To ensure proper functionality and optimum performance, it is STRONGLY recommended that Hillphoenix specialty cases be installed/serviced by qualified technicians who have experience working with commercial refrigerated display merchandisers and storage cabinets. For a list of Hillphoenix-authorized installation/service contractors, please visit our website at www.hillphoenix.com.
LIABILITY NOTICE

For Cases with Shelf Lighting Systems

Hillphoenix 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 Hillphoenix 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 Hillphoenix 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.

R-744 (CO₂) NOTICE

For Systems Utilizing R-744 (CO₂) Refrigerant

For refrigeration units that utilize R-744 (CO₂), 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 (CO₂), venting of the R-744 (CO₂) 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 Hillphoenix Field Service Engineering. Utilizing improper components may result in serious injury to persons or damage to the system.
Important

At Hillphoenix®, 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 Hillphoenix installation and operations handbooks, accompanied by an alert symbol paired with the word "DANGER", "WARNING", or "CAUTION".

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

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

⚠️ WARNING
Indicates a potential threat of death or serious injury if all instructions are not followed carefully.

⚠️ CAUTION
Indicates that failure to properly follow instructions may result in case damage.
Revision History

• new manual format_10/21
TECHNICAL REFERENCE

HILLPHOENIX REFRIGERATED DISPLAY CASES FOR SALE IN THE UNITED STATES MEET OR EXCEED DEPARTMENT OF ENERGY 2017 REQUIREMENTS.

NUMBERS ARE BASED ON STANDARD CASE SIZES. CONSULT ENGINEERING.

GENERAL NOTES:
- "---" Indicates that the feature is not an option on this case model and/or the data is not yet available at this time.
- 15 15/16" toekick height with the 43" profile (optional).

<table>
<thead>
<tr>
<th>Rev. Date</th>
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<tr>
<td>10-01-20</td>
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<td>ENDVIEW UPDATE</td>
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<td>2</td>
<td>ENDVIEW UPDATE</td>
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BSD-SW-R
Service Single-Deck Open Back Merchandiser w/ Flat Swing-Out Glass
4', 6', 8', 10' & 12' (Seafood)
## TECHNICAL REFERENCE

**BSD-SW-R**

**Service Single-Deck Open Back Merchandiser w/ Flat Swing-Out Glass**

*4’, 6’, 8’, 10’ & 12’ (Seafood)*

### ELECTRICAL DATA

<table>
<thead>
<tr>
<th>Case Length</th>
<th>High Efficiency Fans</th>
<th>Anti-Condensate Fans</th>
<th>Drain Heaters</th>
<th>Optional Defrost Heaters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fans Per Case</td>
<td>120 Volts</td>
<td>120 Volts</td>
<td>120 Volts</td>
<td>208 Volts</td>
</tr>
<tr>
<td>Amps</td>
<td>Watts</td>
<td>Amps</td>
<td>Watts</td>
<td>Amps</td>
</tr>
<tr>
<td>4’</td>
<td>0.30</td>
<td>36.0</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>6’</td>
<td>0.60</td>
<td>72.0</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>8’</td>
<td>0.60</td>
<td>72.0</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>10’</td>
<td>0.90</td>
<td>108.0</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>12’</td>
<td>1.20/0.90</td>
<td>144.0/108.0</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

### LIGHTING DATA

**Clearvoyant 4 LED Lighting (Per Light Row)**

<table>
<thead>
<tr>
<th>Case Length</th>
<th>Lights Per Row</th>
<th>Light Length</th>
<th>Standard Power (Cornice or Shelf)</th>
<th>High Power (Cornice)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>120 Volts</td>
<td>120 Volts</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Amps</td>
<td>Watts</td>
</tr>
<tr>
<td>4’</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>6’</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>8’</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>10’</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>12’</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

### GUIDELINES AND CONTROL SETTINGS (DX)

| | BTUH/ft | Superheat Set Point @ Bulb (°F) | Evaporator (°F) | Discharge Air (°F) | Discharge Air Velocity (FPM) |
| | Conventional | Parallel | | | |
| DX (Ice) | 135 | 123 | 10 | 24 | 29 | 115 |

### GUIDELINES AND CONTROL SETTINGS (GLYCOL)

| | Glycol | Supply Temp (°F) | Flow Rate (GPM/ft) | Coil Volume (gal) |
| | BTUH/ft | | | |
| 135 | --- | --- | 0.0675 | 0.26 |

### NOTES:

- “---” Indicates that the feature is not an option on this case model and/or the data is not yet available at this time.
- Fans required in an inlet/outlet case design.
- Listed discharge air velocity represents the average velocity at the peak of defrost.
- Glycol supply of 20°F is for a propylene glycol mixture of 35% concentration by weight.
- Glycol supply of 25°F is for a propylene glycol mixture of 30% concentration by weight.
- ** Time-off duration for defrost with no termination control.
**TECHNICAL REFERENCE**

**BSD-SW-R**

Service Single-Deck Open Back Merchandiser w/ Flat Swing-Out Glass

4’, 6’, 8’, 10’ & 12’ (Seafood)

---

### DEFROST CONTROLS

<table>
<thead>
<tr>
<th></th>
<th>Defrosts Per Day</th>
<th>Run-Off Time (Min)</th>
<th>Electric Defrost</th>
<th>Timed-Off Defrost</th>
<th>Hot Gas Defrost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Fail-Safe (Min)</td>
<td>Termination Temp (°F)</td>
<td>Fail-Safe (Min)</td>
</tr>
<tr>
<td>DX (Ice)</td>
<td>2</td>
<td>---</td>
<td>---</td>
<td>75/60</td>
<td>42</td>
</tr>
<tr>
<td>Glycol</td>
<td>2</td>
<td>---</td>
<td>---</td>
<td>90</td>
<td>45</td>
</tr>
</tbody>
</table>

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**BSD-SW-R**

**Rev. Date** | **Rev. #** | **Rev. Title**
---|---|---
10-01-20 | 3 | ENDVIEW UPDATE
09-29-20 | 2 | ENDVIEW UPDATE
SERVICE SINGLE-DECK OPEN BACK MERCHANTISER W/ FLAT SWING-OUT GLASS
4', 6', 8', 10' & 12' (SEAFOOD)

38" PROFILE

43" PROFILE (OPTIONAL)

ENGINEERED FOR STORES WITH AMBIENT CONDITIONS NOT TO EXCEED 75° AND 55% RELATIVE HUMIDITY. DUE TO ENGINEERING IMPROVEMENTS SPECIFICATIONS MAY CHANGE WITHOUT NOTICE. ALL MEASUREMENTS ARE TAKEN PER ASHRAE-72-2005 SPECIFICATIONS. HILLPHOENIX REFRIGERATED DISPLAY CASES FOR SALE IN THE UNITED STATES MEET OR EXCEED DEPARTMENT OF ENERGY 2017 REQUIREMENTS. NUMBERS ARE BASED ON STANDARD CASE SIZES. CONSULT ENGINEERING.
Thank you for choosing Hillphoenix for your food merchandising needs. This handbook contains important technical information and will assist you with the installation and operation of your new Hillphoenix specialty 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 number listed below. Thank you for choosing Hillphoenix, and we wish you the very best in outstanding food merchandising.

CASE DESCRIPTION
This manual specifically covers the BSD-SW-R seafood application service single-deck open back merchandiser with flat swing-out glass.

STORE CONDITIONS
Hillphoenix cases are designed to operate in an air-conditioned store that maintains a 75°F (24°C) store temperature and 55% (max) relative humidity (ASHRAE 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.

SHIPPING CASES
Transportation companies assume all liability from the time a shipment is received by them until the time it is delivered to the consumer. Our liability ceases at the time of shipment.

RECEIVING CASES
Examine fixtures carefully and in the event of shipping damage and/or shortages, please contact the Service Parts Department at the number listed below.

CASE DAMAGE
Claims for obvious 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. Failure to follow this procedure will result in refusal by the carrier to honor any claims with a consequent loss to the consumer.

If a UPS shipment has been damaged, retain the damaged material, the carton and notify us at once. We will file a claim.

LOST/MISSING ITEMS
Equipment has been carefully inspected to insure the highest level of quality. Any claim for lost/missing items must be made to Hillphoenix within 48 hours of receipt of the equipment. When making a claim please use the number listed below.

SERVICE PARTS & TECHNICAL SUPPORT
For service parts questions regarding our cases, please contact our Service Parts Department at 1-844-HPX-PART (1-844-479-7278) or dfra-parts@doverfoodretail.com

For technical questions regarding our cases, please contact our Technical Support Department at 1-833-280-5714.

CONTACTING THE FACTORY
If you need to contact Hillphoenix regarding a specific fixture, be certain that you have both the case model number and serial number. (This information can be found on the data tag, located at the top-left interior, rear exterior panel or interior rear lower storage of the case. Location may vary based on case design.)
LOCATION

This refrigerated display case has been designed for displaying and storing perishable food product. It is engineered for air-conditioned stores with a maximum ambient of 75°F and 55% relative humidity.

When selecting the location for placement of this case, avoid the following conditions:

Excessive Air Movement
1. Doors
2. Air-conditioned vents
3. Other air sources

Excessive Heat
1. Windows
2. Sun
3. Flood lamps 8 feet or less from the product
4. Other heat sources

FLOOR PREP

1. Ask the general contractor if your current copy of the building dimensions are the most recently 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 case feet.

3. Move case as close as possible to its permanent location. Remove all crating and shipping braces above the shipping pallet. Loosen the plastic dust cover from the pallet, but leave cover over the case to protect it while removing the case from the pallet.

4. Shipping braces with a sled runner construction can either have metal brackets that can be removed with a screw gun, or wood blocks that can be removed with a J-bar. Note: Shipping braces are normally located at each corner of the case. (Shipping braces used vary and are based on case design for best transport.)

5. Carefully, if horizontal supports, lift case up and off the pallet. Remove dust cover. Installation hardware ships in a marked packet located inside the case. Installation hardware ships in a marked packet located inside the case.

6. Leveling is necessary to ensure proper operation of the refrigeration system and drainage of the condensate. Locate the highest point on the positioning lines 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. Level adjustable feet by twisting, if applicable, or shim as necessary under horizontal supports as this will help ensure that the case is not settling over time.

7. Locate vertical (bullet leg) support positions along the chalk line (Fig. 1). Spot properly leveled shim packs at each support location.

8. (BULLET LEGS) If necessary, attach two brackets at two separate corners of the case (Fig. 2) and fasten to the floor with concrete anchors. Note: The brackets do not need to be affixed in the exact locations specified here. However, be sure that the anchors are close to the corners and that at least two brackets are used, one at each corner.

LINE-UP & INSTALLATION

Single Case
1. Move the case into position. Using a “J” bar, raise the end
of the case (under cross support), and lower the horizontal support on to the shim packs. Repeat on the other end of the case.

**WARNING**

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

2. Once the case is properly placed on the shim packs, check the vertical plumb of the case by placing a bubble level on the rear wall. Add/remove shim packs as needed. For the horizontal level, repeat this process after placing the bubble level on the front sill.

3. Install the bumper, if applicable, into pre-attached bumper track and snap into place.

4. After sufficient time has passed to allow for bumper shrinkage, cut away the excess bumper for final fit and finish. Be certain to use an appropriate cutting tool (tubing- or PVC-cutter) to ensure a smooth cut.

5. Install case shelves and reconnect lights. Be aware that differing shelf configurations will affect energy consumption and case performance.

6. Install toekick back onto the base of case.

**Multi-Case**

1. Remove any shelves (discard the shelf clips) and/or loose items from the cases that may interfere with case joining. Keep all loose items as they will be used later in the installation process.

2. Follow the single-case installation instructions for the first case, excluding #6, then position the next case in the line-up approximately 3' away.

3. Move the second case to a position that is approximately 6" from the first case, then position case on the shim packs.

4. Push the cases tightly together, then lightly bolt them together through the holes provided (Fig. 3). Tighten all the joining bolts until all margins are equal. Be careful not to over tighten.

5. The stub-up location can be found under the tank on the customer left. See technical reference on page 5 for access locations.

6. Apply case-to-case watershed (supplied) over the end frame seam (Fig. 4). The watershed prevents water from settling in the case joint.

7. Repeat steps 3-6 of this sequence for all remaining cases. Be certain to properly level all cases.

8. Properly align the front panels as needed, then install, if applicable, front panel trim (supplied).

9. Install the bumper into pre-attached bumper track and snap into place.

10. After sufficient time has passed to allow for bumper shrinkage, cut away the excess bumper for final fit and finish. Be certain to use an appropriate cutting tool (tubing- or PVC-cutter) to ensure a smooth cut.

11. Install case shelves and reconnect lights. Be aware that differing shelf configurations will affect energy consumption and case performance.

12. Install toekick back onto the base of case.

**GLASS ADJUSTMENT**

Tilt or swing glass is installed at the factory with the case perfectly level, if adjustments need to be made to align the glass first check to insure the case was properly leveled during installation. **Note: This is a two-person operation. One person must hold the glass at all times.**
1. Lift the glass to its highest position as shown in (Fig. 5).

![Fig. 5 Glass, polyblock and clamp](image)

2. Loosen allen screws.

3. Glass will rest on poly blocks inside the glass clamp. Do not install the glass in front of the poly block. This will cause the glass to sag back into the case.

4. Starting at the right side, tap the wedge with a #2 standard screwdriver. Repeat this process on the list side. Continue working right to left until the wedge recesses into the aluminum extrusion. **Note: Extreme care must be taken not to tap the wedge too hard.**

5. Slide the glass right or left as needed.

6. Tighten the right allen screw while holding the left side of the glass firmly. Be careful to keep the glass level.

7. Tighten the remaining allen screws.

8. Lower the glass into position. Repeat as necessary until the glass is completely glass.

**Note:** The entire glass clamp and glass can be moved by loosening the allen screws that are located in the glass clamp hinges.

**PLEX INSTALLATION**

Some cases may be equipped with removable plex on the sides of the case.

If plex is used for ice application it must be placed on the inside of the product stop to ensure correct temperature is maintained.
CASE CONNECTIONS

REFRIGERATION

Refrigeration connections will be made through the refrigeration stub up location on the customer left side of the case. Refrigeration lines may be headed together for all cases in a line-up, if necessary, by lines through the access holes with a high grade silicon to prevent recirculation. All lines must be correctly sized. See technical reference on page 5 for access locations.

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.

**CAUTION**

Be certain that all piping connections are compliant with local codes.

PLUMBING

The drain outlet or “P” trap (Fig. 6) is shipped loose with the case and made from a 1 1/2” PVC pipe. Care should be given to ensure that all connections are water-tight and sealed with the appropriate PVC or ABS cement.

**CAUTION**

If any braising is necessary, place wet rags around the area to avoid tank damage.

**CAUTION**

Be certain that all plumbing connections are compliant with local codes.

Drain lines can be run left or right of the tee with the proper pitch to satisfy local drainage requirements. When connecting the PVC to the existing floor drains be sure to provide as much downhill slope as possible and avoid long runs of drain lines.

Do not install condensate drains in contact with non-insulated suction lines in order to prevent condensate from freezing. Install the 1 1/2” PVC trap, which is provided with the case. All drains must be trapped.

**CAUTION**

Be certain that all electrical connections are compliant with local codes.

**DANGER**

CAUTION, RISK OF ELECTRIC SHOCK. If the cord or plug becomes damaged, replace only with a cord and plug of the same type.
GENERAL LIGHTING INFORMATION

The lighting system has an ON/OFF switch located in the raceway, power box or at the inside back of the case. Once a case has been properly positioned in the store and an electrician has connected the lighting circuit, the lights may be turned on to verify that they are connected and functioning properly.

Note: It is highly recommended that the ambient store temperature not exceed 80°F.

⚠️ DANGER ⚠️

SHOCK HAZARD
Always disconnect power to case when cleaning, servicing or configuring components of the 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.

BALLAST/POWER SUPPLY ACCESS

To gain access to the ballasts or power supplies remove the panel located above the rear toe kick (Fig. 7).

Fig. 7 Clear view of the ballasts
PRE-POWER CHECKLIST

Before powering-up the case, be certain that all of the steps listed below have been completed to ensure proper case functionality, safety and compliance with warranty terms.

- Have you thoroughly examined the case for shipping damage? (see pg. 6)
- Have you checked the vertical plumb of the case? The horizontal level? (see pg. 7)
- Have you applied the sealant to the end breakers of adjoining cases? (see pg. 8)
- Have you sealed the case-to-case joints by applying caulk and acrylic tape to the end frame seam? (see pg. 8)
- Have you installed the toekick? (see pg. 8)
- Have you removed the shipping blocks from the refrigeration and plumbing lines? (see pg. 10)

After powering-up the case, be certain that all of the steps listed below have been completed to ensure proper case functionality, safety and compliance with warranty terms.

1. Check case temperature and adjust controller as needed.
AIRFLOW & PRODUCT LOAD

Hillphoenix cases provide maximum product capacity within the refrigerated air envelope. Please keep products within the appropriate load limit.

It is important that you do not overload the food product display so that it impinges on the airflow pattern (Fig. 8). Overloading will cause malfunction and the loss of proper temperature levels.

Note: This is an ice only application case. Be sure that the ice is placed in the designated product load area only. (When loading fresh seafood make sure that the underside of the product is in complete contact with the ice.)

DEFROST & TEMPERATURE CONTROLS

Cases are equipped with either Electric, Hot Gas or Timed-Off defrost at the owner's option.

The hot gas defrost termination sensor bulb and probe are attached to the dump line which is in the front, left-hand side of the case.

DETERMINING SUPERHEAT

To identify proper superheat settings, complete the following:

1. Obtain suction pressure from access port; obtain suction line temperature from area near TXV bulb at the outlet of evaporator coil.
2. Using the suction pressure reading, convert pressure to temperature using temperature pressure chart (see Appendix C1).
3. Finally, subtract the converted temperature reading from the actual temperature reading for superheat setting.
CASE CLEANING

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. Further suggestions for case cleaning include the following:

- 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.
- All surfaces pitch downward to a deep-drawn drain trough, funneling liquids to the center of the case where the waste outlet is located for easy access. Check the 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.
- Clean from top to bottom when cleaning the display case to avoid cross contamination.
- If any potentially harmful cleaners are used, be certain to provide a temporary separator (e.g., cardboard, plastic wrap, etc.) between those cases that are being cleaned and those that may still contain product.
- Avoid spraying any cleaning liquids directly on the electrical connections.
- Allow cases to be turned off long enough to clean any frost or ice from coil and pans.
- Remove toekick and clean underneath the case with a broom and a long-handled mop. Use warm water and a disinfecting cleaning solution when cleaning underneath the cases.

**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 pressure plate removed. The coil contains many sharp edges that can result in severe cuts to the hands and arms.
SOVIS ULTRAVISION® tempered glass specialized Anti-Reflective coatings on each surface of the glass. These coatings reduce the glare from lighting so that the products on display are more visible to your customers.

While the Anti-Reflective coatings are durable, they are susceptible to scratching if abrasive materials are used for cleaning. Once the glass surfaces are scratched, it is impossible to restore the original finish. Special care must be taken to prevent damage when cleaning the glass. SOVIS recommends the following products for routine cleaning of ULTRAVISION® Anti-Reflective glass:

**Cleaning Cloths** – two products are recommended...
- **Scotch-Brite® High Performance Cloth** – manufactured by 3M® and available in most grocery stores under the name *Scotch-Brite® Microfiber Cleaning Cloth* in a 12” x 14” size. This cloth is washable and may be reused as long as it remains clean.
- **Spontex® Microfibre Cleaning Cloth** – distributed by Spontex® and available in most grocery stores under the same name in a 15.75” x 12” size. This cloth is washable and may be reused as long as it remains clean.

**Cleaning Fluid** – for more difficult cleaning jobs, these products are recommended...
- **Windex®** - standard product only (extra-strength or specialty products may not be suitable)
- **Glass-Plus®** - standard product only (extra-strength or specialty products may not be suitable)
- **Exceed® Multi-Surface & Glass Cleaner** – from Kay Chemical Company, Greensboro, NC
- **Warm Water**

*Note: equivalent store-brand glass cleaning products are normally acceptable substitutes to the brand name products listed above.*

The cleaning cloths named above will normally remove dust, grease, oil, and fingerprints without the need for cleaning fluids. A light spray of the cleaning fluids listed above will reduce the time required for cleaning. These materials have been tested and proven to clean ULTRAVISION® glass without scratching or damaging the Anti-Reflective coatings. If you need assistance with obtaining these materials, please contact your display case supplier.

Under no circumstances should the following types of materials be used for cleaning glass with ULTRAVISION® Anti-Reflective coatings.

- Coarse Paper Towels
- Scouring Pads or Powders
- Steel Wool or Steel Fiber Materials
- Blades
- Acidic or highly Alkaline detergents
- Fluorine based detergents

**CAUTION**

Do not use these materials for cleaning glass.
Contact the Service Parts Department at:

1-844-HPX-PART (1-844-479-7278)
or
dfr-ia-parts@doverfoodretail.com

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

*Data tag is located on the left end exterior panel or top interior of the case.

If the parts are to be returned for credit, contact the Parts Department. Do not send parts without authorization.
A1 .............................................................................................................................. Wiring Information
B1-B3 .................................................................................................................. Dixell Operating Instructions
C1 .................................................................................................................. Sporlan Pressure-Temperature Chart
D1 ........................................................................................................................ Parts List
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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 signalling
13. Technical data
14. Maintenance
15. Default setting 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. 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.
- To lock or unlock the keyboard, keys for more than 7s. The L2 label will be displayed and two defrost modes: timed or controlled by the evaporator’s probe. At the end of defrost, it provides two NTC probe inputs, one for room temperature and other one to control defrost. The instrument is fully configurable through special parameters that can be easily programmed through the keyboard or via a software tool.

3. GENERAL DESCRIPTION

The XR03CX, in 32x74x50mm short format, is a microprocessor-based controller suitable for applications on commercial refrigeration units. It provides two relay outputs: one for compressor and the other one for alarm signalling or as auxiliary input. It provides an NTC probe input and a digital input for alarm signalling, 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 via a software tool.

The XR04CX, in 32x74x50mm short format, is a microprocessor-based controller suitable for applications on normal or low temperature refrigeration units. It provides two relay outputs: one for compressor and the other one for alarm signalling or as auxiliary input. It provides a digital input for alarm signalling, 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 via a software tool.

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 On.

5. DEFROST

XR03CX

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

XR04CX

Two defrost modes are available through the "+/-" parameter.

- tEEL: defrost through electrical heater (compressor OFF)
- tEEL: hot gas defrost (compressor ON)

Other parameters are used to control the interval between defrost cycles (id), its maximum length (Md) and two defrost modes: timed or controlled by the evaporator’s probe. At the end of defrost, its length is set in the set parameter. With dtE, the defrost time is disabled.

6. FRONT PANEL COMMANDS

- SET: to display target set point, in programming mode it selects a parameter or confirm an operation
- SET: to start a manual defrost
- SET: in programming mode it increases the displayed value
- SET: in programming mode it decreases the displayed value

Keys combination:
- +: To lock or unlock the keyboard
- +: To enter in programming mode
- +: To return to room temperature display

Valid keys: SET,

7. PARAMETERS

- To display target set point, in programming mode it selects a parameter or confirm an operation
- To start a manual defrost
- In programming mode it increases the displayed value
- In programming mode it decreases the displayed value
B2: DIXELL OPERATING INSTRUCTIONS

8. DIGITAL INPUTS

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

- DOOR SWITCH (iFndo)
  - It signals the door status and the corresponding relay output status through the "iF" parameter. nod: normal (any change); Nf = Fan OFF; CF = Compressor OFF; FC = Fan and compressor OFF.
  - After the delay time set through parameter "iF", if the door is closed, the display shows the message "iF" and the regulation restarts if nod = y. As the external digital input is disabled again. With the door open, the high and low temperature alarms are disabled.

- EXTERNAL ALARM (iF=EA)
  - As soon as the digital input is activated the unit will wait for "iF" delay time before signaling the "EA" alarm message. The outputs status don't change. The alarm stops just after the digital input is deactivated.

- SERIOUS ALARM (iF=Ma)
  - When the digital input is activated, the unit will wait for "iF" delay time before signaling the "CA" alarm message. The relay outputs are switched OFF. The alarm will stop as soon as the digital input is deactivated.

- SWITCHING SECOND RELAY ON (iF=au)
  - When e=au it switches on and off the second relay.

- START DEFROST (iF=dd)
  - The defrost is started if there are the right conditions. The alarm is set to "iF" after the defrost.

- ALARM RECOVERY
  - Probe alarms "P1" and "P2" start some seconds after the fault in the related probe; they automatically stop as soon as the temperature returns to normal values.

- ALARM SIGNALLING
  - The "EA" message is displayed for failed programming. In this case push again key if you want to restart the upload again or remove the "Hot key" to abort the operation.

- 11. HOW TO USE THE HOT KEY
  - 1. Turn OFF the instrument.
  - 2. Insert a programmed "Hot key" into the 5-pin receptacle and then turn the Controller ON.
  - 3. Automatically the parameter list of the "Hot key" is downloaded into the Controller memory, the "Ep" message is blinking followed by a flashing "Ed".
  - 4. After 10 seconds the instrument will restart working with the new parameters.
  - 5. Remove the "Hot key".

- NOTE: The "Ep" message is displayed for failed programming. In this case push again key if you want to restart the upload again or remove the "Hot key" to abort the operation.

12. TECHNICAL DATA

- Mounting: panel mounting in a 71x29mm panel cut-out, in a 25x11 mm hole, and fixed using the special bracket supplied.
- The temperature range allowed for correct operation is 0-60 °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.
**B3: DIXEL OPERATING INSTRUCTIONS**

**Protection:** IP20; Frontal protection: IP65

**Connections:** Screw terminal block ≤ 2.5 mm² wiring.

**Power supply:** according to the model: 12Vac/dc ±10%; 24Vac/dc ±10%; 230Vac ±10%, 50/60Hz, 110Vac ±10%, 50/60Hz

**Power absorption:** 3VA max

**Display:** 2 digits, red LED, 14.2 mm high; Inputs: Up to 2 NTC or PTC probes.

**Digital input:** free voltage contact

**Relay outputs:** compressor SPST (8) A, 20/Aac or 16(Aac) 25Vac defrost or Aux: SPDT (8) A, 25Vac

**Data storing:** on the non-volatile memory (EEPROM).

**Kind of action:** 1B; Pollution grade: 2; Software class: A.

**Rated impulsive voltage:** 2500V; Overvoltage Category: II

**Operating temperature:** 0÷60 °C; Storage temperature: -30÷85 °C.

**Relative humidity:** 20 y 85% (no condensing)

**Measuring and regulation range:** NTC probe: -40÷110°C (-40÷230°F); Resolution: 0,1 °C or 1°C or 1 °F (selectable); Accuracy (ambient temp. 25°C): ±0,7 °C ±1 digit

**14. CONNECTIONS**

**XR03CX -20A o 8A Compressor**

**XR04CX -20A o 8A Compressor**

**NOTE:** The compressor relay is 20(8)A or 16(6)A depending on the model.

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

**15. DEFAULT SETTING VALUES**

<table>
<thead>
<tr>
<th>LABEL</th>
<th>DESCRIPTION</th>
<th>RANGE</th>
<th>DEFAULT</th>
</tr>
</thead>
<tbody>
<tr>
<td>dd</td>
<td>Start defrost delay</td>
<td>0 ÷ 99 min.</td>
<td>0</td>
</tr>
<tr>
<td>df</td>
<td>Display during defrost</td>
<td>n - in - 5P - dF</td>
<td>n</td>
</tr>
<tr>
<td>dt</td>
<td>Drip time</td>
<td>0 ÷ 99 min</td>
<td>0</td>
</tr>
<tr>
<td>dP</td>
<td>Defrost at power-on</td>
<td>y - n</td>
<td>n</td>
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**ALARMS**

<table>
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<tr>
<th>LAB</th>
<th>Description</th>
<th>RANGE</th>
<th>DEFAULT</th>
</tr>
</thead>
<tbody>
<tr>
<td>AU</td>
<td>Maximum temperature alarm</td>
<td>ALL÷99°C / ALL÷210°F</td>
<td>99 °C / 99 °F</td>
</tr>
<tr>
<td>AL</td>
<td>Minimum temperature alarm</td>
<td>-55°C÷ALU÷77°F÷ALU</td>
<td>-55 °C / -55 °F</td>
</tr>
<tr>
<td>Ad</td>
<td>Temperature alarm delay</td>
<td>0 ÷ 99 min</td>
<td>15</td>
</tr>
<tr>
<td>dA</td>
<td>Exclusion of temperature alarm at start up</td>
<td>0 ÷ 99 min</td>
<td>90</td>
</tr>
</tbody>
</table>

**DIGITAL INPUT** (Only XR03CX)

| IP | Digital input polarity | CL - dP | CL |
| IF | Digital input configuration | EA - BA - do - dF - Au - db | EA |
| di | Digital input delay | 0 ÷ 99 min | 5 |
| dc | Compressor and fan status when open door | no ifn / dF / fc | FC |
| rd | Regulation with door open | n - Y | y |

**OTHER**

| d1 | Thermostat probe display | Read Only | - - - |
| d2 | Evaporator probe display | Read Only | - - - |
| Pt | Parameter code table | Read Only | - - - |
| FL | Firmware release | Read Only | - - - |

**dIXEL S.p.a.**

Z.I. Via dell’Industria, 27 - 32010 Pieve d’Alpago (BL) ITALY

tel. +39 - 0437 - 98 33 - fax +39 - 0437 - 98 03 13

http://www.dixell.com E-mail: dixell@dixell.com
# TEMPERATURE PRESSURE CHART - at sea level

To determine subcooling for R-404A use **BUBBLE POINT** values (Temperatures above 50°F — Gray Background); to determine superheat for R-404A, use **DEW POINT** values (Temperatures 50°F and below).

** = exceeds critical temperature

<table>
<thead>
<tr>
<th>TEMPERATURE (°F)</th>
<th>REFRIGERANT (SPORLAN CODE)</th>
<th>TEMPERATURE (°F)</th>
<th>REFRIGERANT (SPORLAN CODE)</th>
<th>TEMPERATURE (°F)</th>
<th>REFRIGERANT (SPORLAN CODE)</th>
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</tbody>
</table>

To determine subcooling for R-404A use **BUBBLE POINT** values (Temperatures above 50°F — Gray Background); to determine superheat for R-404A, use **DEW POINT** values (Temperatures 50°F and below). ** = exceeds critical temperature.

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**FORM IC-11-09 COPYRIGHT 2009 BY SPORLAN VALVE COMPANY, WASHINGTON, MO 63090 Printed in U.S.A.**
A  Front Swing-Out Glass
B  Swing Glass Hardware
C  Dieboard
D  Front Toekick
E  Condensate Plex
F  Product Stop
G  Air Return
H  Insulated Drain Pan
I  End Panel Trim
J  End Panel
K  Fixed End Glass
L  End Toekick
M  Outside Back
N  Bottom Deck
O  Pan Supports
P  Product Stop
Q  Inside Back
R  Air Discharge
S  Case Top
Hill PHOENIX, Inc.  
Hereinafter Referred To As Manufacturer

LIMITED WARRANTY

GENERAL WARRANTY

Manufacturer’s products are warranted to be free from defects in materials and workmanship under normal use and maintenance for fourteen months from date of shipment from manufacturer (the “Base Warranty Period”). In the event of a qualifying warranty claim, a new or rebuilt part to replace any defective part will be provided without charge. The replacement part is covered under this warranty for the remainder of the applicable Base Warranty Period. In order to be eligible for warranty coverage, customer must: (i) notify Manufacturer promptly upon discovery of a warrant defect, and (ii) comply with the warranty claim procedures provided by Manufacturer from time to time.

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

The warranty shall not apply:

1. To any unit or any part thereof which has been subject to accident, alteration, negligence, misuse or abuse, or which has not been operated in accordance with the manufacturer’s recommendations, or in conditions outside of Manufacturer’s specifications, 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. To products that are impaired or damaged due to improper installation.
4. When installation and startup forms are not properly completed or returned within two weeks after startup.
5. If the defective part is not returned to the Manufacturer.
6. To service, maintenance or wear and tear parts (such as lights, starters and ballasts)

MODIFICATIONS TO GENERAL WARRANTY

The following sets forth certain modifications to the General Warranty for specific products of Manufacturer:

DISPLAY CASE AND SPECIALTY PRODUCTS CLEARVOYANT® LED LIGHTING

The warranty period for Clearvoyant LED lighting components within the Clearvoyant lighting system is five years from date of shipment.

REMEDY LIMITATION/DAMAGES EXCLUSION

THE REMEDY OF REPAIR OR PROVISION OF A REPLACEMENT PART WITHOUT CHARGE SHALL BE THE EXCLUSIVE REMEDY FOR ANY WARRANTY CLAIM HEREUNDER. WITHOUT LIMITING THE FOREGOING, MANUFACTURER SHALL NOT BE LIABLE UNDER ANY CIRCUMSTANCES FOR INCIDENTAL, INDIRECT OR CONSEQUENTIAL DAMAGES, INCLUDING LOSS OF PROFIT, LABOR COST, LOSS OF REFRIGERANT OR FOOD PRODUCTS.

EXCLUSIVE WARRANTY

THE FOREGOING WARRANTY IS THE EXCLUSIVE WARRANTY WITH RESPECT TO THE PRODUCTS. ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION, THE WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY DISCLAIMED AND EXCLUDED. NO IMPLIED WARRANTY SHALL BE DEEMED CREATED BY COURSE OF DEALING OR USAGE OF TRADE. NO OTHER PERSON IS AUTHORIZED TO EXPAND OR CREATE ANY OBLIGATION GREATER THAN OR MORE EXPANSIVE THAN THE WARRANTY PROVIDED HEREIN.

Submit warranty claims to:

Hillphoenix Refrigeration & Power
Systems Division
2016 Gees Mill Road
Conyers, GA 30013
Warranty / Service
Phone: 1-833-280-5714

Hillphoenix Display Case Division
1925 Ruffin Mill Road
Colonial Heights, VA 23834
Warranty / Service
Phone: 1-833-280-5714

Hillphoenix Specialty Products Division
703 Franklin Street
Keosauqua, IA 52565
Warranty / Service
Phone: 1-833-280-5714

4844-3514-3187.2
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.