This reference should remain on site with the installed KE2 Evap OEM controller.

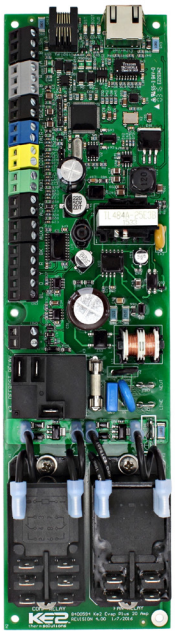
thermsolutions

Q.1.45 October 2022

KE2 EvapOEM

Quick Start Guide

PN 21231 (21214v3.0)



Contents

Overview

The KE2 Evap OEM provides the energy savings, precise temperature control, frost reduction, and communications capability of the KE2 Evaporator Efficiency in a compact and economical package. It replaces and performs the function of multiple mechanical components such as the thermostat, defrost time clock, defrost termination, and fan delay. The KE2 Evap OEM controls the liquid line solenoid (LLS), evaporator fans, and defrost heaters (if present). It is able to control an electronic expansion valve (EEV) to regulate superheat, but will also function with a mechanical thermostatic expansion valve.

Defrosts are initiated by a proprietary calculation of actual evaporator efficiency. When evaporator efficiency has dropped to 90%, the controller will initiate a defrost. Defrost is terminated based on one or more coil temperature sensors. To maximize efficiency, fans may run for several minutes at the start of a defrost before turning off and energizing heaters.

Fans are also managed in a unique way. If wired to control fans with fan management enabled, during the off cycle the controller will intelligently cycle fans based on room and coil temperature for precise room temperature control. Fans should always be running when the controller is calling for refrigeration.

Communications capability on the KE2 Evap OEM was designed with the service technician in mind. The controller has built-in webpages that show system performance in real time, allow setpoint changes, provide a 30 day room/coil temperature graph, and a 30 day datalog of all variables. The webpages can be accessed by smartphone or tablet through a KE2 Therm Wi-Fi accessory, a local network, or by plugging directly into the controller with a Cat5e cable and laptop. If the controller is provided wired internet access, it can be accessed remotely via KE2 SmartAccess.

This **Quickstart** guide provides an overview of the controller, general wiring, basic display operation, and setpoints. Please follow the link below for the latest version of this document, alarm troubleshooting guide, and webpage explanations for further information.

KE2 Evap OEM Literature

https://ke2therm.com/literature/literature-ke2-evap-oem/

KE2 Combo Display

KE2 Evap OEM controllers may be installed with the KE2 Combo Display. The KE2 Combo Display provides a remote display for the KE2 Evap OEM and a number of extra features. Please follow the link below for further information on the KE2 Combo Display.

KE2 Combo Display Literature

https://ke2therm.com/literature/literature-ke2-combo-display/

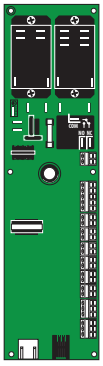
KE2 Humidity Control

KE2 Evap OEM controllers with firmware v3.0 or above may add the KE2 Humidity Control to new or existing installs. This adds humidity monitoring & control, including outputs for humidification, dehumidification, heat, and a unique superheat control designed to maximize or minimize dehumidification.

KE2 Combo Display

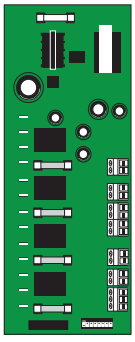
- Remote Display
- Door Heater Control
- Light Control
- Temp Alarm
- Panic Alarm

KE2 Evap OEM



- TEV/EEV
- Precise Room Temperature
- Evap. Fan Management
- Liquid Line Sol./ Comp. Contactor
- Defrost Heater Management
- Multiple Alarms
- Remote Access & Control
- Data Logging

KE2 Humidity Control



- Humidity Control & Monitoring
- Humidifier / Dehumidifier
- Heat / Reheat
- Superheat Control Based on Humidity
- Timer Output

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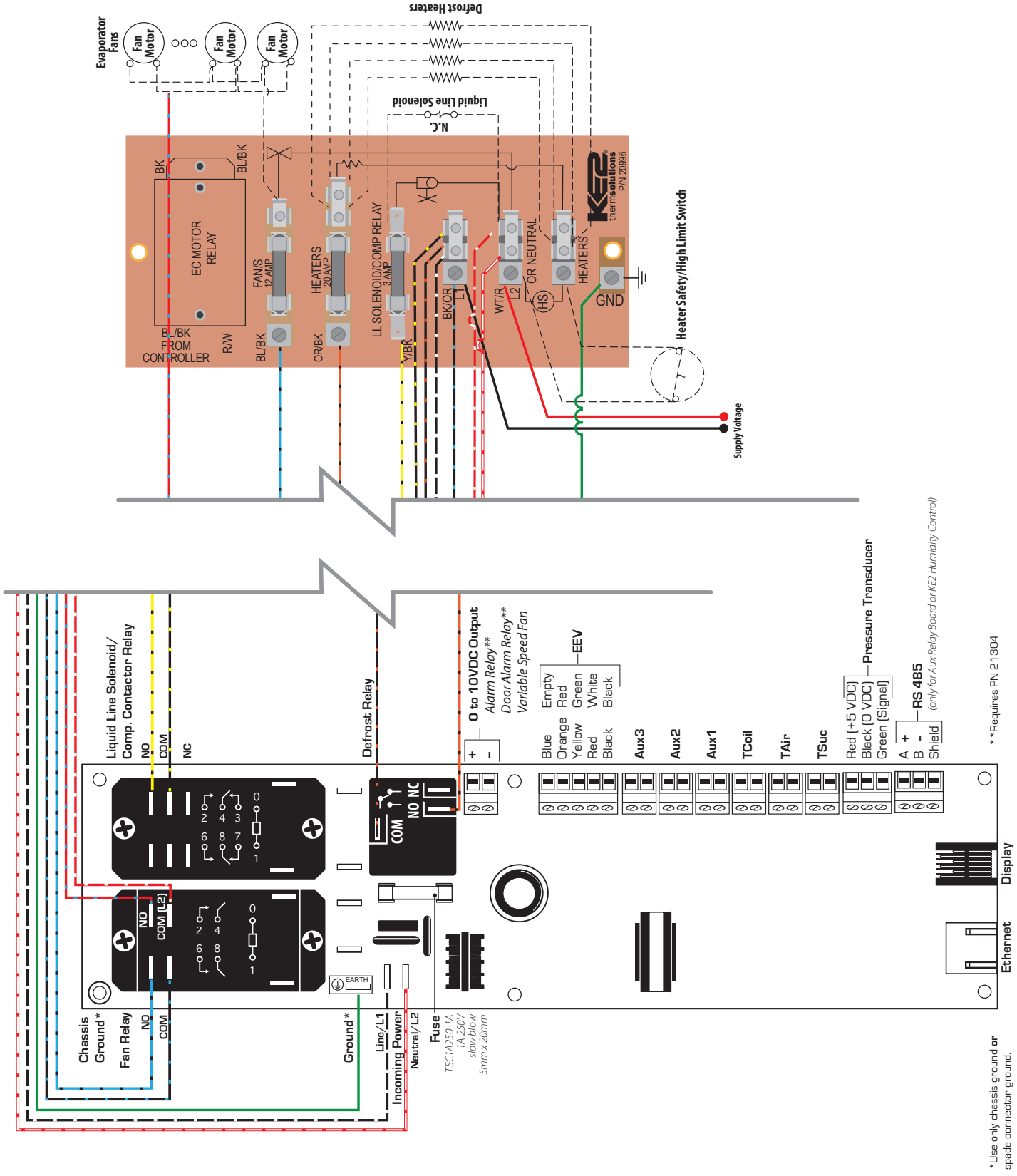
Point to Point Wiring Diagram - Controller with KE2 Terminal Board



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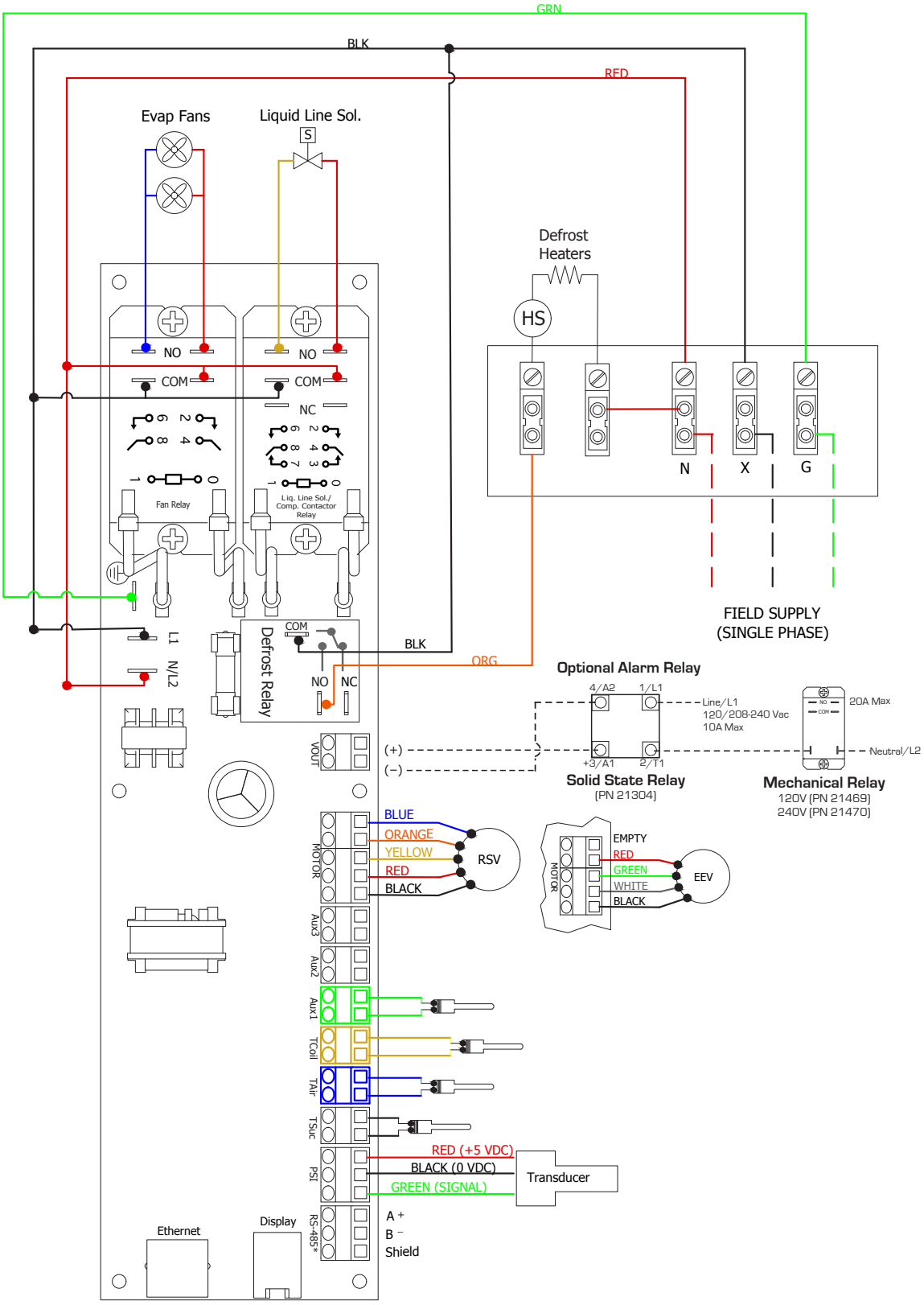
General Wiring Diagram - Controller without KE2 Terminal Board



*Only for use with Aux Relay Board or KE2 Humidity Control.

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IMPORTANT

Steps to Ensure Proper Coil Sensor Location

The coil sensor acts as defrost termination sensor, and must be installed where frost is last to disappear during defrost to ensure a clear coil.

Installing the Sensor - The most active portion of the sensor is the first 1/2" of the probe.

The photo in **Figure 2** shows that the sensor is positioned so that it is touching two circuit tubes. When inserting the sensor into the coil, the tip should touch one of the circuit tubes, and the probe should be inserted into the fins so approximately 1/16" of the stainless shielding is still outside of the fins. 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.

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 3a,** places the sensor vertically between the coil fins. **Figure 3b** shows the coil sensor properly secured.

NOTE: On a small fraction of installations the sensor placement may require adjusting. This is typically caused by product loading, door openings, air flow, high/low superheat etc. The sensor(s) should be placed where frost disappears last on the coil.

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 cable**. Maximum recommended combined length for extension is 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.

** Requires KE2 Combo Display or access to the KE2 Evap OEM's webpage.*

- When running the sensor wires to the controller, avoid introducing electrical noise. Electrical noise can occur when sensor wires are located near high voltage lines. Underwriter's Laboratories defines high voltage as above 30V. The higher the voltage, the more likely electrical noise will occur.

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

Figure 1

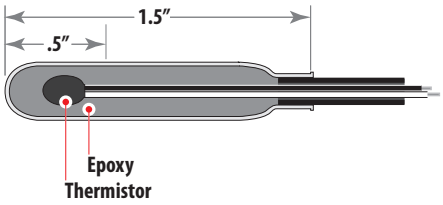

Figure 2

Figure 3a

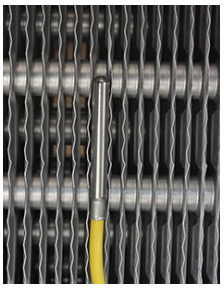

Figure 3b

Technical Videos

Further information on coil sensor placement and installation are available in the videos below:

Determine coil sensor location:
https://www.youtube.com/watch?v=ZZWfEkNK-cE

Properly install a coil sensor:
https://www.youtube.com/watch?v=Q9p3rcjKlAM

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KE2 Basic Display

Most KE2 Evap OEM controllers ship with the KE2 Basic Display. The display allows service technicians to change major setpoints. Setpoints can also be accessed using the KE2 Combo Display or the controller's webpages.

Navigation Using the Basic Display

Indicator lights	**Red light**	Critical alarm (system not running)
	Yellow light	Non-critical alarm (system running)
	Green light	Calling for refrigeration, liquid Line Solenoid (LLS)/compressor contactor relay energized.
	Green flashing	Waiting on min. run or min. off timer to energize/de-energize LLS/comp. contactor relay.

- **Access the basic setpoint menu by pressing and holding ENTER, or advanced setpoint menu by pressing and holding BACK, until tS (temperature setpoint) displays on the screen.**
- **Press ▲ or ▼ to scroll through available setpoints.**
- **Press ENTER to view the current setting.**
- **Press ▲ or ▼ to change the setpoint. Press ENTER momentarily to move between the digits to accelerate the changes.**
- **Press and hold ENTER to save setpoint changes.**
- **Press BACK to escape.**

Controller Setup

When powering up the controller for the first time, the controller will enter **Introduction Mode**. Introduction Mode consists of four **Types of Control**. A maximum of four steps are required to begin refrigeration.

Step 1

Press ▲ or ▼ to move through the available **Types of Control**. Once the correct option is displayed, press and hold ENTER for 3 seconds.

Ed	Ed	Electric Defrost with Mechanical TEV
AdE	AdE	Air Defrost with Electric Expansion Valve (EEV)
Ad	Ad	Air Defrost with Mechanical TEV
EdE	EdE	Electric Defrost with Electric Expansion Valve (EEV)

Note: For mechanical valve control options (Ed and Ad), go to Step 4. For EEV control options (Ede and AdE), go to Step 2.

Step 2

Next, the controller asks for the **Expansion Valve Type** and displays rSV **(RSV)**. If this is the correct valve, press and hold ENTER for 3 seconds. If not, press ▲ or ▼ to select the correct valve. See page 12 for a list of valve types. With correct EEV displayed, press and hold ENTER for three seconds.

Note: Custom valve setup is not available from the Basic Display.

Step 3

The controller next prompts for **Refrigerant Type** and displays r404 **(R-404a)**. Press ▲ or ▼ to change the selection. See page 12 for a list of refrigerants. Once you have the correct refrigerant, press and hold ENTER for three seconds.

Step 4

The final prompt is to set **KE2 SMART ACCESS** to **ENABLED** or **DISABLED**. **KE2 SMART ACCESS** allows you to easily view and modify your controllers online. Press ▲ or ▼ to make your selection, then press and hold ENTER for **three seconds.**

THESE ARE THE ONLY SETPOINTS REQUIRED TO BEGIN REFRIGERATION.

Variables Menu

When not in a menu, press ▲ or ▼ to cycle through the **Variables**. The variables show important system information in real time. Press ENTER to toggle between the variable name and value.

Changing Setpoints

To enter the **Basic Setpoints** menu press and hold ENTER until tS is displayed. Press ▲ or ▼ to cycle through available **Setpoints**. Press ENTER to view the current setpoint value.

To enter the **Advanced Setpoints** menu press and hold BACK until tS is displayed. Press ▲ or ▼ to cycle through the available **Setpoints**. Press ENTER to view the current setpoint value.

▲ or ▼ will increase or decrease the numerical value or scroll through the available options. Press ENTER momentarily to change the digit being modified.

Press and hold ENTER for 3 seconds to save the displayed value.

To cancel changes, press BACK to return to the setpoint abbreviation.

Manual Valve Control

Press and hold BACK and ▼ to switch to EEV **Manual Control** mode. The current valve open percentage will be displayed. To open the valve press ▲. To close the valve press ▼. The controller will immediately attempt to move the valve in the direction indicated. ENTER will advance to the next digit. BACK will exit this mode and return to automatic control.

Manual Defrost

Press and hold ENTER and ▼ to put the controller into **Defrost**. The defrost will terminate automatically based on coil temperature, however, pressing and holding ENTER and ▼ again during defrost will skip to drain (drip) mode.

Note: Fans may run for the first few minutes of electric defrost before fans turn off and heaters are energized.

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System Off (Pumpdown)

Press and hold BACK and ▲ at the same time until SoF is displayed. The controller is in system off and will not refrigerate or defrost until system off is cleared or one hour has passed. Press and hold BACK and ▲ again to exit system off. Power cycling the controller resets the one hour timer. If controller maintains SoF even after the proper button presses, check auxiliary inputs (AU1, AU2, AU3) for proper operation.

Display Lock

Press and hold BACK and ENTER at the same time until Lof is displayed. The display will be locked and show Lof whenever a button is pressed. To unlock, press and hold BACK and ENTER until Lof disappears.

Diagnostics Mode

The KE2 Evap OEM has been programmed with a diagnostics mode. When activated in the advanced setpoints menu, the controller energizes each relay for 30 seconds. While the LLS relay is energized, the EEV will regulate to the superheat setpoint.

To activate diagnostics mode, go to dIA in the Advanced Setpoints Menu. Press and hold ENTER until fan relay FAn is displayed. The defrost relay dEr, then LLS/Comp. Contactor relay LPr will be energized in turn.

Web Login

The User Name and Password are required when making changes to the controller using the built-in webpages. **Upon logging in for the first time the user will be *required* to change the password.** Please record the new password in a secure location for future reference.

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

IMPORTANT: For security purposes, the Password MUST be changed from the default.

Resetting the controller Web Password

If the username or password for the controller is forgotten or lost, the web page login must be reset to regain login access.

From the KE2 Basic Display default screen, press and hold BACK until tS is displayed. Press ▲ several times to display PAS. Press and hold ENTER until the red LED blinks, then release.

From the KE2 Combo Display default screen, press ◀ several times to navigate to MANUAL MENU. Press ENTER. LOGIN will be displayed, if not logged in already. Press ENTER again, 0000 will be displayed. Use ▲▼◀▶ to enter the password 2222. Press and hold ENTER until the screen changes. Press ▼ to navigate to WEB PASSWORD RESET. Press ENTER to display RESET. Press and hold ENTER until the display goes back to WEB PASSWORD RESET. Press BACK to exit.

The username and password will be reverted to the default "ke2admin", however, the user will still be required to change from the default password when logging in for security purposes.

Bonding (Multi-Evap Applications)

Bonding allows multiple controllers to synchronize refrigeration and/or defrost. It is required on systems with multiple evaporators on one condensing unit with no unloading capability. Bonding can easily be done through the controller webpages, or from the KE2 Basic Display if only bonding two controllers.

Run a Cat5e cable between the two controllers. Plug the cable into the Ethernet port at each controller. The cable will remain permanently plugged into both controllers in order to allow the synchronization. Cables can also be run from each controller to a network switch, however, only the two controllers to be bonded can be connected to the switch during the bonding process when bonding from the display.

Go to bnd in the Advanced Menu. Press and hold ENTER until the red LED is blinking. Wait several seconds. PAS means the bond was successful and both controllers will restart. FAI means the bond failed, check cables and ensure only two KE2 Evap OEM controllers are on the network before trying again. Press ENTER again to return to the Advanced Menu.

To unbond controllers from the display, go to Unb. Press and hold ENTER until the red LED is blinking. Wait several seconds. The controllers will unbond and restart. If bonded to more than one controller, the controllers must be unbonded using the webpages.

Note: Only controllers with the same firmware and version can be bonded.

Pairing (Lead/Lag, KE2 Combo Display)

Pairing is used to setup two KE2 Evap OEM controllers for lead/lag control, or to allow them to both be displayed on a single KE2 Combo Display.

Run a Cat5e cable between the two controllers. Plug the cable into the Ethernet port at each controller. The cable will remain permanently plugged into both controllers in order to communicate. Cables can also be run from each controller to a network switch, however, only the two controllers to be paired can be connected to the switch during the pairing process when pairing from the display.

Go to PAr in the Advanced Menu. Press and hold ENTER until the red LED is blinking. Wait several seconds. PAS means the pair was successful. FAI means the pair failed, check cables and ensure only two KE2 Evap OEM controllers are on the network before trying again. Press ENTER again to return to the Advanced Menu.

To enable lead/lag control, go to LEE in the Advanced Menu. Select LLd for redundant cool, LLA for redundant off, or ALt for Alternate. If using a redundant mode, the default switch time is 12 hours. This can be adjusted using the Lead/Lag Time setpoint LLt. Confirm the 2nd Room Temp setpoint tS2, as this will be the backup temperature setpoint for the lag controller.

To unpair controllers from the display, go to UnP. Press and hold ENTER until the red LED is blinking. Wait several seconds. PAS means the unpairing was successful. FAI means the unpair failed. Press ENTER again to return to the Advanced Menu.

Note: Only controllers with the same firmware and version can be paired.

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Menus and Parameters

BASIC Setpoints Menu - Press and hold **ENTER**

Basic Display Abbreviation	KE2 Combo Display Scrolling Text	Min	Max	Default	Description
tS	ROOM TEMP	-50.0°F	90.0°F	0.0°F (E) 37.8°F (A)	Room temperature to be maintained (cut-out temperature).
rFG	REFRIGERANT	N/A	N/A	R-404A	Refrigerant used. See table on page 12.
dtY	DEFROST TYPE	N/A	N/A	Electric	**(ELE)** for Electric. **(Air)** for off time. **(HGn)** for hot gas with LLS relay on. **(HGF)** for hot gas with LLS relay off.

ADVANCED Setpoints Menu - Press and hold **BACK**. Setpoints marked with * depend on an auxiliary board or other setpoints to appear.
(E) denotes default if **DEFROST TYPE = ELECTRIC**, (A) denotes default if **DEFROST TYPE = AIR**.

Basic Display Abbreviation	KE2 Combo Display Scrolling Text	Min	Max	Default	Description
tS	ROOM TEMP	-50.0°F	90.0°F	0.0°F (E) 37.8°F (A)	Room temperature to be maintained (cut-out temperature).
rFG	REFRIGERANT	N/A	N/A	R-404A	Refrigerant used. See table on page 12.
dtY	DEFROST TYPE	N/A	N/A	Electric	**(ELE)** for electric. **(Air)** for off time. **(HGn)** for hot gas with LLS relay on. **(HGF)** for hot gas with LLS relay off.
Edt	VALVE TYPE	N/A	N/A	Mechanical	Expansion valve used on system. See table on page 12.
ind	DEFROST MODE	N/A	N/A	Demand	Mode to initiate defrost. **(dnd)** demand. **(SCH)** schedule. **(rnt)** comp run time.
dPd*	DEFROSTS / DAY	0	8	5	**If DEFROST MODE = SCH:** Defrosts per day. Number of evenly spaced defrosts per day.
dtP	DEFROST TERM TEMP	35.0°F	90.0°F	50.0°F(E) 39.8°F (A)*	Temperature the coil sensor(s) must exceed to terminate defrost. *If **DEFROST TYPE = AIR**, term temp will automatically adjust 2.0°F above **ROOM TEMP if ROOM TEMP** if changed.
dEF*	DEFROST PARAMETER	0	90	30 (E) 40 (A)	**If DEFROST MODE = DEMAND:** Do not adjust unless directed to by KE2 Therm tech support.
dtL*	MAX DEFROST TIME	0 min.	90 min.	45 min.	**If DEFROST MODE = SCH:** Maximum amount of time the defrost relay will be energized.
drn	DRAIN TIME	0 min.	15 min.	2 min. (E) 0 min. (A)	Time to be in drain mode (drip time).
rFt	REFRIG FAN TYPE	Manage/Cycle, Permanent, On with Compressor, Title 24		On w/ Compressor	Select evaporator fan management. **(CYC)** cycle, i.e. manage fans during refrigeration and off cycle. **(FoC)** fans on w/ compressor will primarily manage fans only during the off cycle. **(PEr)** permanent forces fans to run during refrigeration and off cycle. **(t24)** Title 24 cycles fans based on California's Title 24 regulations.
FtS	MIN FAN SWITCH TIME	10 sec.	240 sec.	10 sec.	Minimum time before fans can be turned on again after turning off.
Stt	SUPERHEAT	5.0°F	30.0°F	EEV = 8.0°F TEV = 20.0°F	When EEV selected, target superheat value. When mechanical valve selected, high superheat alarm threshold. If humidity control enabled, becomes minimum superheat value.
LPt*	MAX TIME FOR LPCO	0 min.	15 min.	0 min.	**If EEV selected:** 0 = Disabled. Do not enable unless instructed to by KE2 Therm tech support. Maximum time allowed to run compressor after entering off mode or defrost. If suction pressure does not reach **(LPC)** Low Pressure Cutout in this time will lead to **(Pdt)** Pump Down Timeout alarm.
LPC*	LOW PRESSURE CUT OUT	-5.0 psig	138.0 psig	8.0 psig	**If LPt greater than 0:** Low pressure cut-out when low pressure cut-out (LPCO) mode is enabled. LPCO is enabled when **(LPt)** is set to a value higher than 0 min.
LPd*	PRESS DIFF FOR LPCO	1.0 psig	50.0 psig	15.0 psig	**If LPt greater than 0:** Differential for low pressure cut-in when LPCO mode is enabled. **LOW PRESSURE CUT OUT + PRESS DIFF FOR LPC** = low pressure cut-in.
Att*	LPCO ATTEMPTS	1	5	5	**If LPt greater than 0:** Number of times comp. contactor relay may be de-energized during a refrigeration run cycle due to low pressure, or energized during an off cycle due to high pressure, before triggering (**SCC**) **Short Compressor Cycle** alarm.
rnt*	COMP RUN TIME	0 hrs.	24 hrs.	6 hrs.	**If DEFROST MODE = rnt: Runtime defrost only**, hours of refrigeration before initiating a defrost.
Htn*	ELECTRIC DEFROST MODE	N/A	N/A	Pulse	**If DEFROST TYPE = ELE: (Prn)** Permanent, leaves defrost relay energized during the defrost cycle. **(PUL)** Pulse, utilizes advanced heater management.
HAo	HIGH TEMP ALARM OFFSET	0°F	99.9°F	10.0°F (E) 3.0°F (A)	Degrees above **ROOM TEMP + AIR TEMP DIFF** to trigger **HIGH TEMP ALARM**.
HAd	HIGH TEMP ALARM DELAY	0 min.	120 min.	60 min.	Delay before triggering **HIGH TEMP ALARM**.
LAo	LOW TEMP ALARM OFFSET	0°F	20.0°F	4.0°F	Degrees below **ROOM TEMP** to trigger **LOW TEMP ALARM**.
LAd	LOW TEMP ALARM DELAY	0 min.	30 min.	10 min.	Delay before triggering **LOW TEMP ALARM**.
dAd	DOOR ALARM DELAY	0 min.	180 min.	30 min.	Time door must be open before triggering **DOOR OPEN ALARM**. Requires door switch.
AU1	AUX IN 1 MODE	N/A	N/A	Disabled	See Auxiliary Input Modes table on page 12.

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ADVANCED Setpoints Menu (Continued)

Basic Display Abbreviation	KE2 Combo Display Scrolling Text	Min	Max	Default	Description
A1A	AUX IN 1 STATE	N/A	N/A	Closed	(**oPn**) active if input is an open circuit. (**CLo**) active if input is shorted.
AU2	AUX IN 2 MODE	N/A	N/A	Disabled	See Auxiliary Input Modes table on page 12.
A2A	AUX IN 2 STATE	N/A	N/A	Closed	(**oPn**) active if input is an open circuit. (**CLo**) active if input is shorted.
AU3	AUX IN 3 MODE	N/A	N/A	Sys Off	See Auxiliary Input Modes table on page 12.
A3A	AUX IN 3 STATE	N/A	N/A	Closed	(**oPn**) active if input is an open circuit. (**CLo**) active if input is shorted.
tS2	2ND ROOM TEMP	-50.0°F	90.0°F	-50.0°F	If **AU1**, **AU2**, or **AU3 = (t2n) 2ND ROOM TEMP:** This value becomes the **ROOM TEMP** setpoint when the Auxiliary Input is active, or, if (**tEt**) = (**LGC**) Redundant Cool or (**ALt**) Alternate, this value becomes the **ROOM TEMP** setpoint when the controller is in Lag mode.
10t	0 TO 10 VDC MODE	-	-	Alarm Relay	(**ALr**) Alarm relay. (**FSd**) Evap fan speed control. (**dAL**) Door alarm relay.
tEt	MULTI EVAP MODE	-	-	Off	Lead/lag mode. (**oFF**) Off, lead/lag disabled. (**LGC**) Redundant Cool, time based lead/lag with backup system controlling to 2nd Room Temp. (**LGF**) Redundant Off, time based lead/lag with backup system always off. (**ALt**) Alternate, lead/lag system will switch after every refrigeration run cycle.
PAd	PAIRED DEFROST MODE	-	-	Off	Select operation when lead/lag pair controller goes into defrost. (**oFF**) Off, paired controller will stay off. (**AUt**) Auto, paired controller will refrigerate based on room temp.
LLt	LEAD/LAG TIME	1 hour	168 hours	12 hours	Toggle time between lead/lag when (**tEt**) = (**LGC**) Redundant Cool or (**LGF**) Redundant Off.
HU*	HUMIDITY MODE	diS, EnA, HEt	diS	diS	(**diS**) Disabled. (**EnA**) humidity control enabled. (**HEt**) heater control only.
HSP*	HUMIDITY SP	0.0 %	100.0 %	65.0 %	Humidity target for humidity control.
HdP*	HUMIDITY DIFF SP	0.0 %	25.0 %	5.0 %	Humidity differential. Humidity setpoint +/- the differential will determine the control range.
UAo*	HUM ALARM OFST SP	0.0 %	25.0 %	5.0 %	Offset added & subtracted above/below Humidity Target & Humidity Differential for High/Low Humidity alarms.
UAd*	HUMIDITY ALARM DELAY	0 min.	360 min.	120 min.	Delay before triggering High/Low Humidity alarm once humidity is out of range.
USt*	MAX SUPERHEAT	8.0°F	60.0°F	25.0°F	Maximum allowed superheat for humidity control.
dto*	DEHUM TEMP OFFSET	-140.0°F	0.0°F	0.0°F	DeHumidify Offset. Allows controller to overcool the space if humidity is high. Room Temp - DeHumidify Offset is new target temperature if humidity is high. Must be a negative number.
HEt*	HEATER SP	-50.0°F	90.0°F	-50.0°F	Cut-in temperature for heater control.
HEd*	HEATER DIFF SP	0.1°F	25.0°F	0.1°F	Differential added to Heater Setpoint to determine heater cut-out temperature.
H2P*	HUMIDITY 2 SP	0.0 %	100.0 %	65.0 %	Second Humidity target used when 2nd Humidity Input is active.
Unt	TEMP UNITS	N/A	N/A	Fahrenheit	Display temperature in (**FAH**) Fahrenheit or (**CEL**) Celsius.
EdF	EXTREME TEMP DIFF	0°F	99.9°F	20.0°F	Should not be adjusted unless instructed to by KE2 Therm.
CLA	CLEAR ALARMS	N/A	N/A	-	Press and hold ENTER until red LED starts blinking, alarms will be reset. Sensor and transducer alarms will immediately return until fixed.
diA	DIAGNOSTICS MODE	N/A	N/A	-	Press and hold ENTER until **FAr** is displayed. Energizes each relay individually for 30 seconds: (**FAr**) fan relay, (**dEr**) defrost relay, (**CPr**) compressor relay.
FAC	FACTORY RESET	N/A	N/A	-	Press and hold ENTER to reset the controller's refrigeration setpoints to KE2 Therm defaults. Does NOT reset network settings. Do not press unless requested to by tech support.
PAS	WEB PASSWORD RESET	N/A	N/A	-	Press and hold ENTER to reset the web username and password to the factory default.
PAr*	PAIR L/L	-	-	-	Press and hold ENTER until red LED blinks. (**PAS**) successful pairing. (**FAi**) pairing failed. Only two controllers can be present on network.
UnP*	UNPAIR L/L	-	-	-	Press and hold ENTER until red LED blinks. (**PAS**) successful unpairing. (**FAi**) unpairing failed.
bnd*	BOND	-	-	-	Press and hold ENTER until red LED blinks. (**PAS**) successful bond. (**FAi**) bond failed. Check cabling and only two controllers can be present on network to bond from display.
Unb*	UNBOND	-	-	-	Press and hold ENTER until red LED blinks. Controllers will unbond and restart. Only works if bonded to one other controller.
SA	SMART ACCESS	N/A	N/A	Disabled	Turn KE2 SmartAccess on or off. (**EnA**) enabled. (**diS**) disabled.
dHC	DHCP	N/A	N/A	Disabled	Turn DHCP client mode on or off. (**EnA**) enable DHCP mode. (**diS**) disable DHCP mode. IP address can change automatically from default when DHCP mode is enabled.

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ADVANCED Setpoints Menu (Continued)

Basic Display Abbreviation	KE2 Combo Display Scrolling Text	Min	Max	Default	Description
Only available on KE2 Combo Display or controller built-in webpages.	MOTOR TYPE	Unipolar or Bipolar		Unipolar	Motor type for custom valve, bipolar or unipolar.
	MOTOR STEP RATE	30	400	40	Motor Step rate for custom valve.
	MAX VALVE STEPS	200	6400	500	Full stroke steps for custom valve.
	MAX OPERATING PRES	10.0 psig	150.0 psig**	150.0 psig**	**Max operating pressure. Max is 300 when R-410A selected, 750 when R-744 selected.
	FAN SPEED	-100.0%	100.0%	0.0%	Fan speed %. Do not adjust unless using the 0-10 VDC output for variable speed fans.
	MIN COMP RUN TIME	0 min.	15 min.	2 min.	Minimum Compressor Run Time.
	MIN COMP OFF TIME	0 min.	15 min.	5 min.	Minimum Compressor Off Time.
	1ST DEFROST DELAY	0 min.	240 min.	120 min.	If **DEFROST MODE = SCHEDULED** delay after power cycle before initiating 1st scheduled defrost.
	DEFROST FAN STATE	ON or OFF		OFF(E)/ ON(A)	OFF = fans off during defrost; ON = fans ON during defrost.
	FAN DELAY TEMP	-40.0°F	35.0°F	5.0°F	After electric or hot gas defrost, temperature that coil must fall below to resume normal fan operation, or Max Fan Delay Time elapses, whichever is sooner.
	MAX FAN DELAY TIME	0 min.	20 min.	3 min. (E) 0 min. (A)	Maximum amount of time after defrost to resume normal fan operation.
	PUMP DOWN TIME	0 min.	90 min.	0 min.	Minimum time between de-energizing the liquid line solenoid/compressor contactor relay and energizing the defrost relay.
	MULTI AIR TEMP CTRL	Warmest or Average		Warmest Air	Bonded controls w/synchronized refrigeration only. Warmest Air = use warmest air temp from bonded controls; Average Air = use average of air temp from bonded controls.
	MULTI EVAP COOL	Synchronized or Independent		Synchro-nized	Synchronized = synchronize bonded controller in refrigeration mode; Independent = bonded controllers control temperature independently bonded controllers refrigerate independently based on their local room temp sensor.
	MULTI EVAP DEFROST	Synchronized or Independent		Synchro-nized	Synchronized = synchronize bonded controller in defrost mode; Independent = bonded controllers defrost independently.
	MULTI EVAP SENSOR	Shared or Unshared		Shared	Shared = share sensor readings from bonded controllers; Unshared = use local sensor readings only.
	ROOM TMP IND DEF	-50.0°F	90.0°F	0.0°F	Room temp while bonded controller is in defrost. Only applies to bonded controllers with Multi Evap Defrost set to Independent. Allows better defrost performance in certain multi-evap applications.
	SUCT PRES OFFSET	-5.0°F	5.0°F	0.0°F	Offset added or subtracted from the suction line pressure transducer reading, if needed.
	SUCT TEMP OFFSET	-5.0°F	5.0°F	0.0°F	Offset added or subtracted from the suction temp sensor reading, if needed.
	COIL TEMP OFFSET	-5.0°F	5.0°F	0.0°F	Offset added or subtracted from the coil temperature sensor reading, if needed.
	AIR TEMP OFFSET	-5.0°F	5.0°F	0.0°F	Offset added or subtracted from the room temperature sensor reading, if needed.
	AUX 1 OFFSET	-5.0°F	5.0°F	0.0°F	When Aux1, Aux2, or Aux 3 is used as a temperature sensor, an offset is added or subtracted from the reading.
	AUX 2 OFFSET	-5.0°F	5.0°F	0.0°F	
	AUX 3 OFFSET	-5.0°F	5.0°F	0.0°F	
	PROPORTIONAL	0	255	3	Coefficient to valve control algorithm. Increases responsiveness as value increases.
	INTEGRAL	0	255	5	Coefficient to valve control algorithm. Increases responsiveness as value increases.
	DERIVATIVE	0	255	3	Should not be adjusted unless instructed to by KE2 Therm.
	AIR TEMP DIFF	0.1°F	5.0°F	1.0°F	Degrees above **ROOM TEMP** before the controller will begin **REFRIGERATION**.
	HUMIDITY OFFSET*	-5.0%	5.0%	0.0%	Offset added or subtracted from the humidity sensor reading, if needed.
	MIN OPERATING PRESSURE*	0.0 psig	150.0 psig**	0.0 psig	**Min operating pressure when humidity control is enabled & EEV present. Max is 300 when R-410A selected, 750 when R-744 selected.
Only available on controller built-in webpages.	**Webpage Text**	**Min**	**Max**	**Default**	**Description**
	START TIMER 1*	12:00 AM	11:59 PM	12:00 AM	Energizes the Timer Relay on the KE2 Humidity Control board at the specified time.
	STOP TIMER 1*	12:00 AM	11:59 PM	12:00 AM	De-energizes the Timer Relay on the KE2 Humidity Control board at the specified time.
	START TIMER 2*	12:00 AM	11:59 PM	12:00 AM	Energizes the Timer Relay on the KE2 Humidity Control board at the specified time.
	STOP TIMER 2*	12:00 AM	11:59 PM	12:00 AM	De-energizes the Timer Relay on the KE2 Humidity Control board at the specified time.

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Alarm Status Menu - *See Q.1.61 Alarm Troubleshooting Guide for further details.* https://ke2therm.com/literature/literature-ke2-evap-oem/

Basic Display Abbreviation	KE2 Combo Display Scrolling Text	Description
EAP	N/A	Not an alarm. Displays when controller is powering up.
PrF	N/A	KE2 Basic Display not able to communicate with controller.
PSA	PRESSURE SENSOR	Suction pressure sensor is shorted, open, or pressure out of range.
SSA	SUCTION TEMP SENSOR	Suction temp sensor is shorted or open.
ASA	AIR TEMP SENSOR	Return air temp sensor is shorted or open.
CSA	COIL TEMP SENSOR	Coil temp sensor is shorted or open.
HSH	HIGH SUPERHEAT	**[EEV]** Superheat 2°F above **SUPERHEAT** setpoint for 90 minutes of cumulative runtime, and valve > 90% open. **[TEV]** Superheat above **SUPERHEAT** setpoint for 90 minutes of cumulative runtime.
LSH	LOW SUPERHEAT	Superheat below 3°F for 5 minutes and EEV < 10% open.
HtA	HIGH AIR TEMP	Air temp above **ROOM TEMP** + **AIR TEMP DIFF** + **HIGH TEMP ALARM OFFSET** longer than **HIGH TEMP ALARM DELAY**.
LtA	LOW AIR TEMP	Air temp below **ROOM TEMP** - **LOW TEMP ALARM OFFSET** longer than **LOW TEMP ALARM DELAY**.
EdF	EXCESS DEFROST	Time between defrosts too short in demand defrost. Check if defrost terminating on temperature properly.
dtt	DEFR TERM ON TIME	Defrost terminated on time instead of temperature for two consecutive cycles.
dor	DOOR SWITCH	Door open and air temp above **ROOM TEMP** + 0.5°F longer than **DOOR ALARM DELAY**.
CoA	COMMUNICATION ERROR	**[Bonded controllers only]** No communication between bonded controllers for one minute or more.
EA1	EXTERNAL ALARM 1	If **AU1** = **EAL** and the auxiliary input is in an active state.
EA2	EXTERNAL ALARM 2	If **AU2** = **EAL** and the auxiliary input is in an active state.
EA3	EXTERNAL ALARM 3	If **AU3** = **EAL** and the auxiliary input is in an active state.
EFL	EMAIL FAILURE	Email alert was not confirmed by provided email server after seven consecutive attempts.
A1A	AUX1 SENSOR	**AU1** is set to **rtP**, **CLt**, or **oni** and temp sensor is shorted or open.
A2A	AUX2 SENSOR	**AU2** is set to **rtP**, **CLt**, or **oni** and temp sensor is shorted or open.
A3A	AUX3 SENSOR	**AU3** is set to **rtP**, **CLt**, or **oni** and temp sensor is shorted or open.
Pdt	PUMP DOWN TIMEOUT	**[LPC0 only] LOW PRESSURE CUT OUT TIME** exceeded before suction pressure reached **Low Pressure Cut Out**.
SCC	SHORT COMP CYCLE	**[LPC0 only]** Compressor started excessive number of times due to suction pressure in off mode, or compressor cut-out excessive number of times due to suction pressure while in refrigeration mode.
LPA	LOW PRESSURE	**[LPC0 only]** Suction pressure low despite attempts to run.
CLL	LEAD/LAG COMM ERROR	Communication lost between lead/lag controllers.
CCA	COMP SEQ COMM ERROR	[Siteview Only] Communication lost to KE2 Compressor Sequencer OEM.
ntP	TIMER SERVER COMM	Controller cannot communicate with external time of day server (SNTP server).
dtS	DOOR TEMP SENSOR	Combo Display Aux 1 Door Temp Sensor is shorted or open.
dt2	DISPLAY AUX2 SENSOR	Combo Display Aux 2 Temp Sensor is shorted or open.
dt3	DISPLAY AUX3 SENSOR	Combo Display Aux 3 Temp Sensor is shorted of open.
dtH	DOOR TEMP HIGH	Combo Door Temp above **Door Temperature** + **High Door Alarm Offset** longer than **High/Low Door Temperature Alarm Delay**.
dtL	DOOR TEMP LOW	Combo Door Temp below **Door Temperature** - **Low Door Alarm Offset** longer than **High/Low Door Temperature Alarm Delay**.
Hd2	HIGH MONITOR TEMP2	Combo Aux2 Monitor Temp above **Monitor Temp2 High Alarm** longer than **Monitor Temp2 Alarm Delay**.
Ld2	LOW MONITOR TEMP2	Combo Aux2 Monitor Temp below **Monitor Temp2 Low Alarm** longer than **Monitor Temp2 Alarm Delay**.
Hd3	HIGH MONITOR TEMP3	Combo Aux3 Monitor Temp above **Monitor Temp3 High Alarm** longer than **Monitor Temp3 Alarm Delay**.
Ld3	LOW MONITOR TEMP3	Combo Aux3 Monitor Temp below **Monitor Temp3 Low Alarm** longer than **Monitor Temp3 Alarm Delay**.
EA1	DISPLAY EXTERNAL ALARM 1	Combo External Alarm 1 input is active.
EA2	DISPLAY EXTERNAL ALARM 2	Combo External Alarm 2 input is active.
EA3	DISPLAY EXTERNAL ALARM 3	Combo External Alarm 3 input is active.
Pbt	HELP	Combo Display panic button is active. Press and hold panic button again to clear.
HSA	HUMIDITY SENSOR	Humidity sensor is shorted or open.
HHA	HIGH HUMIDITY	Humidity above **HUMIDITY SP** + **HUMIDITY DIFF** + **HUMIDITY ALARM OFFSET** for longer than **HUMIDITY ALARM DELAY**.
LHA	LOW HUMIDITY	Humidity below **HUMIDITY SP** - **HUMIDITY DIFF** - **HUMIDITY ALARM OFFSET** for longer than **HUMIDITY ALARM DELAY**.
CHA	HUMIDITY COMM	KE2 Evap OEM lost communication with KE2 Humidity Control board for 10 seconds.

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Variables Menu

Basic Display Abbreviation		KE2 Combo Display Scrolling Text	Description
rtP	rtP	ROOM TEMP	Room Temperature as measured by controller.
HU	HU	HUMIDITY	Relative humidity as measured by controller.
CLt	CLt	COIL TEMP	Coil Temperature as measured by controller.
SYS	SYS	SYSTEM MODE	Current operating status.
SHt	SHt	SUPERHEAT	Superheat as calculated by the controller.
PrS	PrS	SUCTION PRESSURE	Suction Pressure as measured by controller.
SUt	SUt	T1 SUCTION TEMP	Suction Temperature as measured by controller.
SAt	SAt	SATURATION TEMP	Saturation Temperature as calculated by controller.
oPn	oPn	VALVE % OPEN	Percentage EEV is open.
LLS	LLS	LLS RELAY	Current status of LLS/Compressor Contactor Relay.
dEr	dEr	DEFROST RELAY	Current status of Defrost Relay.
FAr	FAr	FAN RELAY	Current status of Fan Relay.
HUr	HUr	HUMIDIFIER RELAY	Current status of Humidifier Relay.
dHr	dHr	DEHUMIDIFIER RELAY	Current status of Dehumidifier Relay.
Htr	Htr	HEATER RELAY	Current status of Heater Relay.
t r	t r	TIMER RELAY	Current status of Timer Relay.
AU1	AU1	AUX 1 STATUS	Current status/temperature as measured by controller at Aux Input 1.
AU2	AU2	AUX 2 STATUS	Current status/temperature as measured by controller at Aux Input 2.
AU3	AU3	AUX 3 STATUS	Current status/temperature as measured by controller at Aux Input 3.
HU2	HU2	2ND HUM SP STAT	2nd Humidity Input status, when active uses 2nd Humidity Setpoint as humidity target.
ott	ott	OR TIMER STAT	Timer Override Input status. When input is active energizes Timer Relay.
iP1	iP1	IP OCTET 1	First 3 digits of the controller's IP address.
iP2	iP2	IP OCTET 2	Second 3 digits of the controller's IP address.
iP3	iP3	IP OCTET 3	Third 3 digits of the controller's IP address.
iP4	iP4	IP OCTET 4	Fourth 3 digits of the controller's IP address.
PnH	PnH	FIRMWARE PARTNUM	First three digits of firmware PN.
PnL	PnL	FIRMWARE PARTNUM	Last three digits of firmware PN.
Fir	Fir	FIRMWARE VERSION	Current version of firmware on controller.

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First Time Setup - Types of Control & KE2 SmartAccess

Basic Display Abbreviation		KE2 Combo Display Scrolling Text	Description
Ed	Ed	ELECTRIC DEFROST /TEV	Electric Defrost w/Mechanical valve
EdE	EdE	ELECTRIC DEFROST /EEV	Electric Defrost w/Electric Expansion Valve
Ad	Ad	AIR DEFROST /TEV	Air Defrost w/Mechanical Valve
AdE	AdE	AIR DEFROST /EEV	Air Defrost w/Electric Expansion Valve
SA	SA	SMART ACCESS MODE	KE2 SmartAccess (Enabled/Disabled)

Auxiliary Input Modes

Basic Display Abbreviation		KE2 Combo Display Scrolling Text	Description
diS	diS	DISABLED	Not used.
rtP	rtP	ROOM TEMP	Sets the Aux Input as an additional room (air) temperature sensor input.
CLt	CLt	COIL TEMP	Sets the Aux Input as an additional coil temperature sensor input.
oni	oni	MONITOR	Sets the Aux Input as a monitor temperature input. Monitor temp does not affect controller operation.
t2n	t2n	2ND (ROOM) TEMP	Switches between main and 2nd Room Temperature setpoints. Inactive = 2nd room temp SP off **(t2F)**. Active = 2nd room temp SP on **(t2n)**.
dor	dor	DOOR SWITCH	Inactive = Door Closed (**dCL**). Active = Door Open (**don**).
EAL	EAL	EXT ALARM	Receive a dry contact from a 3rd party device to show an alarm for that device on the controller. Active = **(EAo)**. Inactive = **(EAF)**.
SoF	SoF	SYS OFF	Active input will cause the controller to enter system off (pumpdown). Inactive = System On (**Son**). Active = System Off **(SoF)**.
dFi	dFi	DFR INTERLOCK	Prevents the defrost relay from energizing when active. Inactive = Defrost Heaters normal **(AUt)**. Active = Defrost Heaters Off **(oFF)**.
dFL	dFL	DEFR LOCK	Prevents defrost from initiating when active. Inactive = Defrost Normal (**AUt**). Active = Defrost Not Allowed **(dLo)**.

Valve Types

Basic Display Abbreviation		KE2 Combo Display Scrolling Text	Description
tHr	tHr	MECHANICAL	Traditional Thermostatic Expansion Valve.
PLS	PLS	PULSE VALVE	Pulse Width Modulation (PWM) Valve.
rS	rS	KE2 RSV	KE2 Therm's Refrigeration Stepper Valve.
SEi	SEi	SER/SEI 1 TO 20	12 VDC Bipolar Sporlan EEV with 1,600 max steps, 200 steps/second.
SEr	SEr	SER AA TO L	12 VDC Bipolar Sporlan EEV with 2,500 max steps, 200 steps/second.
CrL	CrL	CAREL	12 VDC Bipolar Carel EEV with 480 max steps, 50 steps/second.

System Modes

Basic Display Abbreviation		KE2 Combo Display Scrolling Text	Description
EAP	EAP	EVAP	Displays when controller is starting up (KE2 Evap OEM).
rEF	rEF	REFRIGERATE	Controller is calling for refrigeration (LLS/Compressor Contactor relay should be energized).
ddF	ddF	DEFROST DELAY FAN	Preparing for defrost by stopping refrigeration and running fans only.
dEF	dEF	DEFROST	Controller in defrost mode.
drn	drn	DRAIN TIME	Controller in drain or "drip" time.
FdL	FdL	FAN DELAY	Controller in fan delay, will turn on fans once coil reaches fan delay temp.
SoF	SoF	SYSTEM OFF	Controller in system off.
oFF	oFF	OFF	Satisfied on temperature or off for other reason (ex. door switch).

Refrigerants

Abbreviation		Full Name
404	404	R-404A
458	458	R-458A
452	452	R-452A
513	513	R-513A
450	450	R-450A
449	449	R-449A
448	448	R-448A
744	744	R-744
410	410	R-410A
407	407	R-407F
409	409	R-409A
408	408	R-408A
438	438	R-438A
717	717	R-717
r22	r22	R-22
134	134	R-134a
42d	42d	R-422D
42A	42A	R-422A
40C	40C	R-407C
40A	40A	R-407A
507	507	R-507

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Alphabetical List of Abbreviations

Abbreviation		Full Name	Type	Description
10t	10t	0 to 10 VDC Mode	Setpoint	**(ALr)** Alarm relay. **(FSd)** Evap fan speed control. **(dAL)** Door alarm relay.
A1A	A1A	Aux Input 1 state	Setpoint	**(oPn)** active if input is an open circuit. **(CLo)** active if input is shorted.
A1A	A1A	AU1 Temp Sensor Alarm	Alarms	**AU1** is set to **rtP**, **CLt**, or **oni** and temp sensor is shorted or open.
A2A	A2A	Aux Input 2 state	Setpoint	**(oPn)** active if input is an open circuit. **(CLo)** active if input is shorted.
A2A	A2A	AU2 Temp Sensor Alarm	Alarms	**AU2** is set to **rtP**, **CLt**, or **oni** and temp sensor is shorted or open.
A3A	A3A	Aux Input 3 state	Setpoint	**(oPn)** active if input is an open circuit. **(CLo)** active if input is shorted.
A3A	A3A	AU3 Temp Sensor Alarm	Alarms	**AU3** is set to **rtP**, **CLt**, or **oni** and temp sensor is shorted or open.
Ad	Ad	Air Defrost w/Mechanical valve	Type of Control	System operates with default values for Air Defrost and Mechanical Valve.
AdE	AdE	Air Defrost w/EEV	Type of Control	System operates with default values for Air Defrost and Electric Valve.
Ai	Ai	Air Defrost (Off time)	Setpoint	Option for evaporator Defrost Type **(dtY)** setpoint. **(Ai)** Air Off time Defrost. Other options are **(ELE)** Electric, **(HGn)** Hot Gas w/ Compressor On, and **(HGF)** Hot Gas w/ Compressor Off.
ALt	ALt	Alternate	Setpoint	Sets lead/lag control to alternate. Lead/lag will switch after every refrigeration run cycle.
ALr	ALr	Alarm Relay	Setpoint	Sets 0 to 10 VDC output to alarm relay.
ASA	ASA	Air Sensor Alarm	Alarms	Return air temp sensor is shorted or open.
AU1	AU1	Aux Input 1	Variables	Current status/temperature as measured by controller at Aux1 input.
AU1	AU1	Aux Input 1 mode	Setpoint	Options for configuring the Auxiliary Input, see Auxiliary Input Modes table.
AU2	AU2	Aux Input 2	Variables	Current Status/Temperature as measured by controller at Aux2 input.
AU2	AU2	Aux Input 2 mode	Setpoint	Options for configuring the Auxiliary Input, see Auxiliary Input Modes table.
AU3	AU3	Aux Input 3	Variables	Current Status/Temperature as measured by controller at Aux3 input.
AU3	AU3	Aux Input 3 mode	Setpoint	Options for configuring the Auxiliary Input, see Auxiliary Input Modes table.
AUt	AUt	Defrost Interlock -Heaters Normal	Auxiliary Input	Defrost interlock inactive. Defrost heaters will energize as needed.
AUt	AUt	Defrost Lockout - Defrost Normal	Auxiliary Input	Defrost lockout inactive. Defrost will be initiated as normal by controller logic.
bnd	bnd	Bond	Setpoint	Press and hold ENTER until red LED blinks. **(PAS)** successful bond. **(FAi)** bond failed. Only two controllers can be present on network to bond from display.
CCA	CCA	Compressor Communications Alarm	Alarms	[Siteview Only] Communication lost to KE2 Compressor Sequencer OEM.
CEL	CEL	Celsius	Setpoint	Option for Temp Units **(Unt)** setpoint. **(FAH)** Fahrenheit. **(CEL)** Celsius.
CHA	CHA	Humidity Comms Alarm	Alarms	KE2 Evap OEM lost communication with KE2 Humidity Control board for 10 seconds.
CLA	CLA	Clear Alarms	Setpoint	Press and hold ENTER until red LED starts blinking, alarms will be reset. Sensor and transducer alarms will immediately return until fixed.
CLL	CLL	Lead/Lag Comm Error	Alarms	Communication lost between lead/lag controllers.
CLo	CLo	Closed	Setpoint	Option for Aux Input State **(A1A, A2A, A3A)** setpoints. Input will be Active when it reads a closed circuit.
CLt	CLt	Coil Temp	Variables	Coil temperature (TCoil Sensor) as measured by the controller.
CLt	CLt	Coil Temp	Auxiliary Input	Coil Temp as measured by Aux input.
CoA	CoA	Communication Alarm	Alarms	**[Bonded controllers only]** No communication between bonded controllers for one minute or more.
CrL	CrL	Carel	Valve Type	Pre-configured EEV selection. 12 VDC Bipolar Carel EEV with 480 max steps, 50 steps/second.
CSA	CSA	Coil Sensor Alarm	Alarms	Coil temperature sensor is shorted or open.
CYC	CYC	Cycle	Setpoint	Option under Refrig Fan Type **(rFt)** setpoint. **(CYC)** to cycle, i.e. managed fan control. Other options are **(FoC)** on w/ compressor, **(PEr)** permanent, and **(t24)** title 24.
dAd	dAd	Door Open Alarm Delay	Setpoint	Time door must be open before triggering **DOOR OPEN ALARM**. Requires door switch.
dAL	dAL	Door Alarm	Setpoint	Sets 0 to 10 VDC output to door alarm. Will only activate for door alarm.
dCL	dCL	Door Switch - Door Closed	Auxiliary Input	Auxiliary input set to Door Switch indicates that the door is closed.
ddF	ddF	Defrost Delay Fan	System Mode	At start of defrost, fans will continue running for several minutes, using stored cooling in the coil. Once the coil reaches room temp, fans will stop, and heaters will turn on to begin electric defrost.
dEF	dEF	Defrost Parameter	Setpoint	**If DEFROST MODE = DEMAND:** Do not adjust unless directed to by KE2 Therm tech support.
dEF	dEF	Defrost	System Mode	Controller is performing a defrost cycle.

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Alphabetical List of Abbreviations - *(Continued)*

Abbreviation		Full Name	Type	Description
dEr		Defrost Relay	Variables	Current state of the defrost relay.
dFi		Defrost Interlock Switch	Auxiliary Input	Option for Auxiliary Input. When inactive **(AUt)** defrost energize as normal. Active **(oFF)** defrost heaters forced off.
dFL		Defrost Lockout Switch	Auxiliary Input	Option for Auxiliary Input. When inactive **(AUt)** defrost will be initiated as normal by controller logic. Active **(dLo)** defrost not allowed.
dHC		DHCP	Setpoint	Turn DHCP client mode on or off. **(EnA)** enable DHCP mode. **(diS)** disable DHCP mode.
dHr		Dehumidifier Relay	Variables	Current status of Dehumidifier Relay.
diA		Diagnostics Mode	Setpoint	Press and hold ENTER until **FAr** is displayed. Energizes each relay individually for 30 seconds: **(FAr)** fan relay, **(dEr)** defrost relay, **(CPr)** compressor relay.
diS		Disabled	Auxiliary Input	Input is not used by the controller.
dLo		Defrost Lockout	Auxiliary Input	Defrost Lockout active. Defrost not allowed while signal is active.
dnd		Demand Defrost	Setpoint	Option for Defrost Initiation Mode **(ind)** setpoint. **(dnd)** Demand Defrost, system will defrost only when dictated to by a decrease in evaporator efficiency. Other options are **(SCH)** Scheduled, and **(rnt)** Compressor Run Time.
don		Door Switch - Door Open	Auxiliary Input	Auxiliary Input set to Door Switch indicates door is open.
dor		Door Switch	Auxiliary Input	Inactive **(dCL)** door closed. Active **(don)** door open, refrigeration, and fans will temporarily stop.
dor		Door Open Alarm	Alarms	Door open and room temp above **ROOM TEMP** + 0.5°F longer than **DOOR ALARM DELAY**.
dPd		Defrosts per day	Setpoint	**If DEFROST MODE = SCH:** Defrosts per day. Number of evenly spaced defrosts per day.
drn		Drain Time	Setpoint	Time to be in drain mode (drip time).
drn		Drain	System Mode	Time after defrost to allow moisture to drain from coil (drip time).
dt2		Disp Aux2 Sensor	Alarms	Combo Display Aux 2 Temp Sensor is shorted or open.
dt3		Disp Aux3 Sensor	Alarms	Combo Display Aux 3 Temp Sensor is shorted of open.
dtH		High Door Temp	Alarms	Combo Door Temp above **High Door Alarm Offset** longer than **High/Low Door Temperature Alarm Delay**.
dtL		Low Door Temp	Alarms	Combo Door Temp below **Low Door Alarm Offset** longer than **High/Low Door Temperature Alarm Delay**.
dtL		Max Defrost Time	Setpoint	**If DEFROST MODE = SCH:** Maximum amount of time the defrost relay will be energized.
dto		DeHumidify Temp Offset	Setpoint	Allows controller to overcool the space if humidity is high. Room Temp - DeHumidify Offset is new target temperature if humidity is high. Must be a negative number.
dtP		Defrost Term Temp	Setpoint	Temperature the coil sensor(s) must exceed to terminate defrost. If **DEFROST TYPE = AIR**, term temp will automatically adjust 2.0°F above **ROOM TEMP** if **ROOM TEMP** is changed.
dtS		Door Temp Sensor Alarm	Alarms	Combo Display Aux 1 Door Temp Sensor is shorted or open.
dtt		Defr Term on Time Alarm	Alarms	Defrost terminated on time instead of temperature for two consecutive cycles.
dtY		Defrost Type	Setpoint	**(ELE)** for Electric. **(Air)** for off time. **(HGn)** for hot gas with LLS relay on. **(HGF)** for hot gas with LLS relay off.
EA1		External Alarm Switch	Auxiliary Input	Shows status of external alarm input. Active **(EAo)**. Inactive **(EAF)**.
EA1		External Alarm 1	Alarms	If **AU1** = **EAL** and the auxiliary input is in an active state.
EA2		External Alarm 2	Alarms	If **AU2** = **EAL** and the auxiliary input is in an active state.
EA3		External Alarm 3	Alarms	If **AU3** = **EAL** and the auxiliary input is in an active state.
EA1		Disp Ext 1 Alarm	Alarms	Combo External Alarm 1 input is active.
EA2		Disp Ext 2 Alarm	Alarms	Combo External Alarm 2 input is active.
EA3		Disp Ext 3 Alarm	Alarms	Combo External Alarm 3 input is active.
EAo		External Alarm Switch Active	Auxiliary Input	Auxiliary input set to external alarm is receiving an active signal.
EAF		External Alarm Switch Inactive	Auxiliary Input	Auxiliary input set to external alarm is not receiving an active signal.
EAP		N/A	System Mode	Not an alarm. Displays when controller is powering up.
Ed		Electric Defrost w/Mech. valve	Type of Control	System operates with default values for Electric Defrost with Mechanical Valve.

KE2 EvapOEM
Quick Start Guide

Alphabetical List of Abbreviations - *(Continued)*

Abbreviation		Full Name	Type	Description
EdE	EdE	Electric Defrost w/EEV	Type of Control	System operates with default values for Electric Defrost with Electric Valve.
EdF	EdF	Extreme Temp Diff	Setpoint	Should not be adjusted unless instructed to by KE2 Therm.
EdF	EdF	Excess Defrost Alarm	Alarms	Time between defrosts too short in demand defrost. Check if defrost terminating on temp properly.
Edt	Edt	Valve Type	Setpoint	Expansion valve on the system: **(tHr)** mechanical, pre-configured electronic, or custom EEV configuration.
EFL	EFL	Email Failure Alarm	Alarms	Email alert was not confirmed by email server provided after seven consecutive attempts.
ELE	ELE	Electric Defrost	Setpoint	Option for evaporator Defrost Type **(dtY)** setpoint. **(ELE)** Electric. Other options are **(Ai)** Air (Off Time) Defrost, **(HGn)** Hot Gas w/ Compressor On, and **(HGF)** Hot Gas w/ Compressor Off.
EnA	EnA	Enabled	Setpoint	Enables connection with KE2 SmartAccess for remote monitoring and control.
FAC	FAC	Factory reset	Setpoint	Press and hold ENTER to reset the controller's refrigeration setpoints to KE2 Therm defaults. Does NOT reset network settings. Do not press unless requested to by tech support.
FAH	FAH	Fahrenheit	Setpoint	Option for Temp Units **(Unt)** setpoint. **(FAH)** Fahrenheit. **(CEL)** Celsius.
FAr	FAr	Fan Relay	Variables	Current state of the fan relay.
FdL	FdL	Fan Delay	System Mode	After drain mode **(drn)**, the LLS relay will energize, and the coil will pulldown until it reaches the Fan Delay Temp or Max Fan Delay Time, whichever is sooner. This allows any moisture on the coil to re-freeze, keeping it from spraying and forming ice drops on the walk-in's surfaces.
Fir	Fir	Firmware Version	Variables	Current version of the firmware on the controller.
FoC	FoC	Fans on with Compressor	Setpoint	Option under Refrig Fan Type **(rFt)** setpoint. **(FoC)** on w/ compressor. Other options are **(CYC)** to cycle, i.e. managed fan control, **(PEr)** permanent, and **(t24)** title 24.
FSd	FSd	Evap Fan Speed	Setpoints	Sets 0 to 10 VDC output to variable speed evaporator fan control.
FtS	FtS	Min Fan Switch Time	Setpoints	Minimum time before fans can be turned on again after turning off.
H2P	H2P	Second Humidity Setpoint	Setpoint	Humidity target used when 2nd Humidity Input is active.
HAd	HAd	High Temp Alarm Delay	Setpoint	Delay before triggering **HIGH TEMP ALARM**.
HAo	HAo	High Temp Alarm Offset	Setpoint	Degrees above **ROOM TEMP** + **AIR TEMP DIFF** to trigger **HIGH TEMP ALARM**.
Hd2	Hd2	High Mon2 Temp	Alarms	Combo Aux2 Monitor Temp above **Monitor Temp2 High Alarm** longer than **Monitor Temp2 Alarm Delay**.
Hd3	Hd3	High Mon3 Temp	Alarms	Combo Aux3 Monitor Temp above **Monitor Temp3 High Alarm** longer than **Monitor Temp3 Alarm Delay**.
HdP	HdP	Humidity Differential	Setpoint	Humidity differential. Humidity setpoint +/- the differential will determine the control range.
HEd	HEd	Heater Differential	Setpoint	Differential added to Heater Target to determine heater cut-in temperature.
HEt	HEt	Heater Target	Setpoint	Cut-out temperature for heater control.
HGF	HGF	Hot Gas Defrost w. Compressor Off	Setpoint	Option for evap Defrost Type **(dtY)** setpoint. **(HGF)** Hot Gas w/ Compressor Off. Other options are **(Ai)** Air Off time Defrost, **(ELE)** Electric, and **(HGn)** Hot Gas w/ Compressor On.
HGn	HGn	Hot Gas Defrost w. Compressor On	Setpoint	Option for evap Defrost Type **(dtY)** setpoint. **(HGn)** Hot Gas w/ Compressor On. Other options are **(Ai)** Air Off time Defrost, **(ELE)** Electric, and **(HGF)** Hot Gas w/ Compressor Off.
HHA	HHA	High Humidity	Alarms	Humidity above **HUMIDITY SP** + **HUMIDITY DIFF** + **HUMIDITY ALARM OFFSET** for longer than **HUMIDITY ALARM DELAY**.
HS	HS	HSV	Valve Type	Pre-configured EEV selection. **(HS)** KE2 Therm's HSV, Hybrid Stepper Valve (removed in v2.05).
HSA	HSA	Humidity Sensor	Alarms	Humidity sensor is shorted or open.
HSH	HSH	High Superheat Alarm	Alarms	**[EEV]** Superheat 2°F above **SUPERHEAT** setpoint for 90 min. of cumulative runtime, and valve > 90% open. **[TEV]** Superheat above **SUPERHEAT** setpoint for 90 minutes of cumulative runtime.
HSP	HSP	Humidity Target Setpoint	Setpoint	Humidity target for humidity control.
HtA	HtA	High Temperature Alarm	Alarms	Air temp above **ROOM TEMP** + **AIR TEMP DIFF** + **HIGH TEMP ALARM OFFSET** longer than **HIGH TEMP ALARM DELAY**.
Htn	Htn	Electric Defrost Mode	Setpoint	**If DEFROST TYPE = ELE: (Prn)** Permanent, leaves defrost relay energized during the defrost cycle. **(PUL)** Pulse, utilizes advanced heater management.
Htr	Htr	Heater Relay		Current status of Heater Relay.
HU	HU	Humidity Mode	Setpoint	(**diS**) Disabled. (**EnA**) humidity control enabled. (**HEt**) heater control only.
HU	HU	Humidity	Variables	Relative humidity as measured by controller.
HU2	HU2	2nd Humidity Setpoint Input	Variables	2nd Humidity Input status, when active uses 2nd Humidity Setpoint as humidity target.
HUr	HUr	Humidifier Relay	Variables	Current status of Humidifier Relay.
ind	ind	Defrost Initiation Mode	Setpoint	Mode to initiate defrost. **(dnd)** demand. **(SCH)** schedule. **(rnt)** comp run time.
iP1	iP1	IP Address Part 1	Variables	First 3 digits of the controller's IP address.
iP2	iP2	IP Address Part 2	Variables	Second 3 digits of the controller's IP address.
iP3	iP3	IP Address Part 3	Variables	Third 3 digits of the controller's IP address.
iP4	iP4	IP Address Part 4	Variables	Fourth 3 digits of the controller's IP address.
LAd	LAd	Low Temp Alarm Delay	Setpoint	Delay before triggering **LOW TEMP ALARM**.

KE2 EvapOEM
Quick Start Guide

Alphabetical List of Abbreviations - *(Continued)*

Abbreviation		Full Name	Type	Description
LAo		Low Temp Alarm Offset	Setpoint	Degrees below **ROOM TEMP** to trigger **LOW TEMP ALARM**.
Ld2		Low Mon2 Temp	Alarms	Combo Aux2 Monitor Temp below **Monitor Temp2 Low Alarm** longer than **Monitor Temp2 Alarm Delay**.
Ld3		Low Mon3 Temp	Alarms	Combo Aux3 Monitor Temp below **Monitor Temp3 Low Alarm** longer than **Monitor Temp3 Alarm Delay**.
LGC		Redundant Cool	Setpoint	Sets lead/lag control to redundant cool. Switches lead/lag based on time. Lag system will act as backup system and refrigerate if room temperature rises.
LGF		Redundant Off	Setpoint	Sets lead/lag control to redundant off. Switches lead/lag on time. Both systems will never simultaneously refrigerate, however, lead/lag will switch under certain alarm conditions.
LHA		Low Humidity	Alarms	Humidity below **HUMIDITY SP** - **HUMIDITY DIFF** - **HUMIDITY ALARM OFFSET** for longer than **HUMIDITY ALARM DELAY**.
LLS		LLS/Compressor Contactor Relay	Variables	Current state of liquid line solenoid (LLS)/compressor contactor relay.
LLt		Lead/Lag Time	Setpoint	Toggle time between lead/lag when **(tEt) = (LGC)** Redundant Cool or **(LGF)** Redundant Off.
LPA		Low Pressure Alarm	Alarms	**[LPCO only]** Suction pressure below **LOW PRESSURE CUT OUT** + **PRESS DIFF FOR LPCO** despite attempts to run.
LPC		Low Pressure Cut Out	Setpoint	**If LPt greater than 0:** Low pressure cut-out when low pressure cut-out (LPCO) mode is enabled. LPCO is enabled when **(LPt)** is set to a value higher than 0 min.
LPd		Press Diff for LPCO	Setpoint	**If LPt greater than 0:** Differential for low pressure cut-in when LPCO mode is enabled. **LOW PRESSURE CUT OUT** + **PRESS DIFF FOR LPC** = low pressure cut-in.
LPt		Max Time for LPCO	Setpoint	**If EEV selected:** 0 = Disabled. Do not enable unless instructed to by KE2 Therm tech support. Maximum time allowed to run compressor after entering off or defrost mode. If suction pressure does not reach **(LPC)** Low Pressure Cutout in this time will lead to **(Pdt)** Pump Down Timeout alarm.
LSH		Low Superheat Alarm	Alarms	Superheat below 3°F for 5 minutes, and, if EEV valve < 10% open.
LtA		Low Temperature Alarm	Alarms	Air temp below **ROOM TEMP - LOW TEMP ALARM OFFSET** longer than **LOW TEMP ALARM DELAY**.
ntP		Time Server Comm Alarm	Alarms	Controller cannot communicate with external time of day server (SNTP server).
oFF		Off	System Mode	System has satisfied on temperature.
oFF		Defrost Heaters Off	Auxiliary Input	Defrost Interlock is active on the Auxiliary Input, defrost heaters forced off **(oFF)**.
oFF		Off (Lead/Lag)	Setpoint	Option for Multi Evap Mode **(tEt)** setpoint. **(oFF)** lead/lag control is disabled.
oni		Monitor Temp	Auxiliary Input	Monitor Temp as measured by the Auxiliary Input.
oPn		Valve % Open	Variables	Percentage the EEV is open (only available if EEV is selected).
oPn		Open	Setpoint	Option for Aux Input State **(A1A, A2A, A3A)** setpoints. Input will be Active when it reads an open circuit.
ott		Timer Override Input	Variables	When input is active energizes Timer Relay.
PAd		Paired Defrost Mode	Setpoint	Select operation when lead/lag pair controller goes into defrost. **(oFF)** Off, paired controller will stay off. **(AUt)** Auto, paired controller will refrigerate based on room temp.
PAr		Pair L/L	Setpoint	Press and hold ENTER until red LED blinks. **(PAS)** successful pairing. **(FAi)** pairing failed. Only two controllers can be present on network.
PAS		Web password reset	Setpoint	Press and hold ENTER to reset the web username and password to the factory default "ke2admin".
Pbt		Panic Button - HELP	Alarms	Combo Display panic button is active. Press and hold panic button again to clear.
Pdt		Pump Down Timeout	Alarms	**[LPCO only] LOW PRESSURE CUT OUT TIME** exceeded before suction pressure reached **LOW PRESSURE CUT OUT**.
PEr		Permanent Fan	Setpoint	Option for Refrig Fan Type **(rFt)** setpoint. **(PEr)** permanent forces fans to run during off cycle.
PLS		Pulse Valve	Setpoint	Pulse Width Modulation (PWM) type expansion valve (changed from **PUL** in v2.05).
PnH		Firmware Partnumber 1	Variables	First three digits of firmware PN.
PnL		Firmware Partnumber 2	Variables	Last three digits of firmware PN.
PrF		Process Failure	Alarms	KE2 Basic Display not able to communicate with controller.
Prn		Permanent	Setpoint	Option for Electric Defrost Mode **(Htn)** setpoint. Applies if **DEFROST TYPE = ELE**. Permanent **(Prn)** forces the defrost relay to stay energized during the entire defrost cycle.
PrS		Suction Pressure	Variables	Suction pressure measured by the controller (only available if suction pressure transducer used).
PSA		Pressure Sensor Alarm	Alarms	Suction pressure sensor is shorted, open, or pressure out of range.
PUL		Pulse	Setpoint	Option for Electric Defrost Mode **(Htn)** setpoint. Applies if **DEFROST TYPE = ELE**. Pulse **(PUL)** uses the advanced defrost algorithm to manage the defrost relay during the defrost cycle.
rEF		Refrigeration	System Mode	System is currently in Refrigeration mode.
rFG		Refrigerant	Setpoint	Refrigerant used. See table on page 12.
rFt		Refrigeration Fan Type	Setpoint	Select evaporator fan management. **(CYC)** cycle, i.e. manage, fans during refrigeration and off cycle. **(FoC)** fans on w/ compressor will primarily manage fans only during the off cycle. **(PEr)** permanent forces fans to run during refrigeration and off cycle. **(t24)** Title 24 cycles fans based on California's Title 24 regulations.

Alphabetical List of Abbreviations - *(Continued)*

Abbreviation		Full Name	Type	Description
rnt	rnt	Compressor Run Time	Setpoint	Option for Defrost Initiation Mode **(ind)** setpoint. **(rnt)** Compressor Run Time, system will defrost after a set number of cumulative hours of run time.
rS	rS1	RSV	Valve Type	Pre-configured EEV selection. **(RSV)** KE2 Therm's Refrigeration Stepper Valve.
rtP	rtP	Room Temp	Variables	Walk-in freezer or cooler room temperature (TAir Sensor) as measured by the controller.
rtP	rtP	Room Temp	Auxiliary Input	Room temp as measured by the Auxiliary Input.
SA	SA1	KE2 SmartAccess	Setpoint	Turn KE2 SmartAccess on or off. **(EnA)** enable KE2 SmartAccess. **(diS)** disable KE2 SmartAccess.
SAt	SAt	Saturation Temp	Variables	Saturation temperature as calculated by the controller (requires suction pressure transducer and T1 suction temperature sensor).
SCC	SCC	Short Compressor Cycle	Alarms	**[LPC0 only]** Compressor started excessive number of times due to suction pressure in off mode, or compressor cut-out excessive number of times due to suction pressure while in refrigeration mode.
SCH	SCH	Scheduled Defrost	Setpoint	Option for Defrost Initiation Mode **(ind)** setpoint. **(SCH)** Scheduled, system will defrost a set number of times per day, spaced evenly throughout the day. Other options are **(dnd)** Demand Defrost, and **(rnt)** Compressor Run Time.
SEi	SEi	SEI	Valve Type	Pre-configured EEV selection. 12 VDC Bipolar Sporlan EEV with 1,600 max steps, 200 steps/second.
SEr	SEr	SER	Valve Type	Pre-configured EEV selection. 12 VDC Bipolar Sporlan EEV with 2,500 max steps, 200 steps/second.
SHt	SHt	Superheat	Variables	Superheat as calculated by the controller (requires suction pressure transducer and T1 suction temperature sensor).
SoF	SoF	System Off Switch	Auxiliary Input	Option for Auxiliary Input. When inactive **(Son)**, system runs as normal. Active **(SoF)**, system enters pumpdown mode and will not refrigerate or defrost until cleared.
SoF	SoF	System Off	System Mode	System off has been activated from the display, or by an external signal to an Auxiliary Input.
Son	Son	System Off Switch - System On	Auxiliary Input	System Off Auxiliary Input is Inactive **(Son)**, system runs as normal.
SSA	SSA	Suction Sensor Alarm	Alarms	Suction temp sensor is shorted or open.
Stt	Stt	Superheat	Setpoint	When EEV selected, target superheat value. When mechanical valve selected, high superheat alarm threshold.
SUt	SUt	Suction Temp	Variables	Suction Temperature as measured by controller.
SYS	SYS	System Mode	Variables	Current operating status.
tr	tr	Timer Relay	Variables	Current status of Timer Relay.
t2F	t2F	2nd Room Temp Setpoint Off	Auxiliary Input	2nd Temp Auxiliary Input is Inactive **(t2f)**. System is controlling to the regular Room Temp setpoint.
t2n	t2n	2nd Temp Switch Setpoint On	Auxiliary Input	2nd Temp Auxiliary Input is Active **(t2n)**. System is controlling to the 2nd Room Temp Setpoint.
tHr	tHr	Mechanical	Valve Type	Thermostatic Expansion Valve in the Expansion Device Type **(Edt)** setpoint.
t24	t24	Title 24	Setpoint	Option for Refrig Fan Type **(rFt)** setpoint. **(t24)** Title 24, cycle fans to comply with California Title 24 regulations.
tEt	tEt	Multi Evap Mode	Setpoint	Lead/lag mode. **(oFF)** Off, lead/lag disabled. **(LGC)** Redundant Cool, time based lead/lag with backup system controlling to 2nd Room Temp. **(LGF)** Redundant Off, time based lead/lag with backup system always off. **(ALt)** Alternate, lead/lag system will switch after every refrigeration run cycle.
tS	tS1	Room Temp SP	Setpoint	Room temperature to be maintained (cut-out temperature).
tS2	tS2	2nd room temp SP	Setpoint	**If AU1, AU2, or AU3 = (t2n) 2ND ROOM TEMP:** This value becomes the **ROOM TEMP** setpoint when the Auxiliary Input is active.
UAd	UAd	Humidity Alarm Delay	Setpoint	Delay before triggering High/Low Humidity alarm once humidity is out of range.
UAo	UAo	Humidity Alarm Offset	Setpoint	Offset added & subtracted above/below Humidity Target & Humidity Differential for High/Low Humidity alarms.
Unb	Unb	Unbond	Setpoint	Press and hold ENTER until red LED blinks. Controllers will unbond and restart. Only works if bonded to one other controller.
UnP	UnP	Unpair L/L	Setpoint	Press and hold ENTER until red LED blinks. **(PAS)** successful unpairing. **(FAi)** unpairing failed.
Unt	Unt	Temperature Units	Setpoint	Option for Temp Units **(Unt)** setpoint. **(FAH)** Fahrenheit. **(CEL)** Celsius.
USt	USt	Max Superheat	Setpoint	Maximum allowed superheat for humidity control.

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Introduction to KE2 SmartAccess

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

Now it's easier than ever to monitor and adjust your KE2 Evap OEM remotely. While the KE2 Evap OEM's webpages can be accessed via traditional IT techniques, many customers prefer the simplicity and convenience of KE2 SmartAccess.

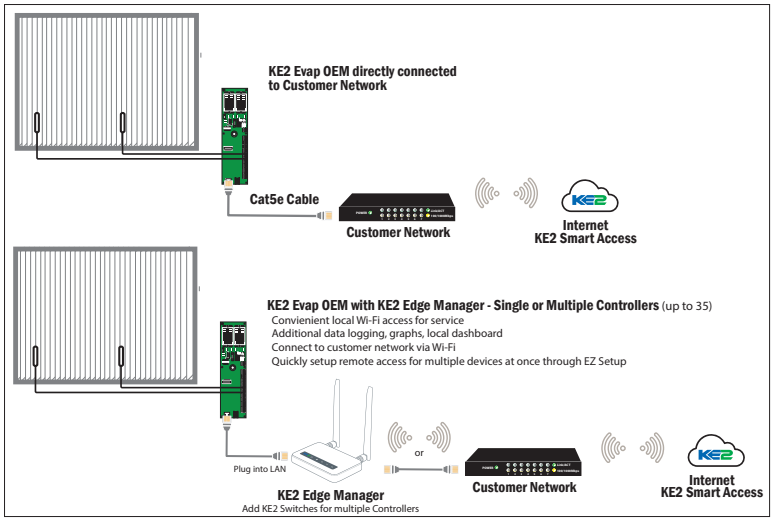
Once the controller is provided Internet access and KE2 SmartAccess is enabled, the controller quickly connects to your personal web portal. Hosted by KE2 Therm, the portal provides a customized dashboard of all the controllers you setup with KE2 SmartAccess, for a nominal monthly fee. No port forwarding or VPN required.

Preliminary Setup

Connect your KE2 Evap OEM to the existing network directly, or, add a KE2-Edge Manager Plus (KE2-EM Plus) & KE2 Switch to manage the refrigeration network if you need any of the following:

KE2-EM Plus

- Bridge to existing Wi-Fi for Internet instead of running cable
- One year+ of detailed datalogs and graphs (@ 15 minute interval)
- Local dashboard of up to 35 KE2 Therm devices on location
- Add KE2 Therm Wireless Sensors to monitor additional spaces
- Incorporate existing KE2 Therm devices at site
- Local Wi-Fi access for service
- BACnet/IP integration



KE2 SmartAccess setup with KE2-EM

Please follow the KE2-EM Plus Quick Start Guide that comes with the KE2-EM to complete the EZ SETUP, or visit the link below for a digital copy:

https://ke2therm.com/literature/literature-ke2-edge-managers/

KE2 SmartAccess with direct connection to network - Online Access in 3 Easy Steps

Step 1 Enable KE2 SmartAccess in the Setpoints menu

- After the initial Introduction Mode setup, press and hold BACK until `t-S` appears.
- Press ▲ two times to view `SA` (abbreviation for KE2 SmartAccess). Press ENTER, then press ▼ to change `dis` (disabled) to `EnA` (enabled).
- Press and hold ENTER for 3 seconds to save the change.

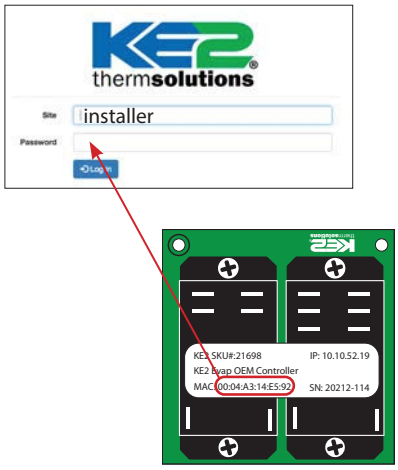
NOTE: Enabling `SA` also enables `dHC` (DHCP client mode)

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 and click **Log In** button
Site: installer
Password: controller's MAC address (from sticker on controller, all capital including colons).



Once logged in, clicking on the controller allows access to the controller's built-in webpages. Navigate to *Setpoints -> Communications -> KE2 SmartAccess* and change the *Site* and *Password* to something unique (Site Example: MyStore-04CD). Follow best practices for password creation. Setting multiple controllers to the same *Site* and *Password* will cause them all to appear on a single KE2 SmartAccess dashboard for easy access and monitoring. See *Q.1.46 Web Screens* for more details on everything available on the KE2 Evap OEM's built-in webpages:

https://ke2therm.com/literature/literature-ke2-evap-oem/

YouTube **VISIT OUR YOUTUBE CHANNEL FOR VIDEOS ON KE2 SMARTACCESS.** youtube.com/ke2therm

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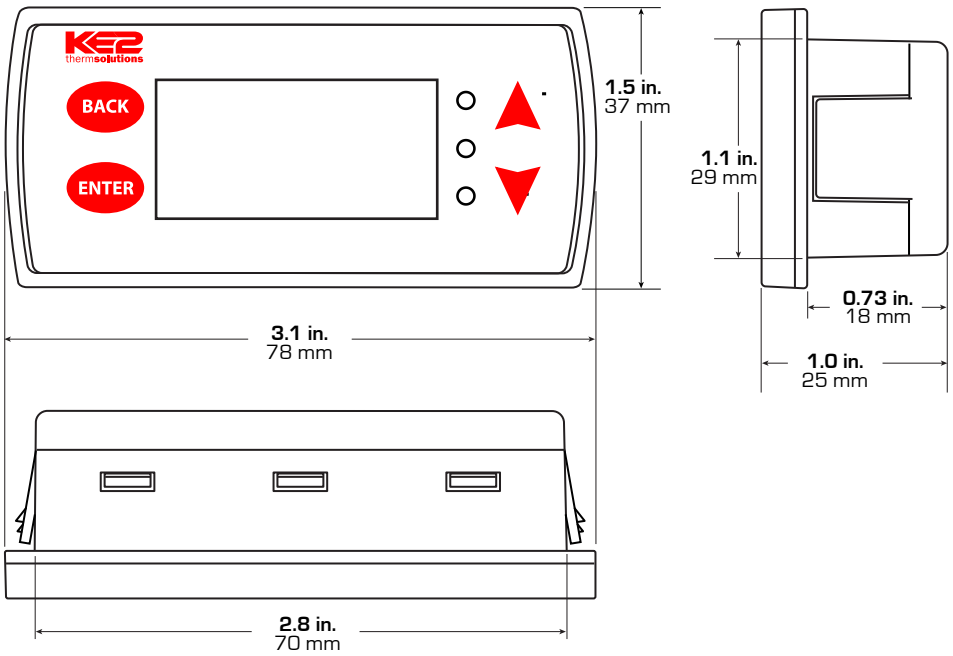
KE2 Basic Display Dimensions



Panel Cutout

1.1 in.
29 mm

2.8 in.
71 mm

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Accessories

Panel Kits

Part #	Description
21958	**KE2 Evap Panel (Single):** Includes a single KE2 Evap OEM controller mounted in UL-508 panel, (3) 40' color temperature sensors & terminal board.
21959	**KE2 Evap Panel (Double):** Includes two KE2 Evap OEM controllers mounted in UL-508 panel, (6) 40' color temperature sensors & (2) terminal boards. For Lead/Lag control or control of two evaporators.
21999	**KE2 Environment Panel:** Includes a single KE2 Evap OEM controller and Aux Humidity Board mounted in UL-508 panel, (3) 40' color temperature sensors, 40' humidity sensor & terminal board.
22006	**KE2 Humidity Panel:** Includes a single KE2 Humidity Board mounted in UL-508 panel & 40' humidity sensor. For adding to existing KE2 Evap OEM install. Requires KE2 Evap OEM.

Displays

Part #	Description
21232	KE2 Basic Display w/ 18" cable
21324	Snap track - 11.2"
21877	KE2 Combo Display (w/ junction box, battery, 25' cable)
21320	KE2 Combo Display (no accessories or junction box)
21786	Combo Display - 25 ft. Cable
21320	Combo Display - Junction Box
21781	9V Rechargeable Battery for Combo Display

Auxiliary Boards

Part #	Description
22003	KE2 Humidity Control (board only)
21323	Aux Relay Board

Sensors

Part #	Description	Lead Length
21151	Temperature Sensor Pack - Yellow, Green, Blue	15 ft.
21066	Temperature Sensor Pack - Yellow, Green, Blue	40 ft.
20199	Temperature Sensor - Black	10 ft.
21795	Temperature Sensor - Yellow	10 ft.
21793	Temperature Sensor - Green	10 ft.
21794	Temperature Sensor - Blue	10 ft.
20200	Temperature Sensor - Black	40 ft.
20651	KE2 Humidity Sensor	40 ft.

Communications

Part #	Description
21902	KE2-EM Plus
21920	KE2-EM Plus (w/ BACnet/IP)
21924	KE2-EM Plus Mounting Bracket
20166	KE2 Switch - 8 Port Ethernet Switch
21011	KE2 Switch - 16 Port Ethernet Switch

Pressure Transducer

Part #	Description	Lead Length
20201	Pressure Transducer – 0 to 150 psia	10 ft.
20204	Pressure Transducer - 0 to 150 psia	40 ft.

RSV - Refrigeration Stepper Valves

Valve Body	Part #	Connections - Inches ODF Inlet x Outlet	Lead Length
RSV-100	21667	3/8 x 1/2	5 ft.
RSV-100	21665	3/8 x 1/2	10 ft.
RSV-100	21666	3/8 x 1/2	40 ft.
RSV-130	21169	3/8 x 1/2	5 ft.
RSV-130	21161	3/8 x 1/2	10 ft.
RSV-130	21162	3/8 x 1/2	40 ft.
RSV-220	21170	3/8 x 1/2	5 ft.
RSV-220	21163	3/8 x 1/2	10 ft.
RSV-220	21164	3/8 x 1/2	40 ft.
RSV-320	21171	3/8 x 1/2	5 ft.
RSV-320	21165	3/8 x 1/2	10 ft.
RSV-320	21166	3/8 x 1/2	40 ft.
RSV-320	21172	1/2 x 1/2	5 ft.
RSV-320	21167	1/2 x 1/2	10 ft.
RSV-320	21168	1/2 x 1/2	40 ft.
RSV-400	21529	5/8 x 7/8	15 ft.
RSV-400	21530	5/8 x 7/8	40 ft.
RSV-550	21594	5/8 x 7/8	15 ft.
RSV-550	21595	5/8 x 7/8	40 ft.
RSV-650	21779	5/8 x 7/8	15 ft.
RSV-650	21778	5/8 x 7/8	40 ft.
RSV-C10 Stator	21149	For RSV-100 to 320	10 ft.
RSV-C40 Stator	21150	For RSV-100 to 320	40 ft.
RSV-LC15 Stator	21525	For RSV-400 to 650	15 ft.
RSV-LC40 Stator	21526	For RSV-400 to 650	40 ft.

External Relays

Part #	Description
21304	Solid State Relay for 0/10 VDC Alarm Output
21469	120V Mechanical Relay (for dry contact alarm output)
21470	240V Mechanical Relay (for dry contact alarm output)

Replacement Relays

Part #	Description
21373	Replacement Fan Relay (Form A)
21374	Replacement LLS Relay (Form C)

Replacement Fuse

Part #	Description
21375	Replacement Fuses (5 pcs), 1 Amp, 250V ceramic

KE2 EvapOEM
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Specifications

Controller	
Input Voltage:	100 to 240 VAC
Ambient Temp:	-40°F to 140°F (-40°C to 60°C)
Operating Temp:	-40°F to 140°F (-40°C to 60°C)
Inputs:	(3) temperature sensor
	(3) multi-use (temp sensor or digital input)
	(1) pressure sensor input
Valve Types:	unipolar and bipolar stepper motors (L/R 12 VDC)
Relays:	(1) 20A resistive (defrost)
	(2) 10A inductive
Auxiliary Input 1:	room temp, coil temp, monitor, 2nd temp setpoint, door switch, external alarm, system off, defrost interlock, defrost lockout
Auxiliary Input 2:	
Auxiliary Input 3:	
Communication:	Standard TCP/IP, RESTful API, BACnet/IP (w/ KE2-EM)

Pressure Transducer	
Pressure Range:	0 to 150 psia
Proof Pressure:	450 psi
Burst Pressure:	750 psi
Operating Temp:	-40°F to 248°F (-40°C to 120°C)

Temperature Sensor	
Sensor Specs:	-60°F to 150°F (-51°C to 65°C) moisture resistant package

Technical Videos

KE2 Therm has created quick technical videos based on commonly asked questions, and are often the quickest way to find the answer to common questions:

KE2 Therm YouTube channel:
https://www.youtube.com/user/KE2Therm/videos

Ice buildup on coil:
https://youtube.com/watch?v=RHXX3ane5as

Troubleshoot temperature sensor:
https://www.youtube.com/watch?v=JI789uGUKRM

Troubleshoot pressure transducer:
https://www.youtube.com/watch?v=4MvIXVh-Dic

Connect directly to the controller (static IP):
https://www.youtube.com/watch?v=NjRLXLGnbkU

KE2 Therm Solutions
12 Chamber Drive . Washington, MO 63090
1.888.337.3358 . www.ke2therm.com