

Jewellery

Ventilated Refrigerated Showcase



User manual and warnings

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CIAM
REFRIGERATION DESIGN

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1 - GENERAL INFORMATION

1.1 General information on the manual and its use



This manual must be read very carefully before transporting, installing, or using a CIAM group Spa appliance.

This documentation is prepared in compliance with the provisions of Directive 2006/42/EC.

This manual indicates the intended use of the refrigerated display cabinet and provides instructions for transportation, installation, assembly and use of the same.

The contents of this manual are strictly technical in nature and are the property of **CIAM group Spa**. It is therefore forbidden to reproduce, disclose or modify partially or completely its contents without written authorisation.

The owner company protects its rights according to the law.

1.2 Symbols used in the manual to facilitate reading



WARNING - NOTE! Read the following instructions carefully.
It indicates a warning or note about key features or useful information.
Pay attention to the text blocks indicated by this symbol



GENERIC DANGER - ATTENTION! Danger sign
Text marked with this symbol indicates that failure to follow the instructions provided may result in damage to refrigerated cabinet equipment and physical injury or death.



VOLTAGE EQUIPMENT - ATTENTION! Danger sign
The text marked with this symbol indicates that the operation to be described involves the risk of electric shock and therefore of electrocution.



DANGER OF BURNS - ATTENTION! Danger sign
The text marked with this symbol indicates that the operation to be described involves the risk of scalds and burns.



CUTTING DANGER - ATTENTION! Danger sign
The text marked with this symbol indicates that the operation to be described involves the risk of cutting.



PROHIBITED! - ATTENTION! Prohibition sign
It reports operations that must never be performed



PROHIBITED! - ATTENTION! Prohibition sign
It is forbidden to remove the safety and protection devices.



REMOVE VOLTAGE! - ATTENTION! Obligation sign
Before any intervention on the refrigerated display cabinet it is mandatory to turn off the power supply of the same.



WEAR PERSONAL PROTECTION CLOTHING! ATTENTION! Obligation sign
Before each intervention on the refrigerated display cabinet, it is essential to wear the PPE (personal protective equipment) highlighted by the mandatory signal.



VISUAL OBSERVATION

It indicates to the reader that they must perform a visual inspection. This symbol is also found in the operating instructions. The user is required to read a measurement value, to check a signal, etc.



HEARING OBSERVATION

It indicates to the reader that they must perform an auditory observation. This symbol is also found in the operating instructions. The user is required to listen for an operating noise.



SPECIAL TOOL

It indicates that it is operationally necessary to use a tool or special equipment.



AVOID DAMAGING THE MATERIAL

Indication of a high risk of damage to a part, for example using an incorrect tool or performing an assembly following an incorrect procedure.



AUTHORISED TECHNICIAN. Text marked with this symbol indicates that the operation to be described must be performed by an operator with particular tasks and qualifications. Paragraph 1.7 contains a detailed explanation of the qualifications.

1.3 Warnings for the purchaser

The manual, similarly to the EC certificate of conformity, is an integral part of the refrigerated display cabinet and must always accompany it in every movement or resale. The user must keep this documentation intact, to allow consultation, throughout its life span.

It must be carefully stored in a place known to the responsible persons, to the persons designated to transportation, installation, use, maintenance, repair, final disposal, etc.



This manual is to be considered an integral part of the refrigerated display cabinet and must be kept until final demolition of the same. In case of loss or destruction it is possible to request a copy from CIAM group Spa specifying exactly the model, serial number and year of production.

Make sure that all users have thoroughly learned the rules of use and the meaning of the symbols shown on the refrigerated display cabinet.

Possible accidents can be avoided by following these technical instructions compiled with reference to the **relevant EEC directives**. In any case, always comply with the national safety regulations.

The manuals enclosed with this manual of the **CIAM group Spa** company are the exclusive property of the respective manufacturers and are therefore subject to the rules imposed by the same manufacturers. They are in any case protected by copyright.



The annexed manuals, referred to in the CIAM group Spa manual, must be carefully read ensuring familiarity with their contents, as they are an integral part of the regulations government safety and correct use of the CIAM group Spa equipment.

The manual reflects the manufacturing technology at the time of supply. The manufacturer reserves the right to modify its products in any way it deems necessary, with no obligation to update manuals and machines relating to previous manufacturing batches.

The manufacturer declines any responsibility for production anomalies and/or for damage caused by the machine to property, persons and animals in the following cases:

- Improper use of the system or use by unsuitable or authorised personnel.
- Power defects
- Insufficient or poor periodic maintenance
- Modifications or interventions not agreed upon and not authorised by the manufacturer
- Use of spare parts that are not original or not specific to the model
- Full or partial failure to comply with these instructions

Responsibility for application of the safety prescriptions listed below is the responsibility of the technical personnel designated to the activities envisaged on the machine, who must make sure that the authorised personnel are qualified to perform the required activity:

- Ensure familiarity with and strictly follow the instructions contained in this document
- Ensure familiarity with and apply the general safety regulations applicable to the machine.
- Failure to comply with the safety regulations can result in injury to personnel and damage to components
- The control unit of the machine.
- Reading, although exhaustive, of this manual cannot under any circumstances replace the adequate experience of the operators.
- The user can, at any time, contact the retailer to request further information in addition to that contained in this document, as well as to indicate improvement proposals.

CIAM group Spa declines all responsibility due to negligence and failure to comply with these instructions.

Use only and exclusively original spare parts. **CIAM group Spa** is not responsible for any damage caused by the use of non-original spare parts.

CIAM group Spa is only responsible for the instructions provided in the original ITALIAN language: it can be problematic to fully verify any translations.

This is why your assistance is invaluable !!

The language translations of technical manuals are very important and are essential for correct use of the machines. **CIAM group Spa** has always used mother-tongue translators specialised in Technical / Industrial translations, but this cannot guarantee the absolute accuracy of translations and the use of terminologies that is always appropriate to the specific sector.

For this reason **CIAM group Spa** asks each of its customers, to help us improve the service offered, to report any translation errors, poorly translated texts or other issues.

We therefore ask you to report by fax or by e-mail the texts that you consider unclear, explaining the reasons for this, and if possible also communicating the correct text.

We will send you the updated manual in case of changes to the manual following your notification.



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Thank you for your collaboration.

1.4 Introduction

CIAM group Spa has always used the best quality materials and their introduction into the company, storage and use in production is constantly checked to ensure the absence of damage, deterioration and malfunctions.

All the construction elements have been designed and manufactured to guarantee a high standard of safety and reliability.

All refrigerated display cabinets are subjected to strict testing before delivery, nevertheless it should be remembered that good performance over time of the product purchased depends on correct use and adequate maintenance.

We therefore invite you to read this manual scrupulously as it contains the indications necessary to maintain the aesthetic and functional characteristics of your display cabinet.



In order to avoid compromising the machine's functionality and safety, particularly complex installation and maintenance activities are not documented in this manual and are carried out exclusively by specialist technicians of the undersigned company.

The use and maintenance manual contains the information necessary for understanding the operating modes of the refrigerated display cabinet and its correct use, in particular: the technical description of the various functional groups, equipment and safety systems, operation, use of the instrumentation and the interpretation of any diagnostic messages, main procedures and information regarding ordinary maintenance interventions.

For correct use of the machine it is assumed that the working environment is adequate to the current regulations in terms of safety and hygiene.

1.5 Manufacturer's contact details

Manufacturer: CIAM Spa
Address: Viale dei Pini, 9
06081 Petrignano di Assisi (PG) Italy
Telephone: (+39) 075 80161
Fax: (+39) 075 8016215
Internet: www.ciamgroup.it
E-mail: info@ciamgroup.it

1.6 Instructions to request interventions

For assistance, the user must contact the dealer from which the equipment was purchased. For any type of information or clarification concerning use, maintenance, installation, etc. the undersigned company is always available to respond to Customer requests via the e-mail address:

service@ciamgroup.it

1.7 Personnel

This manual is addressed both to the operator and to the technicians authorised to install and maintain the machine.

The machine operators must not perform operations that are reserved for repairers or installers. **CIAM group Spa** is not liable for damages resulting from failure to comply with this prohibition.

A number of professional profiles are identified according to the degree of difficulty of certain operations of installation, operation and maintenance of the refrigerated display cabinet:



SPECIALIST INSTALLER

The specialist installer of **CIAM group Spa** is able to carry out all the assembly operations of the mechanical parts, the wiring of the various systems and initial start-up of the refrigerated display cabinet at the Customer's premises. This operator also has the task of training the personnel responsible for operating the machine and carrying out its testing operations.



USER

Specialist personnel assigned to using the refrigerated display cabinet.

The operator must be perfectly familiar with all the command and control devices and must be able to carry out the following operations through use of the appropriate commands:

- Loading/unloading of products into the display cabinet.
- Setting of the operating temperatures.
- Cleaning operations, recording of control devices during operation
- Making sure that the safety devices are in a good condition and that they are functional.
- Checking of the overall integrity of the machine and its correct operation.



REPAIR TECHNICIAN

The technician/repairer must be perfectly familiar with all the command and control devices of the machine and must be able, if necessary, to operate it and make it work.

The repairer must be able to carry out all the operations of handling and transporting, checking, adjusting and replacing the mechanical and electrical parts and the devices of the machine, which are part of the routine and extraordinary maintenance operations.

They must be authorised by **CIAM group Spa**.

1.8 Applied directives and technical standards of reference

The Refrigerated Display Cabinets have been designed, built and tested in compliance with the following Community directives:

- Machinery directive 2006/42/EC regarding approximation of the laws of the Member States relating to machinery
- Directive 2014/35/EU - Low Voltage
- Directive 2014/30/EU - Electromagnetic Compatibility
- Directive 2011/65/EU - Restriction on the use of certain hazardous substances in electrical and electronic equipment

The harmonised reference standards according to which the unit has been tested and approved are:

- CEI EN 60 335-1 - Safety of household electrical appliances
- CEI EN 60 335-2-89 - Particular requirements for refrigerators

ENVIRONMENTAL CLIMATIC CLASSES

These refrigerating display cabinets have been verified in compliance with climate class 4 (30°C; R.H. 55%):

It remains excluded from the scope of the EEC 97/23 directive (PED) as it falls under Art.3 paragraph 3

RISK ANALYSIS

The risk analysis carried out and the solutions implemented by **CIAM group Spamade** it possible to eliminate most of the residual risks.

The obligation to adhere to the instructions given in this manual, which contains the technical information necessary for correct installation, commissioning, use and maintenance, remains the same.

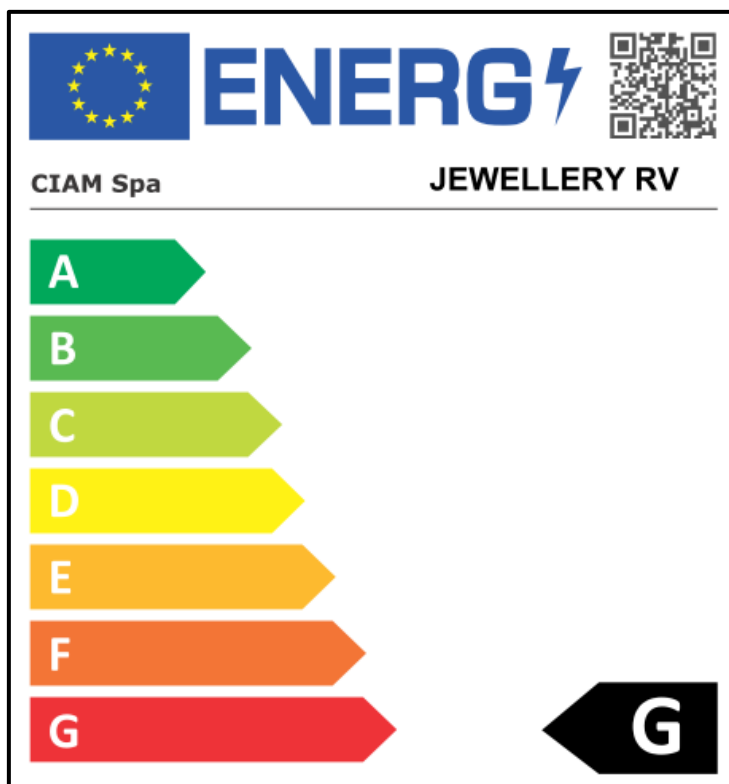
SCHEMA TECNICA – DATA SHEET

SERIE / SERIES – JEWELLERY P6		900	1300	1500	1700	2100
Potenza media consumata/ Average consuming	Kw/h	0.25	0.3	0.4	0.45	0.65
Potenza corrente max assorbita vetrina/ Power current max absorbed showcase	W	450	500	700	800	1000
	A	3.2	3.5	4.1	5	5.5
Potenza frigorifera neccessaria/ Cooling power	W	400	500	600	680	800
Peso vetrina/ Weight	Kg	90	130	150	170	190

SERIE / SERIES – JEWELLERY P8		900	1300	1500	1700	2100
Potenza media consumata/ Average consuming	Kw/h	0.25	0.35	0.5	0.7	0.85
Potenza corrente max assorbita vetrina/ Power current max absorbed showcase	W	500	650	800	1000	1200
	A	3.5	3.9	5	6	6.5
Potenza frigorifera neccessaria/ Cooling power	W	450	600	700	780	1000
Peso vetrina/ Weight	Kg	100	140	190	220	250

CARATTERISTICHE COMUNI - COMMON CHARACTERISTICS		
Classe climatica - Ambiente/ Climate class - Environment	N°/HR%/°C	3/60%/25°
Temperatura esercizio vetrina/ Operating temperature showcase	°C	+4
Alimentazione elettrica/ Electric power supply	V	230
	PH	1
	Hz	50/60
Temperatura di espansione di riferimento/ Reference expansion temperature	°C	-10
Gas refrigerante / Refrigerant gas		R290/R452A
Tipo di refrigerazione / Refrigeration type		VENTILATED
Tipo di sbrinamento / Defrost type		AUTOMATIC/ELECTRIC
Illuminazione / Lighting		3000K
Vaschetta evaporacondensa/ Condensate water discharge		OPTIONAL

CLASSE ENERGETICA – ENERGY RATING



3 - SAFETY

3.1 General information

The purchaser must instruct the personal assigned to use on the risks, on the safety devices and on the general rules on accident prevention foreseen by the Community directives and by the legislation of the country where the refrigerated display cabinet is installed.

Users/operators must be aware of the position and operation of all controls and features of the machine.

They must also have read this manual in full.

Maintenance interventions must be carried out by qualified operators after having appropriately prepared the machine.



Unauthorised tampering with or replacement of one or several parts of the machine, the use of accessories that modify use of the same and the use of replacement materials other than those recommended, may become the cause of accident risks.



Before carrying out any type of operation, the equipment must always be disconnected from the power supply.



Interventions on electrical parts or components of the refrigeration system must be carried out by specialist personnel in full compliance with current regulations.

3.2 Staff training



The machine is intended for professional use

The purchaser must ensure that the personnel, responsible for using the machine and the maintenance technician, are properly trained and instructed.

For this purpose, the manufacturer is available for advice, clarifications and anything else to ensure the operator and technicians make correct use of the machine.

The manufacturer can be contacted by e-mail: service@ciamgroup.it.

3.3 Reasonably foreseeable misuse

CIAM group Spa declines all responsibility and the warranty is void in the event of negligence at the time of use of the machine or non-compliance by the operator with the user instructions.



Any use other than that specified in this manual is considered incorrect.

During use of the machine, other types of work and activities considered to be incorrect and which in general can pose risks to the safety of the workers and damage to the machine are not permitted.

Predictable incorrect uses are considered:

- Use of the machine for storage and display of products other than the food categories described.

- Incorrect use of the machine by personnel who have not been trained correctly.
- Use of the machine in a way that does not comply with the European provisions on occupational safety.
- Use of non-original and non-machine-specific spare parts.
- Use of the machine in a potentially explosive environment.
- Insufficient maintenance and periodic checks.
- Tampering with guards and safety systems.
- Structural changes or unauthorized changes to operation.
- Maintenance technicians failing to use the D.P.I.



In the event of abnormal behaviour of the machine, any type of intervention is the responsibility of maintenance operators.

3.4 General rules of safety and accident prevention

The instructions or warnings are not intended to replace the accident-prevention safety regulations, complement them and to encourage their observance.



Dangers !

- Warnings alone do not eliminate danger!
- Failure to comply with the safety recommendations and improper use of the machine can result in an accident risk for you and for others!
- Before carrying out any operation that could constitute dangerous situations, check that near the machine there is a person who is able to provide first aid.
- Keep the workplace tidy and clean. Disorder in the workplace poses a risk.
- The floor must be dry and free from oil or grease stains.
- Avoid unstable positions. Make sure that you are in a safe and balanced position with respect to the machine.
- Any maintenance operation, whether ordinary or extraordinary, must take place when the machine is stationary and only when all the energy sources are switched off. Furthermore, no other form of stored energy must be present.
- The operator must check that no liquid containers are located near the electrical parts.
- Promptly intervene in conditions of danger within the scope of your skills and possibilities to eliminate and reduce the causes of risk.
- Electrical installation and connections from the machine to the respective disconnecting switch must only be carried out by a specialist installer.
- Strictly follow the instructions of the signs to avoid dangerous situations.
- This machine and its electrical equipment have been made to perfection; repairs must only be carried out by a specialist installer using original spare parts.
- Before each shift start, make sure that the safety devices work properly. Carry out simulation tests of the work cycle, verifying correct operation of all the safety devices present on the machine.
- Report any inefficiency of the safety devices or the means of protection immediately to the employer and to all those persons responsible for safety.
- The operator must ensure that the system is not used by unauthorised persons. The system must only be operated by personnel who have been instructed and trained and who:
 - are at least 16 years of age
 - possess the necessary technical knowledge.
 - give reason to believe that they are able to carry out their task reliably.
- Any person who is assigned to operating, manoeuvring, maintaining and/or repairing the machine must first read and understand the user and maintenance manual, in particular the "Safety" chapter. These instructions must be accessible at any time to the persons mentioned above. Any unusual occurrence regarding the system or part of it must be communicated immediately to the department head, to the shift supervisor or to other persons responsible

for safety of the machine; if necessary, stop the system using the dedicated ignition switch and the main switch.

- All safety warnings and indications applied to the system must be respected and followed.
- The use of accessories, tools and consumables other than those that are original or not recommended by the manufacturer may represent a risk of injury and exempt the manufacturer from civil and criminal liability.
- In the environment there must be no harmful or chemically aggressive vapours and/or explosive vapours and no dust or infiltration of dust that could be harmful to the operator or the machine.



Prohibitions !

- Changing the network frequency!
- Removing any type of safety device and/or protective barrier.
- Use of the machine with electric bridges and/or with mechanical means that exclude utilities/ parts of the machine itself.
- The leaving of tools or keys on top of the machine, or near it. After each maintenance operation, carefully check before turning the machine on that all tools, equipment and materials unrelated to the machine have been removed.
- Operating with the machine without guards. Once the maintenance operations have been completed, the mechanical repairer must necessarily reapply them.
- Applying power to the machine by tampering with the main switch and safety devices.
- Climbing up or getting on to the machine. It is forbidden to create walkways or precarious structures designed to cross over the machine.
- Prohibition for the designated operator and/or specialist personnel to alter the technical or physical characteristics of the equipment or to use it for purposes other than those envisaged and documented.
- Disconnecting of a live socket. Electrical equipment could be irreparably damaged.

The safety instructions given in this chapter are to be considered “general”. The more specific indications present in some of the chapters or paragraphs of this manual must be considered an integral part of this chapter.

3.4.1 Attentions for safe operation

- Avoid incorrect use of the power cord. Only cables or section extensions suitable for the power installed in the machine.
- Protect the cable from high temperatures, oil and sharp edges.
- Replace the cables where wear or damage occurs on them.
- Variations with respect to normal operation (increased power absorption, temperatures, vibrations, noises or signals from the safety and alarm system) alert to the fact that the operation is not correct. To prevent faults, which can directly or indirectly cause serious damage to persons or property, maintenance personnel must be promptly informed.
- Before starting any work, concentrate all your attention on what you are about to do. It is necessary to be extremely careful and to remain alert with promptness of reflexes: these are fundamental conditions for the operator. If the person suffers from any disorder or unfavourable physical condition, even minor, which could reduce their degree of vigilance, they must avoid putting the machine into operation or acting on aggregate or accessory equipment.
- Be very careful during the machine transportation stages of when handling of the annexed equipment! Refer to “4.5 Handling the equipment” on page 22 before carrying out any handling operation.
- When it is suspected that the system or part of it is no longer safe, turn it off and make sure it does not start inadvertently. Entrust the control and/or any repairs to specialist personnel trained on use of the machinery or, possibly, contact the manufacturer.

3.5 Safety devices applied on the machine

3.5.1 Fixed protections (fig 5)

The fixed type protections consist of fixed perimeter guards (screwed or welded), which have the function of preventing access to internal parts of the equipment (example Fig. 5 part.1-2).



It is absolutely forbidden to restart the machine, after maintenance, without correctly restoring the panels.



Periodically check the integrity of the fixed guards and the relative fastenings to the structure, with particular attention to the protection panels.

3.5.2 Electrical power sectioning (Fig. 6-7-8)

The equipment is not equipped with a disconnecter on board that can simultaneously remove the voltage from the two poles (phase and neutral) of the power supply. In fact, pressing the **OFF** key on the electronic control unit (fig.6) only stops operation of the display cabinet, but does not remove current from the electrical components inside the display cabinet (lights, fans and electric base). Sectioning can be performed by means of a plug socket (fig.7), but it is highly recommended that the installer places on the electrical connection, upstream of the appliance, an omnipolar switch (fig.8) that ensures full disconnection of the display cabinet from the mains supply.



Pressing the OFF key on the electronic control unit stops the display operation but does not cause the electrical energy to be disconnected. Therefore, in the event of maintenance work, it is necessary to completely disconnect the display cabinet from the electrical mains by removing the power plug (fig.7) or by acting on the general switch installed upstream of the display cabinet (fig.8).



The isolating switch is not padlockable in the open circuit position. Therefore, in the event of maintenance operations in which the operator is not able to prevent accidental closing of the circuit by others, completely disconnect the appliance from the mains.



If this is not possible, display a sign warning not to switch on the power supply for the duration of the work and also display a sign in a visible position, with the wording **MA-CHINE UNDER MAINTENANCE (fig.9)**



Before restoring the power supply to the machine, make sure that the safety conditions have been re-established, remove any tools or instruments used and make sure that there are no persons in the work area. Follow the envisaged re-start procedure.

3.6 Residual risks

During the project phase all the zones or parts at risk were assessed, and all the necessary precautions were taken to avoid risks to persons and damage to the Refrigerated Display Cabinets as indicated in the previous paragraphs.

Although the machine is equipped with safety systems, there are still a number of risks that cannot be eliminated but instead are reduced by corrective actions by the final integrator and by performing correct operating procedures.



Periodically check the operation of all the safety devices. Do not disassemble the fixed type protections of the machine.
Do not introduce foreign objects or tools into the operation and work area of the equipment.

The following is a summary of the risks that remain in the machine during the phases of:

- Normal operation
- Adjustment and fine-tuning
- Maintenance
- Cleaning.

3.6.1 Electrocution



- Risk of breakage or damage, with a possible lowering of the level of safety, of the components of the electrical equipment following a short circuit.
- Before switching on the power supply, make sure that there is no maintenance work in progress.



BEFORE MAKING THE CONNECTION, check that the c.c. current at the installation point it does not exceed the one indicated on the protection switches in the electrical panel, otherwise the user is obliged to provide the appropriate limitation devices



It is strictly forbidden to carry out any type of electric modification to avoid creating additional hazards and consequent risks that are not foreseen.

3.6.2 Fire



In the event of a fire, always immediately switch off the main switch of the main power supply line (fig.8).

3.6.3 Explosive atmosphere



The machine is not suitable for work in environments classified as ATEX risk.



It is forbidden to use the same in a classified atmosphere at risk of fire or explosion or partially such.

3.6.4 Pressurised gas



The machine is equipped with a pressurised gas refrigeration system. The piping and part of the cooling system containing the pressurised gas is to be considered at risk of explosion.



Pay the utmost attention to avoid damaging the pipes containing the gas. During maintenance work on the system, make sure that the pressure has been discharged.

3.6.5 Sliding



The leaking of lubricants or food products in areas surrounding the machine can cause personnel to slip.



Check that there are no leaks and always keep these areas clean.

3.6.6 Stumbling



The disorderly depositing of material in general can constitute a tripping hazard and partial or total limitation of escape routes if required.

Ensure operational, transit and escape routes free from obstacles and comply with the applicable regulations.

3.6.7 Cutting



Handling of the glass panels and glass shelves during installation, maintenance, cleaning and in any case also during daily use of the display cabinet, entails the risk of cutting in case of glass breakage.



Pay the utmost care to avoid damaging or breaking the glass.

U s e

protective gloves when handling them.

3.6.8 Circuit faults

Due to possible failures, the safety circuits may lose some of their effectiveness with relative lowering of the safety level.



Perform periodic checks of the operating status of the safety devices present in the machine.

3.6.9 Gas leaks



If refrigerant gas leaks occur during installation, use or maintenance of the display cabinet, immediately ventilate the room.



If the refrigerant gas comes into contact with the fire, toxic gases may be generated.

3.6.10 Low temperatures (cold)



During normal operation, various “cold” devices are present in the machine. The refrigerant gas pipes, the heat exchanger inside the display cabinet, etc., these parts of the machine if in prolonged contact with parts of the body can cause incidents of freezing or “cold burns”.



Always use protective gloves when working on these parts of the machine.

3.6.11 High temperatures (hot)



The display cabinet can be fitted with heating accessories:

- Water bath (maximum operating temperature 90°C)
- Hot plate (maximum operating temperature 65°C)
- Evaporator (maximum operating temperature 35°C)

These accessories heat up during operation and can therefore cause burns if in contact with parts of the body.



Always use protective gloves when working on these parts of the machine.

3.7 Safety plates applied to the machine

Based on the residual risks of various types, identified for the machine, **CIAM group Spa** has equipped the Refrigerated Display Cabinets with danger, warning and obligation signs, defined according to the European regulations on graphic symbols to be used on systems (Directive 92/58/EEC).

The plates in question are in a clearly visible position as shown in figure (10).

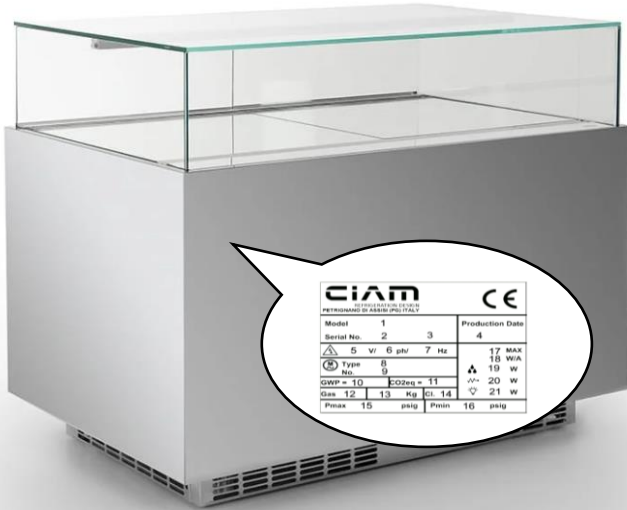


It is absolutely forbidden to remove the warning signs on the machine. CIAM group Spa declines any responsibility for the safety of the Refrigerated Display Cabinets in the event of non-compliance with this prohibition and for any accidents or damage to persons, property or animals due to the absence of safety labels on the machine.

In the event that the plates deteriorate or in general are not particularly visible or are absent, replacement is mandatory, requesting them directly from **CIAM group Spa**.

CE DATA PLATE

DATA PLATE CONTENT



CIAM

REFRIGERATION DESIGN
PETRIGNANO DI ASSISI (PG) ITALY



Model	1			Production Date		
Serial No.	2	3		4		
5	V/	6	ph/	7	Hz	
Type	8			17	MAX	
No.	9			18	W/A	
GWP =	10		CO2eq =	11		
Gas	12	13	Kg	Cl.	14	
Pmax	15	psig		Pmin	16	
					19	W
					20	W
					21	W

1. Nome commerciale / Commercial name of the unit
2. Numero seriale/ Identification serial number
3. Numero di ordine/ Order number
4. Data di produzione / Production date
5. Tensione / Voltage
6. Fasi / Phases
7. Frequenza / Frequency
8. Tipo compressore / Compressor type
9. Numero di compressori / Number of compressors
10. Global Working Potential
11. Tons of CO₂ equivalent

12. Tipo refrigerante / Refrigerant type
13. Peso refrigerante / Refrigerant weight
14. Classe climatica / Climatic rate
(Cl.3 = +25°C/60% U.R.; Cl. 4 = +30°C/55% U.R.)
15. Alta pressione di test / Test pressure – system high pressure side
16. Bassa pressione di test / Test pressure – system low pressure side
17. Massima tensione nominale/Max voltage rating
18. Massima corrente nominale /Max nominal current
19. Massima potenza in defrost / Max. power absorbed during defrost
20. Potenza assorbita dai riscaldatori / Nominal power absorbed by heating elements
21. Potenza illuminazione / Lighting nominal power

QUICK COMMANDS

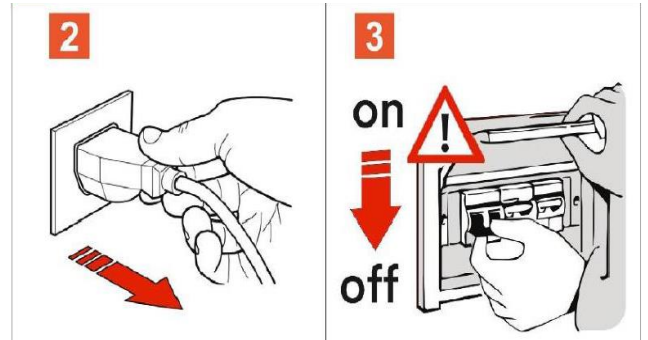
ACCENSIONE POWER ON	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">1</div> <div style="display: flex; align-items: center; gap: 10px;"> <div style="text-align: center;"> on ↑ off </div> <div style="text-align: center;"> </div> <div style="text-align: center;"> </div> </div> </div>	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">2</div> <div style="text-align: center;"> </div> <div style="margin-top: 5px;"> </div> </div>	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">3</div> <div style="text-align: center;"> </div> </div>	
REGOLAZIONE ADJUSTMENT	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="display: flex; justify-content: space-around; width: 100%;"> <div style="border: 1px solid black; padding: 2px; margin: 2px;">1</div> <div style="border: 1px solid black; padding: 2px; margin: 2px;">3</div> <div style="border: 1px solid black; padding: 2px; margin: 2px;">5</div> </div> <div style="display: flex; justify-content: space-around; width: 100%; margin: 5px 0;"> <div style="text-align: center;"></div> <div style="text-align: center;"></div> <div style="text-align: center;"></div> </div> <div style="display: flex; justify-content: space-around; width: 100%; margin: 5px 0;"> <div style="text-align: center;"></div> <div style="text-align: center;"></div> <div style="text-align: center;"></div> </div> <div style="display: flex; justify-content: space-around; width: 100%;"> <div style="border: 1px solid black; padding: 2px; margin: 2px;">2</div> <div style="border: 1px solid black; padding: 2px; margin: 2px;">4</div> <div style="border: 1px solid black; padding: 2px; margin: 2px;">6</div> </div> </div>	<ol style="list-style-type: none"> 1 Se premuto aumenta il valore visualizzato sul display. When pressed increases the value shown on the display. 2 Se premuto diminuisce il valore visualizzato sul display. When pressed decreases the value shown on the display. 3 Se premuto avvia il ciclo manuale di sbrinamento. When pressed starts the manual defrost cycle. 4 Se premuto memorizza il valore impostato. When pressed stores the set value. 5 Se premuto accende le luci di illuminazione della vetrina. When pressed turns on the lights illuminating the display case. 6 Se premuto avvia il funzionamento della vetrina. When pressed starts operation of the showcase. 		
SPEGNIMENTO POWER OFF	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">1</div> <div style="text-align: center;"> </div> </div>	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">2</div> <div style="text-align: center;"> </div> </div>	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">3</div> <div style="display: flex; align-items: center; gap: 10px;"> <div style="text-align: center;"> on ↓ off </div> <div style="text-align: center;"> </div> <div style="text-align: center;"> </div> </div> </div>	

CLEANING AND MAINTENANCE

1 – BEFORE PROCEEDING....



ATTENTION BEFORE ANY
MAINTENANCE WORK
DISCONNECT THE EQUIPMENT
FROM THE ELECTRICITY NETWORK.



2 – GENERAL CLEANING

OPERAZIONE DI PULIZIA - CLEANING OPERATION			PREQUENZA - FREQUENCY
	PULIZIA SUPERFICI IN ACCIAIO INOX CLEANING IN STAINLESS STEEL SURFACES		Settimanale - Weekly
	PULIZIA SUPERFICI IN MATERIALE PLASTICO CLEANING SURFACES IN PLASTIC MATERIALS		Settimanale - Weekly
	PULIZIA SUPERFICI IN VETRO CLEANING GLASS SURFACES		Giornaliero - Daily
	PULIZIA SUPERFICI IN LEGNO CLEANING WOODEN SURFACES		Settimanale - Weekly
	SBRINAMENTO TOTALE TOTAL DEFROSTING		Massimo ogni 15 giorni Maximum every 15 days
<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;"> <p>NO!</p> </div> <div style="text-align: center;"> <p>YES</p> </div> </div>			

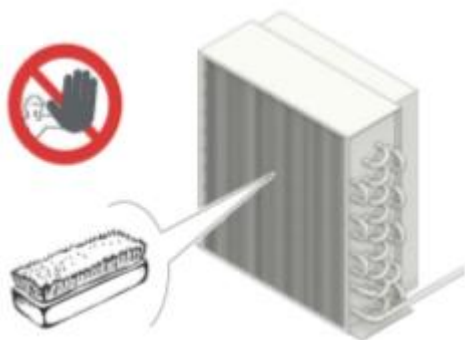
3 – CONDENSER CLEANING



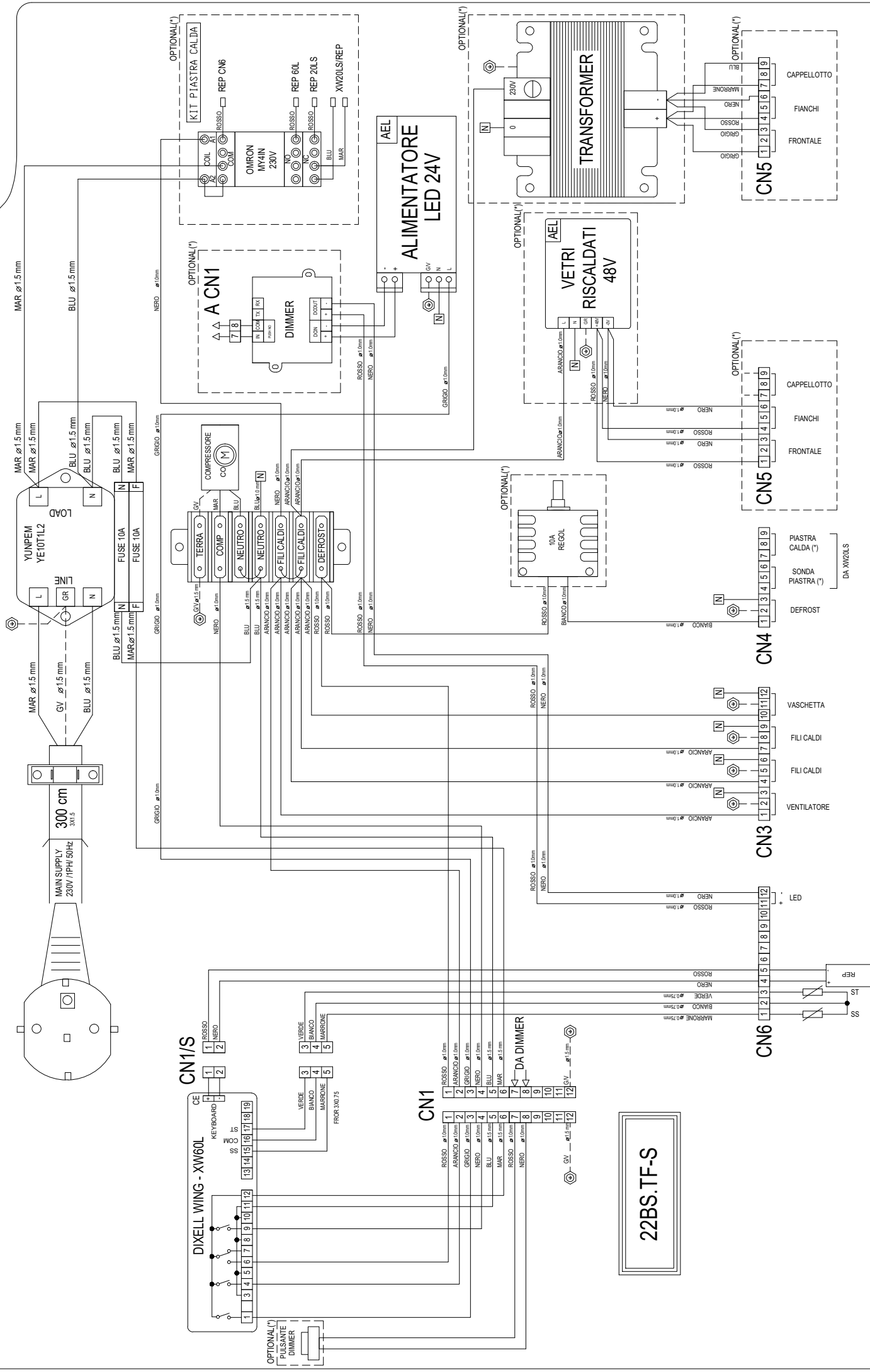
BEFORE PERFORMING THIS OPERATION, DISCONNECT THE EQUIPMENT FROM THE ELECTRICITY NETWORK.



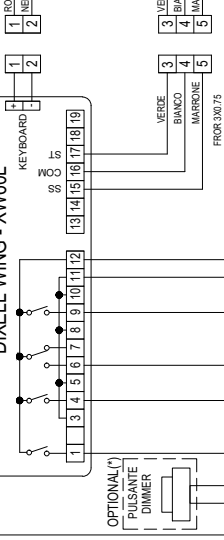
THIS OPERATION MUST BE CARRIED OUT BY QUALIFIED PERSONNEL AND WITH APPROPRIATE PROTECTIONS AND APPROPRIATE TOOLS.



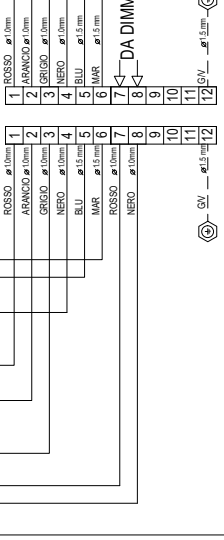
THE CLEANING OF THE CONDENSER MUST BE MADE ON A MONTHLY BASIS.



CN1/S



CN1

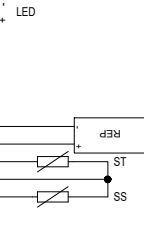


22BS.TF-S

CN6



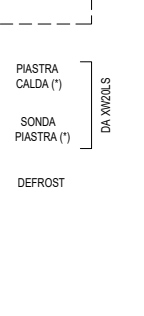
CN3



CN4



CN5



CN5



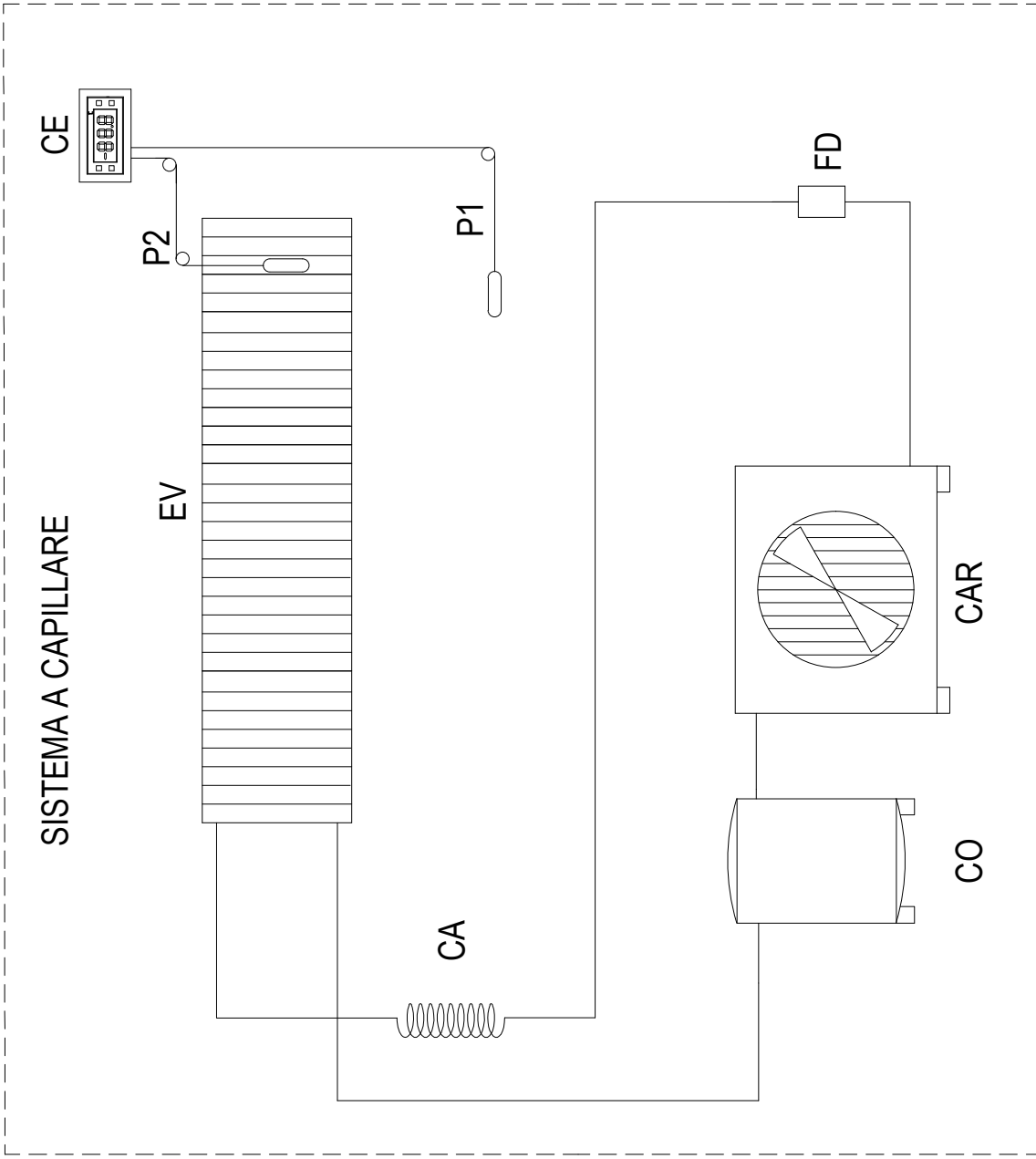
CN5



1 2 3 4 5 6

SISTEMA A CAPILLARE

- CE Centralina elettronica
- CA Capillare
- CAR Condensatore
- CO Compressore
- EV Evaporatore
- FD Filtro
- P1 Sonda ambiente
- P2 Sonda sbrinamento



 Certified Quality System ISO 9001:2008	Rugosità - Ra 3,2 / (A)	0-6 ±0,06	6-30 ±0,1	30-120 ±0,15	120-315 ±0,2	315-1000 ±0,3	1000-2000 ±0,5	3-6 ±1°	6-30 e 30'	30-120 e 20'	oltre 120 e 10'	Smussi e Raggi 0,3-±0,8	TRATT. SUPERFICIALE	Via dei Pini n°9 06081 Pellegrino d'Assisi PG ITALY T +39 075 80161 F +39 075 8016217	 REFRIGERATION DESIGN	
	APPROVAZIONE	VERIFICA	DENOMINAZIONE Vetrina refrigerata ventilata temp. positiva Schema frigoventilata positiva impianto a capillare										Togliere Bavature	SCALA 1:20		www.ciamweb.it info@ciamgroup.it
	DESORIZIONE Emissione	DATA 2020	DESIGNER Pascolini	DATA 2020	P/N	SIF-RV-C			FILE NAME SIF-RV-C_impianto a capillare	FOGLIO 01	MATERIALE	FINITURA	Q.tà	Peso (Kg)	Tolleranze generali vedi tabella	info@ciamgroup.it

A termini di legge ci riserviamo la proprietà di questo disegno con divieto di riprodurlo o renderlo noto a terzi senza nostra approvazione

1 2 3 4 5 6

Digital controller for medium-low temperature refrigeration applications
XW60L

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.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 **XW60L**, format 38x185mm, is microprocessor based controller, suitable for applications on medium or low temperature ventilated refrigerating units. It has 4 relay outputs to control compressor, fan, defrost, which can be either electrical or reverse cycle (hot gas) and light (configurable). It could be provided with a Real Time Clock which allows programming of up to 6 daily defrost cycles, divided into holidays and workdays. A "Day and Night" function with two different set points is fitted for energy saving. It is also provided with up to four NTC or PTC probe inputs, the first one for temperature control, the second one, to be located onto the evaporator, to control the defrost termination temperature and to managed the fan. One of the 2 digital inputs can operate as third temperature probe. The fourth probe is used to signal the condenser temperature alarm or to display a temperature.

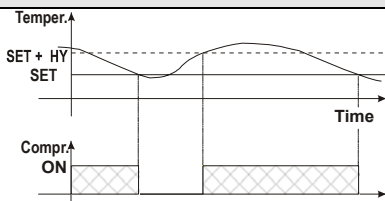
The **HOT KEY** output allows to connect the unit, by means of the external module **XJ485-CX**, to a network line **ModBUS-RTU** compatible such as the **dixell** monitoring units of **X-WEB** family. It allows to program the controller by means the **HOT KEY** programming keyboard.

The instrument is fully configurable through special parameters that can be easily programmed through the keyboard.

3. CONTROLLING LOADS

3.1 COMPRESSOR

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 **"CO_n"** and **"CO_F"**.

3.2 DEFROST

Two defrost modes are available through the **"tdF"** parameter: defrost through electrical heater (**tdF = EL**) and hot gas defrost (**tdF = in**).

The defrost interval depends on the presence of the RTC (optional). If the RTC is present is controlled by means of parameter **"EdF"**:

- with **EdF=in** the defrost is made every **"ldF"** time – standard way for controller without RTC.
- with **EdF = "rtc"**, the defrost is made in real time depending on the hours set in the parameters **Ld1..Ld6** on workdays and in **Sd1..Sd6** in holidays;

Other parameters are used to control defrost cycles: its maximum length (**MdF**) and two defrost modes: timed or controlled by the evaporator's probe (**P2P**).

At the end of defrost dripping time is started, its length is set in the **Fdt** parameter. With **Fdt =0** the dripping time is disabled.

3.3 CONTROL OF EVAPORATOR FANS

The fan control mode is selected by means of the **"FnC"** parameter:

- FnC = C_n**: fans will switch ON and OFF with the compressor and **not run** during defrost;
 - FnC = o_n**: fans will run even if the compressor is off, and not run during defrost;
- After defrost, there is a timed fan delay allowing for drip time, set by means of the **"Fnd"** parameter.
- FnC = C_Y**: fans will switch ON and OFF with the compressor and **run** during defrost;
 - FnC = o_Y**: fans will run continuously also during defrost

An additional parameter **"FSI"** provides the setting of temperature, detected by the evaporator probe, above which the fans are always OFF. This is used to make sure circulation of air only if his temperature is lower than set in "FSI".

3.3.1 Forced activation of fans

This function managed by the **Fct** parameter is designed to avoid short cycles of fans, that could happen when the controller is switched on or after a defrost, when the room air warms the evaporator. **Functioning**: if the difference of temperature between the evaporator and the room

probes is more than the value of the **Fct** parameter, the fans are switched on. With **Fct=0** the function is disabled.

3.3.2 Cyclical activation of the fans with compressor off.

When **Fnc = c-n** or **c-Y** (fans in parallel to the compressor), by means of the **Fon** and **FoF** parameters the fans can carry out on and off cycles even if the compressor is switched off. When the compressor is stopped the fans go on working for the **Fon** time. With **Fon =0** the fans remain always off, when the compressor is off.

3.4 LIGHT RELAY CONFIGURATION

The functioning of the auxiliary relay (terminals. 1-3) can be set by the **oA3** parameter, according to the kind of application. In the following paragraph the possible setting:

3.4.1 Auxiliary thermostat

I.E.. anti condensing heater) with the possibility of switching it on and off also by keyboard

Parameters involved:

- **ACH** Kind of regulation for the auxiliary relay: **Ht**: heating; **cL**: cooling;
- **SAa** Set point for auxiliary relay
- **SHy** Differential for auxiliary relay
- **ArP** Probe for auxiliary relay
- **Sdd** Auxiliary output off during defrost

By means of these 5 parameters the functioning of the auxiliary relay can be set.. The differential is given by the **SHy** parameter.

The auxiliary relay can be switched on also by the **AUX** button. In this case it remains on till it's manually switched off.

NOTE: Set **oA3 =AUS** and **ArP= nP** (no probe for auxiliary output).

In this case the relay 1-3 can be activated only by digital input with **i1F** or **i2F = AUS**.

3.4.2 On/off relay – oA3 = onF

In this case the relay is activated when the controller is turned on and de-activated when the controller is turned off.

3.4.3 Neutral zone regulation

With **oA3 = db** the relay 1-3 can control a heater element to perform a neutral zone action.

oA3 cut in = SET-HY

oA3 cut out = SET

3.4.4 Second compressor

With **oA3 = CP2**, the relay 1-3 operates as second compressor: it is activated in parallel with the relay of the first compressor, with a possible delay set in the **AC1** parameter. Both the compressors are switched off at the same time.

3.4.5 Alarm relay

With **oA3 = ALr** the relay 1-3 operates as alarm relay. It is activated every time an alarm happens. Its status depends on the **tba** parameter: if **"tba = y"**, the relay is silenced by pressing any key. If **"tba = n"**, the alarm relay remains on until the alarm condition recovers.

3.4.6 Night blind management during energy saving cycles

With **oA3 = HES**, the relay 1-3 operates to manage the night blind: the relay is energised when the energy saving cycle is activated , by digital input, frontal button or RTC (optional)

4. FRONT PANEL COMMANDS

4.1 STANDARD FRONTAL PANEL



4.2 STEEL FINISHING



SET: To display target set point; in programming mode it selects a parameter or confirm an operation.

(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.

To switch the instrument off, if onF = oFF.

To switch the light, if oA3 = Lig.

KEY COMBINATIONS:

+ To lock & unlock the keyboard.



To enter in programming mode.
To return to the room temperature display.

4.3 USE OF LEDS

Each LED function is described in the following table.

LED	MODE	FUNCTION
	ON	Compressor enabled
	Flashing	Anti-short cycle delay enabled
	ON	Defrost enabled
	Flashing	Drip time in progress
	ON	Fans enabled
	Flashing	Fans delay after defrost in progress.
	ON	An alarm is occurring
	ON	Continuous cycle is running
	ON	Energy saving enabled
	ON	Light on
ALUX	ON	Auxiliary relay on
°C/°F	ON	Measurement unit
°C/°F	Flashing	Programming phase

5. MAX & MIN TEMPERATURE MEMORIZATION

5.1 HOW TO SEE THE MIN TEMPERATURE

1. Press and release the **▼** key.
2. The "Lo" message will be displayed followed by the minimum temperature recorded.
3. By pressing the **▼** key again or by waiting 5s the normal display will be restored.

5.2 HOW TO SEE THE MAX TEMPERATURE

1. Press and release the **▲** key.
2. The "Hi" message will be displayed followed by the maximum temperature recorded.
3. By pressing the **▲** key again or by waiting 5s the normal display will be restored.

5.3 HOW TO RESET THE MAX AND MIN TEMPERATURE RECORDED

1. Hold press the SET key for more than 3s, while the max. or min temperature is displayed. (rSt message will be displayed)
2. To confirm the operation the "rSt" message starts blinking and the normal temperature will be displayed.

6. MAIN FUNCTIONS


6.1 TO SET THE CURRENT TIME AND DAY (ONLY FOR INSTRUMENTS WITH RTC)

When the instrument is switched on, it's necessary to program the time and day.

1. Enter the Pr1 programming menu, by pushing the SET + **▼** keys for 3s.
2. The rtc parameter is displayed. Push the SET key to enter the real time clock menu.
3. The Hur (hour) parameter is displayed.
4. Push the SET and set current hour by the UP and Down keys, then push SET to confirm the value..
5. Repeat the same operations on the Min (minutes) and dAy (day) parameters.

To exit: Push SET+UP keys or wait for 15 sec without pushing any keys.


6.2 HOW TO SEE THE SET POINT

- 
1. Push and immediately release the SET key: the display will show the Set point value;
 2. Push and immediately release the SET key or wait for 5 seconds to display the probe value again.

6.3 HOW TO CHANGE THE SET POINT

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

6.4 HOW TO START A MANUAL DEFROST

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

6.5 HOW TO CHANGE A PARAMETER VALUE

To change the parameter's value operate as follows:

1. Enter the Programming mode by pressing the SET + **▼** keys for 3s (the "°C" or "°F" LED starts blinking).
2. Select the required parameter. Press the "SET" key to display its value
3. Use "UP" or "DOWN" to change its value.
4. Press "SET" to store the new value and move to the following parameter.

To exit: Press SET + UP 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.

6.6 THE HIDDEN MENU

The hidden menu Includes all the parameters of the instrument.

6.6.1 HOW TO ENTER THE HIDDEN MENU

1. Enter the Programming mode by pressing the Set + **▼** keys for 3s (the "°C" or "°F" LED starts blinking).
2. Released the keys, then push again the Set+ **▼** keys for more than 7s. The Pr2 label will be displayed immediately followed from the HY parameter.

NOW YOU ARE IN THE HIDDEN MENU.

3. Select the required parameter.
4. Press the "SET" key to display its value
5. Use **▲** or **▼** to change its value.
6. Press "SET" to store the new value and move to the following parameter.

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

NOTE1: if none parameter is present in Pr1, after 3s the "noP" message is displayed. Keep the keys pushed till the Pr2 message is displayed.

NOTE2: the set value is stored even when the procedure is exited by waiting the time-out to expire.

6.6.2 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 HIDDEN MENU when a parameter is present in First Level the decimal point is on.

6.7 HOW TO LOCK THE KEYBOARD

1. Keep pressed for more than 3 s the UP + DOWN keys.
2. 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
3. If a key is pressed more than 3s the "POF" message will be displayed.

6.8 TO UNLOCK THE KEYBOARD

Keep pressed together for more than 3s the **▲** and **▼** keys, till the "Pon" message will be displayed.

6.9 THE CONTINUOUS CYCLE

When defrost is not in progress, it can be activated by holding the "**▲**" key pressed for about 3 seconds. The compressor operates to maintain the "ccS" set point for the time set through the "CCt" parameter. The cycle can be terminated before the end of the set time using the same activation key "**▲**" for 3 seconds.

6.10 THE ON/OFF FUNCTION

With "onF = oFF", pushing the ON/OFF key, the instrument is switched off. The "OFF" message is displayed. In this configuration, the regulation is disabled. To switch the instrument on, push again the ON/OFF key.

WARNING: Loads connected to the normally closed contacts of the relays are always supplied and under voltage, even if the instrument is in stand by mode.

7. PARAMETERS

rtc Real time clock menu (only for controller with RTC): to set the time and date and defrost start time.

REGULATION

Hy Differential: (0,1 + 25,5°C / 1+255 °F) Intervention differential for set point. Compressor Cut IN is Set Point + differential (Hy). Compressor Cut OUT is when the temperature reaches the set point.

LS Minimum set point: (- 50°C+SET/-58°F+SET): Sets the minimum value for the set point.

US Maximum set point: (SET+110°C/ SET+230°F). Set the maximum value for set point.

Ot Thermostat probe calibration: (-12.0+12.0°C; -120+120°F) allows to adjust possible offset of the thermostat probe.

P2P 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.

P3P Third probe presence (P3): n= not present., the terminals 13-14 operate as digital input.; y= present., the terminals 13-14 operate as third probe.

O3 Third probe calibration (P3): (-12.0+12.0°C; -120+120°F). allows to adjust possible offset of the third probe.

P4P Fourth probe presence: (n = Not present; y = present).

o4 Fourth probe calibration: (-12.0+12.0°C) allows to adjust possible offset of the fourth probe.

OdS Outputs activation delay at 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.

AC1 2nd compressor delay at start up (0+255s) Used only if oA3 = cP2 Time interval between the switching on of the first compressor and the second one.

rtr Percentage of the second and first probe for regulation (0+100; 100 = P1, 0 = P2): it allows to set the regulation according to the percentage of the first and second probe, as for the following formula (rtr(P1-P2)/100 + P2).

CCt Compressor ON time during continuous cycle: (0.0+24.0h; res. 10min) Allows to set the length of the continuous cycle: compressor stays on without interruption for the CCt time. Can be used, for instance, when the room is filled with new products.

CCS Set point for continuous cycle: (-50+150°C) it sets the set point used during the continuous cycle.

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

COF Compressor OFF time with faulty probe: (0+255 min) time 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 decimal point display.

Lod Instrument display: (P1; P2, P3, P4, SET, dtr): it selects which probe is displayed by the instrument: **P1** = Thermostat probe; **P2** = Evaporator probe; **P3** = Third probe(only for model with this option enabled); **P4** = Fourth probe, **SET** = set point; **dtr** = percentage of visualization.

rEd X-REP display (optional): (P1; P2, P3, P4, SET, dtr): it selects which probe is displayed by X-REP: **P1** = Thermostat probe; **P2** = Evaporator probe; **P3** = Third probe(only for model with this option enabled); **P4** = Fourth probe, **SET** = set point; **dtr** = percentage of visualization.

dLy Display delay: (0 +20.0m; resul. 10s) when the temperature increases, the display is updated of 1 °C/1°F after this time.

dtr Percentage of the second and first probe for visualization when Lod = dtr (0+100; 100 = P1, 0 = P2): if **Lod = dtr** it allows to set the visualization according to the percentage of the first and second probe, as for the following formula (dtr(P1-P2)/100 + P2).

DEFROST

EdF Defrost mode (only for controller with RTC):
rtc = Real Time Clock mode. Defrost time follows **Ld1+Ld6** parameters on workdays and **Sd1+Sd6** on holidays.
in = interval mode. The defrost starts when the time "ldf" is expired.

tdF Defrost type: EL = electrical heater; in = hot gas

dFP Probe selection for defrost termination: nP = no probe; **P1** = thermostat probe; **P2** = evaporator probe; **P3** = configurable probe; **P4** = Probe on Hot Key plug.

dtE Defrost termination temperature: (-50+50 °C/ -58+122°F) (Enabled only when EdF=Pb) sets the temperature measured by the evaporator probe, which causes the end of defrost.

ldF Interval between defrost cycles: (0+120h) Determines the time interval between the beginning of two defrost cycles.

mdF (Maximum) length for defrost: (0+255min) When **P2P = n**, (not evaporator probe: timed defrost) it sets the defrost duration, when **P2P = y** (defrost end based on temperature) it sets the maximum length for defrost.

dSd Start defrost delay: (0+99min) This is useful when different defrost start times are necessary to avoid overloading the plant.

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.

Fdt Drip time: (0+120 min) time interval between reaching defrost termination temperature and the restoring of the control's normal operation. This time allows the evaporator to eliminate water droplets that might have formed due to defrost.

dPo First defrost after start-up: (y = immediately; n = after the ldf time)

dAF Defrost delay after continuous cycle: (0+23.5h) time interval between the end of the fast freezing cycle and the following defrost related to it.

FANS

FnC Fans operating mode: **C-n**= runs with the compressor, OFF during defrost;
o-n = continuous mode, OFF during defrost;
C-Y = runs with the compressor, ON during defrost;
o-Y = continuous mode, ON during defrost;

Fnd Fans delay after defrost: (0+255min) Interval between end of defrost and evaporator fans start.

Fct Temperature differential avoiding short cycles of fans (0+59°C; Fct=0 function disabled). If the difference of temperature between the evaporator and the room probes is more than the value of the Fct parameter, the fans are switched on.

FSt Fans stop temperature: (-50+50°C/122°F) setting of temperature, detected by evaporator probe, above which fans are always OFF.

Fon Fan ON time: (0+15 min) with **Fnc = C_n** or **C_y**, (fan activated in parallel with compressor): it sets the evaporator fan ON cycling time when the compressor is off. With **Fon = 0** and **FoF ≠ 0** the fan are always off, with **Fon=0** and **FoF = 0** the fan are always off.

FoF Fan OFF time: (0+15 min) with **Fnc = C_n** or **C_y**, (fan activated in parallel with compressor): it sets the evaporator fan off cycling time when the compressor is off. With **Fon = 0** and **FoF ≠ 0** the fan are always off, with **Fon=0** and **FoF = 0** the fan are always off.

FAP Probe selection for fan management: nP = no probe; **P1** = thermostat probe; **P2** = evaporator probe; **P3** = configurable probe; **P4** = Probe on Hot Key plug.

AUXILIARY THERMOSTAT CONFIGURATION (terms. 1-3) – OA3 = AUS

ACH Kind of regulation for auxiliary relay: **Ht** = heating; **CL** = cooling

SAA Set Point for auxiliary relay: (-50,0+110,0°C; -58+230°F) it defines the room temperature set point to switch auxiliary relay.

SHy Differential for auxiliary output: (0,1 + 25,5°C / 1+255 °F) Intervention differential for auxiliary output set point.
With ACH = cL AUX Cut in is SAA + SHy; . AUX Cut out is SAA
With ACH = Ht AUX Cut in is SAA - SHy; . AUX Cut out is SAA

ArP Probe selection for auxiliary: nP = no probe, the auxiliary relay is switched only by button; **P1** = Probe 1 (Thermostat probe); **P2** = Probe 2 (evaporator probe); **P3** = Probe 3 (display probe); **P4** = Probe 4 fourth probe.

Sdd Auxiliary relay off during defrost: n = the auxiliary relay operates during defrost.
y = the auxiliary relay is switched off during defrost.

ALARMS

ALP Probe selection for alarm: nP = no probe, the temperature alarms are disabled; **P1** = Probe 1 (Thermostat probe); **P2** = Probe 2 (evaporator probe); **P3** = Probe 3 (display probe); **P4** = Fourth probe.

ALC Temperature alarms configuration: (Ab; rE)
Ab= absolute temperature: alarm temperature is given by the ALL or ALU values. **rE** = temperature alarms are referred to the set point. Temperature alarm is enabled when the temperature exceeds the "SET+ALU" or "SET-ALL" values.

ALU MAXIMUM temperature alarm: (SET+110°C; SET+230°F) when this temperature is reached the alarm is enabled, after the "ALd" delay time.

ALL Minimum temperature alarm: (-50,0 ÷ SET °C; -58+230°F when this temperature is reached the alarm is enabled, after the "ALd" delay time.

AFH Differential for temperature alarm/ fan recovery: (0,1+25,5°C; 1+45°F) Intervention differential for recovery of temperature alarm. It's also used for the restart of the fan when the FSt temperature is reached

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

dAO Exclusion of temperature alarm at start-up: (from 0.0 min to 23.5h) time interval between the detection of the temperature alarm condition after instrument power on and alarm signalling.

CONDENSER TEMPERATURE ALARM

AP2 Probe selection for temperature alarm of condenser: nP = no probe; **P1** = thermostat probe; **P2** = evaporator probe; **P3** =configurable probe; **P4** = Probe on Hot Key plug.

AL2 Low temperature alarm of condenser: (-55+150°C) when this temperature is reached the LA2 alarm is signalled, possibly after the Ad2 delay.

Au2 High temperature alarm of condenser: (-55+150°C) when this temperature is reached the HA2 alarm is signalled, possibly after the Ad2 delay.

AH2 Differential for temperature condenser alarm recovery: (0,1+25,5°C; 1+45°F)

Ad2 Condenser temperature alarm delay: (0+255 min) time interval between the detection of the condenser alarm condition and alarm signalling.

dA2 Condenser temperature alarm exclusion at start up: (from 0.0 min to 23.5h, res. 10min)

bLL Compressor off with low temperature alarm of condenser: n = no: compressor keeps on working; **Y = yes**, compressor is switched off till the alarm is present, in any case regulation restarts after AC time at minimum.

AC2 Compressor off with high temperature alarm of condenser: n = no: compressor keeps on working; **Y = yes**, compressor is switched off till the alarm is present, in any case regulation restarts after AC time at minimum.

AUXILIARY RELAY

tbA Alarm relay silencing (with oA3 =ALR):
n= silencing disabled: alarm relay stays on till alarm condition lasts,
y=silencing enabled: alarm relay is switched OFF by pressing a key during an alarm

oA3 Fourth relay configuration (1-3): **dEF**, **FAn**: do not select it!. **ALr**: alarm; **Lig**: light; **AuS**: Auxiliary relay; **oNF**: always on with instrument on; **db**= neutral zone; **cp2** = second compressor; **dEF2**: do not select it!; **HES**: night blind

AoP Alarm relay polarity: it set if the alarm relay is open or closed when an alarm happens. **CL**= terminals 1-3 closed during an alarm; **oP** = terminals 1-3 open during an alarm

DIGITAL INPUTS

i1P Digital input polarity (13-14): **oP**: the digital input is activated by opening the contact; **CL**: the digital input is activated by closing the contact.

i1F Digital input configuration (13-14): **EAL**= external alarm: "EA" message is displayed; **bAL**= serious alarm "CA" message is displayed. **PAL**= pressure switch alarm, "CA" message is displayed; **dor**= door switch function; **dEF**= activation of a defrost cycle; **AUS**=not enabled; **Htr**= kind of action inversion (cooling – heating); **FAn**= not set it; **ES**= Energy saving; **HdF** = Holiday defrost (enable only with RTC); **oNF** = to switch the controller off.

did (0+255 min) with i1F= EAL or i1F = bAL digital input alarm delay (13-14): delay between the detection of the external alarm condition and its signalling.
with i1F= dor: door open signalling delay
with i1F= PAL: time for pressure switch function: time interval to calculate the number of the pressure switch activation.

i2P 2nd digital input polarity (13-19): **oP**: the digital input is activated by opening the contact; **CL**: the digital input is activated by closing the contact.

i2F 2nd digital input configuration (13-19): **EAL**= external alarm: "EA" message is displayed; **bAL**= serious alarm "CA" message is displayed. **PAL**= pressure switch alarm, "CA" message is displayed; **dor**= door switch function; **dEF**= activation of a defrost cycle; **AUS**=not enabled; **Htr**= kind of action inversion (cooling – heating); **FAn**= not set it; **ES**= Energy saving; **HdF** = Holiday defrost (enable only with RTC); **oNF** = to switch the controller off.

d2d (0+255 min) with i2F= EAL or i2F= bAL 2nd digital input alarm delay (13-19): delay between the detection of the external alarm condition and its signalling.
with i2F= dor: door open signalling delay
with i2F= PAL: time for pressure switch function: time interval to calculate the number of the pressure switch activation.

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.

odc Compressor and fan status when open door: **no** = normal; **Fan** = Fan OFF; **CPr** = Compressor OFF; **F_C** = Compressor and fan OFF.

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

HES Temperature increase during the Energy Saving cycle:
 (-30,0°C+30,0°C) it sets the increasing value of the set point during the Energy Saving cycle.

TO SET CURRENT TIME AND WEEKLY HOLIDAYS (ONLY FOR MODELS WITH RTC)

Hur Current hour (0 ÷ 23 h)
Min Current minute (0 ÷ 59min)
dAY Current day (Sun ÷ SAT)
Hd1 First weekly holiday (Sun ÷ nu) Set the first day of the week which follows the holiday times.
Hd2 Second weekly holiday (Sun ÷ nu) Set the second day of the week which follows the holiday times.
N.B. Hd1,Hd2 can be set also as "nu" value (Not Used).

TO SET ENERGY SAVING TIMES (ONLY FOR MODELS WITH RTC)

ILE Energy Saving cycle start during workdays: (0 ÷ 23h 50 min.) During the Energy Saving cycle the set point is increased by the value in HES so that the operation set point is SET + HES.

dLE Energy Saving cycle length during workdays: (0 ÷ 24h 00 min.) Sets the duration of the Energy Saving cycle on workdays.

ISE Energy Saving cycle start on holidays. (0 ÷ 23h 50 min.)

dSE Energy Saving cycle length on holidays (0 ÷ 24h 00 min.)

TO SET DEFROST TIMES (ONLY FOR MODELS WITH RTC)

Ld1+Ld6 Workday defrost start (0 ÷ 23h 50 min.) These parameters set the beginning of the 6 programmable defrost cycles during workdays. Ex. When **Ld2** = 12.4 the second defrost starts at 12.40 during workdays.

Sd1+Sd6 Holiday defrost start (0 ÷ 23h 50 min.) These parameters set the beginning of the 6 programmable defrost cycles on holidays. Ex. When **Sd2** = 3.4 the second defrost starts at 3.40 on holidays.
N.B. :To disable a defrost cycle set it to "nu"(not used). Ex. If Ld6=nu ; the sixth defrost cycle is disabled

OTHER

Adr Serial address (1+244): Identifies the instrument address when connected to a ModBUS compatible monitoring system.

PbC Type of probe: it allows to set the kind of probe used by the instrument: **PbC** = PBC probe, **ntc** = NTC probe.

onF on/off key enabling: **nu** = disabled; **oFF** = enabled; **ES** = not set it.

dP1 Thermostat probe display

dP2 Evaporator probe display

dP3 Third probe display- *optional*.

dP4 Fourth probe display.

rSE Real set point: it shows the set point used during the energy saving cycle or during the continuous cycle.

rEL Software release for internal use.

Ptb Parameter table code: readable only.

8. DIGITAL INPUTS

The first digital input 13-14 is enabled with P3P = n.

With P3P = n and i1F = i2F the second digital input is disabled

The free voltage digital inputs are programmable by the "i1F" and i2F parameters.

8.1 GENERIC ALARM (i1F or i2F = 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.

8.2 SERIOUS ALARM MODE (i1F or i2F = bAL)

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

8.3 PRESSURE SWITCH (i1F or i2F = PAL)

If during the interval time set by "did" parameter, the pressure switch has reached the number of activation of the "nPS" parameter, the "CA" 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.

8.4 DOOR SWITCH INPUT (i1F or i2F = dor)

It signals the door status and the corresponding relay output status through the "odo" parameter: **no** = normal (any change); **Fan** = Fan OFF; **CPr** = Compressor OFF; **F_C** = Compressor and fan OFF. Since the door is opened, after the delay time set through parameter "did", the door alarm is enabled, the display shows the message "dA" and the regulation restarts is **rtr = yES**. 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.

8.5 START DEFROST (i1F or i2F = dEF)

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 "MdF" safety time is expired.

8.6 SWITCH THE AUXILIARY RELAY (i1F or i2F = AUS)

With oA3 = AUS the digital input switched the status of the auxiliary relay

8.7 INVERSION OF THE KIND OF ACTION: HEATING-COOLING (i1F or i2F=Htr)

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

8.8 ENERGY SAVING (i1F = ES)

The Energy Saving function allows to change the set point value as the result of the SET+ HES (parameter) sum. This function is enabled until the digital input is activated.

8.9 HOLIDAY DEFROST (i1F or i2F = HDF) –ONLY FOR MODELS WITH RTC

This function enabled the holiday defrost setting.

8.10 ON OFF FUNCTION (i1F or i2F = onF)

To switch the controller on and off.

8.11 DIGITAL INPUTS POLARITY

The digital input polarity depends on the "i1P" and "i2P" parameters.

i1P or i2P =CL: the input is activated by closing the contact.

i1P or i2P=OP: the input is activated by opening the contact

9. TTL SERIAL LINE – FOR MONITORING SYSTEMS

The TTL serial line, available through the HOT KEY connector, allows by means of the external TTL/RS485 converter, XJ485-CX, to connect the instrument to a monitoring system ModBUS-RTU compatible such as the X-WEB500/3000/300.

10. X-REP OUTPUT – OPTIONAL

As optional, an X-REP can be connected to the instrument, trough the dedicated connector.

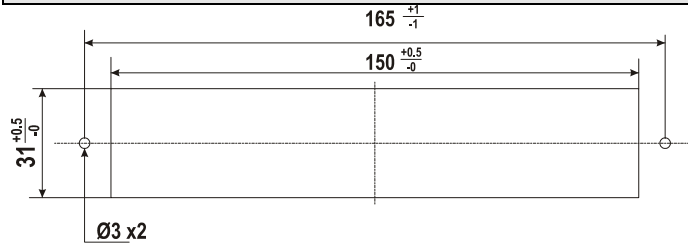


To connect the X-REP to the instrument the following connectors must be used CAB/REP1(1m), CAB/REP2 (2m), CAB/REP5 (5m),

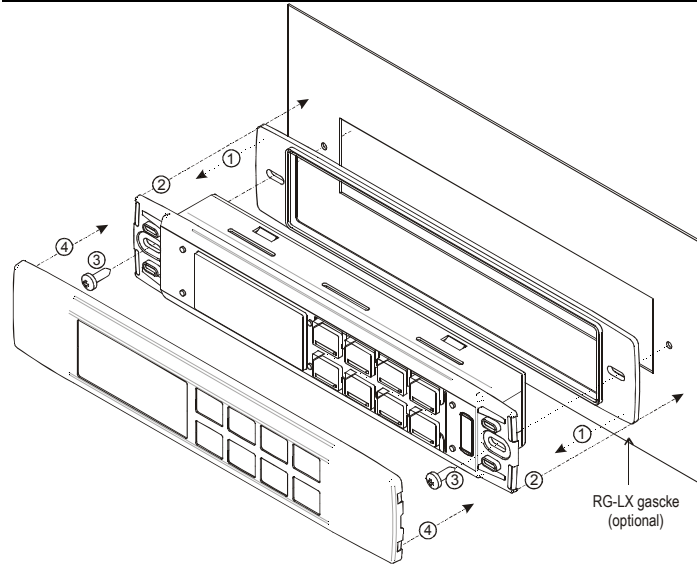
11. INSTALLATION AND MOUNTING

The controller XW60L, shall be mounted on vertical panel, in a 150x31 mm hole, and fixed using two screws Ø 3 x 2mm. To obtain an IP65 protection grade use the front panel rubber gasket (mod. RG-L). 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.

11.1 CUT OUT



11.2 STEEL FINISHING MOUNTING



12. 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.

12.1 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 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.

13. HOW TO USE THE HOT KEY

13.1 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.

13.2 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.

14. ALARM SIGNALS

Message	Cause	Outputs
"P1"	Room probe failure	Compressor output acc. to par. "Con" and "COF"
"P2"	Evaporator probe failure	Defrost end is timed
"P3"	Third probe failure	Outputs unchanged
"P4"	Fourth probe failure	Outputs unchanged
"HA"	Maximum temperature alarm	Outputs unchanged.
"LA"	Minimum temperature alarm	Outputs unchanged.
"HA2"	Condenser high temperature	It depends on the "Ac2" parameter

Message	Cause	Outputs
"LA2"	Condenser low temperature	It depends on the "bLL" parameter
"dA"	Door open	Compressor and fans restarts
"EA"	External alarm	Output unchanged.
"CA"	Serious external alarm (i1F=bAL)	All outputs OFF.
"CA"	Pressure switch alarm (i1F=PAL)	All outputs OFF
"rtc"	Real time clock alarm	Alarm output ON; Other outputs unchanged; Defrosts according to par. "ldF" Set real time clock has to be set
rtF	Real time clock board failure	Alarm output ON; Other outputs unchanged; Defrosts according to par. "ldF" Contact the service

14.1 SILENCING BUZZER / ALARM RELAY OUTPUT

If "tbA = y", the buzzer and the relay are silenced by pressing any key.
If "tbA = n", only the buzzer is silenced while the alarm relay is on until the alarm condition recovers.

14.2 ALARM RECOVERY

Probe alarms "P1", "P2", "P3" and "P4" 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", "LA" "HA2" and "LA2" automatically stop as soon as the temperature returns to normal values.
Alarms "EA" and "CA" (with i1F=bAL) recover as soon as the digital input is disabled.
Alarm "CA" (with i1F=PAL) recovers only by switching off and on the instrument.

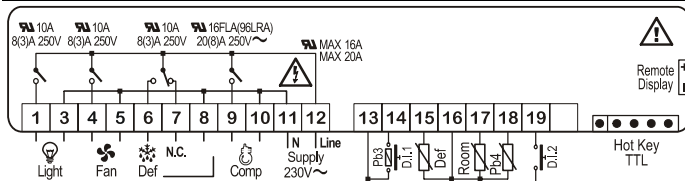
14.3 OTHER MESSAGES

Pon	Keyboard unlocked.
PoF	Keyboard locked
noP	In programming mode: none parameter is present in Pr1 On the display or in dP2, dP3, dP4: the selected probe is nor enabled

15. TECHNICAL DATA

Housing: self extinguishing ABS.
Case: facia 38x185 mm; depth 76mm
Mounting : panel mounting in a 150x31 mm panel cut-out with two screws. \varnothing 3 x 2mm.
Distance between the holes 165mm
Protection: IP20; **Frontal protection:** IP65 with frontal gasket mod RG-L. (optional)
Connections: Screw terminal block \leq 2.5 mm² heat-resistant wiring and 6,3mm Faston
Power supply: 230Vac or . 110Vac or 24Vac \pm 10%
Power absorption: 5VA max.
Display: 3 digits, red LED, 14,2 mm high.
Display: 3 digits, red LED, 14,2 mm high; **Inputs:** Up to 4 NTC or PTC probes.
Digital inputs: 2 free voltage
Relay outputs: Total current on loads MAX. 20A
compressor: relay SPST 20(8) A, 250Vac
light: relay SPST 8 or 16(3) A, 250Vac
fans: relay SPST 8(3) A, 250Vac
defrost: relay SPST 8(3) A, 250Vac
Other output : buzzer (optional)
Serial output : TTL standard; **Communication protocol:** Modbus - RTU
Data storing: on the non-volatile memory (EEPROM).
Internal clock back-up: 24 hours (only for model with RTC)
Kind of action: 1B; **Pollution grade:** 2; **Software class:** A.;
Rated impulsive voltage: 2500V; **Over voltage 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);
PTC probe: -50+150°C (-58+302°F)
Resolution: 0,1 °C or 1°C or 1 °F (selectable); **Accuracy (ambient temp. 25°C):** \pm 0,7 °C \pm 1 digit

16. CONNECTIONS



Supply: 120Vac or 24Vac: connect to terminals 11-12
The X-REP output is optional
The light relay can be also 16(5)A according to the model

17. DEFAULT SETTING VALUES

Label	Name	Range	°C/°F	Level
Set	Set point	LS+US	-5.0	-
rtc*	Real time clock menu	-	-	Pr1
Hy	Differential	0,1+25,5°C/ 1+ 255°F	2.0	Pr1
LS	Minimum set point	-50°C+SET/-58°F+SET	-50.0	Pr2
US	Maximum set point	SET+110°C/SET + 230°F	110	Pr2
Ot	Thermostat probe calibration	-12-12°C /-120+120°F	0.0	Pr1
P2P	Evaporator probe presence	n=not present; Y=pres.	Y	Pr1
OE	Evaporator probe calibration	-12-12°C /-120+120°F	0.0	Pr2
P3P	Third probe presence	n=not present; Y=pres.	n	Pr2
O3	Third probe calibration	-12-12°C /-120+120°F	0	Pr2
P4P	Fourth probe presence	n=not present; Y=pres.	n	Pr2
O4	Fourth probe calibration	-12-12°C /-120+120°F	0	Pr2
OdS	Outputs delay at start up	0+255 min	0	Pr2

Label	Name	Range	°C/°F	Level
AC	Anti-short cycle delay	0 + 50 min	1	Pr1
Ac1	Second compressor start delay	0+255s	5	Pr2
rtr	P1-P2 percentage for regulation	0 + 100 (100=P1 , 0=P2)	100	Pr2
Cct	Continuous cycle duration	0,0+24.0h	0.0	Pr2
CCS	Set point for continuous cycle	(-55.0+150.0°C) (-67+302°F)	-5	Pr2
COn	Compressor ON time with faulty probe	0 + 255 min	15	Pr2
COF	Compressor OFF time with faulty probe	0 + 255 min	30	Pr2
CF	Temperature measurement unit	°C \pm °F	°C	Pr2
rES	Resolution	in=integer; dE= dec.point	dE	Pr1
Lod	Probe displayed	P1;P2	P1	Pr2
rEd*	X-REP display	P1 - P2 - P3 - P4 - SET - dtr	P1	Pr2
dLy	Display temperature delay	0 + 20.0 min (10 sec.)	0.0	Pr2
dtr	P1-P2 percentage for display	1 + 99	50	Pr2
EdF*	Kind of interval for defrost	rtc +in	in	Pr2
tdF	Defrost type	EL=el. heater; in= hot gas	EL	Pr1
dFP	Probe selection for defrost termination	nP; P1; P2; P3; P4	P2	Pr2
dtE	Defrost termination temperature	-50 + 50 °C	8	Pr1
ldF	Interval between defrost cycles	1 + 120 ore	6	Pr1
MdF	(Maximum) length for defrost	0 + 255 min	30	Pr1
dSd	Start defrost delay	0+99min	0	Pr2
dFd	Displaying during defrost	rt, it, SET, DEF	it	Pr2
dAd	MAX display delay after defrost	0 + 255 min	30	Pr2
Fdt	Draining time	0+120 min	0	Pr2
dPo	First defrost after start-up	n=after ldF; y=immed.	n	Pr2
dAF	Defrost delay after fast freezing	0 + 23h e 50'	0.0	Pr2
Fnc	Fan operating mode	C-n, o-n, C-y, o-Y	o-n	Pr1
Fnd	Fan delay after defrost	0+255min	10	Pr1
Fct	Differential of temperature for forced activation of fans	0+50°C	10	Pr2
FSt	Fan stop temperature	-50+50°C/-58+122°F	2	Pr1
Fon	Fan on time with compressor off	0+15 (min.)	0	Pr2
FoF	Fan off time with compressor off	0+15 (min.)	0	Pr2
FAP	Probe selection for fan management	nP; P1; P2; P3; P4	P2	Pr2
ACH	Kind of action for auxiliary relay	CL; Ht	cL	Pr2
SAA	Set Point for auxiliary relay	-50,0+110°C / -58+230°F	0,0	Pr2
SHy	Differential for auxiliary relay	0,1+25,5°C/ 1+ 255°F	2,0	Pr2
ArP	Probe selection for auxiliary relay	nP / P1 / P2 / P3/P4	nP	Pr2
Sdd	Auxiliary relay operating during defrost	n+y	n	Pr2
ALP	Alarm probe selection	nP; P1; P2; P3; P4	P1	Pr2
ALc	Temperat. alarms configuration	rE= related to set; Ab = absolute	Ab	Pr2
ALU	MAXIMUM temperature alarm	Set+110.0°C; Set+230°F	110,0	Pr1
ALL	Minimum temperature alarm	-50.0°C+Set/ -58°F+Set	-50,0	Pr1
AFH	Differential for temperat. alarm recovery	(0,1°C+25,5°C) (1°F+45°F)	2,0	Pr2
ALd	Temperature alarm delay	0 + 255 min	15	Pr2
dAO	Delay of temperature alarm at start up	0 + 23h e 50'	1,3	Pr2
AP2	Probe for temperat. alarm of condenser	nP; P1; P2; P3; P4	P4	Pr2
AL2	Condenser for low temperat. alarm	(-55 + 150°C) (-67+ 302°F)	-40	Pr2
AU2	Condenser for high temperat. alarm	(-55 + 150°C) (-67+ 302°F)	110	Pr2
AH2	Differ. for condenser temp. alar. recovery	[0,1°C + 25,5°C] [1°F + 45°F]	5	Pr2
Ad2	Condenser temperature alarm delay	0 + 254 (min.) , 255=nU	15	Pr2
dA2	Delay of cond. temper. alarm at start up	0.0 + 23h 50'	1,3	Pr2
bLL	Compr. off for condenser low temperature alarm	n(0) - Y(1)	n	Pr2
AC2	Compr. off for condenser high temperature alarm	n(0) - Y(1)	n	Pr2
tbA	Alarm relay disabling	n=no; y=yes	y	Pr2
oA3	Fourth relay configuration	ALr = alarm; dEF = do not select it; Lig =Light; AUS =AUX; onF=always on; Fan= do not select it; db = neutral zone; cP2 = second compressor; dF2 = do not select it; HES = night blind	Lig	Pr2
AoP	Alarm relay polarity (oA3=ALr)	oP; cL	cL	Pr2
i1P	Digital input polarity (13-14)	oP=opening;CL=closing	cL	Pr1
i1F	Digital input 1 configuration (13-14)	EAL, bAL, PAL, dor; dEF; Htr, AUS	dor	Pr1
did	Digital input alarm delay (13-14)	0+255min	15	Pr1
i2P	Digital input polarity (13-19)	oP=opening;CL=closing	cL	Pr2
i2F	Digital input configuration (13-19)	EAL, bAL, PAL, dor; dEF; Htr, AUS	EAL	Pr2
d2d	Digital input alarm delay (13-19)	0+255min	5	Pr2
Nps	Number of activation of pressure switch	0 +15	15	Pr2
odc	Compress and fan status when open door	no; Fan; CP; F_C	F-c	Pr2
rrd	Regulation restart with door open alarm	n - Y	y	Pr2
HES	Differential for Energy Saving	(-30°C+30°C) (-54°F+54°F)	0	Pr2
Hur*	Current hour	0 + 23	-	rtc
Min*	Current minute	0 + 59	-	rtc
dAY*	Current day	Sun + SAT	-	rtc
Hd1*	First weekly holiday	Sun+ SAT - nu	nu	rtc
Hd2*	Second weekly holiday	Sun+ SAT - nu	nu	rtc
ILE*	Energy Saving cycle start during workdays	0 + 23h 50 min.	0	rtc
dLE*	Energy Saving cycle length during workdays	0 + 24h 00 min.	0	rtc
ISE*	Energy Saving cycle start on holidays	0 + 23h 50 min.	0	rtc
dSE*	Energy Saving cycle length on holidays	0 + 24h 00 min.	0	rtc

Label	Name	Range	°C/°F	Level
Ld1*	1 st workdays defrost start	0 ÷ 23h 50 min. - nu	6.0	rtc
Ld2*	2 nd workdays defrost start	0 ÷ 23h 50 min. - nu	13.0	rtc
Ld3*	3 rd workdays defrost start	0 ÷ 23h 50 min. - nu	21.0	rtc
Ld4*	4 th workdays defrost start	0 ÷ 23h 50 min. - nu	0.0	rtc
Ld5*	5 th workdays defrost start	0 ÷ 23h 50 min. - nu	0.0	rtc
Ld6*	6 th workdays defrost start	0 ÷ 23h 50 min. - nu	0.0	rtc
Sd1*	1 st holiday defrost start	0 ÷ 23h 50 min. - nu	6.0	rtc
Sd2*	2 nd holiday defrost start	0 ÷ 23h 50 min. - nu	13.0	rtc
Sd3*	3 rd holiday defrost start	0 ÷ 23h 50 min. - nu	21.0	rtc
Sd4*	4 th holiday defrost start	0 ÷ 23h 50 min. - nu	0.0	rtc
Sd5*	5 th holiday defrost start	0 ÷ 23h 50 min. - nu	0.0	rtc
Sd6*	6 th holiday defrost start	0 ÷ 23h 50 min. - nu	0.0	rtc
Adr	Serial address	1-247	1	Pr2
PbC	Kind of probe	Ptc; ntc	ntc	Pr2
onF	on/off key enabling	nu, oFF; ES	oFF	Pr2
dP1	Room probe display	--	-	Pr2
dP2	Evaporator probe display	--	-	Pr2
dP3	Third probe display	--	-	Pr2
dP4	Fourth probe display	--	-	Pr2
rSE	Real set	actual set	-	Pr2
rEL	Software release	--	1.8	Pr2
Ptb	Map code	--	--	Pr2

* Only for model with real time clock

² Only for XW60L with X-REP output

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