

# Aprilaire®

## ELECTRONIC THERMOSTATS



## MODEL 8355

7 Day Programmable  
2 Heat / 2 Cool  
Heat Pump

User's Manual  
Installation and  
Programming



### Important Safety Information Warning:

- Always turn off power at the main power source by unscrewing fuse or switching circuit breaker to the off position before installing, removing, cleaning, or servicing thermostat.
- Read all of the information in this manual before installing or programming this thermostat.
- This is a 24V AC low-voltage thermostat. Do not install on voltages higher than 30V AC.
- All wiring must conform to local and national building and electrical codes and ordinances.
- Do not short (jumper) across terminals on the gas valve or at the system control to test installation. This will damage the thermostat and void the warranty.

# Features

- Four pre-programmed setpoints for each day of the week.
- Fast and easy programming for setting all days of the week simultaneously.
- Energy efficient recovery.
- Residual cooling for added air-conditioning efficiency.
- Two “AA” ENERGIZER brand batteries retain program memory, even during power outages.
- Low battery indicator.
- Multi-colored LED indicators for system status.
- Zone compatible as master thermostat.
- Fahrenheit/Celsius display option.
- Programmable from 45°F (7°C) to 90°F (32°C).
- Accuracy within ±1 degree.
- Adjustable temperature differential: 1-3 degrees.
- Maintains summer and winter programming.

## Replacing Existing Thermostat

1. Turn off power to heating and cooling system.
2. Remove cover of old thermostat to expose wires. Do not disconnect wires. (Fig. 1)
3. Label wires per Table 1.

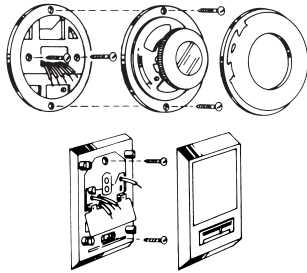
**TABLE 1**

<b>Old Label</b>	<b>New Label</b>	<b>Description</b>
R, V-VR or VR-R	R	24 VAC
Y, Y1 or M	Y1	Stage 1 Cooling/Heating Circuit
O or R	O	Reversing Valve (Cooling Mode)
B	B	Reversing Valve (Heating Mode)
G or F	G	Fan Contactor Circuit
Y2	Y2	2nd Stage Cooling Circuit
W1 or W2 or W-U	W2	2nd Stage Heating Circuit
L or X	L	System Monitor LED
E	E	Emergency Heating Circuit
C, X or B	C	24 VAC, Transformer Common Side

**NOTE:** This thermostat requires a 24V AC common wire for proper operation.

4. After labeling wires, remove wires from terminals.
5. Remove existing thermostat base from wall.
6. Refer to the following section for instructions on how to install thermostat.

FIGURE 1

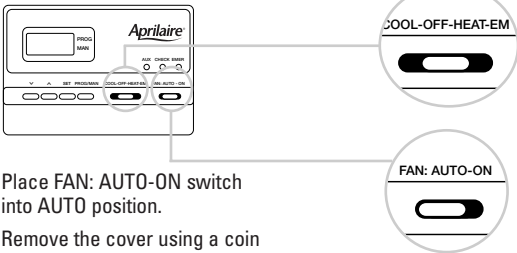


## Installing the Model 8355 Thermostat

**NOTE:** For new installations, mount thermostat on inside wall, 4-5 feet above the floor. Do not install behind a door, in a corner, near air vents, in direct sunlight, or near any heat or steam generating fixtures. Installation at these places will affect thermostat operation.

**IMPORTANT:** This thermostat is compatible with 100% lockout systems. To reset the system, turn thermostat to OFF position for at least 60 seconds.

1. Turn power off to the heating and cooling systems.
2. Place COOL-OFF-HEAT-EM in OFF position.



3. Place FAN: AUTO-ON switch into AUTO position.
4. Remove the cover using a coin or screwdriver.

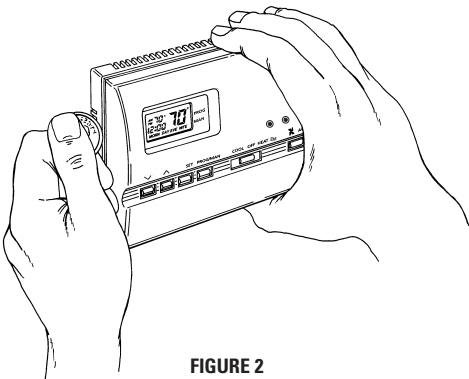
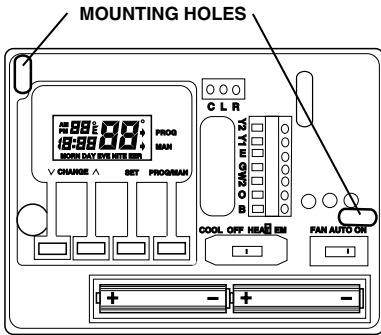


FIGURE 2

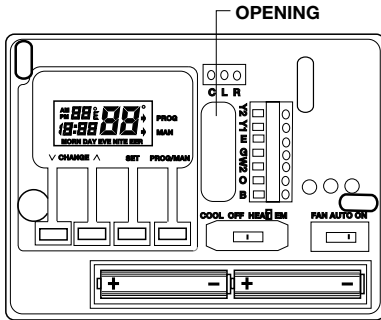
5. Place thermostat against the wall at desired location. Make sure wires will feed through opening on base of thermostat.
6. Mark placement of mounting holes. See Fig. 3. Set base aside.

FIGURE 3

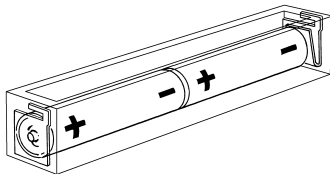


7. Drill the marked holes using a 3/16" drill bit. **NOTE: Enclosed plastic anchors do not require a drilled hole for drywall.**
8. Tap plastic anchors into the holes.
9. Align base with plastic anchors and feed wires through opening. See Fig 4.

FIGURE 4



10. Secure base to wall with supplied screws.
11. Connect wires to terminal strip. Refer to wiring diagrams on other side of this sheet. Make sure wire connections are secure.
12. Install two "AA" ENERGIZER brand batteries or equivalent into battery compartment. Be sure to match positive (+) ends of batteries with positive (+) battery terminals in the battery compartment.

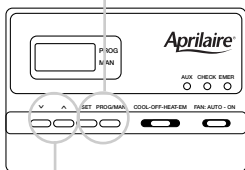


13. Replace cover onto thermostat by snapping into place.
14. Turn on power to system. Test thermostat as described in the following section.

# Programming Guide

## Set Time of Day, Day of Week, Temperature Differential, Residual Cooling

1. Press SET & PROG/MAN.  
Release simultaneously.



Press **V** or **^** to change  
Time of Day.

2. Press



3. Press



To Change Day of Week

4. Press



5. Press



To change 1st Stage  
Temperature Differential

<b>1=MO</b>
<b>2=TU</b>
<b>3=WE</b>
<b>4=TH</b>
<b>5=FR</b>
<b>6=SA</b>
<b>7=SU</b>

**NOTE:** The Temperature Differential is Factory preset at 1°. This means that whenever the room temperature changes by one full degree from the temperature setting, the system will turn on. If the system turns on too often, increase the temperature differential.

6. Press



7. Press



To change 2nd Stage  
Temperature Differential

**NOTE:** The Second Stage Temperature Differential is Factory preset at 2°.

8. Press



9. Press



To change  
Residual Cooling

**NOTE:** The residual cool feature will keep the system fan on for an additional 30, 60 or 90 seconds after the compressor cycles off in cool mode. The residual cool feature can only be set in the cool mode.

## Changing Fahrenheit (F) to Celsius (C)

Press and Hold SET



Press

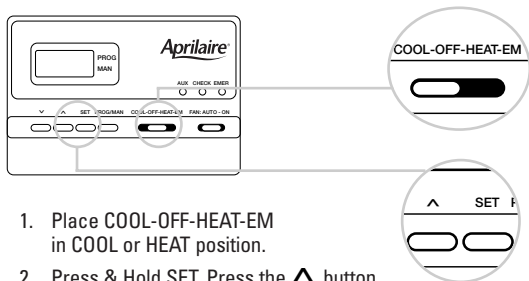



Release both simultaneously.

## Energy Efficient Recovery

The energy efficient recovery feature looks ahead up to 2 hours prior to the end of the setback (or set-up) period to begin monitoring performance and calculating when to turn on your system. It also determines whether the auxiliary heat or cool stages should be activated prior to setpoint time to meet your chosen setpoint temperature. The thermostat will indicate "EER" in the display when this program feature is active. The energy efficient recovery feature will lockout the auxiliary stages until 20 minutes prior to upcoming setpoint time to utilize the most energy efficient first stage. The auxiliary stages of heating and cooling will be available during this lock-out period to maintain the setpoint temperature should the system not be able to keep up with the heating or cooling demand.

## Simple Programming Mode

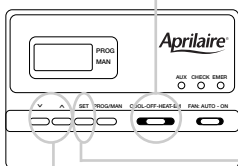


1. Place COOL-OFF-HEAT-EM in COOL or HEAT position.
2. Press & Hold SET. Press the  button. Release simultaneously.
3. The MORN indicator should be blinking. Program the Time-of-Day and the temperature as outlined in the Setting Daily Program section.

**NOTE:** Use this function to set all 7 days of the week with the same program.

## Setting Daily Programming

1. Place COOL-OFF-HEAT-EM in COOL position.



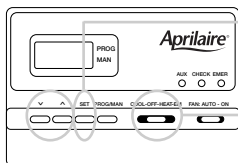
COOL-OFF-HEAT-EM

SET PF

2. Press SET button. The display will show a number from 1 to 7. This number represents the day of the week to be programmed. If programming individual days, press either **V** or **^** button to adjust the day of the week to program (1=Mon., 2=Tues., etc.).

3. Press SET. Press **V** or **^** to change MORN time.

4. Press SET.



SET PF

5. Press **V** or **^** to change MORN temperature.

6. Repeat Steps 2-5 for DAY, EVE, and NITE.

7. Press SET to finish this day.

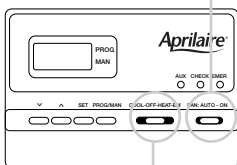
8. Repeat steps 2-7 above to program any other day of the week.

9. Shift COOL-OFF-HEAT-EM to HEAT position.

10. Repeat steps 2-7 to program HEAT (winter) settings.

## Begin Programmed Operation

1. Place FAN: AUTO-ON into AUTO.



FAN: AUTO-ON

2. Place COOL-OFF-HEAT-EM into COOL or HEAT, depending upon the season.

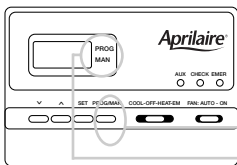
COOL-OFF-HEAT-EM

SUMMER

COOL-OFF-HEAT-EM

WINTER

3. Press PROG/MAN button until indicator is in PROG position.

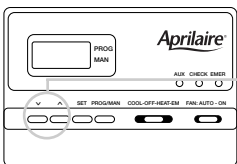


**NOTE:** While in the Cool or Heat mode, once the thermostat turns the system off, a built-in delay keeps the compressor from turning on for about 5 minutes. This protects the compressor. No additional time delay relay (delay on break) is necessary.

## Temporary Program Override

To temporarily increase or decrease temperature

Press **V** or **^**

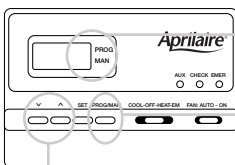


The thermostat will automatically return to the program at the next scheduled setting change or after four hours.

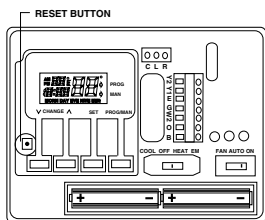
## Manual Operation

Manual operation allows continuous override of the program settings.

1. Press PROG/MAN until indicator is in MAN position.



2. Press **V** or **^** to adjust temperature settings.



## Reset

To reset the thermostat to factory pre-programmed conditions, press the reset button located directly to the right of the display.



## To Test Thermostat

**WARNING:** DO NOT SHORT (JUMPER) ACROSS TERMINALS OF GAS VALVE OR SYSTEM CONTROL TO TEST OPERATION. THIS WILL DAMAGE THE THERMOSTAT AND VOID YOUR WARRANTY.

**CAUTION:** Do not switch system to cool if the temperature is below 50°F (10°C). This can damage the air conditioning system and cause personal injury.

1. Place the COOL-OFF-HEAT-EM switch into the COOL position

COOL-OFF-HEAT-EM



2. Press the **▼** button until the temperature setting is at least 3 degrees below the room temperature. The air conditioning system should turn on within a few seconds.

**NOTE:** While in the Cool or Heat mode once the thermostat turns the system off, a built-in delay keeps the compressor from turning on for about 5 minutes. This protects the compressor. No additional time delay relay (delay on break) is necessary.

3. Put the COOL-OFF-HEAT-EM switch into the OFF position. The air conditioning system should turn off. The fan may continue to run for a short period of time.

COOL-OFF-HEAT-EM



COOL-OFF-HEAT-EM

4. Put the COOL-OFF-HEAT-EM switch into the HEAT position.



5. Press the **▲** button until the temperature setting is at least 3 degrees above room temperature. The heating system should turn on. The fan may not turn on immediately, depending upon the fan delay built into the furnace.

6. Put the COOL-OFF-HEAT-EM switch into the OFF position. The heating system should turn off. Once again, the fan may have a delay.

COOL-OFF-HEAT-EM



7. Put the FAN: AUTO-ON switch to the ON position. The blower fan should turn on.

FAN: AUTO - ON



8. Put the FAN: AUTO-ON switch to the AUTO position. The blower fan should turn off.

FAN: AUTO-ON



## LED Indicators

The LED indicators are used to indicate system activity. The AUX indicator illuminates during a call for second stage heating. The auxiliary stages are used to maintain comfort during extremes in weather conditions. If the AUX LED is illuminated too frequently during periods of moderate temperature, check the differential settings (page 5).

The CHECK indicator is used to monitor system status. If the CHECK indicator is illuminated, call your local HVAC service provider.

The EMER indicator is illuminated only when the system switch is moved to the EM, emergency heat position. The EM position is only used when the primary stage of heat is not functioning or requires service.

# Troubleshooting

SYMPTOM	REMEDY
Thermostat does not turn on system.	Check Wiring (see INSTALLATION). Check fuse. Replace with 3 amp fuse if fuse has opened. Five minute compressor short cycle protection may be in effect. Press RESET to override. <b>NOTE: This will erase programming.</b>
Thermostat turns on and off too frequently.	Increase Temperature Differential (see PROGRAMMING).
Display is blank, flashing or constant "LO BAT."	Replace batteries.
Time shown on display is not the current time of day.	Change time of day setting (see PROGRAMMING).
Thermostat does not follow program.	Thermostat in MANUAL mode (see PROGRAMMING). Thermostat may not have been programmed in HEAT or COOL position. Verify program. Check AM/PM indicators at time of day and programmed time changes (see PROGRAMMING). Verify program and day of week is correct (see PROGRAMMING).
Thermostat does not advance day of week.	To view or change day of week use method on page 5.

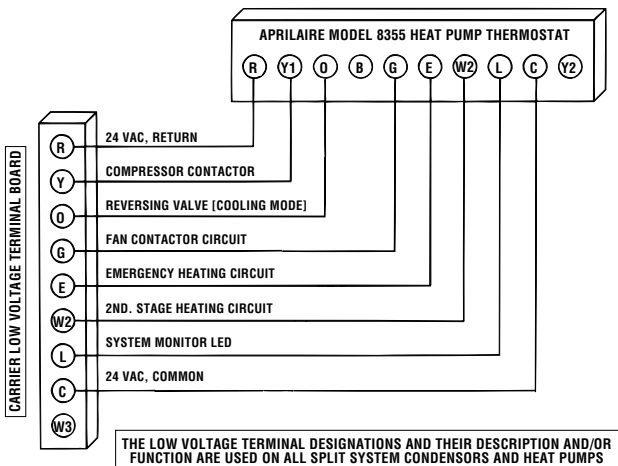
**If problems with thermostats cannot be solved, call:**

Technical Support: 608-257-8801  
Monday-Friday 7:45 am-5:00 pm CST

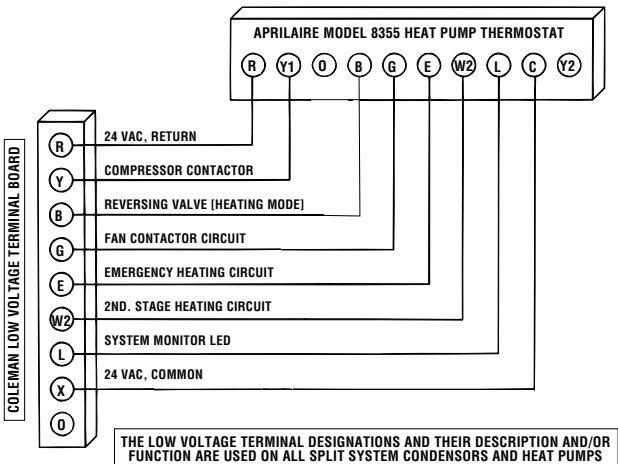
# Wiring Diagrams

The following is just a sample of the most common types of HVAC systems. Refer to your system's installation manual for wiring information.

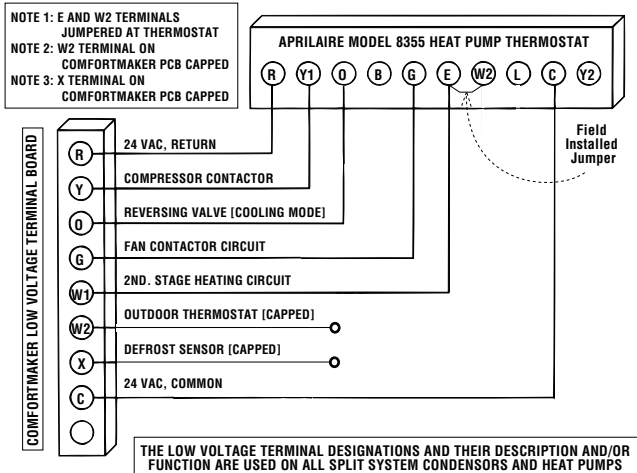
## APRILAIRE MODEL 8355 HEAT PUMP THERMOSTAT CONVERSION TO CARRIER SPLIT SYSTEM CONDENSORS AND HEAT PUMP SYSTEMS



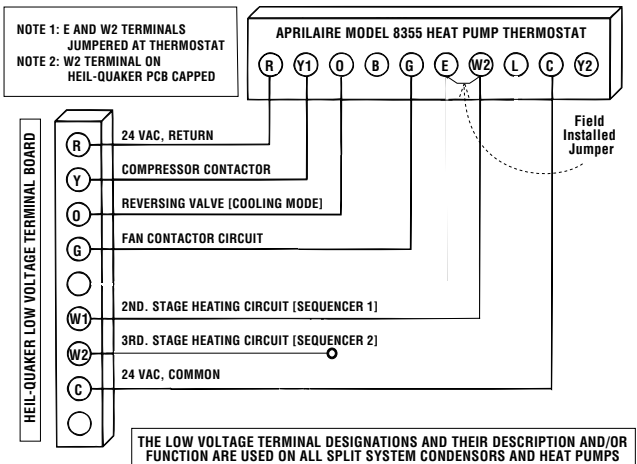
## APRILAIRE MODEL 8355 HEAT PUMP THERMOSTAT CONVERSION TO ROBERT SHAW 3000 SERIES HEAT PUMP SYSTEMS



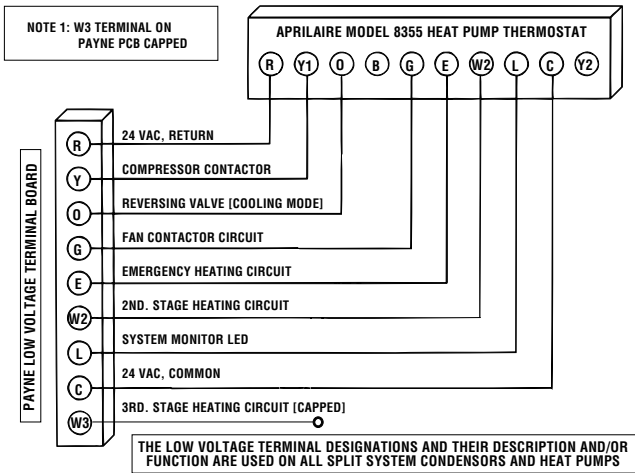
**APRILAIRE MODEL 8355 HEAT PUMP THERMOSTAT CONVERSION TO COMFORTMAKER  
CYC SERIES HEAT PUMP SYSTEMS**



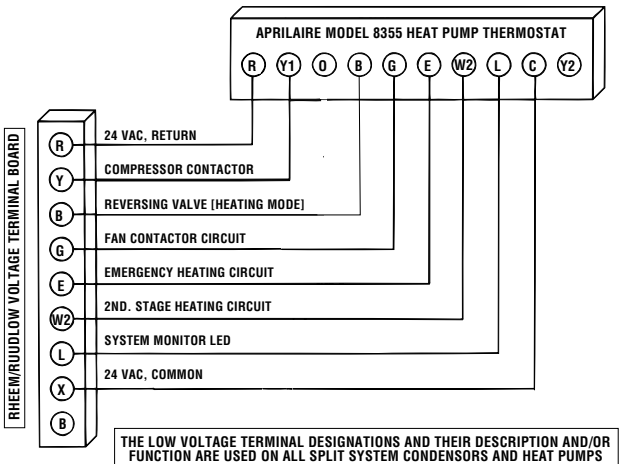
**APRILAIRE MODEL 8355 HEAT PUMP THERMOSTAT CONVERSION TO HEIL-QUAKER  
867.814 SERIES AND PH50 SERIES HEAT PUMP SYSTEMS**



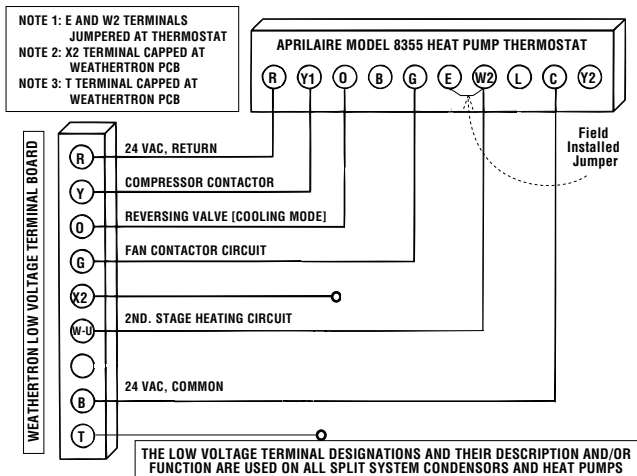
**APRILAIRE MODEL 8355 HEAT PUMP THERMOSTAT CONVERSION TO PAYNE RELIANT AND ENDURA MODEL HEAT PUMP SYSTEMS**



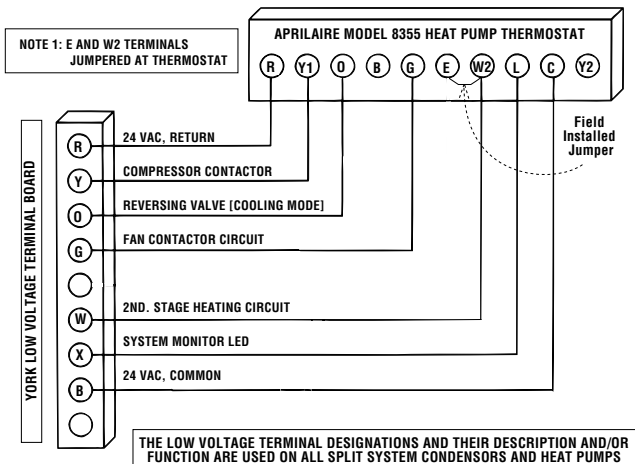
**APRILAIRE MODEL 8355 HEAT PUMP THERMOSTAT CONVERSION TO RHEEM/RUUD HEAT PUMP SYSTEMS**



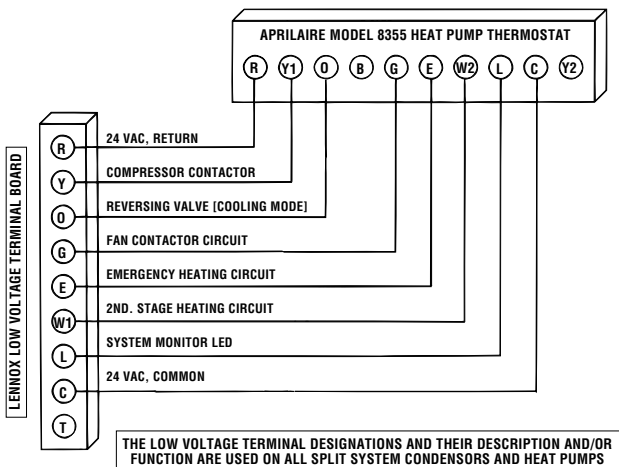
**APRILAIRE MODEL 8355 HEAT PUMP THERMOSTAT CONVERSION  
TO WEATHERTRON HEAT PUMPS**



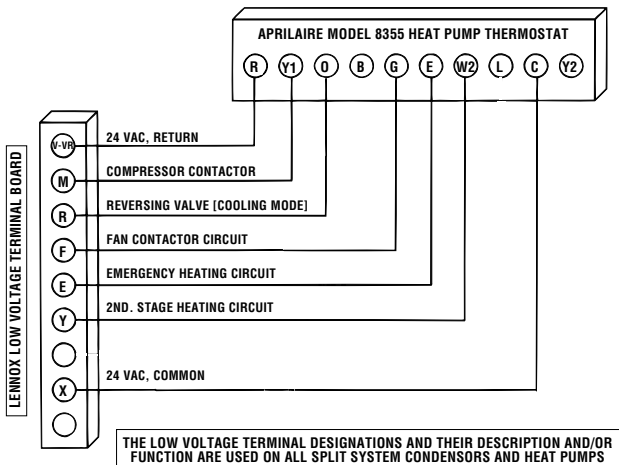
**APRILAIRE MODEL 8355 HEAT PUMP THERMOSTAT CONVERSION TO YORK  
-E1CS, -E1FB, -E1FH HEAT PUMP SYSTEMS**



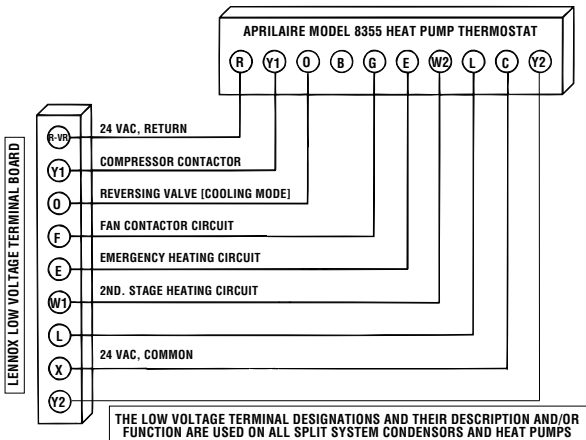
**APRILAIRE MODEL 8355 HEAT PUMP THERMOSTAT CONVERSION TO LENNOX CB19 HEAT PUMP SYSTEMS**



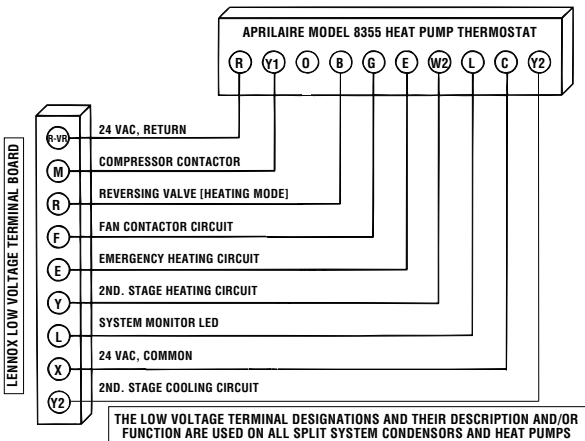
**APRILAIRE MODEL 8355 HEAT PUMP THERMOSTAT CONVERSION TO LENNOX HP19 AND HP20 HEAT PUMP SYSTEMS**



**APRILAIRE MODEL 8355 HEAT PUMP THERMOSTAT CONVERSION TO LENNOX  
HP21 WITH CB21 PCB HEAT PUMP SYSTEMS**



**APRILAIRE MODEL 8355 HEAT PUMP THERMOSTAT CONVERSION TO LENNOX  
HP22 WITH CB19 PCB HEAT PUMP SYSTEMS**



## Limited Warranty

Your Research Products Corporation Aprilaire® Thermostat unit is expressly warranted for two (2) years from date of installation to be free from defects in materials and workmanship. Research Products Corporation's exclusive obligation under this warranty shall be to supply, without charge, a replacement for any thermostat which is found to be defective within a two (2) year period and which is returned, together with the date of installation, no later than thirty (30) days after said two (2) year period by you to either your original supplier or to Research Products Corporation, Madison, Wisconsin 53701.

THIS WARRANTY SHALL NOT OBLIGATE RESEARCH PRODUCTS CORPORATION FOR ANY LABOR COSTS AND SHALL NOT APPLY TO DEFECTS IN WORKMANSHIP OR MATERIALS FURNISHED BY YOUR INSTALLER AS CONTRASTED TO DEFECTS IN THE THERMOSTAT ITSELF.

IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE SHALL BE LIMITED IN DURATION TO THE AFORESAID TWO YEAR PERIOD. RESEARCH PRODUCTS CORPORATION'S LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, OTHER THAN DAMAGES FOR PERSONAL INJURIES, RESULTING FROM ANY BREACH OF THE AFORESAID IMPLIED WARRANTIES OR THE ABOVE LIMITED WARRANTY IS EXPRESSLY EXCLUDED. THIS LIMITED WARRANTY IS VOID IF DEFECT(S) RESULT FROM FAILURE TO HAVE THIS THERMOSTAT INSTALLED BY A QUALIFIED HEATING AND AIR CONDITIONING CONTRACTOR. IF THE LIMITED WARRANTY IS VOID DUE TO FAILURE TO USE A QUALIFIED CONTRACTOR, ALL DISCLAIMERS OF IMPLIED WARRANTIES SHALL BE EFFECTIVE UPON INSTALLATION.

Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, so the above exclusion or limitations may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.