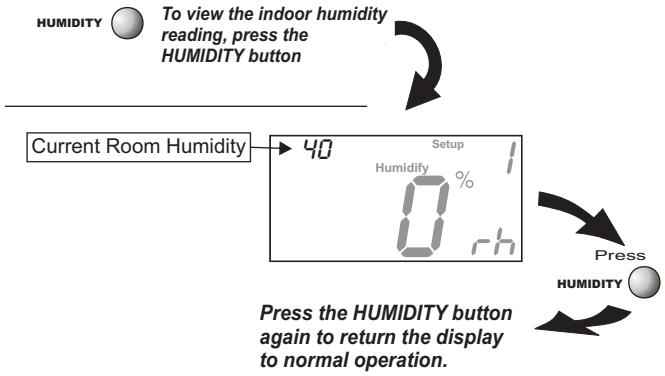
Press the PROGRAM button. While holding PROGRAM, press the HOLIDAY button to leave the Outdoor temperature screen.

Note: If no sensors are connected 2 dashes [- -] will appear.

Viewing the Indoor Humidity

Requires the Humidity Module (optional accessory) to be installed. To display the current humidity at the thermostat, press the HUMIDITY button. The display will then show the current indoor humidity along with the humidification setpoint (*Section 9*).

Note: The humidity reading will not appear unless the Humidity Module has been installed. If the Humidity Module has not been installed dashes will appear in place of the humidity reading.



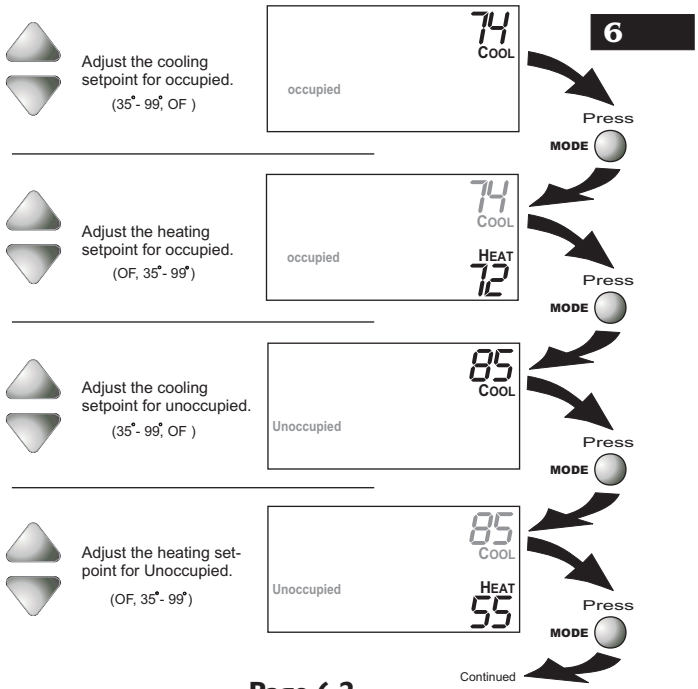
NOTE: Due to variations in environmental conditions, it is not always possible to achieve the desired humidification or dehumidification setpoint.

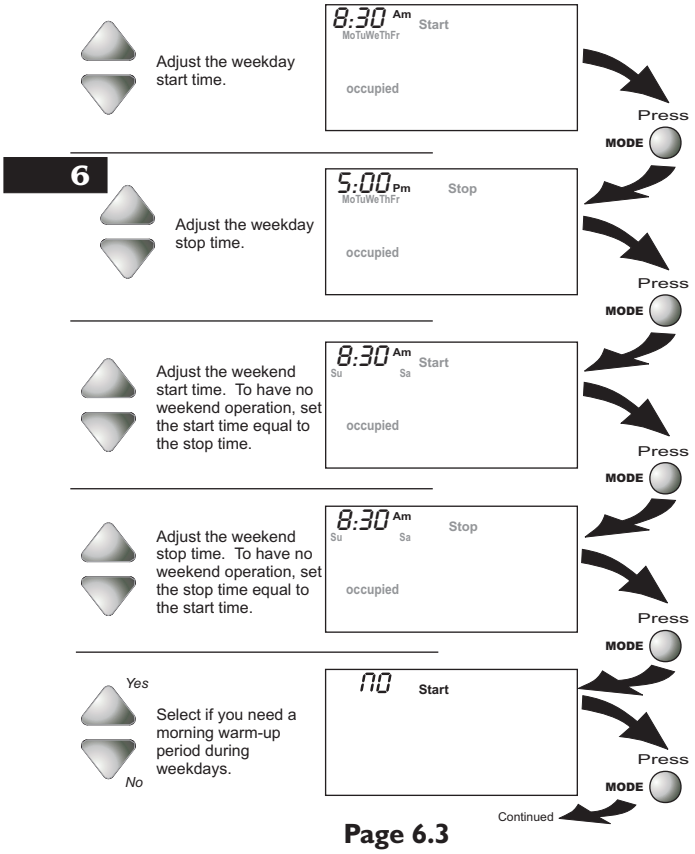
Section 6 Contents:

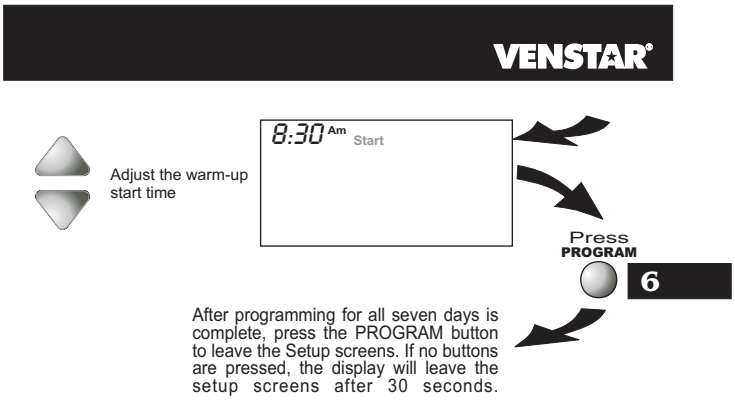
Programming a Daily Schedule

Press **PROGRAM**

Press the PROGRAM button to enter time period programming.




8:30 Am
MoTuWeThFr
Start
occupied
Adjust the weekday start time.
Press
MODE
6
5:00 Pm
MoTuWeThFr
Stop
occupied
Adjust the weekday stop time.
Press
MODE
8:30 Am
Su Sa
Start
occupied
Adjust the weekend start time. To have no weekend operation, set the start time equal to the stop time.
Press
MODE
8:30 Am
Su Sa
Stop
occupied
Adjust the weekend stop time. To have no weekend operation, set the stop time equal to the start time.
Press
MODE
Yes
No
no
Start
Select if you need a morning warm-up period during weekdays.
Press
MODE
Continued



PROGRAMMING TIPS

- The morning warm-up will bring in Occupied setpoints at the selected start time
- Heat & Cool setpoints for Occupied and Unoccupied are the same for every day of the week.
- **If the start time is set later in the day than the stop time,** the program will run from the start time to midnight and from midnight to the stop time on the same day. *For example: 9pm start, 8am stop, on Monday. In this example the program will run from 12am Monday to 8am Monday and again from 9pm Monday to 12am Tuesday.*
- **Unoccupied Operation:** The unoccupied settings take effect at all times when: (**1**) the program is on **and** (**2**) the current time is outside a preset occupied period. For this reason start and stop times are not necessary for unoccupied time periods.
- If the **same** start and stop times are programmed for an occupied period, then it will run 24 hours.

Override Button Operation

Normal Operation

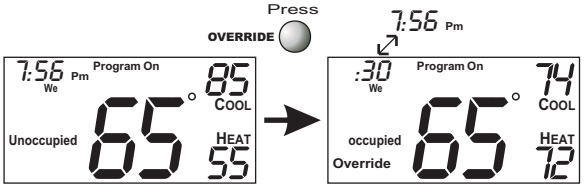
During school hours pressing the OVERRIDE button will force the thermostat into the Time Schedule comfort settings until the end of the Occupied period. During this Occupied period, the setpoints may be adjusted; however, the adjusted setpoints will not be remembered for the following school day. After this time, the thermostat will bring in energy saving unoccupied setpoints.

Override Operation

The OVERRIDE button may be used to interrupt the normal time schedule programming of the thermostat. Override may only be used when the thermostat is running the time schedule, in Program On mode.

Unoccupied Operation - During programmed, unoccupied periods, pressing the OVERRIDE button will temporarily force the thermostat into Occupied comfort settings for the number of hours programmed in step #43 on page 18.1. The remaining override time will alternate with the clock (refer to the second display below). Pressing the OVERRIDE button again will cancel the timer, returning the thermostat to the correct time period program for the day.

Occupied Operation - To turn off the equipment due to abnormal conditions during school hours, press and hold the OVERRIDE button for five seconds. The equipment will shut off and the heating and cooling setpoints will show 'OF'. If the OVERRIDE button is pressed again, the thermostat will return to Time Schedule comfort settings until the end of the Occupied period.

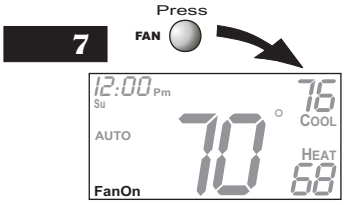


Section 7 Contents:

Using the Fan Button

When the fan is set for automatic operation it will energize any time there is a call for heating or cooling, otherwise the fan will remain off. Pressing the FAN button will energize the fan and display the **FanOn** icon on the thermostat display. To operate the fan in the automatic mode, press the FAN button again and the FanOn icon will disappear.

7



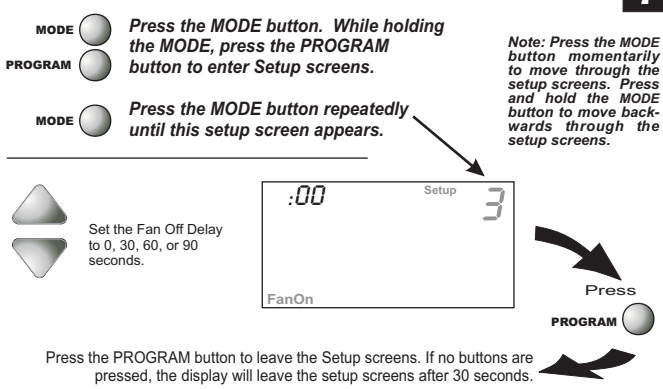
Fan On indicates constant fan operation. If Fan On is selected the fan will run continuously at all times, except in Off, **and** will only run if there is a heating or cooling demand in Unoccupied periods. Pressing the FAN button toggles this feature on or off.

Smart Fan Operation

This feature allows the fan to run continuously during an occupied time period and automatically de-energize during Unoccupied, except when necessary to heat or cool. To use this feature, place the thermostat in the Program On mode. Next, press the FAN button to display the **FanOn** icon (*see below*).

Setting the Fan-Off Time Delay

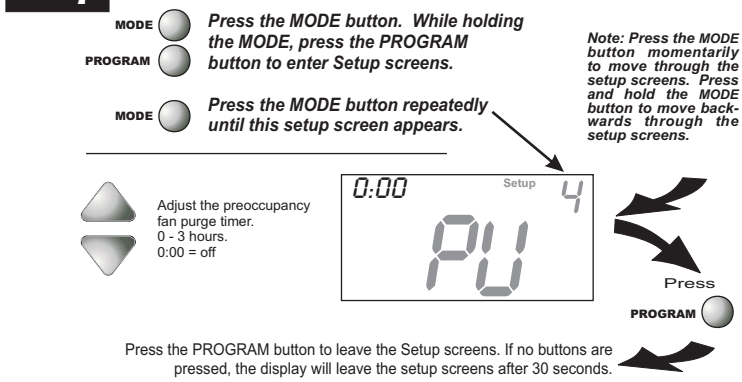
To increase cooling efficiency of your unit, the thermostat may be programmed to continue running the fan after a call for cooling has been satisfied. This delay may be set for 30, 60, or 90 seconds. If the Fan Off Delay is set for zero seconds, the fan will not energize after a call for cooling has been satisfied.



Fan Purge Operation

When this feature is activated, the fan will turn on during an unoccupied period at a preset amount of time prior to Occupied. This preoccupancy fan purge timer may be set from zero to three hours, in 15 minute increments. Zero means this feature is turned off.

7



Section 8 Contents:

Turning On/Off the Backlight

MODE
PROGRAM

Press the MODE button. While holding the MODE, press the PROGRAM button to enter Setup screens.

MODE

Press the MODE button repeatedly until this setup screen appears.

Note: Press the MODE button momentarily to move through the setup screens. Press and hold the MODE button to move backwards through the setup screens.

8

Select backlight operation:
AUTO - Light from 6pm to 6am nightly.
ON - Light continuously.
OFF - Light for 8 seconds after a button press.

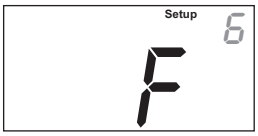
Press
MODE

Programming the Thermostat to Display Temperature in Fahrenheit or Celsius

C

Select thermostat operation in degrees **F**ahrenheit or **C**elsius.

F

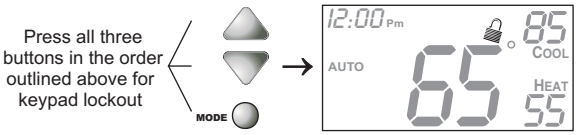


Press
PROGRAM

Press the PROGRAM button to leave the Setup screens. If no buttons are pressed, the display will leave the setup screens after 30 seconds.

Locking/Unlocking the Keypad

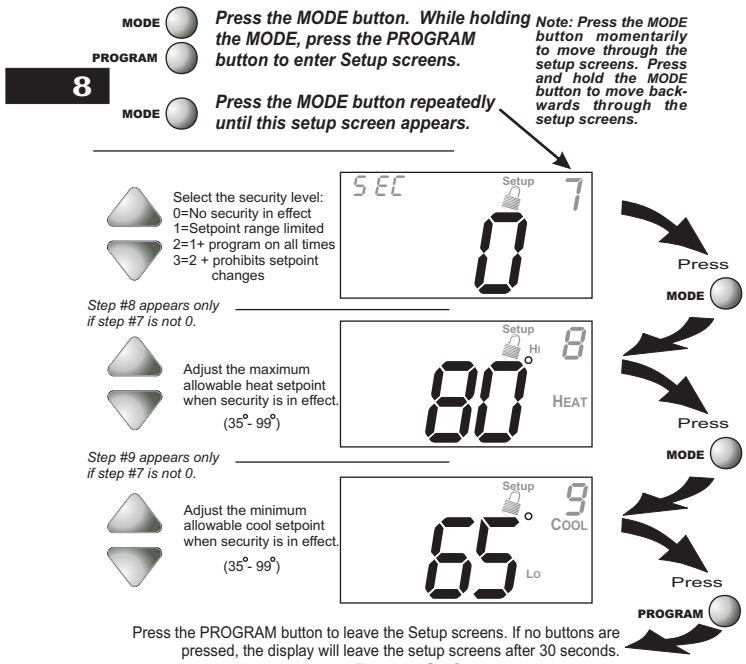
To prevent unauthorized use of the thermostat, the front panel buttons may be disabled. To disable, or 'lock' the keypad, press and hold the MODE button. While holding the MODE button, press the UP and DOWN buttons together. The icon will appear on the display, then release the buttons.



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

Programming a Security Level

When a security level has been programmed, the thermostat will allow limited adjustment to the setpoints (*steps # 8 and 9*). In security levels 2 and 3, the thermostat is forced into the Program On mode. To disable the security feature, set the value in step #7 to 0; this will cause steps # 8 and 9 not to appear.



Section 9 Contents:

NOTE: The humidification functions described in this section will only be available if a Humidity Module has been properly installed.

Disclaimer:
The manufacturer of this thermostat cannot be liable for misinstallation, improper connection or improper programming of the humidity functions of this thermostat that may result in water damage or mold growth.

Additionally, the manufacturer of this thermostat is not responsible for the fitness of the humidifier and/or installation of said humidifier connected to this thermostat. Furthermore, the maintenance of the humidifier components, including but not limited to, the filters and pads are not the responsibility of the thermostat manufacturer.

The Humidifier Service icon is only a suggestive reminder and should not take the place of the humidifier manufacturer's required maintenance requirements and schedule.

Installing the Humidity Module

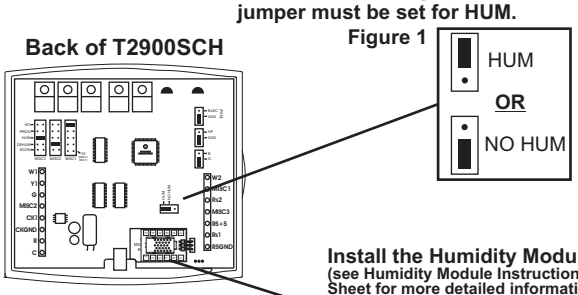
To install the Humidity Module the thermostat must be detached from the back plate. Plug the Humidity Module into the Humidity Module connector as shown in Figure 2 below. Follow the detailed instructions included with the Humidity Module accessory. Once the Humidity Module has been installed, you must adjust the Humidity jumper setting to HUM as shown in Figure 1 below. This will allow you to access the humidification and dehumidification setup steps.

For proper humidity operation, this jumper must be set for HUM.

9

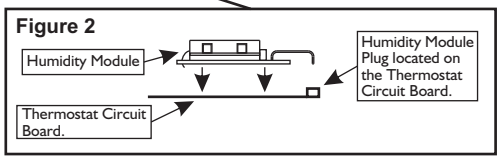
Back of T2900SCH

Figure 1



Install the Humidity Module
(see Humidity Module Instruction Sheet for more detailed information).

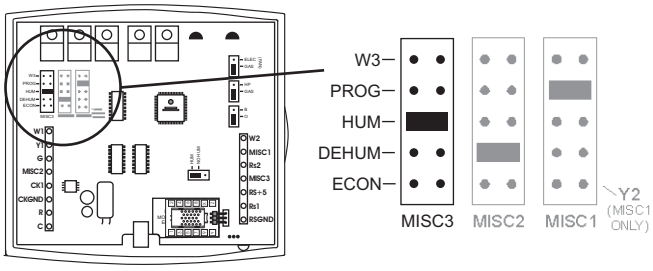
Figure 2



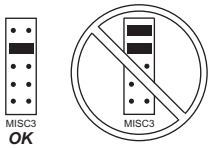
Setting a Thermostat Jumper for Humidity Operation

To control a MISC output for humidification, place the MISC1, MISC2, or MISC3 jumper on the terminal labeled HUM (*see diagram below*). This will supply 24VAC to the selected MISC terminal based on the humidification programming in the following pages. Only one of the three outputs (MISC1, MISC2, or MISC3) is required to have this jumper. *For more information regarding the MISC1, MISC2, and MISC3 outputs, please see section 21.*

In the diagram below, the MISC3 jumper has been set for HUM (humidify) operation.



IMPORTANT CAUTION



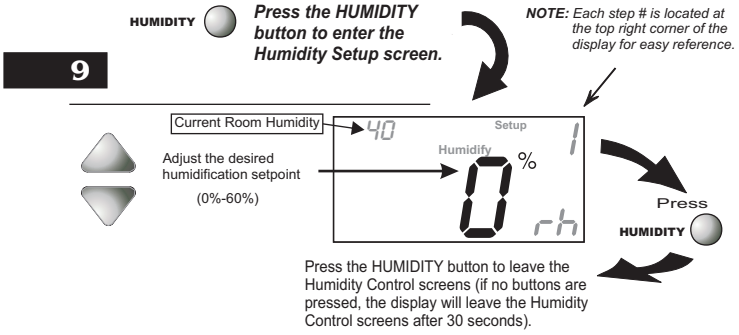
NEVER PUT MORE THAN ONE JUMPER ON THE SAME MISC JUMPER BLOCK!

THIS MAY DAMAGE THE THERMOSTAT AND VOID YOUR WARRANTY

Adjusting the Humidification Setpoint

If your HVAC unit is equipped with a humidification system and the Humidity Module has been installed, the thermostat will provide power to the appropriate terminal on the backplate of the thermostat when the humidity in the building falls below the setpoint you have chosen. The value for this setpoint ranges from 0% to 60%.

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



Humidification Notes: *Press the button to set the humidity setpoint to 0% for no humidification operation.*

You cannot set the dehumidify setpoint any lower than the humidify setpoint; a 5% differential is forced between the humidify and dehumidify setpoints.

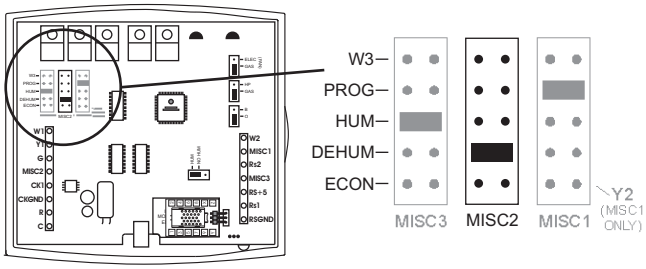
Section 10 Contents:

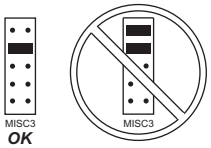
NOTE: The dehumidification functions described in this section will only be available if a Humidity Module has been properly installed. For instructions on installing the Humidity Module please see page 9.2.

Setting a Thermostat Jumper for Dehumidification Operation

To control a MISC output for dehumidification, install the Humidity Module and place the Humidity Jumper on HUM (*see page 9.2*). Then place the MISC1, MISC2, or MISC3 jumper on the terminal labeled DEHUM (*see diagram below*). This will supply 24VAC to the selected MISC terminal based on the programming in the following pages. Only one of the three outputs (MISC1, MISC2, or MISC3) is required to have a jumper. *For more information regarding the MISC1, MISC2, and MISC3 outputs, please see section 21.*

10 *In the diagram below, the MISC2 jumper has been set for DEHUM (dehumidification) operation.*





IMPORTANT CAUTION

NEVER PUT MORE THAN ONE JUMPER ON THE SAME MISC JUMPER BLOCK!

THIS MAY DAMAGE THE THERMOSTAT AND VOID YOUR WARRANTY

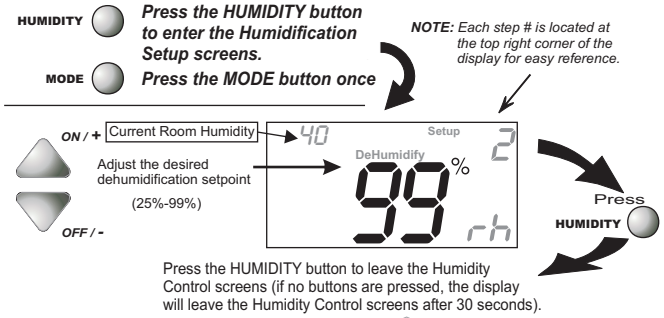
Adjusting the Dehumidification Setpoint

Dehum Terminal: If a MISC terminal is selected for DEHUM operation (*see page 10.2),* then the thermostat will provide power to this terminal when the humidity in the building is above the setpoint you have chosen. See page 10.6 for detailed programming instructions. To utilize this feature your HVAC unit must be equipped with a DEHUM terminal.

Cool to Dehumidify: If the thermostat is programmed for Cool to Dehumidify operation, then the thermostat will energize the cooling system any time the humidity in the building is above the setpoint you have chosen. The thermostat may also be programmed for Reheat operation if available. See pages 10.4 and 10.5 for detailed programming instructions.

In each case, when the indoor humidity falls below the setpoint you have selected, Cool to Dehumidify and the MISC terminal will be de-energized. The value for this setpoint ranges from 25% to 99%.

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



Dehumidification Notes: *Press the button to set the dehumidification setpoint to 99% for no dehumidification operation. This will lockout Advanced Setup steps 10, 11, and 12 (see pages 10.4 - 10.5).*

You cannot set the dehumidify setpoint any lower than the humidify setpoint; a 5% differential is forced between the humidify and dehumidify setpoints.

Using Your Air Conditioner to Dehumidify

If Cool to Dehumidify is on and the Humidity Module is installed, the thermostat has the ability to initiate a cooling cycle for advanced dehumidification operation. When the thermostat detects the humidity percentage is above the setpoint for dehumidification, and heating or cooling is not on, the thermostat will force the compressor to run with the fan, thus reducing moisture in the air. The green LED will blink once every eight seconds to indicate this is taking place. This feature will also allow you to adjust the cooling overshoot of the setpoint, from 0° to 5° (adjustable in step #11). *For Example: If the cooling overshoot is set for 3°F and the cooling setpoint is set for 74°F, then as long as the room temperature reads between 71°F and 74°F this feature will energize the compressor and fan to dehumidify the air.*

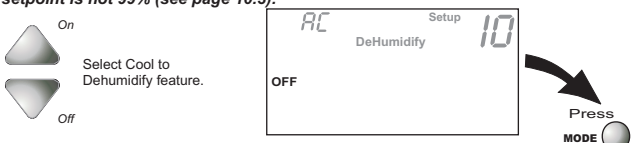
10

MODE + PROGRAM — ***Press the MODE button. While holding the MODE, press the PROGRAM button to enter Setup screens.***

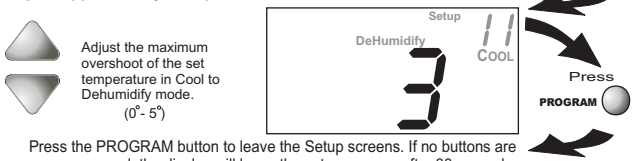
MODE — ***Press the MODE button repeatedly until this setup screen appears.***

Note: Press the MODE button momentarily to move through the setup screens. Press and hold the MODE button to move backwards through the setup screens.

Steps 10 and 11 only appear if the Dehumidification setpoint is not 99% (see page 10.3).



Step 11 appears only if step 10 is set to "ON"

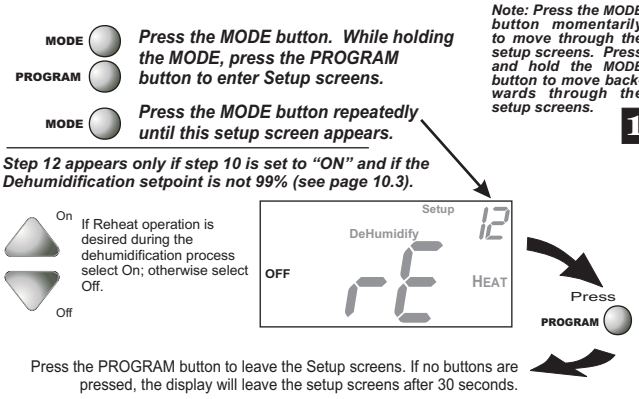


Press the PROGRAM button to leave the Setup screens. If no buttons are pressed, the display will leave the setup screens after 30 seconds.

Dehumidification Notes: *The thermostat must be in the Cool, Auto, or Program On mode for the Cool to Dehumidify feature to be available.*

Using the Reheat Function

This feature allows the thermostat to turn on Electric Heating (W2) during Cool to Dehumidify to maintain room temperature until the dehumidification setpoint is reached. The cooling cycle will allow for the dehumidification of the air to occur while the Electric Heating will allow for a constant room temperature. If Reheat is enabled the Aux icon will appear on the display during Cool to Dehumidify operation.



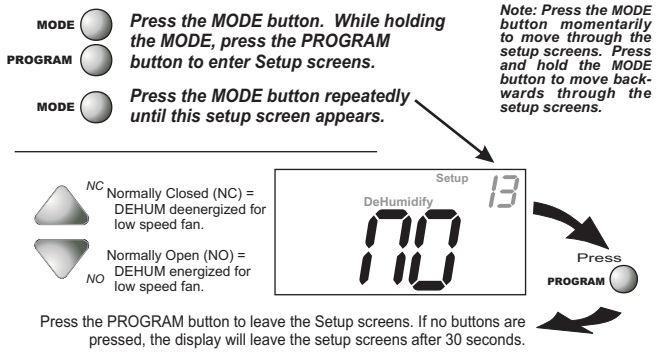
Dehumidification Notes: *Reheat is only available if Cool to Dehumidify has been set to ON in step #10 (see page 10.4).*

Using the Dehum Terminal

If you configure a MISC output jumper for DEHUM, it may be programmed to operate in one of two ways:

1) **Normally Closed** (NC): The thermostat will de-energize the DEHUM terminal to allow the fan to run in low speed when there is a call for 1st stage cooling and the room humidity is greater than the dehumidification setpoint.

2) **Normally Open** (NO): The thermostat will energize the DEHUM terminal to allow the fan to run in low speed when there is a call for 1st stage cooling only and the room humidity is greater than the dehumidification setpoint.



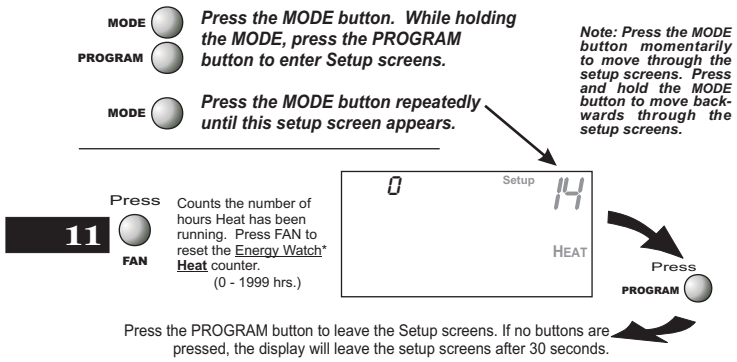
Dehumidification Notes: The DEHUM terminal will "release" and allow the fan to operate normally if there is call for 2nd stage cooling or if the call for Cooling and/or Cool to Dehumidify has been satisfied.

Section 11 Contents:

VENSTAR®

Viewing the Heat Run-Time - Energy Watch

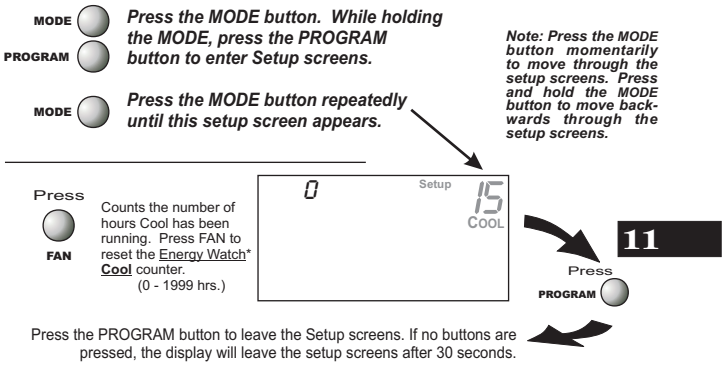
This display will track the number of hours that your heating system has been operating. Press the FAN button to reset the counter.



* ***Energy Watch:*** *This feature enables you to closely monitor your energy usage by keeping track of the number of hours your heating system has been operating.*

Viewing the Cool Run-Time - Energy Watch

This display will track the number of hours that your cooling system has been operating. Press the FAN button to reset the counter.

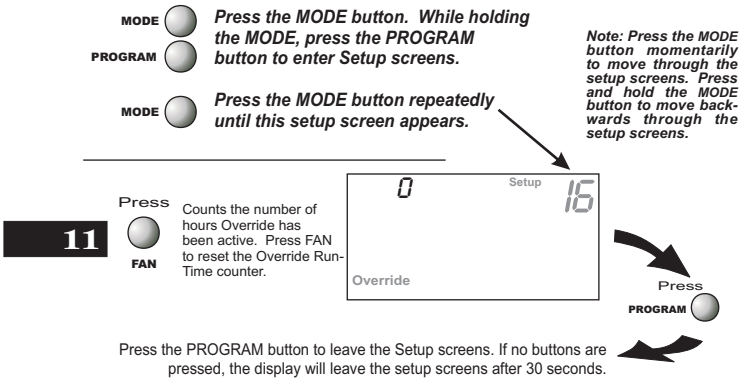


* ***Energy Watch:*** *This feature enables you to closely monitor your energy usage by keeping track of the number of hours your cooling system has been operating.*

VENSTAR®

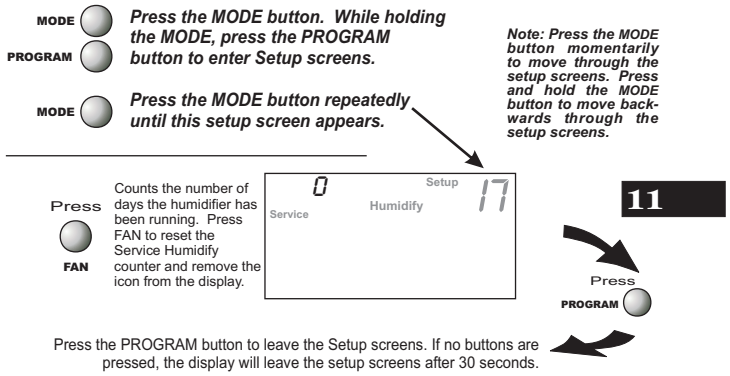
Viewing the Override Operation Run-Time

This display will track the number of hours that your thermostat has been operating in the Override mode (*see page 6.5 & 18.1*). Press the FAN button to reset the counter.



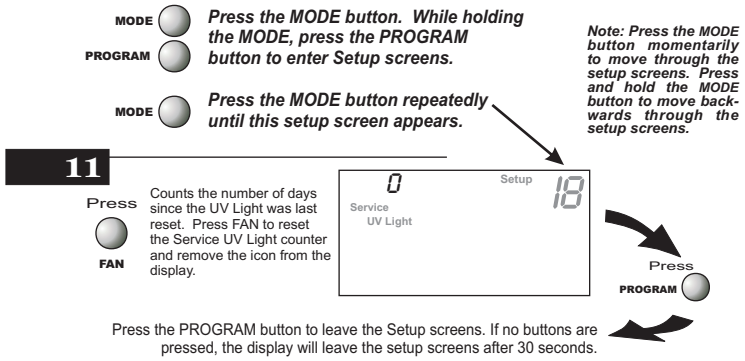
Viewing the Humidification Run-Time

After your humidification system has been operating for the number of days set in step #17 below, the Service Humidify icon will appear. This counter keeps track of the number of days since the Service Humidify icon was reset.



Viewing the UV Light Run-Time

After the UV light has been operating for the number of days set in step #18 below, the Service UV Light icon will appear. This counter keeps track of the number of days since the UV light icon was last reset.



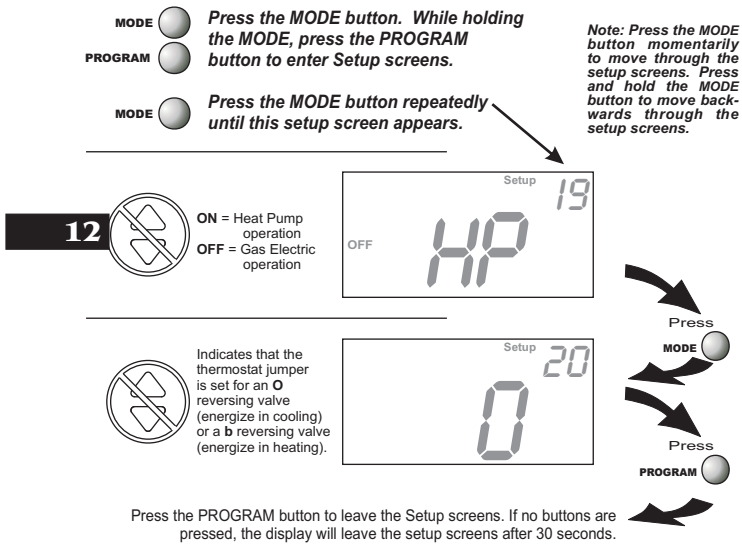
VENSTAR®

Section 12 Contents:

VENSTAR®

Viewing the Heat Pump and Reversing Valve Jumper Settings

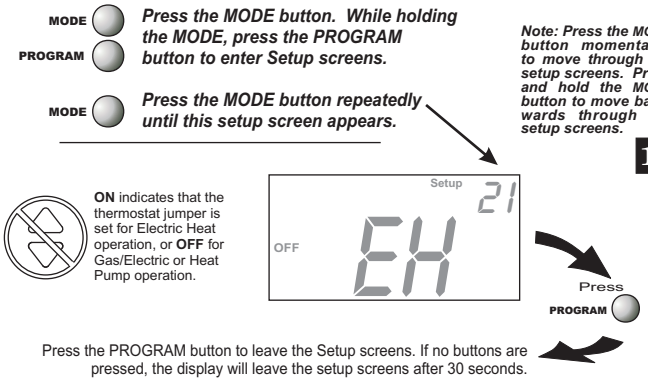
Steps 19 and 20 are 'Read Only' and may only be set with the jumpers on the circuit board of the thermostat.



Viewing the Electric Heat Jumper Setting

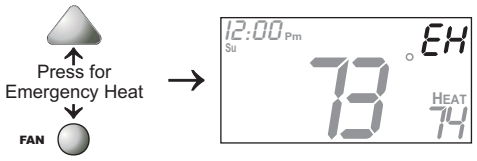
Placing the jumper on ELEC will cause the thermostat to turn on the fan immediately any time there is a heat demand. Since most gas furnaces control the fan, this feature should be off unless it is necessary for the thermostat to energize the fan with first stage heat.

Step 21 is 'Read Only' and may only be set with the jumpers on the circuit board of the thermostat.



Using Emergency Heat

ENTER EMERGENCY HEAT: Only available if you have a Heat Pump installed. To initiate the Emergency Heat feature, press the FAN button. While holding the FAN button press the UP button. The Cool setpoint display will read 'EH' (emergency heat).



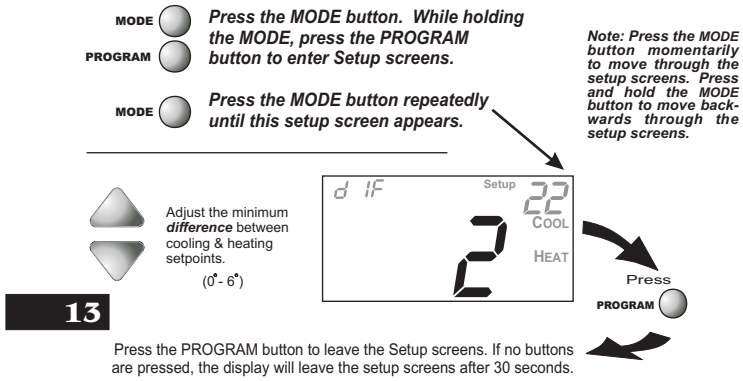
OPERATION: During Emergency Heat operation the thermostat will turn on the fan and the 2nd stage of heat when there is a demand for heat. Also during Emergency Heat the 1st stage of heating or cooling will be unavailable.

EXIT EMERGENCY HEAT: Follow the same steps as entering Emergency Heat by pressing the FAN and UP buttons. During Emergency Heat, only OFF and HEAT modes are available by pressing the MODE button.

Section 13 Contents:

Adjusting the Heat/Cool Differential

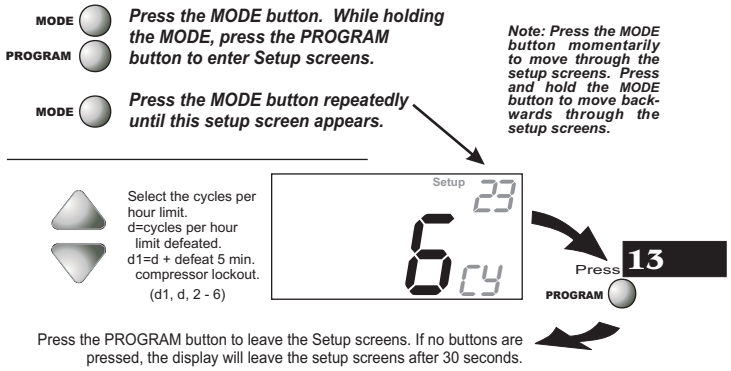
The Heat and Cool setpoints will not be allowed to come any closer to each other than the value in this step. This minimum difference is enforced during Auto-Changeover operation.



Note: *To increase the spread between the heating and cooling setpoints, press the MODE button until only the heat setpoint is displayed. Adjust the desired setpoint. Wait two seconds after adjusting the set point so the thermostat can accept the change. Press the MODE button until only the cool setpoint is displayed. Adjust the desired setpoint. Wait two seconds after adjusting the set point so the thermostat can accept the change. Press the MODE button again to enter the Auto-Changeover mode where both the heat and cool setpoints are displayed.*

Adjusting the Cycles Per Hour

The Cycles Per Hour setting limits 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 UP or DOWN buttons on the thermostat.



Adjusting the Deadband

MULTI-STAGE OPERATION - Controls up to three Heat and two Cool stages.

The **2nd Stage** of heat or cool is turned on when:

(**A**) The 1st Stage has been on for the time required (*step #27, page 13.6).* It is adjustable from 0-60 minutes and the default is two minutes.

And

(**B**) The temperature spread from the setpoint is equal to or greater than: *the setpoint plus the 1st stage deadband (step #24, next page), plus the 2nd stage deadband (step #25, next page).* This 2nd stage deadband is adjustable from 0-10 degrees and the default is two degrees.

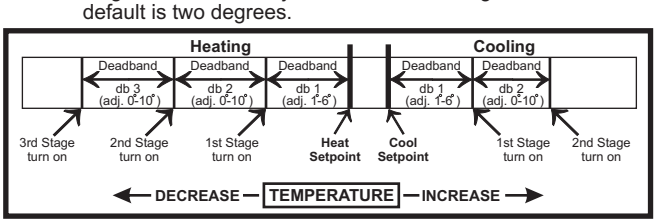
The **3rd Stage** of Heat is turned on when:

(A) The 2nd stage has been on for the time required (*step #28, page 13.6).* It is adjustable from 0-60 minutes and the default is two minutes.

And

13

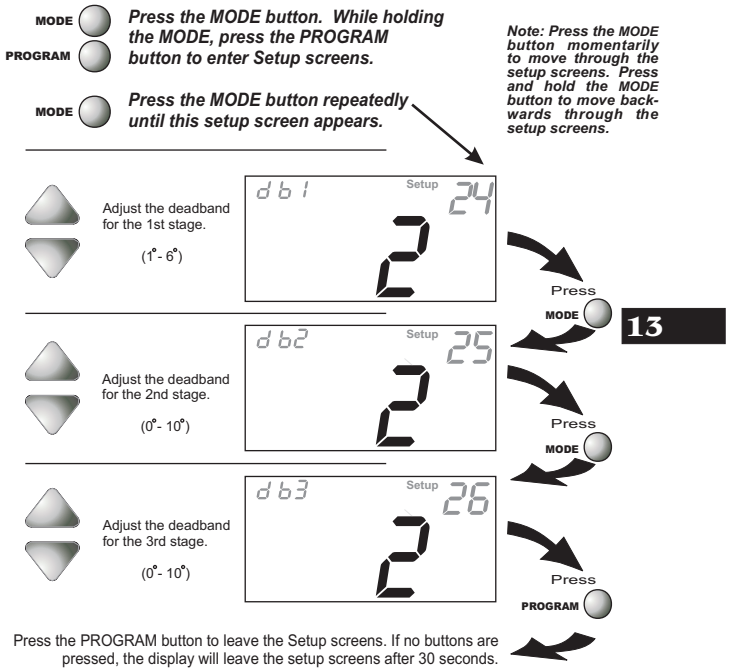
(B) The temperature from the setpoint is equal to or greater than: *the setpoint plus the 1st stage deadband (step #24, next page), plus the 2nd stage deadband (step #25, next page) plus the 3rd stage deadband (step #26, next page).* This 3rd stage deadband is adjustable from 0-10 degrees and the default is two degrees.



The above figure assumes the minimum on time for the prior stage has been met to allow the next stage to turn on, once the deadbands have been exceeded.

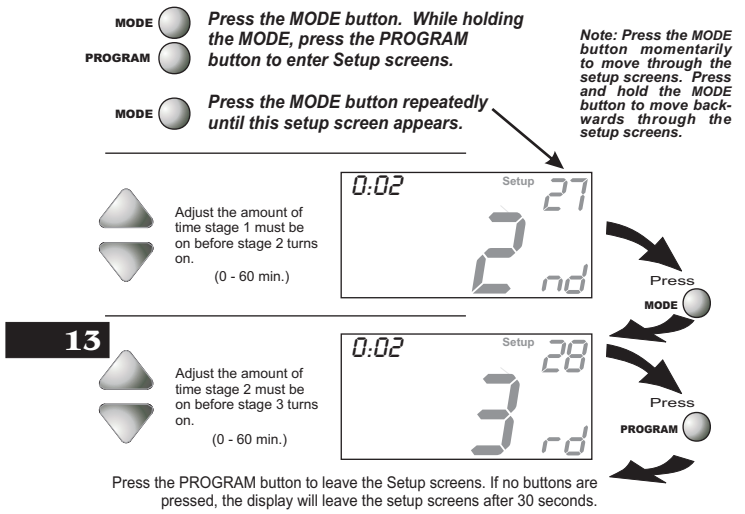
Adjusting the Deadband

For more detailed information, please see the explanation on the previous page.



Adjusting the Minutes of Run-Time Before the Next Stage

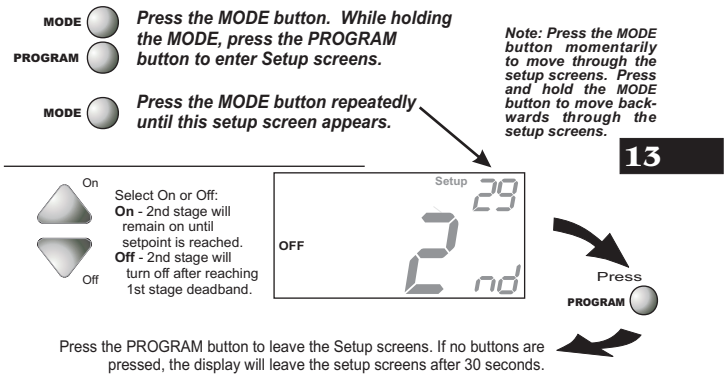
For more detailed information, please see the explanation on page 13.4.



Selecting 2nd Stage Turn Off Temperature

If ON is selected, the second stage of cooling or heating will remain energized until the thermostat reaches the setpoint on the thermostat display.

If OFF is selected, the second stage of cooling or heating will turn off after reaching the 1st stage deadband (*see page 13.4 for more information).*

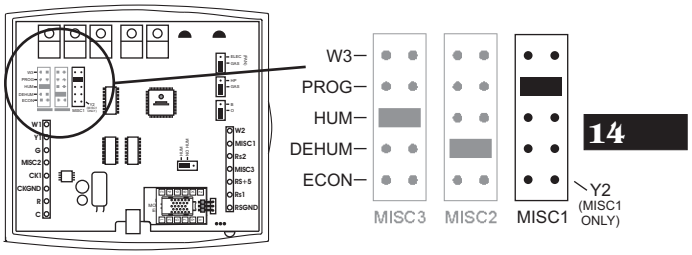


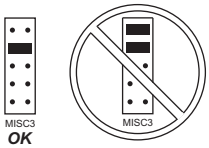
Section 14 Contents:

Setting a Thermostat Jumper for Programmable Output Operation

To control one of the MISC outputs using time, temperature, or Internet/phone based operation, place the MISC1, or MISC2, or MISC3 jumper on the terminal labeled PROG (*see diagram below*). This extra output will supply 24VAC to the selected MISC terminal based on the programming described in the following pages. Only one of the three outputs (MISC1, MISC2, or MISC3) is required to have this jumper. *For more information regarding the MISC1, MISC2, and MISC3 outputs, please see section 21.*

In the diagram below, the MISC1 jumper has been set for PROG operation.





IMPORTANT CAUTION

NEVER PUT MORE THAN ONE JUMPER ON THE SAME MISC JUMPER BLOCK!

THIS MAY DAMAGE THE THERMOSTAT AND VOID YOUR WARRANTY

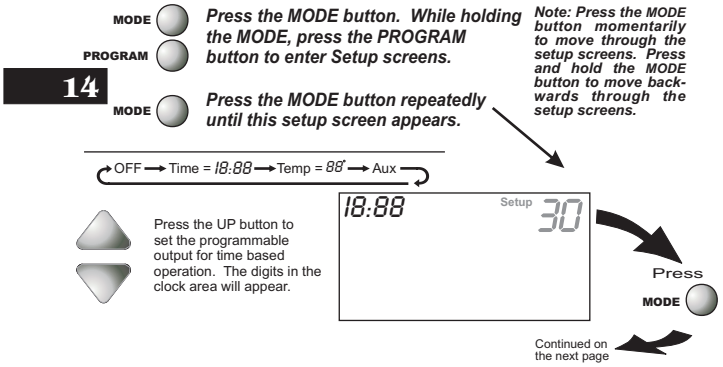
Time-Based Control of the Programmable Output

To operate one of the MISC outputs using time-based operation, set Advanced Setup step #30 (*below*) for Time *18:88*. This extra output will supply 24VAC to the selected MISC terminal, which is especially useful for devices that require a start and stop time. Refer to page 14.4 - 14.5 for more details on programming this output.

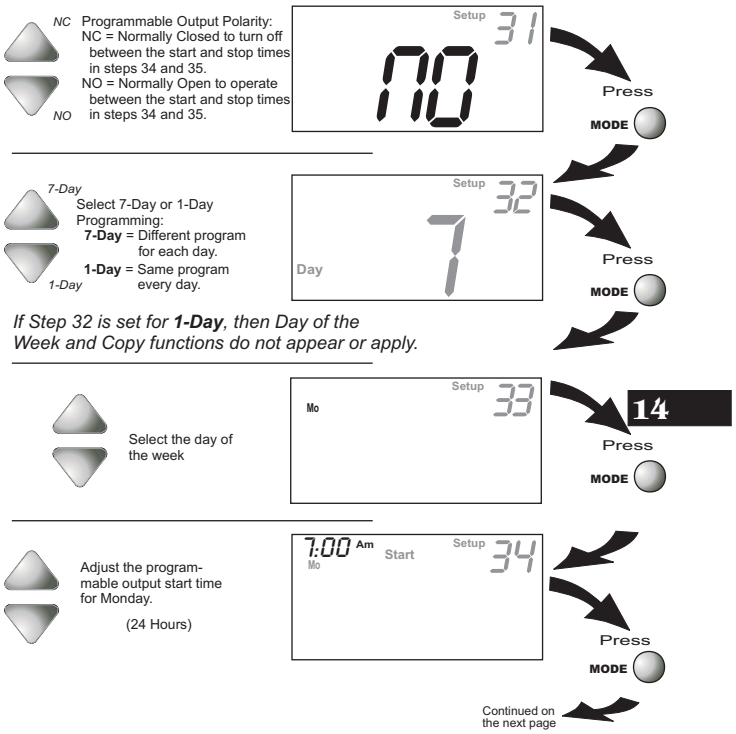
Possible **TIME** scenarios:

1) An exterior lighting system that needs to be energized every day between the hours of 8pm and 1am.

2) A sprinkler system that needs to be energized every day between the hours of 2am and 4am.

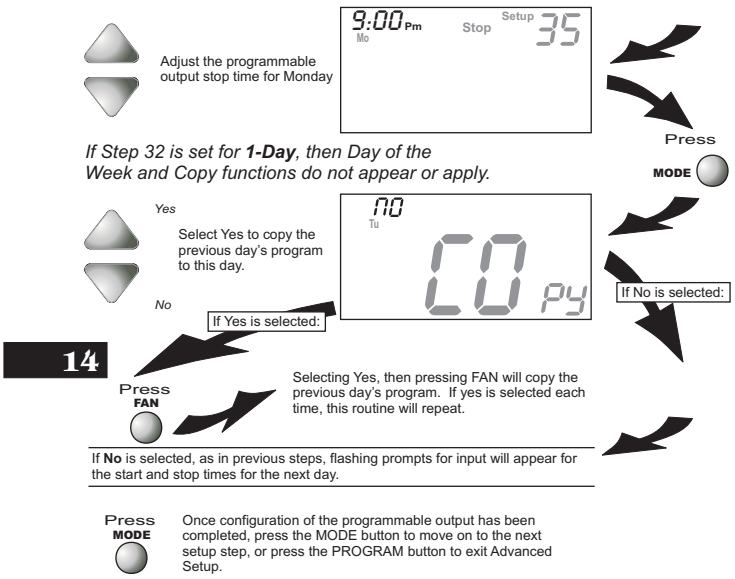


Time-Based Control of the Programmable Output



VENSTAR®

Time-Based Control of the Programmable Output



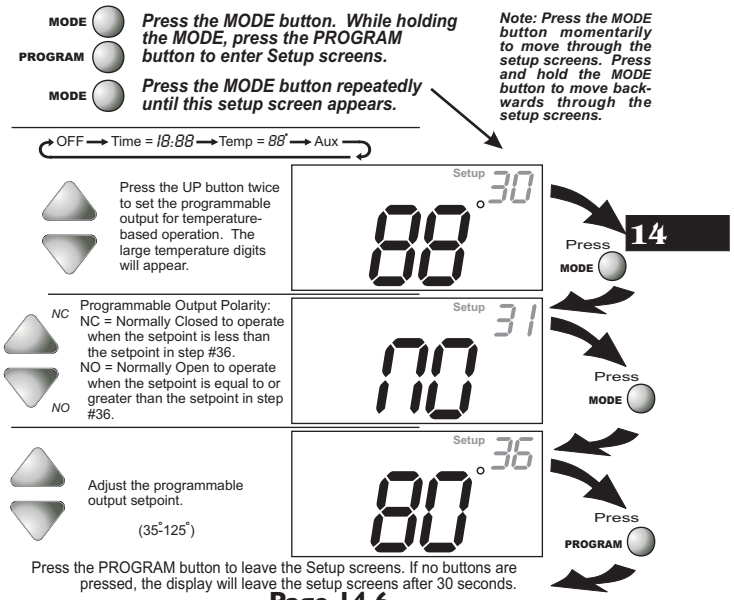
14

Temperature-Based Control of the Programmable Output

To operate a MISC output using temperature-based operation, program advanced setup step #30 (*below*) for temperature 88°. This extra output will supply 24VAC to the selected MISC terminal based on the temperature of RS1 and the setpoint in step #36 (*below*).

Possible **TEMPERATURE** scenario:

1) An exhaust fan in the attic of a store that needs to be energized when the attic temperature is above 85 degrees.

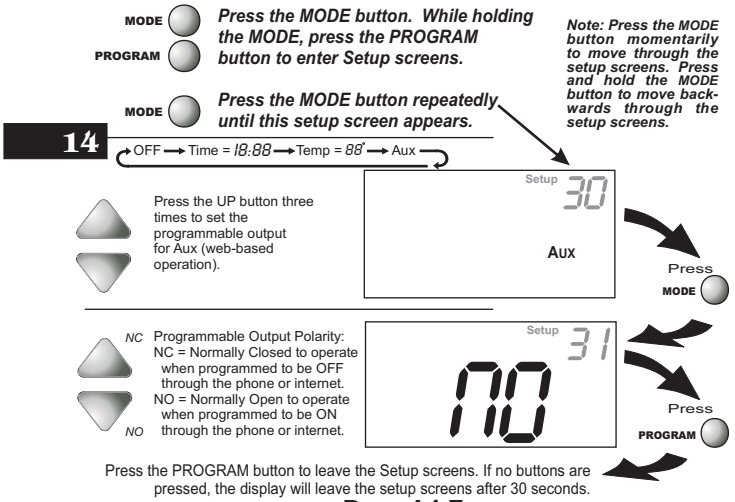


Internet/Phone Control of the Programmable Output

To operate a MISC output using Internet/phone-based operation, program advanced setup step #30 for Aux (*below*). This terminal is especially useful for devices that can be energized via the Internet. Telephone control may also be available when the thermostat is connected to the Internet.

Possible **REMOTE** scenarios:

1) Arm the alarm system in your building after you have left for the day.
2) Turn off your sign lights after arriving home.
3) Turn on your interior lights while you're closed.



Section 15 Contents:

Installing the Remote Sensors

The Remote Sensor measures indoor air temperature and sends this information to the thermostat; it measures temperature with a range of 32°to 99°F.

The Remote Sensor is equipped with an OVERRIDE button which will place the thermostat into the override mode for up to four hours (*see page 6.5 & 18.1*).

The Remote Sensor should be connected to the thermostat using solid conductor CAT 5, CAT 5e, or CAT 6 type network communication cable. This is an unshielded cable with four twisted pairs of 24 gauge solid wire; *DO NOT use stranded cable*. The cable length should not exceed 250 feet. If less than 75 feet of cable is required to connect the thermostat to the Remote Sensor, a three conductor thermostat cable (18-24 gauge) may be used; this cable is NOT suitable for any length greater than 75 feet.

IMPORTANT: Do no use shielded wire. Do not run sensor wiring in the same conduit as the 24VAC thermostat wiring. Electrical interference may cause the sensor to give incorrect temperature readings.

15 With the T2900SCH thermostat, you can connect up to eight wired remote sensors. Each of these sensors must be wired in a linear or daisy chain fashion; do not use stub connections or form a star Network. The thermostat must be wired to the first remote sensor, which is then wired to the second remote sensor, which is then wired to the third remote sensor, and so on.

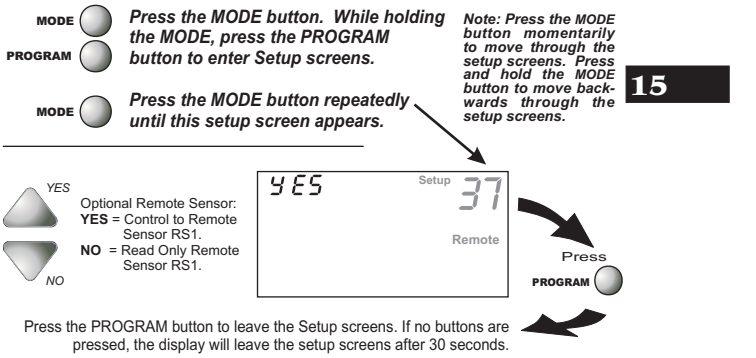
See the Remote Sensor instructions for further details.

Controlling or Reading the Remote Temperature (RS1)

The thermostat may be programmed to only READ the remote sensor, or to CONTROL to the remote sensor. Refer to advanced setup step #37, below.

Read Only Sensor (RS1): If step #37 is set to only READ to the remote sensor, the thermostat will not use this sensor for temperature control. This sensor may be viewed by entering advanced setup (*see below*) and pressing and holding the MODE button to scroll backwards one step to setup step #48 (*see page 22.4*).

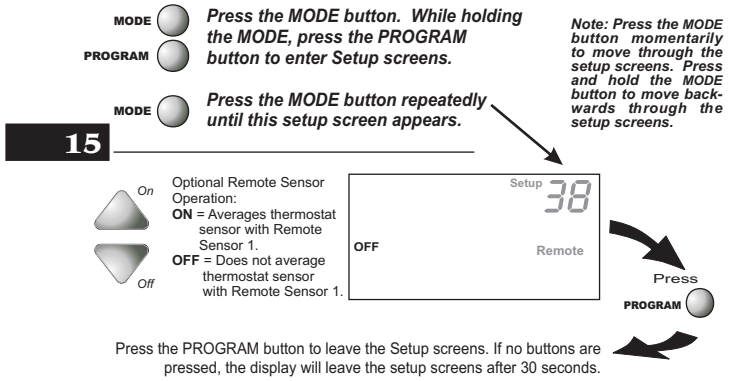
Control Sensor (RS1): If step #37 is set to CONTROL to the remote sensor, the thermostat will ignore the reading of its internal temperature sensor and only display the temperature reading from the remote sensor. The degree icon on the thermostat will blink once per second to indicate that a remote sensor reading is being displayed.



Averaging the Remote Sensor (RS1) with the Thermostat Sensor

If step #37 is set to control to the remote sensor, the thermostat will ignore the reading of its internal temperature sensor and only display the temperature reading from the remote sensor. The degree icon on the thermostat will blink once per second to indicate that a remote sensor reading is being displayed.

If step #38 is set to ON (*see below*), the thermostat will average its internal sensor with the wired temperature sensor connected to RS1. If multiple remote temperature sensors are installed on RS1, they will automatically average together. The temperature displayed will be the average of the thermostat's internal sensor and the remote (RS1) sensor(s).

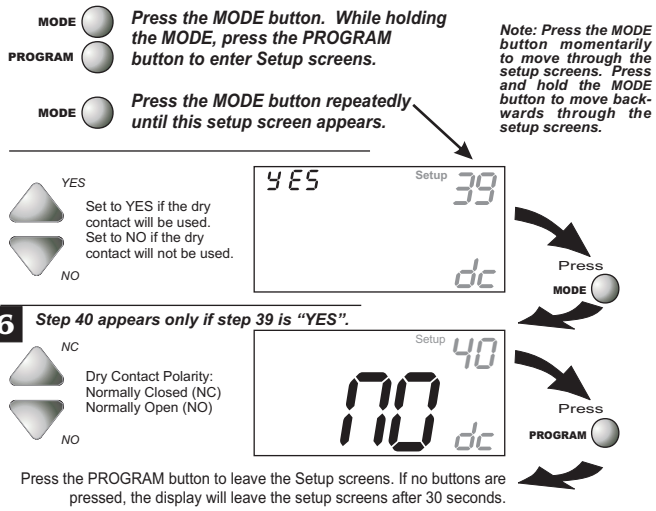


Section 16 Contents:

Dry Contact Operation

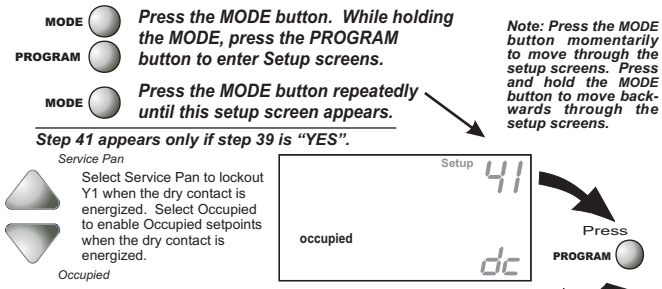
If the dry contact is going to be used, select YES in step #39. If the dry contact is not going to be used, select NO in step #39 below.

DRY CONTACT POLARITY - The terminals may be set to be Normally Open (NO) or Normally Closed (NC) in step #40. If NO is selected the dry contact will operate when it is forced closed. If NC is selected, the dry contact will operate until it is forced open.



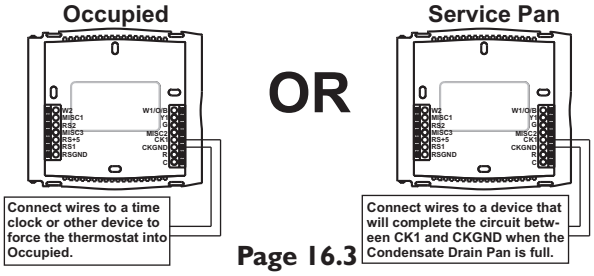
Dry Contact Programming

OCCUPIED OR SERVICE THE CONDENSATE DRAIN PAN - If Occupied is selected in step #41 (*below*), when the dry contact is energized the thermostat will be forced into Occupied setpoints and the Occupied icon will blink (Section *6*). The thermostat must be in Program On mode for this feature to have any effect.
If Service Pan is selected, when the dry contact is energized the thermostat will lockout Y1 (compressor) and write Service Pan on the display.



Press the PROGRAM button to leave the Setup screens. If no buttons are pressed, the display will leave the setup screens after 30 seconds.

NOTE: *If Service Pan is selected and the dry contact was closed at least once, the Service Pan icon will remain on the display to alert the user that a problem has occurred. This icon will be cleared once a button is pressed.*



Random Start Operation

This feature allows a 2 to 30 second delay before energizing the thermostat outputs after any of these events:

Loss of Power to the thermostat: When power to the thermostat is interrupted and then restored, Random Start will lockout the outputs of the thermostat for a random amount of time. This delay helps to keep multiple thermostats from energizing their outputs at the same time after a power outage.

Changing from an Unoccupied time period to an Occupied time period: If the thermostat is running in the Program On mode and the start time for an Occupied period forces the thermostat from Unoccupied to Occupied, Random Start will lockout all outputs of the thermostat for a random amount of time. This delay helps to keep multiple thermostats from energizing their outputs at the same time each day.

Closure of the Dry Contact to force Occupied time period: If step #41 (*previous page*) is programmed for Occupied, then Random Start will lockout all outputs of the thermostat for a random amount of time when a Dry Contact closure occurs (*depending on step #40*). This delay helps to keep multiple thermostats from energizing their outputs each time the Dry Contact is used.

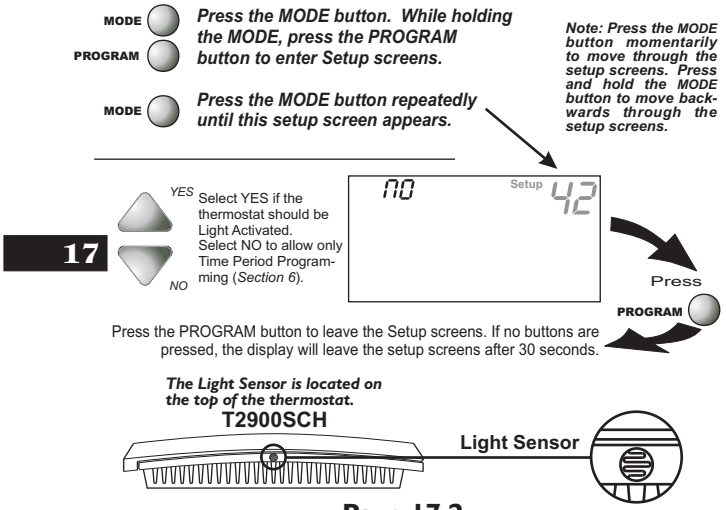
Sensing of a light source by the Light Sensor to force an Occupied time period: If step #42 (*page 17.2*) is programmed YES for Light Activated operation, Random Start will lockout the outputs of the thermostat for a random amount of time when a light source forces the thermostat into Occupied. This delay helps to keep multiple thermostats from energizing their outputs each time the lights are turned on.

Section 17 Contents:

Setting up the Thermostat for Light Activated Operation

A light sensor is provided on the thermostat for light activation. If the thermostat is set up to be light activated, the thermostat will enter Occupied and blink the Occupied icon when a light source is detected. When the thermostat is set up to be light activated, the time period programming for each day should be set to OFF (*Section 6*). The thermostat must be in Program On mode for light activation to have any effect. Page 17.3 explains how to adjust the light sensitivity for this type of operation.

NOTE: Light activation does not work in Holiday mode (Section 21).



The Light Sensor is located on the top of the thermostat.

T2900SCH

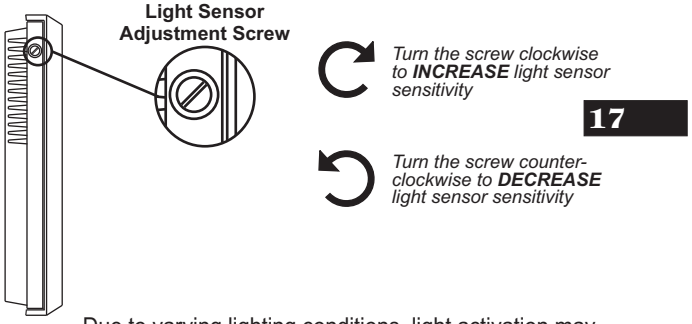
Adjusting the Light Sensor

The light sensor can be adjusted for variable degrees of sensitivity. The sensitivity adjustment screw is located on the side of the thermostat, as illustrated below. Turning the screw clockwise increases the sensitivity of the sensor to light.

To check for correct sensitivity, place the thermostat in the Program On mode. When the lights are on the thermostat should enter Occupied and the Occupied icon will blink on the display. If the thermostat does not enter Occupied while the lights are on, use the supplied screwdriver to turn the light sensor screw clockwise until the Occupied icon appears on the display.

The thermostat should enter an unoccupied period when the lights are off. If the sensor does not enter an unoccupied period when the lights are turned off, use the screwdriver to turn the light sensor screw counterclockwise until the Unoccupied icon appears on the display, with the lights off.

The Light Sensor Adjustment Screw is located on the side of the thermostat.



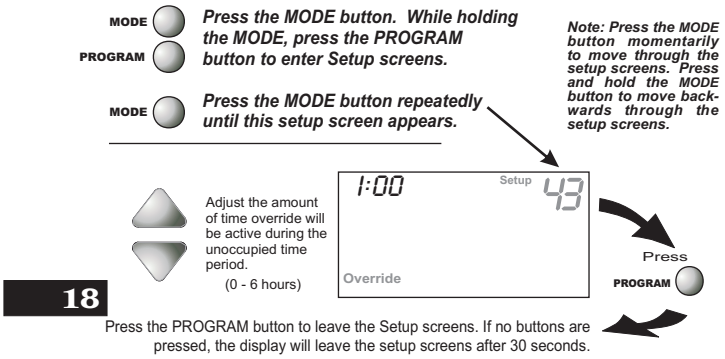
Due to varying lighting conditions, light activation may not be suitable for all installations.

SECTION 18
Override Timer Operation

VENSTAR®

How to Use the Override Timer

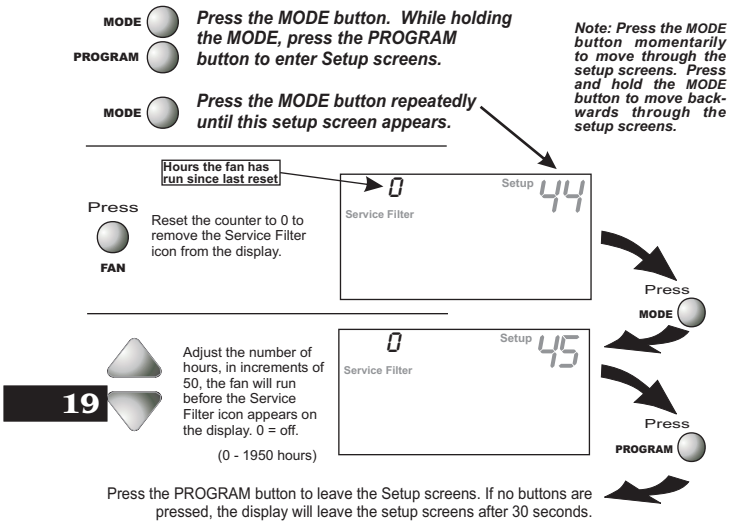
During programmed, unoccupied periods, pressing the OVERRIDE button will temporarily force the thermostat into Occupied comfort settings for the number of hours programmed in step #43, below. For example, if the thermostat is programmed to be occupied from 8:00 AM to 5:00 PM, but a cleaning crew is scheduled to come into the building from 7:00 PM to 9:00 PM, then this setup step can be programmed for two hours. When the cleaning crew presses the OVERRIDE button at 7:00 PM, the thermostat will stay in the Occupied mode until 9:00 PM.



Section 19 Contents:

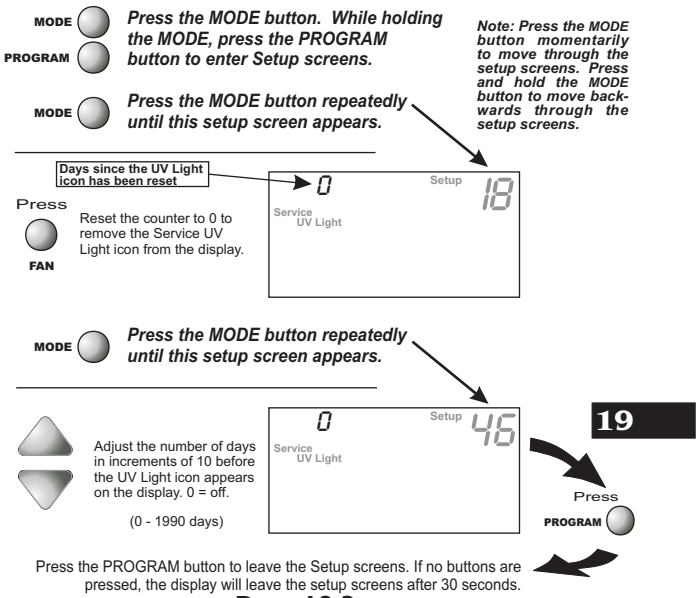
How to Set and Reset the Service Filter (Fan Run-Time) Alert

This counter keeps track of the number of hours of fan run-time whether the fan is energized in the Heating or Cooling modes, or in stand alone fan operation. The Service Filter icon will appear after the preset number of hours of fan run-time in step #45 (*below*) has been achieved. Setting this counter to zero in step #45 will prevent the Service Filter icon from ever appearing.



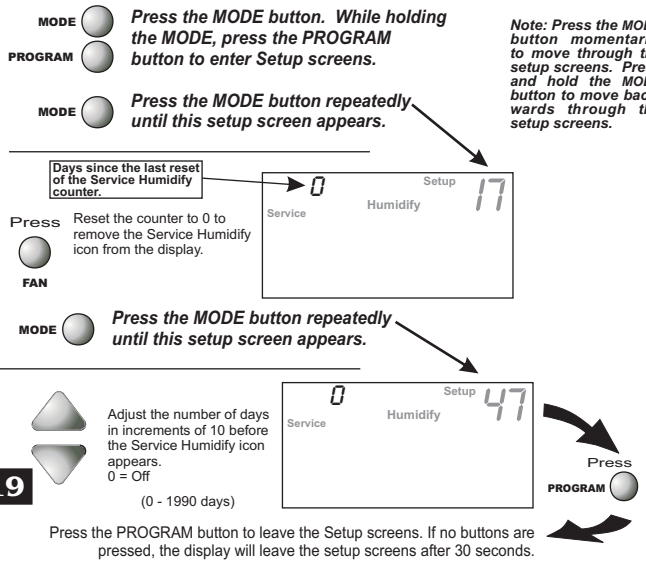
How to Set and Reset the UV Light Run-Time Alert

This counter keeps track of the number of days since the UV Light counter has been reset. The UV Light icon will appear after the number of days has been achieved, as shown in step #46 (*below*). Setting the counter to zero in Step #46 will prevent the Service UV Light icon from ever appearing.



How to Set and Reset the Humidifier Run-Time Alert

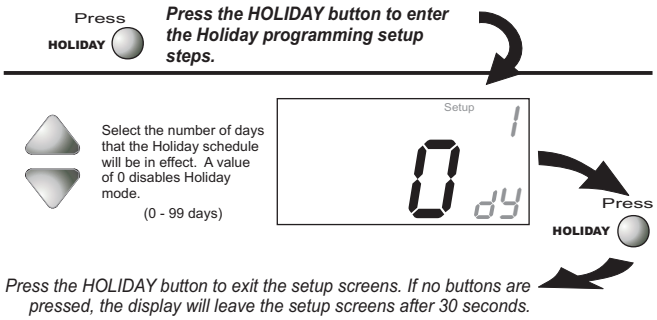
This counter keeps track of the number of days since the Service Humidify icon was last reset; this icon will appear after the number of days set in step #47 (*below*) has elapsed. Setting this counter to zero in step #47 will prevent the Service Humidify icon from ever appearing.



The humidifier run-time alert does not take the place of any humidifier manufacturer's recommended maintenance plan; it only serves as a helpful reminder.

SECTION 20
Programming Holiday Mode VENSTAR®

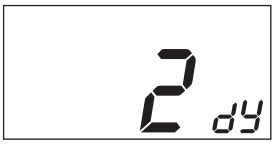
When the thermostat is programmed for a Holiday mode, it will take effect at 12:00 am of the next day. *In order for the Holiday mode to take effect the thermostat must be in the Program On mode.*
The thermostat will control to the Unoccupied cooling and heating setpoints set in Section 6, pages 6.2 and 6.3.
Holiday setpoints will be enforced for the number of days specified in step #1 (0 - 99 days).



You cannot set the Heat setpoint any higher than the Cool setpoint minus the deadband setting in Advanced Setup step #22 on page 13.2.

Programming Holiday Mode (continued)

HOLIDAY DISPLAY - When the thermostat is placed into the Holiday mode, the thermostat will display the screen shown below.

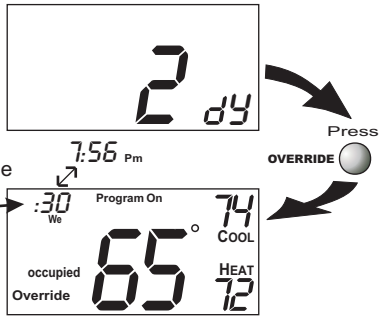


To return the thermostat to normal operation from Holiday mode, press the HOLIDAY button and adjust the number of days in step #1 to zero (*see previous page*).

Press the HOLIDAY button to return to normal operation.

Overriding the Holiday Mode

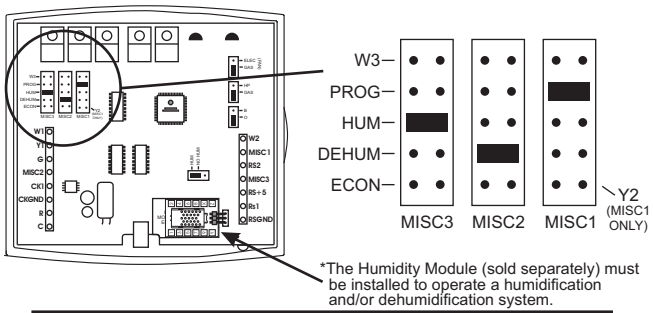
Pressing the OVERRIDE button during Holiday Mode will temporarily force the thermostat into Occupied comfort settings for the number of hours programmed in step #43 on page 18.1. The remaining Override time will alternate with the clock display. Pressing the OVERRIDE button again will cancel the timer, returning the thermostat to the Holiday mode.



Section 21 Contents:

Configuring the Jumpers

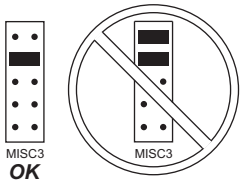
For additional flexibility, your thermostat has three configurable outputs. These outputs are designed to have different functions depending on how the jumpers are set (*below*).
Each output, labeled MISC1, MISC2, and MISC3 may be set for one of the five choices available.
In the diagram below, the MISC3 jumper has been set for HUM* (humidification) operation, the MISC2 jumper has been set for DEHUM* (dehumidification) operation, and the MISC1 jumper has been set for PROG (programmable) operation.



CAUTION

NEVER PUT MORE THAN ONE JUMPER ON THE SAME MISC JUMPER BLOCK!

DOING SO MAY DAMAGE YOUR THERMOSTAT AND VOID THE WARRANTY.



Explanation of Jumper Settings

W3 JUMPER SETTING

If the jumper for MISC1, MISC2, or MISC3 is set to W3, the corresponding MISC screw terminal on the backplate will control a third stage of heat.

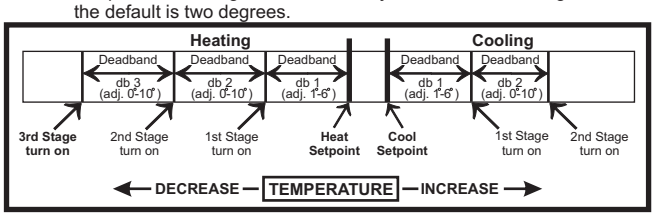
W3 MULTI-STAGE OPERATION EXPLAINED - PAGE 13.4

The **3rd Stage** of Heat is turned on when:

(A) The 1st and 2nd stages have been on for the time required (*steps 27 and 28, page 13.6).* It is adjustable from 0-60 minutes and the default is two minutes.

And

(B) The temperature from the setpoint is equal to or greater than: *the set-point plus the 1st stage deadband (step #24, 13.5), plus the 2nd stage deadband (step #25, 13.5) plus the 3rd stage deadband (step #26, 13.5).* This 3rd stage deadband is adjustable from 0-10 degrees and the default is two degrees.



PROG JUMPER SETTING

If the jumper for MISC1, MISC2, or MISC3 is set to PROG, the corresponding MISC screw terminal on the backplate will control a pilot relay or other accessory.

PROGRAMMABLE OUTPUT - SECTION 14

This jumper setting allows the MISC outputs to control a pilot relay by time, temperature, or a signal from the Internet/Phone. The following are three possible scenarios:

By **Time**: A device that requires a start and stop time. For example, an exterior lighting system that needed to be energized every day between the hours of 8pm and 1am.

By **Temperature**: An exhaust fan that needs to energize whenever the temperature from RS1 rises above 90 degrees F.

By **Remote**: Remotely arming a security system through the web or phone.

Explanation of Jumper Settings (continued)

HUM JUMPER SETTING

If the jumper for MISC1, MISC2, or MISC3 is set to HUM, the corresponding MISC screw terminal on the backplate will control a humidification system.

HUMIDIFICATION OPERATION - SECTION 9

If your HVAC unit is equipped with a humidification system and the Humidity Module (sold separately) has been installed, the thermostat will provide power to the MISC1, MISC2, or MISC3 terminal of the thermostat when the humidity in the home falls below the humidity setpoint you have chosen. The value for this setpoint ranges from 0% to 60%. If no humidity is desired or if a humidification system has not been installed, set the value to 0%.

DEHUM JUMPER SETTING

If the jumper for MISC1, MISC2, or MISC3 is set to DEHUM, the corresponding MISC screw terminal on the backplate will be connected to the dehumidification terminal of a furnace board.
NOTE: Not all furnaces have a dehumidification terminal.

DEHUMIDIFICATION OPERATION - SECTION 10

If your HVAC unit is equipped with a dehumidification system the thermostat will operate in one of two ways.

1) **Normally Closed** (NC): The thermostat will **de-energize** the MISC1, MISC2, or MISC3 terminal of the thermostat (this MISC terminal is connected to the DEHUM terminal on your furnace) to allow the fan to run in low speed when the humidity in the building is above the dehumidify setpoint you have chosen and there is a call for 1st stage cooling.

2) **Normally Open** (NO): The thermostat will **energize** the MISC1, MISC2, or MISC3 terminal of the thermostat (this MISC terminal is connected to the DEHUM terminal on your furnace) to allow the fan to run in low speed when the humidity in the building is above the dehumidify setpoint you have chosen and there is a call for 1st stage cooling.

Explanation of Jumper Settings (continued)

ECON JUMPER SETTING

If the jumper for MISC2 or MISC3 is set to ECON, the corresponding MISC screw terminal on the backplate will be connected to an economizer.

ECONOMIZER OPERATION - If your HVAC unit is equipped with an economizer system, the thermostat will provide power to the MISC2 or MISC3 terminal of the thermostat when the thermostat is in an occupied time period. The MISC2 or MISC3 terminal will be de-energized when the thermostat is in an unoccupied time period.

Y2 JUMPER SETTING

If the jumper for MISC1 is set to Y2 the MISC1 screw terminal on the backplate will control a second stage of cooling.

Y2 OPERATION - SECTION 13

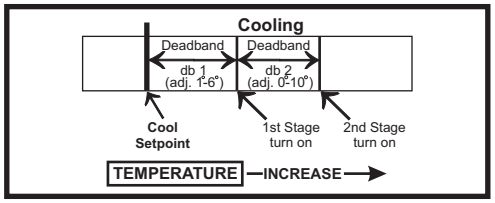
Control up to two Cool stages.

The **2nd Stage** of cool is turned on when:

(**A**) The 1st Stage has been on for the time required (*step #27, page 13.6).* It is adjustable from 0-60 minutes and the default is two minutes.

And

(**B**) The temperature spread from the setpoint is equal to or greater than: *the setpoint plus the deadband (step #24, page 13.5), plus the 2nd deadband (step #25, page 13.5).* This 2nd deadband is adjustable from 0-10 degrees and the default is two degrees.



Section 22 Contents:

Resetting the Thermostat to the Factory Default Settings (for default values see page 24.1)

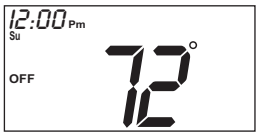
If, for any reason, you desire to return all the stored settings back to the factory default settings, follow the instructions below.

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.

1

MODE

Place the thermostat in the OFF mode.



2

MODE

FAN

Press and hold the MODE button. While holding the MODE button, press and hold the FAN button for 5 seconds. All icons will appear on the display.

3

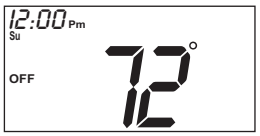
FAN

After all of the icons appear, release the MODE and FAN buttons. Then press and hold the FAN button for 5 seconds.

4

MODE

After the letters **Fd** appear on the display (Factory Default), release the FAN button. Press the MODE button **once** to return to normal operation.



Calibrating the Temperature and Humidity Sensors

Under normal circumstances it will not be necessary to adjust the calibration of the temperature and humidity sensors. If calibration is required, please contact a trained HVAC technician to correctly perform the following procedure.

1

MODE

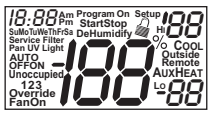
Place the thermostat in the OFF mode.

2

MODE

FAN

Press and hold the MODE button. While holding the MODE button, press and hold the FAN button for 5 seconds. All icons will appear on the display.



3

PRESS

TWICE

THERMOSTAT SENSOR

Press the UP and DOWN buttons at the same time twice. The thermostat temperature will be displayed and may be calibrated using the UP or DOWN buttons.

CALIBRATE

4

MODE

REMOTE SENSOR

Press the MODE button once. The remote sensor temperature will be displayed and may be calibrated using the UP or DOWN buttons. If a remote sensor is not installed, a temperature reading -127 degrees will appear.

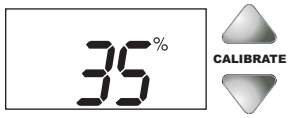
CALIBRATE

5

MODE

HUMIDITY SENSOR

Press the MODE button once. The relative humidity at the thermostat will be displayed and may be calibrated using the UP or DOWN buttons.



CALIBRATE

After calibration is complete, press the MODE button **once** to save your changes and return to normal operation.

Viewing the Remote Temperature Sensors

Each sensor is programmed with a “hard-coded” address that the thermostat “scans” in order from lowest to highest. Therefore, in order to determine which sensor corresponds to the number on the setup screen you will need to disconnect each sensor from the group in order to determine which sensor number reads dashes.

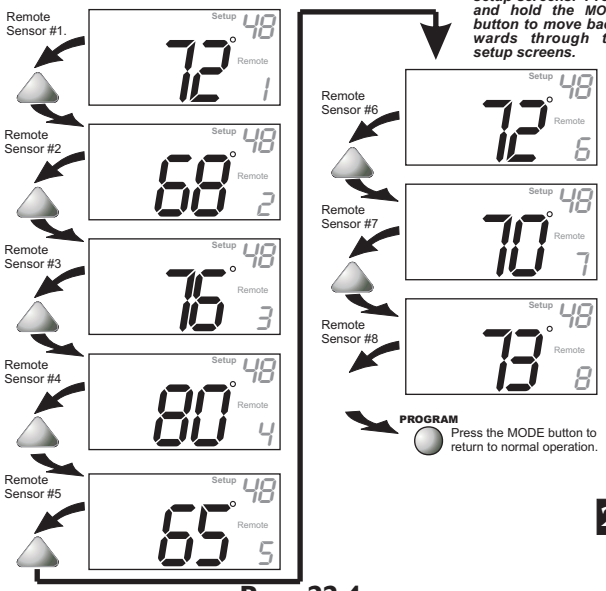
MODE
PROGRAM

Press the MODE button. While holding the MODE, press the PROGRAM button to enter Setup screens.

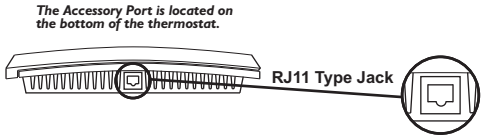
MODE

Press the MODE button repeatedly until setup step #48 appears.

Note: Press the MODE button momentarily to move through the setup screens. Press and hold the MODE button to move backwards through the setup screens.



ACCESSORY PORT - The RJ11 Jack is used to connect the T2900SCH to the IR Receiver (ACC0431) for wireless communication or the EZ Programmer (ACC0432) for easy downloading or uploading of thermostat information.



IR RECEIVER / REMOTE CONTROL (optional accessory) - When the IR Receiver is connected, the thermostat can be controlled using an IR Remote Control. The thermostat may also interface with other wireless systems in your home. For more information see the manual for the IR Receiver (ACC0431).

EZ PROGRAMMER (optional accessory) - When the EZ Programmer is connected, the thermostat Time Period Programming and Advanced Setup Programming can be stored into the EZ Programmer's memory. This information can then be uploaded to other T2900SCH thermostats. For more information see the manual for the (ACC0432).

COMFORT CALL (optional accessory) - When Comfort call is connected, the thermostat's Heating and cooling functionality may be accessed and controlled through the phone. For more information see the manual for Comfort Call (ACC0433).

SECTION 24
Advanced Setup Table

VENSTAR®

Step#	Description	Pg#	Range	Df*
1	Programmable Thermostat	4.2	Yes/No	Yes
2	Auto-Changeover Thermostat	4.3	Yes/No	Yes
3	Fan Off Delay	7.3	0, 30, 60, 90	0
4	Fan Purge	7.4	0 - 3 hrs.	0
5	Thermoglow Backlight	8.2	Auto/On/ Off	Au-to
6	F or C	8.2	F/C	F
7	Security Level	8.4	0 - 3	0
8	Max Heat Setpoint	8.4	35˚- 99˚	80˚
9	Min Cool Setpoint	8.4	35˚- 99˚	65˚
10	Cool to Dehumidify	10.4	On/Off	Off
11	Maximum Dehum Overshoot	10.4	0˚- 5˚	3˚
12	Reheat Operation	10.5	On/Off	Off
13	DEHUM Terminal Polarity	10.6	NO/NC	NC
14	Energy Watch - Heat Timer	11.2	read only	- -
15	Energy Watch - Cool Timer	11.3	read only	- -
16	Override Run-Time	11.4	read only	- -
17	Reset Service Humidify Icon	11.5	read only	- -
18	Reset UV Light Icon	11.6	read only	- -
19	Heatpump Jumper Setting	12.2	read only	- -
20	Reversing Valve Jumper Setting	12.2	read only	- -
21	Electric Heat	12.3	read only	- -
22	Minimum Heat/Cool Differential	13.2	0˚- 6˚	2˚
23	Cycles Per Hour	13.3	d1, d, 2-6	6
24	Deadband/Temp. Swing 1st Stage	13.5	1˚- 6˚	2˚
25	Deadband/Temp. Swing 2nd Stage	13.5	0˚- 10˚	2˚
26	Deadband/Temp. Swing 3rd Stage	13.5	0˚- 10˚	2˚

Step#	Description	Pg#	Range	Df*
27	Minutes Between Stage 1 & 2	13.6	0-60min	2
28	Minutes Between Stage 2 & 3	13.6	0-60min	2
29	2nd Stage turn off at setpoint	13.7	On/Off	Off
30	Programmable Output	14.3	Off/Time/ Temp/Aux	Off
31	Programmable Output Polarity	14.4	NO/NC	NO
32	7 Day/1 Day Programmable Output	14.4	7Day/ 1Day	7
33	Programmable Output Output Day of the Week	14.4	Mo - Su	Mo
34	Programmable Output Start Time	14.4	24 Hour	7am
35	Programmable Output Stop Time	14.5	24 Hour	9pm
36	Programmable Output Temp. Setpoint	14.6	35˚-125˚	80˚
37	Thermostat control to RS1?	15.3	Yes/No	No
38	Thermostat Sensor Averaging	15.4	On/Off	Off
39	Dry Contact Operation	16.2	Yes/No	Yes
40	Dry Contact Polarity	16.2	NO/NC	NO
41	Dry Contact Programming	16.3	Occ./ Service Pan	Occ.
42	Light Activated	17.2	Yes/No	No
43	Override Timer	18.1	0-6 hours	1
44	Reset Service Filter Icon	19.2	read only	- -
45	Service Filter Run Time Set	19.2	0 - 1950	0
46	UV Light Run-Time Set	19.3	0 - 1990	0
47	Service Humidify Run-Time Set	19.4	0 - 1990	0
48	Viewing the Remote Sensor Temperature(s)	22.4	- -	- -

***Df = Factory Default Setting**

Section 26
Warranty

VENSTAR®

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 DURATION TO 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 APPLY TO YOU. THE EXPRESSED WARRANTIES MADE IN THIS WARRANTY ARE EXCLUSIVE AND MAY NOT BE ALTERED, ENLARGED, OR CHANGED BY ANY DISTRIBUTOR, DEALER, OR OTHER PERSON WHATSOEVER.
ALL WORK UNDER THE TERMS OF THIS WARRANTY SHALL BE PERFORMED DURING NORMAL WORKING HOURS. ALL REPLACEMENT PARTS, WHETHER NEW OR REMANUFACTURED, ASSUME AS THEIR WARRANTY PERIOD ONLY THE REMAINING TIME PERIOD OF THIS WARRANTY.

THE MANUFACTURER WILL NOT BE RESPONSIBLE FOR:

1. Normal maintenance as outlined in the installation and servicing instructions or owner's manual, including filter cleaning and/or replacement and lubrication.
2. Damage or repairs required as a consequence of faulty installation, misapplication, abuse, improper servicing, unauthorized alteration or improper operation.
3. Failure to start due to voltage conditions, blown fuses, open circuit breakers or other damages due to the inadequacy or interruption of electrical service.
4. 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.
7. Electricity or fuel costs or increases in electricity or fuel costs for any reason whatsoever including additional or unusual use of supplemental electric heat.
8. 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.