

# MANUAL FOR USE AND MAINTENANCE

# Fridge – Freezers laboratory KFS-KRFS SERIES

Version with "HTS" KW control

## +5 °C/ -30°C

SERIAL N°.....

**Original Instructions** 

Vers. 26/07/2022



**IMPORTANT:** Read this instruction manual. Failure to read, understand and follow the instructions in this manual could result in damage to the unit, injury to operating personnel, and poor equipment performance.

**ATTENTION:** All internal adjustments and maintenance operations must be carried out by qualified technical personnel.

The data and instructions given in this manual refer to the models currently in production; KW reserves the right to make any changes that will be deemed useful for the technical improvement of the products at any time.



### **Business presentation**

KW APPARECCHI SCIENTIFICI S.r.l., bearing the prestigious "KW" brand, whose creation and diffusion dates back to 1953, operates in the biomedical and scientific research sector.

Since 1979, the Company's management has concentrated all activities (commercial, administrative, production and the technological research laboratory) in the current headquarters located in Via della Resistenza 119 - Le Badesse-53035 Monteriggioni -Siena.

Currently the company has a staff of about 30 units, including specialized technicians, employees, workers, consultants in engineering and biology and is present both in Italy and abroad with a sales network composed of scientific collaborators and resellers, as well as with a qualified assistance network.

KW's commitment to the construction of machines at the service of new biological techniques is achieved through the synergistic effect of innovations in manufacturing and marketing processes, the use of microelectronics, constant investments in applied thermodynamic research and integrated regulation systems; this allows us to offer users a decidedly ergonomic range of products with a high technological content; and to have a high dynamism of the KW structure, with particular reference to:

- company quality-product safety
- product reliability
- eco-compatibility of the product.

The company's activity consists of the creation, marketing and installation of the products currently in the catalog, which can be divided into 5 distinct sectors:

#### 1) refrigeration

- freezers with operating temperatures down to -130 ° C, both horizontal and vertical, suitable for storing any biological material and for cold tests of various types;
- efrigerated cabinets (also with combined T) for storing sera, vaccines, various biological materials, drugs, etc.;
- refrigerated cabinets for gelfiltration and cold chromatography techniques;
- Blood cells;
- control units for liquid refrigeration;

#### 2) controlled T environments

- stoves with a range of T up to + 250 ° C;
- stoves with paraffin;
- refrigerated thermostat cabinets with forced air circulation and thermal water flywheel;
- growth chambers with T-control and photoperiod and germination chambers;
- CO<sub>2</sub> incubators with% CO2 control (air jacket and water jacket) both with flow meters and with TC electronic analyzer;
- precision thermostatic baths;
- water bath with oscillating / linear stirring;



#### 3) sterilization

- ventilated dry sterilizers with automatic control of the thermal cycle;
- glassware-drying cabinets;
- cabinets for sterile storage;
- 4) laboratory accessories
  - accessories for completing the above equipment: tube holders, pipette holders, tube rotators, bottle rotators, etc.;
- 5) engineering-apparecchi speciali
  - special equipment and systems on specific design for GMP, FDA, etc. certification

KW Apparecchi Scientifici has been certified for many years according to the company quality standards:

- ISO 9001: 2015 Quality Management Systems
- ISO 13485:2016 Quality Management Systems for Medical Devices
- ISO 45001:2018 Occupational health and safety
- ISO 14001:2015 Environmental management system



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### **1.** General Information

The recommendations, shown below, must be read carefully by the user, as they provide important information regarding the safety of installation, use and maintenance and possible dismantling.

Furthermore, before using the equipment, the operators must be trained on the contents of this instruction, use and maintenance manual.

Keep this booklet carefully for any further consultation.

After removing the packaging, check the integrity of the appliance. If in doubt, do not use the appliance and IMMEDIATELY contact the KW central technical assistance service (tel. 0577/309144).

### **1.1** Simbols used in the manual

The following symbols and conventions are used inthis manual:

	<b>ATTENTION</b> Important operating instructions that reduce the risk of injury, even serious, or of possible damage or insufficient performance of the unit.
A	<b>NOTICE</b> Situations where dangerous voltages exist and the risk of electric shock
	Obligation to use gloves
	Read these instructions before use
*	Particular requirements related to the presence of low temperatures
$\bigcirc$	Prohibition



	Prescription or recommendation		
$\bigtriangleup$	Recyclable materials		
	Obligation to use protective goggles		
	Obligation to use safety shoes		

### **1.2** Symbols present on the device

CE	CE Mark
	Read the enclosed instructions before use
ļ	Grounding point
•	NOTICE
<u>/4</u>	Situations where dangerous voltages exist and the risk of electric shock
	Danger of explosion



### **1.3 General Informations**

	The recommendations, shown below, must be read carefully by the user, as they provide important information regarding the safety of installation, use and maintenance and possible dismantling.
	This manual is an integral part of the machine/equipment and must be consulted by the operator, the maintenance worker, and the safety manager and possibly by the department manager before making the machine/equipment available.
	Before using the equipment, the operators must be trained on the contents of this instruction, use and maintenance manual.
	Keep this booklet carefully for any further consultation. It must be stored in a protected, dry place, away from the sun's rays and must always be present, for consultation, near the machine.
$\bigcirc$	This information is the property of KW Apparecchi Scientifici. It is strictly forbidden to reproduce them or communicate them to third parties without explicit authorization.
	This manual cannot be altered or changed in any of its parts by the buyer on pain of forfeiture of the guarantee granted and the assumption by the buyer of all civil and criminal liability arising from damage caused to people and/or things.
	The machine/equipment cannot be put into service, or made available without having read the attached documentation, under penalty of forfeiture of the guarantee granted and the assumption by the purchaser of all civil and criminal liability deriving from damage caused. to people and/or things.
	If some photos or drawings are not consistent with what was delivered, it is likely that the photos or drawings refer to a different machine configuration, contact the assistance center.
	This manual reflects the state of the art at the time the machine/equipment was placed on the market, as well as the national and international legislative requirements for safety and hygiene in force at the time of its marketing; any subsequent technological innovation will not affect its validity as long as the owner always checks the compliance of the system with the provisions of future laws.



### **1.4 Terms and definitions**

In compliance with the Machinery Directive, this documentation contains important information whose knowledge we believe is essential for both the operator and the service assistant, in order to be able to operate in safe conditions.

Precisely as these terms are widely used, we believe it is essential to clearly clarify the meaning attributed to:

Terms	Description
Operator	Person in charge of operating, regulating, carrying out, providing for routine maintenance, cleaning the machine.
Assistance attendant	Specialized employee, specially trained and authorized to carry out extraordinary maintenance interventions as well as repairs that require in-depth knowledge of the machine, of its operation, of the safety devices and related intervention methods.
Dangerous zone	Any area inside and / or near the machine in which the presence of an exposed person constitutes a risk for the safety and health of the same.
Exposed Person	Any person who is wholly or partially in a dangerous zone.

### 1.5 Safety

The device/equipment in question has been built taking into account the possible risks that it can cause during its operating life.

The staff must be aware of the presence of residual risks, the precautions to be taken and the general accident prevention rules to be followed and respected, therefore the operator:

- It must be properly trained;
- Must read and learn these instructions; if he does not have reading skills, he must be verbally informed of the information relating to this manual;
- Must have a clear understanding of the concept of responsibility and competence.



The machine/equipment must be driven and managed exclusively by operators who have read and learned the instructions. Comply fully with the instructions, procedures, warnings and general rules to be followed in this manual. Unauthorized tampering/replacement of one or more parts of the

machine/equipment, the use of accessories, tools, consumables other than those indicated by the manufacturer, can constitute a real danger of injury.

In order to maintain safety conditions, the operator must always pay attention to:



- Do not tamper with any of the parts of the machine for any reason;
- Avoid the presence of people not related to the operation of the machine.



In order to avoid the risks present, the operator and all the machine operators are required to familiarize themselves with the machine/equipment in order to better evaluate its correct functionality and promptly report any anomalies; not to be distracted during the execution of maneuvers and/or other activities on the machine itself and/or in parts of it, in order to guarantee the safety of oneself and any other exposed persons, while preserving the machine/equipment from possible damage.

### **1.6 Intended use of the equipment**

This appliance is intended for use in the laboratory for refrigeration / storage at a controlled temperature of -30 °C for freezers and +5 °C for fridges of biological material in general, serums, vaccines and other industrial products, provided that they are chemically inert, non-flammable, non-explosive and mostly packaged.

If dangerous for human health, they must be adequately placed in special containers in order to avoid direct contact and in any case the personnel must be adequately informed.

# It cannot operate at temperatures lower and/or different from that of the indicated operating range.

Any other use is to be considered improper and therefore dangerous.

KW Apparecchi Scientifici cannot be held responsible for any damage deriving from improper, erroneous and unreasonable use.

### **1.7** Electrical connection

The machine is equipped with protections and safety devices for the prevention of accidents at work in compliance with the laws in force.





The removal or tampering of the protective barriers causes the operator or
assistance assistant to assume all responsibility for the dangers that may arise
and/or derive from them.
The removal or tampering of the safety devices is not allowed and KW Apparecchi
Scientifici is released from any liability or legal involvement in the event of an
accident.

### **1.8** Residual risks present during the various work phases

During the design and manufacturing phases, all measures were taken to eliminate or reduce the risks for the user of the machine, however only the use provided for in this manual can make these measures effective.

The risks that cannot be eliminated, or residuals, are those deriving from incorrect use of the machine whose probability of occurrence is limited only with the correct training and information of the operators.



### 2. Technical data

This manual applies to appliances:

#### LABORATORY FREEZERS AND FRIDGE-FREEZERS

#### For temperatures from +5°C to -30°C

#### **KFS/KRFS SERIES**

	These appliances, like all those produced by KW, are free from
« <u>CFC FREE</u> »	chlorofluorocarbons and other substances harmful to the stratospheric ozone
	and to the environment.

KW has a sales network, through scientific collaborators and authorized resellers, as well as a qualified assistance network through training and refresher courses, carried out at the production plant.

- The range of capabilities offered is truly high, capable of satisfying the most diverse needs of any laboratory, be it biomedical or industrial.
- The completely sealed execution of the refrigerant circuit and the use of a hermetic compressor make the appliances of this series (KFS/KRFS) very reliable and silent, even in critical environmental conditions. Both the materials and the fluids used are all environmentally friendly, with particular attention to the problems of the ozonosphere and the greenhouse effect.
- The instrumental equipment is typical of a high-level professional scientific freezer, with digital electronic temperature regulation, digital LED display, min / max temperature alarm and contacts designed for remote alarm signal.
- The closure with key lock makes the laboratory equipment very safe both for access and for the stability and uniformity of the storage temperature, as it does not need any defrosting over time.
- A wide range of accessories allows adequate customization of the freezer by the user.



### **2.1** KFS vertical freezers technical characteristics

MODELS	Capacity [l]	External Dimensions LxPxH [mm]	Internal Dimensions LxPxH [mm]	Drawers	Power* [W]	Energy absorption** [kWh/24h]	Weight [kg]
KFS 100	127	710 x 790 x 832	550 x 550 x 420	3	135	3,12	45
KFS 250	254	730 x 800 x 1448	550 x 550 x 840	5	230	4,5	70
KFS 400	402	730 x 800 x 1938	550 x 550 x 1330	8	245	6,2	130
KFS 600	600	730 x 933,5 x 1984,5	550 x 744 x 1425	5	200	4,23	195

\*Nominal absorbed power

\*\*Energy absorption at ambient temperature of 25 °C

Operating temperature: - 30 °C Adjustment temperature range: - 30 °C  $\rightarrow$  - 10 °C Power supply: 220 V, 50 Hz

#### STRUCTURE

The upright freezers are equipped with steel wire mesh shelves and, on request, with the possibility of adding drawers. The structure is single body, with internal coating in AISI 304 stainless steel and external in antibacterial painted sheet and rounded internal corners. On request it is possible to order the AISI 304 polished stainless-steel cladding and in this case a final X letter will be added to the model's name (for example KFS 400 X).

Insulation is carried out with high-density polyurethane foam in situ (40 Kg / mc.) Without CFC with a thickness of 90 mm and the cooling circuit uses environmentally friendly fluids such as R290 and R600.

The doors are solid and reversible, with magnetic seals and automatic closing, the lock with key and the external dimensions supplied include the wheels at the base of the freezer; the compressor is of the hermetic type with air condensation and energy consumption is low with guaranteed silence (<45dB (A)).

There is no need for defrosting and the temperature fluctuations over time are therefore minimal.



### 2.2 KRFS fridge-freezers technical characteristics

MODELS	Capacity [l]	External Dimensions LxPxH [mm]	Internal Dimensions LxPxH [mm]	Drawers [n]	Power* [W]	Energy absorption** [kWh/year]	Weight [kg]
KRFS	R 235	730 x 766,5 x	R 550 x 550 x 775	3+2	365	4.2	115
2515	F 140	2105	F 550 x 550 x 465	5.2	303	1,2	115

\*Nominal power input under standard conditions at an ambient temperature of 23 °C.

\*\*Energy consumption measured under standard conditions at an ambient temperature of 25 °C

Power supply: 230 V, 50 Hz

**Operating temperatures:**  $\mathbf{R} \rightarrow +5$  °C;  $\mathbf{F} \rightarrow -30$  °C **Adjustment range:**  $\mathbf{R} \rightarrow da \ 0$  °C a +10 °C;  $\mathbf{F} \rightarrow da \ -30$  °C a -10 °C *The T are guaranteed with ambient T up to +32* °C.

#### STRUCTURE

In these fridge-freezers the freezer compartment consists of a structure with steel wire grids and the additional possibility of extractable drawers, for the best use of the internal volume and for the lowest energy consumption. Each compartment has its own refrigeration system, independent from the other. The external structure consists of a piece of furniture with a rounded profile, in antibacterial painted sheet metal, with reversible doors and locks with key. The cabinet is also equipped with wheels, to facilitate its transport and positioning in the laboratory.

The internal compartments are in AISI 304 stainless steel with fully rounded edges to facilitate cleaning. The average thickness of the insulation is about 90 mm., With highly ecological polyurethane resins in situ. The insulation guarantees an excellent seal against heat loss, allowing very low energy consumption. The doors are blind and reversible (possibility of replacing the blind door of the refrigerator compartment with a glass window and in this case the final letter V will be added to the model's name), with magnetic seals and automatic closing, the lock with key and the external dimensions supplied include the wheels at the base of the freezer. **There is no need for defrosting and the temperature fluctuations over time are therefore minimal.** 

The **control panel** combines a simple and modern design with great ease of use, the electronics maintain the set values reliably and accurately and the digital LED displays allow you to immediately check the T values inside the compartments. This control guarantees total safety of the stored biological material, with an acoustic (silenceable buzzer) and visual alarm: it immediately informs the user about unwanted increases or decreases in the set temperatures and allows, with the remote-control kits, remote communication. of the alarm event. It is also possible to have an energy failure alarm, with direct current power supply by means of a switching power supply and a 12 V dc 1.2 Ah battery. The control panel is already prepared for the installation of an eventual weekly cycle disc temperature recorder, with double pen, with independent battery (in DC) from the power supply.



### 2.3 Thermoregulation and controls

This appliance is equipped as standard with:

- Key lock
- Free contacts and plug + socket for remoting alarm signals.

The **energy failure alarm** allows, in the event of a power failure, to display the compartment temperature anyway, to launch an immediate (silenceable) acoustic signal and to change the status of the remote alarm contact which, if connected, immediately allows to report the problem remotely.

### 2.4 Refrigeration

The refrigeration units are incorporated into the cabinet; the compressors are of the hermetic type, with a high cooling capacity; the condensation surfaces (with air) are very large, to compensate for the most severe environmental and working conditions.

The expansion of the refrigerant fluid is obtained by means of a capillary tube.

### 2.5 Accessories

- Self-powered energy failure alarm with 12V 2Ah buffer battery;
- Version with one or two PT100 Ohm temperature probes for managing the ambient temperature and alarms;
- Fixed or swivel wheels kit;
- Weekly cycle disc recorder with its own power supply by means of a 1.5 Vdc battery;
- Strip chart electronic recorder with V230 / 1/50 power supply;
- Internal/external through hole, with rubber cap, for cables and probes passage for Installation Qualification, Operational Qualification, calibrations, validations, etc .;
- Remote alarm device;
- Additional temperature probe PT 100 Ohm with plug on the rear panel independent of the regulation system (connection to the T detection system charged to the user).
- Wi-Fl Router;
- GSM module with SIM activation;
- Ethernet port;
- Machine status query by Modbus protocol via RJ45



### 3. Installation

### 3.1 PPE Mandatory for Installation



The clothing and PPE (personal protective equipment) of those who work or carry out maintenance on the machine / equipment must comply with the essential safety requirements in force in their country, as indicated in the EEC directive 89/656 and 89/868 relating to use of personal protective equipment.

During the product installation phases, the use of the following PPE is mandatory:



### 3.2 Transport and unpacking



#### If the equipment is not transported in the VERTICAL position, at least twenty-four hours must be spent in this position before starting it.

In any case, contact our customer service for information on the correct procedure for loading the device.

The product is packed in KW Apparecchi Scientifici to guarantee its integrity during transport. The packaging is customized for the various models while ensuring protection of the surfaces by means of cardboard and/or polystyrene coating, corners and a wrapping with stretch film of polyethylene and strap.

If the appliance is not equipped with wheels, it is placed on a pallet that facilitates its movement by means of mechanical aids (transpallet, forklift). If there are wheels, they are used for handling.



Handling directly on wheels is not recommended for long stretches and on uneven surfaces. In this case it is recommended to place the appliance on a special pallet.



The transport takes place with an authorized courier trained on loading, transport and unloading procedures, in particular on the need to always keep the appliance in a vertical position.

After removing the packaging, make sure the appliance is intact. in case of doubt, do not use the appliance and contact the KW central technical assistance service - tel. 0577/309144.



All the packaging materials used for the new device can be disposed of safely. Cardboard can be crushed and destined for waste paper; the sheets are in polystyrene free from fluoro-hydrochloric hydrocarbons and the wrapping is in branded nylon: these substances can be recycled, if delivered to a relative collection center (ask the Municipal Administration).

### 3.3 Sicurezza e antinfortunistica

The machine was designed and built with appropriate measures to ensure the safety and health of the user.

- *Stability*: the machine has been designed and built in such a way as to ensure stability in all expected operating conditions if positioned flat with the help of the adjustable feet;
- *Surfaces, edges, corners*: within the limits allowed by their functions, the accessible parts of the machine are free of sharp corners and sharp edges;
- *Movable elements*: all the elements with the possibility of movement have been designed, built and arranged in such a way as to avoid risks;
- Electricity: the machine has been designed and built in such a way as to prevent the risks deriving from electricity, in compliance with the specific legislation in force. The electrical safety of this equipment is ensured when the equipment is correctly connected to an efficient grounding system, as required by current electrical safety standards;
- Noise: the machine was designed and built in such a way as to minimize the risk of noise pollution. The average noise value at 1 m. away (in front of the device) and at a height of 1.5 m., is within 60 dB (A). This value also depends on the state of the fans, the cleanliness of the air-cooled exchangers, etc. Beyond 3 meters away, the noise drops, on average, below about 55 dB (A).



The use of any electrical equipment requires the observance of some fundamental rules:

- do not touch the appliance with wet or damp hands or feet;
- do not use the appliance with bare feet;
- do not use extension cables, except with particular caution (and with prior notification and authorization from the CENTRAL TECHNICAL ASSISTANCE SERVICE);



$\bigotimes$	<ul> <li>do not pull the power cable, or the appliance itself, to remove the plug from the socket;</li> <li>do not leave the equipment exposed to atmospheric agents;</li> <li>do not allow the equipment to be used by incapable persons, without supervision;</li> </ul>
	<ul> <li>the fixed guards (fixed protections solidly connected to the structure), if present, must remain in their seat, correctly fixed and in perfect integrity during all operations relating to normal operation;</li> <li>do not put explosive materials or cans/containers with flammable substances into the device; in contact with the electrical parts, any gas leaks (flammable) can ignite. Do not store different materials that are incompatible and/or not clearly separated or materials that require different storage temperatures;</li> <li>do not allow children to play with the appliance and / or it is within their reach;</li> <li>use the appliance only in the temperature range for which it is built and tested; do not use at different temperatures;</li> <li>do not try to alter - in any way - the configuration and adjustment parameters of the electronic instrument of the control panel;</li> <li>do not modify the electrical wiring or mechanical connections in any way.</li> </ul>



**Before carrying out any cleaning or maintenance operation,** disconnect the appliance from the power supply by pulling out the plug.

### 3.4 Positioning and electrical connection



The installation must be carried out according to the instructions of KW Apparecchi Scientifici S.r.l. by professionally qualified personnel. Incorrect installation can cause damage to people, animals or things, for which KW Apparecchi Scientifici cannot be held responsible.

At the time of installation by the user, the device is moved in the manner described above, unpacked and positioned flat (level).



Check that the electrical capacity of the system and of the power sockets are adequate for the maximum power of the appliance indicated on the plate. If in doubt, contact professionally qualified personnel.



#### 3.4.1 Place of installation

The device is suitable for installation in a dry and airy environment, with an ambient temperature between +20  $^{\circ}$  C and +25  $^{\circ}$ C.

Do not use the refrigerator in uncovered areas, outdoors or exposed to atmospheric agents. The refrigerator needs good ventilation. Leave a space of at least 150 mm on all sides.

The device is suitable for installation in a dry and airable environment.

The place must not be exposed to direct sunlight and must not be near a heat source such as a radiator, stove, other heat-dissipating equipment (sterilizer, autoclave, etc.).

If flammable gases are present inside the appliance, it must finally be installed in a compartment that has a sufficiently large volume to avoid dangerous concentrations in the event of leaks. The minimum volume that the room must have can be calculated using the lower flammability limit (LFL) of the gas and the quantity of the same gas present in the circuit, using the following formula:

 $V_{min}$  = (gas charge in Kg) / (0.2 x LFL)

For example, if there are 0.15 kg of R290 in the circuit which has an LFL value of 0.038 kg/m<sup>3</sup>, the minimum volume will be  $19.7 \text{ m}^3$ .

Avoid placing the refrigerator near a heat source such as a radiator, stove, other heat-dissipating equipment (sterilizer, autoclave, etc.) or in direct sunlight.

<u>Under no circumstances must the ventilation space between the appliance and the wall or the ventilation grille be obstructed.</u>

Avoid the introduction of ice or liquids not protected by closed containers.

Avoid the introduction of hot products.

Avoid using the refrigerator in the rain or in the presence of water.



In case of overturning, switch off the refrigerator.

Avoid installing the refrigerator near heat sources.

To disconnect the device from the power supply, turn off the ON/OFF switch (0 / I), and remove the plug from the laboratory socket.

Do not pull the power cord or move the appliance without having first removed the plug. FAILURE TO COMPLY WITH THE ABOVE MAY COMPROMISE THE SAFETY OF THE EQUIPMENT AND CONSEQUENTLY OF THE STORED PRODUCT AND OF THE USERS.



KW declines all responsibility for any damage occurring in the use of the equipment produced or marketed by it, if the recommendations made have not been observed exactly and scrupulously by the user.

### 4. General instruction of use

The T in the room must not exceed +30 C; Max admissible T + 32 ° C, but for limited
periods. The equipment also works with higher T, but in really difficult thermodynamic
conditions. The room where the instrument is located must have air exchange, through
a natural circulation or, better, a forced circulation; if the T is close to + 30 ° C it is
necessary, for the hottest periods, to use an air conditioner / conditioner to remove
the condensation heat from the freezer (varies from model to model).

ATTENTION: the MINIMUM temperature of the room must not be lower than 10 °C, otherwise the appliance may not work properly and face possible failures.

It is advisable to always use <b>the remote alarm signal system</b> supplied with the device.
Pay attention to the use of the door: operate so that it remains open for a few minutes, during the introduction and removal of the material.
Make sure that the door is closed correctly and to do this always lock the door.

### 5. Technical assistance service



In the event of breakdown and/or malfunctioning of the equipment, contact the authorized technical assistance center: for any repairs, request the use of original spare parts. Failure to comply with the above can compromise the safety of the equipment.

The technical assistance of the equipment present on the national territory is made through a maintenance service, both direct and with authorized technical assistance centers distributed throughout all regions of Italy.

The center operating in Monteriggioni (Siena), Via della Resistenza n.119 -53035.

tel. 0577-309143-5 fax 0577-309142 e-mail: assistenza@kwkw.it

For a copy of the manual, send a request to <u>qa-red@kwkw.it</u>



### 6. Power on

The device is already tested in the factory, and therefore, once positioned and properly connected to the mains, it can be turned on immediately (except for the indications previously reported).

- Remove the envelope containing the instructions from inside;
- Remove the protective cap from the nib of the disc temperature recorder (if present);
- Connect the appliance to a suitable power socket;
- Wait for the program to load (about 2 minutes) until the STANDBY screen appears on the display.



If the appliance does not restart after being deprived of power by disconnecting the switch or plug, wait 10 minutes before turning the power back on, the appliance will resume normal operation.

#### STORAGE OF ORGANIC PRODUCTS

Frozen products can be stored for a few months in the freezer where they reach  $-25 \degree C / -30 \degree C$ . Each single drawer and each cooling grid can withstand a distributed load <10 Kg. To preserve them in the best possible way, it is advisable to use special containers or to have materials in packaging.

#### ATTENTION: do not store glass containers containing hot liquids or solids.

Do not introduce flammable volatile material!

#### INDICATIONS FOR FREEZING

Always introduce dry packs to prevent multiple packs from forming a single block when freezing. Always prepare organic products in small doses or portions to allow for rapid freezing.

- For models with 4/5/6 drawers, the upper shelves must be used for rapid freezing;
- Freeze the products in the first 2 shelves, placing them directly on the cooling grid, and, once frozen, place them in the shelves with sliding drawers suitable for storage.
- For models with 3 drawers, use the upper compartment suitable for freezing.
- After 26 hours from the start of freezing, the products can be stored in the drawers.
- Introduce a maximum of 4 Kg. at a time.

#### **OPERATOR SAFETY**

The device is equipped with a bipolar fuse (F + N) on the power line, designed to protect the operator who could find himself in dangerous conditions if a conductor of the device touches the metal casing.

#### FIRST START-UP

Upon first start-up, the time for the temperature to fall to the set set point, for example -25 ° C, is greater than the temperature alarm delay time (set at 120 minutes), so the device will start ringing, with the display flashes the letters "HI" (high temperature). In this case it is necessary to



silence the buzzer and check that the temperature drops to the set point value. The pull down time interval depends on the environmental conditions, but usually is around four hours. It is recommended to load the device with material at least 8/12 hours after the set temperature has been reached; never fill the freezer compartment completely and with "hot" material.

#### **VERSION WITH BUFFER BATTERY**

In the event that the device is equipped with a buffer battery on the thermoregulator, this allows you to view the temperature even in the absence of a power supply, for several hours, in addition to immediately operating the internal buzzer and remoting the alarm signal.

It should be borne in mind, however, that the 12V 2Ah Pb buffer battery has a life of about 2-3 years, beyond which it no longer guarantees its operation.

The thermoregulator checks the efficiency of the battery, signaling, in the event of an anomaly, "faulty battery". In this case, replace it with another one with the same characteristics (12V 2Ah).

### 7. Freezer control via panel

### 7.1 Power on

After connecting the appliance to an appropriate power socket, operate the magnetothermic switch located on the back of the appliance and press the power symbol on the screen for at least 3 seconds.



If the **power-on password (usually 255)** has been enabled, enter it using the numeric keypad shown below.





If the password has been set correctly, the device is switched on with the sequences shown below, otherwise the **ERROR** frame is returned and the display returns to the Stand-By state. A typing error can be cleared with the **C** key on the keypad.

### 7.2 Side keys meaning

On the sides of the screen there are 6 keys, 3 on each side whose name and meaning are indicated below:



MENU KEY accesses the menu panel

INFO KEY accesses the information panel from the Home Page

ESCAPE KEY goes back one level switches to *easy/scientific* Home



UP KEY increases the variable flicks multiple pages forward

UP KEY decreases the variable flicks multiple pages back



ENTER KEY confirms the value and exits

### 7.3 Main screen

In the single temperature configuration two types of Home Page are provided: **EASY** or **SCIENTIFIC**. The external **ESCAPE** key selects one mode or the other. The header shows the **MACHINE\_NAME** (in the example LABORATORY) that can be edited from the SETTINGS MENU.

#### a) HOME PAGE EASY

Starting from the top left corner, the first box shows 7 squares corresponding respectively to the relay outputs U1-U7. The U7 relay is present only in the PRO1 and PRO 2 control boards therefore in other configurations the square will be present but always disabled. Activating an output changes the style of the square to a lighter gray.



The **EVENTS** area (represented by the second box) will show different icons depending on the alarm in progress: the **RED THERMOMETER** icon in the event of a temperature alarm, **RED KEY** in the event of a fault, **ENVELOPE** in the event of an event that has ceased and is not displayed in **LIST OF EVENTS**.

In case of simultaneous presence of **FAULT** and **ALARM**, the temperature alarm icon has priority over the fault icon.

The third box shows the company logo (D4 in this case).



In the fourth box at the top, the actions of the refrigeration unit are indicated with an icon according to the following table:

PAUSE	STAND-BY	COOL	DEFROST	DRIPPING
no icon	***	ANK AND	**	۵
HEAT	HUMIDIFY	DEHUMIDIFY	BACKUP CO2	ADJUS STOP
ت	4	<u>\$</u>		0
COOL/DEHUMID	COOL/HUMID	DEFROST/DEHUMID	DEFROST/HUMID	HEAT/DEHUMID
<u>*</u> ](()		达美	*	<b>X</b>

Nell'<u>ultimo riquadro (quinto)</u> in alto vengono riportate ora e data.

Nel <u>primo riquadro a sinistra in basso</u> viene riportata la temperatura del limite di allarme di bassa temperatura.

Nel <u>secondo</u> viene riportata la temperatura del limite di allarme di alta temperatura.



Nel terzo viene riportata la temperatura del set point operativo.

Nel <u>quarto</u> viene riportata la temperatura di evaporatore S2.

**N.B.** Nelle unità superfreezer a doppio stadio la stringa EVAPORATORE è sostituita dalla stringa **2° STADIO**.

The time and date are shown in the <u>last (fifth) box</u> at the top.

The low temperature alarm limit temperature is shown in the first box on the bottom left.

The <u>second</u> shows the temperature of the high temperature alarm limit.

The <u>third</u> shows the operating set point temperature.

The <u>fourth</u> shows the evaporator S2 temperature.

**N.B.** In the dual-stage superfreezer units the EVAPORATOR string is replaced by the **2nd STAGE** string.

The <u>fifth box</u> shows the condenser temperature S3 for devices that have probe S3 configured as a condenser probe; otherwise, other variables based on the configuration of the device [EVAPORATOR 2/SET RH%/THERMOSTAT/% HOUR COMPRESSOR].

In the <u>center</u>, the compartment temperature given by the PT100 monitor probe is displayed. If the PT100 monitor probe is faulty or disabled, the compartment temperature is read by probe S1 and is highlighted in purple.



#### b) HOME PAGE SCIENTIFIC

In the Scientific mode the graph traces the values of the compartment and setpoint temperature recorded in the last 6 hours with sampling **every 30 seconds** (720 points) where the minimum and maximum values of axis Y match the alarm limits of low temperature **-1°C** and high temperature **+1°C**. Shutting down the controller deletes the mapping on display; when switched on again, the graph repopulates from right to left.

#### N.B. Other keys



In both views of the home page there are keys for **turning on the interior light** and for **opening the door** with an electric lock, if provided for on the models in question.

### 7.4 User panel



In both views of the home page there are keys for turning on the interior light and for opening the door with an electric lock, if provided for on the models in question.



- 1) **STAND-BY**: the long pressure of the icon turns off the device
- 2) SETPOINT: accesses the compartment temperature setting panel
- 3) LIMITS: accesses the setting panel of the temperature alarm limits
- 4) ACCESS LOG list of access and actions (\*)
- 5) ECOMODE: accesses the setting panel of the energy savings mode
- 6) EVENTS: accesses the event list (recorded alarms and faults)
- 7) GRAPH: accesses the calendar of records and graph display
- 8) DEFROST: starts a manual defrost
- 9) SETTINGS: accesses the SETTINGS menu
- 10) SERVICE: accesses the SERVICE menu

#### 1) STAND-BY

Pressing the STAND-BY key for 2 seconds activates the shutdown phase. With USER password different from zero, this is requested to complete the shutdown sequence. If the password was correctly set the device turns off, otherwise the ERROR frame appears and the display goes back to the Home Page.

#### 2) SET POINT

Pressing the **SETPOINT** icon displays the temperature set setting frame. With USER password **different from zero**, it is requested to access the setting of the new value. The password is edited



via the numerical keypad and confirmed by pressing **ENTER**. If the password was correctly set the temperature set setting frame is accessed, otherwise the **ERROR** frame appears and the display goes back to the starting frame. When the page opens the current setpoint is displayed.

The **UP/DW** keys modify the set value. The new value is saved by pressing the external **ENTER** key with request to confirm. The non-editable values indicated by the ON and OFF labels respectively represent the compressor on/off values.

Starting from left to right, the following are found in the **SET POINT EDIT PANEL**:

- The **STANDARD** key sets the default set
- The MIN and MAX keys set the minimum/masimum value settable of the set
- The CURRENT/MODIFIED key retrieves the set in progress/preset set
- The **ESCAPE** key returns to the USER MENU without saving the value with exit/confirm request.



#### 3) SETTING AND ALARM LIMIT

Pressing the LIMITS icon presents the frame for setting the temperature limits and alarm delays. With passwords enabled, a password is requested in the same way as in the previous paragraph. When the page is opened, the operating values are displayed.

The modification of the limits involves the automatic modification of the relative parameters both in the monitor and controller section:

- CONTROL SECTION PARAMETERS::

LOW TEMP: **ALL**; HIGH TEMP: **ALH**; DELAY **ALD**; DOOR: **DOO**.

- MONITOR SECTION PARAMETERS:

LOW TEMP: **LAA**; HIGH TEMP:**HAA**; DELAY **DSA**; DOOR: **DOO**.



		LIMITS SET	ITINGS		<b>_</b>		LIMITS SE	TTINGS		+
		RELAT	IVE				ABSO	LUTE		
i	-2.0°				- i	-2.0°			20"	-
t	STANDARD	2.0° d.0°	16.0° SELECT	MODIFIED	+ ↓	STANDARD	RELATIVE	SELECT	MODIFIED	₽

- The external **UP/DW** keys increase/decrease the value selected by the **SELECT** key.
- The **STANDARD** key sets the default value
- The *ABSOLUTE/RELATIVE* key sets in rotation the type of setting of limit cwith confirmation of the change occurred; the limits can be set both absolute and relative to the setpoint. The calculated value of the relative limits is displayed below the value bar.
- The *SELECT* key enables the value to be set to rotate.
- The CURRENT/MODIFIED key recovers the value in progress / preset
- The **ESCAPE** key returns to the USER MENU without saving the value map [with confirmation]
- The ENTER key returns to the USER MENU saving the map of values [with confirmation]

#### 4) ACCESS LOG

Pressing the LOG ACCESS icon from the USER MENU leads to the display the last 32 events, updated every 30 seconds.

				ACCESS LOG		1/4	
	1	12/05/2016	22:30	DR ROSSI			+
	2	12/05/2016	20:09	DR BIANCHI	ß		
	3	12/05/2016	14:55	SERVICE	i		
i	4	12/05/2016	14:16	ADMIN		<u> </u>	
	5	10/05/2016	10:24	DR ROSSI	†•		
	6	09/05/2016	18:01	DR ROSSI			
←	7	09/05/2016	13:11	ANONYMOUS			
	8	09/05/2016	11:24	DR BIANCHI	Ċ		

The symbols on the right of each row indicate the type of intervention / modification carried out during access, according to the following table: for each possible modification, the affected menu is indicated and the level of permission you need to be able to implement it.

Each action is associated with the date and time of completion, and the user who performed it.

If an action is performed on a menu that has a null access password, the action is stored and indicated as performed by "FREE ACCESS".

In the single password configuration, users are preset to "USER", "ADMIN" and "SERVICE".

In the multi-password configuration, users are defined by the strings set in the SETTINGS/PASSWORD menu.



In dual-zone/redundant configurations, the zone in which the action was performed (A/B) is indicated next to the action icon. Some icons are replicated for both zones, underlining the fact that the changes are extended to the whole system as a whole.

<b>U</b>	STAND-BW/POWERON Menu: USER Level: USER	2	PARA METERS UPDATED Menu: SETTINGS Level: ADMIN
₽	CHANGED SETPOINT Menu: USER Livello: USER	<i>(</i>	CHANGED CLOUD SETTINGS Menu: SETTINGS Level: ADMIN
	CHANGED TEMPERATURE LIMITS Menu: USER Level: USER		CHANGED FRIDGE MODEL Menu: SERVICE Level: SERVICE
	CHANGED DOOR TIME-OUT Menu: USER Level: USER		CHANGED FRIDGES/N Menu: SERVICE Level: SERVICE
:* =)	CHANGED BOOMO DE SETTINGS Menu: USER Level: USER		CHANGED PAR. CONTROLLE Menu: SERVICE Level: SERVICE
<b>∱</b> ⁵	DOO ROPENED Menu: USER Level: USER	<b></b>	CHANGED PAR, MO NITOR Menu: SERVICE Level: SERVICE
12	B URGLARY Menu: Level	<b>.</b>	REPLAY ACTION Menu: SERVICE Level: SERVICE
	CHANGED DATE/HOUR Menu: SETTINGS Level: USER	Ŷ	COPY PARA METERS Menu: SERVICE Level: SERVICE
-	CHANGED PASSINO RD A DMIN Menu: SETTINGS Level: ADMIN	<u>,</u> ↑,	FIRMINARE UPDATE Menu: SERVICE
22	CHANGED USER PSW (SINGLE) Menu: SETTINGS Level: ADMIN		Level: SERVICE
<u>8</u>	CHANGED USER PSW (MULTI) Menu: SETTINGS Level: ADMIN		
\$	CHANGED SERVICE PASSO WRD Menu: SETTINGS Level: SERVICE		
	FORMATTED MEMORY (SDCARD) Menu: SETTINGS Level: ADMIN		

#### 5) ECO MODE

Pressing the ECOMODE icon displays the timed or automatic temperature profile setting panel. With passwords enabled, the password is required to access the setting of the new configuration. This function allows you to increase the setpoint value at certain times in order to reduce the consumption of the appliance.

- The **ON/OFF** key disables / enables ECOMODE; if the key is **OFF** the other keys are disabled.
- The **AUTO/TIMER** button sets the ECOMODE TIMER / AUTO function in rotation; in AUTO mode the SELECTION key is disabled and only the INCREMENT variable is selected.
- The **SELECT** key, in TIMER mode, enables the values to be set in rotation.



- The **CURRENT/CHANGED** key retrieves the current / preset value.
- The external **ESCAPE** key returns to the USER MENU without saving with a request to exit/confirm.

	ECOMODE PRESET					
					+	
i	1.0°	22:00	4h		_	
	ON	AUTO	SELECT	ACTUAL		

#### 6) EVENTS

The set of recorded **alarms and faults** are recorded and displayed in the **EVENT LIST**. Pressing the **EVENT icon on the Home Page** or pressing the *INFO* key during an alarm or fault or notification status leads to the reading of the EVENT LIST.

With an event in progress the left box flashes red, otherwise it remains grey. If more than 4 events are recorded, a new page is added. The top-right bar shows the page index. The pages can be scrolled forward and back using the **UP/DW** keys. Return to the Home Page occurs by pressing the **ESCAPE** key. If there are no events recorded, the empty list frame appears for 2 sec.

	EVEN	NTS LIST	1/2	
	DEFROST TIME-OUT	18:49 12/06/2015		+
i	HIGH TEMPERATURE	10:43 11/06/2015	12.5°C 10 min	_
	PROBE	08:55 05/06/2015	S1	
+	LOW TEMPERATURE	04:50 02/06/2015	1.3°C 02 min	L+

#### **EVENT LIST** (alarm and faults)

- HIGH TEMPERATURE
- LOW TEMPERATURE
- DOOR OPEN
- BLACK-OUT
- MAINS FAULT
- Sx PROBE
- LOW EVAPORATION
- HIGH CONDENSATION



- HIGH PRESSURE
- DEFROSTING TIME
- FAULTY BATTERY
- DOOR SWITCH
- UNIT FAULT
- LOAD FAULT
- U1 RELAY FAULT
- U2 RELAY FAULT
- RELAY FAULT

#### 7) HISTORICAL GRAPH

Pressing the **GRAPH** icon accesses the select menu of the historical graph. When the **CALENDAR** page opens, the selected day is the current one and it is highlighted by a white bar. Press **UP** to scroll the months forward and **DW** to scroll them back. Press the **TODAY** key to go back to the current day. The grey boxes indicate the lack of data, the green boxes the presence of data, the red boxes the presence of a discrepancy. Press the key of the requested day to access the display frame of the daily graph.

	APRIL 2015							
	1	2	3	4	5	6	7	+
	8	9	10	11	12	13	14	
l	15	16	17	18	19	20	21	
	22	23	24	25	26	27	28	
Ŧ	29	30		t	тоі	DAY		L+

The graph opens with start at 00:00 hours and end at 06:00 hours. Pressing the external **UP/DW** keys the time axis with 6-hour time slots are scrolled forward/back. To select a different day, go back to the calendar by pressing the **ESCAPE** key. The temperature of the respective probes are traced enabling with a click the corresponding box; each square shows the average temperature values calculated in the 24 hours of the current day. The boxes from left allow the cyclic selection of the relative probes.





#### 8) **DEFROSTING**

Pressing the DEFROST icon starts a defrost if there are the conditions provided, otherwise it shows the ERROR frame and returns to the USER MENU. Start of the defrost phase, which may include a stand-by time, leads to the **PANNELLO DEFROST (DEFROST PANEL)** frame. Otherwise, if defrosting is started automatically, it remains in the Home Page showing the defrosting status icon.

#### a) Waiting phase

The defrosting initiation can contemplate a stand-by phase in which the timer 00:00 flashes without increasing the time until initiation for conditions reached.



#### b) Defrost and dripping phase

During defrosting the yellow central bar moves from left to right and the timer starts counting the time. The defrosting end temperature is displayed right of the display. The dripping phase, if provided, is indicated by the DRIPPING string under the timer.



#### c) Interruption

Defrosting can be interrupted by pressing the **STOP key during the stand-by and running phases but not during dripping.** At the end of defrosting the display automatically goes back to the home page. During any moment of the defrosting phases, via the ESC key, it is possible to go back to the Home Page.



### 7.5 Settings panel



From the MENU PANEL on the main HOME PAGE, you can select the SETTINGS button, to reach the SETTINGS PANEL. The following functions are found in this panel:

- 1) DATE/HOUR: accesses the setting date/time panel
- 2) DISPLAY: accesses the setting of the screensaver panel, buzzer and logos
- 3) PASSWORD: accesses the setting panel of the passwords, admin, user, service
- 4) BACKUP: accesses the backup data download panel
- 5) CARD FORMAT: allows deleting the thermoregulation data
- 6) UPDATE: accesses the configuration panel of the connected devices
- 7) CLOUD: accesses the network parameter and SMS service setting menu
- 8) ALARM TEST: accesses the recording menu of the alert telephone numbers
- 9) LANGUAGE: accesses the setting panel of the language
- 10) UNIT NAME accesses the editing panel of the Home Page title

#### 1) Date/time

Pressing the DATE/TIME icon displays the system date and time setting panel. The password may be required to access the clock setting.

When the page is opened, the current RTC values are displayed. The SELECT key enables the value to be set in rotation. The external UP/DW keys increase/decrease the selected value. The new date/time is saved by pressing the ENTER key with a confirmation request.

**N.B.** A date/time change does not allow you to recall the temperature graphs of the current day from 00:00 to the time of the date change; the temperature values are in any case saved in the backup data inside the microSD and can be recalled from the STUDIOGRAPH 2.0 application. The system clock does not automatically manage daylight saving time.

The connection to the Cloud refers to the UTC time transparent to the time conventions of the nation. Browsing on the Cloud refers to the zone time conventions if the device used provides for automatic management.





#### 2) DISPLAY

Pressing the **DISPLAY** icon shows the display configuration frame. The **SELECT** key enables in rotation the value to be set:

SCREENSAVER: screensaver time of intervention (0h=disabled)

BUZZER: buzzer enabling/disabling.

		DISPLAY	PRESET		+
i	7h screensaver	<b>ON</b> buzzer	LOGO LOC BITI	GOS QR CODE	
t	SELEC	r	LOAD BMP	DELETE QR	₽

Selecting **BITMAP** highlights in white the files in the device. To load a new graphic file press the **LOAD BMP** key where inserting the USB pen is requested. The BMP files recognised in the VLX/PAR folder are highlighted green.

- The **SELECT** key enables in rotation the value to be set
- The LOAD BMP load graphic files from USB pen
- The **DELETE QR** erase the QR CODE saved before on display panel
- The **ESCAPE** key returns to the USER MENU without saving with exit/confirm request
- The external **UP/DW** keys increase/decrease the value selected.
  - The ENTER key goes to the USER MENU saving the configuration and the BMPs

#### 3) PASSWORD

- The *SELECT* button leads to spin on modifiable password.
- If the password ADMIN = 0 or typed it correctly then the next time you press the SELECT button brings about password ADMIN/USER/MULTI fields;



- If the password ADMIN > 0 then the next press the SELECT button cycles among the ADMIN password fields and SERVICE;
- The password is edited using the keypad ; It erases one digit at a time by pressing C;
- The **ESCAPE** key returns to the SETTINGS MENU without saving and password might have been set;
- The **ENTER** key returns to the SETTINGS MENU by saving the passwords set.



#### 1. PASSWORD ADMIN

On first entry, the value is zero so the value that will be set using the keypad and confirmed with the **ENTER** key will define the ADMIN password. Defined password ADMIN, the next input is displayed by three asterisks and must be made using the keypad. Confirming an incorrect value back to SETTINGS MENU otherwise continues for viewing or changing the password USER single or multi-user or the same password ADMIN.

#### 2. SINGLE USER PASSWORD

By setting a correct value of the ADMIN password, using the SELECT key go to the SINGLE USER PASSWORD field and set the value using the keypad, confirming with the ENTER key.

#### 3. PASSWORD MULTIUSER

After you correctly set the ADMIN password or if is equal to zero, through the *SELECT* key move to multiple password position and press the *ENTER* key, that presents the USERS TABLE.



The icons and strings with gray style indicate not configured fields, green style configured fields. Click any of the fields to set the user password, record the badge, if the badge reader device is connected, and associate the user name; the display shows the numeric keypad and password to set lit in green. After setting the numeric password, click on the BADGE icon if the badge reader device is connected (see par. 13:42) and finally click on the *id free user* string to edit the user name to be associated (Fig. 3C); in this position the keypad enables all alphanumeric keys. When complete, the display goes to the users table updated to the latest recording.





If the BADGE is also registered, the password will only be used in case of failure of the RFID badge reader. To register the BADGE, click on the central icon depicting the tag: the display shows the registration request frame only if the password has been previously set, otherwise it returns the alert frame (red handle).



Confirming on RECORDING the flashing request frame appears.



After having passed the badge in front of the **TAG reader**, the green check-in frame will appear. (Fig.7) and the display will return to the USER REGISTRATION frame with the green badge icon to indicate the successful registration. Finally click on the free user id string by deleting it with the red key and edit the username to be associated with the BADGE.





In this position the keypad enables all alphanumeric keys. At the end confirm the recordings with the *ENTER*key and the display returns to the updated USER TABLE.

From the INSERT PASSWORD frame click on the BADGE icon to delete registered badges; confirming CANCEL BADGE with a subsequent confirmation frame: the registration of the badge is deleted with a check mark of cancellation.

The system offers the possibility to memorize up to **32 numeric passwords** of 5 digits, and to associate them with a username for easy access recognition.

The system is enabled to recognize at least one valid multi-user password. Access to the menus that require the USER level are accessible by correctly typing any of the multipasswords entered; a password uniqueness check is performed, i.e two passwords with the same value cannot coexist.

In the absence of the conditions described access to the USER level menus is allowed by entering the 3-digit USER password (single password access, as currently).

The ADMIN and SERVICE level menus follow the 3-digit single password criteria.

#### 4. PASSWORD SERVICE

The **SERVICE** password is set independently of the other passwords. At the first entry the value is zero and therefore the value that will be set will define the **SERVICE** password. Once the **SERVICE** password has been defined, the next time you enter this menu, the password is indicated by three asterisks and must be entered using the keypad. Confirming an incorrect value, the display returns to the SETTINGS MENU, otherwise it can be changed using the keypad by confirming the new value with the ENTER key.

When a password is entered to enter a protected menu, the system is unlocked and allows access to all the permissions menus (USER or ADMIN or SERVICE). The unlock time is such that more consecutive operations can be performed without re-entering the password.

#### 4) BACKUP

The BACKUP menu transfers the thermoregulation data on usb pen. Pressing the **BACKUP** icon shows the usb-pen insertion request frame with20-second time-out. If the usb-pen has been recognised, the setting page of the months to download is displayed, otherwise the display goes back to the SETTINGS MENU.

The *UP/DW* keys increase/decrease the number of months to transfer; pressing the *ENTER* key starts the data download with the progress bar; at the end, it goes back to the SETTINGS MENU. The *ESCAPE* key leads to the SETTINGS MENU without transferring the data.





#### 5) Internal SD CARD Formatting

The FORMAT function deletes all thermoregulation data from the BACKUP folder. Pressing the FORMAT icon shows the ADMIN password entering request frame. If the password is entered correctly the device, after confirmation, deletes the data followed by the result frame, otherwise it goes back to the SETTINGS MENU.

#### 6) Parameters Update

The UPDATE menu performs the configuration of the device through the files generated by the application DataBuilder 3.0. The icon pressure UPDATE presents the insertion of the USB-pen request frame. If the usb-pen has been recognized, you see the page of the configuration folder (see fig.) contained in VLX/PAR, otherwise the display goes back to the SETTINGS MENU.



The folder, selected by clicking on the relevant field, presents the set of configuration files that can be selected/deselected by clicking on the relevant box (see fig.); when the file is cleared the square style changes from yellow to gray. Each folder can contain a maximum of 5 configuration files (DIS-CTA-CTB-MNA-MNB). To confirm the sending of one or more configuration files to the devices press the **ENTER** key. If within the VLX/PAR folder of USB-pen contains the logo.bmp image files, and logos.bmp qr.bmp while transferring files the image shows the frame with the green marking of the file in upload.





Following the successful configuration, the control board will be restarted with the appearance of the restart icon.

Once the transfer is complete, the configuration files are saved in the microSD and eeprom of the display panel.

#### 7) ALARM TEST

The icon pressure TEST start the alarm test WITH the following sequences:

- 1. 3 seconds alarm icon with buzzer on;
- 2. Activate the alarm relay for 3 seconds according these sequences OFF/ON/OFF;
- 3. Back to Home Page



#### 8) LANGUAGE

Pressing the **LANGUAGE** icon shows the frame for selecting the text languages. The language is selected in a mutually exclusive manner by clicking on the select box, which changes from grey to orange.

To choose the language use the keys as follows:

- The UP/DW keys browse the language setting pages, if enabled
- The **ESCAPE** key leads to the SETTINGS MENU without changing the language
- The ENTER key, after confirmation, sets the selected language.

#### 9) MACHINE NAME

Pressing the **TITLE** icon shows the editing frame of the machine name that is displayed in the Home Page header. To confirm the text [max 24 characters] press **ENTER**. The external **ESCAPE** key takes the display back to the SETTINGS MENU without saving the edited text.



### 7.6 Service panel

The Service key gives access to the Service Panel, a menu that allows a series of machine settings and is therefore password protected. Only those who have constructive knowledge of the machine can enter this menu.

### 7.7 Events, pre-alarm, allarm, fault and notification

#### 1) Door open and door alarm

With the door open, within the time limit defined by the DOO parameter, the display shows the frame of Fig.1 with a flashing arrow and the indication of the compartment temperature; once the DOO time has elapsed, the alarm status is activated with buzzer active and orange style. From this frame it is possible to return to the Home Page by pressing the external **ESCAPE** key or by closing the door.



The onset of an alarm or fault state is notified via the EVENT frame:

#### 1) High temperature or low temperature pre-alarm status

- FONT OF COMPARTMENT TEMPERATURE AND HEADER BAR YELLOW;
- EVENTS INFO AREA EMPTY;
- BUZZER OFF.



#### 2) Alarm notification

- EVENT FRAME WITH RED THERMOMETER ICON;
- ACTIVE BUZZER 1 sec on and 1 sec off;
- External keys disabled;





- The buzzer is silenced by pressing the display area that displays the LIST OF EVENTS;
- Exiting the EVENT LIST brings you back to the HOME PAGE;
- The buzzer is automatically silenced after a time predefined by the manufacturer (BUF MINUTES) even if the display area is not pressed;
- The buzzer is silenced if the alarm event returns;
- The buzzer is reactivated at the expiration of the set repetition time (BUR MINUTES) if the alarm persists

#### 3) High/low temperature status

- SPACE TEMPERATURE font AND RED/BLUE header bar;
- RED THERMOMETER icon in the EVENTS INFO area;
- The buzzer is reactivated at the expiration of the set repetition time (BUR MINUTES) if the alarm persists;
- The buzzer is silenced by pressing the display area;
- Pressing the area containing the RED THERMOMETER displays the LIST OF EVENTS.



#### 4) Fault Notification

- EVENT FRAME WITH RED KEY ICON;
- ACTIVE BUZZER 1 sec on and 1 sec off;
- External keys disabled;
- The buzzer is silenced by pressing the display area that displays the LIST OF EVENTS;
- Exiting the EVENT LIST brings you back to the HOME PAGE;
- The buzzer is automatically silenced after a time predefined by the manufacturer (BUF MINUTES) even if the display area is not pressed;
- The buzzer is silenced if the alarm event returns;
- The buzzer is reactivated at the expiration of the set repetition time (BUR MINUTES) if the alarm persists.

#### 5) Fault status

- Font of the SPACE TEMPERATURE UNCHANGED;
- RED KEY icon in the EVENTS INFO area;





- The buzzer is reactivated at the expiration of the set reiteration time (BUR MINUTES) if the fault persists;
- The buzzer is silenced by pressing the display area;
- Pressing the area containing the RED KEY displays the LIST OF EVENTS.



#### 6) Notification of alarm or fault return

The return of a temperature or fault alarm, without having entered the EVENT LIST during the active status of the event, shows the ENVELOPE icon in the EVENT INFO area of the HOME PAGE; the icon is deleted by entering the EVENT LIST from the MENU or by clicking on the area containing the icon.

### 7.8 Warnings



The warnings represent the discrepancies that are not recorded in the EVENT LIST. Their display occupies the entire frame with an icon in the centre of the display and descriptive string. In case of simultaneous warnings these are displayed cyclically with 4 seconds of presence per event. Pressing *ENTER* or the arising of an alarm or fault event, shows the Home Page, clears the display and disable the buzzer. If manual acknowledgment is not given, the notification is automatically excluded after a time set by the manufacturer [BUF minutes] and is reactivated when the repetition time expires [BUR minutes] if the cause that generated the warning does not expire. The precedence of the notifications on the display, in order of decreasing priority, is as follows: *FAULTS -> ALARMS -> GENERIC WARNING -> DOOR OPEN -> NON-READABLE MICROSD* 





#### 7.8.1 Warning MicroSD



If the microSD is not detected or is illegible, the event is notified on the display with the warning frame shown on the side. After a manual acknowledgment using the ENTER key, flashing yellow, the warning is repeated every 5 minutes until the problem is resolved. During the notification the buzzer is active intermittently.

### 8. No mains

The power outage status is communicated as soon as the electricity is interrupted. The following WARNING frame appears in this condition with buzzer active. Pressing on the display area returns to the Home Page and silences the buzzer.





### 9. Mains fault

In the absence of power, expired the preset delay time, the controller enters the **MAINS FAULT** status. The buzzer **is activated** and pressing on the display area, that shows the RED SPANNER icon, leads to the EVENT LIST and silences the buzzer. In the Home Page this status is indicated with the red spanner icon and the appearance of the battery icon with 4 charge notches, 100% - 75% - 50% - 25%. When the charge percentage drops below 25%, the battery icon starts flashing. All keys are disabled except for the DOOR key that remains active for the solenoid bolt unlock.

- Backlight off and on



After one minute from notifying the Mains Fault, the backlight of the displays turns off and on again for 10 seconds when the display area is pressed, in order to decrease energy consumption; this up to minimum battery level, beyond which the system will go into auto off to prevent damaging the backup battery.

- High temperature pre-alarm in mains fault



If in the absence of power, the temperature pre-alarm status is generated, the temperature value turns yellow but does not reactivate the back-light if this is already off.

#### - High temperature alarm in mains fault

#### VIEW OF ALARM WITHIN ONE MINUTE FROM NOTIFICATION



If in the absence of power, the device detects a high temperature alarm, the buzzer activates, the back-light activates for one minute and the RED THERMOMETER icon is displayed. Pressing the display area shows the EVENT LIST. Pressing the **ESCAPE** key goes back to the Home Page; if the **ESCAPE** key is not pressed within one minute, the display automatically turns off and the controller goes back to the Home Page.

#### VIEW OF ALARM AFTER ONE MINUTE FROM NOTIFICATION

If the display area is not pressed within one minute from the occurrence of the alarm, the backlight turns off. Pressing the display area temporarily turns on the back-light and displays the EVENT LIST. Pressing the **ESCAPE** key goes back to the Home Page. If the **ESCAPE** key is not pressed within one minute, the backlight turns off and the display automatically goes back to the Home Page.



### 10. Info panel

Pressing the INFO key shows the following illustrated frames:

- if present, the PT100 monitor probe;
- if the monitor probe is not present;
- in configuration with humidity probe. The panel values are continuously updated;
- With the UP key you can view the following pages (Fig.4 and 5) with the DW key the previous pages, with the ESCAPE key you go back to the Home Page.

The battery box shows the operating status.





### 11. Backup battery management

The back-up system uses 2700 mA/h rechargeable nickel-metal hydride batteries with a total voltage of about 11.7V. Alternatively, lead-acid batteries 12V - 3A/h can be used.

If a battery with voltage Vbatt> = VPD is connected to the input, it is detected as **present**. The circuit detects the **absent** battery status for voltage values **Vbatt <VAD**.

In the presence of the mains, the battery is tested every TBT minutes; the duration of the measurement of the voltage under dummy load is BTD seconds. The voltage measurement is shown on the display.

Battery charging is triggered under the following conditions:

- At the transition from absent battery to battery detected with voltage Vbatt> = VPD
- Upon returning from any blackout;
- At the transition from the stand-by state to the on state;
- If after a test the voltage is Vbatt <VRS

The **state of charge** remains charged as long as the voltage does not exceed the VRE Volt value or the expected time-out time of MRT hours has elapsed; upon reaching the charge time-out if Vbatt> = VRT, a measure relating to the last charge test, the battery is considered **inefficient**, otherwise it is considered **faulty** but not disconnected.

The battery voltage, in the absence of electricity, is continuously monitored. As soon as a battery voltage Vbatt <VBR is detected, the "kill" signal is sent so that the high-level processes can be completed; after TBK seconds the battery is disconnected in order to avoid a destructive discharge.

All battery states are periodically recorded on microSD while only the **absent**, **inefficient** and **faulty** battery states generate a *BATTERY WARNING* transmitted to the display board.



### 12. Data management

The functional variables of the controller are saved every 30 seconds in a non-editable binary file on a microSD card installed inside the panel. The recorded data can be transferred via the USB port on a key and read on any PC on which the STUDIOGRAPH program has been installed.

SR	Refrigerator Serial Number
MR	Refrigerator Model
NM	Refrigerator Name
S1 °C	NTC thermostat probe
52 °C	NTC e va por a tor probe
53 °C	NTC condenser probe
RH%	Hamidity %
MONITOR °C	PT100M monitor probe
THERMO °C	PT100 thermosts t probe
SET °C	Setpoint
SETO <sup>®</sup> C	Operation al 포 tpoin t
SET_RH %	Rumidity setpoint
HI TEMP <sup>®</sup> C	High tempera ture limi t
LO TEMP °C	Low temperature limit
HI TEMPm°C	Monitor high temp. limit
LO TEMPm°C	Monitor low temp. limit
D1	D1 Digital in put status
D2	D2 Digital in put status
D3	O3 Digital in put status
D1	Monitor D1 digital in put status
RELAIS UI	La Relay status
RELAIS UZ	U2 Relay status
RELAIS LB	LB Relay status
RELAIS U4	U4 Relay status
RELAIS US	US Relay status
RELAIS U6	UB Relay status
LED BAR	LED output status
PC 8 °C	Technical comportment probe
Vin V	V board power supply

#### Description of the export columns

MAINS Vac	Mains voltage
ватт %	Battery charge %
TEST BATT V	Bottery voltage
DOOR STATUS	Door status
ACTIONS	Action in progress
ALARNS	Alarm in progress
ALARMS_m	Alarm in progress (monitor)
FAULTS	Fault in progress
FAULTS_m	Foult in progress (monitor)
WA RNING	Warning in progress
WA RNING_m	Warning in progress (monitor)
U1%	U1 Relay use percentage
U2 %	U2 Relay use percentage
U3 %	U3 Relay use percentage
04%	U4 Relay use percentage
U5 %	US Relay use percentage
U6 %	U6Relay use percentage
U7 <b>%</b>	U7 Relay use percentage
EH ℃	Max evaporator calibration
EL °C	Min e va porator calibration
DELTA T °C	Thermal exchange
COMP1h%	Compressor operation % (1h)
COMP24h%	Compressor operation % (24h)
COMPON	Time on compressor
COMPOFF	Time off compressor
COMPLIFE	Compressor total hours
VA	Power absorbed by loads
PASSWORD	User password
ACTION	Last user action

With the device in STAND-BY, the writing in microSD and upload to the CLOUD are locked



#### Records

ACTIONS	
PAUSE	Pause phase
WAIT	Waiting cooling action
COOL	Cooling action
HEAT	Heating action
HUMI	Warm phase
DEHU	Dry phase
CO2	CD2 ac tive
DRIP	Dripping phase
DEF_MA N	Manual defrast
DEF_SER	Defrastfrom serial command
DEF_TIMER	Timer defrast
DEF_KHRS	Haurs compressor defrast
DEF_RTC	Real Time Clack defrast
DEF_INC	defrast per incr. e vaporazione
DEF_TUNE	No tuning defrost
DEF_A UTO	Autometic defrast
DEF_SAFE	sa fety defra st
DEF_CLEAN	Off& Clean criterion defrast
DEF_LOW	Low evaporation defrost
DEF_WAIT	Waiting defrast

WARNINGS_CTR/MON	
NORMAL	Regular
DOOR	Open door
DOOR_TIME	Door alarm time-out
DIRTY_CND	Dir ty condenser
SAFE_MODE	sa fe ty criterian
RELA IS_LIFE	Relay life
PWR	Power Supply out of range
MAINS	Mains out of range
B-OUT	Mains fail are
S1-S4	Probe 51/54 unbalance
BT_UNPLUG	Unconnected bottery
THER_SARE	So fe ty ther mosto t

STATUS_BATTERY	
ENAB	Bottery enabled
UNPLUG	Unconnected bottery
DETECT	Detected bottery
TESTING	Bottery test
CHARGE	Bottery chorging
BACKUP	Bottery bockup
EXPIRED	Bottery expired
FAILED	Bottery foult

FAULTS_CTR/MON	
NORMAL	Regular
51	51 probe foil are
52	52 probe foil are
S3	53 probe foil are
54	54 probe foil are
S5	55 probe fail ure
NTC_BOARD	Boord probe foil are
TEM_BOARD	High temperature board
HIGH_CND	High condenser temperature
LOW_EVA	Lowevaporator temperature
HP1	High pressure unit 1
HP2	High pressure unit 2
DEF_TIME	Defrast time-aut
SW_DOOR	D <b>oor</b> switch fail are
MAINS	Mains failure
U18	U1B relay fail are
U2B	U28 relay failure
Ux	U3/U6 relay failure
U1	U1 lood foil are
U2	U21 <b>00d fo</b> il ure
U3	U31 <b>aad fai</b> l are
U4	U4 lood failure
U5	UST <b>ood f</b> oil are
U6	UBlood foilure
LOGIC_COM	Intenal communication failure
TWIN	Unit failure
BATTERY	Bottery foilure
micros D	MicrosO fail ure

ALARM_CTR/MON	
NORMAL	Regular
HKGH	High temperature alarm
HIGH BOUT	High temperature back-out
HIGH DOOR	High temperature for door open
LOW	Low tempera ture alarm

DOOR_INFO	
CLOSE	Daar clased
OPEN	Daar apen



#### Data Download



The functional data, present in the microSD memory, can be saved via the USB port in a pen drive by accessing the BACKUP MENU; with this operation, the VLX / BACKUP folders are automatically created with the folder named with the serial number of the refrigeration unit entered when configuring the device inside; if the S / N is not entered, the folder name is R00000. The folder contains the month folders [yyyamm] which contain the daily files [yyyymmdd.dat]. The latter are read and decoded by the THERMOCONVERTER 3.0 PC application. Inside the S / N folder there is also the OP PAR folder which contains the parametric configuration files of the devices connected to the network. The file name coincides with the MACHINE NAME of the device shown in the header of the Home Page..



### 13. Diagnostics and alarms

The device is designed to signal, after a certain delay, if the internal temperature has exceeded the lower and upper temperature limits. It is also designed to signal an extended door opening time as soon as it remains open for more than a predetermined time.

For other anomalies, refer to the manual for the controller attachment and possibly chidere assistance by reporting the defects to the manufacturer KW: Phone 0577-309144 Fax 0577 309142

#### **ATTENTION**

The KW disclaims any liability for any damages incurred in the use of the Equipment by this produced or marketed, if the recommendations made were not seen by users in the exact and scrupulous.



### 14. Problems and solutions

In case of failure or anomalous operation, before contacting one of our technical assistance centers, make sure that:

- There is no lack of electricity.
- The voltage that reaches the control unit corresponds to that indicated on the plate.
- The connections and polarities are correct.
- The ventilation grilles are not obstructed.
- The refrigeration unit is not placed near a heat source.
- The fuse mounted on the power supply line is not blown.

### 14.1 Possible problems

1. The appliance does not work

Check that:

- The current arrives regularly at the socket;
- The plug is properly inserted in the socket.
- 2. The internal temperature is not low enough Check that:
- There is some obstacle that prevents the perfect closing of the appliance;
- The appliance is not located near a heat source;
- The appliance is leaning against the wall and that the front grill is free from obstructions;
- The door is perfectly closed;
- The thermostat is positioned correctly;
- The condenser is not clogged or obstructed for proper air circulation: for cleaning, use a bristle brush or vacuum cleaner.

#### 3. Noisy refrigerator

Check that:

- The refrigerator or refrigeration unit is well leveled;
- The refrigerator is not in contact with furniture that can cause vibrations;
- The refrigerant circuit pipes placed on the back have no point of contact and do not vibrate with the appliance;
- All screws and bolts are well tightened..
- 4. If condensation forms inside the appliance
  - It is considered normal during periods of high humidity;
  - Part of this humidity is to be considered normal in areas where organic products are not wrapped or contained in uncovered containers;
  - Frequent opening or for a prolonged period of the doors will be considered the cause of the formation of condensation inside the refrigerator. Check that the doors are closed correctly.



For other anomalies, refer to the assistance center, reporting the defects found to the KW manufacturer:

Telephone 0577-309144 Fax 0577 309142

#### **ATTENTION**

KW declines all responsibility for any damage occurring in the use of the equipment produced or marketed by it, if the recommendations made have not been observed exactly and scrupulously by users.



### 15. Cleaning and maintenance

Always disconnect the appliance before cleaning it. Pull out the plug and rewind the power cord.



Clean the interior and exterior walls of the cabinet with warm water, to which a small dose of detergent has been added. Never use abrasive or acid detergents or solutions. We recommend the use of a universal detergent with a neutral pH.

It is forbidden to use water jets for cleaning.

The application of products designed to give shine is recommended only on the external walls.

Clean taking the utmost care that during cleaning the water does not penetrate any electrical parts placed inside the refrigerated compartment. Dry everything with a cloth.

**IMPORTANT**: for cleaning stainless steel it is absolutely necessary to avoid the use of abrasive paste, steel wool and brushes of common steel, as ferrous particles can deposit which, oxidizing, will cause rust spots.

### 15.1 Cleaning the condenser



Cleaning the condenser located on the back of the cabinet is recommended at least twice a year; in case of use in particularly dusty environments it is advisable to carry out it more frequently (even monthly).

It is advisable to have this operation carried out by technical personnel (however it is not covered by the warranty), to use a ladder (in accordance with safety regulations), by moving the equipment away from the wall in advance (at

> least 80 cm. Approximately); cleaning can be carried out using soft bristle brushes and a vacuum cleaner, or compressed air, taking care not to bend the fins of the condenser itself. When carrying out this operation, it is mandatory to use protective gloves to avoid any cuts to the hands, a dust mask and protective goggles.

CLEANING THE CONDENSER, AS WELL AS ENSURING BETTER OPERATION. OF THE EQUIPMENT, WILL ALLOW TO OBTAIN CONSISTENT REDUCTIONS IN ELECTRICITY CONSUMPTION.



ATTENTION: Do not remove or damage the data plate on the right side of the cabinet.



N.B.: if the appliance has recently been turned off, some parts may be very hot, be careful not to touch them with your bare hands!

Once the cleaning operations have been carried out, reassemble all the grids, reposition the appliance, reconnect it to the mains.

**N.B.**: the machine cleaning operation, if performed by expert personnel, takes a few tens of minutes, so it is not generally necessary to empty the appliance. However, keep in mind that the internal temperature, at the end of this operation, could have risen even a lot.

### 15.2 Gaskets

The lid or door gasket must be checked from the point of view of tightness, if ice forms, remove it by thawing, do not tear the gasket. It is necessary to keep the gasket lubricated with silicone grease or with other non-freezing grease.

**IMPORTANT**: the lid or door must be kept closed as much as possible and the openings reduced to the minimum necessary.

### **15.3 Elimination of frost**

If frost forms inside, it must be eliminated once it reaches a thickness of a few millimeters by turning off the device, after moving the load to other suitable equipment.

### 15.4 External cabinet

With a brush or vacuum cleaner, remove the dust that has settled on the freezer.

The outside of the appliance should be cleaned with a cloth and wax and silicone spray. Or with a wet cloth and neutral pH detergent diluted with water; it is recommended not to use abrasives or to use water jets.

Periodically wash the inside with a cloth wet with a solution of denatured ethyl alcohol (90 °).

Optional: after the above cleaning, the stainless-steel interior can be made bright and shiny, with products with acid pH < 5% non-ionic surfactants 5-15% anionic surfactants Biodegradability 90%, poured onto a damp cloth from pass on the stainless steel surface. Then wipe with a wet cloth and finally with a dry cloth.

The outside of the appliance must be cleaned with neutral detergent diluted with water, it is recommended not to use abrasives or volatile detergents.



### 15.5 Precautions in case of prolonged parking

Clean the surfaces as indicated above. Cover the external parts with a light layer of mineral oil. Leave the power cord disconnected, leave the doors slightly open to avoid the formation of fungi and bad smells, inserting a low and wide container filled with water and vinegar inside. Before restarting the appliance after a prolonged stop, wash the internal surfaces again as indicated in the previous point.

# 15.6 Preventive maintenance recommended by the manufacturer

It is advisable to provide for periodic maintenance by KW (which can be purchased separately) consisting of a general check with variable frequency according to the type of appliance:

- For equipment with negative temperature at least 1 annual check;
- For positive temperature equipment at least one check every 2 years.



### 16. KW C.A.T. authorized in Italy

The technical assistance of the devices present on the national territory is done through a maintenance service, either directly or with authorized service centers spread across all regions of Italy.

FOR ACTIVATION OF THE INTERVENTION FOR ADMINISTRATIVE AND TECHNICAL CENTER TO ACTIVATE THE SERVICE AREA MUST BE OTHERWISE A FAX TO REQUEST THE SEAT KW ASS. 0577-309142 OR COMMUNICATION VIA TEL. 0577-309144.

FOR EACH REPORTING ALWAYS INDICATE:

- YEAR OF CONSTRUCTION.
- MODEL.
- SERIAL NUMBER OF THE APPLIANCE.



### **17.** Waste management and disposal of the machine

### 17.1 Refrigerated equipment



Dispose of according to local regulations for the disposal of waste. Make it unusable by cutting off the electrical supply cable, also detach the door.

For the disposal of the metal parts, plastics, electronic circuit boards, lead-acid batteries, compressor oil and refrigerant, follow local regulations for disposal.

### 17.2 Electric and electronic waste disposal instruction

In accordance with the European Directive 2012/19/EC, this device when it is no longer used must be disposed of Refusal Electrical Appliance and Electronic Equipment (WEEE).

The abovementioned Directive and the laws that prohibit WEEE is disposed of as "household waste" because they must be disposed of as "**separate collection**" in accordance with the provisions of local collecting or delivering it to the dealer or distributor in the case of purchase of a new similar apparatus.



The symbol of the container out wheeled bin, shown here, and affixed to the equipment or its packaging states this prohibition.

By ensuring this product is disposed of correctly you will help:

- prevent potential negative consequences for the environment and health caused by the dispersion of the pollutants contained within the equipment;
- recycle part of the materials of which the appliance is made, reducing the use of natural resources and the amount of waste to be disposed of.

Failure to comply with such laws on the disposal is punishable by fine.

The manufacturer of this equipment, identified by the label affixed to each unit and is committed to the management of treatment and recovery of WEEE under Dl.gs 152/2005.



### 17.3 Packing

The packaging materials are recyclable and made from paper, cardboard, polystyrene and plastic. For disposal, observe local legislation. The packaging materials (plastic bags, polystyrene, etc.). Should be kept out of reach of children as a potential source of danger.

### **17.4 Dangerous material**

No dangerous substances are present on this equipment, as provided by law and in particular by the RoHS directive 2002/95/EC.

Upon disposal will be processed the components of plastic, metal and non-ferrous, glass, lead-acid batteries and lithium batteries, electronic boards and their components, lamps, polyurethane foam and mineral oils.



WARNING

This appliance is not suitable for the storage of corrosive substances or whose vapors are corrosive.



### 18. CE Plate

Č C ε°	
KW APPARECCHI SCIENTIFICI VIA DELLA RESISTENZA 119	KW APPARECCHI SCIENTIFICI s.rl.
ANNO di COSTRUZIONE	Via della Resistenza, 119
MATRICOLA	53035 Monteriggioni (SI)
MODELLO	
MARCHIO KW®	SERVIZIO ASSISTENZA
ALIMENT V Hz	
POTENZA VA I: A	
REFRIGERANTE gr	
REFRIGERANTE gr	
CLASSE TIPO	Tel. 0577.309144 Fax 0577.309142 e-mail: service@kwkw.it



### **19. Declaration of conformity CE Mark**

# CE

#### THE MANUFACTURER: KW APPARECCHI SCIENTIFICI S.R.L.

Via della Resistenza 119 53035 Monteriggioni (SI) –ITALIA Tel.0577/309144, Fax.0577/309143 e-mail: kw@kwkw.it, web: www.kwkw.it Trademark: KW APPARECCHI SCIENTIFICI S.R.L.

#### **DECLARES THAT:**

The device: Model:

Serial numer \_\_\_\_\_

2006/42/CE

2014/30/UE

2014/35/UE

#### CONFORM TO THE FOLLOWING DIRECTIVES:

- MACHINERY DIRECTIVE

- ELECTROMAGNETIC COMPATIBILITY

- LOW VOLTAGE DIRECTIVE

#### **TECHNICAL STANDARDS APPLIED:**

- CEI EN 61010-1:2010

- CEI EN 61326-1:2013

Name : Ing. Fabiani Stefano

Position: General Director

Signature

\$am

Monteriggioni, .....



### 20. Warranty rules

This appliance is guaranteed for the period of:

□ 12 months □ 24 months □ 36 months □ other \_\_\_\_\_

from the date of the sales invoice. Within this period, the buyer has the right in the case of imperfect operation, the free replacement of parts due to effective material defect, provided that they are returned to KW defective parts, and it is detected the defect.

<u>The warranty does not</u> cover parts subject to normal wear such as gaskets, light bulbs, battery. Does not cover faults and/or malfunctions resulting from failure to periodically clean the condenser (where present), also does not cover cases of block machine, due to the intervention of the safety pressure switch with manual reset (KP5) (for refrigerated versions).

<u>This warranty is void</u> if the products are used in a manner inconsistent with the instructions given in the manual of the company or if they are modified, repaired or dismantled outside the workshop of the company or by people who did not authorize this in writing to the repairs. And especially in the case of incorrect operation on the controller general of temperature.

In this regard, KW disclaims any responsibility for their electrical faults they had a certain cause or probable in the alleged improper installation of the device, specifically in connection to the power supply of the laboratory.

This also applies in cases where the destination environment of the equipment is not fulfilled the safety rules.

<u>The warranty is void</u> in the event of failures and / or malfunctions attributable to the case where the local location is not guaranteed air exchange.

For KW Apparecchi Scientifici

User/customer signature



Failure to comply with the information described in this publication will result in the immediate forfeiture of the granted guarantee and the assumption by the purchaser of all civil and criminal liability in the event of injury to property and/or persons.



### **21.** Instructions for transport and packaging

The product is packed in KW Apparecchi Scientifici to guarantee its integrity during transport.

The packaging is customized for the various models while ensuring protection of the surfaces by means of cardboard and / or polystyrene coating, corners and a wrapping with stretch film of polyethylene and strap.

If the appliance is not equipped with wheels, it is placed on a pallet that facilitates its movement by means of mechanical aids (transpallet, forklift). If there are wheels, they are used for handling.

In no case are sockets and eyebolts provided because it is not allowed to move in a different way from the aforementioned.

The transport takes place with an authorized courier trained on loading, transport and unloading procedures, in particular on the need to always keep the appliance in a vertical position.

At the time of installation by the user, the device is moved in the manner described above, unpacked and positioned flat (level). The packaging materials are collected by the courier himself.

In the event that it is necessary to transport the instrument, the original packaging (or equivalent) must be requested from KW APPARECCHI SCIENTIFICI SRL. KW is not liable for any damage resulting from the transport of the instrument in unsuitable packaging.



### 22. Temperature recorder

Before you can use the tool, you need to:

- Remove the protective cap from the nib by gently lifting the pen holder shaft and sliding it downwards;
- Check the position of the diagram by making sure that the tip of the pen begins to trace at the time the recording starts here. To do this, just rotate the diagram after loosening the stop that fixes it on the diagram holder disc and slightly lifting the pen holder rod;
- Check that the trace is legible and if not, increase the pressure of the nib on the disc through the knurled screw located at the beginning of the pen holder shaft.

#### NIB REPLACEMENT

- Gently remove the nib from the pen holder shaft;
- Insert the new nib making sure that the pen holder shaft enters the guide located on the top of the nib;
- Push the nib until the shaft touches the extreme edge.

For correct operation, the nibs used must be original.

#### **CORRECTION OF THE CALIBRATION**

- If the instrument requires small calibration adjustments, carry out the following operations:
- Equip yourself with a sample thermometer with which to compare the reading of the recorder (carry out the comparison if possible by immersing the sensitive parts of the two instruments in a reference bath at a temperature included in the measurement range of the recorder, to reproduce the same conditions for both);
- Wait for the reading of the instruments to stabilize;
- Act on the micrometric screw placed on the pen holder rod, using the plastic key supplied with the instrument, until the nib is in correspondence with the value measured by the sample thermometer;
- If necessary, repeat the previous operations by changing the temperature of the reference bath;
- If the necessary conditions cannot be obtained or the instrument always indicates the start of scale value, this must be sent to KW for a more detailed check.

#### VERSION WITH QUARTZ CLOCK

These watchmakers work with 1.5V type a batteries and the duration of the charge is approximately one year.

Operation is continuous from the moment the battery is inserted; if you do not want to register, you need to put the cap back on the nib or raise the pen holder shaft through the knurled screw until there is contact between the diagram and the nib.



#### DIAGRAM REPLACEMENT

- Move the diagram stop lever located in the center of the disc outwards and then lift it until it is perpendicular to the disc itself;
- Raise the pen holder rod and pull the diagram upwards;
- Position the new diagram based on the start time of recording, making sure that it fits into the clock lever and into the special tabs located at the ends of the diagram holder disc;
- Gently lower the pen holder shaft.

#### **BATTERY REPLACEMENT**

- Remove the diagram by repeating the operations described above;
- Remove the old battery from the battery holder and insert the new one (1.5V alkaline type AA) paying attention to the polarity.

#### **GENERAL DESCRIPTION**

The RTD/Q type inert gas recorder, highly reliable, precise and economical, can be installed without limits of use in all industries and in particular, thanks to the absence of mercury, in the pharmaceutical, food and refrigeration industries in general.

For a good functioning:

- Place the sensitive element in a suitable position to be sensitive to temperatures (no stagnant position);
- Place the recorder in a safe and accessible position;
- It is recommended to check the recorder and its functionality at least every 6 months;
- Regularly replace the paper and the nib;
- Replace alkaline batteries every 2 years.



#### **PUT IN ACTION**

<b>1A)</b> Open the lid using the key	
Install the battery (1,5V AAA size cell)	
See paragraphs 1A-3A-4A-4B	
<ul> <li>1B) When installing, be careful not to reverse the polarity. Keep the red tape around the battery to facilitate its extraction.</li> <li>1C) Insert the card (7)</li> </ul>	
See paragraphs 4D-3C-3D	V
<b>2A)</b> Manually rotate the paper in correspondence with the recording start time and date, leveraging the retaining spring 2.	
<ul> <li>3A) Rotate the steel nib by 90 ° 3.</li> <li>3B) Remove the nib head protection 4.</li> <li>3C) Lower the nib carefully</li> <li>3D) Close the cover with key 1.</li> </ul>	





### 21.1 Verification of the temperature marked

#### **NIB ARM CALIBRATION**

It is recommended to check the logger calibration at least every 6 months.

Insert the bulb in a container of water at 20 ° C +/- 1 ° C, together with a reference thermometer. Wait about 10 minutes and if the difference between the temperature measured by the two instruments is greater than +/- 2% proceed as follows:

• With a small screwdriver, through the adjustment screw A), move the head of the nib C) until it is exactly in the 20 °C line.

![](_page_66_Figure_7.jpeg)

![](_page_67_Picture_0.jpeg)

### 21.2 Exploded view and dimensions

![](_page_67_Picture_2.jpeg)

LEGEND:

1 = BULB

2 = PROTECTIVE BOX

**3 = BATTERY RETENTION** 

- 4 = MAIN PLATE
- 5 = SPRING
- 6 = MOVEMENT
- 7 = FRONT PLATE
- 8 = PAPER
- 9 = NIB HEAD
- 10 = ARM OF THE NIB

11 = LITHIUM BATTERY: 1.5 V. AAA size cell.

#### **STANDARD EQUIPMENT:**

n ° 1 ALKALINE BATERIA 1.5V AAA size n ° 1 PACK OF N ° 52 WEEKLY RECORDING DISCS

n ° 1 NIB HEAD

n ° 1 PAIR OF KEYS

![](_page_67_Figure_19.jpeg)

![](_page_67_Picture_20.jpeg)

![](_page_67_Figure_21.jpeg)

![](_page_68_Picture_0.jpeg)

![](_page_69_Picture_0.jpeg)