TEKNALAB
SCIENTIFIC REFRIGERATORS

Serie UF - Model TK 66 HPL

(806 Lt.)

All models are designed and manufactured according to the ISO 9001:2008 International Quality System and built according to European CE trademark safety regulations, and UNI-EN-61010 for laboratory equipment; it complies with the GMP regarding the requirements of the pharmaceutical
and biotechnology sectors. TEKNA'S HS freezer series at -80 °C have technical characteristics that guarantee user "safety" in the harshest conditions: high room temperature (-80 °C up to +35 °C and others), modest air circulation (necessary for condensation), even the absence of electric power for short periods.

MAIN TECHNICAL CHARACTERISTICS:

- **CAPACITY**: **806 Lt.**
- **EXTERNAL DIMENSIONS**: **cm 110 X 103 X 199 (W x D x H)**
- **INTERNAL DIMENSIONS**: **cm 84 X 72 X 128 (W x D x H)**
- **WEIGHT**: 410 Kg.;
- **POWER SUPPLY**: 230 / 50 / 1 + G;
- **POWER CONSUMPTION**: Ca. 570 W (average referred at ambient T°C +23°C with a normal operation);
- **TEMPERATURE RANGE**: from -30°C to -85°C;
- **CERTIFICATIONS**: The Equipment is certified in accordance with:
  - **CEI 66/5 UNI EN 61010-1/A2**;
  - **CEI EN 61326**-1
  - **ISO 9001:2008, OHSAS 18001:2007 and ISO 13485:2003** certified manufacturer;

MECHANICAL STRUCTURE:

- **INTERNAL CABINET**: AISI 304 stainless steel (AISI 316 on request) with polished external BA finish for best resistance and cleanliness;

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- **EXTERNAL CABINET**: zinc-plated and pre-painted steel sheet (AISI 304 stainless steel on request) satin finish;
- **THERMAL INSULATION** : non-CFC, non-HCFC PU foam, min. thickness 140 mm;
- **SEALING GASKET:** Triple silicone rubber (prevention against air leaks);
- **GASKET HEATING***:* frost formation prevention by means of the "hot gas" recirculation coils; high reliability and energy saving (it does not use additional power by electric heaters);
- **COMPENSATION VALVE**:: for internal/external pressure compensation, to facilitate door open/close;
- **DOOR:** door is placed on the upper part, mounted on self balancing hinges. It comes with lock and key.
- **WHEELS**: 4 ea. pivoting wheels for ease of maneuvering of the freezer inside the laboratory;

REFRIGERATION SYSTEM

- **COOLING SYSTEM:** fully sealed cooling circuit with hermetic compressors arranged in cascade, complete with MCB protection and pressure gauge to monitor condensation pressure (MR):
- **EVAPORATING SYSTEM**: direct expansion s.steel coils thermally connected to the inner s.steel shelves surfaces, for a high internal temperature uniformity;
- **CONDENSING SYSTEM:** air-type high-surface finned condenser; the blower is controlled by an inverter to change its speed according to the air temperature at the condenser exit;
- **THERMAL PROBES:** 2 ea. Pt100 probes, one used for thermoregulation, the second for alarm (switched to regulation in case of main probe failure);
- **SAFETY THERMOSTAT**: switches off the appliance from power supply in case of a main regulator breakdown, Temperature exceeds the max safety value (adjustable and preset by the user);
- **VOLTAGE STABILIZER**: the unit can be equipped (**optional**) with a voltage stabilizer, to protect the equipment from irregular voltage spikes, for a longer operative life and failure prevention.

CONTROL SYSTEM

TEKNA is always very innovative and gets inspiration by the news from informatics, electronics and thermodynamics.
TEKNA has thought a controller with a technology based on micro processor ARM9, the same processor applied in smart-phones. It's name is i-TEKNA
I-TEKNA works with operative system Linux and it's a true on –board computer. The new controller has a video- graphic interface, done with a touch screen TFT display. TEKNA slogan is: ***let's put an iPhone 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-TEKNA 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-TEKNA, 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. Besides, through a simple fingering of the IP address, from the browser, from a position with access point, or from everywhere else, it will allow the transmission of all the information about the status of the freezer, or of all the critical events. 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 cry preservation process, etc.**

The user, without needing any specific SW, will be able to transfer the data to PC and/or to LAN n a very friendly way thanks to the standards which are developed in compliance with Windows.
The smart controller i-TEKNA has been designed to guarantee an integrated safety about all the functions, through the regulation and the management of the refrigeration powers.
The data recording complies with the most evolved standards, like GMP, JACIE, FACT,

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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.

TEKNA is the new reference for the user interface and for the connectivity attached to the control of the ultra low temperature freezers -85°C, where a simple, intuitive and nice to see interface is combined with a sophisticated management of the refrigeration unit.

- Menu sensitive to the fingering (touch) with many windows and with temperature graphics:
- Recording of the functional variables on SD card , in real time
- USB interface on the front panel to download the temperature recording and updating
- Recording in CSV format (Comma Separated Value) for a simple exportation of the data in Excel
- Possibility of door opening, in safety temperature/password) through touch button
- Italian, English, French, Spanish, German languages available

The access control and the aided maintenance

The HPL freezers , equipped with the new i-TEKNA 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-TEKNA 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 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.

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 consumpation and the actuation of the parameters useful for COP rising together with Green Ice project.
The user can display also the recording of electrical consumpation.
New functions and an arrangement to future updating.
About energy saving, the smart controller i-TEKNA has new functions:
Night & Day: allows raising the temperature set during the night hours with a pre-definite value (settable by the user or by the manufacturer)
AES (Automatic 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 CO2 emission in the atmosphere. **The energy saving is at least -15%, in comparison with a standard ultra low freezer.**
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 filed.
Smart controller i-TEKNA is the last stage of the art for the control system of the ultra low temperature freezers.

HPL line has 7 chest models, 1 under bench model, and 8 upright models, with a very large range of capacities, form 75 l. to 800 l. HPL line has the same models of Premium 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 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. **KUB75 and K66 models have – 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.
Refrigeration system: 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.
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.
Display to set and to read the temperature: **i – TEKNA** 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
Control system: 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. Automatic recording of the temperature and the alarms; recording in real time of all the functional variables on SD card; USB port on the front panel to download data of thermal recording and for updating ; registration in CSV format (Comma Separated Value) for a simple exportation of the data in Excel; 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.
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, dirty 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.
Environmental adaptability: the condenser vents are managed separately by means of a sensor; HPL series gives the best reliability and the minimum energy consumption ;
Key test : Pressing the icon activates the automatic alarm test procedure
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 - **NIGHT & DAY**: 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. - **AES (Automatic 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.

ETHERNET PEER TO PEER WIRED; by a configuration of PPP type, many i-TEKNA 80 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-TEKNA units can be connected in wireless network , in the environmental where an access point is present (Router WI-FI)

GSM: optional, every i- TEKNA 80, 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- TEKNA 80 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 TEKNA 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
Disk recorder with weekly cycle (optional) : with battery power 1,5 Vdc , independent from the power supply of the laboratory
Back up CO2 and/or LN2: optional, integrated management (in i- TEKNA 80 controller) with cryogenic systems , for power failure of the refrigerant plant or for electrical black out.

Containers : drawers and racks in stainless steel

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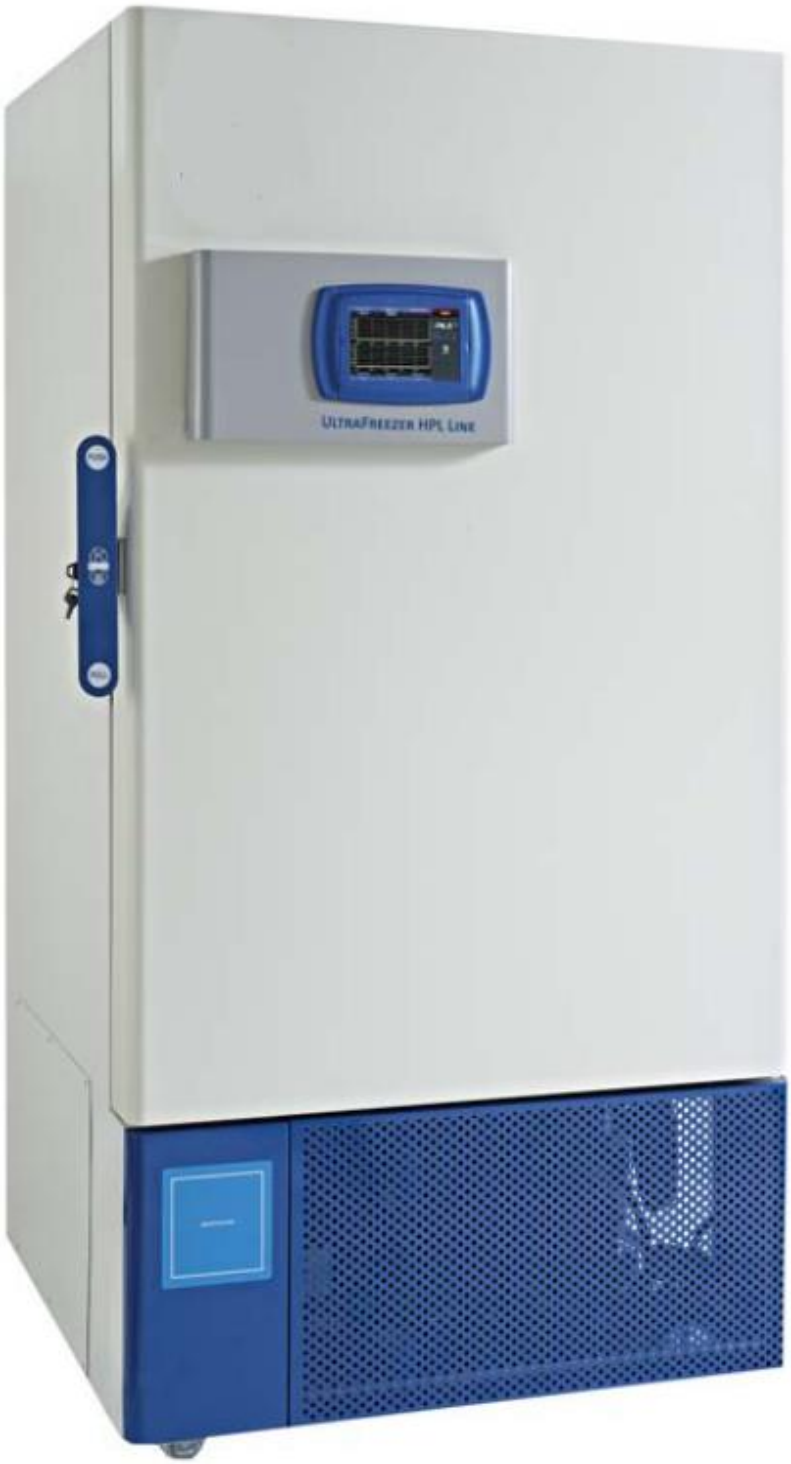
This serie uses VIP panels , embedded in a urethane matrix and allows to save energy and to respect the environmental in a larger way in respect with the other freezer present in the market. These ultra freezers cut the energy consumption and the operative costs of a further 20-25% , over PL line, whose efficiency is already very high. That consume less than 35%-40% compared to the more common solutions. Very soon, will be available , on the request, a version with HC refrigerants , for further protection of the environment, but with more problems for the security, because they use flammable and explosive refrigerants .



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