CLASSIC
DELI/PAstry/CHOCOLATE

MAINTENANCE
AND USER MANUAL

OSCARTÉK
1441 Rollins Road
Burlingame, CA 94010
Tel: 855.885.2400 | 650.342.2400
Fax: 650.342.7400
www.oscartek.com
sales@oscartek.com
1. GENERAL INFORMATION

This documentation is edited in compliance with that defined in point 1.7.2 of Directive EC 37/98 concerning the approximation of laws of the Member States relating to machinery. The content of this manual is of a strictly technical nature and is the property of Oscartek, it is therefore forbidden to reproduce, reveal or modify, partially or completely, its content without written authorisation. Any infringement will be legally pursued.

1.1 Warnings for the purchaser

The manual, as well as the EC certificate of conformity, is an integrating part of the machine and must accompany it always, whether it is transferred or resold. It is up to the user to keep all the documentation intact for consultation, during the machine entire life-span. In case of loss or destruction, it is possible to request a copy from Oscartek specifying the exact model, serial number and year of manufacture. The manual reflects the technical state at the time of supply. The writing company reserves the right to make any amendments to its products it sees fit, without having to update manuals and plants relating to previous production batches. The manufacturing company declines any responsibility for production anomalies and damages caused by the machine to things, persons and animals occurred in the following cases:

- Improper use of the plant or use on behalf of unsuitable or unauthorised personnel
- Power supply defects
- Insufficient or lack of periodic maintenance
- Amendments or interventions not agreed and authorised by the manufacturer
- Use of unoriginal spare parts or not specific for the model
- The total or partial non compliance with these instructions

The responsibility for applying the safety prescriptions reported below is of the technical personnel responsible for the activities on the machine, who must ascertain that the authorised personnel:

- is trained to carry out the requested activity
- is aware of and scrupulously observes the prescriptions contained in this document
- is aware of and applies the general safety regulations to the machine.

The non compliance with the safety regulations can cause injuries to personnel and damage the components and control unit of the machine. The comprehensive reading of this manual cannot, in any case, replace an adequate experience of the operators. The user can, at any time, contact the dealer to request information additional to that contained herewith, as well as signal any improvement proposals.
1.2 Introduction

Oscartek has always used top quality materials and their introduction in the company, their storage and their production use is constantly controlled in order to guarantee there are no damages, deteriorations and malfunctionings.
All the constructive elements have been designed and built to guarantee a high safety and reliability standard.
All the display cabinets are submitted to rigid tests before being delivered. However, a good performance in time of the purchased product, depends on the correct use and an adequate maintenance.
We therefore invite you to scrupulously read this manual containing the necessary indications to maintain the aesthetic and functioning features of your display cabinet unaltered.

NOTE

IN ORDER NOT TO COMPROMISE THE FUNCTIONING AND SAFETY OF THE MACHINE, INSTALLATION AND PARTICULARLY COMPLEX MAINTENANCE ARE NOT DOCUMENTED IN THIS MANUAL AND ARE CARRIED OUT BY THE WRITING COMPANY SPECIALISED TECHNICIANS

The use and maintenance manual contains the necessary information to comprehend the functioning modalities of the machine and the correct use of the same, in particular: the technical description of the various functioning groups, appliances and safety systems, functioning, use of instruments and interpretation of any diagnostic signals, main procedures and information relating to routine maintenance interventions.
For the correct use of the machine it is necessary that the work environment is in compliance with the safety and hygiene regulations in force.

WARNING

BEFORE USING THE MACHINE, THE INSTALLERS AND USERS MUST READ AND COMPREHEND ALL THE INSTRUCTIONS CONTAINED HEREWITH.

1.3 Manufacturer’s address

OSCARTEK
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www.oscartek.com | sales@oscartek.com

INSTRUCTIONS FOR REQUESTING INTERVENTIONS

For assistance, the user must contact the dealer from whom he has purchased the appliance. The writing company is always at the disposal of the Client for any requests of information or clarification relating to the use, maintenance, installation, etc., via e-mail address: sales@oscartek.com
1.4 Safety regulations in the manual

The purpose of the prescriptions, indications, regulations and respective safety notes described in the various chapters of the manual, is that to define a series of behaviours and obligations to be complied with when carrying out the various activities, in order to operate in safe conditions for personnel, appliance and surrounding environment. The reported safety regulations are aimed at the authorised and trained personnel commissioned to carry out the various activities and operations of:
- transport
- installation
- functioning
- handling use
- maintenance
- cleaning
- decommissioning and dismantling which constitute the only use modalities provided for the machine in question.

**ATTENTION**

THE COMPREHENSIVE READING OF THIS MANUAL CANNOT, IN ANY CASE, REPLACE AN ADEQUATE EXPERIENCE OF THE USER, THEREFORE CONSTITUTING ONLY A USEFUL REMINDER OF THE TECHNICAL FEATURES AND THE MAIN OPERATIONS TO BE FULFILLED.

1.5 Symbols used

Certain symbols are used in the manual to recall the readers’ attention and highlight certain particularly important aspects of the treatment.

The following table describes the meaning of the different symbols used.

<table>
<thead>
<tr>
<th>SYMBOL</th>
<th>MEANING</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="danger.png" alt="Danger" /></td>
<td>Danger</td>
<td>Indicates a danger with risk of injury, even death, for the user. Pay maximum attention to the blocks of text indicated by this symbol.</td>
</tr>
<tr>
<td><img src="attention.png" alt="Attention" /></td>
<td>Attention</td>
<td>Represents a warning of possible deterioration or damage to the machine, appliance or another personal object of the user. Pay maximum attention to the blocks of text indicated by this symbol.</td>
</tr>
<tr>
<td><img src="warning.png" alt="Warning" /></td>
<td>Warning Note</td>
<td>Indicates a warning or a note on the key functions or useful information. Pay maximum attention to the blocks of text indicated by this symbol.</td>
</tr>
<tr>
<td><img src="supplementary.png" alt="Supplementary information" /></td>
<td>Supplementary information</td>
<td>The blocks of text which contain complementary information are introduced by this symbol. This information has no direct relation with the description of a function or the development of a procedure. They can be cross-referenced to other complementary documentation, such as attached use instructions manuals, technical documents or to other sections of this manual.</td>
</tr>
<tr>
<td><img src="damaging.png" alt="Avoid damaging the material" /></td>
<td>Avoid damaging the material</td>
<td>Indication relating to a strong risk of damaging a piece, for example by using a wrong tool or mounting following an incorrect procedure.</td>
</tr>
<tr>
<td><img src="special.png" alt="Special tool" /></td>
<td>Special tool</td>
<td>Indicates that the use of a tool or special appliance is effectively necessary.</td>
</tr>
<tr>
<td><img src="visual.png" alt="Visual observation" /></td>
<td>Visual observation</td>
<td>Indicates to the reader that he must proceed to a visual observation. This symbol is also found in the use instructions. It is requested that the user reads a measuring value, checks a signal, etc.</td>
</tr>
<tr>
<td><img src="auditory.png" alt="Auditory observation" /></td>
<td>Auditory observation</td>
<td>Indicates to the reader that he must proceed to an auditory observation. This symbol is also found in the use instructions. It is requested that the user listens to a functioning noise.</td>
</tr>
</tbody>
</table>
2. DIMENSIONAL SIZES AND TECHNICAL SPECIFICATIONS

2.1 USE DESTINATION

This refrigerating equipment is exclusively enabled for the display and sale of confectionery and delicatessen products. It is also possible to display small sized packaged dairy products and sliced packaged cold cuts, positioned in such a way not to exceed the load limits indicated in the manual. The manufacturer does not answer for damages caused to things, persons or the same equipment due to product preservation different to that specified above.

2.2 Equipment dimensions

2.2.1 Series 900

The sizes highlighted in the following two paragraphs represent, respectively: \( H_p \) = plate height - \( H_s \) = service counter height - \( H_t \) = total height - \( P \) = depth display cabinet - \( L \) = length display cabinet - \( P_1 \) = depth shaped display cabinet - \( L_4 \) = length rear side - \( L_1 \) - \( L_3 \) = length front oblique sides - \( L_2 \) = length front side - \( P_2 \) = depth spherical display cabinet - \( R \) = display cabinet radius.

Unable to insert all codes present in the catalogue in the following table, the products have been grouped together in families which completely represent, with regard to dimensional features, the entire range with that code. As an example, considering the family with codes "V9C1.....150", they have the same dimensional features as:

- V9C1FLRS150 - V9C1MNR5150 - V9C1PLRS150F1 - V9C1PLRS150F2 -
- V9C1FLR150 - V9C1MRV150 - V9C1PLRV150F1 - V9C1PLRV150F2

<table>
<thead>
<tr>
<th>MODEL</th>
<th>LINEAR</th>
<th>SHAPED ANGLE</th>
<th>SPHERICAL ANGLE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( P ) (mm)</td>
<td>( L ) (mm)</td>
<td>( H_p ) (mm)</td>
</tr>
<tr>
<td>V9C1.....100</td>
<td>956</td>
<td>1000</td>
<td>799</td>
</tr>
<tr>
<td>V9C1.....100</td>
<td>956</td>
<td>1000</td>
<td>799</td>
</tr>
<tr>
<td>V9C1.....100</td>
<td>956</td>
<td>1500</td>
<td>799</td>
</tr>
<tr>
<td>V9C1.....100</td>
<td>956</td>
<td>1500</td>
<td>799</td>
</tr>
<tr>
<td>V9C1.....100</td>
<td>956</td>
<td>2000</td>
<td>799</td>
</tr>
<tr>
<td>V9C1.....100</td>
<td>956</td>
<td>2000</td>
<td>799</td>
</tr>
<tr>
<td>V9C1.....250</td>
<td>966</td>
<td>2500</td>
<td>799</td>
</tr>
<tr>
<td>V9C1.....300</td>
<td>966</td>
<td>3000</td>
<td>799</td>
</tr>
<tr>
<td>V9C1.....Ap90</td>
<td>-</td>
<td>-</td>
<td>799</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MODEL</th>
<th>LINEAR</th>
<th>SHAPED ANGLE</th>
<th>SPHERICAL ANGLE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( P ) (mm)</td>
<td>( L ) (mm)</td>
<td>( H_p ) (mm)</td>
</tr>
<tr>
<td>V9F(V)(R) C1 10</td>
<td>924</td>
<td>1000</td>
<td>790</td>
</tr>
<tr>
<td>V9F(V)(R) C1 CE 10</td>
<td>954</td>
<td>1000</td>
<td>790</td>
</tr>
<tr>
<td>V9F(V)(R) C1 15</td>
<td>924</td>
<td>1500</td>
<td>790</td>
</tr>
<tr>
<td>V9F(V)(R) C1 CE 15</td>
<td>954</td>
<td>1500</td>
<td>790</td>
</tr>
<tr>
<td>V9F(V)(R) C1 20</td>
<td>924</td>
<td>2000</td>
<td>790</td>
</tr>
<tr>
<td>V9F(V)(R) C1 CE 20</td>
<td>954</td>
<td>2000</td>
<td>790</td>
</tr>
<tr>
<td>V9F(V)(R) C1 25</td>
<td>924</td>
<td>2500</td>
<td>790</td>
</tr>
<tr>
<td>V9F(V)(R) C1 CE 25</td>
<td>954</td>
<td>2500</td>
<td>790</td>
</tr>
<tr>
<td>V9F(V)(R) C1 30</td>
<td>924</td>
<td>3000</td>
<td>790</td>
</tr>
<tr>
<td>V9F(V)(R) C1 Ap90</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
2.2.2 Series 750

<table>
<thead>
<tr>
<th>MODEL</th>
<th>LINEAR</th>
<th>SHAPED ANGLE</th>
<th>ROUND ANGLE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>P (mm)</td>
<td>P (mm)</td>
<td>P (mm)</td>
</tr>
<tr>
<td>V7A1....100</td>
<td>816</td>
<td>1000</td>
<td>789</td>
</tr>
<tr>
<td>V7A1....150</td>
<td>816</td>
<td>1500</td>
<td>789</td>
</tr>
<tr>
<td>V7A1....200</td>
<td>816</td>
<td>2500</td>
<td>789</td>
</tr>
<tr>
<td>V7A1....250</td>
<td>816</td>
<td>2500</td>
<td>789</td>
</tr>
<tr>
<td>V7A1....300</td>
<td>816</td>
<td>3000</td>
<td>789</td>
</tr>
<tr>
<td>V7A1....AP90</td>
<td>-</td>
<td>-</td>
<td>789</td>
</tr>
<tr>
<td>V7A2....100</td>
<td>816</td>
<td>1000</td>
<td>609</td>
</tr>
<tr>
<td>V7A2....150</td>
<td>816</td>
<td>1500</td>
<td>609</td>
</tr>
<tr>
<td>V7A2....200</td>
<td>816</td>
<td>2000</td>
<td>609</td>
</tr>
<tr>
<td>V7A2....250</td>
<td>816</td>
<td>2500</td>
<td>609</td>
</tr>
<tr>
<td>V7A2....300</td>
<td>816</td>
<td>3000</td>
<td>609</td>
</tr>
<tr>
<td>V7A2....AP90</td>
<td>-</td>
<td>-</td>
<td>609</td>
</tr>
</tbody>
</table>

2.3 LOAD LIMITS

It is necessary to observe the following rules when stocking the display cabinet:

- arrange the product evenly, avoiding empty areas
- arrange the product so as not to exceed the load limit provided (see drawings following page).

**WARNING**

IT IS FUNDAMENTAL NOT TO EXCEED THE LIMIT PROVIDED IN ORDER NOT TO ALTER THE CORRECT AIR CIRCULATION AND THEREFORE AVOID A HIGHER PRODUCT TEMPERATURE AND A POSSIBLE RISK OF ICE BLOCKS FORMING ON THE EVAPORATOR.

- It is recommended to rotate the products, using those which have been in the display cabinet longer.

**WARNING**

CERTAIN CONFECTIONERY PRODUCTS, ESPECIALLY THOSE GARNISHED WITH CREAM OR CUSTARD, WITH THE PASSING OF TIME, ARE SUBJECT TO DETERIORATION. REMEMBER THAT THE DISPLAY CABINET IS A SELLING DISPLAY AND NOT FOR PRESERVATION!
All the plate sections are reported in the following figure. The part highlighted with a dark line represents the area in which the refrigerated product has to be placed.

**SERIES 900**

---

**STATIC**

---

**AIRED**

---

**SERIES 750**

---

**CLIENT SIDE**

---

**OPERATOR SIDE**

---

### 2.4 PIPING POSITION AND ELECTRIC CONTROL BOARD

<table>
<thead>
<tr>
<th></th>
<th>MODELS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100</td>
</tr>
<tr>
<td>Drain condensation outlet *</td>
<td>number</td>
</tr>
<tr>
<td>A (mm)</td>
<td>160</td>
</tr>
<tr>
<td>B (mm)</td>
<td>120</td>
</tr>
<tr>
<td>Refrigerating piping **</td>
<td>C (mm)</td>
</tr>
<tr>
<td>Electric power supply ***</td>
<td>D (mm)</td>
</tr>
</tbody>
</table>
* The drain (or drains) condensing outlet position is indicated in the drawings. Such drain is in PVC with one inch threading; already connected to a corrugated 75cm long flexible pipe with male terminal with 32mm connection.

** The point in which the two refrigerated plant pipes come out of the plate is indicated in the drawings (external diameter ø10mm for suction and ø6mm for liquids). In case the motor is not supplied or supplied disconnected, the pipes extend for about a meter inside the equipment compartment underneath the terminal board, always in correspondence of the indicated point.

*** The point of the terminal board in which the spider box is positioned and to which the general power supply of the same board arrives is indicated in the drawings; already connected three pole cable about 1.5m long with plug socket.

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** WARNING **

DO NOT CONFUSE THE OUTLET DIAMETERS OF THE REFRIGERATING PLANT PIPES (10MM FOR SUCTION AND 6MM FOR LIQUIDS) WITH THE DIMENSIONS OF THE PIPES WHICH NEED TO BE EXTENDED IN CASE OF INTERNAL CONDENSING UNIT.

IN SUCH CASE, THE PIPING SECTIONS WILL DEPEND UPON THE REQUESTED POWER, THE UNIT POSITION, ENVIRONMENTAL CONDITIONS, ETC.

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** IMPORTANT NOTE **

IN CASE OF EXTERNAL CONDENSING UNIT, IT IS RECOMMENDED TO CONTACT OSCARTEK TECHNICAL DEPARTMENT TO CORRECTLY PROPORTION THE ENTIRE PLANT.
2.5 Technical specifications
The following table reports the main technical features of the machine in question.

3.1 General description and functioning principles
Dear Client,
Oscartek, happy to include you amongst its clients, trusts that the appliance purchased by you fully satisfies your expectations.
For operator safety, the display cabinets’ devices must be kept constantly efficient.
For this purpose, this manual illustrates the use and maintenance of the display cabinet and it is the operators’ responsibility and duty to scrupulously comply with it.

3.2 Machine composition
The Series 750-900 Refrigerating Display Cabinets are constituted by an individual cabinet on which all the functional devices necessary to make it a professional and efficient product for its use destination are mounted on (see paragraph 2).
The series 750-900 refrigerated display cabinets are constituted by:

- a base frame in which a reserve refrigerated module can be inserted.
- a product containing plate (display cabinet)
- condensing unit group (if supplied with internal motor)
- electronic components group
- control board

In case the display cabinet is supplied with external condensing unit, apart from this one, an electric control board is supplied.
4. SAFETY

4.1 General information

The purchaser must train the users on the risk, safety devices and general accident prevention regulations provided by the EU Directives and the laws of the country where the display cabinet is installed.
The users/operators must be aware of the location and functioning of all controls and features of the machine.
They must have also fully read this manual.
The maintenance interventions must be carried out by qualified operators after having opportunely arranged the machine.

![DANGER]

THE TAMPERING WITH OR UNAUTHORISED REPLACEMENT OF ONE OR MORE PARTS OF THE MACHINE, THE ADOPTION OF ACCESSORIES WHICH MODIFY THE USE OF THE SAME AND THE USE OF SPARE PARTS MATERIALS DIFFERENT TO THOSE RECOMMENDED, CAN CAUSE INJURIES.

The equipment must always be disconnected from the mains before carrying out any type of intervention.
Interventions on electric parts or components of the refrigerating plant must be carried out by skilled personnel, in compliance with the regulations in force.

4.1.1 Personnel training.

![ATTENTION]

THE MACHINE IS DESTINED FOR PROFESSIONAL USE.

The purchaser must ensure that the personnel using the machine and the maintenance technician, are opportunely instructed and trained.
For this purpose, the manufacturer is available for suggestions, clarifications and whatever is necessary for the operator and technician to use the machine correctly.
The manufacturer can be contacted via e-mail: sales@oscartek.com

4.1.2 Applied Directives and technical reference regulations

The SERIES 750-900 Refrigerated Display Cabinets have been designed, manufactured and tested in compliance with the following EU Directives:

- Machinery Directive 98/37/EC regarding the approximation of laws of the Member States relating to the machines
- Low Voltage Directive 2006/95/EC (referred to the use of compliant material)

The reference regulations according to which the cabinet has been tested and certified are:

EN-ISO 23953; EN 60335-2-89; EN 61000-3-2; EN 61000-3-3; EN 55014.
ENVIRONMENTAL CLIMATIC CLASSES.

These cabinets have been processed in compliance with climatic class 4 (30°C; U.R. 55%):

It is excluded from the application field of Directive EEC 97/23 (PED) as it falls within Art.3, paragraph 3.

The risk analysis performed and the solutions implemented by Oscartek have allowed the removal of the majority of residual risks.

It is still obligatory to unconditionally stick to the instructions in this manual, which contain all necessary technical information for correct installation, commissioning, use and maintenance.

4.1.3 Machine Certification


The facsimile of the identification plaque placed on the machine and of the CE Declaration of Conformity now follow.

NOTE

ANY AMENDMENTS MADE TO THE MACHINE IMMEDIATELY VOIDS ALL CE CERTIFICATION. IN THIS CIRCUMSTANCE THE MANUFACTURER DECLINES ALL RESPONSIBILITY.

1. Appliance business name
2. Appliance identification serial number
3. Appliance production date
4. Electric power supply voltage
5. Number of phases of electric power supply
6. Frequency of electric power supply
7. Refrigerating compressor model
8. Number of compressors used
9. Type of coolant used
10. Coolant weight
11. Reference climatic class for the appliance functioning (Cl.3 = +25°C/60% U.R.; Cl.4 = +30°C/55% U.R.)
12. Plant high pressure side pressure test
13. Plant low pressure side pressure test
14. Nominal power/current absorbed during refrigeration
15. Maximum power absorbed during defrosting
16. Nominal power absorbed by the heating elements (only if higher than 100W)
17. Lighting nominal power
4.1.4 Intended use and limits of usage

This refrigerating equipment is used exclusively for the display and sale of confectionary and delicatessen products. It is also possible to display small sized packaged dairy products as well as sliced and packaged cold cuts, which need to be positioned in a way that does not exceed the load limits indicated within this manual.

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**ATTENTION**

**USING THE MACHINE FOR ANY USE OTHER THAN FOR PRESERVING AND DISPLAYING FOODSTUFFS IS CONSIDERED AS IMPROPER USE. IN THIS CIRCUMSTANCE ALL RESPONSIBILITY IS DECLINED IN CASE OF DAMAGE TO THINGS AND/OR PEOPLE, AND, FURTHERMORE, VOIDS ALL WARRANTY.**

THE MANUFACTURER DECLINES ALL RESPONSIBILITY IN CASE OF TAMPERING WITH THE MACHINE FOR NON AUTHORISED AMENDMENTS OR FOR MAINTENANCE OPERATIONS PERFORMED BY UNQUALIFIED STAFF.

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**DANGER**

IN CASE OF ANOMALOUS MACHINE BEHAVIOUR, ANY TYPE OF INTERVENTION IS TO BE PERFORMED BY MAINTENANCE OPERATORS.

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4.2 Disposal of worn-out materials

Under normal functioning conditions the machine does not pollute the environment. At the end of the display cabinet functioning life-span or whenever it is necessary to definitely place the equipment out of service, it is recommended to:

- Make the display cabinet unusable by disconnecting the electric power supply.
- Remove any sliding closures, sides, or panelling that could constitute a source of danger.
- Remove all rubber parts (Seals, etc...)

**IMPORTANT INFORMATION FOR THE USER ACCORDING TO DIRECTIVE "RAEE" 2002/96/EC AND SUCCESSIVE MODIFICATION 2003/108/EC DEALING WITH ELECTRIC AND ELECTRONIC EQUIPMENT WASTE.**

According to Directive “RAEE” 2002/96/EC and successive modification 2003/108/EC, if the purchased equipment is marked with the following symbol of a crossed out rubbish container with wheels, it means that after the product life-span it needs to be collected separately from other waste.

Separate collection of this equipment for recycling, once its life-span has been exceeded, is organised and managed by the manufacturer.

Therefore, the user who wishes to dispose of this equipment must contact the manufacturer and follow the method used to allow separate collection for recycling of equipment that has reached the end of its life-span.

Suitable collection for successive start-up of the equipment for recycling, treatment and compatible environmental disposal contributes in avoiding possible negative effects on the environment and on health, and favours the re-use and/or recycling of the materials composing the equipment.

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**ATTENTION**

**THE ILLEGAL DISPOSAL OF THE PRODUCT ON BEHALF OF THE HOLDER, IMPLIES THE APPLICATION OF ADMINISTRATIVE SANCTIONS PROVIDED BY THE REGULATION IN FORCE.**

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**IMPORTANT**

**IN CASE THE SYMBOL OF THE CROSSED OUT RUBBISH CONTAINER WAS NOT PRESENT ON THE EQUIPMENT, IT MEANS THAT THE DISPOSAL OF THE SAME PRODUCT IS NOT THE MANUFACTURERS’ RESPONSIBILITY. IN SUCH CASE, HOWEVER, THE REGULATION IN FORCE REGARDING THE WASTE DISPOSAL ARE VALID.**

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The refrigerating circuit components must not be cut and/or separated but must be taken to the specialised centres intact for the recovery of the refrigerating gas.

Specific regulations exist in every nation regarding the disposal of these materials in order to safeguard the environment. It is the Client or Maintenance operator obligation to be aware of the laws in force in this regard in his country and to operate in order to comply with these legislations.
ATTENTION

REMEMBER TO COMPLY WITH THE LAWS IN FORCE WITH REGARD TO THE DISPOSAL OF REFRIGERATING LIQUID OR MINERAL OILS.

SUPPLEMENTARY INFORMATION

FURTHER INFORMATION ON THE DISPOSAL MODALITIES OF REFRIGERATING LIQUID AND OILS AND OTHER SUBSTANCES CAN BE FOUND ON THE SAFETY CARD RELATING TO THE SAME SUBSTANCES.

4.3 Safety applied on the machine

The machines provided with the following safety devices

<table>
<thead>
<tr>
<th>Safety present on the Machine</th>
</tr>
</thead>
<tbody>
<tr>
<td>FIXED PROTECTIONS</td>
</tr>
<tr>
<td>SECTIONING THE ELECTRIC POWER SUPPLY</td>
</tr>
</tbody>
</table>

4.3.1 Fixed protections

The fixed type protections are constituted by fixed perimeter covers, which function is to prevent access to the internal parts of the equipment.

DANGER

FOLLOWING MAINTENANCE, IT IS FORBIDDEN TO RE-START THE MACHINE, WITHOUT CORRECTLY RESTORING THE PANELS.

ATTENTION

Periodically check that the fixed covers and respective attachments to the structure are intact, with particular attention to the protection panels.

4.3.2 Sectioning the electric energy

The appliance is not equipped with a sectioning device able to remove the electric power supply voltage to the two poles (phase and neutral) at the same time. In fact, pressing the OFF key on the electronic control unit only stops the display cabinet functioning, but does not remove the current from the electric components inside the display cabinet (lights, fans and electric terminal board). The sectioning can happen through the plug socket, but it is recommended that the installer positions, upstream of the appliance, a multiple pole switch which guarantees the complete disconnection of the display cabinet from the mains.

DANGER

PRESSING THE OFF KEY ON THE ELECTRONIC CONTROL UNIT STOPS THE DISPLAY CABINET FUNCTIONING BUT DOES NOT CAUSE THE SECTIONING OF THE ELECTRIC ENERGY. IT IS THEREFORE COMPULSORY, IN CASE OF MAINTENANCE INTERVENTION, TO COMPLETELY DISCONNECT THE DISPLAY CABINET FROM THE MAINS BY REMOVING THE MAINS PLUG OR ACTING ON THE MAIN SWITCH, INSTALLED UPSTREAM OF THE DISPLAY CABINET.
4.4 Residual risks

The areas or parts at risk have been evaluated during planning. All precautions have been taken to avoid risks to persons and damages to the SERIES 750-900 Refrigerated Display Cabinets as indicated in the previous paragraphs.

<table>
<thead>
<tr>
<th>Position 1</th>
<th>Position ON, circuit CLOSED, machine with voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position 2</td>
<td>Position OFF, circuit OPEN, machine without voltage</td>
</tr>
</tbody>
</table>

**ATTENTION**

PERIODICALLY CHECK THE FUNCTIONING OF ALL SAFETY DEVICES.
DO NOT DISMANTLE THE MACHINE FIXED TYPE PROTECTIONS.
DO NOT INTRODUCE OBJECTS OR FOREIGN TOOLS IN THE APPLIANCE OPERATION AND WORK AREA.

Despite the machine being equipped with the above stated safety systems, certain risks still remain which cannot be removed but reduced, through corrective actions on behalf of the final integrator and correct operational modalities.

Following is a summary of the risks which remain on the machine during:
- Normal functioning
- Regulation and adjustment
- Maintenance
- Cleaning.

4.4.1 Electrocution

- Risk of break or damage with possible lowering in the safety level of the electric appliance components following a short circuit.
- Before inserting the electric power supply, ensure there are no maintenance interventions in process.

**ATTENTION**

BEFORE CONNECTING, CHECK THAT THE D.C. CURRENT IN THE INSTALLATION POINT IS NOT HIGHER TO THAT INDICATED ON THE PROTECTION SWITCHES PRESENT ON THE ELECTRIC CONTROL BOARD. IF SO, THE USER MUST ARRANGE FOR THE APPROPRIATE LIMIT DEVICES.

**ATTENTION**

IT IS FORBIDDEN TO CARRY OUT ANY TYPE OF ELECTRIC MODIFICATION IN ORDER NOT TO CREATE ANY UNFORESEEN ADDITIONAL DANGERS AND RISKS.
4.4.2 Fire

DANGER

IN CASE OF FIRE IMMEDIATELY DISCONNECT THE MAIN SWITCH FROM THE MAINS.

4.4.3 Explosive atmosphere

The machine is not suitable to work in classified environments.
- It is forbidden to use the same in an atmosphere classified or partially classified.

4.4.4 Slipping

Any leaks of lubricants in the areas around the machine can cause personnel to slip.
- Check there are no leaks and always keep such areas clean.

4.4.5 Tripping

The untidy material deposit can generally constitute a danger of tripping and partially, or completely, limit the escape ways in case of need.

Ensure operational, transit areas and escape ways are not obstructed and in compliance with the regulations in force.

4.4.6 Circuit faults

Due to possible faults, the safety circuits may loose part of their efficiency with relative lowering of safety level.
- Periodically check the functioning status of the safety devices present on the machine.

4.5 Monitory plaques

Due to the residual risks, of various nature, identified on the machine, Oscartek has equipped the SERIES 750-900 Refrigerating Display Cabinets with danger, warning and obligatory monitory plaques, defined in compliance with the European regulation relating to the graphic symbols to be used on the plants (Directive 92/58/EEC).

The plaques in question are in a clearly marked position.

ATTENTION

IT IS FORBIDDEN TO REMOVE THE MONITORY PLAQUES PRESENT ON THE MACHINE. MABO SRL DECLINES EVERY RESPONSIBILITY ON THE SAFETY OF THE SERIES 750-900 REFRIGERATED DISPLAY CABINETS IN CASE OF NON COMPLIANCE WITH SUCH PROHIBITION.

ATTENTION

THE USER MUST REPLACE THE MONITORY PLAQUES WHICH, FOLLOWING WEAR, ARE ILLEGIBLE.
5. INSTALLATION

5.1 General information

ATTENTION

CAREFULLY READ THE FOLLOWING AS THE INSTALLATION OPERATIONS (INCLUDING MOUNTING AND START-UP) CAN CAUSE RISKS FOR THE UNSKILLED PERSONNEL, AS THEY REQUIRE KNOWLEDGE OF THE MACHINE.

5.2 Choosing a room and verification of the requisites for the installation

The machine installation area must be sufficiently wide to respect the:
- operational spaces
- passage ways
- escape ways

The floor of the room chosen for the installation must be regular, levelled and in compliance with the application specifications and able to support the machine weight specifications.

The room must also be equipped with attachments for electric and fluidics energy necessary for the functioning of the machine.
The room must be equipped according to the safety regulations in force in the using country and guarantee airing and earthing of the appliances.

ATTENTION

TO HOIST THE PACKAGES, AN ADEQUATE HOISTING MEAN IS NECESSARY, BEARING IN MIND THE SAFETY MARGINS PROVIDED BY LAW AND SAFETY REGULATIONS IN FORCE.

5.3 Moving the appliance

- As far as possible, the operational area must be free from materials which can prevent or limit the view, create obstruction or tripping.

- The packages composing the machine must only be moved using a hoisting trolley with adequate power and capacity for the weight of the appliance to be moved, as per the technical table of the specific appliance purchased. If necessary, hoisting accessories of approved type and adequate capacity, higher than the weight to be hoisted, can be used. The machines’ weight is reported in the technical data table of the same.

- It is therefore the responsibility of the installer to use hoisting means of adequate capacity.

- Before hoisting the appliance, check there are no mobile parts or tools on the same.

- Check that the load is correctly balanced: slightly lift the load from the ground and check, before proceeding further, that it is horizontal. If not, lay down the load, reallocate the slings and repeat the operation until correctly balanced.

- In case of hoisting with forks, check that they are only in contact with the lower part of the appliance frame and not with other perishable parts (carter, power supply cord etc.), which might compromise the safety of the product during start-up.
ATTENTION

TO HOIST THE PACKAGES AN ADEQUATE MEAN IS NECESSARY, BEARING IN MIND THE SAFETY MARGINS PROVIDED BY LAW AND SAFETY REGULATIONS IN FORCE.

ATTENTION

IN CASE OBSTRUCTIONS, AND/OR OPERATIVE SITUATION, DO NOT ALLOW THE OPERATOR TO HAVE A PERFECT VIEW, PERSONNEL WITH THE TASK OF SIGNALLING SHOULD BE PLACED OUTSIDE THE ACTION RANGE OF THE HOISTING MEAN.

Once the perfect balance has been obtained, proceed to hoisting and moving the load.

ATTENTION

NEVER TRANSIT UNDERNEATH SUSPENDED LOADS.
NEVER MOVE THE LOAD OVER PERSONNEL OPERATING IN THE INSTALLATION AREA.

- The moving, from the transport mean to the final site, must be carried out with adequate hoisting and moving mean for the weight of the appliance, which should always be in a stable equilibrium for the integrity of personnel and of the same appliance (fig.5.1.1).

(fig.5.1.1).

- The appliance can be transported with or without packaging: if present, it is provided with a step-board for moving with fork lift. In any case, the application point of the hoisting means or the blades of the elevator mean, must be respectively centred on the centre line of the appliance (fig.5.1.2).

(fig.5.1.2).

- During transport, do not let the appliance undergo crashes or jolts in order not to damage the structure, especially the glass one.
- Do not drag the appliance on the floor and do not push it forcing the glass mount.
5.4 Storing the appliance

- For storing with packaging, pay attention to that reported with regard to the same packaging.
- The storing temperature can be between -15°C and +55°C and humidity between 30% and 90%.
- The appliance must always be protected from sun and bad weather.
- Should the appliance stay in a warehouse for a long time before being used, leave it inside its original packaging, which guarantees the most adequate protection.

5.5 Unpacking the appliance

Before accepting the appliance from the carrier, check its condition.
Should there be evident damages, show them to the carrier and sign, with reserve, the packing list.
Any damages caused by transport or incorrect storage, cannot be attributed to the manufacturer.

5.6 Installation, positioning and environmental conditions:

For the correct positioning, carry out the following operations:
Position the display cabinet leaving a space sufficient for the safe use and maintenance, as provided by the normative UNIEN 292/2.

<table>
<thead>
<tr>
<th>ATTENTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>THE NON COMPLIANCE WITH THE DISTANCES INDICATED, AS WELL AS NOT GUARANTEING A CORRECT FUNCTIONING OF THE APPLIANCE, CAN ALSO PREVENT ANY MAINTENANCE INTERVENTION.</td>
</tr>
</tbody>
</table>

In case a step-board for the operator is present, it must have an easily removable part in correspondence with the condensing unit so that it can be removed for maintenance operations.
Check that there is a suitable earthing plant as provided by the respective EN.

Ensure that the condensing compressor group is in a free air change condition.

The appliance must be positioned flat (check with spirit level) in order to guarantee better functioning.

Ensure that the appliance is installed away from sources of heat (radiator, stoves etc.) and away from continuous air movements (for example, caused by fans, air conditioning inlets etc.).

Do not position the appliance near currents of air (near doors, windows, air conditioning plants etc.) which exceed the speed of 0.2m/sec.

Ensure that the influence or direct exposure to sunlight and anything which might cause the temperature inside the refrigerating room to rise is not possible.

Therefore do not position the appliance near sources of heat (direct sunlight, heating plants, incandescent lamps etc.).

Do not position the appliance in rooms in the presence of explosive gasses, open air and therefore, atmospheric agents.

Once positioned in the desired area, lay it flat using the adjustable feet

- If the cabinet is moved, repeat the levelling control.
- Before connecting the cabinet to the mains, ensure that the plaque data correspond to the electric plant features to which it will be connected.
- For the correct functioning of the cabinet, the room temperature and humidity must respect the parameters provided in normative EN-ISO 23953 - 1/2, which provides Climatic Class 3 (+25°C; U.R. 60%). (Our products satisfy the 4 +30°C; U.R. 55%)

N.B. All these operations must only be carried out by qualified personnel.

The refrigerating appliance requires precise environmental conditions in order to offer the performances for which it was designed; therefore, the housing environment, will have to respect the following indications:

- The support surface must be perfectly levelled; if not, bring the appliance into horizontal position (check with spirit level) to guarantee the perfect evacuation of the defrosting water, to avoid annoying noises caused by the vibrations and to assume a better appearance (fig.5.4.1).

- The appliance, and its displaying compartment, must not be hit by sun rays or reflections; the appliance must always be under cover, inside the premises or covered by a curtain. The non compliance with the above, causes an anomalous increase of the exposed product temperature, which cannot be remedied in any way, and an increase in energy consumption (fig.5.4.2).

- The appliance must not incur permanent air currents caused by open premises doors or windows, ceiling fans, air and air conditioning inlets facing the appliance area. The non compliance with the above, causes an anomalous increase in the exposed product temperature and an excessive build up of brine on the evaporator and fans, compromising the correct air circulation (the immediately detectable effect is the alteration in the product consistency fig.5.4.3).

- The appliance must not be placed near radiating sources of heat, such as radiators, stoves, ovens, intense sources of artificial light, etc. (fig.5.4.4).

- The appliance must have sufficient space in order to allow a correct service to customers, make the maintenance interventions easy, guarantee the necessary air inlet to the condensing cooler; the outgoing hot air from the latter must not be obstructed and must not cover other appliance, in order not to compromise the correct functioning.
5.7 Positioning the remote condensing unit

- The remote condensing unit must be selected by qualified technical personnel depending on the requested refrigerating power and its position compared to the appliance.
- The air condensing unit must be positioned following that reported below:
  - The condenser must distance about 250 mm. from any wall (fig. 5.5).
  - The air flow direction must be from the wall towards the compressor.
  - The lowest possible temperature of the air entering the condenser must be guaranteed.
- If need be, a forced air change must be foreseen (by means of a fan) depending on the air capacity required by the condensing unit.
- The condensing unit must be fixed and stable.
- The generated noise level must not exceed those admitted in the various types of public premises (of importance is an apartment building).
- Sufficient space on all four sides must always be provided in order to make every control and maintenance intervention easy. In case there are more condensing units located in the open, a solid and anchored engine mount must be provided (eventually leaning on shock absorbing elements), equipped with sloping cover; closed side walls, the condensing air discharge wall protected by grate with holes sizes according to law and rain resistant tabs.

5.6 Appliance refrigerating - remote condensing unit connection

- The choice of pipes size and insulating thickness must be carried out by qualified technical personnel depending on the characteristic parameters.
- The length of the pipes must be as short as possible.
- The pipes installation must be up to standard and carried out by qualified personnel in order to guarantee fundamental understanding like the adequate sloping, the presence of siphon at the base of the ascent suction pipes and, eventually, at intermediate quotas, etc.

ATTENTION! An incorrect connection can cause serious damages to the appliance, especially to the compressor; the appliance manufacturer cannot be held responsible of the damages caused by an incorrect connection on behalf of third parties.

5.7 Electrical connection

- Pre-emptively ensure that the power supply voltage and electrical power available correspond to the appliance plaque data.
- The appliance must be protected by means of a multiple pole magnetothermal automatic switch with adequate features and which will also function as line sectioning main switch. This is NOT supplied but must be provided by the purchaser.

ATTENTION!
- The appliance DOES NOT foresee a main switch which removes phase and neutral at the same time.

ATTENTION!
- The appliance must be connected, upstream, to a multiple pole switch, with minimum opening distance of the contacts of 3 mm., which guarantees the disconnection from the mains, accessible by whoever is using the same appliance.
- The magnetothermal automatic switch must not open the circuit on neutral but it must open it on the phases at the same time and, in any case, the opening distance of the contacts must be at least 3 mm.

N.B. The electrical network plant can only be modified by qualified personnel.

- It is compulsory that the appliance is adequately connected to an efficient earth plate (fig. 5.7.1).
- The electrical plant to which the appliance is connected, must be provided with earthing.
- The electrical connection must be carried out according to the manufacturer instructions, by qualified personnel and in accordance with legislations regarding electrical plants.
- Disconnect the appliance from the mains before carrying out any maintenance intervention by operating on the multiple pole switch upstream of the appliance. (Fig. 5.7.2)
• An incorrect installation can cause damages to persons, animals or things, towards which the manufacturer cannot be held responsible.
• Train the operator on the position of the switch so that it can be quickly reached in case of an EMERGENCY.
• To guarantee a regular functioning, it is necessary that the maximum voltage variation is between +/- 6% of the nominal value and that no odd harmonic distortions are present.
• Check that the power supply line has opportune section cables and, however, not lower than 2.5 mm² and that it is protected against over-currents and earth dispersions in accordance with legislation.
• For very long power supply lines, adequately increase the cables section to compensate the relative voltage drop.

5.8 Electrical connection - remote condensing unit

In case a standard external condensing unit is supplied, the technician will have to connect the power supply of such unit to the display cabinet. The operation is simplified in that, inside the display cabinet base, behind the removable grate of the equipment compartment, a terminal board is present on which a white derivation box, which can be opened like a book, is fixed. On such box (PA 104) there are 5 clamps which names are marked on the same box cover with the following symbols: L N G 1 2.

\[ \text{L N G} = \text{Is the display cabinet power supply, respectively phase, neutral and earth 230 Volts, 1Ph, 50Hz.} \]

\[ 1 \ 2 = \text{Is the motor power supply 230 Volts, 1Ph, 50Hz.} \]

5.9 Hydraulic connection

• The appliance is supplied standard without condense drying tank (optional), it is therefore necessary to connect the defrosting water discharge pipe (or pipes) with the premises water network discharge.
• ATTENTION! For correct functioning, it is necessary to interpose a siphon between the appliance discharge and that of the water network.
• Should a condensing unit completely or partially cooled through water be present, it is necessary to connect the incoming pipe (recognizable by the presence of thermal insulation) to the discharging one, of the water-cooled condenser to the water network. (Fig. 5.9)
6. FUNCTIONING

6.1 Preliminary operations

- Appliance with internal condensing unit. Before delivering to the client, the qualified technical personnel must verify the correct functioning of the entire appliance in order to achieve maximum performance.
- Appliance with remote condensing unit. Operate as in the previous point and scrupulously carry out the following checks:
  - Check, with the appliance not electrically fed, that there the coolant does not leak (it is supposed that a first seal test of the plant has already been carried out during an accurate emptying through a vacuum pump).
  - Check the correct loading of the coolant by means of the liquid indicator.
  - Regulate the condensing pressure control system (where present).
  - Perfectly regulate the expansion thermostatic valve after having, pre-emptively, completely opened the compressor carter pressure regulating valve (where present).
  - Regulate the above-said regulating valve, during defrosting only.
  - Regulate the high and low pressure manostats, (where present).
  - Check that there is no water dripping from the pipes insulation and the joining points of the same.

6.2 Start-up

Action the main switch of the network plant.
Insert the Display Cabinet power supply plug on the socket supplied by the client, ensuring that the same has earth contact and that there are no multiple sockets connected.
Action the display cabinet main switch located on the rear protection panel.
To electrically feed the display cabinet, position the main switch on position “1”.
To start-up the appliance subsequently act on: (see Fig.6.2)

- ON-OFF Key. “A”
- Lighting key. “B”
- Electronic control board, on controls panel, for setting the preservation temperature.

<table>
<thead>
<tr>
<th>ELECTRONIC CONTROLS PANEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>DISPLAY CABINET WITHOUT RESERVE CELL</td>
</tr>
</tbody>
</table>

(fig.6.2).
6.3 Use modality of control unit DIXELL XW60L (DISPLAY CABINET)

1. Freezing LED active  
2. Defrosting LED active  
3. Fan LED active  
4. Compressor LED active  
5. Value increase key  
6. Manual defrosting key  
7. Lighting key  
8. ON / OFF key  
9. SET key  
10. Value decrease key  
11. Alarm signal LED  
12. Lighting LED active

- APPLIANCE START-UP/SWITCH-OFF.
To switch on the control unit and the refrigerating appliance press key (8) for about 3 sec.; to switch-off, press the same key for 3 seconds (in such condition, all control unit outputs are switched off, apart from the lighting). The control unit starts working as soon as the temperature of the refrigerated compartment is displayed. When the current comes back after a black-out, the control unit automatically starts working like before.

- KEYBOARD BLOCK/UNBLOCK.
To block the keyboard keep keys (5) and (10) pressed together for a few seconds, until the writing “POF” starts flashing on the display. To unblock the keyboard, keep keys (5) and (10) pressed together for a few seconds, until the writing “POn” starts flashing on the display.

- LIGHTING.
To act on the lighting press key (7).

- DISPLAY AND AMENDMENT OF SET TEMPERATURE.
To display the set temperature press and release key “SET” (9); the set temperature is immediately displayed and the LED above the same key flashes. To amend the set temperature act on keys (5) and (10); to memorise the new temperature press key “SET” (9) or wait for a few seconds for the control unit to automatically exit the programming.

- SUPPLEMENTARY DEFROSTING.
To start the supplementary defrosting press key (6) for more than 2 seconds.
A supplementary defrosting resets the time count between an automatic defrosting and the subsequent one.

- DISPLAY AND/OR AMENDMENT OF SET PARAMETERS VALUES.
To display or amend the set parameters follow the procedure below.
- Press key (10) and immediately after key “SET” (9) until an initial writing appears on the display.
- Repeatedly press key (5) until the writing “PR2” appears.
- Press “SET” (9), the writing “0 - 0” appears with “0” flashing, then type password “321” as follows. Repeatedly press key (5) to pass from 0 to 3, confirm with key “SET” (9); the 0 appears in second place, pass from 0 to 2 and confirm with key “SET” (9); a 0 appears in third place, pass from 0 to 3 and confirm with key “SET” (9). In this way, access is gained to the parameters which can be set or amended, the list of which, must be in possession of the appliance maintenance operator.
- Remember that to memorise each inserted parameter value it is necessary to press key “SET” (9).
- Wait for a few seconds without pressing any key; the control unit will automatically exit the programming.

- PROBE VALUE DISPLAY.
To display the Probe value, especially the one relating to end defrost, it is necessary to enter from the protected menu “PR2”, select parameter “Prd” and press key “SET” (9); the writing “Pb1” appears, alternating with the value of probe 1. With keys (5) and (10) it is possible to display the problems present.
ALARMS.

<table>
<thead>
<tr>
<th>Message</th>
<th>Cause</th>
<th>Outputs</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;P1&quot;</td>
<td>Faulty thermostat probe</td>
<td>Output according to parameters &quot;Con&quot; and &quot;Cof&quot;</td>
<td>The signal on the display remains until the alarm condition has been restored. All the alarm messages flash alternating with the temperature of probe &quot;P1&quot; which permanently flashes. The buzzer and the alarm output can be deactivated by pressing any key. The &quot;EE&quot; alarm signals the presence of data anomaly.</td>
</tr>
<tr>
<td>&quot;P2&quot;</td>
<td>Faulty evaporator probe</td>
<td>Not amended, only signal</td>
<td></td>
</tr>
<tr>
<td>&quot;HA&quot;</td>
<td>High temperature alarm</td>
<td>Not amended, only signal</td>
<td></td>
</tr>
<tr>
<td>&quot;LA&quot;</td>
<td>Low temperature alarm</td>
<td>Not amended, only signal</td>
<td></td>
</tr>
<tr>
<td>&quot;EE&quot;</td>
<td>Anomaly in memory</td>
<td>Not amended, only signal</td>
<td></td>
</tr>
<tr>
<td>&quot;da&quot;</td>
<td>Door open alarm</td>
<td>Not amended, only signal</td>
<td></td>
</tr>
<tr>
<td>&quot;EAL&quot;</td>
<td>Alarm from digital input</td>
<td>Not amended, only signal</td>
<td></td>
</tr>
<tr>
<td>&quot;BAL&quot;</td>
<td>Block alarm from digital input</td>
<td>Control outputs deactivated</td>
<td></td>
</tr>
<tr>
<td>&quot;PAL&quot;</td>
<td>Manostat alarm from digital input</td>
<td>Control outputs deactivated</td>
<td></td>
</tr>
</tbody>
</table>

ALARMS RESTORING MODALITY

- The probe alarms "P1" and "P2" trigger after about 10 sec. from the fault of the problem and are restored automatically 10 sec. after the probe has started to function regularly. **Before replacing a probe check its connections.**
- The temperature alarm "HA" and "LA" are automatically restored as soon as the thermostat temperature returns within the norm or when defrosting starts.
- In case of alarm "EE", it is not possible to find a remedy and the control unit needs to be replaced.

AUTOMATIC DEFROSTING

This appliance is equipped with automatic defrosting to periodically eliminate the brine present on the evaporator tabs.

All the parameters which manage the automatic defrosting phase are set by the manufacturer, however, their value can be amended by qualified personnel to adapt the appliance functioning to the particular work environment conditions.

6.4. Use modalities of control unit DIXELL XW20LS (RESERVE COMPARTMENT)

![Control Unit Diagram]

1. Freezing LED active  
2. Defrosting LED active  
3. Fan LED active  
4. Compressor LED active  
5. Value increase key  
6. Manual defrosting key  
7. Lighting key  
8. ON / OFF key  
9. SET key  
10. Value decrease key  
11. Alarm signal LED  
12. Lighting LED active

APPLIANCE START-UP/SWITCH-OFF.

To switch on the control unit and the refrigerating appliance press key (7) for about 3 sec.; to switch-off, press the same key for 3 seconds (in such condition, all control unit outputs are switched off, apart from the lighting).

The control unit starts working as soon as the temperature of the refrigerated compartment is displayed. When the current comes back after a black-out, the control unit automatically starts working like before.
**KEYBOARD BLOCK/UNBLOCK.**
To block the keyboard keep keys (4) and (9) pressed together for a few seconds, until the writing “POF” starts flashing on the display.
To unblock the keyboard, keep keys (4) and (9) pressed together for a few seconds, until the writing “POn” starts flashing on the display.

**LIGHTING.**
To act on the lighting press key (6).

**DISPLAY AND AMENDMENT OF SET TEMPERATURE.**
To display the set temperature press and release key “SET”(8); the set temperature is immediately displayed and the LED above the same key flashes.
To amend the set temperature act on keys (4) e (9); to memorise the new temperature press key “SET” (8).

**SUPPLEMENTARY DEFROSTING.**
To start the supplementary defrosting press key (5) for more than 2 seconds.
A supplementary defrosting resets the time count between an automatic defrosting and the subsequent one.

**DISPLAY AND/OR AMENDMENT OF SET PARAMETERS VALUES.**
To display or amend the set parameters follow the procedure below.
- Press key (9) and immediately after key “SET”(8) until an initial writing appears on the display.
- Repeatedly press key (4) until the writing “PR2” appears.
- Press key “SET”(8), the writing “0 - -” appears with “0” flashing, then type password “321” as follows. Repeatedly press key (4) to pass from 0 to 3, confirm with key “SET”(8); the 0 appears in second place, pass from 0 to 2 and confirm with key “SET”(8); a 0 appears in third place, pass from 0 to 3 and confirm with key “SET”(8). In this way, access is gained to the parameters which can be set or amended, the list of which, must be in possession of the appliance maintenance operator.
- Remember that to memorise each inserted parameter value it is necessary to press key “SET”(8).
- Wait for a few seconds without pressing any key; the control unit will automatically exit the programming.

**ALARMS.**

<table>
<thead>
<tr>
<th>Message</th>
<th>Cause</th>
<th>Outputs</th>
<th>The signal on the display remains until the alarm condition has been restored. All the alarm messages flash alternating with the temperature of the probe, except for “P1” which flashes permanently.</th>
</tr>
</thead>
<tbody>
<tr>
<td>“P1”</td>
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<td>Output according to parameters “Con” and “Cof”</td>
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<td>Low temperature alarm</td>
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</tr>
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**ALARMS RESTORING MODALITY**
- The probe alarms “P1” and “P2” trigger after about 10 sec. from the fault of the problem and are restored automatically 10 sec. after the probe has started to function regularly. **Before replacing a probe check its connections.**
- The temperature alarm “HA” and “LA” are automatically restored as soon as the thermostat temperature returns within the norm or when defrosting starts.
- In case of alarm “EE”, it is not possible to find a remedy and the control unit needs to be replaced.

**AUTOMATIC DEFROSTING**

This appliance is equipped with automatic defrosting to periodically eliminate the brine present on the evaporator tabs. All the parameters which manage the automatic defrosting phase are set by the manufacturer, however, **their value can be amended by qualified personnel to adapt the appliance functioning to the particular work environment conditions.**

7. ROUTINE MAINTENANCE AND PERIODIC CONTROLS

6.5. Start-up of appliance equipped with ELECTROMECHANICAL CONTROL

To start-up the appliance subsequently act on: (see Fig. 6.5)
- Main switches (1) and (6).
- Light switch (2).

(Fig. 6.5.)

| ELECTROMECHANICAL CONTROL PANEL |
|-------------------------|------------------|
| DISPLAY CABINET WITHOUT RESERVE CELL | DISPLAY CABINET WITH RESERVE CELL |
| ATTENTION! BEFORE CARRYING OUT ANY MAINTENANCE OR CLEANING OPERATION RESERVED TO THE USER, COMPLETELY DISCONNECT THE DISPLAY SWITCH LOCATED UPSTREAM OF THE POWER SUPPLY SOCKET (SEE PARAGRAPH 4.3.2). |
| 1. Display compartment main switch | 5. Reserve compartment mechanical thermostat |
| 2. Display compartment light switch | 6. Reserve compartment main switch |
| 3. Display compartment defrosting luminous warning light | 7. Reserve compartment thermometer |
| 4. Display compartment mechanical thermostat |

6.5.1. Use modalities of the DISPLAY COMPARTMENT electromechanical control

- SETTING THE TEMPERATURE
  Rotate thermostat knob (4) anti-clockwise to end run, that is, until "0" is in correspondence with the reference present on the fixed ring nut, exactly as shown in Fig. 6.5.
  In such condition, the display cabinet is regulated on maximum cold.
  Checking the temperature indicated by the digital thermometer, located on the internal carter underneath the service surface, regulate the temperature of the display compartment by gradually rotating the thermostat knob (4) clockwise; carry out such operation until the desired temperature is reached.
  Wait at least 20 minutes after every small regulation until the display compartment functioning becomes stable.

- DISPLAYING THE TEMPERATURE
  The display of the temperature of the display compartment is entrusted to the digital thermometer located on the internal carter underneath the service surface.
  The thermometer is powered by a battery which will have to be replaced when needed.
  Given the high relevance of the temperature indication, it is important that the battery is replaced as soon as a decrease in the distinctness of the indicated figures is noted.

- DEFROSTING
  Luminous warning light (3) remains on for the whole duration of the evaporator defrosting, periodically controlled and checked by the appropriate timer.
  During defrosting, and the immediate successive refrigeration, the temperature indicated by the thermometer will be higher than that indicated by the stable functioning conditions of the display cabinet.

6.5.1. Use modalities of the RESERVE COMPARTMENT electromechanical control

- SETTING THE TEMPERATURE
  Rotate thermostat knob (5) anti-clockwise to end run, that is, until "0" is in correspondence with the reference present on the fixed ring nut, exactly as shown in Fig. 6.5.
  In such condition, the display cabinet is regulated on maximum cold.
  Checking the temperature indicated by digital thermometer (7), regulate the temperature of the display reserve by gradually rotating the thermostat knob (5) clockwise; carry out such operation until the desired temperature is reached.
  Wait at least 30 minutes after every small regulation until the reserve compartment functioning becomes stable.
8. EXTRAORDINARY MAINTENANCE

- **DISPLAYING THE TEMPERATURE**
  The display of the temperature of the reserve compartment is entrusted to the digital thermometer located on the controls panel.
  The thermometer is powered by a battery which will have to be replaced when needed.
  Given the high relevance of the temperature indication, it is important that the battery is replaced as soon as a decrease in the distinctness of the indicated figures is noted.

- **DEFROSTING**
  The defrosting of the reserve cell can only be carried out manually by removing the electric power supply through main switch (6).

### 6.6. Loading the product

- Before inserting the product to be refrigerated into the appliance, wait for it to have reached the temperature set on the control unit and the compressor has started to cycle.
- This appliance cannot be used as temperature blast-chiller but only as display, therefore, when inserting, the product must already be at preservation temperature.
- Arrange the product so as not to exceed the provided load limit (see drawings page 17).
- It is recommended to rotate the products, firstly using those which have been in the display cabinet longer.

![WARNING]

IT IS IMPORTANT NOT TO EXCEED THE PROVIDED LOAD LIMIT (SEE PAGE 17) IN ORDER NOT TO ALTER THE CORRECT AIR CIRCULATION AND AVOID A HIGHER PRODUCT TEMPERATURE AND POSSIBLE RISK OF ICE BLOCKS FORMING ON THE EVAPORATOR

### 6.7. Use of sliding

In order to guarantee the correct use of the display cabinet, the shutter, or the sliding, must always be placed in closing position every time the selling activity allows it.

### 6.8. Stopping the appliance

For the permanent stopping of the appliance, it is necessary to act only on the main switches or the power supply plug to remove the current to the display cabinet and condensing unit.
### 9. INCONVENIENCES AND REMEDIES

<table>
<thead>
<tr>
<th>INCONVENIENCE</th>
<th>PROBABLE CAUSES</th>
<th>POSSIBLE REMEDIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>The appliance does not work.</td>
<td>Triggered automatic switch.</td>
<td>Pre-emptively find the cause of the switch intervention then restore it.</td>
</tr>
<tr>
<td></td>
<td>Main switch open.</td>
<td>Close the main switch.</td>
</tr>
<tr>
<td></td>
<td>Control unit switched off.</td>
<td>Press the ON button.</td>
</tr>
<tr>
<td></td>
<td>Electric black-out of the premises</td>
<td>If the black-out should last a long time, transfer the product into a suitable refrigerator, in order to limit as much as possible its heating.</td>
</tr>
<tr>
<td>The temperature of the display compartment is not sufficiently low.</td>
<td>Evaporator/s completely obstructed by ice.</td>
<td>Completely defrost after having transferred the entire product in a suitable refrigerator. Do not re-insert the product in the display cabinet until identified the cause of the inconvenience.</td>
</tr>
<tr>
<td></td>
<td>Internal fans stopped or with damaged vents</td>
<td>Replace the non-functioning fans.</td>
</tr>
<tr>
<td></td>
<td>Incorrect temperature setting on electronic control unit</td>
<td>Find the electric inconvenience if the fan seem intact.</td>
</tr>
<tr>
<td></td>
<td>Inefficient control unit</td>
<td>Replace the damaged vents with new ones.</td>
</tr>
<tr>
<td></td>
<td>Display compartment overcome by air currents or exposed to direct or reflecting insulation</td>
<td>Set the appropriate temperature.</td>
</tr>
<tr>
<td></td>
<td>Air condensing unit obstructed by dust or dirt</td>
<td>Replace the electric control unit or the temperature probes.</td>
</tr>
<tr>
<td></td>
<td>Insufficient cooling air capacity of the air condensing unit</td>
<td>Remove anything which obstructs the sufficient air circulation through the condensing unit (papers, cartons, insufficiently asoiate grates, etc.).</td>
</tr>
<tr>
<td></td>
<td>Insufficient coolant in the refrigerating plant</td>
<td>Pre-emptively find the cause of coolant leak and remove it; proceed to re-load the lost coolant from a new plant emptying.</td>
</tr>
<tr>
<td></td>
<td>Insufficient cooling water capacity of the water-cooled condenser</td>
<td>Check that the water power supply is present; if so, regulate, or replace, the regulating valve or manostat.</td>
</tr>
<tr>
<td>The product positioned on the air outlet is too hard, the one on the aspirator is too soft.</td>
<td>Evaporator obstructed by snow.</td>
<td>Check that the display compartment is not overcome by air currents, that the shutter/sliding are always closed, unless during periods of maximum selling, that the ventilation of the refrigerating compartment is sufficiently active and that the provided load limits have not been exceeded.</td>
</tr>
<tr>
<td></td>
<td>Evaporator obstructed by ice.</td>
<td>As above. Additionally, check the reliability of the defrosting (start control, reliability of the refrigerating plant, and defrosting control).</td>
</tr>
<tr>
<td></td>
<td>Inefficient internal fans.</td>
<td>Restore the fans efficiency, replacing the malfunctioning ones.</td>
</tr>
<tr>
<td>The compressor is not working or working for short periods.</td>
<td>Lack of appliance electric power supply.</td>
<td>Check if there is a black-out. Close the various switches on the power supply line.</td>
</tr>
<tr>
<td></td>
<td>The control unit does not give its consent.</td>
<td>The relay of the control unit may be broken or the same control unit is not working. Replace the electronic control unit.</td>
</tr>
<tr>
<td>INCONVENIENCE</td>
<td>PROBABLE CAUSES</td>
<td>POSSIBLE REMEDIES</td>
</tr>
<tr>
<td>---------------</td>
<td>----------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Power supply voltage too low.</td>
<td>Check that the compressor clamps have a nominal voltage of 220; however, a value between 198 and 242 V is admitted. Voltage lower than 198 V may cause compressor start-up inconveniences. Check the electric plant efficiency up to the compressor clamps.</td>
<td></td>
</tr>
<tr>
<td>Temperature set on thermostat too high.</td>
<td>If the set temperature is higher than the air temperature in the display compartment, the compressor does not work. Set the most appropriate temperature if the current one is not sufficiently low.</td>
<td></td>
</tr>
<tr>
<td>The compressor works for long periods or constantly.</td>
<td>Selling premises temperature too high.</td>
<td>In case the appliance works correctly and it is not possible to lower the premises temperature (with air conditioning plant) the compressor may also function constantly; in such case, the refrigerating plant has reached the maximum limit of its performances.</td>
</tr>
<tr>
<td></td>
<td>Temperature of compressor compartment too high (remote condensing unit)</td>
<td>Investigate on the cause of the compressor’s compartment temperature rise and proceed accordingly. If, as said above, it is not possible to lower the premises temperature, the compressor may also function constantly.</td>
</tr>
<tr>
<td></td>
<td>Air condensing unit obstructed.</td>
<td>Carefully clean the condensing unit.</td>
</tr>
<tr>
<td></td>
<td>Flow of cooling air of the water-cooled condensing unit insufficient.</td>
<td>Check the opening of the taps, the efficiency of the regulating valve (replace it if necessary).</td>
</tr>
<tr>
<td></td>
<td>Lack of coolant in the circuit.</td>
<td>Identify the cause for the loss of coolant and, only afterwards, restore it.</td>
</tr>
<tr>
<td></td>
<td>Scarce internal ventilation.</td>
<td>Restore the correct ventilation removing any obstacles, replacing, if necessary, the fans.</td>
</tr>
<tr>
<td></td>
<td>Evaporators extremely obstructed</td>
<td>Proceed to the complete defrosting of the evaporator/s and then investigate on the possible cause of the obstruction and operate accordingly.</td>
</tr>
<tr>
<td></td>
<td>Thermostat regulated on a very low temperature.</td>
<td>Regulate the thermostat to the correct temperature.</td>
</tr>
<tr>
<td>Lack of temperature indication on the digital thermometer.</td>
<td>Power battery exhausted.</td>
<td>Insert a battery identical to the one present.</td>
</tr>
<tr>
<td></td>
<td>Inefficient probe or cable interrupted.</td>
<td>Replace the entire digital thermometer.</td>
</tr>
<tr>
<td></td>
<td>Inefficient electronics.</td>
<td>Replace the entire digital thermometer.</td>
</tr>
<tr>
<td>Lack of defrosting water.</td>
<td>Obstructed water discharge pipe.</td>
<td>Restore the Lack of water of the water flow through the pipe.</td>
</tr>
<tr>
<td></td>
<td>Absent or inefficient defrosting.</td>
<td>intervene on the defrosting commands and controls items (control unit, probes, solenoid valves, etc.) and/or on the position of the defrosting probe.</td>
</tr>
<tr>
<td>Lack of lighting.</td>
<td>Light switch not closed.</td>
<td>Close the light switch or press the light button on the electronic control unit.</td>
</tr>
<tr>
<td></td>
<td>Fluorescent lamp incorrectly inserted in the lamp holders.</td>
<td>Correctly insert the lamp in the appropriate lamp holders and rotate it.</td>
</tr>
<tr>
<td></td>
<td>Exhausted lamp.</td>
<td>Replace the lamp with a new one with the same heat temperature (standard 840°K).</td>
</tr>
<tr>
<td></td>
<td>Inefficient feeders.</td>
<td>Replace the faulty feeders.</td>
</tr>
<tr>
<td>Excessive noise level.</td>
<td>Display cabinet internal sheets vibrate.</td>
<td>Tighten all fixing screws.</td>
</tr>
<tr>
<td></td>
<td>Internal fans incorrectly fixed.</td>
<td>Tighten all fixing screws.</td>
</tr>
<tr>
<td></td>
<td>Internal fans vanes touching parts of the same.</td>
<td>Replace the vanes with other perfectly regulated. If the noise is caused by the dragging of the vanes on ice formed on the fans ring, intervene on the air and/or defrosting circulation.</td>
</tr>
<tr>
<td></td>
<td>Pipes touching other parts of the appliance.</td>
<td>Avoid the pipes touching through vibration other parts of the plant; the continuous rubbing can cause breaks in the pipes and loss of coolant.</td>
</tr>
<tr>
<td></td>
<td>Missing levelling of appliance.</td>
<td>Perfectly level the appliance.</td>
</tr>
</tbody>
</table>
Every display cabinet complete and composed by a lift, a plate and a base each in the configurations displayed in the previous table. N.B.: the only possible combinations relate to lift A1 and A2 of the 750 series which cannot have a plate with removable drawer.
### LIFT

<table>
<thead>
<tr>
<th>N°</th>
<th>DESCRIPTION</th>
<th>N°</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Glass cap</td>
<td>8</td>
<td>Tempered transparent side glass</td>
</tr>
<tr>
<td>2</td>
<td>Pistons for glass opening</td>
<td>9</td>
<td>Heating serigraphy side glass</td>
</tr>
<tr>
<td>3</td>
<td>Pliers for front glass opening upwards</td>
<td>10</td>
<td>Front glass</td>
</tr>
<tr>
<td>4</td>
<td>Upper ceiling light</td>
<td>11</td>
<td>Front central upright (only on angle display cabinets and on lengths higher or equal to 2.5 meters)</td>
</tr>
<tr>
<td>5</td>
<td>Upper shelf</td>
<td>12</td>
<td>Rear side upright present only on lift C2</td>
</tr>
<tr>
<td>6</td>
<td>Lower shelf</td>
<td>13</td>
<td>Anti-condensation deflector (not necessary in C2 model)</td>
</tr>
<tr>
<td>7</td>
<td>Sliding in plexiglass</td>
<td>14</td>
<td>Pliers for front glass opening downwards</td>
</tr>
</tbody>
</table>

### PLATE

<table>
<thead>
<tr>
<th>N°</th>
<th>DESCRIPTION</th>
<th>N°</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>Service surface</td>
<td>22</td>
<td>Steel plate for display compartment</td>
</tr>
<tr>
<td>17</td>
<td>Support profile for sliding</td>
<td>23</td>
<td>Insulated tank</td>
</tr>
<tr>
<td>18</td>
<td>Evaporator</td>
<td>24</td>
<td>Drain outlet</td>
</tr>
<tr>
<td>19</td>
<td>Front grate covering evaporator</td>
<td>25</td>
<td>Lower shelf for plate with drawer</td>
</tr>
<tr>
<td>20</td>
<td>Steel hoop covers</td>
<td>26</td>
<td>Drawer patch</td>
</tr>
<tr>
<td>21</td>
<td>Fan</td>
<td>27</td>
<td>Drawer display surface</td>
</tr>
</tbody>
</table>

### BASES

<table>
<thead>
<tr>
<th>N°</th>
<th>DESCRIPTION</th>
<th>N°</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>28</td>
<td>Flexible pipe for condense outlet</td>
<td>34</td>
<td>Cell evaporator</td>
</tr>
<tr>
<td>29</td>
<td>Control panel</td>
<td>35</td>
<td>Cell panel</td>
</tr>
<tr>
<td>30</td>
<td>Condensing unit</td>
<td>36</td>
<td>Insulated cell</td>
</tr>
<tr>
<td>31</td>
<td>Boxed base in plasticised sheet</td>
<td>37</td>
<td>Cell bottom grate</td>
</tr>
<tr>
<td>32</td>
<td>Foot adjustable in height</td>
<td>38</td>
<td>Cell drain outlet</td>
</tr>
<tr>
<td>33</td>
<td>Condense drain outlet (PVC ø 32)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
11. TERMINAL BOARD COMPONENTS

<table>
<thead>
<tr>
<th>POSITION</th>
<th>COMPONENT</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BOX PA 104</td>
<td>Junction box with clamps: L - N - G (phase, neutral and earth for the display cabinet main power supply) 1 - 2 (for the condensing unit power supply)</td>
</tr>
<tr>
<td>2</td>
<td>RELAY 1</td>
<td>Relay for solenoid valve control for the refrigerated tank</td>
</tr>
<tr>
<td>3</td>
<td>RELAY 2</td>
<td>Relay for solenoid valve control for the reserve cell</td>
</tr>
<tr>
<td>4</td>
<td>CONTROL UNIT CONNECTOR</td>
<td>Connector for cable extension of electronic control unit</td>
</tr>
<tr>
<td>5</td>
<td>POTENTIOMETER</td>
<td>If provided, regulates the voltage of the fans to vary ventilation. ATTENTION! NEVER BRING VOLTAGE BELOW 190 VOLTS.</td>
</tr>
<tr>
<td>6</td>
<td>TRANSFORMER</td>
<td>Transformer for side glass power supply (IN 230V, OUT 0-12/0-16)</td>
</tr>
<tr>
<td>7</td>
<td>VALVES CONNECTOR</td>
<td>Connector for the two solenoid valves power supply (display cabinet and reserve).</td>
</tr>
<tr>
<td>8</td>
<td>LIGHT CONNECTOR</td>
<td>Connector for T5 lamps power supply (the feeder is on the ceiling light)</td>
</tr>
<tr>
<td>9</td>
<td>MAIN CONNECTOR</td>
<td>Connector for hot wires, side glass heating and internal vents power supply</td>
</tr>
<tr>
<td>10</td>
<td>FILTER</td>
<td>Double cell 230V 10A interference prevention filter</td>
</tr>
</tbody>
</table>

N.B.: In case the reserve cell is not present, there is only one relay (2) which directly controls the power supply of the condensing unit. Therefore, the solenoid valves are no longer present and the "valves connector" (7) is missing.

N.B.: once the steel grate has been removed, both the terminal board and the condensing unit can slide towards the operator without impediment, making any type of intervention extremely easy.
| AGD | DIGITAL FLAVOURS DISPLAY FEEDER |
| AEL | ELECTRONIC BALLAST |
| AF  | SERVICE VALVE |
| CA  | SUPPLY CYCLE |
| CAR | AIR CONDENSER |
| CE  | ELECTRONIC CONTROL |
| CN  | MULTIPOLAR CONNECTOR |
| CO  | COMPRESSOR |
| D  | DIO |
| DEV | SHUNT |
| DR  | REMOTE DISPLAY |
| EM  | PHOTOCELL Emitter |
| EV  | EVAPORATOR |
| F   | FUSE |
| FD  | FILTER DRIER |
| FLU | WATER FLOW SWITCH |
| FR  | COMPRESSOR THERMAL PROTECTION |
| HL  | COMPRESSOR ALARM LIGHT |
| I   | GENERIC SWITCH |
| IEC | WATER EVAPORATION BIN SWITCH |
| IGD | DIGITAL FLAVOURS DISPLAY |
| II  | LIGHTING SWITCH |
| IL  | SIGHT GLASS |
| IMC | WARM SHELF SWITCH |
| INV | INVERTER |
| IR  | REFRIGERATION SWITCH |
| IRP | LIGHT REFRIGERATION SWITCH |
| IV  | INTERNAL FAN SWITCH |
| K&M | CONTACTOR |
| LF  | FRONT LIGHTING |
| LI  | INTERNAL UPPER LIGHTING |
| LIA | FRONT LIGHTING |
| LIG | FLAVOURS DISPLAY LIGHTING |
| LIP | REAR LIGHTING |
| MDG | DIGITAL MODULE FOR FLAVOURS DISPLAY |
| MM  | SPINNING SHELVES ELECTRIC MOTOR |
| MUC | CONDENSING UNIT ELECTRIC CONNECTIONS |
| PA  | HIGH PRESSURE CONTROL |
| PD  | HIGH-LOW PRESSURE CONTROL |
| PO  | WATER PUMP |
| QE  | EXTERNAL ELECTRIC PANEL |
| QF  | MAGNETIC-THERMIC SWITCH |
| R   | LIGHTING BALLAST |
| RADD | RECIFIER |
| REL | GENERIC RELAY |
| REP | ELECTRONIC BALLAST |
| RES1| CONTROL TEMPERATURE REPEATER |
| RES2| FRONT PROFILE HEATING ELEMENT |
| RES3| RIGHT/LEFT GLASS HEATING ELEMENT |
| RES4| FRONT GLASS HEATING ELEMENT |
| RES5| DEFROST HEATING ELEMENT |
| RES6| WATER ALWAYS HATING ELEMENT |
| RES7| TOP LIGHTING FIXTURE HEATING ELEMENT |
| RES8| LATERAL GLASS SUPPORT HEATING ELEMENT |
| RES9| FRONT BAND HEATING ELEMENT |
| RES10| COUPLING BAND HEATING ELEMENT |
| RES11| SERVICE TOP HEATING ELEMENT |
| RES12| UPPER BAND/DOOR FRAME HEATING ELEMENT |
| RES13| HOT DRY/BAIN MARIE DISPLAY HEATING ELEMENT |
| RES14| ANTI-FOG SUCTION AIR BAND HEATING ELEMENT |
| RES15| WARM SHELF HEATING ELEMENT |
| RES16| SIDE BAND/FRONT GLASS HINGE HEATING ELEMENT |
| RES17| DEHUMIDIFICATION HEATING ELEMENT |
| RES18| DEFROSTING WATER DRAIN HEATING ELEMENT |
| RES19| RING FRAME HEATING ELEMENT |
| RES20| SIDE BAND HEATING ELEMENT |
| RES21| SUCTION AIR GLASS HEATING ELEMENT |
| RES22| OUTLET AIR HEATING ELEMENT |
| RES23| REAR GLASS HEATING ELEMENT |
| RES24| INTERNAL GLASS HEATING ELEMENT |
| RES25| FRONT GLASS UPPER FRAME HEATING ELEMENT |
| RES26| FRONT GLASS LATERAL/LOWER FRAME HEATING ELEMENT |
| RES27| FRONT GLASS LATERAL FRAME HEATING ELEMENT |
| RES28| FRONT GLASS LOWER FRAME HEATING ELEMENT |
| RES29| FRONT GLASSES COUPLING PROFILE HEATING ELEMENT |
| RES30| DOORS FRAME MIDDLE POST HEATING ELEMENT |
| RES31| GLASSES PERM TERAL FRAME HEATING ELEMENT |
| RES32| HEATED DOORS HEATING ELEMENTS |
| RES33| WATER DRAIN HEATING ELEMENT |
| RES34| DOORS FRAME HEATING ELEMENT |
| RES35| COMPRESSOR CRANKCASE HEATING ELEMENT |
| RES36| FRONT GLASS FRAME HEATING ELEMENT |
| RES37| CABINET FRAME HEATING ELEMENT |
| RES38| HOT COMPARTMENT HEATING ELEMENT |
| REV | CONDENSER FAN SPEED CONTROL |
| REV | CONDENSER FAN RELAY |
| RIC | COMPRESSOR DELAYER |
| RICV | PHOTOCELL RECEIVER |
| RIS | RESERVE ANTI-FOG HEATER ELEMENT |
| RL  | LIQUID RECEIVER |
| RLA | WATER LEVEL ELECTRONIC CONTROL |
| RO  | OIL HEATER ELEMENT |
| SAA | ABSENCE OF WATER LIGHT |
| SC  | CONDENSER PROBE |
| SD  | TERMINAL BOX |
| SDC | COMPRESSOR TERMINAL BOX |
| SE  | PROXIMITY SENSOR |
| SEC | MAIN SWITCH |
| SEV | TANK BOTTOM HEATING COIL |
| SIDG | FLAVOURS DISPLAY DIGITAL SYSTEM |
| SL  | LIQUID SEPARATOR |
| SLA | WATER LEVEL PROBE |
| SPC | COMPRESSOR LIGHT |
| SPMC | WARM SHELF LIGHT |
| SPR | ELECTRIC SUPPLY LIGHT |
| SPR | DEFOSTING LIGHT |
| ST  | DEFOSTING PROBE |
| STP | TEMPERATURE PROBE |
| STR | LIGHTING STARTER |
| SU  | HUMIDITY PROBE |
| T   | TEMPERATURE CONTROL |
| TI  | WINTER THERMOSTAT |
| TC  | CAPILLARY TUBE |
| TE  | TIMER |
| TER | THERMOMETER |
| TF  | FUSIBLE PLUG |
| TMC | WARM SHELF THERMOSTAT |
| TP  | LIGHTING FIXTURES REFRIGERATOR THERMOSTAT |
| TRA | TRANSFORMER |
| TRC | ELECTRONIC CONTROL TRANSFORMER |
| TREV | WATER EVAPORATION HEATER ELEMENT THERMOSTAT |
| TS  | SECURITY THERMOSTAT |
| TVC | CONDENSER FAN THERMOSTAT |
| V   | COMPRESSOR FAN GENERAL USE |
| VC  | CONDENSER FAN |
| VEC | WATER EVAPORATION BIN |
| VES | EXPANSION VALVE |
| VFA | CONDENSING PRESSURE CONTROL WATER VALVE |
| VR  | CHECK VALVE |
| VRA | SUCTION PRESSURE REGULATION VALVE |
| VRE | EVAPORATING PRESSURE REGULATION VALVE |
| VS  | GENERAL USE SOLENOID VALVE |
| VSA | SOLENOID WATER VALVE |
| VSB | BY-PASS SOLENOID WATER VALVE |
| VSC | REVERSING CYCLE SOLENOID VALVE |
| VSL | LIQUID SOLENOID VALVE |
| VSS | DEFROSTING SOLENOID VALVE |
| VSF | POWER REGULATOR |
| VV  | GLASS FAN |
| X1  | CABINET CONNECTIONS |
| X2  | EXTERNAL ELECTRIC PANEL CONNECTIONS |
| X3  | CONDENSING UNIT CONNECTIONS |
WARNING!
BEFORE ANY MAINTENANCE OPERATION DISCONNECT THE ELECTRICAL SUPPLY OF THE CABINET BY OPENING THE MAIN SWITCH

NOTE:
- THE HATER "RES4" (HEATED FRONT GLASS) IS ONLY PRESENT WITH "C2" FRONT GLASS
- THE COMPONENTS MARKED (*) ARE OPTIONALS
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 herein. 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 to avoid corrosion or interference.
- In case of applications in industrial environments, the use of mains filters (opt. MTD 151) is parallel with inductive loads could be useful.

2. GENERAL DESCRIPTION

Model XW60L, format 38x115mm, is microprocessor based controller, suitable for applications on medium or low temperature ventilated refrigeration units. It has 4 relay outputs to control compressor, fan, defrost, which can be either electrical or reverse cycle (hot gas and light) and 7 programmable. 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 for energy saving. It is also provided with up to 5 RTC or RTC probe inputs, the first one for temperature control, the second one, to be located inside 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 X4ABS-DX, to a network level ModBus-RTU compatible such as the diXell monitoring units of X-WEB family. It allows to program the controller by means of 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 the 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 "CDN" and "COD".

3.2 DEFROST

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

The defrost interval depends on the presence of the RTC (optional). If the RTC is present it is controlled by means of parameter "EdF":
- with EdF=0 the defrost is made every "tDF" time - standard way for controller without RTC;
- with EdF=\text{not} the defrost is made in real time depending on the hours set in the parameters LdT,LdS on workdays and in Sat,Sun in holidays.

Other parameters are used to control defrost cycles: its maximum length (tDF) and two defrost modes: timed or controlled by the evaporator's probe (FP2).

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

3.3 CONTROL OF EVAPORATOR FANS

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

- Frc = 0: fans switch on and off with the compressor and do not run during defrost;
- Frc = 1, 2 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 "Fb" parameter.

An additional parameter "Fbt" 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 the temperature is lower than set in "Fbt".

3.3.1 Forced activation of fans

This function managed by the Fbt 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 Fbt parameter, the fans are switched on. With Fbt=0 the function is disabled.

3.4 CYCLICAL ACTIVATION OF THE FANS WITH COMPRESSOR OFF

When Fnc = 0 or C = 0 (fans in parallel to the compressor), by means of the Fc and FcF parameters the fans can carry on and off cycles even if the compressor is switched off. When the compressor is stopped the fans go on working for the Fan time. With FcF=0 the fans remain always on, when the compressor is off.

3.4 LIGHT RELAY CONFIGURATION

The functioning of the auxiliary relay (terminals 1-3) can be set by the 0A3 parameter, according to the kind of application. In the following paragraph the possible setting:

3.4.1 Auxiliary thermostat

- IE., 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; C: cooling;
- SA9 Set point for auxiliary relay;
- SHF Differential for auxiliary relay
- APr Probe for auxiliary relay

Sdt 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 SHF 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 0A3=AUS and APr=NP (no probe for auxiliary output).

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

3.4.2 On/off relay – 0A3 = ON

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

3.4.3 Neutral zone regulation

With 0A3 = 1A the relay 1-3 can control a heater element to perform a neutral zone action.

3.4.4 Second compressor

With 0A3 = 2P, 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 0A3 = 3A 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 alarm relay remains on until the alarm condition recovers.

3.4.6 Night blind management during energy saving cycles

With 0A3 = 4H, the relay 1-3 operates to manage the night blind: the relay is energised when the energy saving cycle is activated , by digital input, front button or RTC (optional).

4. FRONT PANEL COMMANDS

4.1 STANDARD FRONTAL PANEL

4.1.1 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 breezes the parameter codes or increments the displayed value.

DOWN: To see the min stored temperature; in programming mode it breezes the parameter codes or decreases the displayed value.

To switch the instrument off, if FO = OFF.

To switch the light, if 0A3 = Lg.

KEY COMBINATIONS:

To lock & unlock the keyboard.
4.3 USE OF LEDS

Each LED function is described in the following table.

<table>
<thead>
<tr>
<th>LED MODE</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ON</strong></td>
<td>Compressor enabled</td>
</tr>
<tr>
<td>Flashing</td>
<td>Anti-short cycle delay enabled</td>
</tr>
<tr>
<td>Flashing</td>
<td>Defrost enabled</td>
</tr>
<tr>
<td>Flashing</td>
<td>Chip time in progress</td>
</tr>
<tr>
<td>ON</td>
<td>Fans enabled</td>
</tr>
<tr>
<td>Flashing</td>
<td>Fans delay after defrost in progress</td>
</tr>
<tr>
<td>ON</td>
<td>An alarm is occurring</td>
</tr>
<tr>
<td>ON</td>
<td>Continuous cycle is running</td>
</tr>
<tr>
<td>ON</td>
<td>Energy saving enabled</td>
</tr>
<tr>
<td>ON</td>
<td>Light on</td>
</tr>
<tr>
<td>Auxiliary relay on</td>
<td></td>
</tr>
<tr>
<td>OFF</td>
<td>Measurement unit</td>
</tr>
<tr>
<td>OFF</td>
<td>Flashing Programming phase</td>
</tr>
</tbody>
</table>

5. MAX & MIN TEMPERATURE MEMORIZATION

5.1 HOW TO SEE THE MAX TEMPERATURE
1. Press and release the + key.
2. The “LS” 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 (Hi/LS message starts blinking and the normal temperature will be displayed).
2. To confirm the operation, press the SET key again or by waiting 5s the normal display will be restored.

6. MAIN FUNCTIONS

6.1 TO SET THE CURRENT TIME AND DAY (ONLY FOR INSTRUMENTS WITH RTC)
When the instrument is switched on, it is necessary to program the time and day.
1. Enter the 9 programming menu by pressing the SET + keys for 3s.
2. The rtc parameter is displayed. Press the SET key to enter the real time clock menu.
3. The hour parameter is displayed.
4. Press the SET and set current hour by the UP and Down keys, then press SET to confirm the value.
5. Repeat the same operations on the Min (minutes) and day (day) parameters.

To exit: Press SET+UP keys or wait for 15s without pressing any keys.

6.2 HOW TO SEE THE SET POINT

1. Press and immediately release the SET key, the display will show the Set point value.
2. Press 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. Press 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 use the Up or Down keys within 15s.
4. To memorise the new set point value press the SET key again or wait 15s.

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 operates 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.

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. Release the keys, then push again the SET + keys for more than 7s. The P12 label will be displayed immediately followed by the F1 parameter.
3. Select the required parameter.
4. Press the SET key to display its value.
5. Use “UP” or “DOWN” to change the 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.

NOTE: If no parameter is present in P12, after the “F12” message is displayed. Keep the keys pushed till the P12 message is displayed.

NOTE: 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 3s the UP+ and DOWN keys.
2. The “FOP” 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/min temperature stored
3. If a key is pressed more than 3s the “FOP” message will be displayed.

6.8 TO UNLOCK THE KEYBOARD

Keep pressed together for more than 3s the and keys, till the “FOP” 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 3s. The compressor operates to maintain the “cst” set point for the time set through the “CC” parameter. The cycle can be terminated before the end of the set time using the same activation key + “A” for 3s.

6.10 THE ON/OFF FUNCTION

With “OFF” button, pushing the ON/OFF key, the instrument is switched off. The “OFF” display is displayed. In this configuration the regulation is disabled. To switch the instrument on, push again the ON/OFF key.

WARNING: Leads 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 - 25.0%/C or 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 value.
LS Minimum set point: (0-50°C/SET-50°F) Sets the minimum value for the set point.
US Maximum set point: (SET+110°C/SET+230°F) Sets the maximum value for set point.
Or Thermostat probe calibration: (-12.0-12.0°C, -12.-12.0°F) Adjusts to adjust possible offset of the thermostat probe.
P2P Evaporator probe presence: = not present; the defrost stops by time; y present; the defrost stops by temperature.
GE Evaporator probe calibration: (-12.0-12.0°C, -12.0-12.0°F) Adjusts to adjust possible offset of the evaporator probe.
P3P Third probe presence (P3): = not present; the terminals 13-14 operate as digital input; w present: the terminals 13-14 operate as third probe.
O3 Third probe calibration (P3): (-12.0-12.0°C, -12.0-12.0°F) Allows to adjust possible offset of the third probe.
P4P Fourth probe presence (P4): = not present; y present; = not present.

AC1 4th compressor delay at start up: (0-255s) Used only if AC3 = 2P3 Time interval between the switching on of the first compressor and the second one.

The percentage of the second and first probe for regulation (0=100, 100 = P1, 92 = P2): it allows to set the regulation according to the percentage of the first and second probe, for the following formula (mp1=12)P1+P2).

CT Temperature setting duration at continuous cycle: (0-24:00, res: 10min) Allows to set the length of the continuous cycle: compressor stops on without interruption for the CT1 time. Can be used, for instance, when the room is filled with new products.

CSS Set point for continuous cycle: (-50-150°C) Sets the set point used during the continuous cycle.

CO Compressor On time with faulty probe: (0-255 min) time during which the compressor is active in case of faulty thermostat probe. With COF=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.

RES Resolution (of “T” (°C): 0.1°C) allows decimal point display.
06.07 SPECIFICATIONS AND INSTALLATION INSTRUCTIONS

1. General Specifications: 2,500 N-m, 1000 A, 120-240 VAC/DC, 50/60 Hz, IP65, 100% duty cycle.

2. Installation: Mount the motor on a solid surface using the provided mounting hardware. Ensure proper ventilation and access to the control panel.

3. Motor Protection: Use a suitable overload relay or circuit breaker to protect the motor from overcurrent and overheat.

4. Wiring: Follow local electrical codes and use appropriate cable sizes. Ensure proper grounding to prevent electrical shocks.

5. Maintenance: Perform regular maintenance checks to ensure the motor's continued performance. Lubricate moving parts as necessary.

6. Safety: Prior to any maintenance or repair work, ensure the motor is de-energized and power is disconnected.

7. Troubleshooting: If the motor fails to start or runs abnormally, check for power supply issues, overload, or mechanical obstructions.

8. Disposal: Dispose of the motor according to local environmental regulations.

9. Warranty: 1 year warranty from the date of purchase. Contact the manufacturer for service and support.

10. Customer Support: Contact our support team for any queries or issues. Suitable for industrial applications.
Installing and Operating Instructions

PbC Type of probe: it allows to set the kind of probe used by the instrument. PbC = PbC probe, etc. = HTC probe.

8. DIGITAL INPUTS

The first digital input 13-14 is enabled with PbP = n. With PbP = n and 1F = 0 the second digital input is disabled.

8.1 GENERIC ALARM (1F or 2F = EAL)

As soon as the digital input is activated the unit will wait for "above" delay before signaling the "EAL" alarm message. The outputs status don't change. The alarm stops just after the digital input is deactivated.

8.2 SERIOUS ALARM MODE (1F or 2F = BAL)

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

8.3 PRESSURE SWITCH (1F or 2F = PAL)

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

8.4 DOOR SWITCH INPUT (1F or 2F = dor)

It signals the door status and the corresponding relay output status through the "どり" parameter: "dor" normal (any changes), "on = Fan OFF", "PALS = Compressor OFF", "C = Compressor and fan OFF". Since the door is opened, after the delay time set through parameter "delay", the door alarm is enabled, the display shows the message "do" and the regulation stops if the compressor is always OFF. The door 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 (1F or 2F = 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 "def" safety time is expired.

8.6 SWITCH THE AUXILIARY RELAY (1F or 2F = aus)

When "aus" = aus the digital input switches the auxiliary relay of the auxiliary relay.

8.7 INVERSION OF THE KIND OF ACTION: HEATING-COOLING (1F or 2F = H+C)

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

8.8 ENERGY SAVING (1F = E)

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

9. HOLIDAY DEFROST (1F or 2F = HDF) —ONLY FOR MODELS WITH RTC

This function enables the holiday defrost setting.

9.10 ON OFF FUNCTION (1F or 2F = onF)

To switch the controller on and off.

8.11 DIGITAL INPUTS POLICY

The digital input polarity depends on the "H" and "Z" parameters. "H" or "Z" = "CL", the input is activated by closing the contact. "H" or "Z" = "OP", the input is activated by opening the contact.

9. TTL SERIAL LINE — FOR MONITORING SYSTEMS

The TTL serial line, available through the HTK1 connector, allows to monitor the external TTL's receiver. The TTL's receiver must be connected to a monitoring system ModBUS-RTU compatible such as the X-WEBS500/300/000.

10. X-REP OUTPUT — OPTIONAL

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

11. INSTALLATION AND MOUNTING

The controller XW60L shall be mounted on vertical panel, in a 150x31 mm hole, and fixed using two screws ø3 x 2mm. To obtain an IP65 prototype grade use the front panel rubber gasket (mod. RG-1). 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.

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 3A connection (3.0mm), 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 caustic liquid infiltration. It is recommended to place the thermostat probe away from air streams to correctly measure the average room temperature. Place the defeat 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 a key. The "oteL" message appears followed by the flashing "End".
3. Push "SET" key and the End will stop flashing.
4. Turn OFF the instrument and remove the "Hot Key", then turn it ON again.

NOTE: the "Ery" message is displayed for failed programming. In this case push again a key if you want to restart the upload or again 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 "doC" message is blinking followed by flashing "End".
4. After 10 seconds the instrument will restart working with the new parameters.
5. Remove the "Hot Key".

NOTE: the message "Ery" 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

<table>
<thead>
<tr>
<th>Message</th>
<th>Cause</th>
<th>Outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1*</td>
<td>Room probe failure</td>
<td>Compressor output auto to par. &quot;Com&quot; and &quot;COF&quot;</td>
</tr>
<tr>
<td>P2*</td>
<td>Evaporator probe failure</td>
<td>Defrost end is timed</td>
</tr>
<tr>
<td>P3*</td>
<td>Third probe failure</td>
<td>Outputs unchanged</td>
</tr>
<tr>
<td>P4*</td>
<td>Fourth probe failure</td>
<td>Outputs unchanged</td>
</tr>
<tr>
<td>L1*</td>
<td>Maximum temperature alarm</td>
<td>Outputs unchanged</td>
</tr>
<tr>
<td>L2*</td>
<td>Minimum temperature alarm</td>
<td>Outputs unchanged</td>
</tr>
<tr>
<td>L3*</td>
<td>Condenser high temperature</td>
<td>It depends on the &quot;A&quot; parameter</td>
</tr>
</tbody>
</table>
14.1 SILENCING BUZZER / ALARM RELAY OUTPUT

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

14.2 ALARM RECOVERY

Probe alarms PT1, PT2, PT3, and PT4 start some seconds after the fault in the related probe, they automatically stop some seconds after the probe returns normal operation. Check connections before replacing the probe.

Temperature alarms TA1, TA2, and TA3 automatically stop as soon as the temperature returns to normal values.

Alarms "EAC" and "EAF" (with IF=RAL) recover as soon as the digital output is disabled.

Alarm "CA" (with IF=RAL) returns by switching off and on the instrument.

14.3 OTHER MESSAGES

Pos: Keyboard unlocked.
PoF: PoF key locked.
noP: In programming mode: program parameter is present in P11.

On the display or in p2, p3, p4, p5: the selected probe is not enabled.

15. TECHNICAL DATA

Housing: self-extinguishing ABS.
Case: size 30 x 16 x 26 cm, depth 76 mm.
Mounting: panel mounting in a 150 x 31 mm panel-cut-out with two screws, 0.3 x 2.3 mm.
Distance between the holes 10.5 mm.
Protection IP2X, Frontal protection IPX5 with frontal gasket (mod RS-L, optional).
Connections: screw terminal block 2.5 mm heat-resistant wire and 6.3mm faston.
Power supply: 230Vac or 110Vac or 24Vac x 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 PT100 probes.
Digital inputs: 2 free voltage.
relay: relay SPST 8 x 16(3A, A, 24Vac)
fan: relay SPST 8 x 25Vac
defrost: relay SPST 8 x 25Vac
Other output: buzzer (optional).
Serial output: TTL standard; Communication protocol: Modbus-RTU.
Data storage: non-volatile memory (EEPROM).
Internal clock: back-up 24 hours (only for model with RTC).
Kind of action: KB: Pollution grade: 2; Software class: A.
Rated impulsive voltage: 2500V; Over voltage category: II.
Operating temperature: 0-50°C; Storage temperature: -30-85°C.
Relative humidity: 30-85% (no condensation).
PTC probe: -50-+150°C (-30-300°C).
Resolution: 0.1°C or 1°C or 1°F (selectable).
Accuracy (ambient temp. 25°C): ±0.7°C ±0.1°C digit.

16. CONNECTIONS

Supply: 230Vac or 24Vac; connect to terminals 11-12.
The X REP output is optional.
The light relay can be also 16VAC according to the model.

17. DEFAULT SETTING VALUES

<table>
<thead>
<tr>
<th>Label</th>
<th>Name</th>
<th>Range</th>
<th>°C/°F</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>ov</td>
<td>L6</td>
<td>Minimum set point</td>
<td>30°C-SET+9%</td>
<td>SET</td>
</tr>
<tr>
<td>ov</td>
<td>L7</td>
<td>Maximum set point</td>
<td>30°C-SET-9%</td>
<td>SET</td>
</tr>
<tr>
<td>ov</td>
<td>OV</td>
<td>Over/under temp</td>
<td>110°C-SET</td>
<td>SET</td>
</tr>
<tr>
<td>ov</td>
<td>OT</td>
<td>Thermostat probe calibration</td>
<td>-12°C-120°C</td>
<td>120°C</td>
</tr>
<tr>
<td>ov</td>
<td>P2P</td>
<td>Evaporator probe calibration</td>
<td>n/a present; Y=pressures</td>
<td>Y=pressures</td>
</tr>
<tr>
<td>ov</td>
<td>P3E</td>
<td>Evaporator probe calibration</td>
<td>-12°C-120°C</td>
<td>120°C</td>
</tr>
<tr>
<td>ov</td>
<td>P3F</td>
<td>Evaporator probe calibration</td>
<td>n/a present; Y=pressures</td>
<td>Y=pressures</td>
</tr>
<tr>
<td>ov</td>
<td>P4P</td>
<td>Evaporator probe calibration</td>
<td>-12°C-120°C</td>
<td>120°C</td>
</tr>
<tr>
<td>ov</td>
<td>P4Q</td>
<td>Evaporator probe calibration</td>
<td>n/a present; Y=pressures</td>
<td>Y=pressures</td>
</tr>
<tr>
<td>ov</td>
<td>Q5</td>
<td>Evaporator probe calibration</td>
<td>0-255 min</td>
<td>255</td>
</tr>
<tr>
<td>ov</td>
<td>Q6</td>
<td>Evaporator probe calibration</td>
<td>0-255 min</td>
<td>255</td>
</tr>
</tbody>
</table>

1592027050 1X4W0L RTC GB 1 0 27.09.2008.docb 56
<table>
<thead>
<tr>
<th>Label</th>
<th>Name</th>
<th>Range</th>
<th>°C/F</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>L42*</td>
<td>2nd workdays defrost start</td>
<td>0 ≤ 23h 50m min. - nu</td>
<td>6.0</td>
<td>rtc</td>
</tr>
<tr>
<td>L42*</td>
<td>2nd workdays defrost start</td>
<td>0 ≤ 23h 50m min. - nu</td>
<td>13.0</td>
<td>rtc</td>
</tr>
<tr>
<td>L43*</td>
<td>3rd workdays defrost start</td>
<td>0 ≤ 23h 50m min. - nu</td>
<td>21.0</td>
<td>rtc</td>
</tr>
<tr>
<td>L44*</td>
<td>4th workdays defrost start</td>
<td>0 ≤ 23h 50m min. - nu</td>
<td>0.0</td>
<td>rtc</td>
</tr>
<tr>
<td>L45*</td>
<td>5th workdays defrost start</td>
<td>0 ≤ 23h 50m min. - nu</td>
<td>0.0</td>
<td>rtc</td>
</tr>
<tr>
<td>L46*</td>
<td>6th workdays defrost start</td>
<td>0 ≤ 23h 50m min. - nu</td>
<td>0.0</td>
<td>rtc</td>
</tr>
<tr>
<td>Sd1*</td>
<td>1st holiday defrost start</td>
<td>0 ≤ 23h 50m min. - nu</td>
<td>6.0</td>
<td>rtc</td>
</tr>
<tr>
<td>Sd2*</td>
<td>2nd holiday defrost start</td>
<td>0 ≤ 23h 50m min. - nu</td>
<td>13.0</td>
<td>rtc</td>
</tr>
<tr>
<td>Sd3*</td>
<td>3rd holiday defrost start</td>
<td>0 ≤ 23h 50m min. - nu</td>
<td>21.0</td>
<td>rtc</td>
</tr>
<tr>
<td>Sd4*</td>
<td>4th holiday defrost start</td>
<td>0 ≤ 23h 50m min. - nu</td>
<td>0.0</td>
<td>rtc</td>
</tr>
<tr>
<td>Sd5*</td>
<td>5th holiday defrost start</td>
<td>0 ≤ 23h 50m min. - nu</td>
<td>0.0</td>
<td>rtc</td>
</tr>
<tr>
<td>Sd6*</td>
<td>6th holiday defrost start</td>
<td>0 ≤ 23h 50m min. - nu</td>
<td>0.0</td>
<td>rtc</td>
</tr>
</tbody>
</table>

**Addr**

| Serial address | 1-247 | 1 | Pr2 |

**Pzb**

| Kind of probe | P1c, etc. | etc. | Pr2 |

**on F**

| User key enabling | nu, off, ES | off | Pr2 |

**dp1**

| Room probe display | -- | -- | Pr2 |

**dp2**

| Suspender probe display | -- | -- | Pr2 |

**dp3**

| Third probe display | -- | -- | Pr2 |

**dp4**

| Fourth probe display | -- | -- | Pr2 |

**rSe**

| Real set | actual set | -- | Pr2 |

**sR**

| Software release | -- | 1.5 | Pr2 |

**pRb**

| Map code | -- | -- | Pr2 |

* Only for model with real time clock

* Only for XW60L with X-RIP output

Dixell S.p.A. Z.1 Via dell’Industria, 27
32010 Pieve d’Alpago (BL) ITALY

Tel: +39 - 0437 - 98 33 - Fax: +39 - 9437 - 98 93 13

E-mail: dixell@dixell.com - http://www.dixell.com
Digital controller with off cycle defrost

XW20LS

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
  changes in temperature or 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.
- If used in a location where water can get in the instrument, the controller should be installed on a
  monitor panel to avoid damaging the instrument or the cables.
- 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 model F11) in parallel with
  inductive loads could be useful.

2. GENERAL DESCRIPTION

Model XW20LS, format 38x185mm, is a digital thermostat with off cycle defrost designed for
refrigeration applications at normal temperature. It has 2 relay outputs to control compressor and
light. It could be provided with a Real Time Clock which allows programming of up to 6 daily defrost
cycles, divided into holidays and week days. The program function will perform different set points
depending on the time of the day. It can also be programmed with 2 RTD or 2 PTC probe inputs, the first
one for temperature control, the second one, to be located onto the evaporator and to control the defrost
termination temperature. The digital input can operate as third temperature probe, to signal the
condenser temperature alarm or to display a temperature.

The HOT KEY output allows to control the unit, by means of the external module XWEB-CL, to a
network like Modbus-RTU compatible such as the dixell, mentioning 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 “COM” and “COF”.

3.2 DEFROST

Defrost is performed through a simple stop of the compressor. The defrost interval depends on
the presence of the RTC (optional). If the RTC is present it is controlled by means of parameter “Edf”:

- With Edf=0 in the defrost is made every 10’ time – standard way for controller without RTC.
- With Edf=1 the defrost is made once every set time depending on the day, set in the parameters
  Ld1...Ld6 on week days and in Se1...Se6 in holidays.
Other parameters are used to control defrost cycles: its maximum length (MDF) and two defrost
times for the compressor or the evaporator’s probe (P2F).

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

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 is 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 Hour (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 Sd (day) parameters.
6. To exit: Press SET+UP keys or wait 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 press the + or - keys within 10s.
4. To memorize the new set point value press the SET key again or wait 10s.

6.4 HOW TO START A MANUAL DEFROST

1. 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
Installing and Operating Instructions 1592073230

6.8. THE HIDDEN MENU

The hidden menu includes all the parameters of the instrument.

6.8.1 HOW TO ENTER THE HIDDEN MENU

1. Enter the Programming mode by pressing the Set + key for 3s (the “C” or “P” LED starts blinking).

2. Release the keys, then press again the Set + key for 3s and the P2 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.

NOTE: if none parameter is present in P1, after 3s the "not" message is displayed. Keep the keys pressed until the P2 label is displayed.

NOTE:2 the set value is stored even when the procedure is exited by waiting the time-out to expire.

6.8.2 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 + ".

6.7. HOW TO LOCK THE KEYBOARD

1. Keep pressed for more than 3s the UP + DOWN keys.

2. The "PGM" message will be displayed and the keyboard will be locked. At this point it will be possible only to see the set point of the MAX MIN temperature probe.

3. If a key is pressed more than 3s the "PGM" message will be displayed.

6.8.6 TO UNLOCK THE KEYBOARD

Keep pressed together for more than 3s the + and - keys, till the "Pgm" message will be displayed.

6.9. THE CONTINUOUS CYCLE

When detent is not in progress, it can be activated by holding the + “-” key pressed for about 3 seconds. The continuous 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 "on/off" pressing the ON/OFF key, the instrument is switched off. The "off" message is displayed. In this configuration, the configuration 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 deff start time.

REGULATION

Hy Differential (0.1 - 25.0°C / 1 - 25.0°F) Intentional differential for set point. Compressor Cut In is Set Point + differential (hr). 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: [+110°C / SET + 230°F] Sets the maximum value for the set point.

O1 Thermostat probe calibration (-12.9 to +12°C / -10.9 to +25°F) Adjusts its offset of the thermostat probe.

P1P Evaporator probe presence: m: not present; y: present.

P1E Evaporator probe offset: (12.0 - 12°C / 10.0 - 12°F) Adjust its offset of the evaporator probe.

P3P Third probe presence: P3: not present, the terminals operate as digital input; P3: present, the terminals operate as third probe.

O3 Third probe calibration: (P3): (12.0 - 12°C / 10.0 - 12°F) Adjust the offset of the third probe.

do Outputs activation delay at start up: (0 to 255ms) 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 for the following form (mP1-1F2-100-220).

AC Anti-short cycle delay: (0 to 50 min) Minimum interval between the compressor and stop the following restart.

n Percentage of the second and first period for refrigeration (0 = 100; 100 = P1; 0 = P2) It allows to set the regulation according to the percentage of the first and second probe, for as the following formula (mP1-1F2-100-220).

C1 Compressor Off time during continuous cycle: (0.0 - 24.0 hr; res. 0.01 min) Allows to set the length of the continuous cycle, compressor stays on without interruption for the C1 time. Can be used, for instance, when the room is filled with new products.

C3S Set point for continuous cycle: (50 - 150°C) It sets the set point used during the continuous cycle.

C0 Compressor Off with faulty probe: (1 min) during which the compressor is active in case of faulty thermostat probe. When C0=0 comaprison is always OFF.

C0F Compressor Off with faulty probe: (1 min) during which the compressor is OFF in case of faulty thermostat probe. When C0F=0 compressor is always active.

CF Type of action: L = cooling; H = heating.

DISPaly

CF Temperature measurement unit: °C or °F (Temperature Warning: When the parameter is adjusted the set point and the values of the parameters Hy, Lo, Us, Ov, ALU and AUL have to be considered and modified if necessary.)

rES Resolution for °C: (0.1°C; 0.1°F) It allows decimal point display.

Loc Display mode: P1, P3, P4, SET, dt: It selects which probe is displayed by the instrument: P1: Thermosat probe; P2: Evaporator probe; P3: Third probe for model with this option enabled; P4: NOT SET IT; SET: set point; dt: percentage of visualization.

Rd K-REX display (option): (P1, P2, P3, P4, SET, dt); It selects which probe is displayed by the instrument: P1: Thermosat probe; P2: Evaporator probe; P3: Third probe for model with this option enabled; P4: NOT SET IT; SET: set point; dt: percentage of visualization.

dLy Display delay: (0 = 20.0 ms, res. 10us) When the temperature increases, the display is updated every 1s after the delay.

dr Percentage of the second and first probe for visualization when Loc = dr (P1=100; 100 = P1; 0 = P2) If Loc = dr it allows to set the visualization according to the percentage of the first and second probe, as for the following formula (drP1=1F2-100-220).

DEFOUST

EdF Defrost mode (only for controller with RTC): rtcs Real Time Clock mode. Defrost mode follows the L1 and L2 hours on holidays.

lEdF Defrost termination time: (50 - 50 °C / 50 - 112°F) (Enabled only when EdF=4b) It sets the temperature measured by the evaporator probe, which causes the end of defrost.

ldF Interval between defrost cycles: (0 to 12h) Determines the time interval between the beginning of two defrost cycles.

lMdF (Maximum) length for defrost: (0 - 25min) When lMdF = n, (n evaporator probe timed start point) set point defined, when Pn = y (defrost based on temperature) it sets the maximum length for defrost.

lEdF Temperature during defrosting: (rt = real temperature; Ev = evaporator probe; Pn = probe defined, when Pn = y (defrost based on temperature)) it sets the maximum length for defrost.

lAfH Differential for temperature alarm recovery: (0.1 - 25.0°C / 1 - 45°F) Interval differential for recovery of temperature alarm.

lAd Temperature alarm delay (0 - 255 min) time interval between the detection of an alarm condition and alarm signaling.

daA Exclusion of temperature alarm at start-up: (0 to 23.5 h) time interval between the detection of the temperature alarm condition after instrument power on and alarm signaling.

CONDENSOR TEMPERATURE ALARM

AP2 Probe selection for temperature alarm of condenser: m: no probe; P1: Thermostat probe; P2: Evaporator probe; P3: Configurable probe; P4: NOT SET IT.

AL2 Low temperature alarm of condenser: (55 - 150°C) When this temperature is reached the L2 alarm is signaled, possibly after the AG2 delay.

AH2 Differential for temperature condenser alarm recovery: (0.1 - 25.0°C / 1 - 45°F) time interval between the detection of the alarm condition and alarm recovery.

AL2 Condenser temperature alarm delay: (0 - 255 min) time interval between the detection of the alarm condition during the period of time set in the parameter.

bL Compressor off with low temperature alarm of condenser: n: no; compressor keeps working; y: yes, compressor is switched off if the alarm is present, in any case regulation restarts after AG2 time at minimum.

AC2 Compressor off with high temperature alarm of condenser: n: no; compressor keeps working; y: yes, compressor is switched off if the alarm is present, in any case regulation restarts after AG2 time at minimum.

DIGITAL INPUT

ITP Digital input polarity: 0: digital input is activated by opening the contact; CL: the digital input is activated by closing the contact.

iIF Digital input configuration: EAL: external alarm: “EA” message is displayed; BAL: serious alarm: “SA” message is displayed; PAM: pressure alarm: “PA” message is displayed. “EA” message is always visible only with alarm “EA”. door: open switch function; DEF: activation of a defrost cycle; UAM: remote enabled, HTr: kind of action (cooling - heating). Fan: not set; Ef: Energy saving; Hpd: Holiday program (return only within 2h after RTC); self: switch the controller.

Vs Duty (0 to 255) with ITP = EAL or ITP = BAL digital input alarm delay (1s): delay between the detection of the external alarm condition and its signaling.

with HTr: door: open and closing delay with ITP = PAM: door: pressure switch function: time interval to calculate the number of the pressure switch activation.

PS Pressure switch number: (0 - 15) Number of activation of the pressure switch, during the "did interval", before signaling alarm “1F1: PI” if the PNS activation in the did time is reached, switch off and on the instrument to restart normal operation.

ccO Compressor status when open door: no; Fan: normal; CPR, C: Compressor OFF.

oO Outputs restart after alarm: no: outputs not affected by the alarm excitation; y: outputs switch off with the alarm.

HE Temperature increase during the Energy Saving cycle:

CEF The F (0.0000) 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)

Hz Current hour (0 - 23h)

Min Current minute (0 - 59min)
Installing and Operating Instructions

9. TIL SERIAL LINE - FOR MONITORING SYSTEMS

The TIL serial line, available through the HOT KEY connector, allows reads of the external TTU-BS10S converter, X4S-CX, to connect the instrument to a monitoring system ModBus-RTU compatible such as the XWE8200/3000/300.

10. X-REP OUTPUT - OPTIONAL

As optional, an X-REP can be connected to the instrument, through the HOY KEY connector. The X-REP output is the serial connection.

11. INSTALLATION AND MOUNTING

The controller XW20LS shall be mounted on a vertical panel, in a 150x31 mm hole, and fixed using two screws ø 3 x 20 mm. 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 (9.3mm). Heat-resistant cables have to be used. Before connecting cables make sure the power supply complies with the instrument 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 liquid infiltration. It is recommended to place the thermocouple 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 air 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 forward keypad.
2. When the controller is ON insert the “Hot Key” and push + key. The “oPL” message appears followed by a 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 “End” 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.
14. ALARM SIGNALS

<table>
<thead>
<tr>
<th>Message</th>
<th>Cause</th>
<th>Outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>P1#</td>
<td>Room probe failure</td>
<td>Compressor output off, too. Pass &quot;Gen&quot; and &quot;COF&quot;</td>
</tr>
<tr>
<td>P2#</td>
<td>Evaporator probe failure</td>
<td>Defrost end is timed</td>
</tr>
<tr>
<td>P3#</td>
<td>Third probe failure</td>
<td>Outputs unchanged</td>
</tr>
<tr>
<td>FA#</td>
<td>Maximum temperature alarm</td>
<td>Outputs unchanged</td>
</tr>
<tr>
<td>LA#</td>
<td>Minimum temperature alarm</td>
<td>Outputs unchanged</td>
</tr>
<tr>
<td>HAC#</td>
<td>Condenser high temperature</td>
<td>It depends on the &quot;AC&quot; parameter</td>
</tr>
<tr>
<td>LAC#</td>
<td>Condenser low temperature</td>
<td>It depends on the &quot;BL&quot; parameter</td>
</tr>
<tr>
<td>CA#</td>
<td>Door open</td>
<td>Compressor and timer resets</td>
</tr>
<tr>
<td>EAC#</td>
<td>External alarm</td>
<td>Outputs unchanged</td>
</tr>
<tr>
<td>CA#</td>
<td>Serious external alarm</td>
<td>(IF=PAL) All outputs OFF</td>
</tr>
<tr>
<td>rfc#</td>
<td>Real time clock alarm</td>
<td>Alarm output ON. Other outputs unchanged. Defrost according to the &quot;IDF&quot; Set real time clock has to be set</td>
</tr>
<tr>
<td>IF#</td>
<td>Real time clock board failure</td>
<td>Alarm output ON. Other outputs unchanged. Defrost according to the &quot;IDF&quot; Contact the service</td>
</tr>
</tbody>
</table>

14.1 SILENCING_BUZZER / ALARM RELAY OUTPUT

If "IFA = y", the buzzer and the relay are silenced by pressing any key. If "IFB = y", 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# 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 "HAC", "LA# HAC2" and "LAC2" automatically stop as soon as the temperature returns to normal values.

Alarms "EA#" and "CA#" (with IF=PAL) recover as soon as the digital input is disabled.

Alarm "CA#" (with IF=PAL) recovers only by switching off and on the instrument.

14.3 OTHER MESSAGES

Pon Keyboard unlocked.
Poff Keyboard locked.

In programming mode: none parameter is present in P1#.

15. TECHNICAL DATA

- Housing: self-extinguishing ABS
- Case: fi 89x189x68 mm; depth 46 mm
- Panel mounting: panel mounting in a 150x31 mm panel cut-out with two screws. 3 x 2 mm
- Distance between the holes 155 mm
- Protection: IP20
- Frontal protection: IP00 (with white gasket and RS-L, optional)
- Connections: screw terminal block 2.5 mm² heat-resistant wiring and 6.5 mm Faston
- Power supply: 230Vac or 110Vac or 24Vac ±10%, Power absorption: 5VA max.
- Display: 3 digits, red, LED, 14.2 mm high, Inputs up to 3 NTC or PTC probes.
- Digital input: 1 free voltage
- Relay outputs: Total current on loads. Max. 20A
- Compressor: relay SPST (5) A, 230Vac
- light: relay SPST 7 A, 230Vac
- Other output: buzzer (optional)
- Serial output: TTL standard, Communication protocol: Modbus - RTU
- Data storing: on the non-volatile memory (EEPROM)
- Internal lock back-up: 24 hours (only for model with RTC)
- Kind of action: 18 Police grade. 2 Software class: A
- Rated impulsive voltage: 2000V. Over voltage Category II
- Operating temperature: -40°C to 65°C
- Humidity: 20-85% (no condensation)
- Measuring and regulation range: NTC probe: -40°C to 110°C (2°C/30°C); PTC probe: -50°C to 150°C (30°C/20°C)
- Resolution: 0.1°C or 1°C or 1°F (selectable). Accuracy (ambient temp. 25°C), ±0.7°C ±1 digit

16. CONNECTIONS

16.1 XW20LS - DRY CONTACTS

Supply: 120Vac or 24Vac: connect to terminals 7-8
The X-REP output is optional
<table>
<thead>
<tr>
<th>Label</th>
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<td>6th holiday defrost start</td>
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<td>0.0</td>
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<td>Evaporator probe display</td>
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<td>dp3</td>
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<td>Map code</td>
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</tr>
</tbody>
</table>

* Only for models with real time clock

? Only for XW20LS with X-REP output

Dixell S.p.A. | Z.I. Via dell'Industria, 27
32010 Verona d'Alpago (BL) ITALY
Tel. +39 - 0457 - 046 33 Fax +39 - 0457 - 08 93 13
E-mail: dixell@dixell.com - http://www.dixell.com