



# FUTANSI



— 复坦希科技 —



UVSP81T



UVLN81T



UVSF81T

UVLED curing systems








F-UVSP81T UVLN81T UVSF81T

TOUCH series user manual

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<b>Safety Warnings</b>		<b>PLEASE OBSERVE THE FOLLOWING ITEMS WHEN USING THE PRODUCT!</b>	
 <b>notice</b>		 <b>warning</b>	
 <p>forbid</p> <p>No liquid, combustible, metal or other foreign matter can enter the product. Otherwise, this product will have abnormal fever and smoke. Construction (wiring, disassembly, etc.) shall not be carried out under the state of power supply being switched on. It could lead to an electric shock. Do not place items on this product which may cause ventilation blockage. Otherwise, it will be burnt due to heating. Do not touch with bare hands during or after irradiation. Otherwise, burns may be caused by the high temperature.</p>	 <p>forbid</p> <p>Do not use this product in the environment of combustible gas. Otherwise, it may cause an explosion. Do not put this product in the fire. Otherwise, it will lead to the rupture of electronic components and so on. When the LED is on, do not look directly at direct light or reflected light, or cause it to shine on the skin. Otherwise it may cause eye or skin damage or inflammation.</p>	 <p>Be sure to comply</p> <p>Please use within the guaranteed features and performance range of this product. Exceeding the guaranteed performance limits will result in damage. Do not touch the terminal when powered on. It could lead to an electric shock. Please connect the wires, connectors, etc. Otherwise, it may lead to abnormal fever and smoke of the product. Do not use input power outside the specification scope. Otherwise, it may result in burning. Please ground the earth properly. Otherwise it may cause electric shock or misoperation. Do not use in places where the temperature changes violently and condensation occurs. Otherwise it will cause a failure. Do not use in places with violent vibration or impact. Otherwise it will cause a failure.</p>	 <p>Be sure to comply</p> <p>When installing the body, please avoid exposing the human body to LED-UV light. Exposure to LED-UV light may cause skin damage or inflammation. If exposure to LED-UV light and UV reflected light is possible, cover with a case that blocks UV light with appropriate transmittance and thermal properties. Be sure to wear goggles and protective equipment during installation and operation. Otherwise it may cause eye or skin damage or inflammation. The radiation produced by the host machine contains UV light with a wavelength of 385nm or 395nm. So be sure to use UV light protection goggles. Be sure to clean the LED irradiation head when the power is cut off. Cleaning while powered may cause eye or skin damage or inflammation. It could also cause an electric shock.</p>
	 <p>Ban decomposition</p> <p>Do not disassemble, modify. Failure to do so may result in an accident, injury or electric shock. Otherwise, this product will have abnormal fever and smoke. Exposure to LED-UV light may cause eye or skin damage or inflammation.</p>		

UVLED be careful when using the product:

#### ■ General Notes

☞ Please use the products designated and recommended by our company when connecting the cable of the device. When causing damages by using products designated and recommended by non-our-company, it will not covered by the warranty.

☞ The additional connecting wire and LED irradiation head can be used or bent. Under standard experimental conditions, the bending performance of cable are satisfied. While the performance under any conditions under its actual use cannot be guaranteed.

☞ Do not disassemble, modify the internal settings. If disassembling and modification caused any problems, which will not be covered by the warranty.

#### ■ Installation environment

☞ environmental temperature 0°C- +45°C ( non-freezing ) ☞ environmental temperature 30% -85%RH ( noncondensable )

☞ In the place of no dust, soot, conductive dust, corrosive, flammable gas, salt, iron, etc. ☞ Places that do not touch water, oil, medicine, etc.

☞ Places of no violent temperature changes, vibrations and impact. ☞ a place without direct sunlight ☞ a place without strong magnetic fields and strong electric fields

#### ■ About the power supply

☞ Please supply single-phase 200V-240V (frequency 50Hz-60Hz) power supply voltage.

☞ Please make sure to be grounding.

☞ Do not use the same power network with motors and inductive machinery, high power devices.

☞ It has sufficient interference resistance to the interference superimposed on the power line, but it is recommended to use an isolation transformer for proper disposal before power supply to reduce interference.

#### ■ About the wiring

☞ For the controller, the wiring between the LED heads, please use the additional cable and connect it securely.

☞ The additional connecting wire and LED irradiation head can be used or bent.

When using in bending, as a minimum bending radius greater than 110mm, please perform the system design. Bending with radius less than recommended, there is the possibility of cracking occurring in a short period of time.

☞ When an external I/O is connected to an inductive load (motor, breaker, etc.), please connect an interference absorbing component (interference suppressor, etc.) on the load side.

☞ To prevent contact failure after wiring the power cable, securely tighten the fixing screws of the connector.

☞ Please load and unload the cable through the connector (plug).

# 1、 Summary

## 1.1 Brief Introduction :

UV LED series equipment, produced by FUTANSI(Shanghai)Electronic Technology Co.,Ltd: UVSP\UVLN\UVSF models, using UV curing technology to solidify ink、 paint、 adhesives and other UV-sensitive materials through polymerization process. It is a new light source which is low power consumption, environmental friendly, and much safer.

UV LED is new high-tech products, with LED technology becoming mature and its wide application, it

will replace the traditional electrode type UV mercury lamp soon. Compared with traditional UV mercury lamp, UV LED contain no mercury, and it won't produce ozone; Based on its physical property, it overcame numerous drawbacks and limitations of traditional UV mercury lamp, in starting process, it could reach the peak intensity without waiting preheating. Ultra-low energy consumption and long life, which is the best choice to replace traditional UV mercury lamp

FUTANSI UVLED curing series equipment is widely used in microelectronics, optical communications, medical devices, PCB, optics, printing, scientific research and institutions etc.

## **1.2 Related instructions**

The instruction is an important document that guides the user in the proper use of the equipment. To ensure safety, please follow the specifications listed in the manual and use the equipment in accordance with the specification. In addition, when using the equipment, you must also comply with local security regulations, rules and other safety regulations, and always keep in mind the standard operating equipment, safe production.

Please make sure you have read the instruction manual carefully before using the device. This instruction is integral part of the equipment, and should be kept carefully by user to make sure that it can be easily accessed at any time when needed. Please read the instructions and to ensure that you understand the correct reading. Please contact the manufacturer if you have any questions (detailed information in «9-customer service» ).

## **1.3 Statement of Liability**

Based on relevant regulations and standards and our accumulated knowledge and experience in the UV field, our engineers carefully write the instruction manual.

In this case, FUTANSI (Shanghai) Electronic Technology Co., Ltd. solemnly declares that the company will not bear any legal or civil liability for direct or indirect losses as follows:

Not strictly in accordance with the provisions of the manual

Improper use

Untrained personnel use equipment

Ignore error messages or malfunctions

Continue to use defective devices

Private modification / transformation

Failed to wired properly according to electric appliance standards

Electric shock that may be encountered by wet hands

No protective gear when using the device

Scald caused by intentional or unintentional touch on the surface of the device immediately after using the device

Personal injury or damage caused by using this equipment near a water source or in a damp place

Electric shock or other accident caused by the use of this equipment during a thunderstorm

Use this device in an environment where there are security risks.

## **1.4 Copyright Protection**

The instruction is written by FUTANSI(Shanghai)Electronic Technology Co.,Ltd, please keep this manual in safe place and it is only for the related operator to read. This manual is protected by copyright law. Any use that does not comply with the copyright law must be approved by the company in advance, and may not be transferred to a third party without the authorization of our company, especially copying, dissemination, text processing, etc.

## **1.5 Warranty Terms**

The warranty terms are detailed in the sales contract.

# **2. Safety instructions**

## **2.1 Instructions for use**

Anyone, before using this equipment, please read this manual carefully and understand its contents correctly, even those who have similar equipment operating experience or have participated in the manufacturer's training.

## **2.2 Modification and transformation of the equipment**

To ensure safety and avoid danger, no one may modify or transform the equipment without the written permission of our company.

## **2.3 Obligations to use**

This equipment is applied in production field, so the user of the equipment should bear legal obligations related to safe production. In addition to complying with the manual, users should also comply with other relevant regulations about safety, accident prevention and environmental protection. Especially: Users should proactively check applicable safety regulations and conduct risk assessments for possible risks under special working conditions and add them to the instruction manual.

This instruction manual should be kept in accordance with the principle of proximity to the equipment so that the user can access it when needed.

Observe this instruction manual completely and unconditionally during operation!

It should be ensured that the equipment can operate without failure. When there is doubt about the operation of the equipment and it is found that the equipment is damaged,

In the case of cracks, etc., the equipment must be stopped immediately, and user should contact the manufacturer for equipment inspection and maintenance.

Do not use this light source device before reading or understanding this manual.

This device must be connected and operated according to the connection method of the manual. Other connections and operation modes are prohibited.

The above-mentioned and other periodic inspections of the equipment mentioned in the instructions must be observed!

## **2.4 Operators**

The operator should had received relevant guidance to understand the operational responsibilities and be aware of the hazards of the illegal operation.

Professionals are professionally trained, having the relevant knowledge and experience, understanding the relevant regulations, possessing the ability to identify and avoid potential hazards, and be able to train other relevant personnel.

## **2.5 Personal protection**

When using the device, user should wear personal protective equipment to minimize the occurrence of health hazards.

In the whole working process, user should wear necessary protective equipment.

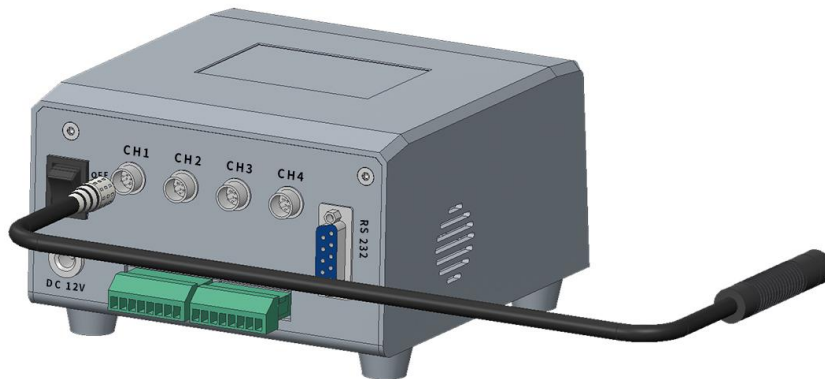
Do not expose the skin directly to the light under a distance less than 1m.

To prevent UV rays causing damages to eyes directly or indirectly, so do not view the light source directly.

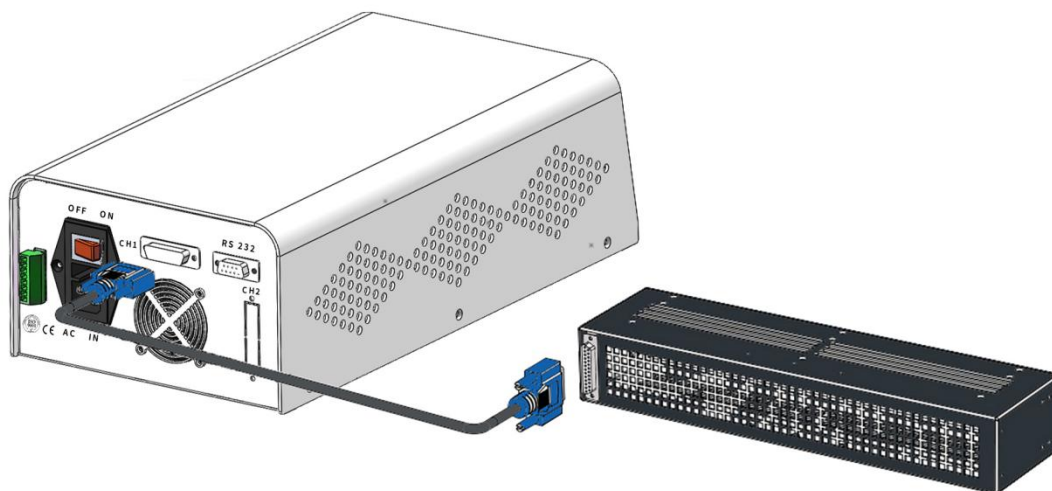
# 3 Technical parameters

## 3.1 Equipment component combination

### 3.1.1 Spot light source

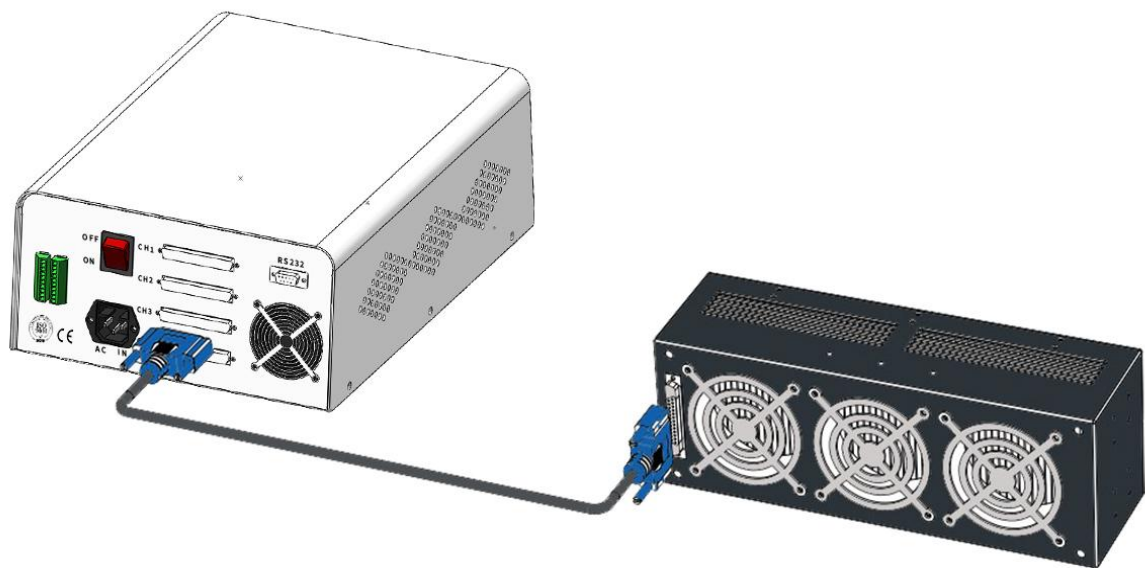


### 3.1.2 line light source







### 3.1.3 Area light source



## 4. System setup operation instructions (system setup password: 2018)



### 4.1 work main interface

#### 4.1.1 No-detection main interface:

 					
Channel	Model	Power	Time	Temp	State
Channel-1	Manual	60%	0.0 s	28 °C	Close Open
Channel-2	Manual	60%	0.0 s	28 °C	Close Open
Channel-3	Manual	60%	0.0 s	0 °C	Close Open
Channel-4	Manual	60%	0.0 s	0 °C	Close Open

Futansi (ShangHai)Electronic Technogy Co.,Ltd System version: F-UVLED OS6.5 +86-139 1784 6211 www.futansi.com

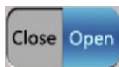
## 4.1.2 UV light intensity detection main interface (optional)

 					
Channel	Model	Power	Time	Temp	State
Channel-1	Manual	60%	0.0s	28°C	<input checked="" type="checkbox"/> Close <input type="checkbox"/> Open
Channel-2	Manual	60%	0.0s	28°C	<input checked="" type="checkbox"/> Close <input type="checkbox"/> Open
Channel-3	Manual	60%	0.0s	0°C	<input type="checkbox"/> Close <input checked="" type="checkbox"/> Open
Channel-4	Manual	60%	0.0s	0°C	<input type="checkbox"/> Close <input checked="" type="checkbox"/> Open

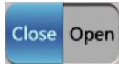
Real-time detection of ultraviolet light energy

0.0mw/cm<sup>2</sup>    0.0mw/cm<sup>2</sup>    Futansi (Shanghai) Electronic Technology Co., Ltd    www.futansi.com

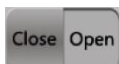
notes:



The temperature can be detected normally, which indicating that the LED light source is connected properly and can be used normally.



It indicates that the LED light source is running.



It means that no LED light source is detected. In this state, the OFF/ON is invalid, and the click is not reflected.

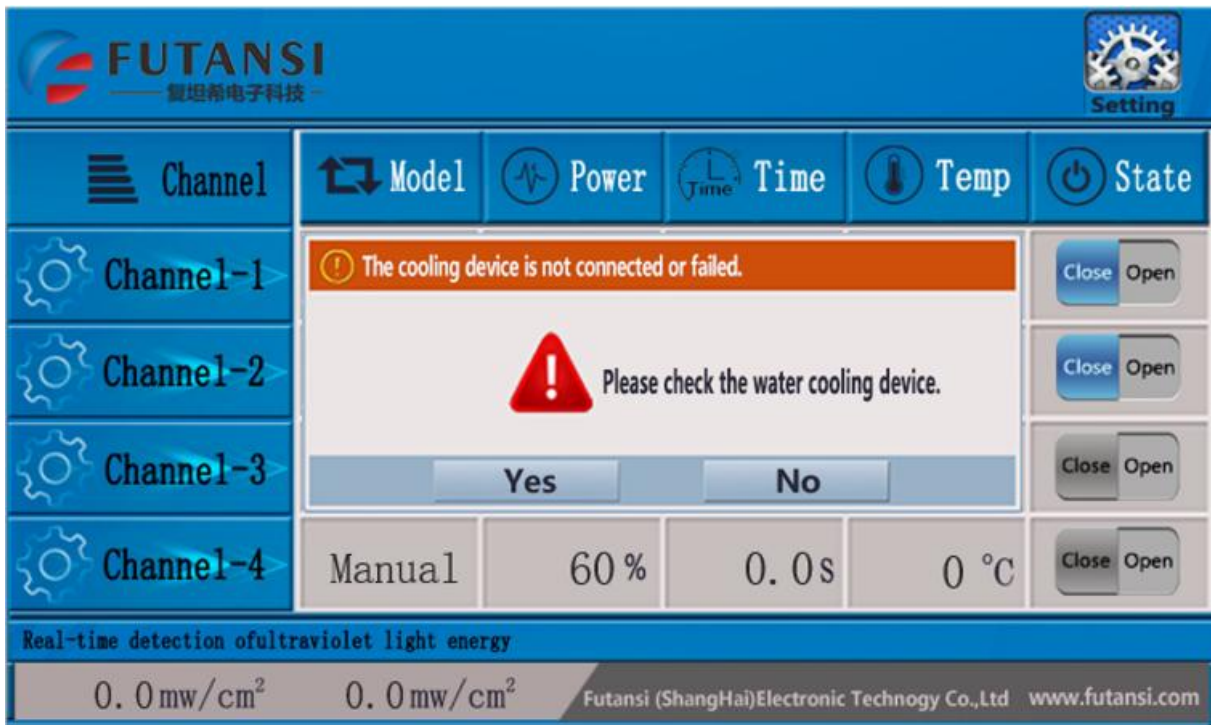


It indicates the temperature abnormality alarm, click to cancel the alarm. When this warning icon appears during operation, it indicates that the UV light source temperature is too high. Please check if the heat sink is working properly.



It indicates that the LED is abnormal. Click to cancel the alarm. When this alert icon appears during operation, it indicates that the LED is shorted or open. Please check if the LED light source is lit normally. If you cannot solve the problem, please contact the company in time.

\*If some kinds of device encountered the problem on this page, it means that the water cooler is not connected or there is something wrong with the water cooler. Please check the external water cooling equipment. If the water cooling should connected to the water cooling machine, the water cooling machine must be turned on first, otherwise an alarm will be given.



Schematic diagram of water cooler connection

## 4.2 System settings

### System settings main interface



## 4.2.1 Parameter setting

Parameter setting main interface

Channel	Model	Power	Time	Ladder	Cycle
Channel-1	Manual	60 %	0.0 S		
Channel-2	Automatic	60 %	10.0 S		
Channel-3	Ladder	100 %	10.0 S	4	1
Channel-4	Ladder	100 %	10.0 S	4	1

Note: Red area and font indicate clickable settings area

Each channel can independently set (three) different irradiation modes: manual, automatic and step.

Parameter setting process

Each channel can be independently set (three) different irradiation modes: manual, automatic, ladder.

Manual irradiation mode: The irradiation power can be set, but the time cannot be set (0-999.9 seconds automatic cycle).

Automatic irradiation mode: The irradiation power and irradiation countdown can be set.

Step irradiation mode: You can set irradiation power, irradiation countdown and step number (up to 20 steps).

Step cycle mode: In step mode, up to 99 cycles can be set. The default loop is 1 time.

Adjustable range of irradiation power: 10%--100%

Auto mode time can be set in the range: 0.0s--999.9s

Step range of step irradiation: 0-20 steps

Step irradiation cycle range: 1-99 times

Ladder: The number of steps and number of loops only appear in Ladder mode

### 4.2.1.1 Mode setting

Example1: Mode setting. Click the channel corresponding mode area, the mode selection box will pop up,



select the desired mode, and the mode corresponding column will automatically display the selected mode.

#### 4.2.1.2 Power Setting、 Time Setting

Example2: Click on the corresponding power area of the channel, the power value setting keypad will pop up, set the power, time and click to confirm.




### 4.2.1.3 Ladder setting












Example3: Ladder setting. The third channel is the ladder mode. Clicking on the corresponding power and time zone of the third channel will pop up the example 4 interface.

 <span style="font-weight: bold; font-size: small;">BACK</span>					
☰ Channel	↔ Model	⚡ Power	⌚ Time	⚡ Ladder	↻ Cycle
⚙ Channel-1	Manual	60 %	0.0 S		
⚙ Channel-2	Automatic	60 %	10.0 S		
⚙ Channel-3	Ladder	100 %	10.0 S	2	1
⚙ Channel-4	Ladder	100 %	10.0 S	4	1












Example4: Power and time can be set, the number of steps in the green box is the number of steps in the example 3 interface, the number of steps corresponds to the blue background, and the others are gray. After the setting is completed, click the Back button to return to the parameter setting main interface.

 <span style="font-weight: bold; font-size: small;">BACK</span>					
Ladder setting ( 1-10 Ladder )			<span style="font-size: small;">»» Down ( 11-20 Ladder )</span>		
⚡ Ladder	⚡ Power	⌚ Time	⚡ Ladder	⚡ Power	⌚ Time
Step1	100%	10.0 S	Step6	60%	10.0 S
Step2	60%	10.0 S	Step7	60%	10.0 S
Step3	60%	10.0 S	Step8	60%	10.0 S
Step4	60%	10.0 S	Step9	60%	10.0 S
Step5	60%	10.0 S	Step10	60%	10.0 S

### 4.2.2 Linkage Setting

		
 Channel	<input type="checkbox"/> <input type="checkbox"/> Linkage <input type="checkbox"/> <input checked="" type="checkbox"/> Channel	 Linkage Setting
 Channel-1	Linkage 1	 Click Set
 Channel-2	Linkage 2	 Click Set
 Channel-3	Linkage 3	 Click Set
 Channel-4	Linkage 4	 Click Set

The linkage state includes four groups of linkages: linkage 1 linkage 2 / linkage 3 / linkage 4  
 Link the linkage status of any channel to the same combination to achieve linkage  
 Example: Adjust linkage to the following status

		
 Channel	<input type="checkbox"/> <input type="checkbox"/> Linkage <input type="checkbox"/> <input checked="" type="checkbox"/> Channel	 Linkage Setting
 Channel-1	Linkage 1	 Click Set
 Channel-2	Linkage 1	 Click Set
 Channel-3	Linkage 3	 Click Set
 Channel-4	Linkage 3	 Click Set



At this time, the CH1 and CH2 of the channel are the linkage combination of the linkage 1, so that the CH1/CH2 linkage is realized. The CH3/CH4 channel is the linkage combination linkage 3, so the CH3/CH4 linkage is realized.

### 4.2.3 Pedal Setting



The foot start mode is divided into pulse and low level mode. The default open state is: pulse

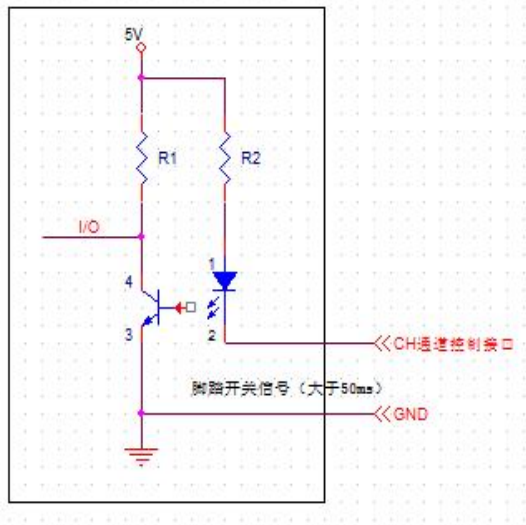
Pulse: Press the foot switch to start the irradiation, and stop the irradiation when you press it again.

Low level: Depress the foot switch to start irradiation, and stop irradiation when released.

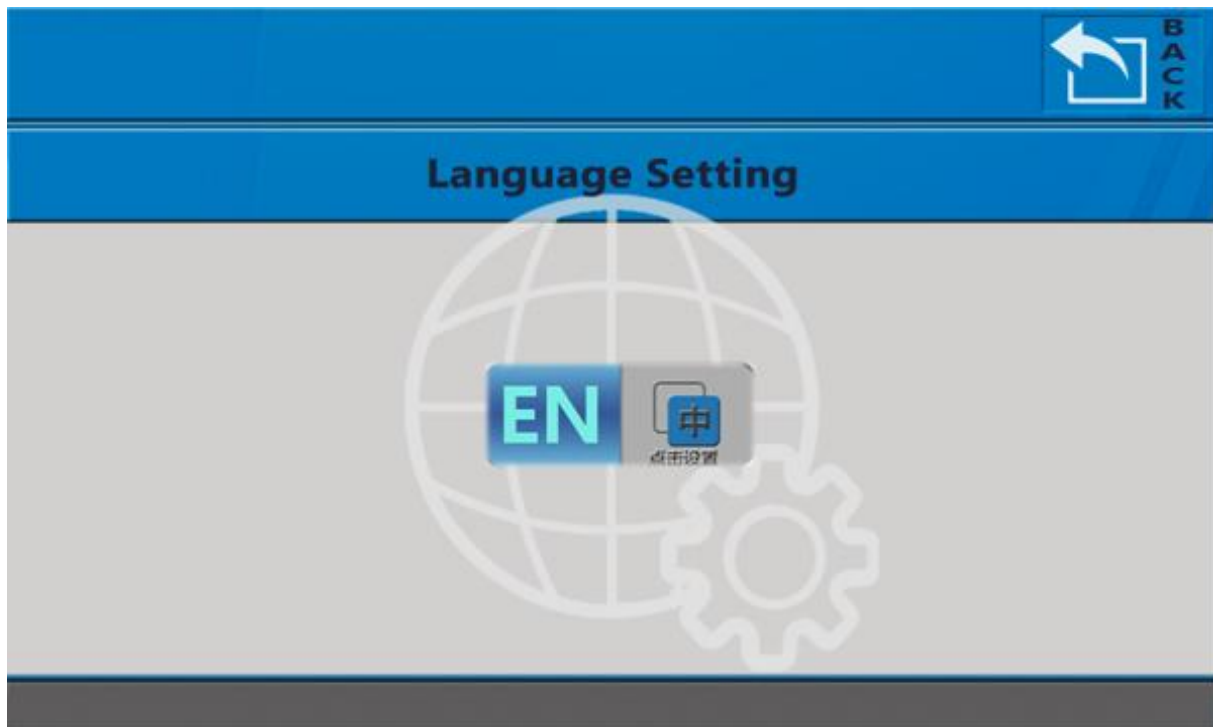
Overlay mode: not used by default, only used in special pipelines.

※The superposition mode is specially designed for the assembly line, and repeats the accumulation work with the assembly line workpiece. After the selection, the operation mode will automatically switch to the automatic mode. After the setting is completed, please go to the parameter setting to set other parameters. After switching to other modes, you need to reset the pedal mode.

This machine provides four-channel foot switch control. In addition to connecting with the foot switch, the grounding switch control interface can also be connected with PLC, single-chip microcomputer, IO port of the host computer and other equipment (passive signal). The control interface protocol requirements are shown in the figure. , after connecting the line according to the picture, the low level duration of the given signal can be more than 50ms.

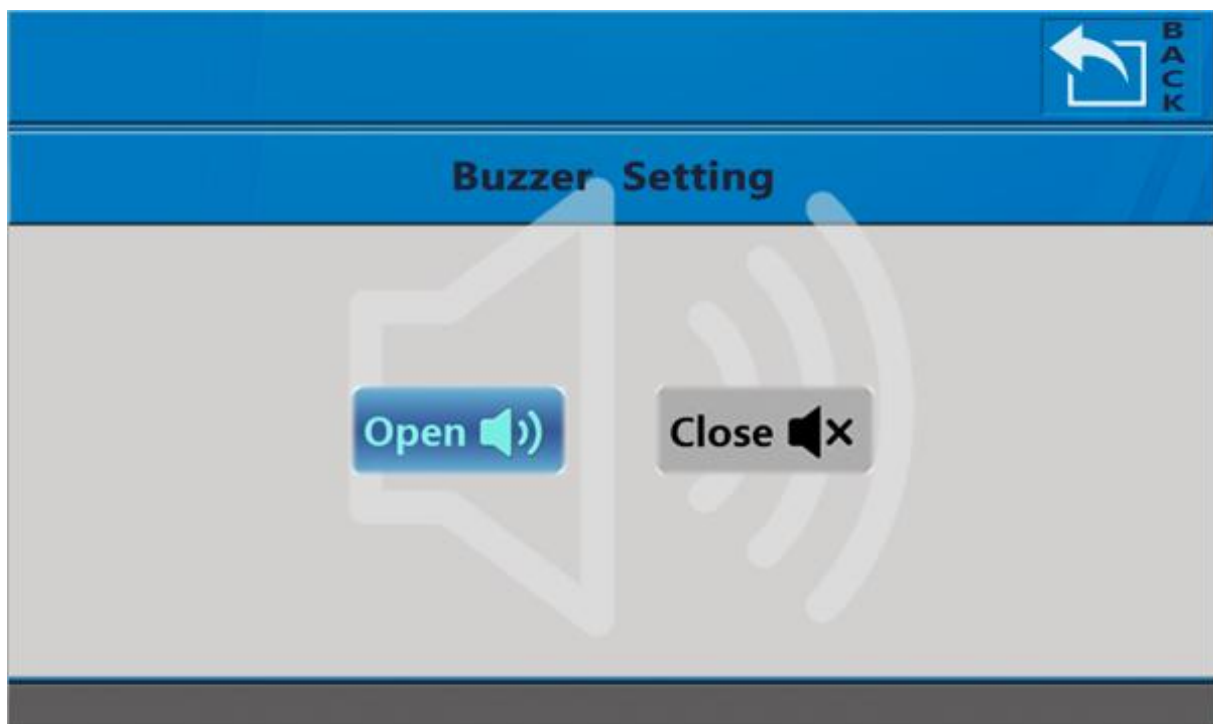


## 4.2.4 Language Setting



It supports switching of Chinese and English. Default language is Chinese, click to switch.

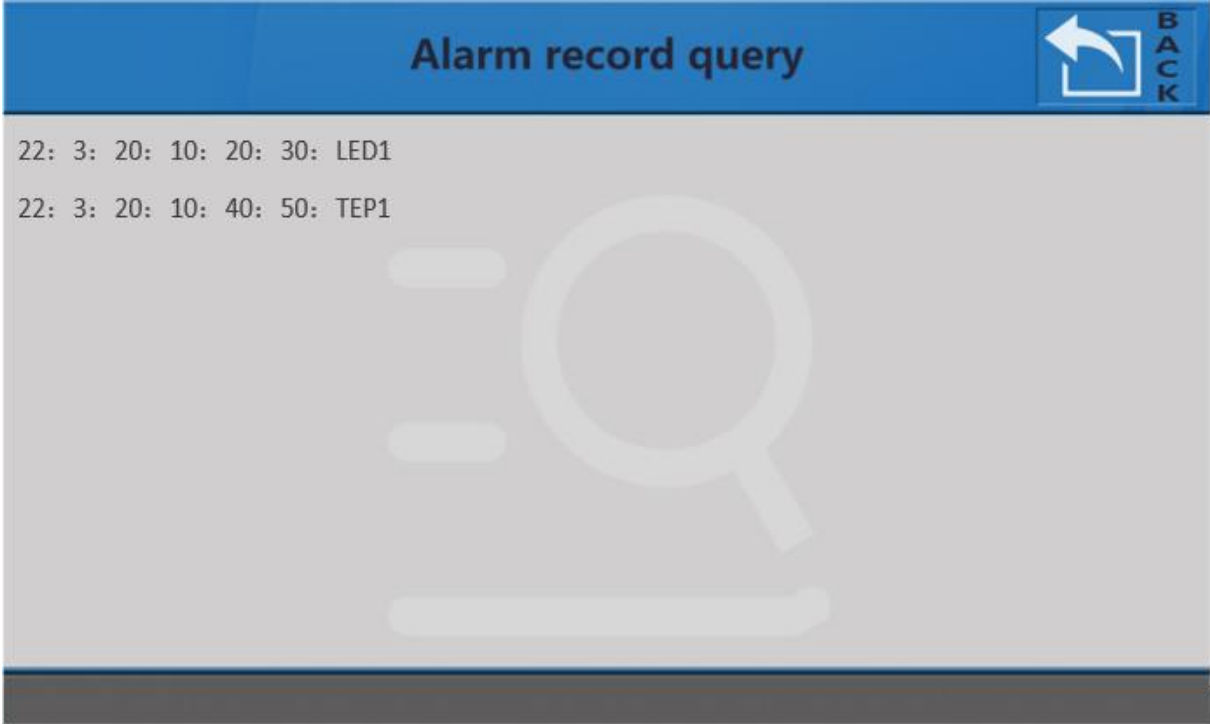
## 4.2.5 Sound settings



The default is on and the font is highlighted.

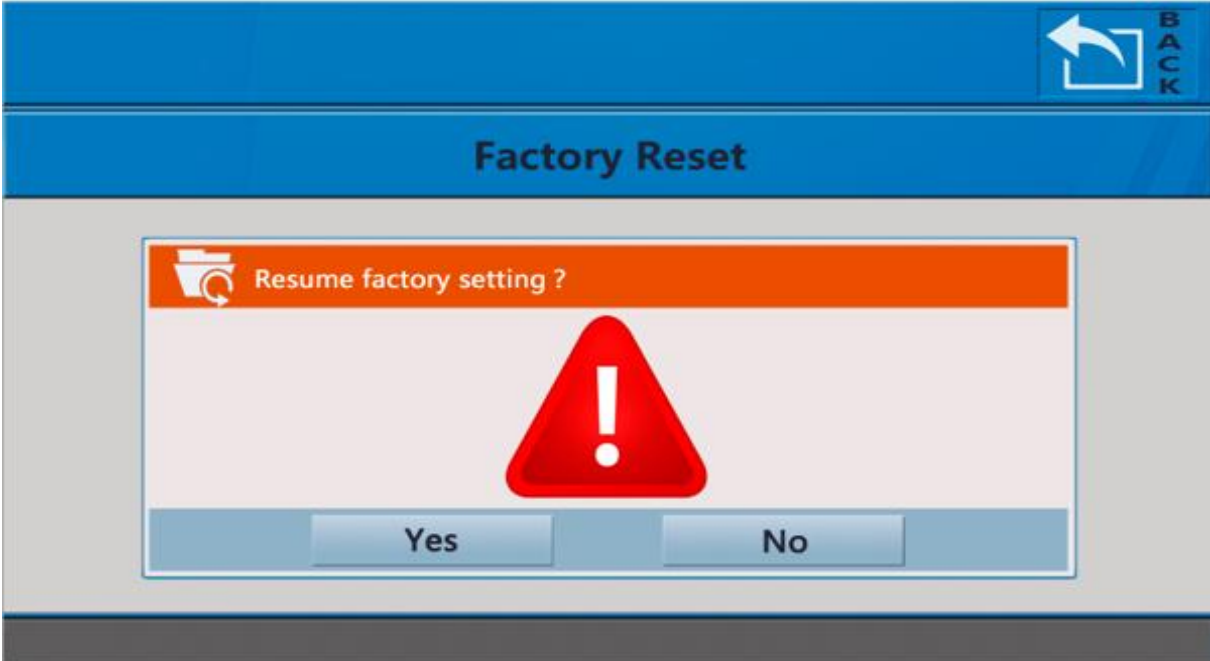
The alarm tone cannot be turned off.

### 4.2.6 Alarm Record Query





You can view the last 30 alarm records, and the record box will display the alarm date, time and status.

### 4.2.7 Restore settings



After entering the reset page, a warning box will pop up, and the factory settings will be restored after further confirmation. After the recovery is completed, it will automatically return to the main interface. All function parameters and settings are restored to their default state.

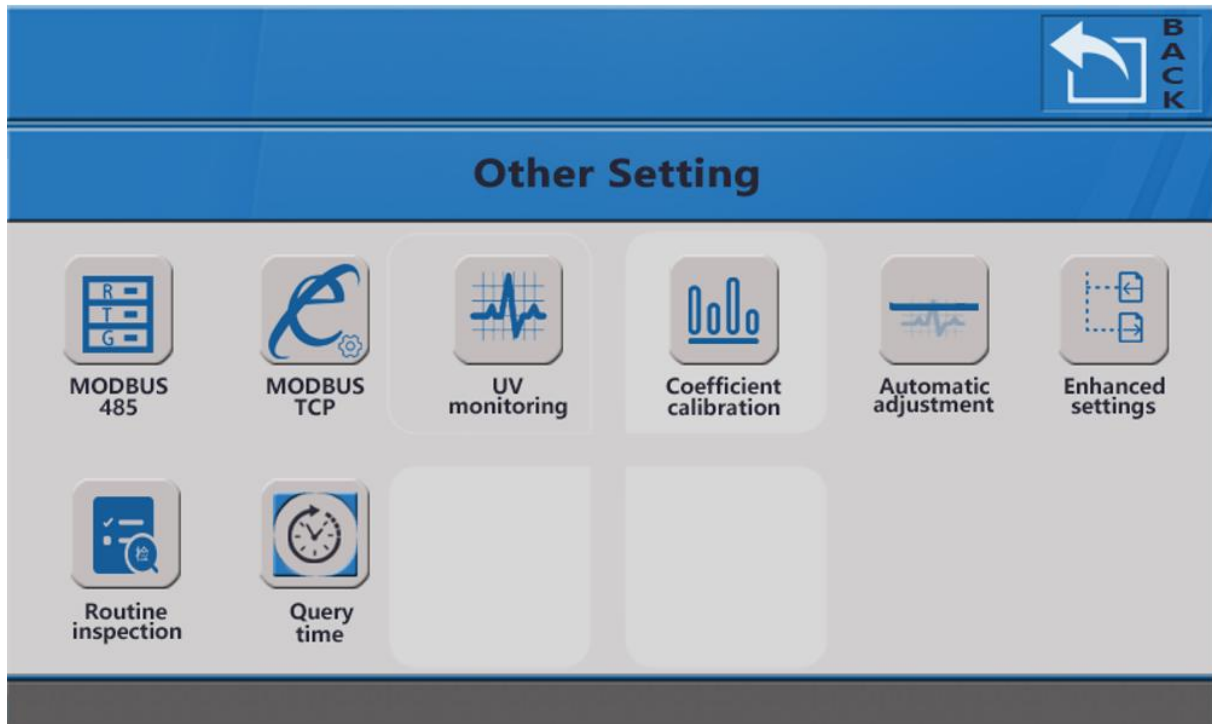
☰ Channel	↔ Model	⚡ Power	🕒 Time	🌡 Temp	🔌 State
⚙ Channel-1	Manual	60%	0.0s	28 °C	Close Open
⚙ Channel-2	Manual	60%	0.0s	28 °C	Close Open
⚙ Channel-3	Manual	60%	0.0s	0 °C	Close Open
⚙ Channel-4	Manual	60%	0.0s	0 °C	Close Open

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0.0 mw/cm<sup>2</sup>
0.0 mw/cm<sup>2</sup>
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## 4.3 other settings

Other settings main interface



### 4.3.1 MODBUS 485

Device address: 1

Baud rate: 9600, 14400, 19200, 38400, 43000, 57600, 76800, 115200

Support standard MODBUS 485 message format. Refer to 6 RS-485 communication for detailed settings.

### 4.3.2 MODBUS

TCP(optional)

Device address: 1

Network port: 10006

IP address: 192.168.1.100  
Subnet mask: 255.255.255.0

Server IP: 192.168.1.101



DNS: 114.114.114.114



Standard Modbus TCP message format. Refer to MODBUS 485 function instruction for instructions.

### 4.3.3 Irradiation monitoring (optional)

			
Channel	Upper limit of irradiation value	Lower limit of irradiation value	State
Channel-1	1000mW/cm <sup>2</sup>	0 mW/cm <sup>2</sup>	<input type="checkbox"/> Close <input checked="" type="checkbox"/> Open
Channel-2	9999mW/cm <sup>2</sup>	0 mW/cm <sup>2</sup>	<input checked="" type="checkbox"/> Close <input type="checkbox"/> Open

Please use this function with our company's radiometer. The upper and lower limits are subject to actual measurement. When the online measurement value exceeds the set upper limit, the system will automatically prompt an alarm.







Channel	Model	Power	Time	Temp	State
Channel-1	 Alarm event!!				<input type="checkbox"/> Close <input checked="" type="checkbox"/> Open
Channel-2	 Out of set range!				<input type="checkbox"/> Close <input checked="" type="checkbox"/> Open
Channel-3	<input checked="" type="checkbox"/> Yes				<input type="checkbox"/> Close <input checked="" type="checkbox"/> Open
Channel-4	Manual	60 %	0.0 s	0 °C	<input type="checkbox"/> Close <input checked="" type="checkbox"/> Open

Real-time detection of ultraviolet light energy

0.0 mw/cm<sup>2</sup>
0.0 mw/cm<sup>2</sup>
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




### 4.3.4 Irradiation calibration



					
 Channel	Channel 1 irradiation calibration				
 Power	20%	40%	60%	80%	100%
 Calibration value	1 mW/cm <sup>2</sup>	1 mW/cm <sup>2</sup>	1 mW/cm <sup>2</sup>	1 mW/cm <sup>2</sup>	1 mW/cm <sup>2</sup>
 Sensor value	1000 mW/cm <sup>2</sup>				
 Reset calibration value					













The irradiance calibration function can re-correct the standard coefficient value of the online sensor. Please cooperate with our company's radiometer. When calibrating (it is recommended to cooperate with the radiometer to set the calibration value), click 20%-100% power value calibration in turn, and after the sensor value is displayed, fill in the calibration value under the corresponding power in turn. The default 1 disables the calibration function. To reset the calibration, click the reset field. During the calibration process, please fix the external sensor and do not move it.

### 4.3.5 Automatic adjustment

 <span style="float: right;">BACK</span>		
 Channel	 Automatic adjustment	 State
 Channel-1	1000mW/cm <sup>2</sup>	<input type="checkbox"/> Close <input checked="" type="checkbox"/> Open
 Channel-2	9999mW/cm <sup>2</sup>	<input checked="" type="checkbox"/> Close <input type="checkbox"/> Open

The automatic compensation function should be used in conjunction with the radiation monitoring function. The Compensation Status function can be turned on only after the Monitoring Status is turned on. Set the threshold to be compensated, and the system will automatically adjust the power to reach the compensated range. If the power value is automatically adjusted to 100% and has not reached the automatic compensation threshold, the system will prompt an alarm.

 Channel	 Model	 Power	 Time	 Temp	 State
 Channel-1	 Alarm event!!				<input type="checkbox"/> Close <input type="checkbox"/> Open
 Channel-2	 Out of automatic adjustment range!				<input type="checkbox"/> Close <input type="checkbox"/> Open
 Channel-3	<input type="button" value="Yes"/>				<input type="checkbox"/> Close <input type="checkbox"/> Open
 Channel-4	Manual	60 %	0.0 s	0 °C	<input type="checkbox"/> Close <input type="checkbox"/> Open

Real-time detection of ultraviolet light energy

0.0 mw/cm<sup>2</sup>
0.0 mw/cm<sup>2</sup>
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### 4.3.6 I/O Enhancement settings



		
 Channel	Pedal controlled setting	Pedal delay setting
 Channel-1	<input type="checkbox"/> Close <input checked="" type="checkbox"/> Open	Delayed 1.0sOpen      Delayed 1.0sClose
 Channel-2	<input type="checkbox"/> Close <input checked="" type="checkbox"/> Open	Delayed 0.0sOpen      Delayed 0.0sClose
 Channel-3	<input type="checkbox"/> Close <input checked="" type="checkbox"/> Open	Delayed 0.0sOpen      Delayed 0.0sClose
 Channel-4	<input type="checkbox"/> Close <input checked="" type="checkbox"/> Open	Delayed 0.0sOpen      Delayed 0.0sClose


Footcontrolled setting: In the automatic mode, after the external I/O starts the light source, the light source cannot be turned off, and the system can only wait for the system to automatically complete the countdown. You can manually click the main interface to turn off the light source; you can set the delay on function in manual, automatic and ladder modes, and the delay off function can only be used in manual mode.

### 4.3.7 Routine check settings

Channel	Spot check time	State
Channel-1	9999H	Close Open
Channel-2	0 H	Close Open
Channel-3	0 H	Close Open
Channel-4	0 H	Close Open

Off by default. Set the time, turn it on, and after the light source runs for the set time, the system will always prompt an alarm. You can choose to close the state or reset the inspection time.

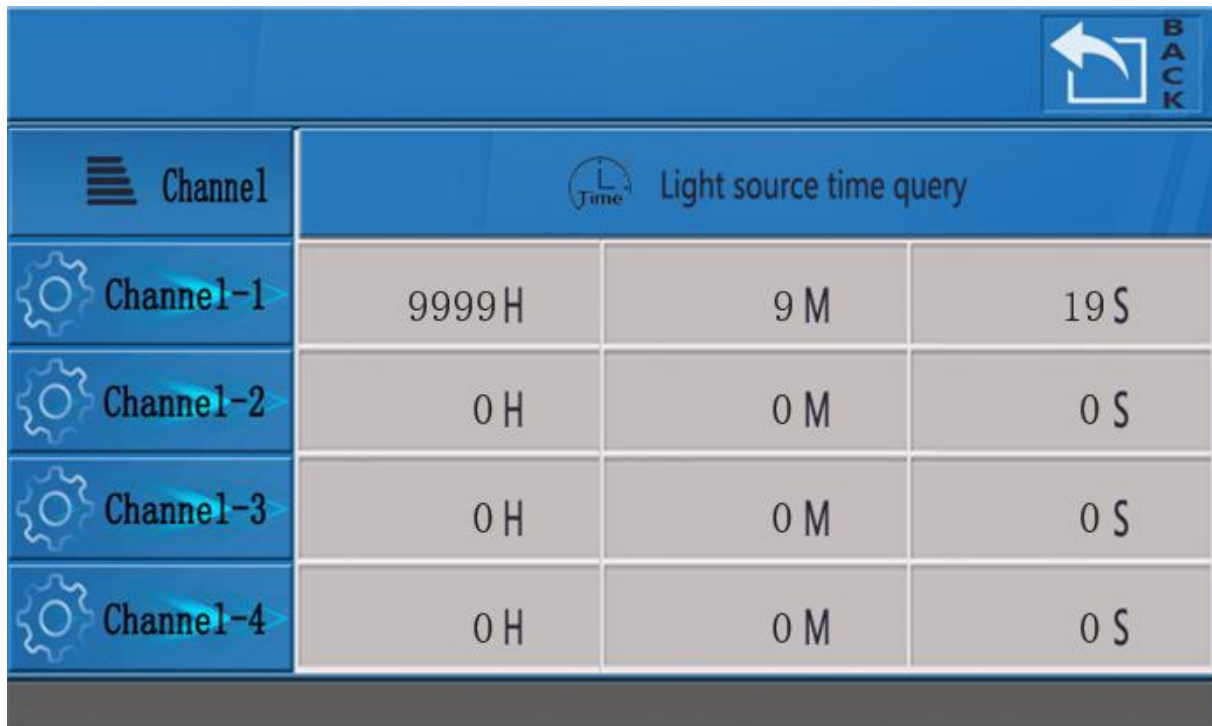



Channel	Model	Power	Time	Temp	State
Channel-1	LED light attenuation prompt  Energy has decayed To avoid affecting normal use Please check the light source <div style="text-align: center; margin-top: 10px;"> <span style="border: 1px solid black; padding: 2px 10px;">Yes</span> </div>				Close Open
Channel-2					Close Open
Channel-3					Close Open
Channel-4	Manual	60 %	0.0 s	0 °C	Close Open

Real-time detection of ultraviolet light energy

0.0 mw/cm<sup>2</sup>
0.0 mw/cm<sup>2</sup>
Futansi (ShangHai) Electronic Technology Co., Ltd
www.futansi.com

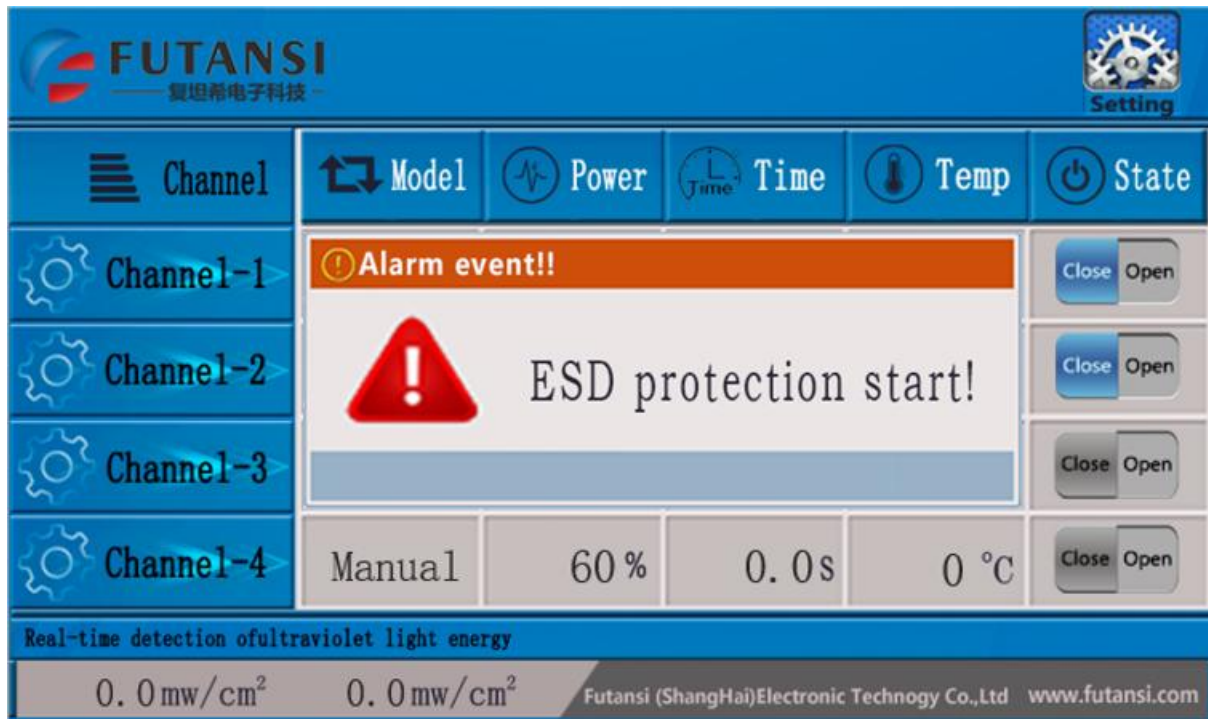
### 4.3.8 Query time



Channel	Light source time query		
Channel-1	9999H	9 M	19 S
Channel-2	0 H	0 M	0 S
Channel-3	0 H	0 M	0 S
Channel-4	0 H	0 M	0 S

Query the total running time of the light source.

### 4.3.9 ESD system protection



By default, the ESD GND terminal of the external I/O port is short-circuited. It can be connected with the automation system and used when other supporting equipment needs an emergency stop state. When the ESD protection is activated, all functions of the system are disabled and can only be recovered by releasing the alarm state.

## 5. RS232 Communication

Our company's UV series products added RS232 serial communication technology for system integration, and can be connected by computer, PLC, host computer and other equipment. RS232 can directly control the switch status, change the mode, set the watt level and time. Except for the ladder mode. The setup steps are as follows:

**Step1:** Connect the UVLED controller to a computer or PLC with a 9-pin serial port connector.

**Step2:** Parameter setting: baud rate is 9600bps, 8 data bits are 1 stop bit, no parity bit.

**Step3:** Communication protocol "handshake": The host computer or PLC device sends a communication protocol command, and continuously sends the ASCII code of the string "FUTANSI" (uppercase letter). If the UVLED controller successfully receives the string, it will return the character 'OK'. The ASCII code indicates that the handshake is successful. At this time,



the LED light source can be controlled through the RS232 interface and the host parameters can be changed.

**Step4:** Send control byte. The control method is as follows:

Figure 1(control command that turns the LED ON or OFF)

Data header	Control command	Notes
A55A	11/10	Channel 1 ON / OFF
A55A	21/20	Channel 2 ON / OFF
A55A	31/30	Channel 3 ON / OFF
A55A	41/40	Channel 4 ON / OFF
A55A	FF/00	Full Open / Full Close

Figure2

Modified power:

Data header	Channel control bits	Power parameters
A5	1A/2A/3A/4A Manual mode	0x00—0x64
A5	1B/2B/3B/4B Automatic mode	0x00—0x64

Modification time (automatic time) :

Data header	Channel function code	Time parameter
A5	1D/2D/3D/4D	0x0000—0x270F

Read parameters:

Data header	Channel function code	Notes
A55A	C0	Read the temperature value of ch1-ch4 channel
A55A	C1	Read the irradiation value of ch1 and CH2 channels
A55A	1E/2E/3E/4E	Read ch1-ch4 channel mode, power, time and status

**Channel switch:** the first bit of the channel switch represents the corresponding channel, the second bit represents the switch state; 11 represents that opening channel One directly after modifying the system parameters; 10 represents that closing channel One directly after modifying the system parameters;

**Details are as follows:**

Channel switch: The first digit of the channel switch represents the corresponding channel, and the second digit represents the switch state; 11 represents directly opening a channel after modifying the system parameters; 10 represents directly closing a channel after modifying the system parameters;

Mode: 00 means manual mode; 01 means automatic mode.

Power: When setting the power, 0-100% power corresponds to hexadecimal 00-64 respectively; please refer to the ASCII code table for the specific correspondence.

Time: The time setting range of automatic mode is 0-999.9 seconds; corresponding to 0000-270F respectively; the time of manual mode cannot be set, please write 00 00 by default.

Notes: 1. The above serial commands are sent in hexadecimal.

2. The time setting range is 0-999.9 seconds; corresponding to 0000-270F respectively; the specific corresponding relationship is that the highest to the lowest time is 16 to the 3rd power; 16 to the 2nd power; 16 to the 1st power; 16 to the 0 power.

3. Do not switch the mode or set the time in the running state.

## 6. RS485 Communication

The company's UV series products provide RS-485 communication interface, and use the Modbus-RTU protocol, which can communicate with computers, PLCs, host computers and other equipment. Read the registers to understand the usage status, parameters, modes, etc. of the company's equipment; modify the status, power, mode and other parameters of the equipment by modifying the register values (except for the ladder mode).

The specific usage is as follows:

1. Connect the 485 interface of the device that needs to communicate with the 485 interface of the UV host, and connect A to A (RXD) and B to B (TXD).
2. The default baud rate is 9600, the default address of the device is 1, 8 data bits, 1 stop bit, no parity check; if you need to modify the baud rate station address, please go to System Settings - Other Settings - Modbus 485 Revise.
3. The message is sent in hexadecimal format.
4. According to the address of the register in the figure below, the function code sends the corresponding command frame to realize the corresponding function.

Details are as follows:

Mode: 00 means manual mode; 01 means automatic mode.

Power: When setting the power, 0-100% power corresponds to hexadecimal 00-64 respectively; please refer to the ASCII code table for the specific correspondence.

Time: The time setting range in automatic mode is 0-999.9 seconds, corresponding to 0000-270F respectively; the four digits represent the time hundreds, tens, ones and decimals respectively; the time in manual mode cannot be set, please write 00 00 by default.

Channel switch: 00 means closed state; 01 means open state.

Notes:

- 1) The time setting range is 0-999.9 seconds; corresponding to 0000-270F respectively; the specific correspondence is that the highest to the lowest time is 16 to the 3rd power; 16 to the 2nd power; 16 to the 1st power; 16 to the 0 power.



- 2) The message does not support ladder mode.  
 3) Do not switch modes or set time during operation.

Function code	Register address	Read / write digit	Functional description	Operation permissions
0x03 (read hold register)	0x0000-0x0003	1 (4)	CH1-CH4 switch state (" 0x0000 "for off," 0x0001 "for on)	Can read but write
	0x0004-0x0007	1 (4)	CH1-CH4 power (range: 0x0000-0x0064)	
	0x0008-0x000B	1 (4)	CH1-CH4 mode (" 0x0000 "for manual," 0x0001 "for automatic)	
	0x003D-0x0040	1 (4)	CH1-CH4 automatic time (range: 0x0000-0x270F)	
	0x000C-0x000F	1 (4)	Ch1-ch4 time (range: 0x0000-0x270f)	
0x06 (write single hold register)	0x0055-0x0058	1 (4)	Ch1-ch4 temperature (range: 0x0000-0x005a)	Read
	0x0060-0x0061	1 (2)	Irradiation value of ch1 and CH2 channels	Read
	0x0050	4	(Value range: 1-4 for channel 1 to channel 4) 00 means no fault, 01 means temperature alarm, 02 means LED alarm, 03 means water cooling alarm, 04 means ESD alarm, 05 means over compensation alarm, 06 means over setting Call the police	Read
	0x0010 0x0015 0x001A 0x0020	5	Ch1-ch4 mode, power, time, temperature, switching state	Read
0x10 (write multiple hold registers)	0x0025 0x002A 0x0030 0x0035	4	Ch1-ch4 mode, power, time, switching state	Write

Example 1: Read channel 1 on state, return register value is 0x0001, representing channel 1 is in open state.  
 Send:

Device address	Function code	Register address	Read the number	CRC check
01	03	00 00	00 01	84 0A

Returns:

Device address	Function code	The number of	Register values	CRC check

		bytes		
01	03	02	00 01	79 84

Example 2: Modify the switch state of channel 1 by writing 0x0001, which represents opening channel 1.

Send:

Device address	Function code	Register address	The numerical	CRC check
01	06	00 00	00 01	48 0A

Returns:

Device address	Function code	Register address	The numerical	CRC check
01	06	00 00	00 01	48 0A

Example 3: Modify channel 1: automatic mode, 50% power, 10.0s, off state. Starting from 0x0025 register, a total of 4 registers and 8 bytes are written. 0001 represents mode, 0032 represents power, 0064 represents time and 0000 represents status.

Send:

Device address	Function code	Register starting address	Number of write registers	The number of bytes	Value of the first register	Value of the second register	Value of the third register	Value of the fourth register	CRC check
01	10	00 25	00 04	08	00 01	00 32	00 64	00 00	53 12

Returns:

Device address	Function code	Register starting address	Number of registers	CRC check
01	10	00 25	00 04	08 00

## 7. Daily Maintenance

FUTANSI's UV Series equipment requires only a little maintenance and cleaning works. Before maintaining the equipment, be sure to turn off the power, unplug the power cord, and allow it to stand for 5 minutes. After maintenance, the equipment can be used after it is completely dry to prevent danger!

Controller maintenance (1 time/month recommended), using compressed gas or vacuuming equipment to remove excess dust and debris from the inside of the controller and on the grid.

When the UVLED light source is used for a long time, it needs regular maintenance (1 time/month recommended). Please check whether the protective glass of the light source has foreign matter during maintenance. In case of foreign matter, it is recommended to use a soft cleaning cloth to wipe off the alcohol gently. Do not use excessive force or use cleaning materials containing ammonia to avoid damage to the protective glass. Do not use chemicals such as alcohol or acetone to wipe or directly touch the LED.

## 8. Cautions:

When the equipment fails, please contact our after-sales department immediately, and there will be professional technicians to guide. To avoid unnecessary problem. When it fails, do not open the casing privately, the solution to the problem only to be occurred under the guidance of FUTANSI technicians, or in FUTANSI company, if you open it privately, you will lose the right to repair and claim.

In the case of equipment failure, emergency treatment should be done as soon as possible, and power supply should be cut off at once and call FUTANSI immediately.

When repair is needed, please send the equipment to FUTANSI curing department.

Suggestions for equipment installation and use:

Installed in a dust-free space to ensure its service life.

Try to keep the most suitable range of temperature and humidity in the working place for the equipment.

Equipment should be installed away from the water source.

Equipment should be installed away from the area that flammable gases may be easily leaked.

Equipment should be installed in a workbench that with stability and without shaking.

Workbench that equipment installed should ensure horizontal placement and long-term tilting will reduce its service life.

The power socket of the device should be configured separately, especially not to share a socket with other high-power devices.



All applications except the designed application may cause danger, it should be operated in strict accordance with the equipment manual. Otherwise, it may cause safety hazards.



Anyone, before using this equipment, please read this manual carefully and understand its contents correctly, even those who have similar equipment operating experience or have participated in the manufacturer's training. If you have any question, please contact us in time, to operate the equipment under the guidance of FUTANSI service technicians.



Careful! Ultraviolet light equipment.



Protective glasses is necessary. Do not view light source directly, to avoid UV rays causing damages to eyes directly or indirectly.



Please wear personal protective equipment before using this equipment. Do not expose skin to light source under a distance less than 1m.



Please wear protective gloves before using the equipment, it could protect the hand injury caused by friction, abrasion, burrs, etc., and it also prevent the hand from directly contacting the high temperature surface of the irradiated body and serious damage caused by UV rays.



The equipment should be installed in a ventilated space, and the cooling fan that control the main unit and the illumination source should be regularly checked to avoid the bad result caused by poor heat dissipation.



The equipment should be installed away from the area where gas, natural gas and other flammable gases are easily leaked. Try to make the temperature and humidity of the work room within the most suitable range of the equipment, and the equipment should be installed away from the water source.



It is strictly forbidden to continue to use the UVLED light source in the presence of condensation water (condensation). Using the UVLED module on the condensation will lead to serious safety hazards such as light output drop, leakage, short circuit, electric shock and burnout. When using water cooling for heat dissipation, if the temperature of the cooling water used is lower than the ambient temperature, condensation water may be generated (generally, when the temperature difference is 10 degrees, the equipment will generate condensation water). Please adjust the water cooler according to the operating environment (temperature and humidity). Please use the original refrigeration equipment. If the condensation water problem cannot be solved, please contact the manufacturer directly.

## 9. Customer service

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