

Engineered
Comfort
by Nailor Industries Inc.



7-Day Programmable Fan Coil Thermostat

3 Speed Fan Control
4 pipe systems

(NC Chilled Water, NO Hot Water)

**User Manual
and Installation
Instructions**

model: **T1075N**

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IMPORTANT

Follow Installation Instructions carefully. Disconnect Power to the Heater/Air Conditioner before removing the old thermostat and installing the new thermostat.

North American Emissions Compliance

United States

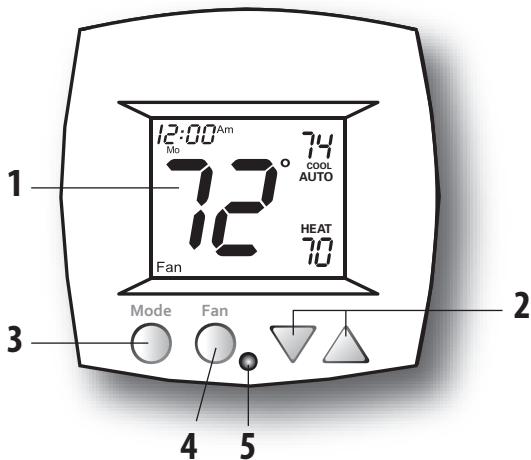
This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when this equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his/her own expense.

Canada

This Class (A) digital apparatus meets all the requirements of the Canadian Interference-Causing Equipment Regulations.

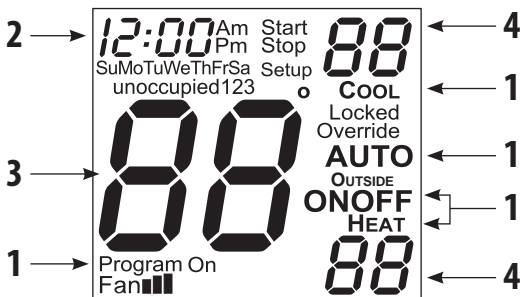
Cet appareil numérique de la Classe (A) respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Front Panel



- 1 Liquid Crystal Display with *Thermoglow*
- 2 Up/Down Buttons
- 3 Mode Button
- 4 Fan/Override Button
- 5 Heat or Cool Indicator
Heat = Red, Cool = Green

Display



1 Mode Indicators - Page 7-10

Selects the operational mode of the equipment.

HEAT - Indicates the heating mode.

COOL - Indicates the cooling 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 with Day of the Week - Page 6

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

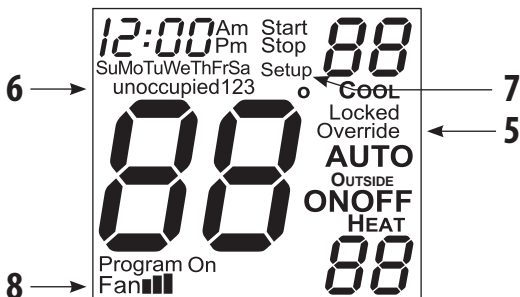
3 Room Temperature Display

Indicates current room temperature.

4 Desired Set Temperature - Page 11

Indicates desired room temperature(s).

Display



5 **Override** icon - Page 9 & 18

Indicates the program is currently being overridden for up to six hours.

6 **Occupied & Unoccupied** icons - Pages 10-14


Indicates the program number: Occupied 1, 2, 3, or Unoccupied.

7 **Setup** icons - Pages 15-19


Indicates the thermostat is in the advanced setup mode.

8 **Fan** icon - Page 8

Indicates fan operation.

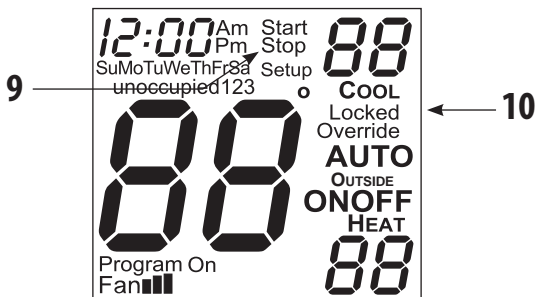
Fan  = low speed

Fan  = medium speed

Fan  = high speed

When only the **Fan** icon is displayed, the fan is in the Auto mode and will run only when necessary to heat or cool.

Display



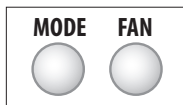
9 Start & Stop icon - Page 14

Appear when programming occupied time periods.

10 Locked icons - Pages 27

Indicates keypad has been locked.

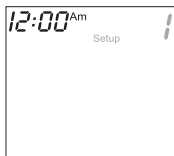
Quick Start *Set the Clock and Go*



Press the MODE and FAN buttons at the same time for two seconds to enter Setup screens.

Setting the Clock

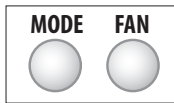
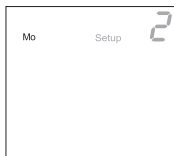
Tip: To change hours quickly, press and hold the FAN button and press the UP or DOWN button.



During Setup and Programming: Pressing the UP or DOWN button will modify the flashing selection.

Setting the Day

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



Press



To adjust the Clock or Day, Use



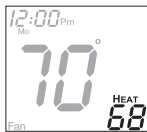
The thermostat is preprogrammed from the factory to operate a 4 pipe system without the need for further programming.

Selecting the Heat or Cool Mode 4-Pipe Operation

Select Mode by Pressing the MODE Button

Heating Only

The **HEAT** setting indicates the temperature that the room has to fall to before the heating source will turn on to heat the room.



Press

MODE

Cooling Only

The **COOL** setting indicates the temperature that the room has to rise to before the cooling source will turn on to cool the room.



Press

MODE

Heating or Cooling

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

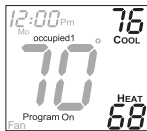


Press

MODE

Time Schedule for Heating or Cooling

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



Press

MODE

Off

OFF indicates both heating and cooling are turned off.



Basic Operation

Selecting Your Desired Temperature (adjusting the setpoints)



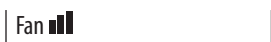
AUTO OR PROGRAM MODE

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



Adjust the desired set temperature with the buttons

Fan Operation



Pressing the **FAN** button will run the fan in low, medium, or high speed continuously (*see below and page 25*).

When only the **Fan** icon is displayed, the fan is in the Auto mode and will run only when necessary to heat or cool (*see below and page 25*).



Low Speed
Fan ■



Medium Speed
Fan ■■



High Speed
Fan ■■■



Auto
Fan

Note: If the thermostat is placed in the Off mode, the fan will de-energize (*see page 7*).

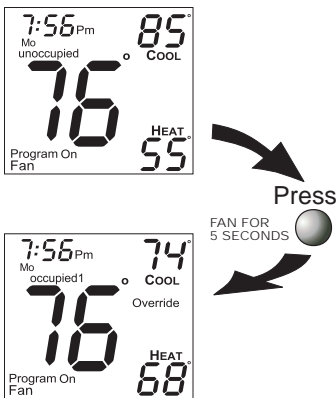
Basic Operation

Overriding the Daily Schedule

Pressing and holding the FAN button for 5 seconds may be used to interrupt the normal time schedule programming of the thermostat. The override feature may only be used when the thermostat is running the time schedule, in Program On mode.

Unoccupied Operation - During programmed, unoccupied periods pressing and holding the FAN button for 5 seconds will temporarily force the thermostat into Occupied 1 comfort settings for one to six hours (*step #14, page 18*). The Override icon will be illuminated during this time. If you press and hold the FAN button while the thermostat is currently overriding the daily schedule, this will reset the timer, returning the thermostat to the correct time period program for the day.

Occupied Operation - Pressing and holding the FAN button for 5 seconds during a programmed Occupied time period will have no effect.



Programming

Occupied & Unoccupied Periods

MODE



Press the **MODE** button. While holding **MODE**, press the **UP** button for two seconds to enter time period programming.



Select the maximum # of occupied periods to be used on any one day.



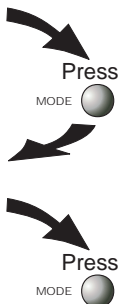
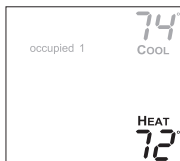
Typically, most installations use only Occupied 1. (1,2 or 3)



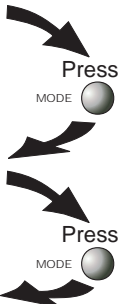
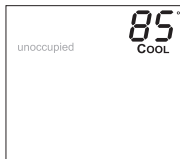
Adjust the cooling setpoint for Occupied 1. (35° - 99°)



Adjust the heating setpoint for Occupied 1. (35° - 99°)



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



Continued

Programming

Occupied & Unoccupied Periods



Adjust the heating setpoint for Unoccupied periods. (35° - 99°)



Select day of the week for Occupied 1. (Mo - Su)



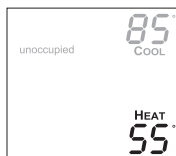
Adjust the start time for Occupied 1.



Adjust the stop time for Occupied 1.

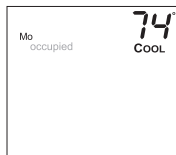


Select Occupied 1 to run on this day (On), or not to run on this day (Off).



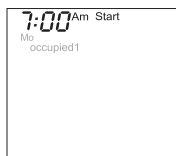
Press

MODE



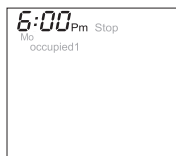
Press

MODE



Press

MODE



Press

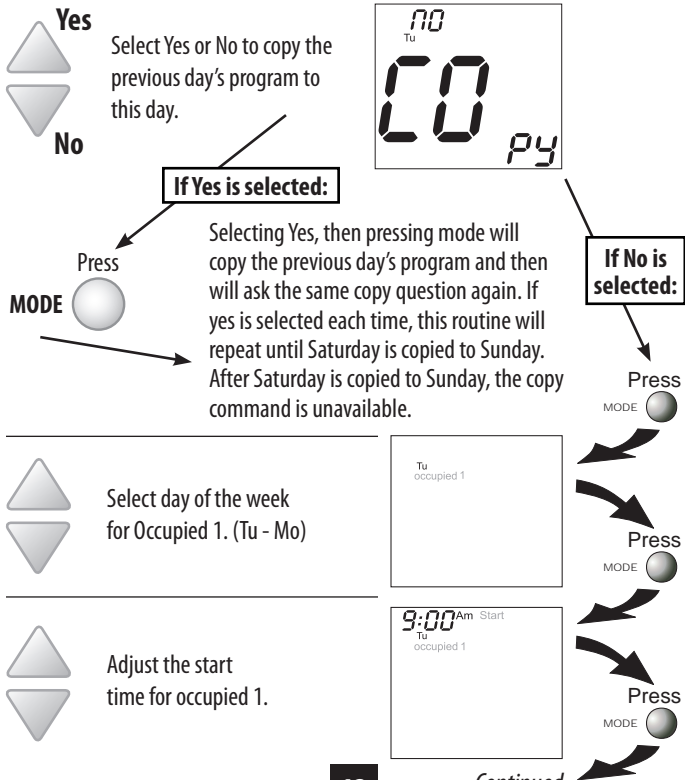
MODE



Press

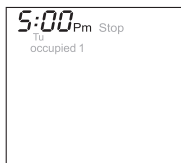
MODE

The copy command becomes available after the maximum # of occupied periods are programmed in a day. This example uses 1 as the maximum occupied periods ever programmed in one day.





Adjust the stop time for Occupied 1.



On

Select Occupied 1 to run on this day (On), or not to run this day (Off).

Off

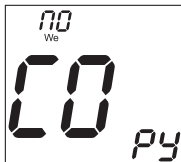


Yes

Select Yes or No to copy the previous day's program to this day.

No

If Yes is selected:



Press

MODE

If No is selected:

Press

MODE



Selecting Yes, then pressing mode will copy the previous day's program and then will ask the same copy question again. If yes is selected each time, this routine will repeat until Saturday is copied to Sunday. After Saturday is copied to Sunday, the copy command is unavailable.



If no is selected, as in previous steps flashing prompts for input will appear for start and stop times for Occupied 1. If more than one occupied period was selected on page 10, then cool/heat setpoints, and start/stop times for additional occupied periods will be prompted.

PROGRAMMING NOTES

You will be prompted to enter both heat and cool setpoints even if the thermostat is configured for heat only, or cool only.

- If only Occupied 1 is selected, the Occupied 2 & 3 steps will be skipped. Further, if only 2 occupieds are selected, the Occupied 3 steps will be skipped.
- Heat & Cool setpoints for Occupied 1 are the same for each day. Heat & Cool setpoints for Occupied 2 & 3 can be adjusted differently for each day, if desired.
- **If the start time is set for later 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: 9:00pm start, 8:00am stop, on MTWTF. This program will run from 12:00am MTWTF to 8:00am MTWTF and again from 9:00pm MTWTF to 12:00pm MTWTF.*
- 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 aren't necessary for unoccupied.
- If the **same** start and stop times are programmed in 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 Occupied 2 settings will take over from Occupied 3 between Occupied 2 start and stop times.
- When the time period programming for Unoccupied is in the Override mode (see page 9), the Heat & Cool setpoints for Occupied 1 are used.

Advanced Setup

MODE



FAN



Press the MODE and FAN buttons at the same time for 10 seconds to enter Advanced Setup screens.

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



Adjust the time of day.
Tip: To change hours quickly, press and hold the FAN button and press the UP or DOWN buttons.



Select the day of the week.

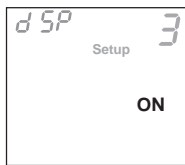
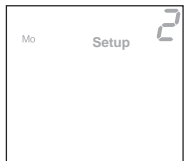
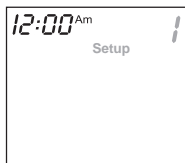
Display On



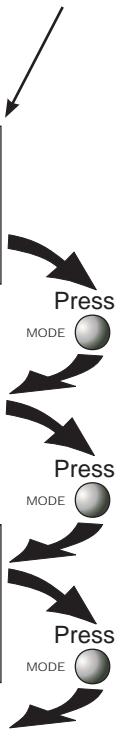
Select Display operation:
On = Full Display
Off = Minimal Display

Display Off

See page 25



Continued



Advanced Setup



Select display operation:

1 = Single Setpoint

2 = Dual Setpoint *See page 29*



Note: When Single Setpoint is selected, the heating or cooling setpoint will always be displayed. To display the room temperature, press and hold the MODE button for two seconds. The degree icon will blink when the large number is displaying room temperature and will remain solid when displaying the heating or cooling setpoint.

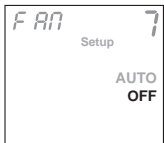


On Select operation when fan is in the Auto mode:

On = continuous low speed fan

Off = only energize during a heating or cooling cycle.

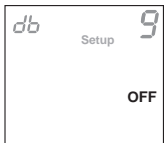
See Page 25, Note #2



On

See page 22 for further explanation
Adjust deadband for 1st Stage

Off

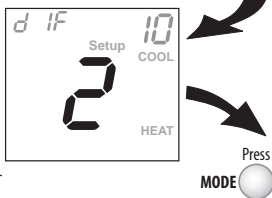


Continued

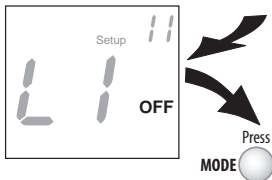
Advanced Setup



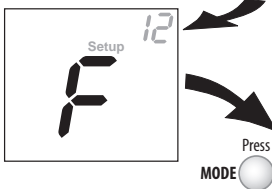
Adjust the minimum ***difference*** between cooling & heating setpoints.
(0° - 6°)



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

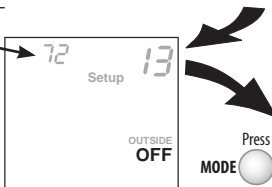


Select thermostat operation in degrees Fahrenheit or Celsius.



On Select sensor operation:
On - read only Duct sensor
Off - control to Duct sensor

Sensor Reading

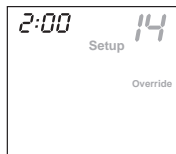


Continued

Advanced Setup



Adjust the amount of time
override will be active during
the unoccupied time period.
(0-6 hours)

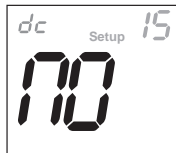


Dry Contact



NO = Normally Open
NC = Normally Closed

See Page 23



Continued

Advanced Setup

Occupied



Unoccupied

Select Dry Contact operation:
Occupied - the thermostat will enter the Occupied mode when the Dry Contact is closed.

Unoccupied - the thermostat will enter the Unoccupied mode when the Dry Contact is closed.



Step #17 only appears if step #16 = Unoccupied.

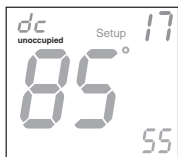
Unoccupied Setpoints



Off

Select Dry Contact Unoccupied operation:
Unoccupied - when the Dry Contact is closed, the thermostat will control to the Unoccupied setpoints

Off - when the Dry Contact is closed, the thermostat will turn off.



After programming is complete, press the MODE and FAN buttons at the same time for two seconds to leave the Setup screens. If no buttons are pressed, the display will leave the setup screens after 30 seconds.

Advanced Setup

Step#	Description	Range	Df
1	Time of Day	24 hour	12:00 am
2	Day of the Week	Mo - Su	Mo
3	Display Blanking	On / Off	On
4	Single or Dual Setpoint	1 / 2	2
7	Fan Auto Operation	On / Off	Off
9	Deadband/Temp. Swing 1st Stage	1° - 6°	2°
10	Minimum Heat/Cool Differential	0° - 6°	2°
11	Backlight Operation	On / Off	Off
12	Fahrenheit or Celsius	F / C	F
13	Duct Sensor Operation	On / Off	Off
14	Override Timer Length	0 - 6 hours	2 hours
15	Dry Contact Polarity	NO / NC	NO
16	Dry Contact Operation	Occupied/Unoccupied	Occupied
17	Dry Contact Setpoints	Unoccupied / Off	Unoccupied

Df = Factory Default Setting

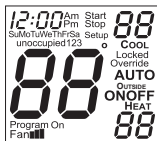
About Advanced Features & Operation

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.

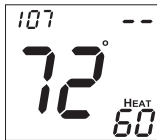
- 1 MODE** Place the thermostat in the OFF mode.



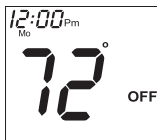
- 2 MODE** Press and hold the MODE button. While holding the MODE button, press and hold the DOWN button for 5 seconds. All icons will appear on the display.



- 3** Press the MODE button once. The thermostat temperature will be displayed and may be calibrated using the UP or DOWN button.



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

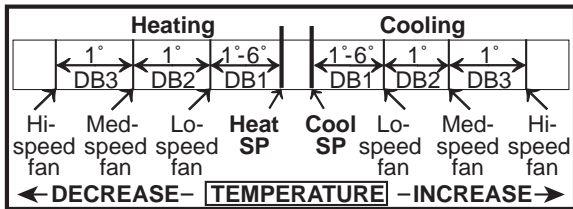
About Advanced Features & Operation

DEADBAND OPERATION - Controls one Heat and one Cool stage with a three speed fan (see below).

The **low speed fan** for heat or cool is turned on when: The temperature spread from the setpoint is equal to or greater than: *the setpoint plus the 1st stage dead-band (step #9, page 16)*. This 1st stage deadband is adjustable from 1-6 degrees and the default is two degrees.

The **medium speed fan** for heat or cool is turned on when: The temperature spread from the setpoint is equal to or greater than: *the setpoint plus the 1st stage deadband (step #9, page 16), plus the 2nd stage dead-band*. This 2nd stage deadband is fixed at one degree and is not adjustable.

The **high speed fan** for heat or cool is turned on when: The temperature spread from the setpoint is equal to or greater than: *the setpoint plus the 1st stage deadband (step #9, page 16), plus the 2nd stage deadband, plus the 3rd stage deadband*. This 3rd stage deadband is fixed at one degree and is not adjustable.



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.

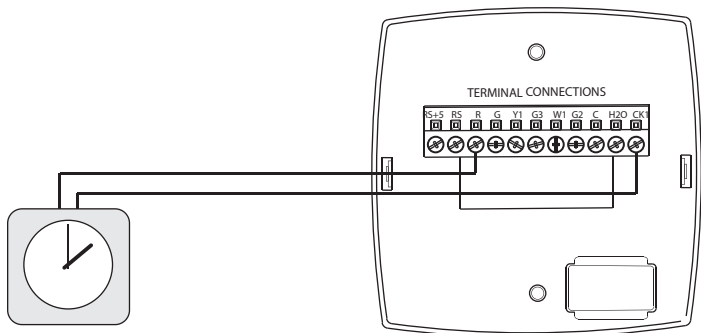
About Advanced Features & Operation

DRY CONTACT SWITCH - This feature allows an external device such as a Central Time Clock, Occupancy Sensor, or a Telephone activated device to force one or more thermostats into an Unoccupied mode (*steps #15 and 16, page 18-19*).

When the CK1 and R terminals are shorted together, and the thermostat is programmed for Unoccupied operation (*step #16, page 19*), the thermostat will be forced into Unoccupied setpoints and the Unoccupied icon will appear on the display.

Note: *The thermostat must be in Program On mode for this feature to have any effect.*

Important Note: *For control of multiple thermostats by one source, refer to 'Potential Phasing Problems' on page 31.*



Connect wires to a time clock or other device to force the thermostat into Occupied 1 or Unoccupied.

About Advanced Features & Operation

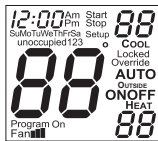
FACTORY DEFAULTS - If, for any reason, you desire to return all the stored settings back to the factory default settings, follow the instructions below.

WARNING: *This will reset all Time Period and Advanced Programming to the default settings. Any information entered prior to this reset will be permanently lost.*

- 1 MODE** Place the thermostat in the OFF mode.



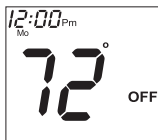
- 2 MODE** Press and hold the MODE button. While holding the MODE button, press and hold the DOWN button for 5 seconds. All icons will appear on the display.



- 3 FAN** After all of the icons appear, release the MODE and DOWN 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 **twice** to return to normal operation.



About Advanced Features & Operation

FAN OPERATION - Fan operation is available in four different modes:

Fan: When only the fan icon is displayed this indicates that (1) the fan is in the Auto mode, (2) the fan will only energize during a heating or cooling cycle, and (3) the fan will modulate fan speeds based on temperature demand.

Fan ■, Fan ■■, or Fan ■■■: Pressing the FAN button will cause the low, medium, or high speed fan icon to appear (*see page 8*), indicating that the fan will run continuously. The fan will de-energize if the thermostat is placed in the Off mode or a dry contact forced unoccupied time period (*see page 23*).

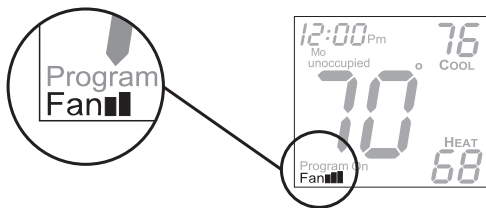
Notes:

- 1) If a Duct sensor is connected to this thermostat, then the fan should be programmed for continuous operation (step #7, page 16). This will provide airflow over the Duct sensor and provide more accurate temperature readings.*
- 2) If the fan is programmed for continuous operation (step #7, page 16), the low speed fan will run continuously when the fan is in the Auto mode, but will de-energize if the thermostat is placed in the Off mode.*

MINIMAL DISPLAY - When the thermostat is programmed for a minimal display (*step #3, page 15*), a blank screen will appear. When a button is pressed the full, normal display will appear for 10 seconds.

About Advanced Features & Operation

ENERGY SAVING SMART FAN - This feature automatically de-energizes the fan during an Unoccupied time period, except when necessary to heat or cool.



Note: *The fan will not de-energize during an Unoccupied time period if it has been programmed for continuous operation (step #7, page 16).*

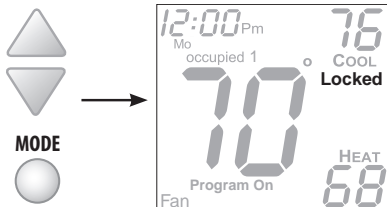
HEAT/COOL DIFFERENTIAL - The Heat and Cool setpoints will not be allowed to come any closer to each other than the value set in Advanced Setup step #10, on page 17. This minimum difference is enforced during Auto-changeover and Program On operation.

Note: *To increase the spread between the heating and cooling setpoints in the Auto-changeover mode press the MODE button until only the heat setpoint is displayed and adjust to the desired setpoint. Press the MODE button until only the cool setpoint is displayed and 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

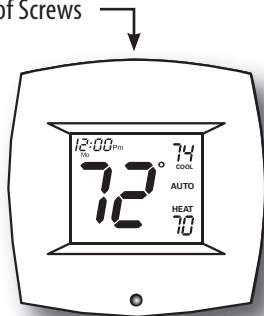
KEYPAD LOCKOUT - To prevent unauthorized use of the thermostat, the front panel buttons may be disabled. To disable, or 'lock' the keypad, press and hold the MODE button. While holding the MODE button, press the UP and DOWN buttons together. The LOCKED icon will appear on the display, then release the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

Press all three buttons in the order outlined above for keypad lockout



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

LOCKING COVER w/Tamper Proof Screws



About Advanced Features & Operation

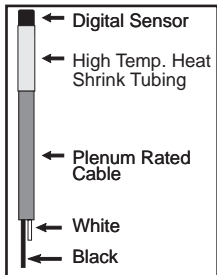
OUTSIDE SENSOR - To view an Outside Sensor (*step #13, page 17*), enter the Advanced Setup by pressing and holding the MODE button. While holding MODE, press the FAN button for 10 seconds to enter Setup screens. Advance to setup step #13 by repeatedly pressing the MODE button. If an optional outside sensor is connected, the outside temperature will appear in the clock display.

DUCT SENSOR (P/N EC0402) - The thermostat is programmed from the factory to automatically recognize when a Duct Sensor is connected (*page 17*).

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

IMPORTANT: Do not 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.

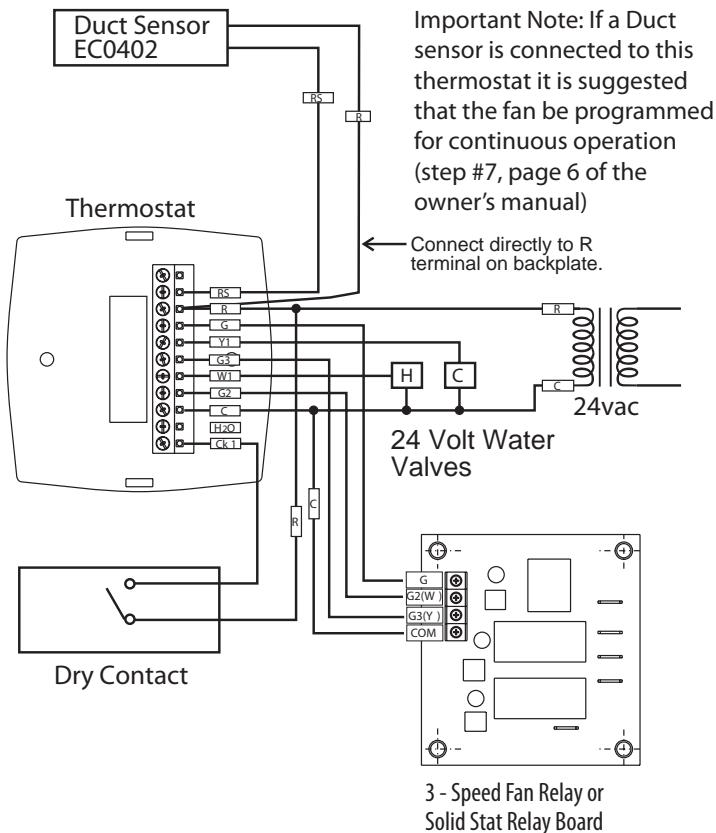
See the Duct Sensor instructions for further details.



About Advanced Features & Operation

SINGLE SETPOINT BEHAVIOR - When configured for Single Setpoint operation (*step #4, page 16*), the degree icon will blink when the large number is displaying room temperature and will remain solid when displaying the heating or cooling setpoint. In the Auto mode the deadband is enforced both above and below the setpoint. To avoid short cycling, a deadband of at least two degrees is recommended (*step #9, page 16*). To display the room temperature press and hold the MODE button for two seconds. Release the MODE button to return to the normal display.

Sample Wiring Diagram



Sample Wiring Diagram



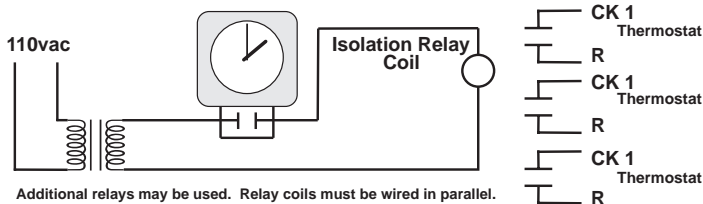
Auxiliary Input Control and Multiple HVAC Control Potential Phasing Problems



When using the auxiliary input (CK1 & R) or controlling multiple HVAC units with a single thermostat, it is possible to encounter transformer phasing problems that will interfere with thermostat operation. Connecting transformers that are not phased correctly may result in a direct short, which could damage transformers and/or the thermostat. Phasing problems are likely if the units share a common ground with secondary grounded transformers.

SOLUTION: If possible, phase all HVAC units together. If phasing is impractical, isolation relays may be used to isolate the transformers. To isolate the auxiliary input, use a separate transformer for the auxiliary control device, usually a time clock. Connect the device to an isolation relay coil. Connect one set of isolated contacts to each thermostat at **CK1** and **R**. See diagram A.

Diagram A- Auxiliary Control



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.



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