

2026

KE2 CONDENSED CATALOG

CC-411

- Refrigeration Controllers
- Communications
- Parts
- Accessories



 **KE2 Therm™**

Your key to energy efficient
refrigeration solutions.

Condensed Catalog Contents

Alphabetical Product & Video Listings **PAGE 3-7**

Communications **PAGE 8-13**

IN THIS SECTION

- Feature Comparison Chart
- KE2 Switch
- KE2-EM Lite 2
- KE2-EM Plus 2
- KE2-EM Cell 2
- KE2 Wireless Sensors
- KE2 Service Tool App
- KE2 SmartAccess
- Ethernet Adaptor Kit
- Ethernet Cable

Controllers **PAGE 14-27**

IN THIS SECTION

- Feature Comparison Chart
- KE2 Temp + Wi-Fi
- KE2 Temp + Air Defrost
- KE2 Temp + Valve
- KE2 Low Temp + Defrost
- KE2 Adaptive Control
- KE2 Evaporator Efficiency
- KE2 Evap 2
- KE2 Evap 2 OEM
- KE2 Evap 2 Lead/Lag Panel
- KE2 Evap 2 Environment Panel
- KE2 Humidity Control
- KE2 Combo Display/Kit
- KE2 Evap-RE3 Contactor Panel
- KE2 Condensing Unit
- KE2 Case Control 2
- KE2 Compressor Sequencer Panel
- KE2 Basic Display
- KE2 Fan Control Panel
- KE2 Condenser Fan Control

Accessories & Replacement Parts **PAGE 28-30**

IN THIS SECTION

- KE2 Wire Harness
- Mounting Boxes
- KE2 Terminal Board
- Buzzer & Light
- Sensor Coil Clips
- Flag Quick Disconnects
- Door Switch
- External Relays
- Connectors
- Temperature Sensors
- Suction Sensor Clips
- Humidity Sensor
- System Off Switch
- Digital Switch Relay
- Fuses
- Pressure Transducers
- Air Sensor Mount
- Refrigerant Leak Sensors

Discontinued **PAGE 30**

IN THIS SECTION

- KE2 LDA, KE2-EM35
- KE2 Wi-Fi Service Tool
- KE2 Controlled Environment
- KE2 Compressor Sequencer
- KE2 Case Control
- KE2 Evap OEM
- KE2 Evap-RE
- KE2 Evap-RE2

Electronic Expansion Valves **PAGE 31**

IN THIS SECTION

- KE2 Refrigeration Stepper Valves (KE2 RSV)
- KE2 EEV Retrofit Kit



KE2 CondensedCatalog - 411

Controllers, Communication, Parts & Accessories

Alphabetical Product Listing

Product Name	Description	Part Number(s)	Page
2-pin Connector	Connectors are standard in many of the controller kits, available separately as a replacement part.	20914	28
3-pin Connector		20915	28
5-pin Connector		20916	28
Aux Relay Board	Use with KE2 Evap OEM, KE2 Evap 2 OEM, KE2 Comp. Seq. OEM, and KE2 Condenser Control.	21323	—
Battery – 9V	9V Rechargeable Battery for KE2 Combo Display.	21781	24
Buzzer/Light	Use with KE2 Evap Efficiency & KE2 Panels.	24VAC/DC - 22300 120VAC – 20973 230VAC – 21294	28
Current Sensor Board	Monitors current draw of fans and defrost heaters when used with the KE2 Evap-RE2/RE3. Monitor current draw of the compressor and condenser fan with the KE2 Condensing Unit.	21613	23
Door Switch	Use with controller's digital or auxiliary input to signal whether the walk-in door is open or closed.	20543	28
Electronic Expansion Valves – RSV / EEV Retrofit Kits	Unipolar, stepper motor actuated electric expansion valve, designed for refrigeration applications.	Multiple part numbers. See page 31	31
Ethernet Adaptor Kit	Use with KE2 Evap Efficiency & KE2 Panels.	20938	13
Ethernet Cable	CAT5e Shielded Ethernet Cable with Connectors	50 ft. – 20185 100 ft. – 20167	13
Fan Motor Relays	Protects controller's onboard relays from transient voltages, back EMF, & motor burnout.	Multiple part numbers.	29
Flag Quick Disconnect	Insulated, 16-14 AWG – 50 pack	20640	28
Fuses – ½ Amp	250V, 0.5A Time Delay Glass; Replacement fuses for the KE2 Evap, KE2 Evap 2, KE2 Evap-RE and KE2 Controlled Environment – 5 pack	20699	28
Fuses – 1 Amp	250V, 1.0A Time Delay Ceramic; Replacement fuses for KE2 Evap-OEM, KE2 Evap 2 OEM, KE2 Compressor Sequencer OEM, KE2 Condenser Fan, KE2 Combo Display, KE2 Humidity Control, and Aux Relay Board– 5 pack	21375	28
Fuses – 3 Amp	250V, 3.0A Fast Acting Ceramic; fuses for the solenoid wiring on the KE2 Terminal Board – 5 pack	21029	28
Fuses – 5 Amp	250V, 5.0A Time Delay Glass; fuses for the relays on the Aux Relay Board – 5 pack	21628	28
Fuses – 12 Amp	250V, 12A Time Delay Ceramic; fuses for fan wiring on KE2 Terminal Board – 5 pack	21031	28
Fuses – 20 Amp	250V, 20A Fast Acting Ceramic; fuses for heater wiring on KE2 Terminal Board – 5 pk	21030	28
Fuse Cap Replacement	Gray fuse cap for KE2 Evap, KE2 Evap-RE, and KE2 Controlled Environment – 2 pack	21406	—
KE2 Adaptive Control	Controller for low & medium temp refrigeration applications with energy saving adaptive defrost and fan management. For new or existing equipment.	21177	18
KE2 Advanced Display	Display for KE2 Case Control, KE2 Case Control 2, and KE2 Evap-RE3. 20' cable sold separately (PN 21835).	22031	25
KE2 Advanced Display - Cable	CAT5e cable for KE2 Advanced Display, 20 ft.	21835	—
KE2 Basic Display	Basic Display with Cable – 3 digit LED – for KE2 Evap OEM, KE2 Evap 2 OEM, KE2 Condenser Fan Control and KE2 Compressor Sequencer OEM.	w. 18in. cable -21232 w. 5ft. cable - 21387	27
KE2 Basic Display Cable	Replacement Cable for the KE2 Basic Display - 5 ft.	21878	27
KE2 Case Control 2	Designed for optimal control of refrigerated showcases, with the addition of auxiliary KE2 Valve Drivers, can simultaneously drive one Electric Evaporator Pressure Regulator (EEPR) and up to a total of three Electric Expansion Valves (EEVs) or Pulse Width Modulation (PWM) valves.	22345	25
KE2 Combo Display	Provides functions of a temperature display, lighting control, panic alarm, temperature alarm, and door heater controller. Stand-alone, or pair KE2 Evap OEM or KE2 Evap 2 OEM controller(s).	Multiple part numbers. See page 24	24
KE2 Combo Display - Cable	RJ-12 6P6C straight cable connects KE2 Combo Display to KE2 Evap OEM or KE2 Evap 2 controller - 25 ft.	21786	24



Alphabetical Product Listing (Continued)

Product Name	Description	Part Number(s)	Page
KE2 Compressor Panel	Designed for small to mid-sized racks. Eliminates using overly complicated controls designed for large systems. Supports up to 3 or 8 stages of loading through onboard relays. Configure relays as Fixed Speed Compressor, Compressor Unloader, Digital Scroll Compressor, Master Liquid Line Solenoid, or Hot Gas Defrost Relay. Add PN 21304 for digital unloader control. Add PN 21302 if using the 8th stage.	Up to 3 stages - 21961 Up to 8 stages - 21962	26
KE2 Compressor Sequencer OEM	Controller only. See KE2 Compressor Panel PN 21961 & 21962.	21768	26
KE2 Condenser Fan Control	Controller only. See KE2 Condenser Panel PN 21963.	21543	27
KE2 Condenser Panel (3 stages)	Energy efficient control of up to 14 condenser fans. 3 relay outputs for staging of fans or banks of fans. Multiple control options, including floating head pressure. VDC output for a VFD / EC Motors.	21963	27
KE2 Condensing Unit	Accurately controls suction pressure and head pressure for refrigeration condensing units with a single compressor, and one or two condenser fans. Has the ability to provide a VDC output for condenser fans with variable speed EC motors. When used with the KE2 Evap OEM or KE2 Evap 2 controlling the evaporator, the KE2 Condensing Unit provides additional features to protect the compressor and refrigerated product, including a low ambient start mode, maximum pumpdown attempts, and multiple safeties. Change setpoints, view real-time pressure, temperature and more remotely with KE2 SmartAccess.	22108 Kit less enclosure 22327 Kit with enclosure 21994 Board only	25
KE2 Controlled Environment	Replacement controller only. See KE2 Environment Panel PN 21999 for new installs.	20894	—
KE2-EM Lite 2	KE2-Edge Manager Lite 2 (KE2-EM Lite 2) automatically finds and dashboards up to 20 KE2 Therm controllers. Creates a common dashboard with in-depth system operational data from KE2 Therm controllers. (Does not support wireless sensors.)	22247	10
KE2-EM Plus	Replaced by KE2 EM Plus 2 PN 22243	Discontinued	—
KE2-EM Plus 2	Provides a local dashboard, alerts, and datalogging for up to 50 KE2 Therm wireless sensors & controllers Also serves as a local Wi-Fi access point for devices, and publishes devices to the KE2 SmartAccess portal.	22243	11
KE2-EM Cell	Replaced by KE2-EM Cell 2 PN 22245	21903	—
KE2-EM Cell 2	Same benefits of the KE2 EM Plus 2, comes equipped with a 10GB/1-year SIM card for Internet access. PN 22246 includes BACnet/IP and Modbus RTU & TCP/IP capability. PN 22313 does not include the 10GB/1-year SIM.	22245 22246 (w/BACnet) 22313 (No SIM)	11
KE2 Evap for Rack Efficiency (KE2 Evap-RE)	Replacement controller only.	21631	30
KE2 Evap-RE2 Contactor Panel	Replaced by KE2 Evap-RE3 Contactor Panel	Discontinued	—
KE2 Evap-RE3 Contactor Panel	Adaptive defrost, fan management, current monitoring, EEPFR & EEV control and more in a pre-wired contactor panel that reduces installation time and possibility of mis-wiring.	Multiple kit part numbers. See page 23.	23
KE2 Evap-RE2 Replacement Display	Replacement display for the KE2 Evap-RE2 Contactor Panels.	21806	23
KE2 Evap-RE2 Replacement Board	Replaced by KE2 Evap-RE2 replacement kit PN 22338. Includes the KE2 Evap-RE3 controller, KE2 Advanced Display, and display cable.	Discontinued	—
KE2 Evap-RE2 Replacement Kit	Contains KE2 Evap-RE3, KE2 Advanced Display, and display cable. Used if necessary to replace the controller in a KE2 Evap-RE2 panel.	22338	23
KE2 Evap 2 KE2 Evap 2 OEM	Controller for walk-in freezers and coolers with remote monitoring, diagnostics, email/text alerts, energy savings, frost reduction, and optional EEV control - for new equipment or upgrade of existing refrigeration equipment. Provides energy savings, precise temperature control, frost reduction, and communications capability.	Multiple kit part numbers. See pages 20-21.	20-21
KE2 Evap Panel (Single)	Replaced by KE2 Evap 2	Discontinued	—
KE2 Evap 2 Panel (Double)	Same benefits as the KE2 Evap 2, but with two controllers mounted inside a panel. Allows easy setup of lead/lag redundant systems, control of a two evaporator system, or for a combo freezer & cooler walk-in.	22119 Lead Lag	21
KE2 Evaporator Efficiency	Controller for walk-in freezers and coolers with remote monitoring, diagnostics, email/text alerts, energy savings, frost reduction, and optional EEV control - for new equipment or upgrade of existing refrigeration equipment.	Multiple kit part numbers. See page 19.	19



KE2 CondensedCatalog - 411

Controllers, Communication, Parts & Accessories

Alphabetical Product Listing (Continued)

Product Name	Description	Part Number(s)	Page
KE2 Environment Panel	Controls both temperature and humidity with outputs for humidifier, dehumidifier, heat/reheat and more. KE2 Therm's unique algorithm adjusts superheat based on humidity, further aiding in maintaining or removing moisture from the space. Ideal for vegetables, fruits, meats, ripening rooms, curing rooms, clean rooms, tobacco storage, wine and more.	21999	21
KE2 Fan Control	Packaged solution optimizes energy efficiency of air cooled condensers. Incorporates Variable Frequency Drive (VFD) to match fan speed with varying load and ambient conditions.	Custom Product – Contact KE2 Therm.	27
KE2 Humidity Panel	Designed for sites that already have a KE2 Evap OEM or KE2 Evap 2 installed, or require the humidity control to be mounted separately, the KE2 Humidity Panel provides all of the benefits of the KE2 Environment Panel when paired with an existing KE2 Evap OEM v3.0 or higher.	22006	22
KE2 LDA – Local Area Dashboard & Alarms	Replaced by KE2-EM Lite 2 PN 22247 and KE2-EM Plus 2 PN 22243.	Discontinued	30
KE2 Low Temp + Defrost	Controller for low & medium temp refrigeration applications. Replaces thermostat, fan delay, defrost time clock & termination device. Ideal for truck stock. For new or existing equipment.	20903	17
KE2 SmartAccess	KE2 SmartAccess provides quick and easy real time access to your refrigeration systems 24/7. 1 year of datalogging, customizable alerts, reports, and more.	Multiple part numbers	13
KE2 Service Tool App Kit	Access Ethernet controller webpages with your phone or tablet, even if they are not internet connected.	iOS 22041, Android 22042	13
KE2 Temp + Air Defrost	Thermostat and air defrost timeclock in one controller, saving time and wiring. Ideal for truck stock. Easy to read digital display.	20611	16
KE2 Temp + Valve	Temperature and air defrost controller that also drives an EEV. Alternate modes available to drive an EEPR or EHGB valve to control pressure or temperature. Additional mode to act as controller for a mechanical subcooler. R-410A requires 0 to 300 psig pressure transducer.	21301, 21393	17
KE2 Temp + Wi-Fi	Thermostat and air defrost timeclock in one controller, saving time and wiring. Additional "Heat" mode. Ideal for truck stock. Easy to read digital display. Communications via Service Wi-Fi, Wi-Fi Client, TCP/IP, BACnet/IP.	22291	16
KE2 Terminal Board	Simplifies installation of KE2 Evap, KE2 Evap OEM, KE2 Evap 2, KE2 Low Temp & KE2 Adaptive.	20996	28
KE2 Valve Driver	Use with KE2 Evap-RE3 Contactor Panel or KE2 Case Control 2 to control the EEV of an additional evaporator.	21612	23
KE2 Wire Harness	9 wire, color coded harness for wiring the KE2 Evap, KE2 Evap OEM, KE2 Evap 2, KE2 Low Temp, and KE2 Adaptive.	10 ft. – 20736 25 ft. – 20670 40 ft. – 20737	30
Mounting Box - KE2 Combo Display	Simplifies installation and service of the KE2 Combo Display	22146	28
Mounting Box - KE2 Evap	Simplifies installation and service of the KE2 Evaporator Efficiency controller.	20687	28
Mounting Box - KE2 Temp + Wi-Fi	Simplifies installation and service of the KE2 Temp + Wi-Fi	22160	16
Pressure Transducer	0 to 150 psia	10 ft. – 20201 40 ft. – 20204	28
Pressure Transducer	0 to 300 psig	10 ft. – 20208 40 ft. – 20711	28
Pressure Transducer	0 to 500 psig	10 ft. – 20202 40 ft. – 20712	28
Pressure Transducer	0 to 750 psig	10 ft. – 21872 40 ft. – 21873	28
Refrigerant Leak Sensor	Refrigerant leak detectors and cables for R-454A, R-454C, and R-455A applications. Available as a convenient kit for truck stock or as individual parts.	Multiple part numbers	28
Relay – 8th Compressor Stage / Digital Switch	For the KE2 Compressor Sequencer OEM, used to pilot contactor for 8th compressor stage, control master liquid line solenoid, hot gas solenoid or unloader valve with Aux Relay Board. To control reheat, humidifier, or de-humidifier with KE2 Controlled Environment.	21032	29

Alphabetical Product Listing (Continued)

Product Name	Description	Part Number(s)	Page
Relay – Fan Motor Relay Kit	External Fan Relay Kit – Mechanical: (1)120V Coil Relay; (1) 240V Coil Relay; wire harness, 4 spades, 2 screws – for KE2 Evap, KE2 Low Temp & KE2 Adaptive. Protects on-board fan relay from motor burnouts and motors without proper switching protection.	120V & 240V Coils – 21409	29
Relay – Fan Motor Relay (relay only)	For KE2 Evap, KE2 Low Temp & KE2 Adaptive. Protects on-board fan relay from motor burnouts and motors without proper switching protection.	120VAC – 21469 240VAC – 21470	29
Relay – Form A	Replacement for the KE2 Evap OEM or KE2 Evap 2 fan relay.	21373	—
Relay – Form C	Replacement for the KE2 Evap OEM or KE2 Evap 2 LLS relay, as well as relays 1 & 2 on the KE2 Condenser Fan Control / KE2 Comp. Seq. OEM.	21374	—
Relay – Solid State (N.O.)	Used with KE2 Compressor Sequencer OEM to pilot the bypass valve for a digital scroll compressor. Also used with KE2 Evap, KE2 Evap 2, KE2 Evap OEM, KE2 Evap-RE3, and KE2 Case Control 2 to pilot PWM valves.	21304	29
Relay – Solid State (N.C.)	Used with KE2 Evap OEM, KE2 Evap 2, and KE2 Condensing Unit as alarm output for a buzzer, siren, strobe etc. Can be used to pilot mechanical relay to signal a BMS or security system via a dry contact. Also used with KE2 Condensing Unit to control two speed condenser fans or a 2nd condense fan motor.	22005	29
Sensor Clip – Coil 3/8 in.	Coil sensor mount for 3/8 in. circuit tube	20963	29
Sensor Clip – Coil 1/2 in.	Coil sensor mount for 1/2 in. circuit tube	20964	29
Sensor Clip – Coil 5/8 in.	Coil sensor mount for 5/8 in. circuit tube	20965	29
Sensor Clip – Suction. Line ½ in.	100-pk. of clips to securely fasten temp sensor to ½ in. suction line	21225	29
Sensor Clip – Suction Line 5/8 in.	100-pk. of clips to securely fasten temp sensor to 5/8 in. suction line	21226	29
Sensor Clip – Suction Line 7/8 in.	100-pk. of clips to securely fasten temp sensor to 7/8 in. suction line	21227	29
Sensor Clip – Suction Line 1-1/8in	100-pk. of clips to securely fasten temp sensor to 1-1/8 in. suction line	21228	29
Sensor Clip – Suction Line Kit	(1) each of ½, 5/8, 7/8 & 1-1/8 inch suction line sensor clips	21229	29
Sensor – Current	Replacement CTs for the Current Sensor Board.	21614	23
Sensor – Humidity	For use with the KE2 Humidity Control, KE2 Environment Panel & KE2 Controlled Environment, 40 ft. leads.	20651	29
Sensor – Temperature	Temperature sensor – NTC Thermistor Assembly. Operating Range -60°F to 150°F (-51°C to 65°C)	Multiple kit part numbers. See pg. 23.	29
Sensor – Temperature – Color	Set of blue, yellow, and green sensors, NTC Thermistor Assembly. Operating Range -60°F to 150°F (-51°C to 65°C)	15 ft. – 21151; 40 ft. – 21066	29
Sensor – High Temperature	For measuring discharge temperature – 15 ft. Operating Range -40°F to 302°F (-40°C to 150°C)	21230	29
Sensor Mount for Air Sensor	Used to position the air sensor in the return air of the evaporator, pack of 20.	20606	29
Sensor - KE2 Wireless Door Sensor	Allows local and remote monitoring of door openings and closings. Door alarms notify users of excessively long openings or closings. Door openings and closings can be logged either at the KE2-EM and/or on the KE2 SmartAccess portal. Common applications are: blast freezer, commercial refrigerator, refrigerated showcase, walk-in cooler, walk-in freezer, refrigerated warehouse, undercounter. Operating Range -4°F to 140°F (-20°C to 60°C)	22115	12
Sensor – Wireless Temp & Humidity w/Remote Probe	Replaced by KE2 Wireless Temp + Humidity Sensor PN 22238	Discontinued	—
Sensor - KE2 Wireless Temp + Humidity Sensor	KE2 Wireless Sensor for monitoring temperature and humidity. Use with the KE2-EM Plus 2 or KE2 EM Cell 2. Operating Range -22°F to 176°F (-30°C to 80°C)	PN 22238	12
Sensor - KE2 Wireless X-Temp Sensor	Extreme Temperature KE2 Wireless Sensor for monitoring temperature and humidity. Use with the KE2-EM Plus 2 or KE2 EM Cell 2 Operating Range -238°F to 392°F (-150°C to 200°C)	PN 22239	12
Snaptrack	Snaptrack for use with the KE2 Evap OEM, KE2 Evap 2 OEM, KE2 Compressor Sequencer OEM, and KE2 Condenser Fan Control.	11 in. – 21324; (2) 3 in. pieces – 21415	—
System Off Switch	Utilize controller digital input to turn the System Off, without power cycling the system.	21934	29
Switch 8-port	8-port Ethernet switch	20166	10
Switch 16-port	16-port Ethernet switch	21011	10
USB to RS 485 Adaptor	Replacement USB to RS 485 adaptor for the KE2 Edge Managers	21354	—



KE2 CondensedCatalog - 411

Controllers, Communication, Parts & Accessories

Video Listing



Connect to training, installation, and general information videos on many of our products at: <https://www.youtube.com/ke2therm> or use the QR code below.

Controller Videos

KE2 Temp & KE2 Temp + Valve

- Video 091 How to Wire the KE2 Temp
- Video 096 Configure Your Network When Multiple KE2 Temps are Being Monitored
- Video 093 Publish Your KE2 Temps on KE2 SmartAccess
- Video 098 What is on the Temp's Webpage
- Video 083 Set a Custom Defrost Schedule for the KE2 Temp or KE2 Temp + Valve
- Video 119 Troubleshooting a KE2 Temp that is Not Cooling

KE2 Low Temp & KE2 Adaptive Control

- Video 042 Wiring the KE2 Low Temp or KE2 Adaptive for a Door Switch
- Video 043 Configure the KE2 Low Temp or KE2 Adaptive Control for a Door Switch

KE2 Evaporator Efficiency

- Video 046 How to Wire the KE2 Evap
- Video 030 Setup the KE2 Evap Controller for a Walk-in Freezer

- Video 031 Setup the KE2 Evap for a Walk-in Cooler
- Video 033 Confirm the KE2 Evap is Wired Correctly
- Video 045 What to do: If the KE2 Evap Display is Blank
- Video 048 KE2 Evap HOME Page
- Video 049 KE2 Evap SETTINGS Page
- Video 050 KE2 Evap NETWORK Page
- Video 051 KE2 Evap SETPOINTS Page

Communication Videos

KE2-EMs

- Video 123 Quickly Access Your KE2-EM35 and Wireless Sensors
- Video 125 Best Practices for Deploying a Wireless Monitoring Solution
- Video 118 Assigning Meaningful Names to Your KE2 Wireless Sensors
- Video 117 Benefits of Affordable Temperature Monitoring

KE2 Wi-Fi Service Tool App

- Video 141 Introduction to the KE2 Service Tool App
- Video 143 Connect to Stand-alone Controller or Switch w. KE2 Service Tool

- Video 145 Access Controllers Connected to a KE2 Edge Manager Using the KE2 Service Tool App

KE2 SmartAccess

- Video 132 The New KE2 SmartAccess Portal
- Video 133 Comparison of KE2 SmartAccess Key Features, 2015 vs 2024
- Video 134 Register & Sign-in to New KE2 Smart Access Portal
- Video 135 Navigating the New KE2 Smart Access Portal
- Video 136 Purchasing KE2 SmartAccess Licenses - Existing User
- Video 144 Purchasing KE2 SmartAccess Licenses - New Users

- Video 137 Enabling KE2 Smart Access from Front Panel of KE2 Evap Efficiency
- Video 140 Set Alarm Notifications Plans in KE2 SmartAccess
- Video 151 Access Datalogs and Graphs in KE2 SmartAccess
- Video 153 Creating Controller Groups in KE2 SmartAccess
- Video 155 Add or Remove a Site on Your KE2 SmartAccess Portal
- Video 156 Sharing or Un-Sharing a Site on KE2 SmartAccess
- Video 093 How to Publish Your KE2 Temps on KE2 SmartAccess

Miscellaneous Videos

Accessories

- Video 158 Accessories to Make Installs & Service Visits More Efficient
- Video 035 Why Use the KE2 Wire Harness
- Video 037 What are the Benefits of Installing a Door Switch
- Video 038 How to Install a Door Switch
- Video 040 How to Wire a Door Switch
- Video 115 Benefits of using an EEV vs. TEV

Troubleshooting

- Video 034 Iced Evaporator Coil on a Walk-in Freezer
- Video 044 Iced Evaporator Coil on a Walk-in Cooler
- Video 068 How to Determine Proper Coil Sensor Location
- Video 069 How to Install a Coil Sensor
- Video 106 Troubleshooting a Pressure Transducer
- Video 107 Troubleshooting a Temperature Sensor



KE2 Therm YouTube videos

Communications

IN THIS SECTION

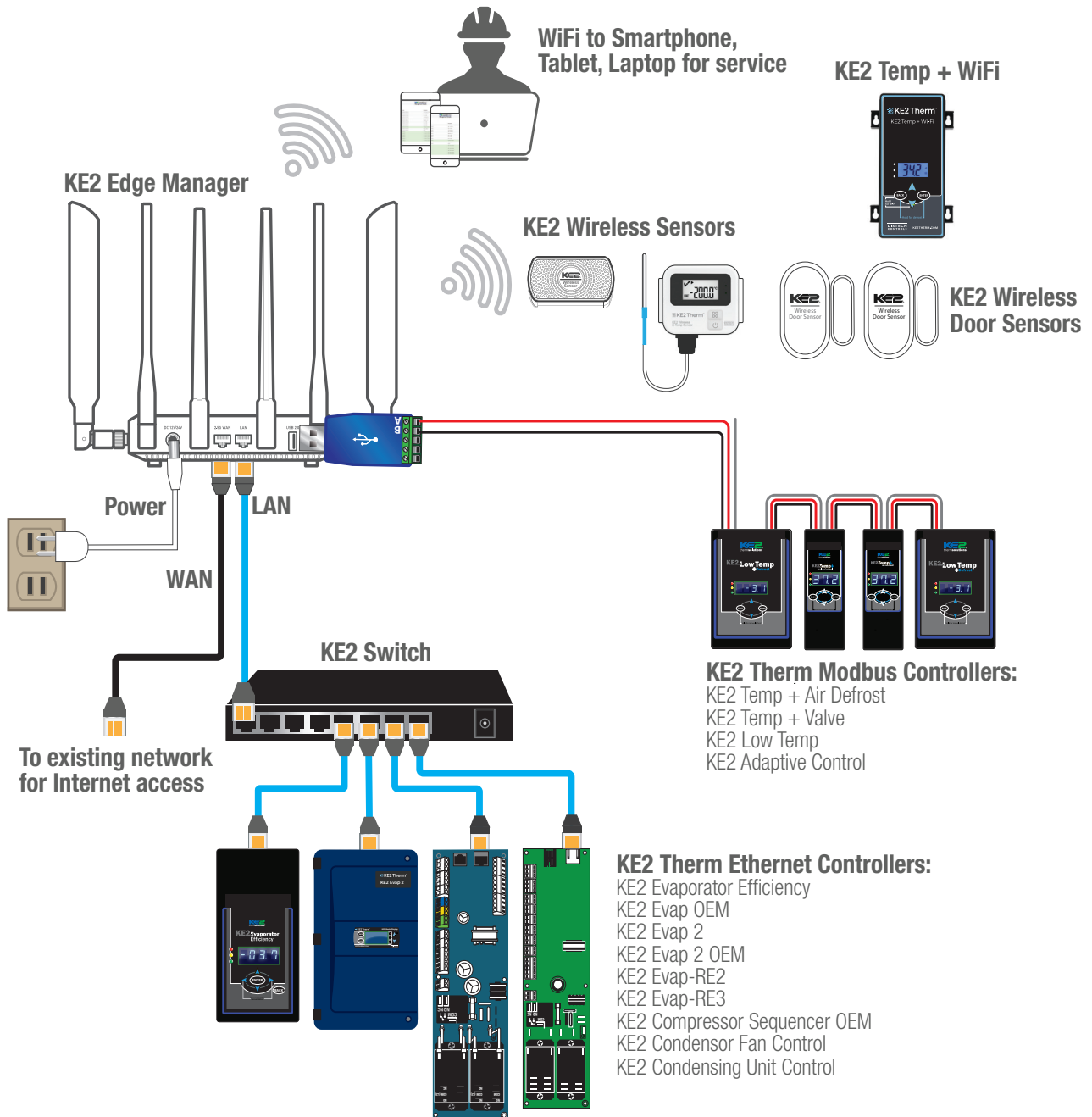
- Feature comparison chart
- KE2 Switch
- KE2-EM Lite 2
- KE2-EM Plus 2
- KE2-EM Cell 2
- Wireless Sensors
- KE2 Service Tool App
- KE2 SmartAccess
- Ethernet Cable
- Ethernet Adaptor Kit



Communication Features	KE2 Switch	KE2-EM Lite 2	KE2-EM Plus 2	KE2-EM Cell 2*
Part Number	20166 – 8 port 21011 – 16 port	22247	22243	22245 22246 (w. BACnet/Modbus)
Use with KE2 Wireless Sensors	—	—	●	●
Use with Modbus controllers: KE2 Temp, KE2 Temp + Valve, KE2 Low Temp, KE2 Adaptive	—	●	●	●
Use with Ethernet controllers: KE2 Evap, KE2 Evap OEM, KE2 Evap 2, KE2 Case Control 2, KE2 Evap RE3, KE2 Compressor Sequencer OEM, KE2 Condenser Fan Control	●	●	●	●
Number of Ethernet ports	8 or 16	1 WAN, 2 LAN	1 WAN, 1 LAN	1 WAN, 1 LAN
Dashboard for easy access and management of devices	—	●	●	●
Wireless Access to Controllers	—	●	●	●
Bridge to Wireless Network for Internet	—	●	●	●
4G LTE for Internet	—	—	—	●
Datalogging	—	●	●	●
Acts as BACnet/IP gateway for KE2 Therm devices	—	—	—	● Use PN 21926 (does not support BBMD)

*10GB/1 year SIM card included. Data plans available after the initial 10GB/1 year.

Typical Refrigeration Network Diagram



KE2 Switch



The KE2 Switch forms the foundation of the local refrigeration network, and facilitates communications between controllers. Each controller is linked via an Ethernet cable to the KE2 Switch.

In addition to communication between controllers, connecting the switch to a KE2-Edge Manager (KE2-EM) will provide a local dashboard of controllers, local Wi-Fi access to controllers, and datalogging. Providing internet access to the switch/KE2-EM allows further features such as email/text alerts and remote monitoring & control via KE2 SmartAccess.

Network Switch – 8 port pn 20166 , 16 port pn 21011	
Specifications	
Construction	Sturdy Metal Case
Operating Temperature	-22°F to 150°F (-30°C to 66°C)
Interface	16 x 10/100/1000 Mbps Auto-MDIX RJ-45 ports
Standards	IEEE 802.3 10Base-T; IEEE 802.3u 100Base-TX; IEEE 802.3ab 1000Base-T; IEEE 802.3x Flow Control; IEEE 802.3az Energy Efficient Ethernet (16 port)
Network Media	Gigabit Ethernet: Cat 5e and 6 up to 328 ft. (100 m)
Diagnostic LEDs	Power, Link/AST, Speed

BENEFITS SUMMARY

- Allows networked controllers to communicate with each other to coordinate defrost, refrigeration, lead/lag etc.
- Use as a connection point for multiple controllers to a KE2-EM, or to the local network for internet access, providing remote monitoring and control.

Literature



KE2-EM Lite 2

for use with KE2 Therm controllers



The KE2-Edge Manager Lite 2 (KE2-EM Lite 2) automatically finds and dashboards up to 20 KE2 Therm controllers

The KE2-Edge Manager Lite 2 creates a common dashboard with in-depth system operational data from KE2 Therm controllers.

The local dashboard can be accessed via the on-board Wi-Fi, or through the local network. The Wi-Fi provides a convenient access point to controllers while working on the refrigeration system, while graphs and datalogs can be accessed from a PC on the local network.

When provided internet access either via the on-site network or from cellular, the KE2-EM Lite 2 can send alerts email, push, or text (w/ KE2 SmartAccess). The controllers can also be published to the KE2 SmartAccess portal for remote access & control.

KE2-EM Lite 2 Kit – pn 22247

KE2-EM Plus 2 Manager Lite - Communication Device

(1) 5 ft. Ethernet Cable

5V/2A Power Adapter

(1) RS-485 USB Adapter - for KE2 Therm Modbus controllers

Micro USB Power Cord

BENEFITS SUMMARY

- Detailed graphs with time stamps
- Bridge to existing Wi-Fi networks
- Provides a wireless access point
- Remote access for all connected KE2 Therm devices via KE2 SmartAccess
- High-accuracy temp & humidity readings
- Send alerts email, push, or text (w/ KE2 SmartAccess) for all connected KE2 Therm devices, to multiple recipients
- Connect Ethernet controllers with older firmware to KE2 SmartAccess without requiring controller upgrades
- Update controller firmware via the KE2-EM
- Create setpoint templates for backup and/or apply to multiple controllers

Literature



KE2-EM Plus 2

for use with KE2 Wireless Sensors and KE2 Therm Controllers



The KE2-Edge Manager Plus 2 (KE2-EM Plus 2) automatically finds and dashboards up to 50 KE2 Therm controllers and KE2 Wireless Sensors.

The KE2-Edge Manager Plus 2 creates a common dashboard that integrates KE2 sensor data with in-depth system operational information from KE2 Therm controllers.

The local dashboard can be accessed via the on-board Wi-Fi, or through the local network. The Wi-Fi provides a convenient access point to controllers while working on the refrigeration system, while graphs and datalogs can be accessed from a PC on the local network.

When provided internet access either via the on-site network or from cellular, the KE2-EM Plus 2 can send alerts email, push, or text (w/ KE2 SmartAccess) alerts. sensors can also be published to the KE2 SmartAccess portal for remote access & control.

KE2-EM Plus 2 Kit – pn 22243

KE2-EM Plus 2 Manager - Communication Device

(1) 5 ft. Ethernet Cable

(1) RS-485 USB Adapter - for KE2 Therm Modbus controllers

Power Cord

BENEFITS SUMMARY

- Detailed graphs with time stamps
- Bridge to existing Wi-Fi networks
- Provides a wireless access point
- Remote access for all connected KE2 Therm devices via KE2 SmartAccess
- High-accuracy temp & humidity readings
- Send alerts email, push, or text (w/ KE2 SmartAccess) for all connected KE2 Therm devices, to multiple recipients
- Connect Ethernet controllers with older firmware to KE2 SmartAccess without requiring controller upgrades
- Update controller firmware via the KE2-EM
- Create setpoint templates for backup and/or apply to multiple controllers

Literature



KE2-EM Cell 2

for use with KE2 Wireless Sensors and KE2 Therm Controllers



The KE2-Edge Manager Cell 2 (KE2-EM Cell 2) automatically finds and dashboards up to 50 KE2 Therm controllers and KE2 Wireless Sensors.

The KE2-Edge Manager Cell 2 creates a common dashboard that integrates KE2 sensor data with in-depth system operational information from KE2 Therm controllers. Pre-installed with a SIM card for plug-and-play Internet connectivity, or use your own SIM card. Access devices without relying on the local network.

The local dashboard can be accessed via the on-board Wi-Fi, or through the local network. The Wi-Fi provides a convenient access point to controllers while working on the refrigeration system, while graphs and datalogs can be accessed from a PC on the local network.

When provided internet access either via the on-site network or from cellular, the KE2-EM Cell 2 can send alerts email, push, or text (w/ KE2 SmartAccess). The controllers or sensors can also be published to the KE2 SmartAccess portal for remote access & control.

KE2-EM Cell 2 Kit – pn 22245, pn 22246

KE2-EM Cell 2 - Communication Device

(1) 5 ft. Ethernet Cable

(1) RS-485 USB Adapter - for KE2 Therm Modbus controllers

Power Cord

BENEFITS SUMMARY

- Includes SIM card with 10GB of data that is valid for 1 year. Data plans available once initial data is consumed.
- Detailed graphs with time stamps
- Bridge to existing Wi-Fi networks
- Provides a wireless access point
- Serves as a BACnet/IP Gateway (with license)
- Remote access for all connected KE2 Therm devices via KE2 SmartAccess
- High-accuracy temp & humidity readings
- Send alerts email, push, or text (w/ KE2 SmartAccess) for all connected KE2 Therm devices, to multiple recipients
- Connect Ethernet controllers with older firmware to KE2 SmartAccess without requiring controller upgrade
- Update controller firmware via the KE2-EM
- Create setpoint templates for backup and/or apply to multiple controllers

Literature



KE2-Wireless Temp Sensors

for use with KE2-EM Plus 2, KE2-EM Cell 2, KE2 Service Tool App

Water resistant and portable, the KE2 Wireless Temp + Humidity Sensor is a high-precision digital temperature and humidity indicator. The wireless signal and light-weight design mean installation takes just seconds. And, the sensor's 3-year battery life ensures low maintenance and extended performance. The 3-foot probe lead allows the transmitter to be positioned outside of the monitored space for better reception at the KE2-EM.

The sensor can be used in conjunction with the KE2-EM, or standalone as a display, alarming device, and data recorder, able to be accessed via the KE2 Service Tool App to change setpoints and download the built-in datalog.

The KE2 Wireless X-Temp Sensor is used in applications that exceed the temperature range of the standard sensor.

Common applications are: laboratory, agricultural, communications, storage facilities, warehouses, refrigerated spaces, medical, and hospitality.



Temperature Range -22 to 176°F (-30 to 80 °C)

KE2-Wireless Sensor – pn 22238

KE2 Wireless Temp + Humidity Sensor

Temperature Range -238 to 392°F (-150 to 200°C)

KE2-Wireless X-Temp Sensor – pn 22239

KE2 X-Temp Wireless Temp + Humidity Sensor

BENEFITS SUMMARY

- High-accuracy digital temperature and humidity sensor
- Configurable location name
- Wireless signal - using BLE 4.1 (Bluetooth Low Energy device)
- Email/text alerts (see list below)
- IP66 water resistance level
- 300 ft. (91 m) line of sight broadcasting range
- 3-year battery life (3.6V 2,700 mAh AA lithium battery)
- Low battery indicator
- 12-month free KE2 SmartAccess portal license
- Very fast start-up and measurement time
- Real-time data tracking, storing, & uploading

ALARMS

- High/low temp w/adjustable time delay
- High/low humidity w/adjustable time delay
- Disconnect alarm; sensor lost contact with the KE2-EM.
- Device loss alarm; sensor lost contact with the KE2-EM for an extended period.
- Portal Disconnect Alarm (optional).
- Low battery alarm

Literature



KE2-Wireless Door Sensor

for use with KE2-EM Plus 2, KE2-EM Cell 2

The KE2 Wireless Door Sensor allows local and remote monitoring of door openings and closings. Door open and door closed alarms notify users of excessively long openings or closings. Door openings and closings can be logged either at the KE2-EM and/or on the KE2 SmartAccess portal. The sensor is used with the KE2-Edge Manager Plus 2 (KE2-EM Plus 2) and KE2-Edge Manager Cell 2 (KE2-EM Cell 2) products lines.

Common applications are: blast freezer, commercial refrigerator, reach-in cooler, reach-in freezer, refrigerated showcase, walk-in cooler, walk-in freezer, refrigerated warehouse, undercounter.



Temperature Range -40 to 140 °F (-40 to 60°C)

KE2-Wireless Door Sensor – pn 22115

Wireless Door Sensor and magnet

BENEFITS SUMMARY

- Communicate locally or remotely with the KE2-EM and KE2 SmartAccess
- BACnet/IP, Modbus RTU, Modbus TCP/IP available with KE2-EM Cell 2 and BACnet/Modbus license.
- Email/push alerts with KE2-EM, text alerts with KE2 SmartAccess
- Datalogging of 365+ Days with KE2-EM and/or KE2 SmartAccess
- Door open and door close alarms with adjustable delay.
- Disconnect alarm; sensor lost contact with the KE2-EM.
- Device loss alarm; sensor lost contact with the KE2-EM for an extended period.
- Portal Disconnect Alarm (optional).
- Low battery alarm.

Literature



KE2 Service Tool App



The KE2 Service Tool App turns your phone temporarily into a KE2-Edge Manager and Wi-Fi service tool, providing hundreds of dollars in features to you for FREE.

Access controller webpages with your phone or tablet, even if they are not internet connected. Simply connect to the same network that the controllers are plugged into and the KE2 Service Tool App will quickly discover and display all KE2 Therm controllers on the network. Or, use a tested Apple or Android Ethernet dongle to plug your phone directly into a controller with an Ethernet cable.

The KE2 Service Tool App will display a dashboard of all available controllers and wireless sensors from which you can change setpoints, initiate defrosts, and view historic data. The tool also allows you to backup and restore setpoints, as well as update controllers using your smart device.

The app can also use your phone's mobile internet connection to publish controllers to KE2 SmartAccess, meaning your home office or KE2 Therm technical support can watch the system in real time with you, making it easier to troubleshoot system issues over the phone.

BENEFITS SUMMARY

- Accessing your controllers is easier than ever, automatically finds and dashboards any controllers it can see.
- Connect to the controller network or plug into the controller directly.
- View real time status of controller temperatures, pressures, relay status etc.
- Access the 30 days of built-in graphs and datalogs on controllers.
- Setpoints can be viewed and changed
- Allow others to view the controller with you in real time.
- Update controllers from your smart device.
- View and access any KE2 Wireless Sensors in range.

Literature



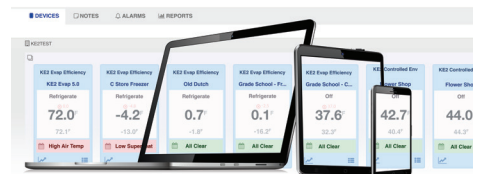
KE2 Service Tool App Kits– Apple pn 22041, Android pn 22042

- (1) 20 ft. Ethernet Cable
- (1) Apple (lightning) or Android (USB-C) to Ethernet dongle
- (1) Polyweave water resistant bag

KE2 SmartAccess

KE2 SmartAccess is your personal secure portal for remote access and monitoring of KE2 Therm devices. Simply provide the controller or KE2-Edge Manager with internet access, enable KE2 SmartAccess, and start accessing your systems from anywhere internet is available.

Whether managing one location or one hundred locations, KE2 SmartAccess will present your KE2 Therm devices to you in an easy to understand dashboard. Change setpoints, initiate defrosts, setup email/text alerts, view datalogs, generate reports and more, all from your KE2 SmartAccess portal.



Ethernet Adaptor Kit – pn 20938

Provides easy access to the Ethernet port on the backside of the KE2 Evaporator Efficiency or controller inside of a panel. Once the adaptor is connected, there is no need to remove the controller from the mounting screws or open the panel to reach the Ethernet connection.



Ethernet Cable

CAT5e shielded Ethernet cable for commercial/industrial temperature range. Shielding helps prevent noise interference with communications. Shielded RJ-45 connections are attached.

CAT5e Shielded Ethernet Cable – 50 ft. pn 20185

CAT5e Shielded Ethernet Cable – 100 ft. pn 20167



Refrigeration Controllers



Controller Features	KE2 Temp + Wi-Fi	KE2 Temp + Air Defrost	KE2 Temp + Valve	KE2 Low Temp + Defrost
Part Number	22291	20611	21301	20903
Defrost Type	Air	Air	Air	Air, Electric
Initiate Defrost	Time	Time	Time	Time
Terminate Defrost	Time	Time	Time	Temperature, Time, External Signal
Evaporator Fan Management Options	N/A	N/A	N/A	●
Defrost Heater Management Options	N/A	N/A	N/A	●
Alarm Options	Display, Email (from controller), Email/Push (KE2-EM), Email/Push/Text (KE2 SA)	Display, Email/Push (KE2-EM), Email/Push/Text (KE2 SA)	Display, Email/Push (KE2-EM), Email/Push/Text (KE2 SA)	Display, Buzzer, Email/Push (KE2-EM), Email/Push/Text (KE2 SA)
Eliminates T-Stat, Time Clock	●	●	●	●
Eliminates Fan Delay, Defrost Termination Device	N/A	N/A	N/A	●
Valve Control	TEV	TEV	TEV, EEV, Electric Evaporator Pressure Regulating Valve, Electric Hot Gas Bypass Valve, Subcooler EEV	TEV
Humidity Control/Monitor	—	—	—	—
Communication	Service Wi-Fi, Wi-Fi Client, TCP/IP, BACnet/IP*, Modbus RTU*, Modbus TCP/IP*	Modbus RTU, BACnet/IP*, Modbus TCP/IP*	Modbus RTU, BACnet/IP*, Modbus TCP/IP*	Modbus RTU, BACnet/IP*, Modbus TCP/IP*
Datalogging	30 days built-in, 1 year w/KE2 SmartAccess, 1 year+ w/KE2-Edge Manager	1 year w/KE2 SmartAccess, 1 year+ w/KE2-Edge Manager	1 year w/KE2 SmartAccess, 1 year+ w/KE2-Edge Manager	1 year w/KE2 SmartAccess, 1 year+ w/KE2-Edge Manager

*Requires KE2-EM w/ BACnet/Modbus license. New controllers added to EM integration each firmware update.



KE2 CondensedCatalog - 411

Controllers, Communication, Parts & Accessories



KE2 Evap 2	KE2 Evap 2 Panel (Lead/Lag, Environment)	KE2 Evap-RE3 Contactor Panel	KE2 Condensing Unit	
22292 (Ultimate Install Kit) 22333 (Basic Kit)	22119 (Lead/lag) 22118 (Environment - Temp. & Humidity Control)	22361, 22362 (120,208,240 VAC) 22363 (480 VAC)	22327	
Air, Electric, Hot Gas	Air, Electric, Hot Gas	Air, Electric, Hot Gas	No. of Compressors	1
Demand, Time, or Runtime	Demand, Time, or Runtime	Demand, Time, or Runtime	Compressor Control Type	Fixed Speed, Digital (w/Aux Board)
Temperature w/Time Backup	Temperature w/Time Backup	Temperature w/Time Backup	No. of Condenser Fan Stages	2 Stages or High/Low Speed
●	●	●	Condenser Pressure Control	Fixed Head Pressure, Floating Head Pressure
●	●	●	Condenser Fan Motor Type	Fixed Speed, Variable Speed ECM
Display, External Alarm Relay, KE2 Combo Display, Email (from controller), Email/Push (KE2-EM), Email/Text/Push (KE2 SA)	Display, External Alarm Relay, KE2 Combo Display, Email (from controller), Email/Push (KE2-EM), Email/Text/Push (KE2 SA)	Display, Alarm Relay, Email (from controller), Email/Push (KE2-EM), Email/Text/Push (KE2 SA)	Display, External Alarm Relay, Email (from controller), Email/Text/Push (KE2 SA)	
●	●	●	Replaces	Low Pressure Switch, Condenser Fan Control Devices
●	●	●		
TEV, EEV, PWM	TEV, EEV, PWM	TEV, EEV (max 4), PWM (max 4), Electric Evaporator Pressure Regulating Valve, Electric Hot Gas Bypass Valve	Controls	Suction Pressure, Head Pressure, Condenser Fans, Compressor Contactor, Low Ambient Start w/KE2 Evap 2, Defrost Interlock w/KE2 Evap 2
Optional	Optional	—		
TCP/IP, RESTful API, BACnet/IP*, Modbus RTU*, Modbus TCP/IP*	TCP/IP, RESTful API, BACnet/IP*, Modbus RTU*, Modbus TCP/IP*	TCP/IP, RESTful API, BACnet/IP, BACnet/MSTP, Modbus RTU*, Modbus TCP/IP*	TCP/IP, RESTful API, BACnet/IP*, Modbus RTU*, Modbus TCP/IP*	
30 days built-in, 1 year w/KE2 SmartAccess, 1 year+ w/KE2-Edge Manager	30 days built-in, 1 year w/KE2 SmartAccess, 1 year+ w/KE2-Edge Manager	30 days built-in, 1 year w/KE2 SmartAccess, 1 year+ w/KE2-Edge Manager	30 days built-in, 1 year w/KE2 SmartAccess, 1 year+ w/KE2-Edge Manager	

KE2 Temp + Wi-Fi

The KE2 Temp + Wi-Fi is the next generation KE2 Temp + Air Defrost controller, functioning as a thermostat and air defrost controller for refrigeration systems. The Wi-Fi can be used to access the controller's built-in webpage for service, as well as to connect to a local Wi-Fi network for Internet or local access. When connected to the Internet, the KE2 Temp + Wi-Fi can be accessed remotely via the KE2 SmartAccess portal, send out email alerts, and more.

The controller features multiple modes, including a "Heat" mode where the controller switches to function as a simple thermostat for heating applications, increasing versatility for truck stock. The "Mitigation" mode allows the controller to function solely as a leak detection device when used with the proper sensors or digital input, with a robust leak alarm relay to signal a leak event. The "Refrigeration and Mitigation" mode combines both the standard refrigeration function with the leak detect function, simplifying the need to multiple controls in A2L systems.



KE2 Temp + Wi-Fi

Kit – pn 22291

KE2 Temp +Wi-Fi controller	pn 22086 controller only
(1) 10 ft. temperature sensor	pn 21794
(1) KE2 Temp + Wi-Fi Mounting Box	pn 22160
Installation hardware	

Literature



KE2 Temp + Wi-Fi



10 ft. temperature sensor (1)



Mounting Box (1)



BENEFITS SUMMARY

- Wi-Fi may be used to connect to the controller for service, or permanently join a local Wi-Fi network for Internet access and/or remote access & monitoring.
- Great for truck stock - use as a refrigeration thermostat, defrost clock on air defrost applications, or as a simple heat thermostat.
- Simplifies wiring, saves installation time.
- When used with an KE2-Edge Manager, displays a local dashboard showing connected controllers.
- Visual alarms on the display, email alerts if the controller is provided Internet, email/push notifications when used with the KE2-Edge Manager, text messages and more available when publish to the KE2 SmartAccess portal.
- 30-day datalog & graph built-in to controller, 1-year datalog & graph when published to KE2 SmartAccess, 1-year+ datalog & graph when used w. a KE2 Edge Manager.
- Off time defrost on predefined or custom schedule.
- A2L/A3 refrigerant compliant hardware, capability to read specific leak sensors or receive an input to enter leak mitigation mode.
- Compressor protection – minimum run and minimum off time.
- Manual defrost.
- Multiple integration options. RESTful JSON API directly from the controller or via the KE2 SmartAccess portal. BACnet/IP, Modbus RTU, Modbus TCP/IP available with a KE2-EM with BACnet/Modbus license (new controllers/protocols added each firmware update).

KE2 Temp + Air Defrost

The KE2 Temp + Air Defrost simplifies refrigeration controls by combining the functions of a thermostat and air defrost time clock — increasing functionality and reducing wiring. This also makes it ideal for truck stock. Customers also appreciate the large display and blue LEDs, allowing the temperature to be read from a distance.

The KE2 Temp is accessible remotely using the KE2-Edge Manager (KE2-EM), a simple, multi-functional, communication device. The KE2-EM will automatically find any connected KE2 Temp + Air Defrost controllers and provide immediate local network communication.



KE2 Temp + (Air) Defrost

Kit 1 – pn 20611

KE2 Temp controller	
(1) 45 in. temperature sensor	pn 20715
Installation hardware	

Kit 2 – pn 21322

KE2 Temp controller	
(1) 10 ft. temperature sensor	pn 20199
Installation hardware	

KE2 Temp + Defrost



Temp sensor (1)



Literature



BENEFITS SUMMARY

- Ideal for truck stock – Eliminates an air defrost time clock and a thermostat.
- Simplifies wiring, saves installation time.
- When used with an KE2-Edge Manager, displays a local dashboard showing connected controllers.
- Visual alarms on the display, and alarm notifications via text or email when used an the KE2-Edge Manager.
- Over a year of temperature datalogging when used with the KE2-Edge Manager.
- Off time defrost on a predefined, or custom schedule.
- Compressor protection – adjustable maximum compressor starts per hour.
- 1st defrost 2 hours after start up.
- 120V / 208-240V
- Keypad lock feature.
- Multiple integration options. Modbus RTU available natively on the controller. BACnet/IP, Modbus TCP/IP available with a KE2-EM with BACnet/Modbus license (new controllers/protocols added each firmware update). RESTful JSON API available via the KE2 SmartAccess portal.

KE2 Temp + Valve

The KE2 Temp + Valve replaces the thermostat and defrost time clock for air defrost applications, simplifying the installation. In addition, the KE2 Temp + Valve has to ability to drive an electric expansion valve (EEV) to control superheat, or an electric evaporator pressure regulator (EEPR) or electric hot gas bypass (EHGB) valve to control to a specific temperature or pressure. Further, Subcool mode allows the KE2 Temp + Valve to be applied to a mechanical subcooler, modulating an EEV to control the liquid temperature of the refrigerant leaving the brazed plate heat exchanger.



KE2 Temp + Valve

Kit – pn 21301

KE2 Temp + Valve controller	pn 21393 controller only
(1) 10 ft. 0-150 psia pressure transducer	pn 20201*
(1) 45 in. temperature sensor	pn 20715
(1) 10 ft. temperature sensor	pn 20199
Installation hardware	

*R-410A requires a 0-300 psig transducer (pn 20711).

Literature



KE2 Temp + Valve



45 inch temp sensor (1)
10 ft. temp sensor (1)



10 ft. pressure transducer (1)



BENEFITS SUMMARY

- New hardware compatible with A2L and A3 refrigerants.
- Controls an EEV, EEPR, or EHGB providing much tighter system control than possible with mechanical controls.
- Great for truck stock - can be used as thermostat and defrost clock on air defrost applications, or as thermostat only for electric defrost. Compatible with TEVs and most common EEVs & refrigerants.
- Simplifies wiring, saves installation time.
- When used with the KE2-Edge Manager, displays a local dashboard showing connected controllers.
- Visual alarms on the display, and alarm notifications via text or email when used with the KE2-Edge Manager.
- 366 days of temperature datalogging when used with the KE2-Edge Manager.
- Off time defrost on a predefined, or custom schedule.
- The subcool control mode allows the KE2 Temp + Valve to be applied to mechanical subcoolers.
- Compressor protection – adjustable maximum compressor starts per hour.
- Manual defrost.
- Keypad lock feature.

KE2 Low Temp + Defrost

Controller for low & medium temp refrigeration applications. For new or existing equipment. Serves the function of multiple components: replaces thermostat, fan delay, defrost time clock & termination device. Versatile controller ideal for truck stock.

KE2 Therm fan management allows tighter temperature control and saves energy. California Title 24 compliant evaporator fan management option available when used with a single fixed speed compressor.



KE2 Low Temp + Defrost

Kit – pn 20903

KE2 Low Temp controller	
(2) 10 ft. temperature sensors	pn 21794 & 21795
Air sensor wire mount	pn 20606
Installation hardware	

Literature



KE2 Low Temp +Defrost



10 ft. temp sensors (2)



BENEFITS SUMMARY

- New hardware compatible with A2L and A3 refrigerants.
- Off time or electric defrost on pre-defined schedule or custom defrost interval.
- Ideal for truck stock – Replaces defrost time clock, thermostat, defrost termination, and fan delay.
- Simplifies wiring, saves installation time
- KE2 Therm fan management allows tighter temperature control and saves energy. Title 24 compliant option available.
- Regulates the amount of defrost heat to prevent steaming.
- Optional Door Switch with all the necessary time delays.
- Controllers can connect to KE2 SmartAccess portal with the KE2-Edge Manager.
- Visual alarms on the display, built-in buzzer, and alarm notifications via text or email when used with the KE2-Edge Manager.
- Over a year of temperature datalogging when used with the KE2-Edge Manager.
- Compressor protection – adjustable maximum compressor starts per hour.
- Keypad lock feature.

KE2 Adaptive Control

Energy saving controller for low & medium temp refrigeration applications. For new or existing equipment. Serves the function of multiple components: replaces thermostat, fan delay, defrost time clock & termination device.

Includes unique energy saving demand defrost algorithm based on the efficiency of the evaporator, third party verified to provide 20%+ energy savings.

KE2 Therm fan management allows tighter temperature control and saves energy. California Title 24 compliant evaporator fan management option available when used with a single fixed speed compressor.



KE2 Adaptive Control

Kit – pn 21177

KE2 Adaptive Control controller	
(3) colored, 15 ft. temperature sensors	pn 21151
Air sensor wire mount	pn 20606
Terminal board	pn 20996
Installation hardware	

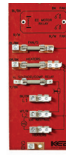
KE2 Adaptive Control



15 ft. colored temp sensors (3)



KE2 Terminal Board



BENEFITS SUMMARY

- New hardware compatible with A2L and A3 refrigerants.
- Unique defrost initiation based on evaporator efficiency, third-party verified to provide 20%+ energy savings.
- KE2 Therm fan management allows tighter temperature control and saves energy. Title 24 compliant setting available.
- Controllers can connect to KE2 SmartAccess portal with the KE2-Edge Manager
- When used with the KE2-Edge Manager, displays a local dashboard showing controllers connected to the KE2-EM.
- Visual alarms on the display, built-in buzzer, and alarm notifications via text or email when used with the KE2-Edge Manager.
- Over a year of temperature datalogging when used with the KE2-Edge Manager.
- Regulates the amount of defrost heat to prevent steaming.
- Optional Door Switch with all the necessary time delays.
- Off time or electric defrost on demand, pre-defined schedule, or custom interval.
- Keypad lock feature.

Literature





KE2 CondensedCatalog - 411

Controllers, Communication, Parts & Accessories

KE2 Evaporator Efficiency

Energy saving controller for low & medium temp refrigeration applications with built-in remote monitoring & diagnostics capability. For new or existing equipment. Serves the function of multiple components: replaces thermostat, fan delay, defrost time clock & termination device.

Able to drive an electric expansion valve (EEV) for increased energy efficiency, temperature control, and monitoring, however, works with mechanical TEV as well. Order additional temperature sensor and pressure transducer for EEV control.

Includes unique energy saving demand defrost algorithm based on the efficiency of the evaporator, third party verified to provide 20%+ energy savings.

KE2 Therm fan management allows tighter temperature control and saves energy. California Title 24 compliant evaporator fan management options available for single or multiple compressor applications.



KE2 Evaporator Efficiency

Controller Only – pn 20631

KE2 Evaporator Efficiency controller

Installation hardware (sensors NOT included)

Basic Kit – pn 20178

KE2 Evaporator Efficiency controller

(3) colored 15 ft. temperature sensors pn 21151

Air sensor wire mount pn 20606

Terminal board pn 20996

Installation hardware

KE2 Evaporator Efficiency



15 ft. colored temp sensors (3)



KE2 Terminal Board



Ultimate Install Kit – pn 20844

KE2 Evaporator Efficiency controller

(3-pack) colored 40 ft. temperature sensors pn 21066

Mounting box pn 20687

Air sensor wire mount pn 20606

Terminal board pn 20996

Installation hardware

KE2 Evaporator Efficiency



40 ft. colored temp sensors (3)



Mounting Box



KE2 Terminal Board



BENEFITS SUMMARY

- Improved product integrity and reduced spoilage – elimination of unnecessary defrost cycles reduces freezer burn, and temperature spikes, which degrade product quality.
- Energy savings through identification of system performance issues using graphing and datalogging feature.
- Maximizes energy efficiency with less compressor run time resulting from precise evaporator fan management and reduced defrost time.
- Improved evaporator performance due to utilization of frost on the evaporator.
- Reduces liability by eliminating ice buildup on floors.
- Alarm notification text/email.
- Remote monitoring & system control.
- 30 day graph of room and coil temperature. Built-in datalog provides 30 days of system operation history.
- Over a year of temperature datalogging when used with the KE2-Edge Manager.
- For new equipment or upgrade of existing equipment.
- Integrate with Building Management Systems. BACnet/IP available with KE2-Edge Managers (does not support BBMD).

Literature



KE2 Evap 2

Flagship energy saving evaporator controller for low & medium temp refrigeration applications with built-in remote monitoring & diagnostics capability. For new or existing equipment. Serves the function of multiple components: replaces thermostat, fan delay, defrost time clock & termination device.

A2L compliant hardware and certified as UL 60335-2-89 ed. 2 RDS (Refrigerant Detection System); refrigerant leak sensors sold separately. Able to read and record LFL % of leak sensors and trigger a pre-mitigation alarm before shutting the system down. May also accept mitigation output from a 3rd party device as a digital input.

The optional KE2 Combo Display serves as a remote display for the KE2 Evap 2, adding a built-in buzzer, additional temperature and auxiliary inputs, such as a panic button and door switch. Offers additional relays for alarm, lights, and door heater.

When used with the KE2 Condensing Unit, both controllers will coordinate to provide additional compressor protections, and enable a special start procedure designed for low ambient and low space temperatures. The start procedure avoids compressor short cycling and unnecessary high room temperatures caused by new refrigerants and difficult to fine-tune mechanical pressure controls.

Able to drive an electric expansion valve (EEV) for increased energy efficiency, temperature control, and monitoring, however, works with mechanical TEV as well. Order additional temperature sensor and pressure transducer for EEV control.

KE2 Therm fan management allows tighter temperature control and saves energy. California Title 24 compliant evaporator fan management options available for single or multiple compressor applications.

Built-in lead/lag control over Ethernet allows switchover between two KE2 Evap 2 OEM controllers based on time or every run cycle without any external timers or additional controls.

Humidity control options available with the addition of the KE2 Humidity Control auxiliary board.

Controller only option available for OEM applications or replacement.



Ultimate Install Kit – pn 22292

KE2 Evap 2 (KE2 Evap 2 OEM in UL Listed Enclosure)	
(3-pack) 40 ft. blue, yellow, green temperature sensors	pn 21066
(1) 40 ft. black temperature sensor	pn 20200
(1) 40 ft. 0-150 psia pressure transducer	pn 20204
(1) 40 ft. 9-wire color coded wiring harness	pn 20737
Air sensor wire mount	pn 20606
Terminal Board	pn 20996
Installation hardware	

Basic Kit – pn 22333

KE2 Evap 2 (KE2 Evap 2 OEM in UL Listed Enclosure)	
(3-pack) 40 ft. blue, yellow, green temperature sensors	pn 21066
Air sensor wire mount	pn 20606
Terminal board	pn 20996
Installation hardware	

BENEFITS SUMMARY

- UL 60335-2-89 ed. 2 compliant RDS (Refrigerant Detection System), leak sensors sold separately.
- Hardware compatible with A2L and A3 refrigerants.
- When used with KE2 Condensing Unit, provides additional compressor protections and low ambient/low box temp start procedure.
- Remote display with additional features available, see KE2 Combo Display.
- Built-in lead/lag control over Ethernet allows switchover between two KE2 Evap 2 controllers without external timers or additional controls.
- Humidity control & monitoring options when used with the KE2 Humidity Control auxiliary board.
- Includes unique energy saving demand defrost algorithm based on the efficiency of the evaporator, third party verified to provide 20%+ energy savings.
- Improved product integrity and reduced spoilage – elimination of unnecessary defrost cycles reduces freezer burn, and temperature spikes, which degrade product quality.
- Energy savings through identification of system performance issues using graphing and datalogging feature.
- Maximizes energy efficiency with less compressor run time resulting from precise evaporator fan management and reduced defrost time.
- Improved evaporator performance due to utilization of frost on the evaporator.
- Reduces liability by eliminating ice buildup on floors.
- Alarm notification text/email.
- Remote monitoring & system control.
- 30 day graph of room and coil temperature. Built-in datalog provides 30 days of system operation history.
- Over a year of temperature datalogging when used with the KE2-Edge Manager.
- For new equipment or upgrade of existing equipment.
- Integrate with Building Management Systems. BACnet/IP available with KE2-Edge Managers (does not support BBMD).

Literature



KE2 Evap 2



40 ft. colored temp sensors (3)



40 ft. black temp sensor (1)



40 ft. pressure transducer



40 ft. wire harness



KE2 Terminal Board



KE2 Evap 2 OEM



Control Board Only – pn 22157

KE2 Evap 2 OEM Controller - Board only, for replacement in the field or OEM applications.

Literature



KE2 Evap 2 Lead/Lag Panel

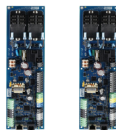
All of the benefits of the KE2 Evap 2, with two KE2 Evap 2 OEM controllers mounted in a single panel to allow easy setup of lead/lag redundant systems, control of a two evaporator system, or for a combo freezer & cooler walk-in.

KE2 Evap 2 Lead-Lag Panel – pn 22119

(2) KE2 Evap 2 OEM controllers mounted in UL-508 panel with (2) KE2 Basic Displays, (6) 40' color temperature sensors & (2) terminal boards. For Lead/Lag control or control of two evaporators.



KE2 Evap 2 OEM Boards (2)



40 ft. colored temp sensors (6)



KE2 Basic Displays (2)



KE2 Terminal Boards (2)



Literature



KE2 Evap 2 Environment Panel

(Humidity & Temp Control)

Provides all the benefits of the KE2 Evap 2 OEM controller, such as adaptive defrost, service web-pages, remote access, fan management etc., in addition to monitoring and controlling humidity, with outputs for humidifier, dehumidifier, heat, reheat and more provided by the KE2 Humidity Control auxiliary board.

When used with an electric expansion valve, KE2 Therm's unique algorithm adjusts superheat based on humidity, further aiding in maintaining or removing moisture from the space. Ideal for vegetables, fruits, meats, ripening rooms, curing rooms, clean rooms, tobacco storage, wine and more.



KE2 Evap 2 Environment Panel – pn 22118

(1) KE2 Evap 2 OEM controller & (1) KE2 Humidity Control Auxiliary board mounted in UL-508 panel with (1) KE2 Basic Display, Humidity sensor with 40" lead, (3) 40" color temperature sensors & terminal board

KE2 Evap 2 OEM Board



KE2 Humidity Control Auxiliary Board



Humidity Sensor 40' lead



KE2 Terminal Board



KE2 Basic Display



40 ft. colored temp sensors (3)



BENEFITS SUMMARY

- Reduces potential for on site errors in wiring & reduces installation time.
- Provides consistent setup across locations, especially important for multi-site businesses.
- Improved product integrity and reduced spoilage – elimination of unnecessary defrost cycles reduces freezer burn, and temperature spikes, which degrade product quality.
- Maximizes energy efficiency with less compressor run time resulting from precise evaporator fan management and reduced defrost time.
- Alarm notification text/email. Remote monitoring & system control.
- 30 day graph of room and coil temperature. Built-in datalog provides 30 days of system operation history.
- Over a year of temperature datalogging when used with the KE2-Edge Manager.
- For new equipment or upgrade of existing equipment.
- Integrate with Building Management Systems. BACnet/IP available with KE2-Edge Managers (does not support BBMD).

Literature



KE2 Humidity Control

The KE2 Humidity Control is the most energy efficient approach to achieve your humidity goals. As an auxiliary board to the KE2 Evap OEM & KE2 Evap 2 OEM, it is designed to add humidity control and monitoring to refrigerated spaces. It can also be used in applications where both heat and refrigeration are required.



When added to new or existing KE2 Evap OEM (updated to v3.0 or higher) or KE2 Evap 2 OEM installs, the KE2 Humidity Control provides logic for humidity control & adds outputs for a humidifier, dehumidifier, heat/reheat, and a schedule based output.

If used with an Electric Expansion Valve (EEV), the system will also modulate superheat to increase or decrease runtime, based on current humidity, and humidity target. This unique control provides additional dehumidification or minimizes the amount of dehumidification during refrigeration.

The KE2 Humidity Control is ideal for applications with specific humidity and temperature requirements, such as: Meat curing rooms, Growth chambers, Green houses, Ripening Rooms, Clean rooms, Paper & document storage.

KE2 Humidity Control – pn 22003

Auxiliary board only



KE2 Humidity Panel – pn 22006

Use with existing KE2 Evap OEM or KE2 Evap 2 OEM install

KE2 Humidity Control auxiliary board

Snaptrack

Humidity Sensor, 40' lead pn 20651

KE2 Humidity Control Auxiliary Board



Humidity Sensor 40' lead



BENEFITS SUMMARY

- Improved product integrity through precise regulation of the conditioned space's humidity and temperature.
- Reduced spoilage & shrinkage by defrosting only when necessary, maintaining desired humidity level, and providing consistent temperature control.
- Outputs for reheat, dehumidifier, humidifier, and schedule based output for lights etc.
- Remote monitoring & system control with KE2 SmartAccess.
- 30 day built-in graph of room temp, coil temp, and relative humidity. Over a year of data storage available with the KE2-Edge Manager.
- For new or existing equipment. Existing controllers can be updated to KE2 Evap OEM firmware v3.0+ to work with the KE2 Humidity Control.

Literature



KE2 Evap-RE3 Contactor Panel



Saves time and eliminates the potential for on site errors. Ideal for refrigeration applications that require fan and/or defrost contactors. Pre-wired to make installation easy. Provides energy savings, precise temperature control, frost reduction, and advanced communications capability. Able to control up to (3) EEVs with additional Aux Valve Drivers. Able to drive electric evaporator pressure regulator (EEPR) or electric hot gas bypass (EHGB) valve to control room temperature. Programming specific to control evaporators on rack systems.

On-site wiring of controller related components is simplified. Plus the contactor panel provides consistent setup across locations, making return service visits more productive, reducing both installation time and system downtime. Built-in Wi-Fi allows easy access to controller webpages while in front of the panel with smartphone, tablet, or laptop.

Using the KE2 Wireless Refrigeration Protocol, controllers will coordinate multiple panels' refrigeration and defrost over wireless (bonding and defrost queue). Built-in service Wi-Fi allows technicians to connect to the controller for setup, diagnostics, and troubleshooting without needing to plug-in to the controller.

The controller monitors both fan and defrost amperage, providing advanced notification of issues with the evaporator fans or defrost heaters before room temperature is affected.

The KE2 Evap-RE3 controller may communicate natively over BACnet/MSTP and BACnet/IP allowing easy integration into a local BMS. It also features a RESTful JSON API, and KE2 SmartAccess portal communications for remote access.

KE2 Evap-RE3 Contactor Panel Kits

120V/208-240V Contactor Panel, 20A Fans, 40A Defrost w/KE2 KE2 Valve Driver	pn 22361
120V/208-240V Contactor Panel, 20A Fans, 80A Defrost w/KE2 Valve Driver	pn 22362
480V Contactor Panel, 20A Fans, 35A Defrost w/ KE2 Valve Driver	pn 22363

Kit Contents

KE2 Evap-RE3 Contactor Panel	
Ethernet adaptor – already installed in panel	
(3-pack) colored 40 ft. temperature sensors	pn 21066
(1) black 40 ft. temperature sensor	pn 20200
(1) door switch	pn 20543
(1) 40 ft. pressure transducer	pn 20204
(1) Current Sensor Board – already installed in panel	pn 21613
(1) KE2 Valve Driver pn 21612 – already installed in panel	

Accessories

Auxiliary Boards

KE2 Valve Driver	pn 21612
Current Sensor Board	pn 21613

Pressure Transducers

Pressure Transducer – 0 to 150 psia, 40 ft. lead	pn 20204
Pressure Transducer – 0 to 750 psig, 40 ft. lead - For R-744 applications	pn 21873

Sensors - Temperature or Current Sensor

Standard for all other temp inputs, 40 ft. (black)	pn 20200
Current sensor	pn 21614

Replacement Controller or Display

Replacement KE2 Evap-RE3	pn 22364
Replacement KE2 Advanced Display	pn 22365

BENEFITS SUMMARY

- Service Wi-Fi available allows access to the controller's built-in webpage without hard wiring to the controller.
- Built-in Wi-Fi also allows wireless coordination (bonding, defrost queue) between controllers without running Ethernet cable.
- BACnet/MSTP and BACnet/IP available on the controller natively, providing easy integration into BMS systems.
- Reduces potential for on site errors in wiring & significantly reduces installation time.
- Provides consistent setup across locations, especially important for multi-site businesses.
- Pre-programmed options with carefully selected default settings for evaporators on rack systems.
- Pre-installed current sensors to monitor fan and defrost current.
- Drive an EEPR or EHGBV, and up to three EEVs with Valve Driver boards.
- Improved product integrity and reduced spoilage – elimination of unnecessary defrost cycles reduces freezer burn, and temperature spikes, which degrade product quality.
- Energy savings through identification of system performance issues using graphing and datalogging feature.
- Maximizes energy efficiency with less compressor run time resulting from precise evaporator fan management and reduced defrost time.
- Improved evaporator performance due to utilization of frost on the evaporator.
- Reduces liability by eliminating ice buildup on floors.
- Alarm notification text/email. Remote monitoring & system control.
- 30 day graph of room and coil temperature. Built-in datalog provides 30 days of system operation history.
- Over a year of temperature datalogging when used with the KE2-Edge Manager.
- For new equipment or upgrade of existing equipment.

Literature



KE2 Combo Display



Combines the functionality of a temperature display, lighting control, panic alarm, temperature alarm, and a door heater controller. Three configurations: Stand-alone, Paired with one KE2 Evap OEM/KE2 Evap 2 controller, or paired with two KE2 Evap OEM/KE2 Evap 2 controllers.

KE2 Combo Display

KE2 Combo Display - does not include any accessories pn 21320

KE2 Combo Display w/ Battery & Cable – pn 21877

KE2 Combo Display	pn 21320
25 ft. Cable	pn 21786
Junction Box	pn 21782
9V Rechargeable Battery	pn 21781

KE2 Combo Display Kit – pn 22146

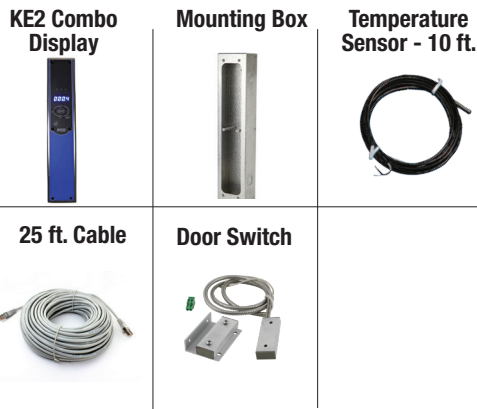
KE2 Combo Display	pn 21320
Combo Display Mounting Box	pn 22146
10 ft. Black Temperature Sensor	pn 20199
25 ft. RJ-12 Cable	pn 21786
Door Switch	pn 20543
9V Rechargeable Battery	pn 21781

BENEFITS SUMMARY

When applied stand-alone:

- Controls door heaters to reduce energy required to maintain frost free door frame.
- Combined with KE2 Therm's panic button, provides safety for anyone in the refrigerated space.
- Lighting control integrates with door switch to automatically turn lights on & off.
- Serves as a temperature display and alarm.
- When used w. KE2 Evap OEM / KE2 Evap OEM
- Email/text alerts can be sent for alarms originating from the KE2 Combo Display, as well as from the KE2 Evap OEM controller(s).
- Information from the KE2 Combo Display is added to KE2 Evap OEM webpages.
- KE2 Combo Display provides the ability to change additional KE2 Evap OEM setpoints not available from the basic display.

Literature



Accessories

25 ft. RJ-12 Cable	pn 21786
Junction Box	pn 21782
KE2 Panic Button Kit	pn 21801
9V Rechargeable Battery	pn 21781

KE2 Condensing Unit



Provides precise control and advanced communication for condensing units. Protects the compressor and ensures proper refrigeration control.

Accurately controls suction pressure and head pressure for refrigeration condensing units with a single compressor and two speed/one or two condenser fans. Is able to provide a VDC output for condenser fans with variable speed EC motors. When used with the KE2 Evap OEM or KE2 Evap 2 OEM controlling the evaporator, the KE2 Condensing Unit Control has additional features to protect the compressor and refrigerated product, including a low ambient start mode, maximum pumpdown attempts, and multiple safeties. Change setpoints, view real-time pressure, temperature, and more with KE2 SmartAccess.

KE2 Condensing Unit

Kit - pn 22327 (in UL enclosure) / pn 22108 (no enclosure)

KE2 Condensing Unit Control	pn 21994
Basic Display w. 18" Cable	pn 21232
120/208/240V to 24VAC Transformer	pn 22105
(1) 0-150 psia transducer w. 10 ft. lead	pn 20201
(1) 0-500 psig transducer w. 10 ft. lead	pn 20202
Snaptrack - 11"	pn 21324
(3) colored 10 ft. temperature sensors	pns 20199, 21795, 21794
(1) white 15 ft. (Discharge Temp) sensor	pn 21230
Installation hardware	

Controller Only – pn 21994

KE2 Condensing Unit (for OEM or replacement)



BENEFITS SUMMARY

- Precisely adjust low pressure cut-in and cut out easily, on site or remotely. OEMs can factory pre-set low pressures cut-in and cut-out, based on application and refrigerant.
- Control to a fixed head pressure or the let the head pressure float with the ambient temperature (California Title 24 compliant). Multiple options for condenser fan control including fixed speed, two speed, and VDC output for variable speed EC motors.
- Multiple safeties protect the compressor. Short cycle, low suction superheat, high suction temperature, high discharge pressure, and high discharge temperature alarms.
- When used with a KE2 Evap OEM or KE2 Evap 2 OEM controller at the evaporator, the controller at the evaporator and condensing unit will coordinate run cycles to avoid short cycling or leaving the space without refrigeration for extended periods due to off timers or low ambient conditions.
- Compatible with A2L refrigerants and R-290. When used with a KE2 Evap OEM or KE2 Evap 2 OEM with Leak Detection the KE2 Condensing Unit Control will stop refrigeration during a leak event.

Literature



KE2 Case Control 2



Provides optimal control of refrigerated showcases, saves energy, preserves product quality, reduces icing, and offers real-time communications both local and remote.

With the addition of auxiliary KE2 Valve Drivers, can simultaneously drive one Electric Evaporator Pressure Regulator (EEPR) and up to three Electric Expansion Valves (EEVs) or Pulse Width Modulation (PWM) valves.

A unique hybrid control for EEPRs provides superior temperature stability.

KE2 Case Control 2

Controller Only – pn 22345

KE2 Case Control 2

KE2 Advanced Display – pn 22031

KE2 Advanced Display - Used with KE2 CC, KE2 CC2, and KE2 Evap-RE3

Accessories

Cat5e Cable with connectors, 20 ft. (for display)	pn 21835
Solid State Relay (for driving PWM valve)	pn 21304
Replacement Fan Relay (Form C)	pn 22200
Temperature Sensors	See page 29
Pressure Transducers	See page 29
KE2 Valve Driver Kit (Includes Snaptrack)	pn 21979
Valve Driver Cover	pn 22050

BENEFITS SUMMARY

- Provides all of the benefits of KE2 Therm's unique demand defrost based on evaporator efficiency, evaporator fan management and more.
- Service Wi-Fi allows convenient access to the controller's built-in webpage for technicians working on the case.
- Controllers coordinate via KE2 Therm's Wireless Refrigeration Protocol. Allowing bonding and defrost queuing via wireless communications.
- Monitors fan and heater current, providing early indication of failures before case temperature is affected.
- Adding KE2 Valve Drivers allows multiple evaporators in a case lineup to use EEVs.
- Natively supports BACnet/MSTP, BACnet/IP, and RESTful JSON API, providing easy integration into the local BMS.

Literature



KE2 Compressor Sequencer Panel



Controls up to 3 stages of loading from the main board, and up to 8 stages of loading with the addition of an Auxiliary Relay board.

Suction pressure can be controlled to a fixed setpoint or allowed to float for maximum efficiency.

Each stage of loading can be set to: fixed speed compressor, variable speed compressor¹, digital compressor^{1,2} or unloaders. Relays for the stages can alternatively be set to control a Master Liquid Line Solenoid, or as a Hot Gas Defrost Relay.

Complete remote access is available during startup with a few simple button presses and an Internet connection.

Intended for retrofits or new installs, the KE2 Compressor Panel includes the controller pre-mounted in a UL-508 panel. The panel is available for 3 stages or 8 stages, the 8 stage version includes the Auxiliary Relay board also pre-mounted in the panel.

If controlling the digital compressor bypass valve for a digital scroll, include the solid state relay pn 21304.

If using the 8th stage, include the digital switch relay, pn 21032.

¹ One per suction Group

² Controller is designed to operate with a Copeland Scroll Digital Compressor when Digital Compressor is selected.



BENEFITS SUMMARY

- Designed for small to mid-sized racks - eliminates complicated controls designed for larger systems.
- Supports up to 3 stages of loading with onboard relays. Up to 8 stages can be controlled with the addition of an Auxiliary Relay board.
- Will automatically equalize runtime of compressors with equal HP.
- 30 day graph of capacity and suction pressure.
- Built-in datalog provides 30 days of system operation history.
- Controller webpages allows tech to quickly assess system's operation.
- Works as a stand-alone rack controller or with other KE2 Therm controllers.
- Can limit the amount of defrost load, as dictated by the site's electrical requirements.

Literature



KE2 Compressor Sequencer OEM

Controller Only – pn 21768

KE2 Compressor Sequencer OEM Controller only	pn 21768
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KE2 Compressor Panel (3 stages) – pn 21961¹

KE2 Compressor Sequencer OEM controller	pn 21768
KE2 Basic Display w/ 18" Cable	pn 21232
Snaptrack	pn 21415
0-150 psia Pressure Transducer, 40' lead	pn 20204
0-500 psig Pressure Transducer, 40' lead	pn 20712
Standard Temperature Sensor, black, 40' lead	pn 20200
High Temperature Sensor, white, 15' lead	pn 21230
System off switch & 15" lead	pn 21934

KE2 Compressor Panel (8 stages) – pn 21962²

KE2 Compressor Sequencer OEM controller	pn 21768
Auxiliary Relay Board)	pn 21323
KE2 Basic Display w/ 18" Cable	pn 21232
Snaptrack	pn 21415
0-150 psia Pressure Transducer, 40' lead	pn 20204
0-500 psig Pressure Transducer, 40' lead	pn 20712
Standard Temperature Sensor, black, 40' lead	pn 20200
High Temperature Sensor, white, 15' lead	pn 21230
System off switch & 15" lead	pn 21934

¹ Add solid state relay pn 21304 for digital compressor control.

² If using 8th stage, add digital switch relay pn 21032.

KE2 Compressor Sequencer OEM

Accessories

Aux Relay Board	
Auxiliary Relay Board	pn 21323

External Relays

Solid State Relay - Used to control digital compressor bypass valve; for digital scroll	pn 21304
Digital Switch Relay - Used to control the 8th stage, if used	pn 21302

Pressure Transducers

0 -150 psia, 10 ft. lead - for suction pressure	pn 20201 ³
0 - 150 psia, 40 ft. lead - for suction pressure	pn 20204 ³
0 - 500 psig, 10 ft. lead - for discharge pressure	pn 20202
0 - 500 psig, 40 ft. lead - for discharge pressure	pn 20712

Temperature Sensors

High temp sensor for discharge, 15 ft.	pn 21230
Standard temp sensor for all other temp inputs, 10 ft.	pn 20199
Standard temp sensor for all other temp inputs, 40 ft.	pn 20200

Replacement Relays

Replacement Form C Relay for Main Board	pn 22200
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Replacement Fuses

Replacement incoming power fuse for Main Board and Aux Relay Board	pn 21375
Fuses for Aux Relay Board relays (5-pack)	pn 21628

³ Use transducers pn 20208 (10 ft.) or pn 20711 (40 ft.) for R-410A.

KE2 Basic Display



The KE2 Basic Display shows critical system information and uses a simplified menu structure to allow service technicians to change the major setpoints of the KE2 Evap OEM, KE2 Evap 2 OEM, KE2 Condenser Fan Control, KE2 Condensing Unit Control and KE2 Compressor Sequencer OEM. The display has a blue, 3-digit window and three status indicator LEDs.

pn 21232
 Basic Display with 18 in. Cable - 3 digit LED

pn 21387
 Basic Display with 5 ft. Cable - 3 digit LED

pn 21878
 Replacement Cable - 5 ft.

KE2 Fan Control Panel



The KE2 Fan Control provides a simple packaged solution to optimize energy efficiency of air cooled condensers. This package incorporates Variable Frequency Drive (VFD) technology to match fan speed with the varying load and ambient conditions. Custom part numbers, contact KE2 Therm for selection.

Options
230V, 460V or 575 V, 3-phase
Available for 2 to 14 fan condensers
Available for split condensers
Motor starters with short circuit and thermal protection
Interlock VFD/constant speed contactors
Optional drop leg or ambient temp control
Optional two drive model for dual circuit condensers

Includes the KE2 Condenser Fan Control, see Q.2.51 for more information.

BENEFITS SUMMARY

- Typically condensers are sized for conditions that are experienced less than 5% of the time. The KE2 Fan Control package contains proprietary algorithms that match system conditions with equipment operation, providing the highest levels of efficiency, improving system operation and saving money.
- Remote monitoring and system control, plus Email/text alerts. 30 day datalog available with the KE2 Condenser Fan Control.

KE2 Condenser Fan Control



The feature-rich KE2 Condenser Fan Control allows for the control of up to 14 fans, on up to two separate interlaced circuits sharing common fans. With five control modes, each of which offer four control types the KE2 Condenser Fan control can work in most applications, and the controller is California Title 24 compliant. Several of the control methods allow for floating head pressure.

The KE2 Condenser Panel includes the controller mounted in UL-508 panel, with 0-10VDC output to control a VFD, variable speed EC motors, or relays to pilot contactors for 3 fans or 3 banks of fans when staging fixed speed fans.

BENEFITS SUMMARY

- FIVE CONTROL MODES:**
 - Fixed (Head) Pressure
 - Saturated Temp to Ambient Air Temp
 - Subcooling (drop leg temperature)
 - Condenser Liquid Temp to Ambient Air Temp
 - Condenser Inlet to Condenser Outlet Temp
- FOUR CONTROL TYPES:**
 - Stage Fixed Speed Fans
 - VFD
 - EC Motors
 - EC Motors w/Fixed Speed Motors
- Alarm notification text/email.
- Remote monitoring & system control.
- Onboard communication-TCP/IP and easily connected KE2 SmartAccess.
- Select from many common refrigerants.
- Automatic split mode based on ambient and load. Manual split mode based on digital input.
- Can control 12VDC bipolar stepper valve to act as holdback valve to maintain minimum head pressure.

Controller Only – pn 21543
 KE2 Condenser Fan Control (board only)

KE2 Condenser Fan Control Panel (3 stages) – pn 21963	
KE2 Condenser Fan Control	pn 21543
KE2 Basic Display w/ 18" Cable	pn 21232
Snaptrack	pn 21415
0-500 psig pressure transducer, 40' lead	pn 20200
(2) Standard Temp Sensors, black, 40' lead	pn 20712
High Temperature Sensor, white, 15' lead	pn 21230
System off/override switch, lead	pn 21934

Accessories	
Pressure Transducers	
0-500 psig, 10 ft. lead - head pressure	pn 20202
0-500 psig, 40 ft. lead - discharge pressure	pn 20712
Temperature Sensors	
High temp sensor for discharge, 15 ft.	pn 21230
Standard temp sensor for all other temp inputs, 10 ft.	pn 20199
Standard temp sensor for all other temp inputs, 40 ft.	pn 20200
Replacement Relays	
Replacement Form C Relay for Main Board	pn 22200
Replacement Fuses	
Incoming power fuse for Main Board	pn 21375

Literature



Accessories & Replacement Parts

Buzzer & Light 120VAC/DC – pn 20973

Buzzer & Light 230VAC/DC – pn 21294

Buzzer & Light 24VAC/DC – pn 22300

22 mm, 25 mA audible (80dB at 4 in. /10 cm) buzzer annunciator with non-replaceable LED indicator.



Connector 2-pin – pn 20914

Connector 3-pin – pn 20915

Connector 5-pin – pn 20916

For use with the KE2 Evaporator Efficiency, KE2 Evap-RE, and KE2 Controlled Environment.



Door Switch – pn 20543

Designed for high traffic. Reed switch hermetically sealed in PVC shock absorber, enclosed in solid aluminum housing. Wires in 36 inch stainless steel armored cable. Adjustable L-shaped bracket, universal mounting, and greater pulling power.

- Contact - 22AWG 36 in. leads
- Contact Rating 10 VA
- Contact Type - Normally Open
- Max. Switching Current .4 Amp
- Breakdown Voltage - 250 VDC
- Operating Gap 2 in.
- Temperature Range 32°F to 120°F (0°C to 49°C)



Flag Quick Disconnects (50 pack) – pn 20640

90° Insulated, 16-14 AWG
 Ideal for connections with limited space.



Fuses (Sold in packs of 5 - part number is for 5 pack)

- ½ Amp** pn 20699 – 250V, 0.5A Time Delay Glass; Replacement fuses for KE2 Evap, KE2 Evap-RE and KE2 Controlled Environment
- 1 Amp** pn 21375 – 250V, 1.0A Time Delay Ceramic; Replacement fuses for Main Board of KE2 Evap-OEM, KE2 Evap 2 OEM, KE2 Compressor Sequencer OEM, KE2 Condenser Fan, KE2 Combo Display and Aux Relay Board
- 3 Amp** pn 21029 – 250V, 3.0A Fast Acting Ceramic; Replacement LLS fuses for the KE2 Terminal Board
- 5 Amp** pn 21628 – 250V, 5.0A Time Delay Glass, Replacement fuse for the relays on the Aux Relay Board
- 12 Amp** pn 21031 – 250V, 12A Time Delay Ceramic; Replacement fan fuses for the KE2 Terminal Board
- 20 Amp** pn 21030 – 250V, 20A Fast Acting Ceramic; Replacement defrost fuses for the KE2 Terminal Board
- 2.5 Amp, 5 Amp, 8 Amp** pn 22195 – 250V 20 mm x 5 mm fuses for the KE2 Evap-RE2, KE2 Evap-RE3, KE2 Case Control, and KE2 Case Control 2



KE2 Evap-RE2 Replacement Kit - pn 22338

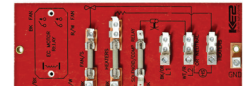
For replacing the KE2 Evap-RE2 controller in an existing panel. The kit contains the KE2 Evap-RE3 controller, a display cable, and the new display. Replace both the KE2 Evap-RE2 controller and the display.

KE2 RSV - SC Magnet Tool - pn 22099

Simple tool to manually open and close the KE2 RSV valves for troubleshooting or service. Not usable with the original RSV-400, RSV-550, and RSV-650 (may use with RSV2-400, RSV2-550, and RSV2-650).

KE2 Terminal Board – pn 20996

Standardizes the wiring for every install. Board is marked with well known symbols for the fan, heaters, and LLS, making future diagnostics instantly recognizable. Built in fuse on the terminal board protect every relay on the controller from power surges. Board has mounting position for an EC Motor Relay. (Relay sold separately.)



Mounting Box - KE2 Evap – pn 20687

40 mil embossed aluminum, box measures 12.3 x 6.4 x 2.0 inches and includes the necessary hardware to mount the box and controller. Provides a stationary location to attach conduit. Sized to accommodate the controller's wiring and service loops. Stamped aluminum blends into the refrigeration environment - clean appearance to the finished install.



Mounting Box with Wire Harness

Use with the KE2 Evaporator Efficiency.

Mounting Box - KE2 Combo Display - pn 22146

40 mil embossed aluminum, box measures 14.75 x 3.5 x 2 inches (375 x 89 x 51 mm) and includes the necessary hardware to mount the KE2 Combo Display to a wall, and provides a stationary location to attach conduit. Stamped aluminum blends into the refrigeration environment - clean appearance to the finished install.



Use with KE2 Combo Display.

Mounting Box - KE2 Temp + Wi-Fi - 22160

Simplifies installation and service of the KE2 Temp + Wi-Fi. Heavy-duty plastic enclosure with rubber gasket ensure tight seal. Sized to accommodate the controller's wiring and service loops, providing clean professional appearance to the install.



Pressure Transducers

- 0 to 150 psia**
 - 10 ft. lead pn 20201
 - 40 ft. lead pn 20204
- 0 to 300 psig**
 - 10 ft. lead pn 20208
 - 40 ft. lead pn 20711
- 0 to 500 psig**
 - 10 ft. lead pn 20202
 - 40 ft. lead pn 20712
- 0 to 750 psig**
 - 10 ft. lead pn 21872
 - 40 ft. lead pn 21873
- 0 to 1000 psig**
 - 10 ft. lead pn 21671
 - 40 ft. lead pn 21672



RDS Refrigerant Leak Sensors

- RDS Leak Sensor Kit - Contains RDS Leak Sensor Adr. 1, RDS Leak Sensor Adr. 2, 18 in. cable, and 20 ft. cable. - pn 22356
- RDS Leak Sensor for R-454A/454C/455A (g) Address 1 – pn 22352
- RDS Leak Sensor for R-454A/454C/455A (r) Address 2 – pn 22353
- RDS Leak Sensor for R-454A/454C/455A (w) Address 3 – pn 22354
- RDS Sensor Cable 18 in. cable – pn 22357
- RDS Sensor Cable 3 ft. cable – pn 22358
- RDS Sensor Cable 6 ft. cable – pn 22359
- RDS Sensor Cable 20 ft. cable – pn 22360

Relay - Digital Switch Relay – pn 21032

This relay is required for the 8th stage/output on the Aux Relay Board when used with the KE2 Comp. Seq. OEM.

- 15A resistive/ 10A inductive load rated contacts @110V
- 12 VDC coil can be connected directly to the Aux Relay Board
- Used for controlling external compressor contactor, unloader, master LLS or Hot Gas Defrost relay
- Comes with DIN rail mountable base



Relay - Fan Motor Relays

The Fan Motor Relays are designed to protect the controller's onboard relays from transient voltages, back EMF, and motor burnouts.

120VAC, Relay Only – pn 21469

240VAC, Relay Only – pn 21470



Relay - Fan Motor Relay Kits - Mechanical

Includes fan motor relay or relays, wire harness, and screws to easily install on the KE2 Terminal Board.

- 120VAC & 240VAC Relay Kit pn 21409
- 120VAC Relay Kit pn 21824
- 240VAC Relay Kit pn 21823

Use with the KE2 Evaporator Efficiency, KE2 Low Temp, and KE2 Adaptive.

Relay - Solid State (N.O.) – pn 21304

Use with KE2 Compressor Sequencer OEM to pilot the bypass valve for a digital scroll compressor. Use with KE2 Evap, KE2 Evap 2, KE2 Evap OEM, KE2 Evap 2 OEM KE2 Evap-RE2 to pilot PWM valves. Can also be used to pilot a mechanical relay to signal a BMS or security system via a dry contact.



Relay - Solid State (N.C.) – pn 22005

Use with KE2 Evap OEM or KE2 Evap 2 as an alarm output for a buzzer, siren, strobe etc. Can also be used to pilot a mechanical relay to signal a BMS or security system via a dry contact.

Sensor - Humidity Sensor – pn 20651

Pre-configured and pre-wired with a 40 ft. lead. For use with the KE2 Humidity Control auxiliary board for the KE2 Evap OEM controller.

If sensor is located more than 40 ft. from the controller, cable can be extended to 100 ft. using 18/3 stranded, shielded cable.



Sensor Clips - Coil

- 3/8 in. circuit tube – pn 20963
- 1/2 in. circuit tube – pn 20964
- 5/8 in. circuit tube – pn 20965

Sensor sold separately.



For widely spaced evaporator fins. Rather than pressing fins together to hold the sensor bulb, bulb inserts in the spring, which then clips to the evaporator circuit tube.

Sensor Clips - Suction Line Temperature

- 1/2 in. suction line - 100 pack – pn 21225
- 5/8 in. suction line - 100 pack – pn 21226
- 7/8 in. suction line - 100 pack – pn 21227
- 1-1/8 in. suction line - 100 pack – pn 21228



Kit (1) of each 1/2", 5/8", 7/8", 1-1/8" – pn 21229

Securely fasten the suction temperature sensor to the suction line.

Sensor Mount for Air Sensor

(sold in packs of 20, part number is for one pack of 20 – pn 20606)
Replacement air sensor mounts. Holds sensor 8-12 inches from the evaporator.



Sensors - Temperature

- 2K Ω NTC at 77°F
- Operating range -60°F to 150°F (-51°C to 65°C)
- Quick response & precise thermal tracking
- IP67 moisture protection
- 10,000 freeze/thaw thermal cycles



Black Sensors

Black – 45 in. lead pn 20715

Black – 10 ft. lead pn 20199

Black – 40 ft. lead pn 20200

Individual Color Sensors

Yellow – 10 ft. lead pn 21795

Green – 10 ft. lead pn 21793

Blue – 10 ft. lead pn 21794

3-Pack of Color Sensors

Yellow, Green, Blue – 15 ft. lead pn 21151

Yellow, Green, Blue – 40 ft. lead pn 21066

High Temperature Sensor

- 10K Ω NTC at 77°F
- Operating range -40°F to 300°F (-40°C to 150°C)
- Quick response & precise thermal tracking
- IP67 moisture protection

White – 15 ft. lead pn 21230

Literature



Sensors - KE2- Wireless Door Sensor - pn 22115

Temperature Range -40 to 140 °F (-40 to 60°C)
The KE2 Wireless Door Sensor allows local and remote monitoring of door openings and closings. Temperature



Sensors - KE2- Wireless Temperature Sensors

The wireless signal and light-weight design mean installation takes just seconds. 3-year battery life ensures low maintenance and extended performance. The sensor can be used in conjunction with the KE2-EM, or standalone as a display, alarming device, and data recorder, able to be accessed via the KE2 Service Tool App to change setpoints and download the built-in datalog.

KE2 Wireless Temp + Humidity Sensor - pn 22238

Temperature Range -22 to 176°F (-30 to 80 °C)

KE2- Wireless X-Temp + Humidity Sensor - pn 22239

Temperature Range -238 to 392°F (-150 to 200°C)

System Off Switch – pn 21934

Practice excellence in refrigeration system stewardship by utilizing the digital input to turn the System Off, without power cycling the system. Comes with 15" colored lead wires, and grommet that will fit in controller knockouts. For use with all controllers that have System Off as a digital input/auxiliary input option.



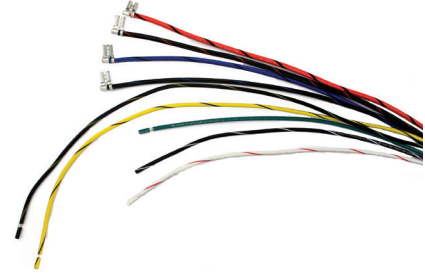
Wire Harness - 10 ft. – pn 20736

Wire Harness - 25 ft. – pn 20670

Wire Harness - 40 ft. – pn 20737

Color coded wires, with connectors corresponding to the controller's inputs, simplify installation of KE2 Therm controllers. This reduces on site wire preparation time, and eliminates the need to stock multiple wire gauges, colors and connectors. Stranded wires used in the harness are flexible, and easier to pull and route.

Function	Color		Gauge	Wire Ends
Power	black with white stripe	L1	16 AWG	stripped and retained
Power	white with red stripe	L2/neutral	16 AWG	stripped and retained
Ground	green		16 AWG	stripped and retained
Defrost Heat	orange with black stripe		12 AWG	flag connectors
Defrost Heat	black with orange stripe	L1	12 AWG	flag connectors
Fans	blue with black stripe		14 AWG	flag connectors
Fans	black with blue stripe	L1	14 AWG	flag connectors
LLS/Compressor	yellow with black stripe		16 AWG	stripped and retained
LLS/Compressor	black with yellow stripe	L1	16 AWG	stripped and retained



Discontinued Controllers & Accessories

KE2 Case Control

Discontinued, the KE2 Case Control 2 may be used for replacement.



KE2 Evap-RE

For replacement on existing installs only (PN 21631). For new installs, please see the KE2 Evap-RE3 Contactor Panel.



KE2 Compressor Sequencer

Discontinued, see the KE2 Compressor Panel and KE2 Compressor Sequencer OEM for retrofit of existing installs and new installs.



KE2 Evap-RE2

Discontinued, for replacement on existing installs, the KE2 Evap-RE3 may be used for replacement. The display must also be replaced.



See PN 22338 replacement kit, which includes the KE2 Evap-RE3 controller, the display cable, and the new display.

KE2 Controlled Environment

For replacement on existing installs only (PN 20894). For new installs, please see the KE2 Environment panel.



KE2 LDA, KE2-EM35

Discontinued, the KE2-EM Plus 2 may be used for replacement.



KE2 Evap OEM

Discontinued, the KE2 Evap 2 OEM may be used for replacement.



KE2 Wi-Fi Service Tool

Discontinued, see the KE2 Service Tool App, which turns your smartphone or tablet into a personal service tool. When used with an approved Ethernet dongle, connect your Apple or Android smart device directly to KE2 Therm Ethernet controllers.



Electronic Expansion Valves

KE2 Refrigeration Stepper Valve (KE2 RSV)

For use with R-22, R-134a, R-422D, R-422A, R-407C, R-407A, R-507, R-404A, R-513A, R-450A, R-449A, R-448A, R-744 (sub-critical) R-410A, R-407F, R-409A, R-408A, R-438A, R-452A, R-458A, R-290, R-32, 454A, 454C, 455A

The KE2 Therm RSV electric expansion valve is a stepper motor actuated valve, designed for refrigeration applications. The RSV uses a unipolar stepper motor that provides high precision control. Upgrading your system with an RSV and KE2 Therm controller will increase system efficiency, provide the best, most consistent superheat control, and eliminate the headache of adjusting superheat. Nominal capacities from 1 to 19 tons in R-404A.

BENEFITS SUMMARY

- High precision bi-directional control
- 4-phase, unipolar stepper motor
- Neodymium-iron-boron magnet rotor
- 500 steps for high resolution control
- 30 to 90 per second step rate
- External, replaceable coil – 5-wire
- Low power consumption

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.

Valve Body	Part #	Connections - Inches ODF Inlet x Outlet	Lead Length
RSV2-400	22226	5/8 x 7/8	10 ft.
RSV2-400	22227	5/8 x 7/8	40 ft.
RSV2-550	22228	5/8 x 7/8	10 ft.
RSV2-550	22229	5/8 x 7/8	40 ft.
RSV2-650	22230	5/8 x 7/8	10 ft.
RSV2-650	22231	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-SC Magnet Tool	22099	Manually open/close valves for troubleshooting & service.	

KE2 EEV Retrofit Kits

The KE2 Temp + Valve controller in combination with the KE2 RSV handle a much wider range of operating conditions, for optimal control even during low head pressures/low ambient conditions. The KE2 EEV Retrofit Kits include the components you need to easily retrofit an evaporator with an EEV for use with new energy efficient condensing units.

- No transformer necessary for 120V or 208-240V applications
- Replaces timeclock for air defrost
- No complicated programming
- No complicated selection
- Replaces thermostat

Retrofit Kit	Valve	R-404A	R-448A, R-449A, R-407C, R-407A
PN 21844	RSV-100 3/8" X 1/2" ODF w. 10'	1/10 to 1/3	1/10 to 1/2 ton
PN 21744	RSV-130 3/8" x 1/2" ODF w. 10'	1/4 to 3/4 ton	1/4 to 1 ton
PN 21745	RSV-220 3/8" x 1/2" ODF w. 10'	3/4 to 1-1/2 ton	3/4 to 2-1/4 tons
PN 21746	RSV-320 3/8" x 1/2" ODF w. 10'	1-1/2 to 2 tons	1-1/2 to 3-1/4 tons
PN 21821	RSV2-400 5/8" x 7/8" ODF w. 10'	2 to 4-1/2 tons	3 to 7 tons
PN 21845	RSV2-550 5/8" x 7/8" ODF w. 10'	4 to 7-1/2 tons	6-1/2 to 12 tons
PN 21846	RSV2-650 5/8" X 7/8" ODF w. 10'	6-1/2 to 11-1/2 tons	10 to 18 tons

Valve Selection Program



Literature



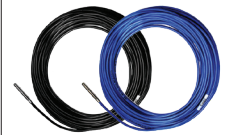
KE2 Temp + Valve



RSV



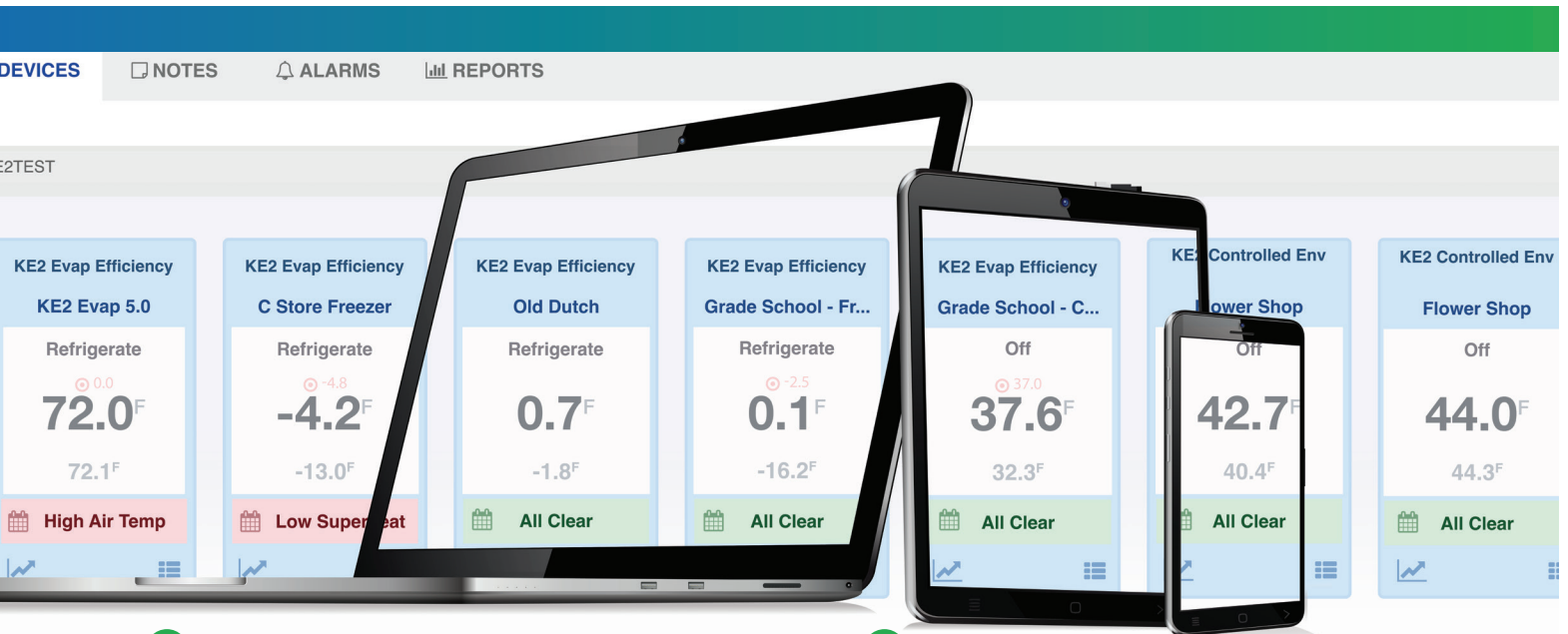
10 ft. temp sensors (2)



Pressure Transducer with 10 ft. cable



Peace of Mind Refrigeration



Energy usage is reduced with adaptive refrigeration control



Real-time monitoring of system operation allows for proactive, actionable alerts



Reduction of nuisance service calls and multiple service trips



Reduced product loss for equipment owners with real-time alerts



Remote access helps dealing with industry shortage of service techs



Ability to provide immediate temperature logs to meet regulatory needs