

eco-TTM PLUS

with SFTTM (Smart Fan TechnologyTM)



Installation, Programming and Operating Guide for Digital, Programmable Thermostat with *Smart Fan Technology*TM

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EclipseEfficiencies.com

Eclipse Efficiencies eco-Tplus Operation Guide.

Programmable Single Stage Compressor and Heater Thermostat with Heat Pump.

January, 2017

BEFORE INSTALLATION, DO A SIMPLE SYSTEM CHECK. RUN SYSTEM IN EACH MODE, HEATING, COOLING, FAN ON AND FAN AUTO TO ASSURE SYSTEM READINESS.

WARNING: To prevent electrical shock and equipment damage, disconnect all electrical power to the HVAC system at the main circuit breaker until this installation is complete.

Removal and Installation

1. Shut off electrical power to the HVAC at the main panel and/or at the fuse box.
2. Remove the face-plate and loosen the back-plate of the old thermostat from the wall.
3. Once the cover and base are removed the connection wires are exposed.
4. Verify that the **Common** wire is available. The **eco-Tplus** thermostat requires 24vac from the HVAC to function properly. If the **Common** wire is not available, this thermostat cannot be used.

WARNING: 24Vac Common Wire must be connected to the eco-Tplus

5. Photograph the wiring and save it as a ready reference if needed.
6. Remove wires from the old thermostat terminals. Label each wire with the terminal designation as it is removed.
7. Remove the wall plate. Make sure the wires do not fall back thru the hole in the dry- wall.

*Remove the top and bottom covers of the new **eco-Tplus** by applying firm pulling pressure at either end of the panels. Removing the top cover exposes the terminal block. Removing the bottom cover exposes the AA battery compartment.*

8. With top and bottom covers removed, place **eco-Tplus** against the wall at the installation site. Be sure the wall is flat behind it.



9. Bring wires up behind **eco-Tplus**, between the wall and the “wire slot” in the top-center of the back-plate. Be sure there is enough length in the wires to allow them to comfortably reach the connection ports in the terminal block.



10. With the hardware provided, secure **eco-Tplus** to the wall. Screw down only “finger-tight” to avoid excess pressure against the **eco-Tplus** back-plate.



WARNING: Excessive tightening of screws may cause malfunction.

11. Connect the wires to the clearly marked matching port in the terminal block according to the wire identifications made in steps five and six.



12. 2 x “AA” alkaline batteries (included) must be installed in the battery compartment located at bottom of the **eco-Tplus**. They provide back-up power for data stored in the thermostat as well as temporary back-up power to the thermostat electronics if the 24vac fails. It is recommended that these batteries be replaced annually or whenever the display shows “Lo”. This display means Change Now!



13. The switch to the left of the terminal block is for selecting Heat Pump (**HP**) or Normal Mode (**NORM**). If the HVAC is a heat pump system, select **HP**. (in this position the **ELEC/GAS** selector is disabled). If the system is “straight AC”, select **NORM**.



14. If the **NORM** is selected, then **ELEC/GAS** switch located at the right of the terminal block must be set to the corresponding heating energy source. For electric heating, select **ELEC**. For gas furnace heater, select **GAS**.



WARNING: HP/NORM switch must select NORM for ELEC/GAS to operate

15. Make sure that wires and batteries are installed correctly and replace covers.
16. Before powering up the thermostat, set the **FAN** to **AUTO** and Set the **SYSTEM** switch to **OFF**.
17. Turn on the power at the main panel and / or fuse panel to the HVAC. This will route power to the Common (C) wire and, therefore, to **eco-Tplus**.



18. When the thermostat is set to **COOL**, the screen displays a **SNOWFLAKE** symbol in the top-left quadrant of the screen to indicate that the AC compressor is running. If this **SNOWFLAKE** symbol is flashing, the thermostat is on compressor short cycle delay. The compressor short cycle delay protects the compressor from **SHORT CYCLING**. This feature will not allow the compressor to turn on for 5 minutes after it was last turned off.
19. When the thermostat is set to **HEAT**, the **SUN** symbol will display in the top-left quadrant of the screen. The **HEAT** function engages when the set temperature of **eco-Tplus** is above the room temperature.



System Set-Up and Programming

20. To **Set Thermostat Time**, slide system selector switch to **HEAT** or **COOL**. Press **SET CLOCK** once. The day number (1) flashes in the lower left quadrant, under **WEEK**. Use **UP/DOWN** to change the **DAY** of the week. 1 for Monday, 2 for Tuesday, 3 for Wednesday, 4 for Thursday, 5 for Friday, 6 for Saturday and 7 for Sunday.
21. Press **SET CLOCK** again to get the **HOUR** flashing. Use the **UP/DOWN** button to adjust the hour (24 hour format). Press the “set clock” once more to get the **MINUTE** flashing. Use **UP/DOWN** to adjust the minutes.
22. The thermostat goes back to **HEAT** or **COOL** screen after 30 seconds or press the “**AUTO/HOLD**” button to exit. Time set is complete.



23. To **Set Thermostat Technical Settings**, slide the **SYSTEM** switch to **HEAT** or **COOL** from **OFF** position. “LH5 HE01” will display on the screen for 2 seconds before it goes to the regular **HEAT** or **COOL** screens.
24. Once the “LH5 HE01” is displayed, immediately press the “**AUTO/HOLD**” button. Continue pressing this button to advance through the following settings.
25. **CAL** is to calibrate the temperature reading. Obtain the current room temperature from a reliable source. Use the **UP/DOWN** to calibrate the temperature reading. The range is ± 5 degrees. It will take a few minutes for the temperature to change its value.



26. Press **AUTO/HOLD** button to advance to **PC** mode. **PC** is to set the programming to 5/2 (Monday to Friday and another setting for Saturday and Sunday), 6/1 (Monday to Saturday and another setting for Sunday) or 7 (Monday to Sunday). Press **UP/DOWN** to select. When “1 2 3 4 5” flashes, the 5/2 is selected. When “1 2 3 4 5 6” is flashing, 6/1 is selected. When “1 2 3 4 5 6 7” flashes a single program is selected.



27. Press **AUTO/HOLD** button to advance to **FP** mode. **FP** is Freeze Protection feature and it is recommended to be turned ON at all times. **FP** turns on the heater when the room temperatures drop to below 42 °F. The heater turns off automatically when the room temperature is above 44 °F.



28. Press **AUTO/HOLD** button to advance to **D IF** mode. **D IF** is temperature hysteresis; also called the swing temperature setting or cycle rate or differential temperature. The adjustment range is from 0.5 degrees to 5.0 degrees. Example: If **D IF** is set for 1 degree and the system switch is in cool position then the compressor will turn on when the room temperature rises 1 degree above the set temperature and turn off when the room temperature drops 1 degree below the set temperature.



29. Press **AUTO/HOLD** button to advance to **BL** mode. **BL** is the status of the backlight. “on” means the backlight is always ON, “OFF” means the backlight will turn off after 10 seconds.



30. Press **AUTO/HOLD** button to advance to **C – F** mode. **C – F** is Celsius or Fahrenheit. Press **UP** button for °C, **DOWN** button for °F.



31. Press **AUTO/HOLD** button to advance to **BEF** mode. **BEF** is factory default or reset setting. Pressing any **UP** or **DOWN** button will reset the settings.



To program the schedules

There is 6 periods per setting, P1 through P6 (For 5/2, 6/1 or 7, previously selected on **PC** item 23).

32. For **COOL** schedule, move the **SYSTEM** to **COOL**. Press the “**SET SCHEDULE**” button and P1 will appear on the screen, with “**WEEK**” and “**Hour**” flashing. Example: if **PC** was configured as 5/2 then “1 2 3 4 5” and “**Hour**” will flash. Press **UP/DOWN** to set the start time “**Hour**”. Press “**SET SCHEDULE**” again to set the “**Minutes**”. Press “**SET SCHEDULE**” again and the temperature set point will flash. Use **UP/DOWN** to adjust the temperature setting for P1.



33. Continue to press “**SET SCHEDULE**” to set P2 for period 2 and so on, until all the 6 periods have been programmed. To turn off any period, press the “**SET SCHEDULE**” to the period (for example P1) and continue pressing “**SET SCHEDULE**” until the temperature set point is displayed. Then, press the **DOWN** button to lower the temperature until it displays **OFF**. This turns off the programming for that period (for example P1). This completes the programming for Monday to Friday.



34. At the end of P6, the screen goes back to P1 with the “6 7” and “**Hour**” flashing. This is for programming Sat and Sunday. Follow above steps to program Saturday and Sunday. Press the **AUTO/HOLD** to exit the programming or wait for 10 seconds for the thermostat to automatically exit the programming mode.

35. **To set thermostat to Programmed Mode or Manual Mode.** With the screen in normal **HEAT** or **COOL** display, press the **AUTO/HOLD** to switch between manual and programmed modes. Manual mode is indicated by an index finger symbol on top of the screen. Programmed mode is indicated by the clock face symbol on top of the screen.



36. To manually adjust the room temperature setting up or down, the thermostat must be in the Manual Mode first indicated by the index finger symbol.



Normal Operations

37. During normal operation of the thermostat, the big temperature display is the current room temperature. The smaller display toggles between **SET TEMPERATURE** and the **TIME** in 24 hour format (3 PM is 1500 Hours). On the left, the display toggles between **WEEK DAY** and **STAGE NUMBER**. The **STAGE** is the programmed Period (P1 through P6). For example, STAGE 5 refers to P5.

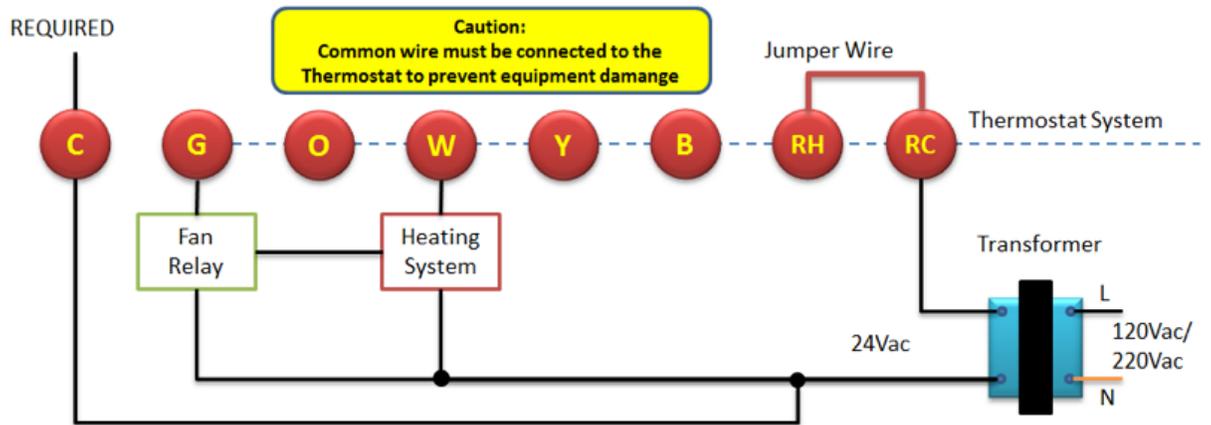
Press AUTO/HOLD to switch between programmed mode (clock symbol) and MANUAL MODE (index finger symbol).



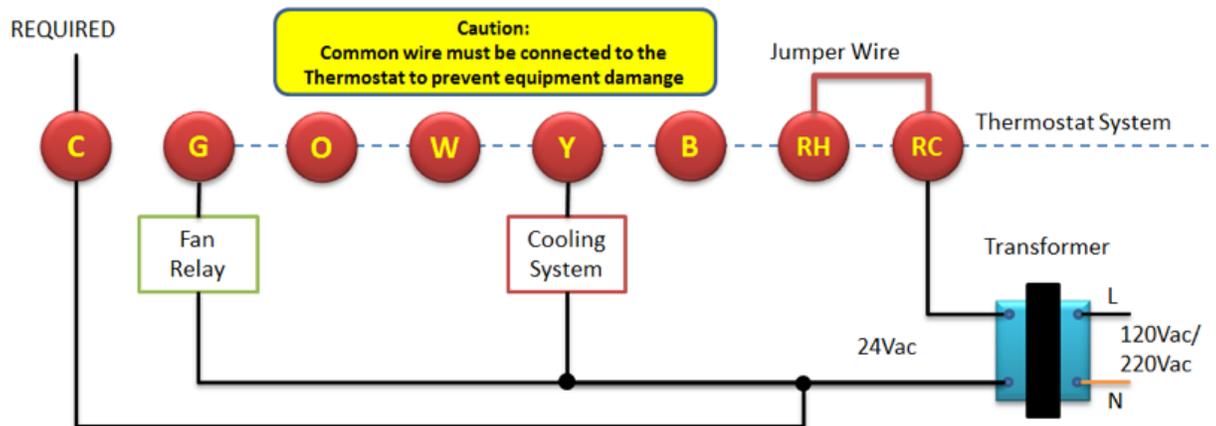
38. The wires from the air handler unit is connected to the terminal blocks.

See connection diagrams on the following pages.

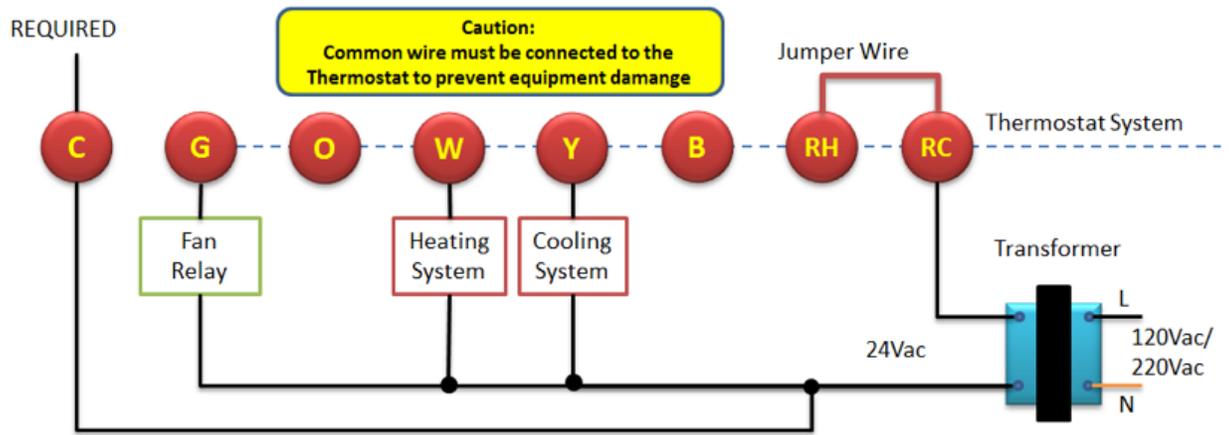
Wiring Diagrams



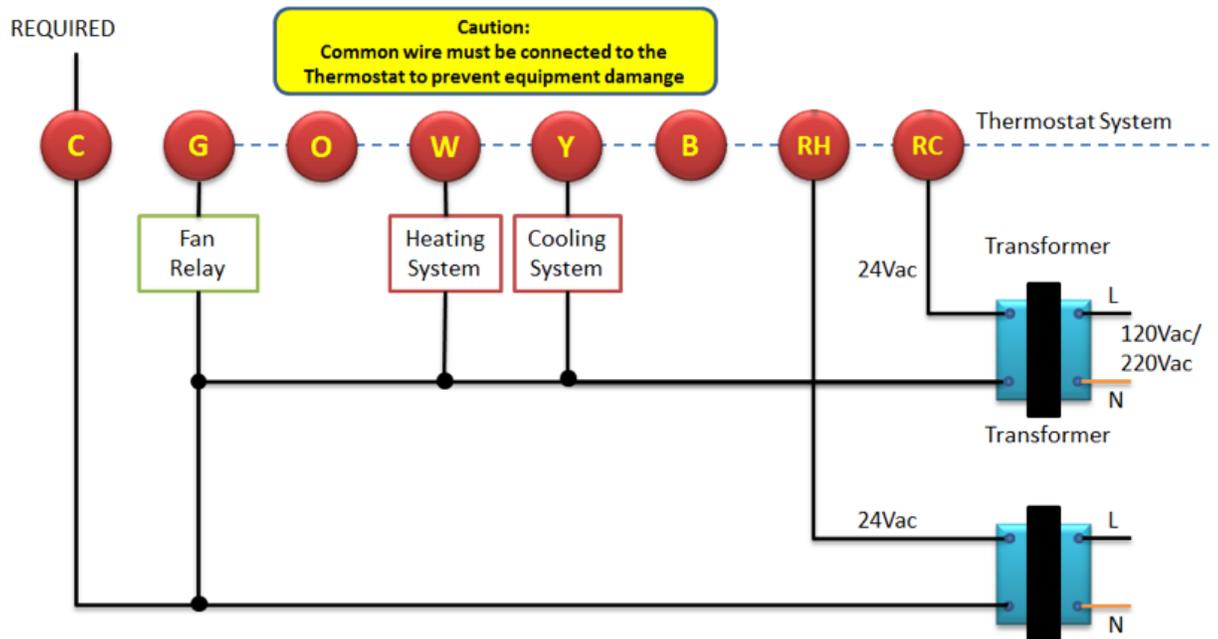
Typical Wiring Diagram for Heat Only, 3 Wire, Single Transformer Systems.
For a 2-Wire Heat Only System, attached G to W as show above.
Note that RC and RH must be connected with a jumper wire.



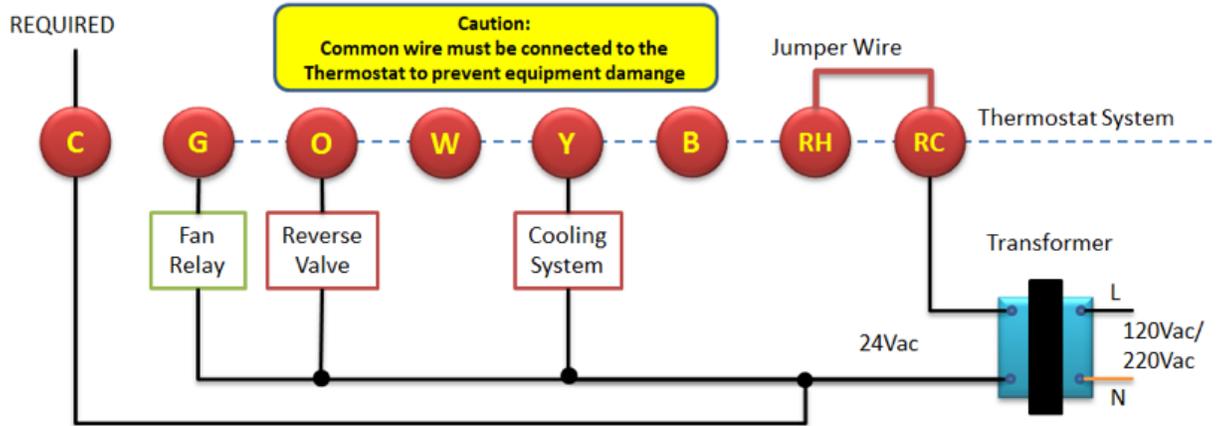
Typical Wiring Diagram for Heat Only, 3 Wire, Single Transformer Systems
Note that RC and RH must be connected with a jumper wire for proper
Thermostat operation.



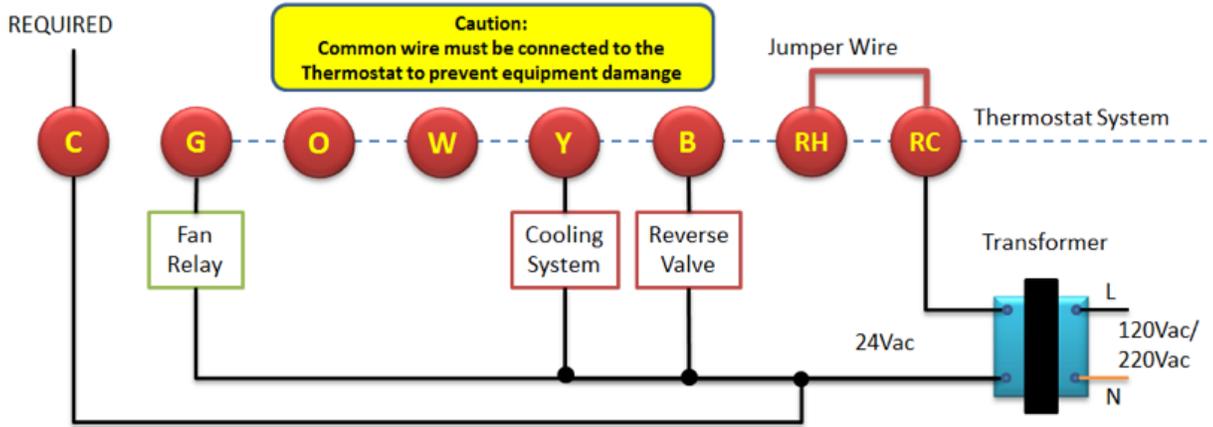
Typical Wiring Diagram for Heat/Cool, 4 Wire, Single Transformer Systems. Note that RC and RH must be connected with a jumper wire for proper Thermostat operation.



Typical Wiring Diagram for Heat/Cool, 5 Wire, Two Transformer Systems.



Typical Wiring Diagram for Heat Pump with Reversing Valve energized to 24Vac in COOL. When SYSTEM switch is in COOL position, Terminal “O” is energized to 24Vac and terminal “B” is at ground 0Vac level.



Typical Wiring Diagram for Heat Pump with Reversing Valve energized to 24Vac in Heat. When SYSTEM switch is in HEAT position, Terminal “B” is energized to 24Vac and terminal “O” is at ground 0Vac level.

IMPORTANT NOTE:

Some Heat Pump reversing valve is active high and some is active low. For a Heat Pump with reversing valve active high, the reversing valve is energized with a high 24Vac voltage level. For a Heat Pump reversing valve active low, the reversing valve is energized with a 0Vdc voltage level. Many technicians just connect the heat pump reversing valve wire to either “O” or “B” terminal and feel the air coming out. If the wrong temperature air is coming out, they just swap connection from “B” to “O” or verse versa.