To ensure proper functionality and optimum performance, it is STRONGLY recommended that Hill PHOENIX display cases be installed/serviced by qualified technicians who have experience working with commercial refrigerated display merchandisers and storage cabinets. For a list of Hill PHOENIX-authorized installation/service contractors, please visit our Web site at www.hillphoenix.com.
At Hill PHOENIX®, the safety of our customers and employees, as well as the ongoing performance of our products, are top priorities. To that end, we include important warning messages in all Hill PHOENIX installation and operation handbooks, accompanied by an alert symbol paired with the word "DANGER", "WARNING", or "CAUTION".

All warning messages will inform you of what the potential hazard is; how to reduce the risk of death, injury, or damage; and what may happen if the instructions are not properly followed.

**DANGER**

"DANGER" indicates an immediate threat of death or serious injury if all instructions are not followed carefully.

**WARNING**

"WARNING" indicates a possible threat of death or serious injury if all instructions are not followed carefully.

**CAUTION**

"CAUTION" indicates that failure to properly follow instructions may result in case damage.
LIABILITY NOTICE

For Cases with Shelf Lighting Systems

Hill PHOENIX does NOT design any of its shelf lighting systems or any of its display cases with shelf lighting systems for direct or indirect exposure to water or other liquids. The use of a misting system or water hose on a display case with a shelf lighting system, resulting in the direct or indirect exposure of the lighting system to water, can lead to a number of serious issues (including, without limitation, electrical failures, fire, electric shock, and mold) in turn resulting in personal injury, death, sickness, and/or serious property damage (including, without limitation, to the display itself, to the location where the display is situated [e.g., store] and to any surrounding property). DO NOT use misting systems, water hoses or other devices that spray liquids in Hill PHOENIX display cases with lighted shelves.

If a misting system or water hose is installed or used on a display case with a shelf lighting system, then Hill PHOENIX shall not be subject to any obligations or liabilities (whether arising out of breach of contract, warranty, tort [including negligence], strict liability or other theories of law) directly or indirectly resulting from, arising out of or related to such installation or use, including, without limitation, any personal injury, death or property damage resulting from an electrical failure, fire, electric shock, or mold.

P079211M, REVO
For refrigeration units that utilize R-744 (CO$_2$), pressure relief and pressure-regulating relief valves may need to be installed based on the system capacity. The valves need to be located such that no stop valve is positioned between the relief valves and the parts or section of the system being protected.

When de-energizing refrigeration units containing R-744 (CO$_2$), venting of the R-744 (CO$_2$) refrigerant may occur through the pressure regulating relief valves. *These valves are located on the refrigeration system and not on the case model.* If venting does occur, the valve must not be defeated, capped, or altered by any means.

**WARNING:** Under *no circumstances* should any component be replaced or added without consulting Hill PHOENIX Field Service Engineering. Utilizing improper components may result in serious injury to persons or damage to the system.
# Energy Data

## System Requirements

<table>
<thead>
<tr>
<th>Model</th>
<th>Volts</th>
<th>Phase</th>
<th>Hz</th>
<th>Wire</th>
<th>Minimum Circuit Ampacity</th>
<th>Maximum Overcurrent Protection</th>
</tr>
</thead>
<tbody>
<tr>
<td>FEA</td>
<td>208</td>
<td>1</td>
<td>60</td>
<td>4-wire</td>
<td>No Drain Pan: 33.2</td>
<td>Drain Pan: 45.7</td>
</tr>
</tbody>
</table>

## Electrical Data

<table>
<thead>
<tr>
<th>Model</th>
<th>Fans per Case</th>
<th>High Efficiency Fans</th>
<th>Condenser Fan</th>
<th>Drain Pump</th>
<th>Maximum Lights</th>
</tr>
</thead>
<tbody>
<tr>
<td>FEA</td>
<td>7</td>
<td>1.05</td>
<td>77</td>
<td>1.3</td>
<td>94</td>
</tr>
</tbody>
</table>

## Guidelines & Control Settings

<table>
<thead>
<tr>
<th>Model</th>
<th>24 hr Energy Usage (kWh)</th>
<th>Suction Pressure @ Case Outlet (psig)</th>
<th>Superheat Set Point @ Bulb (°F)</th>
<th>Discharge Air (°F)</th>
<th>Discharge Air Velocity (FPM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FEA</td>
<td>84</td>
<td>68</td>
<td>6-8</td>
<td>38</td>
<td>250</td>
</tr>
</tbody>
</table>

## Condensing Unit Data

<table>
<thead>
<tr>
<th>Model</th>
<th>Volts</th>
<th>Phase</th>
<th>Frequency (Hz)</th>
<th>HP</th>
<th>RLA(^2) (amps)</th>
<th>LRA(^3) (amps)</th>
<th>Refrig.</th>
<th>Lbs. of Refrig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>FEA</td>
<td>208</td>
<td>1</td>
<td>60</td>
<td>3</td>
<td>21</td>
<td>107</td>
<td>R507</td>
<td>11.4</td>
</tr>
</tbody>
</table>

## Defrost Controls

<table>
<thead>
<tr>
<th>Model</th>
<th>Defrosts per Day</th>
<th>Electric Defrost</th>
<th>Timed-Off Defrost</th>
<th>Hot Gas Defrost</th>
<th>Reverse Air Defrost</th>
</tr>
</thead>
<tbody>
<tr>
<td>FEA</td>
<td>6</td>
<td>---</td>
<td>45</td>
<td>60</td>
<td>---</td>
</tr>
</tbody>
</table>

---

1. Average discharge air velocity at peak of defrost.
2. RLA - Running Load Amps
3. LRA - Locked Rotor Amps
4. "- - -" indicates not an option on this case model.

All measurements are taken per ARI 1200 - 2002 specifications.
Thank you for choosing Hill PHOENIX for your food merchandising needs. This handbook contains important technical information that will assist you with the installation of your new Hill PHOENIX display cases. By closely following the instructions, you can expect peak performance; attractive fit and finish; and long case life.

We are always interested in your suggestions for improvements (e.g. case design, technical documents, etc.). Please feel free to contact our Marketing Services group at the toll-free number listed below. Thank you for choosing Hill PHOENIX, and we wish you the very best in outstanding food merchandising.

CASE DESCRIPTION

STORE CONDITIONS
Hill PHOENIX cases are designed to operate in an air-conditioned store that maintains a 75°F (24°C) store temperature and 55% (max) relative humidity (CRMA conditions). Case operation will be adversely affected by exposure to excessively high ambient temperatures and/or humidity.

REFRIGERATION SYSTEM OPERATION
Air-cooled condensing units require adequate ventilation for efficient performance. Machine-room temperatures must be maintained at a minimum of 65°F in winter and a maximum of 95°F in summer. Minimum condensing temperatures should be no less than 70°F.

CONTACTING THE FACTORY
If you need to contact Hill PHOENIX to obtain parts or warranty information, please call toll free 1-800-283-1109 and ask for a Service Parts Representative. For technical questions regarding Hill PHOENIX display cases, please call toll free 1-800-283-1109 and ask for Technical Support. For questions regarding our refrigeration systems or electrical distribution centers, please call our Systems Division Customer Service Department at 1-770-285-3100.

SHIPPING DAMAGE
Claims for obvious shipping damage must be 1) noted on either the freight bill or the express receipt and 2) signed by the carrier's agent; otherwise, the carrier may refuse the claim. If damage becomes apparent after the equipment is unpacked, retain all packing materials and submit a written request to the carrier for inspection within 14 days of receipt of the equipment.
MOOVING CASES
Hill PHOENIX FEA floral display cases are equipped with lower structural tubes (see Fig. 1) that run the length of the case. These tubes are designed to allow the case to be moved into position by a forklift operator.

FLOOR PREP
1. Ask the general contractor if there have been changes in the building dimensions since the print you are using was issued. Also, ask for the points of reference from which you should take dimensions to locate the cases.
2. Using chalk lines or a laser transit, mark the floor where the cases are to be located for the entire lineup. The lines should coincide with the outside edges of the lower structural tubes.
3. Leveling is necessary to ensure proper case function and to avoid potential damage. Locate the highest point on the positioning line as a reference for determining the proper height of the shim-pack levelers. A laser transit is recommended for precision and requires just one person.
4. Locate the position of the lower structural tubes and spot properly leveled shim packs at the appropriate locations.

LINE-UP & INSTALLATION
1. Move the case into position, being certain to leave at least 6" of ventilation space at the top and back of the case.
2. Using a “J” bar, raise the end of the case (under cross support) and place the lower structural tubes on the shim packs. Repeat on the other end of the case.
3. Once the lower structural tubes are properly placed on the shim packs, check the vertical level by placing a bubble level plumb to the rear edge of the case; then add/remove shim levels as needed. To check the horizontal level, repeat this process after placing the bubble level on the rear sill.

WARNING
Be certain that your hands and feet are out of the way before lowering the case after the removal of the casters. Failure to do so may result in serious injury.

Fig. 1  Attaching the front and end kick plates.
The expansion valve and other controls are located on the left-hand side of the case and are accessible without lifting the fan plenum.

The controls cluster may be reached by lifting the left-hand deck pan. The compressor and condensing unit are located on top of the case for easy access.

The diagram below illustrates all of the refrigeration components in the FEA case. The components surrounded by the box are located in the case tank. Basic definitions of these components are listed on the preceding page.

If it becomes necessary to penetrate the case bottom for any reason, make certain it is sealed afterward with canned-foam sealant and white RTV.

NOTE: FEA case contains 3 evaporator coils that are piped in parallel.
**Refrigeration Components**

**Access Valve** - Access port on the evaporator that allows service personnel to check system pressure.

**Accumulator** - A device installed on the suction line that is used to boil off small amounts of liquid refrigerant so liquid does not reach the compressor.

**Compressor** - An electrically driven piston pump that pumps vapor refrigerant from a low pressure level to a higher pressure level.

**Condenser** - The component in a refrigeration system that transfers the heat that was absorbed by the refrigerant in the evaporator and the heat of compression from the system by condensing the refrigerant.

**Condenser Fans** - Fan that forces air through the air cooled condenser to aid heat transfer.

**Low-Pressure Control** - A device that protects the compressor from low charge and high pressure.

**Evaporator Coil** - The component of the refrigeration system that absorbs heat from the air by boiling liquid refrigerant to vapor.

**Evaporator Fans** - Fans that circulate air through the case and force air through the evaporator to aid heat transfer.

**Filter Drier** - A device installed on the liquid line of a refrigeration system that removes water and other impurities from the refrigerant in the lines during initial start-up.

**High-Pressure Control** - Non-adjustable pressure transducers that regulate condenser fan operation and protects the compressor from high pressure.

**Receiver** - The component in a refrigeration system that stores liquid refrigerant that is not being used by the system in low load conditions or when the system is shut down.

**Service Valve** - A manually operated valve in the refrigeration system that is used for various service operations such as isolating the high or low sides of the system.

**Sight Glass** - A device installed on the liquid line of a refrigeration system that is used to determine if there is water or vapor in the lines by visual inspection.

**Thermostatic Expansion Valve (TXV)** - A valve that controls the flow of liquid refrigerant to the evaporator coil and also separates the high pressure side of the system from low pressure side of the system.

**Thermostatic Expansion Valve (TXV) Bulb** - A bulb that is attached to the suction line of the evaporator that controls the TXV. Inside the bulb is a charge that reacts to temperature and regulates the flow of refrigerant through the expansion valve.
Electrical hookups for the FEA are made to a centrally-located electrical box. The light ballasts are also mounted in the electrical junction box. Access to the box can be gained by removing the rear access panel. See the appendix section at the end of this manual for more detailed electrical wiring information.

MODEL
FEA
The condensate pumps have been designed to remove excess moisture that is created during the operation of the case. The drain outlet is located beneath the deck pans in the front-center section of the case.

Pump 1 pushes the condensate up through the rear area of the case into the condensate reservoir in Pump 2. Pump 2 then carries the condensate out of the top of the case through a 30-foot long, clear vinyl 3/8" ID hose with quick connect, emptying into the store’s drainage system.

Pump 2 is provided with an emergency fail-safe switch designed to turn off Pump 1 as Pump 2 reaches its maximum capacity. Pump 2 will continue to pump until the switch is turned off. Each pump must remain plugged into its design receptacle for the emergency fail-safe switch to operate properly.

An optional heated condensate pan may be substituted for pump 2. The same receptacle is used; however, the emergency fail-safe switch and wiring are removed.

Care should be given to assure that all connections are water tight and properly sealed.
LED LIGHTING

GENERAL INFORMATION

The Hill PHOENIX LED power supplies are located inside the grounded, sheet-metal structure of the display case in the same location that the T8 ballast would normally occupy – typically a slide out ballast tray under the case or in the cornice area.

The LED lighting system has an ON/OFF switch that is located in the upper left-hand corner of the lighting assembly. Once cases have been properly positioned in the store and the electrician has connected the lighting circuit, Hill PHOENIX luminaires may be turned on to verify that all lights are connected and working properly.

To ensure peak performance, it is advisable to run the LED lights only when the store climate control is on and case refrigeration is started. **NOTE: it is highly recommended that the ambient store temperature not exceed 80°F.**

Once store power is connected and the light circuit is energized, the LED system should operate without the need for any significant maintenance for several years. Should a power supply need to be removed and/or replaced, turn off the power to the case before proceeding. Be certain to replace the power supply with genuine Hill PHOENIX parts or a comparable UL-listed Class-2 rated regulated 24V DC power supply with 100W output capacity.

**DANGER**

**SHOCK HAZARD**

Always disconnect power to case when cleaning, servicing or configuring components of the LED lighting system. Failure to do so may result in serious injury or death.

**WARNING**

Using improper DC power supplies may damage the luminaires, resulting in sub-standard operation and increased chances of safety issues/injury.

Never replace a 24V DC power supply with a T8 or T5 ballast of any kind! Ballasts use alternating current (AC) instead of direct current (DC) and operate at a much higher voltage than is used by this LED system. Doing so will damage the LED system and increases the chance of safety issues/injury.

**REMOVING SHELF LUMINAIRES**

1. Unplug the luminaire.
2. Pinching the latching clips inward at the ends of the luminaire, rotate luminaire up at each end until hooks are free, then remove.

**Re-installing shelf luminaires:**

1. Place hook into shelf roll form at shelf front and rotate rear of luminaire toward the shelf.
2. Depress the rear clip so that luminaire can finish rotation and until clip engages the shelf bracket.

**REMOVING NON-SHELF LUMINAIRES**

1. Simultaneously squeeze the plastic clips at each end.
2. When the hooks are disengaged, pull the luminaire free.

**Re-installing a non-shelf luminaire:**

1. Align the 4-pole jack with the 4-pole connector on the clip-in LED luminaire.
2. Push into place – side clips will engage on the sheet metal of the case.
3. Fasten anti-tamper bracket into sheet metal of case with #8 screw at end opposite the 4-pole in-line connector.
AIR FLOW
FEA cases have been designed to provide maximum product capacity within the refrigerated air envelope. It is important that you DO NOT overload the food product display to avoid impinging on the air flow pattern.

Overloading will cause malfunction and the loss of proper temperature levels, particularly when discharge and return air sections are covered. Please keep products within the load-limit lines shown on in the diagram below.

DEFROST & TEMP CONTROLS
The defrost and temperature controls of FEA cases are initiated by a Dixell XR03CX rack controller.

The single time-off defrost is initiated by the Dixell XR03CX controller mounted in the electrical control box. During defrost, all valves close and the pump cycles OFF.

It is important to consult the guidelines and control setting shown on page 4 before setting defrost times. Further adjustment may be required depending on store conditions.

Dixell controller information and setpoints are located in this manual's Appendix section.
CASE CLEANING

Hill PHOENIX cases are designed to facilitate cleaning. All surfaces pitch to a deep-drawn drain trough that angles toward the front of the case where the waste outlet is located for easy access.

CLEANING PROCEDURES

• A periodic cleaning schedule should be established to maintain proper sanitation, insure maximum operating efficiency, and avoid the corrosive action of food fluids on metal parts that are left on for long periods of time. We recommend cleaning once a week.

• To avoid shock hazard, be sure all electrical power is turned off before cleaning. In some installations, more than one disconnect switch may have to be turned off to completely de-energize the case.

• Check waste outlet to insure it is not clogged before starting the cleaning process and avoid introducing water faster than the case drain can carry it away.

  - Avoid spraying cleaning solutions directly on electrical connections.
  - Allow cases to be turned off long enough to clean any frost or ice from coil and pans.
  - Use mild detergent and warm water. When necessary, water and baking soda solution will help remove case odors. Avoid abrasive scouring powders or pads.
  - Under no circumstances should abrasive cleaning solutions such as scouring powders or steel wool be used to clean non-glare glass.
  - Use warm water and a disinfecting cleaning solution when cleaning underneath the cases.
  - When removing deck pans for cleaning, gently set the pans on the ground in a vertical position up against the front of the case. If equipped with the optional quick connects, disconnect the coolant lines from the pans for cleaning. Use warm – not hot – water when cleaning the deck pans.

---

**DANGER**

**SHOCK HAZARD**

Always disconnect power to case when servicing or cleaning. Failure to do so may result in serious injury or death.

**WARNING**

Exercise extreme caution when working in a case with the coil cover removed. The coil contains many sharp edges that can result in severe cuts to the hands and arms.
Contact the Service Parts Department at:

1-800-283-1109

Provide the following information about the part you are ordering:

• Model number and serial number of the case for which the part is intended.
• Length of the part (if applicable).
• Color of part (if painted) or color of polymer part.
• Whether part is for left- or right-hand application.
• Quantity

*Serial plate is located on the back of the case on the left-hand side.

If the parts are to be returned for credit, ask the Parts Department to furnish you with a Return Material Authorization Number.
APPENDIX A:

DIXELL CONTROLLER/SETPOINTS
1. CONTENTS
1. Contents
2. General warnings
3. General description
4. Regulation
5. Defrost
6. Front panel commands
7. Parameters
8. Digital inputs
9. Installation and mounting
10. Electrical connections
11. How to use the hot key
12. Alarm signaling
13. Technical data
14. Connections
15. Default settings values

2. GENERAL WARNINGS

PLEASE READ BEFORE USING THIS MANUAL
1. This manual is part of the product and should be kept near the instrument for easy and quick reference.
2. The instrument shall not be used for purposes different from those described hereunder. It cannot be used as a safety device.
3. Check the application limits before proceeding.

SAFETY PRECAUTIONS
• Check the supply voltage is correct before connecting the instrument.
• Do not expose to water or moisture: use the controller only within the operating limits avoiding sudden temperature changes with high atmospheric humidity to prevent formation of condensation.
• Warning: disconnect all electrical connections before any kind of maintenance.
• Fit the probe where it is not accessible by the End User. The instrument must not be opened.
• In case of failure or faulty operation send the instrument back to the distributor or to “Dixell S.p.A.” (see address) with a detailed description of the fault.
• Consider the maximum current which can be applied to each relay (see Technical Data).
• Ensure that the wires for probes, loads and the power supply are separated and far enough from each other, without crossing or intertwining.
• In case of applications in industrial environments, the use of mains filters (our mod. FT1) in parallel with inductive loads could be useful.

3. GENERAL DESCRIPTION

The XR03CX, in 52x74x50mm short format, is microprocessor based controller suitable for applications on normal temperature refrigerating units. It provides two relay output: one for compressor and the other one for alarm signaling or as auxiliary output. It provides an NTC probe input and a digital input for alarm signaling, for switching the auxiliary output or for start defrost. The instrument is fully configurable through special parameters that can be easily programmed through the keyboard or by the HOTKEY.

The XR04CX, in 74x50mm short format, is microprocessor based controller suitable for applications on normal or low temperature refrigerating units. It provides two relay output: one for compressor and the other one for defrost. It provides two NTC probe inputs, one for room temperature and other one to control defrost termination. The instrument is fully configurable through special parameters that can be easily programmed through the keyboard or by the HOTKEY.

4. REGULATION

The regulation is performed according to the temperature measured by the thermostat probe with a positive differential from the set point: if the temperature increases and reaches set point plus differential the compressor is started and then turned off when the temperature reaches the set point value again. In case of fault in the thermostat probe the start and stop of the compressor are timed through parameters “Cy” and “Cn”.

5. DEFROST

XR03CX
Defrost is performed through a simple stop of the compressor. Parameter “tdef” controls the interval between defrost cycles, while its length is controlled by parameter “Md”.

XR04CX
Two defrost modes are available through the “td” parameter:
• tdel = tdef through electrical heater (compressor OFF)
• tdsin = hot gas defrost (compressor ON).
Other parameters are used to control the interval between defrost cycles (id), its maximum length (NM) and the defrost modes, timed or controlled by the evaporator’s probe. At the end of defrost dripping time is started, its length is set in the “dt” parameter. With “tdd” the dripping time is disabled.

6. FRONT PANEL COMMANDS

SET
To display target set point, in programming mode it selects a parameter or confirm an operation.
To start a manual defrost.

AUX
In programming mode it browses the parameter codes or increases the displayed value.
In programming mode it browses the parameter codes or decreases the displayed value.

KEYS COMBINATION

SET + SET:
To lock or unlock the keyboard.
To enter in programming mode.
To return to room temperature display.

HOW TO SEE THE SET POINT
1. Push and immediately release the SET key, the set point will be showed.
2. Push and immediately release the SET key or wait about 5s to return to normal visualisation.

HOW TO CHANGE THE SETPOINT
1. Enter the Programming mode by pressing the SET+ SET keys for 3s (“C” or “F” LED starts blinking).
2. Select the required parameter. Press the “SET” key to display its value.
3. Use + or - to change its value.
4. Press “SET” to store the new value and move to the following parameter.

TO START A MANUAL DEFROST
Push the DEF key for more than 2s and a manual defrost will start.

HOW TO CHANGE A PARAMETER VALUE
To change the parameter’s value operate as follows:
1. Enter the Programming mode by pressing the SET+ SET keys for 3s (“C” or “F” LED starts blinking).
2. Released the keys, then push again the SET+ SET keys for more than 7s. The L2 label will be displayed immediately followed from the Hy parameter.

NOTE: the set value is stored even when the procedure is exited by waiting the time-out to expire.

HIDDEN MENU
The hidden menu includes all the parameters of the instrument.

HOW TO ENTER THE HIDDEN MENU
1. Enter the Programming mode by pressing the SET+ SET keys for 3s (“C” or “F” LED starts blinking).
2. Released the keys, then push again the SET+ SET keys for more than 7s. The L2 label will be displayed immediately followed from the Hy parameter.
3. Select the required parameter.
4. Press the “SET” key to display its value.
5. Use + or - to change its value.
6. Press “SET” to store the new value and move to the following parameter.

TO EXIT: Press SET+ SET or wait 15s without pressing a key.

IN CASE OF TEST: if none parameter is present in L1, after 3s the “op” message is displayed. Keep the keys pushed until the message is changed.

TO LOCK THE KEYBOARD
• Keep pressed for more than 3s the + and - keys.
• The “OF” message will be displayed and the keyboard will be locked. If a key is pressed more than 3s the “OF” message will be displayed.

TO UNLOCK THE KEYBOARD
Keep pressed together for more than 3s the + and - keys till the “ON” message will be displayed.

7. PARAMETERS

REGULATION
8. DIGITAL INPUTS

The free voltage digital input is programmable in different configurations by the “iF” parameter.

9. INSTALLATION AND MOUNTING

The instrument is provided with screw terminal block to connect cables with a cross section up to 2.5 mm². Before connecting cables make sure the power supply complies with the instrument’s requirements. Separate the probe cables from the power supply cables, from the outputs and the power connections. Do not exceed the maximum current allowed on each relay, in case of heavier loads use a suitable external relay.

10. ELECTRICAL CONNECTIONS

1. HOW TO USE THE HOT KEY

1.1. How to use the hot key from the instrument (upload)

1.2. Insert a programmed “Hot key” into the 5-PIN receptacle and then turn the Controller ON.

2.3. The temperature range allowed for correct operation is 0-25°C. Avoid places subject to strong vibrations, corrosive gases, excessive dirt or humidity. The same recommendations apply to probes. Let air circulate by the cooling holes.

11. HOW TO USE THE HOT KEY

1.1. How to use the hot key from the instrument (upload)

1.2. HOW TO PROGRAM THE HOT KEY FROM THE INSTRUMENT (UPLOAD)

1.1. How to use the hot key from the instrument (upload)

1.2. HOW TO PROGRAM THE HOT KEY FROM THE INSTRUMENT (UPLOAD)

1.2. Insert a programmed “Hot key” into the 5-PIN receptacle and then turn the Controller ON.

2.3. The temperature range allowed for correct operation is 0-25°C. Avoid places subject to strong vibrations, corrosive gases, excessive dirt or humidity. The same recommendations apply to probes. Let air circulate by the cooling holes.

11. HOW TO USE THE HOT KEY

1.1. How to use the hot key from the instrument (upload)

1.2. HOW TO PROGRAM THE HOT KEY FROM THE INSTRUMENT (UPLOAD)

1.2. Insert a programmed “Hot key” into the 5-PIN receptacle and then turn the Controller ON.

2.3. The temperature range allowed for correct operation is 0-25°C. Avoid places subject to strong vibrations, corrosive gases, excessive dirt or humidity. The same recommendations apply to probes. Let air circulate by the cooling holes.

11. HOW TO USE THE HOT KEY

1.1. How to use the hot key from the instrument (upload)

1.2. HOW TO PROGRAM THE HOT KEY FROM THE INSTRUMENT (UPLOAD)

1.2. Insert a programmed “Hot key” into the 5-PIN receptacle and then turn the Controller ON.

2.3. The temperature range allowed for correct operation is 0-25°C. Avoid places subject to strong vibrations, corrosive gases, excessive dirt or humidity. The same recommendations apply to probes. Let air circulate by the cooling holes.
14. CONNECTIONS

XR03CX – 20A o 8A Compressor

NOTE: The compressor relay is 20(A) or 16(A) depending on the model.

NOTE: 120Vac or 24Vac/dc or 12Vac/dc connect to 6-7

XR04CX – 20A o 8A Compressor

NOTE: The compressor relay is 20(A) or 16(A) depending on the model.

NOTA: 120Vac o 24Vac/dc o 12Vac/dc connect to 6 and 7

15. DEFAULT SETTING VALUES

<table>
<thead>
<tr>
<th>LAB</th>
<th>DESCRIPTION</th>
<th>RANGE</th>
<th>DEFAULT</th>
</tr>
</thead>
<tbody>
<tr>
<td>REGULATION</td>
<td>Hy</td>
<td>Differential</td>
<td>0.1 ÷ 25°C/1 ÷ 45°F</td>
</tr>
<tr>
<td></td>
<td>LS</td>
<td>Minimum Set Point</td>
<td>-55°C÷SET÷67°F÷SET</td>
</tr>
<tr>
<td></td>
<td>US</td>
<td>Maximum Set Point</td>
<td>SET÷99°C/ SET÷210°F</td>
</tr>
<tr>
<td></td>
<td>ot</td>
<td>First probe calibration</td>
<td>-9.9÷9.9°C÷18÷18°F</td>
</tr>
<tr>
<td></td>
<td>P2</td>
<td>Second probe presence (Only XR04CX)</td>
<td>n - Y</td>
</tr>
<tr>
<td></td>
<td>oE</td>
<td>Second probe calibration (Only XR04CX)</td>
<td>-9.9÷9.9°C÷18÷18°F</td>
</tr>
<tr>
<td></td>
<td>od</td>
<td>Outputs activation delay at start up</td>
<td>0 ÷ 99 min</td>
</tr>
<tr>
<td></td>
<td>AC</td>
<td>Anti-short cycle delay</td>
<td>0 ÷ 50 min</td>
</tr>
<tr>
<td></td>
<td>Cy</td>
<td>Compressor ON time faulty probe</td>
<td>0 ÷ 99 min</td>
</tr>
<tr>
<td></td>
<td>Cn</td>
<td>Compressor OFF time faulty probe</td>
<td>0 ÷ 99 min</td>
</tr>
<tr>
<td></td>
<td>CH</td>
<td>Kind of Action (Only XR03CX)</td>
<td>cL = Hi</td>
</tr>
<tr>
<td>DISPLAY</td>
<td>CF</td>
<td>Measurement units</td>
<td>°C - °F</td>
</tr>
<tr>
<td></td>
<td>re</td>
<td>Resolution (only for °C)</td>
<td>eE – in</td>
</tr>
<tr>
<td></td>
<td>Ld</td>
<td>Default Display (Only XR04CX)</td>
<td>P1-P2 : SP</td>
</tr>
<tr>
<td></td>
<td>dy</td>
<td>Display delay</td>
<td>0 ÷ 15 min</td>
</tr>
</tbody>
</table>

DEFROST

| dd | Start defrost delay | 0 ÷ 99 min. | 0 |
| dF | Display during defrost | n – in – SP – dF | it |
| dt | Drip time | 0 ÷ 99 min | 0 |
| dP | Defrost at power-on | y - n | n |

ALARMS

| AU | Maximum temperature alarm | ALL÷99°C / ALL÷210°F | 99 °C / 99 °F |
| AL | Minimum temperature alarm | -55°C÷ALU÷67°F÷ALU | -55 °C ÷ 65 °F |
| Ad | Temperature alarm delay | 0 ÷ 99 min | 15 |
| da | Exclusion of temperature alarm at startup | 0 ÷ 99 min | 90 |

DIGITAL INPUT (Only XR03CX)

| iP | Digital input polarity | cL – oP | cL |
| IF | Digital input configuration | EA – do – dF – Au – db | EA |
| di | Digital input delay | 0 ÷ 99 min | 5 |
| dc | Compressor and fan status when open door | no /Fn / oP / Fc | FC |
| rd | Regulation with door open | n - Y | y |

OTHER

<p>| d1 | Thermostat probe display | Read Only | - - - |
| d2 | Evaporator probe display | Read Only | - - - |
| Pt | Parameter code table | Read Only | - - - |
| rl | Firmware release | Read Only | - - - |</p>
<table>
<thead>
<tr>
<th>LBL</th>
<th>DESCRIPTION</th>
<th>RANGE</th>
<th>DEFAULT</th>
<th>LEVEL</th>
<th>SETTING</th>
</tr>
</thead>
<tbody>
<tr>
<td>REGULATION</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Setpoint</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hy</td>
<td>Differential</td>
<td>1+45°F</td>
<td>2°F</td>
<td>L1</td>
<td>37</td>
</tr>
<tr>
<td>LS</td>
<td>Minimum Set Point</td>
<td>-67°F+SET</td>
<td>25°F</td>
<td>L2</td>
<td>25</td>
</tr>
<tr>
<td>US</td>
<td>Maximum Set Point</td>
<td>SET+99°F</td>
<td>40°F</td>
<td>L2</td>
<td>50</td>
</tr>
<tr>
<td>ot</td>
<td>First probe calibration</td>
<td>-18+18°F</td>
<td>0°F</td>
<td>L2</td>
<td>0</td>
</tr>
<tr>
<td>P2</td>
<td>Second probe presence</td>
<td>n-Y</td>
<td>y</td>
<td>L2</td>
<td>Y</td>
</tr>
<tr>
<td>oE</td>
<td>Second probe calibration</td>
<td>18+18°F</td>
<td>0°F</td>
<td>L2</td>
<td>0</td>
</tr>
<tr>
<td>AC</td>
<td>Anti-short cycle delay</td>
<td>0+50 min</td>
<td>2</td>
<td>L2</td>
<td>2</td>
</tr>
<tr>
<td>Cy</td>
<td>Compressor ON time faulty probe</td>
<td>0+99 min</td>
<td>12</td>
<td>L2</td>
<td>12</td>
</tr>
<tr>
<td>Cn</td>
<td>Compressor OFF time faulty probe</td>
<td>0+99 min</td>
<td>4</td>
<td>L2</td>
<td>4</td>
</tr>
<tr>
<td>DISPLAY</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CF</td>
<td>Measurement units</td>
<td>°C-°F</td>
<td>°F</td>
<td>L2</td>
<td>°F</td>
</tr>
<tr>
<td>rE</td>
<td>Resolution (only for °C)</td>
<td>dE-In</td>
<td>in</td>
<td>L2</td>
<td>-</td>
</tr>
<tr>
<td>Ld</td>
<td>Default Display</td>
<td>P1-P2</td>
<td>P1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>dy</td>
<td>Display delay</td>
<td>0+15 min</td>
<td>0</td>
<td>L2</td>
<td>0</td>
</tr>
<tr>
<td>DEFROST</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>dE</td>
<td>Defrost termination temperature</td>
<td>58+99°F</td>
<td>52°F</td>
<td>L1</td>
<td>55</td>
</tr>
<tr>
<td>Id</td>
<td>Interval between defrost cycles</td>
<td>0+99 hours</td>
<td>4</td>
<td>L1</td>
<td>4</td>
</tr>
<tr>
<td>ηd</td>
<td>Maximum length for defrost</td>
<td>0+99 min</td>
<td>28</td>
<td>L1</td>
<td>40</td>
</tr>
<tr>
<td>dF</td>
<td>Display during defrost</td>
<td>rt-It-dF-St</td>
<td>rt</td>
<td>L2</td>
<td>rt</td>
</tr>
<tr>
<td>dP</td>
<td>Display After Power Failure</td>
<td>n-Y</td>
<td>y</td>
<td>L2</td>
<td>y</td>
</tr>
<tr>
<td>Fd</td>
<td>Defrost Indicator delay after defrost</td>
<td>0-99 min</td>
<td>20</td>
<td>L2</td>
<td>20</td>
</tr>
<tr>
<td>ALARMS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AU</td>
<td>Maximum temperature alarm</td>
<td>ALL+99°F</td>
<td>55°F</td>
<td>L2</td>
<td>50</td>
</tr>
<tr>
<td>AL</td>
<td>Minimum temperature alarm</td>
<td>-55°C+ALU/-</td>
<td>20°F</td>
<td>L2</td>
<td>20</td>
</tr>
<tr>
<td>Ad</td>
<td>Temperature alarm delay</td>
<td>0+99 min</td>
<td>5</td>
<td>L2</td>
<td>5</td>
</tr>
<tr>
<td>dA</td>
<td>temperature alarm delay at startup</td>
<td>0+99 min</td>
<td>90</td>
<td>L2</td>
<td>90</td>
</tr>
<tr>
<td>OTHER</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d2</td>
<td>Evaporator probe display</td>
<td>Read Only</td>
<td>---</td>
<td>L1</td>
<td>---</td>
</tr>
<tr>
<td>Pt</td>
<td>Parameter code table</td>
<td>Read Only</td>
<td>---</td>
<td>L2</td>
<td>---</td>
</tr>
<tr>
<td>rL</td>
<td>Firmware release</td>
<td>Read Only</td>
<td>---</td>
<td>L2</td>
<td>---</td>
</tr>
</tbody>
</table>

SETPOINT FOR DIXELL XR03CX USED ON FEA

P079238D     REVO
APPENDIX B:
CONDENSATE PUMP DIAGRAMS
## VCL-45 Series

### Specifications

<table>
<thead>
<tr>
<th>Model No.</th>
<th>Item No.</th>
<th>Discharge Size</th>
<th>Listing</th>
<th>HP</th>
<th>Volts</th>
<th>Hertz</th>
<th>Amps</th>
<th>Watts</th>
<th>Performance (GPH @ Head)</th>
<th>Shut Off Feet</th>
<th>Pwr. Cord PSI</th>
<th>Weight (lbs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VCL-45ULS</td>
<td>553242</td>
<td>3/8&quot; OD Copper</td>
<td>UL/CSA</td>
<td>1/5</td>
<td>115</td>
<td>60</td>
<td>3.5</td>
<td>185</td>
<td>450 445 440 415</td>
<td>45</td>
<td>19.5</td>
<td>6</td>
</tr>
<tr>
<td>VCL-45ULS</td>
<td>553245</td>
<td>3/8&quot; OD Copper</td>
<td>UL/CSA</td>
<td>1/5</td>
<td>230</td>
<td>50/60</td>
<td>1.0</td>
<td>250</td>
<td>450 445 440 415</td>
<td>45</td>
<td>19.5</td>
<td>6</td>
</tr>
</tbody>
</table>

### Replacement Parts

- Tank: 153502
- Cover, Tank: 153225
- Copper Tubing: 938108
- Adapter, Brass: 941014
- Float/Switch Assy: 153537
- Cover, Switch: 153120
- Safety Switch Assy: 154713
- Stand/Volute Assy: 153516
- Seal Ring: 928025
- Impeller: 153520

[Flow vs. Head Diagram]

www.LittleGiantPump.com

Little GIANT
PO Box 12010 • Oklahoma City, OK 73157
Phone: 800.701.7894 • Fax: 800.701.8046
E-mail: customerservice@littlegiant.com

Form 995128 — 03/2003
APPENDIX C:
WIRING DIAGRAMS
CASE LEFT LED HARNESS
CASE RIGHT LED HARNESS
TEMPERATURE PROBES
PUMP RECEPTICAL HARNESS
PUMP 1 RECEPTICAL
PUMP 2 RECEPTICAL
CONDENSING UNIT WIRING HARNESS
CONDENSING UNIT CAPACITOR CABINET
FAN JUNCTION BOX
SIGHT GLASS
CONDENSING UNIT
CONDENSING UNIT
CONDENSING UNIT
CONDENSING UNIT
COMPRESSOR
CONDENSING PUMP TWO
FEA ELECTRICAL BOX
FOURTEEN MONTH WARRANTY. MANUFACTURER’S PRODUCT IS WARRANTED TO BE FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP UNDER NORMAL USE AND MAINTENANCE FOR A PERIOD OF FOURTEEN MONTHS FROM THE DATE OF ORIGINAL SHIPMENT. A NEW OR REBUILT PART TO REPLACE ANY DEFECTIVE PART WILL BE PROVIDED WITHOUT CHARGE, PROVIDED THE DEFECTIVE PART IS RETURNED TO MANUFACTURER. THE REPLACEMENT PART ASSUMES THE UNUSED PORTION OF THE WARRANTY.

This warranty does not include labor or other costs incurred for repairing, removing, installing, shipping, servicing, or handling of either defective parts or replacement parts.

The fourteen month warranty shall not apply:

1. To any unit or any part thereof which has been subject to accident, alteration, negligence, misuse or abuse, operation on improper voltage, or which has not been operated in accordance with the manufacturer’s recommendation, or if the serial number of the unit has been altered, defaced, or removed.

2. When the unit, or any part thereof, is damaged by fire, flood, or other act of God.

3. Outside the continental United States.

4. To labor cost for replacement of parts, or for freight, shipping expenses, sales tax or upgrading.

5. When the operation is impaired due to improper installation.

6. When installation and startup forms are not properly complete or returned within two weeks after startup.

THIS PLAN DOES NOT COVER CONSEQUENTIAL DAMAGES. Manufacturer shall not be liable under any circumstances for any consequential damages, including loss of profit, additional labor cost, loss of refrigerant or food products, or injury to personnel or property caused by defective material or parts or for any delay in its performance hereunder due to causes beyond its control. The foregoing shall constitute the sole and exclusive remedy of any purchases and the sole and exclusive liability of Manufacturer in connection with this product.

The Warranties are Expressly in Lieu of All Other Warranties, Express of Implied and All Other Obligations or Liabilities on Our Part. The Obligation to Repair or Replace Parts or Components Judged to be Defective in Material or Workmanship States Our Entire Liability Whether Based on Tort, Contract or Warranty. We Neither Assume Nor Authorize Any Other Person to Assume for Us Any Other Liability in Connection with Our Product.

MAIL CLAIM TO:

Hill PHOENIX
Display Merchandisers
1925 Ruffin Mill Road
Colonial Heights, VA  23834
1-800-283-1109

Hill PHOENIX
Refrigeration Systems &
Electrical Distribution Products
709 Sigman Road
Conyers, GA  30013
770-285-3200
Warning
Maintenance & Case Care

When cleaning cases the following must be performed PRIOR to cleaning:

To avoid electrical shock, be sure all electric power is turned off before cleaning. In some installations, more than one switch may have to be turned off to completely de-energize the case.

Do not spray cleaning solution or water directly on fan motors or any electrical connections.

All lighting receptacles must be dried off prior to insertion and re-energizing the lighting circuit.

Please refer to the Use and Maintenance section of this installation manual.