PRALINE DISPLAY MODULE

TORTUGA SERIES

E

Maintenance

And Use Manual

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1. INTRODUCTION

1.1. PRESENTATION

Dear Client,

Ciam Spa is pleased to number you among its customers and relies the bought machine will match your expectation. In order to get the best performances of the machine, we recommend you to follow all suggestions and instructions, which are included in this manual.

1.2. HOW TO USE THE MACHINE

- *PERMITTED USES*

This refrigerated module has been manufactured for **praline** cold storage **at 15 - 18°C and 45% -60% Relative Umidity**

- *NOT PERMITTED USES*

It is absolutely forbidden the use of the refrigerated display cabinet for **pharmaceutical products**.

1.3. RESPECTED NORMS

The refrigerated display cabinet has been manufactured in respect of the safety issues relevant to the following norm:

- **Directive** N° 2006/95/CE : Low tension
- **Directive** N° 2004/108/CE : Electro-magnetic Compatibility
- **Directive** N° 97/23/EC (P.E.D.) : European Pressure Equipment
- **Norm** CEI 17-13/1 (EN 60439/1) : Realization of Electric Installations
- **Norm** CEI EN 60335-1 (CEI 61-150) : Safety of household and similar electrical appliances
- **Norm** CEI EN 60335-2-24 (CEI 61-56) : Special norms for refrigerators, freezers and ice machines

1.4. RESPONSIBILITY

CIAM SpA declines any responsibility relevant to damages on persons, animals and/or products in case of:

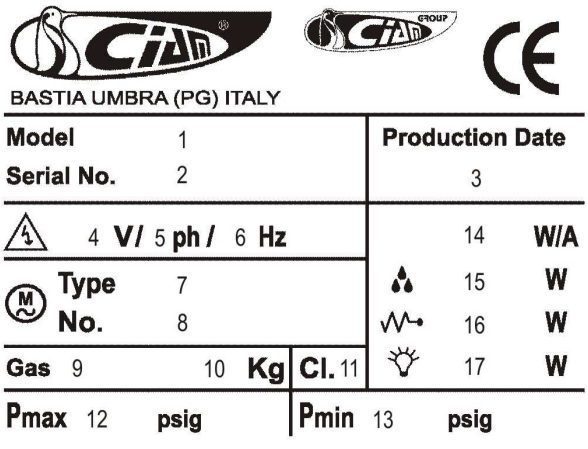
- No respect of in force norms
- Installation, which is not conform to the instructions manual
- No observance of all maintenance operations, which are suggested in this manual
- No previously agreed change operations with the manufacturer
- No proper use of the refrigerated display cabinet, for which the machine has been produced.

1.5. WARNING

Anytime CIAM SpA reserves the right to up-date the content of this manual and/or to modify the product in order to improve its quality and performance, without any previous notice and/or communication.

2. DISPLAY CASE DATA PLATE

2.1. DATA PLATE CONTENT



1. Commercial name of the unit
2. Identification number
3. Production date
4. Voltage
5. Phases
6. Frequency
7. Compressor type
8. Number of compressor
9. Refrigerant type
10. Refrigerant weight
11. Climatic rate (Cl.3 = +25°C/60% U.R.; Cl. 4 = +30°C/55% U.R.)
12. Test pressure – system high pressure side
13. Test pressure – system low pressure side
14. Nominal power/current absorbed during defrost
15. Max. power absorbed during defrost
16. Nominal power absorbed by heating elements (only if higher than 100W)
17. Lighting nominal power

3. INSTALLATION

3.1. MACHINE HANDLING

- The wall showcase handling, from the truck to the final place, has to be made by any truck-lift, which is proper to its weight. The showcase shall be always balanced in order to ensure personnel integrity and machine functionality.
- The showcase can be shipped with or without wood packaging, in case wood crate will be used, will have a pallet base for an easy fork-lift handling. The pallet, however should be handle in the central position**.**
- During the shipment, it is necessary to avoid any crash or/and shake of the wall showcase in order to not damage its frame, especially its glasses
- Do not drag the wall showcase on the floor and do not push it on the upper glasses.
- In case the wall showcase has front or side room-glasses avoids its shipment by air.

3.2. STOCK OF THE SHOWCASE

- Whenever the showcase has to be stoked, follow carefully what suggested before.
- Environmental temperature during the showcase stock can have following range -15°C and + 55°C and humidity between 30% and 90%.
- The wall showcase has always to be protected by sunrays and raining.
- In case the wall showcase has to remain in stock quite long time before its use, keep it with its packaging in order to maintain its protection.

3.3. PACKAGING REMOVE

Before getting the wall showcase from the forwarding agent, check its conditions. In case it will be some damages, inform the driver and sign it on shipping documents. **Eventual damages relevant to the shipment and/or to the wrong stock, have not to be ascribed to the manufacturer.**

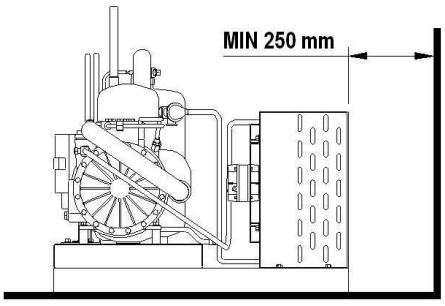
3.4. SHOWCASE POSITION

The refrigerated showcase needs particular environmental conditions in order to offer the right performance, so that the area where it will be used has to respect following indications

- Floor has to be levelled perfectly, on the contrary keep the wall showcase on the horizontal position in order to guarantee a perfect defrosting water drain and avoid boring compressor noises.
- The wall showcase has to not be under the sun-rays in order to have its better refrigeration performance, has to remain inside the local or to be sheltered by window curtain. If what described above is not observed, it can determinate an increase of temperature of displayed product and an increasing power consume.
- The wall showcase has not to be under air currents due to open doors or windows, or under roof ventilators or under air condition outlets.
  In case will be not respected the above suggestions it can arise an increasing of temperature of the displayed product and/or an increasing ice phenomena on the evaporator and internal fans, which compromise the correct cold air circulation and product consistence.
- The wall showcase has not to be placed close any heat source as heaters, ovens, etc
- The wall showcase has to have a sufficient place in order to ensure a correct custom service, to make an easy maintenance operation, to guarantee the right air flow necessary to make cold the condenser. Besides the warm air which flows out has to no have any obstacle or to invest other equipments in order to not reduce the correct functions.

3.5. REMOTE CONDENSING UNIT PLACING

- The remote condensing unit has to be checked by specialised technicians and according to the required refrigerating power and their position respect the showcase.
- The condensing unit has to be placed following these points:
  - The condensing unit has to be located at least 250 mm from any eventual wall. **(pic.5.5)**
  - Air flow direction has to be from the eventual wall towards compressor.
  - The local, in case will be closed, has to be with enough air circulation.
  - By the condenser has to be guaranteed in any case as much as possible cold air.
  - In case will be necessary it has to be foreseen a forced air exchange by any fan according to the air flow of condenser.
  - The condensing units of display showcase have to be fixed properly.
  - The generated noise has not exceed the admitted noise levels relevant to the public places, especially in case of domestic buildings.
  - It is always necessary a sufficient place along the four sides of the wall showcase in order to make easy any type of check and maintenance operations.
  - When the condensing units are external will be necessary a frame holder that has to be fixed in a proper way and eventually added with amortising elements. Besides this frame has to be closet with no-water protection grid and sufficient opening holes for ventilation.



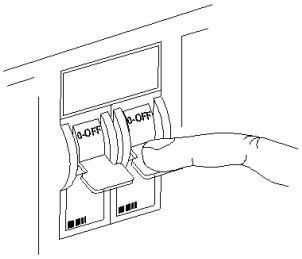
pic.5.5

3.6. ELECTRICAL CONNECTION

- Before proceeding with electrical connection, be sure that the available electric power and tension are what is required on technical label of the wall showcase.
- The electric connection has to be made by qualified personnel and following manufacturer's instructions.
- The wall showcase has already a general switch, however it is necessary an omni polar switch, with a minimum distance among the contacts of 3mm.
- It is obligatory that the wall showcase will be connected properly with an efficient ground socket.

WARNING! A wrong connection may occur always to persons, animals and things, where the manufacturer cannot be considered as responsible.

WARNING!
The wall showcase has no main switch breaking both the phases.
Before any maintenance operation disconnect the electrical supply of the wall showcase. (pic.5.6).



pic.5.6

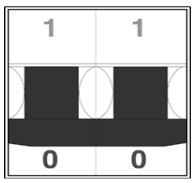
3.7. IDRAULIC CONNECTION - REMOTE CONDENSING UNIT

- In the case then wall showcaset has a remote condensing unit, it is necessary make the connection of defrosting water outlet with the main water drain outlet.

4. ROUTINE MAINTENANCE AND PERIODIC CHECKS

- **These kinds of operations are at client's expenses.**
- In case some malfunctioning of the unit are observed, please make sure this is not due to non-maintenance reasons, before you apply to qualified assistance.
- The accurate and periodic cleaning of the unit will reduce the risk of damages to the unit itself and to the products stored within.
- See following tab for reference.

ATTENTION ! Before starting any maintenance and cleaning operation make sure you operate on the main switch in order to deactivate tension **(pic. 7)**



(pic.7)

MAINTENANCE OPERATIONS AND THIR FREQUENCY. A SUMMARY TAB.

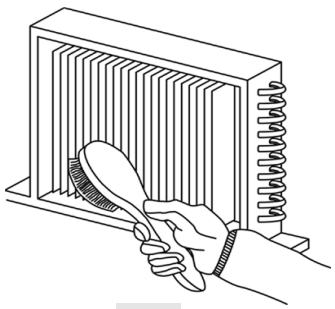
OPERATION	DESCRIPTION	FREQUENCY
Surfaces' cleaning	• Wash exclusively with warm water and neutral soup; rinse abundantly and wipe off with a soft cloth. • Do not use abrasive products	weekly
Plastic surfaces' cleaning	• Wash exclusively with warm water and neutral soup; rinse abundantly and wipe off with a soft cloth. • Do not use alcohol, acetone and any solvent that might spoil the look and structure of the material.	weekly
Glass surfaces' cleaning	• Use only specific products for glass cleaning • Using water alone might lead to calcareous deposits on the glass surfaces	daily
Wooden surfaces' cleaning	• Use exclusively a wet cloth.	weekly
Additional defrost	• Under particular conditions of temperature and humidity, the frost that normally forms on the evaporator and fans might increase in volume, so leading to a faulty functioning the unit. • If these conditions should last, the assistance of a qualified technician shall be needed. Waiting for this service, it is suggested to operate one or more defrost cycles (despite the damages this might cause to the stored product)	Waiting for qualified assistance
Periodic defrost	• In order to obtain the best performance from the cooling system, we suggest to operate an extended defrost cycle. • Before you do that, please remove displayed products from inside the cabinet; always operate an additional defrost cycle in order to remove from the evaporator the largest possible amount of frost or ice. Turn the main switch off for 5 hours (min.) • Before re-starting the unit, make sure that frost has totally melted and wipe carefully.	max. 15 DAYS
ATTENTION! DO NOT CLEAN THE UNIT WITH WATER JETS		

5. EXTRAORDINARY MAINTENANCE

This type of operation has to be made by qualified technician only.

ATTENTION! Before operating any maintenance, make sure the tension is deactivated. (pic.11).

- Lamps' replacement: qualified technician needed.
- Air condenser cleaning: qualified technician needed. When the fan is switched off you can clean the condenser with a compressed air jet. Never use metallic brushes. Use protection gloves **(pic.8).**



(Pic.8.)

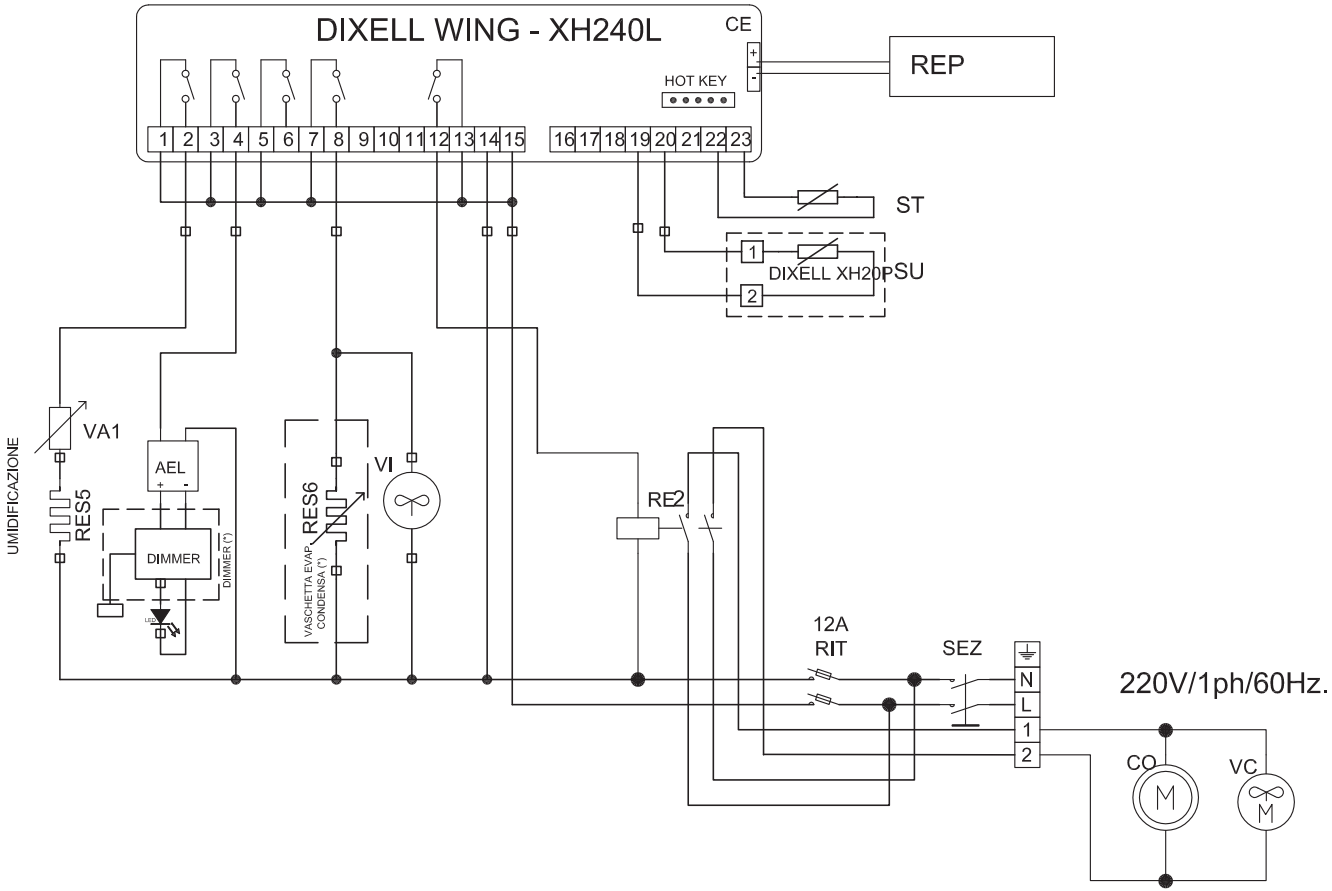
REFRIGERATION AND ELECTRICAL SYSTEM CABLE CONNECTION GUIDE

AGD	DIGITAL FLAVOURS DISPLAY FEEDER
AEL	ELECTRONIC BALLAST
AP	SERVICE VALVE
CA	SUPPLY CABLE
CAR	AIR CONDENSER
CE	ELECTRONIC CONTROL
CN	MULTIPOLAR CONNECTOR
CO	COMPRESSOR
D	DIOD
DEV	SHUNT
DR	REMOTE DISPLAY
EM	PHOTOCELL EMITTER
EV	EVAPORATOR
F	FUSE
FD	FILTER DRIER
FLU	WATER FLOW SWITCH
FR	COMPRESSOR THERMAL PROTECTION
HL	COMPRESSOR ALARM LIGHT
I	GENERIC SWITCH
IEC	WATER EVAPORATION BIN SWITCH
IGD	DIGITAL FLAVOURS DISPLAY
II	LIGHTING SWITCH
IL	SIGHT GLASS
IMC	WARM SHELF SWITCH
INV	INVERTER
IR	REFRIGERATION SWITCH
IRP	LIGHT REFRIGERATION SWITCH
IV	INTERNAL FAN SWITCH
KM	CONTACTOR
LF	FRONT LIGHTING
LI	INTERNAL UPPER LIGHTING
LIA	FRONT LIGHTING
LIG	FLAVOURS DISPLAY LIGHTING
LIP	REAR LIGHTING
MDIG	DIGITAL MODULE FOR FLAVOURS DISPLAY
MM	SPINNING SHELVES ELECTRIC MOTOR
MUC	CONDENSING UNIT ELECTRIC CONNECTIONS
PA	HIGH PRESSURE CONTROL
PD	HIGH-LOW PRESSURE CONTROL
PO	WATER PUMP
QE	EXTERNAL ELECTRIC PANEL
QF	MAGNETIC-THERMIC SWITCH
R	LIGHTING BALLAST
RADD	RECTIFIER
RE	GENERIC RELAY
REL	ELECTRONIC BALLAST
REP	ELECTRONIC CONTROL TEMPERATURE REPEATER
RES1	COLD AIR DISCHARGE HEATING ELEMENT
RES2	FRONT PROFILE HEATING ELEMENT
RES3	RIGHT/LEFT GLASS HEATING ELEMENT
RES4	FRONT GLASS HEATING ELEMENT
RES5	DEFROST HEATING ELEMENT
RES6	WATER EVAPORATION HATING ELEMENT
RES7	TOP LIGHTING FIXTURE HEATING ELEMENT
RES8	LATERAL GLASS SUPPORT HEATING ELEMENT
RES9	FRONT BAND HEATING ELEMENT
RES10	COUPLING BAND HEATING ELEMENT
RES11	SERVICE TOP HEATING ELEMENT
RES12	UPPER BAND/DOOR FRAME HEATING ELEMENT
RES13	HOT DRY/BAIN MARIE DISPLAY HEATING ELEMENT
RES14	ANTI-FOG SUCTION AIR BAND HEATING ELEMENT
RES15	WARM SHELF HEATING ELEMENT
RES16	SIDE BANDS/ FRONT GLASS HINGE HEATING ELEMENT
RES17	DEHUMIDIFICATION HEATING ELEMENT
RES18	DEFROSTING WATER DRAIN HEATING ELEMENT
RES19	RING FRAME HEATING ELEMENT
RES20	SIDE BAND HEATING ELEMENT
RES21	SUCTION AIR GLASS HEATING ELEMENT
RES22	OUTLET AIR HEATING ELEMENT
RES23	REAR GLASS HEATING ELEMENT
RES24	INTERNAL GLASS HEATING ELEMENT
RES25	FRONT GLASS UPPER FRAME HEATING ELEMENT
RES26	FRONT GLASS LATERAL/LOWER FRAME HEATING ELEMENT
RES27	FRONT GLASS LATERAL FRAME HEATING ELEMENT
RES28	FRONT GLASS LOWER FRAME HEATING ELEMENT
RES29	FRONT GLASSES COUPLING PROFILE HEATING ELEMENT
RES30	DOORS FRAME MIDDLE POST HEATING ELEMENT
RES31	GLASSES PERIMETRAL FRAME HEATING ELEMENT
RES32	HEATED DOORS HEATING ELEMENTS
RES33	WATER DRAIN HEATING ELEMENT
RES34	DOORS FRAME HEATING ELEMENT
RES35	COMPRESSOR CRANKCASE HEATING ELEMENT
RES36	FRONT GLASS FRAME HEATING ELEMENT
RES37	CABINET FRAME HEATING ELEMENT
RES38	HOT COMPARTMENT HEATING ELEMENT
REV	CONDENSER FAN SPEED CONTROL
REVC	CONDENSER FAN RELAY
RI	REFRIGERANT TAP
RIC	COMPRESSOR DELAYER
RICV	PHOTOCELL RECEIVER
RIS	RESERVE , ANTI-FOG HEATER ELEMENT
RL	LIQUID RECEIVER
RLA	WATER LEVEL ELECTRONIC CONTROL
RO	OIL HEATER ELEMENT
SAA	ABSENCE OF WATER LIGHT
SC	CONDENSER PROBE
SD	TERMINAL BOX
SDC	COMPRESSOR TERMINAL BOX
SE	PROXIMITY SENSOR
SEC	MAIN SWITCH
SFV	TANK BOTTOM HEATING COIL
SIDG	FLAVOURS DISPLAY DIGITAL SYSTEM
SL	LIQUID SEPARATOR
SLA	WATER LEVER PROBE
SPC	COMPRESSOR LIGHT
SPMC	WARM SHELF LIGHT
SPR	ELECTRIC SUPPLY LIGHT
SPS	DEFROSTING LIGHT
SS	DEFROSTING PROBE
ST	TEMPERATURE PROBE
STR	LIGHTING STARTER
SU	HUMIDITY PROBE
T	TEMPERATURE CONTROL
TI	WINTER THERMOSTAT
TC	CAPILLARY TUBE
TE	TIMER
TER	THERMOMETER
TF	FUSIBLE PLUG
TMC	WARM SHELF THERMOSTAT
TP	LIGHTING FIXTURES REGRIGERATOR THERMOSTAT
TRA	TRANSFORMER
TRC	ELECTRONIC CONTROL TRANSFORMER
TREV	WATER EVAPORATION HEATER ELEMENT THERMOSTAT
TS	SECURITY THERMOSTAT
TVC	CONDENSER FAN THERMOSTAT
V	COMPRESSOR FAN / GENERAL USE
VC	CONDENSER FAN
VEC	WATER EVAPORATION BIN
VES	EXPANSION VALVE
VI	INTERNAL FAN
VPA	CONDENSING PRESSURE CONTROL WATER VALVE
VR	CHECK VALVE
VRA	SUCTION PRESSURE REGULATION VALVE
VRE	EVAPOTATING PRESSURE REGUTATION VALVE
VS	GENERAL USE SOLENOID VALVE
VSA	SOLENOID WATER VALVE
VSAB	BY-PASS SOLENOID WATER VALVE
VSIC	REVERSING CYCLE SOLENOID VALVE
VSL	LIQUID SOLENOID VALVE
VSS	DEFROSTING SOLENOID VALVE
VT	POWER REGULATOR
VV	GLASS FAN
X1	CABINET CONNECTIONS
X2	EXTERNAL ELECTRIC PANEL CONNECTIONS
X3	CONDENSING UNIT CONNECTIONS

nati per il freddo

TARGHETTA

PRALINERIA



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Design & Tecnologia su misura

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REV.	DATA	DESCRIZIONE	VERIFICA	APPROVAZIONE
1				
2				
3				

CLIENTE **CIAM**

OGGETTO **SCHEMA TORTUGA**

FIRMA PER ACCETTAZIONE

SCALA

FOGLIO 1/1

DESIGNER	COMMESSA	TAVOLA	NOME FILE
LUCA SONNO		01	
DATA			SIGLA

Certified Quality System ISO 9001:2000

MOD 09-01E

XH240L – XH240V

TEMPERATURE AND HUMIDITY CONTROLLER

1. GENERAL WARNING

1.1 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.

1.2 SAFETY PRECAUTIONS

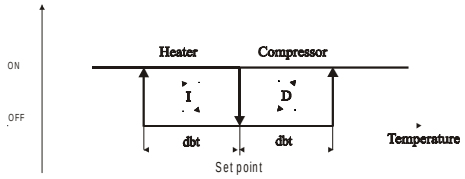
- Check the supply voltage is correct before connecting the instrument.
- Do not expose to water or moisture: use the controller only within the operating limits avoiding sudden temperature changes with high atmospheric humidity to prevent formation of condensation
- Warning: disconnect all electrical 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.r.l." (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

The **XH240L, 38x185** format, and the **XH240V, 100x64** format, are microprocessor controllers, suitable for applications on medium temperature refrigerating units. They control both humidity and temperature. They have 4 output relays to control compressor, heating elements , fan and humidifier. They have 2 analogue inputs: one for temperature control, the other one for humidity. There is one digital input (free contact) configurable by parameter. An output allows the user to programme the parameter list with the **"Hot Key".**

3. TEMPERATURE REGULATION

The temperature regulation is performed through neutral zone using compressor and heater output relays.



• **Heating** output: CUT IN is "SET_TEMP-dbt", CUT OUT is when the temperature reaches the set point.
• **Compressor** output CUT IN is " SET_TEMP +dbt", CUT OUT is when the temperature reaches the set point.

3.1 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**".
To **disable** the defrost set the **MdF** parameter to **zero**
Humidity regulation during a defrost depends on the **Hud** parameter.
With **Hud=no** humidity regulation is disabled.
Con **Hud=yES** humidity regulation is performed also during a defrost.

4. HUMIDITY REGULATION

The humidity regulation is performed through neutral zone, by humidifying dehumidifying actions.
Humidity control can be disabled setting the SET_RH to "nu" value. In this case only the temperature control is perform.

4.1 HUMIDIFYING ACTION

The humidifying action is done enabling the humidifier relay when the humidity is lower than the "SET_RH-dbH" value.
The relay is switch off when humidity reaches the set values.

4.2 DEHUMIDIFYING ACTION

The dehumidifying action is performed enabling the heating and compressor outputs together when humidity is higher than SET_RH+dbH value.
Outputs are disabled when humidity comes back to the SET_RH value.

4.2.1 Relation between cooling, heating and dehumidifying

1. If is simultaneously present a request of cooling (temp>SET_TEMP+dbt) and dehumidifying (RH > SET_RH+dbH): the cooling action has the priority over the dehumidifying action: only the compressor relay is energised till the SET_TEMP is reached at this point also the heating relay is enabled.

2. If is simultaneously present a request of heating (temp< SET_TEMP-dbt) and dehumidifying (RH > SET_RH+dbH): the dehumidifying action has the priority over the heating action: both the compressor and the heating relays are energised till the humidity set is reached at this point only the heating relay is enabled.

5. THE DISPLAY

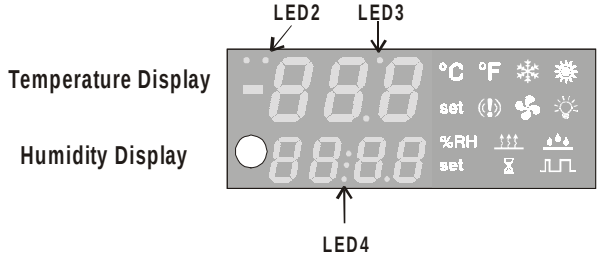
set temp.	To display and modify target temperature set point. (SET_TEMP)
set %RH	To display and modify target humidity set point (SET_RH); in programming mode it selects a parameter or confirm an operation.
	In programming mode it browses the parameter codes or increases the displayed value.
	In programming mode it browses the parameter codes or decreases the displayed value. By holding it pressed for 3s the defrost is started
	Switch ON and OFF the light, if present
	Switch ON and OFF the instrument.

KEY COMBINATIONS

+	To lock and unlock the keyboard
+ set %RH	To enter the programming mode.
+ set %RH	To exit the programming mode.

5.1 ICONS AND SYMBOLS

Each LED function is described in the following table.



LED	MODE	FUNCTION
Led 4	ON	- Instrument in stand by. - In "Pr2" indicates that the parameter is also present in "Pr1".
°C	ON	°C

LED	MODE	FUNCTION
°F	ON	°C
❄	ON	The compressor is running
❄	FLASHING	- Anti-short cycle delay enabled
❄ LED 3	ON	The defrost is enabled
❄ LED 3	FLASHING	Drip time in progress
LED 2	FLASHING	Programming Phase (flashing with LED3)
☀	ON	Heating enabled
set (temp)	FLASHING	Temperature Set programming phase
(!)	ON	- ALARM signal
	ON	Fan is running
	ON	The light is on
%RH	ON	RH%
	ON	Dehumidifying enabled
	ON	Humidifying enabled
set (umid)	FLASHING	Humidity Set programming phase

5.2 HOW TO SEE AND MODIFY THE SET POINT (TEMPERATURE AND HUMIDITY)

1. Push and immediately release the **SET** key: the display will show the Set point valueand the correspondant set icon starts flashing;
2. To change the Set value push the ▲ or ▼ arrows within 10s.
3. To memorise the new set point value push the **SET** key again or wait 10s.

5.3 TO START A MANUAL DEFROST

1. Push the **DOWN** key for more than 2 seconds and a manual defrost will start.

5.4 TO ENTER IN PARAMETERS LIST "PR1"

To enter the parameter list "Pr1" (user accessible parameters) operate as follows:

1. Enter the Programming mode by pressing the **SET_RH**+ ▼ for few seconds. (LED2&3 start flashing)
2. The instrument will show the first parameter present in "Pr1"

5.5 TO ENTER IN PARAMETERS LIST "PR2"

To access parameters in "**Pr2**":

1. Enter the "Pr1" level.
2. Select "Pr2" parameter and press the " **SET_RH** " key.
3. The "PAS" flashing message is displayed, shortly followed by "0 - -" with a flashing zero.
4. Use ▲ or ▼ to input the security code in the flashing digit; confirm the figure by pressing " **SET_RH** ".
   The security code is "321".
5. If the security code is correct the access to "Pr2" is enabled by pressing " **SET_RH** " on the last digit.

Another possibility is the following: after switching ON the instrument the user can push **SET_RH** + ▼ keys within 30 seconds.

NOTE: each parameter in "Pr2" can be removed or put into "Pr1" (user level) by pressing **SET_RH** + ▼. When a parameter is present in "Pr1" LED 4 is on.

5.6 TO CHANGE PARAMETER VALUES

1. Enter the Programming mode.
2. Select the required parameter with ▲ or ▼.
3. Press the " **SET_RH** " key to display its value (LED2&3 start blinking).
4. Use ▲ or ▼ to change its value.
5. Press " **SET_RH** " to store the new value and move to the following parameter.

To exit: Press **SET_RH + UP** or wait 15s without pressing a key.
NOTE: the new programming is stored even when the procedure is exited by waiting the time-out.

5.7 HOW TO LOCK THE KEYBOARD

1. Keep the ▲ and ▼ keys pressed together for more than 3 s the ▲ and ▼ keys.
2. The "**POF**" message will be displayed and the keyboard is locked. At this point it is only possible the viewing of the set point or the MAX o Min temperature stored and to switch ON and OFF the light, the auxiliary output and the instrument.

TO UNLOCK THE KEYBOARD
Keep the ▲ and ▼ keys pressed together for more than 3s.

5.8 ON/OFF FUNCTION

By pushing the **ON/OFF** key, the instrument shows "OFF" for 5 sec. and the ON/OFF LED is switched ON.
During the OFF status, all the relays are switched OFF and the regulations are stopped;
N.B. During the OFF status the LED4 button is lighted.

6. PARAMETER LIST

REGULATION

dbt half dead band width for temperature: (0,1÷25,5°C; 1÷45°F) this band is place below and above the temperature set point (SET_TEMP). The compressor is enabled when the temperature increases and reaches the SET_TEMP + dbt value. It is turned off when it comes back to the SET_TEMP. The heating output is enabled when temperature is less than SET_TEMP -dbt value and disabled when the SET_TEMP is reached.

dbH half dead band width for humidity: (0,5÷25,5RH) this band is place below and above the humidity set point (SET_RH). The dehumidifying action is enabled when the humidity increases and reaches the SET_RH + dbH value. It is stopped when it comes back to the SET_RH. The humidifying output is enabled when humidity is less than SET_RH -dbH value and disabled when the SET_RH is reached.

LS Minimum temperature set point limit: (-50,0°C÷SET; -58°F÷SET) Sets the minimum acceptable value for the set point.

US Maximum temperature set point limit: (SET÷110°C; SET÷230°F) Set the maximum acceptable value for set point.

OdS Outputs activation delay at start up: (0÷255 min) 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. (Light can work)

AC Anti-short cycle delay: (0÷30 min) interval between the compressor stop and the following restart.

LSH Minimum humidity set point limit: (Lci ÷ Set H) Sets the minimum acceptable value for the humidity set point.

USH Maximum humidity set point limit: (Set H ÷ uci) Set the maximum acceptable value for humidity set point.

DISPLAY

CF Measurement unit: °C= Celsius; °F= Fahrenheit

rES Resolution (for °C): allows decimal point display. **dE** = 0,1°C; **in** = 1 °C

rEH Resolution for RH%: in = integer; Hd= half digit.

DEFROST

IdF Interval between defrosts: (1÷120h) Determines the time interval between the beginning of two defrost cycles.

MdF Duration of defrost: (0÷255 min) When **P2P = n**, no evaporator probe, it sets the defrost duration, when **P2P = y**, defrost end based on temperature, it sets the maximum length for defrost.

dFd Display during defrost:
rt = real temperature; **it** = temperature reading at the defrost start;
Set = set point; **dEF** = "dEF" label; **dEG** = "dEG" label;

dAd Defrost display time out: (0÷255 min) Sets the maximum time between the end of defrost and the restarting of the real room temperature display.

Hud Humidity control during defrost: no: the humidity control is stopped during the defrost; **yES** the humidity control works also during the defrost.

FANS

FnC Fan operating mode: C-n = running when a load is on, OFF during the defrost;
C-y = running when a load is on, ON during the defrost;
O-n = continuous mode, OFF during the defrost;
O-y = continuous mode, ON during the defrost;

TEMPERATURE ALARMS

ALC Temperature alarm configuration: rE = High and Low alarms related to Set Point
Ab = High and low alarms related to the absolute temperature.

ALL Low temperature alarm setting: ALC = rE , 0 ÷ 50 °C or 90°F
ALC = Ab , - 50°C or -58°F ÷ ALU
when this temperature is reached and after the ALd delay time, the LA alarm is enabled,.

ALU High temperature alarm setting: ALC= rE, 0 ÷ 50°C or 90°F
ALC= Ab, ALL ÷ 110°C or 230°F
when this temperature is reached and after the ALd delay time the HA alarm is enabled.

ALH Temperature alarm recovery differential: (0,1÷25,5°C; 1÷45°F) Intervention differential for recovery of temperature alarm.

ALd Temperature alarm delay: (0÷255 min) time interval between the detection of an alarm condition and the corresponding alarm signalling.

dAO Delay of temperature alarm at start-up: (0min÷23h 50min) time interval between the detection of the temperature alarm condition after the instrument power on and the alarm signalling.

EdA Alarm delay at the end of defrost: (0÷255 min) Time interval between the detection of the temperature alarm condition at the end of defrost and the alarm signalling.

dot Delay of temperature alarm after closing the door : (0÷255 min) Time delay to signal the temperature alarm condition after closing the door.

HUMIDITY ALARMS

AHC Humidity alarm configuration: rE = High and Low alarms related to humidity Set Point
Ab = High and low alarms related to the "absolute" humidity.

AHL Low humidity alarm setting: (with AHC = rE: 0 ÷ 50. With AHC = Ab: Lci ÷ AHu)
when this humidity is reached and after the AHd delay time, the HLA alarm is enabled,.

AHU High humidity alarm setting: (with AHC = rE: 0÷50°C. with AHC = Ab: AHL ÷ uci

when this humidity is reached and after the AHd delay time the HHA alarm is enabled.

AHH Humidity alarm recovery differential: (0.5÷20.0) Intervention differential for recovery of humidity alarm.

AHd Humidity alarm delay: (0÷255 min) time interval between the detection of an alarm condition and the corresponding alarm signalling.

dHo Delay of humidity alarm at start-up: (0min÷23h 50min) time interval between the detection of the humidity alarm condition after the instrument power on and the alarm signalling.

doH Alarm delay at the end of defrost: (0÷255 min) Time interval between the detection of the humidity alarm condition at the end of defrost and the alarm signalling.

doA Open door alarm delay:(0÷255 min) delay between the detection of the open door condition and its alarm signalling: the flashing message "**dA**" is displayed.

nPS Pressure switch number: (0 ÷15) Number of activation of the pressure switch, during the "**did**" interval, before signalling the alarm event (I2F= PAL).
If the nPS activation in the "did" time is reached, switch off and on the instrument to restart normal regulation.

PROBE INPUTS

Ot Thermostat probe calibration: (-12.0÷12.0°C/ -21÷21°F) allows to adjust possible offset of the thermostat probe.

O3 Humidity probe calibration: (-10÷10 RH) allows to adjust possible offsets of the humidity probe.

P3P Humidity probe presence: yES= probe present; **no=** probe absent, only the temperature control is perfomed.

LCI Readout with 4 mA : (-999 ÷ 999). Adjustment of read out corresponding to 4mA signal.

UCI Readout with 20 mA : (-999 ÷ 999). Adjustment of read out corresponding to 20mA signal.

DIGITAL INPUTS

i1P Digital input polarity: CL : the digital input is activated by closing the contact; **OP** : the digital input is activated by opening the contact

i1F Digital input operating mode: configure the digital input function:
EAL = generic alarm; **bAL** = serious alarm mode; **PAL** = Pressure switch; **Ht** = heating relay safety; **dor** = door switch

odc Outputs status when open door:
on = normal; **Fan** = Fan OFF; **oFF** = all the loads are switched off

rrd Outputs restarting after doA alarm: no = outputs not affected by the doA alarm; **yES =** outputs restart with the doA alarm;

did Time interval/delay for digital input alarm:(0÷255 min.) Time interval to calculate the number of the pressure switch activation when I1F=PAL. If I1F=EAL or bAL (external alarms), "did" parameter defines the time delay between the detection and the successive signalling of alarms.

OTHER

Adr RS485 serial address (0÷247) identifies the instrument within a control or supervising system.

Ptb Parameter table: (read only) it shows the original code of the dixell parameter map.

rEL Software release: (read only) Software version of the microprocessor.

Pr2 Access to the protected parameter list (read only).

7. DIGITAL INPUT

One digital input is present configurable by user by means of the i1F parameter according tothe following descriptions.

7.1 DOOR SWITCH (12F = dor)

It signals the door status and the corresponding relay output status through the "**odc**" parameter: **no** = normal (any change); **Fan** = Fan OFF; **oFF** = all the loads are switched off.

Since the door is opened, after the delay time set through parameter "**dOA**", the alarm output is enabled and the display shows the message "**dA**".
The status of loads depends on the "**rrd"** parameter:
with **rrd=no** outputs are not affected by the doA alarm;
with **rrd=yES =** outputs restart with the doA alarm;
The alarm stops as soon as the external digital input is disabled again. During this time and then for the delay "**dot**" and **"doH"** after closing the door, the temperature and humidity alarms are disabled.

7.2 GENERIC ALARM (I1F = EAL)

As soon as the digital input is activated the unit will wait for "**did**" time delay before signalling the "**EAL**" alarm message. The outputs status don't change. The alarm stops just after the digital input is de-activated.

7.3 SERIOUS ALARM MODE (I1F = BAL)

When the digital input is activated, the unit will wait for "**did**" delay before signalling the "**bAL**" alarm message. The relay outputs are switched OFF. The alarm will stop as soon as the digital input is de-activated.

7.4 PRESSURE SWITCH (I1F = PAL)

If during the interval time set by "**did**" parameter, the pressure switch has reached the number of activation of the "**nPS**" parameter, the "**PAL**" pressure alarm message will be displayed. The compressor and the regulation are stopped. When the digital input is ON the compressor is always OFF.
If the nPS activation in the did time is reached, switch off and on the instrument to restart normal regulation.

7.5 HEATING RELAY SAFETY (i1F=Ht)

With **i1F=Ht** as soon as the digital input is activated for "**did**" time heating relay is disactivated. The alarm will stop as soon as the digital input is de-activated.

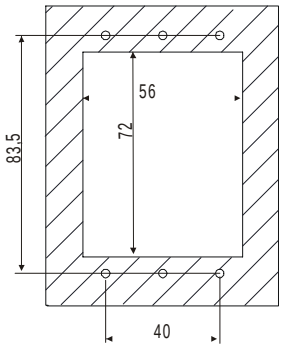
7.6 DIGITAL INPUTS POLARITY

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

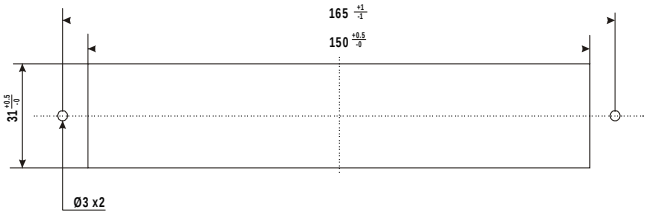
8. INSTALLATION AND MOUNTING

Instruments **XW240L** shall be mounted on vertical panel, in a 150x31 mm hole, and fixed using two screws ∅ 3 x 2mm. To obtain an IP65 protection grade use the front panel rubber gasket (mod. RG-L).
Instrument **XH240V** shall be mounted on vertical panel, in a 72x56 mm hole, and fixed using screws ∅ 3 x 2mm. To obtain an IP65 protection grade use the front panel rubber gasket (mod. RG-V).
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 the air circulate by the cooling holes.

8.1 XH240V: CUT OUT



8.2 XH240L: CUT OUT



9. ELECTRICAL CONNECTIONS

The instruments are provided with screw terminal block to connect cables with a cross section up to 2,5 mm² for the digital and analogue inputs. Relays and power supply have a Faston connection (6,3mm). Heat-resistant cables have to be used. 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.
N.B. Maximum current allowed for all the loads is 20A.

9.1 PROBE CONNECTIONS

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.

10. HOW TO USE THE HOT KEY

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

1. Program one controller with the front keypad.
2. When the controller is ON, insert the "**Hot key**" and push ▲ key; the **"uPL"** message appears followed a by flashing **"End"**
3. Push "**SET"** key and the **End** will stop flashing.
4. Turn OFF 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 ▲ 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)

1. Turn OFF the instrument.
2. Insert a **programmed "Hot Key" into the 5 PIN receptacle** and then turn the Controller ON.

3. Automatically the parameter list of the **"Hot Key"** is downloaded into the Controller memory, the "**doL**" message is blinking followed a by flashing **"End".**
4. 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 SIGNALLING

Message	Cause	Outputs
"P1"	Thermostat probe failure	Compressor and heating outputs off
"P3"	Humidity probe failure	Humidity regulation off
"HA"	High temperature alarm	Outputs unchanged
"LA"	Low temperature alarm	Outputs unchanged
"HHA"	High humidity alarm	Outputs unchanged
"HLA"	Low humidity alarm	Outputs unchanged
"dA"	Door switch alarm	Outputs depending on the odC parameter
"EAL"	External alarm	Other outputs unchanged
"BAL"	Serious external alarm	Outputs OFF
"PAL"	Pressure switch alarm	Outputs OFF

The alarm message is displayed until the alarm condition recoveries.
All the alarm messages are showed alternating with the room temperature except for the "**P1**" which is flashing. To reset the "EE" alarm and restart the normal functioning press any key, the "**rSt**" message is displayed for about 3s.

11.1 SILENCING BUZZER

Once the alarm signal is detected the buzzer, if present, can be silenced by pressing any key.

11.2 ALARM RECOVERY

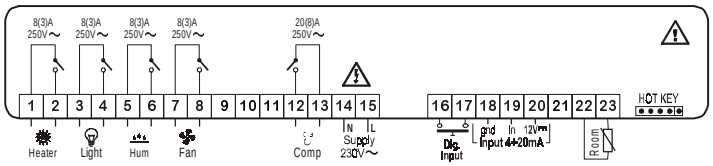
Probe alarms : "**P1**" (probe1 faulty), "**P3**" ; they automatically stop 10s after the probe restarts normal operation. Check connections before replacing the probe.
Temperature alarms "**HA**" and "**LA**" automatically stop as soon as the thermostat temperature returns to normal values or when the defrost starts.
Humidity alarms "**HHA**" and "**LHA**" automatically stop as soon as the humidity returns to normal values.
Door switch alarm "**dA**" stop as soon as the door is closed.
External alarms "**EAL**", "**BAL**" stop as soon as the external digital input is disabled
Pressure switch alarm "**PAL" alarm is recovered by switching OFF the instrument**.

12. TECHNICAL DATA

Housing: self extinguishing ABS.
Case: XH240L: facia 38x185 mm; depth 76mm
XH240V: facia 100x64 mm; depth 76mm
Mounting: XH240L: panel mounting in a 150x31 mm panel cut-out with two screws. ∅ 3 x 2mm. Distance between the holes 165mm
XH240V: panel mounting in a 56x72 mm panel cut-out with two screws. ∅ 3x2mm. Distance between the holes 40mm
Protection: IP20.
Frontal protection: IP65 with optional frontal gasket mod. RG-L (XH240L); RGW-V (XH240V)..
Connections: Screw terminal block ≤ 2,5 mm^2 heat-resistant wiring and 6,3mm Faston
Power supply: 230Vac or 110Vac ± 10%; **Power absorption:** 7VA max.
Display: double display + icons.
Inputs: 1 NTC probe + 4÷20mA probe
Digital input: 1 free voltage
Relay outputs: compressor: XH240L: relay SPST 20(8) A, 250Vac;
XH240V: relay SPST 8(3) A, 250Vac
heather: relay SPST 8(3) A, 250Vac
fans: relay SPST 8(3) A, 250Vac
humidifier: relay SPST 8(3) A, 250Vac
Other output : alarm buzzer (optional)
Data storing: on the non-volatile memory (EEPROM).
Kind of action: 1B.; **Pollution grade:** normal; **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).
Accuracy (ambient temp. 25°C): ±0,5 °C ±1 digit

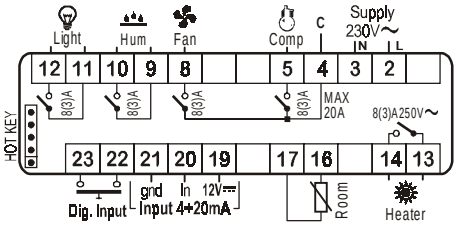
13. WIRING CONNECTIONS

13.1 XH240L



Supply 115Vac: 14-15 terminals

13.2 XH240V



Supply 115Vac: 2-3 terminals

14. DEFAULT SETTING VALUES

Label	Value	Menu	Description	Range
Set T	5.0	- - -	Temperature Set Point	LS ÷ uS (nu = temperature regulation disabled)
Set H	50.0	- - -	Humidity Set Point	LSH ÷ uSH (nu = humidity regulation disabled)
dbt	2.0	Pr1	Half dead band width for temperature	0.1°C o 1°F ÷ 25°C o 77°F
dbH	5.0	Pr1	Half dead band width for humidity	0.5 ÷ 50
LS	-40	Pr2	Minimum temperature set point limit	-50.0°C o –58°F ÷ Set T
uS	110	Pr2	Maximum temperature set point limit	Set T ÷ 110°C o 230°F
odS	1	Pr2	Outputs activation delay at start up	0 ÷ 250 min
Ac	1	Pr1	Anti-short cycle delay	0 ÷ 30 min
LSH	0.0	Pr2	Minimum humidity set point limit	Lci ÷ Set H
uSH	100.0	Pr2	Maximum humidity set point limit	Set H ÷ uci
cF	°C	Pr2	Measurement unit	°C ÷°F
rES	dE	Pr2	Resolution (for °C):	in = integer / dE = decimal
rEH	Hd	Pr2	Resolution for RH%:	in = integer / Hd = half digit
idF	8	Pr1	Interval between defrosts	1 ÷ 120 h
MdF	20	Pr1	Duration of defrost	0 ÷ 250 min
dFd	it	Pr2	Display during defrost	rt / it / SEt / dEF / dEG
dAd	30	Pr2	Defrost display time out	0 ÷ 250 min
Hud	no	Pr2	Humidity control during defrost	no; yES
Fnc	c-n	Pr2	Fan operating mode	c-n / c-Y / o-n / o-Y
ALc	Ab	Pr2	Temperature alarm configuration	rE = relative / Ab = absolute
ALL	-40.0	Pr1	Low temperature alarm setting	0°C ÷ 50.0°C / -50.0°C ÷ ALu
ALu	110	Pr1	High temperature alarm setting	0°C ÷ 50.0°C / ALL ÷ 110°C
ALH	1.0	Pr2	Temperature alarm recovery differential	0.1°C o 1°F ÷ 25°C o 77°F
ALd	15	Pr2	Temperature alarm delay	0 ÷ 250 min
dAo	1.3	Pr2	Delay of temperature alarm at start-up	0.0 ÷ 23.5 h
EdA	20	Pr2	Alarm delay at the end of defrost	0 ÷ 250 min
dot	20	Pr2	Delay of temperature alarm after closing the door	0 ÷ 250 min
AHc	Ab	Pr2	Humidity alarm configuration	rE = relative / Ab = absolute
AHL	0.0	Pr1	Low humidity alarm setting	0 ÷ 50 / Lci ÷ AHu
AHu	100	Pr1	High humidity alarm setting	0 ÷ 50 / AHL ÷ uci
AHH	2.0	Pr2	Humidity alarm recovery differential	0.5 ÷ 25
AHd	15	Pr2	Humidity alarm delay	0 ÷ 250 min
dHo	1.3	Pr2	Delay of humidity alarm at start-up	0.0 ÷ 23.5 h
doH	20	Pr2	Alarm delay at the end of defrost	0 ÷ 250 min
nPS	0	Pr2	Pressure switch number	0÷15
doA	20	Pr2	Open door alarm delay	0 ÷ 250 min (250 = nu)
ot	0.0	Pr1	Thermostat probe calibration	-12.0 ÷ 12.0
o3	0.0	Pr1	Humidity probe calibration	-10 ÷ 10
P3P	yES	Pr2	Humidity probe presence	yES; no
Lci	0	Pr2	Readout with 4 mA	-999 ÷ 999
uci	100	Pr2	Readout with 20 mA	-999 ÷ 999
i1P	oP	Pr2	Digital input polarity	cL =open / oP = close
i1F	dor	Pr2	Digital input configuration	dor / PAL / EAL / bAL / Ht
odc	oFF	Pr2	Outputs status when open door	on / Fan / oFF
rrd	YES	Pr2	Outputs restarting after doA alarm	no = no / YES = yes
did	0	Pr2	Digital input alarm delay	0÷255 min.
Adr	1	Pr2	Serial address 1	0÷247
Ptb	1	Pr2	Parameter table	- - -
rEL	0.1	Pr2	Software release	- - -
Pr2	321	Pr1	Access to the protected parameter list	- - -

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