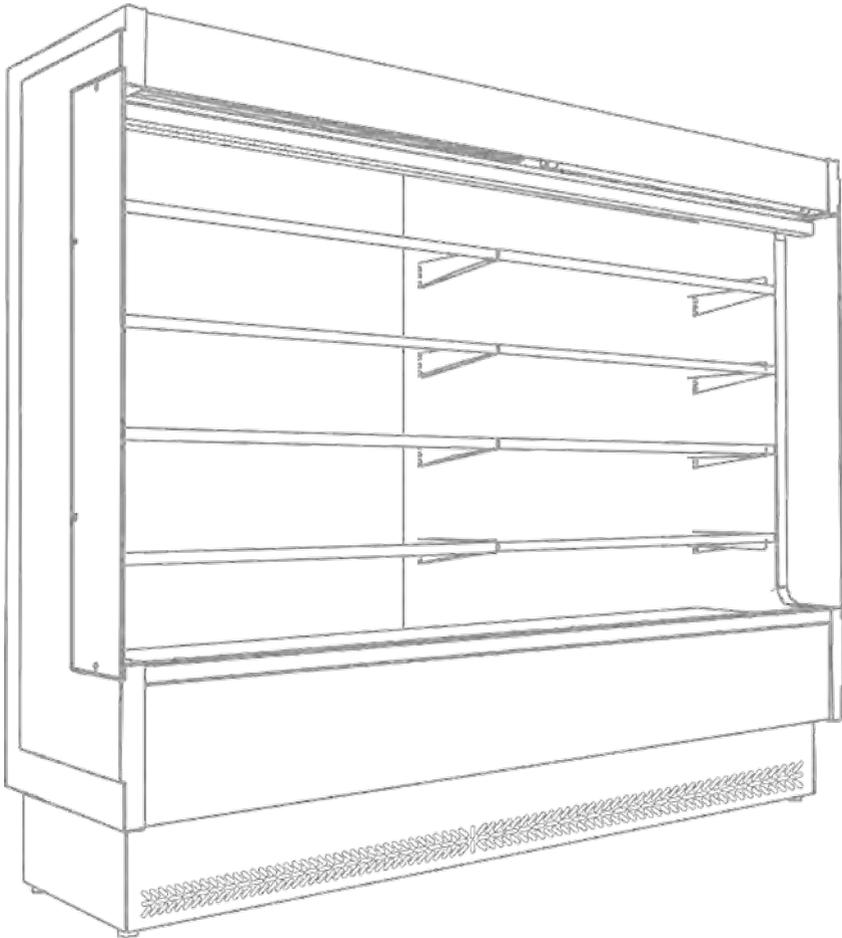


VULCANO



MANUALE D'USO E MANUTENZIONE **IT**
USER AND MAINTENANCE MANUAL **EN**
MANUEL D'INSTALLATION E DE FONCTIONNEMENT **FR**

 Hosteleria10.com

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ATTENTION

READ INSTRUCTION

Welcome

Translation of the original instructions

The producer thanks you for choosing one of its products.

We kindly ask you to read carefully our manual: this will guarantee the optimal use of your equipment.

ENGLISH - RAEE - Electrical and Electronic Waste Management

The barred can symbol displayed on the product or in the use manual documentation indicates that the product has been placed for sale on the market after August 13, 2005. At the end of its useful life-cycle, the product must be collected, disposed of, and transported separately from urban waste, in accordance to the norms in force in each individual country. **RAEE** In this way, it can be recovered, contributing to avoid possible negative effects on the environment and health, and favoring the re-use and/or recycling of the materials of which the equipment is made of. The abusive disposal of the product by the user entails the application of administrative sanctions established by the norms in force. The EU Directive RAEE N. 2002/96/CE, (implemented in Italy by the Law Decree n. 151 dated May 15, 2005); EU Directive N. 2003/108/CE concerning the handling of electrical and electronic waste.



CLIMATE CLASS : 5 (Ambient temperature +40°C; Relative humidity 40%)

MAX SHELF LOAD : 35 kg for linear meter.

Any operation of ordinary and extraordinary maintenance of the equipment must be done disconnecting the electric power supply. This maintenance must be done by qualified technician.

The plug has to be always connected to a fixed outlet. It is strictly forbidden to connect the equipment plug to an extension cord or an adapter.

Before loading the food on the equipments, wait that the temperature needed is the same on the control panel. Avoid to set a lower temperature than that suggested according to the category the equipment belong to in order to avoid evaporator block.

Do not damage or bend the evaporator fins or tubes of the coolant.

This professional equipment may only be used and cleaned by adults (> 18 years of age in Europe or other limits defined by local legislation) in normal physical and psychological condition and who have been adequately trained and informed regarding health and safety in the workplace.

The installation of the device and of the refrigerator unit must be done only by the manufacturer's technicians or by trained personnel.

Do not store explosive substances such as aerosol cans with flammable propellant in this appliance.

The installation of the device and of the refrigerator unit must be done only by the manufacturer's technicians or by trained personnel.

If the power supply cable is damaged, it must be substituted by the manufacturer or by its technical assistance service

When parts are being replaced and when removal of the plug is foreseen, and removal of the plug is clearly indicated, it must be such that an operator may check, from any point to which he has access, that the plug remains disconnected.

All maintenance operations, repairs and cleaning, must be carried out with the unit in stop position and with the power switched off.

NOISE EMISSION: Less than 70 dB

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INTRODUCTION

The REFRIGERATED MULTIDECK VERTICAL DISPLAY models “VULCANO” have been constructed in respect of the overall community norms concerning the free circulation of industrial and commercial products in EU countries.

Before proceeding with all the operations on the products, it is recommendable to read carefully the user’s manual and maintenance. In addition, it is important to follow all the current regulations (loading-unloading, installation of the product, electrical connections, positioning of the item, disposal of material).

Therefore, the units are supplied with all the documentation imposed by such standards.

The Company will not be held liable for any breakage, accidents or faults due to non-compliance, including non-compliance for not following the instructions of this manual. Moreover, The Company will not be responsible if the user makes any modifications, variants or if non-authorized accessories are installed in the unit. The maintenance requests easy operations, which can be carried out exclusively by specialized technician.

USING MANUAL

The user and maintenance manual constitutes an integral part of the Vertical Multi-deck Display. It must be kept intact and in the safe place for the entire life of the equipment, even if the equipment is transferred to another user or owner. The manual must be easily consulted by operators and maintenance staff and must be placed nearby the unit.

The equipment includes all documentation required by regulations in force, which are reached during the planning and manufacturing phase. All the instructions prescribed on this manual must help the operator and the qualified technician to conduct all installation procedures, connections, use and maintenance of the system, in a safely manner and correctly. This user and maintenance manual contains all the information required for handling the unit with particular attention to safety.

MANUAL PRESERVATION

It is advisable to use the manual with care and in such a way as not to compromise its contents.

Under no circumstances shall the user remove, pull out or rewrite any parts of the manual.

Keep the manual in a place protected against humidity and heat. The instruction manual shall be kept nearby the unit so that operators can easily consult the manual. The manual must also return to its location after each consultation. Furthermore, the manual must be kept for the entire life of the equipment and must be handed over to any successive user or owner.

THE MANUFACTURER RESERVES THE RIGHT TO MAKE TECHNICAL MODIFICATIONS TO ITS OWN PRODUCTS WITHOUT GIVING PRIOR NOTICE.



ATTENTION

As the manufacturer of the equipment covered in this use and maintenance manual, the company does not manufacture materials and objects intended to come in contact with food products (Art. 1 paragraph 2 letter a of Reg. 1935/2004). In addition, within reason, all materials used for the manufacture of the equipment do not transfer their components to food products under normal or expected use conditions (Art. 1 paragraph 2 letter c of Reg. 2023/2006), among other things, as supported by laboratory tests. Moreover, the user must protect all food products with packaging or containers and, therefore, with materials and objects in compliance with regulation (EC) 1935/2004, with express reference to regulation (EC) 2023/2006, which establishes the standards regarding good manufacturing practices (GMP), from which the manufacturer of the aforementioned equipment considers itself exempt.

VERTICAL MULTI-DECK DISPLAY DESCRIPTION

This instruction manual refers to "SELF-SERVICE REFRIGERATED MULTIDECK VERTICAL DISPLAY" suitable for the storage, exposure and maintaining of "DAIRY PRODUCTS AND DELICATESSEN", "PRE-PACKED MEAT" and "FRUITS AND VEGETABLES".

VULCANO Line is available in the following versions:

VULCANO model 600 with depth 600mm :

- **"DAIRIES version"** with base + n.4 shelves depth 280 mm each

VULCANO model 800 with depth 760mm :

- **"DAIRY PRODUCTS AND DELICATESSEN"** and **"PRE-PACKED MEAT"** with base + n.4 shelves depth 380 mm each
- **"FRUITS AND VEGETABLES"** with base + n.3 inclined shelves with depth 380 mm

The Vertical Multi-deck Display is lighting on the top canopy as standard, manual night curtain, electronic control panel, with built-in unit or predisposed for connection to the remote condensing unit.

VULCANO 60 VS SLIDING DOORS mod. 600 - 650 mm DEPTH :

- **"DAIRY PRODUCTS"** and **"PRE-PACKED MEAT"** base + n.4 ripiani con profondità 280 mm cadauno e 2 porte scorrevoli

VULCANO 80 VS SLIDING DOORS mod. 800 - 810 mm DEPTH :

- **"DAIRY PRODUCTS"** and **"PRE-PACKED MEAT"** base + n.4 ripiani con profondità 380mm cadauno e 2 porte scorrevoli
- **"FRUITS AND VEGETABLES"** with base + n.3 inclined shelves with depth 380 mm

Refrigerated Multideck Vertical Display with sliding doors are fitted as standard with tempered thermophane sliding doors, internal lighting on both sides, electronic control panel, with built-in unit or predisposed for connection to the remote condensing unit.

All VULCANO versions are also available in INOX version.

Power supply: 230V - 1ph - 50Hz.

The insulation of the basin is free of CFC in order to guarantee a low environmental impact.



ATTENTION

All operations regarding the points:

- "1 VERTICAL MULTI-DECK DISPLAY POSITIONING pag. 26
- "2 ELECTRICAL CONNECTION AND EARTHING pag. 28
- "3 CLEANING pag. 30
- "5 MAINTANANCE - GARBAGE MANAGEMENT pag. 32

Must be carried out by high qualified technical staff.

I VERTICAL MULTI-DECK DISPLAY POSITIONING

Before to unload/download and positioning the Vertical Multi-deck Display inside the shop/kitchen, you are kindly invited to read carefully this instruction manual especially the chapters regarding: unloading/loading, dimensions, weight, evaporating water basin, adjustable feet, electric connections and maintenance procedures.

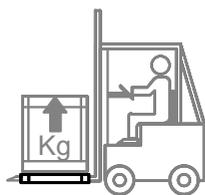
I.1 TRANSPORTATION



Do not superimpose Vertical Multi-deck Display packing (allowed only if there is wooden crate packing option).

We recommend you to transport the Vertical Multi-deck Display always in the upright position (as mention on the packing). If the Vertical Multi-deck Display with built in condensing unit was inclined during transportation we suggest you to keep the product in the suggested upright position for at least 8 hours, before switching it on. In this way, you will allow the oil to flow in all the components, lubricating them again. Afterwards you can proceed with the start.

I.2 DOWNLOAD - UNLOAD / LENGTHS / WEIGHTS



The unloading/loading procedures should be executed by pallet-jack or by forklift driven by skilled and authorized staff. We decline any liability for failing to comply with safety rules currently in force.

Before starting the unloading, positioning and installation procedures of the Vertical Multi-deck Display inside the shop/kitchen according to the model of the Vertical Multi-deck Display, please read carefully the information in the technical data Appendix.

The manufacturer declines any responsibilities due to operations performed without adopting the above safety precautions.

I.3 PACKING

At the delivery please check that the packing is intact and that during transportation no damage was occurred. Remove the external carton-box; remove the fastener that keeps still the Vertical Multi-deck Display to its pallet, put it in the correct position and then remove the adhesive white protection of the stainless steel.

The recovery and the recycling of the packing materials such us, plastic, iron, carton box, wood help the saving of row material and reduce the waste. Please consult your area address book for disposal of materials and authorized garbage dump.

I.4 POSITIONING AND FEET REGULATION



Place the Vertical Multi-deck Display in a perfect horizontal position, acting if necessary on the screw type adjustable feet. Use a spirit level to check it. The Vertical Multi-deck Display must be placed in order to operate properly and allow the correct defrost condensate water draining. In this way you will avoid noisy vibrations of the condensing unit. Check the correct positioning of the condensate water basin and its draining.

1.5 INSTALLATION INSIDE YOUR SHOP/RESTAURANT/WORKROOM

The equipments are tested in test-room with ambient temperature of +25°C and relative humidity 60%, therefore, if the ambient in which the equipment is installed has different conditions of ambient temperature and relative humidity, it could be verified a malfunction and the equipment will not run properly (making inside condensation....etc). It is advisable to install the equipment inside an area with an air conditioning system. Please note that malfunctions may arise in areas that are not provided with air conditioning, e.g. condensation formation.

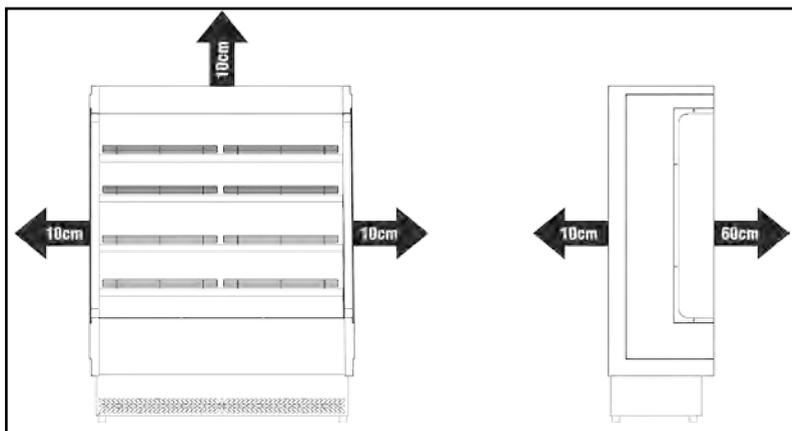


ATTENTION

In order to allow a good functioning of the equipment please pay attentions to the following instructions:

- **Do not place the unit in an area directly exposed to sun light or to other heating sources**, such as high intensity incandescent lighting systems, ovens or other radiant heating sources, e.g. heating radiators etc.
- **Do not place the unit nearby door openings producing air currents**, whether doors or windows or directly exposed to air from fans, vents or fan coil unit air conditioner.
- **Do not block or obstruct the air inlets** of the built-in refrigeration unit.
- **Do not place any objects on the unit**, including boxes or any other type of objects; leave the entire perimeter of the unit completely free so that air can circulate properly.
- **Do not place the equipment inside areas with high relative humidity levels** (it may cause formation of condensation)
- **Do not place the equipment inside a closed niche**, as there is not enough air circulation and may cause the refrigeration unit to not work properly.
- **Do not place the unit one above another.**
- **Verify that the room in which the equipment is placed must be sufficiently aired**, even when the shop is closed.

Verify that in the installation room there is enough air turnover, even during closing and rest hours. In this way the expansion/condensing unit will work correctly.



INSTALLATION MINIMUM DISTANCE

In order to allow a good performance of the cabinet, during the installation you must respect the MINIMUM WALL distances as showed on the drawings.

1.6 WATER CONDENSATION DRAIN / WATER DRAIN CONNECTION

The Vertical Multi-deck Display with built-in unit is fitted with automatic evaporating water condensation tank with stainless steel cooling (tank not removable). Verified that the water pipe is correct positioned and periodically the basin is must be cleaned from waste materials.

The Vertical Multi-deck Display with remote unit, not having the basin for water collection is provided with a siphon only, the customer take care of the water connection pipe. Its connection to the principal basin prevents the circulation of cold air and of bad smells. **The Vertical Multi-deck Display cannot absolutely be installed without siphon and each drain must have its own siphon.** It is necessary to have the drain-siphon after the exit of belly section to block the out-take air and also to avoid any smell. You never install the equipment without siphon and to connect more drains of the same equipment together. **Each drain must have only one siphon.**

1.7 VERTICAL MULTI-DECK DISPLAY WITH BUILT-IN UNIT

If the **Vertical Multi-deck Display** is fitted with **built-in condensing unit**, keep it clear all around in line to not obstructs air circulation. Do not put any cartoons or any others materials that could obstruct the air ventilation on all sides of the Vertical Multi-deck Display.

For a good running and performance of the Vertical Multi-deck Display, do not obstruct the condensing unit ventilation. Air suction grid and air delivery grid positioned on the front and back sides of the Vertical Multi-deck Display must be always opening.

Check if the room is sufficiently ventilated, even when the shop is closed. Avoid to obstruct the sources of air placing objects along the perimeter of the Vertical Multi-deck Display. **It is necessary to place Vertical Multi-deck Display at least five centimetres from the walls.** Avoid placing products or other materials on the perimeter of the refrigerator. Before activating electric connection clean the Vertical Multi-deck Display completely by using tepid water and neutral detergents (non-aggressive) . **Dry it with a smooth rag.**

1.8 VERTICAL MULTI-DECK DISPLAY WITH REMOTE CONDENSING UNIT VERSION

The electrical and cooling connection must be done only from a qualified technician. We recommend to follow actual electrical standards and regulations.

The engine of Vertical Multi-deck Displays with remote refrigerating unit must be protected from atmospheric agents and the room must not be used for storing goods.

Leave free space all around the remote unit. Respect the spaces between the unit and the walls or others obstacles, in order to have a good air ventilation to avoid a good performance and easy maintenance during the cleaning of the condensing unit. It is necessary to remember that higher room temperature and insufficient air circulation around the condensing unit imply higher energy costs and worse technical performances of the refrigerator, with a possible waste of the exposed goods.

2 ELECTRICAL CONNECTION AND EARTHING

2.1 ELECTRICAL POWER SUPPLY



The installation and the electrical connections must be carried out in conformity with the electrical rules in force. These operations must be carried out by qualified staff. *The Company declines any responsibilities originated from the no observance of the above rules in force.*

See the equipment electric diagrams at the end of this manual.

Before plugging in the equipment, it is necessary to proceed with its complete and careful cleaning, using warm water with no aggressive detergents and drying with a soft cloth all the humid parts (read with attention the chapter "1 VERTICAL MULTI-DECK DISPLAY POSITIONING pag. 26).

In order to carry out a correct plug in you must proceed as follow:

1. Before the connection to the electrical supply it is necessary to **verify that the frequency / tension of the line correspond to those written on the identification label** of the Vertical Multi-deck Display ("APPENDICE - 3 pag. 82). A variation +/- 10% of the nominal rated voltage is permitted. It is needful to connect the equipment to an efficient ground socket
2. It is advisable to install an **bipolar sectioning switch with opening of contacts at least 3 mm wide** at the source as for example automatic switch, fuse wire (the fuse screw must be removed from the so-

cket) switch for fault current and electricity meter.

3. In order to save the equipment from overload or short circuit, **the connection to the electricity has to be done through a magneto-thermal switch high sensibility (30 mA)** with manual re-establishment, of the right power.
4. For protective device size, **consider the power consumptions showed on the identification label** of the equipment (APPENDIX - identification label product)
5. It is necessary that the connection cable section is commensurate to the power consumption of the unit.
6. **The law requires that the unit is earthed**; therefore it is necessary to connect it to an efficient earth connection.



7. **If the power supply cable is damaged, it must be substituted by the manufacturer or by its technical assistance service or however by a person with similar qualifications**, so as to avoid all risks. No liability whatsoever can be accepted if the above instructions in not complied with.
8. In order to prevent any risks if **the the compressor supplied is damaged, these must be replaced by qualified technician**. Installation must be carried out only by qualified technicians according to the regulation in force. No liability whatsoever can be accepted if the above instructions in not complied with.



WARNING

Any operation of ordinary and extraordinary maintenance of the equipment must be done disconnecting the electric power supply. This maintenance must be done by qualified technician.

The plug has to be always connected to a fixed outlet. It is strictly forbidden to connect the equipment plug to an extension cord or an adapter.

2.2 START UP AND USE



WARNING

Before to proceed to the switch-ON of the equipment you have to verify as follow:

- **the equipment fitted with built-in condenser must be transported solely in vertical position**, if it is tilted, make sure to wait at least 8 hours before starting the unit; this time will allow the oil on the compressor to flow into all of its components, lubricating all parts once again.
- **In order to adjust operating parameters consult the information on the electrical control board section** in the user instructions enclosed herein.
- for equipment with built-in units make sure that the disconnecting switch is open, in position 0, OFF, before connecting the plug into the power socket, then connect the plug and close the switch.
- **avoid setting temperatures lower than the table unit's relative temperature.**
- **the first start-up operation for equipments or for remote units must be performed by qualified staff.**

Once the power line is connected to the refrigerated display cabinet (see previous paragraph), power the unit by closing the switch.

After having checked as above, it is possible to start the equipment, giving electricity from the general power pack. Press green button in position 1, ON.



WARNING

Before loading the food on the equipments, wait that the temperature needed is the same on the control panel. Avoid to set a lower temperature than that suggested according to the category the equipment belong to in order to avoid evaporator block.

To regulate functioning parameters please follow the instruction attached to the present manual.

3 CLEANING

3.1 CLEANING OF THE VERTICAL MULTI-DECK DISPLAY

The equipment must be kept clean daily.

All cleaning operations must be carried out with the refrigerated table in stop position; the multi-deck equipment as well as the built-in refrigeration unit must be completely powered off.



Attention! During cleaning operations, it is high recommended to use working gloves.

Avoid using products that contain chlorine or its diluted substances, as well as sodium hydroxide, abrasive detergents, muriatic acid, vinegar, bleach or other products that may scratch or scrape the surface of the unit.

3.2

Never use high-pressure water jet to wash internal parts of the multideck equipment as electrical parts could be damaged. Do not use heavy metal devices to remove ice. **Only use warm water with non-aggressive detergents** to clean the refrigerated table; make sure to dry all wet parts using a soft cloth. It is advisable to wash the bottom of the basin on a weekly basis, especially parts that are exposed to discharge of liquids or other food waste. The external parts of the multideck equipment that surround the display area must also be cleaned using cleansing agents: this will help keep the multideck equipment presentable free of encrustations.



ATTENTION

do not damage or bend the evaporator's flaps or refrigerant fluid pipes.

In order to avoid bacteria formation, the loading zone of the refrigerated table used for preserving food products such as meat, salami or dairy products, must be cleaned at least once a week.

3.3 CONDENSER'S BUILT-IN UNIT CLEANING

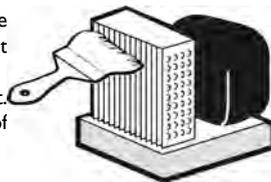
Any operation of cleaning must be done disconnecting the electric power supply.

The condenser of the Vertical Multi-deck Display with built-in unit must be cleaned, in normal conditions of use of the Vertical Multi-deck Display, at least once a month by using a vacuum cleaner and a real-bristle brush.

It is advisable to use gloves since the reduced thickness of the wings can cut. Dirty condensing unit reduce the output of the engine causing an increase of energy consumption.

Take care not to damage the refrigerating fluid circuit.

The unit is on the top of the Vertical Multi-deck Display.



Attention! During cleaning operations, it is high recommended to use working gloves.

In order to ensure good operating performance, the condenser unit must be cleaned on a regular basis at least once at month.



Easy opening system

Unscrew the two screws positioning to the extremity part of the low front panel of the multideck.

Open the front panel and pay attention to the electronic control board at your right side. For cleaning the condenser, please read the note on the use manual at Condenser cleaning.

4 GENERAL GUIDELINES



ATTENTION

This professional equipment may only be used and cleaned by adults (> 18 years of age in Europe or other limits defined by local legislation) in normal physical and psychological condition and who have been adequately trained and informed regarding health and safety in the workplace.

The professional equipment may also be used by trainees, in works/school projects, according to local legislation, provided that, they are under strict supervision by a tutor and are adults as mentioned above. In other words, trainees must be in normal physical and psychological condition, and adequately trained and informed regarding health and safety in the workplace.



ATTENTION

Do not store explosive substances such as aerosol cans with flammable propellant in this equipment.



ATTENTION

Do not place hot pans, hot pots or any hot object on the tops or close to the the equipment.

4.1 MAX SHELF LOAD

The MAX uniformed distributed load of each shelf and belly is 35 kg for linear meter.

4.2 STORING PRODUCTS



ATTENTION

The refrigerated food should be introduced for exposition in the equipment at a temperature next to that necessary to its preservation. The quality of food depends on the kind of treatment had before its exposition

Food displacement and exposition must not obstruct air suction and air ventilation. They respect some adequate proportions which permit air circulation. Also avoid to obstruct the passage of the air which is on the front of the Vertical Multi-deck Display. It is important, for example, not to obstruct the grid by attaching price stickers. It is highly recommended to keep all ventilation outlets clear within the Vertical Multi-deck Display. In the case of the exposition of seasoned sausages or cheese it is better if they do not lay directly on the exposition top but on grids which let the products transpire. This will prevent the formation of mould. This will prevent the dispersion of cold.

The introduction of non-refrigerated food can damage the general working of the Vertical Multi-deck Display, risking also wasting the exposed products. Thus, it is extremely necessary to preserve food in cold rooms or Vertical Multi-deck Displays before exposing it.

5 MAINTANANCE - GARBAGE MANAGEMENT

5.1 DISPOSAL OF MATERIALS

All maintenance operations and repairs must be carried out with the unit in stop position and with the power of the unit and of the condenser unit switched off.

These maintenance operations must only be carried out by specialised qualified staff.



Attention! During cleaning operations, it is high recommended to use working gloves.

5.2 PERIODICAL CHECKS

At regular intervals (at least once a year), it is important to make a complete system check by qualified staff only.

Please check that:

- the condensed water drainage system must work correctly
- check for gas refrigerant leaks and make sure the refrigeration unit works correctly
- make sure the condition of the electric system is completely safe
- check the sliding doors gaskets as well as the door itself and make sure it closes correctly (VULCANOV5)
- clean the condenser of the refrigeration unit

5.3 REPLACE OF TOP CANOPY LIGHT

The fluorescent lamps, include the information that the lamps have to be replace by identical lamps only.

See the max lamps power identification label stuck near the lamps.

The electric power supply must be switch-off, by disconnecting the equipment or by opening the switch. You find at the top of principal electric supplier whenever it is necessary to change the lamps. To remove the lamp take the plastic protection of the lamp off and size it at the two ends. Move it 90° round till You hear a click. Replace the lamp paying attention not to break it. Install the new lamp following the same instructions and cover it again with the protection.

5.4 SIDE WALL GLASS REPLACEMENT

In case the side glass end wall damage and/or side glass end wall replace operation, remember to do not dissipate on the environment.

5.5 MOTOR FAN REPLACEMENT

If the Vertical Multi-deck Display is equipped with fan, and you need to replace it, removing the power supply, checking the data plate of the motor fan and replace it with one of with same power, voltage and frequency.

These operations must be done by a technician!

5.6 SUBSTITUTION OF THE COMPRESSOR/ REFRIGERATED GAS AND OIL

In case of damage or replace of compressor unit, remember to recover the gas refrigerant do not dissipate on the environment.

These operations must be done by a technician!

5.7 VERTICAL MULTI-DECK DISPLAY WITH ELECTRIC DEFROSTING

VULCANO C versions (MEATS) are fitted with an automatic defrost system, which parameters are already setted by factory and the number, duration and interval can be adjusted using the control panel; this operation shall be carried out by a qualified technician, in some cases manual defrosting may be

required and the command located on the control panel can be used, or simply switch off the cooling system for the time required to melt the ice on the pipe coils (depends on room conditions and on the quantity of ice). For units intended for frozen or packaged food products it is recommended to perform a complete monthly cleaning, including a defrosting cycle. **It is advisable to clean the external part of the table unit on a daily basis, as well as the internal part of the door nearby the gaskets.**

5.8 GARBAGE DISPOSAL



Plastic, gaskets, sheet metal, polyurethane components, panel controls and electric material in general must be saved and/or dumped in public dumps and/or garbage authorized centre.

Be sure not to disperse.

Save the refrigerating gas and oil in special tanks, do not dispose of them in the sewage system but dump them in according to your local laws.

5.9 REQUESTING SPARE PARTS

After verifying the problem with a specialized technician, When requesting spare parts, after please say clearly :

- Model of the item
- Serial number of the item
- Motivation of the request of support
- Quantity of the spare part

Possibly, enclose also a picture of the part to be ordered.

General product information:

code VERjklz (identification of single particular code of the family HSD - Horizontal serve-over displays)

"VER" TYPE OF PRODUCT

possible options

VER = Vertical Refrigerators

"j" size (horizontal length) of EUT

possible options

0060 = length 60 cm

0090 = length 90 cm

0096 = length 96 cm

0100 = length 100 cm

0120 = length 120 cm

0125 = length 125 cm

0136 = length 136 cm

0140 = length 140 cm

0150 = length 150 cm

0180 = length 180 cm

0182 = length 182 cm

0200 = length 200 cm

0240 = length 240 cm

0250 = length 250 cm

0262 = length 262 cm

0280 = length 280 cm

0300 = length 300 cm

0350 = length 350 cm

0375 = length 375 cm

0380 = length 380 cm

"k" additional configuration of EUT

possible options

S = without motor (compressor)

C = with motor (compressor)

N = without motor (compressor) and without other electric components; appliance provide only with internal light - expositor unit

"z" additional configuration of EUT

possible options

W = with electrical defrost (resistance)

X = with hot gas defrost (additionat by-pass valve)

Y = Stopping defrost (compresser turn off)

6 CONTROL PANEL



ATTENTION ! READ INSTRUCTIONS

Before the start-up, pay attention to the following instructions and safety norms!

KEYS AND LEDs

 <p>UP Press and release Scrolls through menu items Increases values Press for at least 5 secs Activates the Manual Defrost function</p>	 <p>SET / Reduced SET LED Flashing: reduced set active Quick flashing: access to level 2 parameters Off: otherwise</p>
 <p>DOWN Press and release Scrolls through menu items Decreases values Press for at least 5 secs Configurable function by user (par. H32)</p>	 <p>Compressor LED Permanently on: compressor active Flashing: delay, protection or blocked start-up Off: otherwise</p>
 <p>STAND-BY (ESC) Press and release Returns to the previous menu level Confirm parameter value Press for at least 5 secs Activates the Stand-by function (when outside the menus)</p>	 <p>Defrost LED Permanently on: defrost active Flashing: manual or D.I. activation Off: otherwise</p>
 <p>SET (ENTER) Press and release Displays alarms (if active) Opens the Machine Status menu Press for at least 5 secs Opens the Programming menu Confirms commands</p>	 <p>Fan LED Permanently on: fans active Off: otherwise</p>
	 <p>Alarm LED Permanently on: alarm on Flashing: alarm acknowledged Off: otherwise</p>

ACCESSING AND USING THE MENU

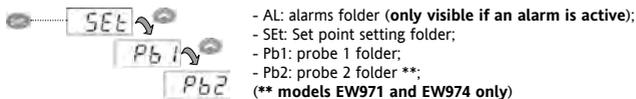
Resources are organised into 2 menus which are accessed as explained below:

- 'Machine Status' menu: press and release the **SET** key.
- 'Programming' menu: press for at least 5 secs the **SET** key.

Either do not press any keys for 15 seconds (time-out) or press the **UP** key once, to confirm the last value displayed and return to the previous screen.

MACHINE STATUS MENU

Access the "Machine Status" menu by pressing and releasing the **SET** key. If no alarms are active, the "SET" label appears. By pressing the **LEFT** and **RIGHT** keys you can scroll all folders in the "Machine Status" menu:



Setting the Set point: To display the Set point value press the **SET** key when the 'SEt' label is displayed.

The Set point value appears on the display. To change the Set point value, press the **LEFT** and **RIGHT** keys within 15 seconds. Press **SET** to confirm the modification.



Displaying the probes: When the Pb1 or Pb2* label is displayed, press **SET** and the associated probe value will appear (* Pb2 is only present on models EW971 and EW974).

SET POINT EDIT LOCK

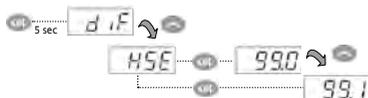
It is possible to disable the keypad on this device. The keypad can be locked by programming the 'LOC' parameter.

With the keypad locked you can still access the 'Machine Status' menu by pressing **SET** to display the Set point, but you cannot edit them. To disable the keypad lock, repeat the locking procedure.

PROGRAMMING MENU

To access the 'Programming' menu press for at least 5 secs the **SET** key. If specified, the 'PA1' access PASSWORD will be requested (see 'PASSWORD' paragraph). At the access, the display will show the first parameter ("dIF").

By pressing the **LEFT** and **RIGHT** keys you can scroll all parameters in the Programming menu:



Select the desired parameter using the **LEFT** and **RIGHT** keys. Press **SET** to see the current value of the selected parameter. Press **LEFT** and **RIGHT** to change the value and then press **SET** to save it.

NOTE: It is strongly recommended that you switch the device off and on again each time the parameter configuration is changed, in order to prevent malfunctioning of the configuration and/or ongoing timings.

PASSWORD

The password "PA1" allow access to the level 1 parameters (**User**) as the password "PA2" allow access to the level 2 parameters (**Installer**). The level 2 parameters group include also all the level 1 parameters.

Default setting has the password "PA1" disabled (value = 0) while the password "PA2" is enabled (value = 15).

To enabled the password "PA1" (value ≠ 0) and assign the required value, enter in the "Programming" menu, select the parameter "PS1" with **LEFT** and **RIGHT** keys, press the **SET** key, assign the required value and confirm it by pressing the **SET** key again.

If the password "PA1" is already enable, at the access to the "Programming" menu, will be required to put in the password "PA1" or "PA2" according to the parameters that you need to edit. To enter the password 'PA1' (or 'PA2):



If the password is incorrect, the display will show the 'PA1' (or 'PA2') label and you will have to repeat the entry procedure. It is possible to access to level 2 parameters also from level 1 parameters by selecting parameter 'PA2' (available at level 1) through **LEFT** and **RIGHT** keys and then pressing the **SET** key.

ALARMS

Label	Fault	Cause	Effects	Remedy
E1	Probe1 faulty (cold room)	<ul style="list-style-type: none"> reading of out of range operating values probe faulty / short-circuited / open 	<ul style="list-style-type: none"> Display label E1 Alarm icon permanently ON Min/max alarm regulator disabled Compressor operation according to "Ont" and "OFt" parameters. 	<ul style="list-style-type: none"> check probe type (NTC) check the probe wiring replace probe
E2	Probe2 faulty (defrost)	<ul style="list-style-type: none"> reading of out of range operating values probe faulty / short-circuited / open 	<ul style="list-style-type: none"> Display label E2 Alarm icon permanently ON The defrost cycle will end due to Time out (Parameter "dEt") 	<ul style="list-style-type: none"> check probe type (NTC) check the probe wiring replace probe
AH1	Probe1 HIGH Temperature alarm	<ul style="list-style-type: none"> value read by Pb1 > HAL after time of "tAO". (see "MIN/MAX ALARMS table) 	<ul style="list-style-type: none"> Registration AH1 label in the AL folder No effect on regulation 	<ul style="list-style-type: none"> Wait until temperature value read by probe1 returns below HAL.
AL1	Probe1 LOW Temperature alarm	<ul style="list-style-type: none"> value read by Pb1 < LAL after time of "tAO". (see "MIN/MAX ALARMS table) 	<ul style="list-style-type: none"> Registration AL1 label in the AL folder No effect on regulation 	<ul style="list-style-type: none"> Wait until temperature value read by probe1 to come back above LAL.
EA	External alarm	<ul style="list-style-type: none"> Digital input activated (H11 set as external alarm) 	<ul style="list-style-type: none"> Registration EA label in the AL folder Alarm icon permanently ON Regulation blocked if EAL = y 	<ul style="list-style-type: none"> check and remove the external cause which generate alarm on DJ.
OPd	Door Open alarm	<ul style="list-style-type: none"> Digital input activated (H11 set as door switch) (for a longer time than tAd) 	<ul style="list-style-type: none"> Registration OPd label in the AL folder Alarm icon permanently ON Regulator blocked 	<ul style="list-style-type: none"> close the door delay function defined by OAO
Ad2	Defrosting for time-out	<ul style="list-style-type: none"> end of defrosting because of time instead of because of reaching the defrost end temperature detected by the Pb2 probe. 	<ul style="list-style-type: none"> Registration Ad2 label in the AL folder Alarm icon permanently ON 	<ul style="list-style-type: none"> wait until the next defrost for automatic return

MANUAL DEFROST CYCLE ACTIVATION

To manually activate the defrost cycle, hold down the  key for 5 seconds.

If the defrost conditions are not satisfied:

- the parameter OdO ≠ 0 (**EW961, EW971 and EW974**)

- the evaporator probe Pb2 temperature is higher than the defrost end temperature (**EW971 and EW974**) the display will flash 3 times, to indicate that the operation will not be carried out.

DIAGNOSTICS

Alarms are always indicated by the buzzer (if present) and the alarm icon .

To switch off the buzzer, press and release any key, the relative icon will continue to flash.

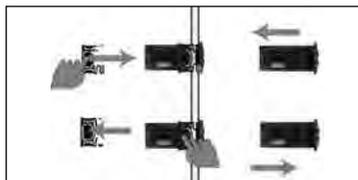
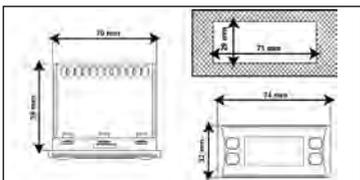
NOTES: If alarm exclusion times have been set (see 'AL' folder in the parameters table) the alarm will not be signalled.

 A probe 1 (Pb1) malfunction alarm will appear directly on the display with the indication E1.

 **Models EW971 and EW974:** A probe 2 (Pb2) malfunction alarm will appear directly on the display with the indication E2.

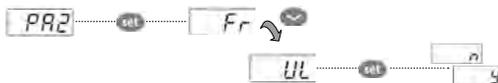
DIAGNOSTICS

The instrument is designed for panel mounting. Make a hole of 29x71 mm, insert the instrument and fix it using the brackets provided. Do not mount the instrument in humid and/or dirty places; it is suitable for use in ordinary polluted places. Ventilate the place in proximity to the instrument colling slits.



USING THE COPY CARD

The Copy Card is an accessory connected to the TTL serial port used for quick programming of the device parameters (upload and download a parameter map to one or more devices of the same type). Upload (label UL) and copy card formatting (label Fr) operations should be performed as explained below:



After the password 'PA2' has been putted in, press the and keys to scroll through to the required function (e.g. UL). Press the key to execute the upload. If the operation is successful, the display will show 'y', if not it will show 'n'.

Upload (UL) This function uploads the programming parameters from the device.
 UPLOAD: device \longrightarrow Copy Card

Format (Fr) This command is used to format the copy card, an operation which is necessary when using the card for the first time. **Important:** when the copy card has been programmed, the parameter 'Fr' will delete all data that have been entered. This operation cannot be cancelled.

Download from reset:

Connect the copy card when the device is switched off. When the device is switched on, the download from the copy card will begin automatically. At the end of the lamp test, the display will show 'dLy' if the operation was successful and 'dLn' if not.

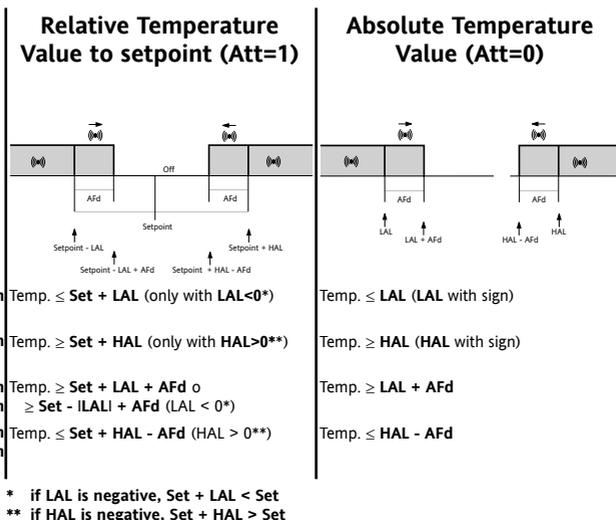


DOWNLOAD: Copy Card \longrightarrow device

NOTES:

- after the parameters have been downloaded, the device uses the downloaded parameter map settings.

MAX AND MIN TEMPERATURE ALARM



ELECTRICAL WIRING

Attention! Never work on electrical connections when the machine is switched on.

The device is equipped with screw or removable terminals for connecting electric cables with a diameter of 2.5mm² (one wire per terminal for power connections). For the capacity of the terminals, see the label on the instrument. Do not exceed the maximum current allowed; in case of higher loads, use an appropriate contactor. Make sure the power supply voltage complies with the one required by the instrument. Probes have no connection polarity and can be extended using a regular bipolar cable (note that the extension of the probes affects the EMC electromagnetic compatibility of the instrument: pay extreme attention to wiring). Probe cables, power supply cables and the TTL serial cables should be distant from power cables.

RESPONSIBILITY AND RESIDUAL RISKS

ELIWELL CONTROLS SRL shall not be liable for any damages deriving from:

- installation/use other than that prescribed and, in particular, that which does not comply with safety standards anticipated by regulations and/or those given herein;
- use on boards which do not guarantee adequate protection against electric shock, water or dust under the conditions of assembly applied;
- use on boards which allow access to dangerous parts without the use of tools;
- tampering with and/or alteration of the products;
- installation/use on boards that do not comply with the standards and regulations in force.

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CONDITIONS OF USE

Permitted use

For safety reasons the instrument must be installed and used according to the instruction provided and in particular, under normal conditions, parts bearing dangerous voltage levels must not be accessible. The device must be adequately protected from water and dust as per the application and must also only be accessible via the use of tools (with the exception of the frontlet). The device is ideally suited for use on household equipments and/or similar refrigeration equipment and has been tested with regard to the aspects concerning European reference standards on safety. It is classified as follows:

- according to its manufacture: as an automatic electronic control device to be incorporated;
- according to its automatic operating features: as a 1 B-type operated control type;
- as a Class A device in relation to the category and structure of the software;
- device with pollution grade 2;
- as a device with class D fire resistance;
- overvoltage category grade II;
- device made with class IIIa material;

Unpermitted use

Any other use other than that permitted is de facto prohibited. It should be noted that the relay contacts provided are of a practical type and therefore subject to fault. Any protection devices required by product standards or dictated by common sense due to obvious safety reasons should be applied externally.

TECHNICAL DATA

Mechanical Characteristics

Front protection: IP65.
 Housing: PC+ABS UL94 V-0 resin plastic casing, polycarbonate glass, thermoplastic resin keys.
 Dimensions: front 74x32 mm, depth 59 mm (excluding terminals).
 Mounting: panel mounting with 71x29 mm (+0.2/-0.1 mm) drilling template.
 Terminals: screw/removable terminals for cable with a diameter of 2,5mm²
 Connectors: TTL for connection to Copy Card
 Temperature: Operating: -5 ... +55 °C - Storage: -30 ... +85 °C
 Humidity: Operating / Storage: 10...90 % RH (not condensing).

Electrical Characteristics

Power Supply: 230Vac (+10% / -10%) 50/60 Hz
 Consumption: 4.5W max
 Display Range: NTC: -50.0°C ... +110°C (on display with 3 digit + sign)
 Accuracy: Better than 0,5% of full-scale + 1 digit.
 Resolution: 0,1 °C.
 Buzzer: YES (it depends from the model)
 Analogue Input: **EW961**: 1 NTC input. - **EW971** and **EW974**: 2 NTC inputs.
 Digital Input: 1 voltage-free digital input
 Digital Output: **EW961**:1 Compressor relay: UL60730 (A) 1,5 Hp (10FLA - 60LRA) max 250Vac o
 UL60730 (B) 2 Hp (12FLA - 72LRA) max 250Vac
EW971:1 Defrost relay: N.O. 8(4)A - N.C. 6(3)A max 250Vac
 1 Compressor relay: UL60730 (A) 1,5 Hp (10FLA - 60LRA) max 250Vac o
 UL60730 (B) 2 Hp (12FLA - 72LRA) max 250Vac
EW974:1 Defrost relay: N.O. 8(4)A - N.C. 6(3)A max 250Vac
 1 Compressor relay: UL60730 (A) 1,5 Hp (10FLA - 60LRA) max 250Vac o
 UL60730 (B) 2 Hp (12FLA - 72LRA) max 250Vac
 1 Fan relay: 5(2)A max 250Vac

Regulations

Electromagnetic compatibility: This device complies with Directive 2004/108/EC and the harmonised standard EN 60730-2-9
 Security: This device complies with Directive 2006/95/EC and the harmonised standard EN 60730-2-9
 Food safety: This device complies with standard EN 13485 as follows:
 - suitable for storage
 - climate range A
 - measurement class 1 in the range from -35°C to 25°C (*)

(* exclusively using Eliwell NTC probes)

Classification: operating (not safety) device for integration.

NOTE 1: check the power supply specified on the instrument label; for relay, power supply capacities and PTC probes, contact the Sales Office.

NOTE: The technical data included in this document, related to measurement (range, accuracy, resolution, etc.) refer to the instrument itself, and not to its equipment such as, for example, sensors. This means, for example, that sensor(s) error(s) shall be added to the instrument's one.

TABLE OF PARAMETERS

PAR.	Level	DESCRIPTION
SET		Temperature SETpoint.
		COMPRESSOR

dIF	1&2	diFFerential. Relay compressor tripping differential. The compressor stops on reaching the Setpoint value (as indicated by the adjustment probe), and restarts at temperature value equal to the Setpoint plus the value of the differential. Note: the value 0 cannot be assumed
HSE	1&2	Higher SEt. Maximum possible setpoint value.
LSE	1&2	Lower SEt. Minimum possible setpoint value.
OSP	2	Offset Set Point. Temperature Value to be added to the Set-Point if reduced set is enabled (Economy function).
dOd	2	digital (input) Open door. Digital input that allow you to switch off loads. Valid if H11 = ±4 (door switch). n = does not switch off loads; y = switch off loads.
dAd	2	digital (input) Activation delay. Delay time in activating the digital input.
Ont	2	ON time (compressor). Compressor activation time in the event of faulty probe. If OFt=1 and Ont=0, the compressor is always off, while if OFt=1 and Ont>0 it operated in duty cycle mode.
OFt	2	OFF time (compressor). Compressor deactivation time if probe is faulty. If Ont=1 and OFt=0, the compressor is always on, while if Ont=1 and OFt>0 it operated in duty cycle mode.
dOn	2	delay (at) On compressor. Delay time in activating the compressor relay after switch-on of instrument.
dOF	2	delay (after power) OFF. Delay after switch off; the indicated time must elapse between switch-off of the compressor relay and the successive switch-on.
dbi	2	delay between power-on. Delay between switch-ons; the indicated time must elapse between two successive switch-ons of the compressor.
OdO (!)	2	delay Output (from power) On. Delay time in activating the outputs after switch-on of the instrument or after a power failure.
DEFROST		
dty	1&2	defrost type. Type of defrosting. 0 = electric defrost - compressor off (OFF) during defrosting; 1 = reverse cycle defrost (hot gas); compressor on (ON) during defrosting; 2 = Free defrost; defrosting independently of compressor.
dit	1&2	defrost interval time. Interval between the start of two successive defrosting operations.
dCt	2	defrost Counting type. Selection of count mode for the defrosting interval. 0 = compressor operating hours (DIGIFROST® method); Defrosting active only if compressor is on; 1 = Real Time - equipment operating hours; defrost counting is always active when the machine is on and start everytime the instrument switch on; 2 = compressor stop. Each time the compressor stops a defrosting cycle is performed according to parameter dTY.
dOH	2	defrost Offset Hour. Start-of-defrosting delay time from the call.
dEt	1&2	defrost Endurance time. Defrosting time-out; determines duration of defrosting.
dSt	1&2	defrost Stop temperature. Defrost stop temperature (defined by the evaporator probe).
dPO	2	defrost (at) Power On. Determines if at the start-up the instrument must enter defrosting (if the temperature measured by the evaporator allows this operation). y = yes; n = no.
EVAPORATOR FAN		
FPt	2	Fan Parameter type. Characterizes the 'FSt' parameter that can be expressed or as an absolute temperature value or as a value related to Setpoint. 0 = absolute 1 = relative.
FSt	1&2	Fan Stop temperature. Fan lock temperature; if the value, read by the evaporator probe, is higher than the set value, fans stop.
FAd	2	FAn differential. Fan starting differential (see par. 'FSt').
Fdt	1&2	Fan delay time. Delay time in activating fans after a defrost operation.
dt	1&2	drainage time. Dripping time.
dFd	1&2	defrost Fan disable. Allows to select the evaporator probes exclusion during defrost. y = yes (fan disable); n = no.
FCO	2	Fan Compressor OFF. Allows to select compressor fans lock OFF (switched off). y = fans activated (with thermostat; based on the value read by the defrost probe, see
parameter "FSt"); n = fans off; dc = not used.		
Fod	2	Fan open door. Fans active when the door is open. Allows you to select the option of stopping the fans when the door is open, and re-starting the fans when door is closed (if they were active). n = fans stop; y = fans unchanged.
ALARMS		
Att	2	Allow you to select if the parameters HAL and LAL will have absolute (Att=0) or relative (Att=1) value.
AFd	2	Alarm Fan differential. Alarm differential.
HAL	1&2	Higher Alarm. Maximum temperature alarm. Temperature value (in relative value) which if exceeded in an upward direction triggers the activation of the alarm signal.
LAL	1&2	Lower Alarm. Minimum temperature alarm. Temperature value (in relative value), which if exceeded in a downward direction, triggers the activation of the alarm signal.
PAO	2	Power-on Alarm Override. Alarm exclusion time after instrument switch on, after a power failure.
DAO	2	defrost Alarm Override. Temperature alarm exclusion time after defrost.
OAo	2	Alarm signaling delay after digital input disabling (door close). Alarm is only for high-low temperature alarms.
tdO	2	time out door Open. Alarm activation delay time open door.
tAO	1&2	temperature Alarm Override. Temperature alarm signal delay time.

dAt	2	defrost Alarm time. Alarm for defrosting ended due to time out. n = alarm deactivated; y = alarm activated.
EAL	2	External Alarm Clock. External alarm to lock loads (n = don't lock loads; y = lock loads).
COMMUNICATION		
dEA	2	Device address in family (valid values from 0 to 14).
FAA	2	Device family (valid values from 0 to 14). The FAA and dEA values represent the network address of the equipment and are indicated in the following format "FF.DD" (where FF=FAA and DD=dEA).
DISPLAY		
LOC	1&2	LOCK. Setpoint change shutdown. See related paragraph. There is still the possibility to enter into parameters programming and modify these, including the status of this parameter to permit keyboard shutdown. n = no; y = yes.
PS1	1&2	PAssword 1. When enabled (value ≠ 0) it constitutes the access key for level 1 parameters.
PS2	2	PAssword 2. When enabled (value ≠ 0) it constitutes the access key for level 2 parameters.
ndt	2	number display type. View with decimal point. y = yes; n = no.
CA1	1&2	CALibration 1. Positive or negative temperature value added to the value read by probe 1.
CA2	1&2	CALibration 2. Positive or negative temperature value added to the value read by probe 2.
ddl	1&2	defrost display Lock. Viewing mode during defrosting. 0 = shows the temperature read by the room probe; 1 = locks the reading on the temperature value read by room probe when defrosting starts, and until the next time the Setpoint value is reached; 2 = displays the label "dEF" during defrosting, and until the next time the Setpoint value is reached.
dro	2	display read-out. Select °C or °F for displaying the temperature read by the thermostat probe. (0 = °C, 1 = °F). PLEASE NOTE: the switch between °C and °F DO NOT modify setpoint, differential, etc. (for example set=10°C become 10°F)
ddd	2	Selection of type of value to be displayed. 0 = Setpoint; 1 = cold room probe (Pb1); 2 = evaporator probe (Pb2).
CONFIGURATION		
H08	2	Stand-by operating mode. 0 = display switch off; 1 = display switch off, loads and alarms stopped; 2 = display with OFF label, loads and alarms stopped.
H11	2	Configuration of digital inputs/polarity. 0 = disabled; ±1 = defrosting; ±2 = reduced set; ±3 = not used; ±4 = door switch; ±5 = external alarm; ±6 = Stand-by (ON-OFF). ATTENTION!: the "+" sign indicates that the input is activated when the contact is closed. the "-" sign indicates that the input is activated when the contact is open.
H25 (!)	2	Enable/Disable the buzzer. 0 = disabled; 4 = enabled; 1-2-3-5-6 = not used.
H32	2	DOWN button configurability. 0 = disabled; 1 = defrost; 2 = not used; 3 = reduced set; 4 = stand-by.
H42	1&2	Evaporator probe present. n = not present; y = present.
rEL	1&2	rElease firmware. Device version: read only parameter.
tAb	1&2	tAble of parameters. Reserved: read only parameter.

COPY CARD

UL	2	Up load. Programming parameter transfer from instrument to Copy Card.
Fr	2	Format. Erasing all data in the copy card.

(!) WARNING!

- If one or more of these parameters highlighted with (!) are modified, the controller must be switched off and switched on again to ensure correct operation.
- Parameter H25 is present only in model with buzzer on board.

SUPERVISION

The device can be connected to:

- telecontrol system **TeleviSystem** (*)
- **ParamManager** fast parameter setting software
- **DeviceManager** fast parameter setting software (only parameter table)

The connection can be made via **TTL** serial port.

For connection to RS-485 bus use TTL/RS485 interface **BusAdapter 150**.

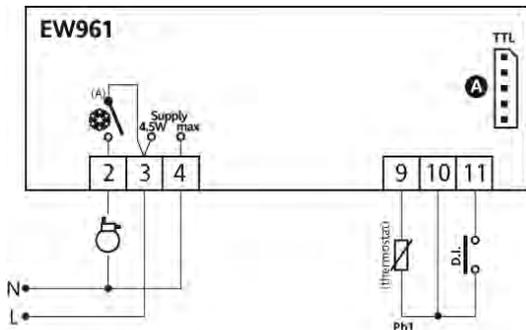
For connection to PC should be used:

- for **TeleviSystem**: **PCInterface** 1110/1120 with Televi licence;
- for **ParamManager**: **PCInterface** 2150/2250 with **ParamManager** licence;

(*) To configure the instrument for this purpose, use parameters "dEA" and "FAA" in the "Programming" menu.

EW961: CONNECTIONS

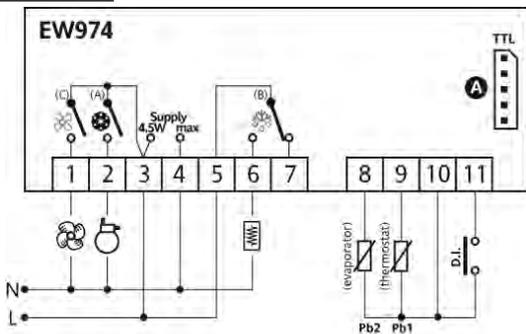
TERMINALS



	Compressor relay
N-L	Power Supply
A	TTL input

EW974: CONNECTIONS

TERMINALS



	Defrost relay
	Compressor relay
	Relè ventole
N-L	Power Supply
A	TTL input

Parameters - Default setting

PAR	EW961		EW974		U.M.	Level	PAR	EW961		EW974		U.M.	Level
	RANGE	DEFAULT	RANGE	DEFAULT				RANGE	DEFAULT	RANGE	DEFAULT		
SEt	-50.0 ... 99.0	0.0	-50.0 ... 99.0	0.0	°C/°F	1&2	HAL	LAL ... +150.0	+50.0	LAL ... +150.0	+50.0	°C/°F	1&2
diF	+0.1 ... +30.0	2.0	+0.1 ... +30.0	2.0	°C/°F	1&2	LAL	-50.0 ... HAL	-50.0	-50.0 ... HAL	-50.0	°C/°F	1&2
HSE	LSE ... +230	99.0	LSE ... +230	99.0	°C/°F	1&2	PAO	0 ... 10	0	0 ... 10	0	hours	2
LSE	-55.0 ... HSE	-50.0	-55.0 ... HSE	-50.0	°C/°F	1&2	dAO	0 ... 999	0	0 ... 999	0	min	2
OSP	-30.0 ... +30.0	3.0	-30.0 ... +30.0	3.0	°C/°F	2	OAO	0 ... 10	0	0 ... 10	0	hours	2
dOd	n/y	n	n/y	n	flag	2	tdO	0 ... 250	0	0 ... 250	0	min	2
dAd	0 ... 255	0	0 ... 255	0	min	2	tAO	0 ... 250	0	0 ... 250	0	min	1&2
Ont	0 ... 250	0	0 ... 250	0	min	2	dAt	---	---	n/y	n	flag	2
Ort	0 ... 250	1	0 ... 250	1	min	2	EAL	n/y	n	n/y	n	flag	2
dOn	0 ... 250	0	0 ... 250	0	secs	2	dEA	0 ... 14	0	0 ... 14	0	num	2
dOf	0 ... 250	0	0 ... 250	0	min	2	FAA	0 ... 14	0	0 ... 14	0	num	2
dbi	0 ... 250	0	0 ... 250	0	min	2	LOC	n/y	n	n/y	n	flag	1&2
OdO	0 ... 250	0	0 ... 250	0	min	2	PS1	0 ... 250	0	0 ... 250	0	num	1&2
dtY	---	---	0/1/2	0	flag	1&2	PS2	0 ... 250	15	0 ... 250	15	num	2
dit	0 ... 250	6	0 ... 250	6	hours	1&2	ndt	n/y	y	n/y	y	flag	2
dCt	0/1/2	1	0/1/2	1	num	2	CA1	-12.0 ... +12.0	0.0	-12.0 ... +12.0	0.0	°C/°F	1&2
dOH	0 ... 59	0	0 ... 59	0	min	2	CA2	---	---	-12.0 ... +12.0	0.0	°C/°F	1&2
dEt	1 ... 250	30	1 ... 250	30	min	1&2	ddL	0/1/2	1	0/1/2	1	num	1&2
dSt	---	---	-50.0 ... +150	8.0	°C/°F	1&2	dro	0/1	0	0/1	0	flag	2
dPO	n/y	n	n/y	n	flag	2	ddd	0/1/2	1	0/1/2	1	num	2
Fpt	---	---	0/1	0	flag	2	H08	0/1/2	2	0/1/2	2	num	2
FSt	---	---	-50.0 ... +150	50.0	°C/°F	1&2	H11	-6 ... +6	0	-6 ... +6	0	num	2
FAd	---	---	+1.0 ... +50.0	2.0	°C/°F	2	H25	---	---	0 ... 6	4	num	2
Fdt	---	---	0 ... 250	0	min	1&2	H32	0 ... 4	0	0 ... 4	0	num	2
dtF	---	---	0 ... 250	0	min	1&2	H42	---	---	n/y	y	flag	1&2
dFd	---	---	0 ... 250	0	min	1&2	rEL	/	/	/	/	flag	1&2
FCO	---	---	n/y	y	flag	2	tAb	/	/	/	/	flag	1&2
Fod	---	---	n/y	n	flag	2	UL	/	/	/	/	flag	2
Att	0/1	1	0/1	1	flag	2	Fr	/	/	/	/	flag	2
AfD	+1.0 ... +50.0	2.0	+1.0 ... +50.0	2.0	°C/°F	2							