



KwikKool™

PORTABLE COOLING SYSTEMS

KPO Operation Manual



KPO
INDOOR/OUTDOOR SERIES

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Before installing and using your KwiKool Portable Cooling System, read this manual carefully for instructions and proper usage and all safeguards.

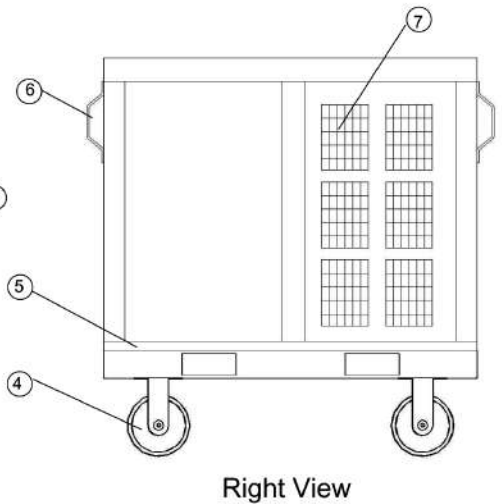
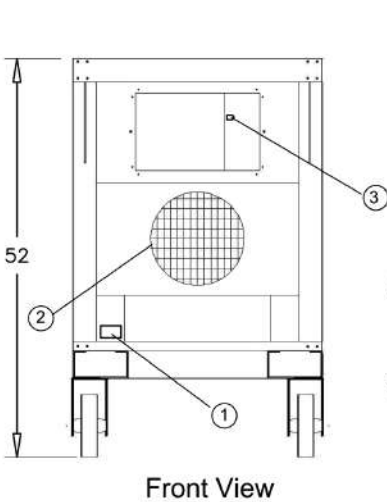
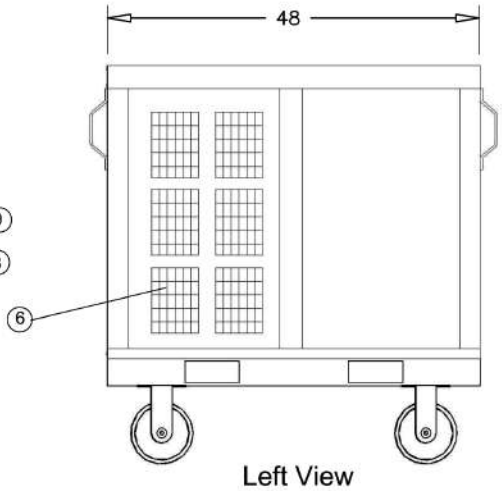
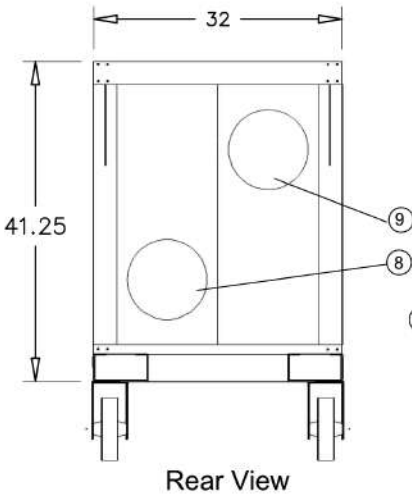
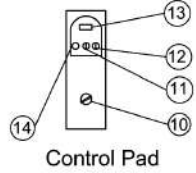
This manual should be retained for future reference.

I / Unit Components

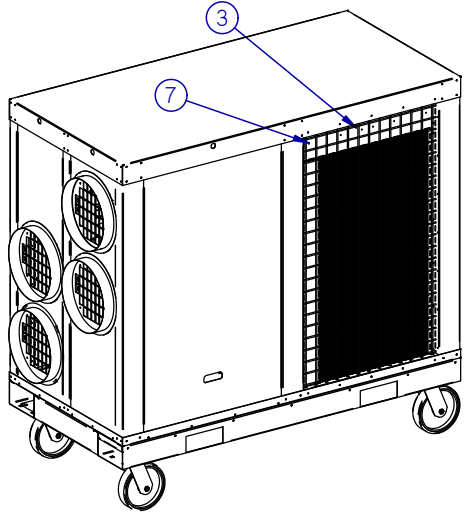
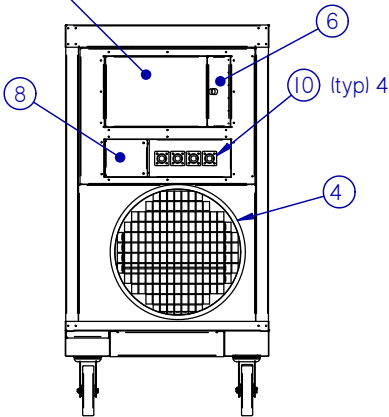
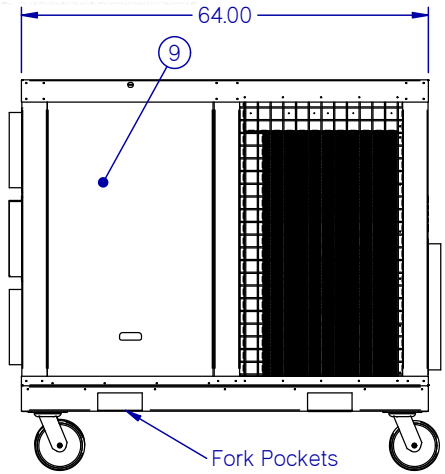
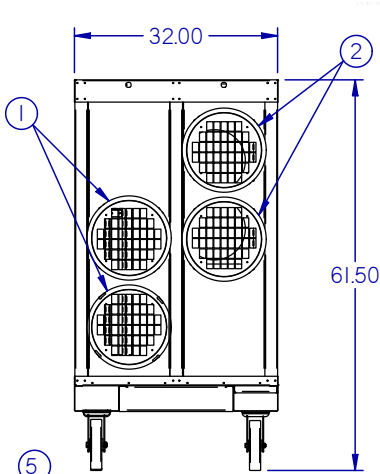
5-Ton Model

Legend

- | | |
|---|-----------------------|
| 1 Power cord Inlet (10' length) | 10 On/Off Switch |
| 2 Condenser Hot Air Exhaust (12" Dia. Flange) | 11 Temp. Up Control |
| 3 Control Panel Door | 12 Temp. Down Control |
| 4 Detachable Wheel (8" Dia.) | 13 Display |
| 5 Skid Mounted | 14 Temp. Set Control |
| 6 Handle | |
| 7 Condenser Intake | |
| 8 Return Air (12" Dia. Flange) | |
| 9 Cold Air Supply (12" Dia. Flange) | |



12-Ton Model



KPO12

LEGEND

- | | |
|------------------------|------------------------|
| 1 Cold Air Return | 6 Control Panel Access |
| 2 Cold Air Supply | 7 Condensate Nipple |
| 3 Condenser Air Inlet | 8 Breaker Access |
| 4 Condenser Air Outlet | 9 Access Door |
| 5 Electrical panel | 10 Camlok Connections |



ETL LISTED CONFORMS TO ANSI/UL1995
CERTIFIED TO CAN/CSA 22.2 NO 235

II / Assembly

- A. Connecting the Casters** - Lift the unit carefully with a forklift using the built in fork pockets; **DO NOT TILT** the unit to bolt the casters to the base. Use all bolts and nuts included, 4 for each caster and tighten well.
- B. Install Flanges** - All flanges are pre-drilled and measured to fit on your KPO. Line up the holes in the flanges to the threaded female insert on the cabinet and install included fasteners, tighten well. Loose flanges will leak air and can diminish performance.
- C. Installation Site** - Preview your installation site, **DO NOT** place the KPO in the space that you are cooling. Your KPO is designed to be placed outside the conditioned space and ducted in. Before moving your KPO into place verify the following. The direction you would like the supply and return air to go (cooling), the direction you would like the hot air exhaust to go (heat removal), where will the condenser make-up air coming from, where is your power supply located and where is the condensate water pumping too? Position the unit based on these guidelines for best results. **NOTE: Leave at least 5' of space open around the make-up air inlets for the condenser to ensure proper operation.**

III / Power Connections

Verify the source power, phase and breaker size is compatible with the units serial plate information, if you are not sure contact a licensed electrician. The KPO 5-ton comes from the factory with an 8' power cable sized to fit the electrical specifications of the units' electrical requirement and has no male receptacle attached. The KPO 12-ton comes without a power cable and has 4 male cam lock connectors ready to receive the corresponding female cam locks, the female cam locks, or complete cord line set can be purchased separately with the proper cable size attached from the factory in various lengths. Users of 208/320 volt units will be required to set a switch located in the units' control compartment to select incoming voltage: the default selection from the factory is 208 volt. 230 volt requires the switch to be changed.

IV / Operational Safeguards

Read the following safeguards carefully before installing your KPO KwiKool:

- A.** Do not operate or install your KwiKool unit in a potentially explosive, combustible, or corrosive gas atmosphere.
- B.** Keep your KwiKool system away from flammable materials and open flame.
- C.** To avoid electrical shock keep your KwiKool system away from direct contacts with water and any liquids. Do not touch your system with wet hands.
- D.** To insure your KwiKool system is stable, the ground on which the system is to be placed should be level, free of vibration and strong enough to support the weight of your KwiKool model.
- E.** Do not move the system while it is operating. Before moving the system, first turn to OFF then unplug the system from the power source. Then unlock the casters.

- F. Do not tilt or overturn your unit, since this could damage the compressor.
- G. Do not place objects on top of your unit.
- H. Do not insert your hand or any other object into the cold-air supply chutes.
- I. Do not operate your KwiKool system with its service doors open.
- J. If your KwiKool system makes abnormal noises or vibrations, call KwiKool at: 1-800-594-5665.

V / Installation

- A. Install Condensate Line** - The KPO series comes equipped with a high lift condensate pump, the connection is a 1/4" outer diameter barbed fitting located on the left side upper portion of the condenser inlet on the 12-ton models as you are facing the control panel and next to the power cable connection to the cabinet on the 5-ton models. It is important to connect the condensate line prior to hooking up the electrical power as the condensate pump is live when power is engaged. **Collected water in the pumps reservoir could be ejected when powered up.**
- B. Install Cold-Air Supply Flex Duct** - The KPO line **requires** a duct to direct the cooling into the conditioned space, this is done with a 12" diameter duct. As you face the unit opposite the control end, the supply is on your right side. Clamp supply ducting onto the 12" flange(s), and route the duct to your desired location. The supply air works best directed to the inlets of your equipment or directly on the area to be cooled.
- C. Install Cold-Air Return Flex Duct** - Your KPO portable air conditioner works at its best when the return air return is directly in the area of highest heat load, this placement allows the unit to return the heat load directly to the evaporator and not to linger in the conditioned space. This is also done with 12" diameter duct. As you face the unit opposite the control end, the return is on your left side. Clamp return ducting onto the 12" flange(s), and route the duct to your desired location. **NOTE: The return air duct is pulling in air and can try to collapse while operating, avoid this condition by pulling all of the slack out of the duct and anchoring it to a fixed object. Duct collapse is the number one cause of evaporator coil freeze or low performance.** *NOTE: KPO models utilize high static blowers. The KPO systems must have a minimum of 25' ducting for each inlet and outlet. KPO 12-ton must have 100 total feet of duct (minimum 2 ducts). KPO 5-ton must have 50' of total ducting (minimum 1 duct). For example if using a KPO 12-ton you need 100' of duct. You can use 4-25' pieces on any outlet. If you are not sure about your application, call us at: 1-800-KWIKOOL. **NOTE: Customers using this unit only to blow cold air and that are not trying to cool a space may not need to connect the return air duct. However the KPO line requires a minimum amount of duct to operate. If you are operating this unit with no ducting, you will need to damper the return air by at least 50%. Allowing the KPO to operate without duct or without dampening the return air could cause condensate water leakage, diminished temperature difference, and/or evaporator motor malfunction.

- D. Install Flex Duct (hot-air discharge)** - You will need to direct the hot air discharge away from your conditioned space and away from the condenser air intakes. This is especially true when the KPO is used in a confined space or an indoor closed space. This is completed with a 20" diameter duct for the 12-ton and a 12" diameter duct for the 5-ton. Clamp the duct onto the flange on the control side of the KPO and route to your desired location (Visit www.kwikool.com for specific model specifications on maximum duct length). **NOTE: It may not be necessary to connect a hot-air discharge duct if you are using the KPO outdoors and ducting the cooling into a space. When used indoors or in a confined space and the hot air exhaust is ducted out, the KPO must have a supply of make-up air for the condenser. The condenser make-up air cannot be ducted into the KPO, and has to come from the surrounding space. Make sure you have adequate fresh air supply or the unit will shut down to protect the compressor from catastrophic failure.**
- E. Apply Electrical Power** - When power is supplied to the unit, the controller will become operational. KPO 12-ton users will have to place the units built in breaker to the ON position to engage the controller. For units equipped with a Phase Monitor (all 12-ton KPOs and KPO 5-ton 3 Phase models), the unit will display a red light alarm for 5 seconds, then clear when the microprocessor in the Phase Monitor "boots up", this is a normal condition. For units with a Phase Monitor, the most common reason the fault light will not clear on initial start up is incorrect phasing. This condition is easily corrected. If the red light fails to clear in 5 seconds a qualified personal may turn the source power off and exchange any of the 3 line voltage wires with the other. **DO NOT SWAP THE GREEN WIRE.** Power the unit back up and wait for the fault red light to clear for 5 seconds and then proceed to the next step. If the fault light fails to clear after changing the phase, turn the power off at the source, return the wires back to the original configuration and refer to the Troubleshooting Guide (section IX) of this manual.
- F. Set your Controller** - The controller of your KPO is factory set to start cooling above 72 degrees F and will be displaying the current room temperature; it is in cooling mode and is set to come on within a 2 degrees temperature differential. If it is necessary to alter these settings, the set routine is as follows:
- Press set. F is displayed, use the up or down arrow to choose Celsius and Fahrenheit, the letter C is then displayed.
 - Press set again, the current set point is displayed, use the up or down arrow to change the temperature that the unit will cycle on or off at. **NOTE:** Lowering or raising this temperature setting will not change the actual temperature of the supply air, for best results always set the unit to a realistic temperature that it can maintain.
 - Press set again, the number 2 is displayed, this is the temperature differential, changing this setting up or down is not recommended and only varies the range that the temperature must be when cycling, and under some conditions may not allow the unit to cycle on at all if adjusted out of the factory range.
 - Pressing set again, and C1 displays do not adjust this setting, this is the mode setting and moving the control from this setting will place the unit in H1 **which is heat mode and not the abbreviation for the word HIGH and not used or available in KPO models. Your KPO will not operate in this mode. H1 DOES NOT SIGNIFY HI..IT IS HEAT 1 - THIS MUST BE SET TO C1.**

- e. Press set again, the unit displays the room temperature. This is the default display and the control will always reset to this display automatically. This completes the "set" cycle routine.

G. Turn ON the System - Using the ON/OFF selector switch select to ON. The evaporator fan starts and a 3 minute delay activates. This prevents the compressor short cycling. After the time delay reaches 3 minutes the compressor starts and cooling will begin. After the system has built up enough pressure the hot air exhaust fan will start to ramp up, it is normal for this fan to delay in starting and also normal for it to slow down and speed up during the operating process. **NOTE: The evaporator fan is on continuously when the selector switch is in the ON position.**

H. Cycling Off - After the system has reached its set point it will automatically cycle off or you may choose to turn the system OFF by moving the selector switch to the OFF position. If the unit cycles off or is turned off, the 3 minutes time delay will always activate when the system calls for cooling. When cycling off by making the set point, the evaporator fan stays on and cooling will begin automatically when the temperature rises above the set point. Turning the system OFF manually will turn the evaporator fan off and not allow the system to restart until the selector switch is set to ON and the return air temperature is above the set point.

I. Installation Site - Preview your installation site, **DO NOT** place the KPO in the space that you are cooling. Your KPO is designed to be placed outside the conditioned space and ducted in. Before moving your KPO into place verify the following. The direction you would like the supply and return air to go (cooling), the direction you would like the hot air exhaust to go (heat removal), where will the condenser make-up air coming from, where is your power supply located and where is the condensate water pumping too? Position the unit based on these guidelines for best results. **NOTE:** Leave at least 5' of space open around the make-up air inlets for the condenser to ensure proper operation.

VI / Built in Safeguards

A. Time Delay - Protects your KwiKool from potential damage by delaying the compressor from starting before the pressures in the mechanical system equalizes. Always activates when your KwiKool cycles off, is turned off, or power is lost and then restored.

B. High Pressure Alarm - Protects your KwiKool from potential damage to the mechanical system by shutting down and alerting operators of a condition such as stopped or slowed air flow over the condenser coil, make-up air temperature above operating range or mechanical failure. Your KwiKool will sound an audio alarm only with no fault light. To resume operation the system requires a manual reset after corrective action is taken, the reset switch is located in the service door access on the compressor discharge line. Push in to reset, if activated you will feel a click.

C. Low Pressure Alarm - Protects your KwiKool from potential damage to the mechanical system by shutting down and alerting operators of the condition. This safety activates when pressure below 20 PSI are detected in the mechanical system. Your unit will sound an audible alarm only with no fault light. Call KwiKool at 1-800-594-5665 if the alarm is present on start up. Automatic reset upon correction of the low pressure condition.

- D. Automatic Restart** - In the event of a power loss your KwiKool resumes operation when the power is restored if in the ON position. All operational functions are preserved in the memory of the control.
- E. Condensate Pump & High Level Alarm** - KPO systems are factory equipped with an internal high lift condensate pump. KwiKool condensate pumps are able to pump the condensation collected in the reservoir of the pump to a drain or other area approved for the discharge water by attaching 1/4" I.D. tubing to the 1/4" O.D. barbed condensate outlet, located as you are facing the control on the left upper portion of the condenser inlet on the 12-ton models and next to the power cable connection to the cabinet on 5-ton models. KwiKool condensate pumps are able to pump 20' vertical and are equipped with a pump safety cut-off that prevents accidental water overflow by shutting your unit down and alerting operators with an audible alarm only with a no fault light. Call KwiKool at 1-800-594-5665 if this alarm is present on start up. The most common reason for this alarm to activate during operation is restricted water flow through the discharge tubing or excessive discharge line connected to the system. Automatic reset upon correction of the condensate flow.
- F. Power/Phase Monitor** - Standard on all 3-Phase KPO models. The power monitor samples the power supply and shuts down and alerts operators with an alarm and red fault light displays in the event of low or high voltage, incorrect voltage, incorrect phasing or motor fault. The monitor is factory set to reset automatically upon adjustment of the monitor or correction of the issue indicated on the monitor. The monitor is located in the electrical control panel of your KwiKool unit and displays the reason for activation. See the Troubleshooting Guide (section X) in this manual for adjustment detail if your KwiKool Phase Monitor is alarming and displaying fault lights.
- G. VFD (Variable Frequency Drive)** - Used on KPO systems to optimize the operation of the condenser fan in low ambient conditions by slowing down and speeding up the condenser blower. This helps to maintain the best pressure needed to operate in your current environment. Your VFD is located in the cold-air return air compartment for the 12-Ton and in the condenser access compartment on the 5-Ton and displays the current operating frequency or any error message needed for fault diagnosis.

VII / Application Requirements

- A. Air Temperature Requirements** - The environmental requirements of your KwiKool unit at the installation site are 60 to 110 degrees F for the condenser make-up air located on each side of the unit. **If the unit is operated in an environment above 110 F the high pressure switch may trip stopping the unit's compressor, or you will notice diminished performance.** The High Pressure Switch is manually reset, the reset switch is located in the service compartment, Reset is accomplished by pressing the button on the switch located on the compressor discharge line. If the switch has tripped, you will feel a distinct click upon reset. **Standard KwiKool KPO models are not designed to operate at temperatures below 60 degrees F. on the cooling side.** Temperatures below 60 degrees F will cause evaporator coil freezing.
- B. Capacity & Temperature Settings** - Sizing of our units are based on matching capacity to a specific heat load while maintaining a 72 degree F temperature. In order to reach temperatures below 72 degrees F, the unit must have extra capacity. **Therefore, we recommend that you do not set the temperature set point below 72 degrees F,**

unless you have excess cooling capacity beyond your heat load, since this may cause the unit's evaporator coil to freeze up.

- C. Positioning of Unit** - The unit should be positioned as close to the heat generating equipment as possible with the return air duct directly in the area of highest heat load. Do not block the return air duct of the unit, since this will cause low performance and or evaporator coil freezing. Place your KwiKool system on a level surface to ensure proper condensate water flow and be sure the surface is able to support the weight of your KwiKool.

VIII / Maintenance

- A. Air Filters** - Your KwiKool comes from the factory with filters installed on the evaporator inlet to prevent dust and debris from entering the system and circulating in the conditioned space, factory installed filters are a disposable type and must be periodically checked and replaced based on the air quality of your conditioned space. Failure to maintain the filters will cause restricted air flow and low overall unit performance. The air filters are located in the supply air return; remove the return air panel by turning the slotted lock fastener to the horizontal position and lift up panel to replace the filters.
- B. Condenser Drive Belt (KPO 12-ton only)** - Your KwiKool moves air over the condenser coil to remove heat from the conditioned space by way of a motor that drives a blower wheel. This wheel turns by way of a pulley and belt system. Inspect/adjust these belts every 60 days of operation, replace as needed. Failure to maintain the drive belts will cause low performance, high pressure trip or in extreme cases damage to the blower/motor in event of a belt breaking. Located in the condenser access compartment on the control end of your KPO, release the 2 slotted fasteners to give you access to the condenser belts and motor. **NOTE: Adjust the tension on the belts by adjusting the mother base. DO NOT ADJUST THE DRIVE PULLEY.**
- C. Service Ports** - Located in the service access door on the left side as you face the control. This gives service personal a connection point for servicing gauges to monitor the operating pressures of your KwiKool.
- D. Sight Glass**- Located in the condenser access compartment on the control side of your KPO, allows operators and service personal to view the condition of the refrigerant returning to the evaporator coil. Used as a diagnostic tool by qualified personal.

IX / Utilizing your KwiKool System

In contrast to conventional air conditioners, which circulate air conditioning capacity evenly to an entire floor, KwiKool systems are generally used for cooling an area with a high concentration of heat load, usually from electrical or computer equipment. Understanding the capabilities of your KwiKool can help you avoid problems. Your KwiKool system offers an effective affordable solution for many applications. It can also provide spot cooling for workers or process cooling within a large space without the use of condenser ducting, such as a warehouse factory, or production areas. If the system is used in this manner,

the cold air supply must be within 5 feet of the person or equipment being cooled, since the hot ambient air will mix with the cool air very quickly. Your KwiKool system is specifically designed to adapt to today's high tech environments such as telecommunication or computer rooms and is equipped with the necessary controls to maintain those special environments. Call your nearest KwiKool Distributor or 1-800-594-5665 for help or for questions about other applications.

X / Troubleshooting Guide

Fault	Possible Cause	Possible Solution
Red alarm light and audible alarm fails to clear on start up, Phase/Power Monitor and displays "Front Fault Reversal"	Phase/Power Monitor detects phasing issue on 3 phase system or improper power incoming.	Turn OFF power & then swap any line voltage wire with one of the other 2. Reapply power, verify incoming power.
Red alarm light and audible alarm fails to clear on start up, Phase/Power Monitor and displays "Front Under Voltage"	Phase Monitor detects voltage lower than factory setting.	Check system for under voltage cause. Increase percentage of under voltage setting if necessary.
Red alarm light and audible alarm fails to clear on start up, Phase/Power Monitor displays "Front Over Voltage"	Phase/Power Monitor detects voltage higher than factory setting.	Check system for under voltage cause. Increase percentage of under voltage setting if necessary.
System sounds audible alarm only.	A condition exists with the mechanical system involving pressure or condensate flow.	See Advanced Troubleshooting Guide (section XI), or call: 1-800-KwiKool
System starts up but is not cooling.	System is in time out, control is set above room temperature or control is adjusted out of operating parameters.	Wait 3 minutes, review section V/F. Set up control.
System starts up but goes into visual and audible alarm when the compressor starts.	Phase/Power Monitor detects voltage drop.	Observe the Phase/Power Monitor on start for fault lights and adjust accordingly, verify incoming power. If no fault light is present see Advanced Troubleshooting Guide (section XI).

Fault	Possible Cause	Possible Solution
Power is supplied but control is blank.	Low Voltage circuit is not engaged.	On 12-ton models turn on built in breaker, all models verify incoming power to contactor, reset switch on low voltage transformer.
System starts up and cools but hot air exhaust fan speeds up and slows down.	Normal operating condition especially in low temperatures.	No action required, see section VI/G.
Cool air flow is limited, water is dripping from the front of the system.	Supply or return duct is collapsed, blocked or not installed, filters need to be replaced and/or the evaporator coil is freezing as a result of the above.	Verify that supply and return ducts are installed to specifications, remove or add duct as needed, check air filter for blockage. Restart when thawed.
Condensate is not pumping.	Water is below pumping level.	Reservoir fills, Check for line crimping.

XI / Advanced Troubleshooting Guide

Fault	Possible Cause	Possible Solution
System sounds audible alarm only, display.	Mechanical system has detected high water level in the condensate pump.	Inspect condensate pump for overflow and proper operation call KwiKool at: 1-800-594-5665, check condensate line for clog or crimping. Resets automatically upon correction.
	Mechanical system has detected high pressure.	Correct condition with air flow in or out of the condenser, inspect/replace condenser drive belts, check condenser motor for proper operation, check condenser drive (VFD) for trip, reset if needed. The high pressure switch requires manual reset. The pressure switch is located in the service compartment on the compressor discharge line.
	Mechanical system has detected low pressure.	Install service gauges to view pressure readings below 20 PSI. Check for icing on the evaporator coil or low return air temperature. Resets automatically upon correction.
KPO red fault light on control panel is on. Phase Monitor displays lock out. "Back Fault" 2 red lights.	A fault has been detected from one of the unit's motors.	Inspect motor components for faulty or loose connections.
Chatter or hum is heard from the control box while unit is operating.	Incoming source power is poor, low voltage component is faulty	This is not adjustable through the Phase Monitor, check for proper voltage switch selection on 208/230 volt units and correct incoming power.

Fault	Possible Cause	Possible Solution
Evaporator coil is freezing.	Low or restricted air flow. Undersized capacity, unit constantly on, unable to achieve set point. Low return air temperature out of factory specifications. Service door open or off, mechanical system malfunction.	Review duct engineering, direct return air duct to area of highest heat load, replace air filters, adjust set point to allow unit to cycle, add more KwiKool units or capacity, close service compartment door. Install service gauges to view pressures.
Control Displays E1	Appears when up or down key is pressed when not in programming mode.	Operate in program mode. If E1 appears when no keys are pressed.
Control displays E2	Appears when control settings are not properly stored in memory.	Check all settings and correct if necessary.
Control displays EP	Appears when the probe is open, shorted or sensing a temperature that is out of range.	Check to see if the sensed temperature is out of range. If not, check for probe damage by comparing it to a known ambient temperature.
Control displays EE	Appears if the EEPROM data has been corrupted.	Control must be replaced. Call KwiKool at: 1-800-594-5665.
Control displays CL	Appears if calibration mode has been entered.	Remove power to the control for at least 5 seconds. Reapply power and if CL message still appears, control must be replaced. Call us at 1-800-KwiKool
Hot air exhaust fan (condenser fan) stops and the High Pressure Switch trips while the compressor is operating.	Condenser drive has detected a fault with the incoming electrical power or is not receiving an operating signal.	Check condenser motor drive (VFD) for trip, reset if needed. Write down the displayed fault code on the drive and call KwiKool at 1-800-594-5665 if the problem persists.

XII / Phase Monitor

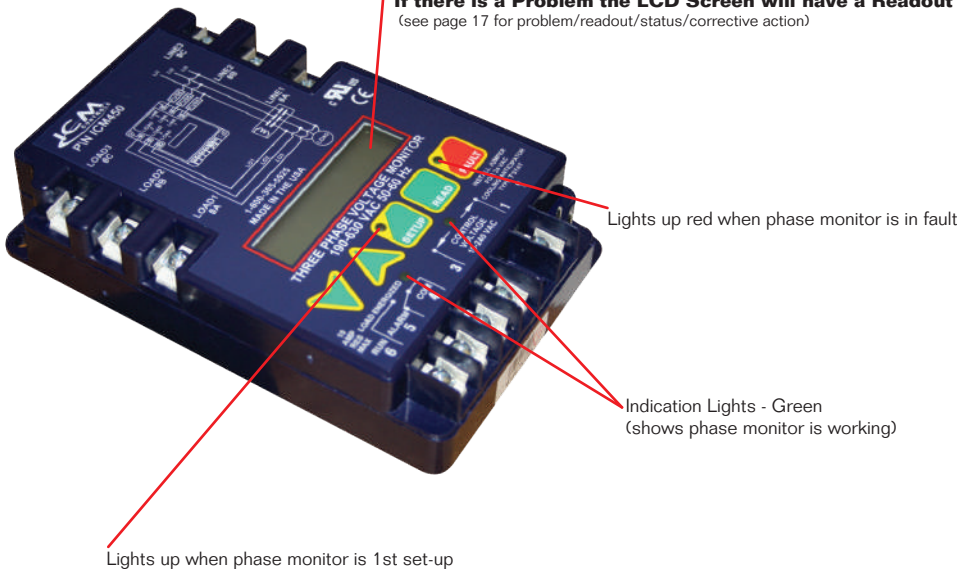
The Phase Monitor is factory installed and is located inside the control Box.
The Phase Monitor can be accessed through the right side service door as you face the unit and removing the cover to the control box.

ONLY ADJUST ARROWS/BUTTONS WHEN MONITOR IS IN FAULT MODE
ADJUSTING AT ANY OTHER TIME WILL DAMAGE SYSTEM AND VOID WARRANTY

LCD Screen displays Voltage.

When in Alarm LCD Screen will display Fault Title
(see page 16 for fault/problem/corrective action)

If there is a Problem the LCD Screen will have a Readout
(see page 17 for problem/readout/status/corrective action)



XIII / Phase Monitor - Fault Conditions

FAULT TITLE	PROBLEM	CORRECTIVE ACTION
Back Phase Loss	Not all three of the phases on that load side are present	Call factory at: 1-800-KWIKOOL (800-594-5665)
Back Phase Rev	Loads 1, 2, or 3 are not in sequence (not 120 phase shifted)	Call factory at: 1-800-KWIKOOL (800-594-5665)
Back Phase Unbalance	A voltage unbalanced between the three load phases exceeds the unbalanced setpoint	Call factory at: 1-800-KWIKOOL (800-594-5665)
Front Over Voltage	Average phase-phase voltage exceeds the maximum percentage	<ol style="list-style-type: none"> 1. Check system for over-voltage cause 2. Increase the percent over-voltage setting if necessary 3. Increase the fault interrogation time if necessary
Front Phase Loss	Not all three of the phases on the line side are present	<ol style="list-style-type: none"> 1. Press and hold the READ button on the phase monitor or use an AC voltmeter to carefully measure all three phase-phase line voltages (example: Line 1→Line 2, Line 2→Line 3, Line 3→Line 1) 2. Repair the missing phase
Front Phase Reversal	Loads 1, 2, or 3 are not in sequence (not 120 phase shifted)	<ol style="list-style-type: none"> 1. Turn OFF all power 2. Swap any 2 phases on the load side of the Monitor only (example: swap load 1 and load 2) 3. Re-apply power
Front Phase Unbalance	A voltage unbalance between the three line phases exceeds the unbalance setpoint	<ol style="list-style-type: none"> 1. Press the READ button to observe the present load voltages. Check system for unbalanced cause 2. Increase the fault interrogation time if necessary 3. Increase the percent unbalance setting if necessary
Front Under Voltage	Average phase-phase voltage is below the minimum percentage	<ol style="list-style-type: none"> 1. Check system for under-voltage cause 2. Increase the percent under-voltage setting if necessary 3. Increase the fault interrogation time if necessary

IX / Phase Monitor - Troubleshooting

PROBLEM	LCD Readout	LCD Status	CORRECTIVE ACTION
Load will not energize	Phase Avgerage	All LEDs Off	Confirm that the control input (terminals 1 & 3) is properly connected and configured
Load will not energize	Phase Avgerage	Load LED Off, Fault LED Blinking	Press FAULT once to observe the current fault; correct the condition of the first fault that appears (see FAULT Conditions, for a list of corrective actions)
Fault LED blinks repeatedly while load is energized	Phase Avgerage	Fault LED Blinking, Load LED On	Indicates there are faults saved in the memory, press FAULT rapidly to scroll through saved faults; to clear the faults, press and hold FAULT for more than 5 seconds
Load will not de-energize when control voltage is OFF	Phase Avgerage	Load LED On, Control LED Off	The control mode setting is OFF; press SETUP to get the control mode. Press \wedge to set the control mode ON
Setup LED is on while load is being energized	Anything other than Phase Avgerage	Setup LED on, Load LED On	To exit the setup mode, press either READ or FAULT
Load will not energize	Reset	Fault LED Blinking	Unit in lockout; maximum number or retries in manual reset mode has been reached; to reset unit, press FAULT and hold for more than 5 seconds
Load turns ON and OFF repeatedly	Readout is Irrelevant	Fault LED Blinking	Fix load side fault; press FAULT to observe condition; the delay on break period may be too short; press SETUP to enter the delay on break mode; press \wedge to lengthen the delay



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