

Preface

Dear customer, first of all, thanks for you trusting and using Red light therapy manufactured by our company.


In order to accustom you operate quicker, we make detailed user manual. Please read this manual and other all information carefully before your first installation and using this system.

To improve capability and reliability of instrument, we will continuously upgrade our product (including hardware and software). We will announce you immediately if take some amendment. Thanks in advance if you correct it after finding any mistake or oversight.

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Version: V1.3.0

Important Notice

Please read the contents of "security requirements", "Note" and the special warnings " " in the instructions carefully.

If you meet problem or need help in using, please contact our technical service center for help in time. We will give you technical support or arrange professional technical expert for service.

Correct use can extend the life of machine; also make fully usability of machine by farthest.

Abnormal operation will do harm to machine or person. Our company will not bear the relevant responsibility if use the device violating the provisions of the manual, thereby causing injury to persons or equipment; Meanwhile, our company will also not be liable for the resultant instrument performance, reliability and safety and some other performance index declination. Any faults arising from such non-observance will invalidate the warranty!

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1 Safety Requirements And Precautions

1.1 Safety Requirements

- When you use the equipment for treatment, please strictly confirm the indications and possible adverse reactions.
- When device working, the light emitted by light source can stimulate people's eyes, and do damage to the eyes if the operator being in the irradiation area of the device for a long time. Operator and patient should wear special goggles in the irradiation area.
- Before treatment start, please set up time
- Electromagnetic field may interfere with the normal operation of equipment. Therefore, make sure the neighboring external devices comply with EMC requirements. X-ray equipment or magnetic resonance device may be a source of interference, because they can produce high-intensity electromagnetic radiation. At the same time, pay attention away from mobile phones or other communications equipment.

1.2 Attentions

- Instrument only by trained medical personnel in the specified usage

situations. No authorized personnel, or untrained personnel not to instrument any operation

- Prohibit to put it in anesthetic inflammable and explosive environment, in case of fire or explosion.
- Prohibit to open the instrument shell without authorization, or may have get an electric shock risk. To instrument maintenance or upgrade must be after the company training or authorized service personnel.
- If the supply voltage fluctuation is too large, it should be with an accuracy of 2% AC power supply.
- In order to avoid electric shock and reduce device failure, do not make water into device. If liquid is fallen into the machine, please shut down machine immediately, and contact with our service people.
- Before using the machine, please check and make sure all cables are in the safe condition. If not, please replace bad cables and connector immediately.
- No blocking the light source vent during using to avoid damage to the equipment caused by poor ventilation.
- When moving the device, please loose the front wheel brake, steady push the device on the handle, after moving completes, lock the front wheel

brake. When carrying, to lift the device by grasping the support pole, must not lift the gooseneck part directly.

- To ensure the safe operation of equipment, all replacement parts, accessories and all kinds of supplies that the instruments are equipped with, please use the product models provided or designated by our company.
- **Handling of accessories and device**

Need to handle packing materials accordingly to local waste disposal rules, avoid to let child touch.

Device life is 5 years. Need to handle device and accessories according to relative rules. To deal with any doubts, please contact our company or our agency.

- **User manual**

In order to assure using this equipment safety, must obey this manual. But this manual can not replace acknowledged plastic experience of patient nursed.

Please send this manual placed in instrument nearby, so that when necessary, can facilitate timely acquisition.

1.3 Attentions for home use

- The machine should be used under the guidance of a doctor or specialist, and strictly follow up with the doctor's prescription for treatment.
- In case of any untoward effect, please contact the doctor immediately.
- The user should master the treatment method, relevant attentions and make sure the correct use before self-treatment.
- Please make sure the machine is placed in the location where the children can not touch to prevent personal injury.
- While treating, Children should be guarded by adults.
- People incompetent or can't master the correct treatment method are prohibited to operate the device.

2 Summary of the machine

The characteristic of LED light source is to adopt special semiconductor materials under the action of external electric field to output single-wavelength light. LED photodynamic therapy in the use of this characteristic applies to the wound surface in a particular power, making the irradiated parts produce biochemical effect, promoting metabolism of cells and growth of granulation tissue, accelerating wound healing and disease rehabilitation.

2.1 Function summary

2.1.1 Range of application:

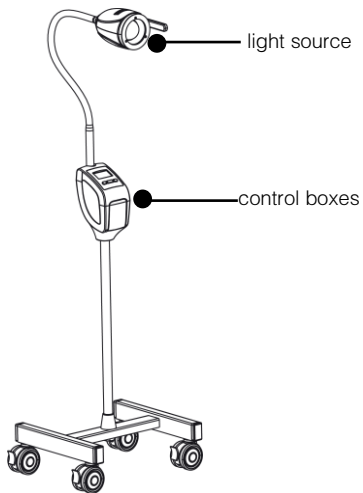
Apply to anti-inflammation and promote skin wound healing.

2.1.2 Device features

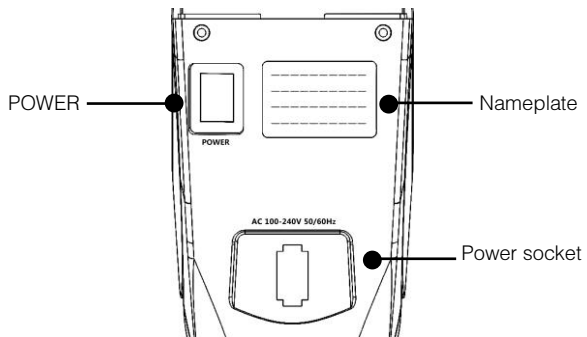
- High-power LED light source, accelerate wound healing
- Small and portable, the bottom of universal wheel design, easy for indoor mobility.
- Freely bent stand, suitable for any irradiation part.
- Simple operation, no need for professional training, convenient for home use.

2.2 Configuration

The machine consists light source and control boxes. Figure 2-1 below.










Pic 2-1



Pic 2-2

2.3 External ID Description

	Caution! Refer to the random file
	goggles necessary
	Refer to instruction manual/ booklet
	Serial number
I	power on
O	power off
	Recycling symbol mark
	Production date
	II class equipment

2.4 Instrument parameters

2.4.1 Instrument Type

- Safety Classification: II
- continuous duty
- Common equipment
- Can not be used in flammable anesthetic gas mixed with air or oxygen or N₂O

2.4.2 Main Technical parameters

- Work Voltage: AC 100V~240V, 50Hz/60Hz \pm 2%
- Rated Power: 60VA
- Working environment:
TEMP. 5~40°C
Relative Moisture: \leq 85%
Atmospheric pressure: 700hPa ~ 1060hPa
- Structure: desktop
- Effective Radiant area: 50cm² \pm 10%
- Work distance: 5cm \pm 1cm
- Output wavelength: red laser 633nm \pm 10nm

- Output power: red laser 20 ~ 96mW/cm²;

- working noise:

Under normal working state, the noise produced by the device doesn't exceed 60dB(A).

- stand adjustment:

Under normal working state, stand can be adjusted by up and down, right and left. Treatment head can be fixed at any angle.

- Timing and function

Equiped with timer, the error of timing doesn't exceed $\pm 2\%$ of set value; with the function of manual stopping exposure output.

3 Installation and Connection

3.1 Checking

- Before unpacking, please check the box carefully to ensure if the product is damaged during transportation. If you find any damage, please contact the carrier or our company immediately.
- If the package is in good condition, carefully remove the instrument and its accessories from the box and place them in a safe, stable, and easy-to-view position.
- Check the products and accessories carefully according to the packing list to confirm whether the accessories are complete and whether there is any mechanical damage.

Attention! Please save the box and packing materials for future transportation or storage.

Warning!

- User should place the packaging material out of reach of children. When handling packaging materials, users must comply with local regulations or hospital waste disposal regulations.
- The instrument may be contaminated by microorganisms during storage, transportation and use; please confirm that the packaging is intact before use. If it is found damaged, please do not use it.

3.2 Environmental requirements

- Working condition:
temperature: 5 ~ 40°C
relative humidity: $\leq 85\%$
Atmospheric pressure: 700hPa ~ 1060hPa
- The using environment should also reasonably avoid the presence of noise, vibration, dust, corrosive or flammable, explosive materials.
- Allow sufficient space around the instrument and leave at least 30cm of space on the rear panel to ensure proper ventilation.

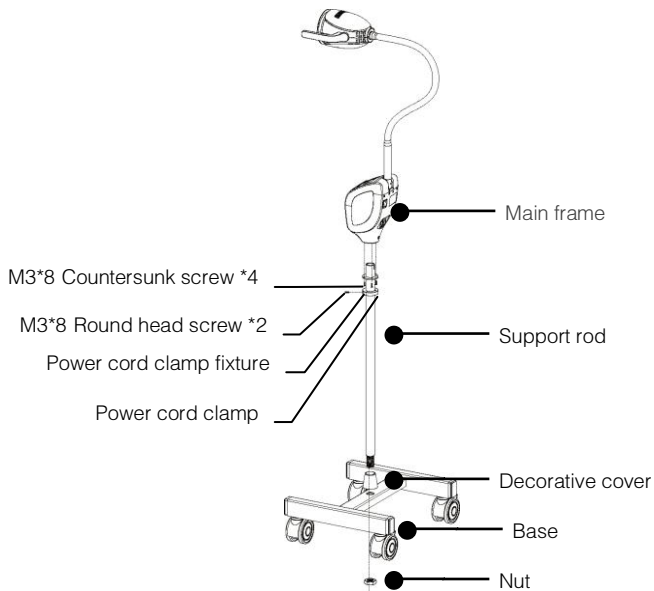
3.3 Power requirements

AC 100 –240V, 50/60Hz $\pm 2\%$

Warning!

- Please ensure that the instrument works within the specified environmental and power requirements, otherwise it will not work properly and may cause equipment damage.
- The instrument must be connected to a power outlet separately and must not be shared with other electrical equipment.
- It is recommended to use a 2% AC regulated power supply in areas where voltage is unstable.

3.4 Connection



Pic.3-1

- Put the bottom end of the support rod into the decorative cover, align it with the mounting hole on the base, and rotate the support rod according to the thread direction to install it into the base.
- Install the upper end of the support rod into the bottom of the mainframe, and fasten it with M3*8 countersunk screws. Slightly rotate the support rod to align the direction of the mainframe with the direction of the base, and then tighten the support rod with the matching nut.
- **Install light hidden cover:**

Put the disinfected light hidden cover on the front of the black bracket as shown in the figure.

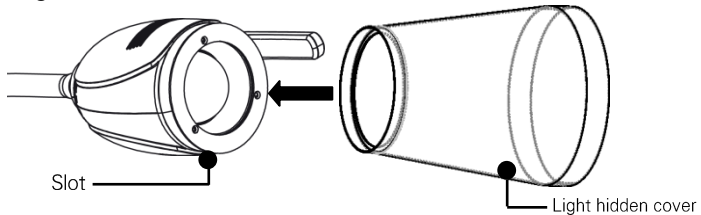


Figure 3-2

➤ **Connect the power cord:**

Insert one end of the power cord into the power socket of the instrument, put the power cord into the small slot of the clamp, and then fasten the clamp and clamp fixing parts with M3*8 round head screws, as shown in Figure 3-1. Plug the other end of the power cord into an AC power outlet.

Attention:

- Equipment must be individually connected to the outlet which can not be shared with other electrical equipment. Recommended to equip with a regulated power supply in the region of voltage instability.
- Instruments should not be placed in vibration or shaking of the place.
- Operation of the instruments should be required to ensure the normal working environment.

4 Operation

4.1 Preparation before treatment

For patient, please clean treatment parts before treatment. Then put on the goggles to prevent light hurt to eyes

4.2 Operations instruction

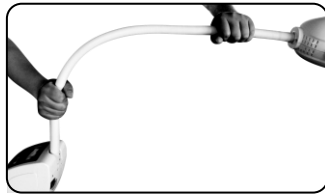
4.2.1 How to operate

- 1) Operator wears protective goggles.
- 2) Turn on the equipment, check if every part is all right.

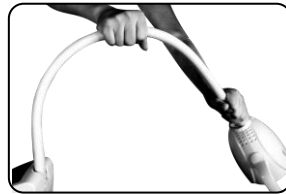
NOTE!

- **After startup instrument will be issued "di" of a sound, verify the buzzer work is normal or not. If not normal please contact with manufacturer or local dealers.**
- 3) Setting the radiation time according to the requirement;
 - 4) Effective area of irradiation see Fig.4-1, calculate according to the formula;
 $S = \pi R^2$; Patients should wear special protective goggles; Hand the position (pic 4-1) to adjust the radian of support (support stress bending

range: 200 mm maximum bending 90° , the length of 300 mm maximum bending 180° , the length 600 mm length maximum bending 360°) .
Expose treatment part to the light source in the distance of 5cm, as Figure 4-2,

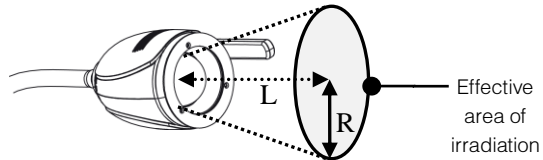


step one



step two

pic4-1 The method of adjusting the support rods



pic 4-2

Attention! The bearing ability of stand is 7.5N. Only bend in the range of stress it can bear, do not excessive force bending.

- 5) Press “start/Stop” to use this function.
- 6) When radiation treatment is finished, Device stops radiating automatically and cools it according to the set time.
- 7) Turn off the power switch, disconnect the power cord.

Attentions!

- When receiving phototherapy, don't wear earring, necklace or other jewelry, in case of reflection.
- The attending doctor or expert should have some knowledge and experience in phototherapy, never treat the therapeutic process as a learning process. Self-treatment should be guarded by physician or expert, attending doctor or expert should track and monitor periodical.
- Operators should wear protective goggles while treating, in the treatment process, irrelevant personnel should avoid.
- No blocking the light source vent during using to avoid damage to the equipment caused by poor ventilation.

4.2.2 Software operation

4.2.2.1 Operation panel

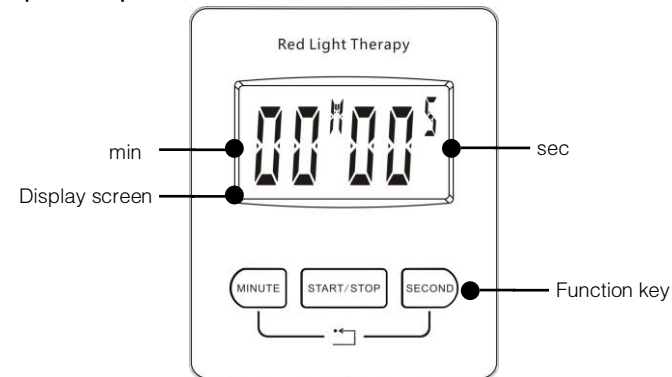



Figure 4-3 operation panel

4.2.2.2 Setup time

- Press "MINUTE" key to adjust the minute, press it once, and add to one minute. Press more, more minutes.
- Press "SECOND" key to adjust the second, press it once, and add to one

second. Press more, more seconds.

- “” indicates “back” , Simultaneously press “MINUTE” key and “SECOND” key to return to zero

4.2.2.3 Treatment process

- Start treatment

After setting the Irradiation time, press “START/STOP” key, “beep” sound will be heard before working, then the count down time starts. At the last 10 seconds will have a warning sound.

- Pause treatment

press “START/STOP” to pause treatment, light source puts out, countdown pause, press “START/STOP” key to recover the treatment process, light source lightens, continue the count down time.

- Stop treatment

Count down time is finished, the light source will be close automatically. And finish the treatment.

4.2.2.4 Setup the save function

On the condition of stopping, if you need to check the time that you setup

last treatment, press “START/STOP” key, “Irradiation time” shows last setup time. press again “START/STOP” key, device starts to work.

Close it and start it again, the last setup treatment time. Will be shown.

NOTE!

- Shall confirm the preset treatment time is correct and treatment, such as incorrect should be reset.

5 MAINTENANCE&MAINTAIN

In order to ensure machine's normal use, extend the machine life, should notice Maintenance & Maintain.

5.1 Maintenance of equipment and accessories

In order to ensure normal and safe working equipment, every 6 months, response equipment and its accessories to conduct a preventive check-ups (including the performance, inspection and safety inspection) and maintenance confirmed the device will work properly and are in good working condition, on the medical staff and patients are safe and meet the clinical use of the required accuracy.

Items to be inspected should include:

- ✓ Environment and power supply meet the requirements.
- ✓ The instrument casing is clean and free of fouling.
- ✓ The outer casing, connectors and accessories are not mechanically damaged.
- ✓ If light source can light up.
- ✓ The power cord and connecting cable are wear-free and have good

insulation performance.

- ✓ Instrument grounding should be good.
- ✓ Use only specified consumables, attachments.
- ✓ Instrument software is functioning properly.

If any damage or abnormality is found, stop using the instrument immediately and contact the hospital electrical engineer or our after-sales service department immediately.

5.2 Maintenance

1. To ensure that equipment grounding well.
2. Note that the local power grid voltage fluctuations, beyond the permitted range, the proposed additional regulation equipment.
3. Instrument chassis permission should not be arbitrarily opened, in order to avoid undue impact of failure of normal use.
4. Instruments of the annex should be equipped with handle care and put down gently, do not throw, hit, pull, non-corrosive chemicals containing wipe!

5. Users are suggested in daily operation instruments and accessories, check, to make the corresponding processing; and every half year to the instrument and accessories for full technical inspection to check out the mechanical damage and cable injury, etc.
6. Equipment and accessories service life expires, in accordance with the related electronic products waste handling requirements for processing.

5.3 Instrument cleaning

Warning!

- Turn off the power switch before cleaning equipment and cut off the AC power.

1. The instrument should be cleaned regularly, and the frequency of cleaning should be increased in areas with serious environmental pollution or large wind and sand.
2. Clean instrument surface with soft and clean cloth and appropriate amount of water
3. If there is a stain on the surface of the instrument, a proper amount of soap water can be adsorbed and wiped until the surface stain is removed.

4. After wiping, use a soft dry cloth to dry the surface.
5. Place the device in a cool, ventilated environment.
6. Light source for such as infected with dirt, besmirch, can be used without hair soft cloth or absorbent cotton dips in right amount alcohol wipe gently.
7. The light hidden cover soak with 75% alcohol for 5 minutes, then rinse it with water and dry it. If the light hidden cover is broken and faded, please replace the new light hidden cover.

Attention!

- Do not use strong detergents such as acetone.
- Prohibiting the use of such steel wire brush or metal polishing agent abrasive materials.

5.4 Storage

Equipment, such as a long time unused, should wipe clean and use dust cover to cover later; storage environment should be kept dry and ventilated.

5.5 Transport and storage

Transport: Equipment should be avoided by the pouring rain and snow hit, and

not with the corrosive substances, gases mixed cases, allow for transportation by any mode of transport.

Storage: Package the complete product should be stored in dry and ventilated, non-corrosive substances, no strong magnetic field of the storehouse.

Transport and storage environmental conditions:

- Ambient temperature: $-40 \sim 55$ °C
- Atmospheric pressure: 500 ~ 1060hpa
- Relative humidity: $\leq 95\%$

6 Trouble shooting

Analysis and trouble shootings for Common machine breakdown, see below table 6–1, if you can not determine or solve the problem, please call our after sales service center.

Table 6–1 trouble shooting

NO.	Fault phenomenon	Probable cause	Exclusion methods
1	Turn on the power switch, display window no display	Power supply system is abnormal	Check the power line connection is loose, the fuse is damaged
		Control circuit breakdown	Notice manufacturer or local agent
2	The failure of light source	not set the time correctly and start it	re–set the time and start it
		Control circuit breakdown	Notice manufacturer or local agent
		The damage of driver power supply	Notice manufacturer or local agent
		Power supply voltage is too low	Check voltage, if the voltage is too low, stop using

3	After startup, light source illumines before turning on it	Control circuit breakdown	Notice manufacturer or local agent
4	Digital display incomplete	Control circuit breakdown	Notice manufacturer or local agent

7 After Service

1. In case of any special requirements for the services, the user can consult relevant issues with the After-sales Service Center of the Company
2. Relevant technical data of the instrument can be provided to the technical service staff authorized by the Company as necessary.
3. The Company will not offer free warranty services for faults as a result of the following causes:
 - Faults due to disassembly & assembly or modification of the instrument without permission.
 - Faults due to accidental break or drop during use or handling.
 - Faults due to lack of reasonable maintenance or failure to meet the environment requirements for use.
 - Faults due to failure to conduct proper operation as required in the user manual.
 - Damage to the instrument and accessories due to human causes.
 - Faults due to maintenance without permission of the Company.
 - Faults or damage due to force majeure such as fire or earthquake.

Appendix Effective irradiance

The effective irradiance will be recorded in Table A–1.

Table A–1 effective irradiance

effective irradiance of red light (mW/cm^2)	
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Attention: The lifetime of LED light source can up to 50,000 hours. After a period of the usage of source, the value of exposure intensity will attenuate correspondingly and should be adjusted in time according to the condition (For example, every usage of 500 hours or less time, when the intensity attenuate obviously, after the replacement of source, or other any may cause the change of the exposure intensity value) of the usage of source, and should be acquired after measurement by special tools. If it's unable to determine the accuracy of the exposure intensity value, please contact the distributor or manufacturer to help you determine.

Packing List

NO.	Name	Quantity	Unit
1	Mainframe (including one treatment panel)	1	Set
2	Support rod	1	Piece
3	Decorative cover	1	Piece
4	Base	1	Piece
5	Power cord clamp	1	Piece
6	Power cord clamp fixture	1	Piece
7	Power cord	1	Piece
8	Goggles (black)	1	Piece
9	Goggles (blue)	1	Piece

10	Light hidden cover	1	Piece
11	Tools (2.5mm hex wrench,30mm Spanner, screw driver each of all)	1	Set
12	M3*8 Countersunk screw	4	Pieces
13	M3*8 Round head screw	2	Pieces
14	M20 Nut	1	Piece
15	User Manual	1	Copy
16	Certificate of conformity	1	Piece