

MODEL: UPA



INSTALLATION & OPERATION HANDBOOK





P057380H Rev. 8 8/07





DANGER

Electrical Shock Hazard Always disconnect power to case when servicing or cleaning.





disconnect power to the fans before cleaning case.



WARNING

Some surfaces may be hot when case is in operation.



WARNING

Always turn off power to lights before servicing.





Welcome to the Hill PHOENIX display case family. We're very pleased you joined us.

This installation and operation handbook has been especially prepared for everyone involved with Hill PHOENIX display cases – owners, managers, installers and maintenance personnel.

You'll find this book different than our traditional manual. The most dramatic difference is the use of many more illustrated instructions to make it easier to read and to help you get the most from this innovative new design. When you follow the instructions you should expect remarkable performance, attractive fits and finish, and long case life.

We are interested in your suggestions for improvement both in case design and in this handbook. Please call/write to:

HIII PHOENIX

Marketing Services Department 1925 Ruffin Mill Rd. Colonial Heights, VA 23834 Tel: 804-526-4455 Fax: 804-526-7450 or visit our web site at www.hillphoenix.com

We wish you the very best in outstanding food merchandising and a long trouble-free operation.

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GENERAL INFORMATION

DESCRIPTION OF CASES: Specifically covered in this manual is model UPA-8' mobile self-contained produce merchandiser.

STORE CONDITIONS: Hill PHOENIX cases are designed to operate in an air conditioned store with a system that can maintain 75^{O} F (24^{O} C) store temperature and 55 percent (maximum) relative humidity (CRMA conditions). Case operation will be adversely affected by exposure to excessively high ambient temperatures and/or humidity.

REFRIGERATION SYSTEM OPERATION: Air cooled condensing units require ventilation for efficient performance of condensers. Machine room temperatures must be a minimum of 65^OF in winter and a maximum of 95^OF in summer. Minimum condensing temperatures should be no less than 70^OF.

RECEIVING CASES: Examine fixtures carefully for shipping damage and shortages. For information on shortages contact the Service Parts Department at 1-800-283-1109.

APPARENT DAMAGE: A claim for obvious damage must be noted on the freight bill or express receipt and signed by the carriers agent, otherwise the carrier may refuse the claim.

CONCEALED DAMAGE: If damage is not apparent until after the equipment is unpacked, retain all packing materials and submit a written request to the carrier for inspection within 15 days of receipt of equipment.

LOST ITEMS: This equipment has been carefully inspected to insure the highest level of quality. Any claim for lost items must be made to **HIII PHOENIX** within 48 hours of receipt of equipment.

TECHNICAL SUPPORT: If any technical questions arise regarding a refrigerated display case contact our Customer Service Department in Richmond at 1-804-526-4455. For any questions regarding our refrigeration systems or electrical distribution centers contact our Customer Service Department in Conyers at 1-770-285-3200.

CONTACTING FACTORY: Should you need to contact **HIII PHOENIX** regarding a specific fixture, be sure to know the case model number and serial number. This information is on the serial plate located on the lower rear baffle of the case (see next page for details). Ask for a Service Parts Representative at 1-804-526-4455.

GENERAL INFORMATION



• CASE CLEARANCE: MINIMUM 6" FROM BOTH ENDS • AVAILABLE SHELF SIZES: 10", 12", 14", & 16"

INSTALLATION

The cases come equipped with a 120 volt, three prong connection that can be plugged into any 30 amp NEMA L5-30 receptacle within the store. Do not locate the case next to an area of measurable air flow. Examples of these locations would be directly under an air vent or near a main entrance or exit. When setting cases be sure to allow at least six inches of space between the ends and nearest case or wall to provide sufficient airflow to the condenser.

The two front exterior panels are shipped

attached to the case. The front panels are attached with three screws each located at the bottom of the panel. Once the screws are removed the panels lift off for easy access to electrical and plumbing components. The side panels, which are shipped loose in the case, fit behind the end and are attached with two screws.



REFRIGERATION COMPONENTS

Refrigeration components for the mobile self-contained cases are easily accessible in the tank and underneath the case. The expansion valve and suction line 1/4" access valve are both located in the right hand front side of the tank and are accessible without lifting the fan plenum. These components may be reached by lifting *only* the right hand deck pan which minimizes the need to remove product.

refrigeration components in the mobile self-contained cases. The components surrounded by the box are located within the case tank. Basic definitions of these components are listed on the following page.





COMPONENT DEFINITIONS

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

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

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

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

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

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

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

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

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

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

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

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

Thermostatic Expansion Valve (TXV) Bulb - A bulb that is attached to the suction line of the evaporator that controls the TXV. Inside the bulb is a charge that reacts to temperature and regulates the flow of refrigerant through the expansion valve.

PLUMBING

The drain trap and case piping are attached to the case at the factory so no assembly is required. The standard drain assembly is designed to direct the case drainage to an evaporative drain pan located underneath the case. Drain pan heaters are wired to a float control switch that cuts the heaters on when the water level in the drain pan reaches a certain level. The case drain is located front and center of the case for convenient access. Should any future maintenance issues arise it is important to note that the drain outlet is especially molded of ABS material and the drain box is constructed of PVC. Care should be given to make certain that all connections are water tight and sealed with appropriate PVC primer and PVC cement.



ELECTRICAL HOOKUP

The case comes pre-wired with a 120 volt, any 30 amp NEMA L5-30 receptacle, as shown in diagram 1 below.

The ON/OFF switch for the case lights is locatthree prong connection that can be plugged into ed on the left side of the case just under the rear sill as shown in diagram 2 below.



30 Amp Receptacle Face





REAR



CONTROL SETTINGS



Factory Control Settings

		Factory Settings
Parameter	Description	UPA
	Setpoint	27
HY	Hysteresis (differential) [1 to 9 ^o F/ ^o C]	1
LL	Setpoint Low Limit [67 ⁰ F (55 ⁰ C) to HL]	0
HL	Setpoint High Limit [LL to 99 ⁰ F/ ⁰ C]	73
CC	Anti-Short Cycling Timer [0 to 9 min.]	0
Со	Deep Freeze Cycle Time [0 to 99 min.]	0
АН	High Temperature Alarm Value (degrees above setpoint) [0 to 55 ⁰ F/ ⁰ C]	20
AL	Low Temperature Alarm Value (degrees below setpoint) [-50 to 0 ⁰ F/ ⁰ C]	-10
Ad	Alarm Differential [1 to 9 ⁰ F/ ⁰ C]	5
At	Alarm Time Delay [0 to 99 min.]	3
dF	Defrost Type (0-electrical; 1-hot gas)	0
dE	Defrost End Mode (O-timed defrost; 1-temperature terminated defrost)	1
dt	Defrost Termination Temperature [32 ⁰ F to 68 ⁰ F (0 ⁰ C to 20 ⁰ C)]	47
di	Defrost Interval [0 to 99 hours]	6
dd	Maximum Defrost Duration [1 to 99 min.]	45
dC	Dripping Time After Defrost [0 to 99 min.]	0
dU	Initial Defrost Interval (time before first defrost after startup) [0 to 99 min.]	99
dP	Defrost Display (O-displays last value before defrost; 1-displays setpoint)	0
dr	Display Delay After Defrost [1 to 99 min.	1
iF	Digital Input Type (0-no digital input;	0
	1-if digital input open, compres. off w/alarm on:	
	2-if digital input open, alarm on (contacts closed);	
	3-if digital input open, fan off w/alarm on)	
id	Digital Input Time Delay [0 to 99 sec.]	0
FF	Fan Function (O-fan runs parallel with compressor; 1-fan on)	0
Fd	Fan Start-Up Delay (after defrost) [0 to 99 min.]	5
Fr	Fan Start-Up Temp. [-22 ⁰ F to 41 ⁰ F/-30 ⁰ C to 5 ⁰ C]	40
SF	Sensor Failure Operation (0-compressor off; 1-compressor on;	1
	2-compressor on/off based on last 4 cycles)	
So	Temperature Sensor Offset [-20 ⁰ to 20 ⁰ F/ ⁰ C]	0
Un	Units Used (0- ⁰ C; 1- ⁰ F)	1
PU	Display Refresh Rate [1 to 99 sec.]	1



	Error Code	System Status	To program parameters:
F1			1. Hold the "Enter" button down for about 10 seconds. The display will change to
1 -	shorted temperature sensor. Cycle Power to reset control.	runs according to the sensor failure mode selected (parame- ter sf)	 "Hy." 2. Press the "Up" and "Down" button until the desired parameter is shown
F2	Indicates an open or shorted evaporator sensor. Correct problem to reset control.	Alarm output on defrost cycle is controlled by parameters di (defrost initiation) and dd (defrost duration)	 3. Press the "Enter" button. The parameter's current value will be shown. 4. Press the "Up" and "Down" button until
A1	Digital input was open for longer than time delay (id) and digital input option (if) 1 is selected.	Compressor off Alarm output on	 the desired value is shown. 5. Press the "Enter" button to save the new value. After 10 seconds of inactivity, the display will return to its normal function.
A2	Digital input is closed and digital input option (if) 1 is selected.	Alarm output is on	To change setpoint: 1. Hold down the "Enter" button down for 3 seconds. The display will change to show
A3	Digital input is open for longer than time delay (id) and digital input option (if) 3 is selected.	Fan output is off Alarm output is on	 2. Press the "Up" or "Down" button until you reach the new setpoint. 3. Press the "Enter" button to save the new
HI	Temperature has exceeded the high	Alarm output is on	To lock and unlock the unit:
	temp. alarm value (AH).		Press the "Enter," the "Up," and the "Down" buttons in sequence and hold
LO	Temperature has fallen below the low temp. alarm value (AL).	Alarm output is on	 them all down until "" is displayed. Hold for about 10 seconds until the current temperature is displayed.
EE	Program failure: control	Alarm output is on	To Initiate a deep freeze cycle:
	must be replaced.	Other outputs off	Press and the "Enter" and "Up" buttons in sequence and hold for five seconds. The compressor status LED will light

To Initiate Manual Defrost:

Hold the Defrost button down for 3 seconds.

To Initiate Self-Test:

IMPORTANT: Disconnect loads before beginning self test. Cycle power to resume operation.

Press the "Up" and the "Down" buttons in sequence and hold for 5 seconds.

CONTROL SETTINGS ESC3 Controls

Operation

Temperature Control

Temperature control in the ESC3 is accomplished by comparing the temperature reading of the case temperature probe against the temperature setpoint. The compressor output is used to control the temperature. If the temperature is above the temperature setpoint (L1) + the hysteresis setpoint (rd), the compressor output is turned on (subject to the conditions described in the compressor operation sec-tion). If the temperature is below the temperature setpoint – the hysteresis set-point, the compressor output is turned off. Note that the compressor output can also be used to control a refrigeration solenoid to regulate the temperature in a case.

Compressor Control

Several setpoints are available that allow the operation of the compressor output to be tailored to match individual needs.

Min On/Off Times and Minimum Cycle Time

Minimum ON/OFF compressor times can be specified, as well as a minimum time delay between compressor cycles. These parameters help prevent short-cycling.

Compressor Power ON Delay

The compressor power on delay set-point (c0) allows the user to specify a delay after the power up of the controller. The compressor output will not come on regardless of the temperature reading, until this amount of time has expired.

Compressor Safety Cycle

If the temp sensor fails, the ESC3 can be programmed to cycle the compressor ON for a fixed amount of time, followed by a 15-minute OFF time, until the probe failure is fixed. You may also specify the compressor be fully ON or OFF during probe failure.

Fan Control

The fan output is controlled by the ESC3 based on the current operating mode (defrost, cooling, etc.) and the setpoints which affect fan operation. It may be set to run only when required based on case temperature, or it may be set to be always ON regardless of temperature. In addition to these two basic modes, you may also turn the fans OFF during defrost, specify the fan will be ON only when the compressor is running, and delay fan activation after defrost drip time.

Defrost Control

The ESC3 can control the defrost function of a case. The ESC3 executes defrost cycles at a user-defined time interval. Electric, Off Cycle and Hot Gas defrost types are supported.

The ESC3 features a number of options to customize operation and termination of a defrost cycle. A defrost cycle can be terminated based on time or temperature. When termination by temperature is used, a minimum and maximum defrost time can be specified.

You may also program the ESC3 to begin a defrost cycle after power-up (after a user-defined delay time) and initiate a defrost manually (see the description for "Defrost Key" on this page).

Alarm Control

The ESC3 has several alarm functions. In addition to alarms based on high and low air temperatures, it will alarm if a probe failure is detected. If you are using defrost, the ESC3 will also generate an alarm when the defrost cycle did not terminate as expected (such as when the ESC3 is programmed to terminate at a temperature set point and the set point was never reached).

Interface

The ESC3 features a 3 digit LED display that shows the case temperature. Alternately, the display can be configured to display the product temperature if a product temperature probe is connected. The temperature can be displayed in either °C or °F.

Three keys on the front panel provide an indication of operating status as well as allowing setpoints to be changed.

Alarm Key

The Alarm key illuminates when the controller has detected an alarm condition. This key is also used to reset an alarm condition and to enter the setup mode (allowing setpoints to be changed).

Compressor Key

The Compressor key illuminates when the compressor output is on. When the ESC3 is in setup mode, this key is used to select a setpoint to be modified and to change the value of the setpoint.

Defrost Key

The Defrost key illuminates when the ESC3 is in defrost mode. Press the defrost key for 5 seconds to go into manual defrost mode. The key is also used in setup mode to select a setpoint to be modified and to change the value of the setpoint.



Alarm Operation

Indications on the Display

If the defrost, or compressor key blinks, it means that the corresponding function is delayed by a timing routine or inhibited. Other two-character messages may appear on the screen to indicate changes of state or alarm conditions. Values shown in Table 1.

Viewing and Changing the Temperature Setpoint

The temperature setpoint is the comparison point for the control temperature input. To change the set point value:

1. Press the *Alarm* key for more than 5 seconds until the setpoint is displayed and blinking.

- 2. Press the *Compressor* key and Defrost keys to raise/lower the value.
- 3. Press the Alarm key again to accept the new value.

Changing Other Setpoints

There are two levels of setpoints in the ESC3. The first level does not require a password to change (unless the buttons are locked out). The setpoints that can be changed in this manner are identified in the table on the next page as a USER LEVEL setpoint. All other setpoints do require a password to change and are identified as OEM setpoints. To change USER-level setpoints:

1. Press the *Alarm* key and hold it until the letters PS are displayed.

2. Use the *Compressor* and *Defrost* key to scroll through the codes for the different set points (see Table 1 and Table 2).

- 3. When the code is displayed for the setpoint you wish
- to change, press the *Alarm* key. The value for that setpoint will be displayed.
- 4. Press the *Compressor* or *Defrost* key to change the value
- 5. Press the *Alarm* key to go back to the code.

At this point you must press the *Alarm* key to accept the change or press the *Compressor* or *Defrost* key to scroll to the next USER setpoint. To accept the changes, press and hold the *Alarm* key until the display stops flashing. To change OEM-level setpoints, the password must be entered. To do this press and hold the *Alarm* key until the letters PS are displayed. When PS is displayed release the alarm key and 0 will be displayed. Press the *Compressor* or *Defrost* keys to enter the password (22 is the default) then press the *Alarm* key. PS will be displayed again. At this point, pressing the *Compressor* or *Defrost* key will scroll through the legend for all setpoints. To change the setpoints, use the identical procedure that is used to change a USER setpoint.

Table 1

Code	Meaning
E0	Air probe has failed
E1	Defrost termination or product probe has failed
LO	Low temperature alarm
н	High temperature alarm
Ed	Defrost timeout has occurred
	(did not terminate correctly)
dF	Case is in defrost (not an alarm)

ESC3 Case Controller



CONTROL SETTINGS ESC3 Controls

User Level Setpoints - UPA

Code	Parameter Name	Min	Max	Units	UPA
	Setpoint			°C/°F	27
PS	Password	0	199		22
/C	Offset for air temp sensor	-127	127	°C/°F	0
	(in tenths of a degree: i.e. a value of "1" adds 0.1° to value)				
rd	Regulator differential (superheat) set point (a "0" in this field = 0.5°C or 0.5°F)	0	19	°C/°F	1
dl	Time between defrost cycles (defrost interval)	0	199	hours	6
dt	Defrost temperature termination set point	-50	127	°C/°F	47
dP	Max duration of defrost if using electric or hot gas defrost, or the actual	1	199	min	45
	duration of defrost if doing timed defrost				
dd	Drip time	0	15	min	0
d8	Alarm delay after defrost	0	15	hours	1
d/	Defrost probe reading (read-only)			°C/°F	
AL	Low temperature alarm differential (subtract this value from the temperature	0	127	°C/°F	-10
	set point to get low alarm temperature set point) (0 = no low temp alarming)				
AH	High temperature alarm differential (add this value to the temperature set	0	127	°C/°F	20
	point to get high alarm temperature set point) (0 = no high temp alarming)				
F1	Fan on at temperature set point (used if F0 = 1)	-50	199	°C/°F	5
Fd	Fan delay after defrost drip time for each F0 value	0	15	min	1
H5	ID code for programming key	-99	+		21
Т	External parameter programming	-99	199		

CONTROL SETTINGS

Dixell Controls

dxal

Installing and Operating Instructions

1598007305

Thermostat with off cycle defrost XR20C-E cooling

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1. GENERAL WARNING

APLEASE READ BEFORE USING THIS MANUAL

- This manual is part of the product and should be kept near the instrument for easy and guick reference.
- The instrument shall not be used for purposes different from those described hereunder. It cannot be used as a safety device.

1.2 A SAFETY PRECAUTIONS

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

2. GENERAL DESCRIPTION

Model XR20C, format 32 x 74 mm, is thermostat with off cycle defrost designed for refrigeration applications at normal temperature. It provides a relay output to drive the compressor and a NTC probe input. A internal timer manages the off cycle defrost. The instrument is fully configurable through special parameters that can be easily programmed through the keyboard

3. CONTROLLING LOADS



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

1598007305 XR20CE GB r1.0 05.10.2004.dog

again. In case of fault in the thermostat probe the start and stop of the compressor are timed through parameters "COn" and "COF

3.2 DEFROST

Defrost is performed through a simple stop of the compressor. Parameter "IdF" controls the interval between defrost cycles, while its length is controlled by parameter "MdF & dtE". MdF is used for a timed defrost end when P2P = n. When P2P = y, then dtE will end defrost by temperature.

4. FRONT PANEL COMMANDS



- SET: To display target set point; in programming mode it selects a parameter or confirm an operation.
- 3 (DEF) To start a manual defrost
- (UP): To see the max. stored temperature; in programming mode it browses the parameter codes or increases the displayed value.
- ✓ (DOWN) To see the min stored temperature; in programming mode it browses the parameter codes or decreases the displayed value. KEY COMBINATIONS:

- · + v To lock & unlock the keyboard.
- SET + To enter the programming mode.
- To return to the room temperature display. SET + A

4.1 MEANING OF LEDS

LED	MODE	FUNCTION
*	ON	Compressor enabled
*	Flashing	-Programming Phase (flashing with 3) - Anti-short cycle delay enabled
漱	ON	Defrost enabled
*	Flashing	 Programming Phase (flashing with \$\$) Drip time in progress
(cb)	ON	An temperature alarm happened

5. MAIN FUNCTIONS

5.1 HOW TO SEE THE SETPOINT

Push and immediately release the 1. SET SET key: the display will show the Set point value:

Push and immediately release the SET key or wait for 5 seconds to display the probe value again

5.2 HOW TO CHANGE THE SETPOINT

- Push the SET key for more than 2 seconds to change 1. the Set point value:
- The value of the set point will be displayed and the 🗱 2 LED starts blinking;
- To change the Set value push the . or . arrows To memorise the new set point value push the SET key 4 again or wait 15s

5.3 HOW TO START A MANUAL DEFROST



1. Enter the Programming mode by pressing the Set and v key for 3s (1 and 🗱 start blinking). 2. Select the required parameter

3. Press the "SET" key to display its value. (Now only the * LED is blinking).

15

4. Use - or - to change its value.

SETC

XR20C

exited by waiting the time-out to expire. 5.5 THE HIDDEN MENU

The hidden menu Includes all the parameters of the ir strument.

5. Press "SET" to store the new value and move to the

To exit: Press SET + UP or wait 15s without pressing a key. NOTE: the set value is stored even when the procedure is

5.5.1 HOW TO ENTER THE HIDDEN MENU



following parameter

Enter the Programming mode by pressing the Set + - key for 3s (and 🗱 start blinking). 1. When a parameter is displayed keep

pressed the Set+ v for more than 7s. The Pr2 label will be displayed. Release the keys, immediately the HY parameter will be shown, NOW YOU ARE IN THE HIDDEN MENU.

2. Select the required parameter.

3. Press the "SET" key to display its value (Now only the 34 LED is blinking).

4. Use - or - to change its value. 5. Press "SET" to store the new value and move to the

fullowing parameter.

To exit: Press SET + - or wait 15s without pressing a key. NOTE: the set value is stored even when the procedure is exited by waiting the time-out to expire.

5.5.2 HOW TO MOVE A PARAMETER FROM THE HIDDEN MENU TO THE FIRST LEVEL AND VICEVERSA.

Each parameter present in the HIDDEN MENU can be removed or put into "THE FIRST LEVEL" (user level) by pressing "SET + ~ "

In the HIDDEN MENU when a parameter is present in Fisrt Level the decimal point is on.

5.6 HOW TO LOCK THE KEYBOARD



- Keep pressed for more than 3 s the and keys. The "POF" message will be displayed and the keyboard will be locked. At this point it will be possible only to see
- the set point or the MAX o Min temperature stored If a key is pressed more than 3s the "POF" message will be displayed.

5.7 TO UNLOCK THE KEYBOARD

Keep pressed together for more than 3s the - and - keys til the Pon message will be displayed.

6 LIST OF PARAMETERS

NOTE: the parameters preceded by dots are only in the Hidden Menu. REGULATION

- Hy Differential: (0,1 ÷ 25,5°C / 1÷255 °F) Intervention differential for set point. Compressor Cut IN is Set Point Plus Differential (Hy). Compressor Cut OUT is when the temperature reaches the set point.
- LS Minimum set point: (- 50°C+SET / -58°F+SET): Sets the minimum acceptable value for the set point.
- US Maximum set point: (SET+ 150°C / SET+302°F). .
- Set the maximum acceptable value for set point. Ot Thermostat probe calibration: (-12.0+12.0°C; -120÷120°F) allows the adjustment of possible offset of the thermostat probe.
- F2P Evaporator probe presence: n= not present: the defrost stops by time; y= present: the defrost stops by temperature.
- OE Evaporator probe calibration: (-12.0+12.0°C; 120÷120°F). allows to adjust possible offset of the evaporator probe.
- OdS Outputs activation delay start up: (0+255min) 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: (0+50 min) minimum interval between the compressor stop and the following restart.
- COn Compressor ON time with faulty probe: (0+255 min) time during which the compressor is active in case

CONTROL SETTINGS

Dixell Controls - Dixell XR20C-E

dixel Inste

Installing and Operating Instructions

- of faulty thermostat probe. With COn=0 compressor is always OFF.
- COF Compressor OFF time with faulty probe: (0+255 min) fime during which the compressor is OFF in case of faulty thermostat probe. With COF=0 compressor is always active.

DISPLAY

- CF Temperature measurement unit °C = Celsius; °F= Fahrenheit. WARNING: When the measurement unit is changed the SET point and the values of the parameters Hy. LS, US, Ot, ALU and ALL have to be checked and modified if necessary).
- rES Resolution (for °C): (in = 1°C; dE = 0.1 °C) allows the decimal point displaying.

DEFROST

- dtE Defrost termination temperature: (-50÷50 °C/ -58+122°F) (Enabled only when P2P=y) sets the temperature measured by the evaporator probe, which causes the end of defrost.
- IdF Interval between defrost cycles: (1÷120h) Determines the ime interval between the beginning of two defrost cycles.
- MdF Length for defrost: (0+255min) It sets the defrost duration.
- dFd Temperature displayed during defrost (rt = real temperature; it = temperature at defrost start; SEt = set point; dEF = "dEF" label)
- dAd MAX display delay after defrost: (0+255min). Sets the maximum time between the end of defrost and the restarting of the real room temperature display.

DIGITAL INPUT

- 11P Digital input polarity: oP: the digital input is activated by opening the contact; CL: the digital input is activated by closing the contact.
- did: (0+255 min) door open signalling delay
- odc Compressor status when open door: no, Fan = normal; CPr, F_C = Compressor OFF
 OTHER

OTHER

- rEL Software release for internal use.
- Ptb Parameter table index: readable only. For internal use

7. DIGITAL INPUT

7.1 DIGITAL INPUTS POLARITY

The digital input polarity depends on the "i1P" parameter. i1P=CL: the input is activated by closing the contact. i1P=OP: the input is activated by opening the contact

8. INSTALLATION AND MOUNTING





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.

9. ELECTRICAL CONNECTIONS

The instruments are provided with screw terminal block to connect cables with a cross section up to 2,5 mm². Heatresistant cables have to be used. Before connecting cables make sure the power supply complies with the instrument's mature the power requirements. Separate the probe cables from the power supply cables, from the outputs and the power <u>connections</u>. Do not exceed the maximum current allowed on each relay, in case of heavier loads use a suitable external relay.

9.1 PROBE CONNECTION

The probes shall be mounted with the bulb upwards to prevent damages due to casual liquid infiltration. It is recommended to place the probe away from air streams to correctly measure the average room temperature.

10. HOW TO USE THE HOT KEY

10.1 HOW TO PROGRAM A HOT KEY FROM THE INSTRUMENT (UPLOAD)

- Program one controller with the front keypad.
 When the controller is <u>ON</u>, insert the 'Hot key' and push ~ key; the "uPL" message appears followed a by flashing "End"
- Push "SET" key and the End will stop flashing.
 <u>Turn OFF</u> the instrument remove the "Hot Key", then turn it ON again.

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

10.2 HOW TO PROGRAM AN INSTRUMENT USING A HOT KEY (DOWNLOAD)

- Turn OFF the instrument.
 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 "doL"
- downloaded into the Controller memory, the "doL" message is blinking followed a by flashing "End".
 After 10 seconds the instrument will restart working
- with the new parameters. 5. Remove the **"Hot Key"**..

NOTE the message "Err" is displayed for failed programming. In this case turn the unit off and then on if you want to restart the download again or remove the "Hot key" to abort the operation.

11. ALARM SIGNALS

Message	Cause	Output
"EE"	Data or memory failur	e
"P1"	Room probe failure	Output according to par "Con" and "COF"
P2	Display probe failure	Output unchanged
"dA"	Door open	Regulation restarts

11.1 ALARM "EE"

The instrument is provided with an internal check verifying memory integrity. Alarm "EE" flashes when a failure in the internal memory is detected. In such case call the service.

11.2 ALARM RECOVERY

Probe alarm "P1 & P2" start some seconds after the fault in the related probe; it automatically stops some seconds after the probe restarts normal operation. Check connections before replacing the probe. Alarms "dA" recovers as soon as the digital input is disabled.

12. TECHNICAL DATA

Housing: self extinguishing ABS. Case: XR20C frontal 32x74 mm; depth 60mm; Mounting

XR20C panel mounting in a 71x29mm panel cut-out

Protection: IP20. Frontal protection:

XR20C IP65 with frontal gasket RG-C (optional). Connections: Screw terminal block $\leq 2,5$ mm² heatresistant 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: 3 digits, red LED, 14,2 mm high.

Inputs: 2 PTC or NTC probe. Relay outputs compressor: SPST relay 16FLA/96LRA Data storing: on the non-volatile memory (EEPROM). Kind of action: 1B; Pollution grade: normal

1598007305

Software class: A.

Operating temperature: 0+60 °C. Storage temperature: -25+60 °C.

Relative humidity: 20+85% (no condensing)

Measuring and regulation range: NTC probe: -40+110°C (-58+230°F) Resolution: 0,1 °C or 1°C or 1 °F (selectable)

Resolution: 0,1 °C or 1 °C or 1 °F (selectable). Accuracy (ambient temp. 25°C): ±0,7 °C ±1 digit

13. CONNECTIONS

13.1 XR20C: 16FLA COMPRESSOR



OPTIONAL

12Vac/dc supply: connect to the terminals 7 and 8. 24Vac/dc supply: connect to the terminals 7 and 8. 120Vac supply: connect to the terminals 7 and 8.

14. DEFAULT SETTING VALUES

ahal	1000	Denne	- scier
aDel	Name	Kange	2/27
Set	Set point	L5+05	3/3/
ну	Differential	0,1+25.5°C/ 1+255°F	2/4
LS	Minimum set point	-50°C+SET/ -58°F+SET	-40/ - 40
US	Maximum set point	SET+150°C/ SET + 302°F	110/ 230
Ot	Thermostat probe calibration	-12+ 12°C / -120 + 120°F	0/0
P2P	Second probe presence	y/n	Y
OE	Second probe calibration	-12+ 12°C / -120 + 120°F	0/0
OdS	Outputs delay at start up	0+255 min	0
AC	Anti-short cycle delay	0 + 50 min	1
COn	Compressor ON time with faulty probe	0 + 255 min	15
COF	Compressor OFF time with faulty probe	0 + 255 min	30
CF	Temperature measurement unit	°C + °F	°C/°F
rES	Resolution	in + dE	dE/-
dtE	Defrost termination temperature	-50 + 50 °C	8/46
IdF	Interval between defrost cycles	1 + 120 hour	8
MdF	(Maximum) length for defrost	0 + 255 min	20
dFd	Displaying during defrost	rt, it, SEt, DEF	it
dAd	MAX display delay after defrost	0 ÷ 255 min	30
i1P	Digital input polarity	oP=opening; CL=closing	CL
did	Digital input alarm delay	0+255min	5
odc	Compressor status with open door:	no, Fan = normal; CPr; F_C = Compr. OFF;	no
FEL	Software release		-
Ptb	Map code		-

Hidden parameters

CE

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SETPOINTS FOR DIXELL XR20C-E USED ON UPA8

CODE	DESCRIPTION	HIDDEN	RANGE	DEFAULT	UNIT-MEAS	SETTING
Set	SETPOINT		LS to US	37	•F	26
Ну	DIFFERENTIAL		1 to 255	4	۰F	2
LS	MINIMUM SET POINT	X	-58 to Set	-40	۰F	20
US	MAXIMUM SET POINT	X	Set to 230	230	۰F	40
Ot	THERMOSTAT PROBE CALIBRATION		-120 to 120	0	۰F	0
P2P	SECOND PROBE PRESENCE	X	y/n	У	_	у
OE	SECOND PROBE CALIBRATION		-120 to 120	0	۰F	0
OdS	OUTPUTS DELAY AT START-UP	X	0 to 255	0	MIN	0
AC	ANTI-SHORT CYCLE DELAY		0 to 50	1	MIN	1
COn	COMPRESSOR ON TIME W/FAULTY PROBE	x	0 to 255	15	MIN	15
COF	COMPRESSOR OFF TIME W/FAULTY PROBE	X	0 to 255	30	MIN	30
CF	TEMPERATURE MEASUREMENT UNIT	Х	°C or °F	۰F	*C/*F	۴F
rES	RESOLUTION		_	-	_	-
dtE	DEFROST TERMINATION TEMPERATURE		-58 to 122	46	۰F	47
ldF	INTERVAL BETWEEN DEFROST CYCLES		1 to 120	8	HOURS	6
MdF	(MAXIMUM) TIME FOR DEFROST		0 to 255	20	MIN	45
dFd	DISPLAY DURING DEFROST	X	rt, it, SEt, DEF	it	_	it
dAd	MAX DISPLAY DELAY AFTER DEFROST	X	0 to 255	30	MIN	1
i1P	DIGITAL INPUT POLARITY	X	CL = CLOSING	CL	-	CL
did	DIGITAL INPUT ALARM DELAY	X	0-255	5	MIN	5
odc	COMPRESSOR STATUS W/DOOR OPEN	x	no = NORMAL	no	_	no
rEL	SOFTWARE RELEASE		-	-	-	-
Ptb	MAP CODE		-	-	-	-

DIGITAL CONTROLLER

XR02CX

1. CONTENTS

- Contents General warnings General description Regulation Defrost Front panel commands Parameters Installation and mounting 9 Electrical connections 10 How to use the hot key 11 Alarm signalling 12 Technical data 13 Connections
- 14 Default setting values

2. **GENERAL WARNINGS**

PLEASE READ BEFORE USING THIS MANUAL

- This manual is part of the product and should be kept near the instrument for easy and quick reference.
- The instrument shall not be used for purposes different from those described hereunder. It cannot be used as a safety device.
- Check the application limits before proceeding.

SAFETY PRECAUTIONS

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

GENERAL DESCRIPTION 3.

Model XR02CX, format 32 x 74 x 50 mm, is a digital thermostat with off cycle defrost designed for refrigeration applications at normal temperature. It provides a relay output to drive the compressor. It is also provided with 2 NTC probe input. The instrument is fully configurable through special parameters that can be easily programmed through the keyboard or the by HOTKEY.

REGULATION 4.

THE REGULATION OUTPUT

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 para "Cy" and "Cn"

DEFROST 5.

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 6.



KEYS COMBINATION

∀+♪ To lock or unlock the keyboard ET+ 🏷 To enter in programming mode **-**T+ へ To return to room temperature display

LED	MODO	SIGNIFICATO		
×tx	On	Compressore enabled		
*	Flashing	Anti short cycle delay enabled (AC parameter)		
	On	Defrost in progress		
_				

	Flashing	Dripping in progress
Ĵ	On	Measurement unit
	Flashing	Programming mode
Ĵ	On	Measurement unit
	Flashing	Programming mode

HOW TO SEE THE SET POINT

- Push and immediately release the SET key, the set point will be showed;
- Push and immediately release the SET key or wait about 5s to return to normal visualisation. 2

HOW TO CHANGE THE SETPOINT

- Push the SET key for more than 2 seconds to change the Set point value; 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 o or n arrows within 10s.
- To memorise the new set point value push the SET key again or wait 10s

HOW TO START A MANUAL DEFROST (ONLY XR02CX)

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

HOW TO CHANGE A PARAMETER VALUE

To change the parameter's value operate as follows:

- blinking)
- 2 Select the required parameter. Press the "SET" key to display its value
- Use \triangle or \bigtriangledown to change its value. 3.
- Press "SET" to store the new value and move to the following parameter.
- To exit: Press SET+ a or wait 15s without pressing a key.

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

HIDDEN MENU

The hidden menu includes all the parameters of the instrument.

HOW TO ENTER THE HIDDEN MENU

- 1. Enter the Programming mode by pressing the SET+ v keys for 3s ("°C" or "°F" LED starts blinking)
- Released the keys, then push again the SET+ V keys for more than 7s. The L2 label will be displayed immediately followed from the Hy parameter. NOW YOU ARE IN THE HIDDEN MENU.
- 3 Select the required parameter
- 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 15s without pressing a key.

NOTE1: if none parameter is present in L1, after 3s 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 the time-out to expire. HOW TO MOVE A PARAMETER FROM THE HIDDEN MENU TO THE FIRST LEVEL AND VICEVERSA.

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

TO LOCK THE KEYBOARD

- Keep pressed for more than 3s the \triangle and \bigtriangledown keys. The "**OF**" message will be displayed and the keyboard will be locked. If a key is pressed more 2 than 3s the "OF" message will be displayed

TO UNLOCK THE KEYBOARD

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

7. PARAMETERS

REGULATION

- Differential: (0.1°C ÷ 25°C) Intervention differential for set point. Compressor Cut IN is SET Hy
- POINT + differential (Hy). Compressor Cut OUT is when the temperature reaches the set point.
- Minimum SET POINT: (-55°C+SET/-58°F+SET): Sets the minimum value for the set point.. Maximum SET POINT: (SET+99°C/ SET+99°F). Set the maximum value for set point.
- First probe calibration: (-9.9+9.9°C) allows to adjust possible offset of the first probe.
- P2
- Evaporator probe presence: n= not present; y= the defrost stops by temperature. Second probe calibration: (-9.9+9.9°C) allows to adjust possible offset of the second probe οE
- od Outputs activation delay at start up: (0+99min) 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. **Anti-short cycle delay:** (0+50 min) minimum interval between the compressor stop and the AC following restart
- Compressor ON time with faulty probe: (0+99 min) time during which the compressor is active in case of faulty thermostat probe. With Cy=0 compressor is always OFF. Cy
- Cn Compressor OFF time with faulty probe: (0+99 min) time during which the compressor is OFF in case of faulty thermostat probe. With Cn=0 compressor is always active.

DISPLAY

- Measurement unit: (°C÷°F) °C =Celsius: °F =Fahrenheit, WARNING: When the measurement CF 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).
- Resolution (only for °C):(dE ÷ in) dE= decimal between -9.9 and 9.9°C; in= integer; Default display: (P1 ÷ P2) P1= thermostat probe; P2= evaporator probe. SP=Set point
- Display delay: (0+15 min.) when the temperature increases, the display is updated of 1 °C/1°F dy after this time

DEFROST

- Defrost termination temperature: (-50÷50°C) if ot=Y it sets the temperature measured by the dF evaporator probe, which causes the end of defrost.
- Interval between defrost cycles: (0÷99 ore) Determines the time interval between the beginning of two defrost cycles

15 US

To display target set point, in

programming mode it selects a

In programming mode it browses

the parameter codes or increases

In programming mode it browses the parameter codes or

decreases the displayed value

To start a manual defrost

the displayed value

parameter or confirm

operation

- Md Maximum length for defrost: (0+99 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.
- 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: (AL+99°C) when this temperature is reached the alarm is enabled, after the "Ad" delay time.
- AL Minimum temperature alarm: (-55+AU°C) when this temperature is reached the alarm is enabled, after the "Ad" delay time.
- Ad Temperature alarm delay: (0+99 min) time interval between the detection of an alarm condition and alarm signalling.
- dA Exclusion of temperature alarm at startup: (0+99 min) time interval between the detection of the temperature alarm condition after instrument power on and alarm signalling.

OTHER

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

8. INSTALLATION AND MOUNTING



Instrument **XR02CX** shall be mounted on vertical panel, in a 29x71 mm hole, and fixed using the special bracket supplied. The temperature range allowed for correct operation is $0\div60$ °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.

9. 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.

9.1 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.

10. HOW TO USE THE HOT KEY

10.1 HOW TO PROGRAM THE HOT KEY FROM THE INSTRUMENT (UPLOAD)

- 1. Program one controller with the front keypad.
- When the controller is ON, insert the "Hot key" and push A key; the "uP" message appears followed a by flashing "En"
- 3. Push "SET" key and the "En" will stop flashing.
- Turn OFF the instrument remove the "Hot Key", then turn it ON again.

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

10.2 HOW TO PROGRAM AN INSTRUMENT USING HOT KEY (DOWNLOAD)

- 1. Turn OFF the instrument.
- Insert a programmed "Hot Key" into the 5 PIN receptacle and then turn the Controller ON.
 Automatically the parameter list of the "Hot Key" is downloaded into the Controller memory, the
- "do" message is blinking followed a by flashing "En".
 After 10 seconds the instrument will restart working with the new parameters.
- 5. Remove the "Hot Key"..

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

11.	ALARM SIGNA	LLING
Mess.	Cause	Outputs
"P1"	Room probe failure	Compressor output according to "Cy" e "Cn"
"P2"	Evaporator probe failure	Defrost end is timed
"HA"	Maximum temperature alarm	Outputs unchanged
"LA"	Minimum temperature alarm	Outputs unchanged
"EA"	External alarm	Outputs unchanged
"CA"	Serious external alarm	All outputs OFF.
"dA"	Door Open	Compressor and fans restarts

11.1 ALARM RECOVERY

Probe alarms P1" and "P2" start some seconds after the fault in the related probe; they automatically stop some seconds after the probe restarts normal operation. Check 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.

12. TECHNICAL DATA

Housing: self extinguishing ABS.

Case: frontal 32x74 mm; depth 60mm;

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

Protection: IP20; Frontal protection: IP65

Connections: Screw terminal block \leq 2,5 mm^2 wiring.

Power supply: according to the model $\pm10\%;~230Vac\pm10\%,~50/60Hz,~110Vac\pm10\%,~50/60Hz$ Power absorption: 3VA max

Display: 2 digits, red LED, 14,2 mm high; Inputs: 2 NTC. Relay outputs: compressor SPST 8(3) A, 250Vac; 20(8)A 250Vac 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+85% (no condensing)

Reasuring and regulation range: NTC -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

13. CONNECTIONS

13.1 XR02CX - 20A OR 8A



NOTE: The compressor relay is 20(8)A or 8(3)A depending on the model

14. DEFAULT SETTING VALUES

LBL	DESCRIPTION	DESCRIPTION RANGE		LEVEL
REGU	LATION			
Ну	Differential	0.1 ÷ 25°C/1 ÷ 45°F	36 °F	L1
LS	Minimum Set Point	-55°C+SET/-67°F+SET	-40 °F	L2
US	Maximum Set Point	SET÷99°C/ SET÷210°F	99°F	L2
ot	First probe calibration	-9.9÷9.9°C/-18÷18°F	0.0	L2
P2	Second probe presence	n – Y	у	L2
οE	Second probe calibration	-9.9÷9.9°C/-18÷18°F	0.0	L2
od	Outputs activation delay at start up	0 ÷ 99 min	0	L2
AC	Anti-short cycle delay	0 ÷ 50 min	0	L1
Су	Compressor ON time faulty probe	0 ÷ 99 min	15	L2
Cn	Compressor OFF time faulty probe	0 ÷ 99 min	30	L2
DISPL	AY			
CF	Measurement units	°C - °F	°F	L2
rE	Resolution (only for °C)	dE – in	in	L1
Ld	Default Display	P1 - P2 - SP	P1	L2
dy Display delay		0 ÷ 15 min	0	L2
DEFRO	DST			
dE	Defrost termination temperature	-50÷50°C/-58÷122°F	46 °F	L1
id	Interval between defrost cycles	0 ÷ 99 hours	6	L1
Md	Maximum length for defrost	0 ÷ 99 min.	20	L1
dF	Display during defrost	rt – in – dE	it	L2
ALAR	MS			
AU	Maximum temperature alarm	ALL÷99°C / ALL÷210°F	99 °F	L2
AL	Minimum temperature alarm	-55°C÷ALU/-67°F÷ALU	-50 °F	L2
Ad	Temperature alarm delay	0 ÷ 99 min	15	L2
dA	Exclusion of temperature alarm at startup	0 ÷ 99 min	99	L2
OTHER	2			
d2	Evaporator probe display	Read Only		L1
Pt	Parameter code table	Read Only		L2
rL	Firmware release	Read Only		L2

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SETPOINTS FOR DIXELL XR02CX ON UPA8

PARAMETER	DESCRIPTION	RANGE	LEVEL	SETTING
REGUL	ATION	•		
St	SETPOINT	LS to US		26
Hy	HYSTERESIS (DIFFERENTIAL)	0.1 to 25°C/1 to 45°F	L1	2
LS	LOWER SETPOINT STOP	-55°C to SET/-67°F to SET	L2	20
US	UPPER SETPOINT STOP	SET to 99°C/SET to 210°F	L2	40
ot	FIRST PROBE CALIBRATION	-9.9 to 9.9°C/-18 to 18°F	L2	0
P2	SECOND PROBE PRESENCE	Y/N	L2	Y
οE	SECOND PROBE CALIBRATION	-9.9 to 9.9°C/-18 to 18°F	L2	0
od	OUTPUTS DELAY AT START UP	0 to 99 min.	L2	0
AC	ANTI-SHORT CYCLE DELAY	1 to 9 °F/°C	L2	1
Су	COMP ON TIME BAD PROBE	0 to 99 min.	L2	15
Cn	COMP OFF TIME BAD PROBE	0 to 99 min.	L2	30
DISPLA	λΎ			
CF	MEASUREMENT UNITS	°C – °F	L2	F
rE	RESOLUTION (ONLY FOR *C)	dE — in	L2	in
Ld	DEFAULT DISPLAY	P1 – P2 – SP	L2	P1
dy	DISPLAY DELAY	0 to 15 min.	L2	0
DEFRO	ST			
dE	DEFROST TERMINATION TEMP	-50 to 50°C/-58 to 122°F	L1	47
id	INTERVAL BETWEEN DEF CYCLES	0 to 99 hours	L1	6
Md	MAX LENGTH FOR DEFROST	0 to 99 min.	L2	45
dF	DISPLAY DURING DEFROST	rt – it – St – dE	L2	rt
ALARM	S			
AU	MAX TEMP ALARM (Upper)	AL to 99°C/AL to 210°F	L2	55
AL	MIN TEMP ALARM (Lower)	-55° C to AU/ -67° F to AU	L2	20
Ad	TEMPERATURE ALARM DELAY	0 to 99 min.	L2	5
dA	TEMP ALARM DELAY AT STARTUP	0 to 99 min.	L2	90

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DIGITAL CONTROLLER

XR03CX - XR04CX

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2. GENERAL WARNINGS

PLEASE READ BEFORE USING THIS MANUAL

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

SAFETY PRECAUTIONS

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

3. GENERAL DESCRIPTION

The XR03CX, in 32×74x50mm short format, is microprocessor based controller suitable for applications on normal temperature refrigerating units. It provides two relay output: one for compressor and the other one for alarm signalling or as auxiliary output. 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 the by HOTKEY.

The XR04CX in 32x74x50mm short format is microprocessor based controller suitable for applications on normal or low temperature refrigerating units. It provides two relay output: one for compressor and the other one for defrost. It provides two NTC probe inputs, one for room temperature and other one to control defrost termination. The instrument is fully configurable through special parameters that can be easily programmed through the keyboard or the by HOTKEY.

REGULATION 4.

The regulation is performed according to the temperature measured by the thermostat probe with a positive differential from the set point: if the temperature increases and reaches set point plus differential the compressor is started and then turned off when the temperature reaches the set point value again



In case of fault in the thermostat probe the start and stop of the compressor are timed through parameters "Cy" and "Cn"

5. DEFROST

XR03CX

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

XR04CX

Two defrost modes are available through the "td" parameter:

- td=EL → defrost through electrical heater (compressor OFF)
- td=in → 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 dripping time is started, its length is set in the dt parameter. With dt=0 the dripping time is disabled.

6. FRONT PANEL COMMANDS



V AUX

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

KEYS COMBINATION

к Л П П	7+ △ T+ < T+ ∠	To lock or unlock the keyboard To enter in programming mode To return to room temperature display			
LED	MODO	SIGNIFICATO			
ķ	On	Compressore enabled			
*	Flashing	Anti short cycle delay enabled (AC parameter)			
ķ	On	Defrost in progress			
444	Flashing	Dripping in progress			
Ĵ	On	Measurement unit			
	Flashing	Programming mode			
ĥ	On	Measurement unit			
-	Flashing	Programming mode			

HOW TO SEE THE SET POINT

- Push and immediately release the SET key, the set point will be showed;
- Push and immediately release the SET key or wait about 5s to return to normal visualisation 2

HOW TO CHANGE THE SETPOINT

- 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;
- To change the Set value push the o or n arrows within 10s. 3 To memorise the new set point value push the SET key again or wait 10s

HOW TO START A MANUAL DEFROST

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

HOW TO CHANGE A PARAMETER VALUE

- To change the parameter's value operate as follows:
- Enter the Programming mode by pressing the SET+ 5 keys for 3s ("°C" or "°F" LED starts 1. blinking).
- Select the required parameter. Press the "SET" key to display its value 3
 - Use rightarrow to change its value.
- Press "SET" to store the new value and move to the following parameter. 4
- To exit: Press SET+ a or wait 15s without pressing a key.

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

HIDDEN MENU

The hidden menu includes all the parameters of the instrument.

HOW TO ENTER THE HIDDEN MENU

- 1. Enter the Programming mode by pressing the SET+ ∽ keys for 3s ("°C" or "°F" LED starts blinking).
- 2. Released the keys, then push again the SET+ \bigtriangledown keys for more than 7s. The L2 label will be displayed immediately followed from the Hy parameter. NOW YOU ARE IN THE HIDDEN MENU.

Select the required parameter 3

- Press the "SET" key to display its value 4.
- Use △ or ♥ to change its value. 5.

Press "SET" to store the new value and move to the following parameter. 6.

To exit: Press SET+ or wait 15s without pressing a key

NOTE1: if none parameter is present in L1, after 3s 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 the time-out to expire.

HOW TO MOVE A PARAMETER FROM THE HIDDEN MENU TO THE FIRST LEVEL AND VICEVERSA.

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

TO LOCK THE KEYBOARD

- Keep pressed for more than 3s the \triangle and \bigtriangledown keys.
- The "OF" message will be displayed and the keyboard will be locked. If a key is pressed more than 3s the "OF" message will be displayed.

TO UNLOCK THE KEYBOARD

REGULATION

PARAMETERS

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

- Differential: $(0,1^{\circ}C \div 25^{\circ}C)$ Intervention differential for set point. Compressor Cut IN is SET POINT + differential (Hy). Compressor Cut OUT is when the temperature reaches the set point. Minimum SET POINT: (-55°C+SET)/-58°F+SET): Sets the minimum value for the set point. Hy
- Maximum SET POINT: (SET+99°C/SET+99°F). Set the maximum value for set point US
- First probe calibration: (-9.9÷9.9°C) allows to adjust possible offset of the first probe. P2 Evaporator probe presence: n= not present; y= the defrost stops by temperature. (Only
- XR04CX) Second probe calibration: (-9.9÷9.9°C) allows to adjust possible offset of the second probe ٥F
- (Only XR04CX) Outputs activation delay at start up: (0+99min) This function is enabled at the initial start up of od
- the instrument and inhibits any output activation for the period of time set in the parameter Anti-short cycle delay: (0+50 min) minimum interval between the compressor stop and the AC
- following restart Cy Compressor ON time with faulty probe: (0+99 min) time during which the compressor is active in case of faulty thermostat probe. With Cy=0 compressor is always OFF
- Compressor OFF time with faulty probe: (0+99 min) time during which the compressor is OFF Cn in case of faulty thermostat probe. With Cn=0 compressor is always active.
- CH Kind of Action (Only XR03CX): cL= cooling action; Ht = heating action;

DISPLAY

- Measurement unit: (°C÷°F) °C =Celsius; °F =Fahrenheit. WARNING: When the measurement CF 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).
- Resolution (only for °C):(dE + in) dE= decimal between -9.9 and 9.9°C; in= integer Default display: (P1 + P2) P1= thermostat probe; P2= evaporator probe. SP=Set point (Only Ld XR04CX)
- Display delay: (0+15 min.) when the temperature increases, the display is updated of 1 °C/1°F dy after this time

DEFROST

- Defrost type: (EL in) EL= electrical heater, compressor OFF; in= hot gas, compressor ON; td
- Defrost termination temperature (Only XR04CX): (-50+50°C) if P2=Y it sets the temperature dE measured by the evaporator probe, which causes the end of defrost.
- Interval between defrost cycles: (0÷99 ore) Determines the time interval between the id beginning of two defrost cycles. Maximum length for defrost: (0+99 min. with 0 no defrost) when P2=n, (not evaporator probe: Md
- timed defrost) it sets the defrost duration, when P2 = y (defrost end based on temperature) it sets the maximum length for defrost
- dd Start defrost delay: (0÷99min) 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; SP= SET-POINT: dF= label dF.
- Drip time: (0÷99 min) time interval between reaching defrost termination temperature and the dt 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

ALARMS

- AU Maximum temperature alarm: (AL+99°C) when this temperature is reached the alarm is enabled, after the "Ad" delay time
- AL Minimum temperature alarm: (-55+AU°C) when this temperature is reached the alarm is enabled, after the "Ad" delay time
- Temperature alarm delay: (0+99 min) time interval between the detection of an alarm condition hA and alarm signalling.
- Exclusion of temperature alarm at startup: (0+99 min) time interval between the detection of dA the temperature alarm condition after instrument power on and alarm signalling. Silencing buzzer (n-y):(Only XR03CX) n= silencing disabled, alarm relay stays on till alarm
- tb conditions lasts; y= silencing enabled: alarm relay is switched OFF by pressing a key during an alarm:
- Auxiliary relay configuration (dF/Fn/AL/AU/db): (Only XR03CX) dF= defrost; Fn= Fans; AL= 01 Alarm; AU= auxiliary; db= neutral zone; Alarm relay polarity (cL-OP): (Only XR03CX) cL= when active is closed; OP= when active is
- AP opened

DIGITAL INPUT (Only XR03CX)

- iP Digital input polarity: (oP ÷ cL) oP= activated by closing the contact; cL= activated by opening
- Digital input configuration: (EA/bA/do/dF/Au/Hc) EA= external alarm: "EA" message is iF displayed; bA= serious alarm "CA" message is displayed; do= door switch function; dF= defrost activation; Au =not used; Hc= inversion of the kind of action;
- Digital input delay: (0+99 min) with iF=EA or bA delay between the detection of the external di alarm condition and its signalling. . With iF=do it represents the delay to activate the door open alarm
- Ъb Compressor and fan status when open door: (no/Fn/cP/Fc); no= normal: Fn = Fans OFF; cP =Compressor OFF; Fc = Compressor and fans OFF;
- Regulation with door open: (n+y) n = no regulation if door is opened; Y= when di is elapsed rd regulation restarts even if door open alarm is present;

OTHER

- Thermostat probe display (read only) d1
- Evaporator probe display (read only) (Only XR03CX) d2
- Pt Parameter code table
- Software release

8. DIGITAL INPUTS

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

DOOR SWITCH (iF=do)

It signals the door status and the corresponding relay output status through the "dC" parameter: no = normal (any change); Fn = Fan OFF; CP = Compressor OFF; FC = Compressor and fan OFF. Since the door is opened, after the delay time set through parameter "di", the door alarm is enabled, the display shows the message "dA" and the regulation restarts if rd = y. The alarm stops as soon 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 "di" time delay before signalling the "EA" alarm message. The outputs status don't change. The alarm stops just after the digital input is de activated.

SERIOUS ALARM (iF=bA)

When the digital input is activated, the unit will wait for "di" delay before signalling 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 o1=Au it switches on and off the second relay.

START DEFROST (iF=dF)

It starts a defrost if there are the right conditions. After the defrost is finished, the normal regulation will restart only if the digital input is disabled otherwise the instrument will wait until the "dd" safety time is expired.

INVERSION OF THE KIND OF ACTION: HEATING - COOLING (IF=Hc)

This function allows to invert the regulation of the controller: from cooling to heating and viceversa

9. INSTALLATION AND MOUNTING



Instrument XR03CX and XR04CX shall be mounted on vertical panel, in a 29x71 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

ELECTRICAL CONNECTIONS 10.

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

1.1 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 11

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

- Program one controller with the front keypad. When the controller is ON, insert the "Hot key" and push A key; the "uP" message appears 2.
- followed a by flashing "Ed"
- Push "SET" key and the "Ed" will stop flashing. 3
- Turn OFF the instrument remove the "Hot Key", then turn it ON again 4

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

1.3

- "do" message is blinking followed a by flashing "Ed".

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

ALARM SIGNALLING 12

Mess.	Cause	Outputs
"P1"	Room probe failure	Compressor output according to "Cy" e "Cn"
"P2"	Evaporator probe failure	Defrost end is timed (Only XR04CX)
"HA"	Maximum temperature alarm	Outputs unchanged
"LA"	Minimum temperature alarm	Outputs unchanged
"EA"	External alarm	Outputs unchanged
"CA"	Serious external alarm	All outputs OFF.
"dA"	Door Open	Compressor and fans restarts

1.4 ALARM RECOVERY

Probe alarms P1" and "P2" start some seconds after the fault in the related probe; they automatically stop some seconds after the probe restarts normal operation. Check 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=bA) recover as soon as the digital input is disabled.

TECHNICAL DAT 13.

Housing: self extinguishing ABS. Case: frontal 32x74 mm; depth 60mm; Mounting: panel mounting in a 71x29mm panel cut-out Protection: IP20: Frontal protection: IP65 Connections: Screw terminal block ≤ 2.5 mm² wiring

HOW TO PROGRAM AN INSTRUMENT USING HOT KEY (DOWNLOAD)

Turn OFF the instrument

2 3.

4 After 10 seconds the instrument will restart working with the new parameters. Remove the "Hot Key". 5

Insert a programmed "Hot Key" into the 5 PIN receptacle and then turn the Controller ON. Automatically the parameter list of the "Hot Key" is downloaded into the Controller memory, the

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(3) A, 250Vac; or 20(8)A 250Vac
defrost or Aux: SPDT 8(3) A, 250Vac; or 20(8)A 250Vac
defrost or Aux: SPDT 8(3) A, 250Vac
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+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



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 6-7

XR04CX -20A o 8A Compressor



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

15. DEFAULT SETTING VALUES

LAB EL	DESCRIPTION	RANGE	DEFAULT
REGU	LATION		
Ну	Differential	0.1 ÷ 25°C/1 ÷ 45°F	2.0°C / 4 °F
LS	Minimum Set Point	-55°C÷SET/-67°F+SET	-55 °C /- 55°F
US	Maximum Set Point	SET÷99°C/ SET÷210°F	99 °C / 99°F
ot	First probe calibration	-9.9÷9.9°C/-18÷18°F	0.0
P2	Second probe presence (Only XR04CX)	n – Y	у
οE	Second probe calibration (Only XR04CX)	-9.9÷9.9°C/-18÷18°F	0.0
od	Outputs activation delay at start up	0 ÷ 99 min	0
AC	Anti-short cycle delay	0 ÷ 50 min	1
Су	Compressor ON time faulty probe	0 ÷ 99 min	15
Cn	Compressor OFF time faulty probe	0 ÷ 99 min	30
СН	Kind of Action (Only XR03CX)	cL ÷ Ht	cL
DISPL	AY		
CF	Measurement units	°C - °F	°C / °F
rE	Resolution (only for °C)	dE – in	dE
Ld	Default Display (Only XR04CX)	P1-P2 - SP	P1
dy	Display delay	0 ÷ 15 min	0
DEFRO	DST		
td	Defrost type	EL – in	EL
dE	Defrost termination temperature	-50÷50°C/-58÷122°F	8.0 °C / 46 °F
id	Interval between defrost cycles	0 ÷ 99 hours	6
Md	Maximum length for defrost	0 ÷ 99 min.	30
dd	Start defrost delay	0 ÷ 99 min.	0
dF	Display during defrost	rt – in – SP – dF	it

dt	Drip time	0 ÷ 99 min	0				
dP	Defrost at power-on	y - n	n				
ALARMS							
AU	Maximum temperature alarm	ALL÷99°C / ALL÷210°F	99 °C / 99 °F				
AL	Minimum temperature alarm	-55°C÷ALU/-67°F÷ALU	-55 °C / -55 °F				
Ad	Temperature alarm delay	0 ÷ 99 min	15				
dA	Exclusion of temperature alarm at startup	0 ÷ 99 min	90				
DIGITAL INPUT (Only XR03CX)							
iP	Digital input polarity	cL – oP	cL				
iF	Digital input configuration	EA – bA – do – dF – Au– db	EA				
di	Digital input delay	0 ÷ 99 min	5				
dC	Compressor and fan status when open door	no /Fn / cP / Fc	FC				
rd	Regulation with door open	n - Y	у				
OTHER							
d1	Thermostat probe display	Read Only					
d2	Evaporator probe display	Read Only					
Pt	Parameter code table	Read Only					
rL	Firmware release	Read Only					

dix zll S.p.a.

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PARAMETER	DESCRIPTION	RANGE	DEFAULT	UPA8
REGUL	ATION			
St	SETPOINT	LS to US	-	27
Hy	HYSTERESIS (DIFFERENTIAL)	0.1 to 25°C/1 to 45°F	2.0°C/4°F	1
LS	LOWER SETPOINT STOP	–55°C to SET/–67°F to SET	–55°C/ –55°F	22
US	UPPER SETPOINT STOP	SET to 99°C/SET to 210°F	99°C/99°F	85
ot	FIRST PROBE CALIBRATION	–9.9 to 9.9°C/–18 to 18°F	0.0	0
P2	SECOND PROBE PRESENCE	Y/N	Y	Y
oE	SECOND PROBE CALIBRATION	–9.9 to 9.9°C/–18 to 18°F	0.0	0
od	OUTPUTS ACTIVATION DEL @ START	0 to 99 min.	0	0
AC	ANTI-SHORT CYCLE DELAY	1 to 9°F/°C	1	1
Су	COMP ON TIME BAD PROBE	0 to 99 min.	15	10
Ch	COMP OFF TIME BAD PROBE	0 to 99 min.	30	3
DISPLA	.Υ			
CF	MEASUREMENT UNITS	°C – °F	°C/°F	F
rE	RESOLUTION (ONLY FOR °C	dE — in	dE	IN
Ld	DEFAULT DISPLAY	P1 – P2 – SP	P1	P1
dy	DISPLAY DELAY	0 to 15 min.	0	0
DEFRO	ST			
td	DEFROST TYPE	EL–in	EL	EL
dE	DEFROST TERMINATION TEMP	–50 to 50°C/–50 to 122°F	8.0°C/46°F	47
id	INTERVAL BETWEEN DEF CYCLES	0 to 99 hours	6	6
Nd	MAX LENGTH FOR DEFROST	0 to 99 min.	30	45
dd	START DEFROST DELAY	0 to 99 min.	0	0
dF	DISPLAY DURING DEFROST	rt – it – St – dE	it	RT
dt	DRIP TIME	0 – 99 min.	0	0
dP	DEFROST AT POWER ON	n – y	n	Y
ALARM	5			
AU	MAX TEMP ALARM (Upper)	AL to 99°C/AL to 210°F	99°C/99°F	42
AL	MIN TEMP ALARM (Lower)	-55°C to AU/-67°F to AU	–55°C/–55°F	12
Ad	TEMPERATURE ALARM DELAY	0 to 99 min.	15	60
dA	TEMP ALARM DELAY AT STARTUP	0 to 99 min.	90	90

SETPOINTS FOR DIXELL XR04CX CONTROLLER

WIRING DIAGRAMS-

MODEL UPA-8'



CASE OPERATION

Single Deck Self-Contained Mobile Boxed Produce Merchandiser UPA-8'

System Data

Model	Volts	Phase	Hz	Plug Style	Cord Length
UPA	120	1	60	NEMA L5-30	6'

Guidelines & Control Settings

Model	24 hr Energy Usage (kWh)	Suction Pressure @ Case Outlet (psig)	Superheat Set Point @ Bulb (°F)	Discharge Air (°F)	Return Air (°F)	Discharge Air Velocity ¹ (FPM)
UPA	37	20	6-8	32	42	200

¹ Average discharge air velocity at peak of defrost.

Condensing Unit Data

Model	Volts	Phase	Frequency (Hz)	HP	RLA ² (amps)	LRA ³ (amps)	Refrig.	lbs of Refrig.
UPA	115	1	60	1/2	12.9	66.3	R134A	4.0

² RLA - Running Load Amps.

³ LRA - Locked Rotor Amps.

Defrost Controls

		Electric Defrost		Timed Off Defrost		Hot Gas Defrost		Reverse Air Defrost	
Model	Defrosts Per Day	Fail-safe (min)	Termination Temp. (°F)	Fail-safe (min)	Termination Temp. (°F)	Fail-safe (min)	Termination Temp. (°F)	Fail-safe (min)	Termination Temp. (°F)
UPA	4	4		45	47				

⁴ NOTE: --- not an option on this case model.

Medium Temperature Defrost Schedule

No. Per Day	Hours
1	12 midnight
2	12 am - 12 pm
3	6 am - 2 pm - 10 pm
4	12 - 6 am - 12 - 6 pm

All measurements are taken per ARI 1200 - 2002 specifications.

DEFROST AND TEMP CONTROL

The mobile self-contained cases come equipped with Timed-Off defrost. The timed-off defrost termination probe and the temperature control probe are located on the rear wall of the case behind the access cover in the rear baffle, as shown below.

Both of these probes are wired to the case controller that is located in the front of the case behind the front panels as shown in diagram **2** below.



MODEL UPA-8'

AIR FLOW AND PRODUCT LOADING

Cases have been designed to provide maximum product capacity within the refrigerated air envelope. It is important that you do not overload the food product display so that it impinges on the air flow pattern. Overloading will cause malfunction and the loss of proper temperature levels, particularly when discharge and return air sections are covered. Please keep products within the load limit lines shown on the diagram.

DISCHARGE 1

2

3

4

LOAD LIMIT	
RETURN AIR	

USE AND MAINTENANCE

CASE CLEANING

Case is designed to facilitate cleaning. All surfaces pitch to a deep-drawn drain trough that angles toward the front and center of the case where the 2" waste outlet is located for easy access.

In order to keep the unit running at peak design efficiency the air intake grill and the condenser coil should be cleaned at least once a month. The coil is covered to keep food fluids from entering. The cover is screwed down to the coil but is easily removed when coil cleaning is desired. The fan plenum lifts up for cleaning, exposing a major portion of the inside bottom. Make certain coil cover and plenum are in their original positions after cleaning to avoid air leaks.



CLEANING PROCEDURES

- A periodic cleaning schedule should be established to maintain proper sanitation, insure maximum operating efficiency, and avoid the corrosive action of food fluids on metal parts that are left on for long periods of time. We recommend cleaning once a week.
- To avoid shock hazard, be sure all electrical power is turned off before cleaning. In some installations, more than one disconnect switch may have to be turned off to completely de-energize the case.
- Check waste outlet to insure it is not clogged before starting the cleaning and avoid introducing water faster than drip pipe can carry it away.
- Avoid spraying cleaning solutions directly on fans or electrical connections.
- Allow cases to be turned off long enough to clear any frost or ice from coil and flue areas.
- Remove and clean honeycomb discharge grill. You may need to use spray detergent and a soft, long bristle brush.
- Use mild detergent and warm water. When necessary, water and baking soda solution will help remove case odors. Avoid abrasive scouring powders or pads.
- For difficult stains that may appear on polymer exterior bumper parts, the following specialty cleaning products are recommended:

3M brand[©] Stainless Steel Cleaner and Polish
3M brand[©] Troubleshooter Cleaner
3M brand[©] Sharpshooter, Extra Strength No Rinse Cleaner
3M brand[©] Scotch-Brite No. 64 Cleaning and No. 74 Scrubbing Brushes
Revere[©] aluminum powder for tank liner
Armor All[©] for polymer parts







FANS

The evaporator fans are equipped with 5 watt fan motors, 1550 RPM's, 6" diameter, clockwise rotation. The rotation of these fans is determined relative to the back side of the motor. It is important that the blade pitch be maintained as specified. Do not attempt a field modification by altering the blades.

Fan motors may be changed with an easy threestep process without lifting up the plenum, thereby avoiding the necessity to unload the entire product display to make a change:

1. Disconnect power to the case.

2. Unplug the fan motor, easily accessible out side the plenum.

3. Remove two fasteners, then lift out the entire fan basket.



Model	UPA-8'
No.	
Fans	3
Blade	0
Pitch	270





MODEL UPA-8'

PARTS ORDERING





Model UPA-8'

Location Number	Part Descriptions
2	Bumper
3	Lower Front Panel, Painted
5	Thermopane, Front Sill Glass
9	Deck Pan
11	Front Baffle, Painted (Not Shown)
12	Honeycomb, Discharge, 1" x 4" x 48", (Not Shown)
15	Rear Baffle, Painted White
26	Panel Front, Painted White
27	Sill Cap, front glass
48	Rear Sill, Painted
51	Back Panels, Upper and Lower (Not Shown)
81	Bottom Wire Racks
87	End Assembly, Identify Left or Right Hand, Color of Panel, and Color of PVC End
	Trim
88	End Panel, Painted
E09	Fan Motor - STATE HIGH EFFICIENCY OR STANDARD
E10	Fan Blade
E11	Fan Basket, 6"
E20	Fan Cord-Set, High Efficiency or Standard

PARTS ORDERING

Procedure

1. Contact the Service Parts Department

Hill PHOENIX 1925 Ruffin Mill Road Colonial Heights,Virginia 23834 Tel: 800-283-1109 Fax: 804-526-3897

2. Provide the following information about the part you are ordering:

- Model number and serial number* of the case which the part is needed for.
- Length of part, if applicable.
- Color of part if painted, or color of polymer part.
- Whether part is for left hand or right hand application.
- Whether shelves are with or without lights.
- Quantity.

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

3. If parts are to be returned for credit, ask the Parts Department to furnish you with a Return Materials Authorization Number.



WARRANTY HEREINAFTER REFERRED TO AS MANUFACTURER

FOURTEEN MONTH WARRANTY. MANUFACTURER'S PRODUCT IS WARRANTED TO BE FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP UNDER NORMAL USE AND MAINTENANCE FOR A PERIOD OF FOURTEEN MONTHS FROM THE DATE OF ORIGINAL SHIPMENT. A NEW OR REBUILT PART TO REPLACE ANY DEFECTIVE PART WILL BE PROVIDED WITHOUT CHARGE, PROVIDED THE DEFECTIVE PART IS RETURNED TO MANUFACTURER. THE REPLACEMENT PART ASSUMES THE UNUSED PORTION OF THE WARRANTY.

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

The fourteen month warranty shall not apply:

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

- 2. When the unit, or any part thereof, is damaged by fire, flood, or other act of God.
- 3. Outside the continental United States.
- 4. To labor cost for replacement of parts, or for freight, shipping expenses, sales tax or upgrading.
- 5. When the operation is impaired due to improper installation.
- 6. When installation and startup forms are not properly complete or returned within two weeks after startup.

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

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

MAIL CLAIM TO:

HIII PHOENIX

Display Merchandisers 1925 Ruffin Mill Road Colonial Heights, VA 23834 804-526-4455 Hill PHOENIX

Refrigeration Systems & Electrical Distribution Products 709 Sigman Road Conyers, GA 30013 770-285-3200



<u>Warning</u> <u>Maintenance & Case Care</u>

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.







1925 Ruffin Mill Road, Colonial Heights, VA 23834 Due to our commitment to continuous improvement all specifications are subject to change without notice. Hill PHOENIX is a Sustaining Member of the American Society of Quality. CRMA endorsed Visit our web site at www.hillohoenix.com