

The Following Sequence of operation is used **IF** Dual Fuel System Type is selected in the setup menu selections. (This is for Single Stage Compressor)

Sequence of operation (3.3) Main control buttons set to **Fan AUTO/ON** and **System HEAT**. (Heating with Heat Pump).

The thermostat monitors the actual temp inside the space and compares it to the set point selected by the user. Should the actual temperature fall below the set point by .5deg F, the Y/Y2 compressor contacts and the G fan contacts, will be energized allowing the system to Heat utilizing the Heat Pump. When the actual temp rises above the set point by .5deg F then both contacts will be de-energized, and system will go back to idle. (Assuming humidity is in range). This small temp offset from set point prevents the system from short cycling while still maintaining close control of the desired temp. Once the contacts are de-energized a short minimum off timer begins a countdown to prevent mechanical short cycling. (Timer set in Setup menu)

Two conditions will cause the system to energize the Gas furnace for heating. The first is if the actual Temperature is >2deg F below the set point. The other is if the Heat pump run time >15minutes without reaching set point.

Sequence of operation (3.4) Main control buttons set to **Fan AUTO/ON** and **System HEAT**. (Heating With Gas Furnace).

The thermostat monitors the actual temp inside the space and compares it to the set point selected by the user. Should the actual temperature fall below the set point by >2deg F, and/or the heat pump run time is >15 minutes, the compressor Y/Y2 contacts and the G fan contacts will be *de-energized* and the W heating contacts will be energized. This allows the system to Heat with the Gas furnace and turns off compressor heating. (They cannot run simultaneously). When the actual temp rises above the set point by .5deg F, only then will the "W" contacts be de-energized, and system will go back to idle. (Assuming humidity is in range). This small temp offset from set point prevents the system from short cycling while still maintaining close control of the desired temp. Once the contacts are de-energized a short minimum off timer begins a countdown to prevent mechanical short cycling. (Timer set in Setup menu)

If "ALLOW DE-HUMIDIFICATION WHILE HEATING" was chosen from the installer setup menu, the Dual Fuel system Type disallows this operation.

If "HUMIDIFIER" was chosen from installer setup menu, a humidifier can be turned on from this mode. If the actual humidity is 8% below the humidity set point, the G fan contacts and the *AUX1* Hum contacts are energized to allow a humidifier to increase space humidity. Once Actual humidity is 5% above humidity set point, the *AUX1* Hum contacts and the G fan contacts are de-energized. The G fan contacts will remain energized if the fan control button is in the ON position.

Carbon Dioxide and Carbon Monoxide detection are always active and operate independently/simultaneously with the above sequence.

If the CO₂ rises above 600ppm the *AUX1* CO₂ contacts and the G fan contacts are energized to allow for an outside air damper to open, introducing fresh air into the space. Once the CO₂ reaches 500ppm the *AUX1* CO₂ contacts and the G fan contacts are de-energized. The G fan contacts simply remain energized if one of the above conditions are driving the fan contacts to the energized position.

If the CO rises above 70 ppm, a HIGH CARBON MONOXIDE WARNING alarm event will de-energize all contacts and put the system in idle mode including the G fan contacts. This should command a "Push Notification" to the user and will present an on-screen alarm warning. Once CO falls below 40 ppm, the system may return to the modes required to maintain space comfort as outlined above.