KW APPARECCHI SCIENTIFICI

Ultra Low Temperature
High Performance Line

Freezers HPL -40°C -86°C
Slim Version
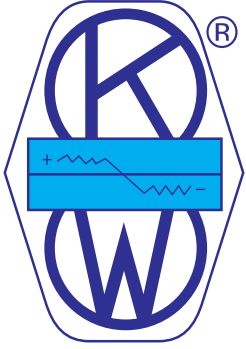### Model K59US HPL

BLUEline
Cold storage
equipment

APPARECCHI SCIENTIFICI

KW ®

PROUDLY MADE IN ITALY

KW BIRTHDAY
60 years!

CONTACTS:

Managing Director: **management@kwkw.it**
Technical Production Manager: **technician@kwkw.it**
Tender Commercial Office: **customorservice@kwkw.it**
International Sales Manager: **expdpt@kwkw.it**
Technical Support & Spare Parts: **assistenza@kwkw.it**
Service line: **service@kwkw.it**
Delivery Office: **delivery@kwkw.it**
Administration: **administration@kwkw.it**

BlueLine

GreenLine

RedLine

ServiceLine

BloodLine

Cold storage equipment

DATA LOG

Incubation and microbiological test equipment

Ovens, drying and sterilizing equipment

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

Medical devices for transfusion centres

KW APPARECCHI SCIENTIFICI

Series HPL - Ultra Slim

UltraFreezers -40°C -86°C

TOTAL CONNECTIVITY
TOTAL TRACEABILITY
CONTROLLED ACCESS

USB

SIM
GSM

ETHERNET

SD

7" TFT Display Touch Screen

APPARECCHI SCIENTIFICI
KW
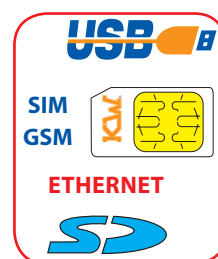
ISO 9001:2008   ISO 13485:2012   ISO 14001:2004   OHSAS 18001 2007

BlueLine
Ultra Low temperature freezers
HPL LINE
(High Performance Line)

(TT) TOUCH TECNOLOGY

KW is always very innovative and gets inspiration by the news from informatics, electronics and thermodynamics.

KW has thought a controller with a technology based on micro processor ARM9, Dual Core, the same processor applied in smart-phones. It's name is **i-KW**.

I-KW works with operative system Linux and it's a true on–board computer. The new controller has a graphic interface, done with a touch screen **TFT DISPLAY**.

This controller, not only is equipped with a more powerful processor and with much capacity of memory RAM, if compared to the previous models, it has an user interface so direct, that anyone will find it really user-friendly.

CONNECTIVITY, TRACEABILITY AND TOTAL SAFETY

Guarantying the maximum connectivity and traceability, i-KW is able to satisfy the requirements of the pharmaceutical industry and health laboratories, completely.

The ultra low temperature freezers HPL, with the new smart controller i-KW, **can have a full connectivity with the laboratory environmental, by means of: slot USB, slot SIM, Wi-Fi, Ethernet wired, and RS485 port with ModBus protocol.**

Above all, the Wi-Fi connection will make the HPL freezer visible in the LAN of the hospital or of the industrial laboratory.

From a PC workstation, connected in the same network as the freezer, through the browser, you can connect with the refrigeration unit by typing the IP address of the same.

Or, from any Internet terminal in the world will be able to connect to the refrigeration unit accessing the static IP address of the company, whose network is connected in the freezer, of course having the login credentials, which may be granted by the administrator corporate network.

The controller also warrants a full traceability, since the system continuously records, at high frequency, the functional data, bar codes, or other forms of coding, combining them with the freezing or cryo preservation process, etc. The user, without needing any specific SW, will be able to transfer the data to PC and/or to LAN in a very friendly way thanks to the standards which are developed in compliance with Windows. The smart controller i-KW has been designed to guarantee an integrated safety about all the functions, through the regulation and the management of the refrigeration power. The data recording complies with the most evolved standards, like GMP, JACIE, FACT, and so on. **There is also the availability of a temperature – time graphic, with no need to install a specific recorder.**

BlueLine

ULTRAFREEZER HPL LINE

THE INNOVATION OF HUMAN INTERFACE

A true challenge to the common sense for dimensions, structure and possible information. I-KW is the new reference for the user interface and for the connectivity attached to the control of the temperature freezers, where a simple, intuitive and nice to see interface is combined with a sophisticated management of the refrigeration unit.

- Recording of the functional variables on SD card, in real time
- Menu sensitive to the fingering (touch) with many windows and with temperature graphics
- USB interface on the front panel to download the temperature recording and updating (SW-FW)
- Possibility of door opening, in safety (password) through touch button or transponder
- Italian, English, French, Spanish, German languages available

Badge or Transponder
KW
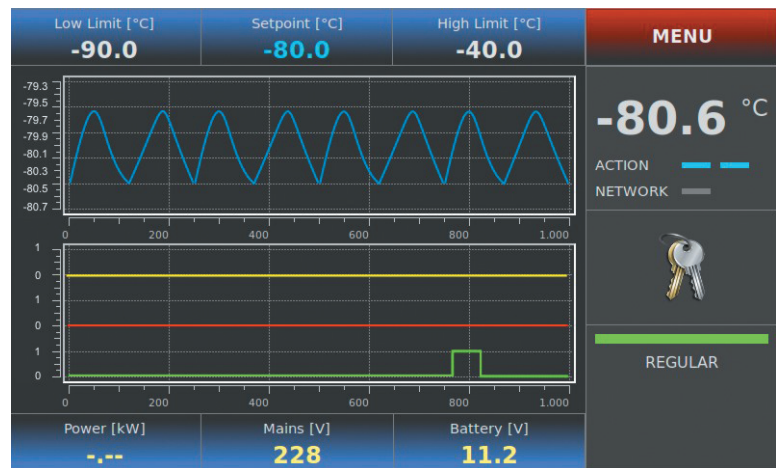
Instant termperature and alarm graphs and door opening

THE ACCESS CONTROL AND THE AIDED MAINTENANCE

The HPL freezers, equipped with the new i-KW controller, have a controlled access: it comes as standard the possibility to use an **electronic key** (alphanumerical code customized by the user) to put together with an electrical lock for a controlled door opening, or, as optional equipment, to use a **badge or transponder (or finger pass, with the finger print storage)**.

The new i-KW controller guarantees high use simplicity and an easy maintenance. The user will be able to arrange many tools which will teach him how to use them.

KW can offer the personal key a further electronic board connected with the main board; it has a RFID reader and record the number of the card (the number is connected with the name of operator), the day/hour/min/sec of access.

Think to the possibility to have a user guide on display and to scroll it as if it was a smart phone; and therefore to enjoy immediately an user manual, a start up sequence, or video files, which show the maintenance activities and so on.

Through the possibility for the manufacturer or the service engineer to connect by an IP address, and by a sequence of passwords (safety and traceability) to ask questions to the freezer status, or to modify the parameters, the freezer management can also happen from remote, with low costs and in very short time, with undoubted advantages for the failures preventing.

It will be possible to activate a telecare, with the mailing of instructions and recommendations on display, activating GSM function, by the slot for SIM.

BlueLine

Ultra Low temperature freezers
HPL LINE
(High Performance Line)

The new controller assures safer procedures, automatic recording of the data and shorter working time for the technician.
In fact it obtains the maximum saving for the procedures of freezing, storage, by the automatic writing of the introduced items, by the automatic recording of materials and thermal cycle, and their association. In this way it obtains to amend many errors and many not conformities of the laboratory processes, and in last analysis it gives a sensible saving of the indirect costs.

The control and recording of all the functional parameters, by the computer memory, guarantees a very high operative efficiency, allowing the measurements of the energy consumption and the actuation of the parameters useful for COP rising together with Green Ice project.
The user can display also the recording of electrical consumption.
New functions and an arrangement to future updating

About energy saving, the smart controller i-KW has new functions:

INTERACTIVE ENERGY SAVING

ECO MODE
allows raising the temperature set during the night hours with a pre-definite value (settable by the user or by the manufacturer)
ENERGY SAVING
allows, when the percentage of the compressor use reaches a pre definite value, to raise the temperature set point, temporarily and automatically, with a pre definite value (settable by the user or by the manufacturer). The restore, at the pre definite conditions, happens automatically.
These two new functions allow to integrate themselves to those offered by NIA system and to aid the energy saving and the reduction of the global warming, with a smaller not direct CO_2 emission in the atmosphere.
The energy saving is at least -15%, in comparison with a standard ultra low freezer, only through Night Mode and Eco Mode.
Besides, the new controller is equipped to accept future updating easily and at low costs, so it'll be able to adapt itself to the new technological innovations and to response to the raising requirements from the rules and the directives in pharmaceutical and health field.
Smart controller i-KW is the last stage of the art for the control system of the ultra low temperature freezers.

BlueLine

Ultra Low temperature freezers
HPL LINE
(High Performance Line)

STRUCTURE: the external cabinet is a plasticized, zinc-plated (or enamelled) steel sheet with rounded edges for maximum ergonomics; Internal casing in AISI 304 stainless steel (or AISI 316 upon request) with rounded angles for easy cleaning; n.4 insulated internal counter doors (n.5 upon request) for upright models; the handle has an ergonomic design and key lock; pivoting wheels to facilitate transportation and placement inside the laboratory; not heated pressure-compensation valve

to facilitate the operation of opening the door, Insulation is in CFC- and HCFC-free polyurethane resin foamed on site, with a density of 40 Kg. /m3 and with an average thickness of 140 mm or more. **(It's available V.I.P. solution)**

K59US HPL model has – standard - polyurethane resin foamed on site and embedded V.I.P. panels

Gaskets: triple silicone rubber seal, welded joints, heated by the refrigerant itself and with virtually unlimited duration.

User panel

REFRIGERATION SYSTEM AT -86°C: the refrigeration system is fully sealed; it uses a cascade circuit with innovative components and fluids to obtain, together, maximum cooling reliability and performance; 2 silent, airtight compressors (value Leq dB (A) <55) with a high refrigeration capacity; the refrigerants are nontoxic, non-flammable, non-explosive and environmentally friendly. the condensation is obtained with forced air circulation; on request, water condenser.

Compressors warranty: 5 years !!

The freezers at -40°C have the same construction characteristics as those of the HPL series at -86°C, with the exception of the second system in cascade.

Filter condencer: to provide protection from dust on the condenser

Voltage stabilizer: 4,000-VA voltage regulation, capable of compensating the fluctuations of the utility power supply (± 15%), protecting the compressors and guaranteeing a long useful life.
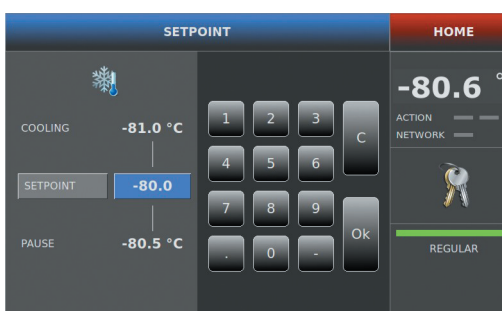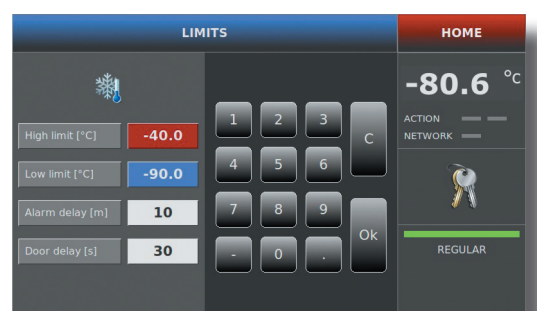
Customized
temperature limits

COMPLETELY CUSTOMIZED

SAFETY - Customized
password protection

BlueLine

Ultra Low temperature freezers
HPL LINE
(High Performance Line)

Display to set and to read the temperature:

i–KW video – graphic interface is a color touch screen display 7" TFT; micro processor ARM9 technology , the same processor used in the smart phones, which functions with Linux operative system; menu sensitive to the fingering with many windows and with temperature graphics; system available in 5 languages: Italian, English, German, French, Spanish.

- Controller startup and shutdown: access protected by electronic key with password

SD

USB

SIM GSM

ETHERNET

Display	**TFT Touch screen 7.0" wide**
Power supply	**from Power Board**
Dimensions	**197x122x50 mm**
Front ports	**USB - Slot per SIM Card e SD Card**
Ports	**Ethernet**
Slot	**for modem GSM**
CPU	**Atmel® at91 sam9261 256 Mb flash**
	Operating System Linux 2.6.33

CONTROL SYSTEM:

control, recording, supervision, full traceability of all the parameters, user profiles and the events, full connectivity to the environmental, very high safety about the operations and the accesses.

2-ch monitoring kit with two independent RTD Pt 100 Ω (class A) sensors; one for the regulation and one for the temperature alarm and for automatic recording of the temperature and the alarms; recording in real time of all the functional variables on SD card and on USB port; this last part on the front panel to download data of thermal recording and for updating; registration in SQL format for easy reading by dedicated software **KW80CRC TRACER**; **Pb or Ni-MH backup battery; and battery recharge circuit.**

- Set point and alarm limits change:

controlled change through an electronic key, with password against violations, accidental handlings, and for the best traceability.

- Access to the menu, with sensible data and parameters:

controlled access to SW parameters, by electronic key, for the maximum security and in compliance with laboratory rules and standard.

- Monitoring output: RS485, dry contact, WiFi, 4/20mA.

- All data are continously recorded on SD card and on USB Port (software Tracer).

BlueLine

Ultra Low temperature freezers
HPL LINE
(High Performance Line)

ALARMS:

temperature alarm system fully independent with the regulation control; **reading of alarm probe by 2nd micro processor on the electronic board:** visual and acoustic alarm for power failure, door opening, high condenser pressure, battery alarm, damaged probe/s, compressors time, high temperature condenser, clogged condenser; for any temperature alarm, automatic recording (high T, low T) black out, critical alarm temperature, month/day/hour/minute of the alarm start; month/day/hour/minute of the alarm end.

- Door opening:

n° daily openings, n° critical openings, total opening time are all recorded in the memory
List of the monitored failures: damage of T probe, compressor time, dirty condenser, high condenser T, power failure, thermal protection, damaged plant probe

- Safety control:

the freezer continues to run a timed thermo stabilization with compressor on/off times collected before the sensor(s) broke down.

Disaster recovery:

in the event the CPU is destroyed, it allows cycling the functions on the remote unit, with the exception of data visualization, that is, the freezer continues working with average on/off times recorded before the failure.

Info test:

executes functional tests for the biological freezer, with report printing if necessary, without engaging external devices.

Enviromental adaptability: the condenser vents are managed separately by means of a sensor; **condenser fan speed modulation within a band of temperatures.**

Energy saving, activating the under mentioned functions, it's possible save over 15% energy in respect of the freezer with standard controllers – **GREEN ICE SOLUTIONS**; economic management of the consumptions

- ECO MODE:

during the night, when the user procedures and stored product so permit it is possible to raise the set temperature by a predefined value, thereby obtaining important energy savings.

- ENERGY SAVING

this reduces the consumption rates of the refrigerating unit as soon as the compressor use percentage reaches a predefined value. In this condition, the operating set point is temporarily and automatically increased by a value preset by the user; resetting takes place automatically at the defined conditions.

BlueLine

Ultra Low temperature freezers
HPL LINE
(High Performance Line)

48 Hours!!

Up to 48 hours of temperature data logging on SD CARD in case of energy black out

The control system uses 8 AA Ni-MH rechargeable batteries

GSM: optional, every i-KW80, can have a GSM form, becoming an independent unit, which transmits and receives SMS on own phone number, towards the recorded users;

RS 485 Modbus RTU: is present – standard- a RS485 port with Modbus RTU protocol, oriented to the serial communication of i-KW80 towards systems of supervision, compatible with this protocol;

**Bar code reader:** optional; for the registered samples equipped with a bar code;

Dry contacts: remote management of the alarm signals;

Human interface: user guide on display; files (also video) with maintenance programs on display; maintenance KW program: informs about periodic operations recommended for the maximum reliability of the freezer and for the minimum energy consumption;

Recording (standard): with data logger function and the possibility to display the temperature - time graphic on display touch screen;

ETHERNET PEER TO PEER WIRED: by a configuration of PPP type, many i-KW80 controllers can be connected in a same network. This configuration allows the supervision per single address IP from PC in the network , by a browser with the display of the HTML pages, pre installed in every single terminal;

WI-FI: through the WI-FI form, optional, the i-KW units can be connected in wireless network , in the environmental where an access point is present (Router WI-FI) or **through router connected directly;**
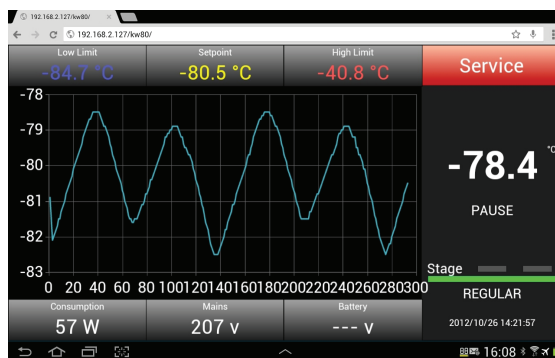
Ethernet or WIFI connectivity

BlueLine

UltraFreezers -40°C -86°C

HPL LINE-Ultra Slim

RFID reader for access

UltraFreezer HPL Line

7" TFT DISPLAY

K59US HPL UltraFreezer (-40°C/-86°C)

DATA LOG

BlueLine

Freezers -40°C -86°C

HPL - Ultra Slim

(High Performance Line)

NEW

√ **SAVE SPACE IN YOUR LABORATOR**

√ **WORK WITH TOUCH TECNOLOGY:** easy, traceable, with built-in recording system, for easy maintenance at any time, updatable with a simple message

√ **ERGONOMIC AND EASY TO USE AS A LAST GENERATION SMARTPHONE**

√ **SAVE ENERGY** with touch technology HPL through special thermodynamic functions **(GREEN ICE project)**

√ **YOUR FREEZER ALWAYS CONNECTED WITH YOU WHEREVER YOU ARE, ALWAYS IN CONTROL OF YOUR SAMPLES WITH JUST A TOUCH OF PC**

K59USHPL

KW Apparecchi Scientifici offers models with **VIP** panels to save energy (up to 20% less - **GREEN ICE project**), while maintaining the same footprint.

VIP PANEL

Now **KW** has developed and will develop new innovative models:

-**ULTRA SLIM** models with Vacuum Insulation Panel Technology: high insulation material with extremely low thermal conductivity and consequently very low thermal transitivity (U-value).
Main components of VIP panels are silica based core and multi layer high-banner film, which keeps vacuum inside the panel on the sufficient level for more than 50 years.

Energy-efficient, quiet running and reliable, **HPL SLIM KW** freezers use space-saving Vacuum Insulation Panel technology to reduce **wall thickness (only 90 mm.) for a significant increase in storage capacity (over 35%), with the same footprint.**

BlueLine
Freezers -40°C -86°C
HPL - Ultra Slim

KW -86°C FREEZER SERIES HPL ULTRA SLIM - Model K59US HPL	
MODELS HPL ULTRA SLIM -80°C	**K59US HPL**
External dimensions (WxDxH)	cm 67,2*x90x190
Internal dimensions (WxDxH)	cm 49x67,6x125
Set Point	-80°C
Working range	-40°C -86°C
Capacity (litres)	413
Pre painted steel closed doors	1
Shelves/inner doors	4
Weight Kg	290
Internal surfaces standard	AISI 304 stainless sheet
External surfaces standard	Prepainted steel
Insulation thickness	90mm
Key Lock	ST
4 wheels (2 with brake)	ST
(*) Controller HPL (display Touch Screen, Smart defrost, HT, LT, BLACK OUT, failure list, door open, switching on/off password, alarm memory, alarm test, SAFETY CONTROL, DISASTER RECOVERY, key alarm test, USB port, WI.FI, Ethernet wired)	
Controller HPL (*)	ST
N°2 PT100 probe(-40°C/-130°C Class A)	ST
RS485, 4-20mA, USB and Ethernet Port and SD Card	ST
SW KW TRACER	ST
AVAILABLE ACCESSORIES	
Internal AISI 316 surfaces	√
External AISI 304 o AISI 316 surfaces	√
V.I.P. (vacuum insulation panel)	ST
Rack/Cak/COS	√
Additional shelves	√
Kit back up CO2 (24Vac/50Hz)	√
Kit back up LN2 (24Vac/50Hz)	√
Opening door by transponder personal key	√
Electrical key	√
Temperature recorder	√
GSM Port	√
Emergency plant CO2 (12Vac/25Hz)	√
Additional PT100 probe	√
Data logger WIFI+software/hardware (temperature management Spy KW)	√
Voltage stabilizer ± 35V (±15%)	√
IQ/QQ/ecc.	√
Water condenser	NO
Internal - external hole	√

(*) handle included

- **Boxes capacity 300**   - the boxes are stored in special racks with extraction front to save the cold and exposing the minimum amount of samples to the momentary heating
- **2 standard internal insulated doors to save the cold**
- also available , on request, 3 or 4 internal insulated doors to prevent the exit of cold air (GREEN ICE project)
- 4 standard stainless steel AISI 304 shelves   - Triple seal with silicone rubber with a lifetime guarantee
For the rest, the structure has the same materials and the same technical features as any other ultra low temperature freezer branded KW. And this serie has the same accessories of the other ULT freezers branded KW.

Rack DRA

ENERGY CONSUMPTION:
- HIGH PERFORMANCE CONSUMPTION: **14,2 Kw/24h**
- ENERGY SAVING: **13 Kw/24h**

Green ICE

BlueLine

KW SPY

WiFi DATA LOGGER FOR DETECTING TEMPERATURES AND ANALOGUE SIGNALS

The wi-log module is the ideal solution for the management and remote control of laboratory environments and equipment

Fitted with double powering (internal batteries and optional external power supply unit), the device offers the possibility to monitor a large range of physical quantities. Indeed, the S2000 has one or two ports that can be configured for reading:

* **PT100 or PT1000 RTD sensors** (Resistance Temperature Detector) with measurement accuracy of +/-0.2°C. (code S2000-P1 for one sensor and S2000-P2 for two sensors)

* **4/20mA analogue signals leading from sensors of many types** (O2 sensors, CO2 sensors, pressure sensors, etc.) and with an accuracy of +/-30μA. An external power supply unit is needed if the sensors are passive.

* Due to a special sensor inside the module, it is possible to detect the temperature and relative humidity in the environment, contributing to the safety and traceability of the work areas.

It is possible to set 4 alarm thresholds for each sensor used and associate a delay to each of them for triggering alarm signals. These signals are visual (red led on the module front panel), acoustic (buzzer) and via relay with NC and NO contacts.

The values of the physical quantities detected by the S2000 are acquired on the basis of the sampling time set by the user, which is variable between two seconds and one hour.

The recording capacity is over 270000 records. For example, making one record per 5 minutes the module can collect data for over 30 months!! All the information concerning the values read by the sensors at the input, the status of the module (e.g. the type of power supply used) and any active alarms are stored to ensure the utmost safety and reliability of the system.

All the records are sent in block, via WiFi network to a PC running the dedicated software developed for recording and displaying all the data. With WiFi technology it is possible to overcome the wiring limits of conventional systems, reducing costs and positioning restraints of the areas/equipment monitored.

On the front panel the device has a very low consumption LCD display that shows the values of the physical quantities measured and helpful information such as the type of power supply used, the battery charge status and information about the signal available for data transfer. The front buttons make use and programming both simple and intuitive.

<div style="border:1px solid">
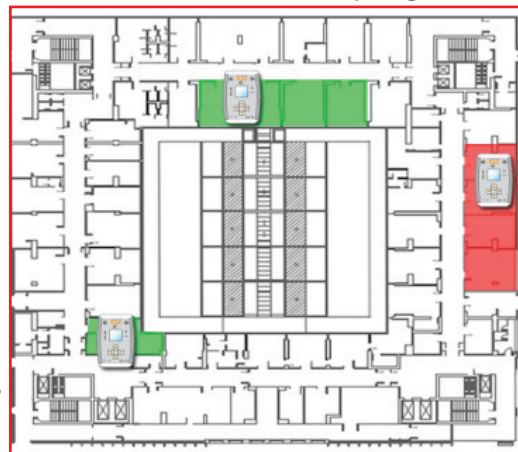
TECHNICAL SPECIFICATIONS

* Battery power supply (average foreseen duration: 3 years). Option for external power supply
* Installation with one or two ports that can be configured as:
   -RTD sensor reading (PT 100 or PT1000) - Reading of two 4/20mA signals in active or passive mode
* Possibility of environment temperature and relative humidity reading
* Reading accuracy: +/-0.2°C (RTD), +/-30uA (4/20mA signals)
* Automatic instrument calibration during measurement
* Possibility of setting sampling times (from 2 to 3600 seconds) - Storage capacity over 270000 records
* Parameter setting of each sensor: offset for RTD correction, 4 alarm thresholds with the possibility to
   individually delay the alarms, and sensor failure indication possibility (open/shorted)
* Very low consumption graphic LCD display with SHARP "LCD Memory" technology
* Battery status and power supply mode display - Transmission status and available signal display
* Output for allowing the remote control of alarms with clean NC/NO contacts
* Data transmission via Wi-Fi IEEE 802.11 b/g network

</div>

802.11 WiFi telemetry system

The supervision system **KW SPY**, is a SCADA (Supervisory Control and Data Acquisition) capable of monitoring equipment, Biological Laboratories.

Is a modular system consisting of:

- The Wi-Log modules (Data Logger with built-in memory) that control field devices via PT1000 probes. The Wi -Log can be to a probe (Wi -Log P1) for detecting a temperature, or to two probes (Wi -Log P2) for the detection of two temperatures;

- The PC (connected to the intranet of the structure) using the software KW maintains a database and performs the function of web server.

Thanks to the system KW SPY it is possible to monitor in real time the status of all the controlled equipment. The plants of the laboratories are shown with synoptic reports, to scale
It is possible to interact with the maps using the appropriate menu.


Among the main features:
• Real-time display of the alarms detected
• Real-time display of temperatures.
• Storage of measured values with a frequency set by the operator
• Storage of events and alarms
• Reconstruction of the data in graphical and tabular form , exportable in excel format
• Submission of reports alarms via telephone dialer S140 in voice form and / or SMS on GSM network
• inspection by intranet and / or Internet via software-viewer .
• Ability to make an "inspection" by operators   with periodic releases that the check of the entire system.

The system is based on a powerful DBMS via which it is possible to reconstruct in tabular or graphical form the trend of the recorded quantities.

Similarly, in the database are stored alarms occurring in the plant with date-time - event activation and restoration of the normal condition.

The system is used by multiple operators connected in a local network (intranet) or remote (internet). Thanks to the Internet, skilled technicians are able to provide immediate support in case of anomalies.

The software is KW SPY CE0051 certificate , in accordance with **_Directive 93/42/EEC_** and 2007/47/EC, Annex II, defined in Class IIa according to Annex IX, Rule 2.
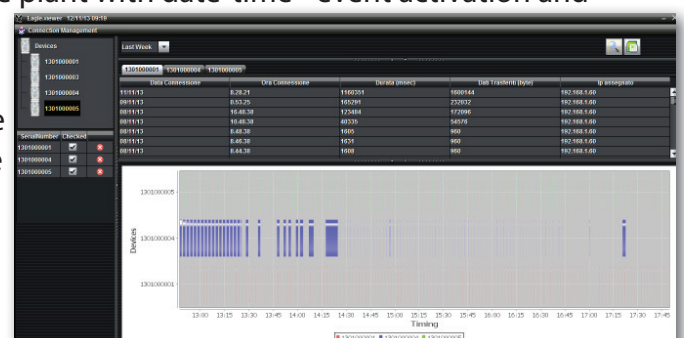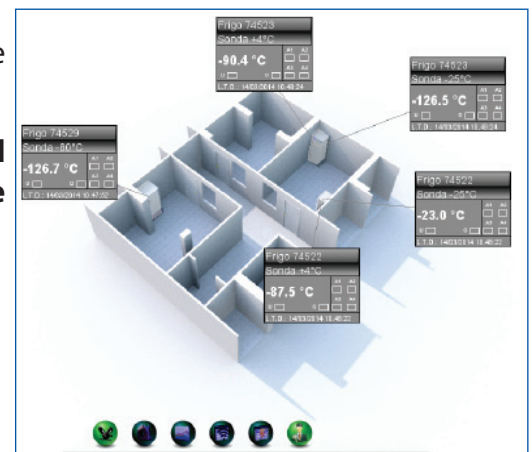
2014
New controller and new KW image

2006
Rapid freezer for plasma -85°C

2006
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**

CSQ **MED**
ISO 13485:2012

CERTIFIED MANAGEMENT SYSTEM · IQNet
ISO 9001:2008

CSQ **eco**
ISO 14001:2004

Made in Italy

KW APPARECCHI SCIENTIFICI s.r.l.

53035 Monteriggioni (SI) Via della Resistenza, 119
Tel. +39 0577 309143 / 309145
www.kwkw.it kw@kwkw.it expdpt@kwkw.it