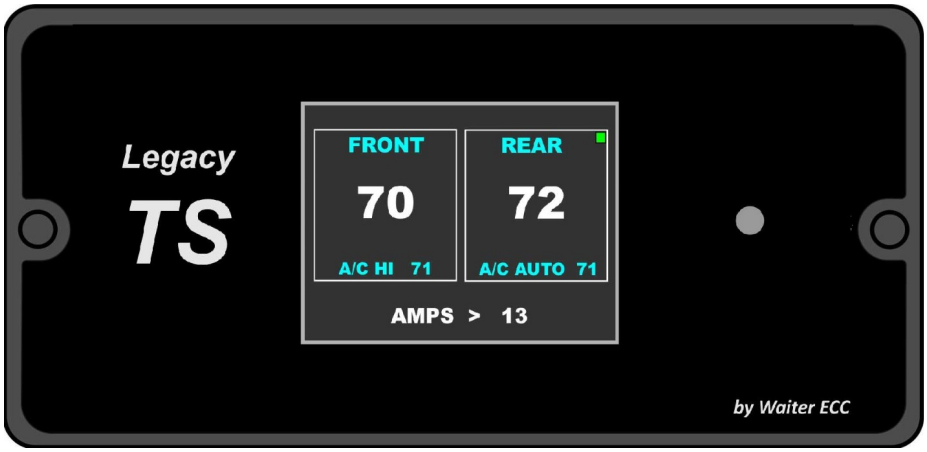
Waiter Legacy TS

Electronic Climate Controller

September 14, 2022



Operation Manual

www.WaiterECC.com

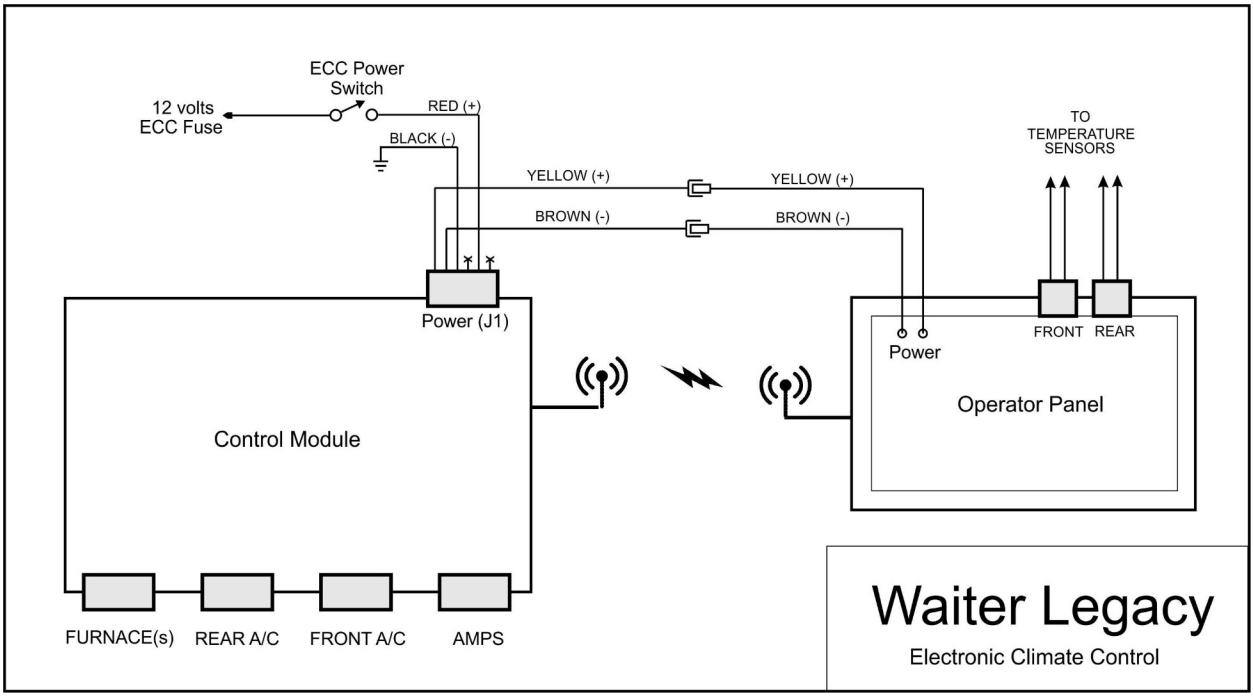
INTRODUCTION

Waiter Legacy TS is a direct plug and play replacement for a failed or aging Intellitec ECC system.

Operation and control is accomplished using a 2.8 inch touchscreen display. Temperatures, modes, and set points are shown in frame areas for the front and rear systems. 110 volt power "amps" is shown at the bottom of the main display. Mode and set points are selected with a mode screen.

The Waiter Legacy and Waiter Legacy TS use the same control module circuit board. Control of the furnace(s) and A/C units is performed by the control module. The control module monitors the current draw (amps) and provides load shedding and power management of the A/C unit compressors as needed. The control module provides 5.6 volt power to the operators touch screen via the existing yellow (+) and brown (-) wires.

The operator touchscreen and the control module communicate with each other using a dedicated wireless link similar to what you'd find in a wireless mouse or keyboard. The base wireless channel number is set at the factory during assembly. There are four sub channel addresses that can be selected by the end user. The base and sub channel addresses must match in order for the operator panel and control module to communicate with each other.



WAITER LEGACY TS – PLUG AND PLAY FOR MOST INTELLITEC ECC SYSTEMS

There are three variations of the original Intellitec ECC system used in 30 amp Fleetwood motorhomes between 1994 and 2008. You MUST verify your system part number(s) before ordering to ensure you order the correct replacement kit.

EARLY MODEL - Early model systems were installed from about 1994 to 1998 and have part numbers 000-003xx-xxx on the operator panel and control module. These early systems used two 2.2k ohm temperature sensors and connectors that aren't compatible with the Waiter Legacy TS System. The replacement kit for early model systems include new temperature sensors and connectors that are compatible with the Waiter Legacy TS system. The old sensors and connectors will need to be replaced.

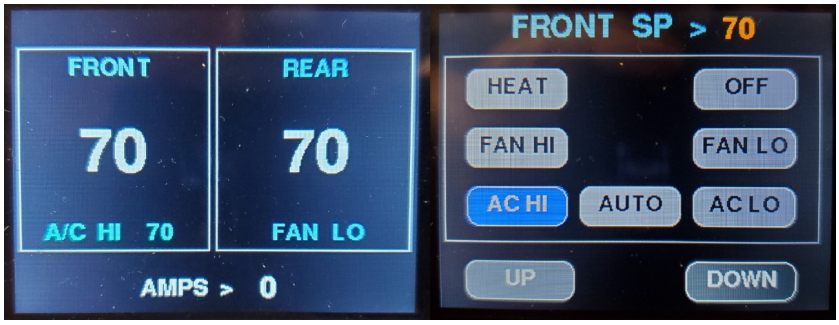
NORMAL MODEL – The normal model system is the most common, installed from about 1998 to 2004. These can be identified with part numbers 000-005xx-xxx. These units are completely plug and play with no wiring changes required.

LATER MODEL – Later model ECC II systems use a completely different operator panel and part numbers 000-008xx-xxx. These were installed from about 2005 to 2008. The control module for these later systems is physically smaller and the power connections to the operator panel are different.

The kit for replacing the later model units includes a new 3d printed control module housing and a power plug adapter for the operator panel.

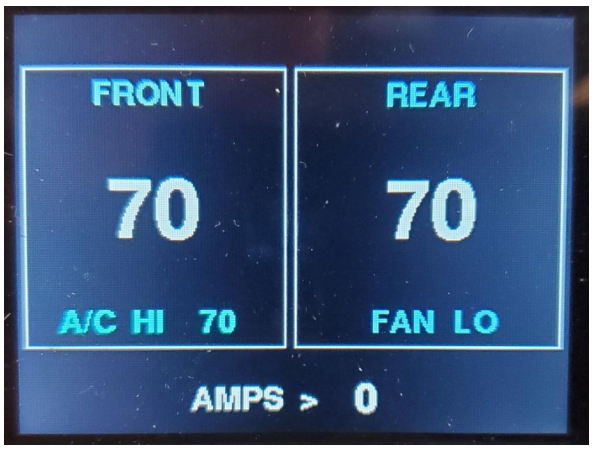
OPERATOR TOUCH SCREEN PANEL

The Operators touch screen is made up of two pages, the main display page (left) and the mode select page (right).



MAIN PAGE

The main page has two status frames, one for the FRONT and one for the REAR. The 120 volt current (amps) is displayed at the bottom of the screen.



These frames show the current temperature in the middle of frame, and the current mode and set point for the front / rear at the bottom of frame.

The main screen automatically dims to one of four preset levels after a 10 second period of no touch activity. These dim levels are set with switches on the touchscreen circuit board.

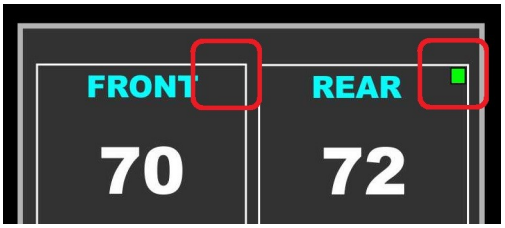
The main page touch sensitive areas are shown in the yellow highlight.

The two areas over the FRONT and REAR frames call up the mode page for the front or rear system.

The area at the bottom of the screen is used to restore the screen to full brightness. After 10 seconds of no activity, the screen returns to its preset dim level.

STATUS INDICATORS

Operational status is shown by a small colored square in the upper right corner of the front and rear frames.



GREEN – Indicates the furnace is being commanded to run (HEAT mode) or, the compressor is being commanded to run (AC modes)

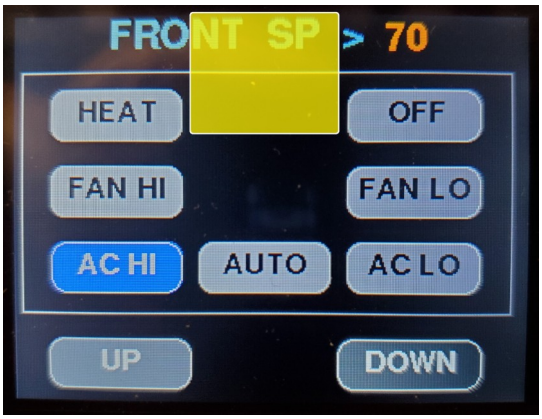
BLUE – Indicates the compressor wants to run, but is being delayed and waiting for the hard start delay timer to time out (approx 2 minutes)

RED – Indicates the compressor has been shed. When amps exceed 28 amps for over two seconds, the compressor is shed. See SHED PRIORITY in Configuration section

BLINKING RED – Pre Shed - Indicates the compressor wants to start, but there aren't enough amps available, so its being delayed until more amps become available. See AC UNIT BTU in Configuration section.

MODE PAGE

The mode page is used to set the system mode and temperature set points for the front and rear system.



The yellow highlighted area at the top center shows a touch sensitive area that allows you to toggle between the front mode page and the rear mode page.

All the buttons are touch sensitive.

The mode screen shows the current mode by highlighting the appropriate mode button. The system (front or rear) and temperature set point is shown at the top of the page.

The mode can be changed by touching the appropriate mode button. Temperature set point is changed by touching the UP or DOWN buttons. The same set point is used for both HEAT and A/C modes. Set point range is 50 to 90 degrees F

UP / DOWN - Either hold or momentarily press the button to raise or lower the set point

HEAT – The furnace is command to run when the temperature drops below the set point. The furnace continues to run until the temperature is 2 degrees or more above the set point.

If your motorhome has only one furnace, this will be the FRONT furnace. The REAR furnace mode has no functionality. See NUMBER OF FURNACES in Configuration section.

OFF – Turns the system OFF.

FAN LO – Blower runs continuously at low speed.

FAN HI – Blower runs continuously at high speed.

AC LO – The A/C blower runs continuously at low speed. The compressor is commanded to run if the temperature is greater than set point. Compressor turns off if temperature is 2 degrees or more below the set point.

AC HI – The A/C blower runs continuously at high speed. The compressor is commanded to run if the temperature is greater than set point. Compressor turns off if temperature is 2 degrees or more below the set point.

AUTO – Blower speed changes according to the temperature. The compressor is commanded to run the if temperature is greater than set point. Compressor turns off if compressor is 2 degrees or more below the set point.

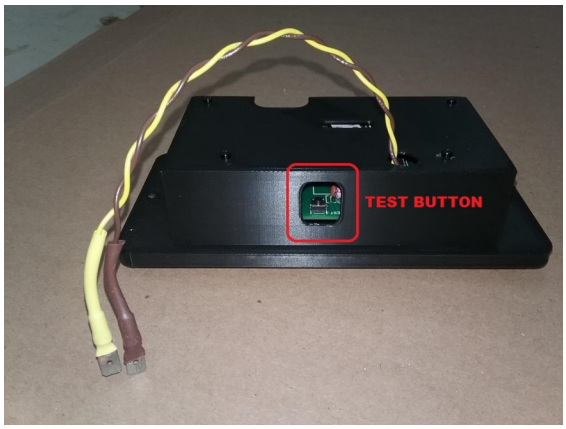
Blower high speed is commanded if the temperature is greater than 5 degrees above the set point.

Blower low speed is commanded if the temperature is less than 4 degrees above set point. When the temperature drops 2 degrees or more below the set point, the compressor is commanded OFF. 30 seconds later the blower is commanded OFF.

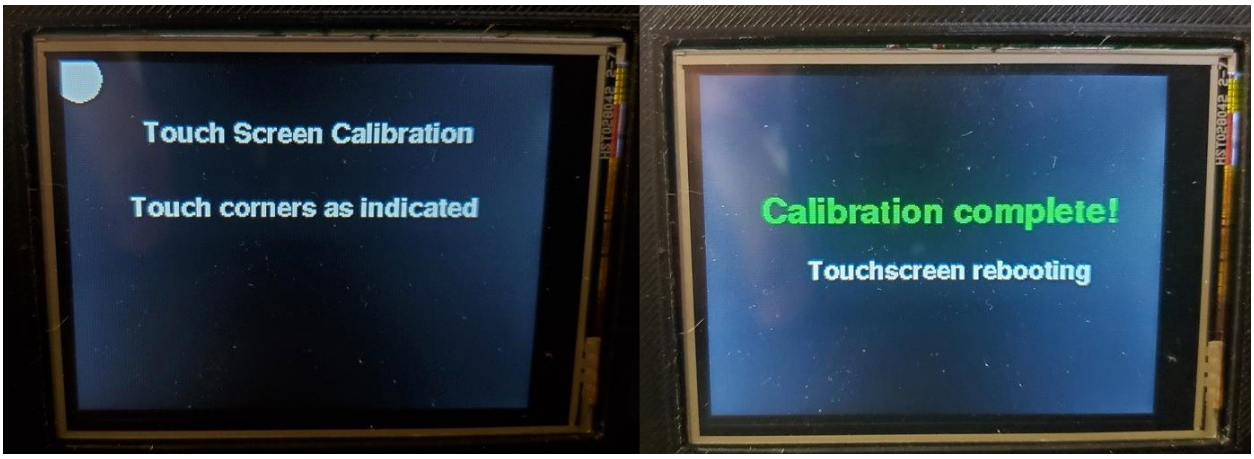
NOTE – If the compressor is SHED during the AUTO COOL operation, the blower continues to run at its commanded speed.

TOUCH SCREEN CALIBRATION

Touch screen calibration isn't normally required. However, in the unlikely event it needs to be done. The process is simple.



1) Activate the calibration mode by momentarily pressing the TEST BUTTON on top of the TS display.



2) Momentarily touch the display in each corner as indicated.

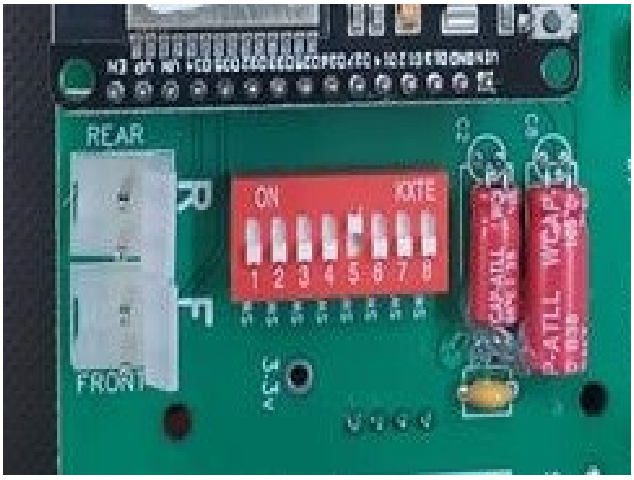
3) When complete, the touchscreen will reboot.

SYSTEM CONFIGURATION

System parameters can be selected on the control circuit board and/or the operator panel. Configuration changes allow the user to optimize the performance of the Waiter Legacy system for their particular motor homes configuration

Control Module (CM)

SW1 – ADDR1 (SW1 – SW2)	OFF-OFF = 0x00, ON-OFF = 0x10
SW2 - ADDR2 (SW1 – SW2)	OFF-ON = 0x20, ON-ON = 0x30
SW3 - Front A/C unit btu	OFF = 13k, ON = 15k
SW4 - Rear A/C unit btu	OFF = 13k, ON = 15k
SW5 - SHED sequence	OFF = Rear first, ON = AUTO
SW6 - SPARE	
SW7 - SPARE	
SW8 - SPARE	



Touch Screen Operator Panel (OP)

SW1 – ADDR1 (SW1 – SW2)	OFF-OFF = 0x00, ON-OFF = 0x10
SW2 - ADDR2 (SW1 – SW2)	OFF-ON = 0x20, ON-ON = 0x30
SW3 - Number of furnaces	OFF = 2, ON = 1
SW4 - Min Brightness	SW4-OFF SW5-OFF = 75% SW4-ON SW5-OFF = 50%
SW5 - Min Brightness	SW4-OFF SW5-ON = 25% SW4-ON SW5-ON = 0%
SW6 - SPARE	
SW7 - SPARE	
SW8 - SPARE	

The OP and CM must be rebooted to pick up address changes made to switch settings.

NUMBER OF FURNACES (OP)

SW3 on the operator panel OFF = two furnaces, ON = one furnace.

When configured for one furnace (SW3 ON) the rear HEAT mode option is not shown on the rear mode select page.

WIRELESS COMMUNICATION ADDRESS (OP and CM)

SW1 (ADD1), SW2 (ADD2) on the control module and operator touchscreen set the sub address for the wireless communication.

Communication between the operator panel (OP) and the control module (CM) is achieved by using a dedicated wireless link similar to what you'd find in a wireless mouse or keyboard.

The OP and CM are paired with each other before being shipped using any of the thousands of wireless base channels available. In the extreme remote possibility that two Waiter

Legacy systems are in close proximity and interfering with each other, the user can select a different wireless sub channel by changing the address on the operator panel and the control module with the ADD1 and ADD2 switches. The selected channel sub address for the OP and CM must match or they will not talk to each other.

The table below shows the sub address for the switch and jumper settings

	0x00	0x10	0x20	0x30
SW1 (ADD1)	OFF	ON	OFF	ON
SW2 (ADD2)	OFF	OFF	ON	ON

A/C UNIT BTU (CM)

SW3	FRONT A/C unit	OFF = 13k,	ON = 15k
SW4	REAR A/C unit	OFF = 13k,	ON = 15k

Switches can be set to tell the system what A/C unit BTU you have installed, select 13 or 15k btu. This selection is only used for estimating the compressor current draw prior to give the command to start a compressor. The 13k btu compressor is estimated at 8 amps, the 15k btu compressor estimated at 11 amps. Actual real time current draw (amps) is used for shedding.

Pre-shed - Before commanding an A/C compressor to start, the system estimates if there are enough amps available to start the compressor. It does this by adding either 8 or 11 amps to the current amps being drawn. If the sum exceeds 28 amps, the compressor will be placed in a “pre-shed” mode and won’t start until enough amps become available.

EXAMPLE ; The system comes configured as having two 13k btu A/C units installed. The system is currently drawing 21 amps from the microwave (11amps) , A/C blower (3 amps) , Water heater (4), Refrigerator (2), and converter (1). The system wants to start the front compressor and does a pre-shed check. The sum of 21 actual amps and an estimated 8 amps for the compressor results in 29 amps. This exceeds the 28 amps maximum, so the compressor is placed in a pre-shed mode and doesn’t start.

The system continues to monitor the amps and if the microwave or water heater are turned off, there’ll be enough amps available and the compressor will start if its still needed..

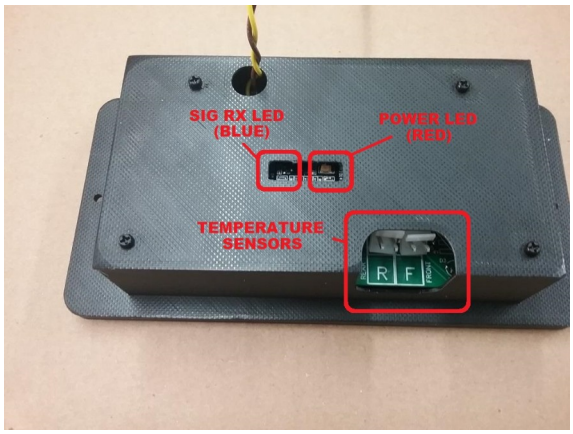
SHED PRIORITY

SW5 SHED priority OFF = REAR, ON = AUTO

Shed priority provides two options on how / what A/C unit is shed. By default, the REAR setting will always shed the rear A/C unit first. The AUTO setting will alternate shedding between the front and rear A/C units.

In the REAR setting (default) if the front compressor wants to run, but there aren't enough amps available (pre-shed), the system will shed the rear compressor in an attempt to free up enough amps to start the front compressor.

SIG RX LED



The OP and CM have a small LED indicator to signal when it receives a communications packet. Information packets are exchanged at least every ten seconds or immediately if a temperature, set point, or status changes. The blue (or red) LED on the OP or the SIG RX LED on the CM blink whenever they receive a packet.

A/C TEST SWITCH

This switch provides a quick and easy way to verify the operation of an A/C unit. This switch forces the compressor and high speed fan to run, There's no hard start delay, no shedding, no temperature control, etc..

IMPORTANT NOTES ABOUT USING THE TEST SWITCH

1) The Waiter Legacy Control module must have 12 volts power in order for the TEST switch to function.

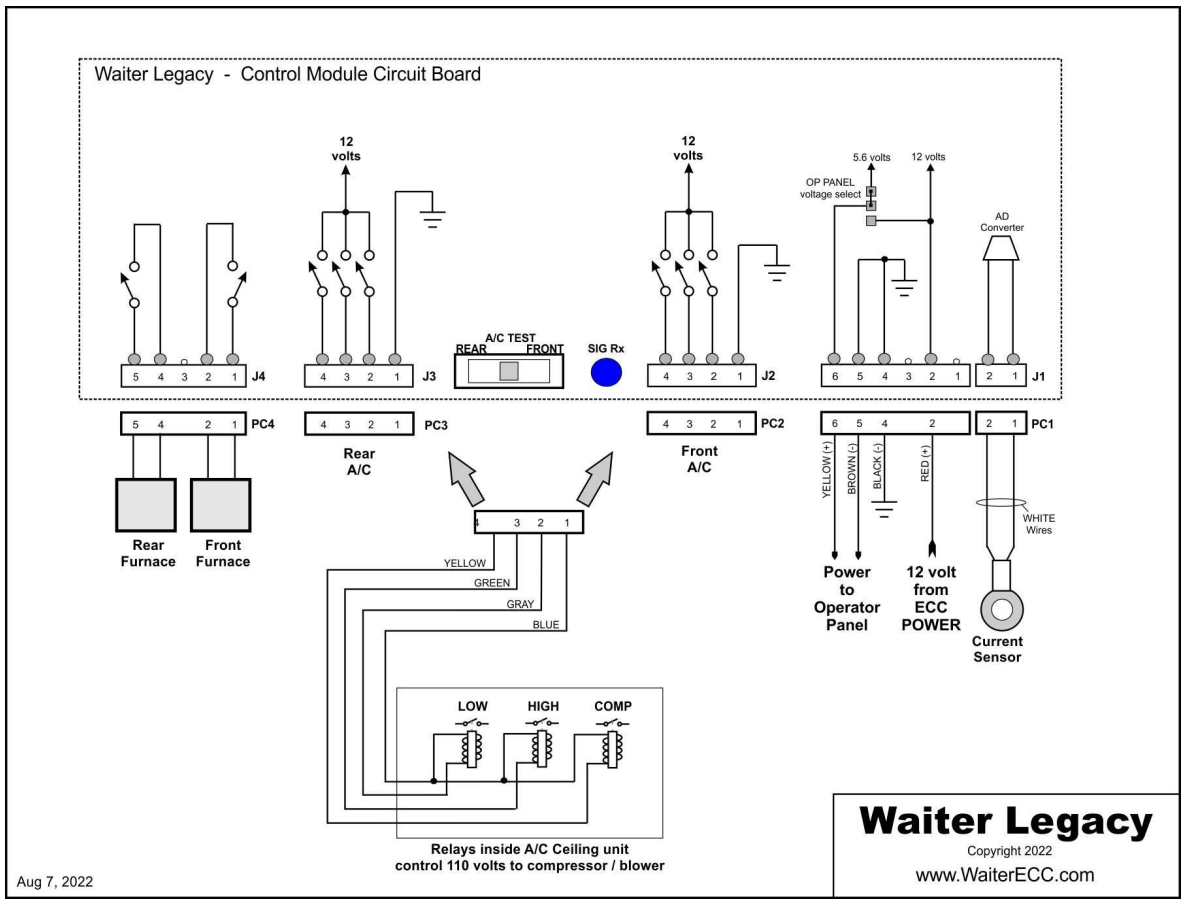
2) To safeguard against attempting to run the HI and LOW speed blower at the same time, its mandatory to place the front and rear systems in OFF position before using the TEST switch

3) The TEST switch bypasses shedding, hard start delay, and pre-shed functions. Before using the TEST switch, verify you have enough amps available to run the compressor without overloading the 30 amp service.

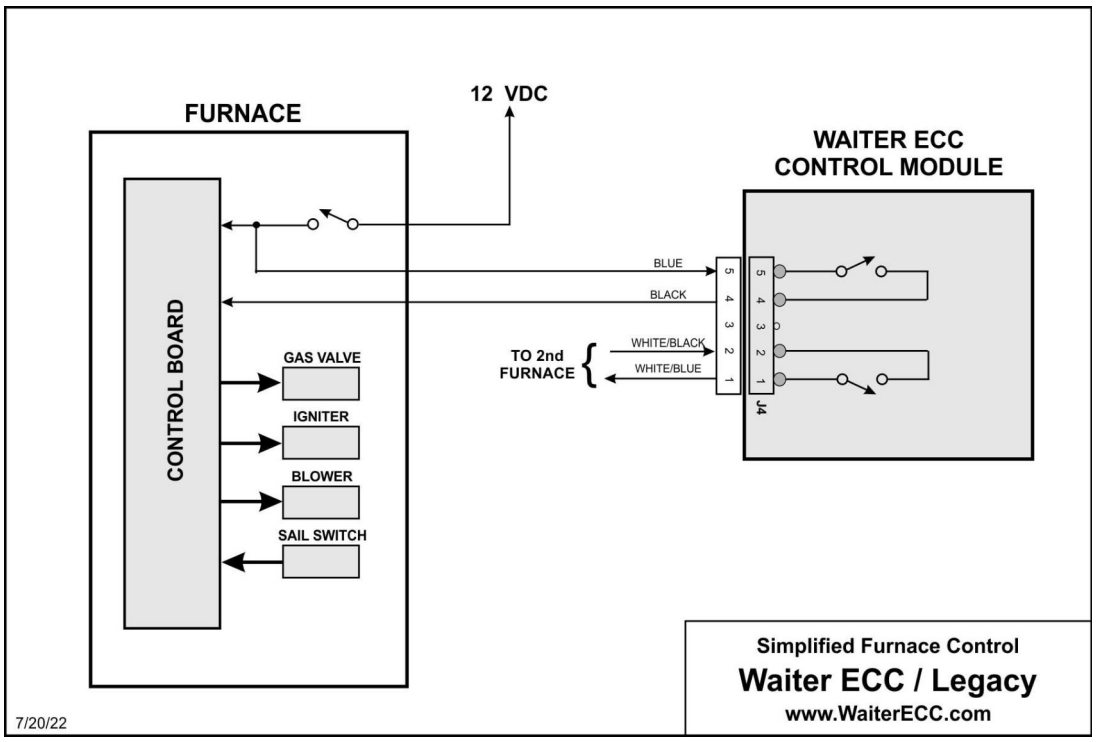
You should also allow enough time between compressor runs to allow high pressure to bleed off.

4) If you run a compressor then stop it, you must allow enough time for the head pressure to bleed down. Failure to do this could result in a large overload when attempting to restart the compressor.

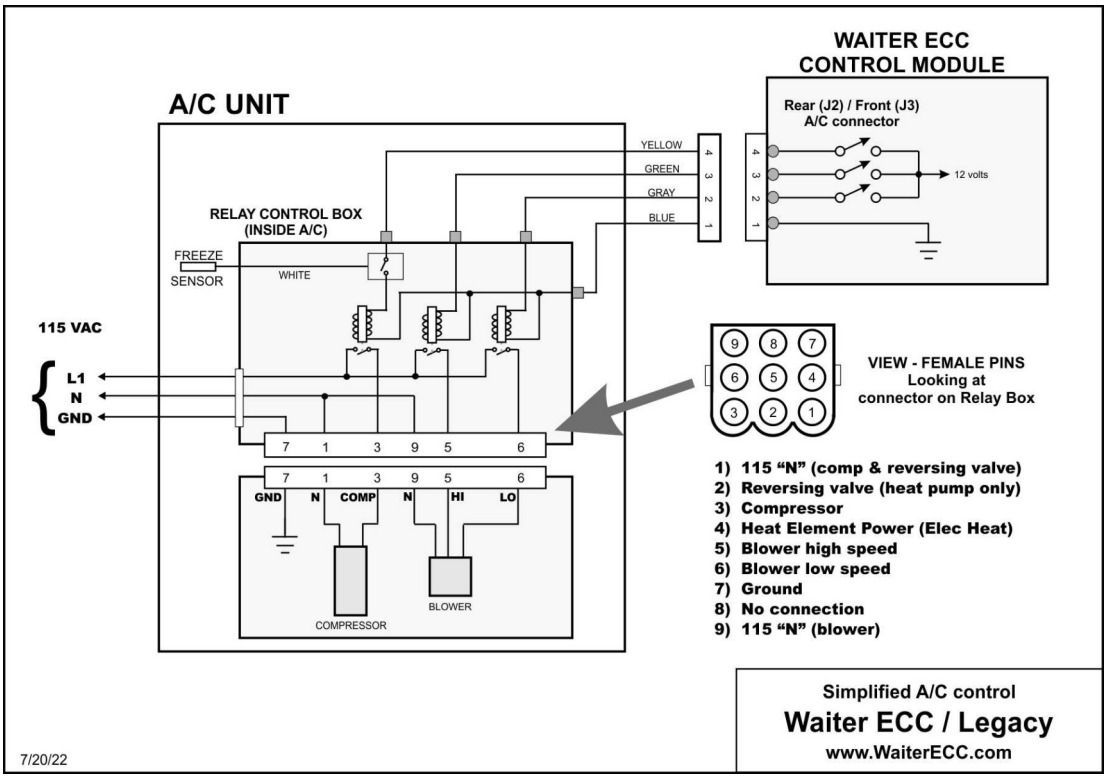
SIMPLIFIED CONTROL MODULE DIAGRAM



TYPICAL FURNACE WIRING



TYPICAL A/C UNIT WIRING



SIMPLIFIED 120volt POWER DIAGRAM