

Owner's Manual



Model
S1-THEM22P7S
COMMERCIAL

BACKLIT DISPLAY

Heat/Cool & Heat Pump
7-Day Programmable

Digital
Thermostat

Use with most
Heat Pump Systems:
2-Heat, 2-Cool



- Stages: 2-Heat, 2-Cool
- Backlit Digital Display
- Aux Heat Indicator
- System Powered
- Fahrenheit or Celsius
- Auto-Changeover
- Clock Backup in the Event of Power Failure
- Up to 4 Hour Override
- Keypad Lockout

Contents	Page #
Safety Warnings _____	3
Location of Controls _____	4
Display _____	5
Normal Operation	
Manual Operation _____	7
Programmed Operation _____	8
Clock Set _____	9
Time Period Programming	
Overview _____	10
Daily Programming _____	11
Copying the Program _____	13
Overriding the Program _____	14
Advanced Setup _____	15
Advanced Features _____	17
Factory Defaults _____	19
Calibration _____	20
Warranty _____	21

Safety Warnings

P/N S1-THEM22P7S

CAUTION

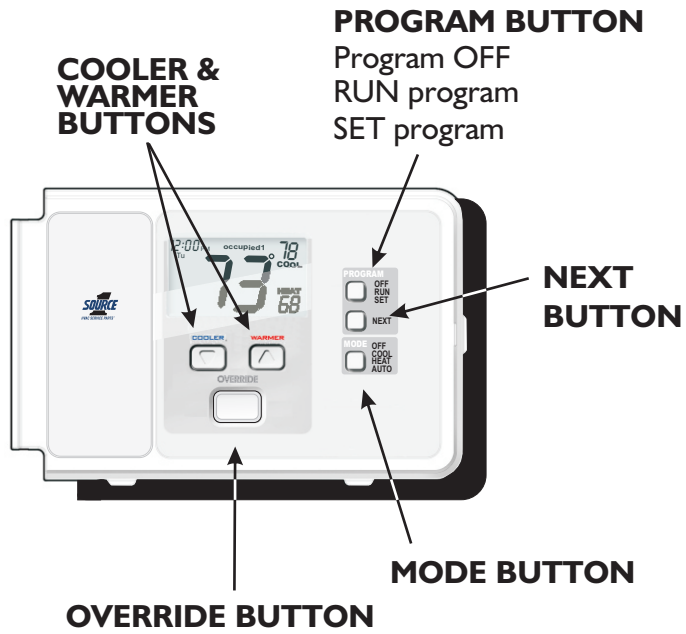
Follow *Installation Instructions* carefully.

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

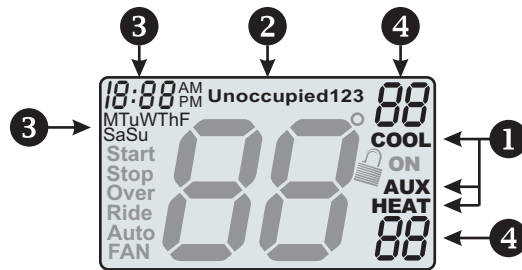
**WARNING**

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.

Location of Controls



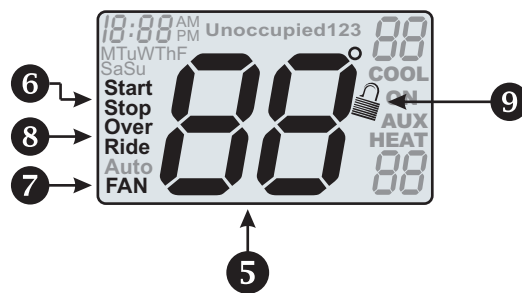
Display



- 1** Mode Indicators -

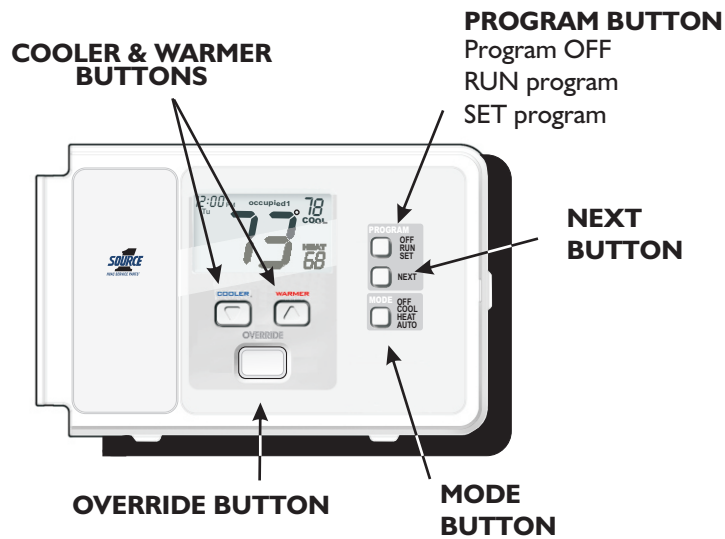
 - HEAT** - Indicates the heating mode. When heating is energized the Heat indicator will flash.
 - COOL** - Indicates the cooling mode. When cooling is energized the Cool indicator will flash.
 - HEAT & COOL** - Indicates the system will automatically changeover between heat and cool modes as the temperature varies.
 - AUX** - Indicates the 2nd stage of heat is energized. When 2nd stage heat is energized, the Aux indicator will flash.
- 2** Time period indicators. These indicate the part of the program that is currently active, if the PROGRAM button is set to RUN.
- 3** Clock with Day of the Week. Indicates the current time and day. This clock is also used to program the time period schedules.
- 4** Desired set temperatures for heating and cooling.

Display



- 5 Current room temperature.
- 6 Appears when programming Occupied 1, 2, or 3 start and stop times.
- 7 Indicates the fan will run continuously.
- 8 Indicates the program is currently being overridden for up to four hours (see page 14).
- 9 Indicates the keypad is locked.

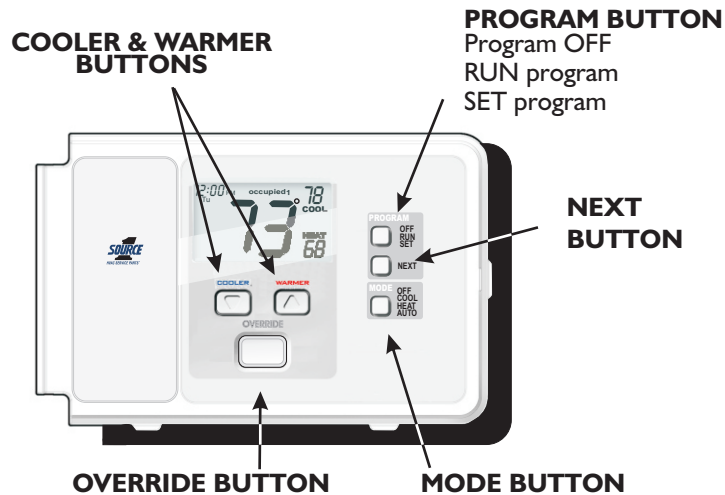
Normal Operation



Manual Operation (Program set to OFF)

- 1 Select Heat, Cool, or Heat & Cool with the MODE button.
- 2 Normally leave the fan programmed for Auto (see page 15). In Fan Auto, the fan will turn on only with a heat or cool demand. When Fan On is selected, the fan will run continuously.
- 3 Adjust the desired set temperature with the COOLER and WARMER buttons.

Normal Operation



Programmed Operation (Program set to RUN)


- 1 Select Heat, Cool, or Heat & Cool with the MODE button.
- 2 Select RUN with the PROGRAM button. Occupied 1, 2, 3, or Unoccupied will appear on the display.
- 3 Normally leave the fan switched to Auto (see page 15). When Fan On is selected, the fan will run continuously.
- 4 The desired set temperature may be temporarily overridden. The thermostat will revert to the programmed settings in the following time period.

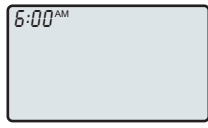


Clock Set

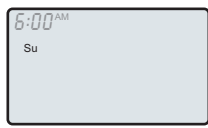




Press the **PROGRAM** button to enter the clock and day setup screens.

Press **NEXT** to advance



  Use these buttons to adjust the current time.

To slew the time more rapidly, push and hold the COOLER or WARMER buttons.

  Use these buttons to adjust the current day.


This thermostat is preprogrammed from the factory to operate 1 or 2-Stage equipment without the need for further programming. To optimize the installation of this thermostat follow the instructions in the Advanced Setup section.

Time Period Programming

Overview

PROGRAM BUTTON



- Press the PROGRAM button to enter the time period programming screens.
- The blinking icon(s) on the display may be changed by pressing the COOLER or WARMER button.
- After the blinking icon is changed to the desired selection, press the NEXT button.
- Each item in the time period programming screens will flash and can be modified with the COOLER & WARMER buttons.
- Continue the steps above until programming is complete.
- Press the PROGRAM button twice to exit the programming screens and operate the thermostat according to the time period programming. Then press the MODE button to run the program in the Heat, Cool, or Heat & Cool mode.
- Press the PROGRAM button once to exit the programming screens and operate the thermostat as a manual heat or cool only thermostat.

Time Period Programming



Press the PROGRAM button to enter the time period programming screens. Press the NEXT button to advance past the Clock and Day setup screens (page 9).



Use these buttons to select the maximum # of occupied periods to be used on any one day. Typically most installations use only Occupied 1.



Use these buttons to adjust the cool setpoint for Occupied 1.



Use these buttons to adjust the heat setpoint for Occupied 1.




Use these buttons to adjust the cool setpoint for Unoccupied.



Next Page

Time Period Programming

Press **NEXT** to advance




Unoccupied 85 COOL HEAT 55





Use these buttons to adjust the cool setpoint for Unoccupied.

Press **NEXT** to advance




M occupied1





Use these buttons to select the day you would like to program for the Occupied 1 time period.

Press **NEXT** to advance




7:00 AM occupied1 Start





Use these buttons to adjust the start time for the Occupied 1 time period.

Press **NEXT** to advance




6:00 PM occupied1 Stop





Use these buttons to adjust the stop time for the Occupied 1 time period.

Press **NEXT** to advance



YES occupied1



Use these buttons to select Occupied 1 to run on this day (YES), or not to run on this day (NO).

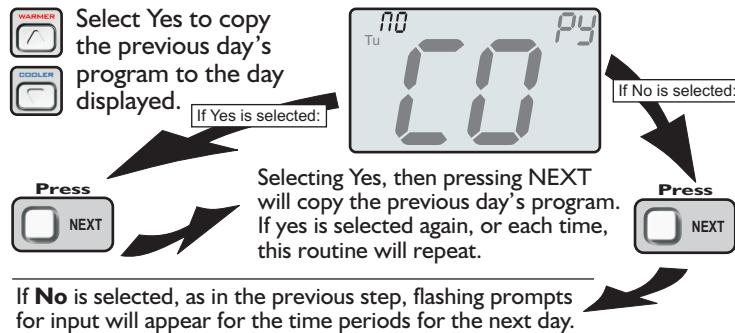
NO

Next Page

Time Period Programming

Copying the Program

The copy command becomes available after the maximum # of occupied periods are programmed in a day. This example uses only one occupied period.



After programming for all seven days is complete, press the PROGRAM button to leave the Setup screens. If no buttons are pressed, the display will leave the setup screens after 30 seconds.

PROGRAMMING TIPS

- ☛ If only the Occupied 1 period is selected in the first programming step (page 11), Occupied 2 & 3 programming steps are skipped. Furthermore, if Occupied 2 is selected, Occupied 3 programming steps are skipped.
- ☛ Heat & Cool setpoints for Occupied 1 are the same for every day of the week. If desired, Heat & Cool setpoints for Occupied 2 & 3 can be adjusted differently for each 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.
- ☛ If one occupied period starts and stops within another occupied period the lower occupied # has priority. For example: If Occupied 3 is programmed to be on 24 hours, and Occupied 2 is programmed to run that day, then the Occupied 2 setting will take over for Occupied 3 between Occupied 2 start and stop times.

Time Period Programming

After you have completed setting the time period programming, you have two options:

- 1) Run the time period program by pressing the PROGRAM button two times.



or,

- 2) Do not run the time period program by pressing the PROGRAM button one time. The thermostat will operate as a manual heat, cool or auto thermostat.



OVERRIDING THE PROGRAM

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 1 comfort settings for 30 minutes. The remaining Override time will alternate with the clock. The Override timer can be set up to a maximum of four (4:00) hours, in increments of 30 minutes. If the timer has been set for the maximum time, the next press of the OVERRIDE button will reset the timer, returning the thermostat to the correct time period program for the day.

Pressing the MODE button will also reset the Override timer, returning the thermostat to the correct time period program for the day.

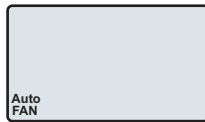
Occupied Operation - During programmed, occupied periods, a press of the OVERRIDE button will force the thermostat into an unoccupied period for the remainder of the day. During this forced unoccupied period the OVERRIDE button will operate as described in the Unoccupied Operation section (see above).

Advanced Setup

This is normally done by the installer at initial installation.

Press the PROGRAM button to enter the Advanced Setup. When the clock is flashing, press the NEXT button for 5 seconds. Do not release the button until this screen appears.

Press NEXT to advance



Use these buttons to select fan operation. **On** for continuous operation. **Auto** for heating or cooling operation only.

Press NEXT to advance



Select backlight operation when a button is pressed: **ON**: Light continuously. **OFF**: Light for 8 seconds after a button press.

Press NEXT to advance



Use these buttons to adjust the deadband from 1 to 6 degrees (page 17).

Press NEXT to advance



Use these buttons to adjust the minimum **difference** between cooling & heating setpoints. (0° - 6°)

Continued

Press NEXT to advance




Use these buttons to adjust the Cycles Per Hour from 2 to 6.
d = no limit (zoning)
d l = d + no compressor lockout (page 17).

Press NEXT to advance




Use these buttons to select thermostat operation in degrees F or C.

The following three setup steps are 'Read Only' and may only be set with the jumpers on the circuit board of the thermostat (see Installation Instructions).

Press NEXT to advance




OFF = Gas Electric operation
ON = Heat Pump operation

Press NEXT to advance




Indicates that the thermostat jumper is set for an **O** reversing valve (energize in cooling) or a **b** reversing valve (energize in heating).

Press NEXT to advance




ON indicates that the thermostat jumper is set for Electric Heat operation, or **OFF** for Gas/Electric or Heat Pump operation (page 18).

Press the PROGRAM button to exit Advanced Setup.

About Advanced Features & Operation



CYCLES PER HOUR - The Cycles Per Hour setting (page 16) monitors 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 temporarily overridden by pressing the WARMER or COOLER button.



DEADBAND OPERATION - Controls up to two Heat and two Cool stages.

The **1st Stage** of heat or cool is turned on when:

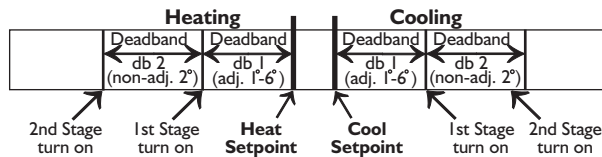
- (A) The temperature spread from the setpoint is equal to or greater than: *the setpoint plus the 1st stage deadband (page 14)*. This 1st stage deadband is adjustable from 1-6 degrees and the default is two degrees.

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

- (A) The 1st Stage has been on for a minimum of *two minutes*.

and

- (B) The temperature spread from the setpoint is equal to or greater than: *the setpoint plus the 1st stage deadband (page 14)*, plus the *2nd stage deadband*. This 2nd stage deadband is fixed at two degrees and is not adjustable.



HEAT/COOL DIFFERENTIAL - The Heat and Cool setpoints will not be allowed to come any closer to each other than the minimum difference on page 15. 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 to the desired setpoint. Press the MODE button until only the cool setpoint is displayed; adjust to the desired setpoint. Press the MODE button again to enter the Auto-changeover mode where both the heat and cool setpoints are displayed.

About Advanced Features & Operation



ENERGY SAVING SMART FAN - This feature allows the fan to run continuously during Occupied 1, 2 or 3 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, enter Advanced Setup and program the fan to run continuously (page 15).



ELECTRIC HEAT - Selecting Electric Heat (page 16), 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.



KEYPAD LOCKOUT - To prevent unauthorized use of the thermostat, the front panel buttons may be disabled. To disable, or 'lock' the keypad, press and hold the NEXT button. While holding the NEXT button, press the OVERRIDE button for five seconds. The LOCKED icon will appear on the display, then release the buttons.



To **unlock** the keypad, press and hold the NEXT button. While holding the NEXT button, press the OVERRIDE button for five seconds. The LOCKED icon will disappear from the display, then release the buttons.

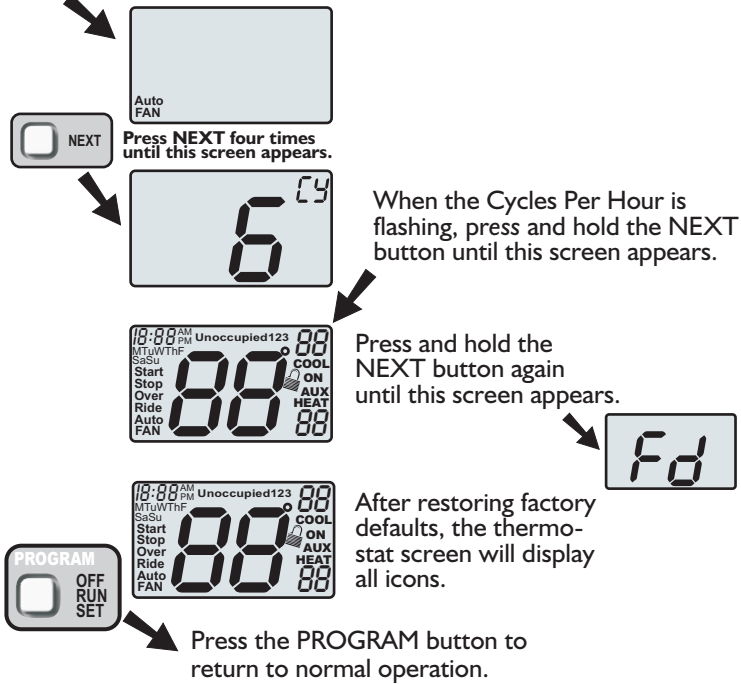
CAUTION



Factory Defaults

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

Press the **PROGRAM** button to enter the **Advanced Setup**.
When the clock is flashing, press the **NEXT** button for 5 seconds. Do not release the button until this screen appears.



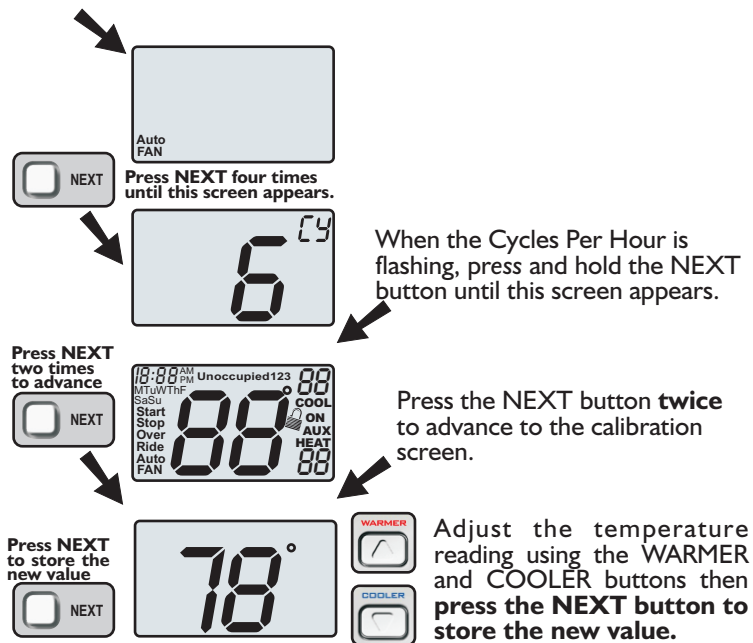
CAUTION



Calibration

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

Press the PROGRAM button to enter the Advanced Setup. When the clock is flashing, press the NEXT button for 5 seconds. Do not release the button until this screen appears.



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.

Programming Worksheet

see Page 10

DAY	PERIOD	START TIME	COOL	HEAT	
M O N D A Y	Unoccupied				
	Occupied 1				
	Occupied 2				
	Occupied 3				
T U E S D A Y	Unoccupied				<i>Copy Mon → Tue</i>
	Occupied 1				<input type="checkbox"/> No
	Occupied 2				<input type="checkbox"/> Yes
	Occupied 3				
W E D N E S D A Y	Unoccupied				<i>Copy Tue → Wed</i>
	Occupied 1				<input type="checkbox"/> No
	Occupied 2				<input type="checkbox"/> Yes
	Occupied 3				
T H U R S D A Y	Unoccupied				<i>Copy Wed → Thu</i>
	Occupied 1				<input type="checkbox"/> No
	Occupied 2				<input type="checkbox"/> Yes
	Occupied 3				
F R I D A Y	Unoccupied				<i>Copy Thu → Fri</i>
	Occupied 1				<input type="checkbox"/> No
	Occupied 2				<input type="checkbox"/> Yes
	Occupied 3				
S A T U R D A Y	Unoccupied				<i>Copy Fri → Sat</i>
	Occupied 1				<input type="checkbox"/> No
	Occupied 2				<input type="checkbox"/> Yes
	Occupied 3				
S U N D A Y	Unoccupied				<i>Copy Sat → Sun</i>
	Occupied 1				<input type="checkbox"/> No
	Occupied 2				<input type="checkbox"/> Yes
	Occupied 3				



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