# 1600x27mm UV LED Array with Integrated Water Cooling for UV LED Conveyors

**SKU: 511039**

## USER MANUAL

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# 1. Equipment features

## 1.1 Lamp features

- Instantaneous switch with no preheating required due to cold light source.
- LED offers higher efficiency, lower consumption, longer lifespan, energy savings, environmental friendliness, and greater stability compared to traditional mercury lamps.
- UV LED lifespan is 20,000 hours, reducing power consumption by 80% and energy attenuation to only 1%, resulting in up to 70% lower operating costs.
- LED UV lamps do not emit ultra-short-wave ultraviolet, thus producing no ozone and achieving zero VOCs emissions.
- Seoul brand LED lamp beads are used, adhering to international industry standards with the best thermal conductivity materials and exclusive packaging, resulting in a 20% increase in energy efficiency.

## 1.2 Controller features

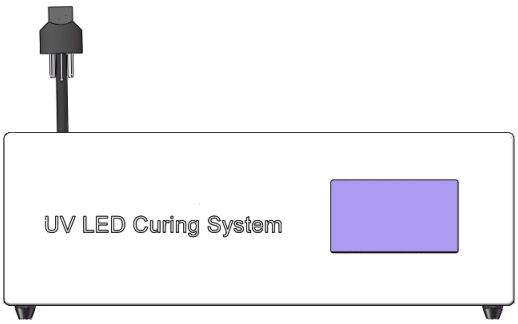
- Touch screen display for easy and intuitive operation.
- Supports external dry contact control UV LED switch and alarm output.
- Compatible with standard RS485 communication protocol for easy peripheral equipment communication.
- Real-time temperature monitoring with over-temperature protection alarm function to ensure LED stability.
- Features automatic irradiation function with countdown capability and total irradiation time recording.

## 2. Main performance parameters

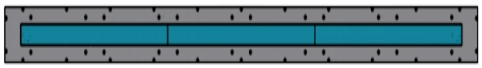
| | |
|---|---|
| Controller dimensions | 384mm*356mm*140mm (L*W*H) |
| Lamp external dimensions | 1640mm*90mm*110mm (L*W*H) |
| Water chiller external dimensions | 693mm*475mm*889mm (L*W*H) |
| Power supply | Single-phase AC220V 60HZ |
| Power consumption | 6000W(Current 27A)max |
| Emitting window | 1600mm*30mm |
| Wavelength | 395nm |
| Optical power | 15W/cm$^2$ |
| Cooling method | water cooling |
| Net weight | Approx. 51KG |
| Operating Temperature | -10°C - 50°C (non-corrosive, no dust) |
| Working environment humidity | 10% - 80% RH without condensation |
| Adjunct | Instruction manual, water chiller, connecting cable, water-cooling tubes |

## 3. Installation and connection

### 3.1 Main structure



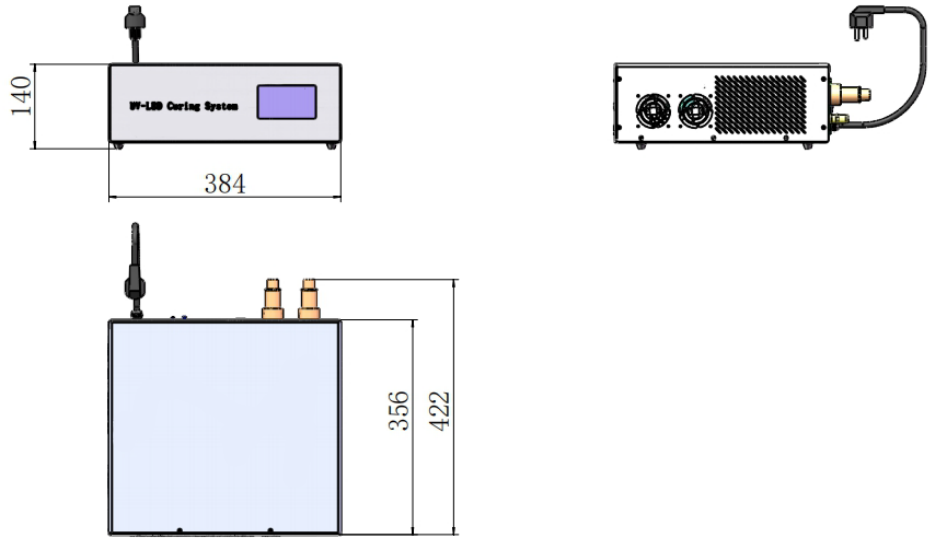

**Controller**



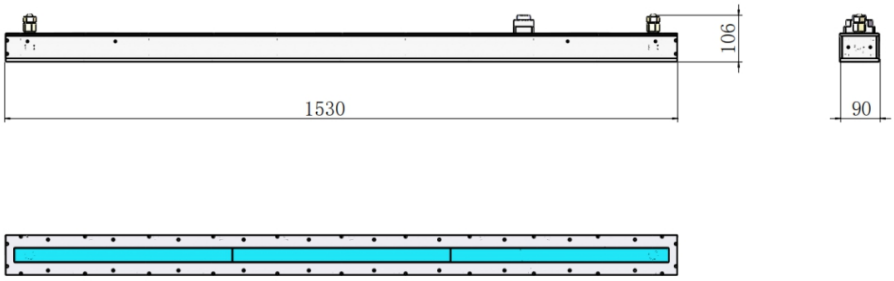
**Lamp**

## 3.2 Dimensions

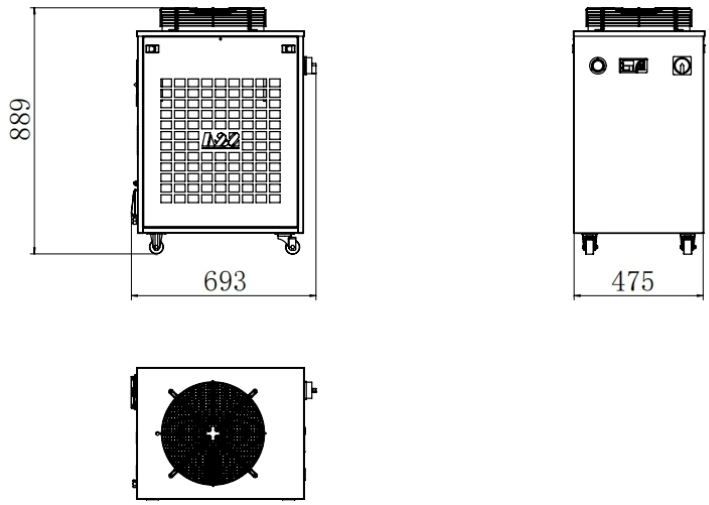
### 3.2.1 Controller dimensions




### 3.2.2 Lamp dimensions




### 3.2.3 Water chiller dimensions



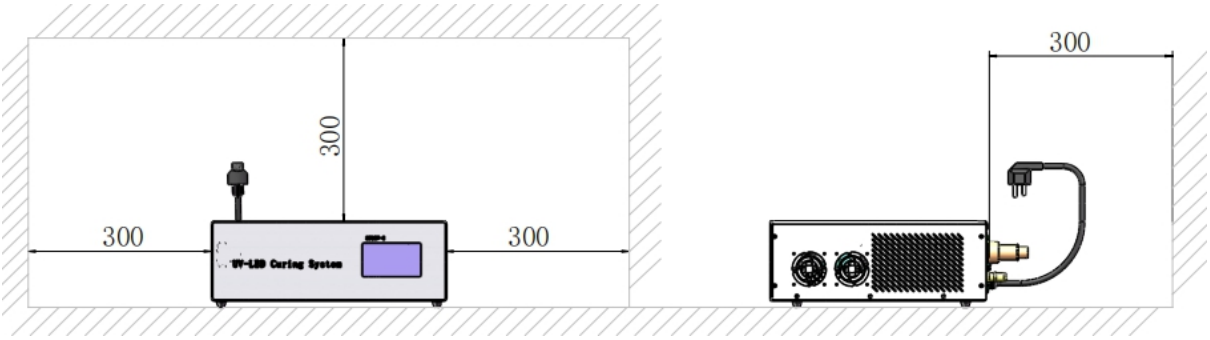
## 3.3 Installation Schematic

Installation Note:

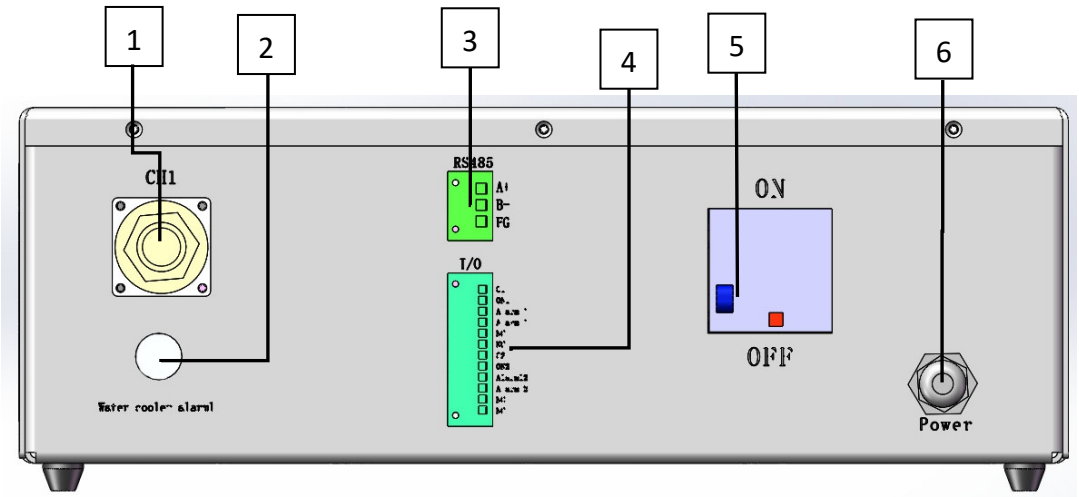
- Upon receiving the package, it's essential to conduct a thorough inspection to ensure the equipment's integrity and the presence of all necessary accessories. Each package should include one controller, one lamp, one connecting cable, and one instruction manual.
- When proceeding with the installation, it's crucial to prioritize proper positioning and fixation of both the controller and lamp. Additionally, thorough consideration of the installation environment, particularly regarding ventilation, is paramount to facilitate effective heat dissipation and ensure optimal performance.

Installation Sequence:

1. Begin by securely fixing the position of both the controller and lamp. Prioritize stability and alignment to avoid any potential issues during operation.
2. Before proceeding with the installation of the input power cord, it's imperative to confirm the compatibility of the power supply with the equipment. Given the inherent risks associated with high voltage, strict adherence to safety protocols and performing relevant operations while the power is off is strongly advised.
3. Align the connection port of the UV LED lamp (female) located at the back of the main controller with the corresponding dimpled side of the connector of the UV LED lamp (male). Carefully insert the connector, ensuring a snug fit. Once inserted, rotate the rotatable part counterclockwise until fully tightened to secure the connection.
4. Maintain proper installation spacing, adhering to the minimum requirement of 300mm as illustrated in the accompanying documentation and diagrams. This spacing ensures optimal performance and prevents potential interference between components.



## 3.4 Main structure and working principle



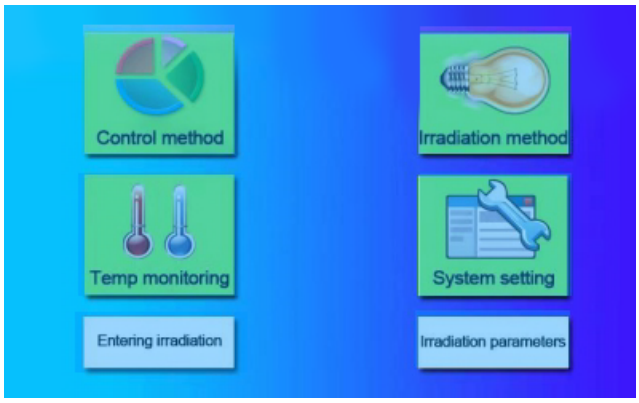

| No. | Name | Function |
|---|---|---|
| 1 | UV LED Connectors | UVLED Connection Port (Female) |
| 2 | Water chiller Signal Connector | Connected with the water chiller operation signal, to realize the water chiller and lamp synchronization controller, When the lamp is turned off, the water chiller continues to work according to the set delay time, until the timing is completed without the light signal input, the water chiller is automatically turned off (the water chiller delay time is recommended to be set to 60S) |
| 3 | RS485 communication port | Port numbering, from top to bottom A+ B- FG, for external parameter reading and writing |
| 4 | Input/output IO terminals | 1. Connect the foot switch or relay shorting for UV irradiation switch, the alarm output signal is relay shorting signal.<br>2. Port numbering: from top to bottom G1, ON1 a group, short on the light signal; Alarm1, Alarm1 a group, alarm output. |
| 5 | Earth leakage switch | Main power switch for controller |
| 6 | Power cable | External power input |

# 4. Instructions

## 4.1 Startup and shutdown

Before starting, check whether the water-cooling circuit is connected, and then check whether the signal line between the water-cooler and the controller, the UVLED lamp connection line and the power line are connected. After making sure that there is no error, first open the water chiller, and then turn on the UVLED system for related operations (if the UV system is turned on first and the water chiller is not turned on in time, the alarm will be activated after clicking into the irradiation page and the UV lamp cannot be turned on for irradiation). When shutting down the machine, please turn off the UVLED lamp first, and turn off the water chiller in time, then turn off the main power switch of the controller and unplug the power cord. (Note: Please do not turn on the water chiller for a long time when the UV LED is not working)

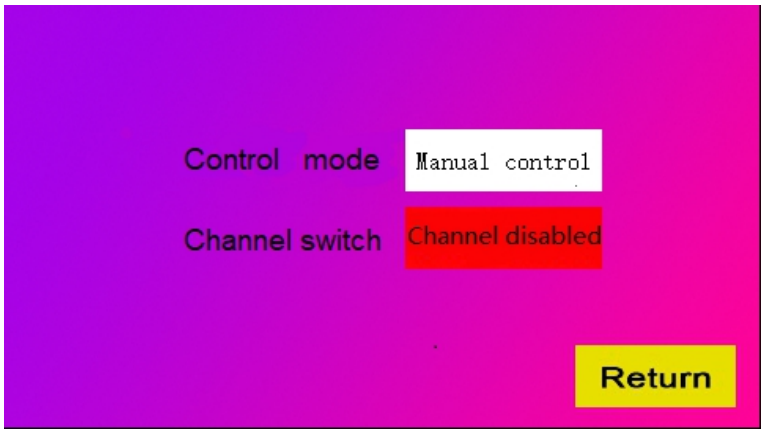
## 4.2 Operation




| Main interface | Display content |
|---|---|
| Control method | Manual control, Automatic control |
| Irradiation method | Irradiation power and time setting, total irradiation time query and zeroing |
| Temperature monitoring | Set alarm temperature, real-time display of lamp temperature |
| System setting | Restore Factory Settings |

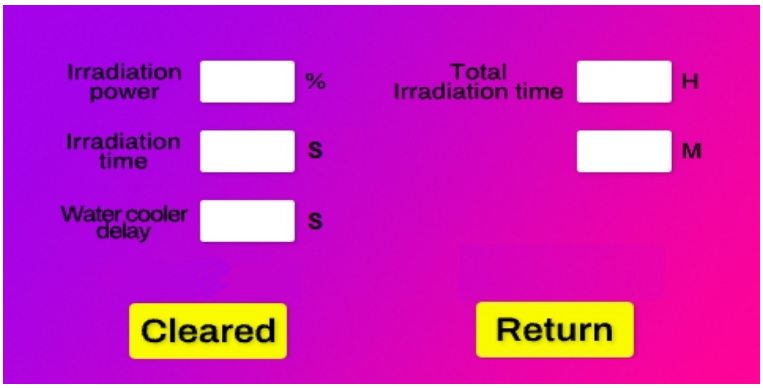
| | |
|---|---|
| Start to irradiate | Click on the button to enter the irradiation interface |
| View parameters | View parameters such as irradiation power, irradiation time, alarm temperature, etc. |

### 4.2.1 Control mode



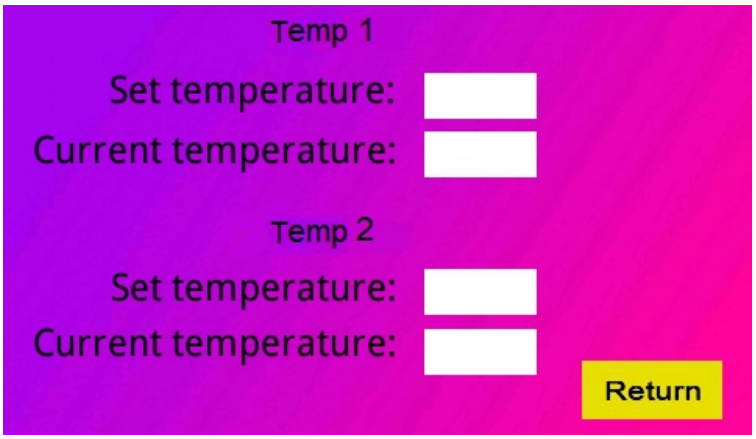

| | |
|---|---|
| Control mode | Click Automatic irradiation to switch to Manual control and work with the clock, can not timed control. |
| | Click Manual control to switch to Automatic irradiation, countdown work, can timed control. |
| Channel switch | Click Channel disabled to switch to Channel enable, the channel enable is on and the irradiation button can be turned on to work. |
| | Click Channel enable to switch to Channel disabled, the channel enable is off and the irradiation button cannot be turned on for operation. |

### 4.2.2 Irradiation method




| | |
|---|---|
| Irradiation power | Click the number in the space for irradiation power to bring up the input keyboard, type in the desired value and click Enter to confirm. The input range of irradiation power is 1-100%. |
| Irradiation time | Click the number in the space of irradiation time to pop up the input keyboard, type in the desired value and click Enter to confirm. Irradiation time input range 0-9999 seconds |
| Water chiller delay | Time setting for delayed water chiller shutdown after UVLED shutdown |
| Total irradiation time | Record the total exposure time of the UV lamp, you can click zero to clear the total exposure time, zero requires an administrator password. |

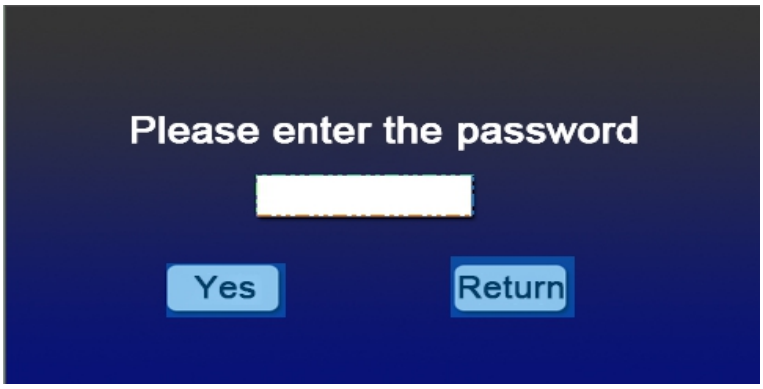
### 4.2.3 Temperature monitoring



| | |
|---|---|
| Set temp | Click on the number in the set temperature space to pop up the input keyboard, type in the user's own desired value and click Enter to confirm. The range of setting value is between 0℃ and 65℃. |
| Current temp | The current temperature is the real-time display of the UV LED lamp temperature, the current temperature exceeds the set temperature UV LED lamp will stop working and send an alarm signal. |

### 4.2.4 System settings

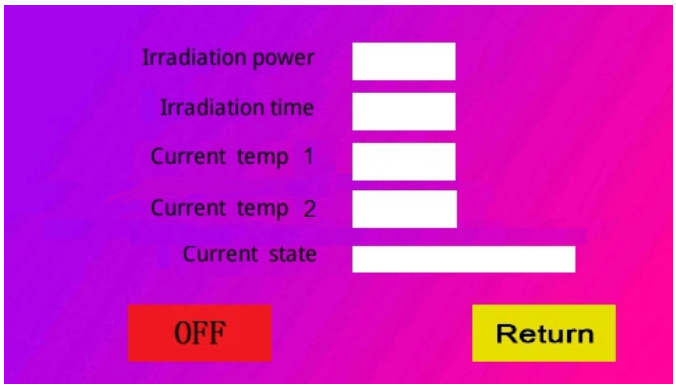
Clicking System Settings requires you to enter the administrator password to access the System Settings screen.




**Administrator password: 123456,**
**non-professionals please do not modify parameters**


| | |
|---|---|
| Factory reset | Clicking 'Restore Factory Settings' will restore the factory original data: irradiation power is 80%, irradiation time is 60S, temperature monitoring is set to 65℃. |

### 4.2.5 Entering irradiation



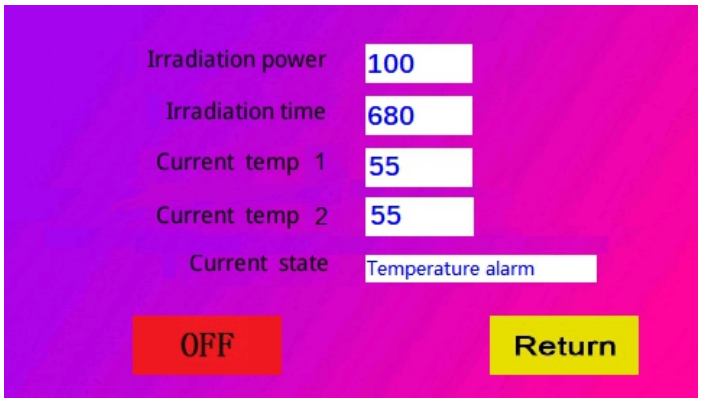

| | |
|---|---|
| ON/OFF | Start and stop buttons. |
| Return | Click the Start button to return to the main screen and turn off the irradiation at the same time. |

### 4.2.6 Viewing irradiation parameters

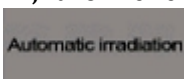
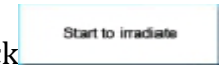
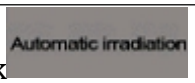
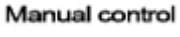
When the "Main Page" is displayed, click the "View Irradiation Parameters" button to view the irradiation power, time, alarm temperature and other parameters.


### 4.2.7 High temperature fault alarm

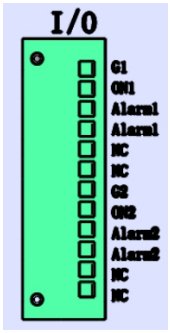
When the UV LED lamp is running, if the temperature of the UV LED lamp is higher than the set temperature, the UV LED lamp will be automatically turned off and an alarm signal will be issued, and the alarm signal will be automatically lifted when the current temperature of the UV LED lamp is lower than the set temperature.

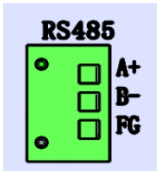



### 4.2.8 Examples of operations

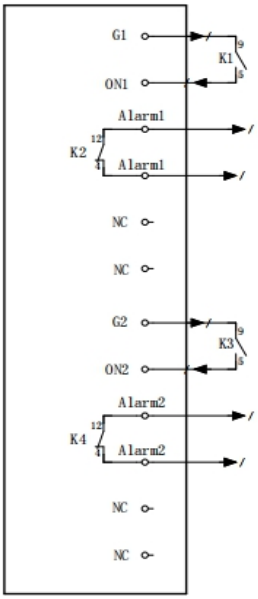
| | |
|---|---|
| Automatic control mode | 1, Click  , then click   to switch to automatic control mode  , then click "back" to return to main interface. |
| Modification of irradiation parameters | 2. Click  , input the parameters  ,  ,  , and click "Back" to return to the main interface after setting. |
| Access to irradiation | 3. Click   and   to start irradiation. The UVLED will light up and turn off automatically after 10 seconds countdown. You can also click   to turn it off in advance. |
| Manual control mode | 1. Click  , then click   to switch to the manual control mode  , and then click "Back" to return to main interface. |
| Modification of irradiation parameters | 2. Click  , input the parameters  ,  ,  , and click "Back" to return to the main interface after setting. |
| Access to irradiation | 3. Click  , click   to start irradiation. UVLED lights up, clockwise timing, click   to close manually. |

## 5. Peripheral device connections




**I/O signal port** **RS485 communication**

| IO signal port | Function | |
|---|---|---|
| G1 NO1 | Shorting the light on signal<br>External relay shorting controls the light on and off. |  |
| Alarm1, Alarm1 | Alarm output signal<br>Relay dry contact signal. | |
| RS485 communication | Top to bottom A+ B- FG for external parameter read/write. | |



### (1).RS485 communication protocol:

The UV LED controller adopts standard RS485 interface with baud rate 115200, no parity bit, 8 data bits and 1 stop bit (115200 N 8 1).

## (2) Register description:

| | |
|---|---|
| 00 | Local address Factory default '0' (range: 0-255) Read/write support |
| 01 | UVLED output power setting address (range: 1-100%) Read/write support |
| 02 | Manual/Auto Mode Setting Address (0: Manual 1: Auto) Read/Write support |
| 03 | Exposure time setting address (range: 0-9999 seconds) Read/write support |
| 04 | Alarm Temperature Setting Address (Setting Range: 0℃-55℃) Support Read/Write |
| 05 | Current temperature address Read only |
| 06 | NC |
| 07 | Enable/disable UVLED address (0: off 1: on) Write support |

## (3) UVLED controller support command code:

| | |
|---|---|
| 03 | Read function code Read parameter as hexadecimal number |
| 06 | Write Function Code The write parameter must be a hexadecimal number. |

## (4) Parameter read and write instruction format:

1. UV LED controller address modification instruction format (hexadecimal) such as: 0 address to 1 address

(A reboot of the controller is required for the device address change to take effect)

| | Device address | Function code | Register address | | Data bit | | CRC check | |
|---|---|---|---|---|---|---|---|---|
| Send command | 00 | 06 | 00 | 00 | 00 | 01 | 49 | DB |
| Receive instructions | 00 | 06 | 00 | 00 | 00 | 01 | 49 | DB |

2. UV LED controller output power setting instruction format (hexadecimal) such as: set 50% power output (decimal 50 to hexadecimal 32) if the device address is '0'

| | Device address | Function code | Register address | | Data bit | | CRC check | |
|---|---|---|---|---|---|---|---|---|
| Send command | 00 | 06 | 00 | 01 | 00 | 32 | 58 | 0E |
| Receive instructions | 00 | 06 | 00 | 01 | 00 | 32 | 58 | 0E |

3. UV LED controller automatic irradiation time setting instruction format (hexadecimal) such as: set irradiation 100 seconds, that is, 100 (decimal 100 to hexadecimal 64) if the device address is '0'

| | Device address | Function code | Register address | | Data bit | | CRC check | |
|---|---|---|---|---|---|---|---|---|
| Send command | 00 | 06 | 00 | 03 | 00 | 64 | 79 | F0 |
| Receive instructions | 00 | 06 | 00 | 03 | 00 | 64 | 79 | F0 |

4. UV LED lamp real-time temperature reading instruction format (hexadecimal) if the device address is '0'.

| | Device address | Function code | Register address | | Data bit | | CRC check | |
|---|---|---|---|---|---|---|---|---|
| Send command | 00 | 03 | 00 | 05 | 00 | 01 | 95 | DA |
| Receive instructions | 00 | 03 | 00 | 05 | 22 | | 95 | DA |

'22' is the real-time temperature value in hexadecimal, 34°C in decimal

## 6. Common faults and treatments

| Fault | Reason | Treatment |
|---|---|---|
| Water Cooling Alarm | Water chiller not turned on | Turn on the water chiller before starting the irradiation |
| | Poor contact or disconnection of water-cooled signal cable | Check if the signal cable is connected properly |
| Temperature Alarm | Overheating | Check the water chiller for proper operation |
| | Damaged temperature sensor | Enabling Backup Sensors |
| UV LED does not light up | Connection | Check that the connectors are plugged in |
| No power on | Poor power cord contact | Check the power connector, power cord plug for good contact. |
| | Earth leakage switch | Whether the leakage switch open |

## 7. Equipment maintenance

- Clean the surface daily to maintain cleanliness. Regularly clean the cooling fan port to ensure proper cooling (usually once a month, depending on the environment).
- Check the UV lamp's irradiation when turning on the light. If it's not functioning correctly, stop operation and contact staff for inspection or the manufacturer.
- Perform systematic maintenance every month, including inspecting the UV LED glass for pollution and lamp aging.

## 8. Precautions

### 8.1 Warranty

- This product is covered by a one-year warranty against non-man-made damage. During this period, all repair costs will be covered by us. Please note that self-demolition repair is not covered under the warranty.

### 8.2 Precautions

- Avoid direct UV light exposure to eyes or skin to prevent damage.
- Do not disassemble the UV LED, as it may lead to UV light leakage.
- Disconnect the power supply before installing or removing the UV LED lamp.
- When cleaning the lamp and controller, avoid using thinner, volatile oil, acetone, or kerosene. Instead, use a soft cotton cloth with a small amount of ethanol.
- Operate the machine in a cool, dry, ventilated environment free from high magnetic or electric fields.
- Use the factory's DC power supply for the power adapter.