



# EcoNet<sup>®</sup> Enabled Unit Coolers



## Installation and Operations Manual

### Table of Contents

Introduction and Board Layout .....	2
Safety Considerations .....	3
System Installation .....	3-4
Start-Up/Commissioning .....	5
Operational Overview .....	9
Operational Limits .....	10
Diagnostics .....	10
Replacement Parts and Part Numbers .....	11
Group Operation .....	11,20
Typical Wiring for Multiple Controllers .....	20
<b>EcoNet Command Center</b>	
Safety Considerations .....	12
Installation and Mounting Instructions .....	12
Wiring Considerations .....	13
User Guide .....	14-16
Maintenance .....	16
Installer Settings .....	17-19

# EcoNet® Enabled Unit Coolers

## Introduction

EcoNet® Enabled Unit Coolers are intelligent, electronically operated evaporators for walk-in coolers and freezers designed for easier installation and energy savings. Developed in conjunction with Rheem Manufacturing, it builds on the success, reliability and efficiency of the EcoNet technology and brings it to commercial refrigeration.

EcoNet Enabled Unit Coolers save energy in refrigeration systems through precise superheat and space temperature control, fan cycling, and controlling how often the system goes into defrost based on compressor runtime. It eliminates unnecessary defrosts, maximizes energy efficiency with less compressor runtime, reduces liability by eliminating icing issues, reduces fan speed to 50% during off cycle to save energy, and reduces temperature fluctuations by regulating defrosts for improved product quality. EcoNet Enabled Unit Coolers can be configured to work on a single or dual evaporator coil, and can be used with a condensing unit in single and multiple evaporator installations as a group.

### EcoNet Board

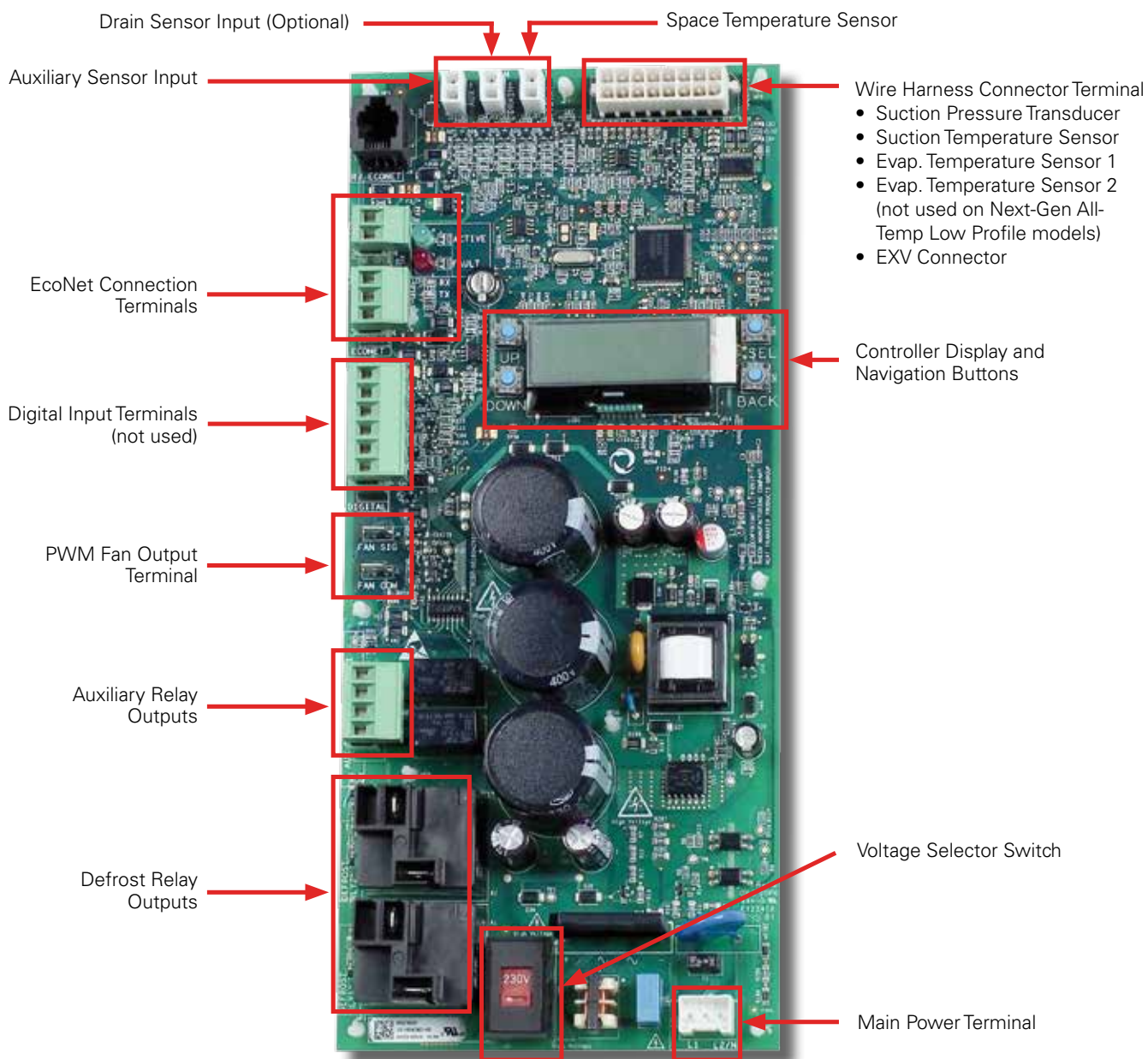


Figure 1-1

# Installation and Operations Manual

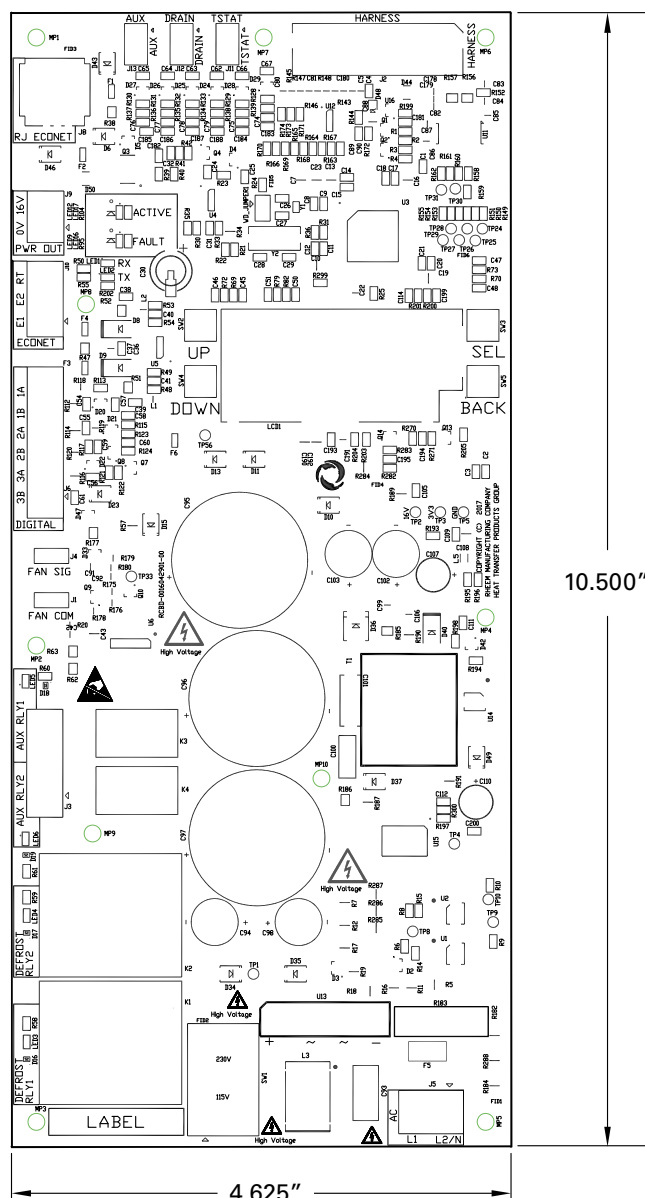


Figure 1-2

## Safety Considerations

Failure to read and follow all instructions carefully before installing or operating this control and system could cause personal injury and/or property damage.

**NOTE:** All wiring must comply with national, local, and state codes.

**WARNING:** Disconnect power to the outdoor and indoor units before beginning installation.

- Only a trained service professional/contractor should use or interact with the control board.
- Never touch the control board surface directly to avoid static shock damage or exposure to high voltages.

- Before service, power to the unit should be disconnected per proper lockout procedures.
- After power is disconnected wait 10 minutes before touching the board for power stored to fully discharge.
- The control board has no user serviceable parts, do not try to repair.
- Do not wire the control board while powered.
- If the board becomes corroded replace immediately.
- Cleaning of the control board is not recommended.

## System Installation

### Evaporator

- EcoNet Enabled Unit Coolers ship with the EcoNet controller installed and all sensors and relays wired. Prior to installation, you must verify that all sensors, defrost heaters and wire harnesses are securely connected to the controller board and terminal board.
- Verify correct voltage from main power supply to evaporator unit. Set the Voltage Selector Switch (Figure 2-1) on the controller board to the correct voltage setting (115V/230V) **before** powering up the unit.



Voltage Selector Switch      Main Power Terminal

Figure 2-1

**CAUTION:** Having the Voltage Selector Switch set to incorrect voltage can damage the controller board when power is connected to it.

- Connect main power to the evaporator unit at the L1/L2 and GND terminals on the terminal board as shown in the wiring diagram (Figures 2-2, 2-3).

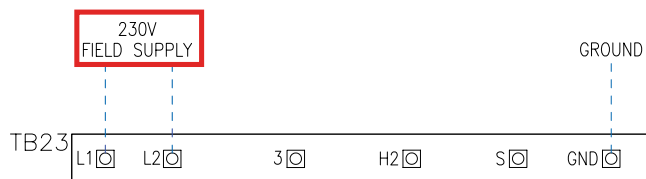


Figure 2-2



# EcoNet® Enabled Unit Coolers

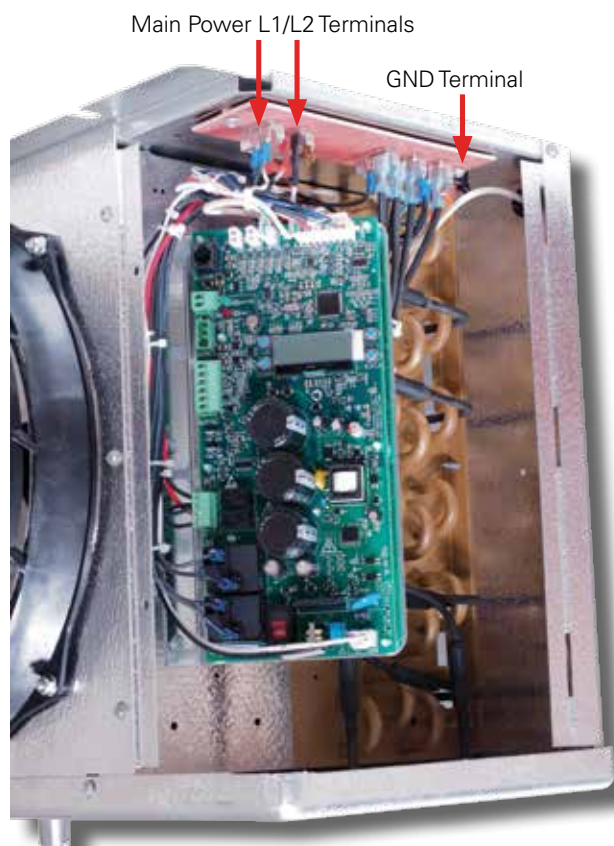


Figure 2-3

4. Prior to installation, please refer to factory label at evaporator unit for correct voltage and amp draw requirements to verify circuit breaker size where unit will be connected to.

## Condensing Unit

1. If a defrost timer is installed on the condensing unit, make sure it is disconnected/disabled (all switches on time clock should be in the OFF position) (Figure 2-4). All defrost functions are performed by the controller board.
2. Please refer to factory label at condensing unit for correct voltage and amp draw requirements.



Figure 2-4

## During System Installation

### 1. Refrigerant Line Brazing

- a. Cover EXV with wet rag to protect from excess heat from torch.
- b. Suction Temp Sensor (Figure 2-5) must be removed from the suction line prior to brazing. The sensor must be reinstalled on the suction line (10 or 2 o'clock position) after brazing is completed and the tubing has been allowed to cool down. After suction temp sensor is installed, suction line should be insulated and the sensor should be covered with the insulation.

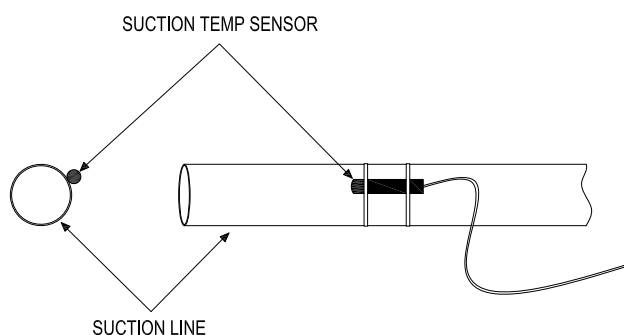


Figure 2-5

### 2. Purging Lines (pulling vacuum), two options:

- a. To purge lines on system with EXV closed, make sure that controller is off, and pull vacuum from both suction and discharge ports at the condensing unit.
- b. OR, to purge lines on system with EXV open, power up the controller and wait a couple of minutes for the controller to command the valve to open. Leave controller powered on while system evacuation is being done.

3. While charging the system with refrigerant, ensure that the EXV is open by powering up the controller and waiting a couple of minutes for the controller to command the EXV to open. With the controller powered on while the system is being charged, make sure to monitor the suction pressure, suction temperature, and superheat via the controller display and also via installer's gauges. Please refer to Display Status under the Startup/Commissioning section to show on the controller display the current suction temperature, suction pressure, EXV position and calculated superheat.

**NOTE:** If there is a power loss at any time during normal system operation, the controller will close the EXV, forcing a pumpdown.

# Installation and Operations Manual

## 4. Power Supply

- Freezers require 230V for electric heaters; coolers can run on 115V or 230V. Please refer to factory label on evaporator unit for amp draw and voltage requirements for proper circuit sizing at the facility prior to installation.
- Set the Voltage Selector Switch on the controller board to the correct voltage setting (115V/230V) **before** connecting power to the controller. *CAUTION: Having the voltage selector switch set to incorrect voltage can damage the controller board when power is connected to it.*
- Connect main power to L1 and L2 on evaporator terminal board. Connect ground wire to GND on terminal board.
- Refer to unit wiring diagram attached to cover panel.
- If there is a power loss at any time during normal system operation, the controller will close the EXV, forcing a pumpdown. When power is restored, the controller will resume refrigeration operation.
- To force the EXV closed while leaving the controller powered on, at the display go to *Settings→System Enabled→No*. This disables the system (fans off, EXV closed). To re-enable the system, go to the same display screen and set *System Enabled→Yes*. Please refer to the Setting Navigation Overview on page 6.

## Start-Up/Commissioning

### 1. Local Display (Figure 3-1)

- Use the **UP/DOWN/SEL/BACK** buttons to navigate through the display.
- To change a parameter, navigate to it using the **UP/DOWN** buttons, press **SEL** until the value is flashing intermittently, use the **UP/DOWN** buttons to cycle through the selection, then press **SEL** again to confirm the selection.

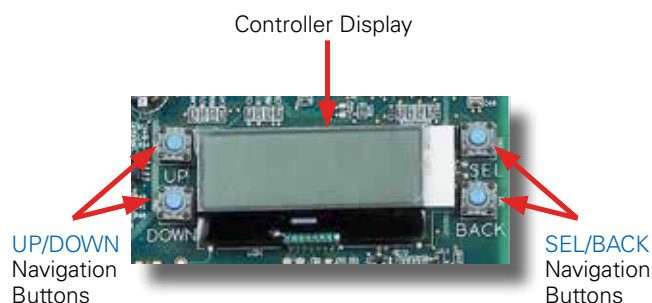
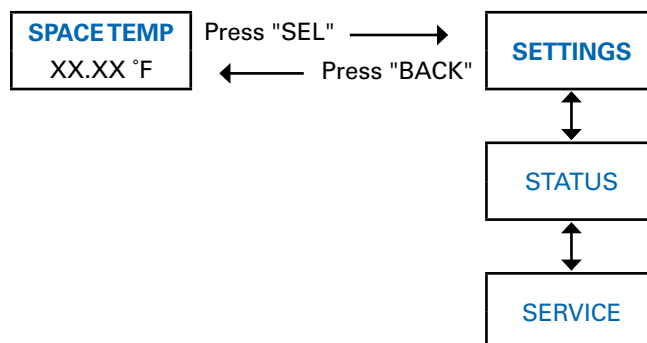


Figure 3-1

## 2. Navigation Overview

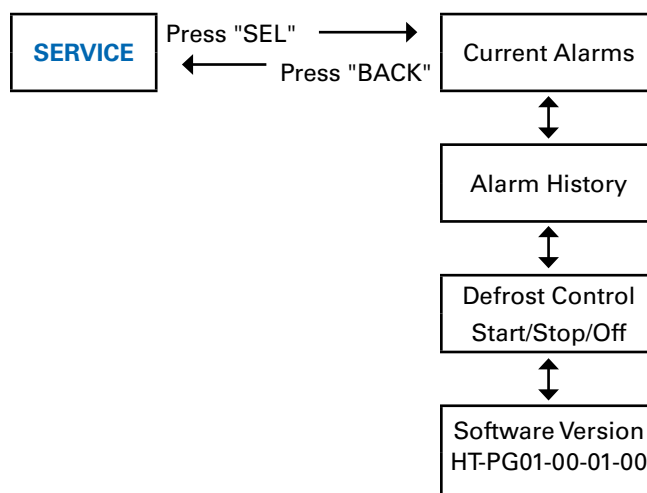
### a. Space Temp



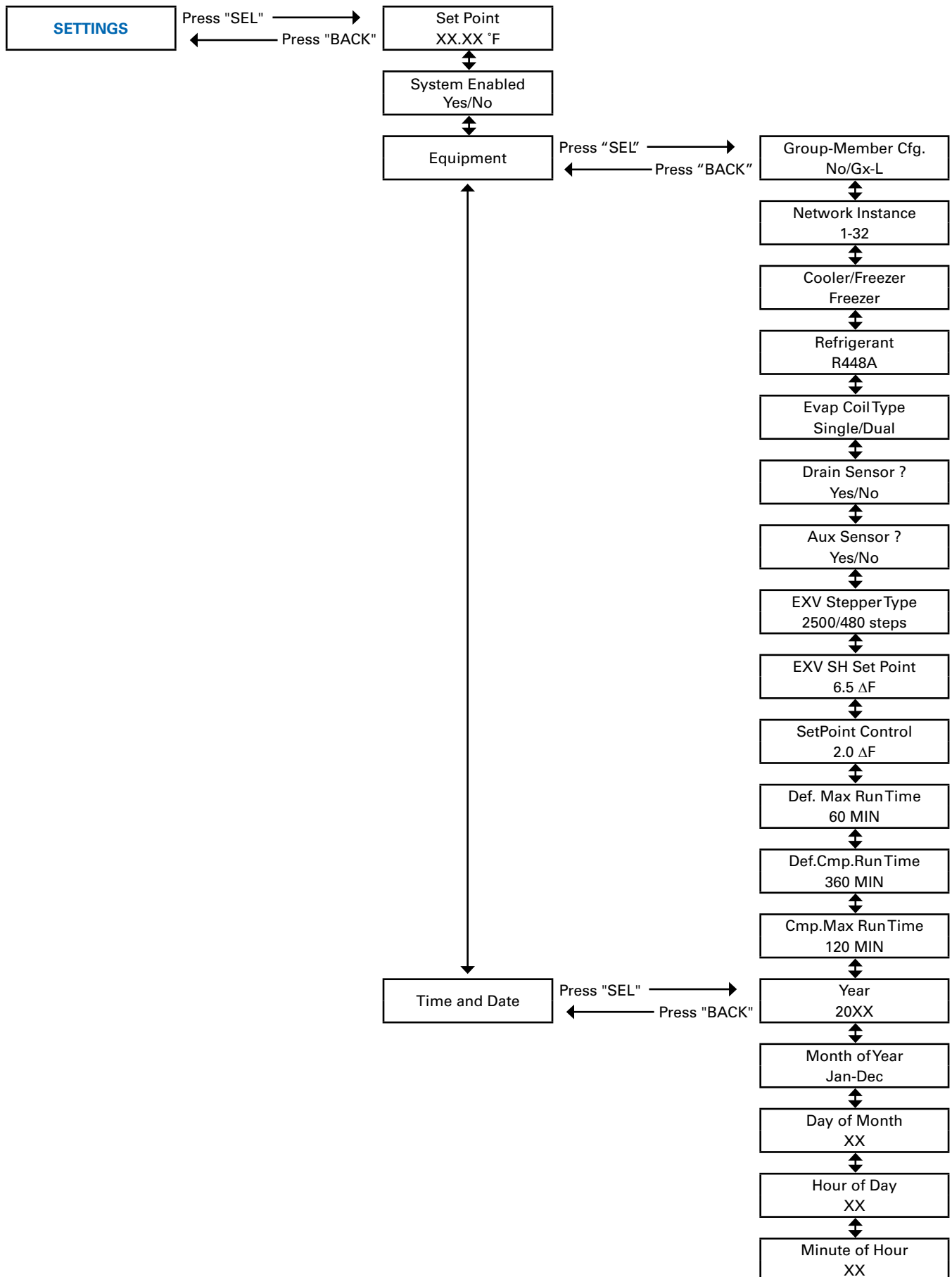
### b. Settings Overview - see page 6

### c. Status Overview - see page 7

### d. Service

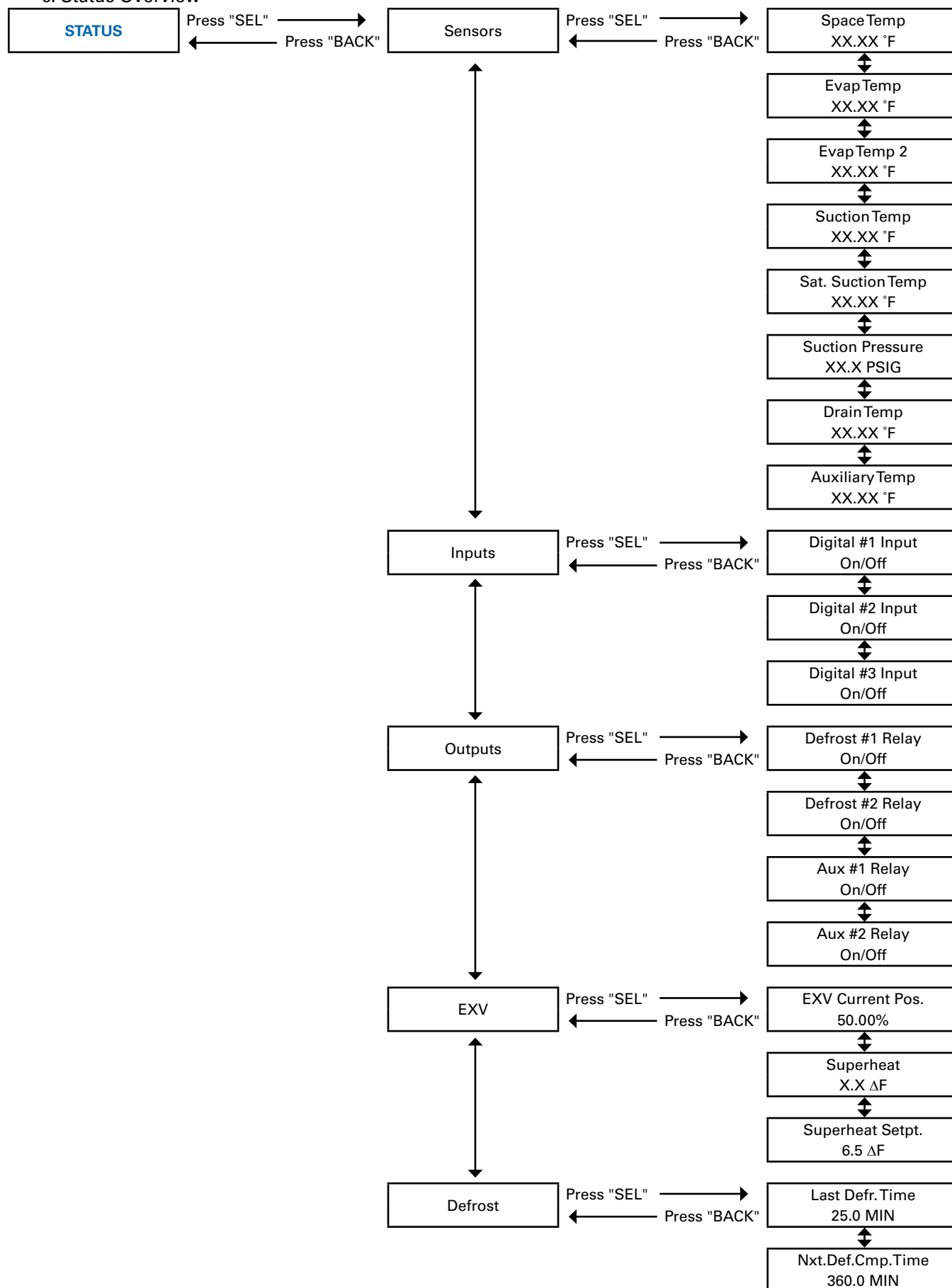


## SETTINGS



# Installation and Operations Manual

## c. Status Overview



# EcoNet® Enabled Unit Coolers

## 3. Parameters List

Parameter	Range	Default
Setpoint <sup>1</sup>	25°F to 60°F (Cooler); -40°F to 35°F (Freezer)	-10°F
Group Member Cfg	(See group member list)	No
Network Instance	1 to 32	1
Cooler/Freezer <sup>1</sup>	Cooler or Freezer	Freezer
Refrigerant	(See supported refrigerants list)	R448A
Evap Coil Type	Single or Dual	Single
Drain Sensor?	Yes or No	No
Aux Sensor?	Yes or No	No
EXV Stepper Type	2500 or 480 steps	2500 steps (Sporlan)
EXV SH Setpoint	4.0dF to 20.0dF	6.5dF
Setpoint Control	0.5dF to 20.0dF	2.0dF
Def. Max Run Time	10 to 60 minutes	60 minutes
Def. Cmp. Run Time	0 to 900 minutes	360 minutes
Cmp. Max. Run Time	0 to 480 minutes	120 minutes

## 4. Parameter Definitions

- Setpoint:** This is the room setpoint for the walk-in box. If the controller is configured as a "Cooler", the available room setpoint range is 25°F to 60°F; if the controller is configured as a "Freezer", the available room setpoint range is -40°F to 35°F (See "d" Cooler/Freezer parameter).
- Group Member Cfg:** This is to address the controller as part of a group if multiple evaporators will be wired together to cool the same space (See Group Operation section).
- Network Instance:** This is to address the controller to work as a standalone unit, but wired to other evaporators on the same communication bus with a Control Center Display (See Group Operation section).
- Cooler/Freezer:** Set the controller for the type of operation it will be used in. If set as "Freezer", the controller will use the defrost relays to activate the electric heaters in the evaporator, and allow a drain time at the end of the defrost cycle. If set as "Cooler", the unit will operate as air defrost (off-cycle).

<sup>1</sup> **NOTE:** Parameters will be pre-selected on factory-installed EcoNet Enabled Unit Cooler boards to match equipment. Air defrost units will ship from factory preset to "Cooler" and "35°F". Electric defrost units will ship from factory preset to "Freezer" and "-10°F". Replacement EcoNet Enabled Unit Cooler boards will ship with the default parameters of "Freezer" and "-10°F". A trained service professional/contractor may adjust the preset depending on the equipment the board is being replaced in.

- Refrigerant:** Set the refrigerant that will be used in the system from among the list of supported refrigerants.

Supported Refrigerants
R448A (Default)
R407A
R407C
R449A
R404A
R507A
R513A
R450A

- Evap Coil Type:** Set for the type of evaporator being used. "Single" applies to Low Profile evaporators. "Dual" applies to dual coil designs such as Ceiling Temp evaporators, where Evap Temp 2 sensor is used.
- Drain Sensor?:** Set to configure if drain temp sensor is installed.
- Aux Sensor?:** Not used.
- EXV Stepper Type:** Set to configure EXV type; 2500 steps or 480 steps. This should come preset from the factory and should not be changed.
- EXV SH Setpoint:** Set to configure desired superheat setpoint.
- Setpoint Control:** Set to configure desired hysteresis range for space temperature control. When the system is in Refrigeration mode, if the Space Temp Setpoint is -10°F with a default Setpoint control differential of 2.0 dF, the unit will continue to cool the space until the Space Temp is just under -10°F. At this point, the system will pump down and run the fans at half speed. When the Space Temp rises to around -8°F, Refrigeration mode will start back up: EXV will open and the fans will run at full speed until Setpoint is reached again or the unit goes into defrost.
- Def. Max Run Time:** Set to configure the maximum allowed defrost time.
- Def. Cmp. Run Time:** Set to configure the allowed compressor runtime before the unit goes into defrost.
- Cmp. Max Run Time:** Set to configure the allowed compressor runtime until Space Temperature Alarm is generated. If unit is actively cooling the space continuously for longer than this time period, an alarm will be generated to indicate that box has not achieved Setpoint.



# Installation and Operations Manual

## 5. Display Status

### a. Sensors

- 1) SpaceTemp
- 2) EvapTemp
- 3) EvapTemp 2 (not applicable on Low Profile evaporators)
- 4) SuctionTemp
- 5) Saturated SuctionTemp (conversion based on refrigerant selection)
- 6) Suction Pressure Gauge
- 7) DrainTemp (optional; requires sensor installed and configured)
- 8) AuxTemp (not used)

### b. Inputs

- 1) Digital Inputs 1, 2 and 3 (not used)

### c. Outputs

- 1) Defrost Relay 1 and 2
- 2) Aux Relay 1 and 2

### d. EXV

- 1) EXV current position
- 2) Calculated superheat
- 3) Current superheat Setpoint

## 6. Defrost

- a. Last defrost elapsed time
- b. Remaining runtime until next defrost

## 7. Service

### a. Current Alarms

- 1) Use the **UP/DOWN** buttons on the display to cycle through the currently active alarms

### b. Alarm History

- 1) Use the **UP/DOWN** buttons on the display to cycle through the alarm history list

**NOTE:** In order for the Alarm History time stamp to be accurate, the Time and Date must be configured on the controller (See Settings Overview, page 6, under the Start-Up/Commissioning section).

### c. Defrost Control

- 1) Use the **UP/DOWN** and **SEL** buttons to manually start/stop defrost cycle

### d. Software version (displays current software version)

## Operational Overview

### Refrigeration Mode

When powered up, the controller will go through an initial startup procedure driving the EXV closed to ensure the valve is properly seated. If the space temperature is higher than the SpaceTemp Setpoint, the controller will attempt to cool the space: After a couple of minutes the EXV will start opening and the controller will keep actively metering the valve to achieve its superheat Setpoint. The fans will start after a delay to ensure that the evaporator coil is cold enough.

During normal refrigeration mode, the fans will run at full speed, and the EXV will continuously modulate to maintain superheat. In order to prevent compressor short cycling, the active refrigeration mode will run for a minimum of 5 minutes.

When the space temperature drops below the SpaceTemp Setpoint, the EXV will close forcing a pumpdown, and the fans will cycle to half speed. In order to prevent compressor short cycling, this inactive mode will run for a minimum of 2 minutes.

When the space temperature rises 2 degrees above the Setpoint (can be adjusted via Setpoint Control parameter), the EXV will start metering again and then fans will cycle back to full speed.

**NOTE:** If there is a power loss, the controller will close the EXV to force a pumpdown. When power is restored, the controller will go through its initial startup before resuming refrigeration functions again.

### Defrost Mode

The controller will automatically start defrost when the Def. Comp. RunTime has elapsed (default 360 minutes), or manually when set by the user on the display **Service→Defrost Control→Start Defrosting**.

**NOTE:** When the unit is actively cooling the space (EXV is metering, fans running at full speed) the controller is counting runtime towards the next defrost. When the space temperature Setpoint is satisfied (EXV closes for pumpdown, fans running at half speed) the controller does not count this as runtime towards the next defrost.

# EcoNet® Enabled Unit Coolers

When a defrost cycle starts, the EXV will close for pumpdown.

- If unit is set as “Freezer” the electric heaters will be energized via the defrost relays, and the fans will cycle off. Defrost will end when evaporator coil reaches termination temperature or when Max. Defrost RunTime has elapsed (whichever comes first). The unit will then begin a 5 minute drain time. After the drain time has elapsed, the unit will resume normal refrigeration operation: EXV opens and fans start after a short delay. If DrainTemp sensor is installed and configured, the controller will monitor the drain pan temperature and generate an alarm if the drain pan does not get warm enough during a defrost cycle.
- If unit is set as “Cooler” the fans will cycle to half speed. Defrost will end when evaporator coil reaches termination temperature or when Max. Defrost RunTime has elapsed (whichever comes first). After the defrost cycle ends, the unit will resume normal refrigeration operation: EXV opens and fans start after a short delay.

The remaining runtime until next defrost can be viewed on the display by selecting [Status→Defrost→Nxt. Def. Comp. Time.](#)

The elapsed time for the last defrost can be viewed on the display by selecting [Status→Defrost→Last Defr. Time.](#)

A defrost cycle can be stopped prematurely via the display if desired. At the display, select [Service→Defrost Control→Stop Defrosting.](#)

**NOTE:** If there is a power loss while the unit is in the middle of a defrost cycle, the controller will keep the EXV closed. When power is restored, the controller will go through its initial startup before resuming the defrost cycle. When the defrost cycle ends, the controller will resume refrigeration functions.

## Test/Service Mode

If the user desires to temporarily disable the system without disconnecting power to the unit, at the controller display select [Settings→System Enabled→No.](#)

This function forces system pump down (EXV closes) and the fans turn off. The sensor inputs (temperatures, pressure, etc.) are still functional and can be viewed on the display.

To restart the system and enable cooling again, at the display select [Settings→System Enabled→Yes.](#)

## Operational Limits

1. Voltage: 115V/230V
2. Operating Temp range: -40°F to 122°F
3. Operating Humidity range: 0% to 97% RH condensing
4. Groups/Leaders/Members: 32 devices max on daisy chain; 1000 ft. max length from first device to last device on daisy chain
5. Defrost Relay #1: 24A at 240VAC
6. Defrost Relay #2: 24A at 240VAC
7. Aux Relay #1: 3A at 120VAC
8. Aux Relay #2: 3A at 120VAC

## Diagnostics

The following sensors are continuously monitored and an alarm is generated in case of failure. A red LED at the controller board will light up to indicate active alarms. The active alarm automatically clears once the sensor is repaired or replaced.

Currently active alarms can be viewed on the display by selecting [Service→Current Alarms.](#)

Any previously active alarms can be viewed in the display by selecting [Service→Alarm History.](#)

1. SpaceTemp
  - a. On failure, Cooling ON and OFF periods are run based on previous cycle averages.
2. EvapTemp
  - a. On failure, defrost cycle will run until max defrost time (60 minutes) has elapsed.
3. EvapTemp 2 (Not applicable on Low Profile Evaporators)
  - a. Same as EvapTemp 1, but only if Evap Coil Type = Dual
4. SuctionTemp
  - a. On failure, EXV remains open at a fixed position. No superheat calculation is available.
5. Suction Pressure
  - a. On failure, EvapTemp will be used with SuctionTemp to obtain approximate superheat calculation. If EvapTemp sensor input has also failed, EXV to remain open at a fixed position.
6. DrainTemp (if applicable)

# Installation and Operations Manual

## Group Operation

The EcoNet application supports multiple evaporator controllers to be connected together and work under a Leader/Follower setup. A maximum of 6 evaporators (1 Leader plus 5 Followers) can be configured on to a single group, and a maximum of 4 groups can be connected on to the same communication bus (see Figure 7-1).

When multiple controllers are addressed and connected to work as a group, the Leader of each group will command its followers when to cool the space, when to pump down, and when to start a defrost. Each group will work from a calculated average space temperature to determine if the space needs cooling. When a group is in active cooling mode, each evaporator in the group will meter its own EXV based on its individual superheat calculation. The Leader will keep track of the system runtime and command the Followers in its group to start a defrost cycle as necessary. When a defrost cycle ends, the Leader will command the Followers in its group to start cooling the space simultaneously after every member of the group has finished defrosting.

Each controller to be connected on the communication bus should be powered up and addressed individually before being connected to the other controllers in the daisy chain.

Group Member List	Description
G1-L	Group 1 Leader
G1-2	Group 1 Followers
G1-3	
G1-4	
G1-5	
G1-6	
G2-L	Group 2 Leader
G2-2	Group 2 Followers
G2-3	
G2-4	
G2-5	
G2-6	
G3-L	Group 3 Leader
G3-2	Group 3 Followers
G3-3	
G3-4	
G3-5	
G3-6	
G4-L	Group 4 Leader
G4-2	Group 4 Followers
G4-3	
G4-4	
G4-5	
G4-6	

Figure 7-1

To address each individual controller via the display select **Settings→Equipment→Group Member Cfg.**

In order to set up the communication bus, multiple controllers have to be wired together on a “daisy-chain” configuration. To “daisy chain” the units on the network, each unit should be connected to the EcoNet communication terminals (E1, E2, RT) as shown in Figure 7-3 on page 20.

- Use minimum 24AWG shielded twisted pair cable with shunt capacitance of 16 pF per foot and 100 ohm impedance.
- Ensure that communication wiring polarity is consistent on all controllers being wired together.
- A maximum of 32 devices can be daisy chained together on a single communication bus.
- Maximum wiring length of communication bus from first device to last device is 1,000 feet.
- The controllers can be wired in any order.

Figure 7-3 on page 20 shows a typical wiring configuration that can be achieved with multiple controllers.

## Replacement Parts and Part Numbers

1. Control Boards (08219624)
2. Sensors
  - a. Space/Drain Temp (08219623)
  - b. Evap Temp (08219636)
  - c. Suction Temp (08219637)
  - d. Suction Pressure (08219621)
3. Wire Harness
  - a. 63" Controller wire harness, SER valve (0821963501)
  - b. 96" Controller wire harness, SER valve (0821963502)
  - c. 126" Controller wire harness, SER valve (0821963503)
4. Controller Power Harness (08219638)

For help with replacement parts, call or e-mail our Parts Department at: (800) 288-9488, (256) 259-7400 or [parts@htpgusa.com](mailto:parts@htpgusa.com).

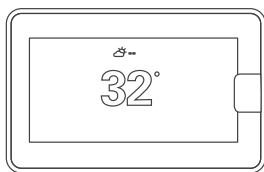
# EcoNet® Enabled Unit Coolers

## EcoNet Command Center (if equipped)

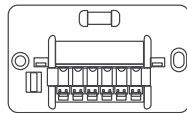
The HTPG EcoNet Command Control Center is an intelligent device that provides remote local control over HTPG EcoNet enabled evaporators in cooler or freezer applications. It's designed to be simple to operate with an intuitive touchscreen interface for seamless control of both groups and standalone systems.



### Items Included in the Box



EcoNet Command Center



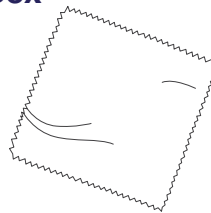
Wall Mounting Plate



Ferrite Toroid



Mounting Screws and Drywall Anchors



Lens Cloth



Quick Start Guide

## Safety Considerations

Failure to read and follow all instructions carefully before installing or operating this control and system could cause personal injury and/or property damage.

**NOTE:** All wiring must comply with national, local, and state codes.

**WARNING:** Power off your refrigeration system by using the master switch or circuit breaker box. Verify that power is not present before beginning installation.

Only a trained service professional/contractor should use or interact with the control board.

## Control Mounting Location

The EcoNet Command Center is an intuitive touchscreen interface allowing complete control of individual and grouped EcoNet Enabled Unit Coolers. This advanced unit provides a single interface to conveniently manage everything from temperature to the most advanced system settings of all EcoNet Enabled coolers and freezers on the EcoNet communication bus. It should be mounted indoors outside the cooler enclosure and located where it is easily accessible and visible to the business end user. Avoid mounting in high humidity areas.

## Installation Instructions

The EcoNet System consists of several intelligent, communicating components. Commands, operating conditions, and other data is passed continuously between components. All system components can be controlled through the wall mounted EcoNet Command

Center providing the user with a single interface to manage all features of the system.

The EcoNet Command Center remembers the system configurations of all connected equipment. If the EcoNet Command Center needs to be removed or replaced the refrigeration system will continue to operate normally and will keep its configuration settings.

When connecting multiple standalone evaporator units to the EcoNet network with a Command Center, use the "Network Instance" parameter ([Settings→Equipment→Network Instance](#)) to address each of them at the board display **before** connecting them to the daisy chain communication bus (see page 8 for Parameters List). When connecting evaporator units that will operate as a group, use the "Group Member Cfg" parameter ([Settings→Equipment→Group Member Cfg](#)) to address each group member at the board display **before** connecting them to the daisy chain communication bus (see Page 8 for Parameters list, page 11 for Group Operation). Multiple Standalone units and Group units can be combined on the same daisy chain network with the Command Center, as long as the wiring guidelines are followed (see page 11). A maximum of 32 devices can be wired on the network, with a maximum 1,000 feet wire length from first device to last device. The Command Center counts as one device and can be wired on either end of the network (see Figure 7-3 on page 20 for wiring diagram example).

**NOTE:** Read the entire instruction manual before starting the installation.

# Installation and Operations Manual

## Wiring Considerations

The EcoNet Command Center can be powered using ordinary thermostat wire from the EcoNet control board up to 150 feet away. We recommend you use 18AWG thermostat wire or shielded wire. Wire should be free from defects such as wear, cracks or anything that would hinder the conductivity of the wire within the circuit.

**NOTE:** If the 16V power wires are shorted the unit cooler board will shut down and cease operation until the short is corrected.

For distances over 75 feet we recommend using shielded wire. This is to reduce the amount of noise that the control sees and increase its overall performance and accuracy.

If the Command Center wiring will be located near or in parallel with high voltage wiring, cableTV, Ethernet wiring or radio-frequency equipment, then shielded thermostat wire can be used to reduce or eliminate potential interference. The shield wire should be connected to the evaporator unit earth ground. The shield wire should **not** be connected to the controller PCB. The shield wire from all runs should be attached together and only grounded at one evaporator unit. The shield wire should **not** be connected to any terminal at the Command Center. Connecting the shield to ground at more than one location can cause current loops in the shield, reducing shield effectiveness.

For distances over 150 feet an external isolated power supply is required and will be connected to the R and C terminals of the EcoNet Command Center. An AC/DC wall mount adapter supply with a rating of 9V or 12V and 400mA or greater is acceptable. The EcoNet communication terminals (E1 and E2) can be wired using ordinary thermostat wire.

**NOTE:** Wiring only requires four wires. However, it is good practice to run thermostat cable having more than four wires in the event of a damaged or broken wire during installation.

Maximum wiring length of communication bus from first device to last device is 1,000 feet.

The units should be wired in a "daisy chain" and not in a "star" configuration (see Figure 7-3 on page 20). To "daisy chain" the units on the network, each unit should have a set of wires coming into it and one set going out of it. The devices on the ends should have only one set of wires running to them. The order of the devices in the network is not important. The EcoNet Command Center has a six-terminal connectors labeled R, C, E1, E2, S1 and S2. The S1 and S2 terminals will never be used in this application.

## CONTROLLER COMMUNICATIONS WIRING

Terminal	Function
R	Power - 24 VAC or 9-21 VDC
C	Common/Ground - 24 VAC
E1	EcoNet Communications Bus Wire 1
E2	EcoNet Communications Bus Wire 2

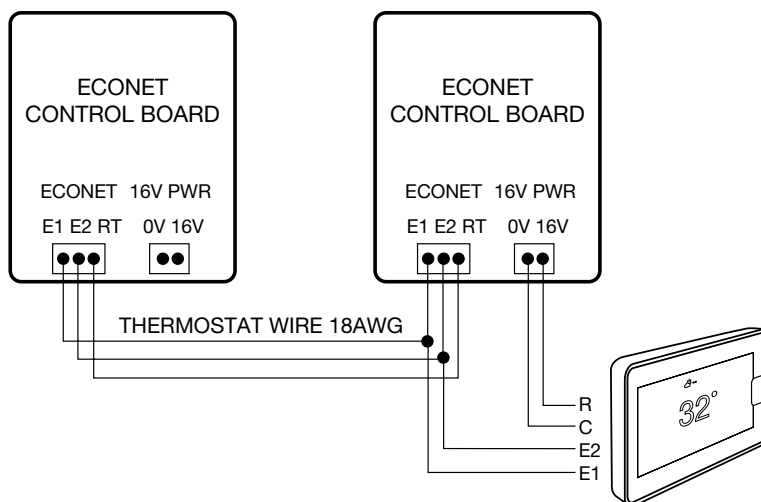


Figure 7-2

See Figure 7-3 on page 20 for typical wiring configuration with multiple controllers.



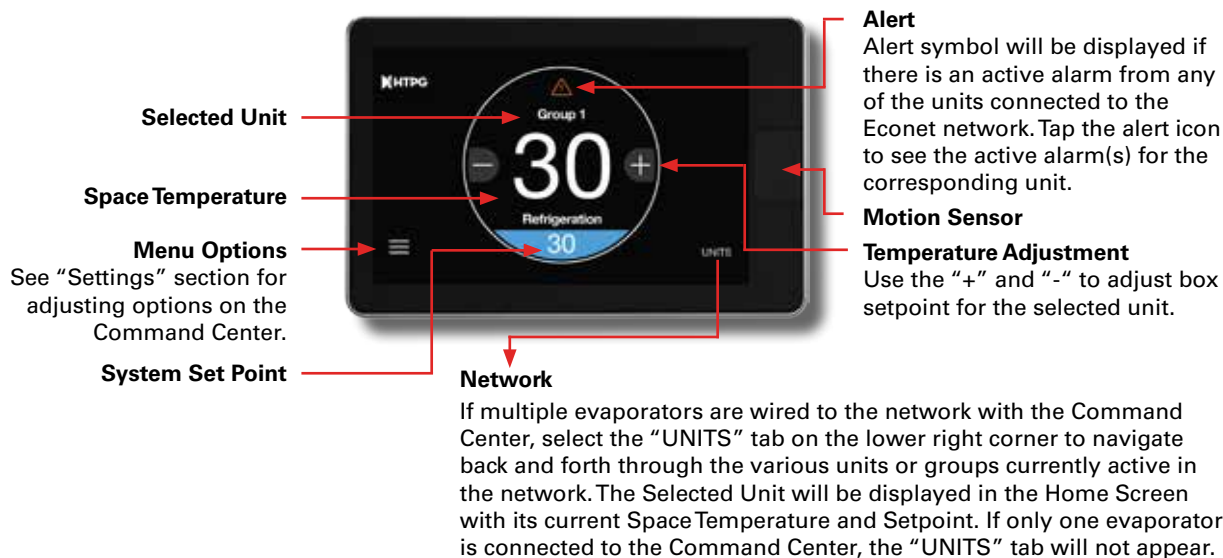
# EcoNet® Enabled Unit Coolers

## User Guide

### System Mode

The EcoNet Command Center can be used to control cooler or freezer applications.

#### Homescreen Overview



## Settings

### Menu Options

Tap the Menu icon in the bottom left corner of the home screen to easily configure basic and system level settings and view equipment status.



### Settings (Menu > Settings)

Adjust system-level settings, preferences and time.



### Basic (Menu > Settings > Basic)

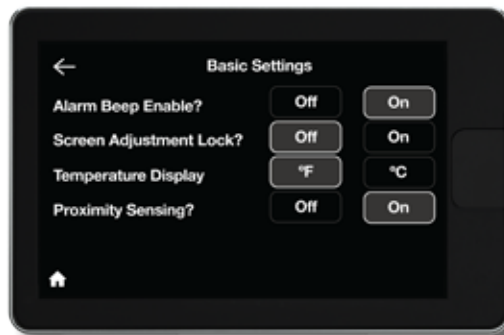
Adjust basic settings for the local Control Center.

**Alarm Beep Enable:** Sounds an audible alarm tone shall a critical alarm condition occur.

**Screen Lock:** To lock the main screen from any changes, enable screen lock. To unlock, enter the Basic settings menu again and set Screen Lock to "No." This locking function prevents any changes except changes made from within the Basic Settings.

**Temperature Display:** Changes the displayed space temperature and set points between Fahrenheit and Celsius.

**Proximity Sensing:** This enables the Command Center screen to go into standby mode after a short period of inactivity. The screen will wake up when the Command Center proximity sensor detects motion near the screen. If Proximity Sensing is disabled, the screen will remain active at all times.



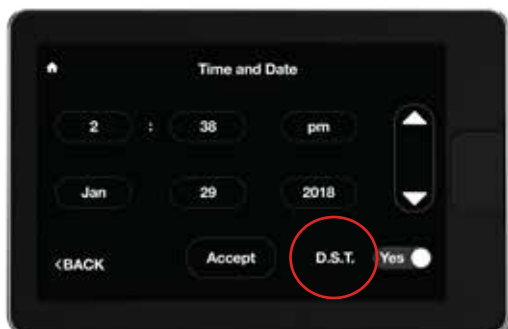
# Installation and Operations Manual

## Time and Date (Menu > Settings > Time)

Set the current time and date. Alerts and Alarms will be date and time stamped so it is important the clock is programmed correctly. This configuration only needs to be done once after all the controllers are addressed and connected together; the Command Center will broadcast the new time and date settings to all the controllers connected to the EcoNet network.

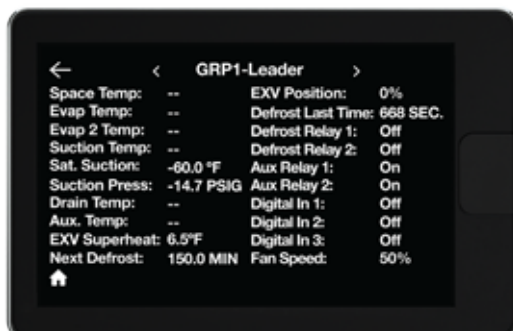


**DST:** At the bottom of this screen you can elect to enable or disable daylight savings time. Enabling this setting will automatically update the clock for Daylight Savings.



## Status (Menu > Status)

Tapping **Menu > Status** will display the equipment operating status for the selected EcoNet control board. Use the left < or right > symbols to quickly navigate between control units.

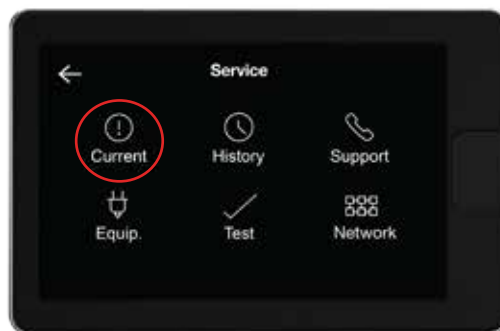


## Service (Menu > Service)

Tapping **Menu > Service** from the home screen will display current alarms, alarm history, support contact information, equipment info, test options and network.



**Current:** Shows currently active alerts and or alarms. When an equipment alert or alarm is present, an alert-alarm icon will appear on the home screen, and the alarm beep will sound if enabled. Select the alert-alarm icon on the home screen to quickly view the alert or alarm and a brief description.



**History:** Shows a list of the past eight alerts/alarms with the time and date stamp.



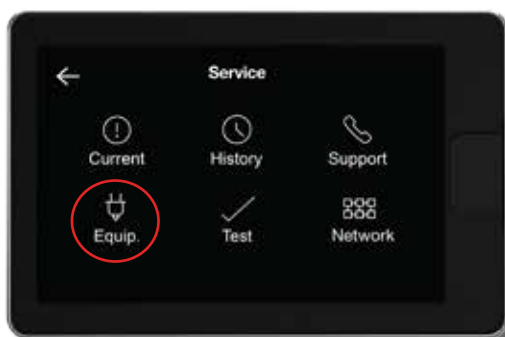
## EcoNet® Enabled Unit Coolers

**Support:** Allows you to input the contact information for your preferred contractor or install professional (company name, phone number and email address), so that it's always available should you run into any issues. Simply use the on-screen keyboard to enter the appropriate contact information.

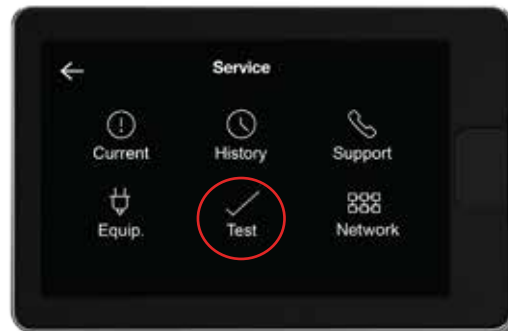
**NOTE:** You should always contact your preferred contractor or install professional regarding alerts/alarms, performance issues or other questions specific to your equipment.



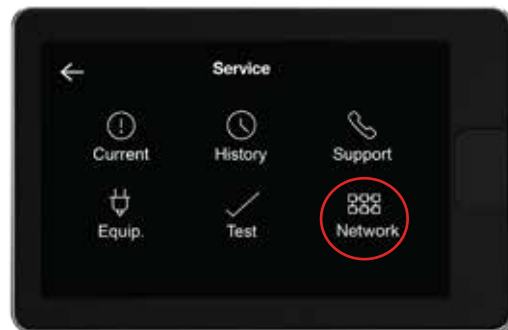
**Equip.:** Displays the model, serial number and software version of all the connected equipment on the EcoNet communication bus.



**Test:** The Test option will allow the user to run a manual defrost cycle. In group configurations the manual defrost command through EcoNet Command Center is only available for Group Leaders. Followers will start the defrost simultaneously.



**Network:** Displays all of the connected units on the EcoNet communication bus. Easily see group configurations and standalone units on one screen.



## Caring for your Smart Refrigeration Control

### Cleaning

You can clean your control screen by lightly spraying water on the provided lens cloth or a clean microfiber cloth. Wipe the surface of the screen with the dampened cloth. It is recommended you first lock the screen ([Menu > Settings > Basic > Screen Lock](#) set to "Yes").

**NOTE:** Never spray any liquids directly onto your EcoNet Command Center.

### Rebooting

You can reboot your EcoNet Command Center by cycling power to the device. Rebooting will not alter programming, settings or configuration options.

# Installation and Operations Manual

## Installer Settings

### Installer Settings Defaults

Object	Range	Default	Description
System Enabled	No/Yes	Yes	If the user desires to temporarily disable the system without disconnecting power to the unit select "No"
Run Time Until Defrost	0 to 900 Minutes	360 Minutes	Set to configure the allowed compressor runtime before the unit goes into defrost
Defrost Max Run Time	10 to 60 Minutes	60 Minutes	Set to configure the maximum allowed defrost time
EXV Superheat Set Point	4.0°F to 20.0°F	6.5°F	Set to configure desired superheat set point
Comp. Run Time Alert	0 to 480 Minutes	120 Minutes	Set to configure the allowed compressor runtime until Space Temperature Alarm is generated. If unit is actively cooling the space continuously for longer than this time period, an alarm will be generated to indicate that box has not achieved set point
Set Point Hysteresis	0.5°F to 20.0°F	2.0°F	Set to configure desired hysteresis range for space temperature control. When the space temperature rises above the set point by the hysteresis value the system will generate a call for cooling
Cooler/Freezer Select	Cooler or Freezer	Freezer <sup>1</sup>	Set the controller for the type of operation it will be used in
Refrigerant Used	R448A, R407A, R407C, R449A, R404A, R507A, R513A, R450A	R448A	Set the refrigerant that will be used in the system
Evaporator Coil Type	Single or Dual	Single	Set for the type of evaporator being used. "Single" applies to Low Profile evaporators. "Dual" applies to dual coil designs such as Ceiling-Temp evaporators, where EvapTemp 2 sensor is used
Drain Sensor Installed	No/Yes	No	Set to "Yes" if a drain temp sensor is installed
Aux Sensor Installed	No/Yes	No	Set to "Yes" if an auxiliary sensor is installed
EXV Stepper Type	480 to 2500 Steps	2500 Steps	Set to configure EXV type; 2500 steps or 480 steps. This should come preset from the factory and should not be changed

<sup>1</sup> **NOTE:** Parameter will be automatically selected by the EcoNet Command Center by detecting factory settings of the EcoNet Enabled Unit Cooler. For optimal performance, the factory setting should not be changed. A trained service professional/contractor may override the auto-populated default if necessary.

# EcoNet® Enabled Unit Coolers

## Installer Settings (Menu > Settings > Installer)

To enter the Installer Settings menu, select [Menu > Settings](#), then tap and hold on "Installer" on the bottom right of the screen for five seconds. Use the large left and right arrows to navigate installer settings. Tap the < and > symbols to navigate between different units.

**Note:** If multiple standalone evaporators will be wired to the Command Center, each evaporator must be addressed individually at the controller display via the "Network Instance" parameter. If multiple evaporators will be wired to the Command Center to work as a group cooling the same space, each evaporator must be addressed individually at the controller display via the "Group Member Cfg" parameter.

The previous < and next > symbols around the unit or group selection can be used to quickly cycle through all of the units on the EcoNet bus to easily change settings.

**System Enabled:** Allows user to temporarily disable the system without disconnecting power to the unit. This function forces system pump down (EXV closes) and the fans turn off. The sensor inputs (temperatures, pressure, etc.) are still functional and can be viewed on the display.



**Run Time Until Defrost:** Set to configure the allowed compressor runtime before the unit goes into defrost.



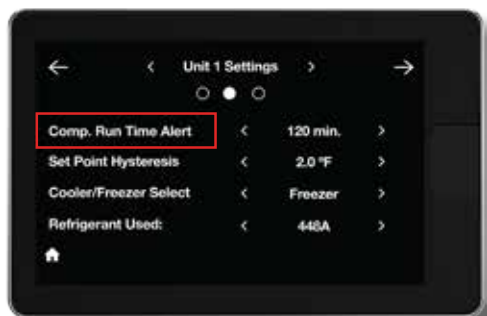
**Defrost Max Run Time:** Set to configure the maximum allowed defrost time.



**EXV SH Set Point:** Set to configure desired superheat setpoint.



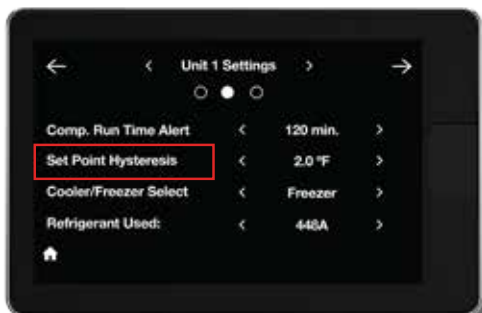
**Comp. Run Time Alert:** Set to configure the allowed compressor runtime until Space Temperature Alarm is generated. If unit is actively cooling the space continuously for longer than this time period, an alarm will be generated to indicate that box has not achieved set point.





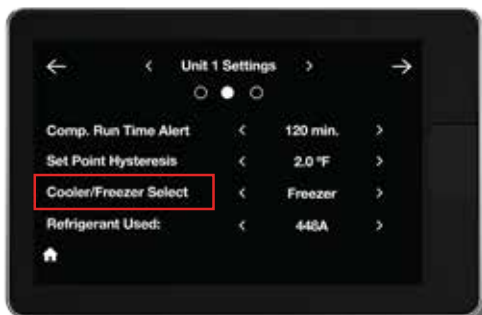
# Installation and Operations Manual

**Set Point Hysteresis:** Set to configure desired hysteresis range for space temperature control. When the system is in Refrigeration mode, if the SpaceTemp set point is -10°F with a default set point control differential of 2.0 dF, the unit will continue to cool the space until the Space Temp is just under -10°F. At this point, the system will pump down and run the fans at half speed. When the SpaceTemp rises to around -8°F, Refrigeration mode will start back up: EXV will open and the fans will run at full speed until set point is reached again or the unit goes into defrost.

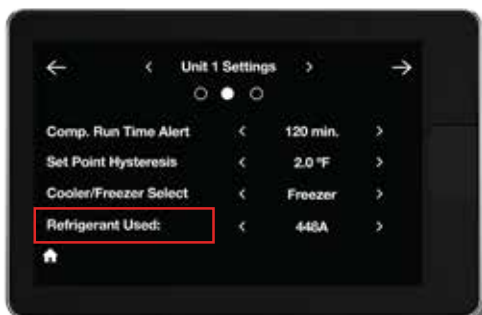


**Cooler/Freezer Select:** Set the controller for the type of operation it will be used in. If set as "Freezer", the controller will use the defrost relays to activate the electric heaters in the evaporator, and allow a drain time at the end of the defrost cycle. If set as "Cooler", the unit will operate as air defrost (off-cycle).

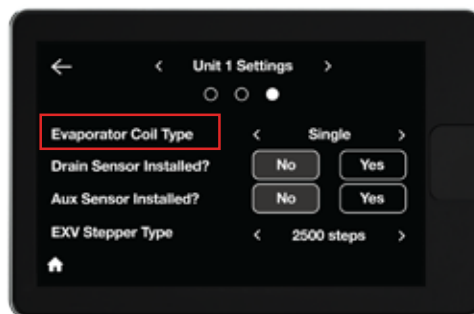
**NOTE:** Parameter will be automatically selected by the EcoNet Command Center by detecting factory settings of the EcoNet Enabled Unit Cooler. For optimal performance, the factory setting should not be changed. A trained service professional/contractor may override the auto-populated default if necessary.



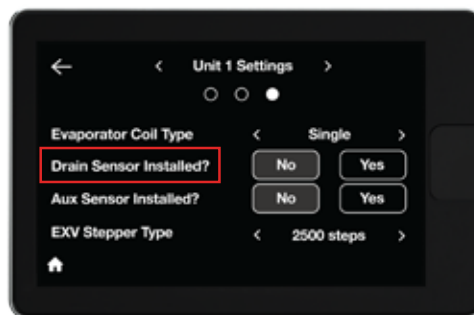
**Refrigerant Used:** Set the refrigerant that will be used in the system from among the list of supported refrigerants. Default is R448A.



**Evaporator Coil Type:** Set for the type of evaporator being used. "Single" applies to Low Profile evaporators. "Dual" applies to dual coil designs such as the Ceiling-Temp evaporators, where EvapTemp 2 sensor is used.

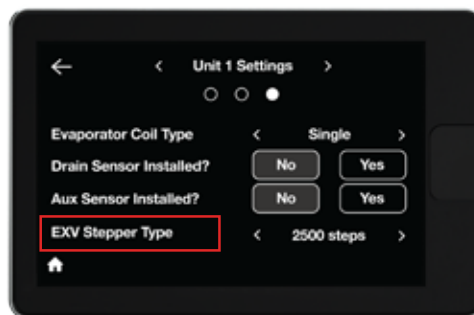


**Drain Sensor Installed:** Set to "Yes" if drain temp sensor is installed.



**Aux Sensor Installed:** Not used.

**EXV Stepper Type:** Set to configure EXV type; 2,500 steps or 480 steps. This should come preset from the factory and should not be changed.



**NOTE:** Followers in a group configuration will not be able to adjust the following settings as these are configured by the leader:

- System Enabled
- Run Time Until Defrost
- Defrost Max Run time
- Comp. Run Time Alert
- Set Point Hysteresis
- Cooler/Freezer Select
- Refrigerant Used

# EcoNet® Enabled Unit Coolers

## Typical Wiring Configuration with Multiple Controllers

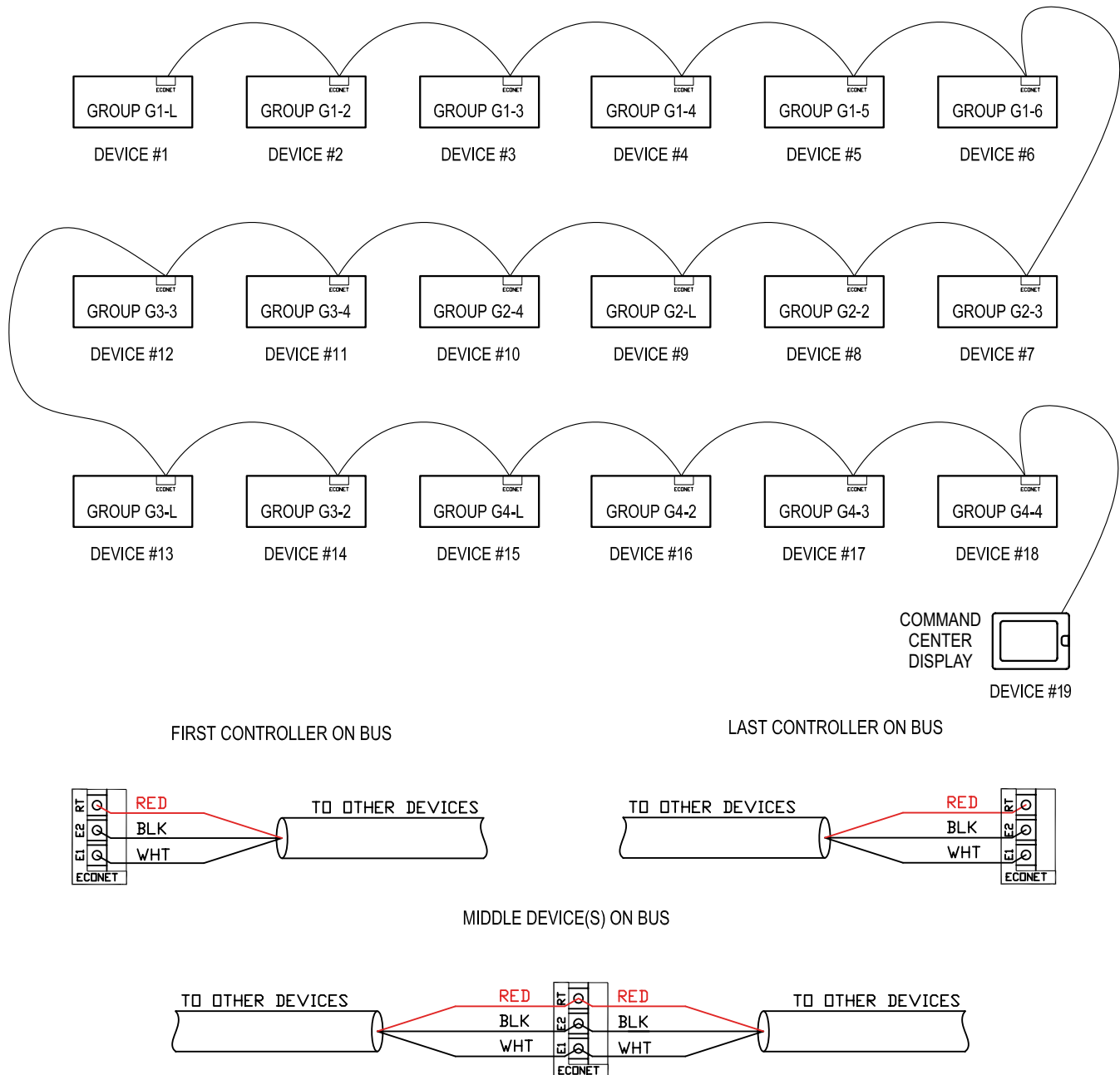


Figure 7-3

### NOTES

- 1,000 feet maximum bus wire from first device to last device.
- 32 maximum number of devices (including the EcoNet Command Center) connected to same bus.
- If the Command Center is being connected to a network consisting of more than one EcoNet Controller, please make sure that all controllers are properly addressed and wired to the network before connecting the Command Center to said network.
- See Figure 7-2 on page 13 for controller communications wiring.

*Due to continuing product development, specifications are subject to change without notice.*