FRIGINOX
LE FROID PROFESSIONNEL

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INSTRUCTION - MAINTENANCE - INSTALLATION MANUAL
i-Chilling blast Chiller / Freezers

Combined Blast Chiller / Freezers	MX iC SXP iC
Combined Blast Chiller / Freezers Cold tables and Oven undercounters	TMX iC, SBFMX iC and TSXP iC
Blast Chilling / Freezing UltraCompact Combined Modules	UMX iC USXP iC
Blast Chilling / Freezing Combined Compartment	DUO MX iC
Blast Chilling / Freezing Combined Refrigeration Systems	EF iC

EQUIPMENT SERIAL NUMBER

(required for After-Sales Service)

en - May 2013

Thank you for choosing a **FRIGINOX** blast chilling / freezing equipment. We thank you for your confidence and hope that it meets your expectations.

This manual is issued specifically for your equipment. It contains instructions detailed for installation, use and maintenance of this equipment.

To use it in an optimal way, we advise you TO READ CAREFULLY THESE INSTRUCTIONS and to respect them throughout the life of the equipment. Keep this manual to hand so that you can refer to it at any time. Ensure that it is complete and kept close to the equipment. It should be provided to the maintenance engineer whenever called on to work on the equipment.

This manual must not be reproduced in any form whatsoever without the prior written approval of **FRIGINOX**, who cannot be held responsible for any use of the information contained in this manual.

As we want you to take advantage of the most of the latest technology and new equipment, as well as to benefit from our experience, our equipment may undergo technical or design changes. As a result, some of the features and information in this manual may change without prior notice and without any obligation to up-date it.

Pictures of this document are not contractual.

Any operations or work other than those described in this manual may interfere with the proper operation of the equipment or even result in a risk for your safety and the safety of the consumers.

Should you encounter any problems or have any questions about your I-chilling equipment, please do not hesitate to contact the **FRIGINOX** after-sales service.

Note the following information of the identification plate before calling us:

- ***model and type,***
- ***serial number,***
- ***date.***

Stamp here

REQUEST FOR ADDITIONAL MANUAL

Instruction - maintenance - installation manual
I-Chilling blast chiller / freezers
Quantity: .....

Technical manual
I-Chilling blast chiller / freezers
Quantity: .....

Equipment technical data sheet
Model: .....

Company: .....

Address: .....

.....

Mr .....

FRIGINOX
LE FROID PROFESSIONNEL

Siège social et usine
F-89330 VILLEVALLIER

Guarantee card to be kept by the fitter

INFORMATION ON THE EQUIPMENT		
Model:	Serial No:	Date:
Board No:	Compressor No:	

USER'S NAME AND ADDRESS

_____

_____

_____

SPECIFIC FEATURES

_____

_____

_____

LIST OF INTERVENTIONS

DATE	REASON	PARTS REPLACED

WARNING

- **Our equipment are designed and manufactured in accordance with local safety regulations, and in particular european directives relative to reconciling member states' legislation:**
  - **2004/108/EC "Electromagnetic compatibility",**
  - **2006/95/EC "Electrical equipment low voltage".**

- **A blast chilling / freezing equipment is designed especially for blast chilling and freezing of foodstuffs while meeting the health and safety standards in force. We may not be held responsible in the event of accident or of degradation caused by an equipment we manufacture of which the use was diverted of that for which it is intended.**

- **The blast chilling / freezing equipment are for professional use and must be used and maintained by competent personnel who are regularly trained for this type of equipment. They must only be installed and connected up by a qualified installer, in compliance with the rules and standards in force.**

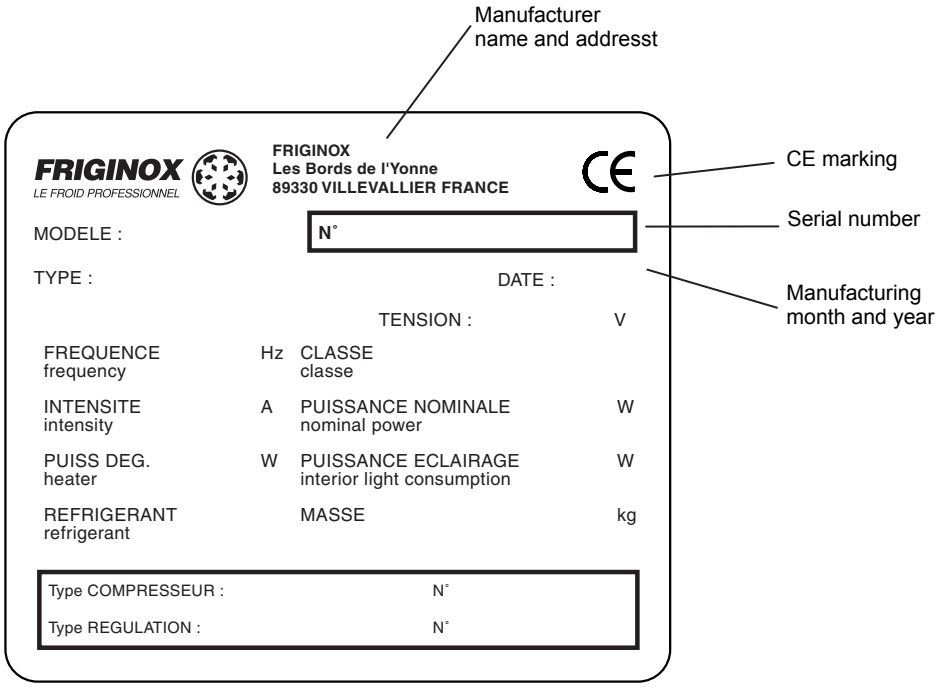
- **May we however draw your attention to the fact that we can in no way be held responsible:**
  - **if any technical alterations are made to our equipment without our written authorisation,**
  - **for any damage to our equipment if hydrochloric acid or other aggressive products are used in the premises where they are kept, whether during installation or when used thereafter.**

- **The safety instructions given in this manual are merely given for guidance purposes to protect you and all those using and working on our equipment. FRIGINOX cannot foresee all dangerous situations that might arise. This is why the owner and/or the operator is responsible for the operating safety of the equipment.**

- **Equipment containing refrigerant:**
  - **the equipment must only be installed and connected up by a qualified installer, in compliance with the rules and standards in force,**
  - **the sealing of the refrigeration circuit must be checked when switching on the equipment and at least every year,**
  - **the refrigeration circuits and work on these circuits are covered by specific regulations according to the country.**

REGULATION MARKING

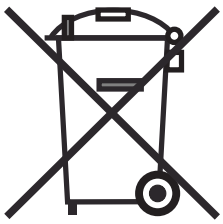
The identification plate is located inside the equipment.



RECYCLING AT THE END OF SERVICE LIFE

FRIGINOX equipments are designed to last long. When an equipment is not economical to use/repare any more, you can disassemble it and recycle most of the components.

For the disposal of this professional electrical equipment at the end of its service life, you must comply with local regulations.



PRESENTATION

The description of your equipment and also its technical specifications (dimensions, consumption, capacity, electrical rating, chilling capacity, etc.) are given in the technical data sheet enclosed with this manual.

CONTENTS

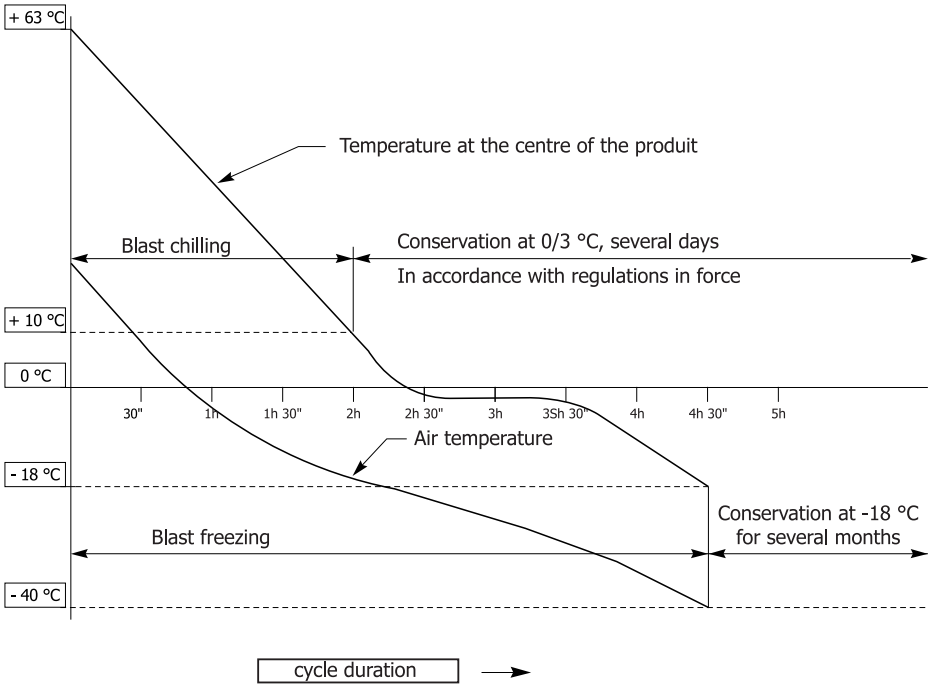
OPERATION

DEFINITION OF THE SCOPE OF USE

WARNING

- A blast chilling / freezing equipment is not intended for the storage of foodstuffs. It is not a conservation cabinet. Do not use it for regular operation during the night or for product maintaining of temperature for long periods. Using this equipment for the storage of foodstuffs may result in damage to the compressor.
- The combined blast chillers/freezers are designed to freeze products. However, for blast freezing, please do not exceed the maximum recommended capacity for your equipment.
- Monitor the operation of the equipment. When a malfunction develops, turn the equipment off and call the after-sales engineer. Never use equipment which is malfunctioning as this may damage the components.

An abnormally low or high temperature in the premises can affect the equipment performance.



Theoretical temperature drop graph

Cooked dishes can be prepared in advance if their production observes a series of rules and in particular if blast chilling takes place immediately after cooking under the following conditions:

- blast chilling: from +63 °C to +10 °C core temperature of the product in less than 2 hours, then conservation at +3 °C,
- blast freezing: from +63 °C to -18 °C core temperature of the product in less than 4 hours and 30 minutes, then conservation at -18 °C. Conservation might be up to several months.

Temperatures and durations may vary depending on the country's regulations.

Blast chiller / freezers are intended to provide blast chilling or freezing of products. It is an essential link in the refrigeration chain. Blast freezers can also be used for products other than cooked dishes such as Viennese pastries, pastries, meat or raw fish (observing legislation in force).

RECOMMENDATIONS FOR USE

Load the equipment in a single go. Loading bit by bit does not allow the temperature to be controlled for all the products and by increasing the temperature of the products already in the equipment, one increases the sanitation risk considerably. Therefore, do not open the equipment door during cycle.

Reach-in blast Chiller / Freezers maximum capacities

	Blast chilling from +64.5 °C to +8.5 °C core			Blast freezing from +64.5 °C to -19.5 °C core		Blast freezing from +20 °C to -18 °C core	Max. number of levels depending on specified space between levels
	Max. 4.8 kg per level in max. 2 h (kg/cycle)	3.6 kg per level in max. 2 h (kg/cycle)	Max. 4.8 kg per level in max. 90 min (kg/cycle)	Max. 4.8 kg per level in max. 4 h 50 (kg/cycle)	3.6 kg per level in max. 4 h 50 (kg/cycle)	(kg/h)	
Blast Chiller / Freezers (GN 1/1)							
MX 20-10 A iC	20	15	12	10	7		4 (74 mm)
MX 20-10 A ENC iC	20	15	12	10	7		4 (74 mm)
SBFMX 30-15 A iC	30	22	20	15	11		6 (90 mm)
TMX 30-15 A iC	30	22	20	15	11		7 (70 mm)
MX 30-15 A iC	30	22	20	15	11		9 (70 mm)
MX 45-20 A iC	45	34	27	20	15		9 (70 mm)
DUO MX 45-300 A iC	45	34	27	20	15		9 (70 mm)
MX 60-30 A iC	60	45	40	30	22		15 (70 mm)
MX 75-35 A iC	75	56	50	35	25		15 (70 mm)
MX 85-40 A iC	85	56	50	40	25		21 (66 mm)
Pastry Blast Freezers (600 x 400)							
SXP 7 A iC						3 (1)	7 (37 mm)
TSXP 15 A iC						5 (1)	15 (35 mm)
SXP 19 A iC						4,5 (1)	19 (35 mm)
SXP 19 A iC Plus						6 (1)	19 (35 mm)
SXP 30 A iC						11 (1)	30 (35 mm)
SXP 43 A iC						14 (1)	43 (33 mm)

(1) Unproved 55 g Danish pastries.

Blast Chiller / Freezers for combined oven loaders and trolleys maximum capacities

	Blast chilling from +64.5 °C to +8.5 °C core			Blast freezing from +64.5 °C to -19.5 °C core		Blast freezing from +20 °C to -18 °C core	Number of GN 1/1 trolleys
	Max. 4.8 kg per level in max. 2 h (kg/cycle)	3.6 kg per level in max. 2 h (kg/cycle)	Max. 4.8 kg per level in max. 90 min (kg/cycle)	Max. 4.8 kg per level in max. 4 h 50 (kg/cycle)	3.6 kg per level in max. 4 h 50 (kg/cycle)	(kg/h)	
Blast Chiller / Freezers (GN 1/1)							
MX 0.5 X A iC	55	34	35	20	15		*
MX 65c A Plus iC	85	56	50	40	25		**

* Allows 1 loader, 6 or 10 levels GN 1/1 (not supplied) of combined and convection RATIONAL (Frima) type ovens.

** For 1 trolley, GN1/1, 20 levels (not supplied) of combined ROSINOX Grandes Cuisines Eloma system ovens, Rational (Frima), Küpperbusch, Convotherm, Electrolux and Hounö. For further details, please refer to the technical data sheet.

Roll-in Blast Chiller / Freezers maximum capacities

	from +63 °C to +10 °C 110 min	from +63 °C to +10 °C 85 min	from +63 °C to -18 °C 4 h 30 min	Number of GN 1/1 trolleys
Blast Chiller / Freezers (GN 1/1)				
UMX 1A GLS iC	80 kg	70 kg	40 kg	1
UMX 1SX iC	110 kg	80 kg	50 kg	1
MX 1A iC	80 kg	70 kg	40 kg	1
MX 1SX iC	110 kg	80 kg	50 kg	1
MX 1LA iC	80 kg	70 kg	40 kg	1
MX 1LSX iC	110 kg	80 kg	50 kg	1
MX 2S iC / MX 27S iC / MX 29S iC	160 kg	130 kg	80 kg	2
MX 2SX iC / MX 27SX iC / MX 29SX iC	220 kg	160 kg	100 kg	2
MX 3S iC	240 kg	210 kg	110 kg	3
MX 3SX iC	330 kg	240 kg	140 kg	3
MX 4S iC	320 kg	280 kg	150 kg	4
MX 4SX iC	400 kg	320 kg	180 kg	4
Pastry Blast Freezers (600 x 400)				
USXP 1cA GLS iC	/	/	23 kg	1*
USXP 1cS iC	/	/	30 kg	1*
SXP 1cA iC	/	/	23 kg	1**
SXP 1cS iC	/	/	30 kg	1**
SXP 1LcA iC	/	/	23 kg	1**
SXP 1LcS iC	/	/	30 kg	1**
SXP 2cS iC / SXP 27cS iC / SXP 29cS iC	/	/	60 kg	2***
SXP 3cS iC	/	/	100 kg	2
SXP 4cS iC	/	/	120 kg	2

* Ladder type trolley, 600 x 400, special UltraCompact.

** Blast freezing of uncooked shaped 250 g French sticks, from +20 °C to -18 °C, 600 x 400 mm trolleys instead of GN 1/1.

*** Ladder type trolley, 600 x 400, without rubber stop in the edges.

The maximum load for blast chilling and blast freezing is 3.6 kg per level for roll-in blast chiller / freezers in GN 1/1 format (530 x 325 mm), 7.2 kg per level for roll-in blast chiller / freezers in GN 2/1 format (650 x 530 mm) and 1.75 kg per level for roll-in blast chiller / freezers of bakery / pastry products (600 x 400 mm).

Roll-in blast chiller / freezers can accept a large number of standard and oven trolleys. Please refer to the technical data sheet of the equipment for further details.

Declaration of capacities

The capacities are stated according to the AFNOR ACD40-003 agreement for the award of the NF Hygiène alimentaire label "INSTITUTIONAL CATERING EQUIPMENT - REFRIGERATION EQUIPMENT - GENERAL DESIGN AND PRODUCTION RULES …", and depending on the model:

- 2.4 kg of mashed potato per GN 1/2 cardboard container, without membrane seal,
- 1.8 kg of mashed potato per GN 1/2 cardboard container, with membrane seal.

The chilling and freezing capacities may vary relative to the above-mentioned tables in real life conditions according to the type of product, its thickness, type of packaging (with membrane seal or not) and the weight of the product in the packaging, the quantity of products in the equipment, the type of trolley, etc.

Product thickness

The products are to be distributed in the containers immediately after they are cooked. It is accepted that, on such packaging, the core temperature of the products is higher than 63 °C.

Loose pieces of products should be spread out evenly in the base of the container, in a single layer without overlapping.

Important! The nature and the thickness of the product have an impact on the chilling duration. In order to be able to observe the time imposed by legislation, it is essential that a thickness of 30 mm is not exceeded.

Product coverage

In order to reduce the risks of contamination and the formation of ice on the evaporator, it is recommended that the products are covered whenever this is possible. For this, use stretch film or a lid.

However, certain very thick (beef roasts) or voluminous (whole chicken) products must be free of any cover in order to observe the chilling time required by the regulations. They should be processed on stainless steel grids so as to present a maximum surface in contact with the air.

Whether the products are covered or not has a significant impact on the chilling and freezing times.

Important! Always monitor these times and cover the products or not, according to the results.

Dishes to be used

The best results are obtained by using stainless steel or aluminium dishes. Never use polycarbonate containers.

The use of slatted plastic crates increases the chilling and freezing times. Adjust the loading of the equipment and crates and/or use crates with bigger slats in accordance with the times obtained.

Loading the equipment

In order to ensure optimum chilling or freezing, make sure that the air is properly distributed over the products.

Always distribute the levels over the full height available in the equipment.

Leave a minimum space of 30 mm for the air to circulate between the product and the upper level.

Trolleys should be placed in the geometric centre of the blast chiller / freezer loading area.

Products can be loaded as soon as cooking has finished, at temperatures greater than 63 °C.

Do not open the door more than 105° for equipment fitted with a door hinge. Exceeding that value may result in damage to the door hinge, which is not covered by the guarantee.

Trolleys to be used

CHECK THAT THE DIMENSIONS OF THE TROLLEY FIT INTO THE BLAST CHILLER / FREEZER.

The minimum space between levels is determined according to the height of the containers, plus the minimum clearance specified above. Account for the swelling of sealing membranes which increases the height of the recipient.

Food probe: Frigiprobe

Place the Frigiprobe in a typical product with a combination of the following most unfavourable specifications:

- sealed tray,
- big-sized tray,
- thickest product, in pieces and the most hot,
- minimum clearance between 2 levels.

In the event of products with homogeneous specifications, place the Frigiprobe in a tray, container or product located at mid height in the equipment.

The probe is fitted with 4 independent temperature sensors, distributed over the tip of the probe. The first 100 millimetres of the probe should therefore be placed in the centre of the product. The electronic board will detect the warmest sensor as being the core temperature.

Important! Never run in Frigiprobe mode if the probe is not inserted in a product. In this situation, the blast chiller / freezer switches to end of cycle mode too quickly and the products are not cooled or frozen in the times required.

For delicate products or products which are too small to accept the Frigiprobe, use the Timer mode. Firstly carry out a few tests with the Frigiprobe so as to determine the duration setting.

Take care to handle the Frigiprobe by its stainless steel body, never by the wires. There is a risk of damaging the Frigiprobe. The destruction is not covered by the guarantee.

Always place the Frigiprobe on its support. There is a risk of damaging it on closing the door or by the trolleys. The destruction is not covered by the guarantee.

In order to release the Frigiprobe from the frozen product, gently quarter turn the probe.

USE

SAFETY

- Use protective gloves for handling the grids, containers or trolleys: hot on loading and cold on unloading.
- Be careful of your hands when loading the trolley in the equipment.
- The Frigiprobe food probe has a sharp end. Handle the Frigiprobe with care and only to measure the temperature of products placed in the equipment. When it is not being used, the Frigiprobe should be placed on its support.
- Clean and disinfect the Frigiprobe before each use.

Do not leave hot products in the equipment without switching it on. Switch the equipment on immediately after loading the products.

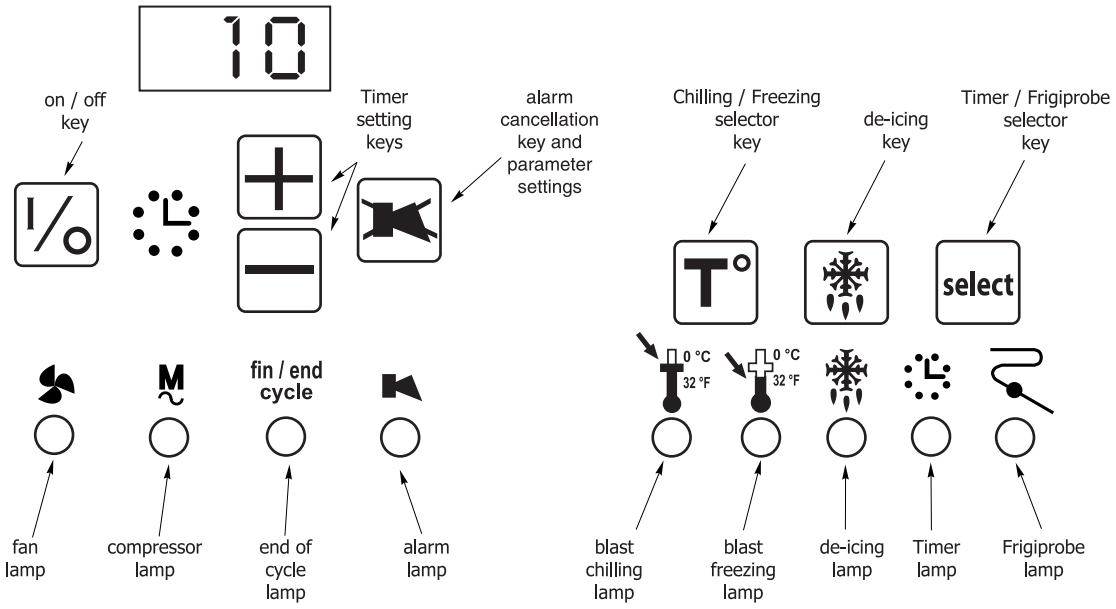
Make sure that the total product weight does not exceed the equipment capacity.

Important! For MX models, the capacity of the equipment differs between chilling and freezing modes. The freezing capacity is approximately 50 % less than the chilling capacity, refer to the "Blast chiller / freezers capacities" paragraphs.

This equipment has many technical innovations including self-adapting intelligent chilling. In blast chilling cycle with Frigiprobe, this control algorithm developed by **FRIGINOX** automatically determines the least cold air temperature possible so as not to exceed the pre-set maximum duration for the cycle. Thus a modulation in the "cold rating" is made on each chilling cycle with the Frigiprobe with no action from the user, whatever the type of product, its thickness, the packaging and the product weight in the equipment. The air temperature low limitation during the chilling cycle with the Frigiprobe will thus be different on each cycle so as to adapt to each situation.

The start and end of cycle core temperature values, together with the maximum duration between the start and the end of cycle are parameters for the electronic control which can be changed. They should be set to the values specified by the regulations in force or in accordance with the user's organisation requirements. Ask your installer to make these adjustments.

Important! The self-adapting intelligent chilling does not avoid the need to observe scrupulously the recommendations for use. Operation with products which are difficult to cool (very thick products, for example) and a reduced cycle maximum duration will not mean surface freezing of the product is prevented.



Control panel

When using for the first time, switch the On / Off switch to the "1" position. A cycle lamp (blast chilling or blast freezing) and a mode lamp (Timer or Frigiprobe) light on. It is possible to know with which settings the equipment will start.

A display 888 but without it being possible to use the equipment indicates incorrect configuration of the electronic control. Contact the after-sales engineer.

The "de-icing" lamp ❄ flashes to show de-icing is needed (refer to step 6 for the de-icing procedure).

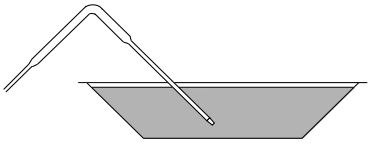
The temperatures can be displayed in °C or °F (adjustable).

Note: the operating description is given in °C, it is based on the electronic control parameters at the factory-set values.

Step 1 - Loading

Load the products all at the same time. There is no need to pre-cool the blast chiller / freezer.

Insert the Frigiprobe into the product and close the equipment door.



Refer to the "Recommendations for use" chapter.

Step 2 - Starting-up

Start-up the blast chiller / freezer by pressing the I/O key.

The equipment starts with all the settings from the previous cycle, chilling or freezing, Frigiprobe or Timer mode, duration of Timer mode. The display then shows the operating information (see below). The green lamps "fan" and "compressor" M light up with a delay.

The fan runs continuously except:

- if the door is opened,
- if the air temperature is above 35 °C at the end of cycle (temperature maintaining phase).

One hour after going into the end of cycle, the fan operates cyclically (adjustable).

Opening the door during the cycle disables the self-adapting intelligent chilling for the cycle in progress (in chilling cycle, Frigiprobe mode). The cycle goes on in automatic control.

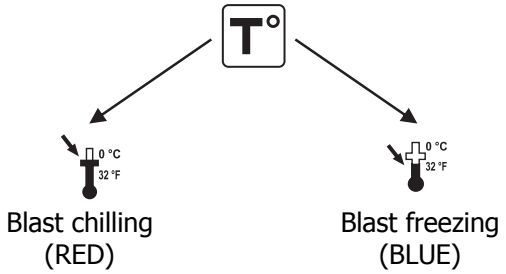
The red "alarm" lamp indicates the presence of an alarm, refer to the "Alarms" chapter.

A flashing "AL8" display and the flashing red "alarm" lamp indicate a fault in the remote condensing unit (if connected to the condensing unit), refer to the "Alarms" chapter.

Step 3 - Type of cycle

Where necessary, change the type of cycle by pressing the T° key. The lamp corresponding to the cycle selected lights up.

This selection is only available on combined equipment (which can operate in blast chilling and freezing). For blast chilling equipment, this key is disabled.

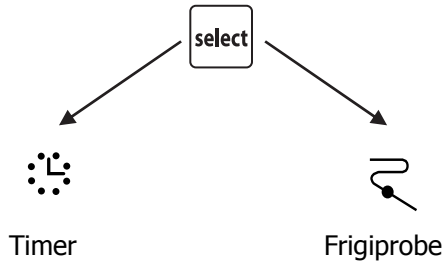


One minute after switching the equipment on, the type of blast chilling / freezing cycle can no longer be changed. The equipment thus needs to be stopped and then started up again.

Step 4 - Operating mode

Where necessary, change the operating mode by pressing the select key. The lamp corresponding to the mode selected lights up.

If the Frigiprobe is out of order (alarm "AL3, auto-backup 2"), the Frigiprobe mode cannot be selected, refer to the "Alarms" chapter. Use the Timer mode pending checking or replacement of the Frigiprobe.



One minute after switching the equipment on, the Frigiprobe / Timer operating mode can no longer be changed. The equipment thus needs to be stopped and then started up again.

Step 4-1: FRIGIPROBE mode. lamp illuminated

Thanks to the 4 temperature sensors integrated in the Frigiprobe, the electronic control selects the one actually located at the core (the warmest) and switches to temperature maintaining when the desired core temperature is reached.

The core temperature is measured and displayed as soon as the equipment is switched on.

Frigiprobe mode. Phase 1 - Before the core temperature reaches +63 °C (parameter P23)

The display shows alternately the core temperature and the time run (in hours and minutes) since the start of the cycle. The time run remains at 0 H 00 min during this phase, as the core temperature is greater than +63 °C (P23).

Example +75 °C

Core temperature (°C)

Cycle duration (h.min)

Frigiprobe mode. Phase 2 - Core temperature less than +63 °C (parameter P23)

A 1 second ringing indicates when +63 °C is reached. This is the start of the chilling or freezing cycle duration counting. The display shows alternately the core temperature and the time run (in hours and minutes) since reaching +63 °C (P23).

Example +50 °C and 0 hour 20 minutes

Core temperature (°C)

Cycle duration (h.min)

Note: for very long cycles, greater than 9 h 59 min, the cycle duration display is replaced by 

.

Frigiprobe mode. Phase 3 - End of cycle

The blast chilling or freezing cycle has finished. The green lamp fin / end cycle lights up. A 30 second ringing indicates that the desired core temperature has been reached. To stop the audible signal before its automatic stop, press the  key.

From this moment, the equipment automatically maintains the conservation temperature depending on the type of cycle which has just been carried out (chilling or freezing).

The display shows alternately the core temperature and the duration of the cycle carried out (in hours and minutes).

Example +7 °C and 1 hour 45 minutes

Core temperature (°C)

Cycle duration (h.min)

The end of cycle occurs one minute after reaching the core temperature at the end of the cycle.

Step 4-2: TIMER mode. lamp illuminated

This is operation by time switch. If necessary, set the desired cycle duration by pressing the keys:

-  to increase the cycle duration,
-  to decrease the cycle duration.

Note: pressing and holding down the keys increases the value scrolling speed.

While setting, the display shows only the duration of the cycle being changed. The duration set remains displayed for 5 seconds after the last press on a key.

Example 1 hour 50 minutes

Timer mode. Phase 1 - Cycle

One minute after switching the equipment on, a 1 second ringing indicates the start of the chilling or freezing cycle. The display shows alternately the air temperature and the time (in hours and minutes) remaining before the end of the cycle.

Example +30 °C and 1 hour 30 minutes

Air temperature (°C)

Time remaining (h.min)

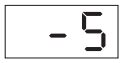
Timer mode. Phase 2 - End of cycle

The blast chilling or freezing cycle has finished. The green lamp fin / end cycle lights up. One minute after time remaining reaches "0.00", a 30 second ringing indicates the end of the cycle. To stop the audible signal before its automatic stop, press the key.

From this moment, the equipment automatically maintains the conservation temperature depending on the type of cycle which has just been carried out (chilling or freezing).

The display only indicates the air temperature.

Example -5 °C



Air temperature (°C)

Step 5 - Stop

Stop the equipment after use, by pressing the key.

The luminous lamps for the type of cycle (chilling or freezing) and the operating mode (Frigiprobe or Timer) remain illuminated, even when the equipment is stopped.

At the end of the day, after using the equipment, switch the On / Off switch to the "0" position. The lamps go out.

Do not switch off the equipment by the On / Off switch when it is in operation. This will give rise to an alarm 

, refer to the "Alarms" chapter.

The blast chiller / freezer's electronic control keeps all the settings stored in memory for use next time:

- the type of the last cycle carried out (blast chilling or freezing),
- the operating mode (Frigiprobe or Timer),
- the duration of the Timer mode.

Step 6 - De-icing

To maintain optimum performance of the equipment regardless of the conditions of use, de-icing should be performed after every cycle.

In addition, the "de-icing" lamp flashes to show de-icing is needed.

In the event of successive operation of the equipment with no products (empty), the "de-icing" lamp may quickly start to flash.

Important! Not de-icing increases the chilling or freezing duration.

De-icing should be carried out:
- with no products in the equipment,
- with the DOOR OPEN for equipment without electrical de-icing, using the fan and ambient air,
- with the DOOR CLOSED for equipment with electrical de-icing, using the fan and the heating resistances.

A de-icing must be carried out every evening (before cleaning) or every morning (before first use).

Start-up the equipment by pressing the I/O key and start the de-icing by pressing the key. The display then shows d.01.

The key is enabled only during the first minute after starting the equipment up. Once the first minute is over (a blast chilling or freezing cycle has thus started), it is no longer possible to start de-icing. The equipment has to be stopped and restarted (I/O key) to be able to start de-icing.

The evaporator fan starts to make the ice melt from the evaporator. The fan operates continuously during de-icing. The de-icing resistances operate from the start of de-icing. The "de-icing" lamp shows that the resistances are on. If the temperature on the evaporator probe exceeds +40 °C, the resistances are automatically turned off for the remainder of the de-icing cycle.

The de-icing cycle lasts at least 10 minutes. After the 10 minutes, the equipment automatically switches off as soon as the evaporator probe reaches the end of de-icing temperature. After a de-icing period of 25 minutes (adjustable), the equipment automatically switches off whatever the evaporator probe temperature. The end of de-icing cycle controls the complete shut-down of the equipment. The equipment can be turned off during de-icing through the I/O key.

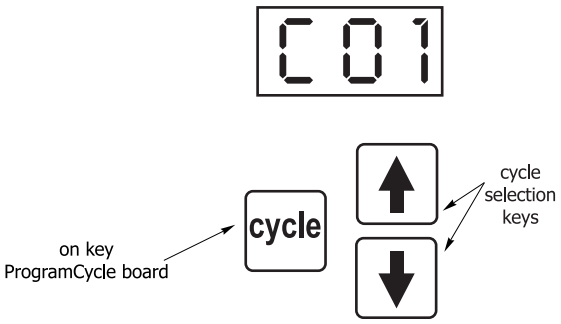
If the equipment is not used, switch the On / Off switch to the "0" position.

Once the de-icing is finished, evacuate any water on the floor of the equipment to the floor trap or the duct located nearby.

Important! Do not use de-icing for thawing foodstuffs.

OPTION PROGRAMCYCLE BOARD

This electronic board provides a very easy means for starting 25 different programmable cycles. Each cycle holds in memory 12 parameters which can be customised (blast chilling or freezing cycle, Frigiprobe or Timer mode, start of cycle core temperature, end of cycle core temperature, etc.) so as to adapt fully to the use.



Control panel of the ProgramCycle board

Use

The equipment should be stopped, with the 2 displays off. Only one of the cycle lamps (chilling / freezing) and one of the mode lamps (Frigiprobe / Timer) should be on.

Pressing the cycle key provides display of the last cycle used (C01, C02, etc.). It is a flashing display.

AFTER 5 SECONDS WITH NO KEY BEING PRESSED, THE CYCLE IS STARTED.

The ↑ and ↓ keys are used to change the cycle.

AFTER 5 SECONDS WITH NO KEY BEING PRESSED, THE CYCLE DISPLAYED IS STARTED. The cycle number remains displayed but not flashing. The electronic control lights up with the parameters for the cycle selected.

Display of the 888 message but without it being possible to start the cycle indicates that the desired cycle uses the Frigiprobe mode and is out of order (alarm "AL3, auto-backup 2"), refer to the "Alarms" chapter.

5 cycles are preprogrammed, refer to the "Factory settings" paragraph.

If no cycle displays (C01, C02, etc.) when the cycle key is pressed, this means that all the cycles are disabled. P00 parameter to activate the preprogrammed cycles. Refer to the "Settings" paragraph to access the cycle parameters.

Factory settings

	C01 and C02 = factory preprogrammed cycles *C03 to C25 = cycles to be programmed in accordance with your requirements* */ = current control setting*	**C01** **Chilling Timer mode Air limitation at 0 °C**	**C02** **Chilling Timer mode 30 min**	**C03**	**C04**	**C05**
P00	Cycle activation = 1 Cycle deactivation = 0	1	1			
P01	Cycle type Chilling = 0 Freezing = 1	0	0			
P02	Operating mode Frigiprobe = 0 Timer = 1	1	1			
P04	Cycle duration in Timer mode (min)	1.50	0.30			
P05	Maintaining air temperature setting (°C / °F)	3 °C	3 °C			
P11	Air temperature limitation commutation core temperature (°C / °F)	/	/			
P20	First air temperature limitation (°C / °F)	0 °C	-20 °C			
P21	Second air temperature limitation (°C / °F)	/	/			
P22	End of cycle core temperature (°C / °F)	/	/			
P23	Start of cycle core temperature (°C / °F)	/	/			
P24	Intermediary printing core temperature (°C / °F)	/	/			
P40	Maximum duration of the self-adapting intelligent chilling (min)	/	/			
P45	Deactivation of the remote loading = 0 Deactivation of the self-adapting intelligent chilling = 1 Activation of the self-adapting intelligent chilling = 2	/	/			

Settings

The equipment should be stopped, with the 2 displays off. Only one of the cycle lamps (chilling / freezing) and one of the mode lamps (Frigiprobe / Timer) must be lighted.

Simultaneously press the + and − keys on the control panel of the electronic control. The ProgramCycle board display shows "C01". If no key is used for 10 seconds, the system exits the setting mode.

Press the + and − keys to select the desired cycle and then confirm with the K key.

The first parameter of the cycle selected displays "P00". The parameter number is displayed for 2 seconds and is then followed by display of its value for 10 seconds.

During these 10 seconds, press the + key to increase and − to decrease the setting. After this 10 second period, the ProgramCycle board switches off. The K key is used to move to the next parameter.

Note: pressing and holding down the keys increases the value scrolling speed.

Parameters list

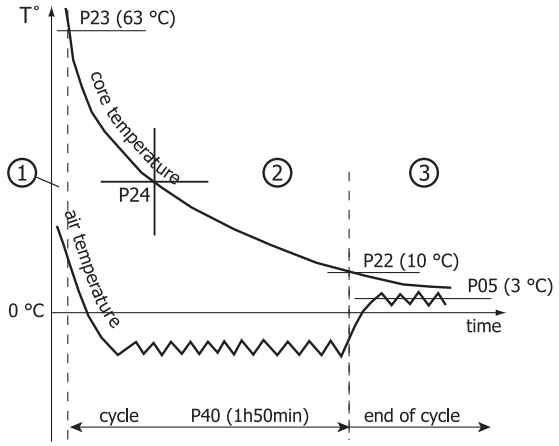
Note: certain parameters can only be accessed depending on the setting of the "P01" parameters (blast chilling of freezing cycle) and "P02" (Frigiprobe or Timer mode).

Readjust the parameters if the temperature unit is modified (°C, °F).

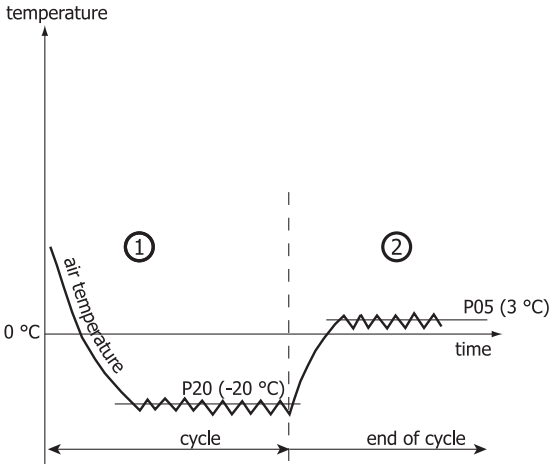
No (2 sec)	DESCRIPTION (value displayed for 10 seconds)	MIN. RANGE	MAX. RANGE
P00	**Cycle activation** Disabled: 0 Enabled: 1	0	1
P01	**Type of cycle chilling or freezing** Chilling: 0 Freezing: 1	0	1
P02	**Operating mode Frigiprobe or Timer** Frigiprobe: 0 Timer: 1	0	1
P04	**Cycle duration in Timer mode (in hours.minutes)** "0.00": do not change the current control setting.	0.00	9.59
P05	**Maintaining air temperature setting after blast chilling or freezing cycle** (in °C or °F) "-40": do not change the current control setting. Single setting range, no difference between chilling and freezing.	-40 °C (-40 °F)	30 °C (86 °F)
P11	**Automatic control: core temperature below which the air temperature may be limited to the value of parameter P21** (in °C or °F) "-40": do not change the current control setting.	-40 °C (-40 °F)	80 °C (176 °F)
P20	**Automatic control: air temperature limitation during the first blast chilling step** (in °C or °F) "-40": do not change the current control setting. Single setting range, no difference between Frigiprobe and Timer.	-40 °C (-40 °F)	30 °C (86 °F)
P21	**Automatic control: air temperature limitation during the second blast chilling step** (in °C or °F) "-40": do not change the current control setting.	-40 °C (-40 °F)	30 °C (86 °F)
P22	**End of cycle core temperature** (in °C or °F). Frigiprobe mode. "-40": do not change the current control setting. Single setting range, no difference between chilling and freezing.	-40 °C (-40 °F)	80 °C (176 °F)
P23	**Start of cycle core temperature** (in °C or °F). Frigiprobe mode. "-40": do not change the current control setting.	-40 °C (-40 °F)	80 °C (176 °F)
P24	**Intermediary printing of the information on the printer when the core temperature reaches the setting value** (in °C or °F). Frigiprobe mode. "-40": do not change the current control setting.	-40 °C (-40 °F)	80 °C (176 °F)
P40	**Self-adapting intelligent chilling: maximum duration of the blast chilling cycle (in hours.minutes) in Frigiprobe mode** "0.00": do not change the current control setting.	0.00	9.59
P45	**Self-adapting intelligent chilling: activation or deactivation** "0": do not change the current control setting. "1": deactivate the self-adapting intelligent chilling. "2": activate the self-adapting intelligent chilling.	0	2

Blast chilling cycles

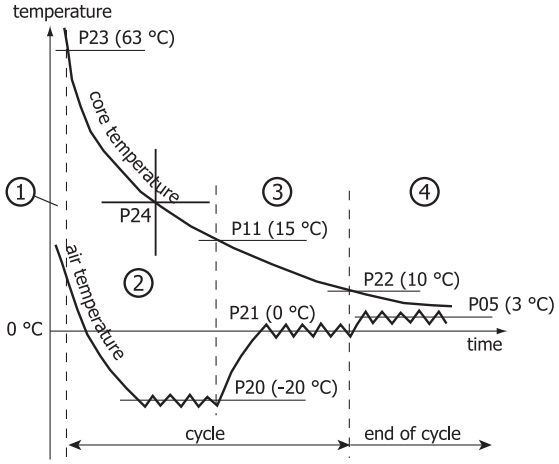
Frigiprobe mode
Self-adapting intelligent chilling



Timer mode

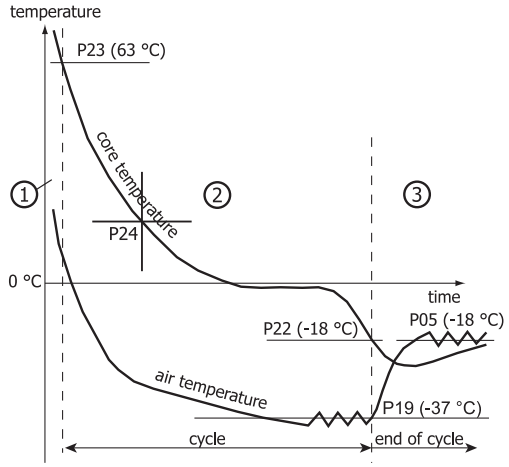


Automatic control

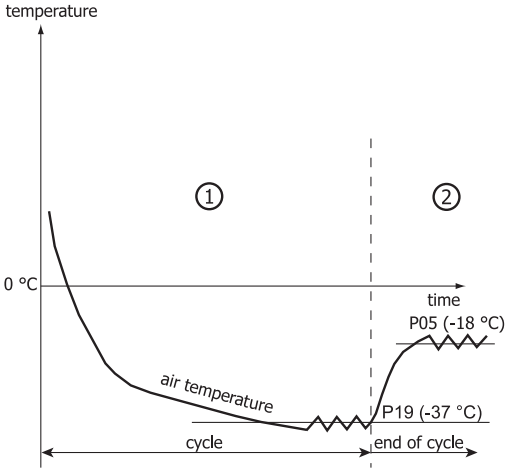


Blast freezing cycles

Frigiprobe mode

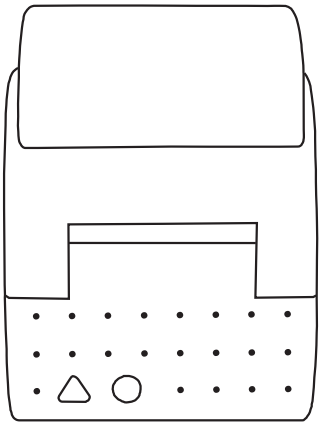


Timer mode



1, 2, 3 and 4 are the different cycle phases. P05, P23, etc. are the control setting parameters.

OPTION PRINTER



A630

SAFETY

- Do not allow water to splash on the printer.

Important! The printer is fully controlled by the electronic control. No manual intervention is required.

The temperatures may vary depending on the country's regulations or user settings.

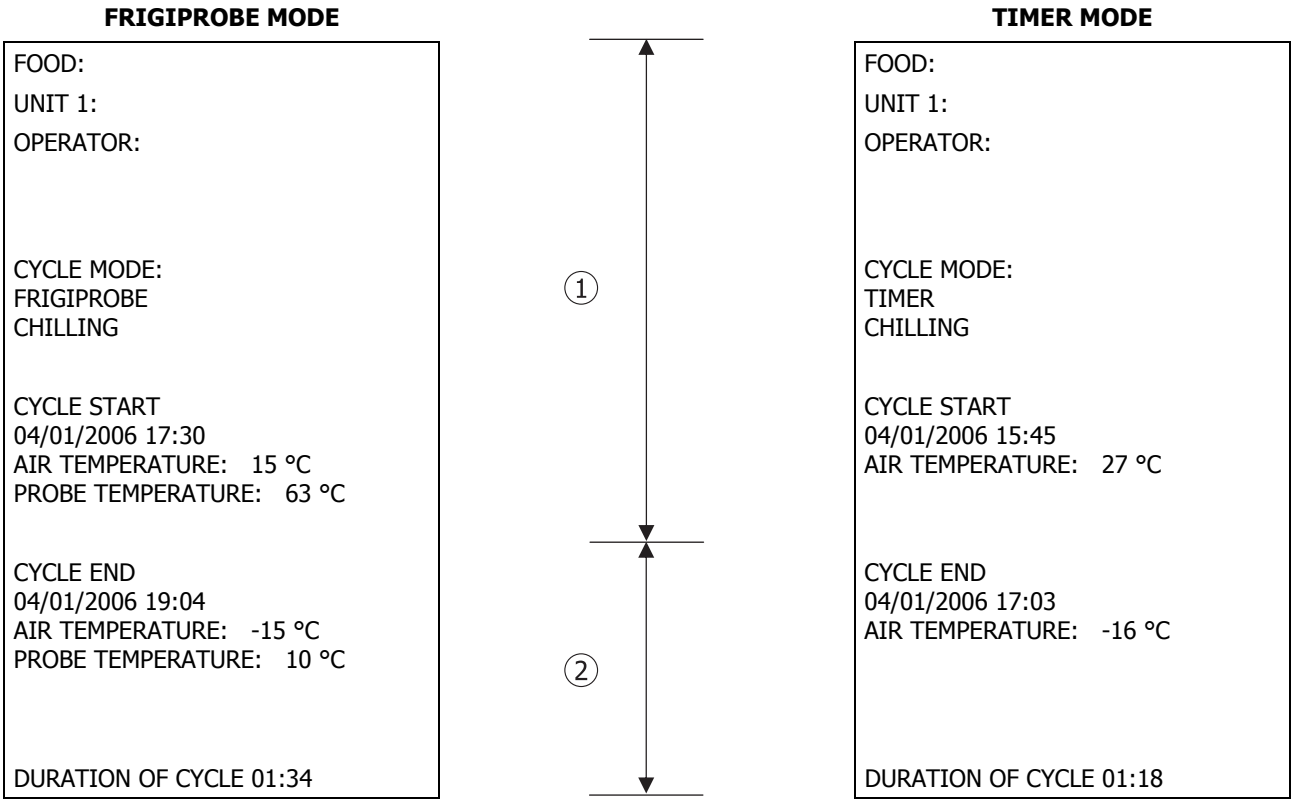
The blank zones next to "FOOD", "UNIT", "OPERATOR" have to be filled in by the user.

Refer to the "Electronic control" section, "Option DataTransfer board" chapter for settings of:
- the equipment number ("UNIT 1", "UNIT 2", etc.),
- date and time,
- the ticket printing language.

Refer to the "Electronic control" section, "Electronic board settings" chapter for the meaning of parameters P22 and P24.

THE INFORMATIONS OF THE CYCLE ARE PRINTED IN TWO STAGES (IF PARAMETER P24 IS THE SAME AS OR LESS THAN PARAMETER P22)

PRINT EXAMPLE IN CHILLING CYCLE



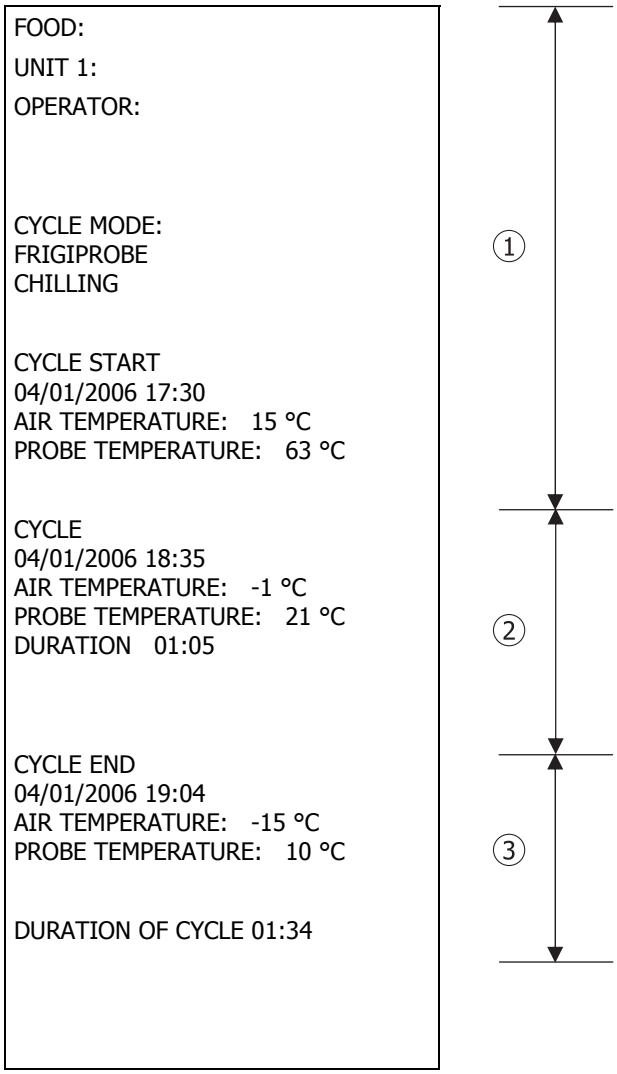
		FRIGIPROBE MODE	TIMER MODE
①	**Start of the cycle**	When the Frigiprobe temperature (core) falls below +63 °C.	One minute after switching the equipment on.
②	**End of the cycle**	When the Frigiprobe temperature (core) reaches +10 °C or -18 °C.	When the cycle timer reaches zero.

Note: if the equipment is stopped with the I/o key before the end of the cycle, the words "CYCLE END" are replaced by "MANUAL STOP".

THE INFORMATIONS OF THE CYCLE ARE PRINTED IN THREE STAGES (IF PARAMETER P24 IS GREATER THAN PARAMETER P22)
Frigiprobe mode only

PRINT EXAMPLE IN CHILLING CYCLE, P24 = 21 °C

FRIGIPROBE MODE



①	**Start of the cycle**	When the Frigiprobe temperature (core) falls below +63 °C.
②	**Cycle**	When the Frigiprobe temperature (core) falls below the P24 value.
③	**End of the cycle**	When the Frigiprobe temperature (core) reaches +10 °C or -18 °C.

Note: if the equipment is stopped with the key before the end of the cycle, the words "CYCLE END" are replaced by "MANUAL STOP".

PERIODIC PRINTING AT END OF CYCLE

Note: by default, periodic printing is not enabled.

PRINT EXAMPLE IN CHILLING CYCLE WITH P02 OF PRINTER = 15 MINUTES

FRIGIPROBE MODE

FOOD:
UNIT 1:
OPERATOR:

CYCLE MODE:
FRIGIPROBE
CHILLING

CYCLE START
04/01/2006 17:30
AIR TEMPERATURE: 15 °C
PROBE TEMPERATURE: 63 °C

CYCLE END
04/01/2006 19:04
AIR TEMPERATURE: -15 °C
PROBE TEMPERATURE: 10 °C

DURATION OF CYCLE 01:34

HOUR	AIR	PROBE
19 : 19	-10 °C	8 °C
19 : 34	-5 °C	6 °C
19 : 49	0 °C	5 °C
20 : 04	3 °C	4 °C

TIMER MODE

FOOD:
UNIT 1:
OPERATOR:

CYCLE MODE:
TIMER
CHILLING

CYCLE START
04/01/2006 15:45
AIR TEMPERATURE: 27 °C

CYCLE END
04/01/2006 17:03
AIR TEMPERATURE: -16 °C

DURATION OF CYCLE 01:18

HOUR	AIR
17 : 18	-13 °C
17 : 33	-9 °C
17 : 48	-5 °C
18 : 03	-2 °C

Description

1 - ON / OFF button
Turning power on to the printer.

2 - PAPER FEED button
Feeds the paper. This feeds continuously when the button is held down.

3 - Paper support
Place the paper roll in this support.

4 - Loading lever
Used to load the paper.

5 - Feed roller
Feeds the paper.

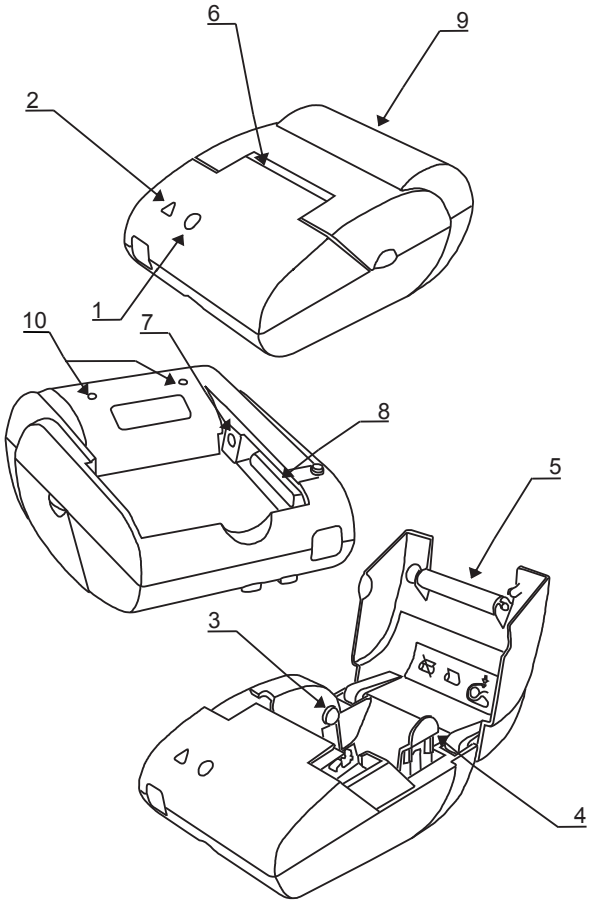
6 - Tear bar
Used to cut the paper.

7 - Power connection
Used for connecting an AC adapter (SA25-0925U).

8 - Interface connector
Used to connect to the blast chiller / freezer's DataTransfer board.

9 - Printer cover
Open this cover to replace the paper.

10 - Mounting holes
Used to attach the printer on the equipment.



Operation

When the printer is powered off, no button are lighted.

When the printer is set on, the ON / OFF button is flashing (colour red) for few seconds, then turned off.

The PAPER FEED button is lighted (colour green); the printer can receive data and print.

Print anomalies

PROBLEMS	SOLUTIONS
Lights are off when powered	• Check the powered supply and cables connections.
Lights are continuously on but printer does not operate	• Check to see if the interface cable is well connected.
The red light flashing slowly	• The printer is in boot mode, meaning that the main firmware could be corrupted. Contact your distributor.
The red light flashing quickly	• Check the cover is well closed. • Open the cover and make sure there is paper left in the printer. If not: remove the paper roll core, place a new paper roll. • Open the cover and check there is no paper jam , if there is some: - unwind the paper until no wrinkle appears, - close the cover with wrinkled part out, - and cut it with the tear bar.
Printing quality is deteriorating	• The printhead may be getting dirty, refer to the "Maintenance" section, " A630 printer" paragraph, "Printer maintenance" subparagraph.

Note: when resetting the printer, every running operation is stopped and all information sent before resetting is lost.

USB RECORDER OPTION

Never clean the equipment when the cover of the USB port is not screwed on correctly as this could damage the USB connection.

Important ! USB recorder memory of approximately 2 weeks. You are advised to retrieve data every week.

ONLY USE A USB KEY TO RETRIEVE DATA. NEVER USE HARD DISKS OR CONNECT DIRECTLY TO A COMPUTER.

Specifications

The USB temperature recorder ensures traceability of blast chilling and freezing cycles in Timer and Frigiprobe mode.

It creates a ".CSV" type file for every operation of the equipment. Recording takes place automatically every minute during operation of the equipment.

No specially dedicated software is required to read the files generated by the USB temperature recorder. The files retrieved have a format that can be read from a Microsoft Excel® type spreadsheet (version 2003 or greater).

Data stays stored on the recorder even when copied onto USB key.

When the memory is full, the oldest recordings are deleted.

Retrieval of recordings on the equipment

DO NOT RETRIEVE DATA WHEN THE EQUIPMENT IS IN OPERATION (RECORDING WILL BE INCOMPLETE).

Switch the equipment on. Only one of the cycle lamps (chilling/freezing) and one mode lamp (Frigiprobe/Timer) should be on.

Remove the USB cover on the front and insert the USB key. The red LED close to the USB port goes on. Copying of data in progress.

DO NOT REMOVE THE USB KEY WHEN THE RED LED IS ON.

Maximum transfer time approximately 7 minutes.

The red LED goes off.

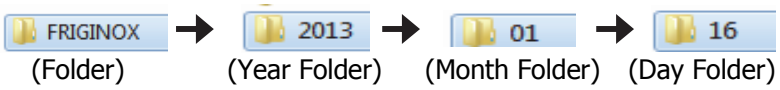
Remove the USB key and put back the cover of the USB port.

If the cover is not correctly screwed on, there is a risk of damaging the USB connection by water spray or an aggressive environment (high humidity level, etc).

Storage structure of data saved on USB key

Recordings saved on the USB key should be copied onto a computer.

Tree structure automatically created on USB key.



(Folder) (Year Folder) (Month Folder) (Day Folder) → Different files of operation

If the USB key is removed during data transfer, an ALARM file is present in the year folder.

Example 01_17H04.CSV
" 01 ": Equipment No.
" 17H04 ": Starting time of operation

Description of recordings

The 1st and 2nd lines are the titles in French and English of the columns.

Then there is one information line per minute, during operation of the equipment.

EXAMPLE OF A ".CSV" TYPE RESULT FILE TO BE OPENED WITH AN "EXCEL®" TYPE SPREADSHEET

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	APPAREIL	DATE	HEURE	AIR		SONDE		TYPE CYCLE	MODE	DEGIVRAGE	FIN CYCLE	UNIT T	ALARME	BESOIN DEGRIVRAGE	PORTE
2	EQUIPEMENT	DATE	TIME	AIR		PROBE		CYCLE TYPE	MODE	DEFROST	CYCLE END	T UNIT	ALARM	DEFORST NEEDED	DOOR
3	1	16/01/2013	17:04	24	C	24	C	1	1	0	0	0	0	0	0
4	1	16/01/2013	17:05	24	C	24	C	1	1	0	0	0	0	0	0
5	1	16/01/2013	17:06	24	C	24	C	1	1	0	0	0	0	0	0
6	1	16/01/2013	17:07	24	C	24	C	1	1	0	0	0	0	0	0
7	1	16/01/2013	17:08	24	C	24	C	1	1	0	0	0	0	0	0

Column A - EQUIPMENT
Number of equipment (parameter "P01" of the DataTransfer board).

Column B - DATE
Day/month/year.

Column C - TIME
HH:MM.

Column D - AIR
Air temperature.

Column E - C
Air temperature unit °C or °F, according to the setting of the board (parameter "P30").

Column F - PROBE
Temperature of food probe (Frigiprobe).

Column G - C
Temperature unit of food probe (Frigiprobe), same as column E.

Column H - CYCLE TIME
0 = blast chilling cycle; 1 = blast freezing cycle.

Column I - MODE
0 = Frigiprobe mode; 1 = Timer mode.

Column J - DE-ICING
0 = no de-icing; 1 = de-icing in progress.

Column K - END OF CYCLE
0 = cycle in progress; 1 = temperature holding phase in progress (end of cycle).

Column L - UNIT T°
0 = °C ; 1 = °F.

Column M - ALARM
0 = no alarm; 1 = alarm(s) activated.

Column N - DE-ICING REQUIRED
0 = NO ; 1 = YES.

Column O - DOOR
0 = door closed; 1 = door open.

Settings

Refer to the "Electronic control" section, "Option DataTransfer board" chapter for settings of:

- the equipment number ("UNIT 1", "UNIT 2", etc.),
- date and time.

OPTION DOUBLE CONTROL

This option provides the means for having a second control of the equipment identical to the main control. It has the same functions as the main control (switching the equipment on, display of the temperature and change in the parameters of the various boards).

OPTION REMOTE INFORMATION DISPLAY

Secondary display identical to the control panel, same layout and same graphics, for which the control keys are disabled. This option provides the means for consulting, in a place other than on the equipment front panel, the air temperature and remaining time data for cycles in Timer mode, the Frigiprobe temperature and time run data for cycles in Frigiprobe mode.

ALARMS

In the event of a fault on the equipment and where appropriate on the remote condensing unit, an alarm condition appears.

An alarm condition is indicated by:

- the display of the alarm code "AL1", "AL2", etc.
- the "alarm" red lamp ,
- an intermittent audible signal. To stop the audible alarm, press the key. An audible signal may occur twice for the same alarm on starting the auto-backup 2,
- activation of the alarm 12 Vdc output.

Alarm identification

ALARM CODE	TYPE OF ALARM	DISPLAY & CONTROLS	ACTIONS
AL0	Cut in the electric power supply of more than 20 seconds	No change	After restoration of the electric power supply, the equipment restarts a new cycle.
AL1	Air probe fault	Frigiprobe mode: no change in the standard display	**Auto-backup 1** The operation continues normally.
		Timer mode: display "-40"	Deactivation of the self-adapting intelligent chilling and the de-icing required signal.
		Frigiprobe mode: no change in the standard display	**Auto-backup 2** 1. During the cycle, the compressor operates continuously. 2. In conservation phase, (end of cycle) the compressor operates cyclically. No air temperature limitation.
		Timer mode: display "-40"	In blast chilling mode, do not leave the products in the blast chiller / freezer in conservation phase. Risk of freezing.
AL2	Evaporator probe fault	No change in the standard display	During the de-icing, the electrical resistances are not used. The doors therefore have to be left open during de-icing.
AL3	A Frigiprobe sensor is out of order	No change in the standard display	**Auto-backup 1** The operation continues normally.
	Frigiprobe fault	Impossible to select the Frigiprobe mode	**Auto-backup 2** In the event of auto-backup 2 during a cycle with the Frigiprobe, immediate switch to end of cycle and Timer mode.
AL4	Door open more than 10 minutes	No change in the standard display	Deactivation of the ventilation stop on opening the door. Deactivation of the self-adapting intelligent chilling.
AL5	Air temperature too low	No change in the standard display	Only in conservation phase (end of cycle). The operation continues normally. The alarm displays with a delay. If there are frequent temperature alarms, change the parameters "P09" or "P10". Refer to procedure in "Electronic board settings" chapter.

ALARM CODE	TYPE OF ALARM	DISPLAY & CONTROLS	ACTIONS
AL6	Air temperature too high	No change in the standard display	Only in conservation phase (end of cycle). The operation continues normally. The alarm displays with a delay. If there are frequent temperature alarms, change the parameters "P08" or "P10". Refer to procedure in "Electronic board settings" chapter.
AL8	Remote condensing unit fault (if connected)	Flashing of the alarm code and alarm lamp	The equipment goes into pause mode (compressor, fan, etc. stoppage) pending the remote condensing unit coming back into operation. *Stop the equipment and unload the products as chilling is not assured.* The "AL8" alarm can only be eliminated for a period of 30 seconds.
AL9	Condenser cleaning	No change in the standard display	The operation continues normally. On the appearance of this alarm, the condenser will need to be cleaned. Once cleaned, reset the counter to zero. Refer to procedure in "Electronic board settings" chapter, parameter "P00".

After eliminating the cause of the alarm, the alarm lamp must be cancelled manually by pressing the key once or more times.

Note: if the fault corrects itself (e.g. cut and restart of the compressor) the display of the fault will be maintained during your absence so that you are informed of it.

Call your installer. The auto-backup is only designed for while waiting for the engineer. Never leave the blast chiller / freezer operating during a long period in auto-backup.

INCORRECT OPERATION

Check the condition of the lamps on the control panel and compare them with the normal display for the operation in progress.

Check to see if there are any alarms.

Check the fuse located on (or in) the electrical box of the equipment.

Check the electrical power supply.

Call your maintenance service describing the situation and stating the following information which is located on the identification plate:

- equipment model and type,
- serial number,
- manufacturing date.

MAINTENANCE

CLEANING

SAFETY

- Before cleaning, stop the equipment putting the On / Off switch to the "0" position. There is no need to disconnect the power supply cable or operate the circuit breaker (on the distribution board), unless there is no On/Off switch.
- You should never open the evaporator block, remove the unit cover or clean the condenser while the equipment is on; disconnect the power supply cable or operate the circuit breaker (on the distribution board). If not, you run the risk of severe injury.
- The evaporator and condenser fins are sharp-edged; wear gloves to clean them.
- Never remove the protections or safety devices to carry out maintenance.
- Make sure that the element to be cleaned is not too cold; use protective gloves.
- The Frigiprobe food probe has a pointed end. Handle it with care.

Never wash the equipment with a pressurized spray.

Use only neutral cleaning and disinfecting products, approved for cleaning surfaces in contact with foodstuffs.

Do not use chlorinated products for cleaning.

Frequency of cleaning

FREQUENCY	OPERATION
Each time used	Frigiprobe. Before and after use
Every day, after use	Interior and exterior surfaces of the equipment Door seals
Every week	Interior of the evaporator block
Every month	Air-cooled condenser

Frigiprobe

Use throw away cleaning and disinfecting pads. Pads to be used once only.

Blast chiller / freezer external finishes

Use only special non-abrasive products intended for cleaning stainless steel.

Clean the external surfaces with a soft cloth or a sponge soaked in liquid detergent.

Rinse with a damp cloth.

Wipe carefully to dry the surfaces.

Interior surfaces

Remove the products, trays, plates or baskets.

Remove the removable internal accessories such as:
- trolley guide (weight 3 kg),
- air deflectors (weight 5 kg),
- front and rear trolley stop (weight 1.5 kg each),
- rack uprights (weight 0.5 kg each),
- runners (weight 0.5 kg each).

Use a soft cloth or a sponge soaked in liquid detergent, as above. A bicarbonate of soda solution of one teaspoon per litre of water can also be used.

Rinse and wipe in the same way as for the external finishes.

Clean the fans using a manual spray, without liberal spraying of cleaning products.

In the event of lingering smells inside the equipment, remove any product residues which may be the cause, then where appropriate wipe with a damp sponge soaked in a deodorising solution.

Do not use a pressurised water jet to avoid causing damage not covered by the warranty.

In the event of lingering smells inside the equipment, remove any product residues which may be the cause, then where appropriate wipe with a damp sponge soaked in a deodorising solution.

Interior of the evaporator block

Remove the accessories such as the trolley guide and deflectors which could hamper opening of the fan support stainless steel panel. Remove the panel holding screws and open the panel by pivoting on its hinges.

Do not use a water pressure spray, there is a risk of damaging the evaporator fins.

Do not use pointed objects, there is a risk of piercing the evaporator.

Use a soft cloth or a sponge soaked in liquid detergent, as above. A bicarbonate of soda solution of one teaspoon per litre of water can also be used.

Rinse and wipe in the same way as for the interior surfaces.

Seals

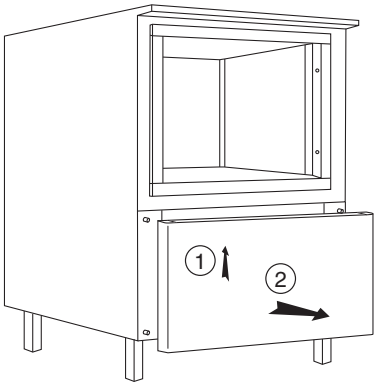
Clean the seals with a damp cloth soaked in soapy water (household soap).

Then wipe to dry them.

Air-cooled condenser

Placed near the compressor, it is essential for the air to be able to flow freely around the compressor and across the condenser. Therefore it is IMPORTANT to examine it at least once a month.

The condenser should be kept clean at all times so as to provide optimal performance of the condensing unit, with no excessive energy consumption.



Remove the front unit cover to gain access to the air-cooled condenser, this is removed without tools.

Remove from the condenser dust or any other obstacle which could hamper or even prevent free air circulation, using a vacuum cleaner, brush or soft-bristle paint brush.

Complete cleaning where appropriate by using a compressed air gun; never use a metal brush.

Water-cooled condenser

The correct operation of the double non-return valve (depending on model) located in the water circuit should be checked every year.

Refrigeration circuit

Operations on the equipment should be carried out by refrigeration engineer only.

The correct operation of the refrigeration circuit should be checked every year:

- check the evaporation and condensation pressures,
- check for leaks.

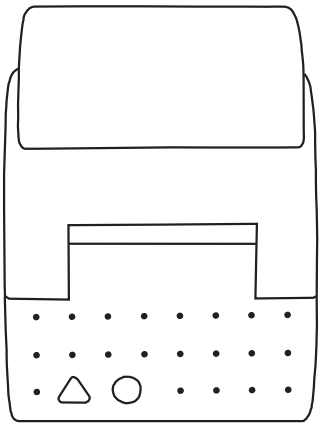
The refrigeration circuits and operations on the refrigeration circuits are subject to specific regulations depending on the country. Contact your installer for full information.

Option USB recorder

Never clean the equipment when the cover of the USB port is not screwed on correctly as this could damage the USB connection.

When cleaning has been completed, switch the equipment on.

OPTION PRINTER



A630

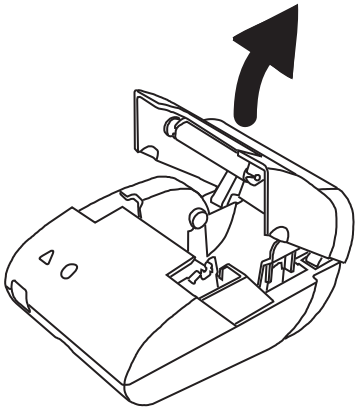
Cleaning

SAFETY

- Do not allow water to splash on the printer.

Clean the printer with a dry cloth only.

Maintenance operations



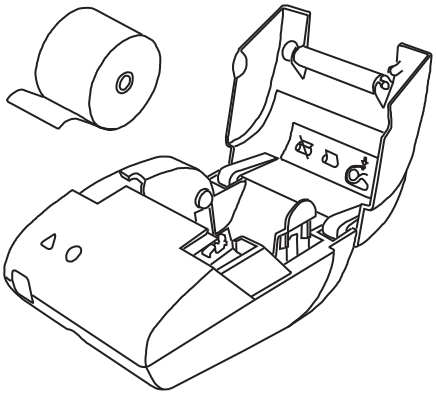
Paper roll specifications

Pack of 5 paper rolls for the A630 printer: code FX39270063

Paper width: 58 +0/-1 mm
Roll diameter: max. 50 mm

Changing the paper roll

Open the cover using finger recesses.



RECOMMENDATIONS

- Make sure you use a specified paper roll.
- Do not insert a torn or crumpled paper roll as this could cause the paper to jam.

Cut the end of the paper roll at right angles.

Place the roll properly on its support, pushing the loading lever to the right.

Close the cover by pushing both sides at the same time, leaving a small length of paper out.

Cut the small length with the tear bar.

The printer is now ready for use.

Note: it is possible to load the paper when the printer is powered. In this case, check if it is still powered after closing the cover; if not, press the ON / OFF button.

YES

NO

Printer cleaning

The printhead may accumulate duct. Therefore it is necessary to clean it at least once a year in order to maintain a good print quality.

CARE

- Never clean the printer immediately after printing, the head may be hot.

Unplug the printer.

Open the cover, clean the heating dots line of the head with a cotton stick containing a solvent alcohol (ethanol, methanol or isopropyl alcohol).

Do not touch the printhead with your fingers.

Allow the solvent to dry and close the cover.

PRECAUTIONS FOR USE

Prolonged stoppage

If the equipment is not to be used for a fairly long period, switch off the power supply putting the On / Off switch in the "0" position.

When de-icing has been carried out before stopping the equipment, allow the interior of the blast chiller / freezer to warm up to ambient temperature, then clean the interior as shown above, not forgetting to wipe and dry it.

Leave the equipment door ajar so as to prevent any smells developing.

Evaporator

Every morning check by visual inspection that the evaporator is indeed de-iced. If not, carry out a de-icing cycle.

Water evacuation

Every month, check the water flows out properly by the runoff plug and drain conduit.

Electric reevaporation tank

Where there is a reevaporation tank, make sure that no cable is resting on it when refitting the electrical box.

INSTALLATION

FRIGINOX EQUIPMENT INSTALLATION, CONNECTION AND ADJUSTMENT MUST BE CARRIED OUT BY A COMPETENT INSTALLER WHO IS QUALIFIED FOR THIS TYPE OF EQUIPMENT.

SAFETY

- This equipment is designed to operate in a dry and temperate room, you should only install it in a place which meets these criteria.
- The internal accessories, changing the opening of the doors and their adjustment, together with all installation operations must be carried out with the power to the equipment turned off, taking all necessary precautions to protect yourself from the risk of injury.
- May we however draw your attention to the fact that we can in no way be held responsible if modifications are made to the electrical connection and wiring of our blast chiller / freezers without our written authorisation.

UNPACKING

This equipment should be tied down during transport.

RECOMMENDATIONS

- If you want responsibility for any damage to be borne by the carrier's insurance and not BY YOU, you must unpack the equipment (even if the packaging is in good condition) in front of the carrier who may not object to it. Check the exterior and INTERIOR condition.

In the event of a problem, you should:

- note down SPECIFIC RESERVES on the transport document,
- confirm these reserves to the carrier IMMEDIATELY (within a maximum of 3 days) by recorded delivery letter.

IF AN EQUIPMENT WITH HOUSED UNIT HAS BEEN TILTED ONTO THE SIDE TO GET THROUGH AN OPENING, WAIT A MINIMUM OF 2 HOURS AFTER STANDING THE EQUIPMENT UPRIGHT BEFORE STARTING IT UP. CHECK THERE IS NO DAMAGE TO THE COMPONENTS AND THAT THE REFRIGERATION CIRCUIT HAS NO LEAKS.

Non-observance of these recommendations may cause damage to the different components and also to the compressor.

RECOMMENDATIONS

- Do not throw the packaging out with household waste. You must observe local regulations in force as regards the elimination of recyclable waste and the protection of the environment.

INSTALLING

Do not install this equipment near a source of heat (oven, etc.) or in the sun.

The place where the equipment is installed should be correctly lighted and sufficiently ventilated. The ambient temperature should be between +15 °C and +32 °C taking into account the heat given off by the equipment. Ventilate the premises if the temperature is greater than +32 °C.

The floor should be flat, horizontal and smooth where the equipment is to be installed. For models with feet, certain irregularities in flatness and horizontality of the floor can be compensated for. Put the equipment level by using the adjustable feet. Make sure the equipment is stable.

Daily operating duration for roll-in blast chiller / freezers according to the equipment's floor type

	Blast chilling	Blast freezing
With 20 mm insulated floor	12 h	8 h
Without insulated floor	6 h	Unauthorized

Like all floor-standing refrigerating equipment, if these maximum durations are exceeded or for over five working days per week, additional thermal insulation under the equipment will be required to prevent freezing on the floor. This must be done according to best working practices applied to negative temperature cold room floors.

Roll-in blast chiller / freezers with no floor: take floor cooling into account.

Minimum distances around the equipment. Built-in and reach-in blast Chiller / Freezers

	Left side (mm)	Right side (mm)	Rear (mm)	Top (mm)
MX 20-10 A ENC iC	0	0	0	0
MX 20-10 A iC / SXP 7 A iC MX 30-15 A iC / SXP 19 A iC MX 45-20 A iC / SXP 19 A iC Plus MX 60-30 A iC / SXP 30 A iC MX 75-35 A iC MX 0.5 X A iC	70	70	70	400
TMX 30-15 A iC / TSXP 15 A iC SBFMX 30-15 A iC	70	70	70	/
MX 85-40 A iC / SXP 43 A iC MX 65c A Plus iC DUO MX 45-300 iC	70	200	70	400
Reach-in blast chiller / freezers without condensing unit	70	70	70	200

Minimum distances around the equipment. Roll-in Blast Chiller / Freezers

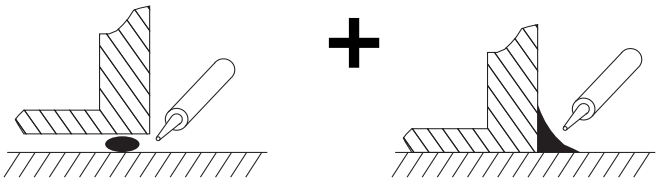
	Left side (mm)	Right side (mm)	Rear (mm)	Height below ceiling (mm)
MX 1A iC / SXP 1cA iC MX 1LA iC / SXP 1LcA iC	70	70	70	2900
UMX A GLS iC / USXP 1cA GLS iC	70	70	70	3000
Roll-in blast chiller / freezers without condensing unit	70	70	70	2400

Allow sufficient space for the door on the front and rear for the pass through version (roll-in blast chiller / freezers) to be opened properly.

If pass through version is used with a cold room, the equipment should slope towards the kitchen and there must be a floor siphon or a duct near the door, from the kitchen side.

Check that the door closes properly on the front so that the gasket provides a full seal.

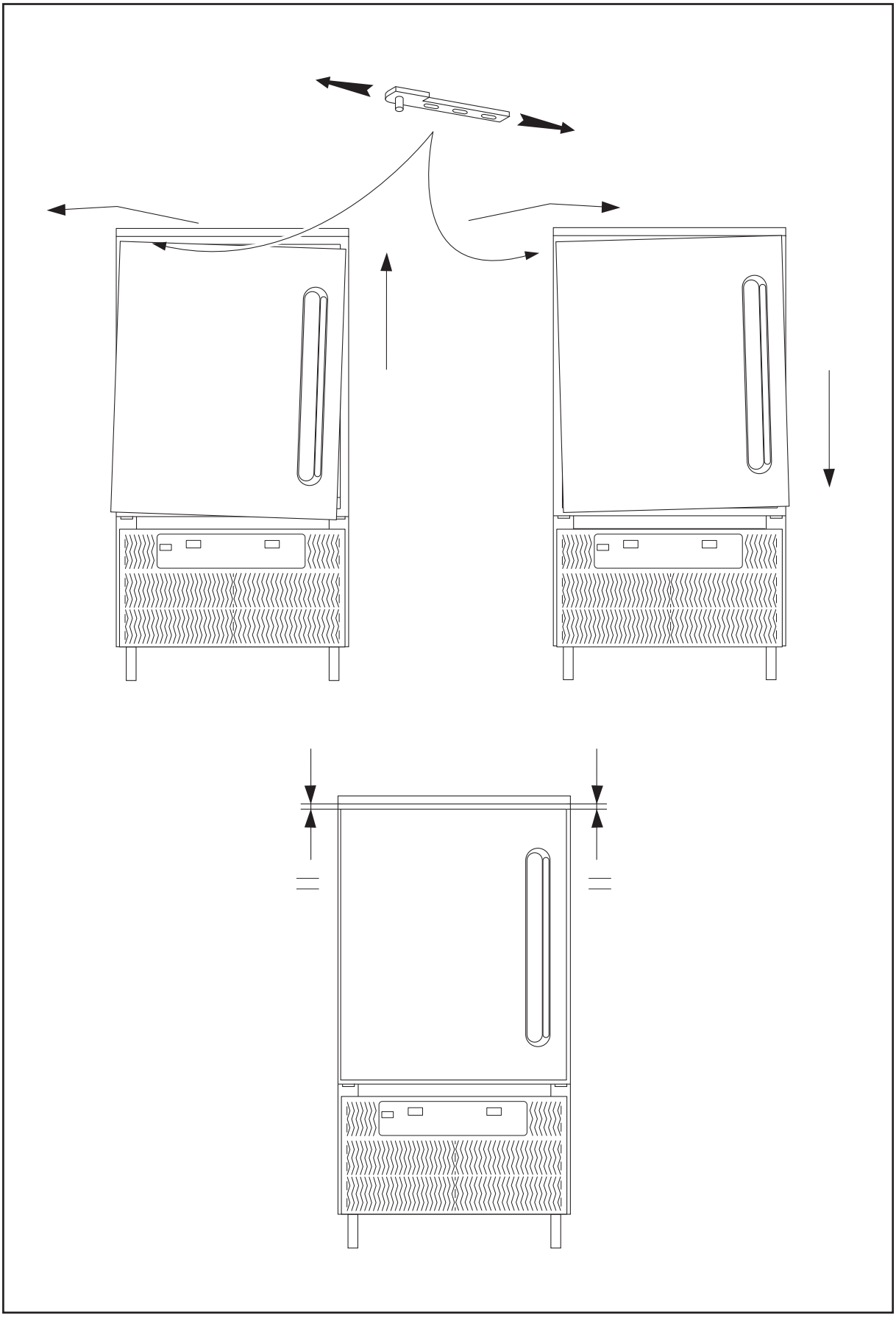
Note: on roll-in blast chiller / freezers, make a full seal between the floor and the ground to prevent any water seeping under the equipment.



Roll-in blast chiller / freezers delivered un-assembled: see specific assembly / dismantling instructions.

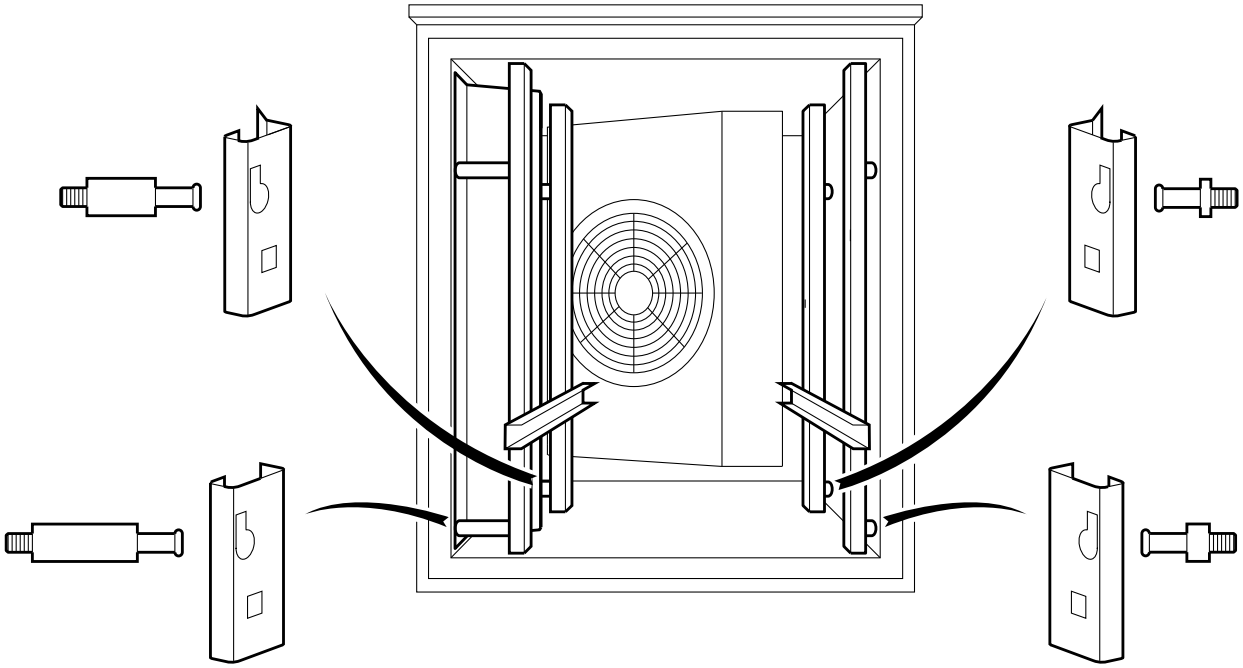
Refrigeration systems: follow the assembly instructions supplied with each refrigeration system.

ADJUSTMENT OF THE BUILT-IN AND REACH-IN BLAST CHILLER / FREEZERS

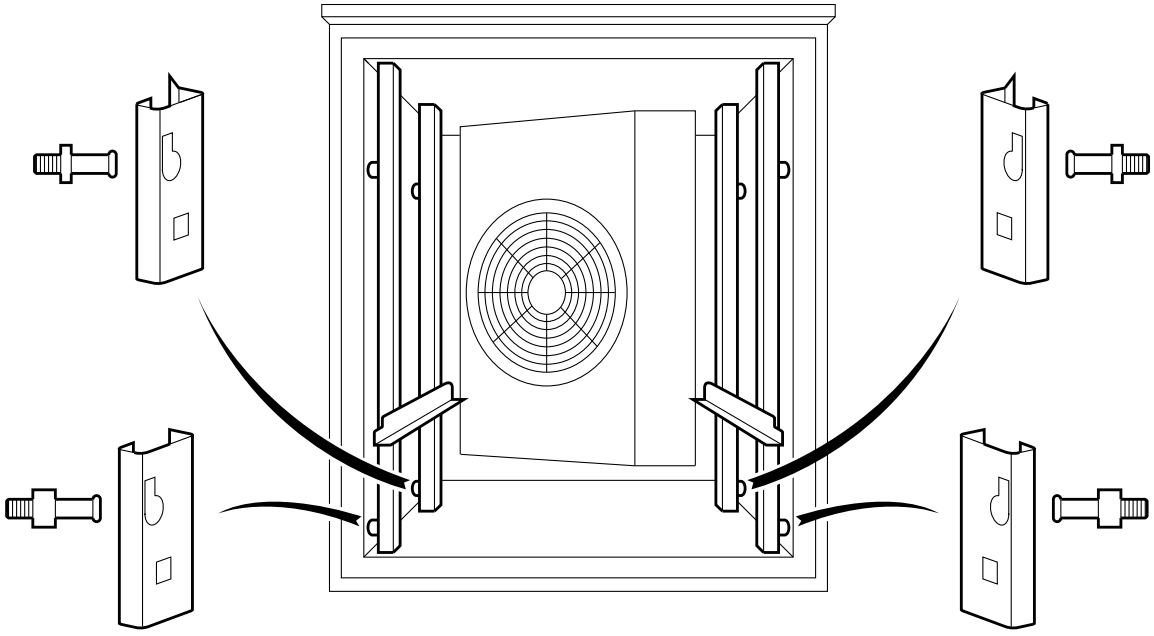


INTERNAL ACCESSORIES OF THE BUILT-IN AND REACH-IN BLAST CHILLER / FREEZERS

Gastrostandard internal accessories

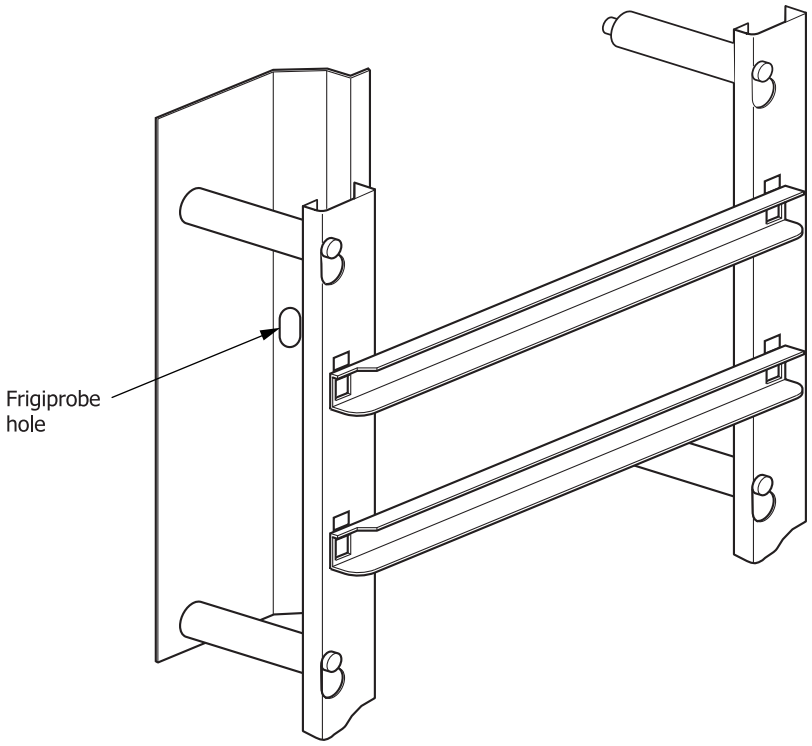


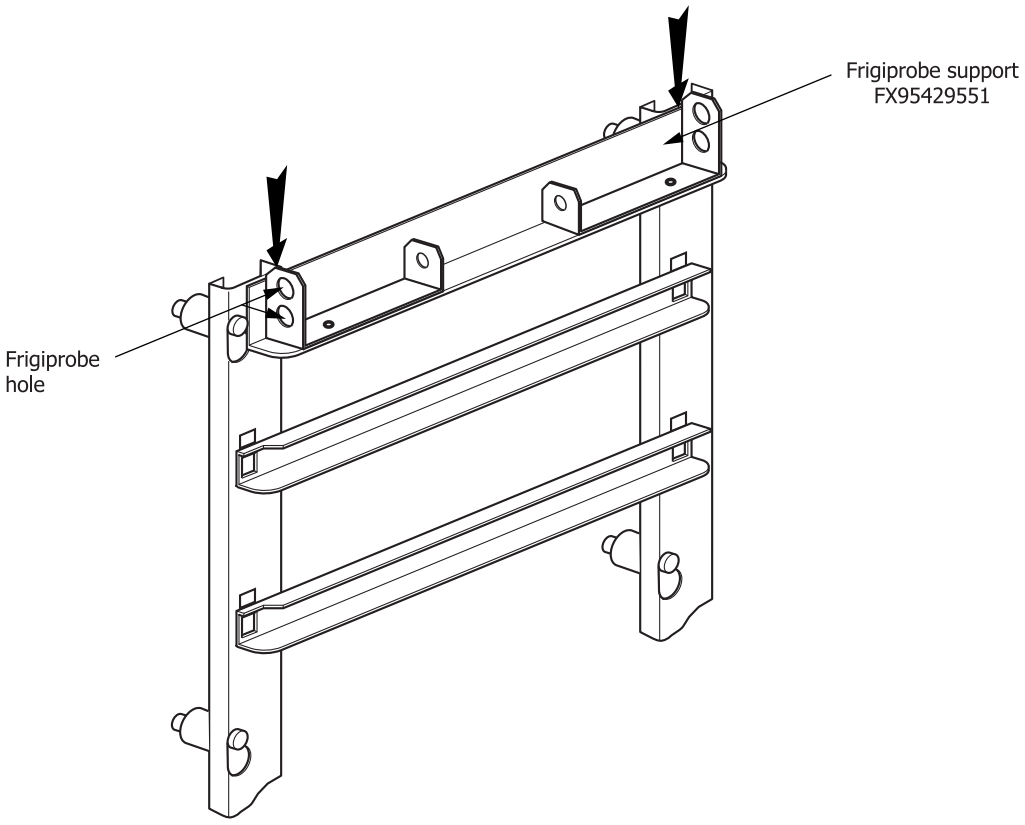
Pastry internal accessories



LOCATION OF THE FRIGIPROBE SUPPORT

Frigiprobe support depending on model.





CONNECTIONS

Electrical connection

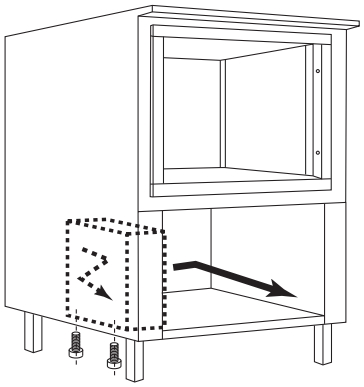
SAFETY

- The equipment should only be wired up by a qualified electrician. The mains connection, earthing and protection must conform with the standards and regulations in force.
- The power supply cable with the male plug is a part which is specific to your equipment. It should only be replaced with a **FRIGINOX** original part.

The equipment is supplied from the factory fully wired (X-type fixing).

Check that the voltage and the main power supplied indeed correspond to the equipment specifications. Refer to the identification plate of the equipment.

Access to the electrical box of the equipment with unit housing in the lower section:



Access to the electrical box of the equipment with unit housing in the upper section: directly from the top of the equipment.

The earth connection should be made and should comply with regulations in force in the destination country (NF C-15 100 for France).

Thermal or magneto-thermal protection appropriate to the rating of your equipment will be required on the power supply line for motor accompaniment. This protection should provide all-pole separation of the equipment and the mains. Wherever possible, the equipment should have its own power supply so as to prevent voltage overload or drops. For satisfactory operation, your mains supply should not suffer from any voltage variation.

SAFETY

- Where the electrical connection is made permanently on a junction box, an ALL-POLE cut-out device should be provided on the line, close to the equipment, having a contact opening distance of less than 3 mm. For connection with an electrical power socket, use 16 A or 32 A plugs, depending on the requirements of the equipment.
- Fixed station equipment: connect the equipotential terminal located in the condensing unit compartment (bottom or top of the equipment). This terminal is identified by a label.

A quick-trip circuit-breaker appropriate to the national regulations of the installer country will be required. 30 mA recommended.

Water supply

Except where otherwise specified, the water-cooled condenser is intended for connection to a clean, non polluted, non corrosive, pressurized water circuit.

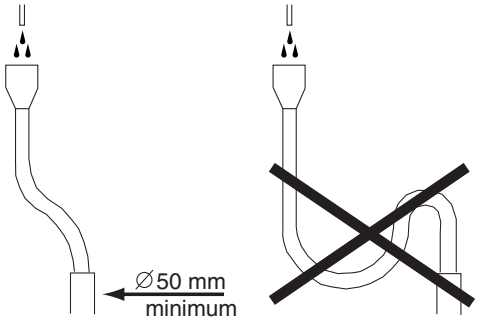
For the water-cooled condenser to operate correctly, the supply water should be at a temperature of 10 °C ± 5 °C.

A 15/21 diameter water supply, min. pressure 2 bar, max. pressure 5 bar, with stop valve will be required. Minimum water supply rate required: 0.7 m^3/h. Equipment supply inlet by 12/17 connector.

Under no circumstances should the supply carried out by the manufacturer be altered.

Check the correct operation of the water pressure valve. The water should not flow after the compressor stops. Adjust the valve where necessary, checking the condensation pressure.

Water-cooled condenser water evacuation

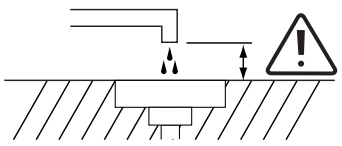


The pressure break system installed by the manufacturer should never be altered or removed.

NEVER USE THE FLEXIBLE CONNECTION TUBE TO MAKE THE INSTALLATION TRAP AS THERE IS A RISK OF OVERFLOW.

De-icing and cleaning water evacuation

Certain equipment are fitted with an automatic de-icing water evaporation system. This system cannot evaporate water from cleaning with the liberal use of water.



For the other equipment, an evacuation of a minimum diameter of 50 mm must be provided, with a floor trap nearby.

For roll-in blast chiller / freezers, a floor duct located in front of the door is preferable because of the quantity of water used for cleaning.

Important! Never install the trap in the floor of roll-in blast chiller / freezer as there is a sanitation risk.

Remote condensing units

The refrigeration capacity requirements for equipment specified in the technical data sheets are defined for the installation of an independent condensing unit for each equipment.

Where more than one equipment are connected to a single condensing unit, the simultaneous operation of the blast chiller should be determined to choose the refrigerating capacity for the unit. Make sure that the lowest evaporation temperature (-30 °C) is maintained for equipment coming to the end of the cycle when an equipment (or more than one) starts with warm products. An increase in the evaporation temperature during the cycle increases the chilling time.

Never install a single condensing unit for more than one equipment if they are to operate simultaneously. In such circumstances, always install a separate condensing unit for each equipment.

In addition to the compressor, condenser and receiver, the unit should be fitted with: low ambiant control, high pressure controller, automatic pump down controller, drier, sight glass, line, insulation and refrigerant load. Depending on the ratings, the installation of a separate oil separator, liquid valve, suction trap, etc. is recommended.

An electric power source and protection for the condensing unit which is independent from the equipment will be required.

Note

- Take into account the pressure drops on the refrigeration lines when dimensioning the unit. The refrigeration requirements for the equipment are expressed for delivered power at the location of the equipment, with a maximum line length of 15 m between the condensing unit and the equipment (observing working practices on the dimensioning of the refrigeration line). Beyond this distance, the unit should be more powerful to compensate pressure drops.
- Install "traps" on the rising aspiration lines and provide slopes in the line so that the oil is returned to the compressor.

CARRY OUT A CHECK FOR LEAKS ON THE REFRIGERATION CIRCUIT BEFORE LEAVING THE INSTALLATION.

CHECK THE SETTINGS AND CHECK THE CORRECT OPERATION OF THE SAFETY DEVICES ON THE CONDENSING UNIT.

Recommended connections between the remote condensing unit and the equipment

As a general rule, no electrical connection is required between the condensing unit and the equipment. The condensing unit should operate in "pump down" control, cut-out and start by the low pressure pressure switch.

Single pump down operation can be performed (refer to the technical manual for i-chilling blast chiller / freezers). In this case, a 3 x 1.5 mm^2 cable should be used to connect the condensing unit to the equipment.

- Connection of the condensing unit safety line (thermal relay, pressure safety switches, etc.) on the electronic control alarm input "Condensing unit stop". 2-wires cable (1.5 mm^2 - 230 V).
- For condensing unit fitted with an anti-short cycle delay on the compressor, connection of the liquid solenoid valve cut-in electric power supply during the anti-short cycle delay of the compressor. 2-wires cable (1.5 mm^2 - 230 V).

- For condensing unit fitted with a power reduction device or with several compressors, connection of the power reduction control on the electronic control "End of cycle" signal and/or "Cycle type" signal. 2-wires cable (1.5 mm² - 230 V).

Provide for additional relays for these connections (refer to the "External connections for the electronic control" paragraph and to the "Standard electrical and refrigeration connection diagrams" section).

Installation of the condensing unit on the outside

Use a unit with bodywork designed for exterior installation or place the unit where it is protected from the elements (rain, sun, etc.).

Place the unit in such a way that condenser air flow does not go against the prevailing wind.

Observe the minimum distances between the unit and the walls nearby, especially where the condenser is located and for technical access.

Installation of the condensing unit in the machine room

Install preferably a unit with remote condenser (outside) or water-cooled condenser connected to a cooling tower.

For air-cooled condensing units, make sure the heat given off by the unit is released. It should operate within the range of temperatures laid down by the manufacturer.

External connections for the electronic control

To have the benefit of certain functions, connect the electronic control to elements outside the blast chiller / freezer, refer to the "Standard electrical and refrigeration connection diagrams" section.

Remote condensing unit default, contact input - SIG 1

SAFETY

- If the equipment is designed for unsupervised, night-time operation, the SIG1 remote condensing unit fault input must be connected.
- If not connected, a stop of the remote condensing unit may lead to a significant rise in temperature in the equipment likely to damage it.

This input provides the means for the electronic control to see if the condensing unit is in fault mode. For the control to have the benefit of this signal, connect inputs 20 and 21 on board A0 to the fault remote report on the condensing unit, if there is one.

No condensing unit fault: contact input closed.
Condensing unit fault: contact input open.

Remote information report, contact output

- INF 1: this output is used to display remotely whether there are one or more alarms on the equipment. The voltage at the output of board A0, terminal 12 (- polarity) and 13 (+ polarity) is 12 Vdc. The outputs of these terminals must be connected to a relay with a max. 35 mA coil placed a maximum of 0.5 m from the board.

  One or more alarms present: output INF 1 live.
  No alarm detected: output INF 1 not live.

- INF 2: this output indicates the cycle type (blast chilling / blast freezing) in progress. Connect outputs 12 (- polarity) and 30 (+ polarity) on board A0 to a relay with a max. 35 mA coil placed a maximum of 0.5 m from the board. The output voltage is 12 Vdc.

  Blast chilling cycle: output INF 2 live.
  Blast freezing cycle: output INF 2 not live.

- INF 3: the end of cycle is displayed through this output. Terminals 6 and 7 on the board A0 must be connected to equipment of a max. of 5 A. The output voltage of the terminals is 230 Vac.

  During a cycle: output INF 3 not live.
  End of cycle: output INF 3 live.

- INF 4: this 4-20 mA output is used to read the Frigiprobe temperature on a temperature recorder. Connect outputs 1 and 2 on the DataTransfer board (A3) to the input terminal on your temperature recorder, via an external 10-30 Vdc power supply. 4 mA corresponds to a temperature of -40 °C (-40 °F) and 20 mA to +85 °C (+185 °F). The current / temperature progression between these two points is linear. 0 mA shows equipment at a stop.

Connection of the double control and remote information display options

These options may be located on the equipment but also on a console separate from the equipment. For the connection of these options to the control, use only link cables supplied by **FRIGINOX**. These cables must not pass close to 115 V, 230 V and 400 V electrical cables.

FINISHINGS

Internal accessories

Remove the adhesive used to hold the accessories during transport.

Remove the accessories and install them.

Plastic protection

As the equipment is ready for use, you can therefore remove the protective plastic film covering the external finish.

INITIAL SETTINGS TO BE MADE ON THE ELECTRONIC CONTROL

See the parameter modification procedure in the "Electronic control" section, "Electronic board settings" chapter.

Self-adapting intelligent chilling, in Frigiprobe mode

The maximum duration of cycle, between the start of cycle core temperature and the end of cycle core temperature, must be adjusted in accordance with regulations or in accordance with your work organisation.

Use parameter P40. Example of blast chilling cycle duration regulation for certain countries:
USA: 4 h 00 between +60 °C and +4 °C
France: 2 h 00 between +63 °C and +10 °C

Reference core temperatures

They are defined by the regulations or the HACCP procedure and also according to use:

- core temperature at start of cycle P23. If the mean product loading temperature in the appliance is always very different to the value defined in the regulations, parameter P23 must be adapted to the actual situation (reduction), and the value of parameter P40 reduced (above),
- core temperature at start of cycle P22.

THESE ADJUSTMENTS IMPACT THE EQUIPMENT'S PEFORMANCE. THEY MUST RELATE TO THE ACTUAL USE OF THE EQUIPMENT.

Intermediate print-out with printer option

The temperature information when the core temperature reaches the value of parameter P24 can be printed out. Function deactivated by default. Adjust parameter P24 if required.

Temperature unit

The control can operate with two different temperature units: degrees Celsius (°C) and degrees Fahrenheit (°F). Use parameter P30.

Equipment with water-cooled condenser

Deactivate alarm AL9, condenser cleaning. Adjust parameter P01 to 0.

Option printer

Refer to the "Electronic control" section, "Option DataTransfer board" chapter.

Adjust:
- date and time,
- equipment number,
- ticket printing language if required,
- periodical printing at the end of cycle if required.

Option ProgramCycle board

Refer to the "Operation" section, "Option ProgramCycle board" chapter.

Option USB temperature recorder

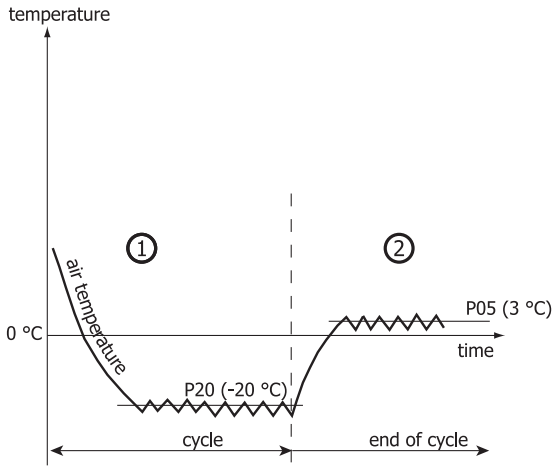
Refer to the "Electronic control" section, "Option DataTransfer board" chapter.

Adjust:

- date and time,
- equipment number.

CHECK OPERATIONS ON THE EQUIPMENT

Carry out a test in blast chilling cycle, Timer mode.



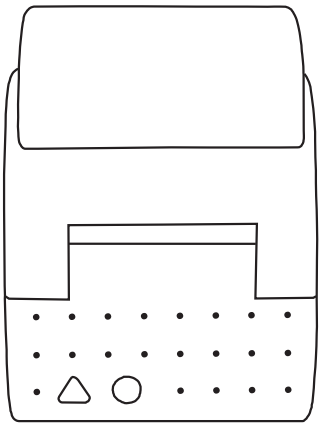
Use a container with a height of 100 mm filled with less than half of hot water. Start-up the equipment.

Phase 1 - The air temperature displayed on the blast chiller / freezer goes down to -20 °C (-4 °F) during the time of the cycle. On the control, the temperature varies by approximately 2 °C above and below that value.

Phase 2 - Once the time has run, the equipment switches to end of cycle and the air inside, which is still displayed on the control panel, rises to +3 °C (+37 °F). In the same way as during the cycle, the temperature varies by approximately 2 °C around that value.

The temperatures may be different because of the settings for the electronic control depending on the country of use.

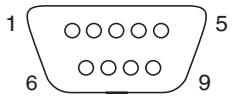
OPTION PRINTER



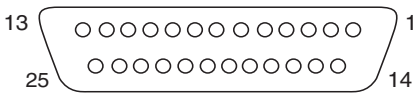
A630

Serial connection cable between the DataTransfer board and the printer

DataTransfer board
DB9
female type



Printer
DB25
male type



2 2
3 3
4 6
5 7
6 20

Set up

Paper feed button

Press the PAPER FEED button and the paper will advance by one line. Hold the button down and the paper will feed continuously.

Printer parameter

A built-in automatic test function can be used to check the printer setting parameters. With the printer halted, press the PAPER FEED button and ON / OFF button at the same time, then release the ON / OFF button. Then release the PAPER FEED button when the printer starts to print. The printer then prints the micro-controller version, the language used, etc. When this test has finished, the printer returns to normal operating condition.

Note

- Do not use this function when the paper roll is empty.
- No data can be transmitted during the printer test.

If the data on the ticket does not match that shown opposite, contact your distributor.

A630 Diagnostics

A6300000

```
S/N              0000000000

Boot Firmware
  Revision     : V3.02
  CRC          : D9C6
Flash Firmware
  Revision     : V3.05
  CRC          : 3B87

Hardware
  Flash Memory: 256 kb
  Logos/Fonts :  64 kb
  User Storage:   0 kb
  EasyFont    :   0 kb
  SRAM Size   : 128 kb
  CPU Freq.   : 40 MHz
  Brightness  : 100 %
  Max Power   : 55 W
  Power Mode  : OFF
  Max speed   : 55 mm/s
  Paper Out Th: 0x80

Comm. Interface
  RX Buffer   : 4096
  TX Buffer   : 256
  Interface   : RS232
  Baud Rate   : 9600
  Parity      : NONE
  Data Bits   : 8
  Stop Bit(s) : 1
  Flow Control: DTR/DSR
  Error Detect: Ignore

Print Options
  Diagnostics : OFF
  Emulation   : ESC_POS
  Graphics    : Standard
  Logos       : NO
  User Fonts  : NO
  Resid. Fonts: 16*24
              :  9*24
  Code Page   : CP437
  Country     : USA
  Default Font:  9*24

      0123456789ABCDEF
00
10
20     !"#$%&'()*+,-./
30    0123456789:;<=>?
40    @ABCDEFGHIJKLMNO
50    PQRSTUVWXYZ[\]^_
60    `abcdefghijklmno
70    pqrstuvwxyz{|}~
80    ÇüéâäàåçêëèïîìÄÅ
90    ÉæÆôöòûùÿÖÜ¢£¥₧ƒ
A0    áíóúñÑªº¿⌐¬½¼¡«»
B0    ▒▓│┤╡╢╖╕╣║╗╝┐
C0    └┴┬├─┼╞╟╚╔╩╦╠═
D0    ╬╧╨╤╥╙╘╒╓╫╪┘┌
E0    αßΓπΣσµτΦΘΩδ∞øε∩
F0    ≡±≥≤⌠⌡÷≈°∙·√ⁿ²■
```

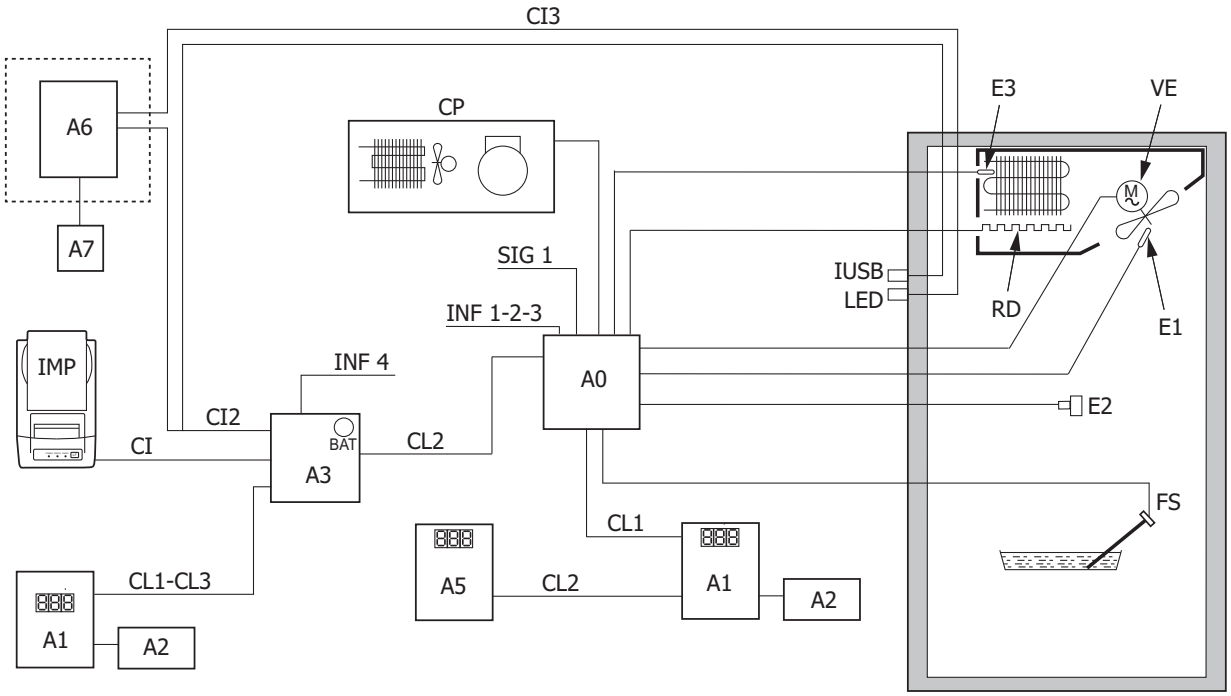
I-CHILLING
ELECTRONIC CONTROL

ANY WORK ON THE ELECTRONIC CONTROL MUST BE CARRIED OUT BY A COMPETENT ENGINEER WHO IS QUALIFIED FOR THIS TYPE OF EQUIPMENT.

SAFETY

- If electronic control parts are being replaced, use only **FRIGINOX** original parts.
- Do not connect any other equipment to the electronic control other than that described in this manual.
- Comply strictly with the fitting of each part on the electronic control and also their earthing.

PRESENTATION



A0 - BASE BOARD
This is the heart of the control. It is programmed to control the blast chilling or freezing cycle.

A1 - DISPLAY BOARD
Groups the digital display and the controls together.

A2 - AUXILIARY DISPLAY BOARD
Groups the controls together.

A3 - DATATRANSFER BOARD (optional)
It provides an output to a printer or to a PC. It also has a 4 - 20 mA output.

A5 - PROGRAMCYCLE BOARD (optional)
It provides the means for starting one cycle out of 25 with all the parameters specific to the cycle.

A6 - USB RECORDER (optional)
Not compatible with printer.

A7 - USB BOARD SUPPLY (optional)

CL…- LINK CABLES
Connect the various boards.

CI - PRINTER CABLE (optional)
Provides the link between the printer and the DataTransfer board.

CI2 - USB CABLE (optional)
Provides the connection from the USB recorder to the USB interface.

CI3 - USB CABLE (optional)
Provides the connection from the USB recorder to the DataTransfer board.

FS - MULTI-POINT FRIGIPROBE
This measures several temperatures simultaneously using 4 sensors.

E1 - AIR TEMPERATURE PROBE

E2 - LIGHT PROBE

E3 - EVAPORATOR TEMPERATURE PROBE

CP - REFRIGERATING COMPRESSOR

VE - EVAPORATOR FAN
Ensures the interior ventilation of the equipment.

IUSB - USB INTERFACE (optional)

LED - RED LED (optional)
Indicates download in progress towards the USB key.

RD - DE-ICING RESISTANCE
Standard or optional, depending on model.

INF…- INFORMATION OUTPUT

SIG 1 - COMPRESSOR FAULT

IMP - PRINTER (optional)
Prints the main cycle information (temperatures and duration).

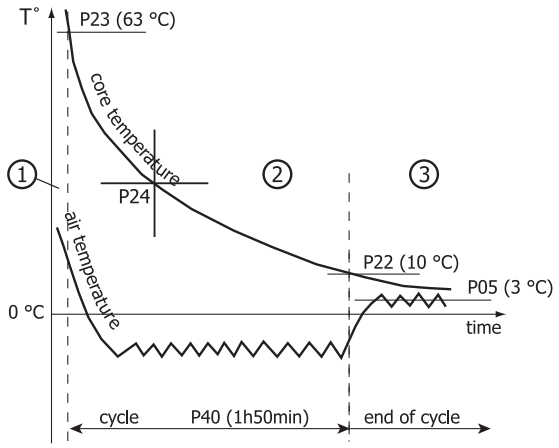
Control component codes

ITEM	DESCRIPTION	CODE
A0	Base board A0 V3 IC	FX95055514
A1	Display A1 V3 IC	FX95055515
A2	Auxiliary display A2 V3 IC	FX95055516
A3	DataTransfer board A3 V3 IC	FX95055513
A5	ProgramCycle board A5 V3 IC	FX95055518
A6	USB recorder	FX98055954
A7	USB board supply	FX95055956
BAT	A3 IC board battery	FX95040566
CL1	Link cable 3 m V3 IC	FX95040360
CL2	Link cable 400 mm V3 IC	FX95040362
CL3	Link cable 10 m V3 IC	FX95040361
CL3	Shielded link cable 20 m V3 IC	FX95040562
CL3	Shielded link cable 50 m V3 IC	FX95040563
CI	A630 link cable - 4 m	FX95040147
CI2	USB link cable - 3 m	FX95055998
CI3	RS232C cable 0-12 V	FX95055986
E1-E3	Temperature probe	FX95033676
E2	Fibre light probe E2 V3 IC	FX95040359
E2	Double fibre light probe 7 m E2 V3 IC	FX95040567
FS	Frigiprobe	FX95040389
IMP	A630 printer	FX95040601
IUSB	USB interface	FX95055997
LED	Red LED 12 V	FX95055999

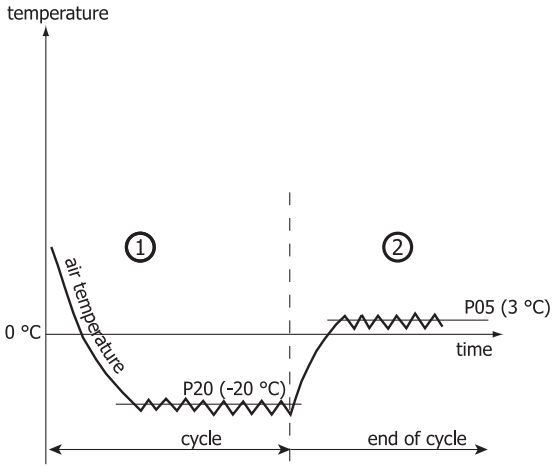
ELECTRONIC BOARD SETTINGS

Blast chilling cycles

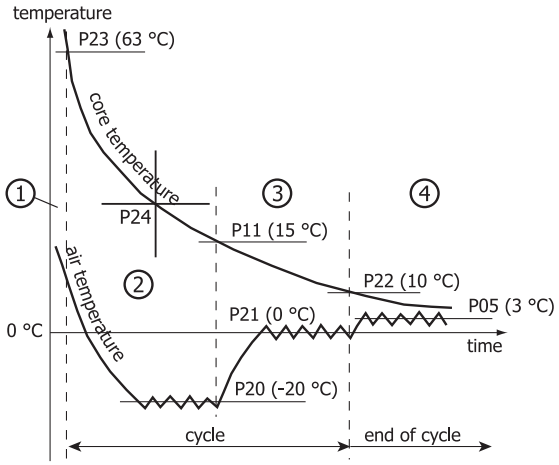
Frigiprobe mode
Self-adapting intelligent chilling



Timer mode

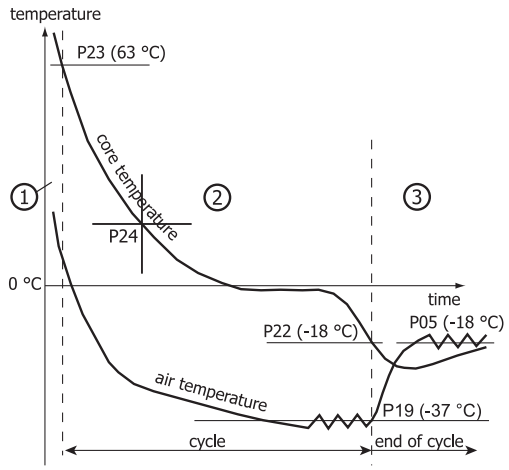


Automatic control

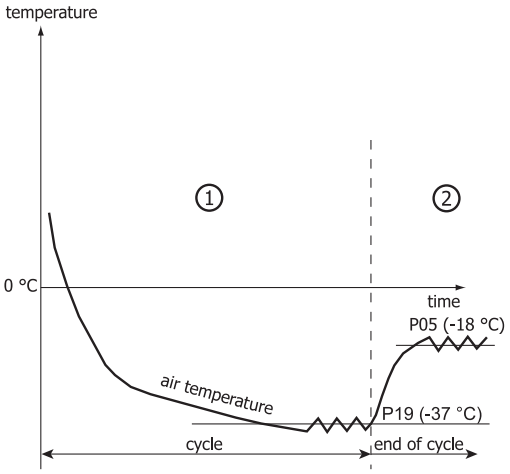


Blast freezing cycles

Frigiprobe mode



Timer mode



1, 2, 3 and 4 are the different cycle phases. P05, P23, etc. are the control setting parameters.

The equipment should be operating to be able to access the electronic control parameters. It should operate in the cycle type (chilling / freezing) and the mode (Frigiprobe / Timer) corresponding to the parameters that are to be changed.

Pressing the key provides display of the number of the first parameter "P00". The parameter number is displayed for 2 seconds and is then followed by the display of its value for 10 seconds. During these 10 seconds, press the + key to increase and − to decrease the setting. After this 10 second period, the display returns to its normal operation. The key is used to move to the next parameter.

Nota: pressing and holding down the keys increases the value scrolling speed.

During the display of or change in the parameters, presses on the other keys are taken into consideration except for the I/O key. The equipment continues to operate normally and the display of alarms is suspended while the parameters are being read / changed. The display of the setting temperatures is in °C or °F, according to the value of parameter "P30".

If there are one or more alarms, the first presses display the alarm code(s). Press the key several times to get to the first parameter "P00".

Parameters list

No	DESCRIPTION	FACTORY SETTING	MIN. RANGE	MAX. RANGE
P00	**Data: cumulative compressor operating time** since last reset (in tens of hours, for example: 5 = operating time between 50 hours and 59 hours and 59 minutes) When the condenser cleaning alarm "AL9" is present, press the + key to reset the counter to zero.			
P01	**Setting: threshold for triggering the "condenser cleaning" alarm** "AL9" (in tens of hours, e.g. 5 = 50 hours) The value "0" disables the counter and thus the alarm "AL9". Set to "0" if water-cooled condenser.	36	0	200
P02	**Data: air probe temperature** (in °C or °F).			
P03	**Data: evaporator probe temperature** (in °C or °F)			
P04	**Data: base board application (setting of jumpers JP7 - JP11)** 5: chilling without Frigiprobe only. 6: chilling with Frigiprobe only. 8: combined (chilling and freezing) without Frigiprobe. 9: combined (chilling and freezing) with Frigiprobe.			
P05	**Setting: maintaining air temperature setting** after blast chilling or freezing cycle (in °C or °F)			
	Blast chilling	+3 °C (+37 °F)	0 °C (+32 °F)	+10 °C (+50 °F)
	Blast freezing	-18 °C (0 °F)	-35 °C (-31 °F)	0 °C (+32 °F)

No	DESCRIPTION	FACTORY SETTING	MIN. RANGE	MAX. RANGE
P06	**Setting: maximum duration of de-icing** (in minutes)	25 min	10 min	60 min
P07	**Setting: end of de-icing evaporator temperature** (in °C or °F)	+25 °C (+77 °F)	+10 °C (+50 °F)	+40 °C (+104 °F)
P08	**Setting: temperature differential** before high temperature alarm, "AL6" (in °C or °F). End of cycle only.	15 °C (27 °F)	4 °C (7 °F)	30 °C (54 °F)
P09	**Setting: temperature differential** before low temperature alarm, "AL5" (in °C or °F). End of cycle only.	15 °C (27 °F)	10 °C (18 °F)	30 °C (54 °F)
P10	**Setting: duration of the anomaly** before the high or low temperature alarm (in minutes)	20 min	10 min	60 min
P11	**Setting: core temperature**, in automatic control, below which the air temperature may be limited to the value of parameter "P21" (in °C or °F)	+15 °C (+59 °F)	0 °C (+32 °F)	+50 °C (+122 °F)
P12	**Automatic ADJUSTMENT** of all the values to the FACTORY settings When "dEF" is displayed, press +. All the parameters are returned to the factory settings. Note: all the parameters are returned to the factory settings, temperature unit °C/°F also. After returning to the factory settings, check and set the parameters again in the following order: "P30", "P11", "P22", "P23", "P24", "P40" and "P45". IMPORTANT: always check the settings for parameters "P30", "P11", "P22", "P23", "P24", "P40" and "P45" before leaving the equipment.	dEF		
P13	**Setting: tripping differential of compressor** (in °C or °F)	2 °C (4 °F)	2 °C (4 °F)	5 °C (9 °F)
P15	**Setting: compressor anti-short cycle** (in minutes)	2	1	20
P16	**Setting: light sensor sensitivity** The value "0" deactivates the light sensor (operation of the equipment as a door permanently closed) and the self-adapting intelligent chilling.	16	0	20
P17	**Data: light sensor operation** Display of the light sensor in real time. "0" displayed for door closed and "1" for door open.			
P19	**Setting: air temperature limitation** during the blast freezing cycle	-37 °C (-35 °F)	-40 °C (-40°F)	-20 °C (-4 °F)

No	DESCRIPTION	FACTORY SETTING	MIN. RANGE	MAX. RANGE
P20	**Setting: air temperature limitation**, in automatic control, during the first blast chilling step (in °C or °F)			
	Frigiprobe mode	-20 °C (-4°F)	-35 °C (-31 °F)	0 °C (+32 °F)
	Timer mode	-20 °C (-4 °F)	-35 °C (-31 °F)	0 °C (+32 °F)
P21	**Setting: air temperature limitation**, in automatic control, during the second blast chilling step (in °C or °F). Frigiprobe mode.	0 °C (+32 °F)	-5 °C (+23 °F)	+10 °C (+50 °F)
P22	**Setting: end of cycle core temperature** (in °C or °F). Frigiprobe mode.			
	Chilling For setting less than 8 °C (46 °F), also change: - parameter "P11". "P11" = "P22" + 5 °C (9 °F). E.g. "P22" = 5 °C (41 °F), "P11" should be set to 10 °C (50 °F). - parameter "P41". New setting = -17.	+10 °C (+50 °F)	0 °C (+32 °F)	+10 °C (+50 °F)
	Freezing	-18 °C (0 °F)	-35 °C (-31 °F)	0 °C (+32 °F)
P23	**Setting: start of cycle core temperature** (in °C or °F). Frigiprobe mode.	+63 °C (145 °F)	+50 °C (+122 °F)	+80 °C (+176 °F)
P24	**Setting: intermediary printing** of the information on the printer when the core temperature reaches the setting value (in °C or °F). Frigiprobe mode. IMPORTANT: a setting at -40 deactivates the operation of the printer at this stage.	-40 °C (-40 °F)	-40 °C (-40 °F)	+80 °C (176 °F)
P25	**Setting: coefficient for triggering of the de-icing requirement display** Decreasing in this value decreases the time between two de-icing requirement signals and increasing it increases the time between two signals.	70	10	200
P26	**Setting: evaporator fan cyclical stoppage at end of cycle one hour after coming to the end of cycle** Enabled: 1 Disabled: 0	1	0	1
P27	**Setting: Frigisonde temperature calibration differential** Corrects the core temperature measurement.	0 °C (0 °F)	-5 °C (-9 °F)	+5 °C (+9 °F)
P30	**Setting: selection of the temperature unit displayed** (in °C or °F) When the temperature unit is displayed (°C or °F), press + or — to select the other value. Note: modify the ProgramCycle board settings in the event of change in the temperature unit.	°C	°C	°F

No	DESCRIPTION	FACTORY SETTING	MIN. RANGE	MAX. RANGE
P40	**Setting: self-adapting intelligent chilling:** blast chilling cycle maximum duration (in hours.minutes) in Frigiprobe mode. Blast chilling cycle maximum duration, between the start of cycle core temperature (parameter "P23") and the end of cycle core temperature (parameter "P22"). The cycle maximum duration parameter represents a duration not to be exceeded, not a cycle duration to be achieved. For products which are easy to cool and light equipment loading, a cycle may be completed in less than 45 minutes, with an air temperature not falling below 0 °C. This maximum duration is automatically corrected (reduced) for the cycle in progress when the loading temperature is lower than the parameter of the core temperature at cycle start "P23". IMPORTANT: do not set "P40" below the nominal performance for the equipment. For equipment with 110 minutes performance, minimum value 1 hour 50 minutes. For equipment with 85 minutes performance, minimum value 1 hour 25 minutes. Parameter "P40" does not provide the means for increasing the performance of the equipment.	1.50	0.05	9.59
P41	**Setting: self-adapting intelligent chilling** Do not change.	-10	-50	-1
P42	**Setting: self-adapting intelligent chilling** Do not change.	4	1	15
P43	**Data: self-adapting intelligent chilling**: cause of the interruption of the self-adapting intelligent chilling on the cycle carried out. 0: no interruption. 1: interruption by air temperature limitation. 2: door opening. 3: alarm "AL1". 4: light probe disabled.			
P45	**Setting: self-adapting intelligent chilling**: activation or deactivation of the self-adapting intelligent chilling. Activation: 1 Deactivation: 0 When the self-adapting intelligent chilling is disabled, the blast chiller / freezer operates in automatic control.	1	0	1

OPTION DATATRANSFER BOARD

This provides output to a printer, a recorder or a PC with monitoring software. Refer to the "Standard electrical and refrigeration connection diagrams" section for information.

For further details, contact your installer.

Settings

The equipment should be stopped, with the display off. Only one of the cycle lamps (chilling / freezing) and one of the mode lamps (Frigiprobe / Timer) must be lit.

Press and hold down the key for 7 seconds to go into setting mode and for the first parameter to appear "P01". The parameter number is displayed for 2 seconds and is then followed by display of its value for 10 seconds. During these 10 seconds, press the + key to increase and − to decrease the setting. After this 10 second period, the display switches off. The key is used to move to the next parameter.

Note

- Pressing and holding down the keys increases the value scrolling speed.
- It is not possible to set the date and time if the equipment is operating. During equipment operation, the settings which can be accessed by the key are those for the I-chilling control.

Parameters

No	DESCRIPTION	FACTORY SETTING
P01	**Number of the equipment** Used to nominate the equipment from 1 to 20.	1
P02	**Period of time between two periodic printings at end of cycle** (printer option only) From 0 to 99 minutes Setting to "0" means no periodic printing.	0
P03	**Printing language of the ticket** (printer option only) French: 0 Italian: 3 English: 1 Spanish: 4 German: 2 Dutch: 5 USA (English, month/day/year date format): 6	0
P04	**Serial port speed (Baud)** Do not change.	3
P05	**Serial port stop bit** Do not change.	1
P06	**Serial port communication protocol** Do not change.	3
P07	**Output type** Printer option: 0 Computer / option USB recorder: 1 RS 485 network PC monitoring (depending on version): 2	0

No	DESCRIPTION	FACTORY SETTING
P08	**Year** 00 (2000) to 99 (2099)	/
P09	**Month** 1 (January) to 12 (December)	/
P10	**Day** 1 to 31 28, 29, 30 and 31 available depending on the month	/
P11	**Hour** 0 to 23 (24 hours)	/
P12	**Minutes** 0 to 59	/
P15	**Unused** Do not change.	0

RESISTANCE-TEMPERATURE CONVERSION CHART FOR THE PROBES AND THE FRIGIPROBE

TEMP. °C	TEMP. °F	R kΩ	TEMP. °C	TEMP. °F	R kΩ	TEMP. °C	TEMP. °F	R kΩ
-40	-40.0	336.6	8	46.4	21.92	56	132.8	2.878
-39	-38.2	315.0	9	48.2	20.88	57	134.6	2.774
-38	-36.4	295.0	10	50.0	19.90	58	136.4	2.674
-37	-34.6	276.4	11	51.8	18.97	59	138.2	2.580
-36	-32.8	259.0	12	53.6	18.09	60	140.0	2.488
-35	-31.0	242.8	13	55.4	17.26	61	141.8	2.400
-34	-29.2	227.8	14	57.2	16.46	62	143.6	2.316
-33	-27.4	213.8	15	59.0	15.71	63	145.4	2.234
-32	-25.6	200.6	16	60.8	15.00	64	147.2	2.158
-31	-23.8	188.4	17	62.6	14.32	65	149.0	2.082
-30	-22.0	177.0	18	64.4	13.68	66	150.8	2.012
-29	-20.2	166.4	19	66.2	13.07	67	152.6	1.942
-28	-18.4	156.5	20	68.0	12.49	68	154.4	1.876
-27	-16.6	147.2	21	69.8	11.94	69	156.2	1.813
-26	-14.8	138.5	22	71.6	11.42	70	158.0	1.751
-25	-13.0	130.4	23	73.4	10.92	71	159.8	1.693
-24	-11.2	122.9	24	75.2	10.45	72	161.6	1.637
-23	-9.4	115.8	25	77.0	10.00	73	163.4	1.582
-22	-7.6	109.1	26	78.8	9.574	74	165.2	1.530
-21	-5.8	102.9	27	80.6	9.166	75	167.0	1.480
-20	-4.0	97.12	28	82.4	8.778	76	168.8	1.432
-19	-2.2	91.66	29	84.2	8.408	77	170.6	1.385
-18	-0.4	86.54	30	86.0	8.058	78	172.4	1.341
-17	1.4	81.72	31	87.8	7.722	79	174.2	1.298
-16	3.2	77.22	32	89.6	7.404	80	176.0	1.256
-15	5.0	72.98	33	91.4	7.098	81	177.8	1.216
-14	6.8	69.00	34	93.2	6.808	82	179.6	1.178
-13	8.6	65.26	35	95.0	6.532	83	181.4	1.141
-12	10.4	61.76	36	96.8	6.268	84	183.2	1.105
-11	12.2	58.46	37	98.6	6.016	85	185.0	1.071
-10	14.0	55.34	38	100.4	5.776	86	186.8	1.038
-9	15.8	52.42	39	102.2	5.546	87	188.6	1.006
-8	17.6	49.66	40	104.0	5.326	88	190.4	0.975
-7	19.4	47.08	41	105.8	5.118	89	192.2	0.9452
-6	21.2	44.64	42	107.6	4.918	90	194.0	0.9164
-5	23.0	42.34	43	109.4	4.726	91	195.8	0.8888
-4	24.8	40.16	44	111.2	4.544	92	197.6	0.8620
-3	26.6	38.12	45	113.0	4.368	93	199.4	0.8364
-2	28.4	36.20	46	114.8	4.202	94	201.2	0.8114
-1	30.2	34.38	47	116.6	4.042	95	203.0	0.7874
0	32.0	32.66	48	118.4	3.888	96	204.8	0.7642
1	33.8	31.04	49	120.2	3.742	97	206.6	0.7418
2	35.6	29.50	50	122.0	3.602	98	208.4	0.7202
3	37.4	28.06	51	123.8	3.468	99	210.2	0.6994
4	39.2	26.68	52	125.6	3.340	100	212.0	0.6792
5	41.0	25.40	53	127.4	3.216	101	213.8	0.6596
6	42.8	24.18	54	129.2	3.098	102	215.6	0.6408
7	44.6	23.02	55	131.0	2.986	103	217.4	0.6226

STANDARD ELECTRICAL AND REFRIGERATION CONNECTION DIAGRAMS

Key to the diagrams

ITEM	DESCRIPTION	ITEM	DESCRIPTION
A0	Base board	FS...	Frigiprobe
A1	Display board	FU	Fuse
A2	Auxiliary display	IMP	Printer
A3	DataTransfer board	INF 1	Output 12 Vdc alarm report
A5	ProgramCycle board	INF 2	Output 12 Vdc cycle in progress
A6	USB recorder	INF 3	Output 230 Vac end of cycle
ACCC	Compressor anti-short cycle	INF 4	Output 4-20 mA
CL...	Link cable	K1	Contactor
CI	Printer cable	KM1	Compressor contactor
CI2	USB link cable	RD	De-icing resistance
BE	Evaporation tank	RE	Evaporation resistance
C	Capacitor	REC	Runoff resistance
CD	Condenser	RF	Front frame heater
CP	Compressor	RL	Receiver
DES	Drier	S1	On / Off bipolar switch
DTH	Thermostatic expansion valve	S2...S5	Food probe switch
E1	Air temperature probe	SIG1	Condensing unit fault, contact input
E2	Light probe	TS	Safety thermostat
E3	Evaporator temperature probe	VC	Condenser fan
EV	Evaporator	VE	Evaporator fan
EVM	Solenoid valve	VL	Liquid valve
F	Thermal relay	VO	Sight glass

INDICES AND ANNOTATIONS	
(SR..)	Only blast freezing and combined models
noir	Black wire. Important position

Remote condensing unit to be wired in "automatic pump down" control.

The number of evaporator fans can vary according to the model. De-icing resistances depending on model.

Voltage identification

U: 1 N ~ 230 V + PE, 50 Hz → single phase voltage (1 N), 230 V AC + earth (PE), 50 Hz

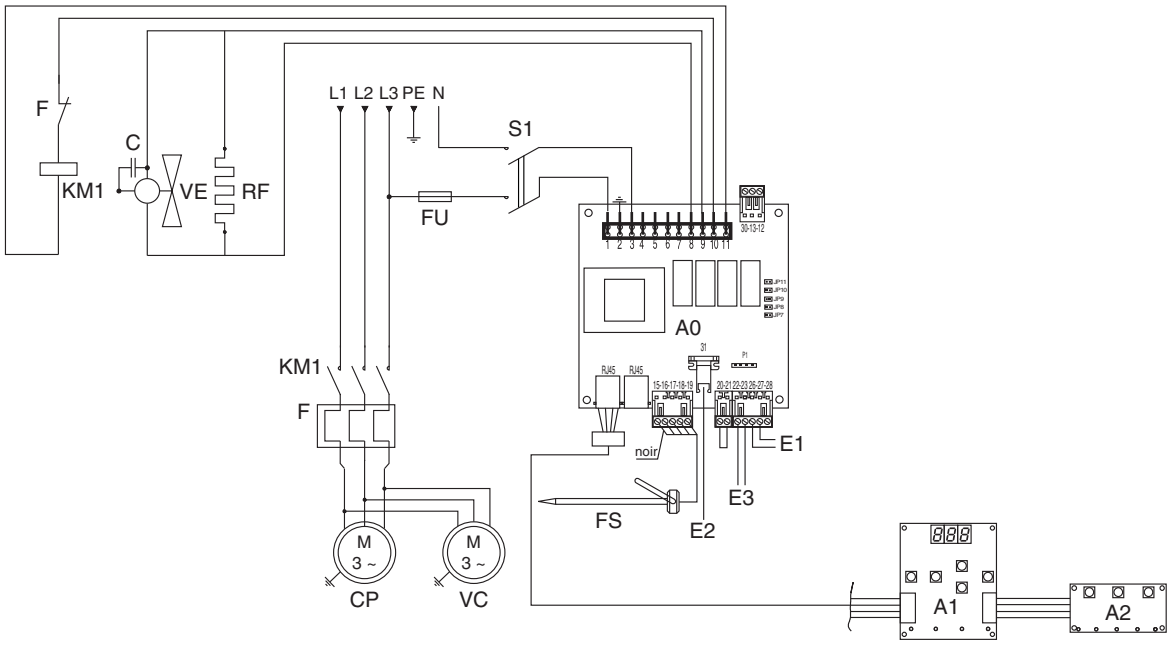
U: 3 N ~ 400 V + PE, 50 Hz → three-phase voltage + neutral (3 N), 400 V AC + earth (PE), 50 Hz

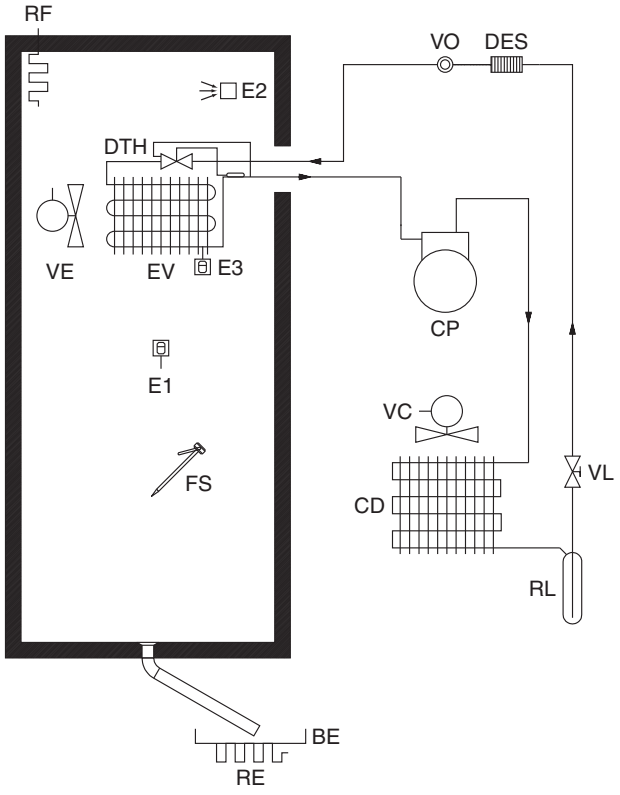
U: ⎓ 12 V → 12 V direct current

U: ⎓ 10-30 V → 10-30 V direct current

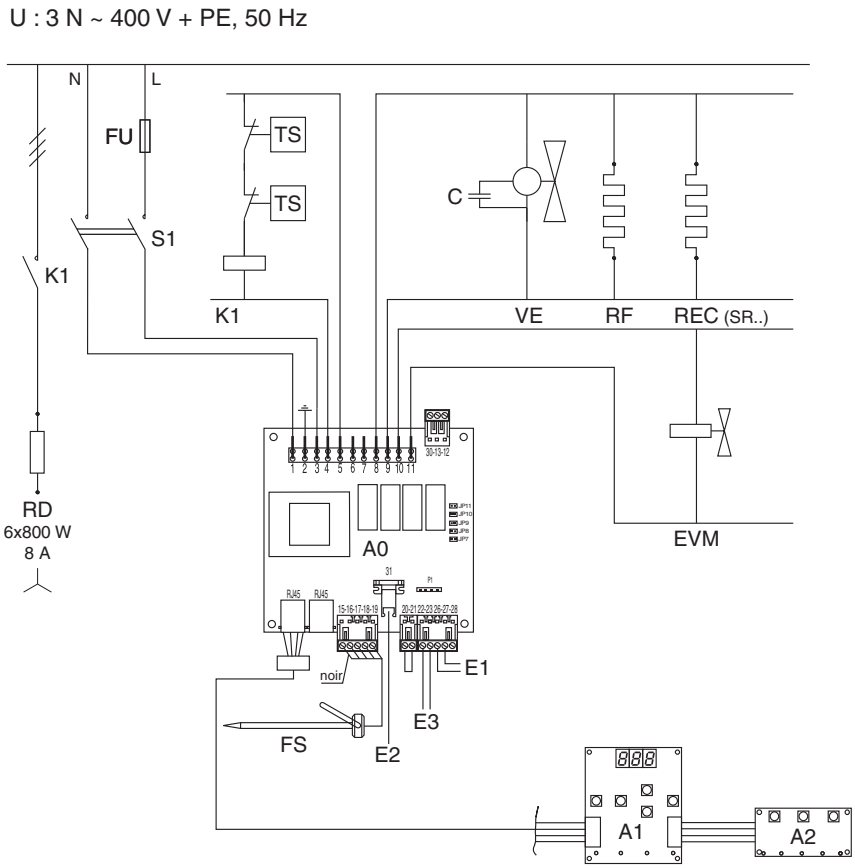
EXAMPLE: EQUIPMENT WITH HOUSED CONDENSING UNIT

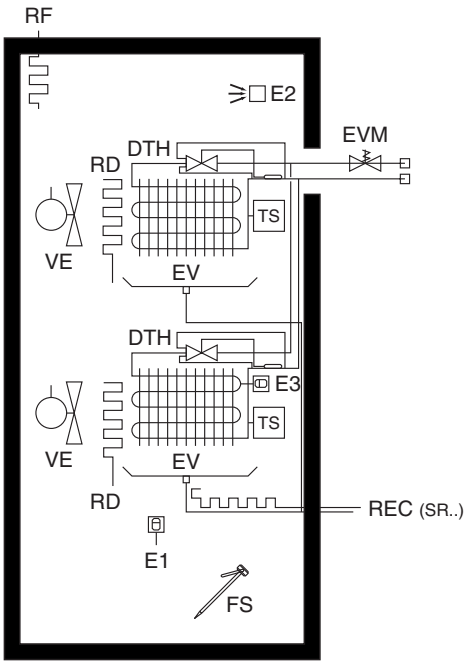
U : 3 N ~ 400 V + PE, 50 Hz





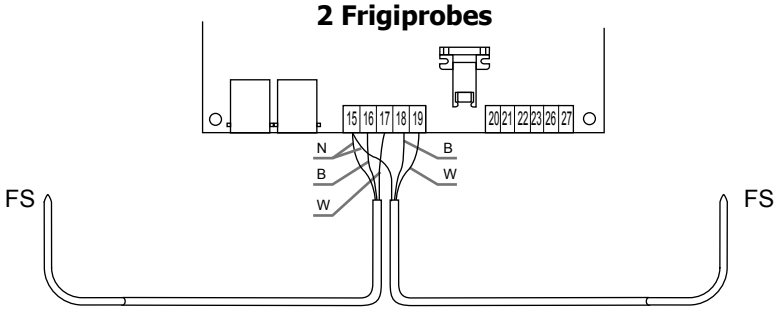
EXAMPLE: EQUIPMENT WITH REMOTE CONDENSING UNIT



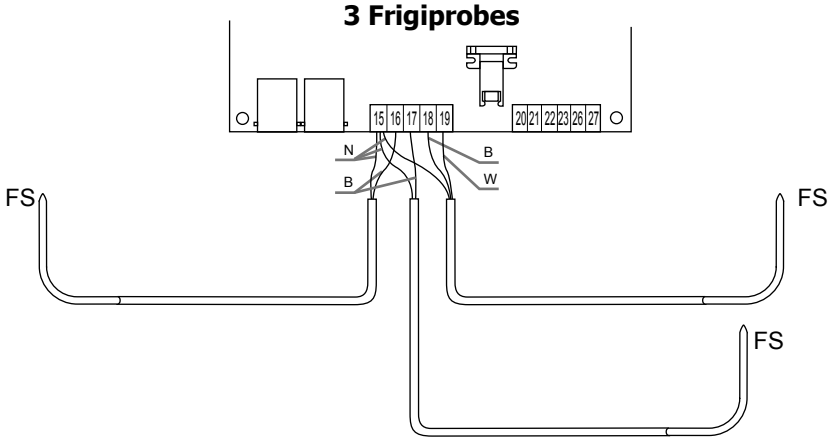


OPTION ADDITIONAL FRIGIPROBE

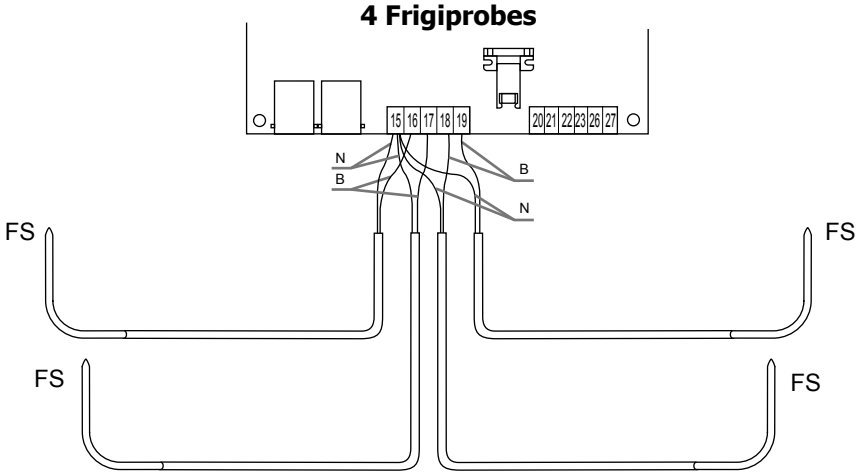
2 Frigiprobes



3 Frigiprobes

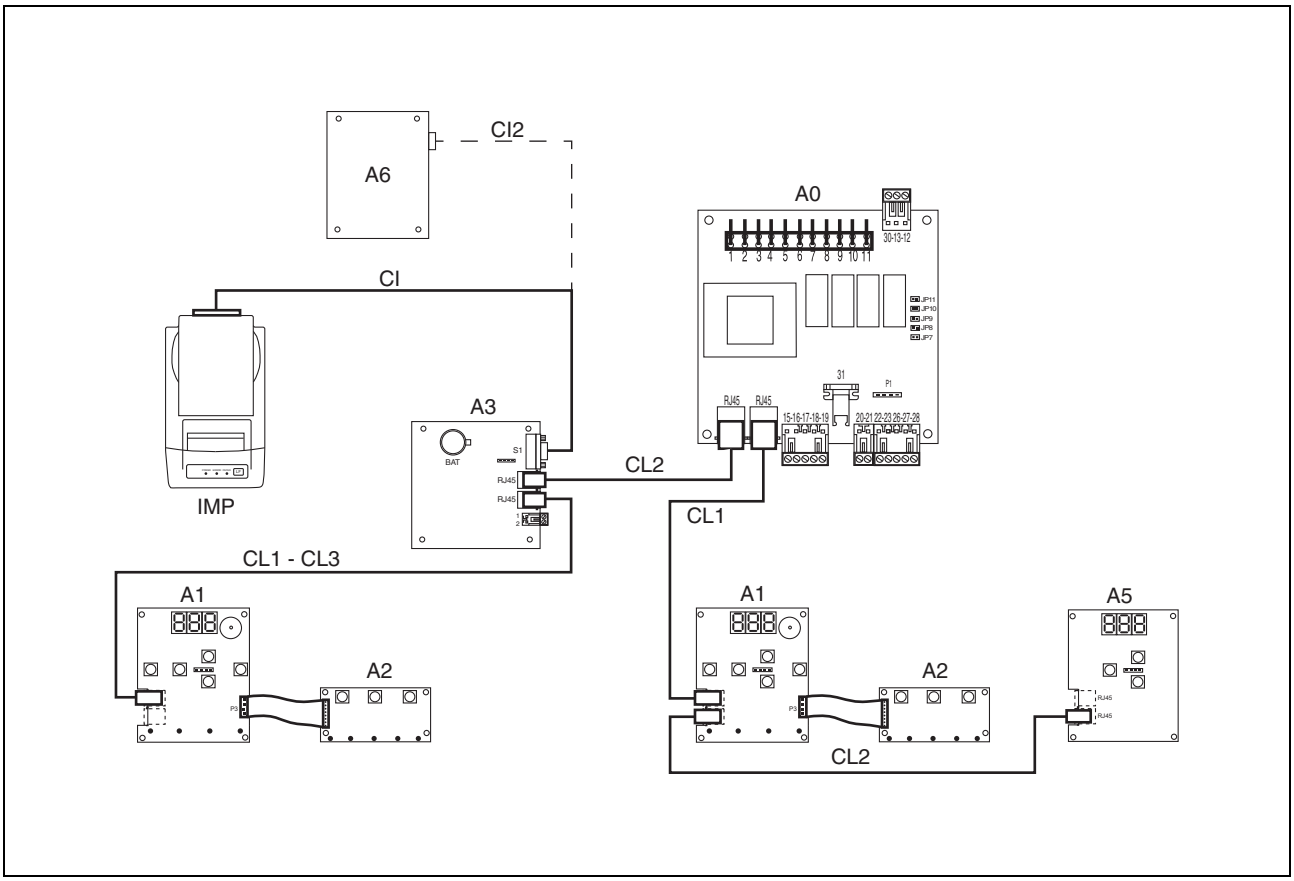


4 Frigiprobes



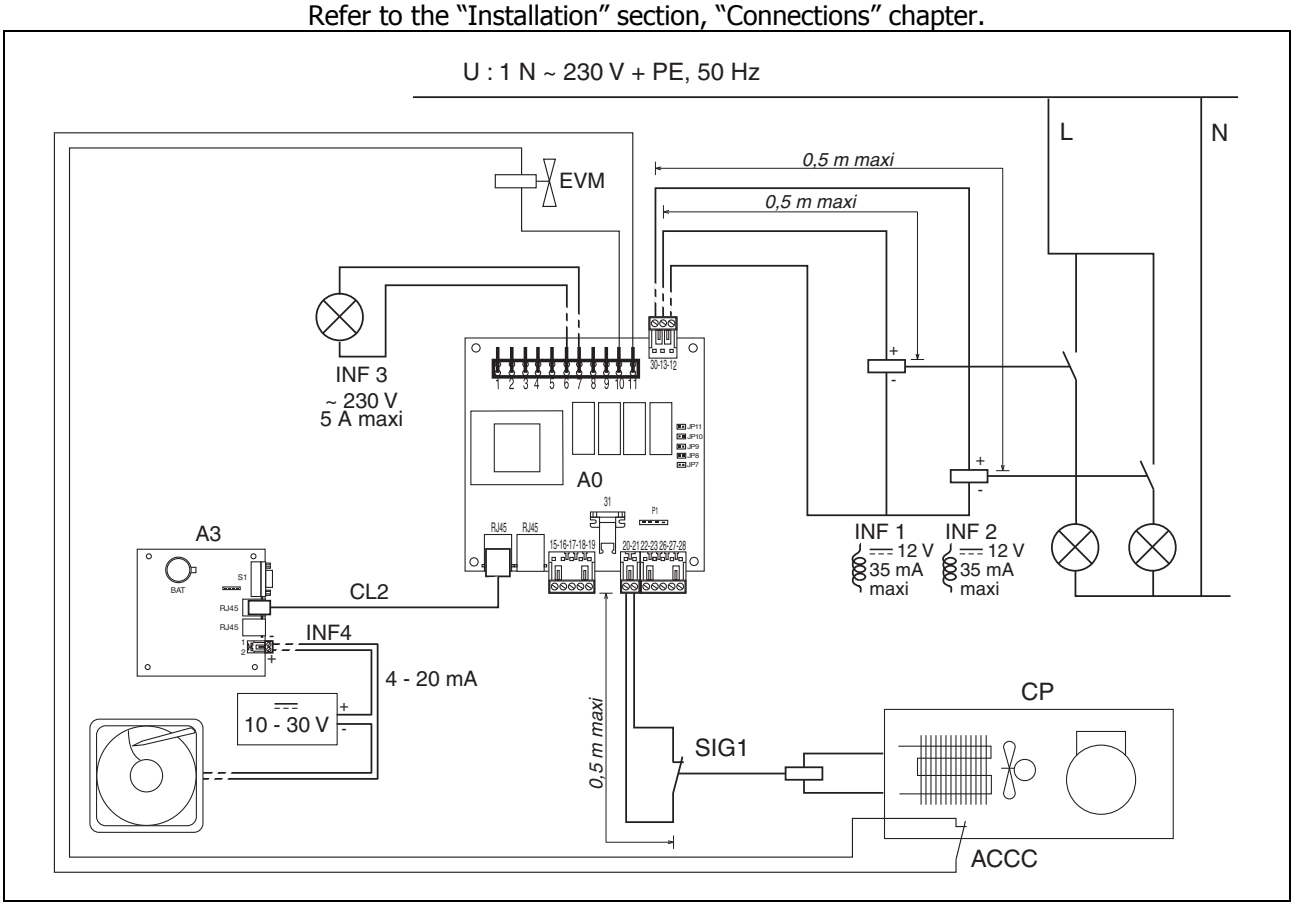
N : noir, black, schwarz, nero, negro
B : bleu, blue, blau, blu, azùl
W : blanc, white, weiss, bianco, blanco

OPTIONS WIRING

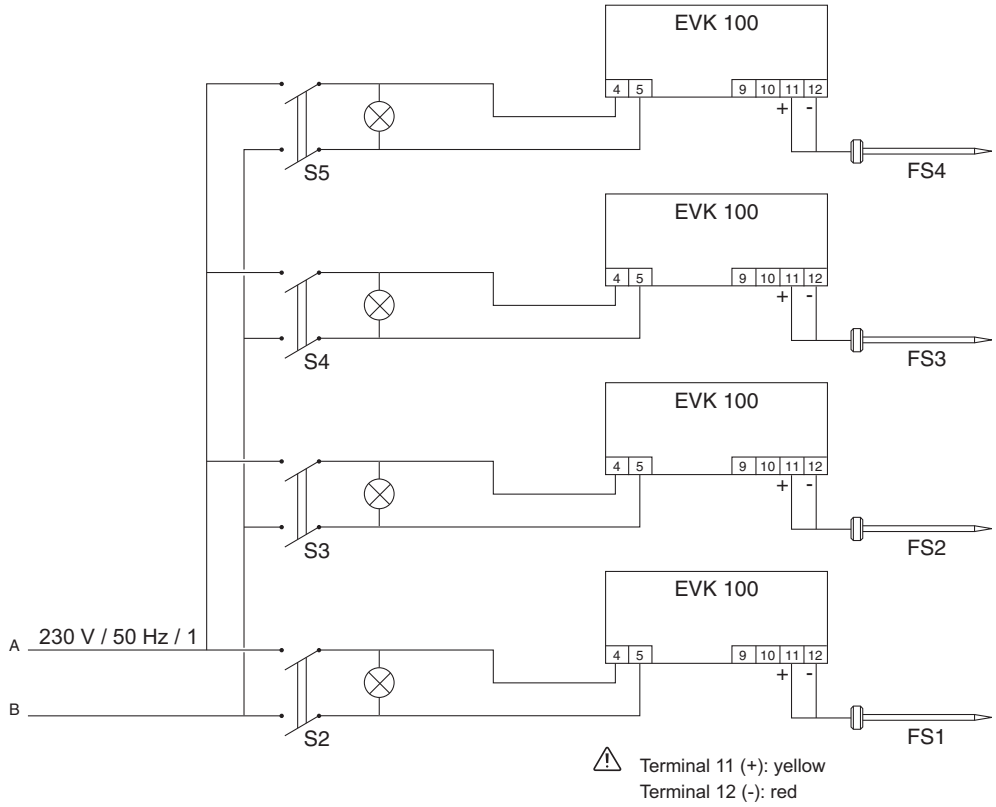


EXTERNAL CONNECTIONS

Refer to the "Installation" section, "Connections" chapter.



OPTION 1, 2, 3 or 4 TEMPERATURE INDICATORS WITH FOOD PROBE



GUARANTEE

The contractual guarantee consists of the pure and simple exchange of parts recognised as being defective by us, or their repair, after examination by our technical department, excluding any other indemnity whatever its nature may be.

PERIOD

Our equipment are guaranteed for one year from the date of delivery to the first purchaser.

CONDITIONS OF APPLICATION

You should only use your equipment under the normal conditions of use for which it is intended, in accordance with this manual. If this is not the case, our guarantee cannot apply and our liability cannot be assumed. The guarantee is excluded for incidents which result from acts by the purchaser whatever their nature may be: incorrect installation or acts linked to the use such as control and maintenance not in accordance with the maintenance handbook, unqualified personnel, alterations to the equipment, negligence or lack of surveillance.
This guarantee does not apply where third parties or the purchaser have carried out repairs.
It also does not apply to the resistances and the components used in the various electric equipment, in particular bulbs likely to be damaged by over-voltages and other causes independent of the design of the equipment.
In all circumstances, refer without delay to your installer responsible for after-sales service who sold you the equipment, taking this manual with you.
The guarantee does not apply to utensils and accessories which are not an integral part of the equipment.
Under no circumstances can we be held responsible for the direct or indirect consequences of the difficulties whether as regards persons or goods.

LEGAL GUARANTEE

The provisions of this guarantee document do not exclude the enjoyment by the purchaser of the legal guarantee for defects and latent defects which in any case apply under the conditions of articles 1641 et seq. of the French Civil Code.

TO BENEFIT FROM THE GUARANTEE

The different instructions contained in this manual as regards the installation and maintenance are to be strictly observed. Failing that, no guarantee of whatsoever nature will be given.

REPLACEMENT PARTS

In the event of a claim or to order spare parts, give:

- THE EXACT TYPE OF THE EQUIPMENT,
- THE DESCRIPTION OF THE PART,
- THE SERIAL NUMBER (which appears on the identification plate located on the equipment).

1) TO ORDER SPARE PARTS
Refer to your installer.
2) IN THE EVENT OF A CLAIM
Refer to our After-Sales Service.

IT IS RECOMMENDED THAT A MAINTENANCE CONTRACT IS TAKEN OUT WITH YOUR INSTALLER.

FRIGINOX

LE FROID PROFESSIONNEL