



KE2 EvapPanel

Quick Start Guide

Q.1.77 February 2023

Parts List

- Kit #21958 KE2 Evap Panel (Single)
- Kit #21959 KE2 Evap Panel (Double)

The following parts are included:

- A** (1) KE2 Evap Panel¹
- B** (3) 40' colored temperature sensors¹
- C** (1) KE2 Terminal Board with fuses¹
- D** (2) ½" plastic knockout plugs¹
- E** (1) air sensor mount¹
- F** (4) wire ties (rated for low temp)¹
- G** (1) 2' Ethernet cable²

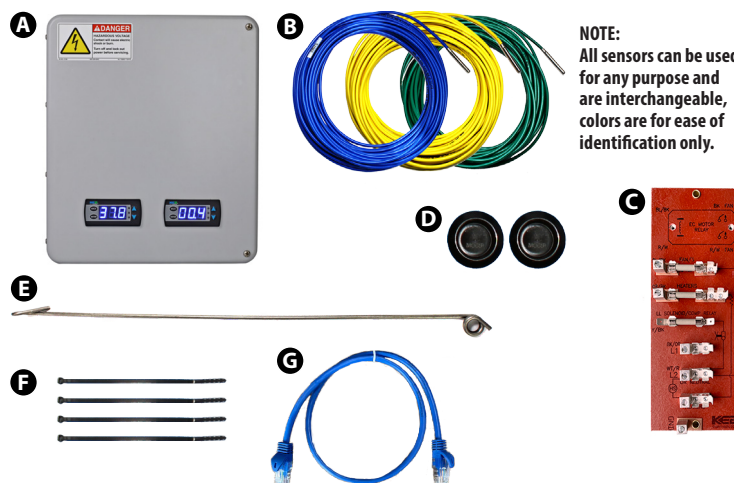
¹ 21959 contains (2) KE2 Evap OEM controllers & displays, (6) 40' colored temperature sensors, (2) KE2 Terminal Boards, (4) ½" plastic knockout plugs, (2) air sensor mounts, and (8) wire ties.

² Only in 21959.

Supplies List

Basic accessories for the controller are included, however, certain truck stock items are required to complete the installation.

- Conduit to go between the controller and the evaporator (high & low voltage).
- Conduit connectors (straight or elbow as required).
- High voltage wires matched to the load of the heaters, fans, liquid line solenoid, and the controller (for ease of install consider using the KE2 Wire Harness accessory).
- Spade Connectors matched to the gauge of the high voltage wires.
- Wire labeling (numbers, colors, etc.).



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

- 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:

- KE2 Wire Harness - 10' pn 20736, 25' pn 20670, 40' pn 20737
- Door Switch - pn 20543

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

Controller Webpages

The controller has a built-in webpage for service. The webpage can be accessed multiple ways, including: plugging the controller into a KE2 Therm communication accessory like the KE2-Edge Manager (KE2-EM), connecting the controller to a network/provide it internet access, using the KE2 Service Tool App with an Ethernet dongle, or by plugging a laptop directly into it.

Once on the webpage, logging in is required to make changes.

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

IMPORTANT: The password MUST be changed from the default upon logging in for the first time for security purposes.

Additional Literature

Please visit:

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

— OR —

use this QR code



Visit our YouTube channel for videos on installation and setup.

Video 068 How to Determine Proper Coil Sensor Location

Video 069 How to Properly Install a Coil Sensor

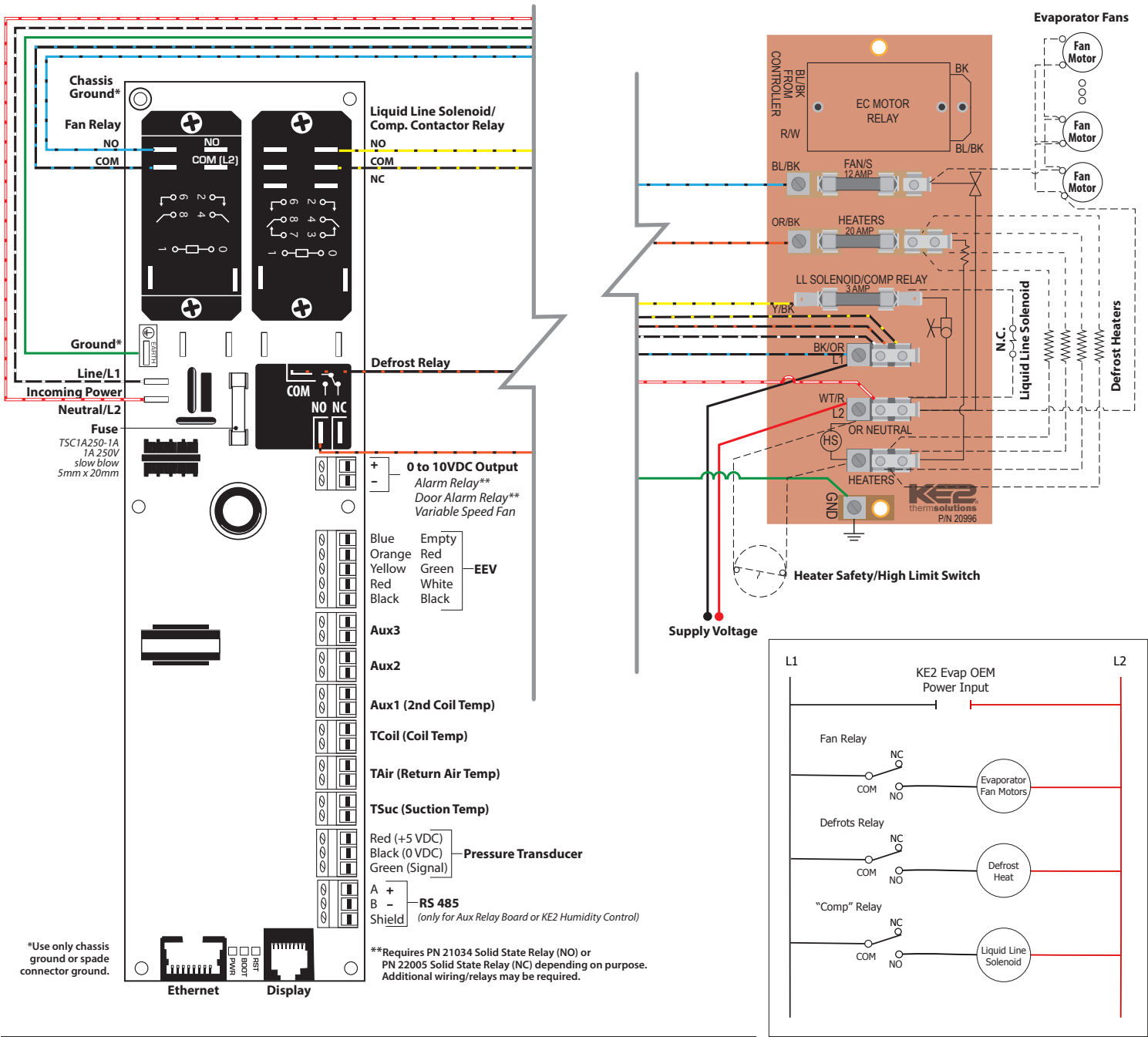


youtube.com/ke2therm

Installation Steps

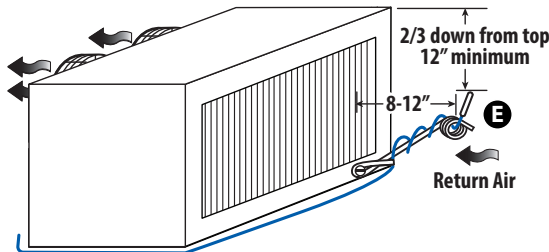
Installation consists of mounting the panel, wiring the high voltage connections, wiring the low voltage connections (sensors, transducer & EEV if used), and inputting the initial setpoints.

High Voltage Wiring - Wiring Schematic w/ KE2 Terminal Board & Wiring Harness



Sensor Installation - Return Air Temp Sensor

Install the air temp sensor using the air sensor mount **E**, approximately 2/3 down from the top of the evaporator, and 8 - 12 inches from coil in the return air of the evaporator.



We recommend standardizing for all installations

Green (Aux1) & Yellow (TCoil) for Coil Sensors



Blue (TAir) for Air Sensor



Sensor Installation - Coil Temp Sensors

IMPORTANT: Determine coil sensor locations

When arriving on site, put the system into defrost, verify all heating elements are working properly, and observe where frost is last to disappear on the coil. **Place one sensor in each of the last two places where frost disappears** ①.

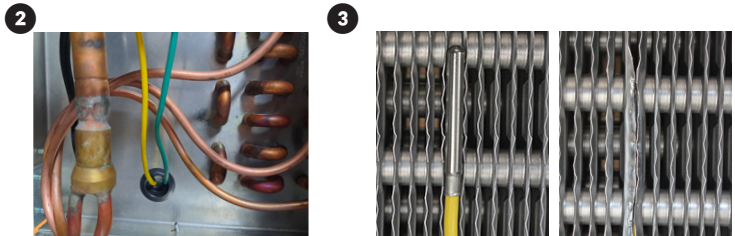
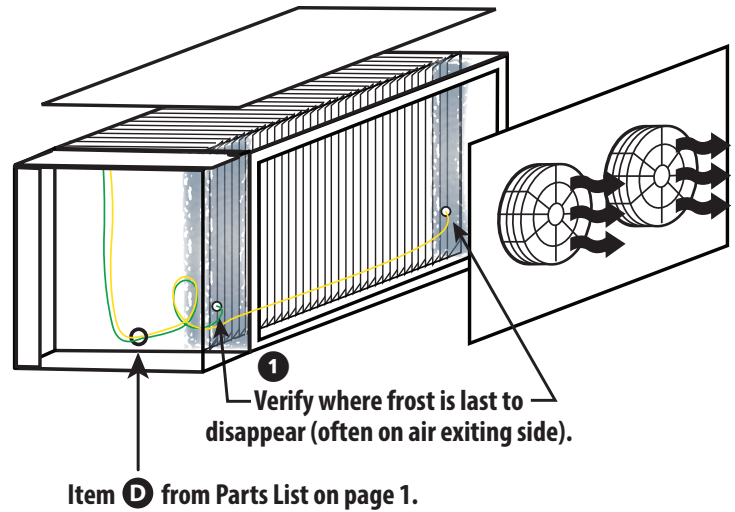
Monitor the evaporator's air entering and exiting sides. Often the last place frost disappears is on the air exiting side, approximately 1" to 1-1/2" away from the right and left edges of the active coil surface, near the top or bottom 1/3rd of the evaporator, as far away from the defrost heat sources as possible. Ice tends to grow from the edges inward, but verify coil sensor locations by observing an actual defrost. **Do not install coil sensor on the U-bends.**

To prevent sensor wire damage from sharp edges, insert plug (D) into coil housing - ②. Plug is inserted in the inner housing to access the coil. Puncture plug to insert sensor wire.

For most applications, the sensor should rest against a circuit tube in between the evaporator fins ③. Position the sensor vertically between the coil fins. Pinch fins together gently all around the probe, securing the sensor. This also provides thermal ballast, ensuring a complete defrost. Don't locate the sensor next to heating elements or insert the sensor too far into the coil. Leave a handloop for service in-case the sensor must be repositioned.

After the sensors are installed, route the sensor cables back to the controller. Do not induce noise on the wires by running the sensor cables near high voltage lines.

If the cables must be extended, use 18 gauge twisted shielded pairs. Max recommended length for 18 gauge: 100ft.



Intro Mode

The controller will enter Intro Mode the first time power is applied. Intro Mode consists of as little as 4 setpoints that must be configured to begin controlling the system.

- 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)

- If AdE or EdE was selected, the controller asks for the **Expansion Valve Type** and displays rS. Press ▲ or ▼ to scroll through the available expansion device types. With the correct EEV displayed, press and hold **ENTER** for three seconds.

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.

NOTE: Custom valve setups are available via the webpage interface or KE2 Combo Display.

*Requires PN 21304 Solid State Relay N.O.

- If AdE or EdE was selected, the refrigerant must also be selected. Press ▲ or ▼ to scroll through the available refrigerants. Press and hold **ENTER** to save a selection.

Refrigerants

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

- The final prompt is to set **KE2 SMARTACCESS** to **ENABLED** or **DISABLED**. KE2 SmartAccess allows you to easily view and modify your controllers online. Press ▲ or ▼ to make your selection, then press and hold **ENTER**.

Note: If a KE2-Edge Manager (KE2-EM) is on site, select **DISABLED** for KE2 SmartAccess.

SETPOINTS MENU

tS	ROOM TEMP SETPOINT
rFG	REFRIGERANT
dtY	DEFROST TYPE
Edt	VALVE TYPE
ind	DEFROST MODE
dPd	DEFROST / DAY
dtP	DEFROST TERM TEMP
dEF	DEFROST PARAMETER
dtL	MAX DEFROST TIME
drn	DRAIN TIME
rFt	REFRIG FAN TYPE
FtS	MIN FAN SWITCH TIME
Stt	SUPERHEAT SETPOINT
LPt	MAX TIME FOR LPCO
HTn	ELECTRIC DEFROST MODE
HAo	HIGH TEMP ALARM OFFSET
HAd	HIGH TEMP ALARM DELAY
LAo	LOW TEMP ALARM OFFSET
LAd	LOW TEMP ALARM DELAY
dAd	DOOR ALARM DELAY
AU1	AUX IN 1 MODE
A1A	AUX IN 1 STATE
AU2	AUX IN 2 MODE
A2A	AUX IN 2 STATE
AU3	AUX IN 3 MODE
A3A	AUX IN 3 STATE
tS2	2ND ROOM TEMP
10t	0 TO 10 VDC MODE
tEt	MULTI EVAP MODE
PAd	PAIRED DEFROST MODE
LLt	LEAD/LAG TIME
Unt	TEMP UNITS
EdF	EXTREME TEMP DIFF
CLA	CLEAR ALARMS
diA	DIAGNOSTICS MODE
FAC	FACTORY RESET
PAS	WEB PASSWORD RESET
PAr	PAIR L/L
UnP	UNPAIR L/L
SA	SMART ACCESS
dHC	DHCP

See Q.1.45 for setpoint descriptions.

Press and hold **BACK** for 3 seconds to enter the Setpoints Menu



When not in the Setpoints Menu, press **▲** or **▼** to view variables & alarms (if any)

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 several minutes of electric defrost before fans turn off and heaters are energized.

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.

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 **LoL** is displayed. The display will be locked and show **LoL** whenever a button is pressed. To unlock, press and hold **BACK** and **ENTER** until **LoL** disappears.

Bonding/Pairing



See Q.1.45 and Q.1.45-A for setup of multiple evaporator & lead/lag controllers.

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

Menu Navigation

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 or de-energize LLS relay.

- Access the 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 digits to accelerate the changes.
- Press and hold **ENTER** to save setpoint changes.
- Press **BACK** to escape.

VARIABLES MENU

rtP	ROOM TEMP
CLt	COIL TEMP
SYS	SYSTEM MODE
SHt	SUPERHEAT
PrS	SUCTION PRESSURE
SUt	T1 SUCTION TEMP
SAt	SATURATION TEMP
oPn	VALVE % OPEN
LLS	LLS RELAY
dEr	DEFROST RELAY
FAR	FAN RELAY
AU1	AUX1 STATUS
AU2	AUX 2 STATUS
AU3	AUX 3 STATUS
iP1	IP OCTET 1
iP2	IP OCTET 2
iP3	IP OCTET 3
iP4	IP OCTET 4
PnH	FIRMWARE PARTNUM
PnL	FIRMWARE PARTNUM
Fir	FIRMWARE VERSION

ALARMS (abbreviated)

PSA	PRESSURE SENSOR
SSA	SUCTION TEMP SENSOR
ASA	AIR TEMP SENSOR
CSA	COIL TEMP SENSOR
HSH	HIGH SUPERHEAT
LSH	LOW SUPERHEAT
HtA	HIGH AIR TEMP
LtA	LOW AIR TEMP
EdF	EXCESS DEFROST
dtT	DEFROST TERM ON TIME
dor	DOOR SWITCH
CoA	COMMUNICATION ERROR
A1A	AUX 1 SENSOR
CLL	LEAD/LAG COMM ERROR

See Q.1.45 and Q.1.61 for full list of alarms.