ULT FREEZERS

EVOLUTION

Froilabo

froilabo.com

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 performance 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.

Simplicity of maintenance & diagnosis

12 LED sensors anticipate and simplify maintenance, allowing the freezer's downtime to be minimised when maintenance is necessary.

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 Evolution, 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.

CE Marking | MET Marking | ISO 9001 and ISO 13485 certified production site | F-Gas Approved

SAMPLES
Protected & secure

CO_2 and LN_2 backup options available

Secure samples

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

BoSS system (Board Substitution System)

Ensures the compressors remain operational in the event of electronic board failure. Up to 30 hours regulation on batteries, allowing time to arrange repair or maintenance.

Ergonomic intelligent 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.

Visual and 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.

Access control

Freezer settings, such as temperature, are protected by user password.
Additionally the door may be locked to restrict access to the contents within the freezer.

Powerful compressors

Essential for a rapid return to the set temperature after opening the door (cascade compressors for -86°C ULTs).

Secure their environment

Froilabo ULT Freezers ensure optimal operation for the safety of your samples in all circumstances.

Micro-cuts power protection

The electronic board will accept power micro-cuts. It will minimise the number of compressor reboots and will reduce potential maintenance. In the event of power failure, the back-up battery ensures that alarm and freezer information can be displayed.

Adjustable delay

After a mains power outage, each ULT Freezer can adjust the time delay for re-start to avoid a simultaneous peak demand on the facility power supply.

EQUIPMENT FEATURES
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.

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

Easy access to samples
Pull-out shelves are anti-tipping and ease the access to sample and specimen. (Available as an option, 2 shelves maximum for the 690l model).

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

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

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

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

5 second filter replacement and tool-free internal door panel extraction

PERFORMANCES
Temperature & homogeneity

Cooling power and temperature homogeneity

Rapid cooling and temperature homogeneity inside the freezer are critical for sample preservation.

+/-4 hours Pull down to -86°C

(empty 690 L model - 22°C ambient temperature)

Rapid temperature pull down

Unrivalled temperature pull down allows rapid temperature recovery after door openings and restarts.

Delayed temperature rise

60 years of experience with designing insulation for ULT Freezers and the use of cryo-accumulator plates (option) retains the low temperature 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.

Temperature homogeneity

The excellent temperature homogeneity inside the bowl allows energy saving for a same high temperature limit. +/-5°C at -80°C

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.

New generation of compressors

More compact and offering improved energy performance, our new generation of compressors allow significant energy savings.

CONSUMPTION
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 provides users with all available information to help reduce power consumption of their equipment.

No one uses an empty freezer

Beware of manufacture performance and economy claims measured with empty freezers in low temperature environments. Froilabo ULT Freezers operate and are measured in the real world with large numbers of samples and realistic ambient temperatures.

ULT Freezer in use

This is the only significant measure of the real power consumption of a ULT Freezer. It is greatly influenced by the set temperature, the frequency of door opening, the ambient temperature, the filter cleanliness, the power supply stability, and many more factors.

Reducing Energy Consumption

The user can significantly reduce energy consumption by optimising operating conditions, environment and paying attention to the equipment and settings.

Eco Mode

Ability to minimise the power consumption of the freezer outside usual working hours.

Proximity sensor

Proximity sensor will only activate the screen when a user is present to conserve power.

Energy performances indicator

A colored indicator gives in real time the energetical comfort zone of the device. Green, yellow or red, the user is informed of the freezer's energy performance.

Best practices tutorial

Recommendations and tips to guide users influencing power consumption: ambient T°, cleanliness of the filter, door opening frequency, etc.

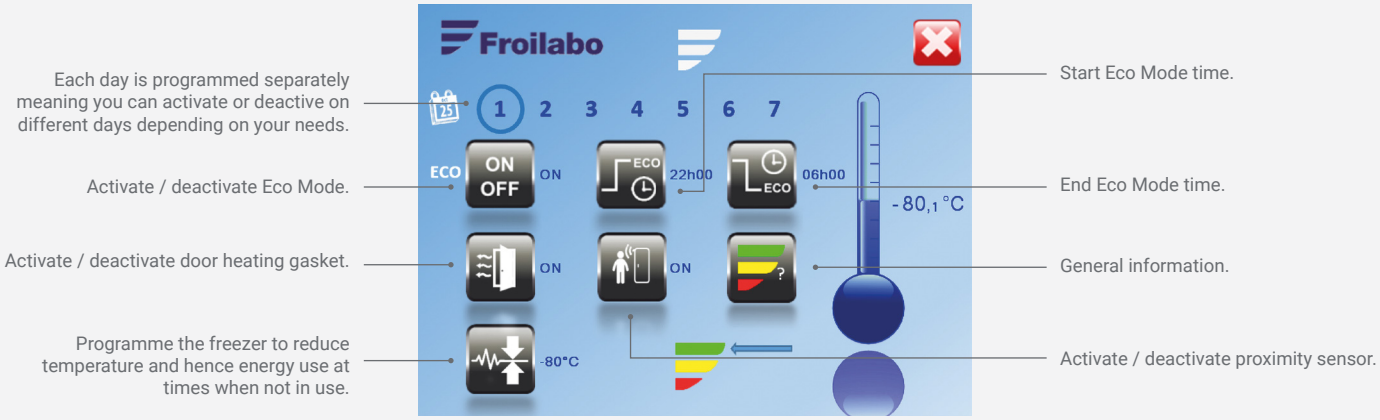
Up to 20% energy saving when using eco mode

MANAGEMENT INTERFACE
Intuitive & secure

Eco Mode fundamentals

Customisable and effective, Eco Mode will help you reduce your energy consumption.

Eco Mode menu screen



Traceability of events in any circumstances

Track the temperature and other events.

Collection of data with USB port

A USB port is available for data collection. Temperature profile and alarm events are recorded and may be downloaded (CSV file).

History of events

View the temperature profile and alarm events from the last 10 hours on the intuitive touch screen.

Record
10 hours of
temperature
profile and
alarm events

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.

“Diagnosis” menu

It gives a preview in real time of the operation of the device. It identifies drifts of parameters (pressure, consumption, T ° of exchange, etc.) and the status of critical components (battery, power relay contacts, etc.).

12 LED indicators

LED indicators give quick alarms indentification
(BoSS engaged, low battery, T° alarm, ...). It eases the diagnosis.

Info menu

Key figures related to conditions of use: number of door openings and times, starts of compressors, power consumption, ambient T °, etc.

Remote hotline

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

Quick and simple service

Critical elements can be replaced rapidly, minimising downtime and significantly reducing maintenance and service cost.

“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.

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	1998 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_2 injection backup system. Autonomy 15 hours, flexible 3m included
	BM/FL1	Stainless steel connection flexible freezer / bottle or CO_2 ramp, length 2m
	BM/FL2	Stainless steel connection flexible freezer / bottle or CO_2 ramp, length 3m
	BM/FL3	Stainless steel connection flexible freezer / bottle or CO_2 ramp, length 4m
	BM/CRYO2E	Cryo-accumulators for BM340, (Temperature up time doubled)
	BM/CRYO3E	Cryo-accumulators for BM515, (Temperature up time doubled)
	BM/CRYO4E	Cryo-accumulators for BM690, (Temperature up time doubled)
	BM/OPT20	Padlock closure bracket (padlock supply by costumer)
TEMPERATURE CONTROL & COMMUNICATIONS	BM/OPT2E	Independent temperature probe PT100 ohms (-100°C to +50°C), connector at back
	BM/OPT3E	Independent K thermocouple (-100°C to +50°C), connector at back
	BM/OPT4E	Pt 100 ohms x3 (-100°C to +50 °C) probes (DIN connector at the back)
	BM/OPT5E	Sensor with 3m cable length for external calibration
	BM/OPT6E	Certified temperature probe
	BM/OPT7E	Circular diagram temperature recorder 0°C to -100°C (1 revolution for 7 days)
	BM/OPT9E	RS 485 port
	BM/OPT13E	4-20mA output
	BM/OPT14E	Samples screen mapping
IQ/OQ/PQ	BM/QP	Performances qualification : 9 points temperature mapping, made in Froilabo factory by a certified independent organisation
	BM/QIQO	Installation and qualification IQ/OQ (without travelling expenses)

STORAGE ELEMENTS

CAT	REF	DESCRIPTION	NUMBER OF SHELVES	USABLE HEIGHT MM (INCHES)	CRYOBOXES 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 BM/EL2T690A	Full stainless steel 2 drawers rack Stainless steel rack with 2 aluminium drawers	2	164 (6.46)	60	4 / 6 / 8
	BM/EL3T690 BM/EL3T690A	Full stainless steel 3 drawers rack Stainless steel rack with 3 aluminium drawers	3	109 (4.29)	60	
	BM/EL4T690 BM/EL4T690A	Full stainless steel 4 drawers rack Stainless steel rack with 4 aluminium drawers	4	80 (3.15)	40	
	BM/EL5T690 BM/EL5T690A	Full stainless steel 5 drawers rack Stainless steel rack with 5 aluminium drawers	5	63 (2.48)	50	
	BM/EL6T690 BM/EL6T690A	Full stainless steel 6 drawers rack Stainless steel rack with 6 aluminium drawers	6	53 (2.08)	60	
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 colums, up to 30 compartments, removables 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

Froilabo

TECHCOMP GROUP

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

Dynamica | Edinburgh Sensors | Edinburgh Instruments | Isotopx | Precisa | Scion Instruments

P.O. Box 1128
Granger, IN 46530

Lazar Scientific, Inc.

574-271-7020
sales@lazarsci.com
www.lazarsci.com