

# DIODE LASER HAIR REMOVAL MACHINE

Model: DepiMED Pro

## USER'S MANUAL



Dear customer,

Thank you and welcome to choose our products of BEIJING LASERTELL MEDICAL CO., LTD.. To ensure proper use our products, we recommend that you read this manual carefully prior to operate. We believe that we can offer you satisfied service.

We can offer technical support for you at all times.

Please note:

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If there are any questions, please contact us!

## **Pay Attention to Warnings, Cautions and Notes**

**WARNING**      Warning means that not following instructions properly or ignoring them completely can endanger patients and/or operators.

**CAUTION**      Attention means that not following instructions properly or ignoring them completely can damage the unit.

**NOTE**            Notes provide additional information.

**Notes to users:**

1. If it is the first time for you to use Diode Laser Hair Removal Instrument, be sure to carefully read this manual before powering on the appliance.
2. It is suggested that do not use the hair removal instrument with the existence of electromagnetic interference, vibration and other environmental conditions with interference. During operation, the hair removal instrument does not interfere other equipments/devices.
3. Avoid using this Diode Laser Hair Removal Instrument when there are the flammable anesthetics or oxidative gases such as nitrous oxide (N<sub>2</sub>O) and oxygen. When there is enough oxygen in the air, some materials, for example, the cotton and wool materials may easily be ignited by the high temperature resulting from the normal operation of laser equipment. The solvent and combustible solution for cleaning or sterilization purpose shall be volatilized before using laser equipment.

**Warning****Read the user's manual prior to operation!**

Diode Laser Hair Removal Instrument can emit high-intensity infrared laser beam, in order to protect the eyes, the users and patients are requested to wear appropriate safety goggles in accordance with (NOHD) standard.

Pay attention to the following precautions:

- ※DO NOT point the laser directly to the eyes and skin.
- ※DO NOT cut off power supply when the instrument is working.
- ※Be sure to get familiar with structures and specifications of the instrument before use.

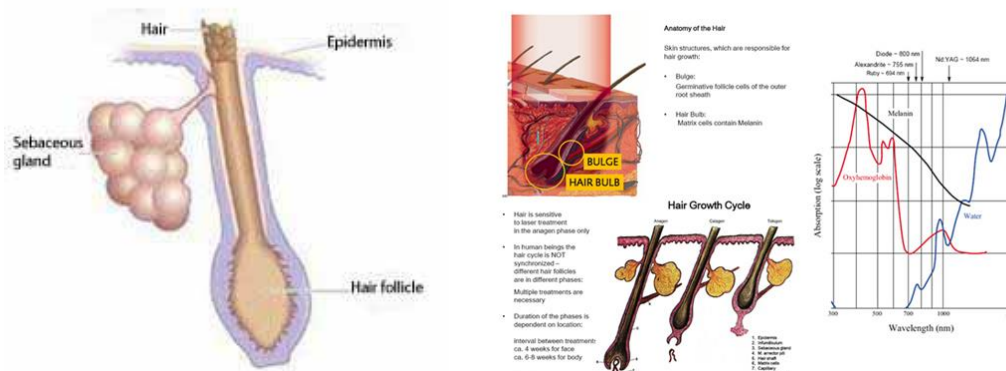
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# Chapter 1 Equipment Overview

## 1.1 Principle of Diode Laser Hair Removal

Diode Laser Hair Removal is the safest and fastest at the present. It adopts Gold standard 808nm semi-conductor laser, based on selective photothermolysis principle, through specific wavelength, penetrate epidermis into dermis, optical energy was absorbed and translated into heat energy with restraining hair follicle tissues, and produce photothermal effect. It takes laser energy in hair follicle with rich in melanin, surrounding tissues absorb less even no energy, reach to restrained melanin of hair follicles and remove hair. Meanwhile, don't hurt around tissues and virtually pain-free remove surplus hair; eventually, reach to permanent Hair Removal.



## 1.2 How does 755+808+1064nm Diode Laser Work?

### Diode Laser 808nm

With Germany Imported Diode Laser, Half Treatment Time

Perform more treatment sessions in less time, allowing you to quickly treat large areas, while offering your patients the fastest and more effective hair removal feelings.

### Diode Laser 755nm

The most popular 755nm diode laser which replace the solid state alexandrite diode laser and have a more comfortable treatment. It is effective for melanin to absorb 755nm

diode laser. This characteristic is good for villi hair removal when people use 755nm diode laser treatment handle. And the treatment time is getting shorter.

### Diode Laser 1064nm

New experience for specialized darker skin hair removal 1064nm laser, 1064nm wavelength hair removal treatment will be safer especially for dark skin, skin rejuvenation. Performance well, and strong power cooling function, treatment comfortable and safe.

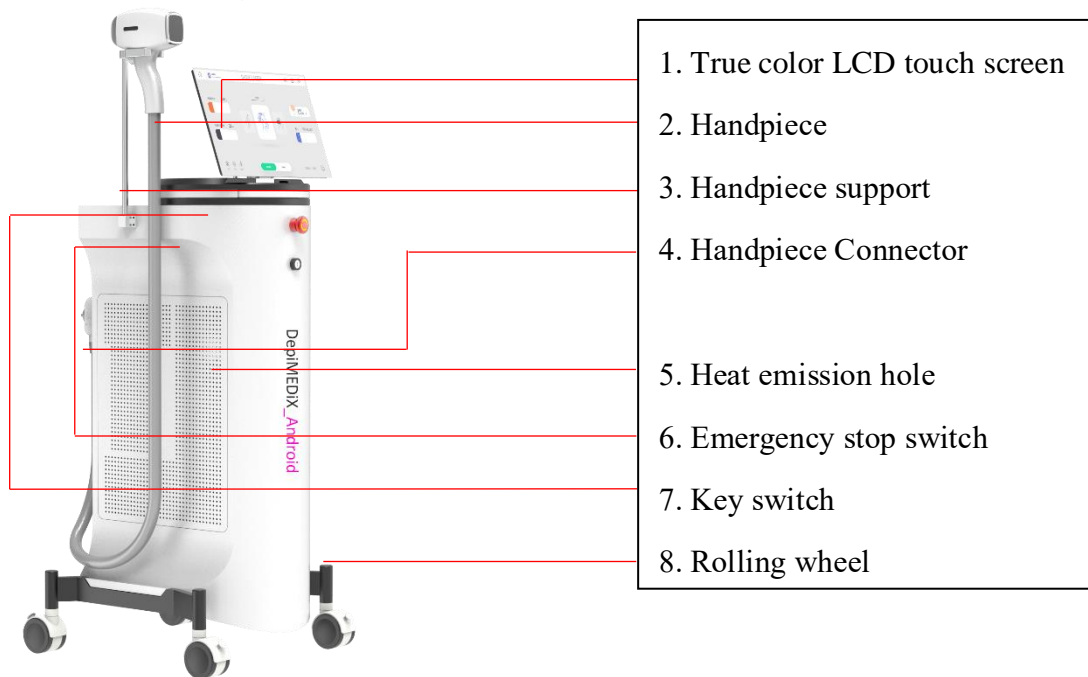


## 1.3 Therapeutic Range

- Permanent Hair Reduction on all pigmented hair and all skin types—including tanned skin.
- Pain-Free, Hair-Free - Comfortable Hair Removal

## 1.4 Parts Introduction

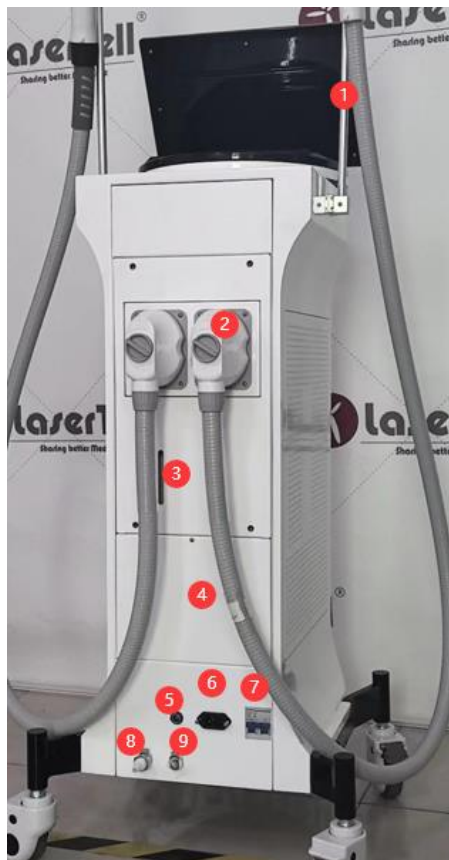
### 1) Front View



1. True color LCD touch screen
2. Handpiece
3. Handpiece support
4. Handpiece Connector
5. Heat emission hole
6. Emergency stop switch
7. Key switch
8. Rolling wheel

Name	Note
Android LCD touch screen	It shows the operational settings and adjustments as well as system status on the screen.
Emergency switch	The emergency switch is used to shut off power supply in case of any emergency.  Notice: suddenly pressing the emergency switch may damage the components of the system, therefore, it should be pressed under emergency.
Key switch	It is used to turn on/ off the power supply.  (rotating the key in a clockwise direction, it will shut off the device, anticlockwise, the system will be turned on).

## 2) Back View



1. Handpiece support
2. Handpiece plug
3. Water viewing window
4. Filter
5. Foot pedal
6. Power Socket
7. Power Switch
8. Vent
9. Infusion/Drain water tap

## 1.5 Contraindications

1. The patients with the keloid history and photosensitivity diseases.
2. Having the history of skin infections or herpes simplex in the treatment region.
3. Within 6 weeks, other ways for hair removal had been used.
4. The patients who are allergic to hydroquinone drugs or other bleaching agents.
5. Pregnant, menstrual women and the patients with the malignant tumor.
6. The patients with the history of taking Isotretinoin within 6 months.



### Notice

Hair removal equipment has no significant effect on white hairs, the person with suntanned skin should be used with caution.

## 1.6 Accessories

After you received the machine, please check all the parts of the machine according to

the following Packing Contents List at first, and contact us immediately if you find any lost and damaged parts inside the packing.

Name	Quantity	Model/Code
Handpiece1	1	755&808&940&1064nm Diode laser
Eye-protection glasses	1	755&808&940&1064nm
Goggles	1	-----
Power cable	1	GB
Foot pedal	1	Small foot pedal
Funnel	1	
Handpiece support	1	-----
Key	2	2801
Support screw	-----	M5×8
Handpiece screw	2	M3×16
O-ring	1	11×1.9



### Warning

Use offered by manufacturers or suggested accessories

## 1.7 Technical Specifications

Name	Value
Type	Diode Laser
Laser Wavelength	755&808&1064nm
Diode Energy Density	1-150J/cm <sup>2</sup> (Continuously adjustable)
Pulse Frequency	1-10Hz
Diode spot size	16*36mm <sup>2</sup> / φ 6mm
Machine power	2000W
Cooling Mode	Close-cycle water cooling+Air+TEC
Electrical Requirements	100-240VAC, 20A max., 50/60Hz

Package Weight	60kgs
Dimension (L*W*H)	50×60×110 (cm)

## Chapter 2 Safety

DepiMEDiX\_Android is designed for safe and reliable treatment when you use it properly. Only LASERTELL authorized personnel may service the system, authorized personnel and maintenance technician and other users should fully understand the safety information provided in this chapter.

### 2.1 Laser Safety

Diode Laser Hair Removal Instrument can emit high-intensity infrared laser radiation; it will lead damage to the tissue, especially the eye tissue. Therefore, in order to avoid the damage to the human body on accidentally observing laser beam, all the doors and windows in the treatment room should be sheltered from the laser transmission with high-density shading materials. There must be warning signs outside treatment room. diode laser hair removal instrument focus on two aspects: functionality and safety. This system designed the comprehensive safety inspection procedures. In consideration of the high-intensity and high-energy output of laser during operation, all the relevant staff must abide by the following precautionary measures. Before application, check whether the accessories installation are correct and whether the insulating cuticle of power cord are intact, also , confirm to wear the eye protectors.

Avoid exposure from the direct or diffuse radiation to the eye or skin.

Laser wavelength: 755&808&1064nm      Rated energy density: 150J/cm<sup>2</sup>

**DO NOT** look directly at laser light or reflected light, the direct and reflected output laser contain the energy enough to lead to serious eye injury.

Nobody can approach the laser with not wearing suitable protective glasses during operation.

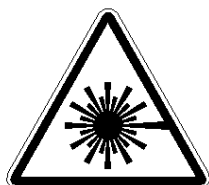
**DO NOT** perform the maintenance work which is not included in the system drawings from instructions, the repair work should be completed by the manufacturers or the authorized dealers from manufacturers.

**DO NOT** allow the system to be in the places with anesthetic, oxygen and other flammable

environment, in addition, the flammable solution for cleaning the light guide crystal of handle should also be evaporated before applying laser.

In addition to the treatment area, please do not point the laser fiber to other place .Before lasing, make sure that the output end of optical fiber is in safe direction.

Warning: Before application or during operation course, your patients, the staff and you will be at risk of radiation from the laser system if the control devices and regulating devices are not used or operated in accordance with the specified method.



**Warning:** before application or during operation course, your patients, the staff and you will be at risk of radiation from the laser system if the control devices and regulating devices are not used or operated in accordance with the specified method.

## 2.2 Features of Diode Laser for Laser Safety

Various components of diode the laser hair removal instrument are with different electronic and mechanical safety design, the following is the safety device designed for preventing from the negligence and improper operation.

1. “Key switch” controls the power-on and off of hair removal instrument, thus, it is an essential tool. Green (POWER) indicator shows the power on / off state.

Directions: When the system is not used, take the key down and keep it safely in order to prevent laser system from irregular operation.

2. Emergency stop switch” can set convenient emergency shutdown function for users. Unless the power switch and main switch connections are correct, otherwise, the laser system can not be used, so the clinical application is very safe. After pressing “Emergency stop switch”, all operations will be suspended, and shut down the device. By this time, turn off the main power, rotate “Emergency stop switch” clockwise until it rises, and then, turn on the switch again to restart the system.

3. in order to prevent error setting and the work parameters change of the laser hair removal instrument during operation process, the “standby / ready” switch function is designed for the main unit, only in standby mode, the system can allow for parameter setting.
4. “Foot-switch” is the switch for controlling the hair removal instrument to work, the switch is being covered by shield can prevent the false operation, its protection grade for the shield is IPX1 (anti-drip device), do not to splash liquids on the hair removal instrument or use it in rather humid environment.
5. “Search switch of transmission system” is the device used to detect whether the handle and the transmission system is effectively connected, the system will prohibit the laser output when the connection is disabled or not connected.
6. When the laser hair removal instrument is in operation, “Remote interlock switch” can prevent the non-expected personnel from entering into the laser work area and get laser radiation, when the door of operating room or laser isolation zone is opened, the hair removal instrument will terminate the laser output.
7. Four casters in front bottom of the laser hair removal instrument are designed as the brake-style, therefore, the latch should be pressed on fixing the hair removal instrument, in order to prevent sliding.
8. Hair removal instrument is equipped with two sets of type SD-4 “protective glasses”, the guard band is 800 ~ 1100nm, its optical safety performance can fully meet all the requirements of European Standard EN207: 1998 + A12002 and passed through European Union's CE certification, please confirm to wear the protective glasses before emitting laser beam.
9. A variety of prompts have been set when the laser hair removal instrument emitting laser beam, which including: flickering screen for emitting beam prompt, the prompts for the red light flashing and the repeated buzzer alarm.

The laser system can work properly only if all of the following conditions have been met:

- ※ the apparatus is well connected with the power supply
- ※ turn on controlling key switch
- ※ the emergency control switch is in the release state

※the laser hair removal instrument is in the ready state and with no abnormality for the self-test

The users must be qualified for the training and have operational experience in practice, if not, the arbitrary operation is prohibited.

## 2.3 Nominal Ocular Hazard Distance (NOHD)

This hair removal instrument is the class IV laser product. To avoid damage to eye, do not look directly into the output or reflected laser beam when the laser is running. During normal operation, the nominal ocular hazard distance (NOHD) of the hair removal instrument is 30.1 m.

## 2.4 Laser Safety Signs

The following warning signs are provided on the back and forth and both sides of the device panel and the laser emitting window:

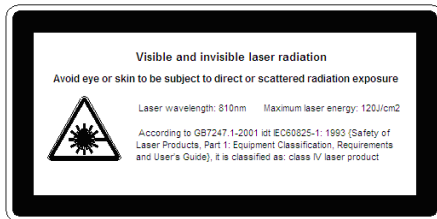


Figure 2.1 Laser classification sign

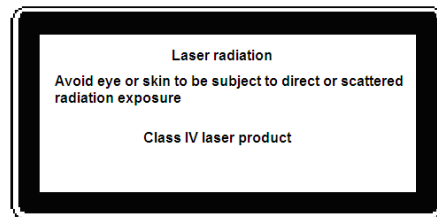


Figure 2.2 Laser radiation sign

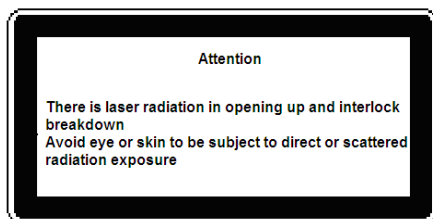


Figure 2.3 Safety interlocking sign



Figure 2.4 Warning sign

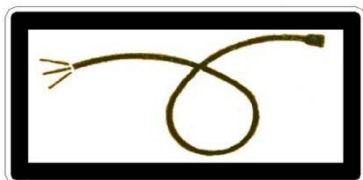
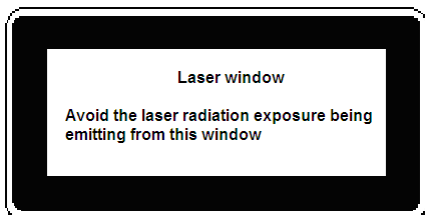


Figure 2.5 Laser output aperture sign      Figure 2.6 Sign of BF-type applied parts.      Figure 2.7 Sign of Optical fiber Transmission system

Figure 2.1: Laser classification sign, at the back of the device and below the product nameplate, it indicate the maximum output of laser radiation and wavelength from equipment and the classification standard, the sign should conform to the requirements of section 5.8 from GB7247.1-2001.

Figure 2.2: Laser radiation sign. This sign is on the top of the appliance, indicating that the appliance is a class IV laser product. This kind of appliance can produces some radiation, so attention shall be made to avoid exposing eye or skin to direct or diffusely-reflected laser radiation. This sign shall conform to the requirement of section 5.6 in GB7247.1-2001.

Figure 2.3: safety interlocking sign. This sign can be found on both sides of the appliance, indicating that once the top cover is moved or disassembled, when the interlocking function fails, operators may be exposed to laser radiation. This sign shall conform to the requirement of section 5.9.2 in GB7247.1-2001.

Figure 2.4: General laser warning sign (see Figure 14 in GB7247.1-2001), it is below the delivery outlet of transmission system, the transmission system is in front of equipment, indicating that such equipment is the laser products

Figure 2.5: Sign of laser output aperture. This sign can be found at the right side of the output aperture of transmission system, indicating that laser beam is emitted from this aperture. This sign

shall conform to the requirement of section 5.7 in GB7247.1-2001.

Figure 2.6: Sign of the applied parts: the shock-proof type sign for the applied parts, which can be found at the left side of the output aperture of transmission system, indicating that the shock-proof type sign for the applied parts is BF-type; this sign shall conform to the relevant requirements of in GB9706.1-2007.

Figure 2.7 Sign of the optical fiber transmission system: which can be found at the left side of the output aperture of transmission system, indicating that the optical fiber transmission system is elicited here, this sign shall conform to the requirements of section 6.1 bb) in GB9706.20-2000.

Totally-enclosed type design is adopted in laser beam path, so that laser radiation leakage can be effectively prevented. Do not operate the hair removal instrument when the seal cover is in open state.

## 2.5 Responsibilities of User

Before each treatment, the user must check the functional performance of the device in order to rule out any risk to patients or someone else. If the device is used in conjunction with peripheral units, the User's Manuals for the peripheral units must also have been thoroughly read and understood.

### 1) Safety Precautions

The following are its parts of safety precautions:

- A. Upon switching on the system, the processor first undergoes a self-diagnostic program. The processor will then examine the system automatically and continuously during the entire treatment procedure.
- B. Use the Emergency Stop Switch (red button) to turn the power off in case of an emergency.
- C. Remove the Key when not in use to prevent unauthorized access to the device.

### 2) Safety warning



- Don't use the equipment with other electrical equipments.
- Verify room voltage with supply area of the equipment are consistent, Don't use alter-mating current more than 240V.
- Don't operate the equipment in the high temperature or humidity place, avoid cause electric shock or fault.
- Ensure that the equipment is connected with power supply prior to use.
- Prior to use, Ensure that connection is good between circuit and accessories.
- Make sure that all trained personnel are familiar with the system controls and have a good knowledge of how to shut down the system instantly.
- It's better to operate the equipment in the dry place, Don't use it outside the room.
- Only use our company to provide matching accessories.
- Please turn off power supply after use it, before cleaning and maintenance.
- Don't use the equipment if you are uncomfortable.
- Don't use the equipment if skin have any uncomfortable or hurt.
- Pregnant women are forbidden to use it .
- Never use the modified or remoulded equipment.

### 3) The Environment Requirements

Working temperature scope	+15-30°C
Relative humidity scope	30%-80%
Atmospheric pressure barometer	86Kpa-106Kpa
Power supply	230V/AC±10%, 50/60Hz,10A; 115V/AC±10%,50/60Hz,20A

## 2.6 User Training

The DepiMEDiX\_Android requires special expertise and care in its handling and using. Only persons who have received appropriate handling training on the device, taking into consideration of operating instructions, and who are familiar with its therapeutic effect and possible risks are permitted to use the laser unit.

Untrained or unqualified operating personnel are not permitted to operate the DepiMEDiX\_Android under any circumstances whatsoever. BEIJING LASERTELL MEDICAL TECHNOLOGY CO., LTD. offers comprehensive training courses for the P-diode laser. Each user must have read and understood the User's Manual completely prior to starting the DepiMEDiX\_Android.

Patient's safety mainly depends upon a well-trained operators and a suitable treatment room. The attending operators must inform the patient all inherent risks with the use of this device. The success of the treatment depends largely on the user's experience and knowledge of the biophysical connections.

## 2.7 Optical Safety

All personnel (including the patient) must wear the protective glasses; opaque eye shield for the patient and filtered 600nm – 1100nm for the operators. The goggles / glasses provided with this unit are manufactured specifically for the 800nm to 1100nm wavelength produced by the DepiMEDiX\_Android unit. Do not substitute treatment / safety glasses with other types of tinted eyewear which may not meet the specific safety requirements of the unit.

**Note: Gauze, eye-shield and tarsi are all effective in the protection for the eyes.**



### **WARNING**

This device may cause thermal injury if used improperly. Medical personnel must familiarize themselves with the devices safety instructions and operational procedures prior to use.

## 2.8 Electrical and Equipment Safety

The unit uses 220V±10%, 50/60Hz or 110V±10%, 50/60Hz single-phase power supply. Its capability should be no less than 2000W. Use a 10A (220V±10%, 50/60Hz); 20A (110V±10%, 50/60Hz) single-phase three-wire outlet at an international level.

This device connects the ground through three lines, connecting the ground well is important to the operation safety.

The high voltage inside the device is very dangerous. Electricity may remain in some components, therefore, It is not advised to open the cover. This will result in an electrical shock.

Do not open the control or rear panel even if the unit is switched off. Only authorized personnel may repair or maintain the unit. Tampering with the unit will void its warranty.

## 2.9 Fire Prevention

The intense pulsed light device generates thermal energy. Avoid using combustible material such as acetone or alcohol in the operative field. If alcohol based products are used to disinfect the IPL device, ensure that the alcohol has completely evaporated prior to operation.

## 2.10 System Safety

The key switch is used to turn the unit on and off. Please remove the key when the unit is not in use to prevent unauthorized access. The emergency cut off switch is used to shut down the device in case of any emergency. After engaging the emergency shut off button, turn the device off by rotating the key in a counterclockwise direction. Rotating the emergency cut off switch in the direction indicated by the white arrows will release the button.

A 10-ampere circuit breaker is installed behind the device adjacent to the power cord. Loads in excess of 10 amperes will trip this switch. Simply moving the switch upward will restore power to the system. A self-diagnostic program then initializes the system and will continuously monitor the circuitry during operation.

## 2.11 Safe Classification of Equipment

The equipment safe classification: Electric shock protection — class I, type BF equipment;

Corrosion preventing liquid: commonness;

Can't use this IPL system in the environment where the combustibility, anaesthetic and the air or carbon monoxides mixture exist.

Operating mode: Consecution.

## 2.12 Label of Equipment

### NAME PLATE (Model) LABEL :

**Position:** back side

**Model:** DepiMED Pro

**Product Name:** Skin Whitening and Skin Rejuvenation Beauty Device

**Power Supply:** 230V, 50/60Hz, 10A



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FAX: +86-10-56370036



**Before operating and maintaining the beauty devices, please read user's manual in detail**

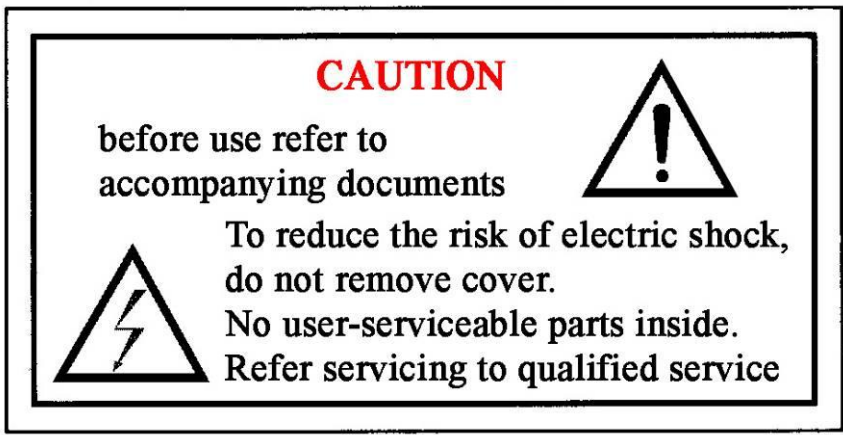
**WARNING LABEL: Position: front side**



**WARNING**

**PROTECTIVE EYEWEAR MUST BE USED  
RISK OF EXPLOSION IF USED IN THE  
PRESENCE OF FLAMMABLE ANESTHETICS**

**CAUTION LABEL: Position: cover back side**



CAUTION LABEL :



DANGEROUS VOLTAGE WARNING LABEL : Position: inside



## Chapter 3 Installation



**Don't modify the equipment without manufacturer's authorization**

### 3.1 Installation Requirements

The equipment should install the atmosphere of non-corrosiveness gas, dust and

fewer particles, corrosive gas can damage to electron, optical components, connection wire. More dust and particles can damage filter, electron components. Temperature and humidity of installation should conform to the requirements of function parameters.

### **Procedure:**

Before unpacking the DepiMEDiX\_Android Treatment System, ensure that working environment conforms to the requirements of this section.

1. Unpacking the device.
2. Staying the device for 12 hours, in order to avoid destruction by high humidity during long distant transportation.
3. Assembly of its components and ensure that all connections are firmly in place.
4. Fill the water tank with distilled water only.
5. Installation treatment handpiece and connect the power supply

**After unpacking the parcel, before installing the device, ensure that the device keeps the cool and dry place for 12 hours, in order to avoid destruction by high humidity during long distant transportation.**

### **1) Location Requirements**

The device should be positioned in an area with adequate ventilation away from devices that produce heat (i.e. refrigerator).

### **2) Electrical Requirements**

Before the DepiMEDiX\_Android leaves the factory, it has already been marked the local rated voltage according to the customers' request. It corresponds to the electricity requirement as follows:

AC220V $\pm$ 10%, 10A; 50/60Hz; or AC110V $\pm$ 10%, 20A, 50/60Hz

Input electric current can't have momentary change, electric voltage or electric current peak, sink.

It is recommended that this device use a dedicated power supply with its own

circuit breaker.

### 3) Environment Requirements

**Air quality:** No caustic particle (such as acid) in the air, which can damage the electric wire, the electric component and optical component surfaces. The dust in the air should be as little as possible, or it can absorb the energy of light and be heated up.. Metal particles could damage the electric component.

**Temperature:** The P-diode laser system has an optimal working temperature between 15°C~30°C. Relative humidity should not be over 80%. The working power of this device is about 2 KW. It would be best that the P-diode laser unit be installed in an air-conditioned room where the relative humidity and temperature can be maintained at optimal levels.

## 3.2 Installation

### 1) Connect the handpieces with machine



Fig 1



Fig 2



Fig 3



Fig 4

**First:** press the two gray buttons at both sides of the handle.

**Second:** make sure the contact pins are aiming at corresponding position.

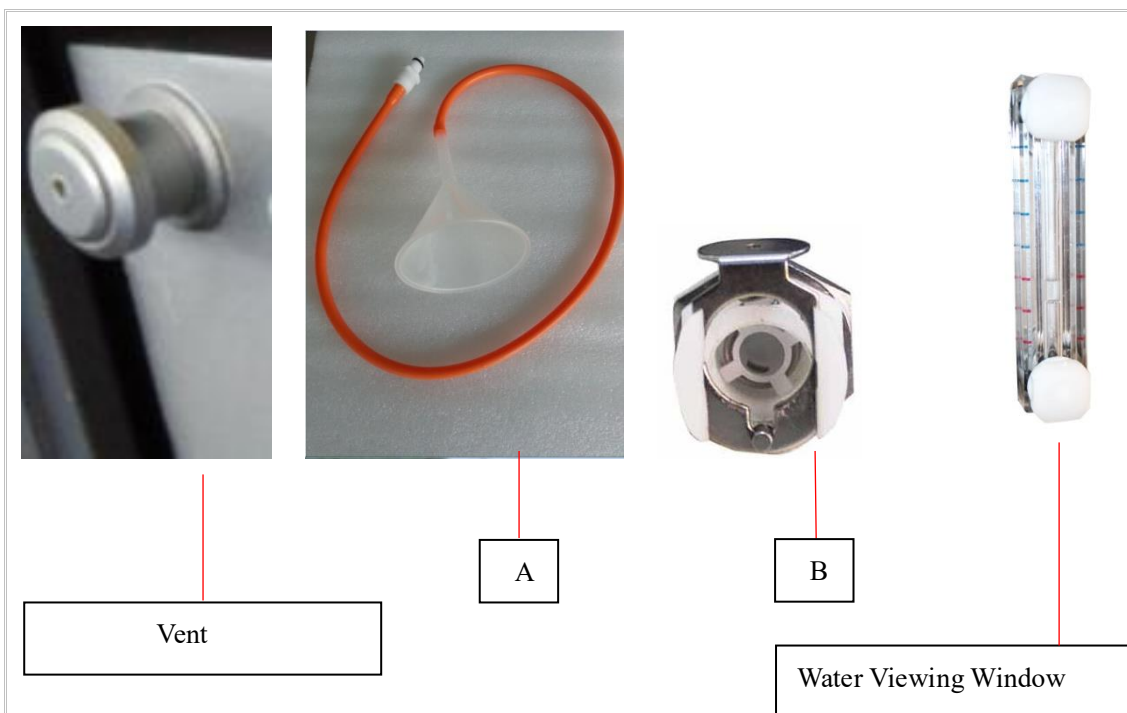
**Third:** plug the upper pin directly to the upper socket, then insert the lower one.

**If you need unplug the handpiece, please press the two gray buttons simultaneously, then unplug the handpiece.**

**WARNING**

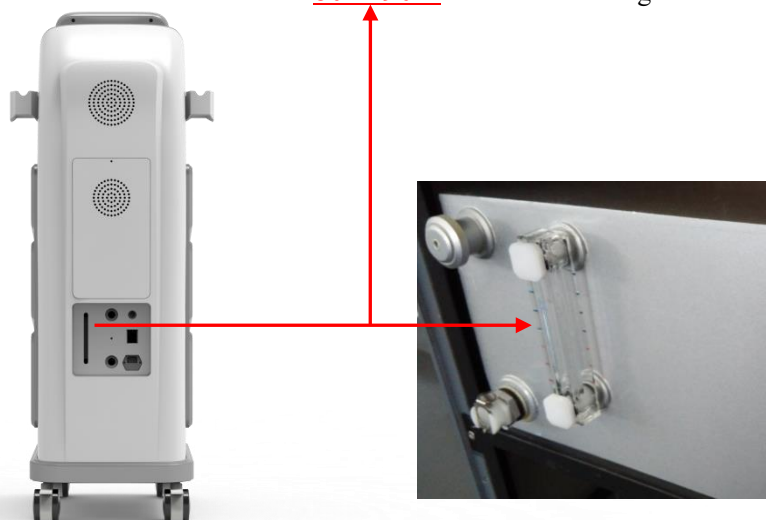
This is essential to be sure to tighten the connectors, or high voltage is easy to poor contact, contact terminal will be burned off. In addition, easily caused leakage of water injection connector.

**2) Fill water**



**Installation:**

- 1. Take out the Vent;
- 2. Insert A into B (Bottom Right of the Rear Device);
- 3. Fill the distilled water until it reaches **80%-90%** of Water Viewing Window



**Attention:**

1. Once filling the water, press the right connector until the water sprays out, so as to avoid water circulation error due to inner air bubbles!



2. Use distilled water or water without hydrogen. (Mineral water strictly prohibited)

3. Replace water every 2-3 month.

**Trouble-Shooting (water circulation error):**

Note: The screen shows water circulation error (always with handpiece hot shortly)

1. Minimize the cooling level on the screen

2. Press the right connector until the water sprays out (During the operation, the device should be Turned ON within 2 minutes, or the electric systems would be damaged)



 **WARNING**

- 1 Use purified water or water without hydrogen, strictly prohibited mineral water
- 2 Replace water every month.
3. Only personnel trained by the distributor are authorized to maintain the inner workings of this device. Any manipulation to the system may cause damage to the device and will void its warranty.

### 3.3 Equipment safety (Move)

If the device is to be moved within the general area.

1. Turn the device off;
2. Put the treatment head on the support;
3. Pull out the power cable;
4. Relocate the unit (Avoid tilting the device).

### 3.4 Transport and Storage Conditions

1. The cooling water in the instrument should be let out and cleaned during storage and transport.
2. The device should vertically be installed in the outer packing box during transport. The instrument is fixed on the base >550mm×490mm×430mm so that the wheels of the instrument will not glide.
3. There is waterproof and soft gasket material in the outer packing box of the instrument and handle with care which the instrument should be supported by natural damage. The markings such as "Handle with care", "No wetness", "up" should be on the box.

#### 4. Environment Requirements

Working temperature scope : +15~+30°C

Relative humidity scope: 30% -80%

Atmospheric pressure barometric : 86kpa – 106kpa

Power supply: 220V/AC±10%, 50/60Hz 10A; or 110V/AC±10%, 50/60Hz, 20A

## Chapter 4 Operation

### 4.1 Software Operation Explanation

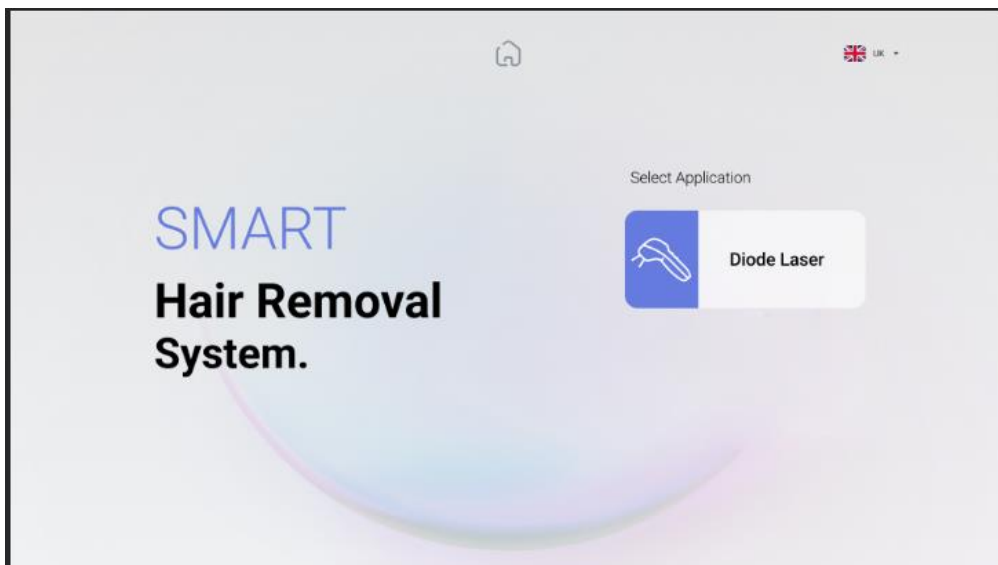


1. WARNING: High voltage: please ensure that all panels are secured prior to operation.
2. Place the treatment head on its support when on standby mode.
3. All personnel in the treatment room must wear the protective filtered glasses supplied.
4. Make sure the patient is wearing the opaque protective goggles prior to treatment.
5. Avoid looking directly into the intense light during the treatment even if you are wearing the protection glasses.
6. Do not point the treatment head outside the treatment field.

#### 1. The main menu

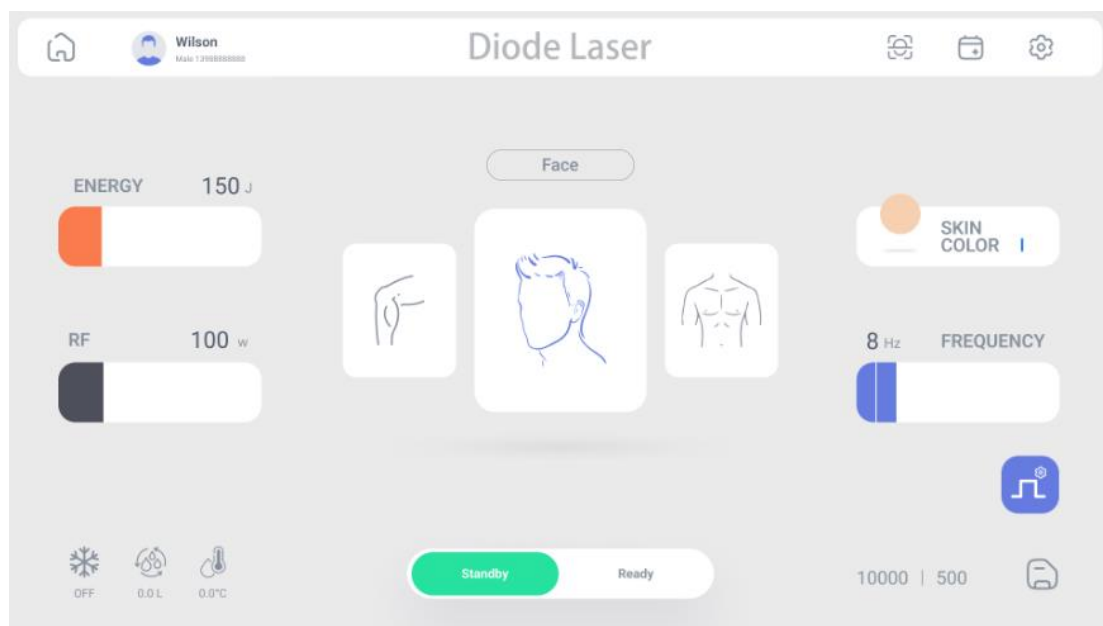
Turning on the equipment by rotating the key in a clockwise direction, the screen will enter into the main menu as the following picture.




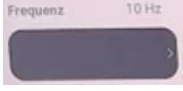

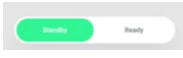
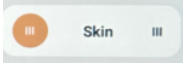
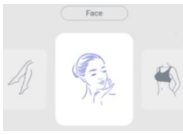
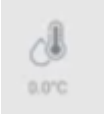



**2. Treatment interface**

Press Diode Laser, enter diode laser treatment interface:



Icon	Name	Function	Remark
------	------	----------	--------

	Energy	Set energy	The range of energy is 1-150J/cm <sup>2</sup>
	Frequency	Set frequency	The range of frequency is 1-10Hz
	Freezing System	Set cooling level	1-6level
	Standby	——	
	Skin color	Choose skin color type	1-5kinds
	Treatment area	Choose treatment area	——
	Water flow temperature	-----	——
	Water flow	-----	——

## Chapter 5 Clinical Guidelines

### 5.1 Treatment Must Know



**Prior to treatment, please read this chapter carefully.**

#### Contraindications:

- 1) The patients with the keloid history and photosensitivity diseases.
- 2) Having the history of skin infections or herpes simplex in the treatment region.
- 3) Within 6 weeks, other ways for hair removal had been used.
- 4) The patients who are allergic to hydroquinone drugs or other bleaching agents.
- 5) Pregnant women and the patients with the malignant tumor.

6) The patients with the history of taking Isotretinoin within 6 months.

Note: The hair removal instrument has no significant effect on the white hair, at the same time, the person with suntanned skin should be cautious on application.

- 1) Prior to treatment, consultant should offer comprehensive consultation for specific conditions of customers.
- 2) Patients with mild measles, new skin-burns, capillary broken through chemical treatment, these are supposed to conform to suggestions to treat.
- 3) Epidermis scrape hair in the treatment area and clean skin surface with neutral detergents, don't use any make-ups.
- 4) Using lots of gels to smear skin surface of treatment parts (it's the best to use import or specialize gels, effect will more obvious).
- 5) Treatment head aiming at skin of treatment area during the treatment, touch skin surface slightly, must be maintain the cleaning of treatment head.
- 6) It is normal that skin surface will occur mild red at times, and it will disappear automatically for a few hours after the treatment.
- 7) In order to future use, record treatment parameters.
- 8) Within 24 hours, don't use any make-ups, avoid sunlight exposure and strong movement, adjust diet, smear sunscreen when go out within one month.



## WARNING

Only professional personnel with appropriate training may operate this device. Unauthorized use or abuse in the hands of a novice may cause thermal injury to oneself or others and may cause irreparable damage to the unit.

## 5.2 Clinical Features

### 1. Treatment features

The basic working principle of diode laser hair removal instrument is based on biological effect. This product adopts the laser with the wavelength of 810nm for irradiation, which are particularly sensitive to the melanocyte of hair follicle with no damage to normal epidermis. The light can be absorbed by the melanin in the hair shaft and hair follicles and is transformed into heat, thus increase the hair follicle temperature, when the temperature rose to a higher extent, the irreversible damage can be produced to the structure of hair follicle, thus, the damaged hair follicles can be removed after a natural physiological process, so as to achieve the purpose of permanent hair removal. This product is of novel design with stable operation; also, it is short for the irradiation time with lasting effects; it is easy to operate and have good clinical efficacy with high safety factor.

## **2. Clinical effects:**

**Safety:** Diode laser has stable performance, long service life; also, it adopts the intelligent microprocessor for real-time control.

**Fast:** big square laser spot of 13 mm \* 13mm, provide large-area hair removal with high efficiency and speed.

**Effective:** Laser wavelength of 810nm, is in the spectrum of near infrared (0.75 ~1.50 $\mu$ m) region with good melanin absorption, can penetrate the deep dermis and subcutaneous adipose tissue, acting on the different sites and depth of the hair.

**Pain-free:** The sapphire cooling window can cool the epidermis to 0~4°C. The whole course cooling provides appropriate feeling with no pain.

**Convenient:** The human-machine interface - touch screen, intuitive and easy-to-use, therefore, its operation is simple and convenient.

**Permanent hair removal:** Suitable for the hair from all types of skin color with good hair removal effect.

## 5.3 Potential Risks

The most common complications for using diode laser hair removal instrument are postoperative local erythema and follicular edema, most of them can disappear of themselves after a few hours. Rare complications are the local scab, purpura, blisters, pigmentation or hypopigmentation and increased sebum secretion. The occurrence of adverse reactions after laser hair removal, mainly relate with the energy density and the epidermal melanin content, meanwhile, it has obvious relationship with the seasonal changes, treatment sites and solar radiation, the adverse reactions can be minimized on abiding by the preoperative and postoperative guidance and the correct operation.

## 5.4 Preoperative Preparation

### 1. Inquiry

1. Avoid sunlight / artificial UV light exposure 3-4 weeks prior to treatment.
2. Discuss current treatment plan.
3. Clarify and confirm patient's expectations.
4. Rule out any conditions contraindicating this treatment.
5. Sign *Written consent of customers*.

### 2. Explanation

1. Discuss the possible number of treatments required for treatment.
2. Inform the patient regarding the possibility of a stinging/ warm sensation during treatment.
3. Inform the patient regarding the possibility of transient erythema.

### 3. Optical Protection

1. The patient should wear the protective opaque eye goggles.
2. The Physician should wear the protective filtered translucent eye goggles.



The treatment room should be clearly marked to prevent unnecessary access by other personal during the procedure.

## 5.5 Treatment Method

### Anesthesia

Whether the anesthesia is needed in treatment should be decided based on the treatment site and size and whether it is the sensitive area and the patient's pain threshold. Generally, the surface anesthesia can be used only.

1. The operators and the patients being operated should wear protective glasses deployed by manufacturers, prevent the eye damage from laser; smear the transparent gel outside treatment area to reduce local skin temperature and the pain during the treatment.
2. Set treatment parameters according to the operation method of "parameter settings" from chapter 6, first give the experimental treatment, after obtaining the best effect in the energy density test, the comprehensive treatment can be performed. The general pulse width adopt 55ms, and for the energy, select 25J/cm<sup>2</sup>, for the frequency, select 3HZ.

It is best to make personalized setup for the treatment parameters according to clinical manifestations and treatment conditions of patients, in general, if the energy density to be set is reasonable, in the treatment course, the patients being operated will feel the needle-stick pain from each hair follicle; if there was absolutely no feeling, the energy to be set may be too low; when hair follicle density from some region is too high, the laser energy for treatment should also be reduced appropriately.

3. During the treatment course, it should exert certain pressure on laser handle, which can maintain good contact between handle and skin, this can also drive off the local blood, reduce the oxyhemoglobin to absorb laser energy. In order to obtain the appropriate epidermal cooling effect, the handle need to maintain contact with skin

for 0.25 ~0.50s before lasing. After treatment, immediately lift the handle and move towards the next treatment point. In addition, in the treatment course, it should pay attention to maintain the cleanliness of optical crystals; the external dust will increase the light absorption and produce the heat, therefore, increase epidermal injury and pain.

4. During the treatment course, light spot overlap should be appropriate, since repeated exposure will aggravate skin damage, meanwhile, too wide spacing will affect therapeutic effect, and in general, the light spot overlap should be less than 10%.
5. Based on the different regions, the hair have different growth cycle, therefore, the treatment interval should be different, for instance, the hair from head has a relatively short period of telogen (about 12~16 weeks),thus, giving treatment with an interval of 1 month may enable it to evolve into the growing period. The telogen of hair from trunk and limbs is 12~24 weeks, so, 2 months is appropriate for the treatment interval. Generally speaking, the next treatment should be given when the hair regeneration begins and the effect is best at this time.
6. After the end of each treatment, the aureomycin eye ointment or erythromycin ointment should be smeared in time at the treatment region, preventing from local infection of skin.

## **5.6 Post-operation Care**

### **1. Prevent sun exposure**

Patients should use high factor sunscreen after operation one month, and protect treatment parts from the sunlight, sun exposure may increase regeneration rate of melanin and produce hyperpigmentation.

**2. Avoid hot baths, using powerful deodorant/antiperspirant within 24 hours after treatment, don't swimming in the high chorine pool.**

### **3. Make up**

Most doctors allows patients to use make-ups after operation, once patients find split

or infection and inform doctors at once, in addition, stop make up.

## **Chapter 6 Maintenance**

Phenomenon	Reason	Solution
No power	<p>1.Pseudo connection or missed connection of power cable.</p> <p>2.Circuit breaker (electrical outlet switch), key switch or emergency switch is off.</p> <p>3.Inner electric apparatus with open circuit.</p>	<p>1.Make sure that the system is properly plugged to the power outlet and that main voltage is present in the socket.</p> <p>2.Check if Circuit breaker (power outlet switch), key switch and or emergency switch are on.</p> <p>3.1) Touch the connection between key switch and power supply by one insulating rod. Then connect it again.</p> <p>2) Measure if the input and output switch cables of power supply are open or not, then join it again.</p>
Trip out or fuse burning	<p>1.Inner system with water loose or damp.</p> <p>2.Inner electric apparatus with short circuit.</p> <p>3.Current overload due to lower voltage or unstable voltage.</p>	<p>1.Make sure that Inner system with no water loose or damp, then turn on.</p> <p>2.Take out the power cable, while keep all the switches on, and check if the input pins of power outlet with short circuit? If yes, take out the input pins of power supply, subsidiary power supply one by one, then check if it with short circuit by multi-meter. If it is defective, replace it.</p> <p>3.Please try to use the voltage stabilizer, or change a big fuse.</p>

Water flow alarm	<ol style="list-style-type: none"> <li>1. Water tank with no water.</li> <li>2. Handpiece or filter jam/block or silicon tube bended.</li> <li>3. Water pump or magnetic valves broken.</li> </ol>	<ol style="list-style-type: none"> <li>1. Add enough water into the tank</li> <li>2. Insert the silicon tube to the handle connector, instead of handpiece plug and play. If the water flow is normal, then there is sth block in the handpiece, you may send back it for repair; if the water flow still alarms, it may due to inside silicon tube bended. Open the system and check it.</li> <li>3. Measure the input voltage of the pump and the magnetic valves, if no voltage, check the power supply circuit; if with normal voltage, then the water pump or valves is broken, just change or repair it.</li> </ol>
Water tank temperature alarm	<ol style="list-style-type: none"> <li>1. Not enough to support sound cooling due to less water in the water tank.</li> <li>2. Continuously working for long time with high energy.</li> <li>3. The environmental temperature is too high</li> <li>4. Radiator of the refrigerator with poor ventilation</li> </ol>	<ol style="list-style-type: none"> <li>1. Fill enough water to the tank</li> <li>2. Stop the system for 15 minutes and then restart.</li> <li>3. Lower environmental temperature and then restart.</li> <li>4. Clean the radiator, make it with good ventilation.</li> </ol>
	<ol style="list-style-type: none"> <li>1. Magnetic door contact with open circuit or with wrong</li> </ol>	<ol style="list-style-type: none"> <li>1. Keep the magnetic door contact with the right connector, and make it with closed circuit.</li> </ol>

Magnetic door contact alarm	<p>connection to the footswitch.</p> <p>2.Control board or magnetic door contact malfunction.</p>	<p>2. Remove the magnetic door contact detector from the control board, then connect the No.5 and No.6 pins frequently by conductive metal.</p> <p>1) if the door contact icon changes on the screen, thus the magnetic door contact or related circuit turns to malfunction. Then take out the door contact wires, and keep it's well connected with no open circuit, or just change the door contact.</p> <p>2) if with no change, just change or repair control board.</p>
Low energy	<p>1.Output lens/mirror is dirty</p> <p>2.Laser emitter /generator is oxidized</p>	<p>1.Clean the output lens/mirror</p> <p>2.Change the new emitter/generator</p>
Current overload protection	<p>1.control board malfunction</p> <p>2. Handpiece malfunction</p>	<p>1. Restart the device, if the system is normal, then you may use it again;</p> <p>If with the same problem, it may due to control board malfunction, just change or repair it.</p> <p>2. Check if the entire handpiece is normal or not, if the emitter/generator with open circuit, then change it. Also check if the control board is normal or not, if yes, just send them together for repair or change.</p>



## WARNING

Before any maintenance work turn the power off and unplug device. Failure to turn off the power may cause an electric shock, damage to the device and bodily injury. Never tempt to remove the back panel or device casing. Unauthorized tampering with the internal system of the devices will automatically void the warranty.

This chapter describes the regular maintenance that can be performed by the owner authorized personnel must do any other maintenance work not described in this chapter. System troubleshooting is also enumerated in this chapter.

## **6.1 Cleaning the Main Host**

The main host casing or body must be clean with a soft damp cloth. A mild detergent may be used but be cautious, do not let the liquid sip into the machine.

## **6.2 Refilling Water Supply**

Observe the water level through the water viewing window at the rear of the unit. The water level is best maintained within the midpoint of this window. Distilled water can be added by following the instructions seen in “Section3.2 Installation”.

## **6.3 Environmental Protection**

When at the end of the service life of equipment accessories, please dispose properly in line with local environmental laws and regulations.

## **6.4 System Trouble Shooting**

### **Annotations:**

**1 the technics items in the manual may be improved, please contact our company as request.**

**2. Electric principle diagram and part list will be provided as request**

**Manufacturer Name: Beijing LaserTell Medical Co., Ltd.**

**Manufacturer Address: Floor3, Block 1, No.12, Jingsheng South Second Street, Tongzhou District, Beijing, China.**