WARNING: READ BEFORE INSTALLING

1) **Installer to ensure Overload Circuit Protection is compliant per National and Local Electrical codes**

2) **Legacy Kit Version 5 Software Version 1.0 has a**
   a. **3 minute bypass timer on low pressure detection**
   b. **7 minute (fixed) compressor anti-recycle time delay**

3) **LEDS – Located on process or on Remote LED Display**
   a. **Green LED – Flashing - Unit Processor is working**
   b. **Red LED – Flashing - High Pressure Alarm – Unit is locked out**
   c. **Blue LED – Solid - Low Pressure Detected, lockout after 3 minutes**
      Blue LED – Flashing- Low Pressure Alarm has been active for more then 3 minutes and has latched the LP alarm.
   d. **Yellow LED - Compressor Relay is closed, compressor has been call "ON"**

4) **To reset latched alarms, cycle power on heat pump off, then on.**

5) **Excessive cycling of compressor can damage unit and void warranty.**

Legacy Kit V5 – SWV1 - INSTALLATION

This document describes the installation instructions for the Legacy Kit Version 5 – Software Version 1.0. The document "**OMEGA - Legacy Kit V5 Documentation**" located on the Omega website at www.omega-heatpump.com can be a helpful aid during installation and potential troubleshooting.

STEP 1: Identification of the HTS Signature "ELECTROMECHANICAL" HP Chassis

The legacy units can ONLY be utilized with HTS Signature Series "ELECTROMECHANICAL" HP chassis as manufactured by Enerzone. These units can be readily identified by the following features.

a) The discrete electromechanical components as depicted in **Figure 1** making up its control circuitry. The circuit diagram is shown in **Figure 2** and located internally in the chassis.
b) The unique Molex connector as identified in **Figure 3**. This connector plugs into the fan cabinet of the Signature Series.

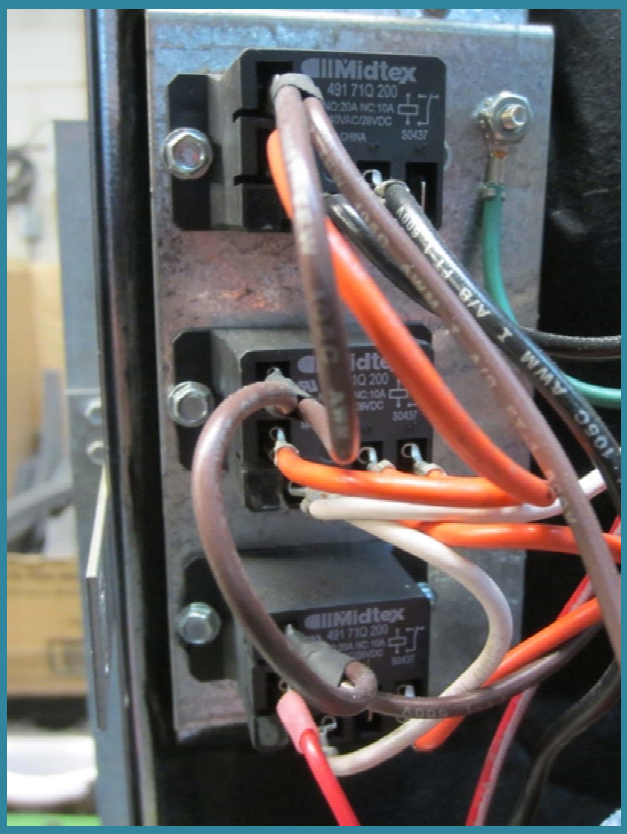

Figure 1 – HTS Signature HP "ELECTROMECHANICAL" Circuit

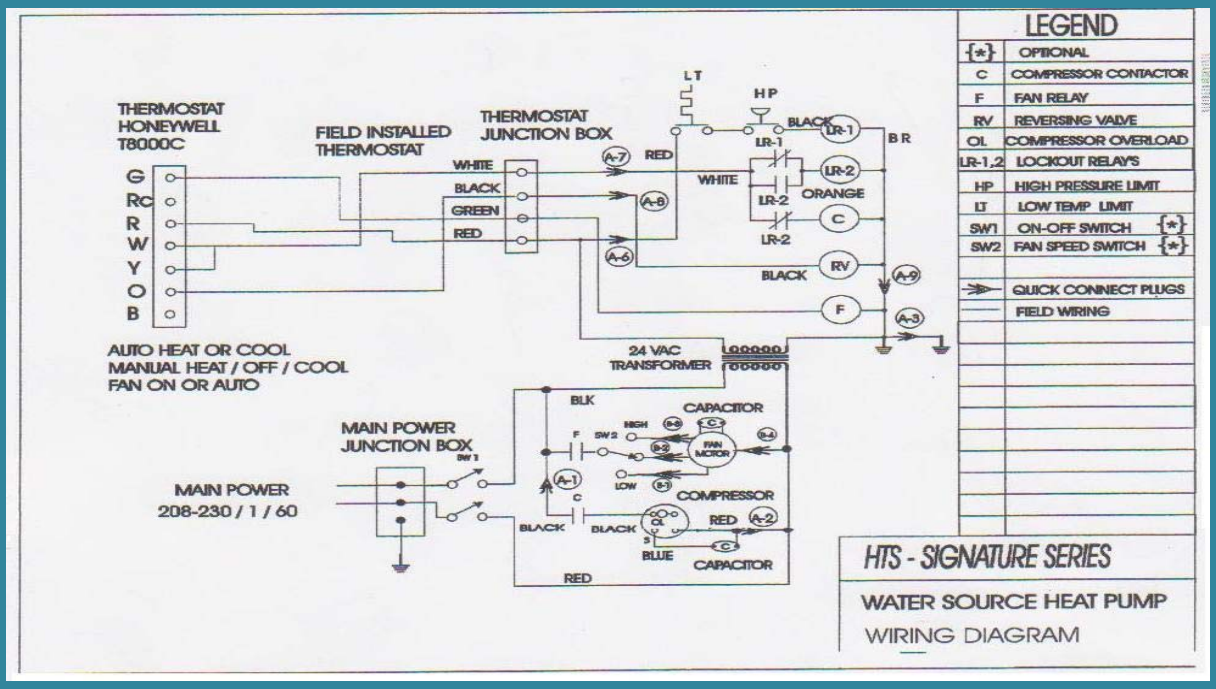

Figure 2 – HTS Signature HP "ELECTROMECHANICAL" Circuit

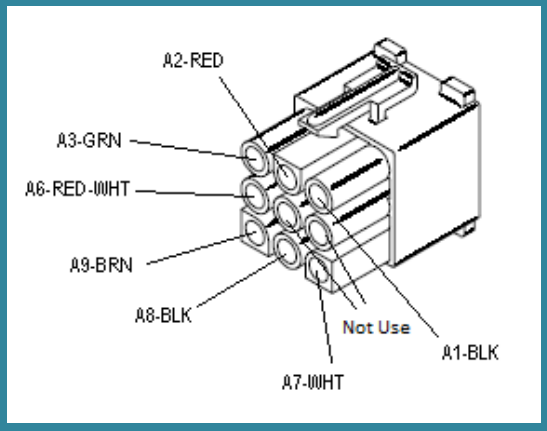

Figure 3 – HTS Signature Series Heat Pump Controls Connector

STEP 2: REMOVE OLD CHASSIS

1. Shut off power to unit.
2. Partially slide unit out of fan cabinet.
3. Shut off supply and return water to unit with manual valves.
4. Disconnect 9 pin wiring cable between chassis and fan cabinet.
5. Fully remove old chassis from fan cabinet and set aside.

STEP 3: INSTALL LEGACY KIT

1. Fasten the Legacy Kit on the inside RIGHT side wall of fan cabinet in the approximate location shown in **Figure 4.**
2. Ensure orientation of kit is per **Figure 4** (note fan cabinet cable location as well as chassis power and control cable orientation on Legacy Kit).
3. Attach the 9 pin fan cabinet from Legacy Kit to the fan cabinet.

STEP 4: INSTALL NEW OMEGA CHASSIS

1. Position the NEW OMEGA Chassis in the fan cabinet opening.
2. Connect the supply and return water hoses and open manual valves. Check for leaks.
3. Connect the Chassis POWER Cable (Black – 4 pin) and Chassis CONTROL Cable (White – 9 pin) from the new Omega Chassis into the Legacy Kit (**Figure 5**).
4. Slide chassis fully into Fan Cabinet.

STEP 5: START & TEST UNIT

1. Enable Power to Unit.
2. Test unit in heating and cooling mode, via the thermostat commands. Make sure the unit turns on and off properly and the 7 minute time delay is working correctly.

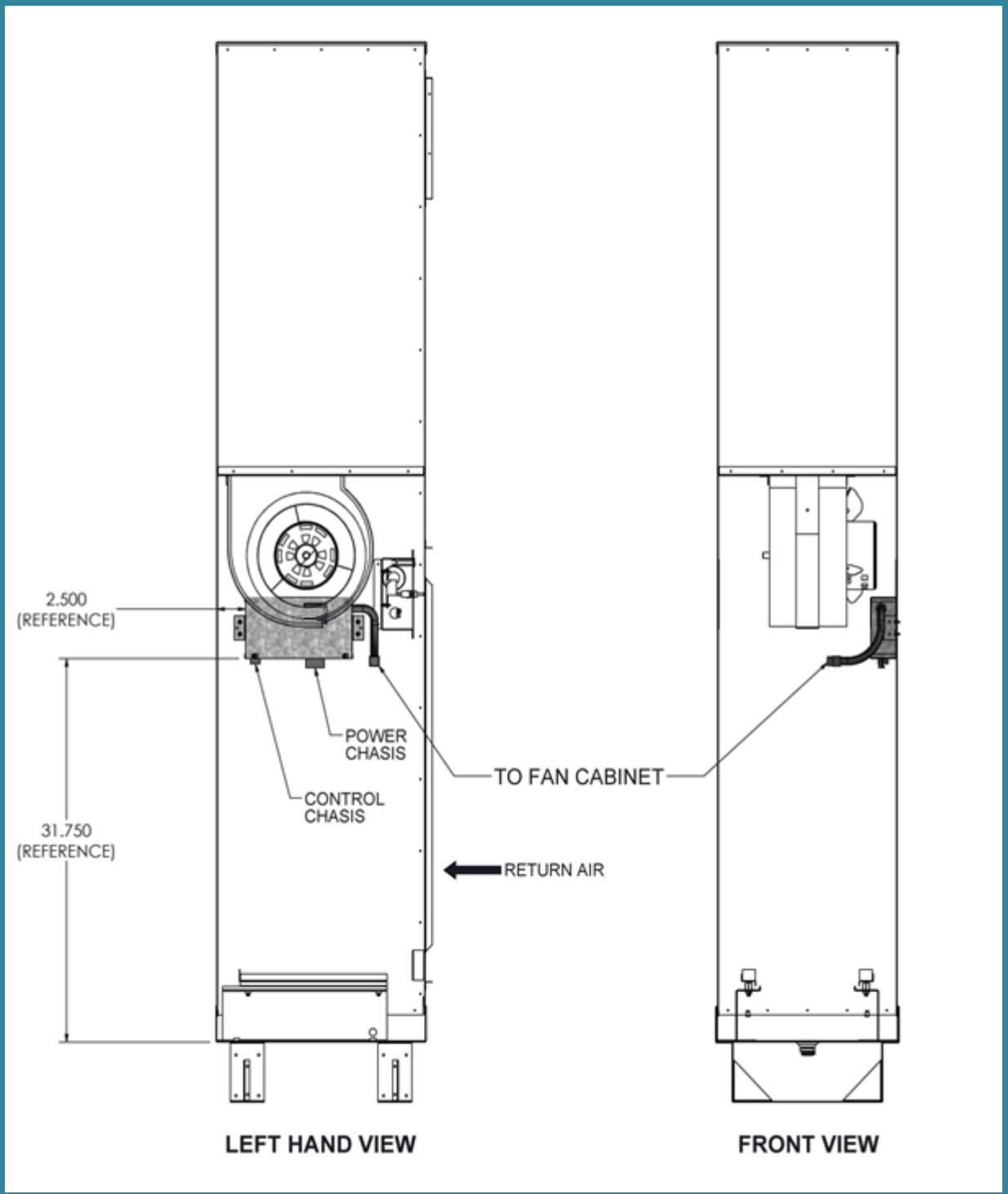

Figure 4 – Legacy Kit Installation

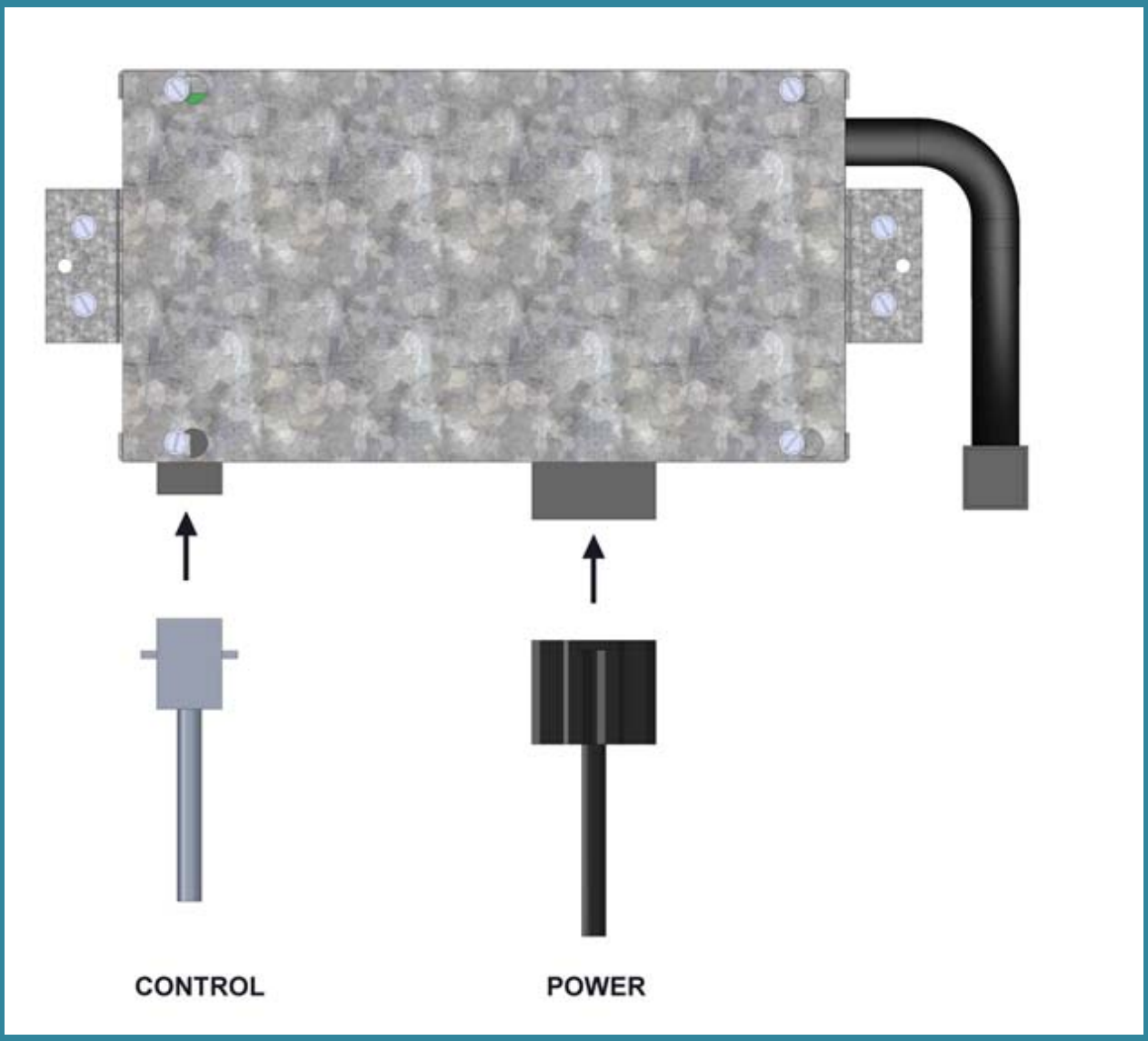

Figure 5 – Legacy Kit Cables

Legacy Kit V5 – SWV1 - OPERATION

Version 5 of the Legacy Kit utilizes a microchip digital controller and a relay as shown in Figure 7 to interface to the Omega standard chassis. The microchip expands the capability of the kit including features such as:

- 3 minute LP Bypass Timer
- 7 minute Compressor Anti Recycle Timer
- On Board LEDs for
    - Processor Status (GREEN)
    - Compressor Contactor (YELLOW)
    - Hi Pressure (RED)
    - Low Pressure (BLUE)

The Version 5 kit also houses the start capacitor usually located in the HTS Signature series HP.

Sequence of Operation

Version 5 Legacy Kit time delay

The Version 5 control board has a built in fixed 7 minute Anti Recycle Timer. At power up to the unit this timer starts counting down its' fixed 7 minute delay. During this 7 minutes the compressor will be locked out from turning on, regardless of the command from the thermostat. During regular operation when the compressor stops running the fixed 7 minute time delay will start counting down to zero. While the timer is counting down the compressor will be locked out from starting regardless of thermostat command. A time delay on the thermostat will delay a command to start the compressor but it will have no effect on the Anti Recycle Time delay.

Version 5 Legacy Kit sequence of operations
For compressor to turn on the following must occur:

a) High Pressure fault must be inactive (switch in closed position)
b) Low Pressure fault must be inactive (Switch in closed position)
c) Anti-Recycle Time Delay count down of 7 minutes must expired
d) Call for Fan must be active
e) Call for Compressor (Cooling will also need call Reversing Valve)

With the compressor on the Low pressure & High pressure switches will be monitored by the PCB. If the pressure drops below cut out set point of the LP Switch the Blue LED will go Solid. If the LP switch stays open for longer than 3 minutes it will lock out compressor and the Blue LED will be flashing. If the pressure gets above the High pressure cut out set point the HP Switch will be open and the PCB will immediately shut down the compressor and lock out the compressor from starting again. Cycling the power off and on to clear active LP/HP alarms (blinking Blue/Red LED).

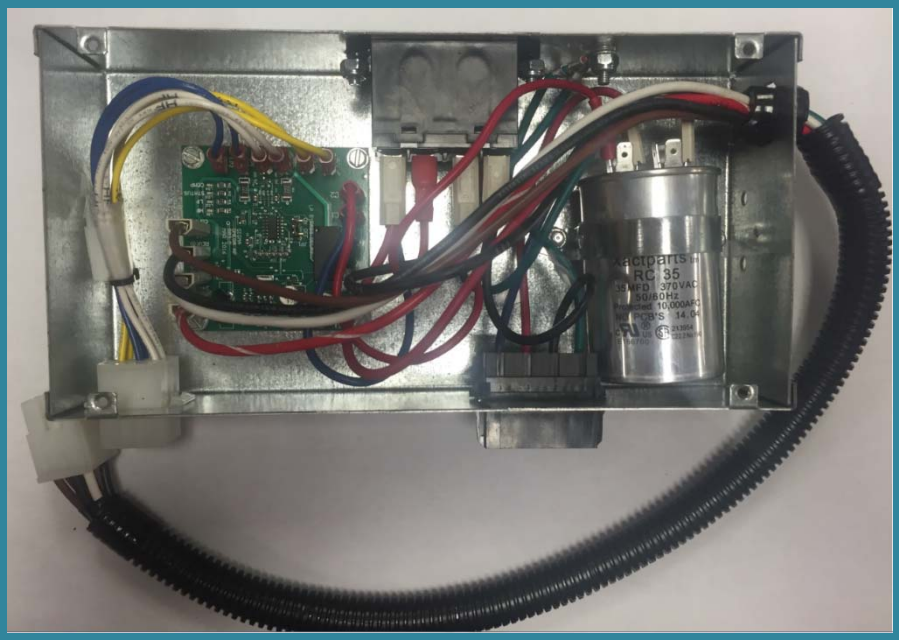

Figure 7 – Legacy Kit Version 5

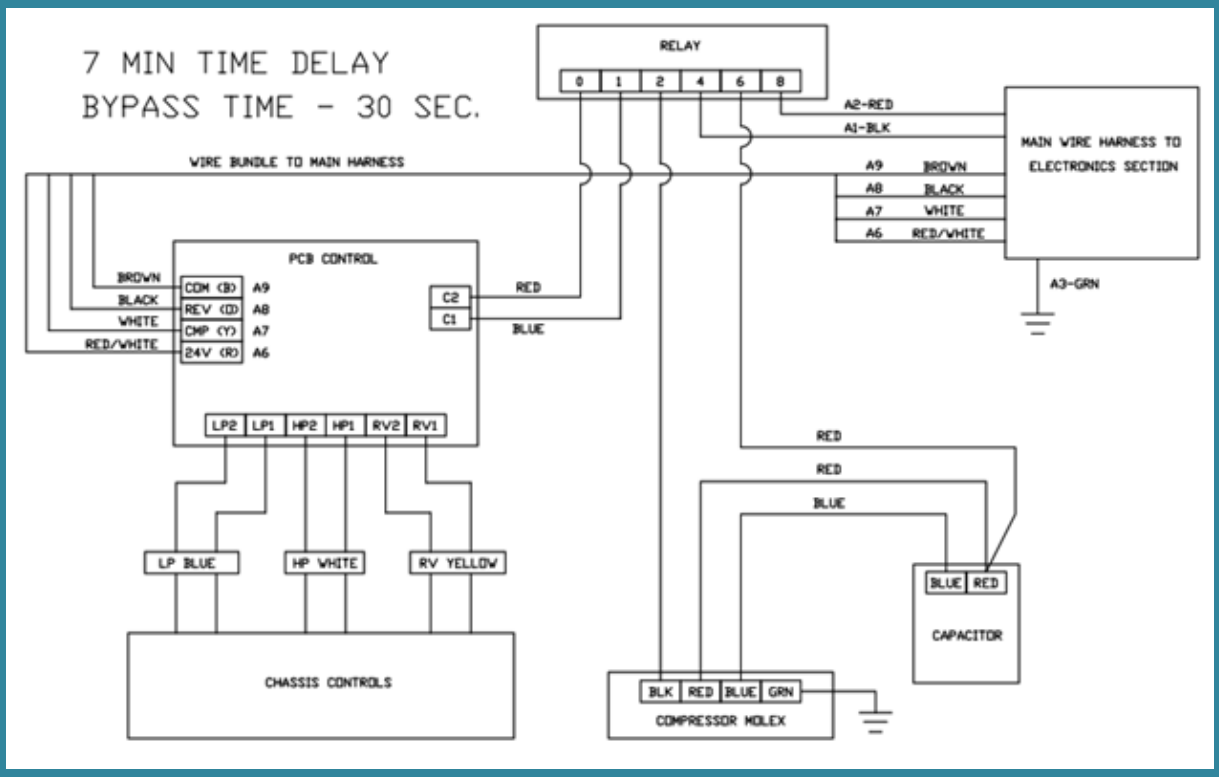

Figure 8 – Legacy Kit Version 5 Electrical Schematic

Trouble shooting:

Processor Status:

The GREEN LED will flash every ½ second if the processor status is OK.

Compressor Contactor:

The YELLOW LED will illuminate SOLID when the compressor contactor is enabled.

Hi Pressure Switch/Safety:

The RED LED will FLASH RAPIDLY if the HP Switch trips (opens).

Low Pressure Switch:

The BLUE LED will illuminate SOLID if the LP Switch trips (opens) while there is a call for compressor.

Low Pressure Safety:

The BLUE LED will FLASH RAPIDLY if the LP Switch is open 3 minutes continuously (LP BYPASS TIMER) while there is a call for compressor.

We require a Heat Pump Thermostat with reversing valve energizing in Cooling mode. Check your thermostat manufacture manual as some thermostats must be programmed to Heat pump mode and energize to cooling while other have switches to set and specific terminals to use.

(Y) – Compressor Call
(O) – Reversing Valve
(G) – Fan
(R) – 24 Volt power
(C) – Common

Trouble shooting

Always check your thermostat wiring connects to determine if the thermostat is causing an issue.

Symptom or Problem	Heating	Cooling	Possible cause(s)	Trouble shooting method
Low Pressure Fault		X	Low Air Flow	Check Air filter is clean, coil surface is clean, and if required replace air filter. Some high MERV rated filters can reduce CFM, Check CFM to make sure you have 400 CFM per ton. If require switch to a higher speed on the fan.
Low Pressure Fault	X	X	-Faulty TX valve - Undercharge or loss of charge	Trouble shoot undercharge measure amp draw of compressor (at black wire of compressor Molex) compare to typical amp draw if significantly lower there may be a leak in the system. Take the readings while running for Enter & Leaving Water temperature (EWT & LWT) as well as Entering & Leaving Air temperatures. Take CFM readings and GPM readings. Look at the data to determine if the unit is operating properly or shows signs of loss of charge. Faulty TX Valve you would also want to look at temperatures across the TX valve to see if it is operational. This would likely be done on a test bench and not in suite.
Low Pressure Fault	X		Low Water Flow or too cold water	Measure water flow (GPM) from chassis water out to return riser. Typically 3 GPM Per Ton is required. Chassis is equipped with water flow regulator valves will have a specified GPM on the chassis label. Possible reasons for lack of water flow: debris stuck in the Co-Aux coil, water supply lines, or water regulator valve. Faulty isolation ball valves or main pump faulty causing low water flow conditions. Purge the co-aux coil of any debris that may inside or address water flow issues. If water is too cold raise the water loop temperature.
High Pressure Fault		X	Low Water Flow or Water is too Hot	Same as above check water flow GPM and water temperature and address areas of concern.
High Pressure Fault	X		Low Air Flow	Check Air filter is clean, coil surface is clean, and if required replace air filter. Some high MERV rated filters can reduce CFM, Check CFM to make sure you have 400 CFM per ton. If require switch to a higher speed on the fan.