

ULT FREEZERS

BIO GUARD

 **Froilabo**



ENGINEERED FROM DECADES OF ULT INNOVATION

- Our ULT freezers are designed around the demands of your workplace, delivering high performance you can rely on.
- We maximize efficiency with a compact footprint and low energy consumption of just 11.3kWh/day.
- We support intensive workflows with rapid temperature recovery following door openings.



Powered by 100 years of proven expertise and innovation

Large storage capacity, up to 48,000 cryotubes, with a compact footprint



Store your high-value samples with confidence

As a member of the Bio Memory range, our Bio Guard 690 -86°C freezer has been designed for daily use with multiple users, with frequent door openings without impacting sample safety.



Excellent temperature homogeneity

With less than +/- 4°C, we offer best in class temperature homogeneity with a large volume of 690 Liters.



Low power consumption

Advanced VIP insulation, excellent foaming and an optimized cooling circuit deliver outstanding performance with remarkably low power consumption.



Rapid recovery time

We have optimized the cooling circuit for rapid temperature recovery after every door opening.



Intuitive interface

Easy to use interface for quick navigation .

European high-quality manufacturing

Developed through years of research and innovation, our freezers are designed in France and manufactured in Europe. We ensure each unit undergoes performance testing to ensure uncompromising reliability.



ROBUSTNESS OF THE BIO MEMORY RANGE

- For decades we have built a reputation for long-lasting, durable equipment.
- Our freezers are reliable, with many units still operating for 20+ years in real-world use.
- Our new Bio Guard range delivers the same long-lasting durability, now with improved performance and efficiency for a freezer that's built for the demands of everyday use.



High quality compressors

Our reliable compressor is built to last, combining excellent performance with durability.



Reliable temperature measurements

Bio Guard 690 includes a unique combination of sensors in the internal tank and different locations of the cooling circuit to make measurement in real time and deliver the best control. The robust cooling circuit is managed more efficiently to ensure a longer lifespan.



Temperature variation for a setpoint of -80°C for 9 probes.



Improved cooling circuit management

R&D team developed new algorithms to manage compressors and to get the best regulation and regular cycling. This approach increase lifetime of compressors.



Unique flat gasket

Guarantee the best seal between the tank and door for excellent freezer performance. Minimal ice formation on the gasket for a smooth operating process.



High level of Quality Control

100% of our equipment are tested to validate performance. We have excellent quality control to ensure our equipment is tested to ensure optional performance.

ENGINEERED FOR EVERYDAY EXCELLENCE

- The Bio Guard is built for real-world demands, delivering a perfect balance of performance, capacity and efficiency.
- We carried out extensive testing to ensure our freezer performs reliably in real-life environments.
- Our testing confirms that our freezer is built for maximum sample protection, combining excellent temperature homogeneity with rapid recovery after door openings.

Excellent temperature homogeneity

With homogeneity of +/- 4°C, Bio Guard 690 delivers better temperature homogeneity than value of reference in the market, +/-5°C. Figure 1 shows our temperature profile of the 9 probes present in the freezer.

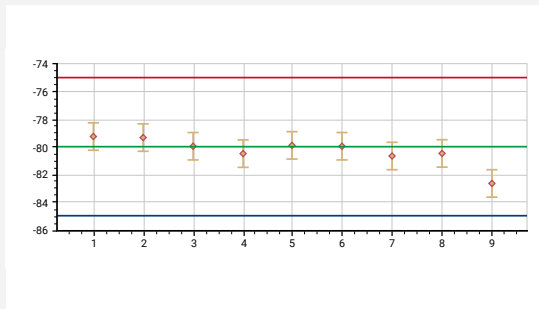


Figure 1. Temperature profile of freezer probes

Efficient Pull-Down time

Bio Guard -86°C 690L ULT freezer reaches -60°C (+/-5°C) in just 2 h 45 hours, and -80°C (+/-5°C) in 4 h 40 min.

Figure 2 below shows temperature profile for average value of top probes, value of the Center probe and average value of bottom probes.

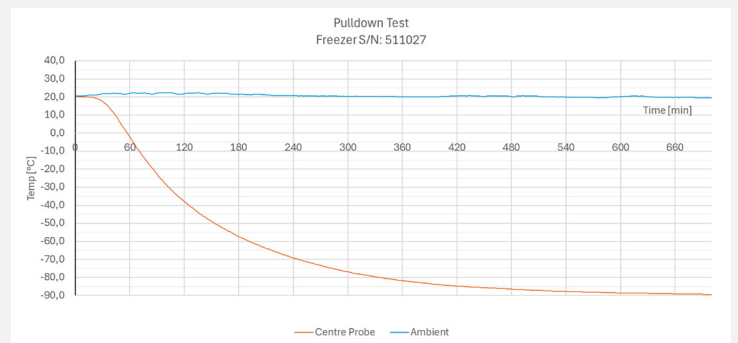
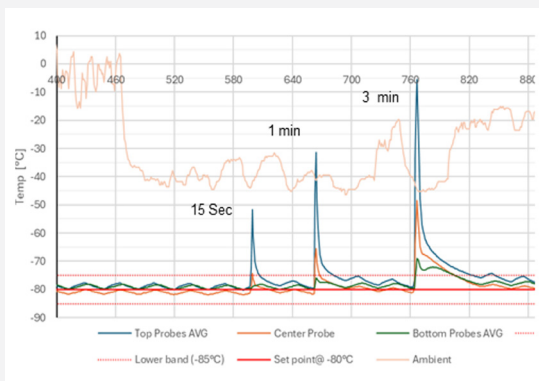


Figure 2. Pull-down test displaying average values of probes

Fast recovery time

Our freezer is designed for daily use, with fast temperature recovery following several door openings. The test confirms the rapid temperature recovery time with a 15 second, 1 minute and 3-minute door opening, ensuring consistent performance and safeguarding of samples.

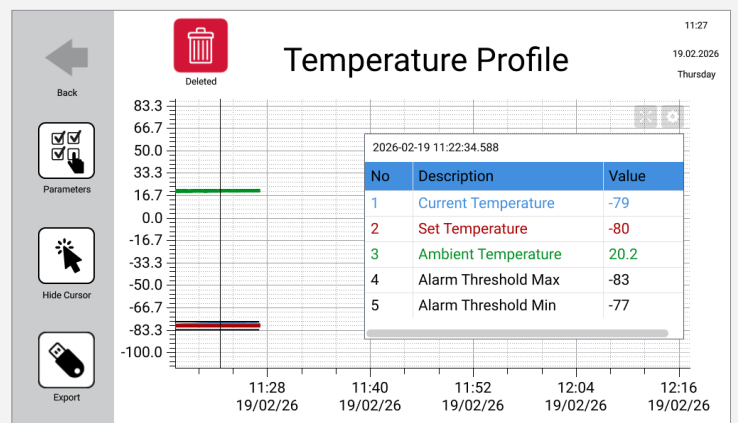


Temperature recovery test

Delayed temperature rise

In the event of a power failure, we offer an additional features which ensures the safety of your samples.

We offer cyro-accumulator plates (option) to retain the low temperature for up to 6 hours.



Temperature profile screen

LARGE TOUCH SCREEN & INTUITIVE INTERFACE

- Our intuitive interface provides smart navigation for quick access to key functions.
- Our sample search function ensures a streamlined process and rapid location of your samples.
- Single-touch control for sample management, temperature profiles, and other essential information.



Sample search feature

Our software is designed to give you instant access to your samples through a high precision search function, helping you find exactly what you need in seconds to keep your workflow running smoothly.



Secured multi-unit management

Monitor the real-time status of every freezer at a glance, with all critical performance data visible from your desk. The Bio Guard platform gives you a centralized oversight of your entire ULT fleet.



Instant visibility of key data

Your key data is displayed in real time, this includes current temperature, setpoint, and a live temperature profile.



Secured access

Bio Guard software supports controlled, secure access by offering four distinct user profiles – guest, user, admin, and service.



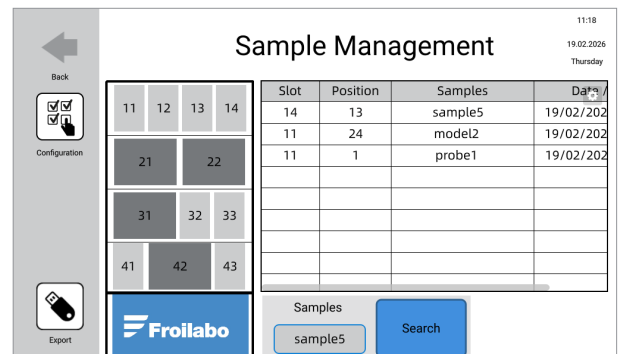
Remote Access

Our ethernet connectivity allows you to see your freezers interface on your computer in real time, giving you instant access to essential information.

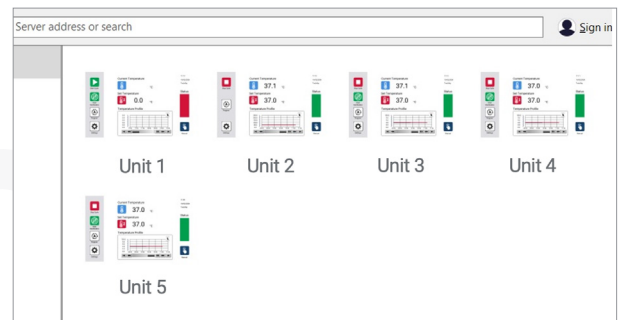


Diagnostics menu

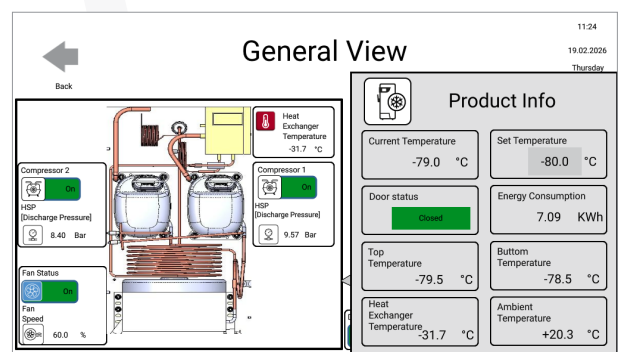
Our diagnostics menu provides you a real-time view of how your freezer is operating,, highlighting any parameter deviations and displaying the status of critical components.



View and search your samples via the sample management screen



Remote access to multiple units from your PC



Diagnostics screen allowing real-time view of key parameters

LOWER POWER CONSUMPTION

Without compromise on performance

Energy consumption

- Low energy consumption is essential to reduce costs and support your sustainability goals.
- The Bio Guard contains vacuum-insulated panels (VIP) and excellent insulation to minimize heat loss and keep the power demand low.
- Our unit consumes just 11.3 kWh/day*, delivering you cost-efficient freezer which has no compromise on performance to protect your most valuable samples.

Low energy consumption of just 11.3kWh/day.



Optimized insulation

Our latest generation of Vacuum Insulation Panel (VIP) combined with high density polyurethane foam offer optimal insulation. In the case of a power outage, the temperature rise is significantly slowed down, ensuring safety of your samples.



Eco Mode

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



Several sensors

We have placed several sensors through the freezer to further reduce the power consumption through optimal management of compressors.



Best practices tutorial

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

Test	Power consumption [kw / 24hr]
24 hr door closed	11.30
15 sec door opening	12.48
1 min door opening	13.21

Power consumption based on energy star protocol

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

FEATURES & BENEFITS

From theory to real-world needs



Large volume with a small footprint

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.



Heated pressure release valve

A bidirectional heated valve ensures balance between pressure and allows you to reopen the door within moments of closing it.



Ergonomic intelligent handle

The ergonomically handle is designed to feel natural in your hand so opening and closing the door requires minimal effort. Our built-in sensor provides instant confirmation the door is fully closed.



Easy access to samples

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



Reduced 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.

Designed to simplify your daily work, with key features to streamline your process

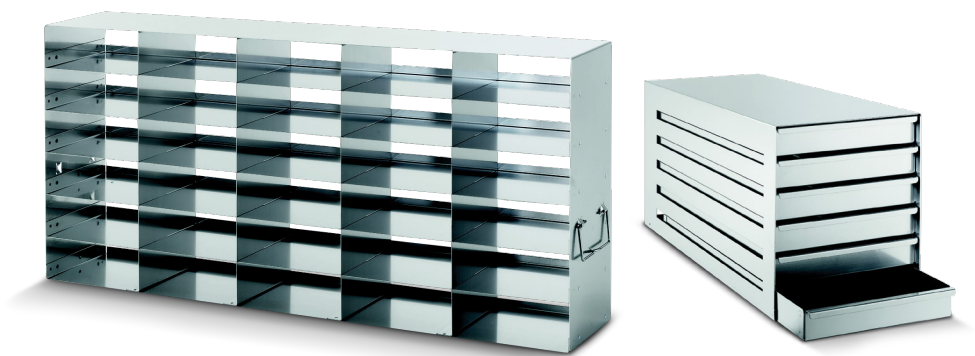


SPECIFICATIONS

VOLUME	COMPARTMENTS	CAPACITY (2ML CRYO-TUBES)	EXTERNAL DIMENSIONS HxLxW MM (INCHES)	INNER DIMENSIONS HxLxW MM (INCHES)	NET WEIGHT (KG AND LB.)	POWER SUPPLY
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.	220/230V 50/60 Hz

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/CRY02E	Cryo-accumulators for BM340, (Temperature up time doubled)
	BM/CRY03E	Cryo-accumulators for BM515, (Temperature up time doubled)
	BM/CRY04E	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)	CRYOBXES CAPACITY (133 X 133 X 51 MM) (5.23 X 5.23 X 2 IN.)	FREEZER RACKS CAPACITY
RACKS WITH DRAWERS (288x730x343mm) (11.34x28.74x13.5in.)	BM/EL2T690	Full stainless steel 2 drawers rack	2	164 (6.46)	60	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	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 cols, up to 30 compartments, removable shelves.	Between 1 and 6	Between 54 and 109	160 micro-plates 96 wells 30 compartments	16
BASKETS	BM/TIR	Stainless steel storage drawer (142x740x330 mm) (5.6 x 29.2 x 13 in.)	1	330	-	16

TECHCOMP GROUP

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



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