

# FAST-STAT Model 5000 Installation Instructions

## Application

The FAST-STAT Model 5000 adds additional HVAC control wiring between a thermostat and indoor unit.

It provides R, C, G, Y, W1 & W2 connections over a 2-wire thermostat cable. Additional thermostat cable wires can be used for other functions.

## Before Installing This Product

1. Read Instructions. If you have any questions please contact our tech support line
2. This product is designed for use only on 24-volt AC circuits supplied by a Class 2 transformer.
3. This product is only to be installed by qualified technicians.
4. To avoid risk of electrical shock or equipment damage, disconnect power before beginning installation.

## Sender Installation

1. The sender is installed in the wall space behind the thermostat (non-insulated walls only).
2. Enlarge the opening around the thermostat cable so that the sender can be inserted into the wall cavity. Trim the lead ends as required to fit the thermostat sub-base terminals but avoid cutting large amounts off.
3. Connect the sender to the thermostat cable. Once the connections to the cable and thermostat are completed, insert the sender into the wall cavity. The sender hangs by its leads and does not require any mounting.
4. When operating, the sender will produce a small amount of heat. To prevent this from affecting the thermostat it is advisable to have the sender as far as possible from the thermostat. This is achieved by having the sender leads as long as possible. Any unused leads should be taped back.

## Receiver Installation

The receiver module is normally mounted inside the cabinet of the indoor unit near the other controls. If there is no space inside the cabinet, the module may be located in any dry location without exposure to high temperatures.

## Wi-Fi & Powered Thermostats

For powered thermostats, it is recommended to directly connect the thermostat "C" terminal to the indoor unit "C" terminal using a thermostat cable wire if available. A minimum of 3 thermostat cable wires would be required to directly connect the Common ("C"). This wiring method provides for proper operation of high power use thermostats. Tape back and do not connect the Sender BLACK wire.

The Sender does provide a common ("C") connection however some thermostats use more power than what the Sender can provide. If the thermostat power usage exceeds the Sender rating, the power to the thermostat will be reduced to 12 volts or less. Once the overload is removed, the voltage will return to 24 volts.

## Wiring

1. The transformer power supply must be between 23 to 27 volts for proper operation.
2. The total connected load must not exceed 2 amps. The connected load cannot operate at a voltage of more than 30 volts (not intended for line voltage control).
3. All red wires are interchangeable.
4. Tape back any used wires to prevent shorting
5. For single-stage heat, use the WHITE and BLUE wires together for "W".

## Sequence of Operation

The receiver has four normally-open relays, one for each output. One side of each relay contact is connected to red wire which is then connected to the transformer "R" terminal. The other side of the relay contact is connected to either the green, yellow, white or blue wires. When any relay is energized it will connect its load to the transformer "R" terminal.

1. A 24 volt input on the sender green wire will cause a 24 volt output at the receiver green wire (fan control)
2. A 24 volt input on both of the sender green & yellow wires will cause a 24 volt output on the receiver green & yellow wires (fan & condenser control)
3. A 24 volt input on the sender white wire will cause a 24 volt output at the receiver white wire (heat 1<sup>st</sup> stage)
4. A 24 volt input on the sender white & blue wires will cause a 24 volt output on both the receiver white and blue wires (1<sup>st</sup> & 2<sup>nd</sup> stage heat)

## Start Up

1. Set the thermostat to "fan manual on". The fan will start. Set the fan mode selector switch to "auto mode". The fan will shut off.
2. Set the thermostat so that it will call for the heating system to start. The heating system will start. Return the thermostat to the off position. The heating system should shut off.
3. To test for 2-stage heat control, the thermostat will need to be set to "installation mode" to get the "W2" function to work. The cause of this is that many thermostats will not call for "W2" regardless of how high the temperature is set if the room temperature is increasing at a rate fast enough when the furnace is in 1<sup>st</sup> stage heat.
4. Set the thermostat to a call for cooling. The fan and compressor will start. Set the thermostat to off. The fan and compressor will stop.

## **Troubleshooting**

1. Check that there is 24-volt power connected to the red and black leads of the receiver module. The receiver black wire must be connected to the indoor unit common terminal and the red wire must be connected to the indoor unit "R" terminal.
2. If the red and purple wires that connect the sender to the receiver are crossed (purple to red) a call for "fan" and/or "cooling" will start "heat" and a call for "heat" would start the "fan". There would also be no common connection "C" at the thermostat so the thermostat may not start up. Set the thermostat into "Fan Manual On". If the heating cycle starts, switch the Purple and Red wires at the Receiver that are connected to the thermostat cable and retest. If this does not fix the problem, then switch the wires back to the way they were.
3. Remove the thermostat from its sub-base. With a jumper, make a connection between "R" and "G" on the thermostat terminal strip. The fan should start. Jumper together "R" "G" and "Y", the fan and A/C should start. Jumper "R" and "W1", the heating system should start. If the fan, A/C and heating systems start when a jumper is used but will not start when the thermostat is used, there may be a set up or compatibility issue with the thermostat.
4. If no functions operate when doing test #3, there may be an open (break) in the connections to the thermostat cable.
7. The Sender overcurrent device will trip slowly (2-5minutes) with a small overload and quickly (less than 1 minute) with a large overload.
8. By using a separate thermostat cable wire to directly connect the thermostat "C" terminal to the indoor unit "C" terminal this eliminates all thermostat power usage problems.
9. Do not connect the Sender "C" (black wire) to the thermostat when using directly connected "C" wire.

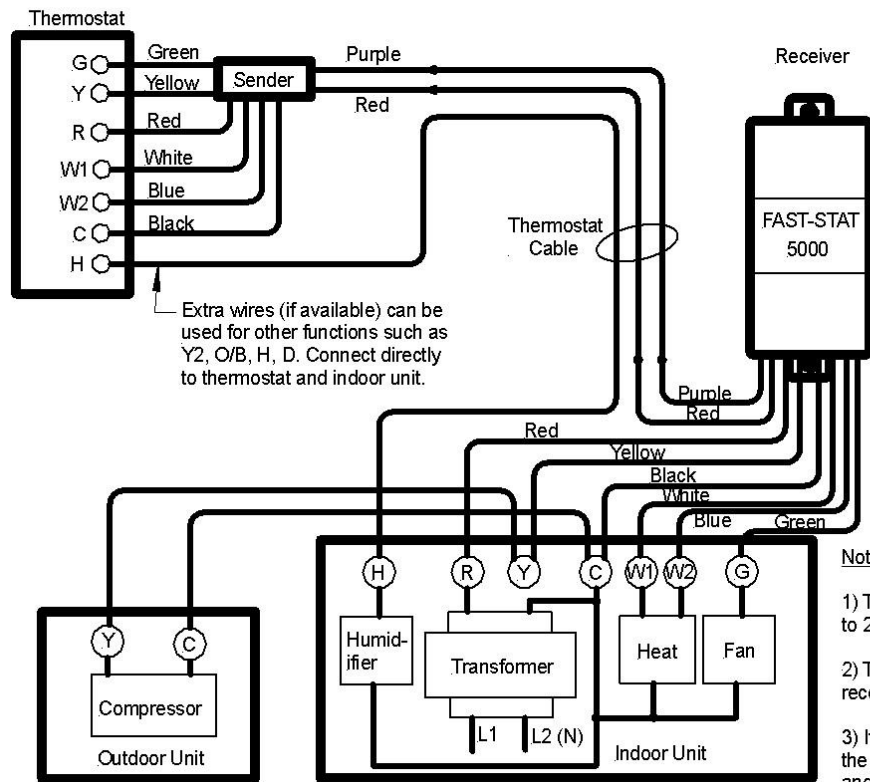
## **Troubleshooting (when using the Sender Common)**

1. If the thermostat power use exceeds the rating of the Sender, the power provided to thermostat "R" and "C" terminals will drop from 24 volts to 12 volts.
2. Switch on the control circuit and allow the thermostat to "power-up". If the thermostat "powers-up" normally then proceed to Step 3.
3. Set the thermostat into a call for heating or cooling and allow the system to operate for not less than 15 minutes.
4. After 15 minutes, turn off the call for heating or cooling. If the thermostat display remains on after this test and the heating or cooling system shut off normally, then the thermostat power use does not exceed the Sender rating.
5. If the power to the thermostat switches off during or after the test or the heating or cooling system continue to operate then the thermostat power usage exceeds the Sender rating.
6. Inside the Sender, the "C" (black wire) is connected to an overcurrent device that "trips" when overloaded, however it does not completely switch off the power, instead the power is reduced to 12 volts or less.



### C) Model 5000 used to extend wiring from a thermostat.

Example: Using cable wires for other functions.

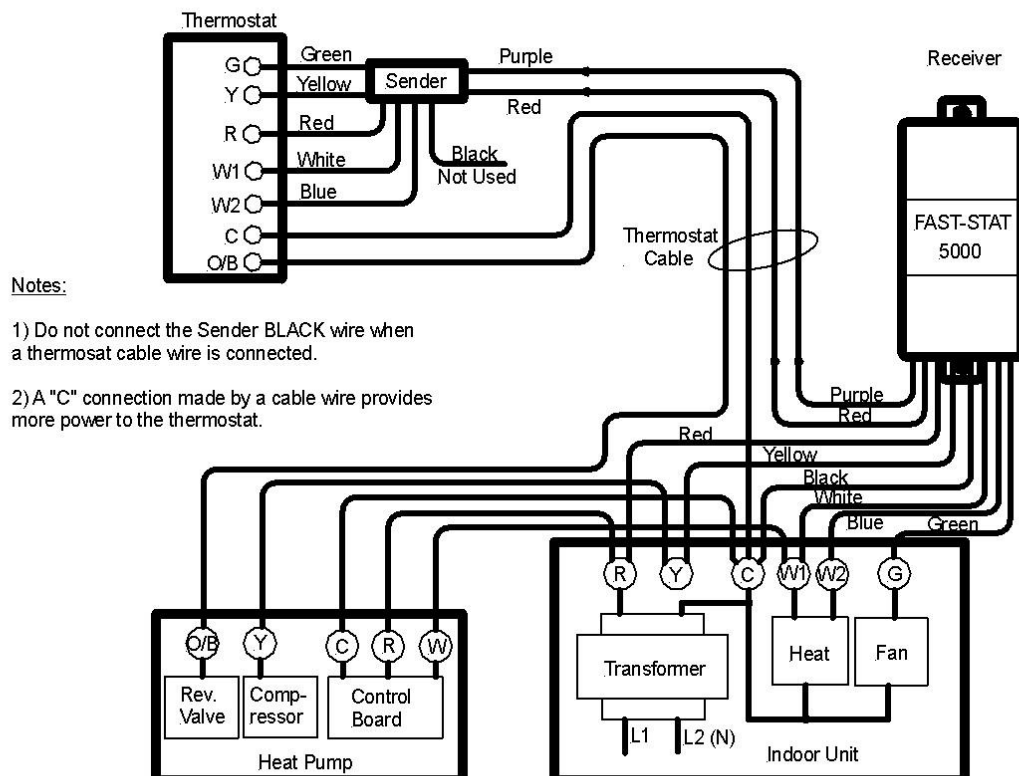


#### Notes:

- 1) The receiver must be connected to 24 volts through the red & black wires.
- 2) The red wires on the sender and receiver are interchangeable.
- 3) If the thermostat uses more power than the Sender can provide, the circuit will "trip" and shut off power to the thermostat.

### D) Model 5000 used to extend wiring from a thermostat.

Example: Single-stage heat pump with a 2-stage furnace (thermostat "C" connection by cable wire).

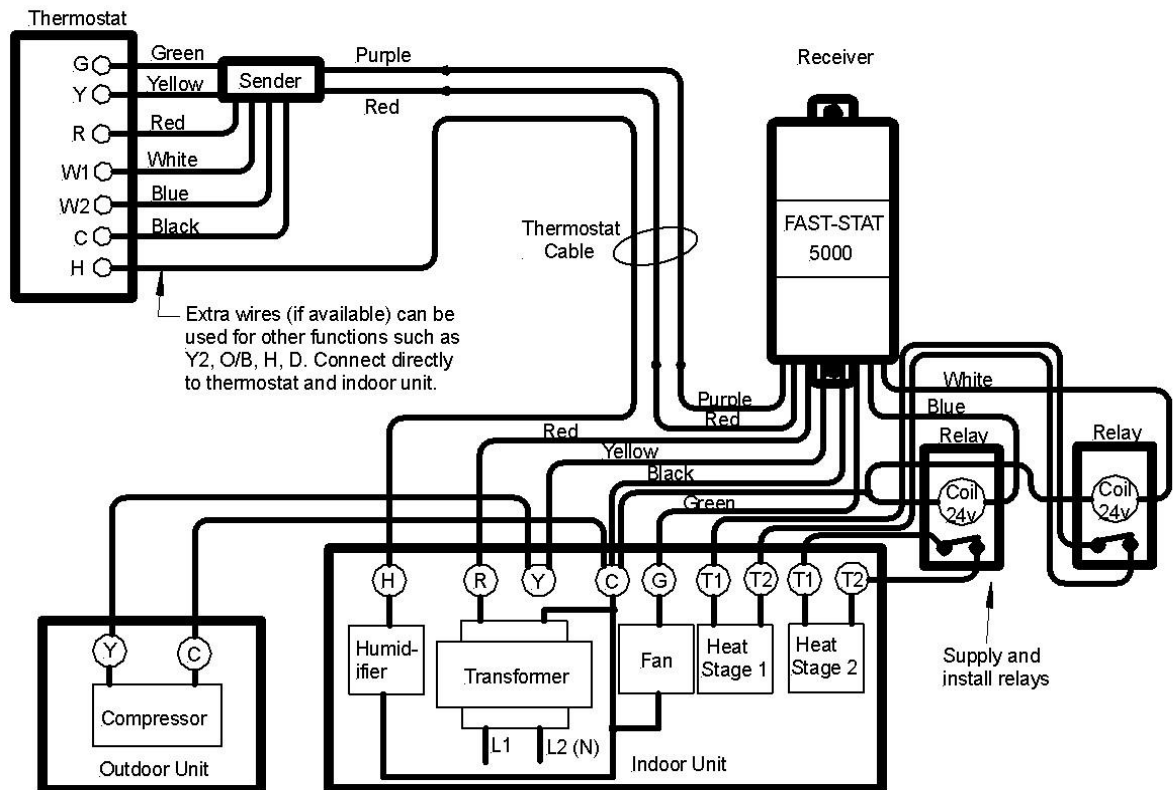


#### Notes:

- 1) Do not connect the Sender BLACK wire when a thermostat cable wire is connected.
- 2) A "C" connection made by a cable wire provides more power to the thermostat.

E) Model 5000 used to extend wiring from a thermostat.

Example: Connecting to a heating system that requires "dry contact" switching.



F) Model 5000 used to extend wiring from an indoor unit to an air conditioner.

Example: Connecting a 2-stage air conditioner with a 2-wire cable.

