

Owner's Manual

Model
S1-THEH21NS



Heat Pump Non-Programmable | Digital Thermostat

Use with most
Heat Pump systems:
1-Heat, 1-Cool
2-Heat, 1-Cool



- Control up to 2-Heat & 1-Cool
- Battery or System Powered
- Auxiliary Heat Indicator
- Fahrenheit or Celsius

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Safety Warnings

P/N S1-THEH21NS

CAUTION

Follow *Installation Instructions* carefully.

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

**WARNING****CAUTION**

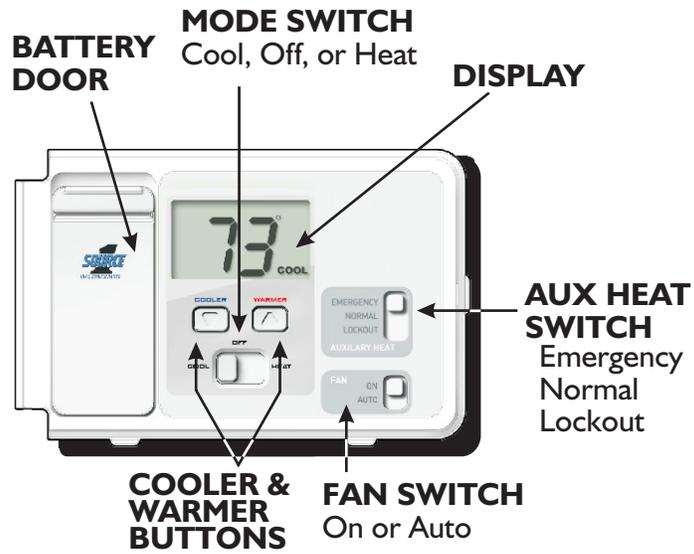
The two Alkaline “AA” batteries must be replaced at least once every 12 months to ensure proper operation. The “Low Battery” icon will appear on the thermostat display when it is time to replace the batteries. If the thermostat is connected to 24v power, the batteries should still be installed, but are not required.

When “Low Battery” is displayed the batteries must be replaced immediately. The manufacturer cannot be liable for improper operation of the thermostat if the batteries are not immediately replaced.

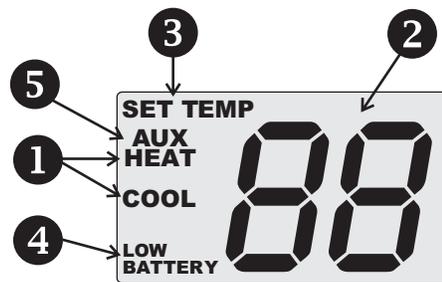
Annual battery replacement is especially critical in locations subject to freezing temperatures. The thermostat will be unable to turn on the heating system if the batteries are exhausted.

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.

Front Panel

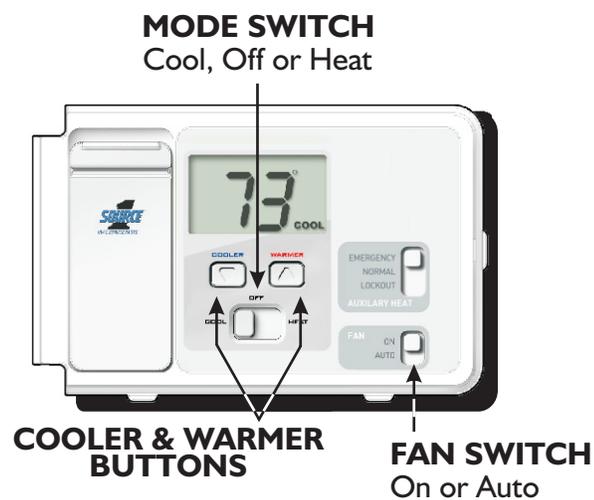


Display



- 1** Heat and Cool indicators.
In normal operation, Heat or Cool appears, depending on the Mode Switch position. When heat or cool is energized, the Heat or Cool indicator will flash.
- 2** Current room or set temperature.
- 3** Desired set temperature indicator.
When this indicator is on, the large numbers represent the desired room temperature. Pressing the COOLER or WARMER button during normal operation will cause the large numbers to switch from the current room temperature to the desired set temperature.
- 4** Indicates battery life is low; it is recommended to replace the batteries at this time.
- 5** Indicates auxiliary heat is energized.

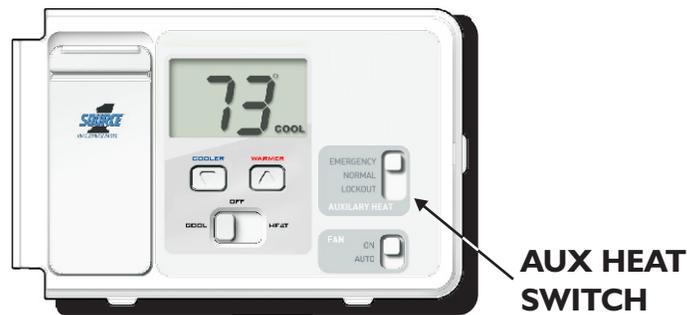
Normal Operation



Operation

- 1 Select Cool or Heat with the Mode Switch.
- 2 Normally leave the fan switched to Auto.
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 or WARMER buttons.

Aux Heat



Emergency - Disables all compressor functions* and energizes only Aux Heat to satisfy the heat demand.

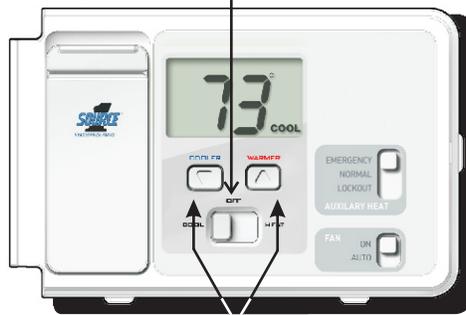
Normal - Aux Heat is allowed to run, if necessary, along with the heat pump to satisfy the heat demand.

Lockout - Aux Heat will never turn on regardless of the heat demand.

* When the Aux Heat switch is in the Emergency position the compressor will also be locked out during cooling operation.

Fahrenheit or Celsius

MODE SWITCH
Cool, Off or Heat



**COOLER & WARMER
BUTTONS**

Operation

- 1 Select Off with the Mode Switch.
- 2 Press and hold the COOLER and WARMER buttons at the same time until the temperature is displayed in degrees Celsius.
- 3 Repeat this process to display the temperature in degrees Fahrenheit.

Preparation



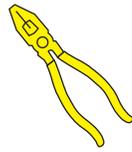
Proper installation of the thermostat will be accomplished by following these step by step instructions. If you are unsure about any of these steps, call a qualified technician for assistance.



These tools will be required:



*Flat Blade
Screwdriver*



*Wire cutter
& Stripper*



Make sure your Heat Pump is working properly before beginning installation of the thermostat.



Carefully unpack the thermostat. Save the screws and instructions.



Turn off the power to the Heat Pump system at the main fuse panel.

Remove & Replace Old Thermostat



Remove the cover of the old thermostat. If it does not come off easily check for screws.



Loosen the screws holding the thermostat base or subbase to the wall, and lift away.



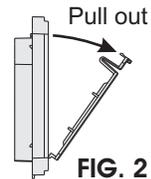
Disconnect the wires from the old thermostat. Tape the ends of the wires as you disconnect them, and mark them with the letter of the terminal for easy reconnection to the new thermostat.



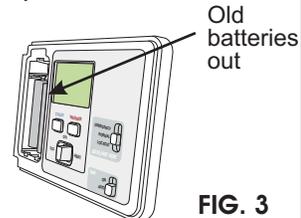
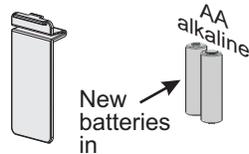
Keep the old thermostat for reference purposes, until your new thermostat is functioning properly.

Battery Replacement

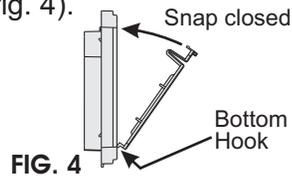
- 1 The batteries are easily accessible from the battery slot located on the front of the thermostat (fig. 1). To open the battery slot, press down on the battery cover (fig. 1) and pull out (fig. 2).



- 2 Remove the old batteries and replace with the new AA alkaline batteries (fig. 3).



- 3 Place the bottom hook of the battery cover into the slot and snap closed (fig. 4).



The batteries must be replaced immediately when the thermostat displays the Low Battery icon.

Wire Connections



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

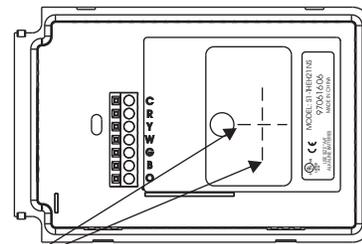
| Wire from the old thermostat terminal marked | Function | Install on the new thermostat connector marked |
|--|----------------------------------|--|
| C | Common | C (optional) |
| Rc, R, M, Vr, A | Power | R |
| Y1 or Y | Cooling | Y |
| W1, W or H | Auxiliary Heat | W |
| G or F | Fan | G |
| B | Rev. Valve (Energize to Heat) | B |
| O | Rev. Valve (Energize to Cool) | O |

Thermal Insulating Sheet

A label is provided on the backplate that prevents drafts originating inside the wall from entering the thermostat.

These drafts, left unchecked, may cause incorrect room temperature readings.

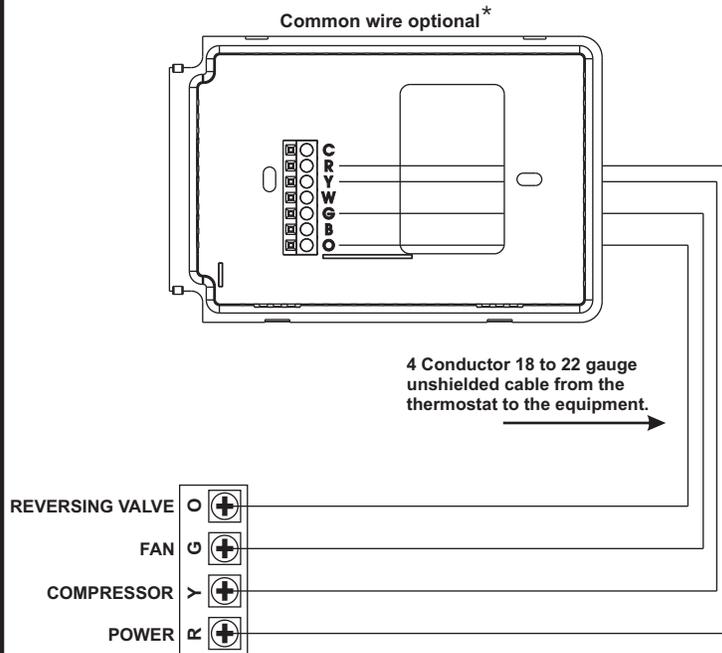
Please do not remove this label from the thermostat. Insert the wires through the slots provided in the label as shown in Fig. 1.



Wire Slots

Sample Wiring Diagrams

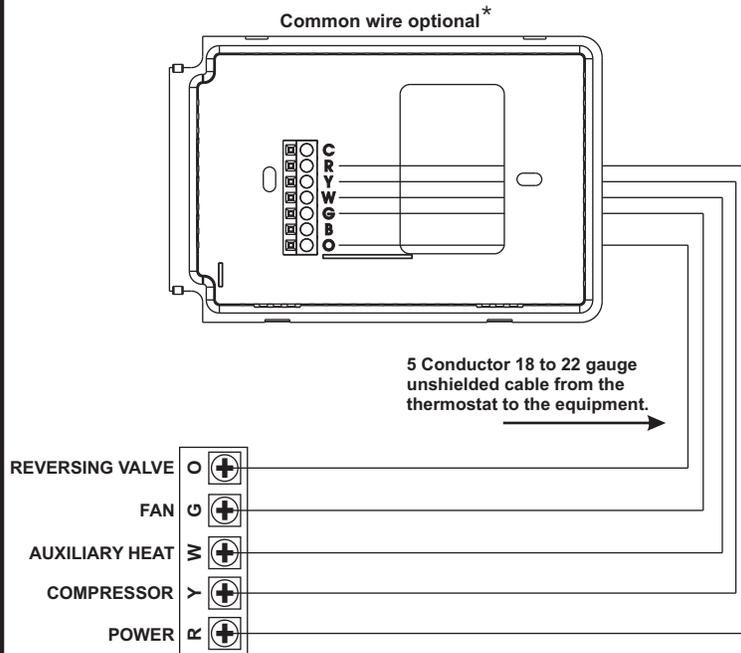
4 Wire, 1 Stage Cooling, 1 Stage Heat-Heat Pump with O reversing valve.
Residential Heat Pumps, split systems & package units, with no auxiliary heat.



* Common wire is optional in all installations. If a common wire is not used the thermostat must be powered by two AA alkaline batteries. These batteries must be replaced (page 11) each year or when the Low Battery indicator is displayed (page 3).

Sample Wiring Diagrams

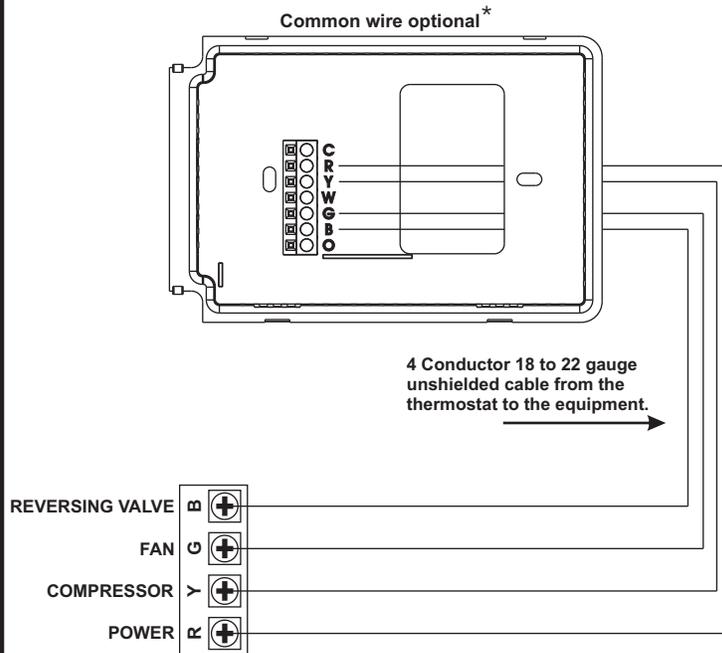
5 Wire, 1 Stage Cooling, 2 Stage Heat-Heat Pump with O reversing valve.
Residential Heat Pumps, split systems & package units, with auxiliary heat.



* Common wire is optional in all installations. If a common wire is not used the thermostat must be powered by two AA alkaline batteries. These batteries must be replaced (page 11) each year or when the Low Battery indicator is displayed (page 3).

Sample Wiring Diagrams

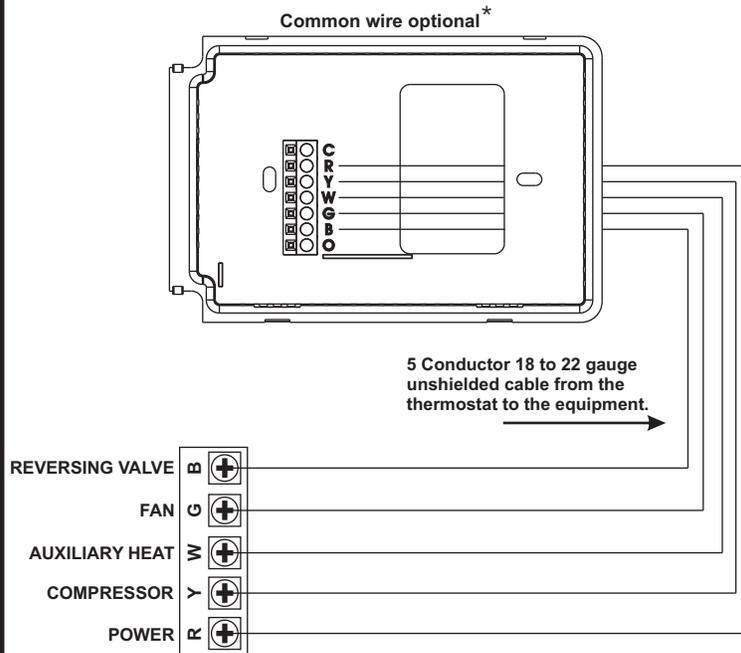
4 Wire, 1 Stage Cooling, 1 Stage Heat-Heat Pump with B reversing valve.
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Sample Wiring Diagrams

5 Wire, 1 Stage Cooling, 2 Stage Heat-Heat Pump with B reversing valve.
Residential Heat Pumps, split systems & package units, with auxiliary heat.



* Common wire is optional in all installations. If a common wire is not used the thermostat must be powered by two AA alkaline batteries. These batteries must be replaced (page 11) each year or when the Low Battery indicator is displayed (page 3).

Test Operation



Turn on the power to the Heat Pump.



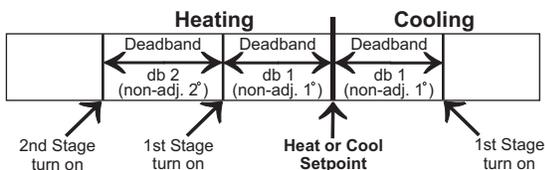
On the thermostat, slide the Mode Switch to **HEAT**. Press the COOLER or WARMER button until the set temperature is 10 degrees above room temperature. The HVAC unit should energize in the heating mode.

Note: *You may need to wait up to five minutes for heating to energize due to the compressor lockout feature. There is a two minute minimum run-time for first stage heating.*

On the thermostat, slide the Aux Heat Switch to the **NORMAL** position. The Aux Heat icon will appear indicating that the thermostat has energized Aux Heat (page 7).



TWO STAGE OPERATION - The 2nd stage of heat (auxiliary heat) is turned on when the room temperature is equal to or less than: *the setpoint minus the 1st stage deadband (one degree, non-adjustable), minus the 2nd stage deadband (two degrees, non-adjustable).*



Test Operation



On the thermostat, slide the Mode Switch to **COOL**. Press the COOLER or WARMER button until the set temperature is 10 degrees below room temperature. The HVAC unit should energize in the cooling mode (Page 6). **Note: You may need to wait up to five minutes for cooling to energize due to the compressor lockout feature.**



On the thermostat, slide the Mode Switch to **OFF**. Slide the Fan Switch to **Fan On**. The fan should turn on and run continuously (Page 6).

Trouble Shooting



SYMPTOM: The slide switches on the thermostat are very difficult to move.

CAUSE: The backplate of the thermostat is screwed too tightly into a wall that is not perfectly flat.

REMEDY: Loosen the screws holding the thermostat into the wall.



SYMPTOM: The Air Conditioning does not attempt to turn on.

CAUSE: The cooling setpoint is set too high, the Mode Switch is not set for Cool, the batteries are too weak, or the Aux. Heat Switch is set for Emergency.

REMEDY: Consult the Normal Operation section in this manual to:

- Lower the cooling setpoint (Page 6).
- Correct the Mode Switch position (Page 6).
- Replace the batteries (Page 10).
- Adjust the Aux Switch to Normal (page 7).



SYMPTOM: The fan does not turn on even though the compressor has energized.

CAUSE: The Fan Switch is not completely in the On or Auto position.

REMEDY: Slide the Fan Switch firmly into the On or Auto position.

Trouble Shooting



SYMPTOM: Aux Heat does not turn on.

CAUSE: The Aux Heat Switch is set for Lockout.

REMEDY: Consult the Aux Heat section of this manual to slide the Aux Heat Switch to Normal (Page 7).

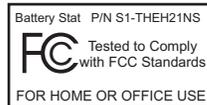


SYMPTOM: The Heating does not attempt to turn on.

CAUSE: The heating setpoint is set too high, the Mode Switch is not set for Heat, the batteries are too weak, or the Aux Heat Switch is set for Emergency.

REMEDY: Consult the Normal Operation section in this manual to:

- Raise the heating setpoint (Page 6).
- Correct the Mode Switch position (Page 6).
- Replace the batteries (Page 11).
- Adjust the Aux Switch to Normal (Page 7).



P/N 88-549
Rev. 4

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.