2019-ENG-Vers. 1.1

KW APPARECCHI SCIENTIFICI

KW FREEZERS

-20°C -30°C -45°C

In our solutions your safest samples

BLUEline

Cold storage equipment

www.kwkw.it - kw@kwkw.it

KW APPARECCHI SCIENTIFICI

Since 1953...
Over 60 years dedicated to research in both the scientific pharmaceutical field and the diagnostics and hospital care field.

Made in Italy

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APPARECCHI SCIENTIFICI KW®

BlueLine

Cold storage equipment

GreenLine

Incubation and microbiological test equipment

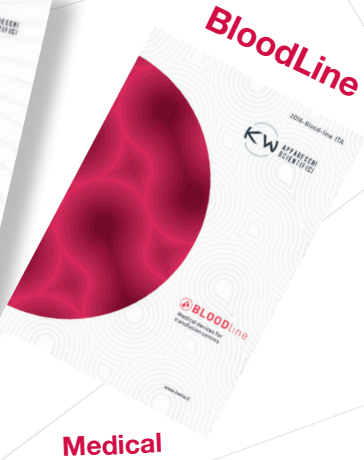
RedLine

Ovens, drying and sterilizing equipment

ServiceLine

Maintenance, IQ,OQ,PQ, hardware and software for equipment management

BloodLine



Medical devices for transfusion centres

2019

KW Freezers
-20°C -30°C -45°C

INTRODUCTION 4

HORIZONTAL FREEZERS -20°C -30°C -45°C 7

DRAWER FREEZERS -20°C -30°C -45°C 12

FREEZELAB SHELVES FREEZERS SERIES: 16

FREEEZERS KFE(-25°C) -KFS(-30°C) SERIES 18

FREEEZERS KFS ELITE(-30°C) -KBPF PP(-40°C) SERIES 22

SHELVE FREEZERS KLAB SERIES: 26

LIGHT FREEEZERS -20°C 30

SMART FREEEZERS -20°C 32

NF -30°C FREEEZERS 34

TWIN GROUP (TG) FREEEZERS 36

Structure and Refrigeration 38

KLAB Series Accessories 41

CONTROL SYSTEM: 42

SLC Control 44

NIA Control 46

HPL Control 50

Introduction

BLUEline

In our solutions
your safest samples

KW is a leading company in the Italian market in designing and manufacturing cold storage and incubation equipment and also operates on various foreign markets.

KW supplies equipment, services and devices for cold and thermal chains for the biomedical sector, scientific research and pharmaceutical industry.

Production plants and warehouses in Monteriggioni (Siena - Italy). The company is provided with the quality system (ISO 9001 - ISO 13485), health and security system (OHSAS 18001) and environmental respect system (ISO 14001).

ISO 9001:2015 ISO 13485:2016 ISO 14001:2015 OHSAS 18001 2007

Energy Saving

Energy Saving- Echocompatibility/Echosustainibility

KW Apparecchi Scientifici follows the **GREEN ICE Project** and its product lines are in continuous development. KW follows some of the fundamental management principles of modern companies such a:

- lower environmental impact of its equipment,
- energy cost reduction of its equipment.

The use of HFO with low GWP are compliant withthe F-gas European regulation. KW builds its devices following the **GREEN ICE Project** in order to have a reduction of costs and less impact on the environment.

GREEN ICE is a brand of KW Apparecchi Scientifici.

GREEN ICE reduces electricity consumption;
GREEN ICE reduces the CO2 emissions and prevents global warming of the earth;
GREEN ICE is hi-tech applied to our machines: it allows significant energy, money and associated operating saving;
GREEN ICE is an added value to the cold chain for biomedical laboratory use.

Energy Saving - Green Ice

• LED LIGHTS:
70% cost reduction compared to fluorescent lights, long lasting less maintenance, eco-compatible disposal.

• HIGH EFFICIENCY FANS:
40% absorption reduction compared to conventional solutions, better performance .

• LOW EMISSIVITY GLASS DOOR:
Insulation increase (lower dispersion) without altering the visibility of the products and higher energy saving (lower consumption rates).

Green Ice is the brand for all these features.

• NO FROST SOLUTIONS:
KW developed devices that do not need to be defrosted in the time as a consequence:
- less energy consumption that is needed for the defrosting heat and the subsequent cooling energy for the T set point restoration ,
- preservation quality improvement as there are no periodical fluctuations (with defrosting) of the t inside the storage chamber.

• OPEN DOOR MANAGEMENT:
door micro switch on all models: the functionality is better and the consumption is lower; the micro switch turns off the fan and minimises the alternation of the internal microclimate. **All Kw models are equipped with a critical door opening alarm** (for door opening lasting > a max. time); for each door open alarm, the NIA and HPL controller register the following data:
– number of critical openings/ number of total openings/ total opening time in minutes
– day/ month/ year.

• AES (Automatic Energy Saving):
It reduces the consumption rates of the refrigerator when the compressor is used for a predefined percentage time. In this condition the operating set point is temporarily and automatically increased by a value pre-established by the user; resetting is automatic at the pre-established conditions.

• NIGHT & DAY:
during the night, when possible, the set temperature can be raised at a predefined value, thus achieving important energy savings.
During the night setting the lights in the refrigerator compartment are also switched off.

The combination of All the features above described lead to a **30% energy saving** compared to standard consumptions and the components and devices are more reliable and llong lasting.

GREEN ICE

KW Antibacteria

KW Apparecchi Scientifici Srl contributes to safety and contamination prevention needs by using innovative materials that increase the microbial activity on the internal surfaces.

The correct storage of samples is an essential part of the safety procedures in the use of laboratory refrigerators and freezers.
Humidity and environmental temperature conditions facilitate the proliferation of bacteria and fungus, reason why micro-organisms find the ideal habitat in refrigerators.

Antimicrobials are substances that fight effectively against unwanted micro-organisms (bacteria, fungus, etc.), especially inside refrigerators and freezers (biomedical and agro- food sectors).

inorganic antimicrobials are antimicrobial active ingredients with substances containing silver in anionic form, anchored on inorganic compounds that regulate the diffusion of the ions within the mass. **These materials are used for the internal surfaces of KW devices and have a permanent antibacterial action and fight against the reproduction of colonies of bacteria, fungus and contaminating micro-organisms. The use of inorganic antimicrobials is very safe as they are non-toxic, non-inflammable, non-corrosive and do not affect the transformation process.**
These materials are compatible with most of the additives used in plastic materials as stabilizers, antistatic and anti UV.
They are suitable for contact with food (FDA). They have a very low environmental impact since they are recyclable thermoplastic materials. this improves the cleaning and maintenance of the storage environments and as a consequence also the storage quality of biological materials and samples in laboratories. **The"risks of contamination reduce andat the same time improve the performance and reliability (thus also the efficiency) of the laboratory results.**

These solutions considerably limit contamination events "by" and "among" sensitive materials like blood, biological samples, perishable materials, tissue or organ samples, etc. … and protect against the proliferation and uncontrolled propagation of micro-organisms colonies..

Freezers
-20°C -30°C -45°C

Horizontal Freezers

Horizontal Freezers:

Horizontal freezers for preservation up to **-20°C/ -45°C**, with an ideal capacity for scientific and hospital laboratories use.

It is characterized by a manufacture according to ISO 9001:2015 quality standards and in compliance with UNI EN 61010 (CEI 66/5) laboratory regulations, full instrumentation and a variety of technical solutions that make it an absolutely specific and safe line for the products, operators and environment

KFCE 460 NIA

-30°C

KFCE Series

-40°C

KW FRIG Series

Available with:

SLC Controller

Led Display

NIA Controller

LCD Display

HPL Controller

Touch Screen Display

Horizontal Freezers:

Wide range of volumes and a well-type structure characterized **by an exceptional 100mm**. Insulation thickness. this allows long preservation times in case of blackout. the fully sealed execution of the refrigerating circuit and the use of airtight compressors make these freezers a very silent and reliable , even in critical environmental conditions. The materials and the fluids used are all ecofriendly with a particular attention for problems dealing with the ozone layer and greenhouse effect. Doors closed with lock and key and refrigeration with evaporators outside the tank make it a very secure laboratory equipment, both in terms of access and stability and uniformity of the conservation temperature -thus there is no defrosting need.

A wide range of accessories facilitate the customization of the freezers according to the needs.

KFCE Series
Horizontal Freezers -20°C -30°C

HORIZONTAL FREEZERS -30°C KFCE Series

MODELS	KFCE 210	KFCE 300	KFCE 460	KFCE 600
CAPACITY (lt)	210	300	460	600
EXTERNAL DIM. (WxDxH)	100x76x92 cm	129x76x92 cm	165x81x92 cm	163x74x97 cm
WEIGHT (Kg)	60	70	87	85
BASKETS	n.3	n.4	n.5	n.3
OPERATION TEMPERATURE	-30°C	-30°C	-30°C	-30°C
INTERNAL SURFACE STANDARD	Laminated aluminum	Laminated aluminum	Laminated aluminum	AISI 304 stainless sheet
EXTERNAL SURFACE STANDARD	White Coated Steel	White Coated Steel	White Coated Steel	White Coated Steel
INSULATION	100mm	100mm	100mm	60mm
CONTROLLER	SLC or NIA or HPL	SLC or NIA or HPL	SLC or NIA or HPL	SLC or NIA or HPL

Power supply : V230/Hz50/1 Set T between **-18°C and -30°C**

-30°C

100mm Thickness

Static Refrigeration

Features:

- Well-type structure
- Internal lighting
- Key lock
- Magnetic gaskets

Refrigeration:

- Static refrigeration
- No defrosting need
- Airtight compressor
- Very low noise and consumption
- Use of HC Green GMP=0

Standard equipment:

= Visual and sound T min/max alarm

= Key lock

Available with:

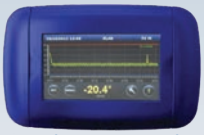
SLC Controller

Led Display

NIA Controller

LCD Display

HPL Controller



Touch Screen Display

Dry Contact

REMOTE ALARM

Contacts for remote alarm signalling.

KFCE 600 NIA

Optional:

= Visual and sound door open alarm

= Visual and sound power failure alarm

= Internal-external through hole

= USB port (only for NIA controller)

= Pivoting wheel kit

= Disk recorder with weekly cycle

KW FRIG Series
Horizontal Freezers -30°C -45°C

HORIZONTAL FREEZERS -40°C KW FRIG Series			
MODELS	**K250C**	**K360C**	**K460C**
CAPACITY (lt)	250	360	460
EXTERNAL DIM. (WxDxH)	114x76x92 cm	138x81x92 cm	165x81x92 cm
WEIGHT (Kg)	75	83	90
BASKETS	n.3	n.4	n.5
OPERATION TEMPERATURE	-40°C	-40°C	-40°C
INTERNAL SURFACE STANDARD	Laminated aluminum	Laminated aluminum	Laminated aluminum
EXTERNAL SURFACE STANDARD	White Coated Steel	White Coated Steel	White Coated Steel
INSULATION	100mm	100mm	100mm
CONTROLLER	SLC or NIA or HPL	SLC or NIA or HPL	SLC or NIA or HPL

-40°C

100mm Thickness

Static Refrigeration

Power supply : V230/Hz50/1

Set T between **-30°C and -45°C**

Features:

- Well-type structure
- Internal lighting
- Key lock
- Magnetic gaskets

Refrigeration:

- Static refrigeration
- No defrosting need
- Airtight compressor
- Very low noise and consumption
- Use of HC Green GMP=0

Standard equipment:

= **Visual and sound T min/max alarm**

= **Key lock**

Available with:

SLC Controller

Led Display

NIA Controller

LCD Display

HPL Controller

Touch Screen Display

Dry Contact

REMOTE ALARM

Contacts for remote alarm signalling.

K460C NIA

Optional:

= **Visual and sound door open alarm**

= **Visual and sound power failure alarm**

= **Internal-external through hole**

= **USB port (only for NIA controller)**

= **Pivoting wheel kit**

= **Disk recorder with weekly cycle**

Freezers
-20°C -30°C -45°C

Drawer Vertical Freezers

Drawer Vertical Freezers:

Drawer vertical freezers for preservation up to **-20°C /-45°C** with an ideal capacity for scientific and hospital laboratories use.

It is characterized by a manufacture according to ISO 9001:2015 quality standards and in compliance with UNI EN 61010 (CEI 66/5) laboratory regulations, full instrumentation and a variety of technical solutions that make it an absolutely specific and safe line for the products, operators and environment.

KFDE 350 SLC

-30°C

KFDE Series

-40°C

KW FRIG Series

Drawer Vertical Freezers:

The structure has removable drawers, for a better use of the internal volume and lower power consumption and an to adequate insulation thickness. – the fully sealed execution of the refrigerating circuit and the use of airtight compressors make these freezers a very silent and reliable, even in critical environmental conditions. The materials and the fluids used are all ecofriendly with a particular attention for problems dealing with the ozone layer and greenhouse effect. **The refrigeration technology uses evaporation trays** that decrease the heat from storage materials e in a fast and direct way with no need to defrost.

This solution assures the maximumstability of the conservation temperature and a good (T) uniformity. There is no need to defrost in time.

Available with:

SLC Controller

Led Display

NIA Controller

LCD Display

HPL Controller

Touch Screen Display

KFDE series
Vertical Freezers at -20 °C -30 °C

VERTICAL FREEZERS -30°C KFDE Series

MODELS	KFDE 080	KFDE 150	KFDE 250	KFDE 350	KFDE 520
CAPACITY (lt)	80	150	250	350	520
EXTERNAL DIM. (WxDxH)	56x63x83	60x63x105	60x63x165	60x63x185	75x75x193
WEIGHT (Kg)	35	50	75	90	105
OPERATION TEMPERATURE	-30°C	-30°C	-30°C	-30°C	-30°C
DOORS (n.)	n.1	n.1	n.1	n.1	n.1
DRAWERS (n.)	2	3	6	7	7+7=14
INTERNAL SURFACE STANDARD	ABS thermo moulded	ABS thermo moulded	ABS thermo moulded	ABS thermo moulded	ABS thermo moulded
EXTERNAL SURFACE STANDARD	White Coated Steel	White Coated Steel	White Coated Steel	White Coated Steel	White Coated Steel
INSULATION	80mm	80mm	80mm	80mm	80mm
CONTROLLER	SLC or NIA or HPL	SLC or NIA or HPL	SLC or NIA or HPL	SLC or NIA or HPL	SLC or NIA or HPL

-30°C

80mm Thickness

Static Refrigeration

Power supply : V230/Hz50/1 Set T between **-18°C and -30°C**

Features:

- Internal structure with removable plastic drawers
- Ergonomic handle
- Key lock
- Support feet on the front and wheels on the back
- Magnetic gaskets

Dry Contact

REMOTE ALARM

Refrigeration:

- Static refrigeration with evaporation trays
- No defrosting need
- Airtight compressor
- Very low noise and consumption
- Use of HC Green GMP=0

Standard equipment:

= Visual and sound T min/max alarm

= Key lock

Available with:

SLC Controller

Led Display

NIA Controller

LCD Display

HPL Controller

Touch Screen Display

KFDE 520 NIA

KFDE 080 NIA

Optional:

= Visual and sound door open alarm

= Visual and sound power failure alarm

= Internal-external through hole

= USB port (only for NIA controller)

= Pivoting wheel kit

= Disk recorder with weekly cycle

KW Frig series vertical freezers at -30 °C -40 °C

VERTICAL FREEZERS -40°C KW FRIG Series	
MODELS	**K220V**
CAPACITY (lt)	230
EXTERNAL DIM. (WxDxH)	60x63x185 cm
WEIGHT (Kg)	90
OPERATION TEMPERATURE	-40"C
DOORS (n.)	1
DRAWERS (n.)	7
INTERNAL SURFACE STANDARD	ABS thermo moulded
EXTERNAL SURFACE STANDARD	White Coated Steel
INSULATION	80mm
CONTROLLER	SLC or NIA or HPL

Power supply : V230/Hz50/1 Set T between **-20°C and -45°C**

K220V NIA

-40°C

80mm Thickness

Static Refrigeration

Dry Contact

REMOTE ALARM

Contacts for remote alarm signalling.

Features:

- Internal structure with removable plastic drawers
- Ergonomic handle
- Magnetic gaskets
- Support feet on the front and wheels on the back
- Contacts for remote alarm signaling

Refrigeration:

- Static refrigeration with evaporation trays
- No defrosting need
- Airtight compressor
- Very low noise and consumption
- Use of HC Green GMP=0

Standard equipment:

= Visual and sound T min/max alarm

= Key lock

Available with:

SLC Controller

Led Display

NIA Controller

LCD Display

HPL Controller

Touch Screen Display

Optional:

= Visual and sound door open alarm

= Visual and sound power failure alarm

= Internal-external through hole

= USB port (only for NIA controller)

= Pivoting wheel kit

= Disk recorder with weekly cycle

Freezers
-20°C -30°C -45°C

Shelve Vertical Freezers

Freezelab Series

Shelve Vertical Freezers:

Shelve Vertical Freezers **Freezelab** Series for preservation up to **-20°C / -45°C** with a capacity ideal for scientific and hospital laboratories use .

It is characterized by a manufacture according to ISO 9001:2015 quality standards and in compliance with UNI EN 61010 (CEI 66/5) laboratory regulations, full instrumentation and a variety of technical solutions that make it an absolutely specific and safe line for the products, operators and environment.

KBPF 600X PP/2D

-25°C
KFE Series

-30°C
KFS Series

-40°C
KBPF PP Series

Shelve freezers **Freezelab Series**:

Single-body structure with external and internal made by white pre-enamelled steel-sheets or aisi 304 stainless steel.
Models with 2 doors are available for the separation of samples with different handlings. Internal grilled shelves with adjustable height; option of counter doors (in some versions on request).
Ventilated refrigeration: due to the large volume of the work chamber, therefore there are minimal T differences in the internal space = max. uniformity of the temperature parameter.
The systems do not require defrosting.

Available with:

SLC Controller

Led Display

NIA Controller

LCD Display

HPL Controller

Touch Screen Display

Vertical Freezers -25°C
Freezelab Elite Series

VERTICAL FREEZERS -25°C KFE Series		
MODELS	**KFE 600**	**KFE 600X**
CAPACITY (lt)	600	600
EXTERNAL DIM. (WxDxH)	67x87x195 cm	67x87x195 cm
INTERNAL DIM. (WxDxH)	55x74x144 cm	55x74x144 cm
WEIGHT (Kg)	140	150
SHELVES (n.)	5 adjustable	5 adjustable
OPERATION TEMPERATURE	-25°C	-25°C
INTERNAL SURFACE STANDARD	White Coated Steel	AISI 304 stainless sheet
EXTERNAL SURFACE STANDARD	White Coated Steel	AISI 304 stainless sheet
INSULATION	60mm	60mm
CONTROLLER	SLC or NIA or HPL	SLC or NIA or HPL

Power supply : V230/Hz50/1 Set T between **-18°C and -25°C**

KFE 600 NIA

-25°C

60mm Thickness

Internal Ventilation

Features:

- Single-body structure
- Internal grilled shelves with adjustable height
- Automatic closing with key lock
- Magnetic gaskets
- Support feet on the front and 4 unidirectional wheels

Refrigeration:

- Ventilated refrigeration
- No defrosting need
- Airtight compressor
- Very low noise and consumption
- Use of HC Green GMP=0

Dry Contact

Contacts for remote alarm signalling.

Standard equipment:

= Visual and sound T min/max alarm

= Key lock

Available with:

SLC Controller

Led Display

NIA Controller

LCD Display

HPL Controller

Touch Screen Display

Optional:

= Visual and sound door open alarm

= Visual and sound power failure alarm

= Internal-external through hole

= USB port (only for NIA controller)

= Pivoting wheel kit

= Disk recorder with weekly cycle

Vertical Freezers -30°C Freezelab Super Series

VERTICAL FREEZERS -30°C KFS Series		
MODELS	**KFS 600**	**KFS 600X**
CAPACITY (lt)	600	600
EXTERNAL DIM. (WxDxH)	67x87x195 cm	67x87x195 cm
INTERNAL DIM. (WxDxH)	55x74x144 cm	55x74x144 cm
WEIGHT (Kg)	150	160
SHELVES (n.)	5 adjustable	5 adjustable
OPERATION TEMPERATURE	-30°C	-30°C
INTERNAL SURFACE STANDARD	White Coated Steel	AISI 304 stainless sheet
EXTERNAL SURFACE STANDARD	White Coated Steel	AISI 304 stainless sheet
INSULATION	60mm	60mm
CONTROLLER	SLC or NIA or HPL	SLC or NIA or HPL

Power supply : V230/Hz50/1 Set T between **-18°C and -30°C**

KFS 600X NIA

-30°C

60mm Thickness

Internal Ventilation

Features:

- Single-body structure
- Internal grilled shelves with adjustable height
- Automatic closing with key lock
- Magnetic gaskets
- Support feet on the front and 4 unidirectional wheels

Refrigeration:

- Ventilated refrigeration
- No defrosting need
- Airtight compressor
- Very low noise and consumption
- Use of HC Green GMP=0

Dry Contact

Contacts for remote alarm signalling.

Standard equipment:

= Visual and sound T min/max alarm

= Key lock

Available with:

SLC Controller

Led Display

NIA Controller

LCD Display

HPL Controller

Touch Screen Display

Optional:

= Visual and sound door open alarm

= Visual and sound power failure alarm

= Internal-external through hole

= USB port (only for NIA controller)

= Pivoting wheel kit

= Disk recorder with weekly cycle

Structure KFE/KFS series

01 STRUCTURE

All models have a single-body structure with external and internal steel sheets pre-enamelled or plasticized, or in AISI 304 stainless steel; **the internal angles are rounded (for easy cleaning and maximum hygiene).** Support feet on the front and n.4 unidirectional wheels (optional pivoting wheels with brake).

02 INSULATION

Thermal insulation is with high-density (40 Kg/mc.) polyurethane foamed on site, **with an average thickness of 60 mm. for energy saving**.

03 DOORS AND GASKETS

All doors are reversible, with **magnetic gaskets** and automatic closing.

04 KEY LOCK

Each door comes with **key lock.**

05 SHELVES

The internal grilled shelves are height adjustable by means of racks on the lateral and back walls. These are made of plasticized steel sheets or stainless steel.
The racks can be used for sliding drawers on removable tracks.

06 CONTROL PANEL

All models are available with controllers: **SLC** (leds display), **NIA** (LCD display) and **HPL** (Touch Screen display).

Alarms (standard equipment):

= **T. min./max alarm** (visual-sound)

= **Sensor failure alarm**

Refrigeration

With evaporating coil on the side and bottom walls of the internal casing; without **no need to defrost** and therefore minimum T fluctuations in time.
Internal ventilation to make sure internal T. uniformity is the best possible; this facilitates both the pull down and recovery phases. Completely sealed refrigerating system with airtight compressor and air condensation; guaranteed low power consumption and noise.

The refrigerants used are non-toxic, non-flammable, non-explosive and ecologic (maximum respect for the environment) as they are HC free, CFC free, HCFC free (ODP=0 OZONE DEPLETION POT ENTIAL) and with a low GWP.

-CEI EN 61326-1 CEI EN 61010 -1 compliant.
-2006/42/CE Machine Directive compliant.
-2014/35/UE Low Voltage Directive compliant.
-2004/30/UE Electromagnetic Compatibility compliant.

Accessories:

- **Pivoting wheel kit.**
- **Supplementary grilled shelves (in plasticized steel or inox).**
- **Removable (drilled) drawer in AISI 304 stainless steel, mounted on anti-rollover sliding rails** (max. n.6).
- **Internal divisions** (for drawers) **in plastic material.**
- **Visual-Sound door open alarm.**
- **Visual-Sound power failure alarm, 12-VDC power supply with backup 2.3 Ah battery** (estimated duration, 3 years).
- **Remote alarm device GSM**.
- **Port USB** to quickly and easily transfer all information (only for NIA control).
- **Internal-external through-hole with rubber stopper.**
- **Disk recorder with weekly cycle** and 1.5 VDC battery power supply.
- **Strip-chart digital electronic recorder** with one or more traces at V230/1/50Hz
- **Additional RTD Pt 100 Ohm sensor** to connect to an external system for the acquisition and recording of T values.
- **Additional RTD Pt 100 sensor complete with 4-20 mA converter** mounted on a DIN bar to connect to an external recording system.
- **2 ch monitoring kit** (only for NIA control) allows to perform the regulation by means of average values from two sensors (NTC standard or RTD PT100 upon request).

Available with:

SLC Controller

LEDS Display

NIA Controller

LCD Display

HPL Controller

Touch Screen Display

ACCESSORIES FOR HPL CONTROLLER:

- **LAN port, WiFi module, GSM module, electronic key for controlled opening.** (see HPL release).

Vertical Freezers -30°C
Freezelab Super Elite Series

VERTICAL FREEZERS -30°C KFS Elite Series

MODELS	KFS 600S	KFS 600S 2D	KFS 600XS	KFS 600XS 2D
CAPACITY (lt)	600	600	600	600
EXTERNAL DIM. (WxDxH)	73x95x215 cm	73x95x215 cm	73x95x215 cm	73x95x215 cm
INTERNAL DIM. (WxDxH)	55x76x151 cm	55x76x151 cm	55x76x151 cm	55x76x151 cm
WEIGHT (Kg)	185	185	190	190
DOOR (n.)	n.1	n.2	n.1	n.2
SHELVES (n.)	5 adjustable	5 adjustable	5 adjustable	5 adjustable
OPERATION TEMPERATURE	-30°C	-30°C	-30°C	-30°C
INTERNAL SURFACE STANDARD	AISI 304 stainless sheet	AISI 304 stainless sheet	AISI 304 stainless sheet	AISI 304 stainless sheet
EXTERNAL SURFACE STANDARD	White Coated Steel	White Coated Steel	AISI 304 stainless sheet	AISI 304 stainless sheet
INSULATION	90mm	90mm	90mm	90mm
CONTROLLER	NIA or HPL	NIA or HPL	NIA or HPL	NIA or HPL

-30°C

90mm Thickness

Internal Ventilation

Power supply: V230/Hz50/1 **2D:** two doors Set T between **-20°C and -30°C**

Features:

- Single-body structure
- Internal grilled shelves with adjustable height
- Automatic closing with key lock
- Support feet on the front and 4 unidirectional wheels
- Magnetic gaskets

Refrigeration:

- Ventilated refrigeration
- No defrosting need
- Airtight compressor
- Very low noise and consumption
- Use of HC Green GMP=0

Dry Contact

REMOTE ALARM

Contacts for remote alarm signalling.

Standard equipment:

- = Visual and sound T min/max alarm
- = Key lock
- = Visual and sound Door Open alarm
- = Visual and sound power failure alarm

Available with:

NIA Controller

HPL Controller

Optional:

- = Internal counter doors
- = Internal-external throughhole
- = USB port (only for NIA controller)
- = Pivoting wheel kit
- = Disk recorder with weekly cycle

Vertical Freezers -40°C KBPF-PP Series

VERTICAL FREEZERS -40°C KBPF-PP Series				
MODELS	**KBPF 600 PP**	**KBPF 600 PP 2D**	**KBPF 600X PP**	**KBPF 600X PP 2D**
CAPACITY (lt)	600	600	600	600
EXTERNAL DIM. (WxDxH)	73x95x215 cm	73x95x215 cm	73x95x215 cm	73x95x215 cm
INTERNAL DIM. (WxDxH)	55x76x151 cm	55x76x151 cm	55x76x151 cm	55x76x151 cm
WEIGHT (Kg)	190	190	195	195
SHELVES (n.)	5 adjustable	5 adjustable	5 adjustable	5 adjustable
OPERATION TEMPERATURE	-40°C	-40°C	-40°C	-40°C
INTERNAL SURFACE STANDARD	AISI 304 stainless sheet	AISI 304 stainless sheet	AISI 304 stainless sheet	AISI 304 stainless sheet
EXTERNAL SURFACE STANDARD	White Coated Steel	White Coated Steel	AISI 304 stainless sheet	AISI 304 stainless sheet
INSULATION	90mm	90mm	90mm	90mm
DOOR/COUNTER DOOR	1/2	2/2	1/2	2/2
CONTROLLER	NIA or HPL	NIA or HPL	NIA or HPL	NIA or HPL

Power supply : V230/Hz50/1 **2D:** two doors Set T between **-30°C and -40°C**

-40°C

90mm Thickness

Internal Ventilation

Features:

- Single-body structure
- Internal grilled shelves with adjustable height
- N. 2 counter doors insulated (thickness 20mm)
- Pivoting wheel kit (+10cm height)
- Automatic closing with key lock
- Magnetic gaskets

Standard equipment:

- = Visual and sound T min/max alarm
- = Key lock
- = Visual and sound Door Open alarm
- = Visual and sound power failure alarm

Dry Contact

REMOTE ALARM

Contacts for remote alarm signalling.

Refrigeration:

- Ventilated refrigeration
- No defrosting need
- Airtight compressor
- Very low noise and consumption
- Use of HC Green GMP=0

Available with:

NIA Controller

HPL Controller

KBPF 600X PP

Optional:

- = Internal-external through hole
- = USB port (only for NIA controller)
- = Disk recorder with weekly cycle

Structure KFS Elite/KBPF series

01 STRUCTURE

All models have a single-body structure with external steel sheets pre-enameled or plasticized, or in AISI 304 stainless steel; the **internal in AISI 304 stainless steel; the internal angles are rounded (for easy cleaning and maximum hygiene).** Support feet on the front and n.4 unidirectional wheels or pivoting wheels with brake (standard in the -40 °C KBPF series).

02 INSULATION

Thermal insulation is with high-density (40 Kg/mc.) polyurethane foamed on site, with an average **thickness of 90 mm for energy savings.**

03 DOORS AND GASKETS

All doors are reversible, with magnetic gaskets and automatic closing with key lock. Also models with 2 doors available.

04 KEY LOCK

Each door comes with **key lock.**

05 COUNTER-DOORS

2 counter doors insulated by means of high-density (thickness of 20 mm.) polyurethane foam: optional in version at -30 °C (KFS), standard in -40 °C (KBPF-PP) series.

06 CONTROL PANEL

All models are available with controllers: **SLC** (leds display), **NIA** (LCD display) and **HPL** (Touch Screen display).

07 SHELVES

The internal grilled shelves are height adjustable by means of racks on the lateral and back walls. These are made of plasticized steel sheets or stainless steel.
The racks can be used for sliding drawers on removable tracks.

Refrigeration

With evaporating coil on the side and bottom walls of the internal casing; with **no need to defrost** and therefore minimum T fluctuations in time.
Internal ventilation to make sure internal T. uniformity is the best possible; this facilitates both the pull down and recovery phases. Completely sealed refrigerating system with airtight compressor and air condensation; guaranteed low power consumption and noise.

The refrigerants used are nontoxic, non-flammable, non-explosive and ecologic (maximum respect for the environment) as they are HC free, CFC free, HCFC free (ODP=0 OZONE DEPLETION POT ENTIAL) and with a low GWP.

-CEI EN 61326-1 CEI EN 61010 -1 compliant.
-2006/42/CE Machine Directive compliant.
-2014/35/UE Low Voltage Directive compliant.
-2004/30/UE Electromagnetic Compatibility compliant.

Alarms (standard equipment):

- **= T. min./max alarm** (visual-sound)
- **= Door open alarm** (visual-sound)
- **= Power failure alarm** (visual-sound)
- **= Sensor failure alarm**

Accessories:

- **Pivoting wheel kit.**
- **Supplementary grilled shelves (in plasticized steel or inox).**
- **Removable (drilled) drawer in AISI 304 stainless steel, mounted on anti-rollover sliding rails** (max. n.6).
- **Internal divisions** (for drawers) **in plastic material.**
- **Remote alarm device GSM**.
- **Port USB** to quickly and easily transfer all information (only for NIA control).
- **Internal-external through-hole with rubber stopper.**
- **Disk recorder with weekly cycle** and 1.5 VDC battery power supply.
- **Strip-chart digital electronic recorder** with one or more traces at V230/1/50Hz
- **Additional RTD Pt 100 Ohm sensor** to connect to an external system for the acquisition and recording of T values.
- **Additional RTD Pt 100 sensor complete with 4-20 mA converter** mounted on a DIN bar to connect to an external recording system.
- **2 ch monitoring kit** (only for NIA control) allows to perform the regulation by means of average values from two sensors (NTC standard or RTD PT100 upon request).

Available with:

NIA Controller

LCD Display

HPL Controller

Touch Screen Display

ACCESSORIES FOR HPL CONTROLLER:

- **LAN port, WiFi module, GSM module, electronic key for controlled opening.** (see HPL release).

Freezers
-20°C -30°C

Shelve Vertical Freezers

KLAB Series

Freezers KLAB series:

Kw offers one of the broadest selections of freezers for medical applications, scientific research and the pharmaceutical and agro alimentary industries. **KLAB** equipment is used in the preservation of pharmaceutical products, diagnostic products, vaccines and sera, biological materials in general and the conservation of industrial products.

-20°C -30°C

KLAB Series:

- Single-body structure.
- **Wide range of models** (blind doors, glass doors and of different capacity).
- Pre-painted steel plate external surfaces.
- **60 and 75 mm** insulation thickness.
- Power supply V230/1/Hz50.
- Use of HFC and HFO, CFC free, HCFC free, non-toxic, non-explosive and non-flammable refrigerants, in compliance with the F-GAS no.517/2014 regulation.

KLAB products are the result of KW's continuous technological innovation, quality in manufacturing and continuous focus on the customer, all part of KW tradition perfected over half a century of activity. All models are designed and manufactured according to the ISO 9001:2015 International Quality System and built according to European CE trademark safety regulations and **UNI-EN-61010** for laboratory equipment; in addition, it complies with the **GMP regarding** the requirements of the pharmaceutical and biotechnology sectors.

KLAB freezers are built using refrigerants with an ODP = 0 and a low GWP to protect the environment.

KLAB Series

1500 litres (glass doors)

700 litres (blind/glass door)

Freezers -20°C -30°C

2300 litres (3 doors)

1500 litres (2 doors)

700 litres (with drawers)

KW

BLUEline

Freezers KLAB LIGHT Series -20°C

Blind Door

FREEZERS -20°C WITH BLIND DOORS

MODELS	F400C	F700C	F1500C	F2300C
CAPACITY (lt)	400	700	1500	2300
EXTERNAL DIM. (WxDxH)	60x60x190 cm	71x80x203 cm	142x80x203 cm	216x80x203 cm
INTERNAL DIM. (WxDxH)	50x50x135 cm	59x68x140 cm	130x68x140 cm	204x65x140 cm
DOOR (n.)	N.1 Blind	N.1 Blind	N.2 Blind	N.3 Blind
WEIGHT (Kg)	120	140	220	290
SHELVES (n.)	3 adjustable	3 adjustable	6 adjustable	9 adjustable
INSULATION (mm)	50	60	60	60
DEFROST	Electric	Electric	Electric	Electric
CONTROLLER	SLC or NIA	SLC or NIA	SLC or NIA	SLC or NIA

Operation temperature: **-20°C** Set T between **-10°C and -22°C** Power supply: V230/Hz50/1

Glass Door

FREEZERS -20°C WITH GLASS DOORS

MODELS	F400V	F700V	F1500V	F2300V
CAPACITY (lt)	400	700	1500	2300
EXTERNAL DIM. (WxDxH)	60x60x190 cm	71x80x203 cm	142x80x203 cm	216x80x203 cm
INTERNAL DIM. (WxDxH)	50x50x135 cm	59x68x140 cm	130x68x140 cm	204x65x140 cm
DOOR (n.)	N.1 Glass	N.1 Glass	N.2 Glass	N.3 Glass
WEIGHT (Kg)	125	150	240	330
SHELVES (n.)	3 adjustable	3 adjustable	6 adjustable	9 adjustable
INSULATION (mm)	50	60	60	60
DEFROST	Electric	Electric	Electric	Electric
CONTROLLER	SLC or NIA	SLC or NIA	SLC or NIA	SLC or NIA

Operation temperature: **-20°C** Set T between **-10°C and -22°C** Power supply: V230/Hz50/1

Standard equipment:

- = Visual and sound T min/max alarm
- = Visual and sound Door Open alarm
- = Sensor failure alarm
- = Disaster Ricovery Safety Control (only for NIA control)

Standard equipment:

- = Key Lock
- = DATA LOG function (only for NIA control)
- = Internal light
- = RS485 port interface (only for NIA control)

Optional:

- = Visual and sound Power failure alarm
- = Wheels
- = Internal-external through-hole
- = USB Port (only for NIA)
- = Disk recorder with weekly cycle
- = Internal-External Stainless Steel

Available with:

SLC CONTROLLER

LEDS Display

NIA CONTROLLER

LCD Display

Green ICE

Environmental impact improvement and energy cost reduction.

Antibacterial

Materials manufactured with modern processes and antibacterial technologies.

Dry Contact

Contacts for remote alarm signalling.

F2300C NIA

F700C NIA

F1500C NIA

F700V SLC

Freezers KLAB SMART Series -20°C

Blind Door

FREEZERS -20°C WITH BLIND DOORS

MODELS	F400C ADV	F700C ADV	F1500C ADV	F2300C ADV
CAPACITY (lt)	400	700	1500	2300
EXTERNAL DIM. (WxDxH)	60x60x190 cm	75x82x210 cm	150x82x210 cm	225x82x210 cm
INTERNAL DIM. (WxDxH)	50x50x135 cm	59x68x140 cm	130x68x140 cm	209x67x147 cm
DOOR (n.)	N.1 Blind	N.1 Blind	N.2 Blind	N.3 Blind
WEIGHT (Kg)	120	140	220	290
SHELVES (n.)	3 adjustable	3 adjustable	6 adjustable	9 adjustable
INSULATION (mm)	50	75	75	75
DEFROST	Hot gas	Hot gas	Hot gas	Hot gas
CONTROLLER	NIA or HPL	NIA or HPL	NIA or HPL	NIA or HPL

Operation temperature: **-20°C** Set T between **-10°C and -22°C** Power supply: V230/Hz50/1

Glass Door

FREEZERS -20°C WITH GLASS DOORS

MODELS	F400V ADV	F700V ADV	F1500V ADV	F2300V ADV
CAPACITY (lt)	400	700	1500	2300
EXTERNAL DIM. (WxDxH)	60x60x190 cm	75x82x210 cm	150x82x210 cm	225x82x210 cm
INTERNAL DIM. (WxDxH)	50x50x135 cm	59x68x140 cm	130x68x140 cm	209x67x147 cm
DOOR (n.)	N.1 Glass	N.1 Glass	N.2 Glass	N.3 Glass
WEIGHT (Kg)	125	150	240	330
SHELVES (n.)	3 adjustable	3 adjustable	6 adjustable	9 adjustable
INSULATION (mm)	50	75	75	75
DEFROST	Hot gas	Hot gas	Hot gas	Hot gas
CONTROLLER	NIA or HPL	NIA or HPL	NIA or HPL	NIA or HPL

Operation temperature: **-20°C** Set T between **-10°C and -22°C** Power supply: V230/Hz50/1

Standard equipment:

- = Visual and sound T min/max alarm
- = Visual and sound Door Open alarm
- = Sensor failure alarm
- = Visual and sound Power failure alarm
- = Ethernet port (only for HPL control)

Standard equipment:

- = Key Lock
- = USB port and DATA LOG function
- = Internal light
- = Disaster Ricovery Safety Control
- = RS485 port interface

Optional:

- = Internal-external through-hole
- = Internal-External Stainless Steel
- = Wheels
- = Disk recorder with weekly cycle

Available with:

NIA CONTROLLER

LCD Display

HPL CONTROLLER

Touch Screen Display

Green ICE

Environmental impact improvement and energy cost reduction.

Antibacterial

Materials manufactured with modern processes and antibacterial technologies.

Dry Contact

Contacts for remote alarm signalling.

F1500C ADV HPL

F1500V ADV HPL

F700C ADV NIA

Freezers KLAB NF Series -30°C

FREEZERS WITH BLIND DOORS -30°C NF= No Frost		
MODELS	**F700C ADV NF**	**F1500C ADV NF**
CAPACITY (lt)	700	1500
EXTERNAL DIM. (WxDxH)	75x82x210 cm	150x82x210 cm
INTERNAL DIM. (WxDxH)	59x68x140 cm	130x68x140 cm
DOOR (n.)	N.1 Blind	N.2 Blind
WEIGHT (Kg)	140	220
SHELVES (n.)	3 adjustable	6 adjustable
INSULATION (mm)	75	75
DEFROST	NO FROST	NO FROST
CONTROLLER	NIA or HPL	NIA or HPL

NF No Frost

Blind Door

-30°C

Operation temperature: **-30°C** Set T between **-18°C and -30°C**

Power supply : V230/Hz50/1

NF: foam coils (with no need to defrost, stable temperature and less T variation in the time) with a kit for internal T ventilation and uniformity.

F700C ADV NF NIA

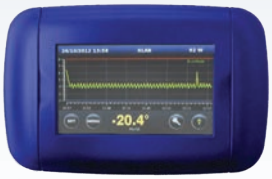
USB

Available with:

NIA Controller

LCD Display

HPL Controller



Touch Screen Display

Standard equipment:

- = Visual and sound T min/max alarm
- = Visual and sound Door Open alarm
- = Sensor failure alarm
- = Visual and sound Power failure alarm
- = Ethernet port (only for HPL control)

Standard equipment:

- = Key Lock
- = USB port and DATA LOG function
- = Internal light
- = Disaster Ricovery Safety Control
- = RS485 port interface

Optional:

- = Internal-external through-hole
- = Internal-External Stainless Steel
- = Wheels
- = Disk recorder with weekly cycle

Green ICE

Environmental impact improvement and energy cost reduction.

Antibacterial

Materials manufactured with modern processes and antibacterial technologies.

Dry Contact

Contacts for remote alarm signalling.

USB

F1500C ADV NF HPL

KLAB TG Series (Twin Group)

FREEZERS -20°C KLAB Twin Group Series						
MODELS	**F700C TG**	**F700V TG**	**F1500C TG**	**F1500V TG**	**F2300C TG**	**F2300V TG**
CAPACITY (lt)	700	700	1500	1500	2300	2300
EXTERNAL DIM. (WxDxH)	75x82x210 cm	75x82x210 cm	150x82x210 cm	150x82x210 cm	225x82x210 cm	225x82x210 cm
INTERNAL DIM. (WxDxH)	59x68x140 cm	59x68x140 cm	130x68x140 cm	130x68x140 cm	209x67x147 cm	209x67x147 cm
DOOR (n.)	N.1 Blind	N.1 Glass	N.2 Blind	N.2 Glass	N.3 Blind	N.3 Glass
WEIGHT (Kg)	140	150	220	240	290	330
SHELVES (n.)	3	3	6	6	9	9
DEFROST	Electric or Hot gas	Electric or Hot gas	Electric or Hot gas	Electric or Hot gas	Electric or Hot gas	Electric or Hot gas
CONTROLLER	n.2 NIA or n.1 HPL	n.2 NIA or n.1 HPL	n.2 NIA or n.1 HPL	n.2 NIA or n.1 HPL	n.2 NIA or n.1 HPL	n.2 NIA or n.1 HPL

Operation temperature: **-20°C** Set T between **-10°C and -22°C** Power supply: V230/Hz50/1

Standard equipment:

- = Visual and sound T min/max alarm
- = Visual and sound Door Open alarm
- = Sensor failure alarm
- = Visual and sound Power failure alarm
- = Key lock
- = USB port and DATA LOG function
- RS 485 = RS485 Port
- = Internal light
- = Disaster Ricovery/Safety Control
- = Ethernet port (only for HPL control)

HOT GAS DEFROSTING

ELECTRIC DEFROSTING

75 mm THICKNESS

INOX INTERNAL

Night & Day

USB

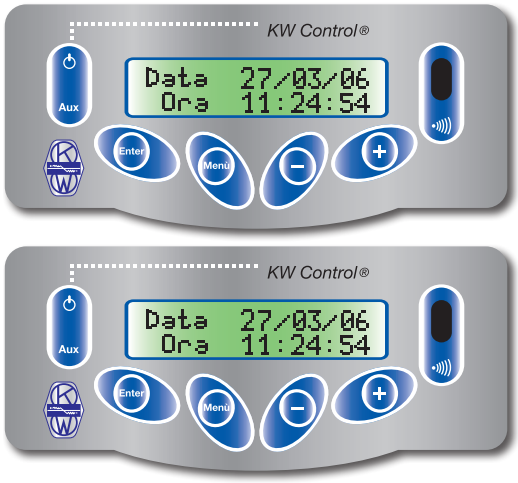
F2300CX TG HPL

F700C TG NIA

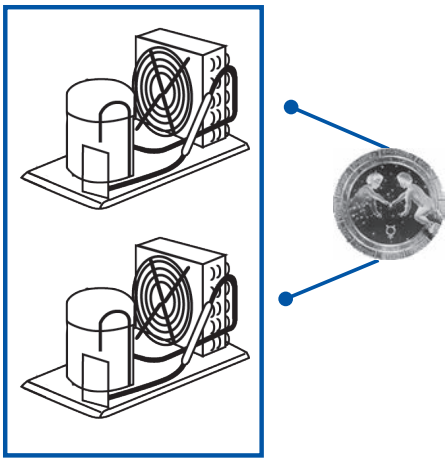
Freezers with dual system KLAB TG Series (Twin Group)

TG

The TG version has a double refrigeration system. ***KW uses completely independent "twin systems"*** both for the electrical and fluid-dynamics circuits. **KW's solution has unique features regarding quality, stability and uniformity of the temperature.**

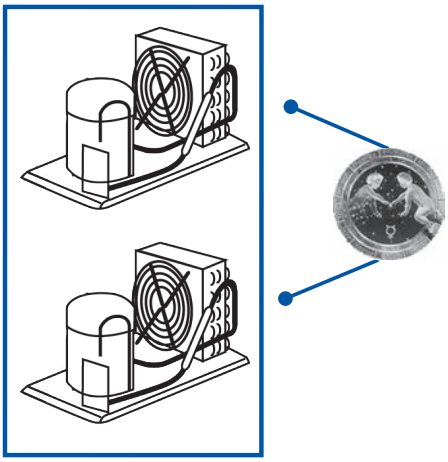


DOUBLE NIA CONTROLLER



Two independent refrigerating systems

UNIQUE TOUCH SCREEN CONTROLLER



Two independent refrigerating systems

Freezers TG with two independent alternately operating and fully automated refrigerating systems (2 compressors).

In case one of the two systems fails (either the fluodynamic thermal part or the electric part), an internal control system signals the event acoustically and visually (in a permanent manner) and shuts out the failed system: this allows easy and not necessarily immediate repairs, since the inner T is kept constant by the other system.

The TG solution, albeit more expensive, in the end is the most cost-effective one, since the individual motors and all the electro mechanic components last almost twice as much.

Structure

01 STRUCTURE

All models have a single-body structure with internal and external steel sheets pre-enameled or plasticized, or in AISI 304 stainless steel; the internal and external angles are rounded **(for easy cleaning and maximum hygiene); the same goes for internal edges.**

02 INSULATION

Thermal insulation is with high-density (40 Kg/mc.) polyurethane foamed on site, **with an average thickness of 60 mm. or of 75 mm. (SMART) for energy saving**.

03 DOORS AND GASKETS

C models include doors with blind-closed panels.
V models include doors in double or triple glass chambers, with anti-clouding noble gas loads.
All doors are reversible, with **magnetic gaskets** and automatic closing.

04 KEY LOCK

Each door comes with **key lock.**

05 INTERNAL LIGHTING (LED)

Internal lighting (led) is activated when the door is opened in models with blind doors; in models with glass doors this is performed with an external switch.

06 CONTROL PANEL

All models are available with controllers: **SLC** (leds display), **NIA** (LCD display) and **HPL** (Touch Screen display).

07 SHELVES

The internal grilled shelves are height adjustable by means of racks on the lateral and back walls. These are made of plasticized steel sheets or stainless steel.
The racks can be used for sliding drawers on removable tracks.

Single-body group:

• **Advantages of the single-body group:**
the evaporator is not visible, better cleaning of the internal preservation compartment, less probability of air flow block or damage due to accidental events, etc.
More conservation space compared to traditional solutions with visible evaporators.
More compact refrigerating group: less refrigerant load, minimal load loss in aspiration, **lower power consumption** with similar operation parameters to evaporation T and condensation T.
Easier maintainance: everything is concentrated in a single area.

The cabinet has adjustable support feet in stainless steel; upon request pivoting wheels (with brakes) can be mounted to facilitate the equipment handling in the laboratory.
C models include doors with blind-closed panels.
V models include doors in double or triple glass chambers, with anti-clouding noble gas loads.

The models with a final **X** have both the internal and external walls in AISI 304 stainless steel.
The models with a final **II** have internal walls in stainless steel and white external walls.

Door micro switch:

Each door comes with a micro switch to block, upon opening, the operation of the internal ventilation; this allows a better functionality and less consumption by minimizing any alterations in the internal microclimate and preventing the operator from being exposed to cold air; it also activates the door open alarm when the opening time is longer than the predefined critical value -which can also be set by KW or by the user directly.
A prolonged time door opening is signaled by a sound and visual alarm that flashes on the temperature control display.

Refrigeration

Ventilated refrigeration for optimum temperature uniformity in the entire compartment; **airtight compressor and air condensation;** guaranteed silence; hermetically sealed circuit to avoid any refrigerant dispersion, in conformity with recent provisions and recommendations on gases; **ecological refrigerant.**

Automatic and/or manual defrost with automatic evaporation of the condensation water.

- execution with **electric defrost (LIGHT line)** or **hot gas defrost (SMART line),** for a more constant temperature, even during the defrosting stage and with a low power consumption.
- tropicalized execution of the refrigerating system (up to +43 °C).
- execution backup of the evaporator group, in order to maximize the internal space and facilitate internal cleaning.

KW is researching alternative solutions with lower environmental impact; and is always updated with new gases at very low or no greenhouse effect impact, in order to develop new models..

For this purpose, we suggest the reading of our SMART line with a 75mm insulation and an integral application of NIA and HPL control system.

The refrigerants used are non-toxic, non-flammable, non-explosive and ecologic (maximum respect for the environment) as they are HC free, CFC free, HCFC free (ODP=0 OZONE DEPLETION POT ENTIAL) and with a low GWP.

-CEI EN 61326-1 CEI EN 61010 -1 compliant.
-2006/42/CE Machine Directive compliant.
-2014/35/UE Low Voltage Directive compliant.
-2004/30/UE Electromagnetic Compatibility compliant.

Accessories
KLAB Series

- **Pivoting wheel kit.**
- **Supplementary grilled shelves (in plasticized steel or inox).**
- **Removable (drilled) drawer in AISI 304 stainless steel, mounted on anti-rollover sliding rails.**
- **Internal divisions** (for drawers) **in plastic material.**
- **Internal-external through-hole with rubber stopper**.
- **Internal electric outlet + external magneto thermal switch.**
- **Visual-Sound power failure alarm, 12-VDC power supply with 2.3 Ah battery backup** (estimated duration, 3 years) only for Light Series.
- **Remote alarm GSM device**.
- **USB Port** for a quick and easy transfer of all information (only for NIA controller light series)
- **Double-trace disk recorder with weekly cycle** and 1.5 VDC battery power supply.
- **Additional RTD Pt 100 Ohm sensor** to connect to an external system for the acquisition and recording of T values, (1 per compartment).
- **Additional RTD Pt 100 sensor complete with 4-20 mA converter** mounted on a DIN bar to connect to an external recording system.
- **2 ch monitoring kit** (only for NIA control light series) allows to perform the regulation by means of average values from two sensors (NTC standard or RTD PT 100 upon request).

THROUGH HOLE

DISK RECORDER

USB PORT

ACCESSORIES FOR HPL CONTROLLER:

- **LAN port, WiFi module, GSM module, electronic key for controlled opening.** (see HPL controller.

On this series it is possible to perform **I.Q. (Installation Qualification) and O.Q. (Operational Qualification);** please contact KW's commercial office for a cost assessment.
KW is also available for Iso calibration certification services for the comparison to slt primary samples.

Freezers
KW

Control System

SLC Control

Silver Line Control

NIA Control

New Ice Age

HPL Control

High Performance Line

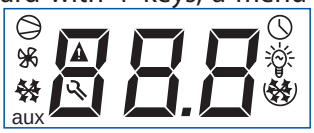
SLC Control

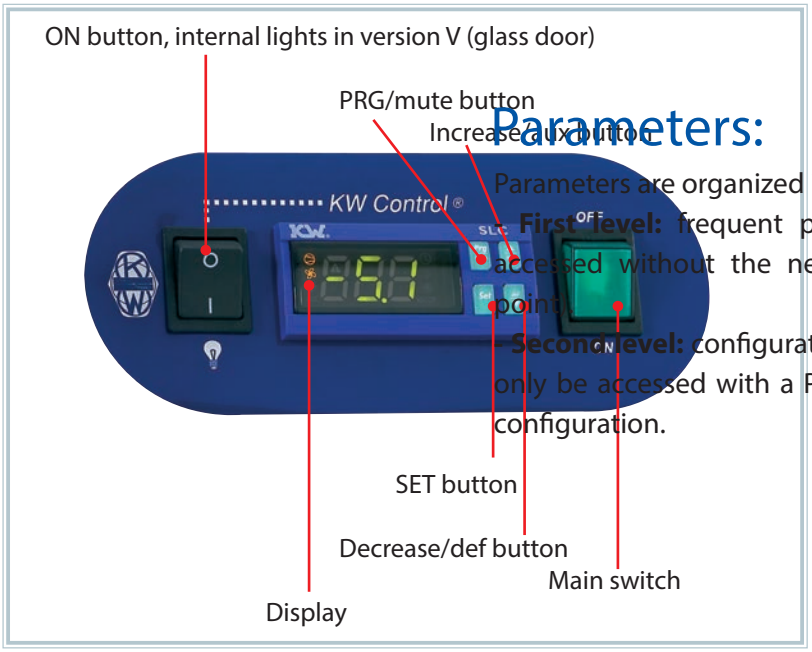
Control System "Silver Line Control"

Digital electronic thermoregulator specific for industrial and laboratory refrigeration:
IP65 protection level.

Keyboard and display:

We want to make using a controller both simple and intuitive. We selected a keyboard with 4–keys, a menu structure and LED display, 2+1/2 digits with automatic digital point (between -19.9 °C and +19.9 °C), marked; perfectly visible with natural or artificial light from any angle.





Parameters:

Parameters are organized into two levels:

- **First level:** frequent parameters that can be accessed without the need of a PAssword (set point)
- **Second level:** configuration parameters that can only be accessed with a Password and allows the configuration.

Input:

- 2 analogs for ntc sensors (thermo- stabilization sensor, evaporator sensor for defrosting).
- 2 multi-function digitals (power failure and open door alarms).

Output:

- 4 SPDT 230VAC/ 8 A relays

Configuration:

- keyboard, remote command, or PC

Refrigeration:

The control operates on the REFRIGERATION SYSTEM in order to maintain the set temperature.
The user can check the functioning with the Icons on the control panel.

Defrosting:

It is performed in different ways depending on the model: **hot gas models, or electric,** can be performed in a scheduled and/or manual mode. It is very safe as there is a thermo-probe in the ventilation system with a max and min timer.

Alarm visualization:

PROBE ALARM
In case of temperature alarm breakdown or failure.

TEMPERATURE ALARM
If, for any reason, the temperature starts increasing or decreasing until it falls outside the allowed range (configured with respect to the defined set point), the internal timer is activated (configurable alarm delay, 30 minutes by default but the value can be modified upon customer request); after this period the TEMPERATURE ALARM activates both visual (HI or LO) and sound (BUZZER) alerts.

DOOR OPEN ALARM
2 minutes (standard time, but confi gurable upon request) after the door is opened, the display shows the word"door" and the Buzzer sounds.

POWER FAILURE ALARM (optional)
When the equipment is furnished with a backup battery, **is it possible to display the temperature reading, even if there is no power supply to the laboratory, for several hours.** The internal buzzer and remote alarm signalling also remain active. The BUZZER starts sounding. Please bear in mind that the backup battery, 12V 2.3 Ah, has a life of 2-3 years.

Standard equipment includes a connector for remote alarm towards the user.

NIA Control

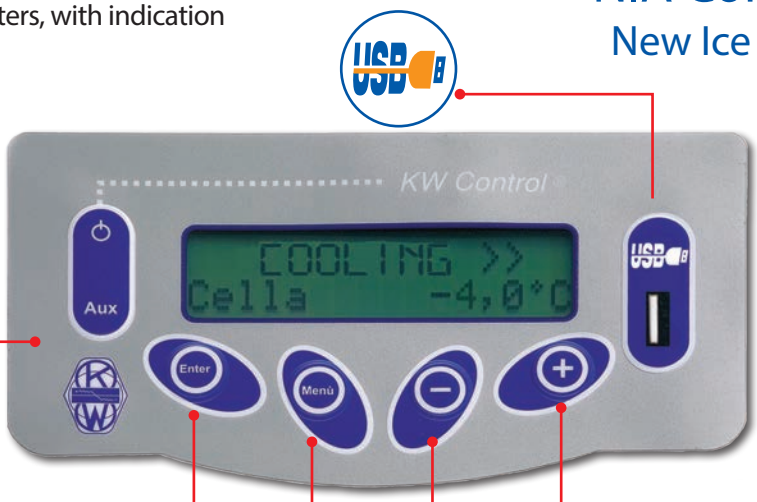
The freezer models can be provided with a **NEW ICE AGE KW CONTROL®** controller, registration and supervision system.
This is an evolution in terms of quality regarding the management of refrigerating machines. kw has researched how to provide greater reliability to the entire system with lower power consumption, and extreme fl exibility in technical solutions for systems that adapt to different environmental conditions for laboratory use. **Other innovations:** easy to read and use even by technically non-qualified users; many opportunities to implement alarms and record work configurations and significant events to maintain the quality of stored products.

NIA Control:

Regulation, Supervision and Recording in one single Control

Back lit LCD display with 16 characters, with indication of T, at 0,1°C.

NIA Control
New Ice Age



On and off.

It turns the Load Menu.

It confirms selected menu or selected value.

Menù Selection.

Value decrease.

It increases the value or turns on and off the load.

Allarms Monitoring

The alarm displays allows to know the state of preservation of the stored biological materials /medications etc. 24/7 etc. with no need of additional direct controls.

Alarm List:

- Min/max temperature audiovisual alarm.
- Power shortage audiovisual alarm.
- Open door alarm.
- Condenser high pressure alarm.
- Battery alarm.
- Sensor failure alarm.
- Compressor alarm.
- Condensation high T and dirty condenser alarm.

Such alarms are always on even in case of power failure.
This is possible thanks to a 2.3 Ah buffer battery which feeds the control system.

Check Service:

The last **32 functional failures** are saved and can be displayed through a password.

The controller, **for any temperature alarm,** records as follows (maximum traceability):
–Type of alarm: high T, low T, black out...
–dd/mm/yy/h alarm beginning and duration

The controller **for every open door alarm records the following:**
–number of critical openings/number of total openings/ total opening time in min.
–dd/mm/yy
Motocompressors' operation time shall be recorded too.

Data Logger Function:

The controller shall record the temperatures in addition to the alarms (up to two channels).
The memory capacity allows to record an input every 20 m for about 4 months.

The USB serial door allows the download of the recorded data through the control unit on usB pen drive. T values and alarm events can therefore be displayed in a graphic chart or as a table through a free dedicated software **(reader USB software).**

Security

Maximum security software against wrong and accidental handling and storage.

User Security:

the following functions are available by entering a password:

- **Refrigerator On and Off**
- **Setpoint value variation**
- **Access to the service menu for all the functional parameters**

Special Functions:

Maximum stored sample security.

2 CH MONITORING KIT (optional):
Regulation is performed with the average value of two sample sensors (RTD Pt 100 Ohm); in addition, a control function determines if the difference between the two sensors exceeds a value defined by Kw: in such case, there is a non-uniform t warning inside the work chamber.
The malfunction of one of the two sensors automatically transfers the regulation on the other by generating an alarm.
Or one sensor can be set up for regulation and the other for an alarm. In this case, the alarm sensor can be position in the hottest spot detected in the mapped inner cabinet.

KEY TEST:
The down arrow key activates the automatic alarm test procedure.
In particular: •Buzzer sound •Remote alarm relay
•Battery •High temperature alarm
• Low temperature alarm

SAFETY CONTROL:
Even in case of regulation sensor failure, the temperature of the storage does not change significantly, since the controller continues to regulate the temperature with on and off timing of the compressor detected before sensor failure (adaptation to the environmental conditions in use!).
The failure is memorized and the alarm signal shows the failure type.

DISASTER RECOVERY:
The destruction of the cPu allows the cycle of the functions on the remote unit, data visualization excluded. The correct conservation is guaranteed with the on/off times previously recorded by the controller.

INFO TEST:
The functional test performed in the factory can be repeated by the user. It performs a functional test of the biologic freezer with a printed report without using external devices.

Energy Saving

With the **Green Ice project KW** continues to develop its product lines and is compliant with some fundamental management principles of modern companies:
•lower impact in the environment;
•energy cost reduction of its equipment.

Automatic control and recording of all the functional parameters ensure a very high operating efficiency, by allowing the energy consumption measurement and the implementation of the parameters for the coP increasing (coefficient of performance), namely promoting **Energy Saving**, in line with the Kw's **Green Ice Project. The use of HFO with low GWP allows to respect the conditions included in the F-gas European regulation.**

Night & DAY:

During night time, when possible, theset temperature can be raised to a predefined value, by saving energy.

Environmental Adaptability:

the fans of the condenser work independently; thus it is possible to to keep the condensation constant, when the ambient T changes; this means an optimization of the condensation conditions and of the COP of the unit: **preventive and energy saving action.**

These two new functions are complement with NIA system functions and contribute to energy saving and global warming reduction, with a lower CO2 indirect emission in the atmosphere.
The energy saving is up to 15% compared to a standard freezer.

HPL Control

Touch Tecnology:

KW has always been very innovative for what regards the innovations in the information technology, the electronics world and thermodynamics technologies. KW invented a controller with ARM microprocessor technology, which is the same used for smartphones, with embedded Linux operating system, and therefore a real on-board computer. The new control and monitoring system is characterized by a graphic video interface composed by a **TFT 4.3" display touch screen.**

HPL Control (High Performance Line)

ONE TOUCH

Touch screen solutions to communicate in a simple and immediate manner.

USER FRIENDLY

Interface facilitates interaction with the controller.

TRACEABILITY

CONNECTIVITY

ENERGY SAVING

SECURITY

EASY MAINTENANCE

Connectivity, Traceability and Security

The new controller assures maximum connectivity and traceability, meets all the requirements of pharmaceutical industries and healthcare facilities. HPL freezer with I–KW Smart controller, have the following advanteges:

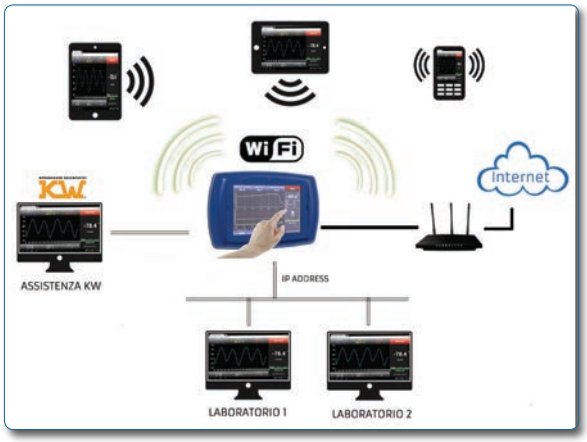
Total Connectivity

Total Connectivity:

- USB door
- SIM Card Slot
- WiFi Connection (optional)
- Ethernet door with Modbus protocol (optional)
- RS485 door with Modbus protocol
- Controlled access presetting

Total Traceability:

The controller records the functional data at high frequency and also **stores bar codes or other coding forms** (some of them with planned hardware implementations), by associating the content to the freezing process, cryo preservation, etc. The user can easily transfer the data on Pc and/or network, by using Windows only (no specific software is needed).



Network KW

Network KW:

The Wi–Fi and/or LAN connection shall ensure that our HPL freezer shall be visible in the LAN of the hospital, of the research center or of the industrial lab.
In addition, **by simply entering the iP address through the browser, the controller provides worldwide all the information on the equipment status or else showing the critical events occurred.**

Security

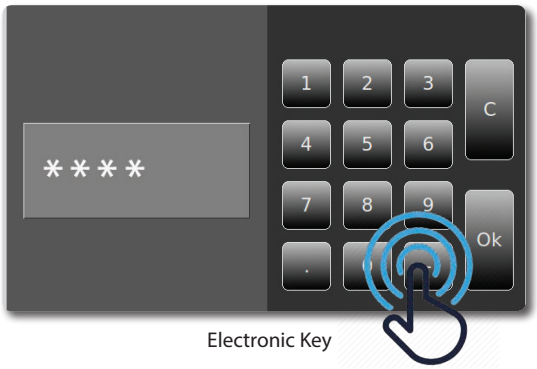
HPL controller is the new interface and connectivity linked to the freezers' control.It is simple, intuitive with a high visual impact and is combined with a sophisticated management of the refrigerating unit.

Time-temperature chart

The KW smart controller was conceived for an integrated security of all functions through the regulation and management of all refrigeration powers.
Data recording and filing is in compliance with the most developed standards, such as gMP, JAcIE, FAct, etc.

The time-temperature chart can be displayed on the screen with no need of a dedicated instrument.

Access control:



Electronic Key

The freezers equipped with the new controller have controlled access:

- (standard) **electronic key** (alphanumeric code customized by the user) to be associated with an electric locking system for controlled opening.
- (optional) **badge or transponder**, or finger-pass, with finger print filing.

Badge KW

"Door Opening" Event Traceability:

Through the **Log Function**, it is possible to trace the "door opening" event.
More particularly, the following info are stored and displayed:

- **The Operator who opened the door** (identified by the User Code entered with the key-board or by using the badge).
- **Door opening timing (day/month/year/hour/minute/second).**
- **Number of times the door was opened.**

User Friendliness and Maintenance

Easy Maintenance:

The manufacturer or maintenance specialist can connect to the device through an **IP address** and with a password sequence (for security and traceability reasons) to question the equipment status. It is possible to manage the equipment remotely, at reduced costs and work time. This system is very advantageous for failure prevention.

User Friendly:

Many tools will facilitate the equipment use. The user's guide is displayed on the screen and can be skimmed just like on a cell phone. The panel displays areal time user's manual, as well as the start up sequence or video files needed for maintenance and so on.

A remote assistance service is possible. There is a designated slot for a SIM with a GSM function that sends instructions and recommendations to the display.

Energy saving

Automatic control and registration of all functional parameters guarantee a very high operating efficiency, by allowing the measurement of energy consumption and the implementation of the coP parameters (coefficient of performance) . increase, namely greater energy saving, as to the Green Ice Project promoted by KW.

Environmental Adaptability:

the condenser fans are independent; thus they can operate differently and still keep the condensation constant when the ambient T changes. This optimizes the condensation conditions and consequently maximizes the COP of the unit: **preventive and energy saving action.**

Energy saving:

When the use percentage of the compressor reaches a predefined value, the Energy Saving function allows to increase temporarily and automatically the set point of the user pre-defined value and automatically activates the established conditions.

Eco mode:

It allows to increase the pre-defined set temperature during night hours (set up by the user or by the manufacturer).

Smart controller is the state of the art of the freezer and ultra freezer control systems.

Green ICE

Environmental impact improvement and energy cost reduction.

These functions complement the functions offered by the HPL system and to contribute to energy saving and global warming reduction, with a lower indirect CO2 emission in the atmosphere.

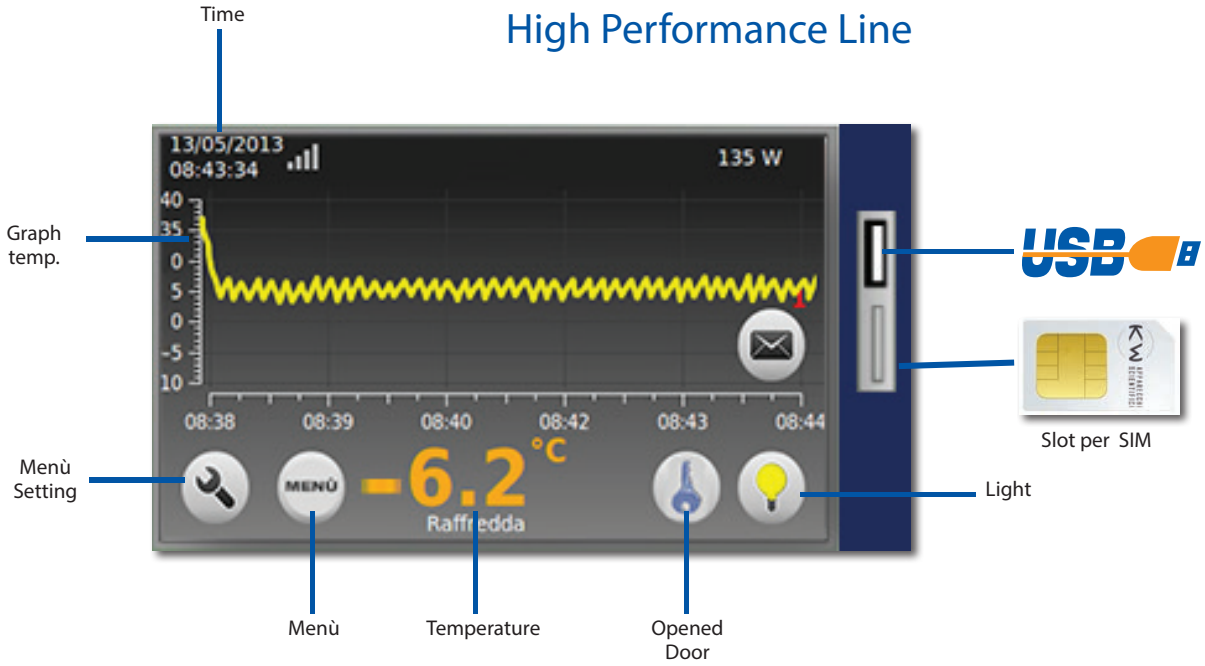
The energy saving is up to 15% compared to a standard freezer.

Display Touch Screen

- **TFT 4.3" color Display Touch Screen.**
- ARM9 microprocessor technology.
- Menu with multiple windows and temperature chart.
- Available in 5 languages.
- On/Off > controlled access through an electronic key with password.

Display	**TFT Touch screen 4.3" wide**
Power Supply	**from Power Board**
Dimension	**170x110x35 mm**
Front ports	**USB - Slot per SIM Card**
Port	**Ethernet, RS485**
Slot	**per modem GSM**
CPU	**Atmel® at91 256 Mb flash**
	Operating System Linux

HPL Control
High Performance Line

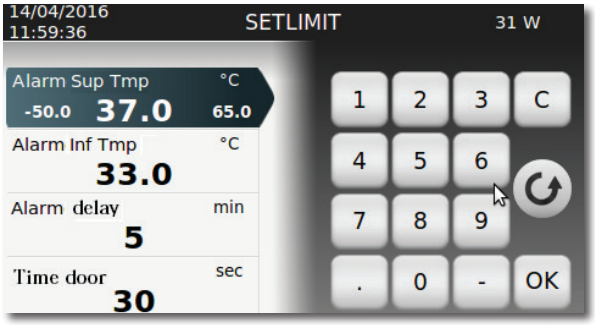


Control System

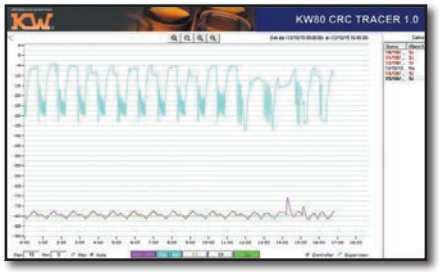
Control, recording, supervision and complete traceability of all parameters and events, complete connectivity with the environment, very high operating and access security.

Menù user

- **Two independent sensors;** one for adjustment and the other for T alarm. Temperature and alarm automatic recording.
- USB interface on the anterior pane for thermorecording data and updates download.
- **Lead buffer battery, supply backup and charge circuit (autonomy 24h).**



Set point modification and alarm threshold



Software Tracer

- **Set point modification and alarm threshold:** controlled modification with an electronic key with password in order to avoid intrusions, accidental handling and for a better traceability.
- **Access to the menu including sensitive data and parameters:** controlled access to the software parameters through an electronic key with password, for maximum security and compliance with lab regulations and procedures.
- **All the data are constantly recorded and can be downloaded** through the USB door. The "Tracer" software allows to display and analyze the recorded data on a PC.

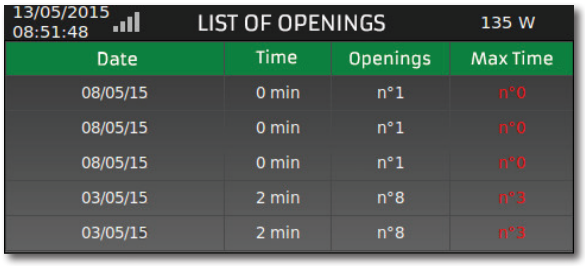
Alarm

The temperature alarm system is independent from the regulation and control system; the alarm sensor reading is allowed by a second microprocessor on the card edge.

Alarms list

Alarms List:

- High/low temperature audiovisual alarm.
- Power failure audiovisual alarm.
- Open door alarm.
- High pressure condenser alarm.
- Battery alarm.
- Sensor/sensors failure alarm.
- Compressor alarm (use time).
- High condensation T and dirty condenser alarm.



Date	Time	Openings	Max Time
08/05/15	0 min	n°1	n°0
08/05/15	0 min	n°1	n°0
08/05/15	0 min	n°1	n°0
03/05/15	2 min	n°8	n°3
03/05/15	2 min	n°8	n°3

Alarm - Door opening

Automatic recording for each alarm:

HT (high T), LT (low T), black out, alarm critical temperature; day/month/ year/ hour (minutes alarm start); alarm duration (for HT and LT) day/month/ year/hour (minutes black out start);

- Door opening: stored recording: number of daily openings; number of critical openings; total opening time.

- Monitored failures list: T sensor failure, compressor time, condenser on, high condensation temperature, network failure, thermal protection, system sensor failure…

HPL Special Function

Disaster Recovery

The freezer does not stop working if a failure occurs. If the cPu is damaged it allows the cycle of the functions on the remote unit and excludes the data visualization. The correct conservation is performed with the recorded on/off times fixed by the previous controller.

Key Test

The alarm test procedure can be activated by pressing a button. In particular:

- Buzzer sound
- Remote alarm relay
- Battery
- High temperature alarm
- Low temperature alarm

Enviromental Adaptability

The fans of the condenser are managed independently; thus it is possible to partialize fan operation and to keep condensation constant, when ambient T changes; this means to optimize the condensation conditions and therefore maximize the COP of the unit: **preventive and energy saving action.**

User Panel

Safety Control

Even in case of regulation sensor failure, the temperature of the storage does not change significantly, since the controller continues timed thermostatating with on and off timing of the compressor detected before sensor failure (adaptation to the environmental conditions in use!).
The failure is memorized and the activated alarm signal shows failure type.

Info test fuction

It allows the customer to repeat the functional test performed in the factory. It performs a functional test of the biologic freezer with a printed report without using external devices.

HPL Controller Connectivity

Real time monitoring of the freezer's operation any time on smart-phone or tablet.

HPL Connettivity

Wireless:

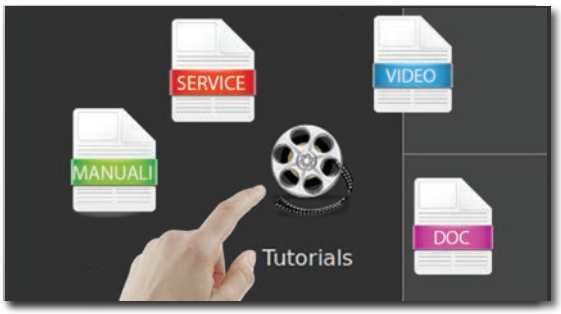
(Optional) – through the optional Wi-fi module, KW units can be connected to a wireless network from an access point (Router Wi- fi); or directly through a router.

Wired:

A P2P configuration allows to connect more i-KW units to the same network. Such configuration allow the supervision of each IP address from any PC part of the network through a browser while displaying preinstalled HTML pages on each terminal.

GSM Modul:

(Optional) - every i-KW80, can have a GSM form, becoming an independent unit, which transmits and receives SMS towards the recorded users;



Human Interface

Human Interface:

Visualized User's guide; File (also video) with visualized maintenance procedure; KW maintenance program: it reminds about periodical operations, recommended for freezer's maximum reliability and minor energy consumption.

USB Port:

Standard production serial USB door for downloading data recorded by the controller. The freezer shall be equipped with the "Tracer" software allowing to display and analyze data.

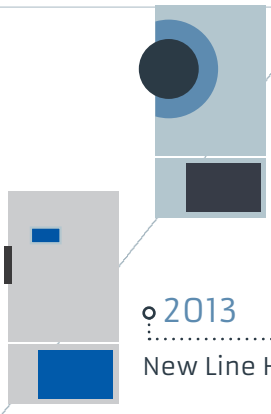
Slot HPL

RS485/ Ethernet Modbus:

(Optional)-RS485 and/or Ethernet door with ModBus protocol.

Free Contacts:

The back of the freezer shall include a free slot for alarm signal remotization.



2016
Frigoematica (Smart Blood Bank)

2014
New KW image

2013
New Line HPL

2006
Rapid freezer for plasma -85°C

2002
Control **NEW ICE AGE KW CONTROL®**

2001
Medical Project® series

1990
Biological Bank -85°C®

1985
KW Apparecchi Scientifici S.r.l

In the '70s
First **vertical** freezer **-85°**

1961
First **horizontal** freezer **-85°**

1953
KW (kalt/warm) **Officine Meccaniche**

ISO 13485:2012 ISO 9001:2008 ISO 14001:2004

Made in Italy

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