
IPL & RF (ZK-20) System

User Manual



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Chapter 1 Summary

1.1. Introduction

This system combines advantages of the technology of bi-polar radio frequency and broad spectrum light energies, applying the conditions that the skin absorbs the light energy selectively and resists differently, on the conditions of low intensity of light energy, causing the absorption of the radio frequency. In this case, the possible side-effects such as blister, pigment imperturbation and blacken can be avoided maximally, which makes the patients feel more comfortable during the operation. By the difference of skin impedance, control RF by specific targeting areas, the RF power can penetrates 15mm depth in skin, promote the RF transmission remain a low light energy and assures patients safety and increase patient comfort.

1.1.1.Name: IPL &RF system

1.1.2. Model: (ZK-20)



1.1.3. Treatment Range

- A. Skin tightening: skin lifting and improve elasticity and tone of skin
- B. Remove light color or dark color of hair
- C. Eliminate and smooth wrinkles.
- D. Remove various kinds of pigmentation such as freckle, chloasma, aged spots, sunburn
- E. Acne treatment
- F. Skin rejuvenation, shrink pores, telangiectasis, glossiness.

1.1.4. Parameters

Light source	Intense Pulsed light + Radio Frequency
Wavelength	430-1200nm,530-1200nm,560-1200mm,590-1200nm, 640-1200nm
Spot size	15*50 mm
IPL Energy	1-50J/cm2
Pulse amount	1-15 pulse (adjustable)
First pulse width	0.1-30 ms (adjustable)
Intermission	1-50ms (adjustable)

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Sub pulse width	0.1-30 ms (adjustable)
Sub intermission	1-50 ms (adjustable)
Power supply	1000 W
Screen display	8.4" colorful touch screen
RF out power	0-50W(adjustable)
Frequency	10MHz
Cooling system	water- cooling, air-cooling, semiconductor refrigeration
Refrigeration	-3°C~+5°C
Power supply	220V/50Hz □ 110V/60Hz □

1.2. Structure

This device is composed of three parts: (1) main unit, (2) control panel, (3) IPL+RF treatment handpiece.

The control panel includes 8.4" colorful touch screen, power switch and emergency shut off switch. The screen shows the work mode and the parameters of the system.

Chapter 2 Safety

2.1. Optical safety

A. When this equipment is in operating, all personnel must wear protective goggles and the patients should wear the eye goggles.

Note:

1. Do not substitute treatment / safety goggles with other types of tinted eyewear which may not meet the specific safety requirements of the unit.

2. Moist gauze, eye goggles and closing eyes are all effective in the protection of the eyes.

B. The intense pulsed light may damage the eyes. Please observe caution at all times. Avoid looking directly into the sapphire crystal during operation even if wearing the protective goggles. When not in use keep the treatment handle on its carriage and keep the device on standby or simmer mode.

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

2.2. Electrical and mechanical safety

A. All panels and covers must be sealed, opening covers may cause dangers.

B. Dangerous high voltage is present with this equipment, some components may also store electrical charges even after power supply is disconnected; therefore, except for the technical personnel designated by our company, any other personnel is not allowed to disassemble any cover components.

C. 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.

D. All personnel who work in the treatment room must be familiar with IPL&RF control and must know how to immediately shut off this IPL&RF equipment.

E. Do not use this equipment under easily combustible or explosive environments, such as acetone or alcohol in the operative field. If alcohol based products are used to disinfect the IPL&RF device, please ensure that the alcohol has completely evaporated prior to operation.

F. Ornaments, watches, medical apparatus or mirrors must be prevented from the reflection of intense pulsed light.

G. This IPL&RF system is grounded to earth through the grounding connector of the 3-connector power supply plug, good grounding is very important to operational safety.

2.3. System safety

The key switch is used to turn the unit on and off. Please turn off the key when the unit is not in use to prevent unauthorized problems. The emergency shut 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 shut off switch in the direction indicated by the white arrows will release the button.

A 20-ampere circuit breaker is installed behind the device which is adjacent to the power cord. Loads in excess of 20 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.

2.4 User training

The IPL&RF system requires special expertise and care in its handling and use. Only personnel who have received appropriate handling training on the device 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 IPL&RF system under any circumstances.

Each user must have read and understood the User's Manual completely prior to starting the IPL&RF systems.

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.

Note:

The treatment process must be explained to the patient. The patient must give written-consent to the treatment.

Although it is difficult to specify the effect that the use of the IPL&RF will have in each therapeutic situation, it is possible to give a general overview as to what the operator might expect when using the IPL&RF:

- A. The exact effect depends on the Fluence setting, Pulse Duration, Pulse Interval, Spot Size and the skin type to treat.
- B. The IPL&RF may cause tissue damage if improperly used.
- C. Precautions, such as careful evaluation of the target tissue during treatment and the use of appropriate Fluence and Pulse Duration, should be taken.
- D. Use low Fluence and short Pulse Duration settings until fully familiar with the instrument's capabilities.
- E. Starting at low powers, the operator should note the effect on the tissue and increase Fluence or Pulse Duration until the desired effect is obtained.
- F. Some pulse duration are suggested. However the operator can fix personal protocols according to his experience and to the clinical assessment of results obtained in previous specific treatments.

2.5 Warnings

- A. Do not use IPL&RF in case of pregnancy, if you have pace makers, metallic prosthesis, electrical prosthesis, acoustical prosthesis, epilepsy, phlebitis of legs, varicose vein and diabetes.
- B. Keep the IPL&RF away from children.
- C. Every time you use the device you should hold in due consideration this warnings even if some of these will be repeated more than once.
- D. Changes and breakages, even if not considered important, the use of unoriginal or incompatible spare parts with the quality standard fixed by the manufacturer, absolve the same manufacturer from any responsibility and imply the loss of the warranty rights.
- E. The IPL&RF works with a water-cooling system and should not be stored at temperatures below -0°C otherwise the frost could damage the sys tem.
- F. The IPL&RF complies fully with European requirements for immunity to electromagnetic interference; however, this instrument may be susceptible to electromagnetic interference from such equipment as microwave, mobile phones, electro-surgical units or other high frequency generators. If such interference occurs, please do not use the device.

Chapter 3 System Description

When you received this IPL +RF system, you will see two tiers.

First tier: (Accessories)



Figure 3.1

Second tier: (Main system)



Figure 3.2

3.1. Main system



Figure 3.4

1. Control panel
2. The handpiece
3. Main unit

3.1.1. Control panel

Operation of this device is done through the control panel. It includes the following parts:

Key switch: Used to turn on and off the power supply. (Clockwise to turn on and counter

clockwise to turn off)

Emergency switch: The red button found in the front panel of the device is used to immediately shut off the device's power supply in case of any emergency. Depressing this button will cut off the power supply to the whole system. Rotating the button in the direction of the arrow printed on its surface will disengage the button and will influence the power supply. When this button is engaged remember to turn the key switch to the off position afterwards.

The screen display shows the operational settings and adjustments as well as system status is displayed on the screen.

3.1.2. The handpiece

The IPL+RF handle consists of a (1) Cable housing: this contains the power cable, liquid coolant tubing, control data cable; (2) IPL +RF head: this houses the control switch, flash lamp, sapphire crystal, filter piece and electronic semi-conductor cooling system.

Depressing the trigger on the IPL treatment head discharges the flash lamp at the settings as displayed on the control panel. Depressing the switch like-wise discharges the device (on selected models only). The supplied sapphire crystal measures 15mm x 50 mm and is superior in both clarity, thereby increasing both the efficiency of the flash lamp and lifespan of the treatment head. It is very important to keep the sapphire crystal clean. Make sure to clean this with a soft cloth after each treatment. A disinfectant such as alcohol can be used between treatments. Dried gel on the crystal filter will reduce efficiency of the flash lamp. Replace the plastic guard over the filter to prevent damage. In the event that the sapphire crystal is damaged (i.e. nicked or cracked), please contact us.

3.1.3. Main unit

The Main unit is the integral part of this system; it consists of the following parts.

1. The Power supply module: Regulates electrical supply to the entire system.
2. The Control module: Regulates and coordinates the various components of the system for optimum performance.
3. The display module: Displays various information of the system and accept users instruction.
4. High current capacitors: Delivers adequate electrical energy to guarantee sufficient power during operation.
5. Cooling system: Maintains a stable thermal environment for optimum performance.

3.2. Accessories:

The accessories of this device include:

The IPL+RF treatment head	1suit
Filter piece	5pc
Protection glasses (for operator)	1pair
Protection goggles (for patient)	1pair
Users manual	1pc
Drainage hose	1pc
Funnel	1pc
Power line	1pc
Key	2pcs

Chapter 4 Installation

4.1 Environment Requirements

1. Unpacking the IPL +RF system and keep it in the ventilate room for one day, in order to avoid destruction by high humidity during long distant transportation.
2. The IPL+RF system should be positioned in an area with adequate ventilation away from devices produce heat.
3. The IPL +IPL 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 1.2 KW. It is best that the IPL +RF unit be installed in an air-conditioned room where the relative humidity and temperature can be maintained at optimal levels.
4. Ensure the local rated voltage and the power supply of IPL +RF system before starting.

4.2 Installation

1. Place the IPL +RF system in the operation room,
2. Plug the handpiece connector firmly and properly to avoid the water circulation problem. (see figure 4.1)



Figure 4.1

3. Unplug on this ①drain tap and screw the ②ventilation screw cap to tighten. (see figure 4.2)



Figure 4.2

4. Hold the funnel insert in one of ①drain tap.
5. Infuse distilled water from ①drain tap until the water can not add inside.
6. Ensure that the key switch is in the off position and that the emergency button is not engaged. If

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it is engaged, release it by rotating the button towards the direction of the arrow indicator.

7. Attach the ③ power line and switch the ④ circuit breaker to the “On” position. At this time water circulation and the cooling system starts automatically
8. Switch the key switch at the front, and turning it in a clockwise direction.
9. After the IPL+RF system runs for at least 1 minute, observe whether the cooling system works well or not. If it works well, when you touch the sapphire on the handpiece, it is cool and frost.

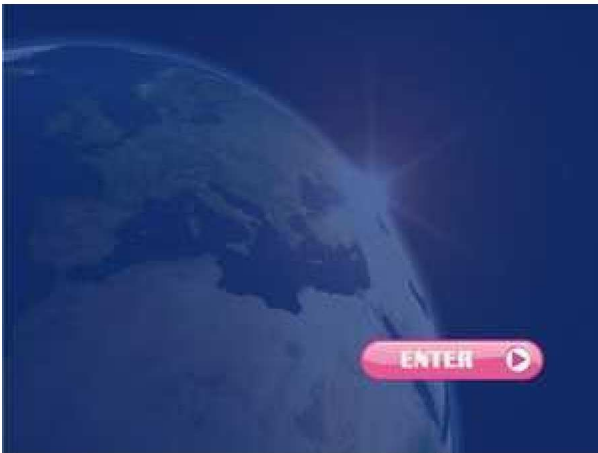
CAUTION

- a. Only distilled water is to be used in the cooling system.
- b. When using the system for the first time, rinse the cooling system with distilled water.
- c. Ensure that the system have the enough water before treatment to prevent over heating.
- d. Distilled water is added periodically specially when working in warmer climates and when the treatment handpiece are changed often.
- e. Make sure that the treatment head is firmly secured and the screw caps are firmly screwed into place prior to operation.
- f. Switch on and off several times for the first time to using the IPL system, until the handpiece is cooling.
- g. If the handpiece still not cooling, must be closed the IPL system and then contact us. Can not shot or continue turn on the IPL system, otherwise the handpiece will be molten and crack.

Chapter 5 Operation

5.1 Software operation explanation

5.1.1 Welcome display



(Figure 5.1)

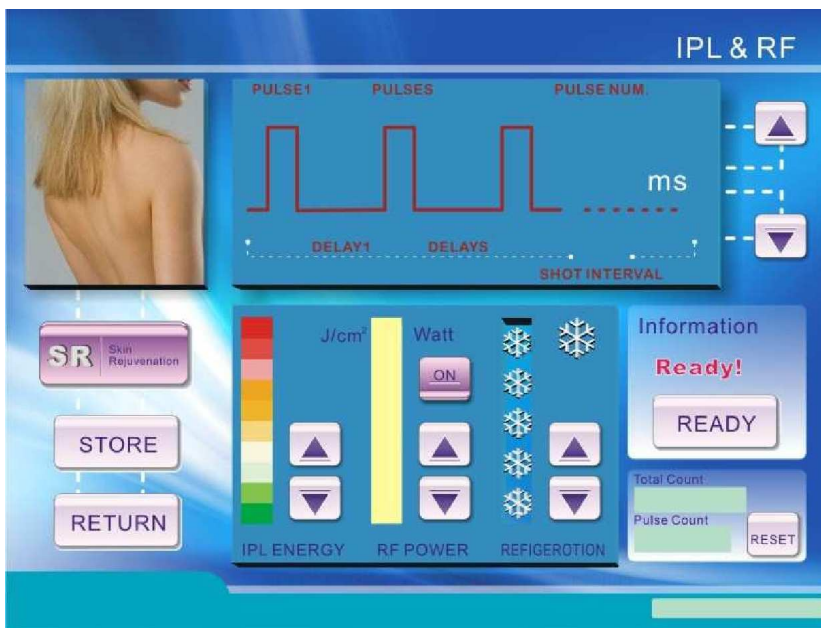


(Figure 5.2)

Turn on the key switch by turning the key switch in a clockwise direction, then the screen will show the first interface (see Figure 5.1) and press the "ENTER" to into the Mode menu (see Figure 5.2).

There are two operational Modes: **Simple Mode** and **Expert Mode**. The Simple Mode only need to adjust the IPL and RF power energy, and the Expert Mode need to adjust all parameters such as: pulse duration, delay time, pulse number, shot interval, IPL and RF power energy

5.1.2 Simple Mode



(Figure 5.3)

1. Treatment Mode Selection

Once in the Treatment Modes Selection Menu at left, press this button to choose the "SR", "HR" (see Figure 5.3).

2. Skin Color Type Selection

There are 6 different skin color types, from type 1 (white color) to type 6 (black color). Please choose the corresponding skin color type,

3. IPL Energy Selection

The total energy measured in Joules/cm². Because of the 12 x 35 spot size, the scattering effect of light is minimized. The higher power energy has the strong energy delivered to the skin. The power energy can be increased or decreased by pressing \uparrow or \downarrow button respectively. The power energy of this system can be adjusted between 0 to 50J/cm².

4. RF Energy Selection (Press "On" watt, the RF is option)

Adjust RF power among 0-15 levels and adjust refrigeration from low to high by touching icon " \blacktriangle " or " \blacktriangledown ".

5. Refrigeration selection

This is the cooling system set up (between -5°C ~+3°C), it can be increased or decreased by pressing \uparrow or \downarrow button respectively.

6. Store button

Press this button can be save you last step for these parameters.

7. Ready button

This button is control IPL function on and off. Press this button once time, it will be shows "Ready" that mean the flash lamp is simmered and brighten, it can be shoot now. And press this button twice, it will be shows "Standby" that mean the flash lamp be closed, it will be failed if shooting.

If you only like to use RF treatment, do not need to press "Ready", just press the yellow button on the handpiece, that is ok.

8. Return button

Press this button will back to the enter interface.

9. Shot count

"Total count" means the total shots for machine, this can not reset. And "pulse count" means the shot number of shooting times in every time treatment, this can be reset. When you press "reset" button, "pulse count" will reset to "0".

10. Treatments

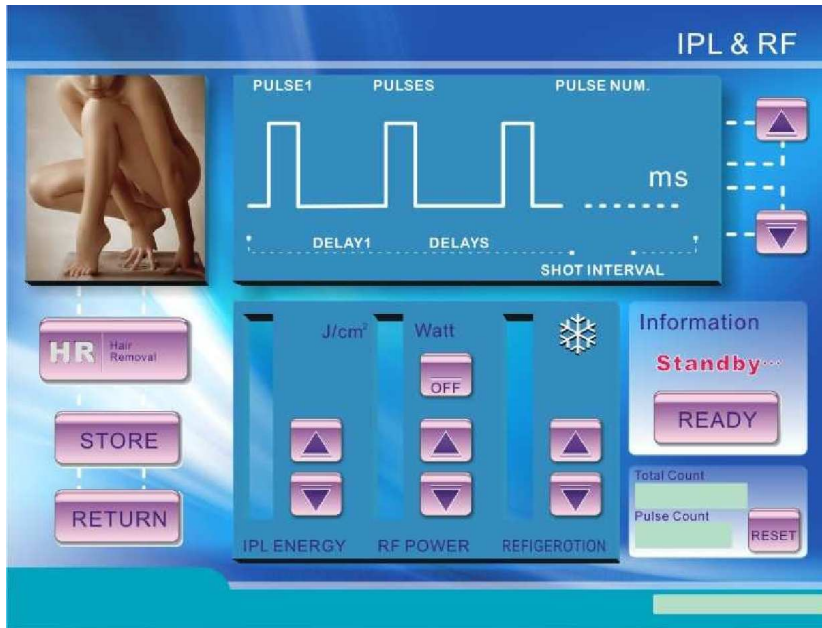
IPL&RF machine can do following 3 treatments:

1. IPL + RF, set up IPL and RF energy
2. RF only, set up RF energy, but not need to press "Ready", just press the yellow button on handpiece to do RF treatment.
3. IPL, do not press "On" button, that means RF treatment turns off, or adjust RF drive power to "0".

Note:

Please press "On" or "Off" to choose RF function ye s or no.

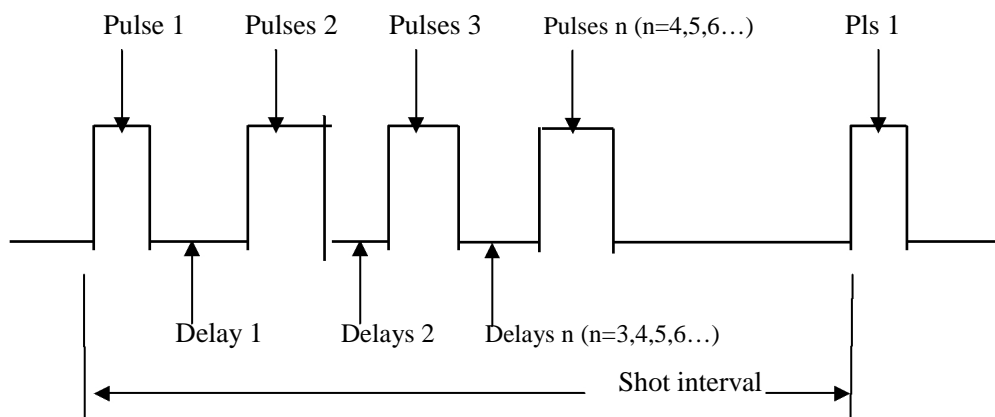
5.1.3 Expert Mode



(Figure 5.4)

It is the same operation as "Simple Mode", only need to Press "**Pulse1**" / "**Pulses**" / "**Delay1**" / "**Delays**" / "**Pulse Number**" or "**shot interval**" first, and then press or to set up the parameters then these button change to red color. Please read these instructions by following each buttons.

The pulse sketch map:



Pulse number can be adjusted between 1 up to 15 pulses. Because the power of the system can be divided into a series of pulses (unlike the previous generation of IPL units), the treatment is less painful and more effective in patients with darker skin types. Please press or to set up pulse number.

Pulse Duration (Pulse1 and Pulses n) can be adjusted between 0.1 up to 30ms. This is the length of time that the skin is exposed to the pulse of light. The larger or darker the lesion, the longer it will take to heat up as compared to smaller lesions or those with less pigment. Please press or to set up pulse1 and pulses.

Pulse Delay (Delay1 and Delays n) can be adjusted between 1 up to 50ms. This is the resting phase between pulses (i.e. between first and second pulses) this delay or rest phase allows the surrounding normal epidermis to cool down prior to initiating the next pulse. Press or to set

Shot interval can be adjusted between 1 up to 5s. This is the delay time of each shots, it means the discharge time of power supply. Press Δ to set up shot interval.

5.1.4 Turn off machine

After completing the treatment, customer must be sure the “Ready” information area shows “Standby”. And please ensure the active treatment phase was terminated and disengage the flash lamp. Then turn off the unit by turning the key counter clockwise. Please note that by going on standby mode and turn off machine, the service lifespan of the treatment handle is maximized.

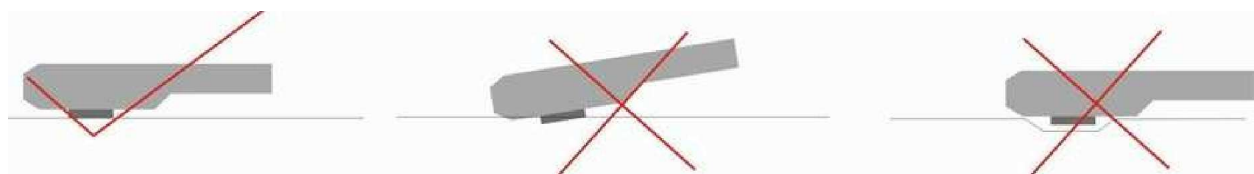
5.2 Treatment operation

5.2.1 Prior to treatment:

1. The operator must first get a detailed information, rule out any disorders that may contraindicate this treatment and finally physically inspect the treatment area.
2. Avoid sunlight / artificial UV light exposure 3-4 weeks prior to treatment by patient.
3. Cosmetics should be removed with non-alcohol containing neutral cleansing milk.
4. The operator must patiently explain to patient the advantages of IPL system, clarify and confirm patient’s expectations.
5. If for hair removal, all hair must be shaving.
6. The operator must wear protective goggles, and the patients should ware the eye –shield.

5.2.2 Treating process:

1. Apply a thin layer (2-3 mm) of cold gel over the entire treatment area.
2. Start the machine, processing step by step (see Chapter 5.1) and adjust the parameters.
3. While exerting light pressure, approximate the treatment head perpendicularly over the treatment area.



(Figure 5.5)

4. Press the Trigger button on the treatment handle to begin treatment.

5.3 After treatment:

1. Remove the gel from the previously treated area after 10-15 minutes.

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2. Copy the treatment parameters to the patients record sheet in each treatment.
3. Avoid use of cosmetics for 24 hours after each treatment.
4. Avoid sun exposure after each treatment, recommended for at least 15 days after the treatment. And use SPF 30 sun block to protection.
5. Pre and postoperative photographic documentation is recommended if possible.

CAUTION

- a. The light generated by this IPL system is very intense. Exercise optical safety measures by wearing the protective goggles. Avoid looking directly into the treatment area during operation even when wearing the goggles.
- b. Only professional personnel with appropriate training may operate this machine. 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.
- c. The continuous use of IPL can lead to a heat block due to overheating.

Chapter 6 Clinical Application

6.1 Contraindications

- Inflammatory dermatosis
- Cutaneous Infections
- Immune system defect
- History of keloid formation
- Psychologically ill patients or has had the high expectations
- Pregnancy
- Skin cancer
- Bleeding disorders
- Infected wounds
- Photosensitiveness skin
- On medication known to cross-react to light

6.2 Complications

Potential complications may be encountered in IPL procedures, in particular if inappropriate IPL settings are used. It is very important to advise the patient that during the treatment some complications may occur:

- **Pain and Stinging**

The Xenon flash lamp produces an intense beam of light that generates heat and is precisely modulated by computers and filters. The use of the built in cooling semiconductor as well as the application of cool coupling gel diminishes discomfort during treatment.

The sensation of this heat is compared to that of being flicked with a rubber band. Any residual sensation post treatment is kept to a minimum by applying cold packs left on for 5 to 10 minutes.

- **Edema and Erythema**

Some transient swelling and erythema can occur especially during photo rejuvenation. This is normally transient and can be treated with cool compresses (5 to 10 minutes) and mid-potent topical steroids such as betamethasone valerate or mometasone furoate can be applied for 1 to 2 days.

- **Crusting and Scab**

Scab formation after treatment can occur particularly if (1) a greater than amount of power/fluence has been used. (2) For the treatment of pigmented lesions, sometimes the only way to treat pigmentation is to physically destroy the pigment containing structures. By doing so, vesicle formation and scab formation is expected. It is advised to place cool packs after treatment and to apply an antibiotic ointment over the treated area until the scab has fallen off.

- **Hyper or Hypo – pigmentation**

Post treatment darkening of target lesions can occur. This is particularly expected for the treatment of pigmented lesions. In a few days to weeks, the scab will fall off.

During the treatment, the patient should always report every sensation.

There is possibility of adverse effects:

- Hypo or hyperpigmentation may occur if the client has had sun exposure within less than 4 weeks before and after treatment.
- Burn marks on the skin may occur if the client was not properly shaved before treatment, or operator applied too much energy on the treated area.
- Blisters and / or hypo or hyperpigmentation may occur when treating dark skin without precautions.
- Zebra stripes may occur if you are treating a client using too much gel and the light is flashing out from the sides of the applicator or when not being careful about overlapping when treating the client.



This is an example of poor preparation and technique. Settings too high & spot location too random

(Figure 6.1)

A course of regular treatments followed by maintenance sessions is required to manage a hair growth concern. How often the initial regular treatments are will depend on body area, previous hair removal and speed of re-growth. How often the maintenance treatments are will depend on hormonal influences, individual response and body area. Body areas are easier to successfully treat as there is less likely to be much hormonal influence. Facial hair is the hardest to eliminate.

The treatment, the patient should always report every sensation.

6.3 Treatment Evaluation

6.3.1 Areas able to be treated

Hair removal	Pigmentation
<ul style="list-style-type: none"> • Female facial hair (upper lips, chin, cheeks, neck) avoid lips mucous area • Male facial hair (upper cheeks, neck) • Front neck and back neck • Chest area but avoid nipple and areola • Abdomen and back • Arms, shoulder area, upper arms, lower forearm, under-arms • Buttocks • Bikini/pubic area but not inner labia • Legs upper and lower • Backs of hands and fingers • Upper feet and toes 	Vascular area
	<ul style="list-style-type: none"> • Back of hands • Back forearms • Decolletage • Face • Cheeks • Nose • Chin • Neck • Decolletage • Legs (limited results)
Acne	Rejuvenation
<ul style="list-style-type: none"> • Full face • Neck • Decolletage • Back • Legs (limited results) 	<ul style="list-style-type: none"> • Full face • Neck • Decolletage • Back of hands

Areas unable to be treated:

- Under eyebrows
- Nostrils
- Inner ears
- Inner labia
- Scrotum/ penis

6.3.2 Conditions which can be treated

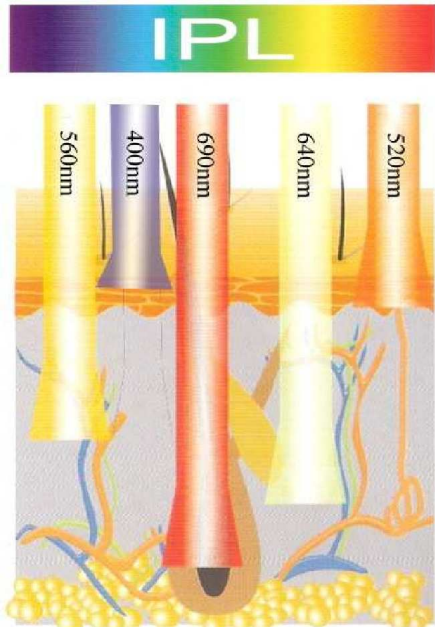
Hair removal:	Pigmentation conditions:
<ul style="list-style-type: none"> • facial hair • Chest, abdomen and back hair • Bikini/pubic hair under-arms, • shoulder, lower forearm hair • Buttock and leg hair 	<ul style="list-style-type: none"> • Sun damaged hyperpigmentation • Molted pigmentation • Lentigines • Ephelides (freckles)
Vascular conditions:	Rejuvenation:
<ul style="list-style-type: none"> • Diffuse redness • Rosacea • Telangiectasia 	<ul style="list-style-type: none"> • Skin texture • Pore size • Elasticity • polish
Acne conditions:	
<ul style="list-style-type: none"> • P. Acne bacteria • Affected acne 	

6.3.3 Skin Evaluation

Skin Type	Color	Reaction to UVA	Reaction to Sun
Type I	Pure Caucasian	Very Sensitive	Very rarely burns, tans very easily; olive or dark skin tone
Type II	Darker Caucasian, Scandinavian	Sensitive	Rarely burns, always tans well; medium skin tone
Type III	light Asian, Mediterranean,	Moderately Sensitive	Burns moderately, tans gradually; fair to medium skin tone
Type IV	Asian, Hispanic	Little Sensitive	Usually burns easily, tans with difficulty; fair skin tone
Type V	Middle Eastern, Latin, Indian, Malayan	Little Sensitive	always burns easily, tans with difficulty; fair skin tone
Type VI	Negro	Minimally Sensitive	Always burns easily, never tans; very fair skin

6.3.4 Wavelength range

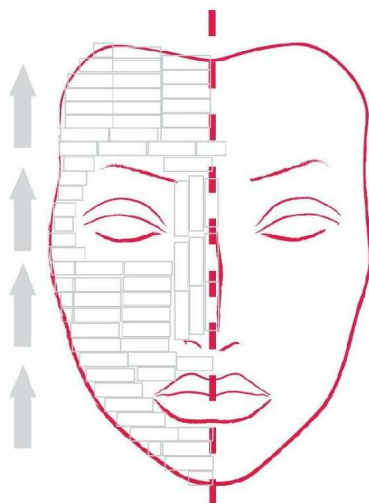
Wavelength range	Function
420-1200nm	acne
510-1200nm	pigmentation removal
560-1200nm	skin rejuvenation, coarse pore treatment, promote skin elasticity
610-1200nm	telangiectasia treatment
640-1200nm	dark hair removal



(Figure 6.2)

6.4 Operation direction

6.4.1 For the face



(Figure 6.3)

1. Mark off two side of face, from one side to anther side.
2. Start from chin to forehead.
3. must be inerratic array every shots.

6.4.2 For the body:

1. It should start from the underside to top for all parts.
2. Every shots must be in inerratic array.

6.4.3 Parameters characteristic:

Skin status	Activity
The darker skin	1. Decrease the power energy
	2. Increase the pulse delay (allow more cooling)
The lighter the skin	1. Increase the power energy
	2. Decrease the pulse delay
The darker the hair / pigmented lesion	1. Decrease the power energy
	2. Increase the pulse delay (allow more cooling)
The lighter the hair / pigmented lesion	1. Increase the power energy
	2. Decrease the pulse delay
Fine blood vessels	1. Increase the power energy
	2. Decrease the pulse delay
	3. Decrease the pulse width
Thicker blood vessels	1. Decrease the power energy
	2. Increase pulse delay (allow more cooling)
	3. Increase the pulse width
The smaller the target size / lesion	1. Decrease pulse delay
The larger the target size / lesion	1. Increase pulse delay (allow more cooling)
Bony prominences (forehead, malar area, shins)	1. Decrease the power energy by 10-20%

6.5 Before and after Clinical pictures



(before hair removal)



(after hair removal)



(before pigment removal)



(after pigment removal)



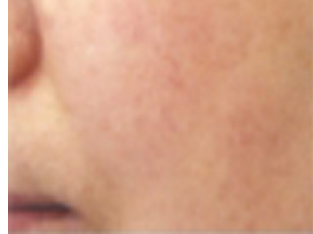
(before skin rejuvenation)



(after skin rejuvenation)



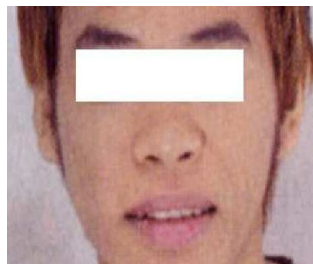
(Before telangiectasia treatment)



(after telangiectasia treatment)



(Before acne treatment)



(after acne treatment)

Chapter 7 Repair and Maintenance

7.1 Daily maintenance

1. Clean the Sapphire crystal: to be wiped clean with cotton stick soaked in alcohol each time after treatment;
2. Every while after this equipment is used, distilled water must be replaced about once in a month;
3. The IPL system must be clean with a soft damp cloth. A mild detergent could be used but be cautious as not to let liquids from entering the units internal mechanism.
4. This equipment must not be disassembled by any unauthorized personnel.

7.2 General Trouble solve

No power	Check power cable
	Check circuit breaker / fuse
	Check key switch
	Disengage the emergency cut off switch by rotating towards the direction of the arrows indicated
	Notify your distributor
Key pads are none responsive	Please contact us
System failed to initialize	Not enough power, please check main power supply and contact us
Malfunction of flash lamp on the handpiece	The flash lamp has reached its maximum life 80,000 shots, Replace the flash lamp.
	The IPL treatment head is probably damaged, please change the IPL treatment head or contact the dealer
The sapphire is warm	Some air in the cooling system, please off the key switch several times
	The system is designed for continued used for up 3 hours in optimal environmental temperature and humidity
	Contact us
The power of the IPL handpiece has wakened	The handpiece has nearly reached its life after 40,000 shots, so the fluence can be adjusted by a few joules to compensate

Annex A IPL treatment parameters

Application: For 8.4" colorful touch screen only

1. For Hair removal

Step 1: Choose the program "HR", and insert: 640-1200 fliter

Step 2: Input the parameters as shown in the table below:

Skin Type	Number of Pulses	Discharge interval	Pulse1	Delay 1	Pulses	Delays	Energy power (J/cm ²)	Number of treatments needed	Treatment Interval
I	7	4	12.0 - 14.0	13	9.0 - 12	13	30 - 40	6	30 - 45 days
II	6	4	9.0 - 11.0	13	8.0 - 10.0	13	25 - 35	6	30 - 45 days
III	6	4	7.0 - 9.0	13	6.0 - 8.0	13	20 - 30	6	30 - 45 days
IV	5	4	5.0 - 6.0	10	4.5 - 5.5	10	15 - 25	5	30 - 45 days
V	4	4	4.0 - 5.0	10	3.5 - 4.5	10	10 - 20	5	30 - 45 days
VI	3	4	3.0 - 4.0	10	2.5 - 3.5	10	7 - 15	4	30 - 45 days

Skin Type	Color	Reaction to UVA	Reaction to Sun
Type I	Pure Caucasian	Very Sensitive	Very rarely burns, tans very easily; olive or dark skin tone
Type II	Darker Caucasian, Scandinavian	Sensitive	Rarely burns, always tans well; medium skin tone
Type III	light Asian, Mediterranean,	Moderately Sensitive	Burns moderately, tans gradually; fair to medium skin tone
Type IV	Asian, Hispanic	Little Sensitive	Usually burns easily, tans with difficulty; fair skin tone
Type V	Middle Eastern, Latin, Indian, Malayan	Little Sensitive	always burns easily, tans with difficulty; fair skin tone
Type VI	Negro	Minimally Sensitive	Always burns easily, never tans; very fair skin

Note:

1. These parameters only as a reference and shouldn't be deemed to be absolute.
2. Observations of the skin reaction is crucial to the success of the treatment.

2. For pigmentation removal

Step 1: Choose the program “SR”, and insert 510-1200nm filter

Step 2: Input the parameters as shown in the table below:

Skin Type	Number of Pulses	Discharge interval	Pulse1	Delay 1	Pulses	Delays	Energy power (J/cm ²)	Number of treatments needed	Treatment Interval
I	6	3	10.0 - 12.0	10	9.0 - 11.0	10	28 - 40	5	20 - 30 days
II	5	3	8.0 - 10.0	10	7.0 - 9.0	10	25 - 35	5	20 - 30 days
III	5	3	7.0 - 9.0	10	6.0 - 8.0	10	20 - 30	5	20 - 30 days
IV	4	3	5.0 - 7.0	10	4.0 - 6.0	10	15 - 30	4	20 - 30 days
V	4	3	4.0 - 5.0	10	3.0 - 4.0	10	10 - 20	4	20 - 30 days
VI	3	3	3.0 - 4.0	10	2.5 - 3.5	10	7 - 15	4	20 - 30 days

Skin Type	Color	Reaction to UVA	Reaction to Sun
Type I	Pure Caucasian	Very Sensitive	Very rarely burns, tans very easily; olive or dark skin tone
Type II	Darker Caucasian, Scandinavian	Sensitive	Rarely burns, always tans well; medium skin tone
Type III	light Asian, Mediterranean,	Moderately Sensitive	Burns moderately, tans gradually; fair to medium skin tone
Type IV	Asian, Hispanic	Little Sensitive	Usually burns easily, tans with difficulty; fair skin tone
Type V	Middle Eastern, Latin, Indian, Malayan	Little Sensitive	always burns easily, tans with difficulty; fair skin tone
Type VI	Negro	Minimally Sensitive	Always burns easily, never tans; very fair skin

Note:

These parameters only as a reference and shouldn't be deemed to be absolute.

Observations of the skin reaction is crucial to the success of the treatment.

3. For Skin Rejuvenation

Step 1: Choose the program “SR”, and insert: 560-1200nm filter

Step 2: Input the parameters as shown in the table below:

Skin Type	Number of Pulses	Discharge interval	Pulse1	Delay 1	Pulses	Delays	Energy power (J/cm2)	Number of treatments needed	Treatment Interval
I	5	3	8.5 - 10.0	10	8.0-9.0	10	26 - 36	4	15 - 25 days
II	4	3	7.5 - 8.5	10	7.0-8.0	10	22 - 30	4	15 - 25 days
III	4	3	6.5 - 7.5	10	6.0-7.0	10	18 - 28	4	15 - 25 days
IV	3	3	5.5 - 6.5	10	5.0-6.0	10	12 - 25	4	15 - 25 days
V	3	3	3.5 - 5.0	10	3.0 - 4.0	10	8 - 16	4	15 - 25 days
VI	2	3	3.0 - 4.0	10	2.5-3.5	10	5-13	4	15 - 25 days

Skin Type	Color	Reaction to UVA	Reaction to Sun
Type I	Pure Caucasian	Very Sensitive	Very rarely burns, tans very easily; olive or dark skin tone
Type II	Darker Caucasian, Scandinavian	Sensitive	Rarely burns, always tans well; medium skin tone
Type III	light Asian, Mediterranean,	Moderately Sensitive	Burns moderately, tans gradually; fair to medium skin tone
Type IV	Asian, Hispanic	Little Sensitive	Usually burns easily, tans with difficulty; fair skin tone
Type V	Middle Eastern, Latin, Indian, Malayan	Little Sensitive	always burns easily, tans with difficulty; fair skin tone
Type VI	Negro	Minimally Sensitive	Always burns easily, never tans; very fair skin

Note:

1. These parameters only as a reference and shouldn't be deemed to be absolute.
2. Observations of the skin reaction is crucial to the success of the treatment.

4. For Vascular treatment

Step 1: Choose the program “SR”, and insert:610-1200nm fliter

Step 2: Input the parameters as shown in the table below:

Skin Type	Number of Pulses	Discharge interval	Pulse1	Delay 1	Pulses	Delays	Energy power (J/cm2)	Number of treatments needed	Treatment Interval
I	5	3	10.0 - 12.0	8	9.0 - 11.0	8	26 - 36	6	20 -30 days
II	4	3	8.0 - 10.0	8	7.0 - 9.0	8	22 - 30	5	20 -30 days
III	4	3	7.0 - 9.0	8	6.0 - 8.0	8	18 - 28	5	20 -30 days
IV	3	3	5.0 - 7.0	8	4.0 - 6.0	8	12 - 25	4	20 -30 days
V	3	3	4.0 - 5.0	8	3.0 - 4.0	8	8 - 16	3	20 -30 days
VI	2	3	3.0 - 4.0	8	2.5 - 3.5	8	5-13	3	20 -30 days

Skin Type	Color	Reaction to UVA	Reaction to Sun
Type I	Pure Caucasian	Very Sensitive	Very rarely burns, tans very easily; olive or dark skin tone
Type II	Darker Caucasian, Scandinavian	Sensitive	Rarely burns, always tans well; medium skin tone
Type III	light Asian, Mediterranean,	Moderately Sensitive	Burns moderately, tans gradually; fair to medium skin tone
Type IV	Asian, Hispanic	Little Sensitive	Usually burns easily, tans with difficulty; fair skin tone
Type V	Middle Eastern, Latin, Indian, Malayan	Little Sensitive	always burns easily, tans with difficulty; fair skin tone
Type VI	Negro	Minimally Sensitive	Always burns easily, never tans; very fair skin

Note:

1. These parameters only as a reference and shouldn't be deemed to be absolute.
2. Observations of the skin reaction is crucial to the success of the treatment.

5. For Acne treatment

Step 1: Choose the program “Acne therapy”, insert: 420-1200nm filter

Step 2: Input the parameters as shown in the table below:

Skin Type	Number of Pulses	Discharge interval	Pulse1	Delay 1	Pulses	Delays	Energy power (J/cm2)	Number of treatments needed	Treatment Interval
I	4	3	6.0 - 7.0	8	5.5 - 6.5	8	25 -35	6	20 -30 days
II	4	3	5.5 - 6.5	8	5.0 - 6.0	8	20 - 30	6	20 -30 days
III	3	3	5.0 - 6.0	8	4.5 - 5.5	8	16 - 25	6	20 -30 days
IV	3	3	4.0 - 5.0	8	3.5 - 4.5	8	12 - 25	5	20 -30 days
V	2	3	3.5 - 4.5	8	3.0 - 4.0	8	8 - 16	5	20 -30 days
VI	2	3	2.5-3.5	8	2.0 - 3.0	8	5-12	5	20 -30 days

Skin Type	Color	Reaction to UVA	Reaction to Sun
Type I	Pure Caucasian	Very Sensitive	Very rarely burns, tans very easily; olive or dark skin tone
Type II	Darker Caucasian, Scandinavian	Sensitive	Rarely burns, always tans well; medium skin tone
Type III	light Asian, Mediterranean,	Moderately Sensitive	Burns moderately, tans gradually; fair to medium skin tone
Type IV	Asian, Hispanic	Little Sensitive	Usually burns easily, tans with difficulty; fair skin tone
Type V	Middle Eastern, Latin, Indian, Malayan	Little Sensitive	always burns easily, tans with difficulty; fair skin tone
Type VI	Negro	Minimally Sensitive	Always burns easily, never tans; very fair skin

Note:

1. These parameters only as a reference and shouldn't be deemed to be absolute.
2. Observations of the skin reaction is crucial to the success of the treatment.

Annex B (IPL+RF treatment parameters)

RF energy setting up: 15 levels, 11-14 levels are recommended with IPL treatment together as following:

Application: For 8.4" colorful touch screen only

1.For Hair removal

Step 1: Choose the program "HR", and insert: 640-1200 fliter

Step 2: Input the parameters as shown in the table below:

Skin Type	Number of Pulses	Discharge interval	Pulse1	Delay 1	Pulses	Delays	Energy power (J/cm ²)	Number of treatments needed	Treatment Interval
I	7	4	12.0 - 14.0	13	9.0 - 12	13	30 - 40	6	30 - 45 days
II	6	4	9.0 - 11.0	13	8.0 - 10.0	13	25 - 35	6	30 - 45 days
III	6	4	7.0 - 9.0	13	6.0 - 8.0	13	20 - 30	6	30 - 45 days
IV	5	4	5.0 - 6.0	10	4.5 - 5.5	10	15 - 25	5	30 - 45 days
V	4	4	4.0 - 5.0	10	3.5 - 4.5	10	10 -20	5	30 - 45 days
VI	3	4	3.0 -4.0	10	2.5-3.5	10	7-15	4	30 - 45 days

Skin Type	Color	Reaction to UVA	Reaction to Sun
Type I	Pure Caucasian	Very Sensitive	Very rarely burns, tans very easily; olive or dark skin tone
Type II	Darker Caucasian, Scandinavian	Sensitive	Rarely burns, always tans well; medium skin tone
Type III	light Asian, Mediterranean,	Moderately Sensitive	Burns moderately, tans gradually; fair to medium skin tone
Type IV	Asian, Hispanic	Little Sensitive	Usually burns easily, tans with difficulty; fair skin tone
Type V	Middle Eastern, Latin, Indian, Malayan	Little Sensitive	always burns easily, tans with difficulty; fair skin tone
Type VI	Negro	Minimally Sensitive	Always burns easily, never tans; very fair skin

Note:

1. These parameters only as a reference and shouldn't be deemed to be absolute.
2. Observations of the skin reaction is crucial to the success of the treatment.

2.For pigmentation removal

IPL&RF ZK-20 system user manual

Step 1: Choose the program “SR”, and insert 510-1200nm filter

Step 2: Input the parameters as shown in the table below:

Skin Type	Number of Pulses	Discharge interval	Pulse1	Delay 1	Pulses	Delays	Energy power (J/cm2)	Number of treatments needed	Treatment Interval
I	6	3	10.0 - 12.0	10	9.0 - 11.0	10	28 - 40	5	20 - 30 days
II	5	3	8.0 - 10.0	10	7.0 - 9.0	10	25 - 35	5	20 - 30 days
III	5	3	7.0 - 9.0	10	6.0 - 8.0	10	20 - 30	5	20 - 30 days
IV	4	3	5.0 - 7.0	10	4.0 - 6.0	10	15 - 30	4	20 - 30 days
V	4	3	4.0 - 5.0	10	3.0 - 4.0	10	10 - 20	4	20 - 30 days
VI	3	3	3.0 - 4.0	10	2.5 - 3.5	10	7 -15	4	20 - 30 days

Skin Type	Color	Reaction to UVA	Reaction to Sun
Type I	Pure Caucasian	Very Sensitive	Very rarely burns, tans very easily; olive or dark skin tone
Type II	Darker Caucasian, Scandinavian	Sensitive	Rarely burns, always tans well; medium skin tone
Type III	light Asian, Mediterranean,	Moderately Sensitive	Burns moderately, tans gradually; fair to medium skin tone
Type IV	Asian, Hispanic	Little Sensitive	Usually burns easily, tans with difficulty; fair skin tone
Type V	Middle Eastern, Latin, Indian, Malayan	Little Sensitive	always burns easily, tans with difficulty; fair skin tone
Type VI	Negro	Minimally Sensitive	Always burns easily, never tans; very fair skin

Note:

1. These parameters only as a reference and shouldn't be deemed to be absolute.
2. Observations of the skin reaction is crucial to the success of the treatment.

3.For Skin Rejuvenation

Step 1: Choose the program “SR”, and insert: 560-1200nm filter

Step 2: Input the parameters as shown in the table below:

Skin Type	Number of Pulses	Discharge interval	Pulse1	Delay 1	Pulses	Delays	Energy power (J/cm2)	Number of treatments needed	Treatment Interval
I	5	3	8.5 - 10.0	10	8.0-9.0	10	26 - 36	4	15 - 25 days
II	4	3	7.5 - 8.5	10	7.0-8.0	10	22 - 30	4	15 - 25 days
III	4	3	6.5 - 7.5	10	6.0-7.0	10	18 - 28	4	15 - 25 days
IV	3	3	5.5 - 6.5	10	5.0-6.0	10	12 - 25	4	15 - 25 days
V	3	3	3.5 - 5.0	10	3.0 - 4.0	10	8 - 16	4	15 - 25 days
VI	2	3	3.0 - 4.0	10	2.5-3.5	10	5-13	4	15 - 25 days

Skin Type	Color	Reaction to UVA	Reaction to Sun
Type I	Pure Caucasian	Very Sensitive	Very rarely burns, tans very easily; olive or dark skin tone
Type II	Darker Caucasian, Scandinavian	Sensitive	Rarely burns, always tans well; medium skin tone
Type III	light Asian, Mediterranean,	Moderately Sensitive	Burns moderately, tans gradually; fair to medium skin tone
Type IV	Asian, Hispanic	Little Sensitive	Usually burns easily, tans with difficulty; fair skin tone
Type V	Middle Eastern, Latin, Indian, Malayan	Little Sensitive	always burns easily, tans with difficulty; fair skin tone
Type VI	Negro	Minimally Sensitive	Always burns easily, never tans; very fair skin

Note:

3. These parameters only as a reference and shouldn't be deemed to be absolute.
4. Observations of the skin reaction is crucial to the success of the treatment.

4. For Vascular treatment

Step 1: Choose the program “SR”, and insert:610-1200nm fliter

Step 2: Input the parameters as shown in the table below:

Skin Type	Number of Pulses	Discharge interval	Pulse1	Delay 1	Pulses	Delays	Energy power (J/cm2)	Number of treatments needed	Treatment Interval
I	5	3	10.0 - 12.0	8	9.0 - 11.0	8	26 - 36	6	20 -30 days
II	4	3	8.0 - 10.0	8	7.0 - 9.0	8	22 - 30	5	20 -30 days
III	4	3	7.0 - 9.0	8	6.0 - 8.0	8	18 - 28	5	20 -30 days
IV	3	3	5.0 - 7.0	8	4.0 - 6.0	8	12 - 25	4	20 -30 days
V	3	3	4.0 - 5.0	8	3.0 - 4.0	8	8 - 16	3	20 -30 days
VI	2	3	3.0 - 4.0	8	2.5 - 3.5	8	5-13	3	20 -30 days

Skin Type	Color	Reaction to UVA	Reaction to Sun
Type I	Pure Caucasian	Very Sensitive	Very rarely burns, tans very easily; olive or dark skin tone
Type II	Darker Caucasian, Scandinavian	Sensitive	Rarely burns, always tans well; medium skin tone
Type III	light Asian, Mediterranean,	Moderately Sensitive	Burns moderately, tans gradually; fair to medium skin tone
Type IV	Asian, Hispanic	Little Sensitive	Usually burns easily, tans with difficulty; fair skin tone
Type V	Middle Eastern, Latin, Indian, Malayan	Little Sensitive	always burns easily, tans with difficulty; fair skin tone
Type VI	Negro	Minimally Sensitive	Always burns easily, never tans; very fair skin

Note:

5. These parameters only as a reference and shouldn't be deemed to be absolute.
6. Observations of the skin reaction is crucial to the success of the treatment.

5.For Acne treatment

Step 1: Choose the program “Acne therapy”, insert: 420-1200nm filter

Step 2: Input the parameters as shown in the table below:

Skin Type	Number of Pulses	Discharge interval	Pulse1	Delay 1	Pulses	Delays	Energy power (J/cm2)	Number of treatments needed	Treatment Interval
I	4	3	6.0 - 7.0	8	5.5 - 6.5	8	25 -35	6	20 -30 days
II	4	3	5.5 - 6.5	8	5.0 - 6.0	8	20 - 30	6	20 -30 days
III	3	3	5.0 - 6.0	8	4.5 - 5.5	8	16 - 25	6	20 -30 days
IV	3	3	4.0 - 5.0	8	3.5 - 4.5	8	12 - 25	5	20 -30 days
V	2	3	3.5 - 4.5	8	3.0 - 4.0	8	8 - 16	5	20 -30 days
VI	2	3	2.5-3.5	8	2.0 - 3.0	8	5-12	5	20 -30 days

Skin Type	Color	Reaction to UVA	Reaction to Sun
Type I	Pure Caucasian	Very Sensitive	Very rarely burns, tans very easily; olive or dark skin tone
Type II	Darker Caucasian, Scandinavian	Sensitive	Rarely burns, always tans well; medium skin tone
Type III	light Asian, Mediterranean,	Moderately Sensitive	Burns moderately, tans gradually; fair to medium skin tone
Type IV	Asian, Hispanic	Little Sensitive	Usually burns easily, tans with difficulty; fair skin tone
Type V	Middle Eastern, Latin, Indian, Malayan	Little Sensitive	always burns easily, tans with difficulty; fair skin tone
Type VI	Negro	Minimally Sensitive	Always burns easily, never tans; very fair skin

Note:

7. These parameters only as a reference and shouldn't be deemed to be absolute.
8. Observations of the skin reaction is crucial to the success of the treatment.

6.RF treatment only

Parameters setting up: RF treatment is not limited for what type of skin or what kind of treatment, the W adjustable is per as customer's sensitive to heat, it is adjusted from 5-10 levels, please communicate with customer which heat is comfortable for them , which is good way.

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