

VeRay
Portable Dental X-ray
User Manual

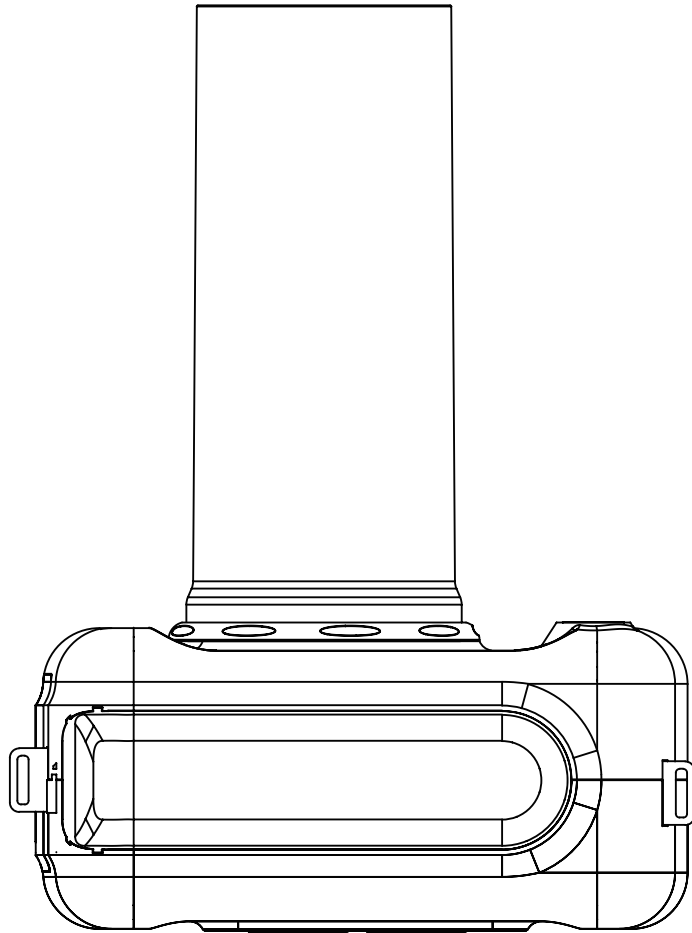


Figure 1-1 VeRay Panoragram

Contraindication: Do not use it on people with cardiac pacemakers or pregnant women. Use it carefully on children.

Main feature: the product is a high frequency dental X-ray equipment, rated tube voltage is 60kV DC, rate tube current is 2 mA, the inverter X-ray control method is adopted, for chemical film and digital sensor diagnostics to obtain high quality dental images, the power supply of

the X-ray VeRay is 24V DC, powered by a rechargeable battery pack.

Chapter 2 Product Description

2.1 Technical specification

2.1.1 Product technical specification

Serial number	Name	Parameter value
1	Power Adapter	Input Voltage
		Uniphase AC 100 ~ 240V, ±10%
		Supply Frequency
		50/60Hz, ±1Hz
2	Output Power	286W
3	Charge voltage	DC 25.2V
4	Charge current	1.0A
5	Nominal value of the focal point	0.8mm
6	Anode angle	19°
7	Available maximum tube voltage at 2mA	60kV
8	Maximum output electric power	0.12kW
9	Maximum loading factor combination	60kV、2mA、2s
10	Repeatability of radiation output	No more than 0.5
11	Tube voltage (The deviation is within the range of ±10%)	60kV
12	Tube current (The deviation is within the range of ±20%)	2mA
13	Running mode	Discontinuous operation, maximum excitation (open) time: minimum excitation (close) time = 1: 30
14	Total filtration of X-ray tube assembly	> 2.5mm Al
15	Intrinsic filtration of X-ray tube assembly	0.75mm Al
16	Additional filtration	1.00mm Al
17	Half-value layer	≥ 1.5mm Al (60kV)
18	Leakage radiation	≤ 0.25mGy/h (60kV、2mA、2s)
19	Adjustment range of the loading time	0.01 ~ 2.00s, adjustable
20	Distance of the Focal point to skin (The deviation is within 0-5%)	205mm±5mm (long) 116mm±5mm (short)
21	X-ray field size at the end of beam limiting tube	round, Φ 57mm±3mm
22	Nominal electric power	0.12kW (60kV、2mA、0.1s)
23	Available maximum tube current at 60kV	2mA
24	Inverter frequency of the High voltage generator	70kHz

2.1.2 Product basic safety features

- Safety category: Class II or internal power supply class, do not use when charging.
- Classified by electric shock protection type: Type B application section.
- Classified by the degree of protection against fluid intake: Common equipment.
- Classified by the manufacturer's recommended disinfection and sterilization methods: As required by the manufacturer to carry out.
- Classified by the degree of safety for use with flammable anesthetic gases mixed with air or with oxygen or nitrous oxide: Non AP/APG type.
- Classified by operation mode: Discontinuous operation, Maximum excitation (open) time: Minimum excitation (close) time = 1: 30.
- The product has no application part with protection against defibrillation discharge effect.
- Whether the equipment has a signal output or input part: No.
- The product is a common equipment.
- Permanent or non-permanent installation equipment: Non-permanent installation equipment.
- Radiation type: Ionizing radiation.
- Radiation property: X ray.
- Radiation distribution: The X-ray radiates from the positive direction of 6cm circle in the window of the limited beam barrel when used.

2.1.3 X-ray tube technical specification

Serial number	Name	Parameter value
1	The X-ray tube model	XD10D-0.5 / 70
2	Nominal value of the focal point	0.8mm
3	Target material	Tungsten
4	Maximum working tube voltage	70kV

5	Anode angle of the X-ray tube	19°
6	Intrinsic filtration	0.75 mm Al
7	Filament current	2.0 A
8	Filament voltage	2.85 ± 0.5 V

The emission characteristics of X-ray tubes are shown in Figure 2-1.

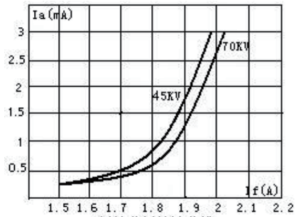


Figure 2-1 Filament emission characteristics of X-ray tube

The X-ray tube load characteristics are shown in Figure 2-2

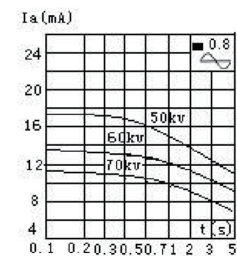


Figure 2-2 Load characteristics curve

The filament characteristics of X-ray tubes are shown in Figure 2-3

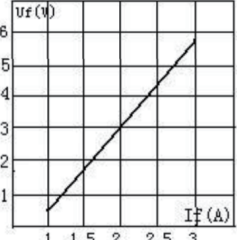


Figure 2-3 Filament characteristics curve

Heating and cooling characteristics of the anode are shown in Figure 2-4.

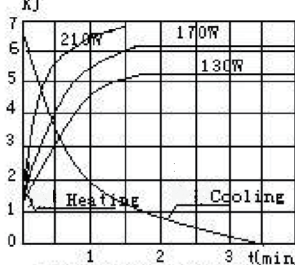


Figure 2-4 Heating and cooling characteristics of the anode

The X-ray tube dimension are shown in Figure 2-5

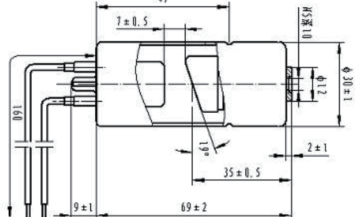


Figure 2-5 Dimension

2.1.4 Product software

Software name: The control software of the dental X-ray system Release version: V1.0.0

2.2 Warnings and cautions

2.2.1 Warnings

- Warning:** To avoid the risk of electric shock, the product must be connected to the power supply network with protective grounding when charging.
- Warning:** The users' manual instructs product operators to operate the product safely. The product should only be used by persons with the necessary radiological knowledge and training, the manufacturer is not responsible for any improper operation, negligence or improper use.
- Warning:** The power supply of the host must be turned off when the exposure is over.
- Warning:** When taken an X-ray radiograph for tooth, the medical staff should always monitor during exposure.
- Warning:** Ionizing radiation.
- Warning:** Do not place the equipment on the position that is difficult to operate the disconnecting device. The equipment uses a flexible wire with a mesh power plug as a breaking device.
- Warning:** Modification of the product is not permitted.

2.2.2 Cautions

- In order to use the product correctly, please read the users' manual carefully before using the equipment.
 - The equipment is only for qualified professional technicians and trained or qualified professionals (such as a dentist) in the hospital or clinic to use.
 - The equipment belongs to the radioactive equipment, the operator should operate the equipment according to the users' manual, the equipment shall not be used for other purposes except for medical radiograph.
 - The equipment should not be used when there is any electrical or mechanical fault.
 - The protective circuit and protective facilities of the equipment shall not be removed when it's powered on.
 - The equipment must not be used in a humid, flammable, or explosive environment.
 - Any modification to the equipment shall be approved by our company or its authorized maintenance personnel.
 - Ensure that there is no risk to the patient or the operator when replace the components of the equipment, if necessary, contact our maintenance personnel.
- Any improper operation of the equipment will cause damage to the equipment, regular inspection and maintenance is also necessary. Our company assumes full responsibility for any loss of life or property caused by the quality of this product, except for those who do not follow the user's requirements and change the system manually or without authorization.

2.2.3 Electric safety

- Ensure the voltage and current meet the power requirements of the product.
- Ensure there is no flammable or explosive gas leakage in the room where the equipment is located.
- Ensure the battery charger is unplugged before cleaning. Cleaning should be carried out when the equipment is powered off, only use non-alcohol sanitizer wipes or cloths dampened with liquid or spray.
- VeRay and the included battery charger is not suitable for any type of disinfection.
- Turn off VeRay after use.

2.2.4 X-ray protective safety

- Ensure that precautions are taken against X-ray before each exposure, keep the following in mind:
 - Wear protective clothing, wear protective goggles during the X-ray examination.
 - Irradiation dose should be as low as possible when x-ray examination permits.
 - Human skin should be as far away from X-ray sources as possible, as long as diagnostic requirements are met.
 - The radiation exposure and absorbed radiation dose are inversely proportional to the square of the distance from the radiation source, the farther away you are from the source, the lower the dose you receive. The operator should be 3 meters away from the X-ray tube head.
 - The X-ray Generated by the equipment has certain harm to human body. Besides operating VeRay properly to ensure normal operation, it is more important to pay special attention to the protection of human body against X-ray, so as to minimize the harm of X-ray operators and patients. example, the equipment room should have protective equipment and measures (such as lead plates), and the operator must use protective equipment (such as lead glasses) and wear protective clothing (such as lead caps, lead aprons, and lead gloves). The operator must operate in an occupied area when approaching patients for radiological examination.

Chapter 3 Product operation instruction

3.1 Product overall layout

3.1.1 Product front view



Figure 3-1 Front view

Figure 3-1 functional descriptions:

Serial number	Position	Name	Functional descriptions
1	"1"	Indicator light	"Standby": blue light flash at interval. "Exposure": yellow light on, return to standby after exposure. "Sleep": green light flash at interval. "Product failure": red light on.
2	"2"	Operation panel	See the details below 3.2.
3	"3"	Exposure switch connection port	Open the cover and put the exposure switch into the exposure switch connection port, realizing exposure switch connection.
4	"4"	Adapter connection port	Open the cover and put the adapter charging cable into the adapter connection port, realizing internal battery charging.

3.1.2 Rear view

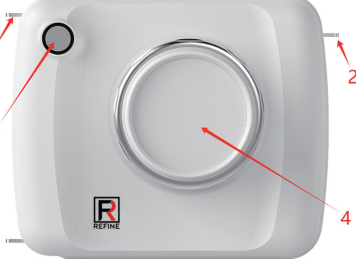


Figure 3-2 Rear view

Figure 3-2 functional descriptions:

Serial number	Position	Name	Functional descriptions
1	"1"	Hand strap ring	Fix hand strap
2	"2"	Neck strap ring	Fix neck strap
3	"3"	Exposure button	Press the exposure button to activate the X-ray exposure
4	"4"	beam tube	Provide X-ray emission field dimension

3.2 Operation panel description

3.2.1 Operation panel

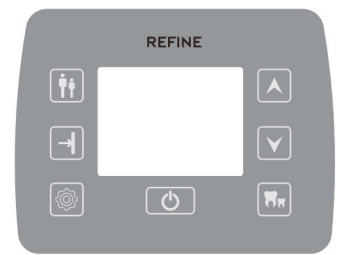


Figure 3-3 Operation panel

Figure 3-3 functional descriptions:

Serial number	Keypad	Name	Functional descriptions
1		Power On/Off button	Turn on or turn off the equipment power supply
2		Patient body type selection button	Select body type large/small
3		Save button	Save exposure time
4		Mode button	Enter the mode selection interface to set the mode
5		Up button	Increase loading time
6		Down button	Decrease loading time
7		Teeth type selection button	Select teeth type

3.2.2 Product operating description

(a) Product power ON/OFF

Power ON: press the power On/Off button , VeRay powers on, the buzzer beeps, the screen lights up, ensure that at least one bar of power is available before starting the equipment.

Power OFF: press the power On/Off button , the buzzer beeps, VeRay powers off. Enter the main interface:

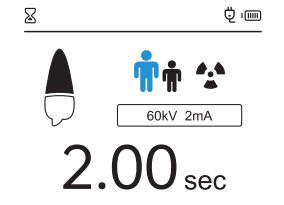


Figure 3-4 Main interface

Figure 3-4 functional descriptions:

Serial number	Keypad	Name	Functional descriptions
1		Tooth	Display the selected tooth type
2		Standby/Pre-exposure/Exposure	Standby state/ Pre-exposure state/ Exposure state
3		Battery capacity	Display the battery capacity state
4		Patient	Display the selected patient type
5	60kV	Exposure tube voltage	Display the fixed exposure tube voltage
6	2mA	Exposure tube current	Display the fixed exposure tube current
7	2.00	Exposure time	Display the set exposure time
8		Charging symbol	Charging state

(b) Body type large/small selection button

Select the type of patient, please press the patient body type selection button , the selection will display the corresponding blue symbol on the screen.

(c) Teeth type selection button

Select the tooth type, please press the teeth type selection button , the selection will display the corresponding tooth type symbol on the screen, as shown in Table 1-1.

Table 1-1

Teeth type							
Description	Upper canine tooth	Lower molar tooth	Upper molar tooth	Wing bite teeth	Lower front tooth	Upper front tooth	Lower canine tooth

(d) Standard exposure time

Preset standard exposure time as shown in Table 1-2.

Patient type	Receiver type							
Child	Sensor	0.35	0.45	0.65	0.80	0.30	0.30	0.35
Adult	Sensor	0.40	0.50	0.70	0.85	0.35	0.35	0.40

(e) **Exposure time**
Change the exposure time, please press the Up button  to increase the exposure time, or press the Down button  to decrease the exposure time.

(f) **Save exposure time**
press the Save button  2 seconds more, the exposure time is saved.

(g) **Exposure operating steps**
● Firstly set the exposure conditions you want to take radiographs.
● Fix the sensor to the opposite side to be exposed, then connect to the device in the exposure section.
● Press the exposure button .
● When the Exposure starts, the pre-exposure symbol “” displays on the screen, then the exposure symbol “” displays on the screen. Meanwhile, LED on with green, the buzzer beeps.
● After radiograph is taken, the screen displays standby symbol “” black, the next radiograph can be made.
● If battery is fully charged, up to about 150 radiographs can be taken. (exposure condition is 0.5 s interval 120 s)
● If the battery level is 3 bars or less than 3 bars, please charge before exposure.

(h) **Battery charge and exchange**
● Charge
The battery level displays at the top right corner on the screen. It will influence the image if the battery level is low. Therefore, you must always check the battery level. If the battery level is low, The charging symbol “” displays on the screen behind the battery symbol as a reminder of charging. It takes about an hour to charge. Turn off the equipment when charging.
● Exchange
If the battery is faulty, please contact us for an exchange.

(i) **Mode Function**
Press the mode button , enter the setting interface to set modes. See figure 3-5



Setting Page



ExpCnt

9999999

No



Factory Reset

No



Auto off

20

Min



Sleep

20

Min



Language

English

Software Ver : V1.0.0

Figure 3-5 Setting interface

● Sleep time
If the equipment is not operated within the Sleep time, it will go into sleep mode automatically.
The green LED is on when the equipment in sleep mode, press any button on the operation panel to cancel sleep mode and enter the standby state, blue LED turns on. If you want to change the Sleep time, please press the mode button to enter the setting interface, then set the Sleep time.
In the mode setting interface, press the Up button  or Down button  select the Sleep time, then press the patient body type selection button , the time behind Sleep time turns blue, press the Up button  again, or the Down button  again, to set the Sleep time, press the patient body type selection button  again, the time behind Sleep time turns black, save the Sleep time, finally press the mode button  to exit the setting interface and return to the main interface.

● Auto Off time
If the equipment is not operated within the Auto Off time, the equipment turns off automatically to prevent unnecessary power consumption.
In the mode setting interface, press the Up button  or Down button  select the Auto Off time, then press the patient body type selection button , the time behind Auto Off time turns blue, press the Up button  or the Down button  again, to set the Auto Off time, press the patient body type selection button  again, the time behind Auto Off time turns black, save the Auto Off time, press the mode button  to exit the setting interface and return to the main interface.
● Factory Reset
Restore factory defaults.
In the mode setting interface, press the Up button  or Down button  select the Factory Reset, then press the patient body type selection button , the No behind Factory Reset turns blue, press the Up button  or the Down button  again, set the No to Yes, press the patient body type selection button  to restore factory defaults, it returns to the main interface automatically after the factory defaults is restored.
● ExpCnt
Record the exposure count.
In the mode setting interface, press the Up button  or Down button  select the ExpCnt, then press the patient body type selection button , the exposure number behind ExpCnt turns blue, press the Up button  or the Down button  again, set the No to Yes, press the patient body type selection button  to clear the exposure number, finally press the mode button  to exit the setting interface and return to the main interface.
● Language
The user can choose the language between the English and the Chinese.
In the mode setting interface, press the Up button  or Down button  to select the Language, then press the patient body type selection button , and the English behind Language turn blue. Press the Up button  or the Down button  again to set the English to the Chinese or to set the Chinese to the English, then press the patient body type selection button  again, and the English or the Chinese turn black. The language saved. Finally press the combination buttons ( + ) to exit the setting interface and return to the main interface.
● Software Ver
Version information.
3.3 Precautions during use

Chapter 4 Installation, Maintenance and Maintain

4.1 Product Installation

4.1.1 Zone of significant occupancy

The zone of significant occupancy is shown in figure 4-1.
The zone of significant occupancy shall be provided when the operator is required to be present, the area is no less than 60cm * 60cm, the height is no less than 200cm.

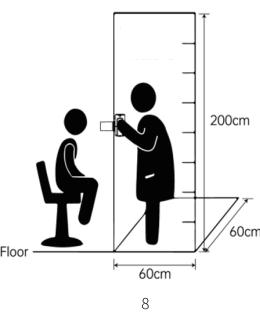


Figure 4-1 Zone of significant occupancy

4.1.2 Power Adapter Connection



Figure 4-2 Power adapter connection

The power adapter connection is shown in figure 4-2, put the adapter DC plug into the adapter connection port, the adapter AC plug connect user AC220V to charge the battery

4.1.3 Stand Installation



Figure 4-3 Stand

The Stand installation is shown in figure 4-3, put it on the flat floor, then install the host.

4.1.4 Exposure Switch Installation



Figure 4-4 Exposure switch

The exposure switch installation is shown in figure 4-4, put the exposure switch into the exposure switch connection port.

4.2 Equipment Maintenance

4.2.1 General Principle

The equipment needs regular maintenance, the following suggestions are good for use and safety:
(a) Keep the machine room clean, dry, well ventilated.
(b) The equipment should be taken charge by special personnel, and establish management files.
(c) In order to ensure the safety of user and patient, the equipment shall not be modified at will. Please contact us if the modification is necessary.
(d) The professional must be recognized by the manufacturer to inspect and repair the equipment, after the product's failure.
(e) The operator is well trained and able to complete routine inspection.
(f) If the X-ray tube has not been used for a long time (such as more than 1 month), the X-ray tube must be loaded gradually before use, that is, the exposure time should be loaded twice successively from 0.01s → 0.1s → 1.0s to avoid the X-ray tube from being damaged caused by excessive instantaneous loading power.

4.2.2 Clean

A soft brush or cleaning cloth should be use to clean the visible pollutant of the equipment surface, dampen the gauze with alcohol (alcoholicity 70-80 vol%) to wipe the surface.

Warning: When performing the above cleaning work, the power supply of the unit must be turned off! And the cleaning liquid shall not flow into the unit, to avoid circuit leakage and short circuit that cause a variety of failures, even personal injury accidents.

4.3 Product Maintenance

4.3.1 Daily Maintenance

(a) The equipment surface should be kept clean and dry, use a soft cloth dipped in a little anhydrous alcohol to scrub the surface of various residues.
(b) Flammable liquids and gases should not approach the equipment to prevent explosion.

4.3.2 Cleaning and maintenance that can be performed by authorized technicians

VeRay is a precise and valuable medical diagnostic equipment, the user should understand the technical performance, structural principle and operating procedures of the equipment, perform the routine maintenance and maintain, to give full play to the efficiency of the equipment, extend the service life, ensure the normal operation of the equipment, ensure the safety of operators and inspected personnel.

4.3.3 Maintain and Maintenance Cycle

Time Interval	Maintenance and inspection contents
Daily Check	Check signal, display and indicator light, buzzer. Check if there is any abnormal sound when the high voltage generator assembly exposed. Check to see if any button is loose or stuck.
Monthly Check	Check the continuous endurance about the used battery pack whether normal or not.
Annual Check	Safety checks must be carried out on the equipment to ensure the equipment run properly.

4.4 Normal working and transportation storage conditions

4.4.1 Normal working condition

(a) Environment temperature: 10°C ~ 40°C
(b) Relative humidity: 30% ~ 75%
(c) Atmospheric pressure: 700hPa ~ 1060hPa
(d) Altitude: ≤ 2000m

4.4.2 Transportation and storage conditions

(a) Environment temperature: -20 ~ 55°C
(b) Relative humidity: 10% ~ 93%
(c) Atmospheric pressure: 70kPa ~ 106kPa

4.4.3 Waste disposal

Waste disposal shall be complied with the local laws and regulations when the equipment is scrapped. The X-ray source assembly and electronic circuit (such as PCB, etc.) and other related parts shall be regarded as non-environmental waste products.

Chapter 5 Common troubleshooting and others

5.1 Fault diagnosis and resolution

5.1.1 Fault codes and troubleshooting method

During normal and abnormal operation, the status will be displayed on the screen. We provide common fault symptoms and measures for troubleshooting. Users can refer to the solutions provided to troubleshoot the fault. If you cannot identify the cause of the fault, or if you have tried the following methods but still cannot resolve the fault, please contact us.
The error code is displayed on the screen, when any of the following faults occur. The error code content and troubleshooting methods are described in table 5-1.

Error Code	Description	Recommended measure
ERR0	Connection fail	Turn off and restart
ERR1	Overcurrent protection or disconnection of tank line or mA, kV high	Contact the technical support
ERR2	kV low	Contact the technical support
ERR3	mA low	Contact the technical support
ERR4	Filament driving voltage is low	Contact the technical support

If the equipment can't be turned on, or can't be exposed normally, or charging abnormally, it might be the battery's failure, you should contact our engineers to replace the battery, unauthorized personnel should not open the product shell.

If the exposure button is pressed for a shorter time than the set exposure time, the “” displayed on the screen, press the patient body type selection button or save button or mode button or Up button or Down button to remove the “” to make an exposure.

5.1.2 Circuit diagram of the product

Any operation relating to maintenance involving access to the interior of the equipment must be performed by our Company's engineers. If circuit diagram, drawing notes, calibration rules and other relevant data related to the maintenance of this product are required, our company will provide the data that can be provided.

5.2 Quality Guarantee

5.2.1 Manufacturer's Responsibility

The manufacturer shall be responsible for the safety, reliability and performance of the equipment in the following cases:
(a) Assembly, debug, modify and maintenance are carried out by or authorized personal by our Company.
(b) The electrical facilities used in the equipment meet the requirements specified in the user manual.
(c) The operators are skilled technicians who have received training and use the equipment in strict accordance with the requirements of the user manual.

5.2.2 Guarantee content

(a) The quality of the product is guaranteed for one year from the date of purchase.
(b) The equipment is damaged because the user fails to comply with the above terms and conditions, or more than one year since the date of delivery of the equipment, our company will repair or replace equipment parts for the user, but will charge the cost of maintenance.
(c) If it is difficult to identify the warranty period, the warranty shall apply after three months of manufacture.
(d) For defects of the product or improper process, the product will be free of charge maintenance or replacement according to the state of the product.
(e) If the damage is caused by the user's fault, it will not be repaired free of charge, even within the warranty period.
(f) If additional grades of seals have been removed or have such instructions, they shall not be repaired and guaranteed free of charge.
(g) Repairs performed in places other than our company or without our company's authorization are not covered by the warranty.
(h) The service life of the product which have been free or have been repaired for free shall not be extended.

5.3 Product Operating Life and Manufacture Date

The product operating life is 5 years, the manufacture date see the nameplate of the equipment.

5.4 Equipment List

Serial number	Name	Unit	Quantity
1	Host	PCS	1
2	Adapter	PCS	1
3	Power cable	PCS	1
4	Hand strap	PCS	1
5	Neck strap	PCS	1

Chapter 6 Electromagnetic Compatibility

The ME EQUIPMENT or ME SYSTEM is suitable for use in hospitals or dental clinics.

Warning: Don't near active HF surgical equipment and the RF shielded room of an ME system for magnetic resonance imaging, where the intensity of EM disturbances is high.

Warning: Use of this equipment adjacent to or stacked with other equipment should be avoided because it could result in improper operation. If such use is necessary, this equipment and the other equipment should be observed to verify that they are operating normally.

Warning: Use of accessories, other than those specified or provided by the manufacturer of this equipment could result in increased electromagnetic emissions or decreased electromagnetic immunity of this equipment and result in improper operation.

Warning: Portable RF communications equipment (including peripherals such as antenna cables and external antennas) should be used no closer than 30 cm (12 inches) to any part of the equipment, including cables specified by the manufacturer. Otherwise, degradation of the performance of this equipment could result.

Note: The emissions characteristics of this equipment make it suitable for use in industrial areas and hospitals (CISPR 11 class A). If it is used in a residential environment (for which CISPR 11 class B is normally required) this equipment might not offer adequate protection to radio-frequency communication services. The user might need to take mitigation measures, such as relocating or re-orienting the equipment.

List of all cables:

Name	Length (m)	Whether shield
Power cable	1.0	NO
Adapter cable	1.0	NO
Exposure switch connection cable	3.0	NO

Performance of the me equipment

1. Accuracy of loading factors.
2. Repeatability of radiation output.

Guidance and manufacturer's declaration -electromagnetic emissions and Immunity

Table 1

Guidance and manufacturer's declaration - electromagnetic emissions					
Emissions test		Compliance			
RF emissions CISPR 11		Group 1			
RF emissions CISPR 11		Class A			
Harmonic emissions IEC 61000-3-2		Not Applicable			
Voltage fluctuations/flicker emissions IEC 61000-3-3		Not Applicable			

Table 2

Guidance and manufacturer’ s declaration - electromagnetic Immunity		
Immunity Test	IEC 60601-1-2 Test level	Compliance level
Electrostatic discharge (ESD) IEC 61000-4-2	±8 kV contact ±2 kV, ±4 kV, ±8 kV, ±15 kV air	±8 kV contact ±2 kV, ±4 kV, ±8 kV, ±15 kV air
Electrical fast transient/burst IEC 61000-4-4	±2 kV power supply lines ±1 kV signal input/output 100 kHz repetition frequency	±2 kV power supply lines Not applicable 100 kHz repetition frequency
Surge IEC 61000-4-5	±0.5 kV, ±1 kV differential mode ±0.5 kV, ±1 kV, ±2 kV common mode	±0.5 kV, ±1 kV differential mode ±0.5 kV, ±1 kV, ±2 kV common mode
Voltage dips, short interruptions and voltage variations on power supply input lines IEC 61000-4-11	0 % UT; 0,5 cycle. At 0°, 45°, 90°, 135°, 180°, 225°, 270° and 315°. 0 % UT; 1 cycle and 70 % UT; 25/30 cycles; Single phase: at 0°. 0 % UT; 250/300 cycle	0 % UT; 0,5 cycle. At 0°, 45°, 90°, 135°, 180°, 225°, 270° and 315° . 0 % UT; 1 cycle and 70 % UT; 25cycles; Single phase: at 0° . 0 % UT; 250 cycle
Power frequency magnetic field IEC 61000-4-8	30 A/m 50Hz/60Hz	30 A/m 50Hz
Conducted RF IEC61000-4-6	3 V 0,15 MHz – 80 MHz 6 V in ISM bands between 0,15 MHz and 80 MHz 80 % AM at 1 kHz	3 V 0,15 MHz – 80 MHz 6 V in ISM bands between 0,15 MHz and 80 MHz 80 % AM at 1 kHz
Radiated RF IEC61000-4-3	3 V/m 80 MHz – 2,7 GHz 80 % AM at 1 kHz	3 V/m 80 MHz – 2,7 GHz 80 % AM at 1 kHz
NOTE UT is the a.c. mians voltage prior to application of the test level.		

Table 3

Guidance and manufacturer's declaration - electromagnetic Immunity						
Radiated RF IEC61000-4-3 (Test specifications for ENCLOSURE PORT IMMUNITY to RF wireless communications equipment)	Test Frequency (MHz)	Band (MHz)	Service	Modulation	IEC 60601-1-2 Test Level (V/m)	Compliance level (V/m)
	385	380 ~ 390	TETRA 400	Pulse modulation 18 Hz	27	27
	450	430 ~ 470	GMRS 460, FRS 460	FM ± 5 kHz deviation 1 kHz sine	28	28
	710	704 ~ 787	LTE Band 13, 17	Pulse modulation 217 Hz	9	9
	745					
	780					
	810	800 ~ 960	GSM 800/900, TETRA 800, iDEN 820, CDMA 850, LTE Band 5	Pulse modulation 18 Hz	28	28
	870					
	930					
	1720	1700 ~1990	GSM 1800; CDMA 1900; GSM 1900; DECT; LTE Band 1, 3, 4, 25; UMTS	Pulse modulation 217 Hz	28	28
	1845					
	1970					
	2450	2400 ~2570	Bluetooth, WLAN, 802.11 b/g/n, RFID 2450, LTE Band 7	Pulse modulation 217 Hz	28	28
	5240	5100 ~5800	WLAN 802.11 a/n	Pulse modulation 217 Hz	9	9
	5500					
	5785					

table 4

Guidance and manufacturer's declaration - electromagnetic Immunity				
Radiated RF IEC61000-4-39 (Test specifications for ENCLOSURE PORT IMMUNITY to proximity magnetic fields)	Test Frequency	Modulation	IEC 60601-1-2 Test Level (A/m)	Compliance level (A/m)
	30 kHz	CW	8	8
	134,2 kHz	Pulse modulation 2.1 kHz	65	65
	13,56 MHz	Pulse modulation 50 kHz	7,5	7,5



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