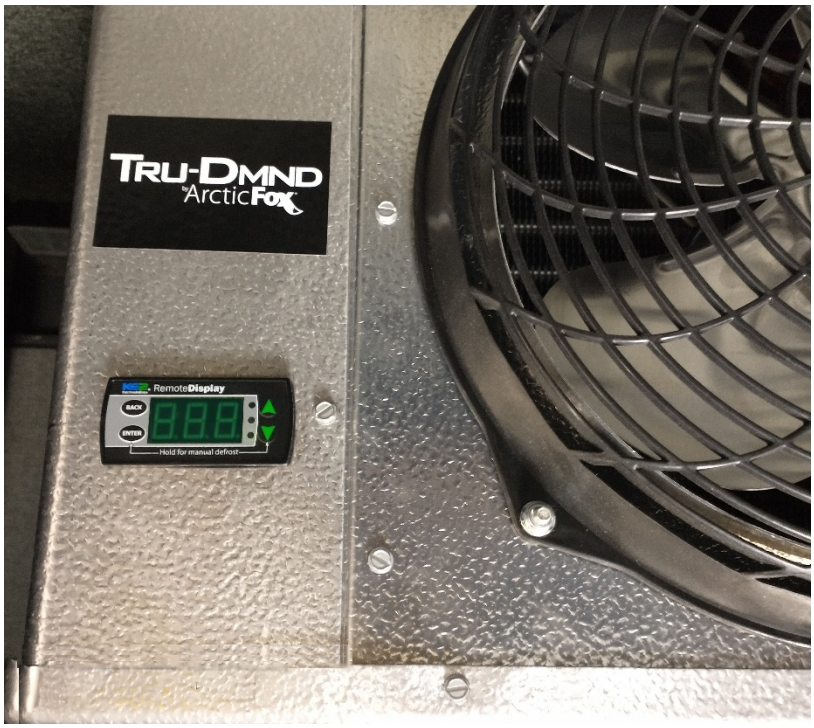
KOLPAK®

Protecting Your Future

Tru-Dmnd™ Defrost Evaporator

Original Instructions
Installation, Operation and Maintenance Manual

This manual is updated as new information and models are released. Visit our website for the latest manual.



WELBILT®

Part Number: 550005898-4 1/21

Safety Notices

⚠ DANGER

Indicates a hazardous situation that, if not avoided, will result in death or serious injury. This applies to the most extreme situations.

⚠ Warning

Indicates a hazardous situation that, if not avoided, could result in death or serious injury.

Notice

Indicates information considered important, but not hazard-related (e.g. messages relating to property damage).

⚠ Caution

Indicates a situation that, if not avoided, could damage the refrigeration system or result in minor injury.

NOTE: Indicates useful, extra information about the procedure you are performing.

⚠ Warning

Read this manual thoroughly before operating, installing or performing maintenance on the equipment. Failure to follow instructions in this manual can cause property damage, injury or death.

⚠ Caution

Installation and maintenance/servicing are to be performed only by trained and qualified personnel familiar with commercial refrigeration systems.

⚠ Caution

Ensure that all field wiring conforms to the equipment requirements and all applicable local and national codes.

⚠ Caution

Disconnect all power sources before servicing the refrigeration equipment.

⚠ Caution

Sheet metal and coil surfaces have sharp edges. Use appropriate protective gloves to prevent injury.

⚠ Caution

Use appropriate eye protection during installation and servicing.

Table of Contents

Section 1
General Information

Receiving Inspection 4
Warranty Information 4

Section 2
Installation

Condensing Units 5
Evaporator Units 6

Section 3
Wiring

Wiring 8
Suction Line Temperature Sensor Mounting 8
CAT-5 Network Cable 8

Section 4
Piping

Piping 9
Cleanliness 9
Pipe Supports 9
Oil Traps 10
Drain Lines 10
Pre-Charged Lines 11
Leak Testing 12
PR Models 12
PC Models 13
PCL Models 13
System Evacuation 13
PR Models 13
PC Models 13
PCL Models 14
Refrigerant Charging 14

Section 5
Operational Start-Up

Pre-Start Checks 15
Navigation Using The Basic Display 15
Introduction TO ArcticFox Smart Access 16
Setting Up E-Mail / Text Alerts 22

Section 6
Maintenance

Preventive Maintenance Tasks 24
P.O.E. Lubricants 24

Section 7
Troubleshooting

Evaporator 25
Condensing Unit 26

System Start-Up Checklist 28

Section 1
General Information

Receiving Inspection

- Check the shipment carefully and compare to the bill of lading.
- Account for all items listed and inspect each container for damage.
- Carefully inspect for any concealed damage.
- Report any shortages or damages to the carrier, note on the bill of lading, and file a freight claim.
- Damaged material cannot be returned to the manufacturer without prior approval.
- A Return Material Authorization (RMA) must be obtained. Contact a sales representative at 800-826- 7036.

Warranty Information

For information regarding warranty guidelines, claim form, product registration, warranty verification, or locating a service provider please visit our website at www.kolpak.com or call 800-225-9916.

Section 2
Installation

Condensing Units

- Check the selected installation location to ensure that racks, braces, flooring, foundations, etc. are adequate to support the condensing unit weight.
- The installation location is clean, dry, and level.
- Locate away from corrosive and noise sensitive atmospheres.
- Use the condensing unit skid and base when moving the unit. Do not remove unit from skid until the unit is moved to the mounting location.
- Mount the condensing unit base to pads or structural rails using properly sized bolts through the unit base. Center of condensing unit needs to be properly supported.



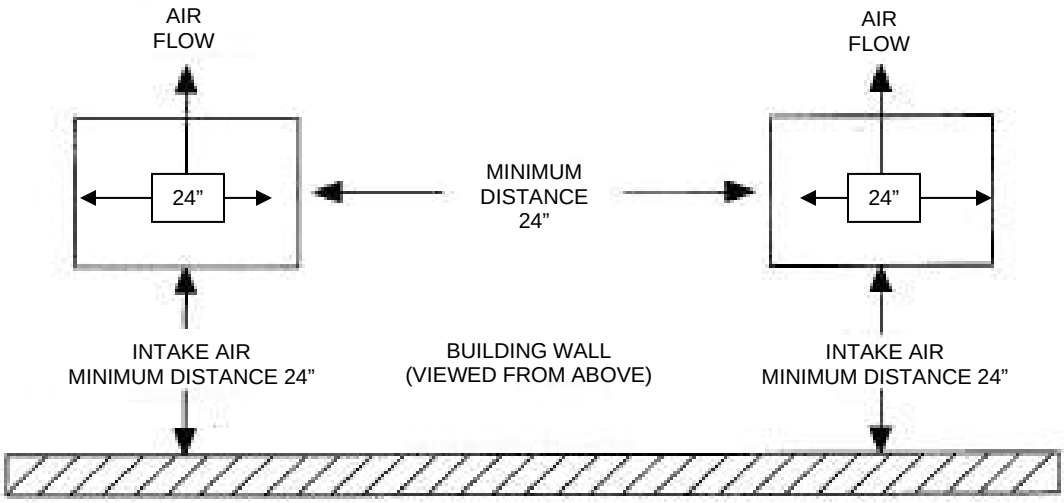
Correct



Incorrect

- Locate where there is a sufficient and unrestricted supply of clean ambient air.
- Locate where this is adequate space for the removal of the heated discharged air from the condensing unit area.
- Do not position multiple units so that discharge air from one unit is blowing into the condenser inlet air of the other unit.
- All sides of the unit should be positioned a minimum distance equal to the total width of the condensing unit away from any other unit, wall, or obstruction.
- Check the selected installation location to ensure that racks, braces, flooring, foundations, etc. are adequate to support the condensing unit weight.
- The installation location is clean, dry, and level.
- Locate away from corrosive and noise sensitive atmospheres.
- Use the condensing unit skid and base when moving the unit. Do not remove unit from skid until the unit is moved to the mounting location.
- Mount the condensing unit base to pads or structural rails using properly sized bolts through the unit base. Center of condensing unit needs to be properly supported.

Example of Multiple Units with Horizontal Airflow



⚠CAUTION

Failure to observe clearance and air flow requirements will result in poor system performance and premature equipment failure!

Evaporator Units

- Do not place the evaporator above or close to door openings. This will help prevent potential icing problems.
- Allow a minimum clearance equal to or greater than the coil height on all sides of the coil for proper air flow and service access.
- Use the evaporator coil for a template to locate and drill the mounting holes (1/2” diameter).
- Place a 1” and a 1-5/8” washer on each nylon bolt and insert through the drilled mounting holes in the ceiling from the exterior of the walk-in ceiling panel.

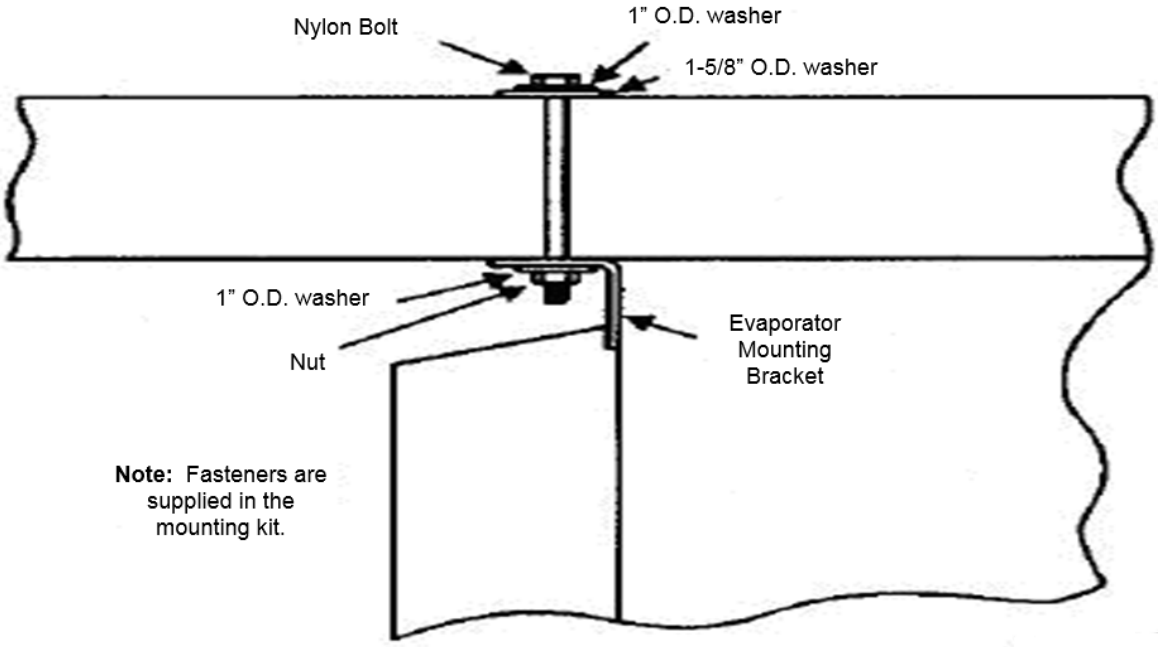
NOTE: Nylon bolts are supplied to prevent thermal transfer between the exterior of the walk-in and the interior of the walk-in. Do not use metal bolts.

- Lift the evaporator coil until the nylon bolts extend through the mounting brackets.
- Install washers and secure with nuts. Tighten until the coil is firm against the ceiling. The evaporator coil must be level.
- Additional information is available in the installation manual supplied with the evaporator.

⚠CAUTION

Failure to observe clearance and air flow requirements will result in poor system performance and premature equipment failure!

Evaporator Coil Mounting Diagram



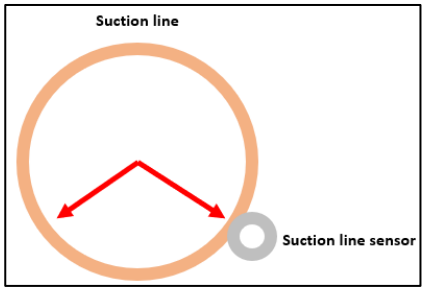
Section 3
Wiring

Wiring

- All electrical connections and routing must comply with local and national codes.
- Do not modify the factory installed wiring without written factory approval.
- The field wiring must enter through the knockouts provided.
- Refer to the nameplate on the condensing or evaporator coil to determine the proper electrical power supply.
- Wire type should be of copper conductor only and properly sized to handle the electrical load.
- The unit and coil must be properly grounded.
- Condensing unit wiring diagrams are and attached inside the electrical box cover.
- Evaporator coil wiring diagrams are and inside the evaporator cover.

Suction Line Temperature Sensor

- Suction line temperature sensor is not mounted on evaporators that do not have quick connect couplings.
- It will need to be properly mounted by installer AFTER the suction lines have been brazed and allowed to cool.
- Sensor needs to be mounted in either the 4 or 8 o'clock position
- Secure sensor with zip ties and metal foil tape.



CAT-5 Network Cable

- CAT-5 network cables are supplied with the evaporator and are located inside of the evaporator box.
- Cables need to be routed from the evaporator circuit board to the locations network router for internet access.
- Please contact the end user for proper connection point.

⚠ WARNING

All wiring must comply with local and national codes. Wiring must be performed only by a refrigeration technician or certified electrician. Failure to follow these guidelines may result in injury!

⚠ CAUTION

Check all wiring connections, including factory terminals, before operation. Connections can become loose during shipment and installation.

Section 4
Piping

Piping

- All refrigeration piping and components are to be installed in accordance with applicable local and national codes and in conformance with industry refrigeration guidelines to ensure proper operation of the refrigeration system.
- Only refrigeration grade copper tubing should be used.
- Long radius elbows should be used. Short radius elbows have points of excessive stress concentration and are subject to breaking at these points, do not use short radius elbows.
- Suction lines must be insulated with a minimum ¾" thick insulation tubing to reduce heat pick-up.

Cleanliness

- Condensing units and evaporator coils are cleaned and dehydrated at the factory.
- The condensing unit must remain closed and pressurized until the piping is complete and final connections are ready to be made.

⚠CAUTION

The maximum air exposure for dehydrated condensing units is 15 minutes. Systems exposed longer than 15 minutes must have the compressor oil and drier filter replaced. Leaving a system exposed to the atmosphere for more than 15 minutes can result in premature system failure.

- Do not remove base mount valve covers until work is ready to be performed.
- Ensure that all refrigeration tubing is clean and dry prior to installation.
- Use only tubing cutters when trimming tubing to the proper length. Do not use saws to cut tubing.

⚠CAUTION

The use of saws to cut tubing can contaminate the system with copper chips causing premature system failure.

- Brazing joints require a dry inert gas, typically nitrogen, be passed through the lines at a low pressure to prevent scaling and oxidation.
- Use only silver solder brazing alloys. Minimize the amount of flux to prevent internal contamination. Flux only the male portion of the joint.
- Thoroughly clean fluxed joints after brazing.

⚠CAUTION

Dry inert gas must be passed through the system while brazing to prevent scaling and oxidation. Scaling and oxides can clog refrigeration components resulting in system failure.

Pipe Supports

- All tubing should be supported in a least two locations (near the end of each tubing run).
- Long runs will require additional support.
- As a guide, support 3/8" to 7/8" pipe every five feet, 1-1/8" to 1-3/8" every seven feet, and 1-5/8" to 2-1/8" every ten feet.
- Do not leave a corner unsupported when changing directions.
- Place supports within 2 feet of each direction change.
- Piping that is attached to a vibrating object (such as a compressor or compressor base) must be supported in a manner that will not restrict the movement of the vibrating object.
- Rigid mounting will fatigue the tubing causing refrigerant leaks.

Oil Traps

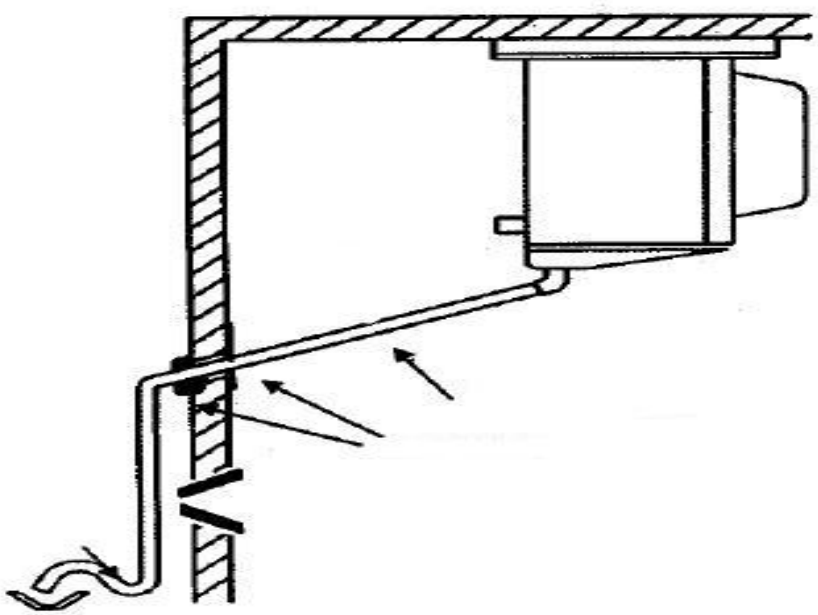
- To ensure proper oil return to the compressor, a P-type oil trap should be installed at the base of each suction riser of four feet or more.
- The suction trap must be the same size as the suction line.
- Additional traps are necessary for long vertical risers. Add a trap for each length of pipe (approximately 20 feet) to insure proper oil return.
- Suction lines must slope ¼" per 10 feet toward the compressor.
- Install a suction line trap at the evaporator outlet if the suction line rises to a point higher than the connection on the evaporator.

⚠ CAUTION

Failure to properly install oil traps can prevent sufficient oil return to the compressor resulting in premature compressor failure.

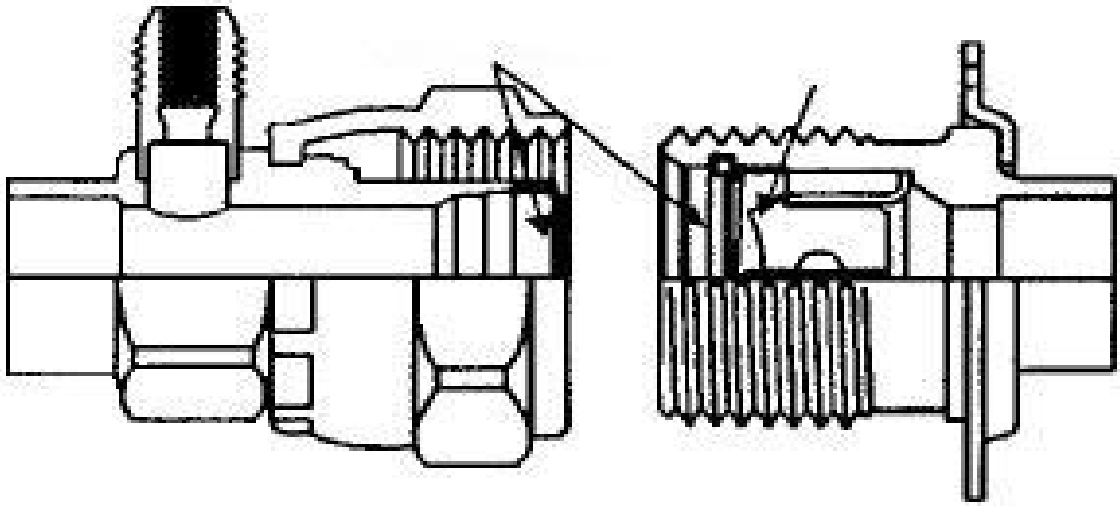
Drain Lines

- Evaporator coil drain lines should be pitched a minimum of 1/2" per foot to allow proper drainage and exit the walk-in as quickly as possible.
- Insulate and seal the drain line where it passes through the wall.
- Copper drain line is required.
- Freezer compartment drain lines must have heat tape wrapped around the copper drain line and must have ¾" thick insulation tubing.
- Do not locate drain line P-traps within the freezer space.
- Do not reduce the drain line size.
- Locate a drain line P-trap outside of the cooler space.
- Any outdoor P-traps exposed to low ambient temperatures should be wrapped with a drain line heater (provide 20 watts of heat per foot of drain line at 0°F, 30 watts per foot at -20°F.
- Freezer/cooler combo boxes can have one common drain line. However, there must be a P-trap located between the freezer evaporator and the cooler evaporator located inside the cooler compartment.
- The cooler compartment P-trap should be located between the cooler evaporator and the external drain location.



Pre-Charged lines and Quick Connects

- Route the suction and liquid line sets between the condensing unit and evaporator coil following the piping guidelines identified in this manual.
- Remove the dust caps from the quick connect fittings and verify that the o-rings are intact.
- Wipe the coupling seals and threaded surfaces with a clean cloth to prevent contamination.
- Lubricate the threads and o-rings with Polyol Ester oil.
- Thread the coupling halves together by hand to ensure proper thread mating.
- Tighten with a wrench until the coupling bodies “bottom” or until there is definite resistance.
- Tighten an additional ¼ turn to ensure proper brass-to-brass seating.
- Once the system is opened and pressurized, check each fitting for refrigerant leaks. If a leak is detected, tighten until the leak stops.







INCORRECT CORRECT

⚠ WARNING

Do not loosen and disconnect the quick connect fittings before reclaiming the refrigerant and depressurizing the system. Disconnecting a pressurized system can result in injury!

⚠ CAUTION

Quick connects are for one time use only. Once disconnected, the coupling cannot be re-used. Refrigerant leaks will occur if the couplings are re-used resulting in poor system performance.

- Excess line set length should never be allowed to coil in the vertical position. Excess line length should be laid flat on its side.



INCORRECT



CORRECT

Leak Testing

- After all connections are complete the refrigeration system must be tested for leaks.
- Failure to perform a leak test can result in unsatisfactory system performance, additional servicing and service costs, and possible system failure.
- Leak test should be performed using an electronic leak detector.
- All joints and components, both factory and field installed, should be thoroughly inspected for leaks.
- The system installation must be leak free!

Leak Testing "PR" model systems

- Open both the liquid and suction service valves.
- Ensure the solenoid valve is energized and open.
- Add 50 psi refrigerant, then pressurize with dry nitrogen to the low side test pressure identified on the unit rating label.
- Allow thirty minutes for refrigerant to reach all parts of the system.
- Check all joints and components with an electronic leak detector.

Leak Testing "PC" model systems

- Leave the service valves closed, the condensing unit is charged with refrigerant.
- Ensure the solenoid valve is energized and open.
- Add 50 psi refrigerant, then pressurize with dry nitrogen to the low side test pressure identified on the unit rating label.
- Allow thirty minutes for refrigerant to reach all parts of the system.
- Check all joints and components with an electronic leak detector.

Leak Testing "PCL" model systems

- Open both the liquid and suction service valves.
- Ensure the solenoid valve is energized and open.
- Allow thirty minutes for refrigerant to reach all parts of the system.
- Check all joints and components with an electronic leak detector.
- If a leak is detected, relieve the pressure and/or reclaim the refrigerant and repair the leak.
- If additional brazing is required, pass a dry inert gas (nitrogen) through the system to prevent contamination.
- Reference page 12 of this manual for leaks located at quick connects couplings.
- Retest the system as outlined above until no leaks are detected.

⚠CAUTION

If a braze joint is detected leaking, dry inert gas must be passed through the system while repairing the joint to prevent scaling and oxidation. Scaling and oxides can clog refrigeration components resulting in system failure.

⚠CAUTION

Always use the system specified refrigerant when pressuring to perform a leak test.

System Evacuation

- Evacuation of the refrigeration system is necessary to remove all air and moisture from the system.
- A reliable rotary vacuum pump with an accurate deep vacuum gauge is recommended.
- Do not use the system compressor as a vacuum pump and do not operate the compressor while the system is under vacuum.

Evacuation of "PR" model systems

- Open both the liquid and suction service valves.
- Ensure the solenoid valve is energized and open.
- Connect vacuum pump to the liquid and suction service valves located on the condensing unit.
- Evacuate the system to 250 microns and maintain for a minimum of 4 hours.
- Perform a vacuum decay test for a minimum of ten minutes to ensure the system is leak free and dry.

Evacuation of "PC" model systems

- Leave the service valves closed, the condensing unit has been evacuated and is charged with refrigerant.
- Ensure the solenoid valve is energized and open.
- Connect vacuum pump to the liquid and suction service valves. located on the condensing unit.
- Evacuate the system to 250 microns and maintain for a minimum of 4 hours.
- Perform a vacuum decay test for a minimum of ten minutes to ensure the system is leak free and dry.

Evacuation of "PCL" model systems

- "PCL" systems do not require evacuation.

⚠CAUTION

Do not use the system compressor to evacuate the system. Do not start the compressor while the system is under vacuum. This may damage to the compressor and cause premature system failure.

Refrigerant Charging

- The refrigerant charge should be added to the system through the liquid line service valve located on the condensing unit.
- Do not charge liquid refrigerant into the suction service valve!
- The initial charge should be determined by weight and sight glass indication.
- Start the system. If the condensing temperature is 105° F or greater, charge the system until the sight glass clears.
- If the condensing unit temperature is below 105° F, reduce the condenser face surface area to raise the discharge pressures above 105° F and to charge to a clear sight glass.
- Return to a full condenser face area when charging is complete.

NOTE: PC & PCL refrigerant charge amounts are based on average ambient operating temperatures across the United States. Any refrigerant amount added or removed based on ambient operating temperatures is considered part of normal maintenance and is not covered under warranty.

⚠CAUTION

Do not charge liquid refrigerant into the suction service valve located on the condensing unit. Do not overcharge the system. These conditions can permit liquid refrigerant to enter the compressor and cause damage to internal components resulting in premature system failure.

Section 5
Operational Start-Up

Pre-Start Checks

- The first 2 – 4 hours of operation after initial start-up is a critical time.
- Do not just start the system and leave.
- Pressure values, compressor and evaporator superheat, and inspecting for excessive vibrations and loose connections are some of checks that must be performed prior to leaving the system.
- Verify that all service valves are fully open.
- Ensure that all refrigerant and electrical connections are tight.
- Verify that the wiring and piping is properly routed and secured.
- The compressor mounting bolts are properly adjusted (see compressor mounts on page 18).
- All fan motors and mounting brackets are tight.
- The condensing unit base and evaporator coil are properly secured.

Navigation Using The Basic Display

- The ArcticFox WiFi OEM board has multiple methods of user input.
- Evaporators ship with the Basic Display installed on the right evaporator end panel.
- This display uses KE2 Therm's familiar menu structure to allow service technicians to change the major setpoints.
- The setpoints may also be accessed using the controller's webpages.
- To view a Service Video on how to setup the ArcticFox WiFi controller for remote access, scan the QR code below.

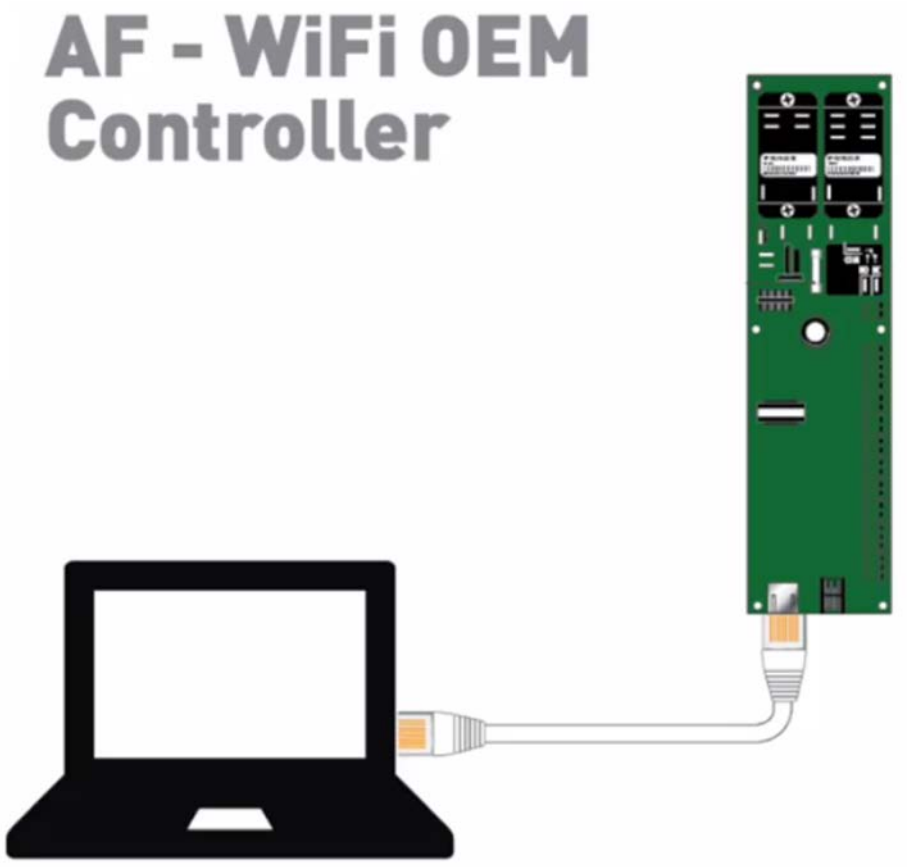


Indicator lights
- **Red light** - critical Alarm (system not running)
- **Yellow light** - non-critical alarm (system running)
- **Green light** - compressor on
- **Green flashing** - compressor waiting on timer to start/stop

- Access Setpoint mode by pressing and holding the ENTER button until tS (temperature setpoint) displays on the screen
- Use the ▲ up and ▼ down arrows to scroll through the available setpoints.
- Press ENTER to view the current setting.
- Use the ▲ up and ▼ down arrows to change the setpoint.
  Press ENTER to move between the digits to accelerate the changes.
- Press ENTER and hold to confirm each setpoint change.
- Press BACK to escape.

Introduction to ArcticFox Smart Access

- ArcticFox Smart Access provides quick and easy, real time access to your refrigeration systems, 24/7. The ArcticFox WiFi OEM has always been internet accessible, but now it's easier than ever to monitor and adjust your ArcticFox WiFi OEM remotely.
- While the ArcticFox WiFi OEM's free connectivity is still available, Kolpak recognizes that some customers prefer the simplicity and convenience of ArcticFox Smart Access to provide the benefits of the controller's communication capability.
- All the ArcticFox WiFi OEM needs is a physical connection to the network router with a CAT-5 cable. Once enabled, ArcticFox Smart Access quickly connects to your personal web portal, hosted by KE2 Therm, and provides a "customized" dashboard of all the controllers you setup with ArcticFox Smart Access.
- The Arctic Fox Wifi controller is designed to provide energy saving, trouble free operation for your walk-in coolers and walk-in freezers. In addition, you can also set up the controller for remote monitoring and alarming with a few easy steps. Start by connecting a CAT-5 cable to the laptop and the ethernet port on the evaporator.



- Once connected to the Arctic Fox Wifi controller, the next step is to get the IP address of the controller from the basic display. The IP address is made up of IP Octet 1, IP Octet 2, IP Octet 3, and IP Octet 4 (example: 10.10.52.19).

- Using the UP or DOWN arrow, scroll until you see IP Octet 1.



- Press ENTER to get the three digit address.

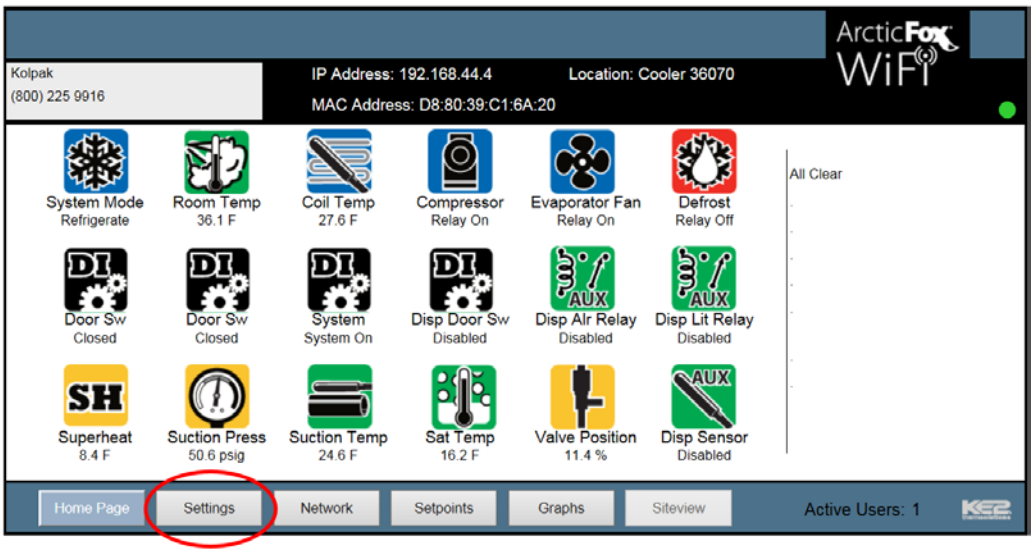


- Press BACK to get back to the IP Octet 1. Using the arrows, scroll until you see IP Octet 2. Repeat this process until you have all four Octets that make up the address of this control.

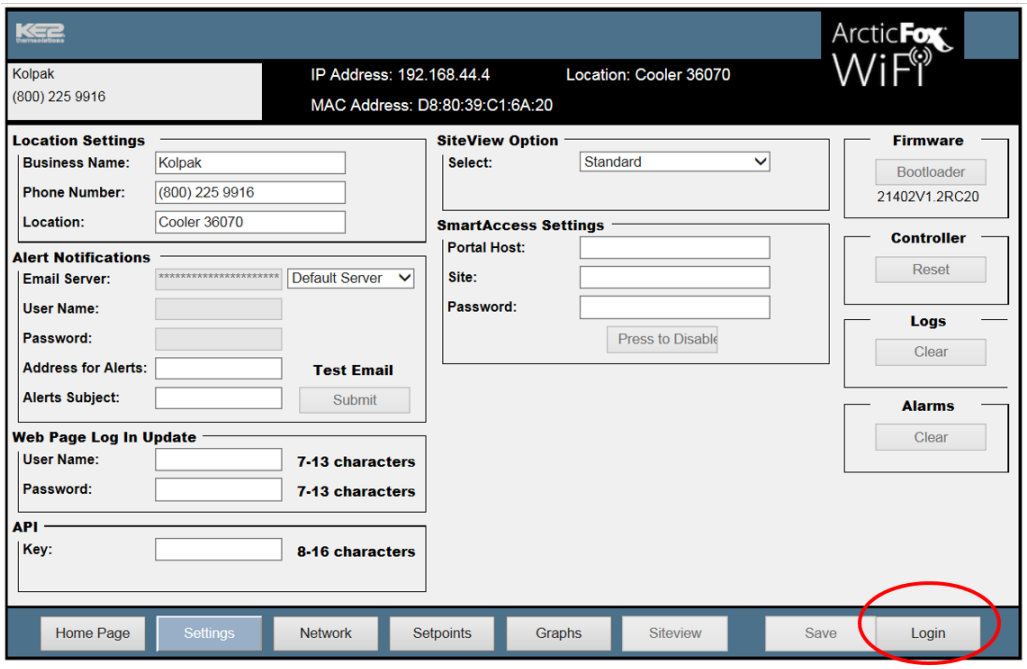
- Now, type the IP address of controller into the address bar in a web browser on your device.



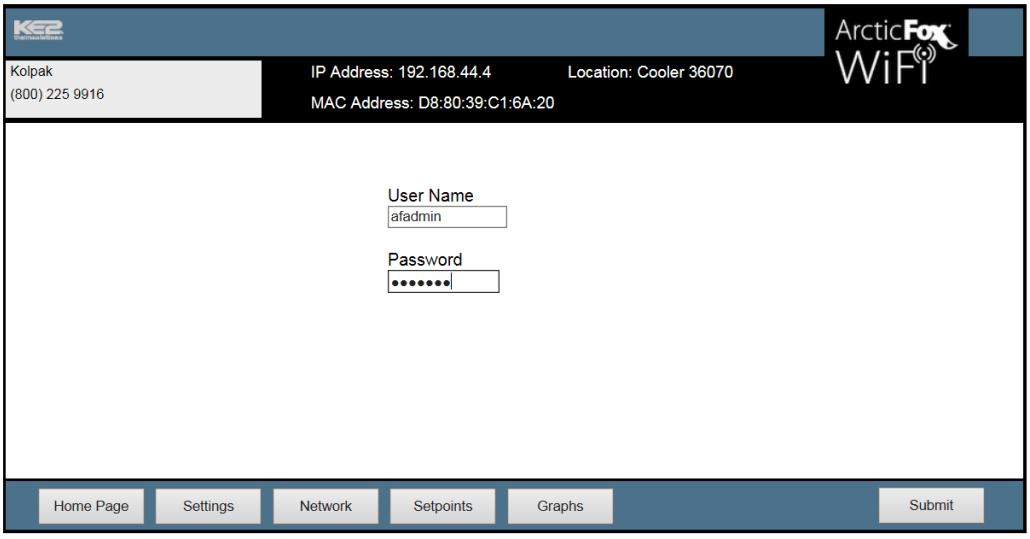
- The controller interface will display a home page…Click on 'Settings' tab.



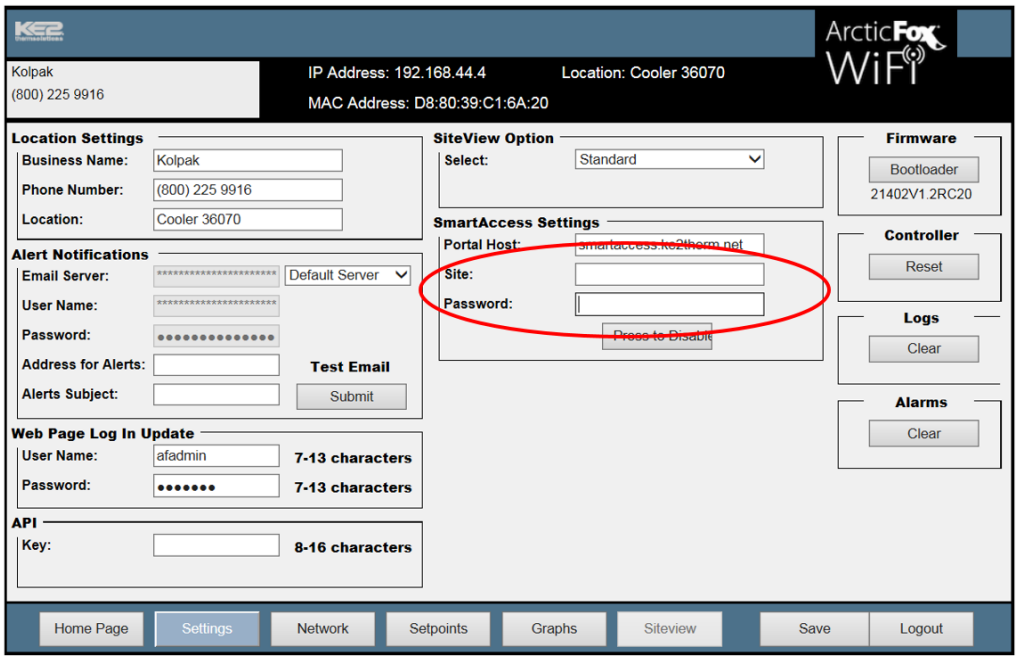
- Click ‘Login’ to login to controller.



- The default username is afadmin. The default password is also afadmin, all lower case. You are now able to make changes to the controller.

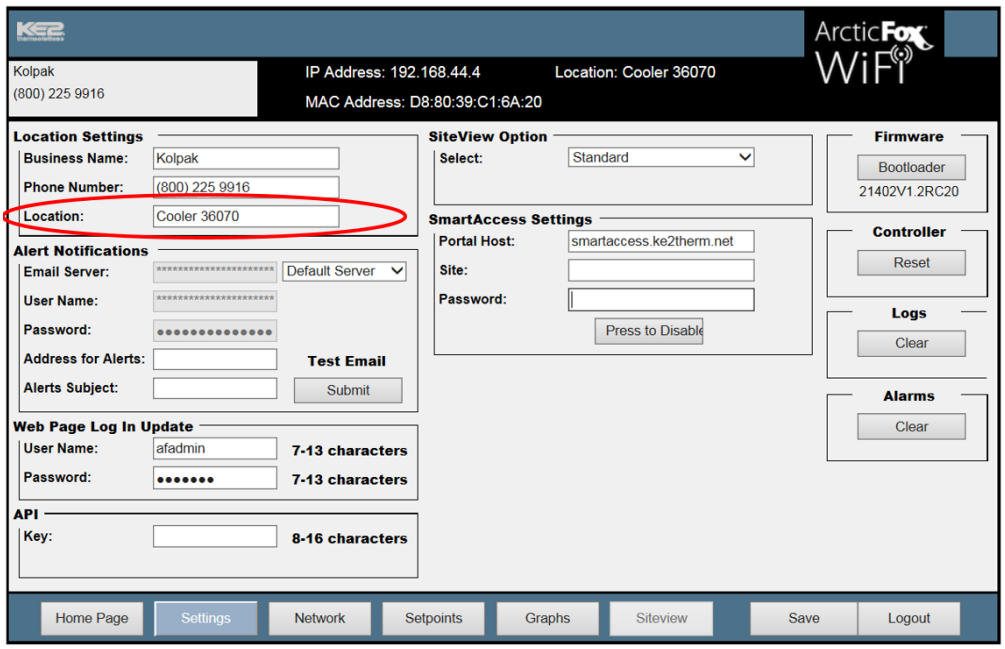


- You should now set the ArcticFox Smart Access Site and Password - Numbers and letters only, these can be upper and lower case.

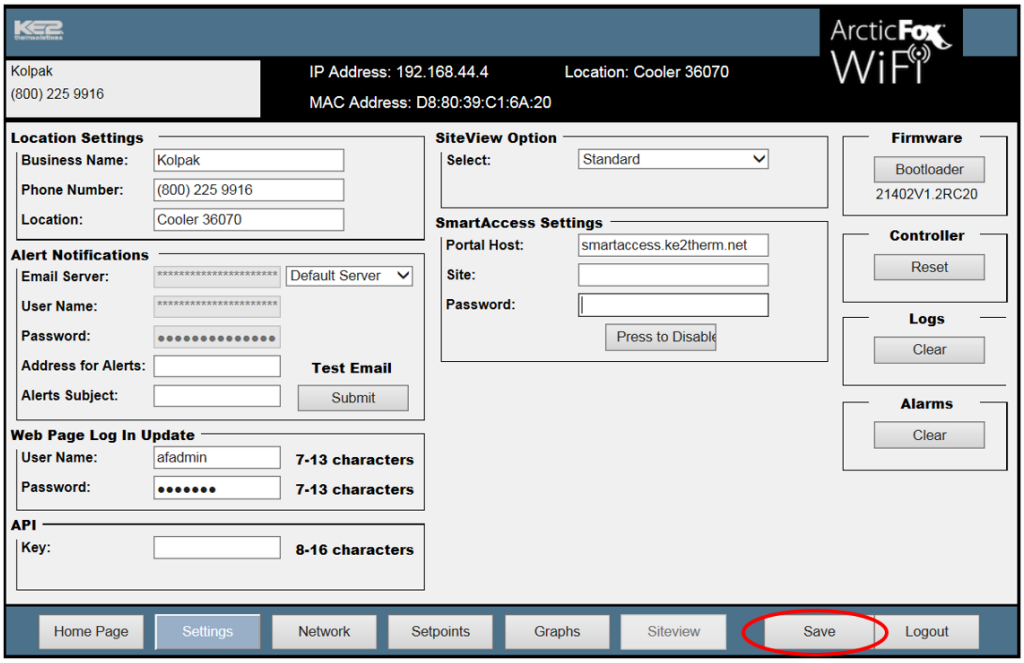


- Make sure to make the Site and Password something that you can remember as you will use this Site and Password to remotely connect to the controller. Multiple controllers can have the same Site and Password.

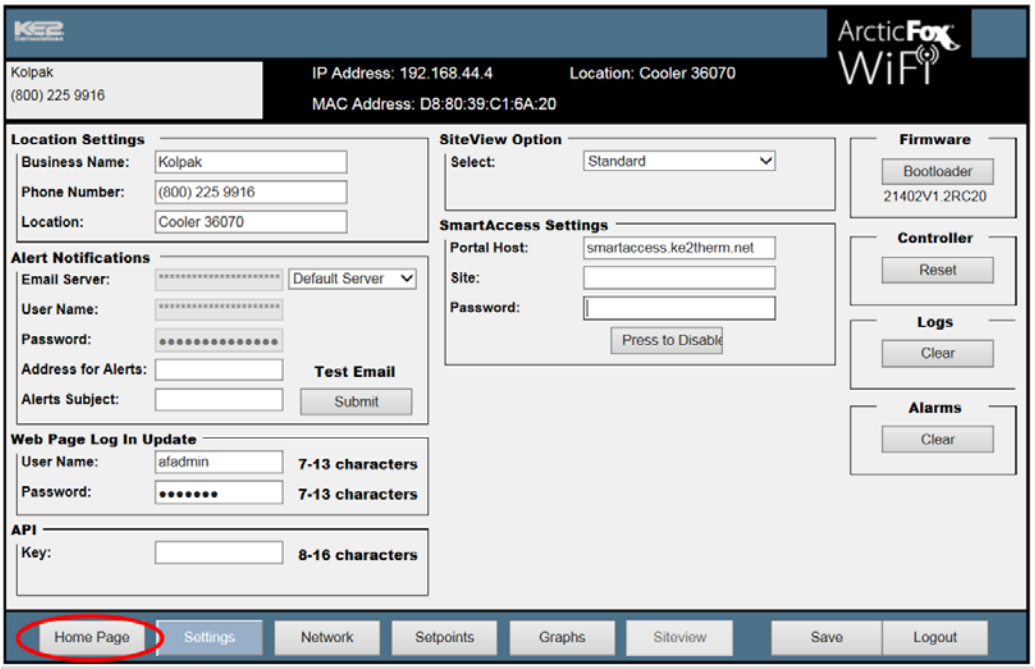
- You should also set the controller Location to something that tells you where the specific controller is, for example “Beer Cooler Store 689”, as you may have multiple locations on one Smart Access Site and Password.



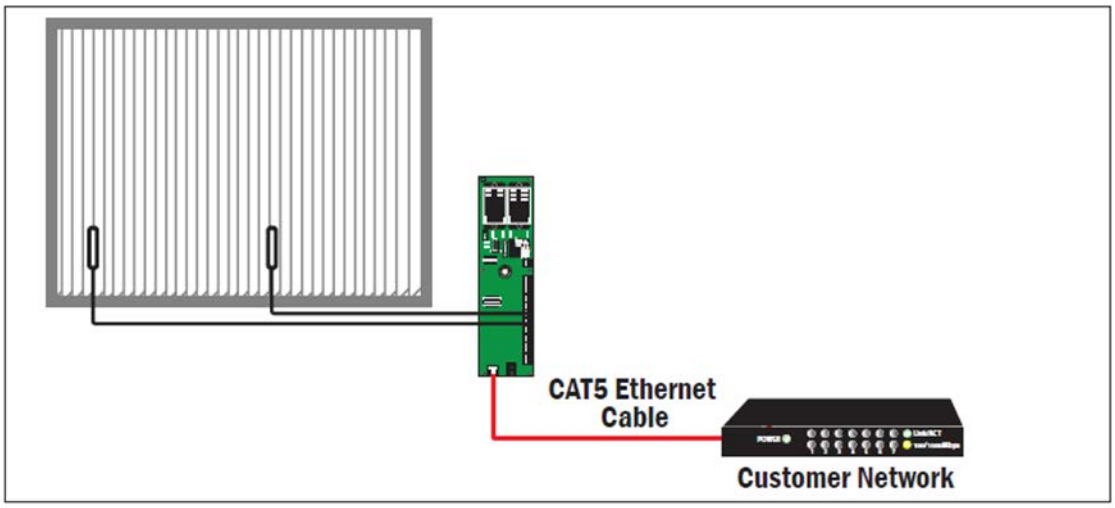
- Once you have entered the information, Click ‘Save’… don’t be alarmed as you may briefly lose connectivity.



- After 30-60 seconds, click ‘Home Page’



- The controller is now set up properly and will be set up for remote communication once the final steps are complete. Now we are ready for the final steps. Talk to the appropriate person who can instruct you to which port you should use to allow for remote access.
- Connect one end of the Ethernet cable to the ArcticFox Wifi controller. Connect the other end of the cable into the router/switch.



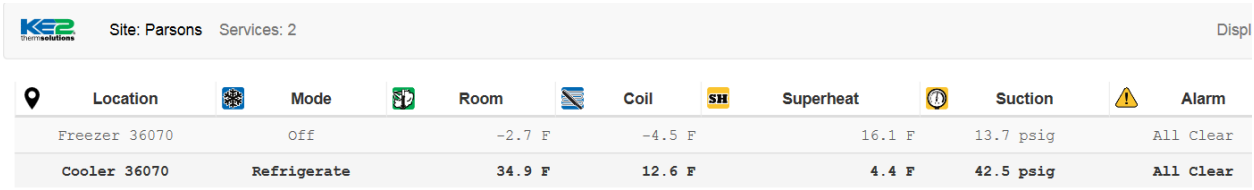
- To confirm proper set up, on a device connected to the internet, type Login.afwifi.net in the address bar.



- Enter site and password that you just created in the previous steps.



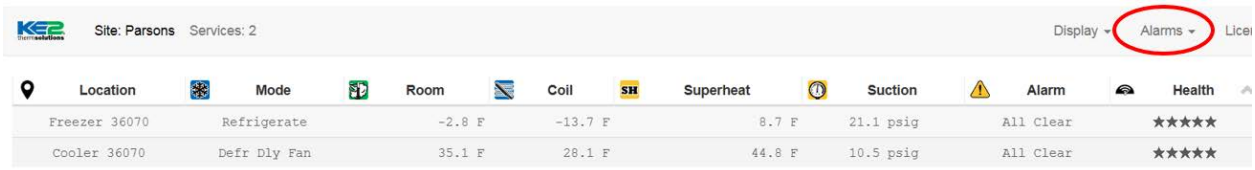
- You should now see the controller displayed on the dashboard.



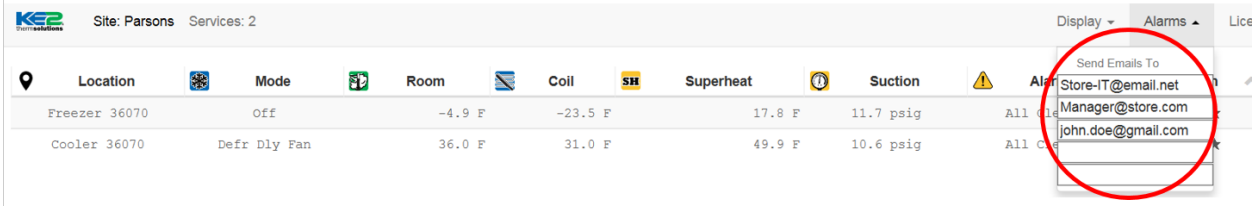
- You now can access this controller anytime, from anywhere to view operation and change set points.

Setting Up E-Mail/Text Alerts

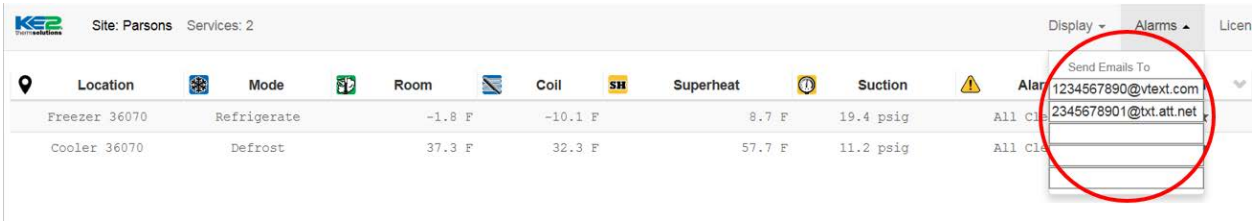
- From the dashboard, click on “Alarms” pull down menu.



- Enter up to five (5) email addresses for alerts to be sent to.



- You can also send Alerts to cell phones.



U.S. Carrier	SMS Gateway	MMS Gateway
Altel	@sms.alltelwireless.com	@mms.alltelwireless.com
AT&T	@txt.att.net	@mms.att.net
Boost Mobile	@sms.myboostmobile.com	@myboostmobile.com
Sprint	@messaging.sprintpcs.com	@pm.sprint.com
T-Mobile	@tmomail.net	@tmomail.net
U.S. Cellular	@email.uscc.net	@mms.uscc.net
Verizon	@vtext.com	@vzwpix.com
Virgin Mobile	@vmobl.com	@vmpix.com

- If more than five (5) addresses/phone numbers are needed to be entered, you can create an email group of many addresses and enter the email group.

Section 6
Maintenance

Preventive Maintenance Tasks

Area	Task	Frequency
Evaporator	Check for proper defrosting	Monthly
	Clean the coil and drain pan	Every 6 months
	Check for proper drainage	
Condenser	Inspect /clean the coil if the air supply is near polluting sources (such as cooking appliances)	Monthly
	Clean the coil surface	Every 3 months
General	Check/tighten all electrical connections	Every 6 months
	Check all wiring and insulators	
	Check contactor for proper operation and contact point deterioration	
	Check all fan motors	
	Tighten fan set screws, and motor mount nuts and bolts	
	For semi-hermetics, check the oil level in the system	
	Check the operation of the control system	
	Make certain all safety controls are operating properly	
	Check operation of the drain line heater and examine for cuts and abrasions	
	Check/tighten all mechanical/flare connections	

⚠CAUTION

Failure to keep the condenser coil clean will result in reduced airflow through the condenser, resulting in poor system performance and premature compressor failure.

Polyol Ester (POE) Lubricants

- Polyol Ester (POE) lubricants quickly absorb moisture from the ambient surroundings.
- POE lubricants absorb moisture more rapidly and in greater quantity than conventional mineral oils.
- Because moisture levels greater than 100 PPM will result in system corrosion and component failure, it is essential that system exposure to ambient conditions be kept to a minimum.
- If a system is left open to the atmosphere for more than 15 minutes, the liquid line drier and compressor oil must be replaced.
- Drain at least 95% of the oil from the compressor suction port.
- Measure the amount of removed oil, and replace it with exactly the same amount of new POE oil.
- Mobil EAL™ ARCTIC 22 CC is the preferred Polyol Ester lubricant because of its particular additives.
- ICI Emkarate RL 32S is an acceptable alternative when the Mobil is not available.
- These POE lubricants must be used with HFC refrigerants.
- Lubricants are packaged in specially designed, sealed containers.
- Once opened, use the lubricant immediately.
- Properly dispose of any unused lubricant.

Section 7
Troubleshooting

Evaporator Troubleshooting

Problem	Possible Cause	Corrective Action
Fan(s) will not operate.	Main switch open	Close switch
	Blown fuse(s)	Replace fuse(s). Check for short circuits or overload conditions.
	Defective motor	Replace motor.
	Defective timer or defrost thermostat	Replace defective component.
	Unit in defrost cycle	Wait for completion of cycle.
Walk-in temperature too high.	Thermostat set too high	Adjust thermostat.
	Superheat too high	Adjust thermal expansion valve.
	System low on refrigerant	Locate and repair leak, recover, evacuate and recharge.
	Coil iced up	Manually defrost coil. Check defrost controls.
Ice accumulating on ceiling around evaporator and/or on fan guards, venturi, or blades.	Defrost duration is too long	Adjust defrost termination thermostat (if adjustable).
	Fan delay not delaying fans after defrost period	Replace defective defrost thermostat.
	Defective defrost thermostat or timer	Replace defective component.
	Too many defrost cycles per day	Reduce number of defrost cycles per day.
Frost on coil after defrost cycle.	Coil temperature not getting above freezing point during defrost	Check heater operation
	Not enough defrost cycles per day	Adjust timer for more defrost cycles per day
	Defrost cycle too short	Adjust timer for longer cycle, check defrost thermostat mounting
	Defective timer or defrost thermostat	Replace defective component.
Ice accumulating in drain pan.	Defective heater	Replace heater.
	Unit not pitched properly	Check and adjust.
	Drain line plugged	Clean drain line.
	Defective drain line heater	Replace heater.
	Defective timer or thermostat	Replace defective component.

Condensing Unit Troubleshooting

Problem	Possible Cause	Corrective Action
Compressor will not run.	Main switch open	Close switch
	Fuse blown	Check electrical circuits and motor winding for shorts or grounds. Investigate for possible overloading. Replace fuse after fault is corrected.
	Thermal overloads tripped	Overloads are automatically reset. Check unit closely when unit comes back on line.
	Defective contactor or coil	Repair or replace
	System shut down by safety devices	Determine type and cause of shutdown and correct
	No cooling required	None. Wait until cooling is required.
	Liquid line solenoid will not open.	Repair or replace coil.
	Low pressure switch will not close.	Replace switch
	Motor electrical trouble	Check motor for open windings or short circuit.

Problem	Possible Cause	Corrective Action
	Loose wiring	Check all wire junctions. Tighten all terminal screws.
Compressor noisy or vibrating	Flooding of refrigerant into crankcase	Check superheat setting of expansion valve
	Improper pipe support	Relocate or add hangers
	Worn compressor	Replace compressor
High discharge pressure	Non-condensable in system	Recover, evacuate and charge
	System overcharged with refrigerant	Remove excess charge
	Discharge shut-off valve partially closed	Open valve
	Fan not running	Check electrical circuit or replace defective fan motor
	Insufficient condenser air supply	Check for cause and correct
	Dirty condenser coil	Clean coil
Low discharge pressure	Faulty head pressure control	Check head pressure control operation.
	Suction shut-off valve partially closed	Open valve
	Insufficient refrigerant in system	Locate and repair leak, recover, evacuate and recharge
	Low suction pressure	Check for proper refrigerant charge
High suction pressure	Excessive load	Reduce load or add additional equipment
	Expansion valve overfeeding	Secure and insulate TXV bulb or if required adjust superheat.
Low suction pressure	Lack of refrigerant	Locate and repair leak, recover, evacuate and charge.
	Evaporator dirty or iced	Clean
	Clogged liquid line or suction line filter-drier	Replace filter-drier
	Expansion valve malfunctioning	Check and reset for proper superheat
	Condensing temperature too low	Check head pressure control
	Improper TXV	Check for proper sizing

Problem	Possible Cause	Corrective Action
Compressor loses oil	Lack of refrigerant	Locate and repair leak, recover, evacuate and recharge
	Excessive compression ring blow-by	Replace compressor
	Refrigerant flood back	Maintain proper superheat at compressor
	Improper piping or traps	Correct piping
Compressor thermal protector switch open	Operating beyond design	Add facilities so that operating conditions are within allowable limits
	Discharge valve partially shut	Open valve
	Dirty condenser coil	Clean coil
	Overcharged system	Correct charge

Notes:

System Start-up Checklist

Date System Installed: _____/_____/_____
Installer and Address: _____

_____

Phone Number: (_____) _____-_____

Start-Up Service Agency: _____

_____

Phone Number: (____) _____-_____

Freezer Condensing Unit				
Inspection Feature	**Data**	**Accept**	**Reject**	**Action Required**
Model Number:				
Serial Number:				
Electrical Volts:				
Electrical Phase:				
Amperage @ L1:				
Amperage @ L2:				
Amperage @ L3:				
Ambient Temp:	°F			
Comp. Discharge Pressure:	PSIG			
Comp. Suction Pressure:	PSIG			
Suction Line Temp @ Comp.:	°F			
Discharge Line Temp @ Comp.:	°F			
Comp. Superheat:	°F			
Defrost Setting (4 day/45 min):				
All electrical connections are tight:				
Unit base properly supported:				
Fans Running & No Vibration:				
All guards, covers attached:				
Refrigerant Sight Glass Clear:				
Comp. Oil Level @ ½ Sight Glass:				
Comp. Mounting Clips Removed:				
Suction line insulated fully and properly supported:				

Freezer Evaporator				
Inspection Feature	**Data**	**Accept**	**Reject**	**Action Required**
Evaporator installed with nylon bolts with proper airflow clearance:				
Model Number:				
Serial Number:				
Electrical Volts:				
Electrical Phase:				
Suction Line Temp @ Evap:	°F			
Evap Superheat:	°F			
Thermostat Set:	°F			
Operating Temp:	°F			
TXV Bulb Properly Mounted:				
All guards, covers attached:				
All electrical connections are tight:				
Defrost Heater Amp Draw:	A			

Freezer Piping				
Inspection Feature	**Data**	**Accept**	**Reject**	**Action Required**
Suction Lines Insulated:				
Oil Trap at Base of Suction Riser:				
Copper Drain Lines Sloped Min 1/2” ft:				
Piping Supported Every 5’:				
Copper drain line heater attached, working, and insulated:				
Copper Drain Line Trapped Outside Freezer Space:				

Cooler Condensing Unit				
Inspection Feature	**Data**	**Accept**	**Reject**	**Action Required**
Model Number:				
Serial Number:				
Electrical Volts:				
Electrical Phase:				
Amperage @ L1:				
Amperage @ L2:				
Amperage @ L3:				
Ambient Temp:	°F			
Comp. Discharge Pressure:	PSIG			
Comp. Suction Pressure:	PSIG			
Suction Line Temp @ Comp.:	°F			
Discharge Line Temp @ Comp.:	°F			
Comp. Superheat:	°F			
Defrost Setting (4 day/45 min):				
All electrical connections are tight:				
Unit base properly supported:				
Fans Running & No Vibration:				
All guards, covers attached:				
Refrigerant Sight Glass Clear:				
Comp. Oil Level @ ½ Sight Glass:				
Comp. Mounting Clips Removed:				
Suction line insulated fully and properly supported:				

Cooler Evaporator				
Inspection Feature	**Data**	**Accept**	**Reject**	**Action Required**
Evaporator installed with nylon bolts with proper airflow clearance:				
Model Number:				
Serial Number:				
Electrical Volts:				
Electrical Phase:				
Suction Line Temp @ Evap:	°F			
Evap Superheat:	°F			
Thermostat Set:	°F			
Operating Temp:	°F			
TXV Bulb Properly Mounted:				
All guards, covers attached:				
All electrical connections are tight:				

Cooler Piping				
Inspection Feature	**Data**	**Accept**	**Reject**	**Action Required**
Suction Lines Insulated:				
Oil Trap at Base of Suction Riser:				
Copper Drain Lines Sloped Min 1/2” ft:				
Copper Drain Lines Insulated:				
Copper Piping Supported Every 5’:				
Copper Drain Line Trapped Outside Cooler Space:				

Walk-In Freezer				
Inspection Feature	**Data**	**Accept**	**Reject**	**Action Required**
Serial Number:				
Interior Lights Installed and Working:				
All Penetrations Sealed:				
Doors/Jambs Squared and Operating Properly:				
All Panel Locks Fully Engaged:				
All Plug Buttons Installed:				
Door Heater Working:				
Door Sweeps Adjusted:				
Heat Air Vent Working:				
Door Closers Adjusted and Working:				
Wainscot and Trim Installed:				
Alarm Set and Working:				
Thermometer Bulb Mounted and Calibrated:				
Walk-In Clean (no excessive caulk, etc.)				
Walk-in at proper temperature:				

Walk-In Cooler				
Inspection Feature	**Data**	**Accept**	**Reject**	**Action Required**
Serial Number:				
Interior Lights Installed and Working:				
All Penetration Sealed:				
Doors/Jambs Squared and Operating Properly:				
All Panel Locks Fully Engaged:				
All Plug Buttons Installed:				
Door Heater Working:				
Door Sweeps Adjusted:				
Heat Air Vent Working:				
Door Closers Adjusted and Working:				
Wainscot and Trim Installed:				
Alarm Set and Working:				
Thermometer Bulb Mounted and Calibrated:				
Walk-In Clean (no excessive caulk, etc.)				
Walk-in at proper temperature:				

Notes:

Superintendent/Customer Signature: _____ **Date:** _____

Service Tech/Installer Signature: _____ **Date:** _____

This page intentionally left blank

WELBILT
Bringing innovation to the table

WWW.WELBILT.COM

Welbilt provides the world's top chefs, and premier chain operators or growing independents with industry leading equipment and solutions.
Our cutting-edge designs and lean manufacturing tactics are powered by deep knowledge, operator insights, and culinary expertise.
All of our products are backed by KitchenCare® – our aftermarket, repair, and parts service.

▶CLEVELAND ▶DELFIELD® ▶FRYMASTER® ▶KOLPAK® ▶MANITOWOC® ▶MERRYCHEF®
▶CONVOTHERM ▶FITKITCHEN™ ▶GARLAND ▶LINCOLN ▶MERCO® ▶MULTIPLEX®

©2017 Welbilt Inc. except where explicitly stated otherwise. All rights reserved. Continuing product improvement may necessitate change of specifications without notice.

Part Number: 550005898-4 1/21