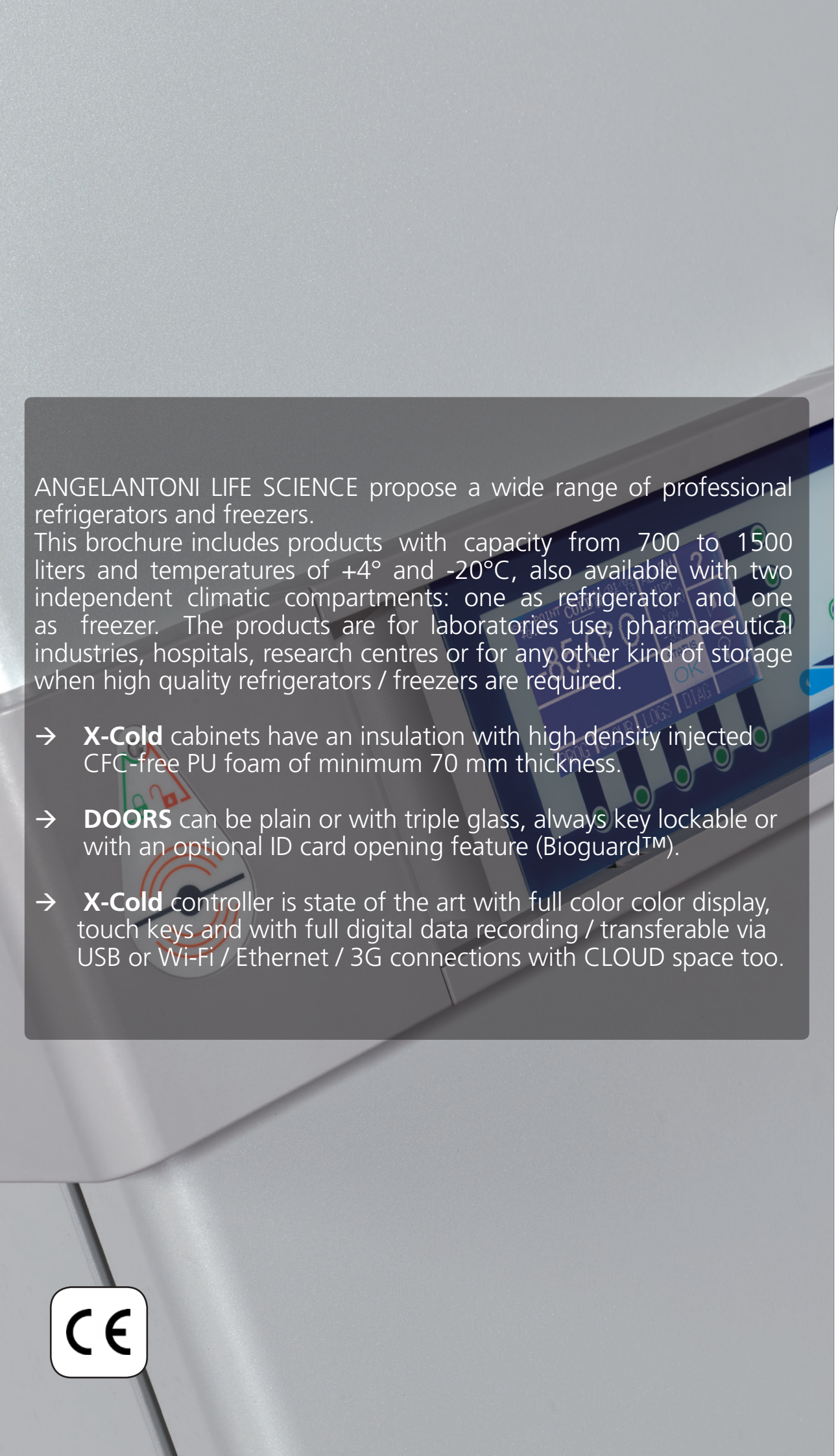
Laboratory refrigerators / freezers +4° / -20°

X-Cold Series

ALS
ANGELANTONI
LIFESCIENCE



ANGELANTONI LIFE SCIENCE propose a wide range of professional refrigerators and freezers.
This brochure includes products with capacity from 700 to 1500 liters and temperatures of +4° and -20°C, also available with two independent climatic compartments: one as refrigerator and one as freezer. The products are for laboratories use, pharmaceutical industries, hospitals, research centres or for any other kind of storage when high quality refrigerators / freezers are required.

→ **X-Cold** cabinets have an insulation with high density injected CFC-free PU foam of minimum 70 mm thickness.

→ **DOORS** can be plain or with triple glass, always key lockable or with an optional ID card opening feature (Bioguard™).

→ **X-Cold** controller is state of the art with full color color display, touch keys and with full digital data recording / transferable via USB or Wi-Fi / Ethernet / 3G connections with CLOUD space too.

CE

Upright refrigerators / freezers, designed for storage of any general non-flammable laboratory materials

- → **Interiors are all made of stainless steel**
- → **Designed to fulfil the Standards for storage of biological and pharmaceutical materials**
- → **Constant monitoring, recording and LOG of performances**
- → **Data transfer with Ethernet, Wi-Fi and UMTS/3G on Cloud server or local computer (see optional accessories)**
- → **Free local data transfer via USB pen drive with proprietary encrypted software (decrypting SWR included)**
- → **Auto recharging backup battery to power the electronics for up to 36h in case of a power outage**
- → **lackable by key, push button or by personal card opening system (see option BIOGUARD™)**
- → **Adjustable grid shelves as standard or optional sliding drawers**
- → **Electronics with digital 2.5" colors display with touch keys, temperature graph view and full access to LOGGED data**
- → **The models with one compartment have a single controller while those with two compartments (one at +4°C and one at -20°C) have two independent controllers' & two independent cooling systems**

X-Cold series with all possible configurations

Technical features

X-Cold has a minimum insulation of 70 mm made of HD Injected PU Foam.
Standard porthole with cap (diam. 23 mm) is included with all models.

Heavy frame with:

- Exterior in plasticized zinc and coated steel,
- Interior of AISI 304 stainless steel with rounded corners
- Adjustable shelves as standard or optional S.S. sliding drawers
- High resistance spherical rollers for easy movement and adjustable feet

Doors:

- Plain or with triple glass with rubber gaskets
- Easy one hand opening with key lock
- As option with ID card (see option BIOGUARD™)
- Automatic or manual internal light

Cooling systems:

- All models are with internal ventilation
- Versions with single compartment have one compressor and one electronic
- Versions with two compartments (+4° and -20°C), have two compressors and two independent electronics,
- CFC free gases (R134a or R404A)
- Low noise level < 45dB

Data transfer:

- All models have a standard USB port for free data transfer to computer
- USB data transfer is with encrypted file who can be read with a specific ALS software only (supplied)
- CLOUD server communication is available as option (see ahead)
- X-COLD software is also available for local use on client computers (see ahead)

X-Cold 700/1 TN-GL (+4°C), shown with mix of shelves and one drawer.

X-Cold 700/2 TN-2TS (+4/-20°C).
All X-Cold versions with double temperature have two independent cooling systems and two electronic controllers.

Technical specifications

Single temperature

Code	Model	Operating range	Doors num / kind	STD (shelves STD)	Optional drawers	Volume (single compart.)	Interior dimensions WxDxH mm	Exterior dimensions WxDxH mm	Package dimensions WxDxH mm	Net weight *with pack.	Electrical
13909	X-Cold 700/1 TN	+2° to +8°C	1, plain	3	up to 8	700	590x675x1500	740x815x1998	770x900x2140	140 *170 Kg	230VAC 50Hz 4 FLA
13915	X-Cold 700/1 TN-GL	+2° to +8°C	1, glass	3	up to 8	700	590x675x1500	740x815x1998	770x900x2140	160 *190 Kg	230VAC 50Hz 4 FLA
13916	X-Cold 1500/2 TN	+2° to +8°C	2, plain	6	up to 16	1500	1330x675x1500	1480x815x1998	1500x900x2140	220 *250 Kg	230VAC 50Hz 5 FLA
13914	X-Cold 1500/2 TN-GL	+2° to +8°C	2, glass	6	up to 16	1500	1330x675x1500	1480x815x1998	1500x900x2140	230 *260 Kg	230VAC 50Hz 5 FLA
13917	X-Cold 700/1 BT	-10° to -23°C	1, plain	3	up to 8	700	590x675x1500	740x815x1998	770x900x2140	140 *170 Kg	230VAC 50Hz 5.5 FLA
13918	X-Cold 1500/2 BT	-10° to -23°C	2, plain	6	up to 16	1500	1330x675x1500	1480x815x1998	1500x900x2140	230 *250 Kg	230VAC 50Hz 6.0 FLA

NOTE: All models are available upon request for 230 or 120 VAC, 60Hz

X-Cold 1500/2 TN: single temperature, +4°C refrigerator, two triple glass doors,1500 liters capacity.

Double temperature

Code	Model	Operating range	Doors num / kind	Shelves	Optional drawers	Volume (double compart.)	Interior dimensions WxDxH mm (per compartement)	Exterior dimensions WxDxH mm	Package dimensions WxDxH mm	Net weight *with pack.	Electrical
13919	X-Cold 700/2 TN-2TS	+2° to +10°C	1, plain	2	up to 3	350 +	590x675x720	740x815x1998	770x900x2140	140 *170 Kg	230VAC 50Hz 7.2 FLA
		-10° to -23°C	1, plain	2	up to 3	350	590x675x720				
13920	X-Cold 1500/2 TN-2TS	+2° to +10°C	1, plain	4	up to 6	700 +	1330x675x1500	1480x815x1998	1500x900x2140	240 *260 Kg	230VAC 50Hz 8.0 FLA
		-10° to -23°C	1, plain	4	up to 6	700	1330x675x1500				

NOTE: All models are available upon request for 230 or 120 VAC, 60Hz

X-Cold 1500/2 TN-2TS: double temperature, two compartments of 700 liters each (+4°C and -20°C), two plain doors, two independent cooling systems and controllers.

Basic optional accessories for all X-Cold models

Code	Description
11354	7-days disc recorder for dual climate versions
11350	7-days disc recorder for single climate versions
12279	Kit for chart recorder for single climate versions (100 discs,2 pens)
12280	Kit for chart recorder for dual climate versions (100 discs,2 pens)
12851	Additional porthole 50 mm with cap
12852	One grid shelf for mix with drawers (see Note 1)
12854	Additional std grid shelf (max 10 per 700 L and 20 per 1500L)
12855	SS perforated shelf (max 10 per 700L and 20 per 1500L)
12860	SS telescopic drawer (for X-Cold single T max 8 for 700 L and 16 for 1500L while for double T, 6 for 700 L and 12 for 1500 L) (see Note 1 and 2)
11676	External PT 100 probe, class A
12132	External certified PT 100 probe, class A with 3 points of temperature calibration
12680	BIOGUARD, card opening system for one door models (700L)
12984	BIOGUARD, card opening system for two doors models (1500L)
17036	Wooden cage package for 700 liters versions
17028	Wooden cage package for 1500 versions

NOTES

1. By ordering one or more drawers with code 12860, it's also supplied a different set of internal supports. Such different supports cannot hold the standard grid shelves that hence must be replaced by purchasing separately some new grid shelves with code 12852, as many as needed.

2. While ordering the drawers, please specify if they are for a 700 or 1500 L version: that's necessary to include the proper internal rail (supplied free of charge with drawers).

Optional accessories for CLOUD data transfer and handling (internet connection)

Code	Description
13923	* UMTS/3G module for CLOUD connection
13922	* Wi-Fi module for CLOUD connection or local computer (for CLOUD requires a router Wi-Fi with internet access)
13921	* Ethernet module for CLOUD connection or local computer (for CLOUD requires an internet access)
13924	CLOUD license for X-Cold software (internet use, necessary)

* One of this option mutually exclude the others

NOTES about the communications' options:

1. Any CLOUD connection kind it is chargeable: pls ask ALS for the fee.

2. With anyone of such CLOUD options, you will get also the possibility of an automatic email sending in case of alarm.

3. By entering your private CLOUD area, you can see the entire history of your X- Cold devices (see details on Section Electronic controller).

Optional accessories for LOCAL data transfer and handling (personal computer use, no internet)

Code	Description
13921	Ethernet module for CLOUD connection or local computer (for CLOUD requires an internet access)
13925	X-Cold software for Windows computer (local use only)

BIOGUARD™ system uses RFID card keyless opening. Each unit equipped with Bioguard™ is supplied complete with three opening cards but, additional cards are optional purchases.

The BIOGUARD™ option increases the safety of your valuable stored products. In case of card' damaging or electronic failure, there is an emergency key to open the door manually.

Control panel of X-Cold series.

Bioguard reader (option) | Chart recorder (option) | Door key lock | Display and controller | Power switch and USB port

The X-Cold controller has three independent microprocessors: one for the cooling system, one for the alarms section and one for the data communication. The access to the parameters is password protected with three levels of privilege: users, service and administrator. The color display is 2.5" backlit with separate variable colors touch keys. The display may show a simplified view or a full graphic view, showing the set point, the alarm limits and the temperature graph too.
The central LED around the programming arrows, change color upon the status of the system:

GREEN >	compressor OFF and internal temperature OK
BLUE BLINKING >	compressor ON start-up phase
BLUE >	compressor ON and internal temperature OK
RED >	alarm or failure status (with programmable delay)
YELLOW >	pre-alarm warning (instant, without delay)

Main features of the X-Cold controller

Cooling system section

- Temperature setting and control
- Cooling system ON/OFF
- ECOMODE set to reduce the electrical consumption
- Automatic and programmable defrost
- Manual defrost
- Driving of internal ventilation
- Door's sensor
- Anti-condense frame heater guiding
- Heaters for the defrost system guiding
- Internal LED's light ON/OFF or automatic

Alarms section

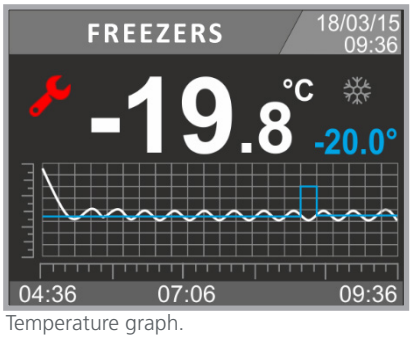
- Hi-Low temperature, visual and acoustic
- Delayed door ajar alarm
- Power outage or out of range
- Compressor failure
- Battery too low
- External free contacts for remote alarms
- Internal fan failure
- Possibility to configure an automatic email sending for alarm conditions (request one of the available Internet Cloud connections, see optional)

Communication and data logging section:

Automatic data recording up to ten years' time with 30 seconds intervals of:

- Date and hour
- Temperatures of all installed probes
- Temperature set point value
- Line voltage
- Power consumption in VA
- Battery level
- Alarms levels or warning conditions if any
- Failure kind
- Warning messages
- Delta T between set temperature and real internal temperature
- Full statistics data of the compressor condition: working percentage, mean working time ON and OFF, total working hours, battery level.

Examples of display view



Temperature graph.

Internet or standalone communication (options):

- UMTS/3G module to CLOUD server (requires SIM card, not included)
- Wi-Fi module to CLOUD server (requires a free Wi-Fi router for internet connection)
- Ethernet module for CLOUD server or to proprietary software on local computer (for CLOUD requires an internet connection)
- Standard USB port for data downloading to computer

NOTE: the use of the CLOUD space is not free. Please ask ALS for the conditions of sales of this service. The access to the CLOUD area occurs through personal ID and password by using any internet browser via either computer, smartphone or tablet.

View of programming area.

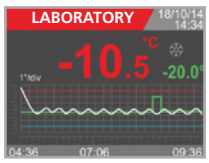
Warning and Alarm messages (examples)

Voltage low

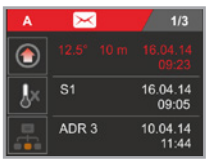
Temperature probes unbalanced

Necessary to clean condenser

Excessive door opening time



High temperature alarm



Log of an alarm condition

General condition of alarm

Main features of X-Cold software

There are two kinds of optional X-Cold software:

- The X-Cold software to install on your computer for **LOCAL** data downloading / handling (Code 13925).
- The X-Cold software for **CLOUD** use through internet connection (Code 13924).

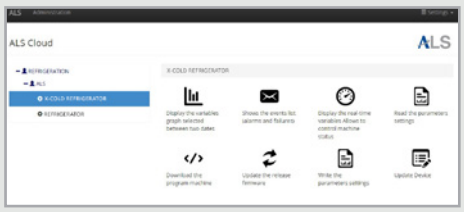
The **LOCAL** version should be installed on client computer, the communication is via Ethernet only (Ethernet cables and LAN should be provided by the customer).

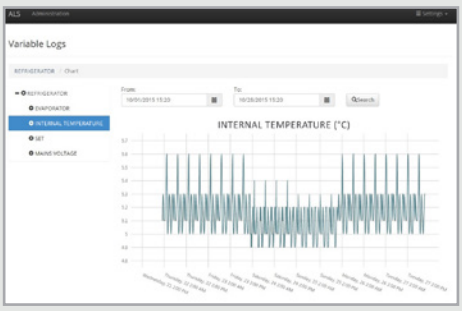
The **CLOUD** version does not require any software installation, being an online application available on internet.

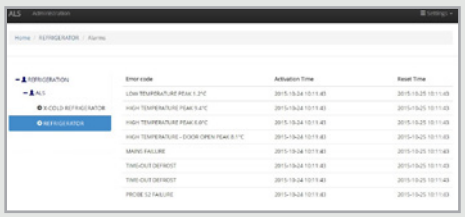
In both cases, what's the customer see is very similar: same user interface, same kind of data storage and handling, same functions.
The **LOCAL** version of X-Cold should be used whenever no internet connection is available while for all other cases, the **CLOUD** version whould be recommended.

What can offer the X-Cold software?

- **LOCAL** or **CLOUD** acquisition and storage of all data parameters (LOG file)
- Ethernet, Wi-Fi or UMTS/3G communication with programmable TCP/IP address
- Creation of a complete database on hard disk or on **CLOUD** server
- Safe Log storage and display of all events such as settings, alarms, failures, door opening
- Display of all temperatures graphs, line voltage, % of use of the compressors and much more
- Access through personal ID and password

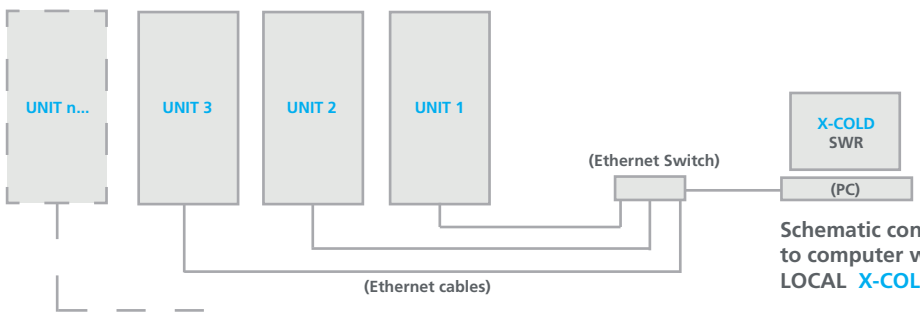






To connect any device to the computer with **LOCAL** X-Cold, you should provide for an Ethernet hub/switch and at least two Ethernet cables (not supplied by ALS).

For more units to connect, add Ethernet cables as many units you have and arrange for any proper Ethernet switch/hub.



Schematic connection of units to computer with LOCAL X-COLD SOFTWARE

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Biomedical refrigerators and freezers (+4°/-86°C), chambers for stability tests and LN2 robotic storage system for vials (-180°C)

Refrigeration systems for industrial processes

Steam sterilizers, washers and biohazard waste treatment

Biosafety laminar flow cabinets

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