1. INTRODUCTION

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

1.2. HOW TO USE THE MACHINE

- **PERMITTED USES**
  - This refrigerated display cabinet has been manufactured for **beverage products** presentation and sell.
- **NOT PERMITTED USES**
  - It is absolutely forbidden the use of the refrigerated display cabinet for **pharmaceutical products**.

1.3. RESPECTED NORMS

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

- Directive N° 2006/95/CE : Low tension
- Directive N° 97/23/EC (P.E.D.) : European Pressure Equipment
- Norm CEI 17-13/1 (EN 60498/1) : Realization of Electric Installations
- Norm CEI EN 60335-1 (CEI 51-150) : Safety of household and similar electrical appliances
- Norm CEI EN 60335-2-24 (CEI 61-56) : Special norms for refrigerators, freezers and ice machines
- UL747
- NSF 7

1.4. RESPONSIBILITY

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

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

1.5. WARNING

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

2. DISPLAY CASE DATA PLATE

2.1. DATA PLATE CONTENT

![Sample Data Plate]

<table>
<thead>
<tr>
<th>Model</th>
<th>Production Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial No.</td>
<td>2</td>
</tr>
<tr>
<td>W/A</td>
<td>14</td>
</tr>
<tr>
<td>W</td>
<td>15</td>
</tr>
<tr>
<td>W</td>
<td>16</td>
</tr>
<tr>
<td>W</td>
<td>17</td>
</tr>
<tr>
<td>Pmax</td>
<td>12 psig</td>
</tr>
<tr>
<td>Pmin</td>
<td>13 psig</td>
</tr>
</tbody>
</table>

1. Commercial name of the unit
2. Identification number
3. Production date
4. Voltage
5. Phases
6. Frequency
7. Compressor type
8. Number of compressors
9. Refrigerant type
10. Refrigerant weight
11. Climatic rate (CL3 = +35°C/65%, CL.4 = +30°C/55%, U.R.)
12. Test pressure - system high pressure side
13. Test pressure - system low pressure side
14. Nominal power absorbed during defrost
15. Max. power absorbed during defrost
16. Nominal power absorbed by heating elements (only if higher than 100W)
17. Lighting nominal power
3. INSTALLATION

3.1. MACHINE HANDLING

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

3.2 STOCK OF THE SHOWCASE

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

3.3 PACKAGING REMOVE

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

3.4. SHOWCASE POSITION

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

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

3.5. REMOTE CONDENSING UNIT PLACING

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

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

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

WARNING!
Although the wall showcase has main switch breaking both the phases.
Before any maintenance operation disconnect the electrical supply of the wall showcase. (pic.3.6).

3.7. IDRAULIC CONNECTION - REMOTE CONDENSING UNIT

- In the case then wall showcase has a remote condensing unit, it is necessary make the connection of defrosting water outlet with the main water drain outlet.
<table>
<thead>
<tr>
<th><strong>CLASSIC &amp; CLASSIC II COMBI</strong></th>
<th><strong>TECHNICAL FEATURES</strong></th>
<th><strong>MODELS</strong></th>
<th><strong>CCOMBI1150</strong></th>
<th><strong>CCOMBI1650</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Inches-MM</td>
<td>MM</td>
<td>1150 - 943 - 1213</td>
<td>1650 - 943 - 1213</td>
<td></td>
</tr>
<tr>
<td><strong>Crated Dimensions (L-D-H)</strong></td>
<td>Inches</td>
<td>54&quot; - 46&quot; - 63 1/4&quot;</td>
<td>71&quot; - 46&quot; - 63 1/4&quot;</td>
<td></td>
</tr>
<tr>
<td>Inches-MM</td>
<td>MM</td>
<td>1371 - 1092 - 1346</td>
<td>1803 - 1092 - 1346</td>
<td></td>
</tr>
<tr>
<td><strong>Top Refrigeration Display Area</strong></td>
<td>Type</td>
<td>Fan Ventilated</td>
<td>Fan Ventilated</td>
<td></td>
</tr>
<tr>
<td><strong>Refrigeration Display Area</strong></td>
<td>Type</td>
<td>Deck / Lower Shelf</td>
<td>Deck / Lower Shelf</td>
<td></td>
</tr>
<tr>
<td><strong>Open Area &amp; Top Deck</strong></td>
<td>Operating Temperature</td>
<td>°C / °F</td>
<td>+4°C / 39.2°F</td>
<td>+4°C / 39.2°F</td>
</tr>
<tr>
<td><strong>Compressor</strong></td>
<td>Nr./Type</td>
<td>1 / Hermetic</td>
<td>1 / Hermetic</td>
<td></td>
</tr>
<tr>
<td><strong>Cooling Power @+10°C/+14°F</strong></td>
<td>(W/ BTU'S)</td>
<td>1350W / 4350BTU'S</td>
<td>1680W / 5320BTU'S</td>
<td></td>
</tr>
<tr>
<td><strong>Electric Supply</strong></td>
<td>(V/Ph/Hz)</td>
<td>220/1/60 (USA)</td>
<td>220/1/60 (USA)</td>
<td></td>
</tr>
<tr>
<td><strong>Power Consumption</strong></td>
<td>(A)</td>
<td>9A</td>
<td>13A</td>
<td></td>
</tr>
<tr>
<td><strong>Defrost</strong></td>
<td>Mode/Type</td>
<td>Electric</td>
<td>Electric</td>
<td></td>
</tr>
<tr>
<td><strong>Climatic Class</strong></td>
<td>N°/°C/F°/H.R.</td>
<td>4+/35/95/70%</td>
<td>4+/35/95/70%</td>
<td></td>
</tr>
<tr>
<td><strong>Refrigerant Gas</strong></td>
<td>Type</td>
<td>R404A</td>
<td>R404A</td>
<td></td>
</tr>
<tr>
<td><strong>Net Weights</strong></td>
<td>Kg/Lb</td>
<td>266Kgs / 586Lbs</td>
<td>350Kgs / 771Lbs</td>
<td></td>
</tr>
<tr>
<td><strong>Crated Weights</strong></td>
<td>Kg/Lb</td>
<td>391Kgs / 862Lbs</td>
<td>525Kgs / 1157Lbs</td>
<td></td>
</tr>
</tbody>
</table>

*Dimensions are without side panels*
REFRIGERATION AND ELECTRICAL SYSTEM CABLE CONNECTION GUIDE

AGD DIGITAL FLAVOURS DISPLAY FEEDER
AEI ELECTRONIC BALLAST
AP SERVICE VALVE
CA SUPPLY FILTER
CAR AIR CONDENSER
CE ELECTRONIC CONTROL
CN MULTIPOLAR CONNECTOR
CO COMPRESSOR
D DIOXIDE
DEV SHUNT
DR REMOTE DISPLAY
EM PHOTOCELL EMMITTER
EV EVAPORATOR
F FUSE
FD FILTER DRIER
FLU WATER FLOW SWITCH
FR COMPRESSOR THERMAL PROTECTION
HI COMPRESSOR ALARM LIGHT
I GENERIC SWITCH
IEC WATER EVAPORATION BIN SWITCH
IGD DIGITAL FLAVOURS DISPLAY
IL LIGHTING SWITCH
ILG SIGHT GLASS
IMC WARM SHELF SWITCH
INV INVERTER
IR REFRIGERATION SWITCH
IRP LIGHT REFRIGERATION SWITCH
IV INTERNAL FAN SWITCH
KF CONTACTOR
LF FRONT LIGHTING
LI INTERNAL UPPER LIGHTING
LIA FRONT LIGHTING
LIG FLAVOURS DISPLAY LIGHTING
LIP REAR LIGHTING
MDIG DIGITAL MODULE FOR FLAVOURS DISPLAY
MM SPINNING SKEINS ELECTRIC MOTOR
MUC CONDENSING UNIT ELECTRIC CONNECTIONS
PA HIGH PRESSURE CONTROL
PD HIGH-LOW PRESSURE CONTROL
PO WATER PUMP
QE EXTERNAL ELECTRIC PANEL
QF MAGNETIC-THERMIC SWITCH
R LIGHTING BALLAST
RADD RECTIFIER
RE GENERIC RELAY
REL ELECTRONIC BALLAST
REP ELECTRONIC CONTROL TEMPERATURE REPEATER
RES1 COLD AIR DISCHARGE HEATING ELEMENT
RES2 FRONT PROFILE HEATING ELEMENT
RES3 RIGHT/LEFT GLASS HEATING ELEMENT
RES4 FRONT GLASS HEATING ELEMENT
RES5 DEFROST HEATING ELEMENT
RES6 WATER EVAPORATION HEATING ELEMENT
RES7 TOP LIGHTING FIXTURE HEATING ELEMENT
RES8 LATERAL GLASS SUPPORT HEATING ELEMENT
RES9 FRONT BAND HEATING ELEMENT
RES10 COUPLING BAND HEATING ELEMENT
RES11 SERVICE TOP HEATING ELEMENT
RES12 UPPER BAND/DOOR FRAME HEATING ELEMENT
RES13 HOT DRY/BAIN MARIE DISPLAY HEATING ELEMENT
RES14 ANTI-FOG SUCTION AIR BAND HEATING ELEMENT
RES15 WARM SHELF HEATING ELEMENT
RES16 SIDE BANDS/FRONT GLASS HINGE HEATING ELEMENT
RES17 DEHUMIDIFICATION HEATING ELEMENT
RES18 DEFROSTING WATER DRAIN HEATING ELEMENT
RES19 RING FRAME HEATING ELEMENT
RES20 SIDE BAND HEATING ELEMENT
RES21 SUCTION AIR GLASS HEATING ELEMENT
RES22 OUTLET AIR HEATING ELEMENT
RES23 REAR GLASS HEATING ELEMENT
RES24 INTERNAL GLASS HEATING ELEMENT
RES25 FRONT GLASS UPPER FRAME HEATING ELEMENT
RES26 FRONT GLASS LATERAL/LOWER FRAME HEATING ELEMENT
RES27 FRONT GLASS LATERAL FRAME HEATING ELEMENT
RES28 FRONT GLASS LOWER FRAME HEATING ELEMENT
RES29 FRONT GLASSES COUPLING PROFILE HEATING ELEMENT
RES30 DOORS FRAME MIDDLE POST HEATING ELEMENT
RES31 GLASSES CARRET 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
REVH CONDENSER FAN RELAY
RI REFRIGERANT TAP
RIC COMPRESSOR DELAY
RICV PHOTOCOLL RECEPTOR
RIS RESERVE, ANTI-FOG HEATING ELEMENT
RL LIQUID RECEIVER
RLA WATER LEVEL ELECTRONIC CONTROL
RO OIL HEATER ELEMENT
SAA ABSENCE OF WATER LIGHT
SC CONDENSER PROBE
SD TERMINAL BOX
SDC COMPRESSOR TERMINAL BOX
SE PROXIMITY SENSOR
SEC MAIN SWITCH
SFV TANK BOTTOM HEATING COIL
SDG FLAVOURS DISPLAY DIGITAL SYSTEM
SL LIQUID SEPARATOR
SLA WATER LEVEL PROBE
SPC COMPRESSOR LIGHT
SPMC WARM SHELF LIGHT
SPR ELECTRIC SUPPLY LIGHT
SPS DEFROSTING LIGHT
SS DEFROSTING PROBE
ST TEMPERATURE PROBE
STR LIGHTING STARTER
SU HUMIDITY PROBE
T TEMPERATURE CONTROL
TIF WINTER THERMOSTAT
TC CAPILLARY TUBE
TE TIMER
TERR THERMOMETER
TF FUSIBLE PLUG
TMC WARM SHELF THERMOSTAT
TLP LIGHTING FIXTURES REFRIGERATOR THERMOSTAT
TRA TRANSFORMER
TRC ELECTRONIC CONTROL TRANSFORMER
TREV WATER EVAPORATION HEATER ELEMENT THERMOSTAT
TS SECURITY THERMOSTAT
TVC CONDENSER FAN THERMOSTAT
TVF COMPRESSOR FAN / GENERAL USE
VC CONDENSER FAN
VEC WATER EVAPORATION BIN
VES EXPANSION VALVE
V1 INTERNAL FAN
VPA 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
VSAB BY-PASS SOLENOID WATER VALVE
VSC REVERSING CYCLE SOLENOID VALVE
VSL LIQUID SOLENOID VALVE
VSS DEFROSTING SOLENOID VALVE
VT POWER REGULATOR
VV GLASS FAN
X1 CABINET CONNECTIONS
X2 EXTERNAL ELECTRIC PANEL CONNECTIONS
X3 CONDENSING UNIT CONNECTIONS
Digital controller for medium-low temperature refrigeration applications
XW60L

1. GENERAL WARNING

1.1 PLEASE READ BEFORE USING THIS MANUAL

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

1.2 SAFETY PRECAUTIONS

- Check the supply voltage is correct before connecting the instrument.
- Do not expose to water or moisture. Use the controller only within the operating limits avoiding sudden temperature changes with high atmospheric humidity to 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 operated.
- In case of failure or faulty operation send the instrument back to the distributor or to "Dxell s.p.A." (see address) with a detailed description of the fault.
- Consider the maximum current which can be applied to each relay (see Technical Data).
- Ensure that the wires for probes, loads and the power supply are separated and far enough from each other, without crossing or interwinding.
- In case there are disturbances in the digital environment, the use of mains filters (for mod. FT1) in parallel with inductive loads could be useful.

2. GENERAL DESCRIPTION

Model XW60L, format 2xS16SS, is microprocessor based controller, suitable for applications on medium or low temperature ventilated refrigerating units. It has 6 relay outputs to control compressors, fan, defrost, which can be either electrical or reverse cycle (hot gas) and light (configurable). It can be provided with a Real Time Clock which allows programming of up to 6 daily cycles divided into weekdays and workdays. A "Day" and "Night" function with two different set points is fitted for energy saving. It is also provided with up to four RTC or PTC probe inputs, the first one is to control temperature, the second one, to be located onto the evaporator, to control the defrost termination temperature and to manage the fan. One of the six digital inputs can operate as third temperature probe. The fourth probe is used to signal the defroster temperature alarm or to display a parameter.

The HOT KEY output allows to connect the unit, by means of the external module X4655-CX, to a network line ModBUS-RTU compatible such as the dxell 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 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 "CDH" and "CDF".

3.2 DEFROST

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

The defrost interval depends on the presence of the RTC (optional). When the RTC is present in controlled by means of parameter "EDF" - with EDF=EL the defrost is made every "EDF" time -- standard way for controller without RTC.

- with EDF = "H", the defrost is made in real time depending on the hours set in the parameters L1d, L2d on weekdays and in S1d, S2d in holidays.

Other parameters are used to control defrost cycles: its maximum length (Mdf) and two defrost modes: timed controlled by the evaporator's probe (P2D).

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

3.3 CONTROL OF EVAPORATOR FANS

The fan control mode is selected by means of the "FtC" parameter;

- FnC = 0: fans will be OFF with OFF and not running during defrost.
- FnC = 1: fans will be ON even if the compressor is OFF and not running during defrost.
- FnC = 2: fans will be OFF even if the compressor is OFF and not running during defrost.
- FnC = 3: there is a timed fan delay allowing for drip time, set by means of the "FtC" parameter.

An additional parameter "FS" 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 if its temperature is lower than set in "TFS".

3.3.1 Forced activation of fans

This function managed by the Fct parameter is designed to avoid short cycles of fans, that could happen when the controller is switched on or after a defrost, when the room air warms the evaporator. Functioning: if the difference of temperature between the evaporator and the room probes is more than the value of the Fd parameter, the fans are switched on. With Fd=0 the function is disabled.

3.3.2 Cyclical activation of the fans with compressor off.

When Fc = 1 or c = Y (fans in parallel to the compressor), by means of the Fc and Fd parameters the fans can carry out on and off cycles even if the compressor is switched off. When the compressor is stopped the fans go on working for the Fc time. With Fc = 0 the fans remain always off, when the compressor is off.

3.4 LIGHT RELAY CONFIGURATION

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

3.4.1 Auxiliary thermostat

(I.e., with condensing heater) with the possibility of switching it on and off also by keyboard.

Parameters involved:

- ACH Kind of regulation for the auxiliary relay: HT: heating; CL: cooling.
- AAl Set point for auxiliary relay
- A7h7 Differential for auxiliary relay
- A7 f Probe for auxiliary relay
- A7d7 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 S7h7 parameter. The auxiliary relay can be switched on also by the AUX button. In this case it remains on till it's manually switched off.

NOTE: Set oA3 = AUS and A7 f = 0 (no probe for auxiliary output).

In this case the relay 1-3 can be activated only by digital input with Hf or i2f = AUS.

3.4.2 On/off relay = oA 3 = onF

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

3.4.3 Neutral zone regulation

With oA 3 = 0 the relay 1-3 can control a heater element to perform a neutral zone action. oA 3 out 1 = SET-Hr oA 3 out 2 = SET

3.4.4 Second compressor

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

3.4.5 Alarm relay

With oA 3 = AL the relay 1-3 operates as alarm relay, it is activated every time an alarm happens. Its status depends on the oB parameter. If "oB = Y", then the relay is silenced by pressing any key. If "oB = W", the alarm relay remains on until the alarm condition recovers.

3.4.6 Night blind management during energy saving cycles

With oA 3 = NBS, the relay 1-3 operates to manage the night blind. The relay is energized when the energy saving cycle is activated by digital input, front panel button or RTC (optional).

4. FRONT PANEL COMMANDS

4.1 STANDARD FRONTAL PANEL

4.2 STEEL FINISHING

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

(DEF) To start a manual defrost.

(UP): To see the max. stored temperature; in programming mode it increases the parameter codes or decreases the displayed value.

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

To switch the instrument off, if onF = onF.

To switch the light, if oA3 = Lig.

KEY COMBINATIONS:

To lock & unlock the keyboard.
6.6.1 HOW TO ENTER THE HIDDEN MENU

1. Enter the Programming mode by pressing the SET + key for 3s (the “C” or “F” LED starts blinking).
2. Release the key, then push again the SET + keys for more than 7s. The Pi2 label will be displayed immediately followed from the HY parameter.

NOTE: 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.
7. To exit: Press SET + or wait 10s without pressing a key.

NOTE: If none parameter is present in Pr1, after 3s the “not” message is displayed. Keep the keys pressed until the Pi2 message is displayed.

NOTE: 22-6 is inserted 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 + DOWN keys.
2. The “PF” 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 “PFO” message will be displayed.

6.8 TO UNLOCK THE KEYBOARD

Keep pressed together for more than 3s the and keys, till the “Pem” message will be displayed.

6.9 THE ON/OFF FUNCTION

When device is in progress, it can be activated by holding the “a” key pressed for about 3 seconds. The compressor operates in its normal set point for the time set through the “OD” parameter. The cycle can be terminated before the end of the time set using the same activation key “a” for 3 seconds.

6.10 THE ON/OFF FUNCTION

With “on/off” pressed, the ON/OFF key, the instrument is switched on. The OFF message is displayed. In this configuration, the regulation is disabled. To switch the instrument on, press again the ON/OFF key.

WARNING: Do not operate this instrument in a manner different from that described in this instruction manual.

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

LS Minimum set point: (0°C/32°F) Set the minimum value for the set point.

US Maximum set point: (10°C/10°F) Set the maximum value for set point.

P2 Thermostat probe calibration: (-12°C/10°F, -12°C/10°F) allows to adjust possible offset of the thermostat probe.

PZF Evaporator probe probe: n: present; the defrost stops by time; y: present; the defrost stops by temperature.

OE Evaporator probe calibration: (-12°C/10°F, -12°C/10°F) allows to adjust possible offset of the evaporator probe.

P3 Third probe calibration (P3): n: not present; the terminals 13-14 operate as digital input; y: present; the terminals 13-14 operate as digital input.

P4 Fourth probe calibration (P4): (-12°C/10°F, -12°C/10°F) allows to adjust offset of the fourth probe.

P6S Output activation delay at start up: (0-255m) This function is enabled at the start up of the instrument and inhibits any output activation for a period of time from the start in the parameter.

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

AC1 2nd compressor delay at start up (0-255m) Used only if = = 02 time interval between the switching on of the first compressor and the second one.

cc Percentage of the first and second probe for regulation (0-100, 100 = P1, P2) it allows to set the regulation according to the percentage of the first and second probe, as for the following formula (R1%*P1+R2%*P2).

CCI Compressor ON time during continuous cycle: (0:01-24:0; res. 0:1m) Allows to set the length of the continuous cycle. The compressor stays on without interruption for the CCI time. Can be used, for instance, when the room is filled with new products.

CCG Set point for continuous cycle: (-10°C/+10°C) it sets the set point used during the continuous cycle.

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

COFF Compressor OFF with faulty probe: (0-255 m) time during which the compressor is OFF in case of faulty thermostat probe. With COFF=0 compressor is always active.

DISPLAY

CF Temperature measurement unit: °C=Celsius, °F= Fahrenheit. WARNING: When the measurement unit is changed the set point and the values of the parameters Hy, LS, US, Alu and All have to be checked and modified if necessary.

rES Resolution (for °C) (in °C, 0.1°C) allows decimal point display.

6.5 HOW TO CHANGE A PARAMETER VALUE

To change the parameter value operate as follows:
1. Enter the Programming mode by pressing the SET + keys for 3s (the “C” or “F” LED starts blinking).
2. Select the required parameter. Press the “SET” key to display its value.
3. Use “UP” or “DOWN” to change its value.
4. Press “SET” to store the new value and move to the following parameter.
5. To exit: Press SET + or wait 10s without pressing a key.

NOTE: the set value is stored 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.
CONDENSER TEMPERATURE ALARM

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

AL2 Low temperature alarm of condenser; (-55°C to -22°C) when this temperature is reached the L2 alarm is signalled, possibly after the A2 delay.

A2d High temperature alarm of condenser; (+55°C to +150°C) when this temperature is reached the H2 alarm is signalled, possibly after the A2 delay.

A2d Differential for temperature condenser alarm recovery; (0.1°C to +5°C; 1°C to 45°F)

A2d Condenser temperature alarm delay; (0-255 min) time interval between the detection of the condenser alarm condition and alarm signaling.

A2d Condenser temperature alarm exclusion at start up; (from 0.0 min to 23.5 min; 0.1 sec)

B. L Blower compressor with low temperature alarm of condenser; n: no compressor keeps on working; y: yes, compressor is switched off till the alarm is present, in any case regulation remains on AC lower temperature AC minimum

A2d Condenser temperature alarm exclusion at start up; (from 0.0 min to 23.5 min; 0.1 sec)

A2d Condenser temperature alarm delay; (0-255 min) time interval between the detection of the condenser alarm condition and alarm signaling.

A2d Condenser temperature alarm exclusion at start up; (from 0.0 min to 23.5 min; 0.1 sec)

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A2d Condenser temperature alarm delay; (0-255 min) time interval between the detection of the condenser alarm condition and alarm signaling.

A2d Condenser temperature alarm exclusion at start up; (from 0.0 min to 23.5 min; 0.1 sec)
8. DIGITAL INPUTS

The first digital input 13-14 is enabled with P3P = n.
With P3P = n and I1f = CF the second digital input is disabled.
The free voltage digital inputs are programmable by the "1Ff" and "2Ff" parameters.

8.1 GENERIC ALARM (I1F or I2F = EAL)

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

8.2 SERIOUS ALARM MODE (I1F or I2F = BSL)

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

8.3 PRESSURE SWITCH (I1F or I2F = PAL)

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

8.4 DOOR SWITCH INPUT (I1F or I2F = dO)

It signals the door status and the corresponding relay output status through the "oDo" parameter: no = normal (any change) Fan = Fan OFF, CP = Compressor OFF. P. C. = Compressor and fan OFF.

8.5 START DEFROST (I1F or I2F = dEF)

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

8.6 SWITCH THE AUXILIARY RELAY (I1F or I2F = AUS)

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

8.7 INVERSION OF THE KIND OF ACTION: HEATING-COOLING (I1F or I2F = Htr)

This function allows to invert the regulation of the controller:

8.8 ENERGY SAVING (I1F = ES)

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

8.9 HOLIDAY DEFROST (I1F or I2F = HDf)–ONLY FOR MODELS WITH RTC

This function enabled the holiday defrost setting.

8.10 ON OFF FUNCTION (I1F or I2F = onF)

To switch the controller on and off.

8.11 DIGITAL INPUTS POLARITY

The digital input polarity depends on the "1IP" and "2IP" parameters.

9. TTL SERIAL LINE – FOR MONITORING SYSTEMS

The TTL serial line, available through the DHT KEY connector, allows by means of the external TTLRS485 converter, X483-CX, to connect the instrument to a monitoring system ModBus-RTU compatible such as the X-AES9800/2000/3000.

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 XW96L shall be mounted on vertical panel, in a 150x31mm hole, and fixed using two screws on 3.2 mm. To obtain an IRPS 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.

12. ELECTRICAL CONNECTIONS

The instruments are supplied with screw terminal block to connect cables with a cross section up to 2.5 mm² for the digital and analogue inputs. Relays and power supply have a Faston connection (6.3mm). Heat-resistant cables have to be used. Before connecting cables make sure the power supply complies with the instrument’s requirements. Separate the probe cables from the power supply cables, from the outputs and the power connections. Do not exceed the maximum current allowed on each relay, in case of heavier loads use a suitable external relay.

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 OFF, insert the "Hot key" and push "key; the "uPL" message appears followed by flashing "End".
3. Push "SET" key and the End will stop flashing.
4. Turn OFF the instrument remove the "Hot Key", then turn it ON again.

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

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

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

NOTE: the message "Err" is displayed for failed programming. In this case turn the unit off and then on if you want to restart the download again or remove the "Hot Key" to abort the operation.
14.1 SILENCING BUZZER / ALARM RELAY OUTPUT

If "BA" = "y", the buzzer and the relay are silenced by pressing any key. If "BA" = "n", only the buzzer is silenced while the alarm relay is in use until the alarm condition is cleared.

14.2 ALARM RECOVERY

Probe alarms P1", "P2", "P3" and "P4" start some seconds after the fault in the selected probe; they automatically stop some seconds after the probe resets normal operation. Check connections before repeating the probe.

Temperature alarms "HA", "LA", "HA2" and "LA2" automatically stop as soon as the step on the returned normal values. Alarm "CA" and "CA2" (with "IF-NL") recover as soon as the digital output is enabled. Alarm "CA" (with "IF-PAL") recovers only by switching off and on the instrument.

14.3 OTHER MESSAGES

Pen
Keyboard unlocked

PcF
Keyboard locked

noP
In programming mode: none parameter is present in Pr1

On the display or in Pr2, Pr3, the selected probe is not enabled

15. TECHNICAL DATA

Housing: self-extinguishing ABS

Case: face 30x38.5 mm, depth 9.0 mm

Mounting: panel mounting in a 100x51 mm panel cut-out with two screws. 3 x 3 mm

Distance between the holes 165 mm

Protection: IP20, Frontal protection: IP65 with frontal gasket mod. RGL (optional)

Connections: Screw terminal block of 2.5 mm² heat-resistant wiring and 6.0 mm Fasten

Power supply: 220Vac or 110Vac or 24Vac or 10%

Power absorption: 5W max.

Display: 3 digits, red LED, 14.2 mm high

Display: 3 digits, red LED, 12.4 mm high, inputs: Up to 4 NTC or PT100 probes

Digital inputs: 2 line voltage

Relay outputs: Total current on loads MAX 20A

compressor: relay SPST 9 (8A/5A) A, 250Vac

light: relay SPST 9 (8A/5A) A, 250Vac

fan: relay SPST 8 (8A/5A) A, 250Vac

disj.: relay SPST 8 (8A/5A) A, 250Vac

Other outputs: buzzer (optional)

Serial output: TTL standard Communication protocol: Modbus - RTU

Data storage: on the non-volatile memory (EEPROM)

Internal clock back-up: 24 hours (only for model with RTC)

Kind of action: 1B, Pollution degree: 2, Software class: A, C

Rated impulse voltage: 2500V, Over voltage Category: II

Operating temperature: 0-40 °C, Storage temperature: -30-85 °C

Relative humidity: 20-85% (no condensation)

Measuring and regulation range: NTC probe: -40-110 °C (40-230°F)

PT100 probe: -50-150 °C (50-302°F)

Resolution: 0.1 °C or 1 °F (selectable) Accuracy (ambient temp. 25°C ±0.5 °C ±1 digit

16. CONNECTIONS

Supply: 120Vac or 24Vac: connect to terminals 11-12

The X-REP output is optional.

The light relay can be also 15A according to the model.

17. DEFAULT SETTING VALUES

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Range</th>
<th>°C/F</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>nEy</td>
<td>0.1-25.9°C</td>
<td>0-48.2°F</td>
<td>Pr1</td>
</tr>
<tr>
<td>nS</td>
<td>LS-US</td>
<td>5-50</td>
<td>Pr1</td>
</tr>
<tr>
<td>nA</td>
<td>Minimum set point</td>
<td>-50°C</td>
<td>-58°F</td>
</tr>
<tr>
<td>nU</td>
<td>Maximum set point</td>
<td>-110°C</td>
<td>-166°F</td>
</tr>
<tr>
<td>nP</td>
<td>Thermostat probe calibration</td>
<td>-12°C-12°C</td>
<td>12°C-120°F</td>
</tr>
<tr>
<td>nP</td>
<td>Evaporator probe calibration</td>
<td>-12°C-12°C</td>
<td>12°C-120°F</td>
</tr>
<tr>
<td>nP</td>
<td>Third probe calibration</td>
<td>-12°C-12°C</td>
<td>12°C-120°F</td>
</tr>
<tr>
<td>nP</td>
<td>Fourth probe calibration</td>
<td>-12°C-12°C</td>
<td>12°C-120°F</td>
</tr>
<tr>
<td>nP</td>
<td>Outdoors temperature delay at start up</td>
<td>0-255 min</td>
<td>0-255 min</td>
</tr>
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</table>

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<table>
<thead>
<tr>
<th>Label</th>
<th>Name</th>
<th>Range</th>
<th>°C/°F</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ld1^*</td>
<td>1st workplace defrost start</td>
<td>0 = 23h 50 min. - nu</td>
<td>6.0</td>
<td>rtc</td>
</tr>
<tr>
<td>Ld2^*</td>
<td>2nd workplace defrost start</td>
<td>0 = 23h 50 min. - nu</td>
<td>13.0</td>
<td>rtc</td>
</tr>
<tr>
<td>Ld3^*</td>
<td>3rd workplace defrost start</td>
<td>0 = 23h 50 min. - nu</td>
<td>21.0</td>
<td>rtc</td>
</tr>
<tr>
<td>Ld4^*</td>
<td>4th workplace defrost start</td>
<td>0 = 23h 50 min. - nu</td>
<td>0.0</td>
<td>rtc</td>
</tr>
<tr>
<td>Ld5^*</td>
<td>5th workplace defrost start</td>
<td>0 = 23h 50 min. - nu</td>
<td>0.0</td>
<td>rtc</td>
</tr>
<tr>
<td>Ld6^*</td>
<td>6th workplace defrost start</td>
<td>0 = 23h 50 min. - nu</td>
<td>0.0</td>
<td>rtc</td>
</tr>
<tr>
<td>Sd1^*</td>
<td>1st holiday defrost start</td>
<td>0 = 23h 50 min. - nu</td>
<td>6.0</td>
<td>rtc</td>
</tr>
<tr>
<td>Sd2^*</td>
<td>2nd holiday defrost start</td>
<td>0 = 23h 50 min. - nu</td>
<td>13.0</td>
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</tr>
<tr>
<td>Sd3^*</td>
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<td>21.0</td>
<td>rtc</td>
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<td>Sd4^*</td>
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<td>0 = 23h 50 min. - nu</td>
<td>0.0</td>
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<tr>
<td>Sd5^*</td>
<td>5th holiday defrost start</td>
<td>0 = 23h 50 min. - nu</td>
<td>0.0</td>
<td>rtc</td>
</tr>
<tr>
<td>Sd6^*</td>
<td>6th holiday defrost start</td>
<td>0 = 23h 50 min. - nu</td>
<td>0.0</td>
<td>rtc</td>
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<td>Adr</td>
<td>Serial address</td>
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<td>Fr2</td>
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<td>PhC</td>
<td>Kind of probe</td>
<td>Phc, etc</td>
<td>ntc</td>
<td>Fr2</td>
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<tr>
<td>onF</td>
<td>Off key enabling</td>
<td>On, off, ES</td>
<td>off</td>
<td>Fr2</td>
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<tr>
<td>dp1</td>
<td>Room probe display</td>
<td>--</td>
<td>--</td>
<td>Fr2</td>
</tr>
<tr>
<td>dp3</td>
<td>Evaporator probe display</td>
<td>--</td>
<td>--</td>
<td>Fr2</td>
</tr>
<tr>
<td>dp3</td>
<td>Third probe display</td>
<td>--</td>
<td>--</td>
<td>Fr2</td>
</tr>
<tr>
<td>dp4</td>
<td>Fourth probe display</td>
<td>--</td>
<td>--</td>
<td>Fr2</td>
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<td>eSE</td>
<td>Real set</td>
<td>actual set</td>
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<td>Fr2</td>
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<tr>
<td>Phb</td>
<td>Snap code</td>
<td>--</td>
<td></td>
<td>Fr2</td>
</tr>
</tbody>
</table>

* Only for model with real time clock

Only for XW60L with XREP output

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