edition version 1.2

BloodLine

WR-KWAP
(Platelet incubator/agitator)
HPL
(High Performance Line)

New Touch Screen
7" TFT Display

APPARECCHI SCIENTIFICI
KW®

BloodLine

WR-KWAP

(Platelet incubator/agitator)

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control panel

WR48 HPL

BloodLine

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KW Apparecchi Scientifici has developed a new line of platelet incubators that offers solutions with many capacities in free-standing and bench-top models.

The agitators are provided with their own power lead to be able to be inserted in the corresponding KW incubator or in another thermostatting appliance.

Incubator specifications: T set +22°C ±1°C

Model	Ext. Measure	Int. Measure	Capacity	Bags (450ml)	T Stability	T Uniformity	Power (W)	Weight (kg)
W18 HPL	72x69x110	62x55x51	170 lt	Max 18	≤ ± 0,5°C	≤ ± 0,5°C	650	105
W48 HPL	65x63x86	56x47x47	120 lt	Max 48	≤ ± 0,5°C	≤ ± 0,8°C	650	50
W96 HPL	65x63x115	56x47x76	200 lt	Max 96	≤ ± 0,5°C	≤ ± 0,8°C	650	70
W85 HPL	110x75x200	75x55x105	430 lt	Max 108	≤ ± 0,5°C	≤ ± 0,5°C	850	230

T = bench-top version F = free-standing version

INCUBATORS:

T. RANGE:

+18°C +22°C for models W48HPL and W96HPL

+5 °C +45°C for models W18HPL and W85HPL

Power supply V230/50 Hz

Structure and system

External structure and door in sheet steel prepainted or plastic-coated in zinc; on model W85HPL an external structure made entirely of AISI 304 stainless steel is an optional feature.

Insulation in natural mineral fibres, with high insulating power **(energy saving),** for models W18HPL and W85HPL; insulation with polyurethane expanded in situ with a density of 40 kg/mc, for models W48HPL and W96HPL. The higher capacity model is fitted with a **led light** that turns on when the door is opened.

GREEN ICE project.

Internal chamber and shelves in AISI 304 stainless steel; with rounded edges; the shelves can be positioned as desired through mobile supports on racks; these are placed on the internal walls.

All models have a transparent door (in toughened glass), fitted with magnetic PVC seal.

This allows observation of the platelets without altering the internal T.

The door is key-lockable for the utmost safety.

All HPL incubators are easy to clean and decontaminate.

The heating is obtained with special heating elements with low thermal density, for maximum temperature stability; cooling is achieved by a special KW designed evaporator; all heat exchangers are placed in an area separated from the internal chamber, in order to create a very uniform temperature control in the working volume. The temperature control flow is driven by a high efficiency helical fan; in the W85RF model, the temperature control flow can be regulated with an angular speed variator of the fan itself (optional).

The refrigeration system is composed of an air condensing unit, with expansion by means of a capillary tube. There is plenty of condensing surface to allow it to function correctly even at very high ambient temperatures (> +32°C) and/or in environments with little ventilation and poor air exchange.

There is a device that collects and evaporates the condensation water.

The refrigerants used are non-toxic, non-flammable, non-explosive and above all eco-friendly (ODP=0).

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(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.**
KW slogan is: ***let's put an iPad in our apparatus!***
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 incubator 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 incubator visible in the LAN of the hospital or of the industrial laboratory.
From a PC workstation, connected in the same network as the incubator, 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 incubator, of course having the login credentials, which may be granted by the administrator corporate network.

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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 heating or incubation 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 incubation 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.**

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 incubators, where a simple, intuitive and nice to see interface is combined with a sophisticated management of the incubation 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

THE ACCESS CONTROL AND THE AIDED MAINTENANCE

The HPL incubators, 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.

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 incubation 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.

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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 incubating, 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

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:

Thermoregolation is managed by P.I.D. Control for heating and by ON-OFF Control for cooling.
Control, recording, supervision, full traceability of all the parameters 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 **KWCRC 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.

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- 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.
- All data are continously recorded on SD card and on USB Port.

ALARMS:

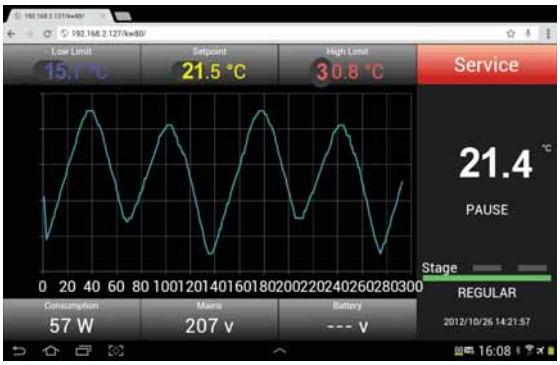
Temperature alarm system fully independent with the regulation control; **reading of alarm probe by 2nd micro processor on the electronic board:** visual and acoustic alarm for power failure, door opening, high condenser pressure, battery alarm, damaged probe/s, compressors time, high temperature condenser, 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 incubator 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 incubator continues working with average on/off times recorded before the failure.
Info test: executes functional tests for the biological incubator, 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.**

GSM: optional, every i-KW, 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-KW 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-KW 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

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WR-KWAP HPL (Platelet incubator/agitator)

Agitator specifications:

Model	Mis. Est. WxDxH (cm)	Capacity bags	Incubator	Power (W)	Weight (kg)
KWAP18	62x55x51	18	W18RT	600	33
KWAP48	52x37x43	48	W48RT	450	30
KWAP96	52x37x63	96	W96RT	450	40
KWAP54	70x49x67	54	W85RF	600	50
KWAP108	70x49x100	108	W85RF	600	80

AGITATORS: Structure and system

The linear alternative agitators KWAP18 (18 bags - 3 shelves), KWAP54 (54 bags - 6 shelves), KWAP108 (108 bags - 12 shelves), KWAP48 (48 bags - 7 shelves) and KWAP96 models (96 bags - 14 shelves) allow the organised storage of human blood platelets in plastic bags.
Each unit is characterized by alternate movement and suspended on guides having linear pads; this ensures that the movement is silent and of high reliability. The upper part moves from side to side with a course of 1" or 11/2"at a frequency of 114 courses per minute. Each shelf has an "open" surface that allows for a ventilation.
The agitator has legs, in metallic material, suitable for placement on the work bench or on the right support.

KWAP108

KWAP48

KWAP96

In the KWAP18, KWAP54 and KWAP108 models, all the shelves are made of AISI 304 stainless steel; in the KWAP48, KWAP96 models, all the shelves are made of painted steel sheet and plastic material; the shape and surfaces are in any case all suitable for facilitating cleaning and ensuring long life.
Each shelf may be extracted in order to reach them, while the motor is in movement, without any disturbance to the agitation of the platelets. Furthermore each shelf has a posterior "STOP" that impedes the complete discharge for eventual errors and permits an almost horizontal position suitable to loading the bags without any intervention of the user.
When the shelf has to be removed entirely for cleaning, it must be raised in order to by-pass the "STOP". On the inferior frontal of the appliance there is the command panel with the ON-OFF switch for power supply, having visual signalling.

TEMPERATURE REGULATION AND CONTROLS

The agitator has its own power supply and power lead to be able to be inserted in the corresponding KW incubator, or in another thermostatting appliance. On the front panel there is the main O/I switch with warning light;

PLATELET AGITATOR OSCILLATION SPEED VARIATOR (Optional)

In the KWAP 18-54-108 models, the KWAP platelet agitator can be fitted with an oscillation speed regulator, obtained through a knob outside the appliance. Regulation takes place between about half of the number of nominal oscillations (around 36 strokes a minute), obtained turning the knob to the MIN position, and the number of nominal oscillations, obtained turning the knob to the MAX position (about 72 strokes a minute).

PLATELET AGITATOR MOVEMENT ALARM (Optional)

All the agitators can be fitted with a movement alarm, obtained through a special sensor positioned inside the agitor itself. Should agitating be interrupted following a failure, an alarm is activated on the incubator for the utmost product safety. The alarm is cut off when the incubator door is opened and the agitator movement is stopped for operator safety.

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