

VENSTAR®

DIGITAL THERMOSTAT



- Control up to 2 Heat & 2 Cool Stages
- SmartTemp Equipped
- Digital Temperature Selection
- Optional Setpoint - Only Display
- Easy Pushbutton Control
- Auto-Changeover
- Dry Contact Equipped
- Display Either F° or C°

Designed Specifically for the Lodging Industry

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

**OWNER'S
MANUAL**

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COMMERCIAL
HOTEL THERMOSTAT
T0051FS

**MULTI-STAGE
PROGRAMMABLE**

**UP TO 2-HEAT
& 2-COOL**



**WITH 48 HOUR
CLOCK BACKUP**

- Mounts Flush with the Wall
- Backlit display
- One For All™ Works with Virtually All Equipment
- 'O' or 'B' Terminal
- Non-Volatile Memory
- 'Hidden' Setpoint Limiting
- Peak Demand Reduction
- Manual or Auto Fan Control



Table Of Contents

FRONT PANEL	2
DISPLAY	3
QUICK START <i>Set the clock and go</i>	5
SMARTTEMP EXPLANATION	6
PROGRAMMING <i>Occupied / Unoccupied</i>	8
ADVANCED SETUP	13
ABOUT ADVANCED FEATURES & OPERATION	18
WARRANTY	23

CAUTION Follow *Installation Instructions* carefully.



DISCONNECT POWER TO THE HEATER -
AIR CONDITIONER BEFORE REMOVING
THE OLD THERMOSTAT AND INSTALLING
THE NEW THERMOSTAT.

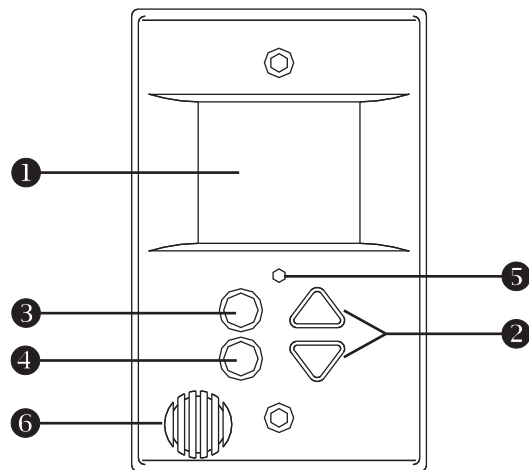


WARNING

Venstar Inc. 12/07

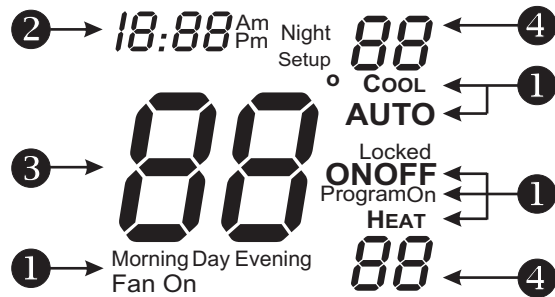
T0051FS

Front Panel



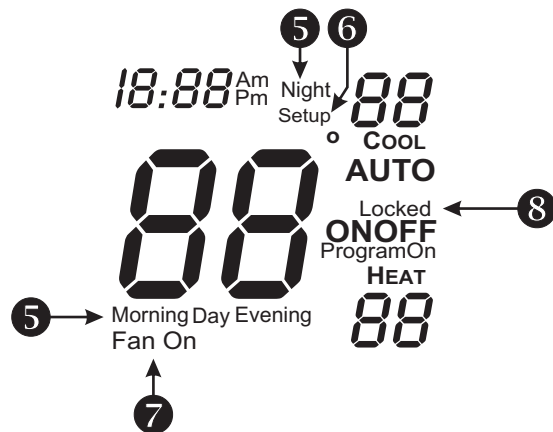
- 1** Liquid Crystal Display
with Thermoglow™
- 2** Warmer/Cooler Buttons
- 3** On/Off Button
- 4** Fan Button
- 5** Heat or Cool Indicator
Red = Heat, Green = Cool
- 6** Temperature Sensor

Display



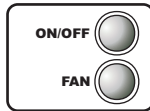
- 1** Mode Indicators
 Selects the operational mode of the equipment.
HEAT - Indicates the heating mode.
COOL - Indicates the air conditioning mode.
AUTO - Indicates the system will automatically changeover between heat and cool modes as the temperature varies.
PROGRAM ON - Indicates the time period program is enabled to run.
OFF - Indicates heating and cooling are turned off.
- 2** Clock
 Indicates the current time. This clock is also used to program the time period schedules.
- 3** Room Temperature Display
 Indicates current room temperature and displays the outside temperature when connected.
- 4** Desired Set Temperature
 Indicates desired room temperature(s).

Display



- 5 Morning, Day, Evening & Night icons - Pages 9-12**
Indicates the day part of the time period program.
- 6 Setup icon - Pages 13-16**
Indicates the thermostat is in the setup mode.
- 7 Fan On icon - Page 5**
Indicates continuous fan operation.
When **Fan On** is not lit - indicates the fan will only operate when necessary to heat or cool.
- 8 Locked icon - Page 20**
Indicates the keypad has been locked.

Quick Start *Set the Clock and Go*



Press the **ON/OFF** and **FAN** buttons at the same time for 10 seconds to enter Setup screens.

During Setup & Programming:

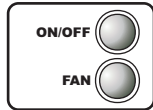
Pressing the Warmer or Cooler buttons will modify the flashing selection.

Setting the Clock

12:00^{Am} Setup |

Tip: To change hours quickly, press and hold the **FAN** button and press the **WARMER** or **COOLER** button.

Press the **ON/OFF** and **FAN** buttons at the same time to return to normal operation.



To adjust the Clock use



buttons.

Using the Fan Button



Pressing the **FAN** button will change the fan speeds as follows:

LO = low speed

LO

74 ° AUTO

Fan On

M = medium speed

M

74 ° AUTO

Fan On

HI = high speed

HI

74 ° AUTO

Fan On

AU = auto

AU

74 ° AUTO

AU = auto

AU

74 ° AUTO

During auto operation the fan will adjust speed based on temperature. These 'extra' fan speeds are only accessible when multiple speed fan has been selected in Advance Setup step #14. If the fan is in Auto, the **Fan On** icon will not be displayed.

SmartTemp Explanation

The SmartTemp feature can save up to 30% or more in operating costs over standard thermostats. SmartTemp gives you almost the same energy savings as thermostats with motion detectors and/or door interlocks at a much lower cost for both the thermostat and installation. No external wiring is required for this feature.

HOW IT WORKS:

The thermostat has a built-in clock. The thermostat can automatically go into an unoccupied setting up to four times a day (default unoccupied settings are 78 degrees and 68 degrees). The default times for **unoccupied** are 8:00 AM, 12:15 PM, 3:00 PM, and 7:00 PM. The rationale for these times are:

8:00 AM: Most guests are expected to leave the room by 8:00 AM and either check out or be gone until check-out time.

12:15 PM: The room will not likely be occupied between the check-out and check-in times.

3:00 PM: Housekeeping staff usually place the thermostat into an occupied mode while cleaning the room.

7:00 PM: Guests typically leave for dinner and the room remains unoccupied until they return to retire for the evening.

The thermostat only displays the setpoint that the hotel guest has selected. When the thermostat is in an unoccupied state, only room temperature is displayed, which the guest will assume is the setpoint temperature.

The number of time periods, their start times, and the unoccupied setpoints can be set by hotel management to maximize savings of operating costs and customer comfort.

Customer complaints are virtually nonexistent with thermostats equipped with the SmartTemp feature, compared to motion sensor and door interlock thermostats.

SmartTemp Explanation

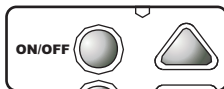
Surveys have shown that even though a hotel can expect to realize an estimated 30% energy savings in heating, cooling and fan costs, the hotel guest is unaware that the thermostat is automatically entering an “unoccupied” state several times throughout the day. The reason for this is that while the hotel guest is in the room, he or she always has complete control of the actual temperature. If the hotel guest happens to notice that the thermostat has entered into “unoccupied” (which is rare), he or she usually assumes that a maid, bar service, or turn-down service person has been in the room and changed the setting.

Programming

Occupied & Unoccupied Periods

To maximize energy savings, the program allows for a day to be broken into four time periods with every day of the week sharing the same program. For each time period, you may choose to have a unique setpoint or simply use the unoccupied setpoints. If four different time periods are not required, then multiple time periods may be set to the same start time.

SMARTTEMP - When a time period is set to OFF, unoccupied settings will be used for that period. During unoccupied operation, the large numbers change from displaying the setpoint to displaying the room temperature and the degree icon will flash. If a guest enters the room and presses the WARMER or COOLER button, the room temperature will be accepted as the setpoint and then can be raised or lowered. This setpoint will remain in effect until the start of the next time period. This enables the guest to maintain control over the room temperature (within setpoint limits), while maximizing energy savings.



Press the ON/OFF button. While holding the ON/OFF, press the WARMER button for two seconds to enter time period programming.

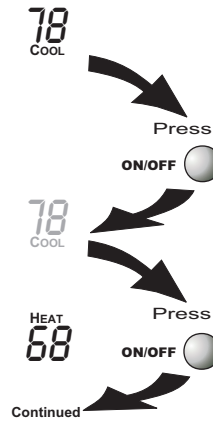
Note: These unoccupied setpoints are not used when the dry contact is asserted. To adjust those setpoints see page 14, steps 5 & 6.



Adjust the cooling setpoint for unoccupied periods.
(35° - 99° OF)

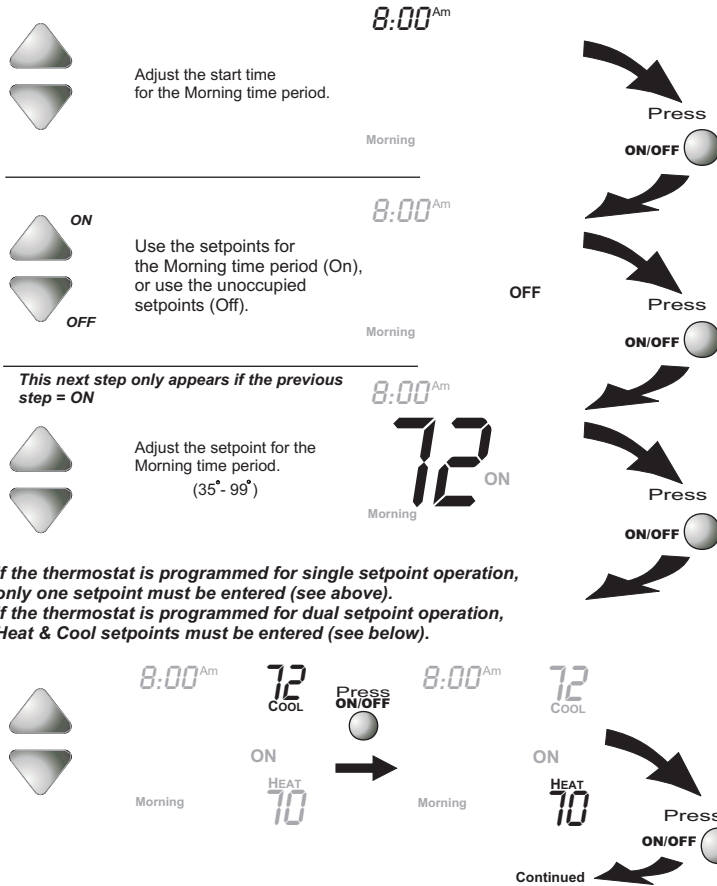


Adjust the heating setpoint for unoccupied periods.
(OF, 35° - 99°)



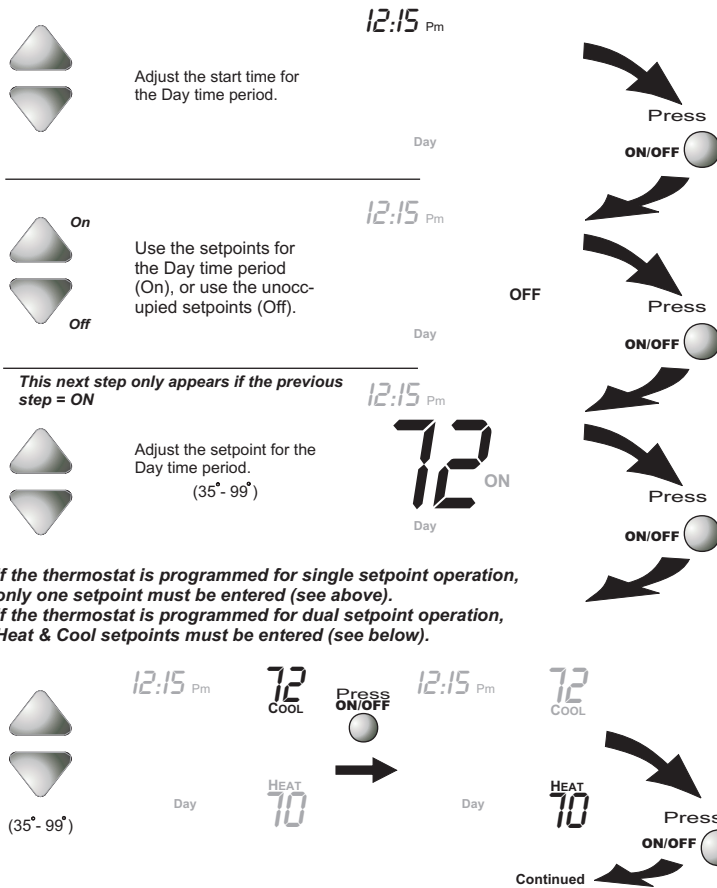
Programming

Occupied & Unoccupied Periods



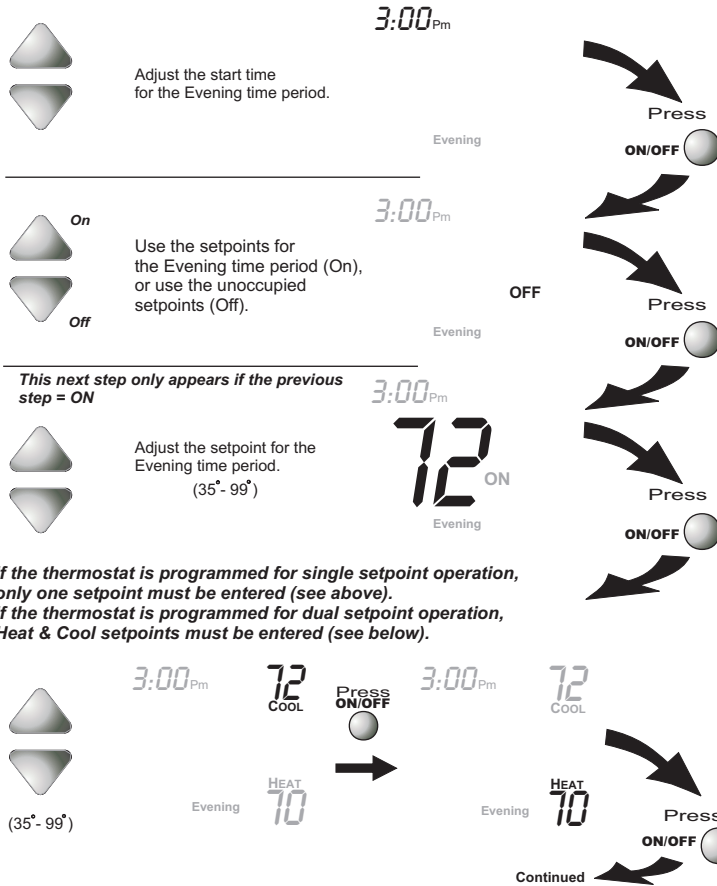
Programming

Occupied & Unoccupied Periods



Programming

Occupied & Unoccupied Periods



Programming

Occupied & Unoccupied Periods



Adjust the start time for the Night time period.

7:00^{Pm} Night



On
Select if the room will be occupied (ON), or unoccupied (OFF), during this time period.
Off

7:00^{Pm} Night

ON

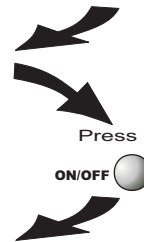


This next step only appears if the previous step = ON



Adjust the setpoint for the Night period.

7:00^{Pm} Night
72 ON



If the thermostat is setup as a dual setpoint, there will be a prompt for Heat & Cool setpoints to be entered. The above step is for the more common, single setpoint setup.

Again, if the thermostat is setup as a dual setpoint thermostat, the next 2 steps will be to adjust the Heat and Cool setpoints for Night as shown here.



(35° - 99°)

7:00^{Pm} Night
72 COOL

HEAT
70





7:00^{Pm} Night
72 COOL

HEAT
70





Exit by pressing ON/OFF & Warmer buttons together.

Advanced Setup



ON/OFF  **Press the On/Off button.**
FAN  **While holding the On/Off, press the Fan button for 10 seconds to enter Setup screens.**

NOTE: Each step # is located at the top right corner of the display for easy reference.

 Adjust the Time of Day Clock.


12:00 Am Setup 1



Tip: To change hours quickly, press and hold the FAN button and press the Warmer or Cooler buttons.

 Select the Display Mode.


- 0=Dual Setpoint, all modes
- 1=Single Setpoint, all modes
- 2=Single Setpoint, auto
- 3=Single Setpoint, program on

DSP Setup 2

3

 NC Dry Contact Sense, normally open or normally closed. For use with occupancy sensors or switches.
 NO

NO Setup 3

NO

 On Select the Dry Contact Latch Scheme.
 Off=Momentary
 Off

LA Setup 4

LA

OFF

Advanced Setup



For the Dry Contact:
Set the Unoccupied
Cool setpoint to 64.
(35° - 99°, OF=Off)

*(Step 5 only appears if
step 4=OFF)*

DC Setup 5
64 COOL



For the Dry Contact:
Set the Unoccupied
Heat setpoint to 66.
(35° - 99°, OF=Off)

*(Step 6 only appears if
step 4=OFF)*

DC Setup 6
66 HEAT



This setup step is unused
for this thermostat.

DC Setup 7
64 COOL



This setup step is unused
for this thermostat.

DC Setup 8
66 HEAT


















On
Adjust the maximum
allowable Heat setpoint.
(35° - 99°)
Off

HI Setup 9
76 LOCKED
HEAT



Advanced Setup

 <p>Adjust the Minimum allowable Cool Setpoint. (35°- 99°)</p>	<p>LO Setup 10 COOL 68 LOCKED</p>	 Press 
<p>On</p>  <p>Select Heat Pump control, On or Off.</p> <p>Off</p>	<p>Setup 11 HP ON</p>	 Press 
<p>B</p>  <p>Select the reversing valve polarity for Heat Pump, O or B. (Step 12 only appears if Heat Pump is ON in step 11)</p> <p>O</p>	<p>Setup 12 0</p>	 Press 
<p>On</p>  <p>Select Electric Heat On or Off. (Step 13 only appears if Heat Pump is OFF in step 11)</p> <p>Off</p>	<p>Setup 13 EH OFF</p>	 Press 
 <p>Select Fan Speeds: 1=Normal operation 2=2 speed fan 3=3 speed fan (2nd stage heat not available w/3 speed fan in heat pump)</p>	<p>SPD Setup 14 1</p> <p>Fan On</p>	 Press 

Advanced Setup



Adjust the Deadband from 1 - 6 degrees.

db Setup 15
2



Step 16 only appears if dual setpoint is selected in step 2.



Adjust the minimum **Difference** between cooling & heating setpoints.
(0° - 6°)

dIF Setup 16
2
COOL
HEAT



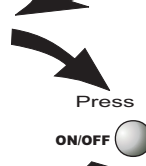
Select the cycles per hour Limit.
d=cycles per hour limit defeated.
d1=d + defeat 5 min. compressor lockout.
(d, d1, 2 - 6)

Setup 17
d
CY



On
Select backlight operation:
ON - Light continuously
Off - Light for 8 seconds after a button press.
Off

Setup 18
LI
ON



C
Select Thermostat Operation in degrees Fahrenheit or Centigrade.
F

Setup 19
F



Press **On/Off**. While holding **On/Off**, press **Fan** for 2 seconds to leave the Setup screens. If no buttons are pressed, the display will leave the Setup screens after 60 seconds.



Advanced Setup

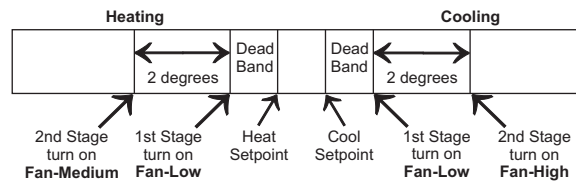
Advanced Setup Table

Step #	Description	Range	Factory Default
1	Time of day clock set	24 hour	12:00 Am
2	Display Mode	0 - 3	3
3	Dry Contact Sense	NC /NO	NO
4	Dry Contact Latch	Off / On	Off
5	Unoccupied Cool setpoint**	35°- 99° OF	OF
6	Unoccupied Heat setpoint**	OF, 35°- 99°	OF
7	This setup step is unused	N/A	N/A
8	This setup step is unused	N/A	N/A
9	Maximum allowable Heat setpoint	35° - 99°	76
10	Minimum allowable Cool setpoint	35° - 99°	68
11	Heat Pump	On / Off	On
12	Reversing Valve Polarity	O / B	O
13	Electric Heat	On / Off	Off
14	Fan Speeds	1 - 3	1
15	Deadband	1 - 6	2
16	Minimum differential - Heat / Cool	0 - 6	2
17	Cycles per Hour Limit	d, d1, 2 - 6	d
18	Backlight	On / Off	On
19	Fahrenheit or Centigrade	F / C	F

** These unoccupied setpoints are used only when the Dry Contact is asserted.

About Advanced Features & Operation

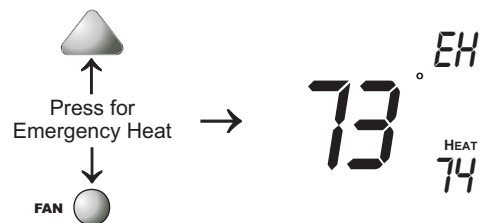
- * **CLOCK BACKUP** - In the event of a power loss, the thermostat's internal clock will continue to keep proper time for a minimum of 48 hours without external power or batteries. The **T0051FS** stores the time at which power is removed and resumes timekeeping from that point, upon power restoration.
- * **2 STAGE OPERATION** - The 2nd Stage of Heat or Cool is turned on when (1) the 1st Stage has been on for a minimum of two minutes, **and** (2) the temperature spread from the setpoint is equal to or greater than: *the setpoint plus the deadband, plus 2 degrees*.



- * **MINIMUM HEAT/COOL SETPOINT DIFFERENCE** - The Heat and Cool setpoints will not be allowed to come any closer to each other than the value set in Advanced Setup *step # 16, on page 16*. This minimum difference is enforced during Auto-changeover and Program On operation.
- * **DRY CONTACT SENSE** - N.O.=Normally Open. N.O. setting with dry contact closure enforces unoccupied settings from normal operation. N.C.=Normally Closed. N.C. setting with dry contact closure enforces normal operation from unoccupied settings. This dry contact works in all modes but OFF.

About Advanced Features & Operation

- * **EMERGENCY HEAT** - Is a feature available to Heat Pump installations. To turn on Emergency Heat press the FAN button. While holding the FAN button press the WARMER button for 2 seconds. The Cool setpoint display will read 'EH'.



During Emergency Heat, the thermostat will turn on the fan and the 2nd stage of heat when there is a demand for heat, which locks out the 1st stage compressor.

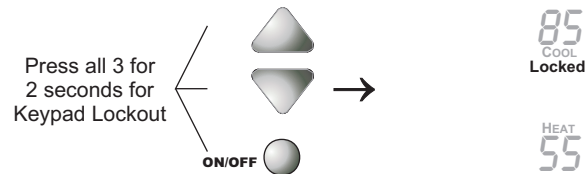
During Emergency Heat only OFF and HEAT are available. Exiting Emergency Heat is the same as entering.

- * **DRY CONTACT LATCH SCHEME** - If Latch OFF is selected, the thermostat runs normally. If Latch ON is selected, the thermostat will 'wait' in unoccupied settings. A momentary closure of the dry contact will put the thermostat into the appropriate period, (Morning, Day or Evening) for 30 minutes.

If the contact closure occurs during Night then the thermostat will remain in Night settings until the Morning period. Then it will return to unoccupied. This is used in a hotel room with a motion detector to allow for comfort settings during sleep periods without movement.

About Advanced Features & Operation

- * **KEYPAD LOCK** - To prevent unauthorized use of the thermostat, the front panel buttons may be disabled. To disable, or 'lock' the keypad, press and hold in the ON/OFF button. While holding the ON/OFF button, press the WARMER and COOLER buttons together. The **Locked** icon will appear on the display.



To **unlock** the keypad, press and hold the ON/OFF button. While holding the ON/OFF button, press the WARMER and COOLER buttons together. The **Locked** icon will disappear from the display.

- * **INTERNAL SETPOINT LIMITING** - The display setpoint(s) may be set further than the thermostat's internal limits.

For example: Internal setpoint limits set to 77 maximum and 69 minimum:

If the COOLER button is pressed to bring the displayed setpoint down to 35 degrees, internally the thermostat will clamp the Cool setpoint to 69 degrees minimum and not go any lower, but the display would show 35 degrees.

About Advanced Features & Operation

- * **DUAL SETPOINT BEHAVIOR** - The adjustable setpoint range is: 35 - 99 degrees Fahrenheit and 7 - 35 degrees Centigrade. When in the modes Heat or Cool, this adjustable range is unhampered. When adjusting any Auto mode, including programming Occupied and Unoccupied periods, the thermostat will not allow the Heat setpoint to get closer to the Cool setpoint than the value programmed as the minimum difference in *step 16, page 16*. When entering the Auto mode from Cool, the Heat and Cool setpoints will remain spread apart by the amount that they were adjusted, prior to entering Auto. For example: If the Cool setpoint was set to 80 while in the Cool mode and the Heat setpoint was adjusted to 70 while in the Heat mode, upon entering the Auto mode the Cool and Heat setpoints would be 80 and 70. **Both** setpoints would then move up and down together, (in this example spread by 10 degrees), by pressing the WARMER or COOLER buttons. To move the Heat and Cool setpoints closer together, enter the Cool or Heat mode by pressing the Mode button, then adjust the setpoint(s) closer together. Heat is limited to how close it can come to Cool by *step 16, page 16*.

- * **ELECTRIC HEAT** - Selecting Electric Heat ON, *step 13, page 15*, will cause the thermostat to turn on the fan immediately any time there is a heat demand. Since all gas furnaces control the fan, this feature should be off unless the heater is only electric.

About Advanced Features & Operation

- * **FACTORY DEFAULTS** - If, for any reason, it is desirable to return all stored settings back to the factory default settings, press the ON/OFF button. While pressing the ON/OFF button, press the COOLER button for 2 seconds. All icons will appear. Press and hold the FAN button until **Fd** appears. This resets all factory settings.

To Calibrate Room Temperature. press the ON/OFF button once more. At this point use the WARMER and COOLER buttons to calibrate room temperature, if needed. Press the ON/OFF button to return to normal operation.

NOTE CAUTION ON PAGE 1.

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 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.