

Blood Bank Refrigerators and Freezers for blood and plasma storage
Emobank, Plasmabank and Emoplasmabank Series



Our commitment in the world of blood and blood derivatives storage



➤ ANGELANTONI LIFE SCIENCE has a wide range of smart blood bank refrigerators (Hemosafe 2.0), blast freezers for plasma (Plasmafrost ITEM 3, 4) and freezers designed to meet the needs of small, medium and large transfusion centers, hospitals, nursing homes and analysis laboratories.

In this catalog we present a line of +4°C blood bank refrigerators, -30°C freezers and a combined unit with one compartment at +4°C and another compartment at -20°C, used for storage of blood, plasma, hemoderivatives and plasma derivatives.

All the equipment are certificated according to the Medical Devices Directive 93/42/EEC, as a demonstration of the company's great commitment to the manufacture of high quality and high reliability products that can guarantee maximum safety in the storage of biological liquids.



With our blood and plasma refrigerators and freezers, your product is preserved according to high-quality standards.





We know perfectly the entire supply chain of the "blood" product.

The procedure begins with the **COLLECTION** phase, followed by **PREPARATION** and finally **CONSERVATION**.

Each step must observe the quality requirements established by current regulations. The quality of the blood components must be guaranteed by performing specific checks, planned for quantity and frequency based on adequate statistics evaluations (statistical process control), in order to obtain statistically representative data compared to the total production volume of the individual blood components.

For whole blood and blood components, the shelf life is derived from the ratio preserved solution/additive solution.

The storage methods are specified below:

	RED BLOOD CELLS Temperature 2 - 6°C Max. duration 42 days		WHITE BLOOD CELLS Temperature 20 - 22°C Max. duration 24 hours		PLATELETS Temperature 20 - 22°C Max. duration 5 days		PLASMA Temperature below -25°C Max. duration 24 months
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A. Whole blood

Parameter	Data
Volume	450 mL (net of anticoagulant)
Storage	4 °C ± 2 (22°C ± 2 for platelet production)

B. Concentrated red blood cells

Parameter	Data
Storage 2-6°C for 35 days	> 185 mL
Freezing -80°C (40% of glycerol) Cryostorage -150°C (15-20% of glycerol)	-60 °C ± 2

C. Platelet concentrate

Can be stored at -80°C up to a year, or in vapors of liquid nitrogen up to 10 years. In the event of a short storage period it must be maintained at + 22 ° C.



D. Leukocytes

Parameter	Data
Storage 2-6°C for 35 days	400 mL
Freezing -80°C (40% of glycerol) Cryostorage -150°C (15-20% of glycerol)	22 °C ± 2

E. Plasma

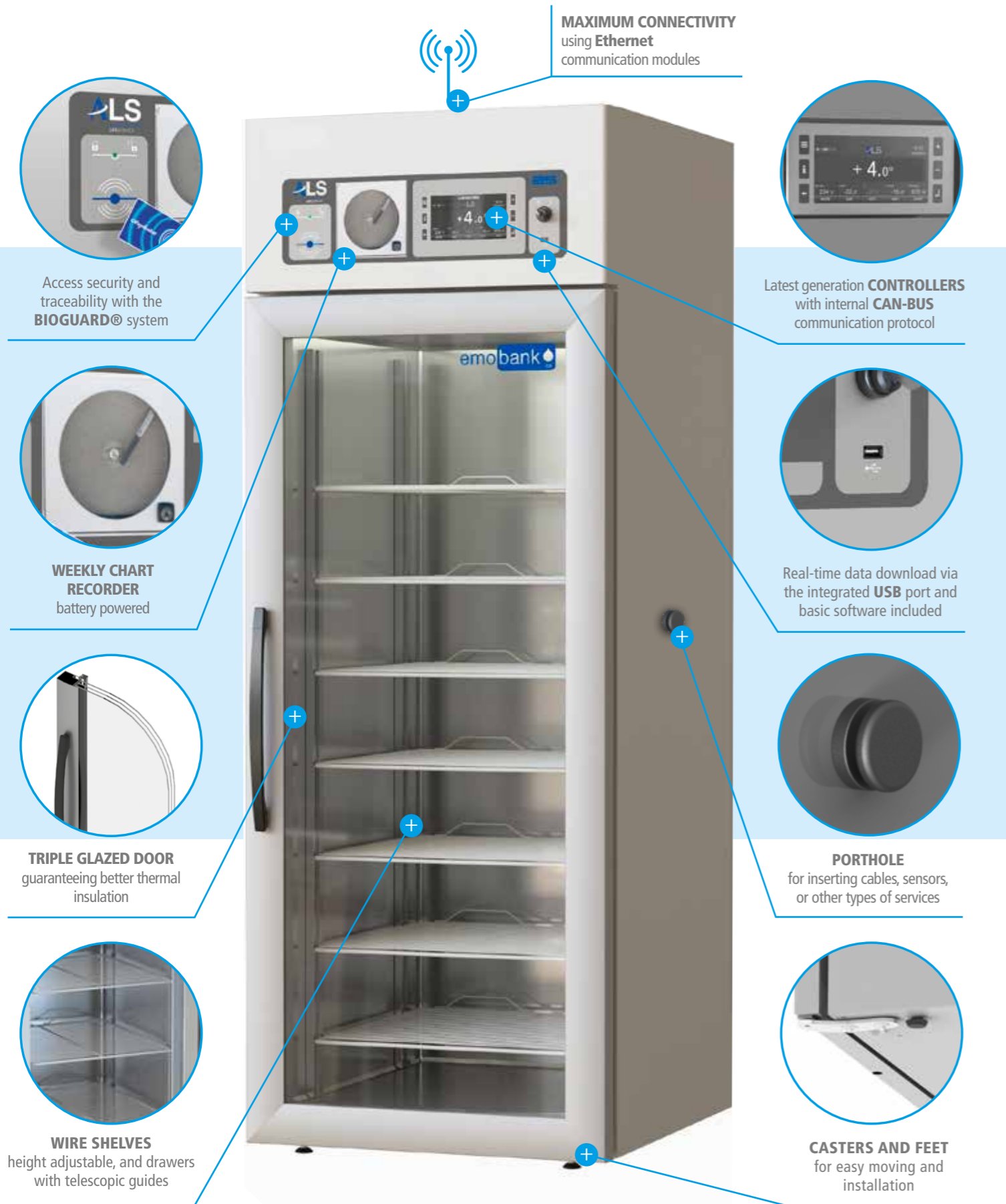
Whole blood plasma must be separated and sent for freezing within six hours from collection. It must be frozen using one special equipment, which allows complete freezing at a temperature below -30 ° C within one hour.

Our range of production boasts the presence of a rapid plasma freezer with certification of the correct freezing process (Plasmafrost ITEM) for more information, visit our website http://www.angelantonilifescience.it/Product/Prodotto?id_fam=178&id_prod=331.


Fresh frozen plasma (FFP), if maintained at constant temperature below -25 ° C can be stored up to twenty-four months, if a temperature between -18 and -25 ° C for up to three months. Thawing of the FFP must take place under controlled conditions at a temperature between 30 ° C and 37 ° C in a thermostatic bath with stirring; after thawing it must be used as soon as possible and in any case not beyond twenty-four hours if stored at + 4 ° C (± 2) ° C.




Blood an plasma refrigerators




Characteristics of storable products in the Emobanks.

Type of bag	Blood bag	
Volume	450 ml.	
Dimensions	105 x 105 ± 5mm	

Characteristics of the products that can be stored in the Emoplasmabank.

Storage compartment	Refrigerator (+4°C)	
Type of bag	Blood bag	
Volume	450 ml.	
Dimensions	105 x 105 ± 5mm	

Storage compartment	Freezer (-30°C)	
Type of bag	Plasma bag	
Volume	200 ml.	
Dimensions	90 x 85 ± 5mm	

The blood and plasma refrigerator **EMOBANK**, **PLASMABANK** and **EMOPLASMABANK** freezers are cabinets monoblock, intended for the conservation of pockets of blood as well as diagnostic drugs, biological material, serums, vaccines and related blood products of small, medium and large hospital transfusion centers, analysis laboratories, research centers, university. Their use is not foreseen in areas with presence stable of patients.

Equipped with a refined alarm system, they guarantee maximum reliability through constant performance monitoring.

What do they preserve?

- Blood bags
- Plasma
- Plasma coagulation factors

THE MAXIMUM SAFETY OF YOUR BAGS

In order to guarantee total **operator safety** the refrigerators and freezers are equipped with a series of safety devices, to prevent machine opening when this is in operation.

	Position	Description	Action
1	KEY OF LOCKING DOOR	Ensures that the freezers and refrigerators does not open accidentally, or deliberately, as a staff member not allowed. The machine can be at very low temperatures.	Close the door, remove the key and verify that the door can't be opened.
2	CLOSING ELECTROMAGNETIC SYSTEM BIOGUARD®	Ensures that the freezers and refrigerators does not open accidentally, or deliberately, as a staff member not allowed. The room can be located at very low temperatures.	Close the door, and verify that the door can't be opened.
3	MICROSWITCH "OPEN DOOR"	Upon opening the door the enable microswitch door open alarm: in user panel appears on "open door" symbol.	Close the door and check that in user panel is no longer present the symbol "open door".



EMOBANK: Features



Maximum protection

Internal tank made in AISI 304 stainless steel combined with a load-bearing structure in hot-galvanized steel covered with PVC film guarantees maximum corrosion protection and long life.



Optimization of internal spaces

Each model is equipped with a system of height adjustable shelves (drawers optional), which allows efficient organization of the internal spaces and adequate positioning the material.



Uniform cooling

The internal compartment is cooled with a ventilation system that guarantees excellent temperature uniformity. The fans are turned off when the door is opened, protecting the operator from exposure to low temperatures and reducing heat loss.



Easy to open

The new ergonomic handle design makes it easier to grip, even with just one hand. Standard key lock or Bioguard® system lock (accessory).



External communication

A porthole of 19, 23 or 50 mm is provided as an accessory for inserting cables, sensors or other types of services.



Eco-Friendly

We have always considered ourselves "friends of the environment", and for this reason all our products use gases that are natural or that have a very low environmental impact.



Easy to clean

The structure of the internal AISI 304 stainless steel tank is designed to minimize the presence of edges; the complete sealing of couplings and joints helps prevent the formation of spots where bacteria can proliferate, and at the same time allowing for easy cleaning.



Greater Access Security

The security of the samples can be increased with the BIOGUARD® system (optional), which guarantees complete access control. With this accessory, the door is equipped with an electric lock that can be opened only by means of authorized cards, ensuring total access traceability.



Low noise levels

The Emobank, Plasmabank and Emoplasmabank line has a structure and cooling system designed to minimize noise. The equipment can be installed in laboratories without disturbing the people who work there.



Stored Product Visibility

Models equipped with glass doors and LED lighting inside for perfect product visibility even when the door is closed.



Easy to move

All the products in the line are equipped with casters, wheels and rollers that make them easy to move and with adjustable feet for stabilization.



Maximum Connectivity

The device is managed by a latest-generation electronic controller that optimizes performance and functionality and lets the user regulate and monitor the refrigerator remotely with great simplicity.



Emobank Series, from 100 to 1500 liters



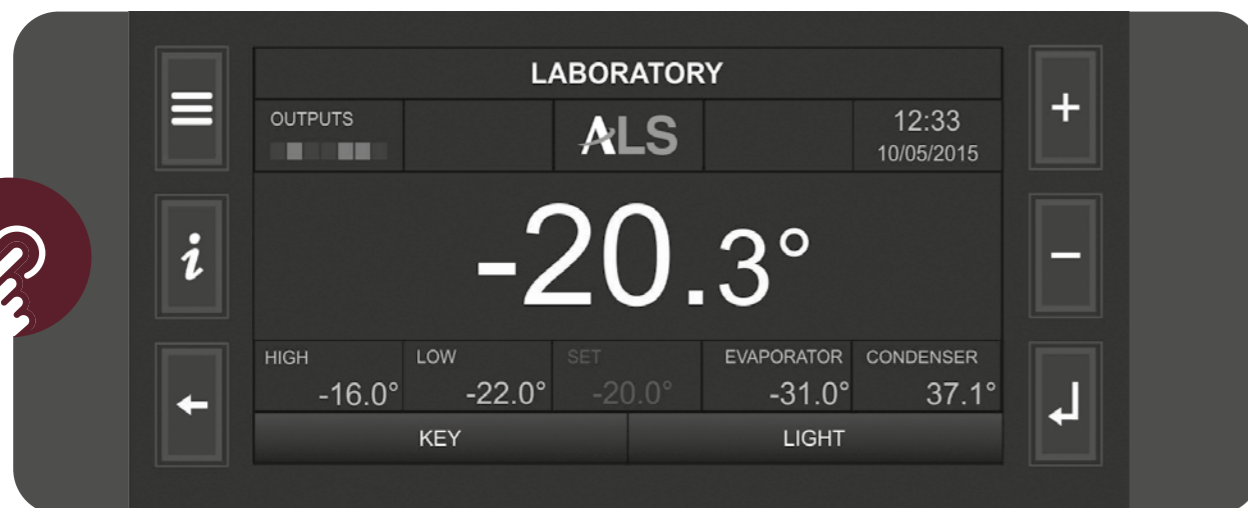
Plasmabank Series, from 700 to 900 liters

Emoplasmabank Series, from 300 to 1500 liters

The controller The latest generation

ACP7: TOTAL CONTROL IN THE BLINK OF AN EYE

TOUCH SCREEN



The **EMOBANK, PLASMABANK** and **EMOPLASMABANK** range has a graphic controller with a 7-inch display.

The latest generation **ACP7** controller, developed over years of experience and supported by the latest technology, guarantees high performance, maximum safety and ease of use.

The controller electronics have three separate processors: one dedicated to the control system, one for the alarm section and one for the communication of the data readings. Access to the parameters is password protected with 3 access levels: users, service, administrator.

The **7-inch display** shows all the basic data in a single screen, thus allowing real-time evaluation of the operating status.

The ACP7 controller has innovative features that optimize energy consumption and allow continuous monitoring of parameters, with 3 separate microprocessors for: REGULATION, ALARMS and CONNECTIVITY.

The **REAL-TIME** function allows viewing with the daily display of temperatures. The other functions include event lists, temperature recording and operating variables sampled every 30 sec. for **10 years**. All values are stored and event log files can be downloaded to a local PC via the **built-in USB port**.

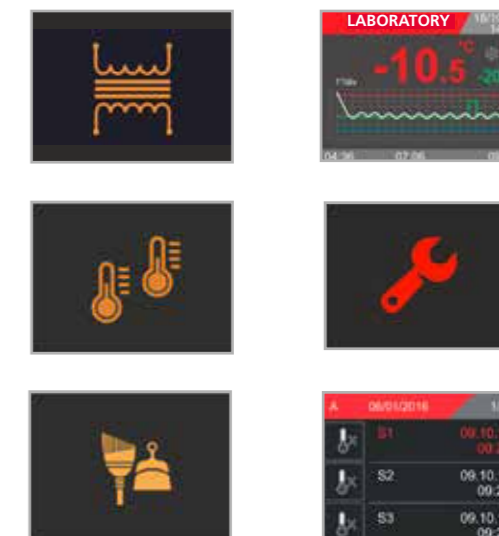
The **ECOMODE** function enables the machine to operate in energy-saving mode. It is possible to regulate access to the controller and to enable user parameter modification functions by means of a **PERSONAL PASSWORD**.



EMOPLASMABANK series is equipped with two separate compressors, one for each compartment. Each compressor is controlled by a dedicated microprocessor controller. Due to space restrictions, it is not possible to install the two 7" touchscreen displays on some models. These models have only one 7" display, which is still able to control the two compressors independently.

The command key manages various functions according to the status of the device:

- 1) All the devices are certified according to the Medical Devices Directive 93/42/EEC, as a demonstration of the company's great commitment to the manufacture of high quality and high reliability products that can guarantee maximum safety in the storage of biological liquids;
- 2) The machine is signaling an alert situation, which can normally be resolved by an operator;
- 3) Critical condition, requiring immediate user intervention or technical assistance.



GREATER SAFETY FOR YOUR SAMPLES

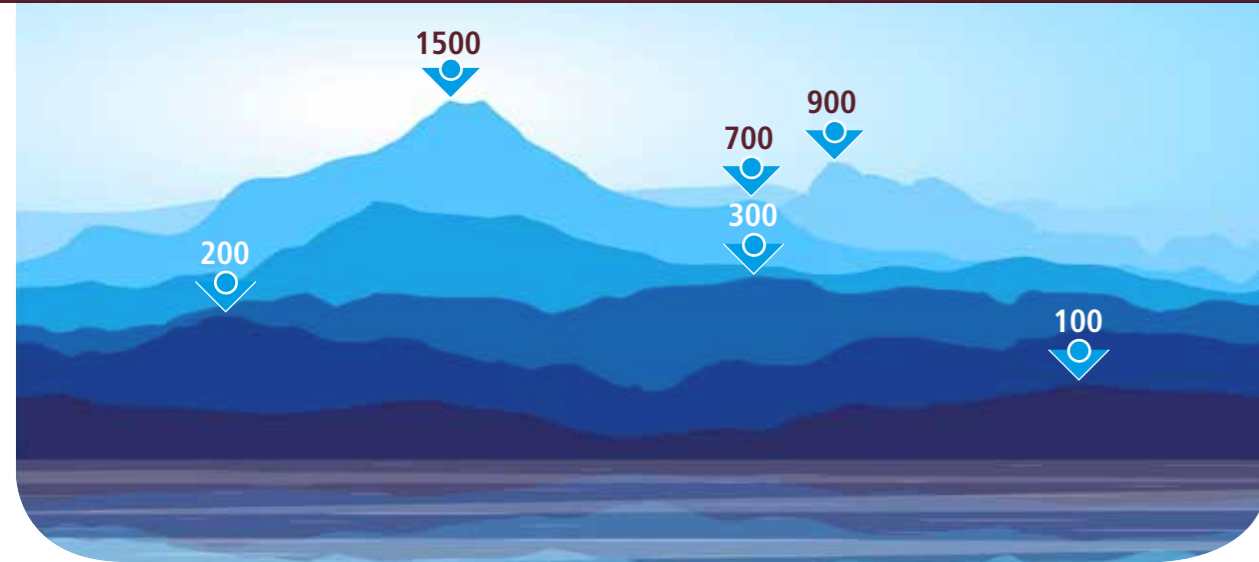
The **SMART DIAGNOSTIC** function guarantees constant monitoring of the degree of wear of the major components. Once the preset maximum wear threshold is reached, an alarm will suggest replacement, reducing the risk of machine downtime.

The temperature in the technical compartment is constantly monitored, and a warning is provided when the safety threshold is reached.

There is a current recharge circuit for the **BACKUP BATTERY**, with periodic tests, charge status and replacement warning. The backup battery provides 30 hours of power in the event of a mains power outage.

SMART, RELIABLE CONTROL SYSTEM, which is able to maintain the set temperature even in the event of a sensor failure.

A complete range from 100 to 1500 liters



The study and design of the **Emobank**, **Plasmabank** and **Emoplasmabank** range have made it possible to build a complete line of refrigerators and freezers with regard to machine control electronics.

The series includes machines from 100 to 300 liters and from 700 to 1500 liters with storage temperatures of +4°C to -30°C.

The range is completed by the following versions, available in the following formats:

- 300 liters combined, with one 200-liter / +4°C compartment and one 100-liter / -20°C compartment (**Emoplasmabank 300**)
- 700 liters combined, with two 350-liter compartments, one at +4°C and one at -20°C (**Emoplasmabank 700**)
- 1500 liters combined, with two 700-liter compartments, one at +4°C and one at -20°C (**Emoplasmabank 1500**)

Controlled access

The **BIOGUARD®** system allows keyless opening with a personal RFID card. Each Bioguard®-equipped device is supplied with 3 ID cards. The BIOGUARD® locking system increases the security of the stored products. In the event of ID card damage or electronic malfunctions, the door can be opened manually with a special emergency key.



Models and Technical Specifications

MODELS	EMOBANK									
	100/2	200/3	200/4	300/5	300/6	700/5	700/6	700/7	700/8	
DIMENSIONS										
Internal dim. (LxDxH)	mm	480X500X450	480x500x815		480x500x1385		590x 675x 1500			
External dim. (LxDxH)	mm	600X615X850	600x500x815	600x615x1425	600x615x1995		740x 815x 1998			
Liters	l	95	176		303		600			
Weight	kg	480X500X450	100		115		170			
TECHNICAL SPECIFICATIONS										
Temperature range	°C	0 ~ +15								
Climatic class		I								
Power voltage	V	230								
Noise level	dB	<50								
Max. absorbed power	A	1,5	2				4			
Heat dissipation	kcal/h	170	215				180			
Refrigerant gas		R 290		R 290		R290				
STRUCTURE										
External finish		Prepainted galvanized-plasticized steel sheet – color gray RAL 9006								
Internal material		AISI 304 Stainless Steel								
Insulation	mm	60					75			
Shelves	Nr.	2	3	4	5	6	5	6	7	8
Maximum load per shelf	kg	30					40			
Capacity per drawer/shelf	Nr.	30 bags (250ml), 16 bags (450ml)					76 bags (250ml), 44 bags (450ml)			
Maximum load	Nr.	60 sacche (250ml), 32 bags (450ml)	90 bags (250ml), 48 bags (450ml)	120 bags (250ml), 64 bags (450ml)	150 bags (250ml), 80 bags (450ml)	180 bags (250ml), 96 bags (450ml)	380 bags (250ml), 220 bags (450ml)	456 bags (250ml), 264 bags (450ml)	532 bags (250ml), 308 bags (450ml)	608 bags (250ml), 352 bags (450ml)

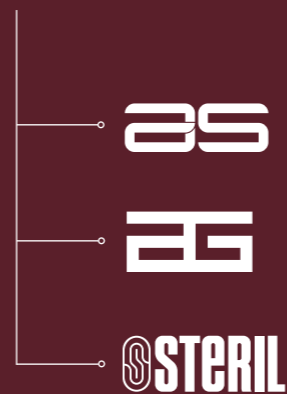
PLASMA BANK	
700 LT	900 LT
590x675x1500	660x875x1510
740x815x1998	810x1010x1998
600	870
170	180
- 30 ~ - 10	
I	
230	
< 55	
6	
345	370
R452A	
Prepainted galvanized-plasticized steel sheet – color gray RAL 9006	
AISI 304 Stainless Steel	
75	
7	9
40	
44 bags (450ml)	55 bags (450ml)
308 bags (450ml)	495 bags (450ml)

MODELS	EMOBANK					
	700/B	900/8	900/9	900/B	1500/12	1500/14
DIMENSIONS						
Internal dim. (LxDxH)	mm	590x675x1500	660x875x1510		1330x675x1500	
External dim. (LxDxH)	mm	740x815x1998	810x1010x1998		1480x815x1998	
Liters	l	600	870		1400	
Weight	kg	170	180		230	
TECHNICAL SPECIFICATIONS						
Temperature range	°C	0 ~ +15				
Climatic class		I				
Power voltage	V	230				
Noise level	dB	<50	<60		<50	
Max. absorbed power	A	4	5			
Heat dissipation	kcal/h	180	140		260	
Refrigerant gas		R290				
STRUCTURE						
External finish		Prepainted galvanized-plasticized steel sheet – color gray RAL 9006				
Internal material		AISI 304 Stainless Steel				
Insulation	mm	75				
Shelves	Nr.	7	8	9	12	14
Maximum load per shelf	kg	40				
Capacity per drawer/shelf	Nr.	76 bags (250ml), 44 bags (450ml)	90 bags (250ml), 55 bags (450ml)		76 bags (250ml), 44 bags (450ml)	
Maximum load	Nr.	532 bags (250ml), 308 bags (450ml)	720 bags (250ml), 440 bags (450ml)	810 bags (250ml), 495 bags (450ml)	912 bags (250ml), 528 bags (450ml)	1064 bags (250ml), 616 bags (450ml)

EMOPLASMA BANK					
300		700		1500	
1°VAIN	2°VAIN	1°VAIN	2°VAIN	1°VAIN	2°VAIN
480x500x845	480x500x495	590x675x675		590x675x675	
600x635x1995		740x815x1998		148x815x1998	
184	108	300	300	600	600
120		180		230	
0 ~ + 15	-23 ~ - 10	0 ~ + 15	-23 ~ - 10	0 ~ + 15	-23 ~ - 10
I					
230					
< 50		<60			
6		7		8	
700		370		430	
R290		R290			
Prepainted galvanized-plasticized steel sheet – color gray RAL 9006					
AISI 304 Stainless Steel					
60		75			
3	2	2	2	5	7
30		40			
30 bags (250ml), 16 bags (450ml)		76 bags (250ml), 44 bags (450ml)			
150 bags (250ml), 80 bags (450ml)		304 bags (250ml), 176 bags (450ml)		912 bags (250ml), 528 bags (450ml)	

ACCESSORIES AND OPTIONS
Weekly chart recorder
BIOGUARD, door opening with badge
Additional user badge for BIOGUARD system (in combination with optional BIOGUARD)
Ø19 mm Porthole with closing cap for Emobank 100, 200, 300 and Emoplasmabank 300
Ø23 mm Porthole with closing cap
Ø50 mm Porthole with closing cap
Sliding and removable stainless steel drawer
Plasticized wired shelf
Stainless steel wired shelf
Mounting on wheels
External facing in stainless steel
Additional PT 100 sensor in class A (complete with calibration certificate)
Additional PT 100 sensor in class A with 4-20mA signal converter (complete with calibration certificate)
Additional PT 100 sensor in class A calibrated on 3 specific temperatures (complete with calibration certificate)
IQ/OQ qualification protocols (ALS standard)
Solid door
Divider set for one drawer
Packing in wooden box/crate
Kit for chart recorder

ACCESSORIES AND OPTIONS FOR CONNECTIVITY
GSM telephone dialer for alarm signaling (SIM card not included)
Ethernet module for Cryolog monitoring (network cable, Hub / switch + PC required)
RS485 module for Cryolog monitoring (serial cable, Hub / switch + PC required)
CRYOLOG software for monitoring max. 32 units from remote PC (in combination with Ethernet or RS485 module)



Angelantoni Life Science (ALS), a sub-holding fully owned by Angelantoni Industrie, is one of the leading international companies in the supply of refrigerating equipment and the design of technological solutions in the biomedical industry, with a constant commitment to biological and environmental innovation and safety.

Research centers, hospitals, laboratories, universities and industrial companies in the pharmaceutical and chemical industry are the recipients of ALS production, which covers all the needs for refrigeration, infection control and microbiological safety with a wide range of standard and special products. With its agents and distributors in over 40 countries, Angelantoni Life Science is the ideal partner in the healthcare sector and scientific research.

Our strength comes from the skills of our engineers and the experience they have gained in design, from the professionalism of our technicians in production and service and the coordination of experienced managers supporting our staff. Each team member contributes their enthusiasm and scientific and industrial knowledge to a work environment that stimulates innovation and development. Angelantoni Life Science invests more than 10% of its turnover in Research and Development, involving a multidisciplinary team of technicians and researchers.

Founded in 1932, Angelantoni Industrie is an industrial group with 4 plants and over 500 employees. It is one of the world's leading companies in the production of environmental and space simulation chambers (ATT Angelantoni Test Technologies), cold technology applications in pharmaceutical and hospital research (ALS Angelantoni Life Science), Energy Efficiency (Cold Energy) and Solar Thermodynamic Energy (Archimede Solar Energy receiver tubes).



Angelantoni Plants



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