Murozero

Positive Temperature



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 a 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.



info@ciamgroup.it



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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 directive PED 2014/68/UE as it falls under Art.3 paragraph 3

RISK ANALYSIS

The risk analysis carried out and the solutions implemented by **CIAM group Spa**made 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.

SCHEDA TECNICA – DATA SHEET

SERIE / SERIES – MUROZERO TP		830	1552	2274	2996
Potenza media consumata/ Average consuming	**Kw/h**	0.65	0.9	1.3	1.5
Potenza corrente max assorbita vetrina/ Power current max absorbed showcase	**W**	1000	1380	1900	2300
	A	5.9	6.8	10	11.5
Potenza frigorifera nesessaria/ Cooling power	**W**	800	1400	1900	2400
Peso vetrina/ Weight	**Kg**	190	250	310	400

CARATTERISTICHE COMUNI - COMMON CHARACTERISTICS		
Classe climatica - Ambiente/ Climate class - Emvironment	**N°/HR%/°C**	4/55%/30°
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		R452A
Tipo di refrigerazione / Refrigeration type		VENTILATED
Tipo di sbrinamento / Defrost type		AUTOMATIC/ELECTRIC
Illuminazione / Lighting		3000K
Vaschetta evaporacondensa/ Condensate water discharge		OPTIONAL

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, supplement 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 issuspected 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 disconnector 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 **MACHINE 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 restart 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. Use 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 sings, 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

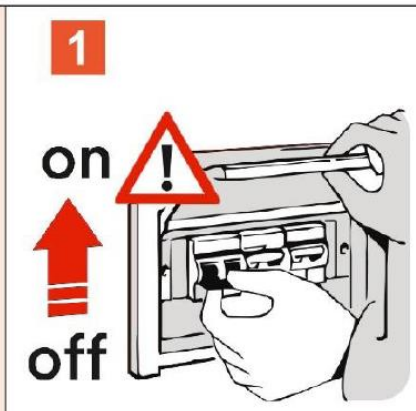
CIAM
REFRIGERATION DESIGN
PETRIGNANO DI ASSISI (PG) ITALY
CE

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

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 CO_2 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







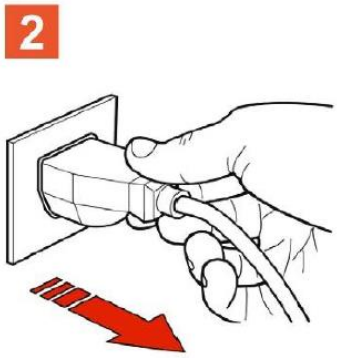
REGOLAZIONE ADJUSTMENT



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





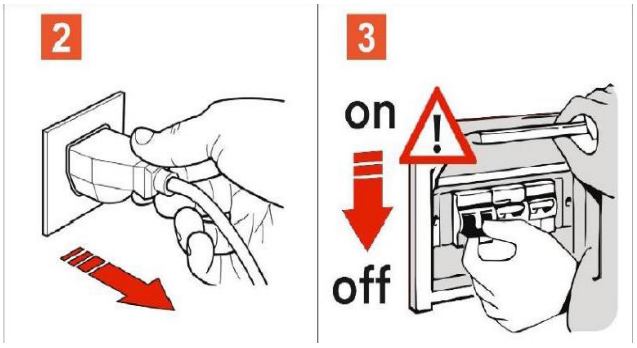


CLEANING AND MAINTENANCE

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









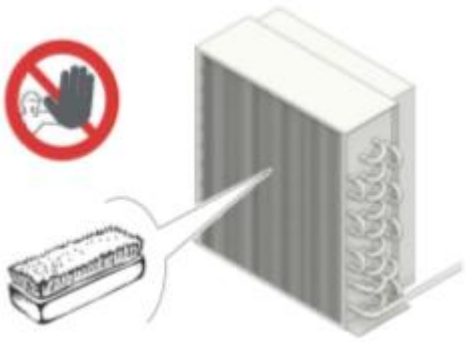
3 – CONDENSER CLEANING



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.

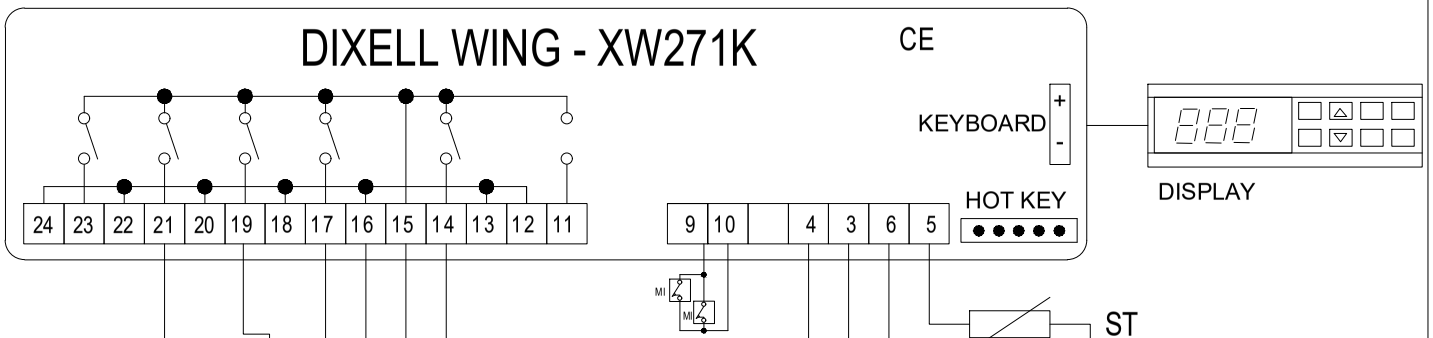
CLIENTE	COMMESSA ..	OGGETTO ..	DESIGNER Giovanni Ziarelli	DATA ..	TAV. 1	REV. A	SCALA

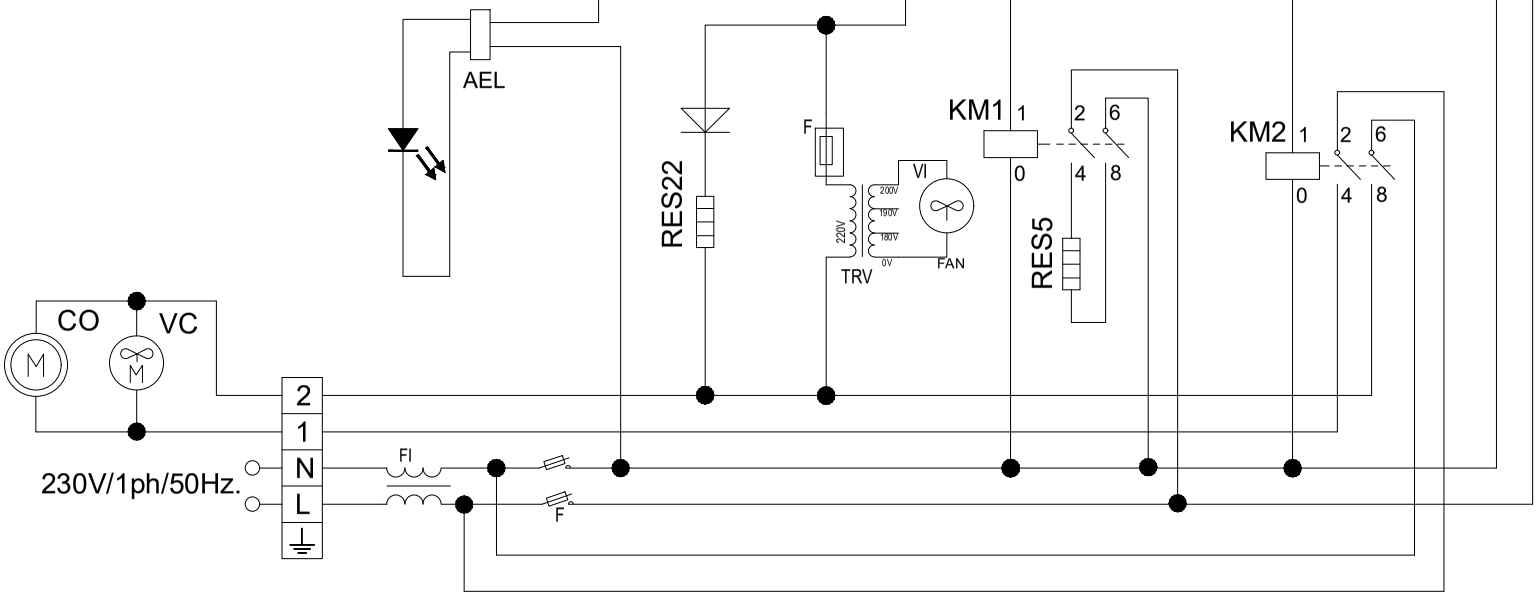
CIAM REFRIGERATION DESIGN

22BS.MUR0TN

DIXELL WING - XW271K

CE



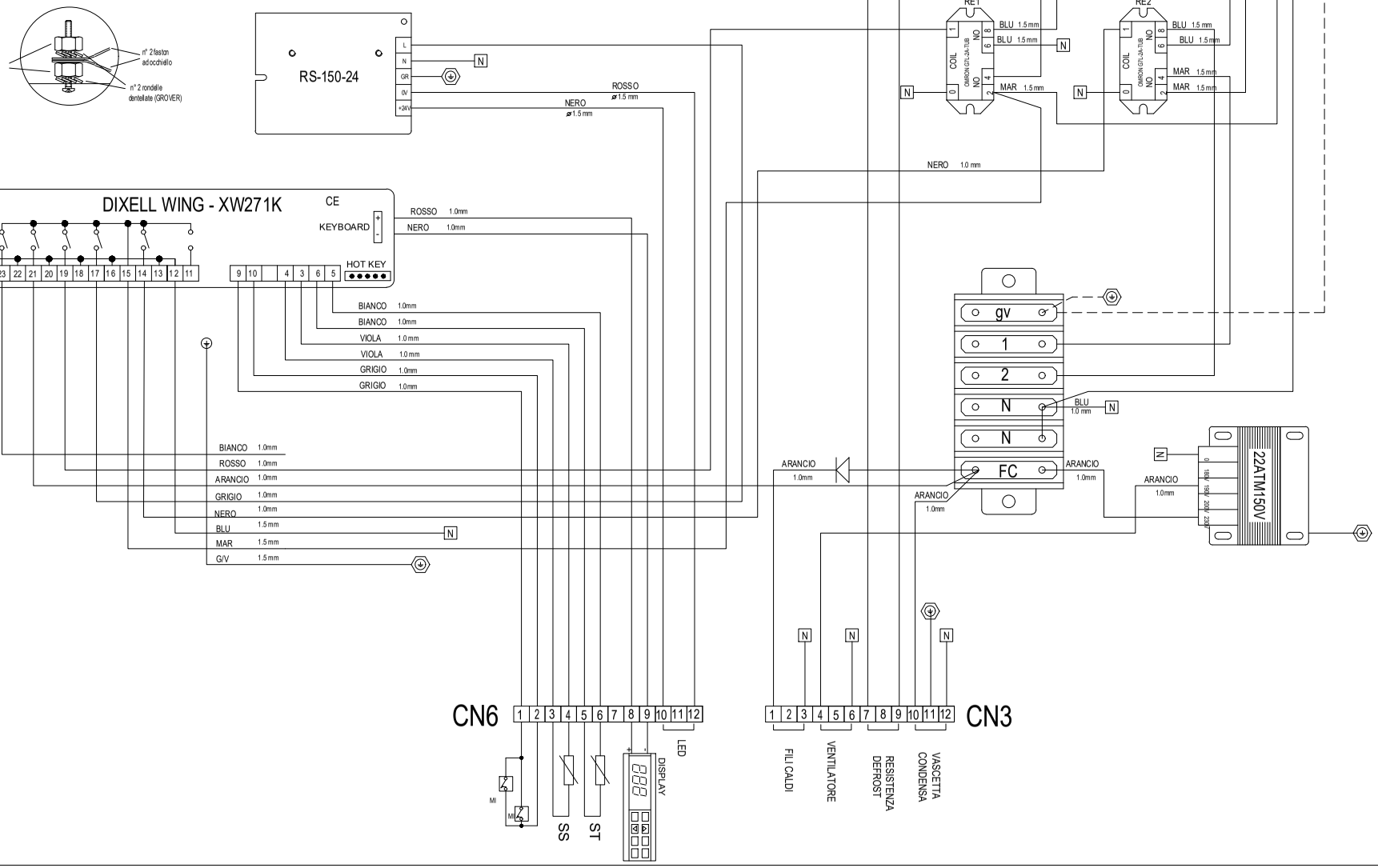


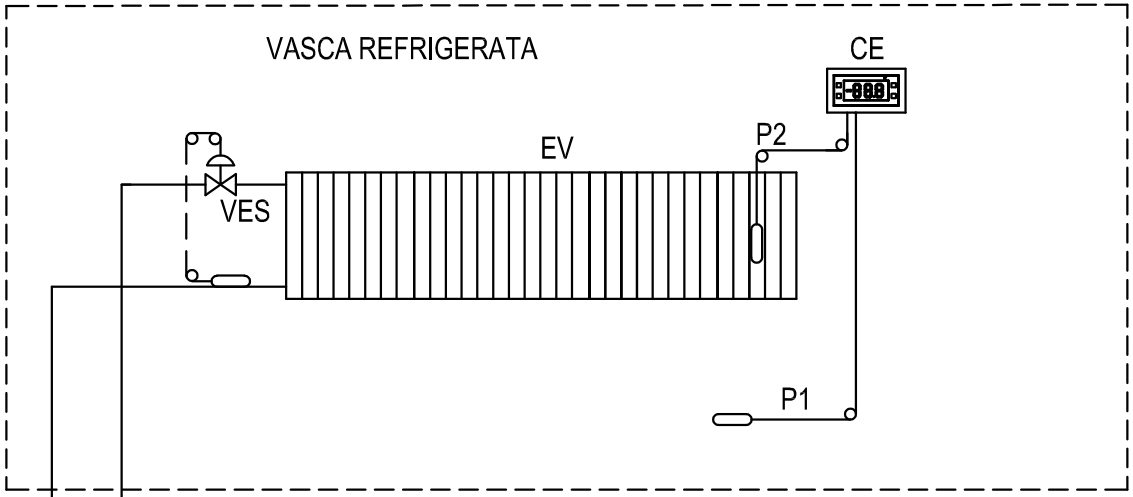
DIXELL TERMINALS	
NUMB.	DESCRIPTION
3-4	COIL PROBE
5-6	TEMPERATURE PROBE
14	LINE FOR COMPRESSOR RELAY
15-16	DIXELL CONTROLLER SUPPLY
17	LINE FOR LED SUPPLIER
19	LINE FOR DEFROST RELAY
21	LINE FOR FANS AND HEATING WIRE

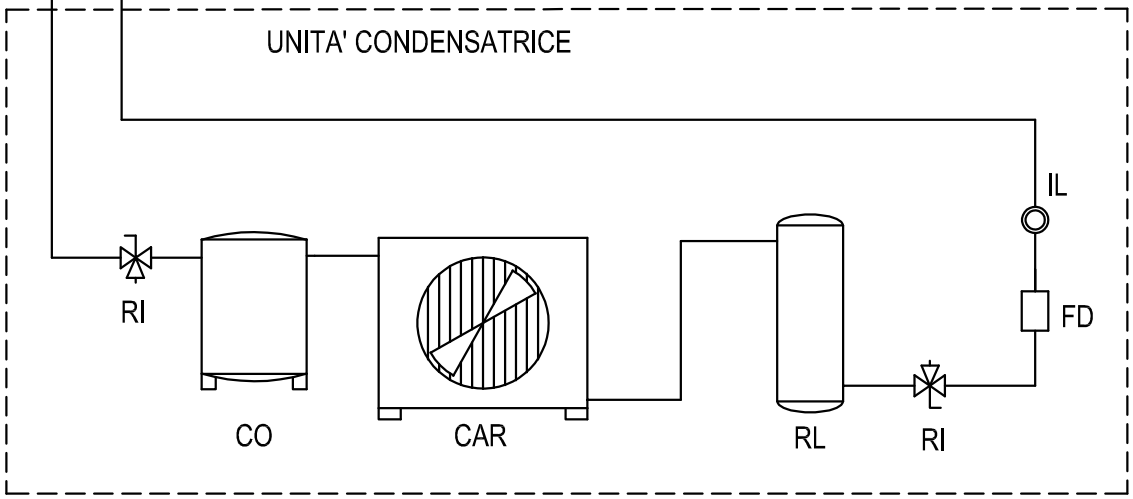
CLIENTE	COMMESSA ..	OGGETTO ..	DESIGNER Giovanni Ziarelli	DATA ..	TAV. 1	REV. A	SCALA

CIAM REFRIGERATION DESIGN

22BS.MUR0TN







CE Centralina elettronica - Electronic Control

CAR Condensatore ad aria - Air Condenser

CO Compressore - Compressor

EV Evaporatore - Evaporator

FD Filtro Deidratatore - Filter Drier

IL Indicatore Liquido - Sight Glass

P1 Sonda ambiente - Ambient temperature probe

P2 Sonda sbrinamento - Defrosting Probe

RI Rubinetto Intercettazione - Refrigerant Tap

RL Ricevitore di Liquido - Liquid Receiver

VES Valvola di espansione - Expansion Valve

Certified Quality System ISO 9001:2008

Rugosità - Ra 3,2

QUOTE SENZA INDICAZIONE DI TOLLERANZA - Grado di precisione medio UNI 5307

0÷6	6÷30	30÷120	120÷315	315÷1000	1000÷2000	3÷6	6÷30	30÷120	oltre 120	Smussi e Raggi
±0,06	±0,1	±0,15	±0,2	±0,3	±0,5	±1°	e 30'	e 20'	e 10'	0,3÷0,8

TRATT. SUPERFICIALE

Via dei Pini n°9
06081 Petrignano d'Assisi PG ITALY
T +39 075 80161 F +39 075 8016217

CIAM REFRIGERATION DESIGN

www.ciamweb.it info@ciamgroup.it

REV.	DATA	DESCRIZIONE
01	2020	Emissione
02	..	..
03	..	..

VERIFICA

APPROVAZIONE

DENOMINAZIONE **Vetrina refrigerata temp. positiva**
Schema frigorifero positiva unità interna a valvola

Togliere Bavature

SCALA 1:20

DESIGNER Pascolini

DATA 2020

P / N **SIF-RV-V**

FILE NAME SIF-RV-V_impianto a valvola

FOGLIO 01

MATERIALE ..

Q.tà ..

FINITURA ..

Peso (Kg) ..

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

Tolleranze generali vedi tabella

WING

XW270K - XW271K

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

Models **XW270K** and **XW271K** are microprocessor based controllers suitable for applications on medium or low temperature refrigerating units. They must be connected by means of a two-wire cable (∅ 1mm) at a distance of up to 30 meters to the keyboards **T820** or **T821**. They are provided with six relay outputs to control compressor, defrost - which can be either electrical or hot gas - the evaporator fans, the lights, the alarm and an auxiliary output. In **XW271L** the auxiliary output is configured as anti-condensing heater.
They are also provided with three NTC probe inputs, one for temperature control, one to control the defrost end temperature of the evaporator and the third, optional, for the display. There are two digital inputs (free contact) for the door switch and configurable by parameter.
The standard TTL output allows the user to connect, by means of a TTL/RS485 external module, a **ModBUS-RTU** compatible monitoring system and to programme the parameter list with the **"Hot Key"**. An optional output for **RS485** direct is available.

3. CONTROLLING LOADS

3.1 THE 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 "**COn**" and "**COF**".

3.2 FAST FREEZING

When defrost is not in progress, it can be activated the keypad by holding the **è** key pressed for about 3 seconds. The compressor operates in continuous mode 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, **è** for about 3 seconds.

3.3 DEFROST

Three defrost modes are available through the "**tdF**" parameter: defrost with electrical heater, hot gas or thermostatic defrost. The defrost interval is control by means of parameter "**EdF**": (EdF=in) the defrost is made every "**IdF**" time, (EdF=Sd) the interval "IdF" is calculate through Smart Defrost algorithm (only when the compressor is ON and the evaporator temperature is bigger than "SdF" parameter). At the end of defrost the drip time is controlled through the "**Fdt**" parameter.

3.4 CONTROL OF EVAPORATOR FANS

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

C-n = running with the compressor, OFF during the defrost;
C-y = running with the compressor, ON during the defrost;
O-n = continuous mode, OFF during the defrost;
O-y = continuous mode, ON during the defrost;

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

3.5 AUXILIARY OUTPUT

The auxiliary output is switch ON and OFF by means of the corresponding button on the keyboard.
The auxiliary output of the **XW271K** model controls the anti-condensing heater and it is automatically activated if the room temperature is lower than the "**SAA**" parameter.

4. KEYBOARD



To display and modify target set point; in programming mode it selects a parameter or confirm an operation.
By holding it pressed for 3s when max or min temperature is displayed it will be erased.

To see the max. stored temperature; in programming mode it browses the parameter codes or increases the displayed value. By holding it pressed for 3s the fast freezing cycle is started.
To see the min stored temperature; 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 cold room light.

By holding it pressed for 3s Energy Saving function is started or stopped.

Present in **T820** Keyboard (for connection to **XW270K**).
Switch ON and OFF the auxiliary output.

Present in **T821** Keyboard (for connection to **XW271K**).
Switch ON and OFF the anti-condensing heater output.

Switch ON and OFF the instrument.

KEY COMBINATIONS

To lock and unlock the keyboard.

To enter the programming mode.

To exit the programming mode.

4.1 USE OF LEDS

Each LED function is described in the following table.

LED	MODE	Function
	ON	The compressor is running
	FLASHING	- Programming Phase (flashing with LED) - Anti-short cycle delay enabled
	ON	The fan is running
	FLASHING	Programming Phase (flashing with LED)
	ON	The defrost is enabled
	FLASHING	Drip time in progress
	ON	The Fast Freezing cycle is enabled
	ON	- ALARM signal - In "Pr2" indicates that the parameter is also present in "Pr1"
	ON	(Present only in **T821** keyboard) The Anti-condensing heater relay (Aux) is ON.

Function of the LEDs placed on the left top side of buttons:

BUTTON	MODE	FUNCTION
SET	FLASHING	The Set point is displayed and it can be modified
DEFROST	ON	The Manual Defrost is activated
ENERGY SAVING	ON	The Energy Saving is enabled
LIGHT	ON	The Light is ON
AUX	ON	The Auxiliary output is ON (**T820**)
HEATER	ON	The Anti-condensing heater is ON (**T821**)
ON/OFF	ON	The instrument is OFF

4.2 HOW TO SEE THE MIN TEMPERATURE

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

4.3 HOW TO SEE THE MAX TEMPERATURE

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

4.4 HOW TO RESET THE MAX AND MIN TEMPERATURE RECORDED

To reset the stored temperature, when max or min temperature is displayed :
1. Press SET key until "rST" label starts blinking.

N.B. After the installation RESET the temperature stored .

4.5 HOW TO SEE AND MODIFY THE SET POINT

1. Push and immediately release the **SET** key: the display will show the Set point value;
2. The SET LED start blinking;
3. To change the Set value push the **è** or **à** arrows within 10s.
4. To memorise the new set point value push the **SET** key again or wait 10s.

4.6 TO START A MANUAL DEFROST

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

4.7 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 and DOWN key for few seconds (and start blinking).
2. The instrument will show the first parameter present in "Pr1"

4.8 TO ENTER IN PARAMETERS LIST "PR2"

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

Another possibility is the following: after switching ON the instrument the user can push Set and DOWN keys within 30 seconds.

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

4.9 HOW TO CHANGE THE PARAMETER VALUE

1. Enter the Programming mode.
2. Select the required parameter with **è** or **à** .
3. Press the "**SET**" key to display its value (and LED starts blinking).
4. Use **è** or **à** to change its value.
5. 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 new programming is stored even when the procedure is exited by waiting the time-out.

4.10 HOW TO LOCK THE KEYBOARD

1. Keep the **è** and **à** keys pressed together for more than 3 s the **è** and **à** 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 **è** and **à** keys pressed together for more than 3s.

4.11 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; if a monitoring system is connected, it does not record the instrument data and alarms.
N.B. During the OFF status the Light and AUX buttons are active.

4.12 TO SEE THE PROBE VALUES

1. Enter in "**Pr2**" level.
2. Select "**Prd**" parameter with **è** or **à** .
3. Press the "**SET**" key to display "**Pb1**" label alternate with Pb1 value.
4. Use **è** and **à** keys to display the other probe values.
5. Press "**SET**" to move to the following parameter.

5. PARAMETER LIST

REGULATION

Hy **Differential:** (0,1÷25,5°C; 1÷45°F): Intervention differential for set point, always positive. Compressor Cut IN is Set Point Plus Differential (Hy). Compressor Cut OUT is when the temperature reaches the set point.
LS **Minimum set point limit:** (-50,0°C÷SET; -58°F÷SET) Sets the minimum acceptable value for the set point.
US **Maximum 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. (AUX and Light can work)
AC **Anti-short cycle delay:** (0÷30 min) interval between the compressor stop and the following restart.
CCt **Thermostat override:** (0min ÷23h 50min) allows to set the length of the continuous cycle. Can be used, for instance, when the room is filled with new products.
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 . When the measurement unit is changed the SET point and the values of the regulation parameters have to be modified
rES **Resolution (for °C):** (in = 1°C; de = 0,1°C) allows decimal point display.
de = 0,1°C
in = 1 °C
Red **Remote display :** select which probe is displayed by the remote display (**T820** or **T821**)
P1 = Thermostat probe
P2 = Evaporator probe
P3 = auxiliary probe
1r2 = difference between P1 and P2 (P1-P2)

DEFROST

tdF **Defrost type:**
rE = electrical heater (Compressor OFF)
rT = thermostat defrost. During the defrost time "MdF", the heater switches On and OFF depending on the evaporator temperature and "dtE" value.
in = hot gas (Compressor and defrost relays ON)
EdF **Defrost mode:**
in = **interval mode**. The defrost starts when the time "**Idf**" is expired.
Sd = **Smartfrost mode**. The time IdF (interval between defrosts) is increased only when the compressor is running (even non consecutively) and only if the evaporator temperature is less than the value in "**SdF**" (set point for SMARTFROST).
SdF **Set point for SMARTFROST**: (-30÷30 °C/ -22÷86 °F) evaporator temperature which allows the IdF counting (interval between defrosts) in SMARTFROST mode.
dtE **Defrost termination temperature:** (-50,0÷110,0°C; -58÷230°F) (Enabled only when the evaporator probe is present) sets the temperature measured by the evaporator probe which causes the end of defrost.
IdF **Interval between defrosts:** (1÷120h) Determines the time interval between the beginning of two defrost cycles.
MdF **(Maximum) 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.
Fdt **Drain down time:** (0÷60 min.) time interval between reaching defrost termination temperature and the restoring of the control's normal operation. This time allows the evaporator to eliminate water drops that might have formed due to defrost.
dPO **First defrost after start-up:**
y = Immediately;
n = after the IdF time
dAF **Defrost delay after fast freezing:** (0min÷23h 50min) after a Fast Freezing cycle, the first defrost will be delayed for this time.

FANS

FnC **Fan operating mode:**
C-n = running with the compressor, OFF during the defrost;
C-y = running with the compressor, ON during the defrost;
O-n = continuous mode, OFF during the defrost;
O-y = continuous mode, ON during the defrost;
Fnd **Fan delay after defrost:** (0÷255 min) The time interval between the defrost end and evaporator fans start.
FSt **Fan stop temperature:** (-50÷110°C; -58÷230°F) setting of temperature, detected by evaporator probe, above which the fan is always OFF.

ALARMS

ALC **Temperature alarm configuration**
rE = High and Low alarms related to Set Point
Ab = High and low alarms related to the absolute temperature.
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.
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,.
AFH **Temperature alarm and fan differential:** (0,1÷25,5°C; 1÷45°F) Intervention differential for temperature alarm set point and fan regulation set point, always positive.
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.
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.
tbA **Buzzer and alarm relay silencing:** by pushing one of the keypad buttons.
n= Only the Buzzer is silenced;
y= Buzzer and relay are silenced.
nPS **Pressure switch number:** (0 ÷15) Number of activation of the pressure switch, during the "**did**" interval, before signalling the alarm event (I2F=PAL).

PROBE INPUTS

Ot **Thermostat probe calibration:** (-12.0÷12.0°C/ -21÷21°F) allows to adjust possible offset of the thermostat probe.
OE **Evaporator probe calibration:** (-12.0÷12.0°C/ -21÷21°F) allows to adjust possible offsets of the evaporator probe.
O3 **Auxiliary probe calibration:** (-12.0÷12.0°C/ -21÷21°F) allows to adjust possible offsets of the evaporator probe.
P2P **Evaporator probe presence:**
n= not present: the defrost stops only by time; **y**= present: the defrost stops by temperature and time.
P3P **Auxiliary probe presence:** **n**= not present; **y**= present.
HES **Temperature increase during the Energy Saving cycle :** (-30,0°C ÷ 30,0°C / -22÷86°F) sets the increasing value of the set point during the Energy Saving cycle.

DIGITAL INPUTS

odc **Compressor and fan status when open door:**
no = normal;
Fan = Fan OFF;
CPr = Compressor OFF;
F_C = Compressor and fan OFF.
I1P **Door switch input polarity:**
CL : the digital input is activated by closing the contact;
OP : the digital input is activated by opening the contact.
I2P **Configurable digital input polarity:**
CL : the digital input is activated by closing the contact;
OP : the digital input is activated by opening the contact
I2F **Digital input operating mode:** configure the digital input function:
EAL = generic alarm;
bAL = serious alarm mode;
PAL = Pressure switch;
dFr = Start defrost;
AUS = Relay AUX actuation;
Es = Energy Saving;
onF = remote On/OFF.
did **Time interval/delay for digital input alarm:**(0÷255 min.) Time interval to calculate the number of the pressure switch activation when I2F=PAL. If I2F=EAL or bAL (external alarms), "did" parameter defines the time delay between the detection and the successive signalling of the alarm.
SAA **Set Point for anti-condensing heater:** (-50,0÷110,0°C; -58÷230°F) defines the room temperature setpoint to switch on the anti-condensing heater.

OTHER

Adr **RS485 serial address** (1÷247)**:** Identifies the instrument address when connected to a ModBUS compatible monitoring system.
Rel **Release software:** (read only) Software version of the microprocessor.
Ptb **Parameter table:** (read only) it shows the original code of the dIXEL parameter map.
Prd **Probes display:** (read only) display the temperature values of the evaporator probe Pb2 and the auxiliary probe Pb3.
Pr2 **Access to the protected parameter list** (read only).

6. DIGITAL INPUTS

The Wing series can support up to 2 free contact digital inputs. One is always configured as door switch, the second is programmable in seven different configurations by the "**I2F**" parameter.

6.1 DOOR SWITCH INPUT

It signals the door status and the corresponding relay output status through the "**odc**" 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 "**dOA**", the alarm output is enabled and the display shows the message "**dA**". The alarm stops as soon as the external digital input is disabled again. During this time and then for the delay "**dot**" after closing the door, the high and low temperature alarms are disabled.

6.2 CONFIGURABLE INPUT - GENERIC ALARM (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.

6.3 CONFIGURABLE INPUT - SERIOUS ALARM MODE (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.

6.4 CONFIGURABLE INPUT - PRESSURE SWITCH (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.

6.5 CONFIGURABLE INPUT - START DEFROST (DFR)

It executes 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.

6.6 CONFIGURABLE INPUT - RELAY AUX ACTUATION (AUS)

This function allows to turn ON and OFF the auxiliary relay by using the digital input as external switch.

6.7 CONFIGURABLE INPUT - ENERGY SAVING (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.

6.8 CONFIGURABLE INPUT - REMOTE ON/OFF (ONF)

This function allows to switch ON and OFF the instrument.

6.9 DIGITAL INPUTS POLARITY

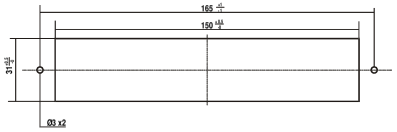
The digital inputs polarity depends on "**I1P**" and "**I2P**" parameters.

CL : the digital input is activated by closing the contact.
OP : the digital input is activated by opening the contact

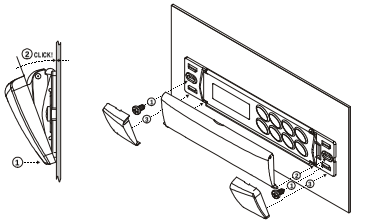
7. INSTALLATION AND MOUNTING

T820 and **T821** keyboards 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). Power modules **XW270K** and **XW271K** shall be mounted in a panel with two or more screws and they must be connected to the keyboards by means of a two-wire cable (∅ 1mm). 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.

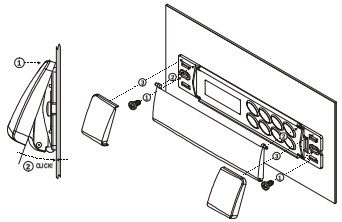
7.1 T820 AND T821 CUT OUT



7.2 MOUNTING WITH KEYBOARD COVER OPENING DOWNWARD



7.3 MOUNTING WITH KEYBOARD COVER OPENING UPWARD



8. ELECTRICAL CONNECTIONS

XW270K and **XW271K** are provided with screw terminal block to connect cables with a cross section up to 2,5 mm² for the RS485(optional) and the keyboard. Connecting other inputs, power supply and relays, **XW270K** and **XW271K** are provided with 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.

8.1 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. 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.

9. TTL/RS485 SERIAL LINE

The TTL connector allows, by means of the external module TTL/RS485 (**XJ485**), to connect the unit to a network line **ModBUS-RTU** compatible as the dIXEL monitoring system XJ500 (Version 3.0).
The same TTL connector is used to upload and download the parameter list of the "**HOT KEY**". The instruments can be ordered wit the serial output RS485(Optional).

10. USE OF THE PROGRAMMING "HOT KEY "

The Wing units can UPLOAD or DOWNLOAD the parameter list from its own E2 internal memory to the "**Hot Key**" and vice-versa.

10.1 DOWNLOAD (FROM THE "HOT KEY" TO THE INSTRUMENT)

1. Turn OFF the instrument by means of the ON/OFF key, remove the TTL serial cable if present, insert the "**Hot Key**" and then turn the Wing ON.
2. Automatically the parameter list of the "**Hot Key**" is downloaded into the Wing memory, the "**DoL**" message is blinking. After 10 seconds the instrument will restart working with the new parameters.
3. Turn OFF the instrument remove the "**Hot Key**", plug in the TTL serial cable, then turn it ON again.

At the end of the data transfer phase the instrument displays the following messages:

"**end** " for right programming.
The instrument starts regularly with the new programming.
"**err**" 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.

10.2 UPLOAD (FROM THE INSTRUMENT TO THE "HOT KEY")

1. Turn OFF the instrument by means of the ON/OFF key and remove the TTL serial cable if present; then turn it ON again.
2. When the Wing unit is ON, insert the "**Hot key**" and push è key; the "**uPL**" message appears.
3. Push "**SET**" key to start the UPLOAD; the "**uPL**" message is blinking.
4. Turn OFF the instrument remove the "**Hot Key**", plug in the TTL serial cable, then turn it ON again.

At the end of the data transfer phase the instrument displays the following messages:

"**end** " for right programming.
"**err**" for failed programming. In this case push "SET" key if you want to restart the programming again or remove the not programmed "**Hot key**".

11. ALARM SIGNALS

Message	Cause	Outputs
"P1"	Thermostat probe failure	Alarm output ON; Compressor output according to parameters "COn" and "COF"
"P2"	Evaporator probe failure	Alarm output ON; Other outputs unchanged
"P3"	Auxiliary probe failure	Alarm output ON; Other outputs unchanged
"HA"	Maximum temperature alarm	Alarm output ON; Other outputs unchanged
"LA"	Minimum temperature alarm	Alarm output ON; Other outputs unchanged
"EE"	Data or memory failure	Alarm output ON; Other outputs unchanged
"dA"	Door switch alarm	Alarm output ON; Other outputs unchanged
"EAL"	External alarm	Alarm output ON; Other outputs unchanged
"BAL"	Serious external alarm	Alarm output ON; Other outputs OFF
"PAL"	Pressure switch alarm	Alarm output ON; Other outputs OFF

The alarm message is displayed until the alarm condition is recovery.

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 / ALARM RELAY OUTPUT

If "**tbA = y**", once the alarm signal is detected the buzzer and the relay are is silenced by pressing any key.
If "**tbA = n**", only the buzzer is silenced while the alarm relay is on until the alarm condition recovers.
Buzzer is mounted in the **T820** and **T821** keyboards and it is an option.

11.2 "EE" ALARM

The dIXEL instruments are provided with an internal check for the data integrity. Alarm "EE" flashes when a failure in the memory data occurs. In such cases the alarm output is enabled.

11.3 ALARM RECOVERY

Probe alarms : "**P1**" (probe1 faulty), "**P2**" and "**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.
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 "**PAL**" alarm is recovered by switching OFF the instrument.

12. TECHNICAL DATA

T820 and T821 keyboards
Housing: self extinguishing ABS.
Case: facia 38x185 mm; depth 23mm
Mounting :
panel mounting in a 150x31 mm panel cut-out with two screws. ∅ 3 x 2mm. Distance between the holes 165mm
Protection: IP20.
Frontal protection: IP65 with frontal gasket mod RG-L. (optional)
Connections: Screw terminal block ≤ 2,5 mm² heat-resistant wiring and 6,3mm
Power supply: from **XW270K or XW271K** power module
Display: 3 digits, red LED, 14,2 mm high.
Optional output: buzzer

Power modules XW270K and XW271K
Case:
"**OS**": open board 132x 94 mm; height: 40mm.
"**OA**": open board with aluminium protection 176x 123mm; height: 52mm.
"**GS**": case 155x114; height 70mm. Self extinguishing ABS. IP55
"**PS**": case 147x110; height 47mm. Self extinguishing ABS. IP55. UL approved
Connections: Screw terminal block ≤ 2,5 mm² heat-resistant wiring and 6,3mm Faston
Power supply: 230Vac or. 110Vac ± 10%
Power absorption: 10VA max.
Inputs: 3 NTC probes
Digital inputs: 2 free voltage
Relay outputs: ***Total current on loads MAX. 20A***
compressor: relay SPST 20(8) A, 250Vac
light: relay SPST 16(3) A, 250Vac
fans: relay SPST 8(3) A, 250Vac
defrost: relay SPST 8(3) A, 250Vac
alarm: SPST relay 8(3) A, 250Vac
auxiliary (XW270K): SPST relay 16(3) A, 250Vac
heater (XW271K): SPST relay 16(3) A, 250Vac
Serial output : TTL standard. RS485 optional
Communication protocol: Modbus - RTU
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. CONNECTIONS

13.1 XW270K / XW271K

T821 Keyboard



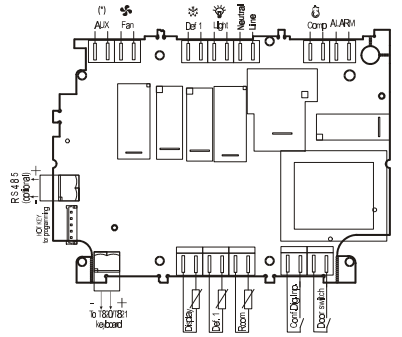
To XW271K

T820 Keyboard



To XW270K

(*) In XW271L, AUX is an anticondensing heater



Connector number	Description	Connector number	Description
HOT KEY	Hot key for programming	11 - 12	Alarm relay
RS485 (Optional)	RS485 direct output	13 - 14	Compressor relay
KEY (+)	+ :connection for keyboard	15	Phase
KEY (-)	- : connection for keyboard	16	Neutral
1 – 2	Display probe	17 - 18	Light relay
3 - 4	Defrost probe	19 - 20	Defrost relay
5 - 6	Room probe	21 - 22	Fan relay
7 - 8	Configurable digital input	18 -19	Auxiliary relay
9 - 10	Door switch		

14. DEFAULT SETTING VALUES

Label	Name	Range	Default	Level	
	REGULATION		°C/°F	XW270K	XW271K
Set	Set point	LS÷ US	-5/23	Pr1	Pr1
Hy	Differential	0,1÷25,5 °C 1÷45°F	2/4	Pr1	Pr1
LS	Minimum set point	-50,0°C÷SET -58°F÷SET	-30/-22	Pr2	Pr2
US	Maximum set point	SET ÷ 110°C SET ÷ 230°F	20/68	Pr2	Pr2
OdS	Outputs activation delay at start up	0÷255 min.	1	Pr2	Pr2
AC	Anti-short cycle delay	0÷30 min.	1	Pr1	Pr1
CCt	Compressor ON time during fast freezing	0 ÷ 23h 50 min.	0	Pr2	Pr2
COn	Compressor ON time with faulty probe	0÷255 min.	15	Pr2	Pr2
COF	Compressor OFF time with faulty probe	0÷255 min.	30	Pr2	Pr2
	DISPLAY				
CF	Temperature measurement unit	°C ÷ °F	°C/°F	Pr2	Pr2
rES	Resolution (integer/decimal point)	in ÷ de	de	Pr1	Pr1
Lod	Local display	P1 ÷ 1r2	P1	Pr2	Pr2
Red	Remote display	P1 ÷ 1r2		Pr2	Pr2
	DEFROST				
tdF	Defrost type	rE, rT, in	rE	Pr1	Pr1
EdF	Defrost mode	In, Sd	In	Pr2	Pr2
SdF	Set point for SMART DEFROST	-30 ÷ +30°C -22÷+86°F	0	Pr2	Pr2
dtE	Defrost termination temperature (1°Evaporator)	-50,0÷110°C -58÷230°F	8/46	Pr1	Pr1
IdF	Interval between defrost cycles	1÷120h	6	Pr1	Pr1
MdF	(Maximum) length for 1° defrost	0÷255 min.	30	Pr1	Pr1
dFd	Displaying during defrost	rt, it, SEt, dEF, dEG	it	Pr2	Pr2
dAd	MAX display delay after defrost	0÷255 min.	30	Pr2	Pr2
Fdt	Draining time	0÷60 min.	0	Pr2	Pr2
dPO	First defrost after start up	n ÷ y	n	Pr2	Pr2
dAF	Defrost delay after fast freezing	0 ÷ 23h 50 min.	2	Pr2	Pr2
	FANS				
FnC	Fans operating mode	C-n, C-y, O-n, O-y	O-n	Pr2	Pr2
Fnd	Fans delay after defrost	0÷255 min.	10	Pr2	Pr2
FSt	Fans stop temperature	-50,0÷110°C -58÷230°F	2/35	Pr2	Pr2
	ALARMS				
ALC	Temperature alarms configuration	rE÷Ab	rE	Pr2	Pr2
ALU	MAXIMUM temperature alarm	-50,0÷110°C -58÷230°F	10/20	Pr1	Pr1
ALL	minimum temperature alarm	-50,0÷110°C -58÷230°F	10/20	Pr1	Pr1
AFH	Temperature alarm and fan differential	0,1÷25,5 °C 1÷45°F	2/4		
ALd	Temperature alarm delay	0÷255 min.	15	Pr2	Pr2
dAO	Delay of temperature alarm at start up	0 ÷ 23h 50 min.	1,3	Pr2	Pr2
EdA	Alarm delay at the end of defrost	0÷255 min.	30	Pr2	Pr2
dot	Delay of temperature alarm after closing the door	0÷255 min.	15	Pr2	Pr2
dOA	Open door alarm delay	0÷255 min.	15	Pr2	Pr2
tBA	Alarm relay silencing	y ÷ n	y	Pr2	Pr2
nPS	Pressure switch activation number	0÷15	0	Pr2	Pr2
	ANALOGUE INPUTS				
Ot	Thermostat probe calibration	-12,0÷12,0°C -21÷21°F	0	Pr1	Pr1
OE	Evaporator probe calibration	-12,0÷12,0°C -21÷21°F	0	Pr2	Pr2
O3	Auxiliary probe calibration	-12,0÷12,0°C -21÷21°F	0	Pr2	Pr2
P2P	Evaporator probe presence	n ÷ y	y	Pr2	Pr2
P3P	Auxiliary probe presence	n ÷ y	n	Pr2	Pr2
HES	Temperature increase during the Energy Saving cycle	-30÷30°C -22÷86°F	0	Pr2	Pr2
	DIGITAL INPUTS				
Odc	Open door control	no, Fan, CPr, F_C	Fan	Pr2	Pr2
I1P	Door switch polarity	CL÷OP	CL	Pr2	Pr2
I2P	Configurable digital input polarity	CL÷OP	CL	Pr2	Pr2
i2F	Digital input configuration	EAL, bAL, PAL, dFr, AUS, ES, OnF	EAL	Pr2	Pr2
dId	Digital input alarm delay	0÷255 min.	5	Pr2	Pr2
SAA	Set point for anti-condensing heater	-50,0÷110°C -58÷230°F	-20.0/4	- - -	Pr2
	OTHER				
Adr	Serial address	0÷247	1	Pr1	Pr1
rEL	Software release	- - -	1.0	Pr2	Pr2
Ptb	Map code	- - -	- - -	Pr2	Pr2
Prd	Probes display	Pb1÷Pb3	- - -	Pr2	Pr2
Pr2	Access parameter list	- - -	- - -	Pr2	Pr2
			- - -		

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