

ULT FREEZERS

# TRUST

 **Froilabo**



# DEVELOPMENT GUIDED BY THE USER

100 years of experience and taking on board customer feedback have led our R&D team to offer you a range of ultra performant ULT Freezers. Safety, innovation and performance have been at the heart of our strategy of development and design of our devices.



100 years of experience and know-how



## Sample security

The preservation of the sample has been the key to any other consideration in our product development.



## ULT freezer performance

Priority has been given to fast temperature recovery without compromising the power consumption.



## Product innovation

Customer feedback has led the development of our freezers with several innovations being patented.

2 models available, -45°C and -86°C with space for up to 48,000 cryotubes

## European manufacturing

The results of several years of research and development, Froilabo ULT Freezers have been conceived and designed in France and manufactured in Europe.

## A scalable range

Feedback from our customers has guided the development of the TRUST, culminating in 2 models to suit your requirements, -45°C and -86°C. Both are fully F-Gas compliant and are optimised for daily use including frequent door opening.



UL Marking



ISO 9001 and ISO 13485 certified production site



F-Gas Approved

# DESIGN

## User-driven, innovative & ergonomic



### External dimensions

Froilabo is the only manufacturer of ULT freezers to offer a useful volume of 690 L (24,3 cu.ft.) or 48000 2ml tubes with a device measuring less than 90cm (35.4") wide allowing it to fit through a standard doorway. It is also possible to remove the handle for 80cm (31.5") wide doorways.



### Robust Construction

An interior tank and shelves fully designed in stainless steel for intensive use and maximum life.



### VIP insulation as standard

Allows optimal insulation with an excellent ratio of useful space to external space.



### Easy tank cleaning

Round corners ease the cleaning and disinfection of the internal compartment.



### Removable accessories

Filter, internal doors and shelves are removable for easy maintenance and defrosting.



### Ergonomic smart handle

The ergonomically designed handle aligns the user force with the required action of unlocking or opening/closing the door. A sensor in the handle confirms door closure/locking.



### Reduction of frost formation

The flatness of the door and the flat heated door seal help to minimize frost formation.



### Heated pressure release valve

A bidirectional heated valve ensures balance between pressure and allows reopening of the door very quickly after closing.

Ergonomic smart handle with door closure and locking sensor

Flat door and gasket design to minimise frost formation

# SECURITY

Comprehensive security for all your samples



Record  
and  
customize  
alarm event

## Secure samples

Equipped with several safety devices, Froilabo ULT freezers guarantee the long term preservation of your samples.

### Cascade refrigeration system

The cascade cooling system is the most efficient and the most durable for the long-term operation of your freezers.



### Robust construction

The chosen components are all renowned for their robustness and durability. The compressors are manufactured in France.



### Visual & Audible Alarms

A variety of alarms alert the user to system issues, such as temperature increase, door opening, power supply and more. The alarm events may be recorded and can be customised.



### Dry contact (optional)

Possibility of adding a dry contact to the equipment for your remote control station



### Buzzer reactivation

The buzzer is reactivated automatically in the event of a new alarm or in the event of a long alarm.



### BoSS System (optional)

In the event of an incident affecting the electronic control of the device, the BoSS system guarantees continuous cold production, thus preserving the samples.

# PERFORMANCE

## Temperature & homogeneity

Return to set temperature in less than 45 minutes

### Cooling power and temperature homogeneity

Optimized performances for all your needs.



#### Quick temperature pull down

Temperature pull down from +22°C to -80°C is +/-4h on the 690L model (empty freezer).



#### Temperature homogeneity

The excellent temperature homogeneity inside the tank guarantees identical storage conditions for all samples (+/-5°C at -80°C).



#### Delayed temperature rise

The VIP insulation throughout the range makes it possible to control the temperature rise during door openings and in the event of a power failure. "Cryo-accumulator" plates can be proposed as an option to further increase the warm-up time during door opening and power failures. +/-3 hours to go from -80°C to -60°C without cryo-accumulator and +/-6 hours with cryo-accumulator.



#### Rapid recovery of the set temperature

Our powerful compressors allow a return to setpoint in less than 45 minutes. This parameter is essential for optimal sample preservation.



#### Cascade compressors

Latest generation compressors made in France for optimal performance and controlled power consumption.



#### F-Gas conformity

The refrigerants fluids used in Froilabo ULT freezers all comply with the new F-Gas regulations (UE n°517/2014).

### Optimal Thermodynamic Performance

Powerful and economic compressors combined with efficient insulation deliver the best performance/power consumption ratio.



#### Optimized insulation

Vacuum Insulation Panel (VIP, VACUPOR™ type) combined with high density polyurethane foam offer optimal insulation. In case of power outage, the temperature rise is significantly slowed down.



#### Homogeneity and stability of temperature

The use of rounded corners within the tank improved heat exchange by 15%, which also contributes to energy savings.

# ECONOMY

## Optimized & controlled

### Energy consumption

The energy consumption of a ULT freezer is influenced by many factors, including the performance of the freezer and the way it is used. Froilabo supports users by providing all available information to help reduce the power consumption of their equipment, without compromising the performance.

The power consumption of the Trust -86°C 690L freezer is 13.9 kWh/ day\*.

\* According to Energy Star calculations, with a room temperature of 20°C, with the door closed.



# INTERFACE

## Intuitive and clear, eye-level display



### Instant checking of the freezer

The general functioning of the device and the perfect security of your samples can be verified at a glance thanks to the OK indicator on the door.



### Visuals and audible alarms

In the event of an alarm, a pictogram is displayed to identify the current alarm and assist you in the diagnosis. The audible alarm can be silenced by pressing the flashing red panel.



### Visible regulator

The regulator is visible at the bottom of the freezer for setpoint setting and easy alarm thresholds. If needed, the display of the actual temperature of the freezer is carried out continuously on the regulator.

Clear, simple, eye-level display with visual and audible alarms

## Clear, simple and user-friendly interface

Thanks to its eye level display, the Trust range continuously updates you on freezer function and alarms. Some of the indicators are described below.



#### Main power indicator

This icon appears when the 230 VAC power supply is connected. It disappears when the 230 VAC power supply is disconnected. If this alarm is silenced via the button on the front, it restarts after 30 minutes.



#### Battery charge fault

This LED indicates that the battery state of charge is very low. Charge the battery as soon as possible. This alarm does not trigger any audible signal from the freezer.



#### Setpoint temperature not reached

This light indicates that the set temperature inside the freezer has not been reached. Check the setting on the regulator or contact after-sales service. If this alarm is switched off via the front button, it restarts after 4 hours.



#### Door open alarm

This light appears when the door remains open for more than 2 minutes. It disappears when closing the door. If the alarm is silenced via the button on the front, it restarts after 10 minutes.



#### CP1 overpressure

This warning light appears when the pressure in the cooling circuit of compressor no. 1 (CP1) is too high. The compressor is switched off for 5 minutes. Please check that nothing is obstructing the air filter, also check the condition of the air filter. After 3 alarms in 24 hours, the light appears definitively. In this case, contact the after-sales service. If this alarm is muted via the button on the front, it restarts after 4 hours.



#### Machine problem

This light indicates that the compressor has been running non-stop for more than 10 hours. Contact the after-sales service as soon as possible. If the alarm is silenced via the button on the front, it restarts after 4 hours.



#### CO<sub>2</sub> injection in progress

This light flashes with each injection of CO<sub>2</sub> / N<sub>2</sub>. Injections occur every second, so it is normal for the light to flash. If the alarm is muted via the button on the front, it restarts after 4 hours.



# MAINTENANCE

## Preventive & simplified

### Self-diagnosis and predictive maintenance

ULT Freezers provide a self-diagnosis that allows users to anticipate maintenance by reporting any reduction in performance.



#### “Plug & Play” electronics

The electronics and display contained in the module are easily removable and can be rapidly switched without any specialised tools.



#### Removable cooling system

The cooling unit is mounted on a removable tray. This allows immediate cooling system replacement, avoiding the need to return the unit to the workshop.



#### Maintenance advice

To maintain freezer performance we recommend you completely defrost your appliance twice a year. In order to prolong its life, remember to do preventive maintenance once a year. For more information, please contact us.



#### 7 LED indicators

The display incorporates several pictograms of alarms allowing quick identification of a default. The “OK” icons indicates the correct operation of your freezer.



#### Removable filter

Clogging of the filter causes a decrease in the performance of the freezer or even a stop in the most critical cases. The filter is removable for easy cleaning and maintaining a high level of performance.



#### Remote hotline

Thanks to the diagnosis menu, with a simple call, our technicians are able to determine the problem encountered before even intervening.





# SPECIFICATIONS

VOLUME	COMPARTMENTS	CAPACITY (2ML CRYO-TUBES)	EXTERNAL DIMENSIONS HxLxW MM (INCHES)	INNER DIMENSIONS HxLxW MM (INCHES)	NET WEIGHT (KG AND LB.)	POWER SUPPLY
340 L 12.0 cu.ft.	2	24,000	1280 x 970 x 875 (50.4 x 38.2 x 34.5)	716 x 752 x 630 (28.2 x 29.6 x 24.8)	223 kg 492 lb.	230V/50Hz 110V/50-60Hz 208V/60Hz
515 L 18.1 cu.ft.	3	36,000	1640 x 970 x 875 (64.6 x 38.2 x 34.5)	1076 x 752 x 630 (42.4 x 29.6 x 24.8)	267 kg 589 lb.	
690 L 24.3 cu.ft.	4	48,000	1990 x 970 x 875 (78.4 x 38.2 x 34.5)	1436 x 752 x 630 (56.6 x 29.6 x 24.8)	330 kg 728 lb.	



# OPTIONS & STORAGE



## OPTIONS LIST

CAT	REF	DESCRIPTION
SHELVES	BM/ETA2	Stainless steel shelf for BM340/BM515/BM690 (597x743 mm) ( 23.5 x 29.3 in.)
SECURITY	BM/CO2T	Liquid CO <sub>2</sub> injection backup system. Autonomy 15 hours, flexible 3m included
	BM/CRY02E	Cryo accumulators for BM340, +/- 6 hours of additional autonomy
	BM/CRY03E	Cryo accumulators for BM515, +/- 6 hours of additional autonomy
	BM/CRY04E	Cryo accumulators for BM690, +/- 6 hours of additional autonomy
	BM/OPT19	BoSS system (factory installation)
	BM/OPT20	Padlock closure bracket (padlock supplied by customer)
TEMPERATURE CONTROL	BM/OPT4E	Pt 100 ohms x3 (-100°C à +50 °C ) probes (DIN connector at the back)
	BM/OPT5E	Sensor with 3m cable length for external calibration
	BM/OPT7E	Circular diagram temperature recorder 0°C to -100°C (1 revolution for 7 days)
COMMUNICATIONS OPTIONS	BM/OPT13E	4-20mA output
	BM/OPT18	Dry contacts NO/C/NC (external box)
IQ/OQ	BM/QIQO	Installation and qualification IQ/OQ (without travelling expenses)

# STORAGE ELEMENTS

CAT	REF	DESCRIPTION	NUMBER OF SHELVES	USABLE HEIGHT MM (INCHES)	CRYOBIXES CAPACITY (133 X 133 X 51 MM) (5.23 X 5.23 X 2 IN.)	FREEZER RACKS CAPACITY (340 L / 515 L / 690 L)
RACKS WITH DRAWERS (288x730x343mm) (11.34x28.74x13.5in.)	BM/EL2T690	Full stainless steel 2 drawers rack	2	164 (6.46)	60	4 / 6 / 8
	BM/EL2T690A	Stainless steel rack with 2 aluminium drawers				
	BM/EL3T690	Full stainless steel 3 drawers rack	3	109 (4.29)	60	
	BM/EL3T690A	Stainless steel rack with 3 aluminium drawers				
	BM/EL4T690	Full stainless steel 4 drawers rack	4	80 (3.15)	40	
	BM/EL4T690A	Stainless steel rack with 4 aluminium drawers				
	BM/EL5T690	Full stainless steel 5 drawers rack	5	63 (2.48)	50	
	BM/EL5T690A	Stainless steel rack with 5 aluminium drawers				
BM/EL6T690	Full stainless steel 6 drawers rack	6	53 (2.08)	60		
BM/EL6T690A	Stainless steel rack with 6 aluminium drawers					
RACKS WITH FIXED SHELVES (140x730x343mm) (5.51x28.74x13.5in.)	BM/EL3E690AC	Aluminium rack, 15 compartments	3	109 (4.29)	30	8 / 12 / 16
	BM/EL4E690AC	Aluminium rack, 20 compartments	4	80 (3.15)	20	
	BM/EL5E690AC	Aluminium rack, 25 compartments	5	63 (2.48)	25	
	BM/EL6E690AC	Aluminium rack, 30 compartments	6	54 (2.12)	30	
OTHER STORAGE ELEMENTS	BM/ELE690	Stainless steel rack, 5 columns, up to 30 compartments, removable shelves.	Between 1 and 6	Between 54 and 109	160 micro-plates 96 wells 30 compartments	8 / 12 / 16
BASKETS	BM/TIR	Stainless steel storage drawer (142x740x330 mm) (5.6 x 29.2 x 13 in.)	1	330	-	8 / 12 / 16



## TECHCOMP GROUP

In addition to Froilabo, Techcomp Europe comprises of the following companies:



### Contact us

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