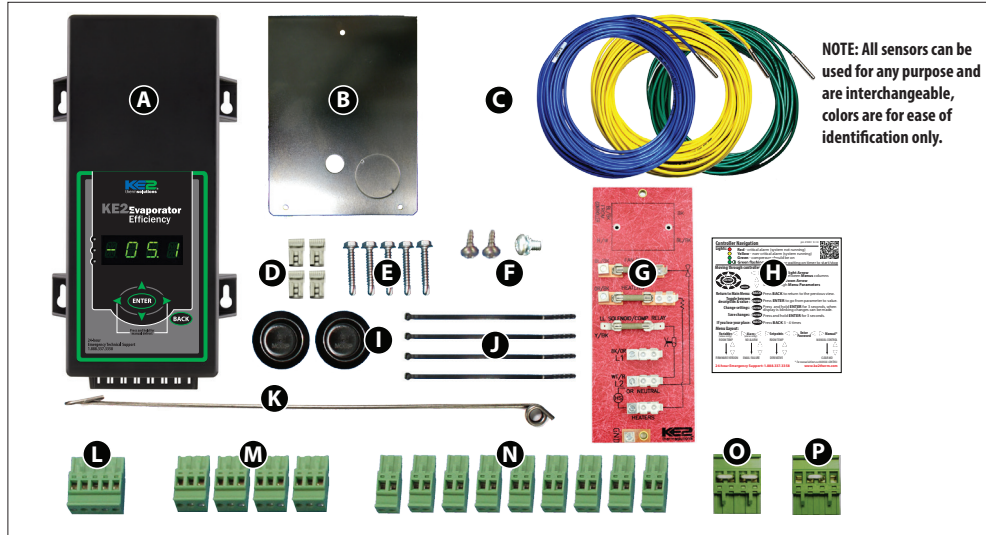




This reference should remain on site with the installed KE2 Evaporator Efficiency controller.



Parts List

The following parts are included in the KE2 Evaporator Efficiency (KE2 Evap) controller kits:

- Kit #20178 with 120/208-240 VAC controller
- Kit #20844^① with 120/208-240 VAC controller
- Kit #20631^② with 120/208-240 VAC controller
- Kit #20222^③ Beacon® I & II replacement controller

- A** (1) KE2 Evaporator Efficiency controller
- B** (1) high voltage safety shield
- C** (3) 15' colored temperature sensors ^{①②③}
- D** (4) 90 degree quick disconnects
- E** (5) self-tapping screws
- F** (2) course thread screws (1) fine thread machine screw with lock washer
- G** (1) KE2 Terminal Board with fuses
- H** (1) KE2 Evap Navigation sticker
- I** (2) 1/2" plastic knockout plugs
- J** (4) wire ties (rated for low temp)
- K** (1) Air sensor mount
- L** (1) 5-position pluggable connector (for EEV)
- M** (4) 3-position pluggable connectors (for power in, transducer and 3A relay)
- N** (9) 2-position pluggable connectors (for sensors and digital input, analog output)
- O** (1) 120 Voltage jumper
- P** (1) 208-240V Voltage jumper (already installed on KE2 Evap)

^① 20844 KE2 Ultimate Install kit includes KE2 Mounting Box pn 20687 and 40' colored temperature sensors

^② 20631 kit does not include temperature sensors

^③ 20222 Beacon® kit includes an extra temperature sensor, and pressure transducer with cable.

Supplies List

The KE2 Evap is supplied with all of the accessories required for the controller to work, however, standard truck stock items will also be required to install the controller. A list of items is provided.

- **Conduit to go between the controller and the evaporator**
- (2) **Conduit connectors** (straight or elbow as required)
- (11) **High voltage wires matched to the load of the heaters, fans, liquid line solenoid, alarm (if used), and the controller.**
- (8) **Spade Connectors matched to gauge of high voltage wires**
- **Wire labeling** (numbers, colors, etc.)
- **Additional wire ties**
- **18 gauge twisted shielded pair** (if extending sensor wires)
- **Foam insulation if running wires outside the space.**
- **Silicone** (for sealing any box penetrations)

Popular Accessories

The following parts are available separately:

- Wire Harness- 10'** pn 20736, **25'** pn 20670, **40'** pn 20737
- Mounting Box** pn 20687
- Door Switch** pn 20543
- Buzzer** pn 20972
- Buzzer & Light Combo** pn 20973

Further information on accessories can be found in KE2 Condensed Catalog 411.



Visit our YouTube channel for videos on KE2 Evap installation and setup.

- Video 046 How to Wire the KE2 Evap Controller
- Video 033 How to Confirm the KE2 Evap is Wired Correctly
- Video 068 How to Determine Proper Coil Sensor Location
- Video 069 How to Properly Install a Coil Sensor
- Video 032 Initial Defrost Sequence: KE2 Evap & KE2 Adaptive Control
- Video 012 How to Navigate the KE2 Evap Controller
- Video 020 KE2 Evap Scrolling Text - Initiate Manual Defrost
- Video 017 KE2 Evap Scrolling Text - Change Room Temp Setpoint
- Video 040 Configure the KE2 Evap for a Door Switch from the Front Panel



[youtube.com/ke2therm](https://www.youtube.com/ke2therm)



KE2 Evaporator Efficiency

Quick Start Guide

Arriving at the Jobsite

When arriving at any jobsite, it is good practice to verify the correct operation of the system. Even systems running for a considerable amount of time without requiring a service call may not be running properly.

Inspect the coil to see the current frost pattern. If the unit has not recently performed a defrost, look for the heaviest area of frost. This will be used to locate the coil sensor.

Installers should account for a full system diagnostic in the installation estimate for the controller.

Although it may seem unnecessary, identifying system issues before the controller is installed will save time overall. It will also allow the controller to provide the highest energy savings.

Verify the system is running correctly. Taking several measurements will help determine the current health of the system.

Two of the most critical indicators of system health are the superheat and subcooling.

Superheat - Superheat is the most overlooked inefficiency in existing systems. Typically the superheat on a mechanical thermostatic expansion valve (TEV) is set when there is no product in the controlled space, if it is set at all.

When applying the controller to an existing system with a **mechanical** expansion valve, the superheat should be set to the manufacturer's recommendation. With an **electronic** expansion valve (EEV), lower superheat and improved efficiency can be maintained.

Subcooling - There should be a solid column of liquid at the inlet of the valve. This can be verified by looking at the sight glass, however, the proper method requires measuring the subcooling of the liquid entering the valve.

Verify Temperature Difference

A typical Temperature Difference (TD) between the coil temperature and the air temperature is between 5 and 15°F. An insufficient TD, between the coil and air temperature, indicates a system issue that needs to be addressed before installing the KE2 Evap.

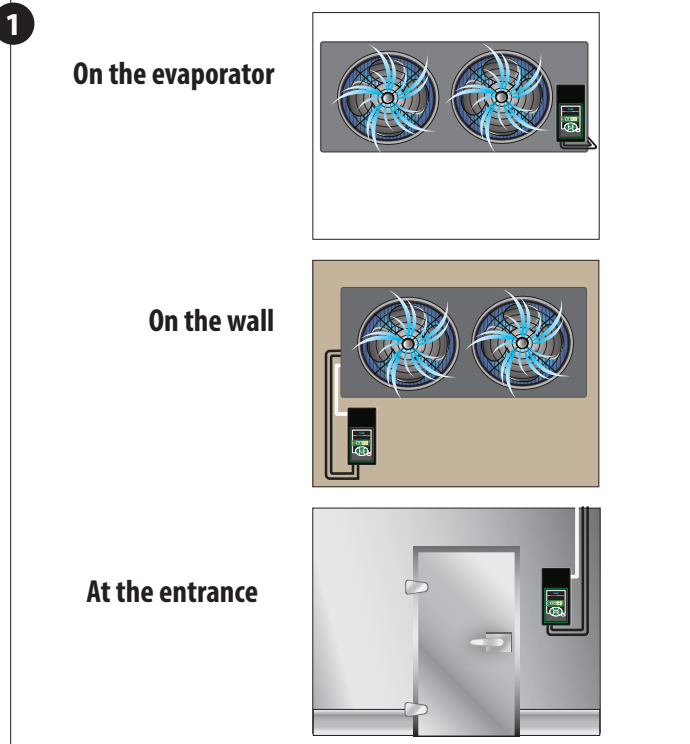
Understanding Frost

The air exiting side of the evaporator is often the coldest spot on the coil due to the load affecting the temperature. As air travels through the fins of the evaporator, the Relative Humidity will reach 100%. Moisture will begin to drop out of the air, and deposit on the coil surfaces to form frost. Although frost typically has a negative connotation when discussed in refrigeration, initial frost formation has a positive effect, due to increased surface area of the tubes, which increases air velocity through the fins. It is not uncommon to see a small amount of frost on the coils that have KE2 Evap controllers installed. The KE2 Evap is continually measuring, monitoring, and managing the frost to assist in maximum energy efficiency. When the efficiency of the coil is reduced due to excessive frost, the KE2 Evap will initiate a defrost.

Determining Controller Location

1 ■ The controller is designed to be as versatile as possible, and can be installed inside or outside the controlled space. The location of the controller should be discussed with the end user to determine if they have a preference, and in a location convenient for installation by the service provider. Locating the controller at the entrance to the space typically does not increase the complexity of the wiring, merely the length of the wires.

■ The controller can also be located at the condenser, but should not be installed outdoors without an enclosure to protect it from sunlight and moisture (must be within operating range -40°F to 140°F (-40°C to 60°C))





KE2 Evaporator Efficiency Quick Start Guide

- 2 Cut a length of conduit to go from the controller to the evaporator**
 ■ Measure the distance between the controller and evaporator to account for the extra length necessary to properly route conduit.

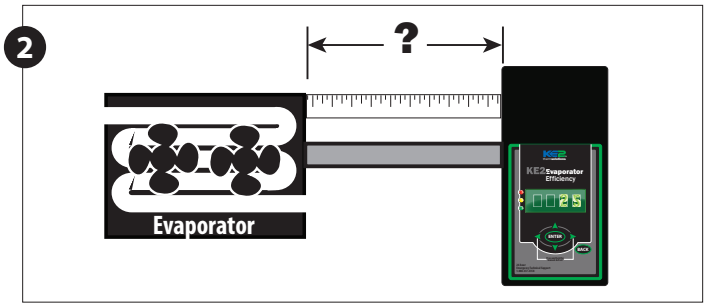
Determine the number of wires to go to the controller.

- Controller power (3 wires)
- Fan control (2 wires)
- Defrost (heater) control (2 wires)
- Liquid line solenoid (2 wires)

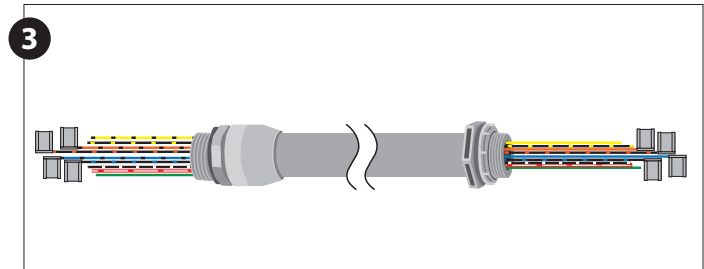
If the Aux Relay is used, the installer will need to supply an additional pair of wires to the controller

- Aux relay (2 wires)

Note: Install in accordance with local wiring codes. KE2 Therm does not accept responsibility for incorrect or unsafe wiring.



- 3 Cut wires to length**
 ■ Once the number of wires is determined, cut the wires to length.
 ■ The wire should be long enough to account for the necessary connections in the controller and evaporator.
 ■ Use the optional KE2 Wire Harness, or select different colored wires, (recommended colors: blue - fan, orange - heaters, yellow - solenoid, purple - alarm). This will simplify the installation and troubleshooting. If only a single color is available, both ends of the wires should be labeled with a matching number. This will save time when wiring the evaporator.

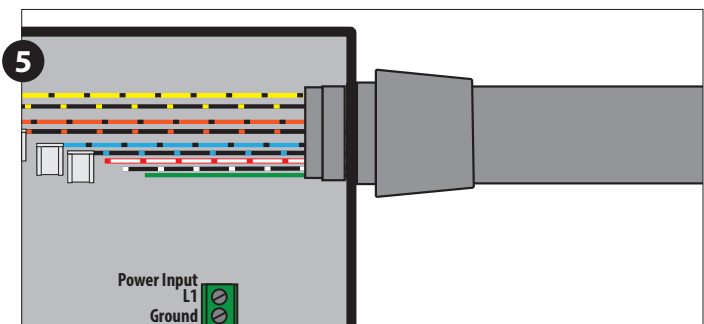


- 4 Determine the current draw of the unit.**
 ■ Use the nameplate to determine the Amp rating of the unit, and select the proper sized wire. Also, verify the unit does not exceed the relay rating on the KE2 Evaporator Efficiency controller.

If the amp draw of the fans, heaters, compressor or aux relay exceeds the rating of the onboard relays, external contactors must be used. In that case, the onboard relays are used to switch the power to the contactor coils. KE2 Therm can provide ready made and tested contactor panels for various high amperage applications. See Page 9. Contact KE2 Therm for specific information.

MODEL NO.	SERIAL NO.				
	QTY	HP	VOLTS	PH	HZ
1	1/20	208-230	1	60	
MOTOR CIRCUIT	AMPS EA	MIN CKT AMPS	MAX OVRCRT PROT		
	1.0	15	20		
HEATER CIRCUIT	VOLTS	PH	AMPS		
	230	1	4.6		
REFRIG & OIL	REFRIG TYPE	REFRIG WGT	OIL TYPE		

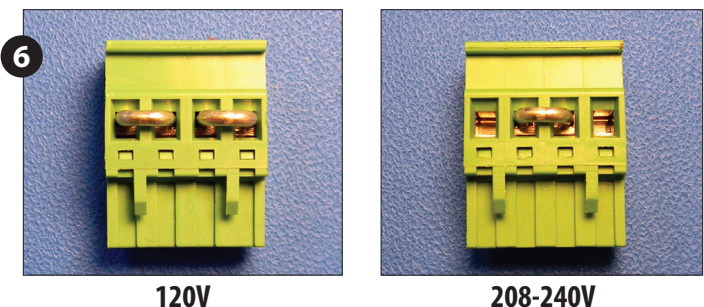
- 5 Preparing conduit**
 ■ Feed the wires through the conduit.
 ■ The conduit connectors can be added at this time. Determine if a straight or 90 degree connector is most appropriate for the installation, and attach to the conduit.
 ■ Securely connect one end of the conduit to the controller, or mounting box, if used.



- 6 Wiring the controller**
 The controller is pre-configured for 208/230V incoming power by the installed four-position plug with a single jumper, as shown in Figure 6.

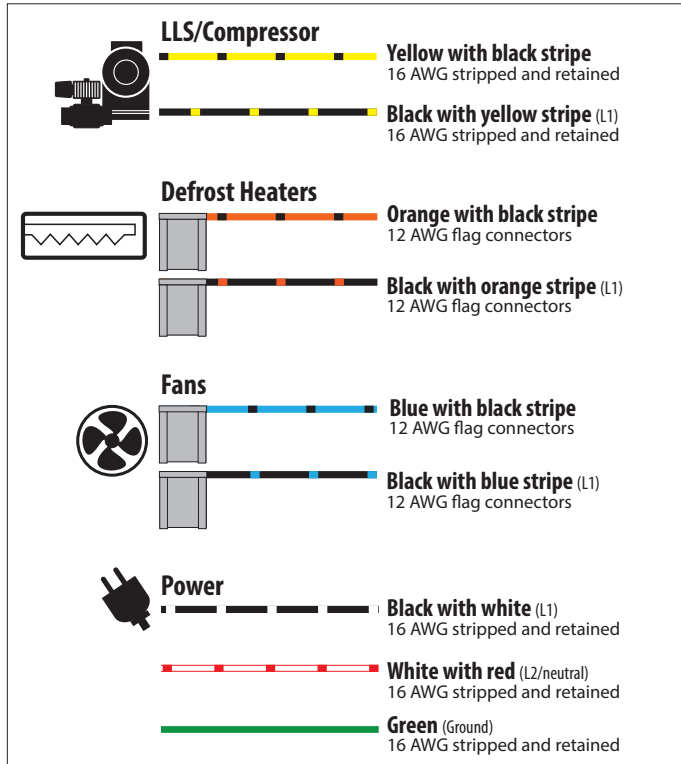
A second plug with two jumpers, as shown in Figure 6, is included in the kit to convert the controller to 120V incoming power. Simply replace the single jumper plug with the two jumper plug. See Back View of Controller, page 13.

- **Power should not be connected to Voltage selector, it is a selector only.**
- Power for the controller should be connected to the **Power In** location using a 3 position connector.




⚠ Controller will illuminate display when 120V is applied with 208-240V selected, however, controller will not function properly.

Wire Harness Key



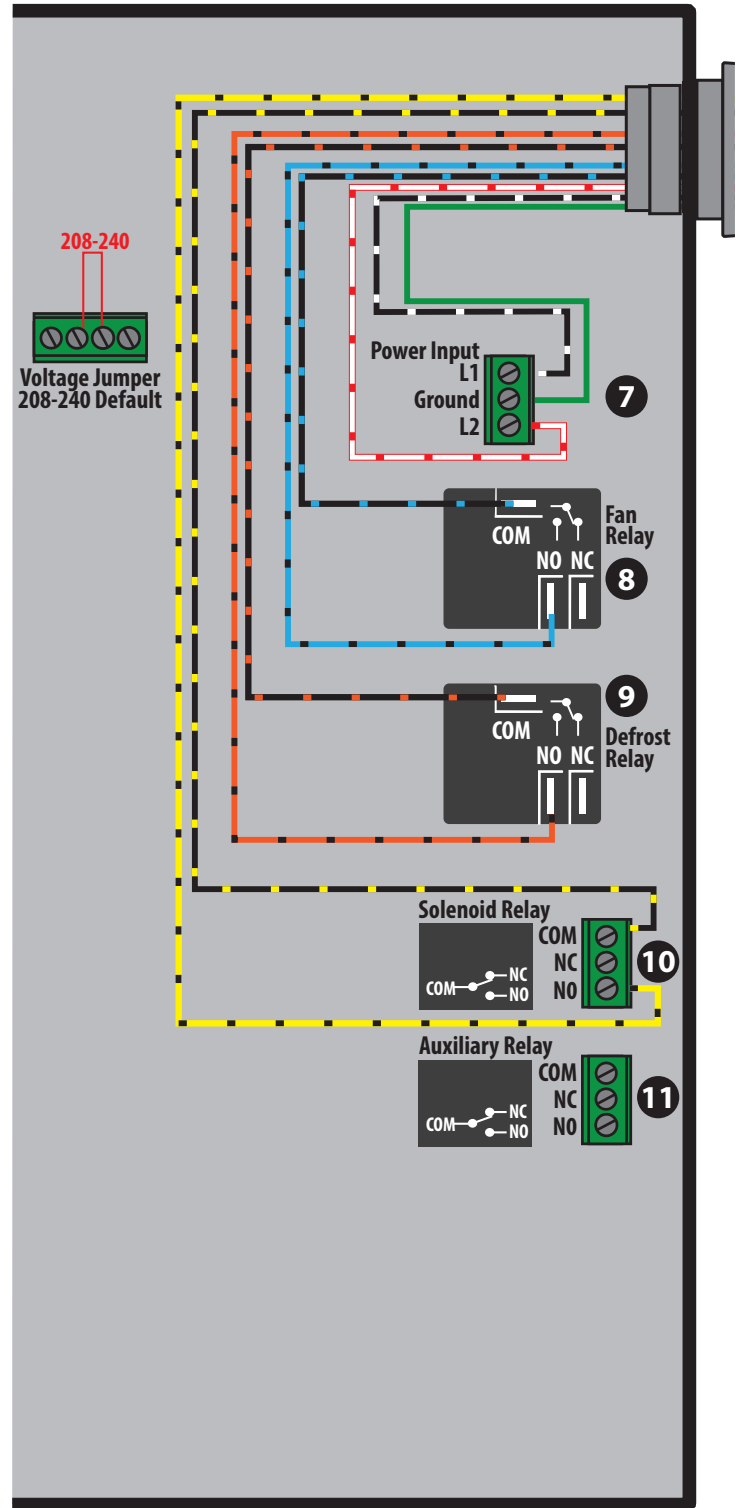
- 7 Controller Power**
- The KE2 Wire Harness wires are pre-stripped (if not using the KE2 Wire Harness, strip the end of the wires used to provide power to the controller).
 - Locate a 3-position pluggable connector in the parts kit.
 - Fasten incoming power to the 3-position pluggable connector*.
 - Plug the 3-position pluggable connector into board as indicated in Wiring Schematic.
- *All terminal screws should be tightened to 5 ft-lbs.

- 8 Fan Relay WITH the KE2 Wire Harness**
- **The BLUE wires are used for FAN control.**
 - Locate the blue wire with a black stripe, and the black wire with a blue stripe.
 - Plug the black wire with a blue stripe into the COM terminal of the Fan Relay
 - Plug the blue wire with a black stripe into the NO position of the Fan Relay
- Fan Relay WITHOUT the KE2 Wire Harness**
- Strip the end of the 2 wires used for fan control.
 - Locate 2 female spade connectors in the parts kit.
 - Crimp on the female spade connectors.
 - Plug the connectors into the COM and NO positions of the Fan Relay.

 Confirm combined fan motor load is not over 10 amps

- 9 Defrost (Heater) Relay WITH the KE2 Wire Harness**
- **The ORANGE wires are used for the HEATER control.**
 - Locate the orange wire with black stripe, and black wire with orange stripe.
 - Plug the black wire with orange stripe into the COM terminal.
 - Plug the orange wire with black stripe into the NO position of Defrost Relay.
- Defrost (Heater) Relay WITHOUT the KE2 Wire Harness**
- Strip the end of the 2 wires used for the defrost control.
 - Locate the remaining 2 female spade connectors in parts kit.
 - Crimp on the female connectors.
 - Plug the connectors into COM and NO positions of the Defrost Relay.

 Confirm combined heater load is not over 20 amps.






KE2 Evaporator Efficiency Quick Start Guide


- 10 Liquid Line Solenoid (LLS)/Comp. Relay USING KE2 Wire Harness**
- The **YELLOW** wires are used for **LIQUID LINE SOLENOID** control.
 - Locate a 3-position pluggable connector from the parts kit.
 - Fasten the black wire with yellow stripe into the COM position of the LLS/Comp Relay.
 - Fasten the yellow wire with black stripe into the NO position of the LLS/Comp Relay.
 - Plug the 3-position pluggable connector into the location as indicated in the Wiring Schematic.

Liquid /Compressor Relay WITHOUT the KE2 Wire Harness

- Strip the end of the 2 wires used to control the Liquid Line Solenoid.
- Locate a 3-position pluggable connector from the parts kit.
- Fasten the incoming power for the liquid line solenoid to COM position of the LLS/Comp Relay
- Fasten the lead from the liquid line solenoid to the NO position of the LLS/Comp Relay.
- Plug the 3-position pluggable connector into the location as indicated in Wiring Schematic.

 Max relay rating is 3A.

- 11 Auxiliary Relay**
- If using the Auxiliary Relay, the installer will need to supply an additional pair of wires to the controller.
 - Strip approx. 1/4" of wire insulation on end of the 2 wires, for the auxiliary device.
 - Locate a 3-position pluggable connector from the parts kit.
 - Plug the 3-position pluggable connector into the location as indicated in the Wiring Schematic.

 Max relay rating is 3A.

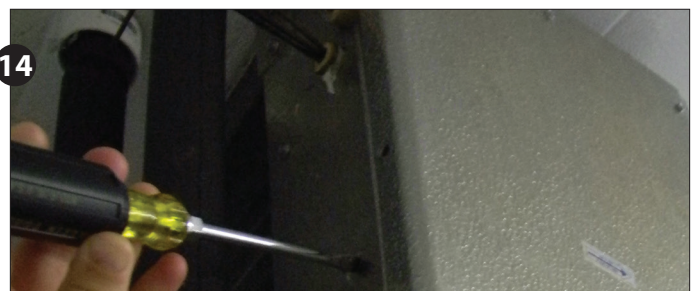
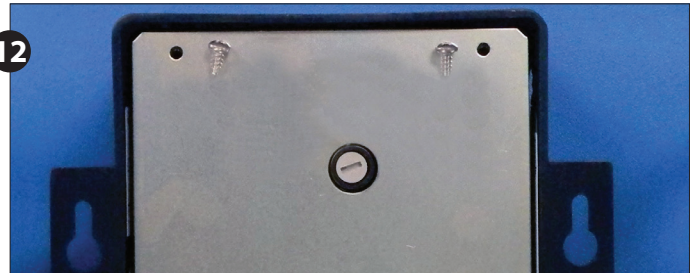
 **Note:** Before installing the safety cover, plug in any remaining connectors to store for future use.

- 12 Install Safety cover**
- Once all of the high voltage wiring is complete, install the metal cover on the controller.
 - Locate the cover and 3 small screws from the accessories kit.
 - Position the cover over the 3 mounting posts.
 - Using the 2 coarse thread screws attach cover to the plastic posts.
 - Use the fine threaded machine screw with lock washer to fasten the cover to the metal post.

Set the controller in a safe place.

- 13 Preparing the Evaporator**
- The evaporator wiring will require access to the high voltage terminal block on the coil.
 - Turn off power to the system.
 - Verify power is no longer present using a multimeter.

- 14 Evaporator wiring**
- Now that the conduit is prepared, it can be connected to the evaporator.
 - Locate the proper sized knockout and carefully remove knockout.
 - Connect conduit to the evaporator



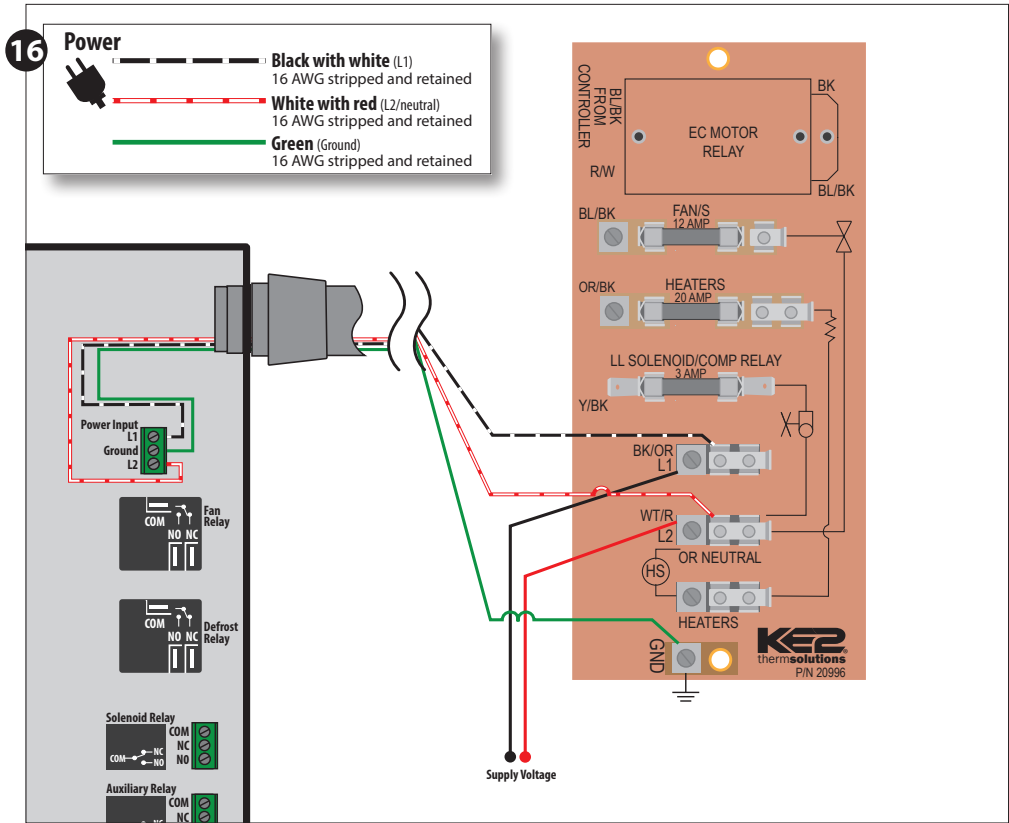
15 Study the existing wiring.

Although the existing terminal board in the evaporator may be used, it is often poorly labeled and difficult to wire. KE2 Therm provides a fused terminal board (Item G in the parts list) that greatly simplifies wiring as well as provides additional protection for controller components. The instructions below are based on the use of this board.

Determine the location of the following: incoming power, fan leads, heater leads, defrost termination leads, and fan delay leads.

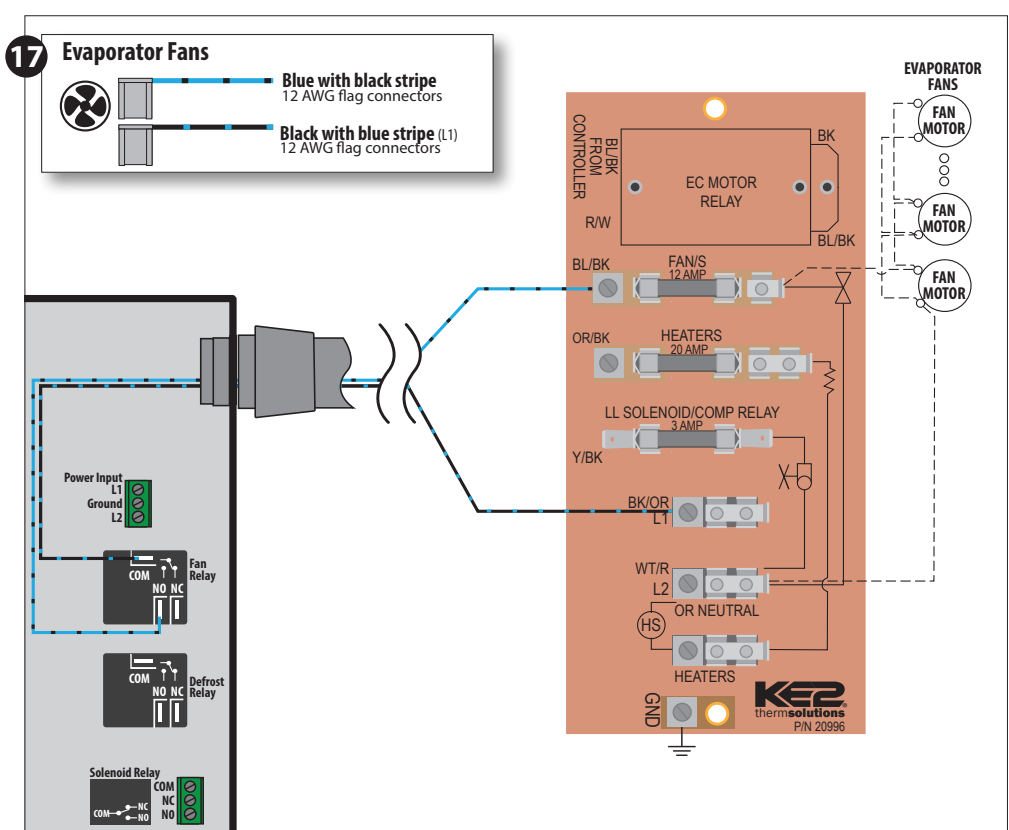
16 Evaporator wiring – Controller

- Bring uninterrupted power to L1 and L2/neutral on the terminal board. Connect ground to the terminal board.
 - Strip the end of the wires used to power the controller.
 - Attach to the line power to provide continuous power to the controller.
 - Connect ground from terminal board to the controller
- Note:** Ground is required for the internal safeties to operate properly.



17 Evaporator wiring – Fans

- Strip the ends of the wires (connected to the KE2 Evap) used to control the evaporator fans.
- The fan wires can be attached to the terminal block using either screw down terminals or spade connectors.
- Attach one of the wires to the L1/Line. This wire should be connected to COM of fan relay on the controller.
- Attach the wire connected to the NO terminal on the Fan Relay to one of the Fan Terminals on the supplied terminal board.
- Connect the remaining fan lead(s) to the L2/Neutral position(s) on the terminal board.





KE2 Evaporator Efficiency Quick Start Guide

18 Evaporator wiring – Heater

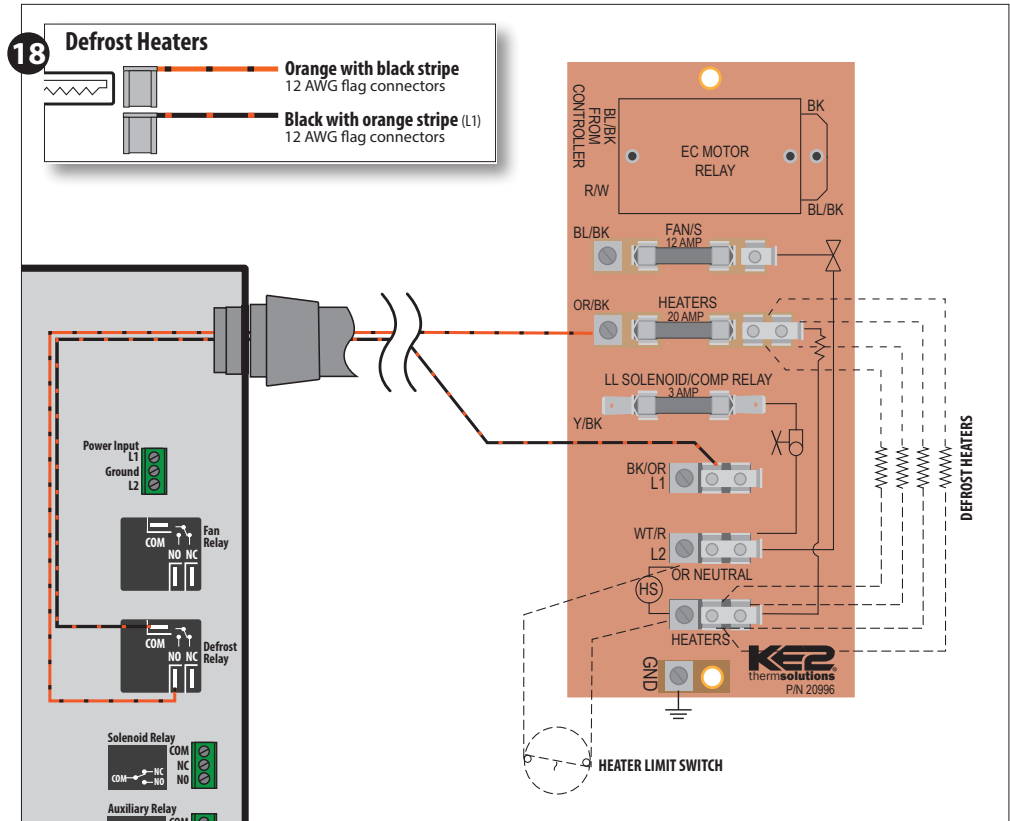
- Strip the ends of the wires being used for heater control.
- The heater wires can be attached to the terminal block using either screw down terminals or spade connectors.

19 Remove defrost termination (Klixon®) from circuitry

- Attach the wire connected to the Heater Relay COM terminal on the controller to the L1 terminal on the board.
- Attach the wire connected to the NO terminal on the Heater Relay to the fused HEATERS terminal on the board as shown.
- Connect L2/NEUTRAL to the remaining HEATERS terminal as shown using the HEATER LIMIT SWITCH (or jumper).

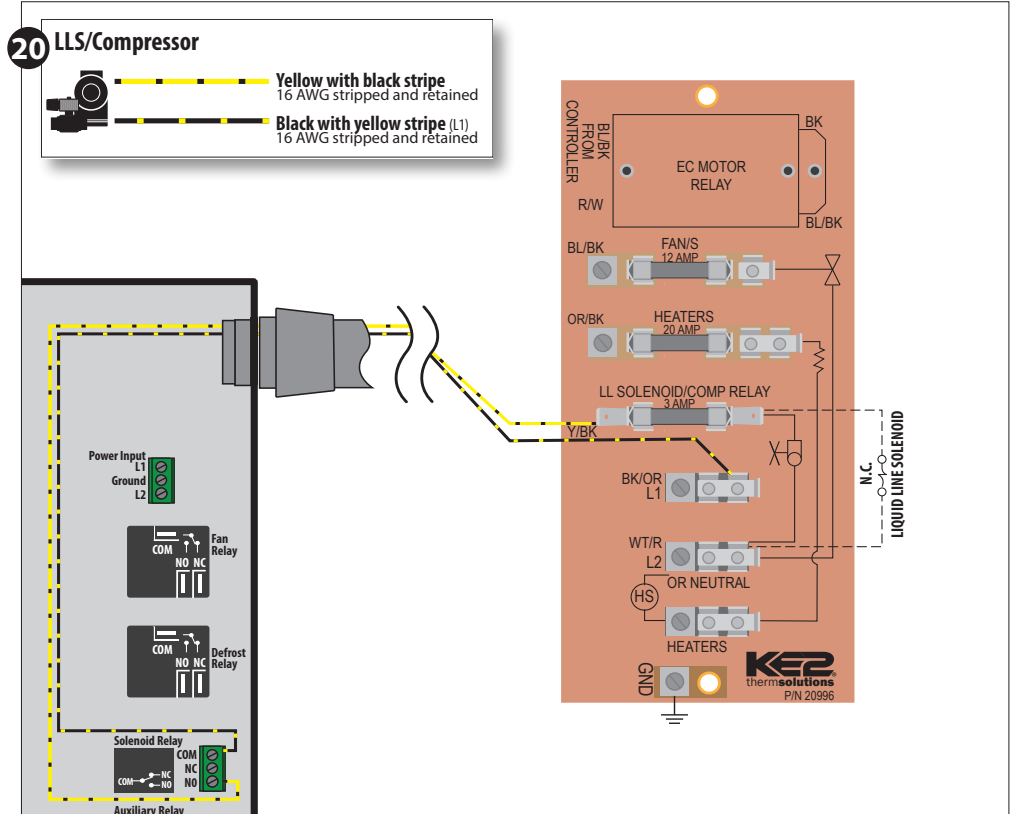


The defrost safety should not be removed from the circuit. Its purpose is to prevent the heaters from over heating and causing damage.



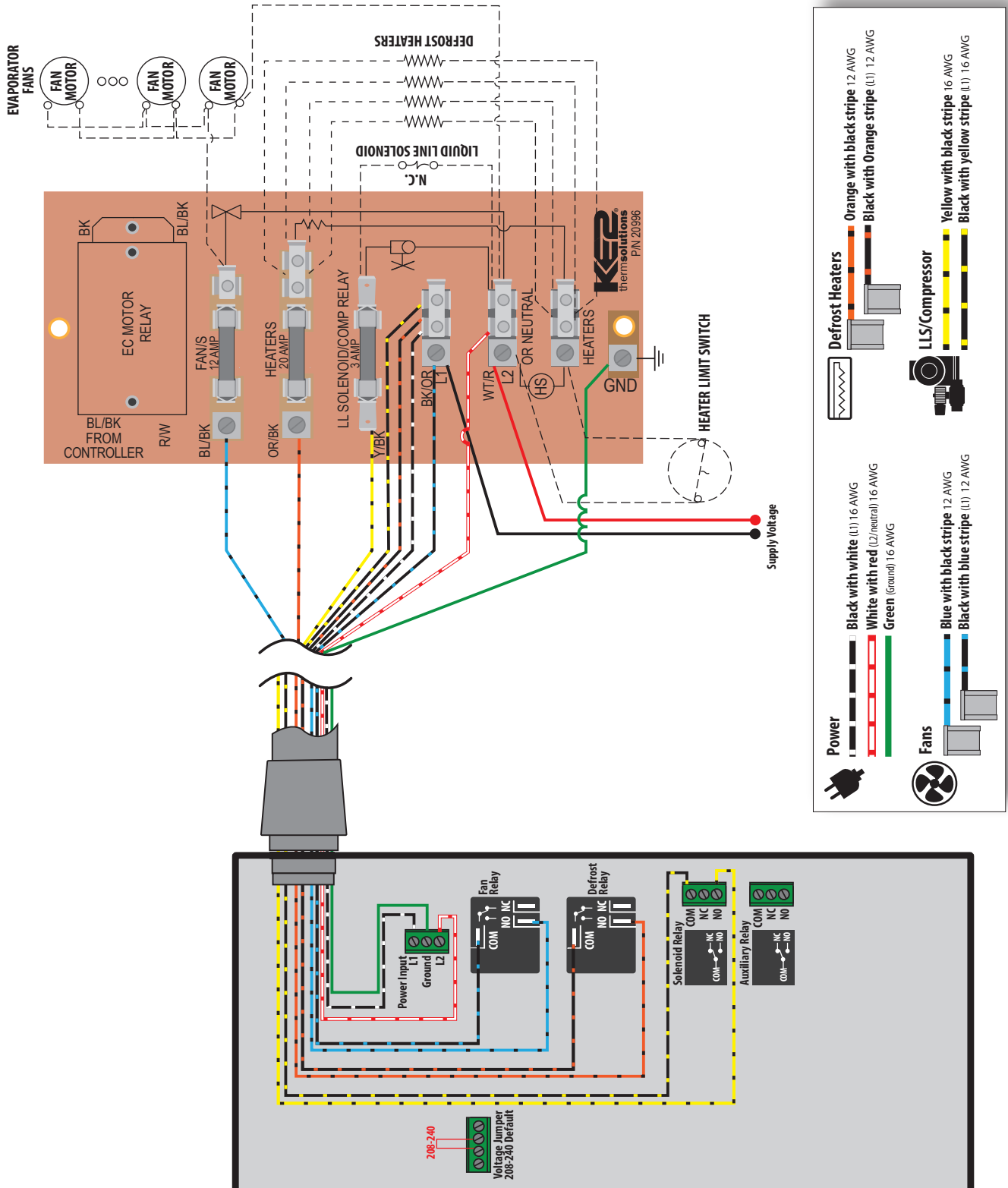
20 Evaporator wiring – Liquid Line Solenoid /Compressor

- Strip the ends selected to control the liquid line solenoid.
- Attach the wire connected to the NO terminal on the LL Solenoid/Compressor relay on the controller, to the fused LL SOLENOID/COMP terminal on the board, as shown.
- Attach the wire from the COM on the LL Solenoid/Compressor relay on the controller, to the L1/Line Voltage on the board.
- Connect remaining LL Solenoid/Compressor lead to L2/NEUTRAL terminal on the board.



Wiring Schematic - Controller New Installation

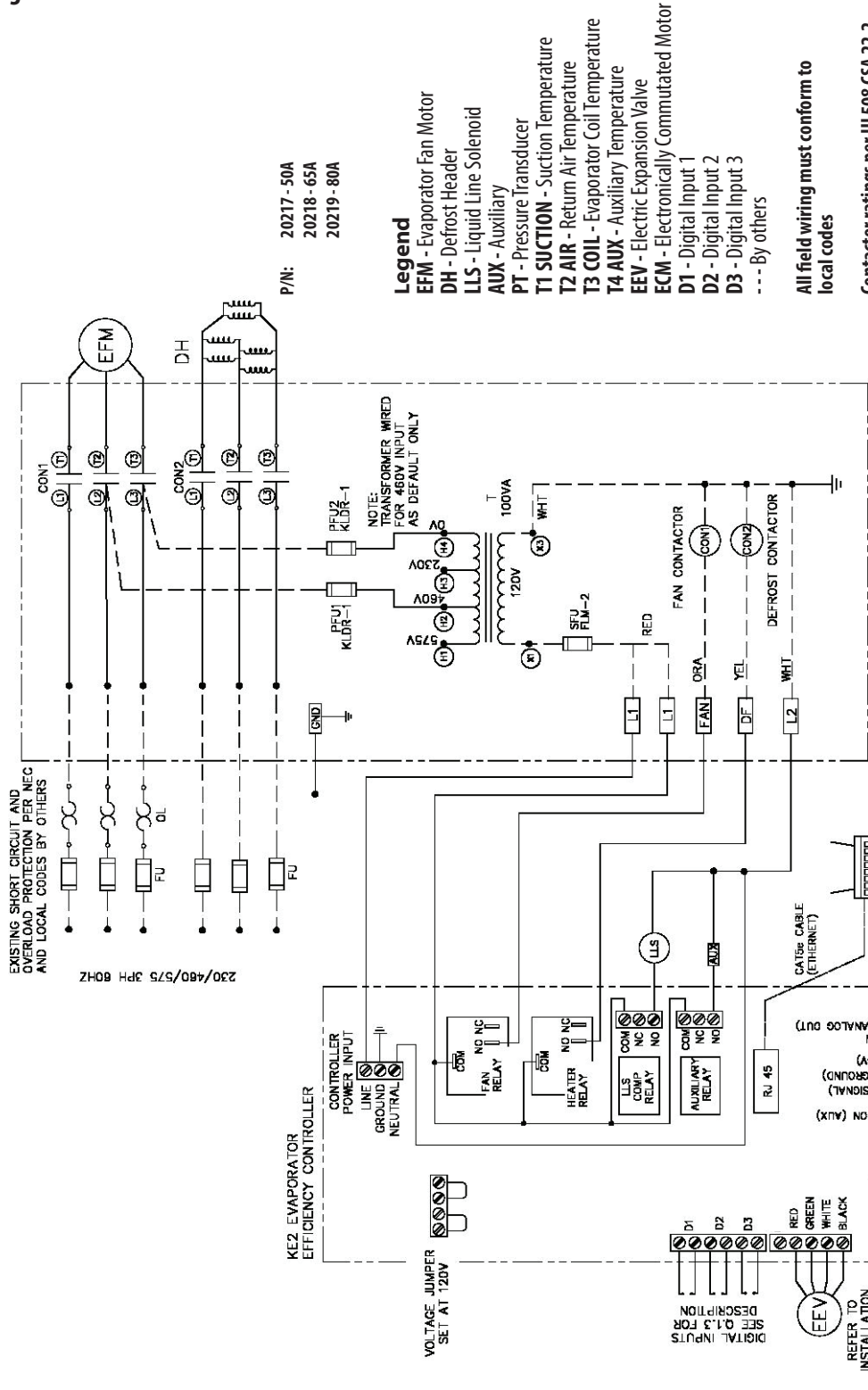
Wiring Schematic - Controller New Installation





KE2 Evaporator Efficiency Quick Start Guide

Wiring Schematic - Controller with KE2 Contactor Box



P/N: 20217 - 50A
20218 - 65A
20219 - 80A

Legend

- EFM - Evaporator Fan Motor
- DH - Defrost Heater
- LLS - Liquid Line Solenoid
- AUX - Auxiliary
- PT - Pressure Transducer
- T1 SUCTION - Suction Temperature
- T2 AIR - Return Air Temperature
- T3 COIL - Evaporator Coil Temperature
- T4 AUX - Auxiliary Temperature
- EEV - Electric Expansion Valve
- ECM - Electronically Commutated Motor
- D1 - Digital Input 1
- D2 - Digital Input 2
- D3 - Digital Input 3
- By others

All field wiring must conform to local codes

Contactor ratings per UL508 CSA 22.2

Existing Defrost Heaters Max Current Ratings (Amps are Total All Heaters)

Relay Box P/N	230V 3Ø	460V 3Ø	575V 3Ø
20217	54 Amps	52 Amps	52 Amps
20218	68 Amps	65 Amps	62 Amps
20219	80 Amps	77 Amps	62 Amps

Evaporator Fan Motors

Con1 Max HP & Amp Ratings (Total All Fans)

Voltage	Max HP	Max AMPS
230 3Ø	15	42
460 3Ø	30	40
575 3Ø	30	32

Wiring Schematic - Controller with KE2 Contactor Box




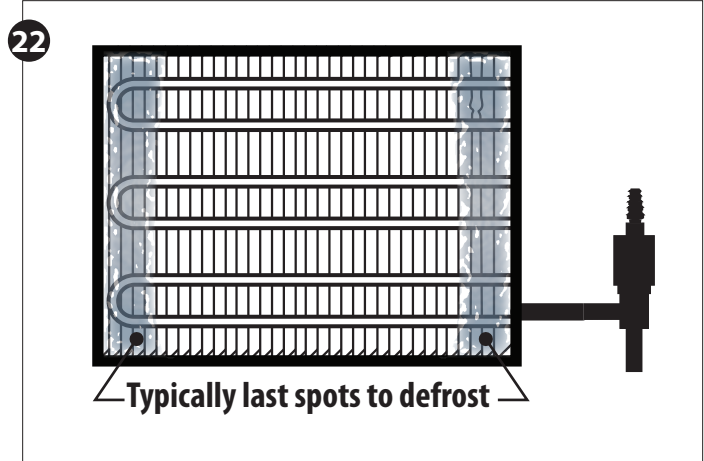
IMPORTANT

Determine the coil sensor location

21 To determine the most appropriate coil sensor location, put the system into defrost. The coil sensor location is easily determined by viewing the frost pattern during defrost. The last place frost disappears during the defrost cycle is the correct coil sensor location.

22 Monitor both the air entering side, as well as the air exiting side, of the evaporator coil. Don't be surprised if the last place for frost to disappear is on the air exiting side. It is usually near the right or left end of the coil.

 It is important to verify all heating elements are working properly.



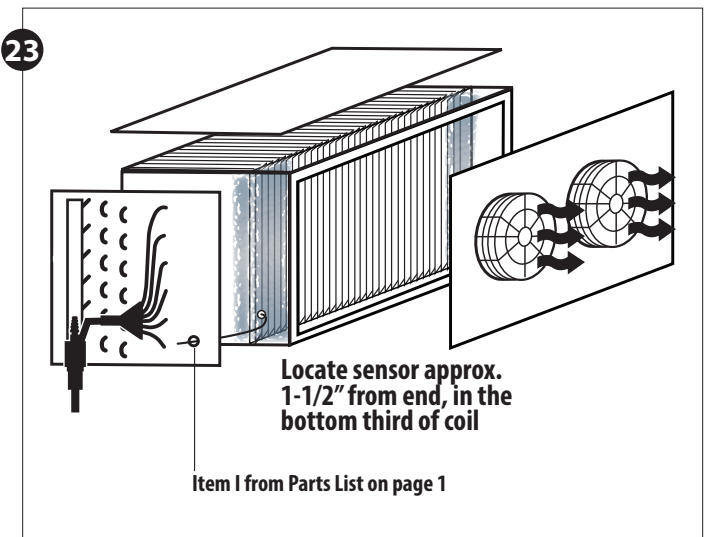
23 Steps to Ensure Proper Coil Sensor Location

More often than not on coils, the location of the sensor is a short distance from the end, approximately 1 to 1-1/2" away from the right and left edges of the active coil surface. The ice tends to grow from these edges towards the center. Therefore, the sensor location is best situated approximately 1 to 1-1/2" from the outer edges and typically near the bottom 1/3rd portion of the evaporator. The sensor needs to be as far away from the defrost heat sources as possible. Be aware that the drain pan heater may affect coil sensor location.

This is easily located by viewing the frost pattern during defrost. The last place frost disappears during the defrost cycle is the correct coil sensor location.

Note: Insert plug (Item I from parts list) into coil housing when mounting sensor wire to prevent damage to the sensor from sharp edges. Two plugs are provided. One plug should be inserted into the inner housing to access the coil, and the other into the outer housing to exit the coil. Installer must puncture plug to insert sensor.

As with any wiring installation, it is appropriate to leave a service loop. Enough wire should be left to move the sensor to the opposite end of the evaporator.





KE2 Evaporator Efficiency Quick Start Guide

- 24 Evaporator wiring – Auxiliary**
- The auxiliary relay is optional and wiring will vary depending on the auxiliary relay method selected.
 - Depending on auxiliary relay function, an additional conduit may be required.
 - Strip the ends selected to control the auxiliary component.
 - Break the hot leg of the auxiliary component.
 - Attach the wire from the NO terminal on the auxiliary relay to one of the auxiliary component leads. Attach the wire from the COM on the auxiliary component relay to the L1/Line Voltage.
 - Connect L2/Neutral to the remaining auxiliary component lead.
 - Route and secure the conduit to the location the controller is to be installed.
 - Wiring must follow local wiring codes.

- 25 Installing the sensors**
- Sensors should be labeled with their function. Although not required, KE2 Therm suggests that the following sensor wiring colors be used for clarity, and consistency, on kits having color sensor wires.

Blue for Room Air Temp and connected to **T2**

Yellow for Coil Temp and connected to **T3**

Green for the 2nd Coil Temp (T4Aux), when used, and connected to **T4**

Black for Suction Temp sensor, when used, and connected to **T1**

Note: All sensors can be used for any purpose and are interchangeable, colors are for ease of identification only.

- 26 Air Sensor Bracket**
- Install the Air Temperature Sensor using the Stainless Steel self-piercing screw and bracket from the parts kit.
 - The end with the single loop is designed to be mounted with the screw included.
 - The end with multiple loops is designed to hold the sensor.
 - Locate the best place to install the sensor.
 - The sensor should be located between 8 - 12 inches away from the face of the evaporator. This distance prevents the sensor from sensing heat from the heating elements during the defrost cycle, but close enough to accurately sense the return air temperature.
 - The sensor bracket may be bent as necessary to locate the sensor in the proper position.
 - The air sensor should be installed at a height 2/3 down from the top of the evaporator to accurately measure air going through the evaporator.



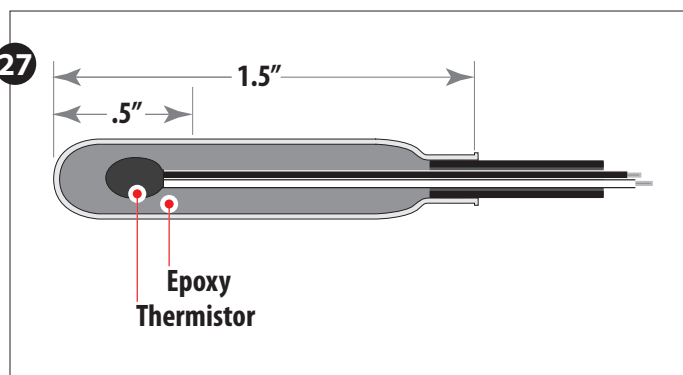
WARNING! Do not allow the metal portion of the air sensor to touch anything other than air. It should not touch the bracket, nylon cable tie, or any other solid surface.

Coil Sensor

■ It is essential that the sensor is in the coldest location on the coil at the end of the defrost cycle, this will ensure a complete defrost each and every time. See steps 21-23 to determine correct coil sensor location.

Once you determine the proper sensor location, as described in preliminary steps 21-23, the coil sensor can be installed.

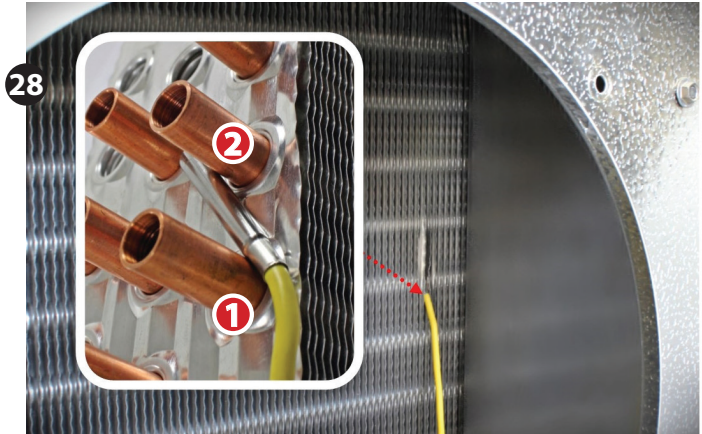
- 27 Installing the Sensor Properly**
- Note, the most active portion of the sensor is the first 1/2" of the 1-1/2" long stainless steel probe. Figures 28 and 29 show two methods for installing the sensor in the coil. The method shown in 28 will work in most applications, however in some cases inserting the sensor into the coil may position it too close to the defrost heat source. In these instances, the method shown in Figure 29 can be used.



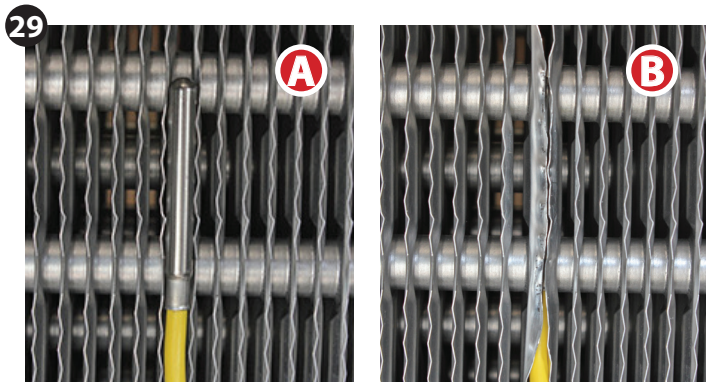


KE2 Evaporator Efficiency Quick Start Guide

- 28** The inset photo in **Figure 28** shows that the sensor is positioned so that it is touching two circuit tubes, as shown in **Figure 28 1 & 2**. When inserting the sensor into the coil, the tip should touch one of the circuit tubes **2**, and the probe should be inserted into the fins approximately 1/16" deeper than the stainless shielding. Pinch the fins gently together, securing the sensor in place. This provides thermal ballast to ensure a complete defrost.
Note: The sensor should not be located adjacent to the electric heating elements. It should be about half the distance between the heaters if possible.



- 29** **Alternate method** - As the defrost termination sensor, it is important to ensure the sensor does not terminate defrost before all frost is removed from the coil. In some installations, inserting the sensor into the coil may position it too close to the defrost heat source. An alternate method of positioning, **Figure 29A**, places the sensor vertically between the coil fins. **Figure 29B** shows the coil sensor properly secured.



Extending sensor wires

After the sensors are mounted, they are routed back to the controller. If the wires must be extended, use **18 gauge twisted shielded pair**. Maximum length for 18 gauge: 100 ft.

If additional resistance affects the temperature or pressure reading of the controller, the temperature and pressure may be "offset" to read correctly. Use the OFFSET function, in the SETPOINTS menu, Page 18.

When running the wires back to the controller take care to avoid introducing electrical noise into the sensor wires. Electrical noise can be introduced when sensor wires are located near high voltage lines. High voltage is defined by Underwriter's Laboratories as above 30V. The higher voltage, the more likely it is to introduce electrical noise.

If crossing a high voltage line is necessary, run sensor wiring at right angles to prevent noise.

30 Connecting sensor wires to controller

The temperature sensors are designed to be attached to the controller using 2-position screw terminals. Using a connector from the parts kit, attach the sensor to the screw terminal. The sensors are not polarized, so wire location does not effect sensor performance.

Connect all sensors to pluggable connectors.

Once connected, the sensors should be plugged into the proper location on the controller. The location can be determined from the label on the interior wall of the enclosure or from the Wiring Schematic.

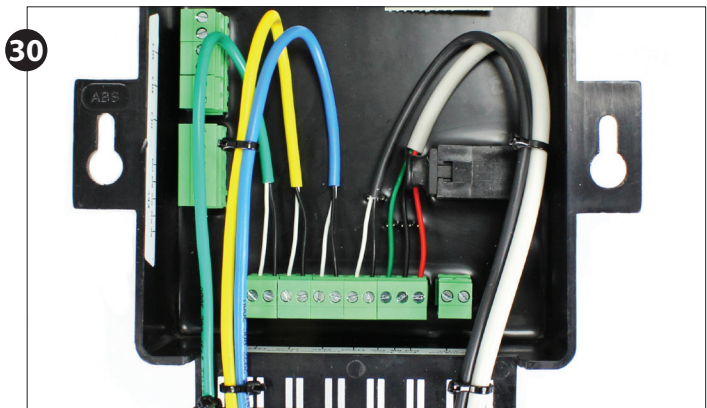
Strain relief

The enclosure is designed with a strain relief bar to prevent the sensor wires from becoming unplugged from inadvertent contact.

Before securing the sensor wires, create a service loop. Figure 30.

Using a cable tie from the parts kit, securely fasten the sensor wires to the strain relief bar.

Note: Unused connectors should be placed (installed) in their respective location for future use.



31 Controller Mounting

Locate the 4 stainless steel mounting screws in the accessories kit

Install the 4 screws

Place the controller on the screws and tighten down the screws.

32 Final Step

Leave installation instructions onsite for future service.





KE2 Evaporator Efficiency

Quick Start Guide

Specifications

Controller	
Input Voltage:	120V or 208 - 240V
Ambient Temp:	-40° to 140°F (-40°C to 60°C)
Operating Temp:	-40° to 140°F (-40°C to 60°C)
Display:	4-digit alphanumeric LED
IP Rating:	IP65
Inputs:	(4) temperature sensors (1) pressure transducer
Valve Types:	unipolar and bipolar stepper motors (12V) (Beacon® is 21V)
Relays:	20A resistive (defrost) 10A inductive (evaporator fan) (2) 3A inductive rated cycles
Digital Input 1:	door contact, use 2nd air temp setpoint, disabled, system off, external alarm notification

Digital Input 2:	door switch, use 2nd air temp setpoint, disabled, system off, external alarm notification, defrost lockout, defrost interlock
Digital Input 3:	door switch, use 2nd air temp setpoint, disabled, system off, external alarm notification, light switch
Communication:	Standard TCP/IP
Pressure Transducer - pn 20201 (10 ft lead) or pn 20204 (40 ft lead)	
Pressure Range:	0 to 150 psia
Proof Pressure:	450 psi
Burst Pressure:	1500 psi
Operating Temp:	-40° to 275°F (-40°C to 135°C)
Temperature Sensor - 3 pack pn 21151 (15 ft leads) or pn 21066 (40 ft leads)	
Sensor Specs:	-60° to 150°F (-51°C to 65°C) moisture resistant package

Back View of Controller - General Layout

For wiring schematics see pages 7-10

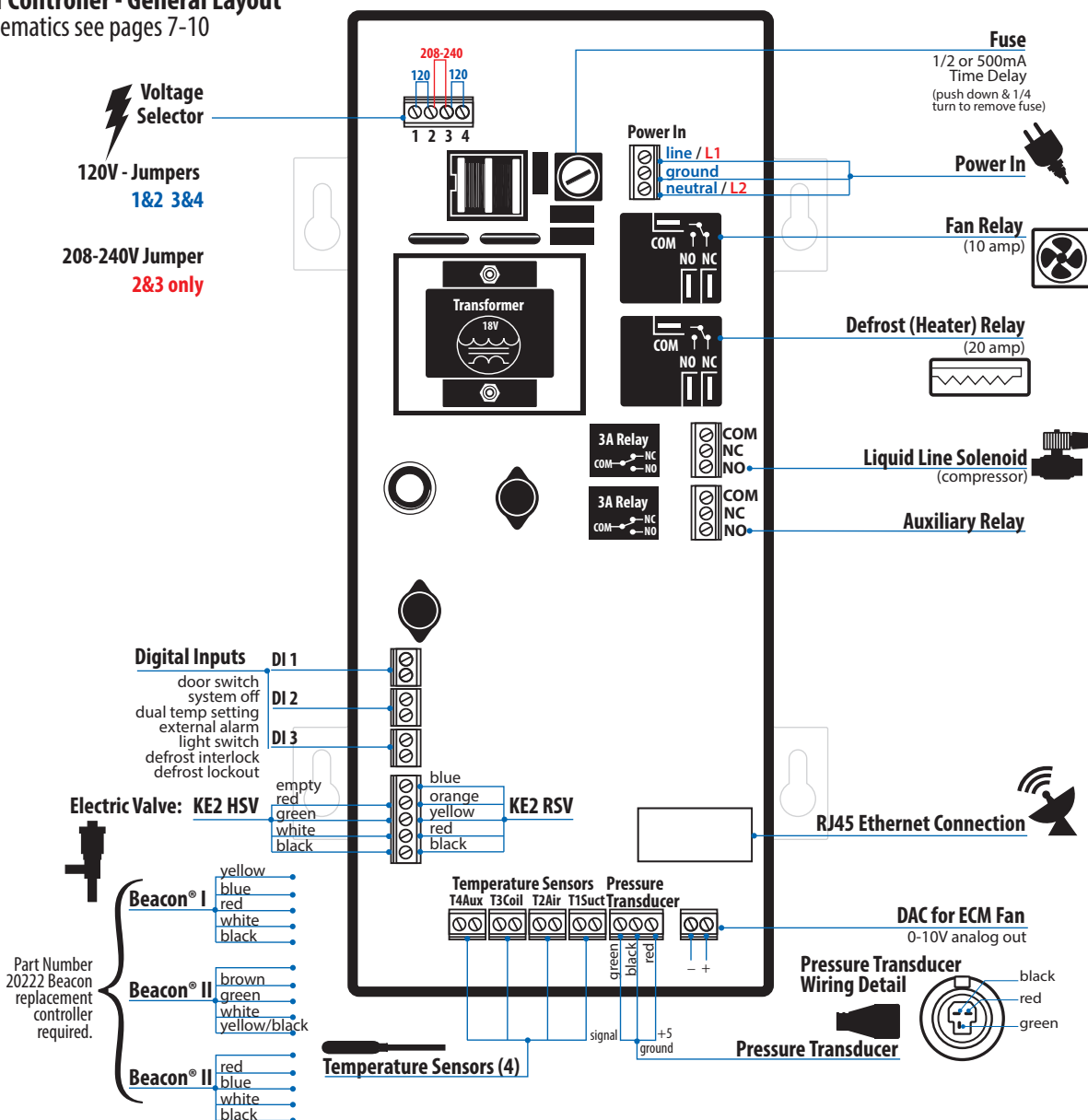


Table 1 - Controller Navigation - Menu Structure



Indicator lights

- Red light** - critical alarm (system is not running)
- Yellow light** - non-critical alarm (system running)
- Green light** - compressor on
- Green flashing** - compressor waiting on timer to start/stop

To move through controller menus:

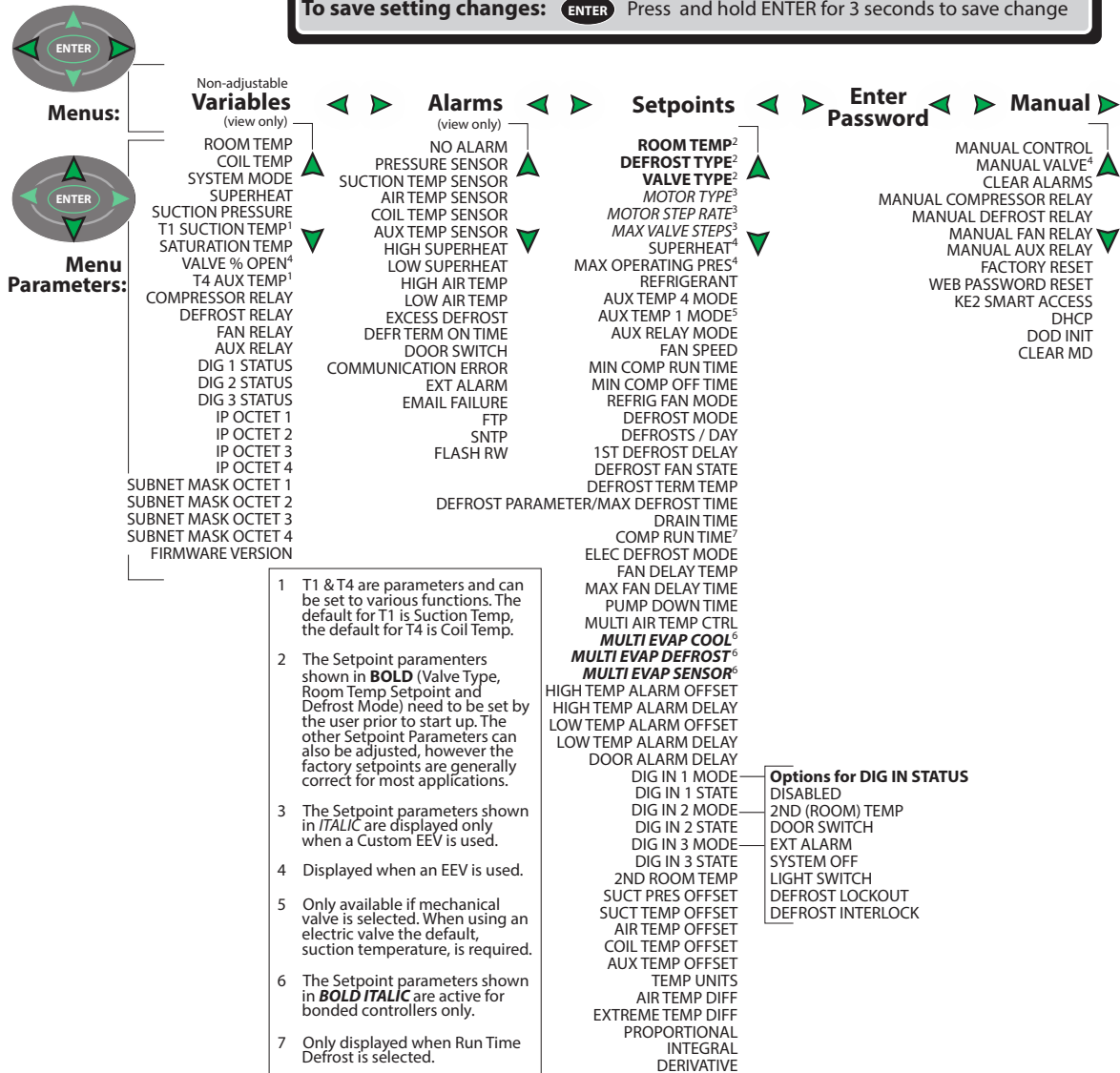
- Left and Right Arrows** Use to move between **Menus**
- Up Arrow and Down Arrow** Scroll through **Menu Parameters**

To return to Main Menu: **BACK** Press BACK to return to the previous view.

To toggle between description and value: **ENTER** Press ENTER to go from parameter to value.

To change settings: **ENTER** Press and hold ENTER for 3 seconds, when display begins blinking changes can be made

To save setting changes: **ENTER** Press and hold ENTER for 3 seconds to save change





KE2 Evaporator Efficiency

Quick Start Guide

User Interface

The KE2 Evap's onboard user interface uses a familiar 6-button arrangement to simplify navigation through the controller's menus. The menus are grouped in columns. The user is not required to scroll through unrelated setpoints.

The ◀ and ▶ arrows move between the menu column categories. If pressed while in a menu, the ◀ and ▶ arrows move to the main screen or the adjacent menu column.

The ▲ and ▼ arrows move the user through the available options for each menu column. All users are allowed access to the variables and alarms menu columns. All other information is password protected to prevent unauthorized access to the controller's functionality.

The **ENTER** button is used to save an input option when it has been changed. **The ENTER button must be held for 3 seconds, to prevent accidental changes.** Changes may be discarded by waiting, to allow the controller to time-out and return to default screen, or by pressing the **BACK** button. The **BACK** button is used to return to the previous screen. Pressing the **BACK** several times will return the user to the default view. See Controller Navigation on page 14.

4 Controller Setup: Four Step Intro Mode

Upon initially applying power to the controller, the controller will initialize, then automatically enter the **Introduction Mode**. The Introduction Mode consists of as little as 4 setpoints that must be configured for the KE2 Evap to begin controlling the system. See **Table 2**.

Step 1 - The first setpoint the user is asked to enter is the desired **ROOM TEMP**. The default value is -10.0°F, and the right most 0 will be flashing. Use the ◀ and ▶ arrows to change the digit being modified. If you want the room temperature warmer, press the ▲ arrow, and if you want it colder, press the ▼ arrow. Once you have the proper room temp for your system, press and hold **ENTER** for **three seconds**.

Step 2 - Next, the controller will display **DEFROST TYPE**, and then display **ELECTRIC**, for electric defrost. The controller is designed to work with electric, hot gas, and air defrosts. Change this value by pressing the ▲ or ▼ arrow. Once you have the correct value, press and hold **ENTER** for **three seconds**.

Step 3 - The controller now prompts for the expansion valve type, and displays **MECHANICAL** as the default. If you have a mechanical valve, press and hold **ENTER** for **three seconds**. If you have an electric valve, use the ▲ or ▼ arrow to move to the correct valve. With the correct electric valve displayed, press and hold **ENTER** for **three seconds**. **NOTE:** If you select an electric valve, you will then be prompted to specify the **REFRIGERANT**.

The KE2 Evap may also be applied to user defined **CUSTOM** electric valves. When **CUSTOM** is selected, the user is prompted to select **MOTOR TYPE**, **MOTOR STEP RATE**, and **MAX VALVE STEPS**.

Step 4 - The fourth prompt is whether **KE2 SMART ACCESS** is **ENABLED** or **DISABLED**. **KE2 SMART ACCESS** allows you to easily view your controller online. (See pages 16 & 17 for more information.) Make your selection by using the ▲ or ▼ arrow, and then press and hold **ENTER** for **three seconds**.

These are the only setpoints required to begin controlling the system. For setup with multi-evaporator applications see bulletins Q.5.10 and Q.1.32

Adjusting Controller Parameters

The controller has the ability to access an abundance of information from the 4-digit alphanumeric display. However, the controller requires a password, adding a degree of protection from unwanted modifications. The controller will prompt the user for a **PASSWORD** when the user attempts to access setpoints they do not have permission to change.

Table 1 shows the menu structure of the controller. The default display of the controller always shows the actual room temperature, defrost, or any alarm condition. Pressing the ◀ or ▶ arrow will move from the default display to the next menu column, shown in the Controller Navigation on page 14. The **VARIABLES** menu column consists of the current sensor readings, and the relays' state.

The **User Password (1111)** only provides access to the **ROOM TEMP** setpoint. For the protection of the system, access to the **SETPOINT** and **MANUAL** control requires an **Installer Password (2222)**. A complete list of parameters is shown in **Table 3**.

Pressing the **BACK** button at any time will return the user to next level up the menu. A second/third press will either return to the **Main Menu**, or to the room temperature reading.

Table 2 - Introduction Mode

Mechanical Valve TEV - 4 steps	Defined EEV 5 steps	Custom EEV 8 steps
Room Temp	Room Temp	Room Temp
Defrost Type	Defrost Type	Defrost Type
Valve Type	Valve Type	Valve Type
KE2 Smart Access	Refrigerant	Refrigerant
	KE2 Smart Access	Motor Type (Unipolar/Bipolar)
		Motor Step Rate
		Max Valve Steps
		KE2 Smart Access

Web Login

The User Name and Password are required when accessing the controller using the webpage.

The defaults are: **User Name:** ke2admin **Password:** ke2admin

IMPORTANT: The User Name and Password should be changed from the default for security purposes.



Introduction to KE2 Smart Access

KE2 Smart Access provides quick and easy, real time access to your refrigeration systems, 24/7

The KE2 Evap has always been internet accessible, but now it's easier than ever to monitor and adjust your KE2 Evap remotely. With the launch of version 4.0 firmware, KE2 Smart Access is available.

While the KE2 Evap's free connectivity is still available, KE2 Therm recognizes that some customers prefer the simplicity and convenience of KE2 Smart Access to provide the benefits of the controller's communication capability.

For a nominal monthly fee, KE2 Smart Access provides easy, real time access to your refrigeration system 24/7. No port forwarding. No VPN.

All the KE2 Evap needs is a physical connection to the network router with a cat 5 cable. Once enabled, KE2 Smart Access quickly connects to your personal web portal, hosted by KE2 Therm, and provides a "customized" dashboard of all the controllers you setup with KE2 Smart Access.

Benefits of KE2 Smart Access

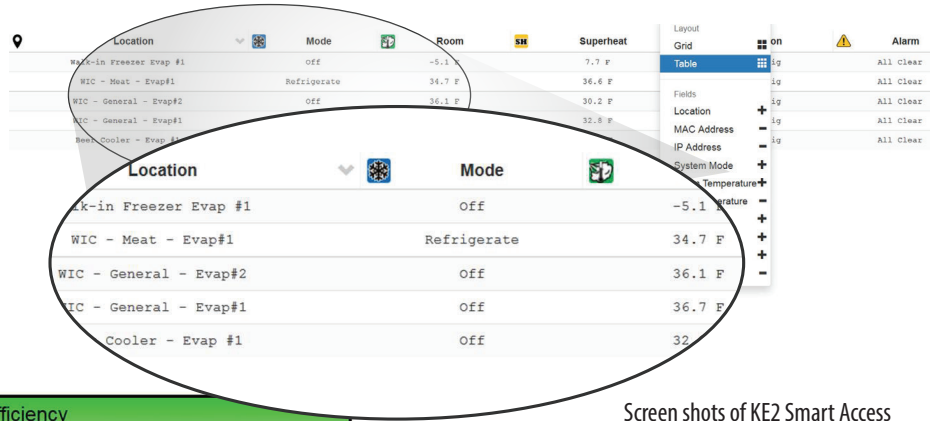
- KE2 Smart Access auto launches, and can eliminate the need for costly IT support
- Doesn't require port forwarding or a vpn
- Customized dashboard lets you remotely view all the controllers on one page
- It's easier than ever to set up every controller you service to provide alarm notifications via text or email
- Easy setup of remote monitoring & system control

YouTube Visit our YouTube channel for videos on KE2 Smart Access.

- Video 062 Communication Made Easy with KE2 Smart Access
- Video 063 Setup KE2 Smart Access on a New KE2 Evap Installation
- Video 064 Setup KE2 Smart Access on a Previously Installed KE2 Evap
- Video 046 Wire the KE2 Evap Controller
- Video 053 The KE2 LDA: Communication Device for KE2 Therm Serial-ModBus and Ethernet Controllers
- Video 059 The KE2 LDA: Connecting the KE2 LDA to KE2 Smart Access



youtube.com/ke2therm

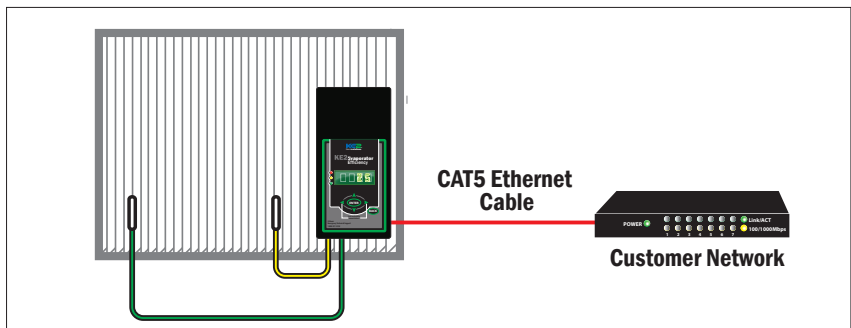


Screen shots of KE2 Smart Access dashboard. Controller and system information is displayed for all of the controllers on the portal.

Screen shot of a single KE2 Evap connected through KE2 Smart Access.

Preliminary

Connect the KE2 Evap to the customer's network.





KE2 Evaporator Efficiency

Quick Start Guide

KE2 Smart Access - Online Access In 3 Easy Steps

Step 1

Enable KE2 Smart Access in the Introduction Mode menu

■ After setting the Room Temp, Defrost Type and Valve Type, set KE2 Smart Access to **Enabled**.

■ Use the ▲ or ▼ arrow to change KE2 Smart Access to Enabled. Press and hold the **ENTER** button for 3 seconds to save the change.

Note: KE2 Smart Access may be enabled during introduction Mode Menu, or anytime thereafter through the Manual Menu. See Table 1, Controller Navigation on Page 14.

Introduction Mode

Mechanical Valve TEV 4 steps	Defined EEV 5 steps	Custom EEV 8 steps
Room Temp	Room Temp	Room Temp
Defrost Type	Defrost Type	Defrost Type
Valve Type	Valve Type	Valve Type
1 KE2 Smart Access	Refrigerant	Refrigerant
	1 KE2 Smart Access	Motor Type (Unipolar/Bipolar)
		Motor Step Rate
		Max Valve Steps
		1 KE2 Smart Access

Step 2

Go to smartaccess.ke2therm.net

■ Using your PC, tablet or smartphone, enter **http://smartaccess.ke2therm.net** in the web browser's address bar.



Step 3

Enter default information

■ Enter default information, and click **Log In** button.

Site: installer

Password: controllers Mac Address
(from sticker on back of controller)



For additional information on KE2 Smart Access, visit <http://ke2therm.com/productliteratureevap4.html>, and see bulletins A.1.76 The KE2 Evap v4.0 with KE2 Smart Access and Q.1.34 KE2 Smart Access Setup and Customizing.



KE2 Evaporator Efficiency

Quick Start Guide

Table 3 - Controller Menus and Menu Parameters

Setpoints Menu

Parameter Name	Description	
ROOM TEMP	Walk-in freezer or cooler room temperature to be maintained	
DEFROST TYPE	Method of defrost used on the evaporator coil: Electric, Air, Hot Gas with Liquid Line Solenoid/Compressor relay off, Hot Gas with Liquid Line Solenoid/compressor relay on	
VALVE TYPE	Type of valve used on the system: mechanical, pre-configured electric, custom EEV configuration	
Custom EEV only	MOTOR TYPE	If VALVE TYPE = CUSTOM: The motor type used in the valve
	MOTOR STEP RATE	If VALVE TYPE = CUSTOM: The motor speed setting in number of steps per second
	MAX VALVE STEPS	If VALVE TYPE = CUSTOM: The total number of steps required to move the valve from closed to fully open
	SUPERHEAT	The superheat value that the controller will maintain, (not applicable if VALVE TYPE = MECHANICAL)
	MAX OPERATING PRES	The maximum allowable suction pressure, (not applicable if VALVE TYPE = MECHANICAL)
	REFRIGERANT	The type of refrigerant used in the refrigeration system
	AUX TEMP 4 MODE	Configuration mode of the auxiliary temperature sensor
	AUX TEMP 1 MODE	Configuration mode of the auxiliary temperature sensor (Not available if EEV is selected)
	AUX RELAY MODE	Configuration mode of the auxiliary relay.
	FAN SPEED	Provides 0-10V DC signal to control variable speed
	MIN COMP RUN TIME	Minimum amount of time the liquid line solenoid/compressor relay must remain on after it is energized
	MIN COMP OFF TIME	Minimum amount of time the liquid line solenoid/compressor relay must remain off before it can be energized again.
	REFRIG FAN MODE	Fan operation while in refrigeration mode
	DEFROST MODE	The method the controller uses to determine when to initiate a defrost.
DEFROSTS / DAY	If DEFROST MODE = SCHEDULED: The number of evenly spaced defrosts per day the controller will initiate.	
1ST DEFROST DELAY	If DEFROST MODE = SCHEDULED: The amount of time from controller power up until the first defrost is initiated.	
DEFROST FAN STATE	Whether or not to run the evaporator fans during defrost	
DEFROST TERM TEMP	The temperature the coil sensor(s) must exceed in order to terminate defrost. The controller's defrost mode is complete at this point.	
DEFROST PARAMETER	if DEFROST MODE = DEMAND: Coefficient to KE2 Defrost algorithm	
MAX DEFROST TIME	If DEFROST MODE = SCHEDULE or RUNTIME: The maximum amount of time the defrost relay will be energized. (Not available if DEFROST MODE = DEMAND)	
DRAIN TIME	Time to be in drain mode (drip time)	
COMP RUN TIME	If DEFROST MODE = RUN TIME: The amount of time liquid line solenoid/compressor relay is energized before the next defrost is initiated.	
ELEC DEFROST MODE	If DEFROST TYPE = ELEC: Whether to leave the defrost relay energized during the defrost cycle or to utilize advanced defrost algorithm.	
FAN DELAY TEMP	After defrost, the coil sensor reading must fall below this temperature set point in order for the controller to resume normal fan operation.	
MAX FAN DELAY TIME	Maximum amount of time after defrost to resume normal fan operation.	
PUMP DOWN TIME	Minimum amount of time between de-energizing the liquid line solenoid/compressor relay and energizing the defrost relay.	
Bonded Controllers Only	MULTI AIR TEMP CTRL	Select control method to use with multiple room temperature sensors
	MULTI EVAP COOL	Select type of multi evaporator control - options are synchronous or independent
	MULTI EVAP DEFROST	Select whether to have all bonded controllers initiate defrost mode at the same time or independently.
	MULTI EVAP SENSOR	Select whether or not to share room temperature, coil temperature and suction pressure sensor data with bonded controllers.
	HIGH TEMP ALARM OFFSET	The number of degrees above ROOM TEMP for a HIGH TEMP ALARM condition.
	HIGH TEMP ALARM DELAY	Minutes the room temperature must remain above ROOM TEMP + HIGH TEMP ALARM OFFSET before issuing a HIGH TEMP ALARM
	LOW TEMP ALARM OFFSET	An offset added or subtracted from the room temperature sensor reading, if needed
	LOW TEMP ALARM DELAY	Minutes the room temperature must remain below ROOM TEMP - LOW TEMP ALARM OFFSET before issuing a LOW TEMP ALARM
	DOOR ALARM DELAY	If DIG IN (1, 2 and/or 3) MODE = DOOR SWITCH: The amount of time, in minutes, before an alarm condition is initiated if door is open and room temperature is 5 degrees above ROOM TEMP + AIR TEMP DIFF
	DIG IN 1 MODE	Sets the function of the digital input
	DIG IN 1 STATE	Sets whether the switch activates when opened or closed
	DIG IN 2 MODE	Sets the function of the digital input
	DIG IN 2 STATE	Sets whether the switch activates when opened or closed
	DIG IN 3 MODE	Sets the function of the digital input
DIG IN 3 STATE	Sets whether the switch activates when opened or closed	
2ND ROOM TEMP	If DIG IN (1, 2 and/or 3) MODE = 2ND ROOM TEMP: This value becomes the ROOM TEMP setpoint when the digital input is active	
SUCT PRES OFFSET	An offset added or subtracted from the suction line pressure transducer reading, if needed	
SUCT TEMP OFFSET	An offset added or subtracted from the suction temperature sensor reading, if needed	
AIR TEMP OFFSET	An offset added or subtracted from the room temperature sensor reading, if needed	
COIL TEMP OFFSET	An offset added or subtracted from the coil temperature sensor reading, if needed	
AUX TEMP OFFSET	An offset added or subtracted from the auxiliary temperature sensor reading, if needed	
TEMP UNITS	Units for temperature's display in °F or °C	
AIR TEMP DIFF	The number of degrees above ROOM TEMP before the controller will go into REFRIGERATION mode	
EXTREME TEMP DIFF	ADVANCED TOPIC: Call KE2 Therm for assistance	
PROPORTIONAL	A coefficient to the valve control algorithm that increases valve responsiveness	
INTEGRAL	A coefficient to the valve control algorithm that increases valve responsiveness	
DERIVATIVE	Should not be adjusted unless instructed by KE2 Therm technical support	



KE2 Evaporator Efficiency

Quick Start Guide

Range	Default	Parameter Name
-50°F to 90°F	-10°F	ROOM TEMP
ELEC, AIR, HOT GAS COMP ON, HOT GAS COMP OFF	ELEC	DEFROST TYPE
MECHANICAL, KE2 RSV, KE2 HSV, SER/SEI 1 TO 20, SER B TO L, SEI 30, SEI 50, SEH, ETS12 TO 50, ETS100, ETS250/400, CAREL, CUSTOM;	MECHANICAL	VALVE TYPE
BIPOLAR, UNIPOLAR	BIPOLAR	MOTOR TYPE
30 to 400 steps/second	200 steps	MOTOR STEP RATE
200 to 6400 steps	1600 steps	MAX VALVE STEPS
5°F to 30°F	8°F	SUPERHEAT
10-500 psig if R-744 selected, 10-300psig if R-410A selected, 10-150 psig all other refrigerants	150 psig	MAX OPERATING PRES
404A, R507, 407A, 407C, 422A, 422D, 134A, R22, R717, 438A, 408A, 409A, 407F, 410A, 448A, 449A, 450A, 513A, R744	404A	REFRIGERANT
DISABLED, MONITOR, T4 ROOM TEMP, T4 COIL TEMP	T4 COIL TEMP	AUX TEMP 4 MODE
T1 SUCTION TEMP, MONITOR, T1 ROOM TEMP, 2ND COIL TEMP	T1 SUCTION	AUX TEMP 1 MODE
ALARM RELAY, 2ND COMP RELAY, 2ND FAN RELAY, 2ND DEFR RELAY, 2 SPEED FAN CTL, LIGHT RELAY, PERM DEFROST RELAY	ALARM RELAY	AUX RELAY MODE
-100% to 100%	0.000 (Off)	FAN SPEED
0 to 15 minutes	2 minutes	MIN COMP RUN TIME
0 to 15 minutes	5 minutes	MIN COMP OFF TIME
ON WITH COMPRESSOR, PERMANENT, MANAGED, CONTROL FOR TITLE 24	ON WITH COMPRESSOR	REFRIG FAN MODE
DEMAND, SCHEDULED, RUN TIME	DEMAND	DEFROST MODE
0 to 8	5	DEFROSTS / DAY
0 to 240 minutes	120 minutes	1ST DEFROST DELAY
ON/OFF	OFF if DEFROST TYPE = ELEC, HOT GAS COMP ON, HOT GAS COMP OFF ON if DEFROST TYPE = AIR	DEFROST FAN STATE
35°F to 90°F	50°F if DEFROST TYPE = ELEC, HOT GAS COMP ON, HOT GAS COMP OFF 40°F if DEFROST TYPE = AIR	DEFROST TERM TEMP
0 to 90	30 if DEFROST TYPE = ELEC 10 if DEFROST TYPE = HOT GAS COMP ON, HOT GAS COMP OFF 40 if DEFROST TYPE = AIR	DEFROST PARAMETER
0 to 90 minutes	45 minutes if DEFROST TYPE = ELEC 10 minutes if DEFROST TYPE = HOT GAS COMP ON, HOT GAS COMP OFF 40 minutes if DEFROST TYPE = AIR	MAX DEFROST TIME
0 to 15 minutes	2 minutes	DRAIN TIME
0 to 24 hours	6 hours	COMP RUN TIME
PULSE, PERMANENT	PULSE	ELEC DEFROST MODE
-40°F to 35°F	20°F	FAN DELAY TEMP
0 to 20 minutes	2 minutes	MAX FAN DELAY TIME
0 to 90 minutes	0 minutes if DEFROST TYPE = ELEC or AIR, 2 minutes if DEFROST TYPE = HOT GAS ON/OFF	PUMP DOWN TIME
AVERAGE, WARMEST	WARMEST	MULTI AIR TEMP CTRL
SYNC, INDEPENDENT	SYNC	MULTI EVAP COOL
SYNC, INDEPENDENT	SYNC	MULTI EVAP DEFROST
SHARED, NOT SHARED	SHARED	MULTI EVAP SENSOR
0°F to 99.9°F	10°F	HIGH TEMP ALARM OFFSET
0 to 120 minutes	60 minutes	HIGH TEMP ALARM DELAY
0°F to 20°F	4°F	LOW TEMP ALARM OFFSET
0 to 30 minutes	10 minutes	LOW TEMP ALARM DELAY
0 to 180 minutes	30 minutes	DOOR ALARM DELAY
DISABLED, 2ND ROOM TEMP, DOOR SWITCH, EXT ALARM, SYSTEM OFF	DOOR SWITCH	DIG IN 1 MODE
OPEN, CLOSED	CLOSED	DIG IN 1 STATE
DISABLED, 2ND ROOM TEMP, DOOR SWITCH, EXT ALARM, SYSTEM OFF, DEFR INTERLOCK, DEFR LOCKOUT	DISABLED	DIG IN 2 MODE
OPEN, CLOSED	CLOSED	DIG IN 2 STATE
DISABLED, 2ND ROOM TEMP, DOOR SWITCH, EXT ALARM, SYSTEM OFF, LIGHT SWITCH	SYSTEM OFF	DIG IN 3 MODE
OPEN, CLOSED	CLOSED	DIG IN 3 STATE
-50°F to 90°F	-50°F	2ND ROOM TEMP
-5.0 to 5.0 psig	0.0 psig	SUCT PRES OFFSET
-5.0°F to 5.0°F	0.0°F	SUCT TEMP OFFSET
-5.0°F to 5.0°F	0.0°F	AIR TEMP OFFSET
-5.0°F to 5.0°F	0.0°F	COIL TEMP OFFSET
-5.0°F to 5.0°F	0.0°F	AUX TEMP OFFSET
FAHRENHEIT/CELSIUS	FAHRENHEIT	TEMP UNITS
0.1°F to 5°F	1°F	AIR TEMP DIFF
		EXTREME TEMP DIFF
0 to 255	3	PROPORTIONAL
0 to 255	5	INTEGRAL
0 to 255	3	DERIVATIVE



KE2 Evaporator Efficiency

Quick Start Guide

Manual Menu

Parameter Name	Description	Range	Default
MANUAL CONTROL	Force the controller into the next operating mode	REFRIGERATE/OFF, DEFROST DELAY FAN, DEFROST, DRAIN TIME, FAN DELAY	
MANUAL VALVE	Manually open or close the EEV in percentage increments	0.1%, 1%, or 10% increments	
CLEAR ALARMS	Clear all active alarms		
MANUAL COMPRESSOR RELAY	Manually energize or de-energize liquid line solenoid /compressor relay	AUTO (ON/OFF), MANUAL OFF, MANUAL ON	AUTO
MANUAL DEFROST RELAY	Manually energize or de-energize defrost relay	AUTO (ON/OFF), MANUAL OFF, MANUAL ON	AUTO
MANUAL FAN RELAY	Manually energize or de-energize evaporator fan relay	AUTO (ON/OFF), MANUAL OFF, MANUAL ON	AUTO
MANUAL AUX RELAY	Manually energize or de-energize auxiliary relay	AUTO (ON/OFF), MANUAL OFF, MANUAL ON	AUTO
FACTORY RESET	Reset the controller to the factory default setpoints	RESET	
WEB PASSWORD RESET	Reset the web password to the factory default	RESET	
KE2 SMART ACCESS	Turn KE2 Smart Access on or off	DISABLE, ENABLE	DISABLE
DHCP	Turn DHCP mode on or off	DISABLE, ENABLE	DISABLE
DOD INIT	Re-initialize KE2 defrost algorithm	RESET	
CLEAR MD	NO LONGER USED		

Variables Menu - Non Adjustable (view only)

Parameter Name	Description
ROOM TEMP	Walk-in freezer or cooler room temperature (T2 Air Sensor) as measured by the controller
COIL TEMP	Coil temperature (T3 Coil Sensor) as measured by the controller
SYSTEM MODE	Current operating status
SUPERHEAT	Superheat as calculated by the controller (requires suction pressure transducer and T1 set as suction temperature sensor)
SUCTION PRESSURE	Suction pressure as measured by the controller (only available if suction pressure transducer installed)
T1 SUCTION TEMP	Suction temperature as measured by the controller
SATURATION TEMP	Saturation temperature as calculated by the controller (requires pressure transducer and T1 sensor)
VALVE % OPEN	Percentage the EEV is open (only available if EEV is selected)
T4 AUX TEMP	Auxiliary Temperature (Taux) sensor reading as measured by the controller (Not available if T4 set to DISABLED)
COMPRESSOR RELAY	Current state of liquid line solenoid/compressor relay
DEFROST RELAY	Current state of the defrost relay
FAN RELAY	Current state of the evaporator fan relay
AUX RELAY	Current state of the auxiliary relay
DIG 1 STATUS	Current status of the Digital Input #1
DIG 2 STATUS	Current status of the Digital Input #2
DIG 3 STATUS	Current status of the Digital Input #3
IP OCTET 1	The first three digits of the IP address
IP OCTET 2	The second three digits of the IP address
IP OCTET 3	The third three digits of the IP address
IP OCTET 4	The fourth three digits of the IP address
SUBNET MASK OCTET 1	The first three digits of the subnet mask
SUBNET MASK OCTET 2	The second three digits of the subnet mask
SUBNET MASK OCTET 3	The third three digits of the subnet mask
SUBNET MASK OCTET 4	The fourth three digits of the subnet mask
FIRMWARE VERSION	Current version of the firmware on the controller

Only displayed when certain configurations are selected

Variables Menu Options for DIG IN 1,2,3 STATUS

DIG IN Setting	Status Displayed on Controller
DIG IN STATUS = DISABLED	DISABLED
DIG IN STATUS = 2ND (ROOM) TEMP	inactive = 2ND ROOM TEMP OFF; active = 2ND ROOM TEMP ON
DIG IN STATUS = DOOR SWITCH	inactive = DOOR CLOSED; active = DOOR OPEN
DIG IN STATUS = EXT ALARM	inactive = NO ALARM; active = EXT ALARM (x)
DIG IN STATUS = SYSTEM OFF	inactive = SYSTEM ON; active = SYSTEM OFF
DIG IN STATUS = LIGHT SWITCH	inactive = LIGHTS OFF; active = LIGHTS ON
DIG IN STATUS = DEFROST LOCKOUT	inactive = DEFROST RELAY AUTO; active = DEFROST LOCKED OUT
DIG IN STATUS = DEFROST INTERLOCK	inactive = DEFROST RELAY AUTO; active = DEFROST RELAY OFF

Alarms Status Menu - Non Adjustable (view only)

Parameter Name	Description
NO ALARM	No alarms active, everything is running correctly
PRESSURE SENSOR	Suction pressure sensor is shorted, open or pressure out of range
T1 SUCTION SENSOR	Suction temperature sensor is shorted or open
T2 AIR SENSOR	Return air temperature sensor is shorted or open
T3 COIL SENSOR	Coil temperature sensor is shorted or open
T4 AUX SENSOR	Auxiliary temperature sensor is shorted or open
HIGH SUPERHEAT	Superheat above upper limit
LOW SUPERHEAT	Superheat below lower limit
HIGH AIR TEMP	Room temperature is above ROOM TEMP + AIR TEMP DIFF + HIGH TEMP ALARM OFFSET for longer than HIGH TEMP ALARM DELAY
LOW AIR TEMP	Room temperature is below ROOM TEMP - LOW TEMP ALARM OFFSET for longer than LOW TEMP ALARM DELAY
EXCESS DEFROST	If the controller initiates 32 defrosts within 48 hours
DEFR TERM ON TIME	Defrost terminated on time instead of temperature for two consecutive cycles
DOOR SWITCH	If door is open and room temperature is 5 degrees above ROOM TEMP + AIR TEMP DIFF for DOOR ALARM DELAY time
COMMUNICATION ERROR	ONLY FOR BONDED CONTROLLERS: No communication between controllers for one minute or more
EXT ALARM	If DIG IN (1, 2 and/or 3) MODE = EXT ALARM : The digital input is in an active state
EMAIL FAILURE	Email alert was not confirmed by email server provided after seven consecutive attempts
FTP COMMUNICATION ALARM	ONLY FOR SITEVIEW MANAGER: No communication to the FTP server defined in Settings/Logging Options
SNTP COMMUNICATION ALARM	ONLY FOR SITEVIEW MANAGER: No communication to the SNTP server defined in Settings/Siteview Options
FLASH R/W	Controller cannot read or write to the flash memory. Contact KE2 Therm.