
PRS-2 REFRIGERATION SYSTEMS

Installation, Operation and Maintenance Instructions

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ELECTRICAL DATA	

Electrical and Refrigerant information can be found on the
Serial Tag.

INSTALLATION

WALL MOUNTED SYSTEMS

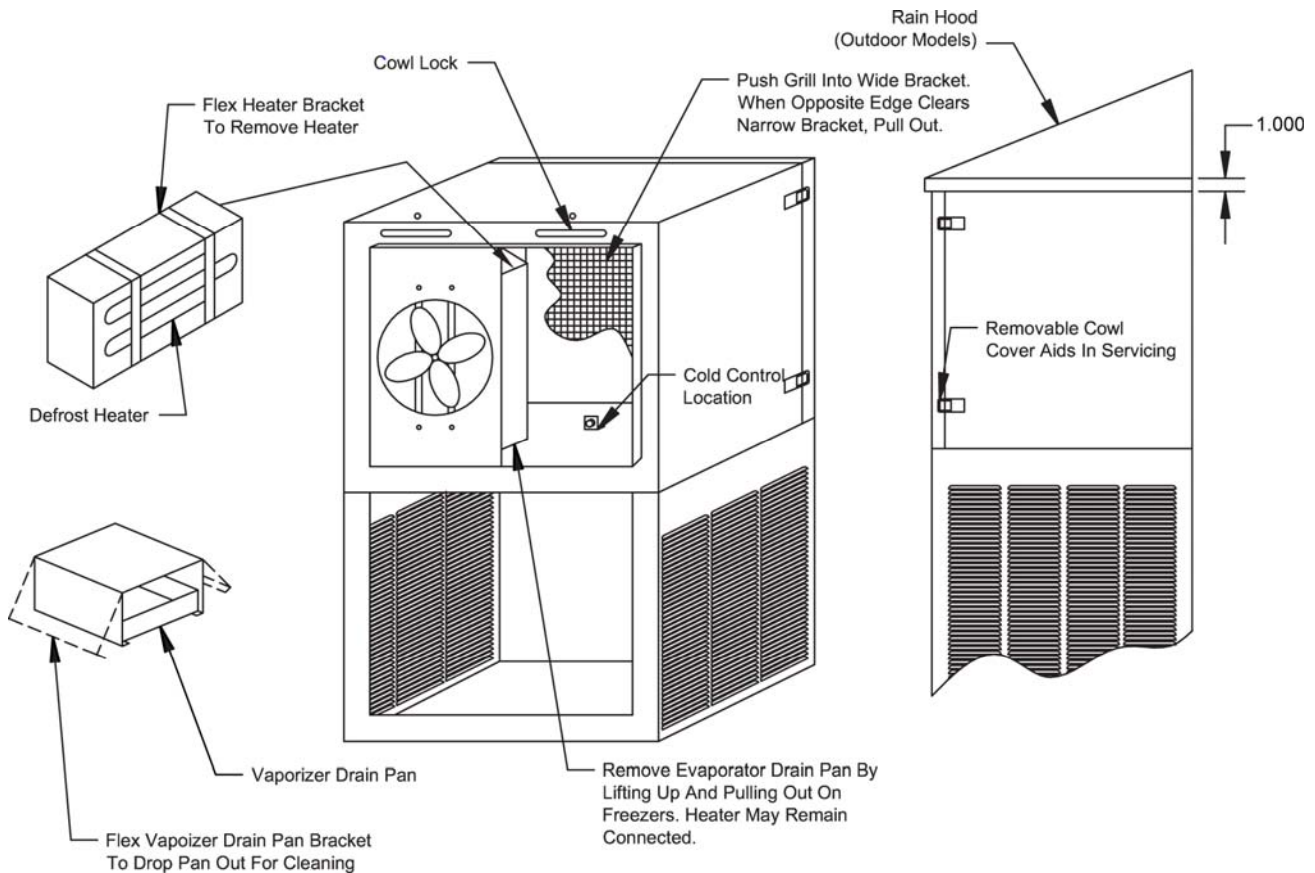
General Installation Instructions

Note: If the system to be wall mounted is a freezer model 100 or 150, please see the next section with special instructions on mounting these units.

Carefully raise the entire refrigeration system and insert the projecting sleeve of the evaporator section into the opening of the walk-in wall. While supporting the system, lock it into position by turning the locks exactly as you did when locking the walk-in sections together. Make sure that the locks are positively engaged and insert the plug buttons into the lock access holes when finished. Refer to Figure 1.

Note: Some motor compressors are openly spring mounted to absorb vibration. Be sure that these bolts are loosened to permit the compressor to float freely on the springs. A reminder label is applied to systems where this procedure applies.

All systems require a permanent connection to an electrical service and a connection at the junction box located within the condensing unit housing. Refer to the serial tag for all pertinent electrical data. These systems must be connected to a power supply disconnect switch and wired according to local and national electric codes.



Wall Mounted PRS-2 Refrigeration System
Figure 1

No plumbing drain is required, under normal conditions, for indoor installations. A built-in hot gas vaporizer dissipates the condensate moisture automatically. In outdoor installations, the condensate should be plumbed to the nearest drain. Check local building codes. Outside drain lines must also be wrapped with a suitable heater wire if they are ever subjected to below freezing temperatures. Outdoor installations also require the attachment of the rain hood that will divert rainfall from the upper surface of the evaporator housing. See Figure 1 for an illustration.

Be sure to allow for sufficient airflow around the condenser. A minimum clearance of two feet is required for proper unit operation. If multiple units are located in the same area, be sure they do not exhaust hot air flows into one another.

Please see the section "Instructions for Pre-Charged Lines" if the installation of this system involves the use of pre-charged lines to connect the evaporator and condenser sections.

Freezer Models 100 or 150

1. After uncrating, before attempting to attach the refrigeration system to the walk-in, a substantial temporary support should be built. The support should be approximately 28 inches high and placed directly below the wall opening of the walk-in.

Note: Due to the weight of these systems it is highly recommended that proper lifting equipment, such as a fork truck, be utilized during installation.

2. Lift the refrigeration system onto the temporary support. Determine whether the coil section sleeve is positioned properly so that it can be inserted into the opening without being bent or damaged. Shim the system appropriately so that this can be accomplished.

3. **Carefully** slide the entire system so that the coil section sleeve enters the opening without disturbing the temporary support below the refrigeration system. Continue until the gasket around the coil section contacts and seals around the entire perimeter of the coil section. Shim the system and adjust it accordingly so that the gasket seal will be uniform on all four sides.

4. Using the section-latching wrench provided for the erection of the walk-in, insert the wrench into the latch access holes of the coil section. Turn each of the locks clockwise until the latches engage the strikes in the walk-in. Turn the lock until a full stop is encountered. **DO NOT REMOVE THE TEMPORARY SUPPORT!**

5. Remove the louver assembly and drill four 9/16" diameter holes through the two upright angles of the condensing unit section. Drill completely through the walk-in wall and insert the 1/2" threaded nylon rods. Secure with the flat washers and nuts provided. Refer to Figure 2.

6. With the leveling screws threaded completely into the leg support, insert the leg support into the leg retainers at the outer corners of the condensing unit section. Unscrew the leg leveling screws until they contact the floor or other supporting surface. **Note:** If the supporting surface is extremely uneven, suitable shimming material must be provided under one or both of the leg supports.

7. Attach the diagonal leg support braces using the threaded fasteners provided. Make the final adjustments to the leg leveling screws so that they serve as supporting devices to the outer edge of the refrigeration system.

8. Insert plug buttons into each of the latch access holes.

9. Remove the temporary support assembly that was provided in Step 1.

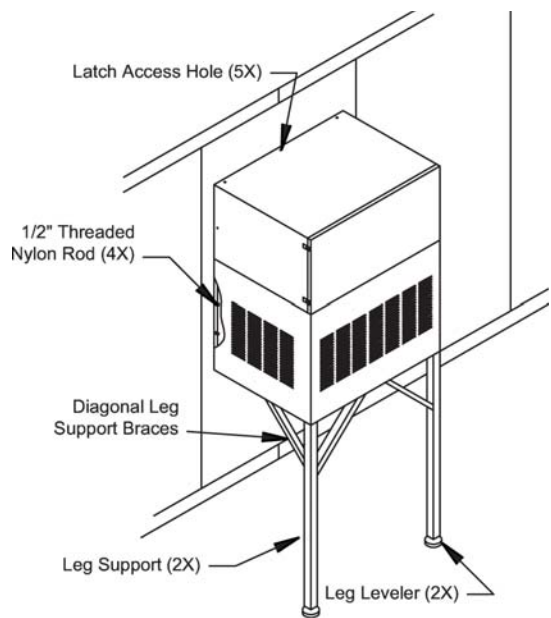
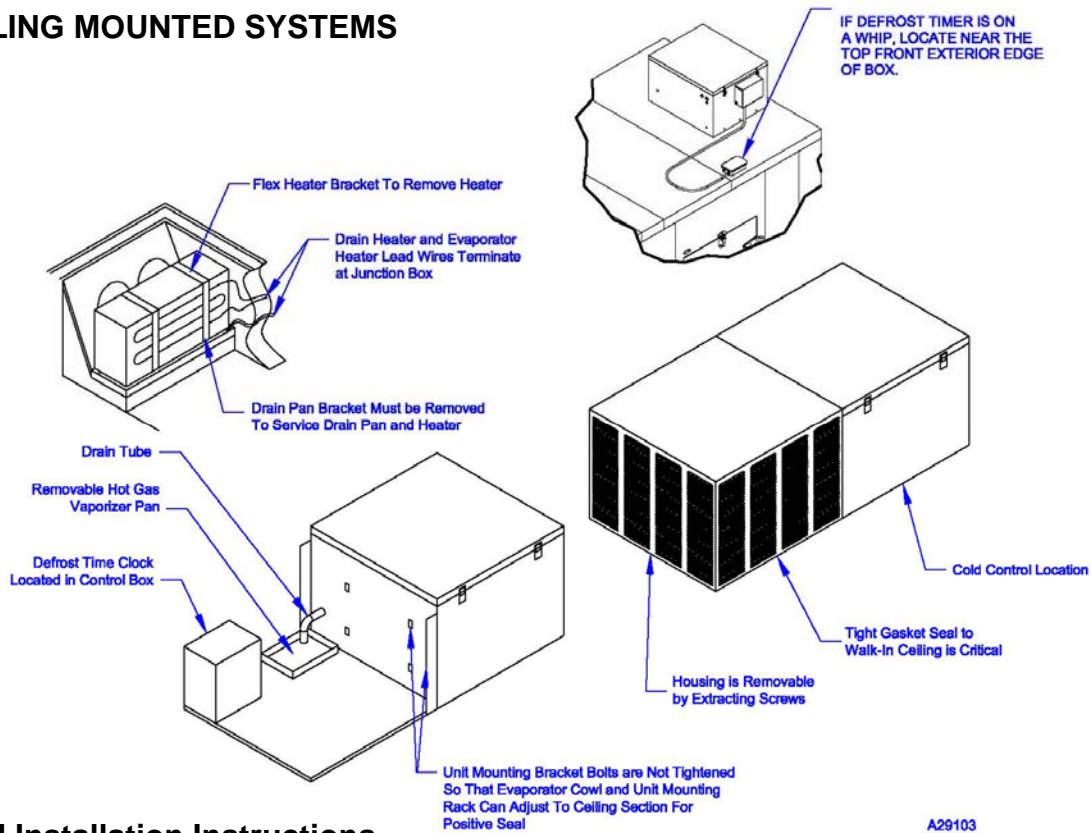


Figure 2

CEILING MOUNTED SYSTEMS



General Installation Instructions

This section has the general instructions for installing the ceiling mounted Refrigeration System. Before proceeding, please also see the following sections on mounting “Outdoor Systems Utilizing a Membrane Roofing Material”, or “Remote Systems with Curb and Electric Vaporizer”, if applicable.

Note: Due to the weight of these systems, it is highly recommended that proper lifting equipment, such as a fork truck, be utilized during installation. Also, be sure to allow for sufficient airflow around the condenser. A minimum clearance of two feet is required for proper unit operation. If multiple units are located in the same area, be sure they do not exhaust hot air flows into one another.

1. Mount eyebolts to the base of the refrigeration system through the holes that were used to lag the base to the shipping crate. **Note:** The holes can be drilled out to a larger diameter, if required, for eyebolts that are available.
2. Insert chains or cables from an overhead lifting source through the eyebolts and carefully raise the entire refrigeration system to the top of the walk-in.
3. Position the unit cooler section of the refrigeration system over the hole in the walk-in ceiling section.
4. Align the tabs on the side of the unit cooler section with the predrilled holes in the ceiling section. Before proceeding to the next step, the cowl cover should be removed. Look inside the unit cooler section and be sure the air divider in the ceiling section lines up with the black gasket divider in the unit cooler. Simply bending the ceiling section divider slightly forward or backward may be required. This will prevent any short cycling of discharge and return air.
5. Fasten the unit cooler section down to the ceiling using the provided drive screws, which can be found in the small cloth bag. **CAUTION! This must be done to prevent the entire refrigeration system from moving during operation.**

Note: On smaller refrigeration systems, you may elect to install the system on the ceiling section while the section is still on the floor. **CAUTION! Make sure to fasten down the system to the ceiling panel.** The ceiling section and the refrigeration system may then be erected together in the normal sequence of assembly as shown in the walk-in installation instructions. This method is not practical and should not be used with larger systems of 1 horsepower or above, such as a model CPF100 or CPF150.

- After the system is in place, make sure that the bolts fastening the condensing unit section to the evaporator section are loose enough so that the two sections can adjust to the ceiling surfaces. **Note:** On large systems, 1 horsepower and above, the units are placed on a rack assembly and do not have these bolts connecting the two sections together. No adjustment is necessary.

Note: Some motor compressors are openly spring mounted to absorb vibration. Be sure that these bolts are loosened to permit the compressor to float freely on the springs. A reminder label is applied to systems where this procedure applies.

- All systems require a permanent connection to an electrical service and a connection at the junction box located within the condensing unit housing. Refer to the serial tag for all pertinent electrical data. These systems must be connected to a power supply disconnect switch and wired according to local and national electric codes. No plumbing drain is required, under normal conditions, since a built-in hot gas vaporizer dissipates the condensate moisture automatically.

Outdoor Systems Utilizing a Membrane Roofing Material

- After the walk-in is completely assembled, place the curb face down on top of the ceiling sections, aligning the opening with the gasket on the curb. To insure proper opening alignment, mark the outside portion of the curb on the ceiling sections with a marking pencil.
- Remove the paper from the gasket and position the curb, gasket side down, on the pencil line. Press down firmly. **Note:** Movement of the curb is very difficult after the gasket adheres to the ceiling section. Refer to Figure 3.

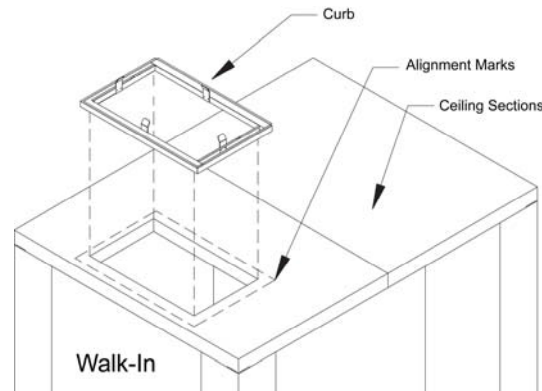


Figure 3

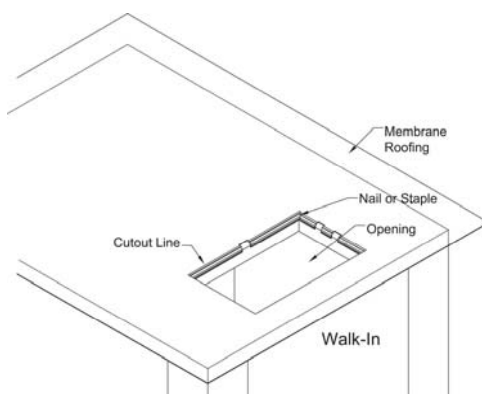


Figure 4

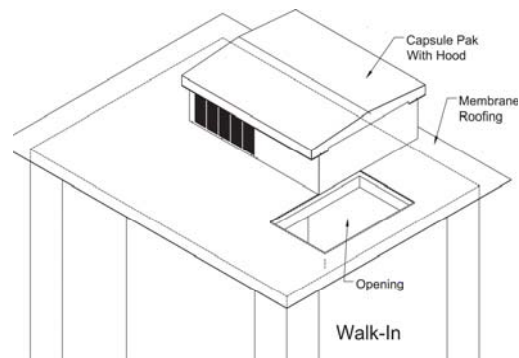


Figure 5

- Lay the membrane roofing material over the walk-in ceiling sections and curb leaving a six inch overhang on all four sides of the walk-in. Using an utility knife, cut a hole in the membrane roof approximately 1-1/2" in from the edge of the opening. (The resulting hole in the membrane will be smaller than the ceiling opening). Fold the 1-1/2" membrane flaps into the opening, notching the membrane around the locators and divider. Use either staples, roofing nails, sheet metal screws, caulk, glue, etc. to fasten the membrane roofing material to the inside edge of the curb frame. Refer to Figure 4.

4. Set the PRS-2 Refrigeration System over the opening in the curb. Remove the enclosure from the condensing unit portion of the system and drill two 9/16" holes through the system base, membrane roof material, curb, and the foamed ceiling section. The holes should be located on opposite sides of the unit. Insert one 1/2" threaded nylon rod into each hole and place one washer and nut on the condensing unit end of the threaded nylon rod. Place a second washer and nut on the inside of the walk-in and tighten securely. Replace the enclosure and attach the outdoor hood with the drive screws provided. Refer to Figure 5. The nylon rods, washers, and nuts are provided.

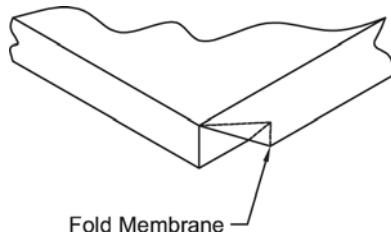


Figure 6

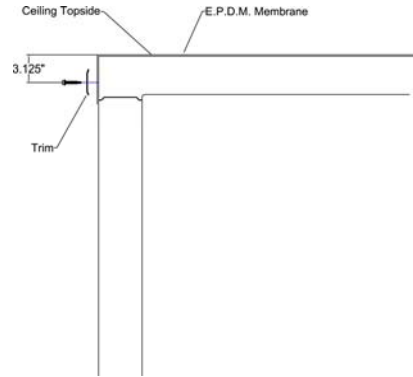


Figure 7

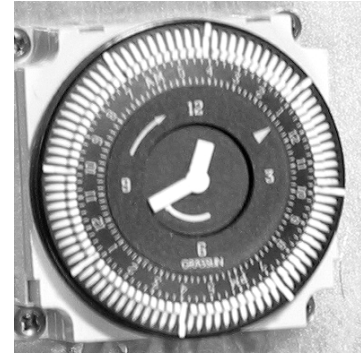
5. Fold all four corners of the membrane roofing material over the walk-in corners as shown in Figure 6.
6. Attach the trim and door hood by using the provided hex head sheet metal screws. All pieces should be held down 3-1/8" from the ceiling top as shown in Figure 7. Insure the trim and membrane roof material cover the joint between the ceiling and wall panels. **Note:** The trim may have to be cut to fit.
7. Trim off all excess membrane roofing material on the bottom of the aluminum trim using a utility knife.

Note: In outdoor installations, the condensate should be plumbed to the nearest drain. Check local building codes. Outside drain lines must also be wrapped with a suitable heater wire if they are ever subjected to below freezing temperatures.

OPERATION

STANDARD TEMPERATURE (COOLER) SYSTEMS

The automatic air defrost Refrigeration System for coolers is a basic, unitized refrigeration system. The system is designed to provide normal storage temperatures in the Walk-in with a minimum of effort during initial installation. The system consists of a complete condensing unit, an evaporator coil, a method for controlling the temperature, and a time switch for setting "off cycle" defrost. The time switch used to control the defrost cycle has been factory preset. However, please refer to the following instructions on the operation of the time switch if an adjustment is ever needed. All cooler systems are provided with an electronic 24 hour dial time clock. **Note:** The cooler time clock is factory set for a 15 minute defrost every 3 hours. **Important:** It is the installing contractor's responsibility to check the operation upon start-up and make necessary temperature control or thermal expansion valve adjustments as required for proper operation.



Note: Refrigeration Systems that are designed for outdoor installation will be fitted with electric crankcase heaters, electrically heated condensate drain tubes, automatic head pressure control valve, and the "pump-down cycle".

Programming

The 24-hour dial has quarter-hour divisions and AM/PM indications. The time switch is programmed by pushing the captive trippers to the outer ring position for the entire period that the load is to be turned "on", i.e. fifteen minutes for each tripper on the 24-hour dial. When the tripper is pushed to the inside, the switch is in the "off" position. (It is not recommended for the cooler to have defrosts longer than 15 minutes.)

Defrost Cycle (Cooler System)

The purpose of the defrost cycle is to allow time for any frost formed on the evaporator to melt and clear from the surface. The time clock stops the condensing unit. During this time, the evaporator fans continue to run, blowing 35-38°F air over the fins. This process will warm the evaporator above 32°F. After 15 minutes, the condensing unit should restart.

LOW TEMPERATURE (FREEZER) SYSTEMS

The low temperature, automatic electric defrost Refrigeration System is the most dependable, readily understood equipment available. It employs a basic refrigeration system with electric elements to provide heat for defrosting.

Important: It is the installing contractor's responsibility to check the operation upon start-up and make necessary temperature control or thermal expansion valve adjustments as required for proper operation.

Note: Refrigeration Systems that are designed for outdoor installation will be fitted with electric crankcase heaters, electrically heated condensate drain tubes, automatic head pressure control valve, and the "pump-down cycle".

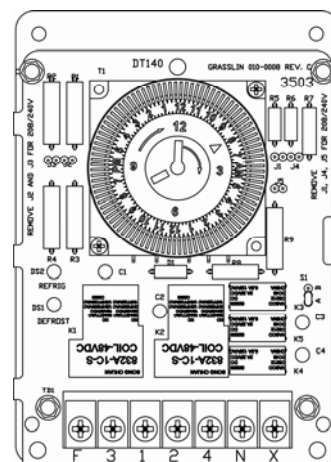
Note: If you purchased a **CPX150DC** or **CPX151DC** extra low temperature system, please also refer to the instructions under "Extra Low Temperature Systems" as all of the following operations may not pertain.

Note: Some models may have a programmable control used in place of the time switch. This unit is used to control the temperature and the defrost settings. Please see the separate instructions that are included on the operation of this control.

Time clock adjustments:

Setting the correct time of day - To set the correct time of day simply rotate the small inner dial counterclockwise until the correct time of day on the large dial is opposite the "time" indicator. Number of defrosts per day - The timer is factory set to defrost the evaporator four times a day. If more defrosts are required, remove a knurled slotted screw from the holder, insert the screw into the time slot on the large dial where a defrost is desired, and tighten. Defrost length adjustment - On the small, upper dial there is a pointer that is used to set a 100% fail-safe feature. The fail-safe of the timer is factory set at 30 minutes. The function of this device is to terminate the defrost if a system malfunction occurs during defrost.

WARNING ! No adjustment of this device should ever be necessary. Lengthening the fail-safe time will not lengthen the defrost cycle.



Defrost Cycle (Freezer System Only)

Under low temperature conditions, the air being forced through the evaporator coil is well below freezing at all times, even during each compressor "off" cycle. Therefore, a source of heat must be supplied to melt the accumulated frost. To achieve a complete defrost, electric heater elements are attached to the evaporator coil and to the drain pan. An electric time switch initiates a predetermined number of regular defrost periods per day. When a defrost period occurs, the time switch stops the evaporator fan(s) and the condensing unit, and energizes the electric heaters in the evaporator coil and in the drain pan beneath it.

Defrost Cycle Termination

As the defrost cycle progresses and the frost accumulation melts from the fins of the evaporator coil, the temperature of the finned surfaces of the evaporator coil will rise proportionately with the removal of the frost. When this temperature reaches about 50°F, a point where the evaporator coil should be completely free of frost, a defrost termination thermostat attached to the evaporator coil will energize a solenoid coil in the defrost time switch which will revert the system to the cooling cycle. The fan(s) in the evaporator housing will not start, however, until the fan delay cycle has expired. See the "Fan Delay" below.

Fan Delay

When a defrost cycle is terminated through the action of the defrost termination thermostat as described in the section "Defrost Cycle Termination", the electric defrost heaters are de-energized, the compressor starts, and evaporation resumes in the coil. The evaporator fan(s), however, will not start until the evaporator coil temperature is reduced to about +20°F. Once this temperature is reached, the fan delay switch action of the defrost termination thermostat energizes the evaporator fan(s) and they begin operating.

The fan delay feature is an important part of defrosting. If the fan(s) was permitted to start immediately following a defrost period, the heat that accumulated in the evaporator housing would be circulated throughout the walk-in, raising the temperature considerably. In addition, any droplets of moisture that remained clinging to the fins of the evaporator coil would be blown into the storage space. The fan delay feature provides for a short refrigeration cycle WITHOUT the evaporator fan(s) to prevent these conditions.

Note: During the initial startup of a PRS-2 Refrigeration System on a warm walk-in, the evaporator fan(s) will not start until the evaporator coil reaches and maintains +20°F. Further, the evaporator fans may cycle "on" and "off" several times until the evaporator coil reaches and maintains +20°F.

Refrigeration Controller

All Refrigeration Systems up to and including 100 series, designed for indoor installations, are equipped with conventional temperature thermostats that sense the "cut-in" and "cut-out" temperatures of the return air to the evaporator coil. These thermostats are adjustable and require a turn of the dial to change the interior storage temperature. **Note: The control can be reached through the interior louver for adjustment, with a 6" long shaft flat blade screwdriver. Make adjustments in small increments until the desired temperature is reached.**

Note: Some models may have a programmable control used in place of the time switch. This unit is used to control the temperature and the defrost settings. Please see the separate instructions that are included on the operation of this control.

All low temperature 150 series refrigeration systems, for indoor and outdoor installation, employ a "pump-down cycle" which permits the compressor to pump most of the refrigerant from the evaporator into its receiver after each "on" cycle. In this application, the refrigeration controller regulates the operation of a solenoid valve in the liquid line. A low-pressure control is installed in the low side of the system that shuts down the compressor due to low pressure, which results when the solenoid valve closes the liquid line. The temperature thermostat is adjustable and requires a turn of the dial to change the interior storage temperature.



Drain Tube Heater

All low temperature, ceiling mounted Refrigeration Systems employ a low wattage, electric heater strip. This heater is spirally wound around the condensate drain tube that extends from the drain pan below the evaporator coil to the evaporator section housing wall. This heater is energized continually to provide positive discharge of the condensate moisture to the hot gas vaporizer. The heater and drain tube are covered with an insulated tape.

EXTRA LOW TEMPERATURE SYSTEMS – CPX150DC & CPX151DC

These units are equipped with a "Hot Gas By-Pass" defrost system. Defrosting of the evaporator coil and evaporator drain pan is accomplished by pumping hot refrigerant gas directly into the drain pan defrost loop and the evaporator coil bypassing the condenser.

A programmable control is used in place of a time switch in these models to control the temperature and the defrost settings. The programmable control can be found mounted to the control box under the condensing unit cover. The control is preset at the factory for the operating temperature and the number of defrosts. Please see the separate instructions that are included on the operation of this control.

Note: Some models may have a programmable control used in place of the temperature control. This unit is used to control the temperature and the defrost settings. Please see the separate instructions that are included on the operation of this control.

MAINTENANCE

WARNING: When servicing any Refrigeration System or performing any maintenance procedure, always disconnect the main power supply.

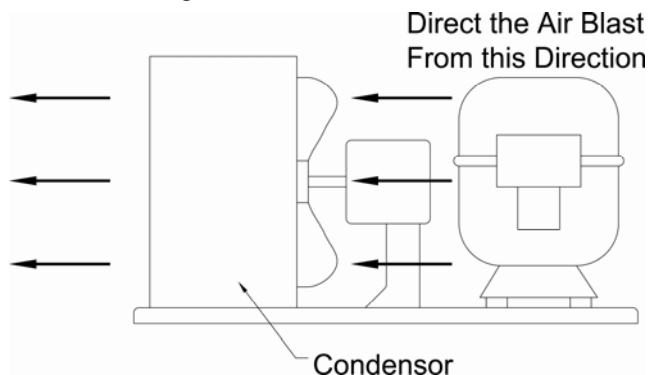
The condensing unit, condensate vaporizer, and the control box on low temperature models are all accessible by removing the grills or louvers on the condensing unit housing. The evaporator coil section is accessible by unlatching and removing the evaporator section housing cover. For access to the fan blade(s) and for oiling the fan motor on some models, remove the louver on the walk-in ceiling.

Cleaning the Condenser

The efficiency of the condensing unit, to a great extent, depends upon the passage of air freely through the condenser. For this reason, the condensing unit should be as clean as possible at all times and should always have an unrestricted supply of air.

Cleaning the condenser should be done at a minimum of every 3 months.

A wire brush should be used to loosen the accumulation of dust and dirt particles that have attached to the fins of the condenser. Once this accomplished, a vacuum cleaner can be used to remove the loosened particles. If compressed air is used to clean the condenser, the air should be directed through the condenser from the fan motor side. Wipe away any accumulated dust from the compressor motor and related parts.



Lubrication

The evaporator fan motor(s) on ceiling mounted systems 100 series and larger, should be oiled with a good grade of S.A.E. #20 oil every six months. Evaporator fan motors on ceiling mounted systems less than 100 series and on the ceiling mounted CPX100 model do not require additional oiling.

Evaporator Drain Pan Removal - Ceiling Mounted Models

Remove the drain pan retainer that is located near the end of the drain pan opposite the drain tube. It is secured by a thumbscrew. Release the drain tube stub from the drain discharge tube and remove the pan. On freezer models, a drain pan heater is secured to the drain pan bottom by short brackets. Only a slight effort is required to release the heater element from the brackets. When replacing the drain pan, make sure that the drain pan stub is properly connected to the drain discharge tube. When replacing the drain pan, the drain tube must be siliconed to prevent water leakage.

Hot Gas Vaporizer Pan

Condensate from the evaporator pan is discharged into a hot gas vaporizer pan, which is located in the condensing unit housing. Here the hot discharge gas from the compressor elevates the temperature of the water and it vaporizes into the atmosphere. This pan should be cleaned periodically to remove solids that remain after the moisture is evaporated.

MAINTENANCE SERVICE AND ANALYSIS GUIDE

REFRIGERATION SYSTEMS - ALL MODELS

MALFUNCTION

Compressor will not start - no hum

POSSIBLE CAUSE

1. Unplugged or power off
2. Fuse blown or removed
3. Overload tripped
4. Control stuck open
5. Wiring incorrect

SOLUTION

1. Plug in service cord or turn on power
2. Replace fuse
3. Determine reasons and correct
4. Repair or replace
5. Check wiring against the diagram

Compressor will not start - hums but trips on overload protector

1. Improperly wired
2. Low voltage to unit
3. Starting capacitor defective
4. Relay failing to close

1. Check wiring against the diagram
2. Determine reason and correct
3. Determine reason and replace
4. Determine reason, correct or replace

Compressor starts and runs, but short cycles on overload protector

1. Low voltage to unit
2. Overload defective
3. Excessive head pressure
4. Compressor hot -- warm ambient conditions

1. Determine reason and correct
2. Check current, replace overload protector
3. Check ventilation or restriction in refrigeration system
4. Check refrigerant charge, fix leak if necessary

Compressor operates long or continuously

1. Short of refrigerant
2. Control contact stuck
3. Evaporator coil iced
4. Restriction in refrigeration system
5. Dirty condenser

1. Fix leak, add charge
2. Repair or replace
3. Determine cause, defrost manually
4. Determine location and remove restriction
5. Clean condenser

Compressor runs fine, but short cycles

1. Overload protector
2. Cold control
3. Overcharge
4. Air in system
5. Undercharge

1. Check wiring diagram
2. Differential too close - widen
3. Reduce charge
4. Purge and recharge
5. Fix leak, add refrigerant

Starting capacitor open, shorted or blown

1. Relay contacts stuck
2. Low voltage to unit
3. Improper relay

1. Clean contacts or replace relay
2. Determine reason and correct
3. Replace

Relay defective or burned out

1. Incorrect relay
2. Voltage too high or too low

1. Check and replace
2. Determine reason and correct

Refrigerated space too warm

1. Control setting too high
2. Refrigerant overcharge
3. Dirty condenser
4. Evaporator coil iced
5. Not operating
6. Air flow to condenser or evaporator blocked
7. Warm ambient conditions

1. Reset control
2. Purge refrigerant
3. Clean condenser
4. Determine reason and defrost
5. Determine reason, replace if necessary
6. Remove obstruction for free air flow -- no storage on top of walk-in
7. Ambient conditions should be 90° or less

Standard temperature system freezes the product

1. Control setting is too low
2. Control points stuck

1. Reset the control
2. Replace the control

Objectionable noise

1. Fan blade hitting fan shroud
2. Tubing rattle
3. Vibrating fan blade
4. Condenser fan motor rattles
5. General vibration
6. Worn fan motor bearings

1. Reform or cut away small section of shroud
2. Locate and reform
3. Replace fan blade
4. Check motor bracket mounting, tighten
5. Compressor suspension bolts not loosened on applicable models - loosen them
6. Replace fan motor

Water overflowing from evaporator drain pan or condensate vaporizer pan

1. Air leak between PRS-2 and walk-in panel.
2. Drain line from evaporator drain pan to condensate vaporizer is blocked with foreign material.
3. Drain line from evaporator drain pan to condensate vaporizer is blocked with ice.
4. Walk-in operating in high humidity environment (heavy door usage).

1. Check that PRS-2 is properly set in panel opening.
2. Clean blockage from inside of drain line.
3. Check that drain line heater (on freezers) is working and repair or replace as required.
4. Plumb drain line from evaporator to floor drain or replace high gas vaporizer with electric vaporizer. Consult factory for further information.

Standard PRS-2 Models

CPB050DC-A

CPB075DC-A

Dixell Control Settings XR02C Part# 138969 & 138970

Label	Parameter	Minimum to Maximum Ranges	Set Points	Access
REGULATION				
Set	Set Point	LS to US	35°F	L1
Hy	Differential	0.1 to 25°C/1 to 45°F	4°F	L1
LS	Minimum Set Point	-55°C to Set Point/-67°F to Set Point	32°F	L2
US	Maximum Set Point	Set point to 99°C/Set Point to 210°F	45°F	L2
ot	First Probe Calibration	-9.9 to 9.9°C/-18 to 18°F	0°F	L2
P2	Second Probe Presence	n-Y	n	L2
oE	Second Probe Calibration	-9.9 +9.0°C/-18+18°F	0°F	L2
od	Outputs activation delay at start up	0 to 99 minutes	0 min	L2
AC	Anti-short Cycle delay	0 to 50 minutes	1 min	L1
Cy	Compressor ON time faulty probe	0 to 99 minutes	3	L2
Cn	Compressor OFF time faulty probe	0 to 99 minutes	15	L2
DISPLAY				
CF	Temperature Measurement Unit	°C or °F	° F	L2
rE	Resolution (only for °C)	dE - in	in	L1
Ld	Default Display	P1 - P2 - SP	P1	L2
dy	Display delay	0 to 15 minutes	1	L2
DEFROST				
dE	Defrost Termination Temperature	-50 +50°C/-58+122°F	46°F	L1
id	Interval between defrost cycles	0 to 99 hours	3	L1
nd	Maximum length for defrost	0 to 99 minutes	15	L1
dF	Display during defrost	rt - in - dE	dE	L2
ALARMS				
AU	Maximum temperature alarm	ALL to 99°C/ALL to 210°F	99°F	L2
AL	Minimum temperature alarm	-55°C toALU/-67°F to ALU	-50°F	L2
Ad	Temperature alarm delay	0 to 99 minutes	15	L2
dA	Exclusion of temperature alarm at startup	0 to 99 minutes	99	L2
tb	Alarm Relay Silencing	Y-n	n	L2
OTHER				
d2	Evaporator probe display	Read Only	--	L1
Pt	Parameter code table	Read Only	--	L2
rL	Firmware Release	Read Only	--	L2

PRS-2 MODEL CPF060DC-A

Dixell Control Settings XR06CX -5N0F7 Part# 138971

Label	Parameter	Minimum to Maximum Ranges	Set Points
Set	Set Point	LS to US	-10°F
Hy	Differential	1 to 45°F	4°F
LS	Minimum Set Point	-58°F to Set point	-20°F
US	Maximum Set Point	Set point to 230°F	10°F
Ot	Thermostat Probe Calibration	-120 to 120°F	0°F
P2	Evaporator Probe Presence	N=Not Present Y=Present	Y
OE	Evaporator Probe Calibration	-120 to 120°F	0°F
Od	Outputs Delay at start up	0 to 99 minutes	N V 0 min
AC	Anti-short Cycle delay	0 to 50 minutes	1 min
Cy	Compressor on time with Faulty Probe	0 to 99 minutes	N V 5 min
Cn	Compressor off time with Faulty Probe	0 to 99 minutes	N V 10 min
CF	Temperature Measurement Unit	°C or °F	° F
rE	Resolution	in = integer / dE = decimal point	in
Ld	Probe displayed	P1:P2	P1
dy	Display delay	0-15	1 min
td	Defrost Type	EL = electric heater / in = hot gas	EL
dE	Defrost Termination Temperature	-58 to 122°F	60°F
Id	interval between defrost	1 to 99 hours	6
Md	(MAXIMUM) Length for Defrost	0 to 99 minutes	36 min
dd	start defrost delay	0 to 99 minutes	N V 0
dFd	Display during defrost	rt, it, Set, DEF	N V dF
Fdt	Draining time	0 to 99 minutes	1 min
dP	First Defrost after Startup	n = after IdF / y = immediately	N V n
Fc	Fan operating mode	C-n, o-n, C-y, o-Y	N V on
Fd	Fan delay after defrost	0 to 99 minutes	2 min
FS	Fan stop temperature	-58 to 122°F	20°F
AU	MAXIMUM Temperature Alarm	Set point to 210°F	99°F
AL	MINIMUM Temperature Alarm	-55°F to Set point	-55°F
Ad	Temperature Alarm Delay	0 to 99 minutes	15 min
dA	Delay of temperature alarm at start up	0 to 90 min	90
iP	Digital input polarity	oP=opening; CL=closing	CL
iF	Digital input configuration	EL = external Alarm / bL = lock regulation dr = door switch/ dF = defrost	EAL
di	Digital input delay	0 to 99 minutes	15 min
dc	Compressor and fan status when open door	no = normal, Fan = Fan OFF, CPr = Compr OFF, F_C = Compr and fan OFF	no
rd	Regulation with door open	n - y	y
PbC	Kind of Probe	Ptc, ntc	N V ntc
dP1	Room probe display	--	--
dP2	Evaporator probe display	--	--
rEL	Software release	--	--
Ptb	Map code	--	--

NV = not visible but still functioning, can only be changed via HOT KEY

Digital Controller XR01-02CX



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General Warnings

PLEASE READ BEFORE USING THIS MANUAL

This manual is part of the product and should be kept near the controller for easy and quick reference.

The controller shall not be used for purposes different from those described hereunder.

SAFETY PRECAUTIONS

Check the supply voltage is correct before connecting the controller.

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.

The controller must not be opened.

General Description

The **XR01CX**, format: 32 x 74 x 50 mm, is microprocessor based controller, suitable for applications on heating and refrigerating units. It has one relay output to control the compressor/heater. It has one NTC probe input.

The **XR02CX**, format: 32 x 74 x 50 mm, is microprocessor based controller, suitable for applications on medium temperature refrigerating units. It has one relay output to control the compressor/heater. It has one NTC probe input.

Regulation

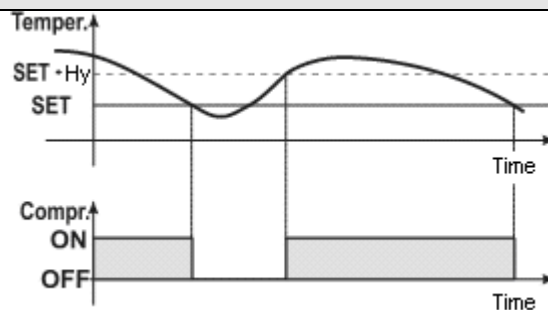
THE REGULATION OUTPUT

The regulation is performed according to the temperature measured by probe. The XR01CX is provided with the **CH** programmable parameter which enables the user to set the regulation both for heating or cooling applications:

- **CH=cL** --> cooling applications;
- **CH=Ht** --> heating applications;

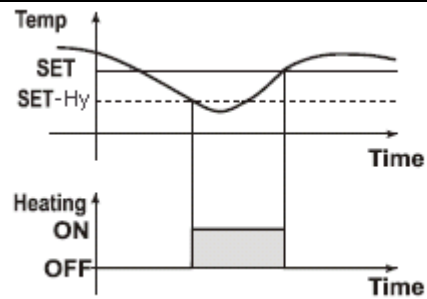
COOLING APPLICATIONS

The regulation is performed according to the air temperature probe with a positive differential from the set point: if the air 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.



HEATING APPLICATIONS

The regulation is performed according to the air temperature probe with a negative differential from the set point: if the air temperature decreases and reaches set point minus differential the heater is started and then turned off when the temperature reaches the set point value again.



Defrost(XR02CX only)

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".

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

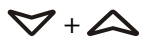


In programming mode it browses the parameter codes or increases the displayed value



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

KEY COMBINATIONS



To lock or unlock the keyboard



To enter in programming mode



To return to room temperature display

LED	MODE	DESCRIPTION
❄️	On	Compressor enabled
	Flashing	Anti short cycle delay enabled
❄️	On	Defrost in progress
	Flashing	Dripping in progress
🌀	N/A	Not Used
	N/A	Not Used
°C	On	Measurement unit
	Flashing	Programming mode
°F	On	Measurement unit
	Flashing	Programming mode


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 operation.

HOW TO CHANGE THE SETPOINT

1. Push the **SET** key for more than 2 seconds to change the Set point value;
2. The value of the set point will be displayed and the "°C" or "°F" LED starts blinking;
3. To change the set value, push the **▲** or **▼** arrows within 10 seconds.
4. To input the new set point value, push the **SET** key again or wait 10 seconds.

HOW TO START A MANUAL DEFROST(XR02CX ONLY)

Push the defrost  key for more than 2 seconds and a manual defrost will start

HOW TO CHANGE A PARAMETER VALUE

To change the parameter's value:

1. Enter the programming mode by pressing the **SET+ ▼** keys for 3 seconds ("°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 exit: Press **SET+ ▲** or wait 15 seconds without pressing a key.

NOTE: the set value is stored even when the procedure is exited by waiting 15 seconds.

LEVEL 2 MENU

HOW TO ENTER THE LEVEL 2 MENU

1. Enter the Programming mode by pressing the **SET+ ▼** keys for 3 seconds ("°C" or "°F" LED starts blinking).
2. Released the keys, then push again the **SET+ ▼** keys for more than 7 seconds. The L2 label will be displayed immediately followed from the "Hy" parameter.

NOW YOU ARE IN THE LEVEL 2 MENU.

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 + ▲** or wait 15 seconds without pressing a key.

NOTE1: if no parameter is present in L1, after 3sec the "nP" message is displayed. Keep the keys pushed till the L2 message is displayed.

NOTE2: the set value is stored even when the procedure is exited by waiting 15 seconds.

HOW TO MOVE A PARAMETER FROM THE SECOND LEVEL TO THE FIRST LEVEL AND VICE VERSA.

Each parameter present in the LEVEL 2 MENU can be removed or put into "THE FIRST LEVEL" (user level) by pressing SET + ∇ . When a parameter is present in First Level, the decimal point is on.

TO LOCK THE KEYBOARD

1. Keep pressed for more than 3 seconds the Δ and ∇ keys.
2. The "oF" message will be displayed and the keyboard will be locked.

TO UNLOCK THE KEYBOARD

Keep pressed together for more than 3 seconds the Δ and ∇ keys till the "on" message will be displayed.

Parameters

REGULATION

- Hy Differential:** (0,1°C to 25°C) Intervention differential for set point. Compressor cut in is SET POINT + differential (Hy). Compressor cut out is when the temperature reaches the set point.
- LS Minimum SET POINT:** (-55°CtoSET/-58°FtoSET): Sets the minimum value for the set point..
- US Maximum SET POINT:** (SETto99°F/ SETto99°F). Set the maximum value for set point.
- ot First probe calibration:** (-9.9to9.9°F) allows to adjust possible offset of the first probe.
- od Outputs activation delay at start up:** (0to99min) This function is enabled at the initial start up of the instrument and inhibits any output activation for the period of time set in the parameter.
- AC Anti-short cycle delay:** (0to50 min) minimum interval between the compressor stop and the following restart.
- Cy Compressor ON time with faulty probe:** (0to99 min) time during which the compressor is active in case of faulty thermostat probe. With Cy=0 compressor is always Off (Hidden).
- Cn Compressor OFF time with faulty probe:** (0to99 min) time during which the compressor is off in case of faulty thermostat probe. With Cn=0 compressor is always active(Hidden).
- CH Kind of Action:** cL= cooling action; Ht = heating action.

DISPLAY

- CF Measurement unit:** (°C, °F) °C =Celsius; °F =Fahrenheit.
WARNING: When the measurement unit is changed the Set point and the values of the parameters Hy, LS, US, oE, o1, AU, AL have to be checked and modified if necessary).

- rE** Resolution (only for °C):(dE, in) dE= decimal between -9.9 and 9.9°F; in= integer.
- dy** Display delay: (0to15 min) when the temperature increases, the display is updated a maximum of 1°F after this time.

DEFROST(XR02CX ONLY)

- id** Interval between defrost cycles: (0÷99 ore) Determines the time interval between the beginning of two defrost cycles.
- Md** Maximum length for defrost: (0÷99 min. with 0 no defrost) when **P2=n**, (not evaporator probe: timed defrost) it sets the defrost duration, when **P2 = y** (defrost end based on temperature) it sets the maximum length for defrost.
- dF** Display during defrost: (rt / it / St / dF) rt= real temperature; it= start defrost temperature; St= SET-POINT; dF= label dF.

ALARMS

- AU** Maximum temperature alarm: (ALto200°F) when this temperature is reached the alarm is enabled, after the "Ad" delay time.
- AL** Minimum temperature alarm: (-55toAU°F) when this temperature is reached the alarm is enabled, after the "Ad" delay time.
- Ad** Temperature alarm delay: (0to99 min) time interval between the detection of an alarm condition and alarm signalling.
- dA** Exclusion of temperature alarm at startup: (0to99 min) time interval between the detection of the temperature alarm condition after instrument power on and alarm signaling.

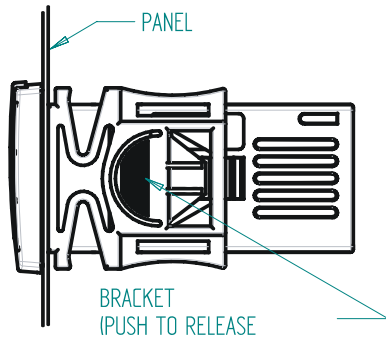
DIGITAL INPUT(NOT USED)

- iP** Digital input polarity: (oP, cL) oP= activated by closing the contact; cL= activated by opening the contact.
- iF** Digital input configuration: (EA, bA, do, dF, Au, Hc) EA= external alarm: EA message is displayed; bA= serious alarm: CA message is displayed;PA=not used; do= door switch function; dF= defrost activation; Au=not used; Hc= inversion of the kind of action; Fn=not used; ES=Energy Savings(not used).
- di** Digital input delay: (0to99 min) with iF=EA or bA delay between the detection of the external alarm condition and its signalling. With iF=do it represents the delay to activate the door open alarm.
- dC** Compressor and fan status when open door: (no, Fn, cP, Fc): no= normal; Fn= Fans OFF; cP=Compressor off; Fc= Compressor and fans off.
- rd** Regulation with door open: (n, Y) n= no regulation if door is opened; Y= when di is elapsed regulation restarts even if door open alarm is present.

OTHER

- Pt** Parameter code table (read only)
- rL** Software release (read only)

Installation and Mounting



Instrument XR06CX shall be mounted on vertical panel, in a 29x71 mm hole, and fixed using the bracket supplied. The temperature range allowed for correct operation is 0to140°F. Let air circulate by the cooling holes.

Electrical Connections

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.

PROBES

The probes shall be mounted with the bulb upwards to prevent damages due to casual liquid infiltration. It is recommended to place the thermostat probe away from air streams to correctly measure the average room temperature. Place the defrost termination probe among the evaporator fins in the coldest place, where most ice is formed, far from heaters or from the warmest place during defrost, to prevent premature defrost termination.

How to Use the Hot Key

HOW TO PROGRAM THE HOT KEY FROM THE CONTROLLER(UPLOAD)

1. Program one controller with the front keypad.
2. When the controller is powered, insert the "Hot key" and push \blacktriangle key; the "UL" message appears briefly followed a by "En" which stays displayed for 15 seconds.
3. Power down the controller and remove the "Hot Key".

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

HOW TO PROGRAM A CONTROLLER USING THE HOT KEY (DOWNLOAD)

1. Power down the controller.
2. Insert a programmed "Hot Key" into the 5-PIN receptacle and then place power to the controller.

3. Apply power to the controller. Automatically the parameter list of the "Hot Key" is downloaded into the controller memory, the "dL" message appears briefly followed by "En" which stays displayed for 15 seconds.
4. Power down the controller and remove the "Hot Key".

Alarm Signaling

Message	Cause	Outputs
"P1"	Room probe failure	Compressor output according to "Cy" and "Cn"
"P2"	Evaporator probe failure	Defrost end is timed
"HA"	Maximum temperature alarm	Outputs unchanged
"LA"	Minimum temperature alarm	Outputs unchanged
"EA"	External alarm(not used)	Outputs unchanged
"CA"	Serious external alarm(not used)	All outputs off
"dA"	Door open(not used)	Compressor and fans restart

ALARM RECOVERY

Probe alarms **P1** and **P2** start some seconds after the fault in the related probe; they automatically stop a few seconds after the probe restarts normal operation. Check the connections before replacing the probe. Temperature alarms **HA** and **LA** automatically stop as soon as the temperature returns to normal values.

Alarms **EA** and **CA** (with iF=bL) recover as soon as the digital input is disabled.

Technical Data

Housing: self-extinguishing ABS

Case: front 32x74 mm; depth 60mm

Mounting: panel mounting in a 71x29mm panel cut-out

Protection: IP20

Frontal protection: IP65

Connections:

6 through 8: ¼ inch spade terminal

1 through 4: screw terminal block ≤ 2.5 mm² wiring

Power supply: according to the model: 110Vac ±10%, 50/60Hz, 230Vac +10%to-15%

Power absorption: 3VA max

Display: 2 digits, red LED, 14.2 mm high

Inputs: 1 NTC

Relay outputs:

compressor: 16FLA/96LRA

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

Kind of action: 1B

Pollution grade: 2

Software class: A

Rated impulsive voltage: 2500V

Over-voltage Category: II

Operating temperature: 0to60 °C (32to140°F)

Storage temperature: -30to85 °C (-22to185°F)

Relative humidity: 20to85% (non-condensing)

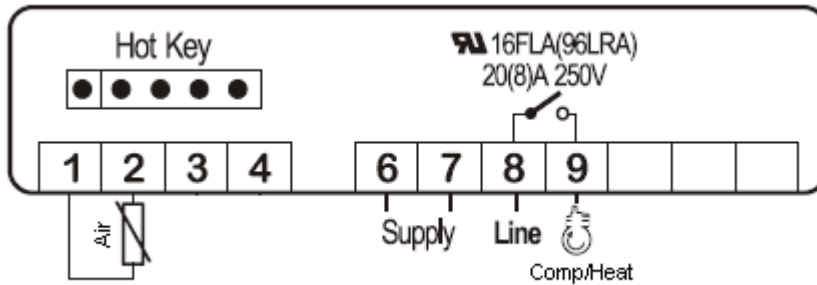
Measuring and regulation range: NTC -40to110°C (-40to230°F)

Resolution: 0.1 °C or 1°C or 1 °F (selectable)

Accuracy (ambient temp. 25°C): ±0.7 °C (1.3°F) ±1 digit

Connections

XR01-02CX



Digital Controller XR06CX



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General Warnings

PLEASE READ BEFORE USING THIS MANUAL

This manual is part of the product and should be kept near the controller for easy and quick reference.

The controller shall not be used for purposes different from those described hereunder.

SAFETY PRECAUTIONS

Check the supply voltage is correct before connecting the controller.

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.

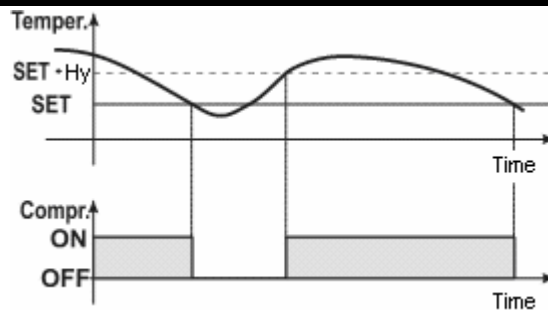
The controller must not be opened.

General Description

The XR06CX, format: 32 x 74 x 60 mm, is microprocessor based controller, suitable for applications on medium or low temperature ventilated refrigerating units. It has three relay outputs to control compressor, fan, and defrost. It also has three NTC probes, the first one for temperature control, the second one, to be located onto the evaporator, to control the defrost termination temperature and to manage the fan, the third one, optional, to connect to the HOT KEY terminals to signal the condenser temperature alarm or to display a temperature.

Regulation

The regulation is performed according to the air temperature probe with a positive differential from the set point: if the air 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.



Defrost

The controller goes into defrost mode every 6 hours. It enables the electric defrost heater for 36 minutes or until the evaporator sensor reaches 60°F—whichever happens first. Immediately after defrost the controller waits for 1 minute before resuming normal operation. This allows time for water droplets which may have formed on the coil to drip off into the drip pan.

Fans

During normal operation, the fan relay is always enabled except for during defrost. Also, there is a 2 minute delay before the fan is enabled after the end of defrost. Furthermore, the evaporator fan will remain off if the evaporator temperature is above 60°F.

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

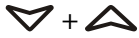


In programming mode it browses the parameter codes or increases the displayed value



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

KEY COMBINATIONS



To lock or unlock the keyboard



To enter in programming mode



To return to room temperature display

LED	MODE	DESCRIPTION
❄️	On	Compressor enabled
	Flashing	Anti short cycle delay enabled
❄️	On	Defrost in progress
	Flashing	Dripping in progress
🌀	On	Fans output enabled
	Flashing	Fans delay after defrost
°C	On	Measurement unit
	Flashing	Programming mode
°F	On	Measurement unit
	Flashing	Programming mode


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 operation.

HOW TO CHANGE THE SETPOINT




1. Push the **SET** key for more than 2 seconds to change the Set point value;
2. The value of the set point will be displayed and the "°C" or "°F" LED starts blinking;
3. To change the set value, push the **▲** or **▼** arrows within 10 seconds.
4. To input the new set point value, push the **SET** key again or wait 10 seconds.


HOW TO START A MANUAL DEFROST

Push the defrost  key for more than 2 seconds and a manual defrost will start

HOW TO CHANGE A PARAMETER VALUE

To change the parameter's value:



1. Enter the programming mode by pressing the **SET+**  keys for 3 seconds ("°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 exit: Press **SET+**  or wait 15 seconds without pressing a key.



NOTE: the set value is stored even when the procedure is exited by waiting 15 seconds.


LEVEL 2 MENU

HOW TO ENTER THE LEVEL 2 MENU

1. Enter the Programming mode by pressing the **SET+**  keys for 3 seconds ("°C" or "°F" LED starts blinking).
2. Released the keys, then push again the **SET+**  keys for more than 7 seconds. The L2 label will be displayed immediately followed from the "Hy" parameter.

NOW YOU ARE IN THE LEVEL 2 MENU.


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** +  or wait 15 seconds without pressing a key.


NOTE1: if no parameter is present in L1, after 3sec the "nP" message is displayed. Keep the keys pushed till the L2 message is displayed.

NOTE2: the set value is stored even when the procedure is exited by waiting 15 seconds.



HOW TO MOVE A PARAMETER FROM THE SECOND LEVEL TO THE FIRST LEVEL AND VICE VERSA.

Each parameter present in the LEVEL 2 MENU can be removed or put into "THE FIRST LEVEL" (user level) by pressing **SET** + . When a parameter is present in First Level, the decimal point is on.

TO LOCK THE KEYBOARD

1. Keep pressed for more than 3 seconds the  and  keys.
2. The "oF" message will be displayed and the keyboard will be locked.

TO UNLOCK THE KEYBOARD

Keep pressed together for more than 3 seconds the  and  keys till the "on" message will be displayed.

Parameters

REGULATION

- Hy Differential:** (0,1°C to 25°C) Intervention differential for set point. Compressor cut in is SET POINT + differential (Hy). Compressor cut out is when the temperature reaches the set point.
- LS Minimum SET POINT:** (-55°CtoSET/-58°FtoSET): Sets the minimum value for the set point..
- US Maximum SET POINT:** (SETto99°F/ SETto99°F). Set the maximum value for set point.
- ot First probe calibration:** (-9.9to9.9°F) allows to adjust possible offset of the first probe.
- P2 Evaporator probe presence:** n= not present; y= the defrost stops by temperature.
- oE Second probe calibration:** (-9.9to9.9°F) allows to adjust possible offset of the second probe.
- od Outputs activation delay at start up:** (0to99min) This function is enabled at the initial start up of the instrument and inhibits any output activation for the period of time set in the parameter.
- AC Anti-short cycle delay:** (0to50 min) minimum interval between the compressor stop and the following restart.
- Cy Compressor ON time with faulty probe:** (0to99 min) time during which the compressor is active in case of faulty thermostat probe. With Cy=0 compressor is always Off (Hidden).
- Cn Compressor OFF time with faulty probe:** (0to99 min) time during which the compressor is off in case of faulty thermostat probe. With Cn=0 compressor is always active(Hidden).

DISPLAY

- CF Measurement unit:** (°C,°F) °C =Celsius; °F =Fahrenheit.
WARNING: When the measurement unit is changed the Set point and the values of the parameters Hy, LS, US, oE, o1, AU, AL have to be checked and modified if necessary).
- rE Resolution (only for °C):**(dE, in) dE= decimal between -9.9 and 9.9°F; in= integer.
- Ld Default display:** (P1, P2) P1= thermostat probe; P2= evaporator probe.
- dy Display delay:** (0to15 min) when the temperature increases, the display is updated a maximum of 1°F after this time.

DEFROST

- td Defrost type:** (EL, in) EL= electrical heater, compressor OFF; in= hot gas, compressor ON;
- dE Defrost termination temperature:** (-58to122°F) if ot=Y it sets the temperature measured by the evaporator probe, which causes the end of defrost.
- id Interval between defrost cycles:** (0to99 hours) Determines the time interval between the beginning of two defrost cycles.

- Md** **Maximum length for defrost:** (0to99 min. with 0=no defrost) when ot=n, (not evaporator probe: timed defrost) it sets the defrost duration, when ot = y (defrost end based on temperature) it sets the maximum length for defrost.
- dd** **Start defrost delay:** (0to99min) This is useful when different defrost start times are necessary to avoid overloading the plant.
- dF** **Display during defrost:** (rt, it, St, dF) rt= real temperature; it= start defrost temperature; St= set point; dF= label dF.
- dt** **Drip time:** (0to99 min) time interval between reaching defrost termination temperature and the restoring of the control's normal operation. This time allows the evaporator to eliminate water drops that might have formed due to defrost.
- dP** **Defrost at power –on:** (y, n) y= at power on defrost starts; n= defrost doesn't start at power-on.

FANS

- FC** **Fans operating mode:** (cn, on, cY, oY) cn= in runs with the compressor, off during defrost; on= continuous mode, off during defrost;; cY= runs with the compressor, on during defrost; oY= continuous mode, on during defrost.
- Fd** **Fans delay after defrost:** (0to99 min) Interval between end of defrost and evaporator fans start.
- FS** **Fans stop temperature:** (-58to122°F) setting of temperature, detected by evaporator probe, above which fans are always off.

ALARMS

- AU** **Maximum temperature alarm:** (ALto200°F) when this temperature is reached the alarm is enabled, after the "Ad" delay time.
- AL** **Minimum temperature alarm:** (-55toAU°F) when this temperature is reached the alarm is enabled, after the "Ad" delay time.
- Ad** **Temperature alarm delay:** (0to99 min) time interval between the detection of an alarm condition and alarm signalling.
- dA** **Exclusion of temperature alarm at startup:** (0to99 min) time interval between the detection of the temperature alarm condition after instrument power on and alarm signaling.

DIGITAL INPUT(NOT USED)

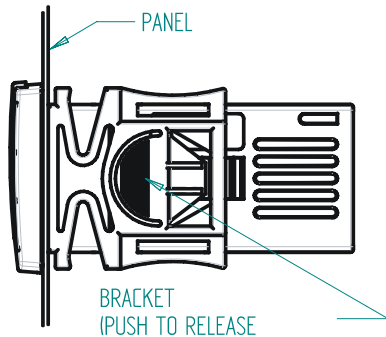
- iP** **Digital input polarity:** (oP, cL) oP= activated by closing the contact; cL= activated by opening the contact.
- iF** **Digital input configuration:** (EA, bA, do, dF, Au, Hc) EA= external alarm: EA message is displayed; bA= serious alarm: CA message is displayed;PA=not used; do= door switch function; dF= defrost activation; Au=not used; Hc= inversion of the kind of action; Fn=not used; ES=Energy Savings(not used).
- di** **Digital input delay:** (0to99 min) with iF=EA or bA delay between the detection of the external alarm condition and its signalling. With iF=do it represents the delay to activate the door open alarm.
- dC** **Compressor and fan status when open door:** (no, Fn, cP, Fc): no= normal; Fn= Fans OFF; cP=Compressor off; Fc= Compressor and fans off.

rd Regulation with door open: (n, Y) n= no regulation if door is opened; Y= when di is elapsed regulation restarts even if door open alarm is present.

OTHER

d1 Thermostat probe display (read only)
d2 Evaporator probe display (read only)
Pt Parameter code table (read only)
rL Software release (read only)

Installation and Mounting



Instrument XR06CX shall be mounted on vertical panel, in a 29x71 mm hole, and fixed using the bracket supplied. The temperature range allowed for correct operation is 0to140°F. Let air circulate by the cooling holes.

Electrical Connections


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.


PROBES

The probes shall be mounted with the bulb upwards to prevent damages due to casual liquid infiltration. It is recommended to place the thermostat probe away from air streams to correctly measure the average room temperature. Place the defrost termination probe among the evaporator fins in the coldest place, where most ice is formed, far from heaters or from the warmest place during defrost, to prevent premature defrost termination.

How to Use the Hot Key

HOW TO PROGRAM THE HOT KEY FROM THE CONTROLLER(UPLOAD)

1. Program one controller with the front keypad.
2. When the controller is powered, insert the "Hot key" and push  key; the "UL" message appears briefly followed a by "En" which stays displayed for 15 seconds.
3. Power down the controller and remove the "Hot Key".

NOTE: The "Er" 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.

HOW TO PROGRAM A CONTROLLER USING THE HOT KEY (DOWNLOAD)

1. Power down the controller.
2. Insert a programmed "Hot Key" into the 5-PIN receptacle and then place power to the controller.
3. Apply power to the controller. Automatically the parameter list of the "Hot Key" is downloaded into the controller memory, the "dL" message appears briefly followed by "En" which stays displayed for 15 seconds.
4. Power down the controller and remove the "Hot Key".

Alarm Signaling

Message	Cause	Outputs
"P1"	Room probe failure	Compressor output according to "Cy" and "Cn"
"P2"	Evaporator probe failure	Defrost end is timed
"HA"	Maximum temperature alarm	Outputs unchanged
"LA"	Minimum temperature alarm	Outputs unchanged
"EA"	External alarm(not used)	Outputs unchanged
"CA"	Serious external alarm(not used)	All outputs off
"dA"	Door open(not used)	Compressor and fans restart

ALARM RECOVERY

Probe alarms "P1" and "P2" start some seconds after the fault in the related probe; they automatically stop a few seconds after the probe restarts normal operation. Check the connections before replacing the probe. Temperature alarms "HA" and "LA" automatically stop as soon as the temperature returns to normal values.

Alarms "EA" and "CA" (with iF=bL) recover as soon as the digital input is disabled.

Technical Data

Housing: self-extinguishing ABS

Case: front 32x74 mm; depth 60mm

Mounting: panel mounting in a 71x29mm panel cut-out

Protection: IP20

Frontal protection: IP65

Connections:

1 through 8: ¼ inch spade terminal

9 through 12: screw terminal block ≤ 2.5 mm² wiring

Power supply: according to the model: 110Vac ±10%, 50/60Hz, 230Vac +10%to-15%

Power absorption: 3VA max

Display: 2 digits, red LED, 14.2 mm high

Inputs: Up to 3 NTC

Relay outputs:

compressor: 16FLA/96LRA

defrost: SPDT 10(3) A, 250Vac

fan: SPST 5(2) A, 250Vac

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

Kind of action: 1B

Pollution grade: 2

Software class: A

Rated impulsive voltage: 2500V

Over-voltage Category: II

Operating temperature: 0to60 °C (32to140°F)

Storage temperature: -30to85 °C (-22to185°F)

Relative humidity: 20to85% (non-condensing)

Measuring and regulation range: NTC -40to110°C (-40to230°F)

Resolution: 0.1 °C or 1 °C or 1 °F (selectable)

Accuracy (ambient temp. 25°C): ±0.7 °C (1.3°F) ±1 digit

Connections

XR06CX

