K2 SCIENTIFIC

Use and Operational Manual

Blood Bank

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Manufacturer's responsibility:
The manufacturer us responsible as to safety and correct use of these refrigerators only if:

- The operations of setting, change and repair must be performed by authorized personnel.
- The electrical installation has been carried out in conformity with the instructions.
- The device is used in accordance with this manual.

⚠ **Special warnings: not to be used in the presence of explosive gases or mixtures/ not intended for flammable material storage.**

Do not for use close to sources with high magnetic or electric fields.

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1. STANDARDS AND GENERAL WARNINGS

PRODUCTS APPLICABLE TO THIS MANUAL

The present manual is exclusively valid and applicable to the following products range:

Plasma Freezer

Adjustable temperature control range: lowest T = -40°C (-40°F), highest T = -30°C (-22°F)

Operating temperature: - 40°C (-40F)

Factory pre-set to: -40°C (-40°F)

Models:*K215SDF-BB-BF*

Model Number	W	D	H	SetPoint Temp.	Elec. V/Ph/Hz	Gas Type
K215SDF-BB-BF	800mm (31 ½ in)	835mm (32 7/8 in)	1964mm (77 5/16 in)	-40°C (-40F)	220V/3/60	R452A

Environmental Operating Conditions

-Nominal environmental operating condition: ***Climatic class 4*** (30°C, HR%=55%);

- Ambient temperature operating range: **10°C~40°C**;

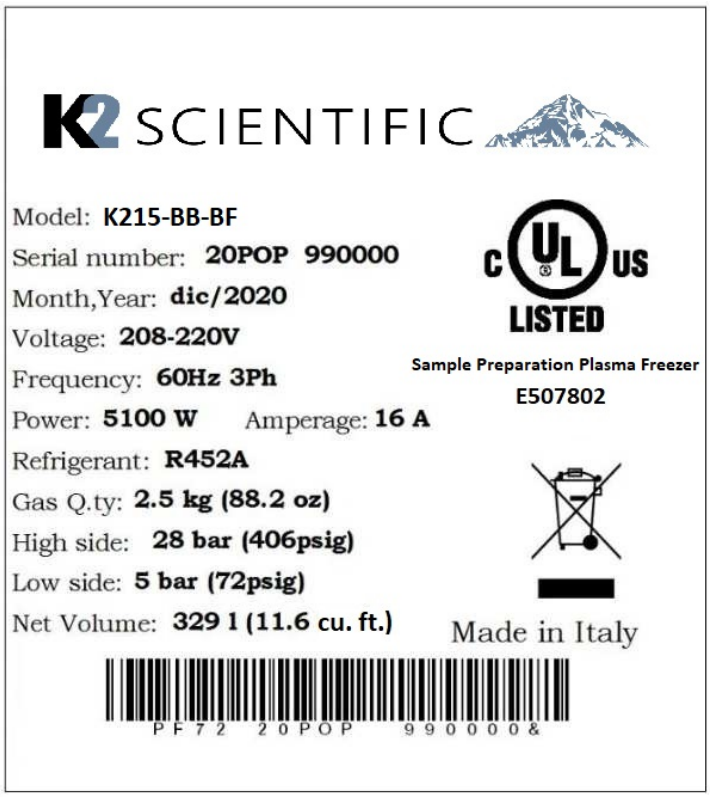
- Humidity: **65% maximum, non-condensing**;

-Electrical supply: **220v/60Hz/3φ;**

-Altitude: **2000 meters MSL** (Mean Sea Level);

- Usage: **This product is intended for use indoors only**.

Note: All relevant data referring to these products can be found on the data label visible on the rear part of the cabinet. Here is an example of the label:



1.1 TESTING AND INTENDED USE

This equipment is tested in compliance with established regulations and then shipped ready for use.

- This product is intended for use:
- As a rapid freezer in research use.
- As a medical device for freezing samples for diagnostic use (storage of samples not intended to be re-introduced to the human body).
- As a medical device for freezing blood components for storage and eventual re-introduction to the human body.

This Product is not intended for long-term storage.

Registration: This medical application is considered a Class II medical device by the FDA.

"If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired."

1.2 INTRODUCTION

This manual provides all instructions required for the correct use of the equipment and to keep it in optimal condition. It also contains important user safety information. The following professional roles are explained in order to define individual responsibilities:

Installer: a qualified technician who installs the equipment in accordance with these instructions.

User: the person who, after having read this manual carefully, uses the equipment in accordance with the intended specification of use described in this manual. User's

responsibilities: ensure that the product is kept at suitable temperatures in an ambient environment less than +40°C (104°F); be aware of the regulations governing the conservation of products to refrigerate and to observe any whatsoever hygiene indications that may be applicable. The user is obliged to carefully read the manual and refer to its information at all times. Particular attention must be paid to safety warnings (refer to Section 1.5).

Routine maintenance technician: qualified operator able to perform routine maintenance of the equipment by following the instructions in this manual.

Service engineer: qualified technician, authorized by the manufacturer to perform extraordinary maintenance of the equipment.

The symbol ⚠ appears at certain points in the manual to draw the reader's attention to important safety information.

The manufacturer declines any responsibility in case of improper use of the equipment deviating from the reasonably construed intended use, and for all operations carried out that are not in compliance with the instructions reported in the manual.

This manual must be stored in an accessible and known place for all operators (installer, user, routine maintenance technician, service engineer).

1.3 PRODUCT DESCRIPTION

The equipment comprises a single body with paneling in various materials and insulation with expanded polyurethane foam. The equipment instruments are located on the front panel where the electrical wiring is housed. The interior parts are fitted with suitable supports for shelves. The doors are fitted with an automatic return device and magnetic seal elements. During the design and construction stage all measures have been adopted to implement total safety including radius interior corners, funnel-shaped base panel to convey condensate to exterior, no rough surfaces, fixed guards protecting moving or potentially dangerous parts.

1.4 CERTIFICATION

The appliances listed in this manual are manufactured in accordance with the following regulations:

- **UL/CSA 61010-1 3rd edition and IEC 61010-2-011**
- **CISPR 11:2009 + A1:2010;**
- **IEC 61000-4-2:2008;**
- **IEC 61000-4-3:2006 + A1:2007 + A2:2010;**
- **IEC 61000-4-3:2006 + A1:2007 + A2:2010;**
- **IEC 61000-4-4:2012;**
- **IEC 61000-4-5:2005;**
- **IEC 61000-4-6:2013;**
- **IEC 61000-4-8:2009;**
- **IEC 61000-4-11:2004**

1.5 GENERAL SAFETY REGULATIONS

Read this manual carefully and follow the instructions contained herein.

The user assumes full responsibility in case of operations carried out without observing the instructions in the manual.

⚠ **Do not use this product with flammable gases or flammable solvents.**

Do not store flammable gases, flammable liquids or flammable solids in these units.

Primary general safety regulations:

- Do not touch the unit with wet hands and/or feet. Do not use the equipment with bare feet;
- Do not insert screwdrivers or other pointed objects between guards or moving parts of the equipment;
- Do not pull the power cord to disconnect the equipment from the electrical mains Make sure that the equipment is not used by unsuitably qualified persons;
- Before performing any cleaning or maintenance on the equipment disconnect it from the electrical mains by switching off the main switch and extracting the plug;
- **Never** use any metallic scouring pads, brushes, abrasive cleaners or strong alkaline solution on any surface.
- The relocation of the unit must be performed by qualified personnel. Do not shift the refrigerator from side to side as this may create leakage point across the cooling unit piping.
- In case of faults or malfunctions, switch off the equipment and do not attempt to repair it by yourself as doing so may void the warranty. All service and repair operations must be performed exclusively by a manufacture's authorized engineer. (Authorized service technician, trained service personnel, authorized service personnel)
- This unit, like any other appliance, must have access to fresh air/oxygen;

Do not use FLAME to check for gas leak.

Do not under any circumstances try to modify or repair valves, regulator, connectors, controls or any other appliance. Doing so creates the risk of a gas leak.

1.6 CUSTOMER'S RESPONSIBILITIES

The customer is required to:

- Execute the electrical connection of the equipment. Prepare the place of installation;
- Provide consumable materials for cleaning Perform routine maintenance;
- In the case of power failures or malfunctions do not open the doors, in order to maintain the internal temperature for as long as possible. If the problem persists for more than a few hours, move the contents to a more suitable place.

1.7 CUSTOMER SERVICE REQUESTS

- For all technical problems and any requests for technical service, refer exclusively to the manufacturer's authorized personnel;

1.8 ORDERING OF SPARE PARTS

- Orders of spare parts should be made by consulting the part reference code and the serial number of your unit. Consult your dealer.

1.9 PRODUCT CONFIGURATION

- The unit is designed solely for the preservation of laboratory products, which requires various controls and warning in case of sudden alteration of temperature.

⚠ ***PRODUCTS MUST BE STORED IN ORDER TO ENSURE EFFICIENT AIR CIRCULATION INSIDE THE UNIT AND SHALL NOT COME OUT OF THE SHELF/DRAWER PERIMETER.***

- All uses outside of manufacturer's intended use in section 1.1 shall be construed as "improper use" for which the manufacturer declines all responsibility.
- It's allowed to accommodate on the shelf a maximum of 20kg per shelf in according to the ***UL471*** regulation. [*The most critical application in terms of weight (glass door/ stainless steel) has been tested following the Base standard UL 61010-1.The application can contain a maximum of 15 shelve.*

1.10 MATERIALS AND REFRIGERANTS

- Materials in contact or potentially in contact with products are in compliance with the relevant directives. The equipments designed and built so that contact parts can be cleaned before each use. The refrigerants utilized comply with established regulations.

1.11 WARNING LABELS

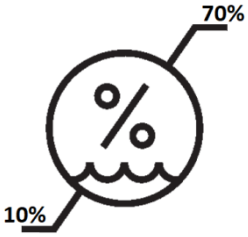
Electrical Shock	LABEL A
	Use of this equipment involves power supplies which convert line voltage to low voltage power. Do not modify or use power supplies other than OEM equipment. Connection of the power supply may require a properly grounded receptacle. Potential for electrical shock or equipment damage exists if precautions are not followed.
Hot Surface	LABEL B
	Avoid contact with the hot surfaces potential for skin's burns.
Cold Surface	LABEL C
	Avoid contact with cold freezer surfaces potential for cold burns or skin sticking to cold surfaces.
Safety Alert	LABEL D

	Important operating instructions. To reduce the risk of injury or poor performance of the unit read the user manual before putting the equipment into operation.
Warning	
	Indicates an immediately hazardous situation, which if not avoided, will result in death or serious injury.

Caution	
	Indicates an immediately hazardous situation, which if not avoided, may result in minor to moderate injury
Battery	LABEL E
	Indicates the location of the back-up battery
Grounding	LABEL G
	Indicates that the electrical components are electrically grounded.
Finger crashing	
	Risk of finger crashing
This unit is intended for use in laboratories in commercial, industrial or institutional occupancies as defined in the Safety Standard for Refrigeration Systems, **Conformément à la Norme de sécurité pour les systèmes de réfrigération (ASHRAE 15), cette unité est destinée à un usage dans les laboratoires d'éetablissements commerciaux,** *Refrigerating equipment*	Refrigerating Equipment intended for laboratory use.

1.12 FDA LABELS

Manufacturer	
	It indicates the generality of the manufacturer of the medical Device.
Manufacture Date	
	Indicated the the day of manufacture of the medical device
Keep Dry	
	Keep the medical device dry.
Don’t Use if the Package is Brocken	
	Don’t use if the package of the medical Device is broken of Opened.
Not Sterile	
	This Medical Device has not undergone a sterilization process.
Attention	
	Read The instructions before the use of the Medical Device.

Upper temperature limit	
	The maximum environmental temperature to grant the safe use of the medical device is 32°C.
Upper and lower humidity limits	
	The maximum environmental humidity to grant the safe use of the medical device is 70% while the lower one is 10%..
Catalog number	
	It indicate the model of the Medical Device.
Lot Number	
	Is the identifier of the production batch.
Serial Number	
	Is the manufacturer internal code. It consent to identify a specific Medical Device.

2. INSTALLATION

2.1 TRANSPORTATION AND HANDLING

⚠ The equipment must be transported and handled exclusively in upright position, in observance of the instructions printed on the packing.

This precaution is necessary to avoid contamination of the refrigerant circuit with compressor lube oil with resulting valve and heat exchanger coil failure and problems starting the electric motor or the risk of a gas leak. The manufacturer is not responsible for any problems due to transport executed in conditions other than those specified herewith.

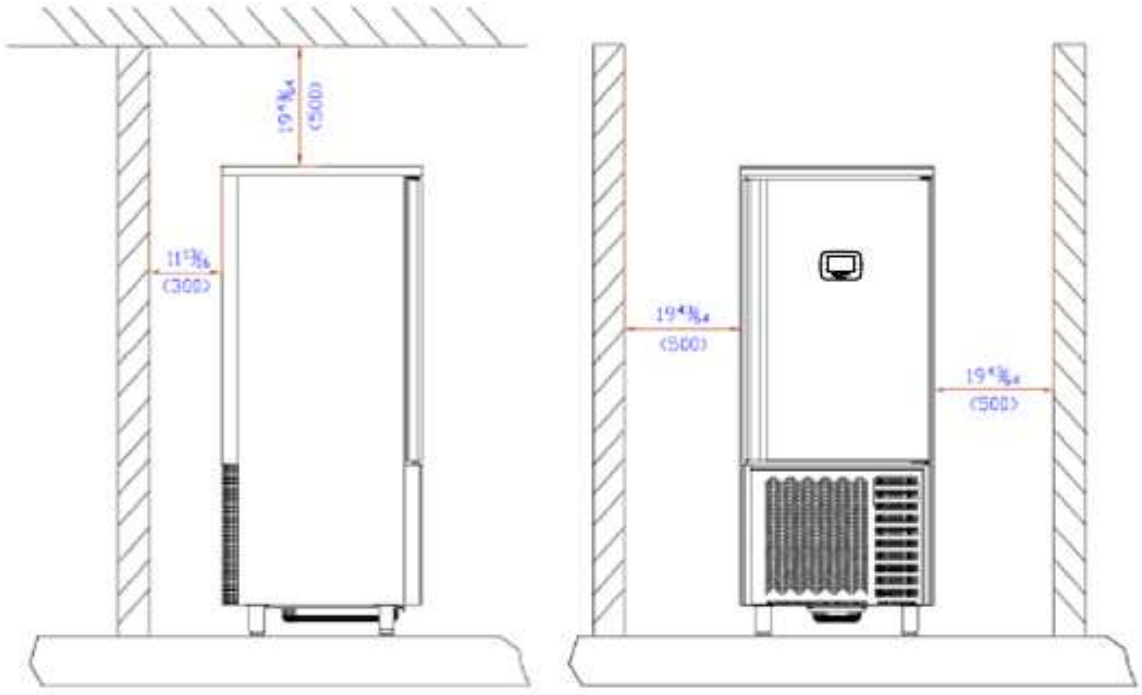
The equipment is secured to a wooden pallet base, wrapped in a plastic film and packaged into a three waves carton box..

The equipment must be handled using a fork lift truck or a pallet truck with suitable forks (fork length at least equal to 2/3 length of unit).

2.2 POSITIONING

Incorrect positioning can cause damage to the equipment and generate hazardous conditions for personnel. The installer must therefore observe the following general regulations:

Clearance



- Make sure you maintain a minimum of 11 $^{13}/_{16}$ inches (30 cm). clearance from the back wall, 19 $^{43}/_{54}$" (50 cm) from the side walls and the ceiling. The room must be well ventilated.
- Keep well away from sources of heat. Avoid direct sunlight exposure.
- Remove packing material.
- Remove accessories from inside the unit.

- Cartoon box or Wood base removal: using a hammer, tilt the cabinet to one side and loosen the two thread-forming screws, drag the cabinet from the back side holding the base still until the four castors have gone out from the containing holes, slightly tilt the cabinet backward and take the base away pulling it from the front side.

⚠ *Use gloves when handling the 3 Waves cartoon box or the wooden base to protect the hands from splinters.*

- Position the equipment with the help of a level. Remove the protective PVC film from the external surfaces of the unit.

2.3 WIRING AND ELECTRICAL HOOK-UP

Receptacle installation and electrical wiring operations must be performed by a qualified electrician. For safety reasons adhere to the following indications:

- Check that the electrical plant is suitably sized for the absorbed power of the unit.
- If the electrical socket and the plug on the equipment power cord are incompatible, call technical service or your local distributor.
- Do not use reductions or multi-way adapters (Fig.1)

⚠ **It is important to connect the equipment correctly to an efficient earth system executed in compliance with the relevant legislation.**

⚠ **A switch or circuit-breaker must be included in the installation:**

- it must be suitably located and easily reached;
- it must be marked as the disconnecting device for the equipment.
- The emissions characteristics of this equipment make it suitable for use in industrial areas and hospitals (CISPR 11 class A). If it is used in residential environment for which CISPR 11 class B is normally required) this equipment might not offer adequate protection to radio-frequency communication services. The user might need to take mitigation measures, such as relocating or re-orienting the equipment.

The Plasma Freezer is a Medical Equipment that meets the requirement of CISPR 11 Class A appliances: this means that they are predominantly intended to be connected (e.g. in hospitals or doctor's offices) to dedicated supply systems (normally fed by separations transformer)

2.4 SET UP OPERATIONS

To avoid errors and accidents, perform a series of checks for possible damage sustained during transport, installation and hook-up operations before starting up the unit.

PRELIMINARY CHECKS

- Check the condition of the power cord (no cut or chaffing). Check that the door hinges and shelf support are stable.
- Check the door seals and shelves are not damaged (broken or scratched) and that the door closes and seals properly.
- Make sure all copper tubing, unions are in perfect condition.

FOR OPTIMAL PERFORMANCE

- Do not block the motor compartment air vents. Do not lay objects on the top of the equipment Before storing products wait until they are cold.

- Arrange the products on suitable shelves or in containers. Do not place products directly on the base or against the walls, doors or fixed guards of the unit.
- Make sure doors are kept closed.
- Keep the defrost water drain outlet clear.
- Limit the frequency and duration of opening; each time the door is opened the internal temperature will alter.
- Load products at ambient temperature gradually to allow correct refrigeration. Perform routine maintenance regularly.

2.5 RE- INSTALLATION

Observe the following procedure:

- Switch off the equipment from the main switch.
- Disconnect the power cord from the electrical outlet.
- Handle the equipment in accordance with the instructions in Section 2.1.
- Follow the instructions in Section 2.2 for positioning and hook-ups in the new location.

2.6 SCRAPPING AND DISPOSAL

These units may contain materials, which at the end of the working life of the apparatus, must be disposed at one of the recycling centers nominated by your Local National Health Department or as specified by the law in force. Scrapping and disposal of the equipment must be carried out in full observance of established legislation in your country.

In particular, the apparatus may contain the following materials:

- Iron
- Copper
- Aluminium
- Non-biodegradable plastics
- Fibre glass for printed circuits
- Ferrite
- Batteries
- CFC-free refrigeration gas
- Electrical and electronic equipment (WEEE)

The manufacturer shall not be chargeable for any disposal of the apparatus at the end of its working life.

In line with EU Directive 2002/96/EC for waste electrical and electronic equipment (WEEE), this electrical product must not be disposed of as unsorted municipal waste. Please dispose of this product by returning it to your local municipal collection point for recycling.

2.7 REMOTE ALARM CONNECTION

These units are equipped with a remote alarm plug for the connection to a remote alarm network.

The remote alarm plug is installed at the back of the cabinet near the electrical box enclosure and it is wired through a connection cable to the controller board.

The Remote alarm contact is a Dry contact (low voltage: max 24VAc/VDc, 1A, SELV) and consist of three outputs: **C** (Common)/**N.O.** (Normally Opened Circuit) / **N.C.** (Normally Closed Circuit). For the external network connection, fasten directly the pins according with the remote alarm network configuration. When an alarm occurs the contact relay switches from the N.C. position to N.O.

3. OPERATION

Before switching ON the unit, check that the electrical connections have been made correctly and above all, that the ground connection is available and working properly.

Please read before using this manual

- This manual is part of the product and should be kept near the instrument for easy and quick reference.
- Digital controller with defrost and fans management shall not be used for purpose different from those described hereunder. It cannot be used as a safely device.
- Check the application limits before proceeding.

Safety precautions

- Check the supply voltage is correct before connecting the instrument.
- Do not expose to water or moisture: use the controller only within the operating limits avoiding the temperature changes with high atmospheric humidity to prevent formation of condensation.

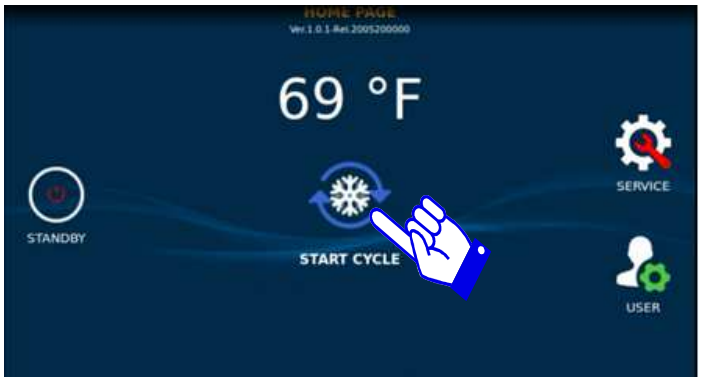
Warning

- Disconnect all the electrical connections before any kind of maintenance.
- In case of failure or faulty operation contact technical service or Dealer.
- Consider the maximum current which can be applied to each relay.
- Ensure that the wired for probes, loads and the power supply are separated and far enough from each other, without crossing or intertwining.

3.1 STARTING CYCLE

Plug in the unit, the controller will start to load the software then it will put the screen into the Home page view.

From the Home Page screen touch the *START CYCLE* mark button:



The cycle settings menu view will then appear on the screen:

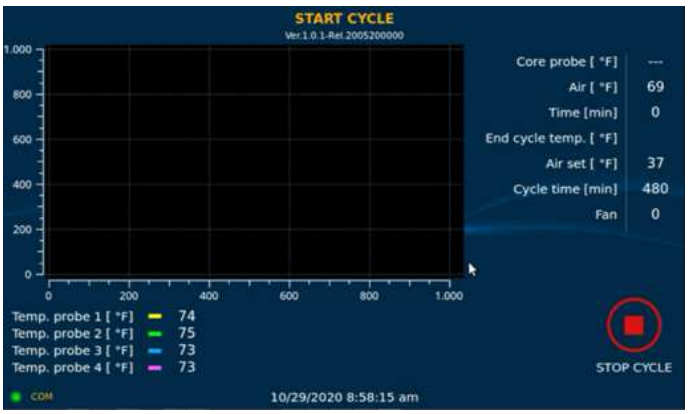
Touch the "*CYCLE TYPE*" tab to select a cycle either by time or by product temperature core probe:

In order to modify the cycle options, press into the tab of the option that need to be adjusted . The tab will light green then dial the value using the keyboard on the right side of the screen. Once set up the correct value, press the OK button.

By factory default, the AIR TEMP. is -40°C, the fan speed is 10 and the storage temperature is -40°C.

Once set up the cycle options touch the *START* button to start up the cycle: the controller will start to load the program and a message will be displayed on the screen:

Once the cycle starts, the screen will show the cycle main view: a graph shows in real time the temperatures detected by the four cores of the product probe as well as the cavity temperature:



On the right side of the screen instead the hottest core probe value, the cavity temperature, the counting time from the start of the cycle, the end cycle temperature set point, the cavity temperature set point, the cycle time set point and the fan speed are displayed.

Once the cycle is completed, a flag icon will appear on the screen and a buzzer will alert that the cycle ended. The unit switches automatically into storage mode.

If you want to interrupt an ongoing cycle, press the *STOP CYCLE* red button. The screen will return to the Home page.

3.1.1 Time Cycle

During a Time Cycle (clock icon in the *CYCLE TYPE* tab) the unit will run the cycle pulling down and holding the temperature inside the cavity at the desired temperature set in the "*AIR TEMP.*" tab, for the desired target time set in the "*CYCLE TIME*" tab.

Once the *CYCLE TIME* is elapsed, a checkered flag will appear on the screen and a buzzer will start to sound alarming that the cycle ended.

At the end of the cycle, the unit will switch automatically into the STORAGE mode, adjusting and holding the temperature set in the T.STORAGE tab until the unit is not stopped manually by touching the stop button on the screen.

3.1.2 Product temperature Cycle

During a Temperature cycle (Needle probe icon in the *CYCLE TYPE* tab), the multi-core needle probes of the unit must be inserted inside a simulation bag. The Unit will run the cycle pulling down and holding the temperature inside the cavity at the desired temperature set in the "*AIR TEMP.*" tab until the 4 cores of the needle probe reads the target temperature set in the "*CYCLE TEMP.*" tab.

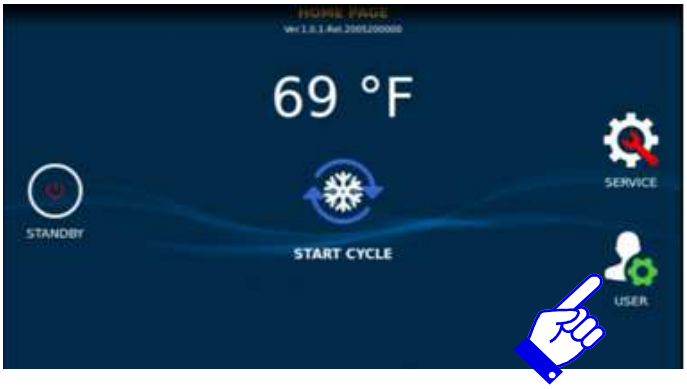
Once the multi-cores needle probe hits the target temperature, a checkered flag will appear on the screen and a buzzer will start to sound alarming that the cycle ended.

At the end of the cycle, the unit will switch automatically into the STORAGE mode, adjusting and holding the temperature set in the *T.STORAGE* tab until the unit is not stopped manually by touching the stop button on the screen.

Note: in case the temperature measured by the needle probe is lower than the target temperature, the cycle won't start and a message will appear on the screen saying "*Start Cycle failed!*"

3.2 USER MENU

From the HOME PAGE screen, touch the USER icon :



The screen then will display the *USER* menu that includes the *Date&Time* settings menu, the *Language* set up menu, the *USB* options menu, *LAN* network settings menu, *I/O STATUS* menu and the *Manual Defrost start cycle*.

3.2.1 USB option

Through the USB port, located on the right side of the Touch Screen frame, it's possible both to import and export data from/to a USB stick. There are no special requirement for the type of USB, however an empty formatted USB with minimum 2 gigs is recommended.

In the *USER MENU* screen, touch the *USB* mark tab then you will be put into the USB options view:

From the USB menu it's possible to upload the touch screen as well as the PCB software, download the HACCP records and export the parameters file.

3.2.1 I/O STATUS

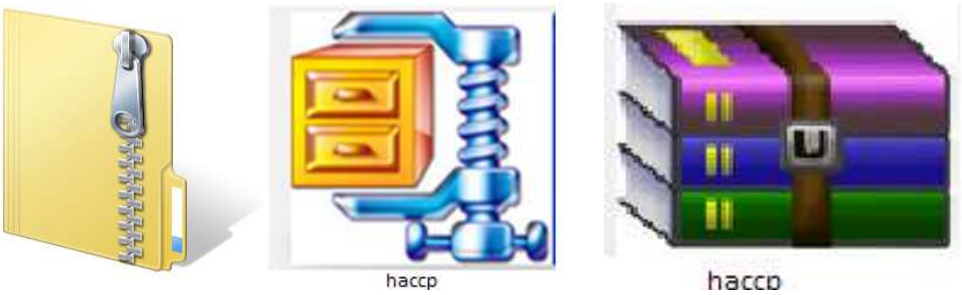
From the *USER MENU* screen, touch the *I/O STATUS* tab:

The *Input/Output* menu allow to check all incoming signals, such as temperature sensors, door switch status, the relays status.

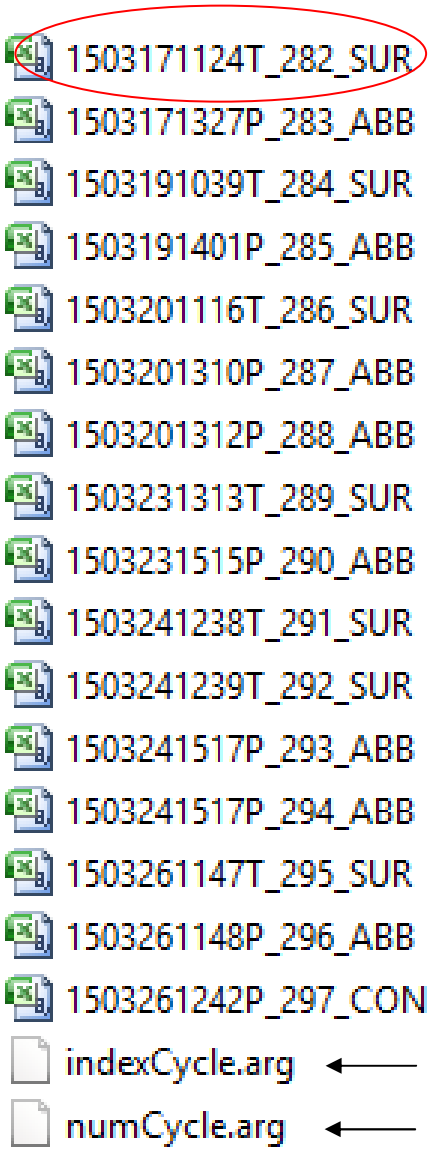
3.2.3 HACCP download

This controller is capable to export HACCP information to a USB key. Press on the related tab in the USB menu and the controller will start to transfer all the recorder cycles to the USB.

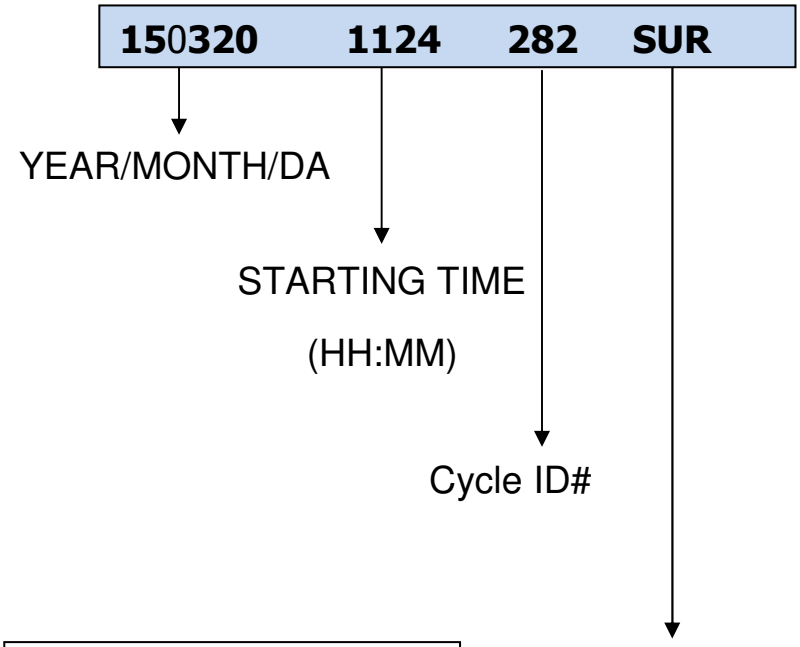
The file will be exported as a zipped file named "haccp.zip". When you connect the USB to a PC the file will show as below



The icon depends on the zip software installed on the PC. Use any zip software (such as unzip, winrar, G7 or similar) to extract the file to a folder. The folder will be named “haccp” as well. The cycle data are stored at the following path ***haccp\home\root\haccp*** and will be contained into .csv files (Comma Separated Values). They will be normally associated to Excel, like shown in the below example:



Every file represents a single cycle and is encoded as per below scheme:



NOTE: ***indexCycle.arg/ numCycle.arg*** **are encrypted files. Do not open them unless following instruction in this manual**

3.2.4 Using a property Software to trace HACCP data

The above .csv files can be easily loaded and traced via a proprietary software called *Blast Chiller Tracer.* Ask the software files to your A.S.A. or to the factory. The necessary files are:

- db (folder)
- lib (folder)
- BlastChillerTracer (Java executable file)

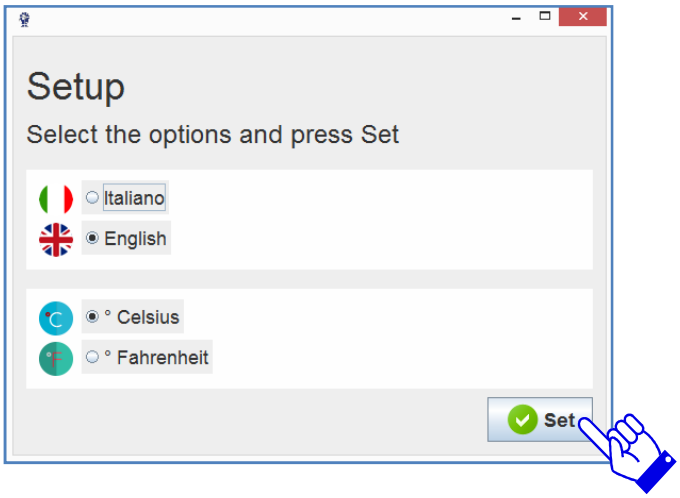
They will need to stay in the same folder, that you can place wherever in your PC.

NOTE: Do not open *db* and *lib* folders but only run BlastChillerTracer.

The Tracer is Java executable file. Java virtual machine (JVM) is a very common software and is normally preinstalled into Windows based OS, in order to run games or other graphical interactive application. When this software is existing on a PC the file BlastChillerTracer will be automatically associated to the JAVA icon. Should this not happen, then you probably need to install the JVM. Contact your Administrator or install directly the JVM from the following link: http://www.java.com/it/download/

The software is safe and free of charge. Once it is installed you can run the executable file BlastChillerTracer that has a .jar extension. The main window will show as below.

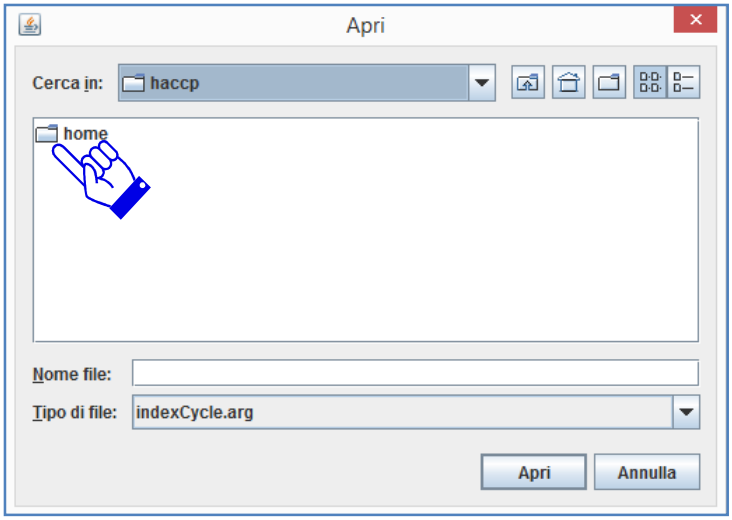
Click on Options to adjust settings:



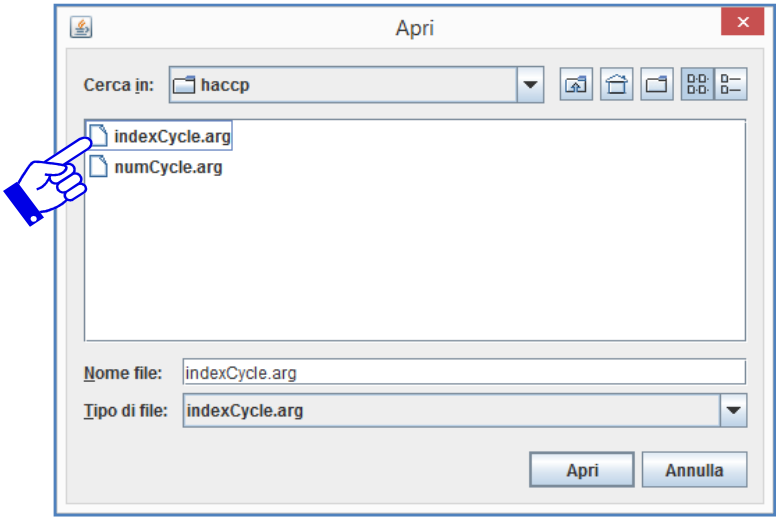
Select the language and scale of temperature, press SET to confirm and exit.

Press the Load File tab on the right top of the screen.

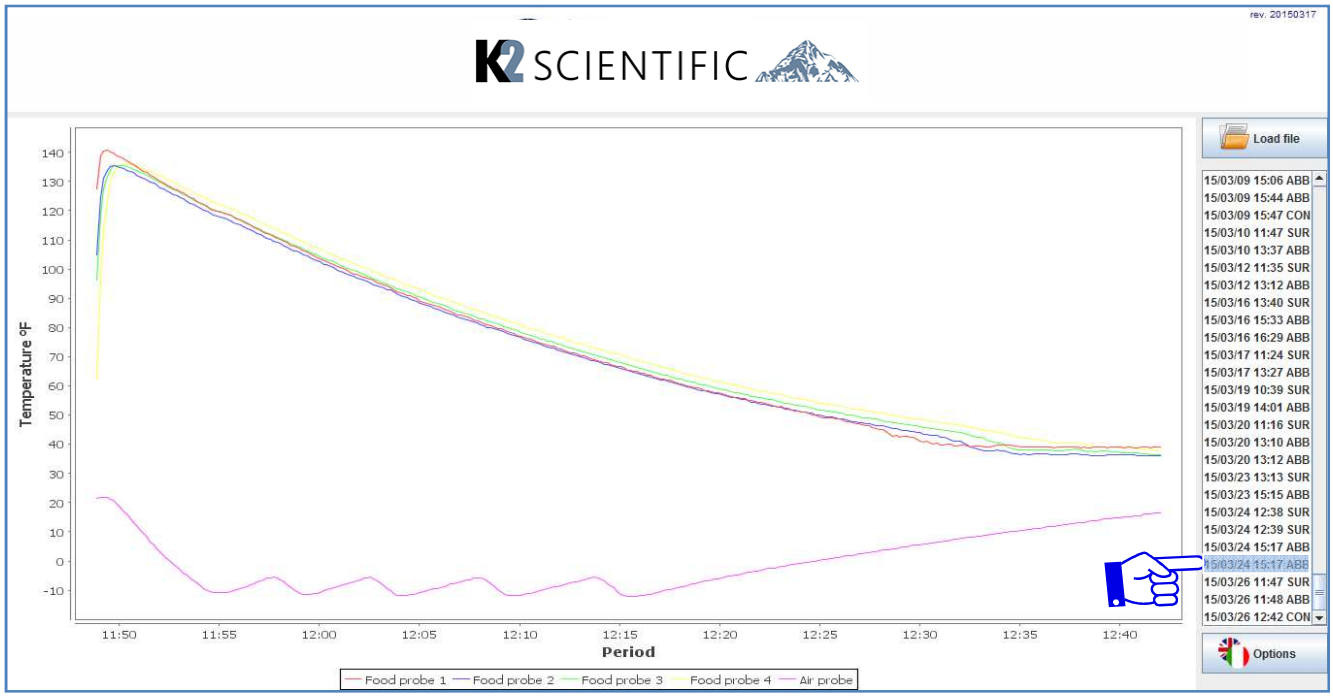
A search file window will open, requiring to find the file *indexCycle.arg* in the *haccp* folder. This is the folder extracted from the *haccp.zip* file downloaded from the USB Touch Screen. Click on the folder name to go through all the path *haccp\home\root\haccp*.



Once that the .arg files show in the box, double click on left side of *indexCycle.arg*



Select the cycle to graph from the right column, watching at date, starting hour and cycle code (see encoding scheme at the above paragraph). See example of cycle graph at the following page. Right click on the graph to print or save a .png file. Scroll up or down to zoom in and out. To zoom in a specific area of the graph, just select the area with the mouse.



3.2.5 Access the source HACCP files for own purpose

The tracer software is a powerful tool to graph all cycle stored in the Blast Chiller memory. However, it's possible to open the .csv source files for checking data or other purpose. Access the .csv files directly from the *haccp* extracted folder (see first section of this chapter). Open the wished cycle with Excel or an equivalent spreadsheet software. The data will be shown as in the below screenshoot:

	A	B	C	D	E	F	G	H	I	J	K
1	2,60315E+11	53.1	40.4	35.6	17.0	-5.9	1	0	0		
2	2,60315E+11	59.4	51.4	48.0	35.6	-5.6	1	0	0		
3	2,60315E+11	60.3	55.1	53.0	45.3	-5.6	1	0	0		
4	2,60315E+11	60.5	56.5	55.5	50.9	-5.7	1	0	0		
5	2,60315E+11	60.1	57.2	56.6	54.1	-6.0	1	0	0		
6	2,60315E+11	59.8	57.4	57.4	55.9	-6.3	1	0	0		
7	2,60315E+11	59.4	57.2	57.5	57.0	-7.0	1	0	0		
8	2,60315E+11	59.1	57.1	57.5	57.5	-7.6	1	0	0		
9	2,60315E+11	58.8	56.9	57.4	57.7	-8.5	1	0	0		
10	2,60315E+11	58.4	56.6	57.3	57.8	-8.9	1	0	0		
11	2,60315E+11	58.1	56.4	57.1	57.7	-9.6	1	0	0		
12	2,60315E+11	57.6	56.1	56.8	57.6	-10.5	1	0	0		
13	2,60315E+11	57.2	55.6	56.5	57.4	-11.1	1	0	0		
14	2,60315E+11	56.8	55.3	56.1	57.2	-11.9	1	0	0		
15	2,60315E+11	56.4	55.0	55.9	56.9	-12.5	1	0	0		
16	2,60315E+11	56.1	54.7	55.6	56.6	-13.3	1	0	0		
17	2,60315E+11	55.7	54.4	55.2	56.3	-14.1	1	0	0		
18	2,60315E+11	55.3	54.1	54.9	56.1	-14.7	1	0	0		
19	2,60315E+11	54.9	53.7	54.6	55.7	-15.4	1	0	0		
20	2,60315E+11	54.5	53.3	54.3	55.5	-16.0	1	0	0		
21	2,60315E+11	54.2	53.0	53.9	55.2	-16.7	1	0	0		
22	2,60315E+11	53.8	52.7	53.6	54.9	-17.3	1	0	0		
23	2,60315E+11	53.4	52.3	53.3	54.5	-17.8	1	0	0		
24	2,60315E+11	53.0	52.0	52.9	54.2	-18.5	1	0	0		
25	2,60315E+11	52.8	51.7	52.6	53.9	-19.0	1	0	0		

Data at column A represent date/hour/minutes/second. Change the cell format to “Number” in order to show the time properly. Reduce decimal places to 0. Next page will show an example of how the rows should appear, and how to read the information.

	A	B	C	D	E	F	G	H	I
1	260315114853	53.1	40.4	35.6	17.0	-5.9	1	0	0
2	260315114903	59.4	51.4	48.0	35.6	-5.6	1	0	0
3	260315114913	60.3	55.1	53.0	45.3	-5.6	1	0	0
4	260315114924	60.5	56.5	55.5	50.9	-5.7	1	0	0
5	260315114933	60.1	57.2	56.6	54.1	-6.0	1	0	0
6	260315114943	59.8	57.4	57.4	55.9	-6.3	1	0	0
7	260315114953	59.4	57.2	57.5	57.0	-7.0	1	0	0

DD/MM/YY **HH/MM/SS** **PRODUCT PROBE 1** **PRODUCT PROBE 2** **PRODUCT PROBE 3** **PRODUCT PROBE 4** **AIR PROBE** **NOT USED**

4 TROUBLESHOOTING

- Ensure product loading does not affect airflow
- If the appliance does not come on, check if the bracket gets any voltage. Call the Service.
- If the cycle does not start: check the temperature sensed by the air-probe and compare it to the set point; Check if the manual defrost cycle is activated; check if the device activates any load; call the Service.
- The refrigerator is continuously working but does not reach the set temperature: Check the ambient temperature is within the working range; check the condenser fan works and the condenser coil is clean and let the air flow through it; check there's proper clearances that allow a good air circulation at the top of the cabinet; check that the door is properly closed; check that the evaporator is not iced up and the evaporator fan works correctly; check the temperature sensed by the evaporator probe ; check that the defrost valve stays closed in normal operation; call the Service;
- Ice blocks on evaporator: check that the temperature sensed by the evaporator probe; check that the defrost is correctly activated; check that the evaporator fan works correctly; check that the solenoid valve opens when the defrost cycle is activated; check the door is kept open no longer than 1 minute during the load/unload operation of the cabinet;
- Appliance is noisy: Check the cabinet is correctly levelled; Check for any contact of the external body; check for any loosing screws or bolts; call the Service.

4.1 ALARM/FAILURE CODES

ALARM MESSAGE	NOTES/CONSEQUENCES
DOOR	The door is open for more than the allowed time during a cycle.
HIGH PRESSURE	Head pressure is too high, exceeding 29 barg (425psig). Check for clogged condenser, condenser fan motor not running or pump down valve not opening when compressor is running.
EVAPORATOR LOW TEMPERATURE	It means that the evaporator temperature is too low if compared to the current setpoint temperature. There is a differential parameter *LBT* that states the maximum gap that should exist between setpoint temperature and evaporator temperature. The alarm may occur in some occasion when there is a big change of setpoint temperature, the evaporator temperature remaining low for some minutes and hence triggering the alarm. This alarm it's not a critical one, however it could be avoided by setting *LBT* as high as possible (i.e. 40°C-72°F).
DEFROSTING TIME	Means that the defrost process has not terminated within the maximum defrosting time. The defrost normally ends by evaporator temperature target (*DTE*). If this doesn't happen within *DTO* minutes then the alarm triggers. Check the evaporator coil

ALARM MESSAGE	NOTES/CONSEQUENCES
	icing status, one defrost may be not enough, then repeat the defrost. If the alarm occur during the holding cycle there may be a problem with the defrost device (hot gas valve). Using the Blast Chiller as an holding cabinet for a long time may reach to this alarm too.
ELECTRICAL FEEDING	It means that the voltage supply is not within the safety range. The range is determined by parameter *MRV* (Main Reference Voltage), plus or minus the percentage defined by the parameter *VOF* (Mains voltage sensor offset)
LOW TEMPERATURE	It occurs when during the holding cycle the air temperature goes below the lower temperature limit, parameter *ALL*. This parameter is a differential of the setpoint.
HIGH TEMPERATURE	It occurs when during the holding cycle the air temperature goes above the higher temperature limit, parameter *ALH*. This parameter is a differential respect to the setpoint.
AIR PROBE (S1)	Air probe failure.
EVAPORATOR PROBE (S2)	Evaporator probe failure.
CONDENSER PROBE (S3) *(Not applicable in this product)*	Condenser probe failure.
FOOD PROBE (PT1)	Insert probe core 1 failure.
FOOD PROBE (PT2)	Insert probe core 2 failure.
FOOD PROBE (PT3)	Insert probe core 3 failure.
FOOD PROBE (PT4)	Insert probe core 4 failure.
RELAY 1,2,…,8 BROKEN	The electronic board detected a failure on Relay 1,2,…,8.
TRIAC BROKEN	The electronic board detected a failure on the PWM output for evaporator fan variable speed.
BLACK OUT	The system recorded a power interruption without switching off the display. Switch off the display and turn it on for clearing the alarm.

4.2 FAILURE CODE DETAILS

When an alarm occurs, an alert icon will blink on the left upper corner of the screen and the buzzer will activate. Click on the alarm icon to see details.

A message box will appears with the alarm code: