CSF
RANGE

Contact Shock Freezers

B Medical Systems | CSF Range

Contact shock freezers are devices intended for the quick-freezing and subsequent temporary storage of blood plasma or biological samples to a core temperature below -30°C within less than one hour.

Compliant to AABB Standards | Medical Device according to 21CFR Part 864.9700, Class II

3
MODELS

-30°C
TEMPERATURE

60 > 96
PLASMA BAGS
(350ml)

SN
CLIMATE
CLASS

AABB
STANDARDS-
COMPLIANT

medical
systems

SAVING LIVES
THROUGH RELIABLE
AND INNOVATIVE
TECHNOLOGY

Blood Management Solutions

Safety Standards
B Medical Systems

The Safety Standards developed by B Medical Systems define certain significant technical features of a product. These ensure the safe storage of the preparations as well as setting the highest standards of safety for the user.

CSF RANGE	
●	B Medical Systems Electronics
●	B Medical Systems 7'' full touchscreen display
●	Power indicator light and digital temperature indicator (display: 0.1 digits)
●	Self-contained alarm system with integrated battery takes over the alarm function and temperature value measurements in case of system failure for at least 48 hours
●	Acoustic and visual alarm signal in case of temperature alarm and system failure
●	The alarm history function on the electronic stores all the relevant values during a temperature alarm, such as: min., max. and average temperature
●	Remote transmission alarm signal (via potential-free contact) in case of temperature alarm (change-over contact)
●	Designed and tested for climatic class SN (ambient temperature range +10°C to +32°C)
●	Interior made from stainless steel *[evaporator plates and drip channel made from stainless steel]*
●	Internal LED lighting
●	Additional remote transmission alarm signal (via potential-free contact) in case of system failure (change-over contact)
●	Smooth castors for optimum flexibility of movement
○	Water cooling *[standard for water-cooled version: CSF61-101 W models]*
○	Machine compartment as external unit *[standard for split version: CSF61-101 S models]*
●	Ambient temperature sensor
○	°B Connected - Universal software for the monitoring of refrigeration devices, including the acquisition, recording and visualization of temperature data
●	Ethernet interface for the visualization of all operating and control functions (hardware and software settings) via °B Connected monitoring software on a peripheral device (computer)
●	Battery operated emergency opening during the power failure

● Standard ○ Optional

Subject to change without prior notice.

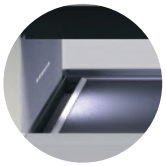
Contact Shock Freezers

B Medical Systems | CSF Range

2 models • Set temperature **-30°C** • Climate class **SN** • Compliant to **21CFR Part 864.9700, Class II** I **AABB Standards**

In conformity with national and international guidelines, regulations for Medical Devices offering reliability, efficiency and safety at an optimal price.

MODELS CSF61-101 L



Fastest contact shock freezers worldwide

Our contact shock freezers provide the shortest freezing cycle on core temperature of -30°C: nearly 100 units of 250 ml within less than 60 minutes.

State-of-the-art contact freezing technology™

Our innovative and patent pending system of inclined trays delivers the most homogeneous freezing and offers the best in repeatibility and productivity, with operator independent performance for 100% performance consistancy.

Highest degree of ergonomics

Each tray has an effective and usable height, giving easier access for quicker loading and enabling easier manipulation of bags.

Optimized pull-down of the layers

The freezing down is quicker, the clinical payback on investment is maximised and the concentration of factors 8, 9 and albumin is increased.

Integrated multifunction electronics

Located at eye level, the electronics are easily accessible and can be connected with our fully integrated monitored solutions for a complete traceability of frozen bags.

Maintenance-friendly design

- Our contact shock freezers offer an easy cleaning and disinfection facility
- Thanks to the additional battery, plates can still be opened to access the bags, in case of power failure

Contact shock freezers are devices intended for the quick-freezing and subsequent temporary storage of blood plasma or biological samples to a core temperature below -30°C within less than one hour. CSF models are built in compliance with directives for the preparation of blood plasma and offers multiple controls, warning and data recording safety features developed as a result of 40 years of expertise in refrigeration technology.

CSF models are also available as split version (CSF61-101 S) and water-cooled version (CSF61-101 W). Technical data available upon request.

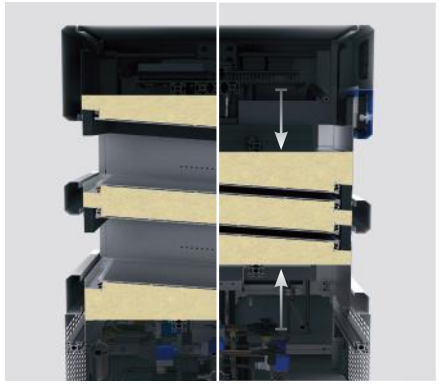
CSF RANGE

Technical Data
General features

CSF61 L

Freezing capacity (plasma bags)	*Single layer*	20 at 1000ml (content 850ml)
		30 at 350ml (content 250ml)
	Double layer	60 at 350ml (content 250ml)
Freezing time to core temperature of -30°C *at +25°C ambient temperature (in single layer)*		20 units (1000ml) ± 45 min.
		30 units (350ml) ± 26 min.
Operating temperature (preset)	*Pre-cooling*	-40°C
	Freezing	-50°C
	Eco-mode	-43°C
Climate class (ambient temperature range)		SN (+10°C to +32°C)
Defrosting technique / time		Manual (hot gas) / 10 min.
Refrigerant type		R449a
External dimensions H x W x D (in)		75.2 x 42.5 x 32.7
Dimensions contact plates W x D (in)		2 units of 26.8 x 24.8
Net weight with standard equipment (lb)		1323

Energy Saver			
	Operating voltage range	380-400 V - 50/60 Hz (32A) or 480 V - 60 Hz (32A)	
		STABLE RUNNING unloaded	FREEZING PROCESS - fully loaded (with units at 1000 / 350ml in single layer)
	Power (W)	8200	4800 / 3500 (5700 at defrosting)
	Energy consumption (kWh/24h)	0.7	3.0 / 1.8 (per freezing cycle)
	Average heat ejection (Kcal/h)	-	3397
	Compressor running time (%)	-	90
	Noise level (dB(A)) *(at 1.6m height & 1m distance)*	73	73



OPTIMIZED CONTACT FREEZING

- Levels operate independently, allowing simultaneous freezing and defrosting as necessary
- Inclined plates at 5° ensure full contact with plasma and minimizes effect of air trapped in bags negatively influencing repeatability of freezing cycle times, providing operator independent performance for 100% performance consistancy

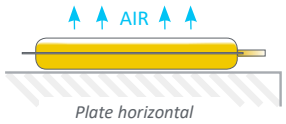


Plate horizontal

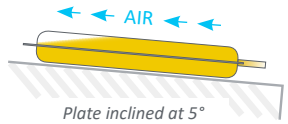


Plate inclined at 5°

All values were measured at +25°C ambient temperature and without load (unless otherwise stated).
Subject to change without prior notice. Some of the accessories shown in the pictures are optional.
The figures are approximate, and may vary based on the number of bags that are actually stored and the different bag manufacturers' specifications available on the market, the actual bag sizes as well as the individual user's practice of loading.

CSF RANGE

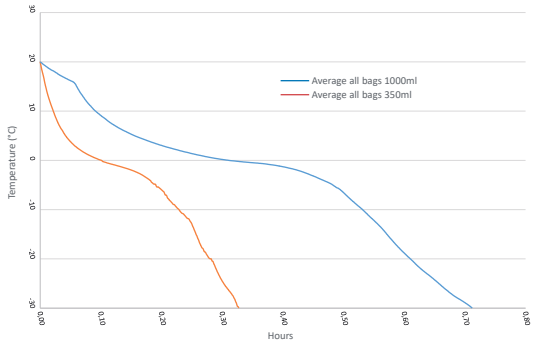
Technical Data
Specifications

		CSF61 L
Control/display sensor (4 sensors per device) *Precision (from -80°C to +180°C) ± 0.3°C*		PT1000 2-WIRE 1/3DIN CL.B
Dummy bag sensor (optional) *Precision (from -80°C to +180°C) ± 0.3°C*		PT1000 2-WIRE 1/3DIN CL.B
Accu data / function time of the control panel when system failure		12 V - 7 AH / 48h
Relative humidity at +32°C		≤ 70%
Compressor		Bitzer
Casing insulation (polyurethane)		3.15 in PU
Material	*Inner body*	Stainless steel (V2A - 1.4301)
	Outer body	Steel (1.0330+ZE25/25) & Powder coated 60-90 ym
	Contact plates	Stainless steel (V2A - 1.4301)
European Medical Device Directive		MDD 93/42/EEC, Class IIa
EMC directive		2014 / 30 / EU
Low voltage directive		2014 / 35 / EU
FDA regulation | Medical Device		21CFR Part 864.9700, Class II

EXAMPLE OF "FREEZING CYCLE ON CORE TEMPERATURE OF -30°C"

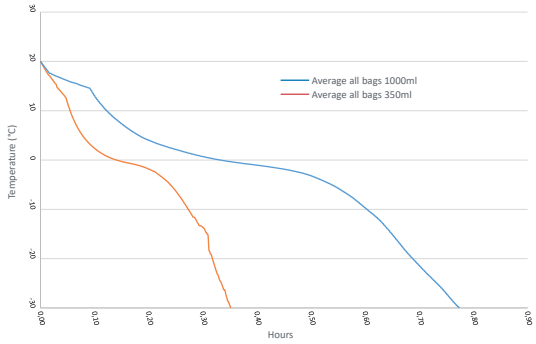
CSF61 L

- Voltage: 400V / 50Hz
- Ambient temperature: +25°C
- Relative humidity: 45%
- Test bag type:
  350ml, filled with 250ml (30 bags)
  1000ml, filled with 850ml (20 bags)
- Filling medium:
  saline solution, 0.9% salt



CSF101 L

- Voltage: 400V / 50Hz
- Ambient temperature: +25°C
- Relative humidity: 45%
- Test bag type:
  350ml, filled with 250ml (48 bags)
  1000ml, filled with 850ml (32 bags)
- Filling medium:
  saline solution, 0.9% salt



CSF RANGE

DUMMY / REFERENCE BAG
(Shown with sensor & cable)

TRANSPORT CARRIER

TRANSPORT TRAY

BARCODE READER

Equipment
Standard & optional

	CSF61 L
B Medical Systems Electronics 7'' full touchscreen display	●
Internal LED lighting	●
GMP - Clean room classification	● A / ISO 5 | ○ B / ISO 6
°B Connected - Monitoring Software	○
Ethernet interface / interface card	●
Ambient temperature sensor	●
Potential-free contact in case of system failure	●
Eco-mode (interim storage temperature of -43°C)	●
Dummy / reference bag port for accompanying core temperature readings during the freezing process	● 2
Dummy / reference bag with sensor & cable	○
Dummy / reference bag	○ 500ml
Transport carrier | tray	○ 1 | ○ 4 (recommended)
Barcode reader	○
Condenser filter	●
Integrated air-cooled condenser	●
Water cooling	○ | ● CSF61 W (water-cooled version)
Air-cooled condenser & compressor as external unit (H 42.5 x W 53.1 x D 38.0 in)	○ | ● CSF61 S (split version)
Securing feet for models with condenser & compressor as external unit	○
Smooth castors with stabilizers	●
Wooden packaging for ocean transport / export	●

EXTERNAL AIR COOLING SYSTEM

INSTALLATION INSTRUCTIONS

The installation costs for units with an external air cooling system or water-cooled system are not included in the unit price (standard version: CSF61-101 L). These costs are subject to an individual client request and can vary depending on the conditions in the designated building. CSF models are installed as a free-standing, air-cooled unit ready for connection.

On request the CSF models can also be equipped with the following cooling systems:

- External air cooling system (CSF61-101 S models)
- Water cooling system (CSF61-101 W models)
  - Directly connected to the in-house water system
  - Connected to a separate closed air-conditioning system, also called “A/C water cooling system”
  - Connected to a separate closed water circuit, also called “refrigerated water tower”

● Standard ○ Optional - Not available

Subject to change without prior notice. Some of the accessories shown in the pictures are optional.

Full functionalities at a glance

B Medical Systems | Electronics

The new B Medical Systems Electronics offers a wide range of adjustment and diagnostic facilities as well as additional protection / warning operations (via external alarm operations, histories and individual display signals).

Multi-function electronics with 7'' full touchscreen display, located at eye level with pre-installed connection allowing exclusive °B Connected monitoring functionalities for a complete traceability of frozen bags.

Power switch OFF / ON

Turn main switch to ON position, the controller will be switched on automatically and the green LED lights up and the display activates.

Touchscreen 7'' full display

The main screen has two different shapes depending on whether the batch management is active or not:

- At the top: login status (user level), current time and current voltage
- In the left-hand: the main screen shall always show two frames containing level specific data (operating mode, plate temperatures, dummy bag temperature, process time and progress bar). The entire frame and its content is an active touch area. When pressed, the selected level opens in detail view. The other level goes to minimized view
- In the right-hand: touch buttons to access batch list and main menu, to deactivate touch screen for cleaning, to mute alarm buzzer and to access active alarms and warnings. When the batch management is inactive, the batch list button is replaced by two moving direction selection button (open/close plates)

Modern and user-friendly graphic display

Acoustic and visual alarm signal

When an alarm occurs, the red alarm LED lights up and an acoustic signal sounds. The corresponding alarm message appears overall or level specific on the display. If several alarms occur simultaneously, the messages will be shown alternately.

Keycard reader

Login using a NFC card

Touch buttons

- CLEAN button: the cleaning button allows the user to disable the touch capability of the screen for a short period of time in order to clean the screen. This button is replaced by the logout button when any user is logged in
- MENU button: allows access to the menu screen
- MUTE button: deactivates the acoustic alarm for a predefined period of time
- ACTIVE ALARMS AND WARNING button: during a warning or alarm situation, the color of this button and the corresponding level will change. Information on an active alarm and warning is accessible by pressing the message button

Optimum control and protection

B Medical Systems | °B Connected

°B CONNECTED | MONITORING SOFTWARE

Universal software for the monitoring of refrigeration devices, including the acquisition, recording and visualization of temperature data.

- Unique monitoring software for the full range of Blood Management Solutions and Medical Refrigeration products
- Web-based interfaces for computers and mobile devices
- Modern design for simple and intuitive use
- Graphic display of temperature curves
- Integrated event and activity history of appliances' components
- Data recording on centralized database for long-term archiving
- Easy setting of specific alarm, via email or SMS alerts
- Generation of reports compiling crucial data and activities
- Temperature and detailed device data export for third-party software
- Important cost advantage compared to a traditional circular chart recorder and its spare parts
- REST API to access raw data directly from the database in read-only mode

KEY BENEFITS:

- Unique interface for the monitoring of the full range of refrigeration devices
- Centralized database providing data access to entire customer network

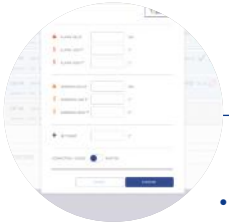
1 CONFIGURATION

USER MANAGEMENT

- Password login
- Access right

DEVICE SETTINGS

- Device information
- Device & user configuration



ALARM PROFILE

- Parameters of the alarm profile (day, hour, minute)
- Alarm management

2 DISPLAYING

DETAILED DISPLAY

- Optimized design for mobile and touch compatible devices
- Support of multiple languages
- Real-time data: Current temperatures, set point, upper and lower limit, door state, compressor runtime
- Log data: Events, alarms within date/time, event type, description of the event. Event and alarm confirmation function
- Batch management: Plasma bag barcodes scanned on device and imported in the database
- Parameter settings of each device: Factory settings, real-time clock, language, firmware version, RS485 address, IP address

°B Connected offer a highly flexible system that is adaptable to specific customer requirements
> Complete & legally safe documentation of temperature data
> Comprehensive applications and diagnostic possibilities

3 ANALYSING

REAL TIME GRAPHICS

- Graphic temperature progress (in real time)
- Adjustable time axis
- Offline navigation

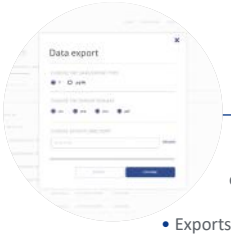
INTERACTIVE ANALYSIS

- No limitation in terms of time range
- Freely scalable
- Detailed information for any point of time
- Temperature data, events and alarms
- Login history and audit trails

CONTROL CENTER

Overview (Control Monitor) of all monitored appliances:

- Information regarding status, appliance name, location, connection, upper and lower limits, current temperature, events / alarms
- Dashboard to combine several temperature measurements in one single graph



PRINTED ANALYSIS

- Customizable print reports on daily, weekly and monthly basis
- Exports in various file types
- Standardized format