



## MEDICAL REFRIGERATORS

- LABORATORY AND PHARMACY REFRIGERATOR
- BLOOD BANK REFRIGERATOR
- LABORATORY FREEZER
- DEEP FREEZER**
- PLASMA FREEZER
- COMBINED REFRIGERATOR AND FREEZER
- COMBINED REFRIGERATOR**



Flight No.	Destination	Schedule	Hall	Type
LH 456	London/Heathrow	1810	B	321
LH 895	Hannover	1810	A	320
LH 811	Köln/Bonn	1815	A	320
LH 833	Düsseldorf	1815	A	735
LH 233	Berlin/Tegel	1820	A	321
FU 546	Nizza	1830	D	CRJ
LO 354	Warschau	1830	D	EM4
OS 116	Wien	1835	A	735
SR 557	Zürich	1835	D	320
LH 227	Frankfurt/Main	1840	A	315
OU 437	Zagreb	1840	B	720
LH 595A	Strasbourg	1845	A	DH3
LH 5915	Düsseldorf	1845	A	DH3
LH 5917	Düsseldorf	1845	A	321
LH 521	Hamburg	1845	A	320
LH 3000	Oslo	1850	B	723
LH 5184	Helsinki	1850	B	142
DL 7520	Berlin/Tegel	1850	D	733
LH 1061	Nürnberg	1850	A	AT3
LH 925	Bremen	1850	A	710
LH 9696	Paderb./Lippel	1850	A	DM3
DL 7166	Köln/Bonn	1855	D	733
DL 7096	Düsseldorf	1855	D	733
LH 4514	Birmingham	1855	B	142
LH 4928	München/Osnabr.	1855	A	733
LH 4542	Manchester	1855	A	142
LH 5178	Leipzig/Halle	1855	A	F50
LH 3672	Zürich	1900	B	F50
LH 4160	Paris/CDG	1900	A	735
LH 5822	Marseille	1900	A	CRJ
LH 4432	Brüssel	1900	A	735
LH 5760	Nizza	1900	A	CRJ
ZK 834	Graz	1900	A	J31
LH 5886	Amsterdam	1900	A	142
IB 3531	Madrid	1905	D	320
LH 3212	Prag	1905	B	F50
LH 5876	Warschau	1905	B	CRJ
LH 4948	London/Heathrow	1910	B	733
LH 3832	Bologna-Napoli	1910	A	733
LH 5384	Wien	1910	A	CRJ
LH 5886	Turin	1910	A	142
LH 5386	Genf	1910	B	144
LH 5884	Florenz	1910	A	142
LH 882	Düsseldorf	1910	A	733
LH 3448	Malpensa	1910	A	735
LH 3448	Göteborg	1915	B	CRJ
LH 5812	Lyon	1915	A	CRJ
LH 692	Hannover	1915	A	735
LH 493	Köln/Bonn	1915	A	320
LH 493	London/Heathrow	1915	B	319
LH 493	Berlin/Tegel	1915	A	321
LH 493	Düsseldorf	1920	A	733
LH 493	Frankfurt/Main	1920	A	733
LH 493	Paris/CDG	1920	A	735
LH 493	Brüssel	1920	A	735
LH 493	Amsterdam	1920	A	320
LH 493	Wien	1920	A	320
LH 493	Hamburg	1925	A	320
LH 493	Düsseldorf	1925	A	733
LH 493	Frankfurt/Main	1930	A	AT3
LH 493	Brüssel	1930	D	735
LH 493	Amsterdam	1935	A	AT3
LH 493	Frankfurt/Main	1935	A	AT3
LH 493	Brüssel	1935	C	350
LH 493	Frankfurt/Main	1935	A	DH3
LH 493	Kopenhagen	1940	B	M80
EN 2681	Genoa	1945	A	AT3
EN 2677	Pisa	1945	A	AT3
EN 2705	Mallanz/Bergamo	1945	A	AT3
EAE 108	Mönchengladbach	1945	A	AT3
EN 9193	Ancona	1945	A	AT3
LH 244	Berlin/Tegel	1945	A	733
DL 7114	Hamburg	1955	D	733
LH 273	Frankfurt/Main	1955	A	A88
DL 4609	Berlin/Tegel	1955	D	735
KL 1798	Amsterdam	2000	D	F70

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Should it be necessary of useful without undermining any model essential features, technical and stylistic characteristics are subject to be changed without manufacturer's previous notice. Pictures don't necessarily show product in standard version.



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as established in 1997,  
as result of twenty year experience of its owners  
in medical refrigeration field.

Constant research and development, along with  
professional and serious attitude have enabled **frimed**  
to design and manufacture highly reliable refrigerators  
and freezers to be used in hospital, laboratory,  
industrial biomedical and pharmaceutical fields as well  
as scientific field in general.

In few years our appliances have become well known  
and are now appreciated and chosen in many countries  
all over the world.



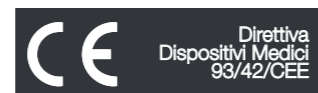
**frimed** has always been oriented to a constant improvement of the business process in order to satisfy the client, to involve its staff and to have a relationship of mutual satisfaction with suppliers. The commitment undertaken in this direction has enabled the company to achieve an important goal the certification of Quality Management System ISO 9001 which is a guarantee of reliability and professional attitude.

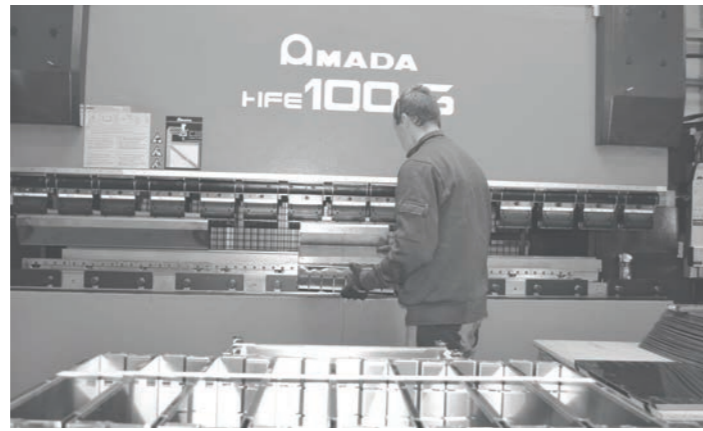


Further Quality Management System ISO 14001: certification confirms **frimed** serious commitment to minimize the environmental impact of procedures, products and services and attests the reliability of the Environmental Management System applied.



In 2010 **frimed** also achieved the certification of Quality Management System according to ISO 13485 (Medical Devices) and, at the same time, the CE certification according to Medical Device Directives 93/42/EEC for the marking of Blood Bank refrigerators (class IIa) for hospital use.





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## ENERGY SAVING AND ENVIRONMENT PROTECTION TECHNOLOGY

### LED LIGHTING

All our cabinets with positive temperature are internally equipped with LED lights. LED lighting is the solution for reducing energy use, because it allows saving energy up to 70% compared with fluorescent lamps. LED lights have high performance, bright colour and provide beneficial environmental impact with longer life and therefore less landfill waste.

### LOW EMISSIVITY GLASS

This technology applied to all models with glass door significantly improves performance of insulation allowing energy saving.

### CFC-FREE THERMO INSULATION

Insulation of all cabinets is done by means of ecological CFC-free polyurethane foam. Insulation thickness of 60mm for all refrigerator models and 80,100 mm for freezer models grants highly insulating performance.



### ENVIRONMENT FRIENDLY REFRIGERANT GAS NATURAL GAS R290

CFC- free R452a gas is used in all compressors of frimed models. In addition we also offer compressors with natural gas R290 on all our models.

### ENERGY SAVING DEFROST CYCLE

In all ventilated refrigerators, defrosting cycles are performed only when necessary.

### HOT GAS DEFROSTING

for ventilated freezer AF70B and AF140B with a very short cycle with no need of electric resistance.

### HIGH PERFORMANCE MOTOR

fan granting energy saving thanks to new technology. Besides, **frimed** mainboard makes condenser fan work only when necessary.



## TECHNICAL HIGHLIGHTS

### STRUCTURE

External structure in hot-dip galvanised steel, anti-corrosion treated and PVC film coated. Stainless steel internal structure.

### INSULATION

Insulation of 60mm, 80mm, 100mm obtained by injection of high density ecological polyurethane CFC-free foam for excellent product preservation and best energy saving.

### DOOR

Self-closing door with removable magnetic gasket on four sides for perfect closing. Right hand opening or left hand on request.

### LOCK WITH KEY

To use the appliance under supervision. Optional electric digital key lock.

### LED LIGHTING

LED light with automatic switch at door opening. Manual switch on control panel.

### SHELVES

In Scotch-Brite stainless steel. Adjustable in height.

### DRAWERS (STANDARD ON BLOOD BANK REFRIGERATORS)

Sliding drawers in Scotch-Brite stainless steel. Plexiglas frontal side. Optional plexiglas dividers.

### REFRIGERATION SYSTEM

Completely sealed, silent and highly efficient hermetic compressor and ventilated air condenser. Internal ventilated or static evaporator. CFC-free refrigerant.

### DEFROSTING

Fully automatic defrosting cycle with auto-evaporation of condensed water, or manual defrosting cycle.

### DATA LOGGER

Electronic data logger with download of data on USB pen drive.

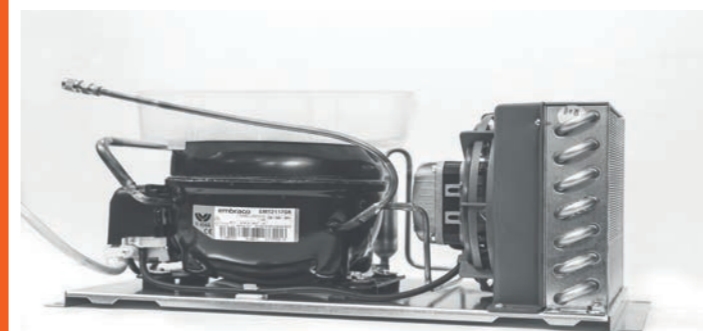
### TEMPERATURE CHART RECORDER (STANDARD ON BLOOD BANK REFRIGERATORS)

Weekly temperature recording system working with 1,5V battery. It is equipped with 52 disks and an ink pen.

### CASTORS WITH FRONTAL BRAKES (OPTIONAL)

### TEST HOLE (OPTIONAL)

Ø 25 mm sidewall test hole for custom probe.



## CONTROL PANEL

Microprocessor control panel with **colour 4.3" LCD touch screen and keys**.

Setting and visualization with **0.1°C resolution**.

Display showing cabinet temperature, set point, date, hour, equipment model and electronic accessories.

Continuous temperature monitoring.

Real time temperature graph on display (to be activated by user).

**Password protected** power switch and settings.

Digital **humidity sensor** (optional).

**RS232/RS485** ports.

Digital calibration of probes.

**In/out 4-20 mA** converter module.

**Safety thermostat**.

Two independent **PT1000** probes, the first one to set and detect temperature, the other one to manage the alarm system and display temperature.

**Visual and audible alarms** through buzzer sound, general alarm warning light and specific alarm warning icon on display.

Alarms of high and low temperature, open door, condenser efficiency, damaged probes, power failure at electricity recovery, power failure with recording of data and alarms generated by back-up battery (standard only on blood bank refrigerator and plasma freezer), damaged or flat battery.

Memory of latest alarms shown on display.

**Back-up Battery** to show temperature on display and to manage the alarm system in case of power failure.

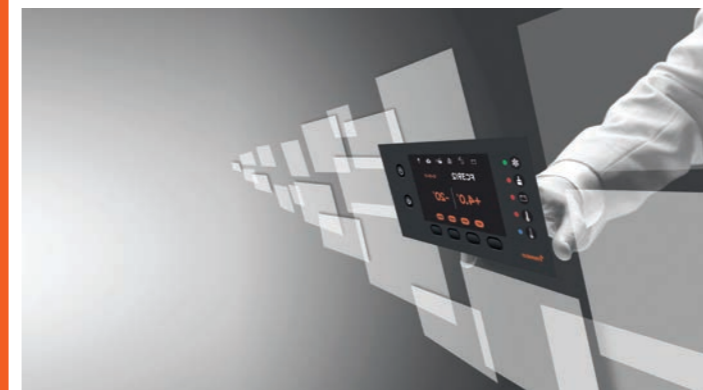
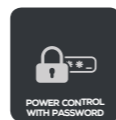
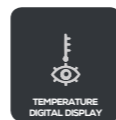
**Remote contact** (dry, volt-free) to connect the equipment to an external alarm.

**GSM module** to send SMS alarms messages to mobile phones showing date, time, cabinet temperature and type of alarm. Possibility to send SMS messages from mobile phone to check correct functioning of equipment.

**LAN port** to connect one or more appliances via Ethernet on PC to monitor working state.

**USB port** to download temperature data and alarms and to upgrade or reset the appliance.

**Data logger** to record temperatures and alarms. Download data on USB pen drive.



## SHU AIR PURIFIER

A revolution in air sanitization and purification of your refrigerator.

The technology used by SHU quickly and effectively attacks and destroys micro-organisms which are harmful to humans (mould, bacteria, viruses, odours and volatile organic compounds) by taking advantage of extraordinary biochemical processes.

Shu air purifier is the only one currently on the market using "state-of-the-art" technology. This is the latest and most advanced technology which is used in NASA aerospace stations.

This system is capable already in the first 90 minutes of use, of eliminating more than 95% of viruses, bacteria and mould in the environment.

### HOW SHU WORKS

The germicidal UV lamp destroys germs that pass through the UVC light rays.

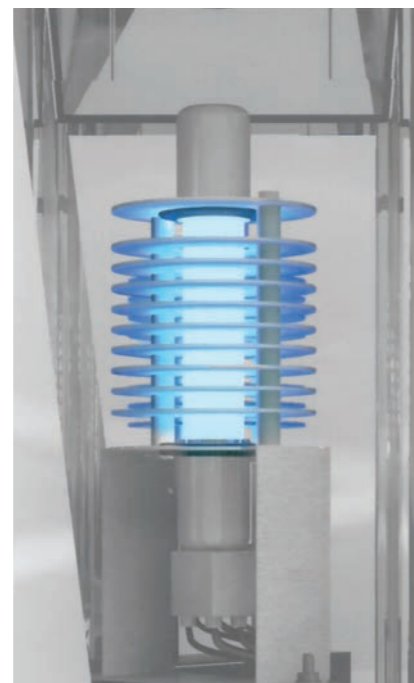
The rays of light from the UV lamp react with the nano Nickel HCT™ catalyst producing catalytic molecules. The catalytic molecules detect and destroy the carbon-based molecules by converting them into harmless carbon dioxide and water.

Unlike other purification systems on the market, SHU is not limited to purifying the air that passes through the catalyst, but also emits a thick layer of molecules into the air (ROS Reactive Oxygen Species) that purifies the air throughout the whole environment.

**SHU, VIA AHPCO TECHNOLOGY,** produces a layer of hydroxide ions, radicals, radical peroxides, hydro peroxides which through the action of light and air humidity, triggers a reaction of decomposition of organic and inorganic substances: only the oxygen and hydrogen molecules remain in the air. It is an absolutely natural phenomenon similar to what occurs during a storm: the air is purified.

### SHU ELIMINATES IN REAL TIME...

Salmonella enterica  
 Staphylococcus aureus  
 Resistant strains of Staphylococcus aureus:  
 Methicillin resistant (MRSA) and CA-MRSA /  
 PVL-MRSA  
 Vancomycin resistant Enterococcus (VRE)  
 Listeria monocytogenes  
 Escherichia coli (E. coli O157: H7)  
 Campylobacter jejuni  
 Acinetobacter baumannii  
 HIV 1  
 Influenza A  
 Avian Influenza  
 H1N1 (Human and Swine)  
 Herpes Simplex Type 1  
 Polio Type 2  
 Norovirus and Murine Norovirus  
 Rhinovirus



shu  
 SANITARY HABITAT UNIT



## BLOOD BANK REFRIGERATOR

FROM 64 TO 770 BLOOD BAGS (450 ml/each)

+2°+6°C FROM 100 TO 1400 LT.

### SB-FS-PN-AF MODELS

#### STRUCTURE

External structure in hot-dip galvanized steel, anti-corrosion treated and PVC film coated. Scotch-Brite stainless steel internal structure.

#### INSULATION

60mm insulation obtained by injection of high density ecological polyurethane CFC-free foam for excellent product preservation and energy saving.

#### DOOR

Self-closing glass door (double insulating – low emissivity glass) with folding magnetic gasket (easy to replace) on four sides for perfect closing. Right hand opening or left hand on request. Lock with key.

#### DRAWERS

Scotch-Brite stainless steel drawers with telescopic ball-bearing slides and plexiglas frontal side. Optional plexiglas internal dividers.

#### LIGHT

LED light (energy saving up to 70%, ecological) with automatic switch at door opening. Manual switch on control panel.

#### TEMPERATURE RANGE

Between +2°C and +6°C. Factory preset to +4°C. Digital adjustable with an increment of 0.1°C

#### REFRIGERATION SYSTEM

Completely sealed, silent and highly efficient hermetic compressor and ventilated air condenser (suitable also for tropical countries). Forced-air cooling system conceived to achieve maximum temperature uniformity and stability inside the refrigerator even in case of frequent door openings. Evaporator fan shuts off during door opening. CFC-free refrigerant R452a or CFC/HCFC-free natural refrigerant R290 on request.

#### DEFROSTING

Fully automatic defrosting cycle and auto-evaporation of condensed water.

#### CONTROL PANEL AND ALARMS

Microprocessor control panel with colour 4.3" LCD touch screen and keys.

Display with 0.1°C resolution. Temperature monitoring detected by two independent PT1000 probes. Real time temperature graph (to be activated by user). Optional humidity sensor. RS232/RS 485 port. Digital calibration of probe.

Visual and audible alarms of: high and low temperature (by means of independent probe), open door, condenser efficiency, damaged probes, power failure with recording of data and alarms (by means of back-up battery), damaged or flat battery. Memory of latest alarms visible on display

#### DATA LOGGER

Electronic recording system of temperatures and alarms. Download data on USB pen drive.

#### BACK-UP BATTERY

Self-powered back-up battery supplying electric power to control panel in order to generate alarms in case of power failure.

#### TEMPERATURE CHART RECORDER

Weekly temperature recording system working with 1,5V battery. It is equipped with 52 paper disks and an ink pen.



#### CERTIFICATION

Certified in accordance with **Medical Device Directive 93/42/EEC** class IIa for storage and preservation of blood.



#### STANDARD

- Drawers.
- Four one-way wheels with stabilizing adjustable feet.
- Power cord with Schuko type plug or British type plug.
- Protection fuses (on power switch and electronic mainboard).
- RFI filter.
- Password protected power switch and settings.
- Electronic control panel with alarm system.
- Safety thermostat.
- Weekly temperature chart recorder.
- Back-up battery.
- Remote contact (dry, volt-free) for alarm.
- Data Logger with USB port to download data.
- Memory of latest alarms visible on screen.
- Kit for DIN 58371 conformity.

#### OPTIONAL ACCESSORIES

- Kit of dividers for drawer.
- Castors with frontal brakes.
- GSM module to send SMS alarm messages to mobile phones.
- LAN port to connect the appliance via ethernet on PC.
- Digital humidity sensor.
- Test hole (Ø 25 mm).
- Electric digital key lock.
- Power supply 115V/60Hz.



MODEL	SB10E	FS15E	FS20E	FS25E
<b>TECHNICAL DATA</b>				
Capacity (LT)	100	150	200	250
Blood bags (450 ml/each)	64	96	128	160
Temp. range (°C)	+2 / +6	+2 / +6	+2 / +6	+2 / +6
Cooling type	Forced air cooling	Forced air cooling	Forced air cooling	Forced air cooling
Defrost	Automatic	Automatic	Automatic	Automatic
CFC-Free Refrigerant gas	R452a or R290	R452a or R290	R452a or R290	R452a or R290
Noise level (db)	<45	<45	<45	<49
CONTROL PANEL	LCD TOUCH 4.3" MICROPROCESSOR	LCD TOUCH 4.3" MICROPROCESSOR	LCD TOUCH 4.3" MICROPROCESSOR	LCD TOUCH 4.3" MICROPROCESSOR
<b>VISUAL AND AUDIBLE ALARMS</b>				
High/Low temperature	√	√	√	√
Open door	√	√	√	√
Condenser efficiency	√	√	√	√
Damaged sensor	√	√	√	√
Power failure	√	√	√	√
Full recording memory	√	√	√	√
SMS alarm message	optional	optional	optional	optional
<b>FUNCTIONS</b>				
Password protected use	√	√	√	√
Remote alarm	√	√	√	√
Data logger	√	√	√	√
Humidity probe	optional	optional	optional	optional
RS232-RS485 serial port	√	√	√	√
4-20 mA converter module	√	√	√	√
Safety thermostat	√	√	√	√
<b>ELECTRICAL DATA</b>				
Supply voltage (V/Hz)	230/50-230/60	230/50-230/60	230/50-230/60	230/50-230/60
Max absorbed current (W)	245	245	245	360
<b>INTERNAL EQUIPMENT</b>				
Drawers	2	3	4	5
Temp. chart recorder	√	√	√	√
Back-up battery	√	√	√	√
<b>OPTIONAL ACCESSORIES</b>				
Kit of dividers for drawer	√	√	√	√
Castors with frontal brakes	√	√	√	√
GSM module	√	√	√	√
LAN Port	√	√	√	√
Port hole	√	√	√	√
Electric Digital key lock	√	√	√	√
Power supply 115V/60Hz	√	√	√	√
CERTIFICATION	MEDICAL DEVICE 93/42 CLASS IIA	MEDICAL DEVICE 93/42 CLASS IIA	MEDICAL DEVICE 93/42 CLASS IIA	MEDICAL DEVICE 93/42 CLASS IIA
<b>DIMENSIONS (WxDxH - MM)/KG</b>				
External Dimensions/weight	600x600x860-68	600x600x1360-89	600x600x1560-107	600x600x1760-125
Packing Dimensions/weight (carton box)	700x700x1030-75	700x700x1570-97	700x700x1770-119	700x700x1890-142



MODEL	FS30E	PN45E	PN52E	AF70E	AF140E
<b>TECHNICAL DATA</b>					
Capacity (LT)	300	450	520	700	1400
Blood bags (450 ml/each)	192	275	330	385	770
Temp. range (°C)	+2 / +6	+2 / +6	+2 / +6	2 / +6	2 / +6
Cooling type	Forced air cooling	Forced air cooling	Forced air cooling	Forced air cooling	Forced air cooling
Defrost	Automatic	Automatic	Automatic	Automatic	Automatic
CFC-Free Refrigerant gas	R452a or R290	R452a or R290	R452a or R290	R452a or R290	R452a or R290
Noise level (db)	<49	<49	<49	<49	<50
CONTROL PANEL	LCD TOUCH 4.3" MICROPROCESSOR	LCD TOUCH 4.3" MICROPROCESSOR	LCD TOUCH 4.3" MICROPROCESSOR	LCD TOUCH 4.3" MICROPROCESSOR	LCD TOUCH 4.3" MICROPROCESSOR
<b>VISUAL AND AUDIBLE ALARMS</b>					
High/Low temperature	√	√	√	√	√
Open door	√	√	√	√	√
Condenser efficiency	√	√	√	√	√
Damaged sensor	√	√	√	√	√
Power failure	√	√	√	√	√
Full recording memory	√	√	√	√	√
SMS alarm message	optional	optional	optional	optional	optional
<b>FUNCTIONS</b>					
Password protected use	√	√	√	√	√
Remote alarm	√	√	√	√	√
Data logger	√	√	√	√	√
Humidity probe	optional	optional	optional	optional	optional
RS232-RS485 serial port	√	√	√	√	√
4-20 mA converter module	√	√	√	√	√
Safety thermostat	√	√	√	√	√
<b>ELECTRICAL DATA</b>					
Supply voltage (V/Hz)	230/50-230/60	230/50-230/60	230/50-230/60	230/50-230/60	230/50-230/60
Max absorbed current (W)	360	336	336	260	490
<b>INTERNAL EQUIPMENT</b>					
Drawers	6	5	6	7	14
Temp. chart recorder	√	√	√	√	√
Back-up battery	√	√	√	√	√
<b>OPTIONAL ACCESSORIES</b>					
Kit of dividers for drawer	√	√	√	√	√
Castors with frontal brakes	√	√	√	√	√
GSM module	√	√	√	√	√
LAN Port	√	√	√	√	√
Port hole	√	√	√	√	√
Electric Digital key lock	√	√	√	√	√
Power supply 115V/60Hz	√	√	√	√	√
CERTIFICATION	MEDICAL DEVICE 93/42 CLASS IIA	MEDICAL DEVICE 93/42 CLASS IIA	MEDICAL DEVICE 93/42 CLASS IIA	MEDICAL DEVICE 93/42 CLASS IIA	MEDICAL DEVICE 93/42 CLASS IIA
<b>DIMENSIONS (WxDxH - MM)/KG</b>					
External Dimensions/weight	600x600x1960-130	700x800x1840-142	700x800x2040-152	700x800x1990-175	1400x800x1990-295
Packing Dimensions/weight (carton box)	700x700x2130-151	750x850x1980-163	750x850x2180-182	750x850x2150-205	1500x900x2170-340

specifications