



# FUTANSI

— 复坦希科技 —








UVLED 光源硬化装置 F-UVSP81T UVLN81T UVSF81T  
TOUCH 系列  
用户使用手册

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# 安全警告事项：

使用产品请一定遵守以下事项！

⚠ 注意		⚠ 警告	
 禁止	<ul style="list-style-type: none"><li>● 产品内部不可有液体，可燃物，金属等异物进入。 否则将导致本产品异常发热，冒烟。</li><li>● 不可在电源接通状态下进行施工（接线、拆卸等）。 否则可能导致触电。</li><li>● 请勿在本产品上放置物品等而造成通风孔堵塞。 否则可能因加热而导致烧损。</li><li>● 照射过程中或照射刚结束后，请勿赤手触摸。 否则可能因高温而导致烫伤。</li></ul>	 禁止	<ul style="list-style-type: none"><li>● 请勿在可燃性气体环境中使用本产品。 否则可能引发爆炸。</li><li>● 请勿将本产品投入火中。 否则将导致电子部件等破裂。</li><li>● LED亮起时，切勿直视直射光或反射光，或使其照射到皮肤上。 否则可能导致眼睛或皮肤损害或炎症。</li></ul>
 请务必遵守	<ul style="list-style-type: none"><li>● 请在本产品的保证特性，性能范围内使用。 超过保证特性，性能的极限值将导致破损。</li><li>● 通电时请勿触摸接线端子。 否则可能导致触电。</li><li>● 电线，连接器等请切实连接。 否则将可能导致本产品异常发热，冒烟。</li><li>● 请勿使用规格范围外的输入电源。 否则可能导致烧损。</li><li>● 请切实进行接地。 否则可能导致触电或误动作。</li><li>● 请勿在温度变化剧烈，发生结露的地方使用。 否则会导致故障。</li><li>● 请勿在有剧烈振动或冲击的地方使用。 否则会导致故障。</li></ul>	 请务必遵守	<ul style="list-style-type: none"><li>● 安装主体时，请避免将人体暴露在LED-UV光下。 接触LED-UV光可能导致皮肤损害或炎症。 如果可能暴露在LED-UV光及UV反射光下， 请盖上可阻挡UV光的具有适当透射率和热性能的外壳。</li><li>● 安装和操作时请务必佩戴护目镜和防护用品。 否则可能导致眼睛或皮肤损害或炎症。</li><li>● 主机产生的放射光中含有365nm或385nm波长的UV光， 因此请务必使用UV光护目镜。</li><li>● 请务必在切断电源的状态下进行LED照射头的清洁。 在供电状态下进行清洁，可能导致眼睛或皮肤损害或炎症， 还可能造成触电。</li></ul>
		 禁止分解	<ul style="list-style-type: none"><li>● 请勿分解，改装。 否则可能导致事故，受伤或触电。 否则将导致本产品异常发热，冒烟。 接触LED-UV光可能导致眼睛或皮肤损害或炎症。</li></ul>

UVLED 产品在使用过程中要注意：

## ■ 一般注意事项

- 连接本产品的电缆等请使用本公司指定，推荐的产品。使用非本公司指定，推荐的产品造成故障，损坏时，将不在保修范围内。
- 在附带的连接线，LED 照射头连接电缆可被用被弯曲。在标准实验条件下，都满足了电缆的弯曲性能。但在其实际使用的任何条件下的性能，不能保证。
- 请勿进行分解，改装及内部的设定。分解，改装使用造成故障，破损等情况时，将不在保修范围内。

## ■ 安装环境

- 环境温度 0°C - +45°C（不可结冰） ● 环境湿度 30% -85%RH（不可凝露）
- 无灰尘，油烟，导电性粉尘，腐蚀性，可燃性气体，盐分，铁分等场所 ● 不接触水，油，药品等的场所
- 无剧烈的温度变化和振动，冲击的场所 ● 无阳光直射的场所 ● 无强磁场，强电场的场所

## ■ 关于电源

- 请供应单相 200V-240V(频率 50Hz-60Hz)的电源电压。
- 请切实进行接地。
- 请勿与电机及带有感应性的机械，大功率装置使用同一电源网络。
- 对叠加在电源线上的干扰具有足够的耐干扰性，但建议在供电前最好使用隔离变压器等进行相应处置，减少干扰。

## ■ 关于配线

- 对于控制器，LED 照射头间的配线，请使用附件的电缆并切实连接。
- 在附带的连接线，LED 照射头连接电缆可被用被弯曲。  
当在弯曲使用时，作为一个最小弯曲半径大于 110mm，请执行系统的设计。弯曲随着半径小于推荐，存在着破裂发生在很短的时间周期的可能性。
- 当外部 I/O 连接感性负载（电机及断路器等）时，请在负载侧连接干扰吸收元件（干扰抑制器等）。
- 电源电缆配线后，为防止接触不良，请切实紧固连接器的固定螺丝。
- 请通过连接器（插头）部位装卸电缆。

## ■ 关于安装

- 安装控制器和照射头时，请保持水平。请勿倾斜，放倒及逆向安装。否则，可能导致发热，造成破损。
- 请勿安装在密闭空间中。● 请勿堵塞散热器的通风口。

## ■ 电源接通时的注意事项

- 接通电源前，请确认各种连接无误。

# 1 摘要

## 1.1 简介:

复坦希（上海）电子科技有限公司生产的 UV LED 系列设备：UVSP\UVLN\UVSF 型号产品，使用紫外光固化技术通过聚合方法固化油墨、涂料、粘合剂及其它紫外光敏材料。是低功耗、环保和更安全的新一代光源。

UV LED 是绿色环保的新型高科技产品，随着 LED 技术日趋成熟和广泛应用，它将很快替代传统的电极式 UV 汞灯。与传统 UV 汞灯相比，UVLED 不含汞，也不会产生臭氧；基于其本身的物理特性，克服了传统 UV 汞灯的诸多弊端和限制，在启动过程中，无需预热等待，瞬间可达峰值强度。超低的能耗和超长的使用寿命，是其替代传统 UV 汞灯的最佳选择。

复坦希 UVLED 固化系列设备广泛应用于微电子行业、光通信领域、医疗器械领域、PCB 行业、光学行业、印刷行业、科研及院所等。

## 1.2 说明书相关须知

本使用说明书是指导用户正确使用设备的重要文档。为确保使用安全请谨遵本说明书所列各项规范，并严格按照此规范操作使用设备。

此外，使用设备时也须遵守当地的安防条例、法规及其他安全规定，时刻谨记规范操作设备、安全生产。

用户在使用设备前请确保已仔细阅读该使用说明书。本使用说明书为设备的组成部分，并请用户妥善保管，确保在需要时可以随时方便的取阅。请用户阅读说明书后能确保其对于阅读内容的正确理解，当有疑问时请及时与厂商联系（详见《8-客户服务》）。

## 1.3 责任声明

以相关法规和标准为依据，并以我们在 UV 领域所积累的知识经验为基础，我们工程师细心的对该使用说明书进行编写。

在此复坦希（上海）电子科技有限公司郑重声明：如下情况产生的直接或间接损失我公司不承担任何法律及民事责任：

未严格按照本说明书规定进行操作

使用不当

未经培训的人员使用设备

无视错误信息或故障

继续使用有缺陷的设备

私自改造/改装

未按照电器标准正常接线

湿手操作可能遭遇的电击

使用设备时未佩带防护装置

刚使用完设备后，故意或无意触摸设备表面造成的烫伤

在水源附近、潮湿的地方使用此设备造成的人身伤害或物体损坏

在雷雨期间使用此设备而导致的电击或其它事故

在有安全隐患的环境里使用本设备

## 1.4 版权保护

本说明书由复坦希（上海）电子科技有限公司出版编写，请妥善保管此说明书，仅供用户设备使用相关人员阅读。本说明书受版权法保护，任何不符合版权法的使用必须事先征得本公司的允许，未经我公司授权不得向第三方转让，尤其是复制，传播，文字加工等行为。

## 1.5 质保条款

质保条款详见销售合同。

# 2 安全须知

## 2.1 使用说明书的内容

任何人在使用本设备前请务必仔细阅读本说明书并正确理解其内容，即使是具有类似设备使用经验或参加过生产厂商培训的人员。

## 2.2 改造、改装本设备

为了保障安全及避免危险的发生，在未经过我公司书面许可的前提下，任何人不得对设备进行改装及改造。

## 2.3 使用者义务

该设备应用在生产领域，因此设备的使用者应承担安全生产的相关法律义务。除了遵守本说明书外，使用者也必须遵守其他的安全、意外防范以及环保等方面的相关规定。尤其是：使用者应主动查询适用的安全法规，并对于特殊工作条件下可能存在的风险进行风险评估，并将其补充入使用说明书。

本使用说明书应按照与设备就近的原则妥善存放，以便使用者能随时按需取阅。

操作时须完全、无条件的遵守本使用说明书！

应保证设备在无故障的状态下才能运行。当对设备的运转有疑问及发现设备上出现破损、裂纹等情况时，必须马上停止设备运转，并及时联系厂商进行设备检查、维修。

未正确阅读及理解本使用说明书前请勿使用该光源设备。

本设备必须按说明书的连接方式进行连接运行，其它的连接和运行方式是禁止的。

必须要遵守前述及其它在说明书中所提及的对设备的定期检查！

## 2.4 操作人员

进行操作时操作人员应具备如下资质：

受过专业指导 操作员应受过相关的指导，能明白操作职责并知晓违规操作的危害。

专业人员 受过专业培训，具备相关的知识和经验，了解相关规定，有能力确定及避免潜在的危险，并能够对其他相关人员进行培训。

## 2.5 个人防护

当使用该设备时应穿着个人防护装备，以尽量减少健康危害的发生。

在整个工作流程中应始终穿着必要的防护装备。

在少于 1m 的距离内不可以将皮肤直接暴露在光照下。

请避免直视光源，防止 UV 射线直接或间接对眼部造成伤害

### 3 技术参数

#### 3.1 设备部件组合

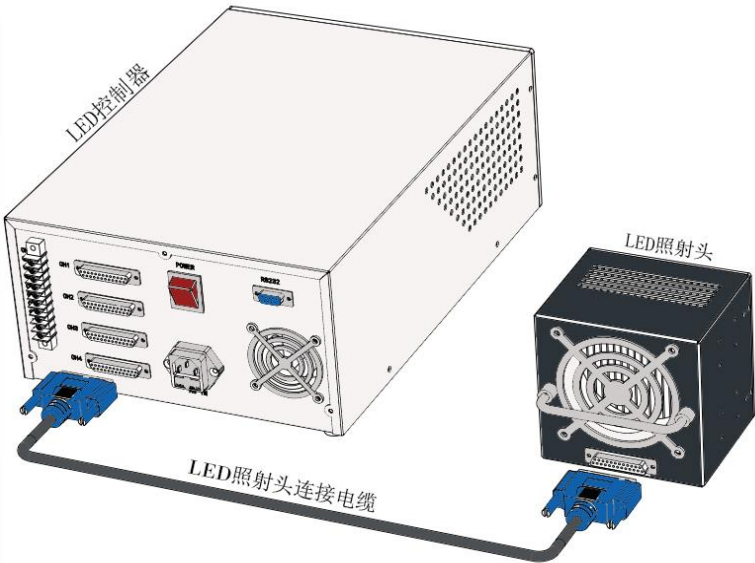
##### 3.1.1 点光源



##### 3.1.2 线光源



##### 3.1.3 面光源



## 4 系统设置操作说明（系统设置密码：2018）

### 4.1 工作主界面

#### 4.1.1 无检测主界面：

通道	模式	功率	时间	温度	状态
通道一	手动	60%	0.0s	28°C	关闭 打开
通道二	自动	60%	8.0s	28°C	关闭 打开
通道三	阶梯	60%	8.0s	0°C	关闭 打开
通道四	手动	60%	0.0s	0°C	关闭 打开

复坦希（上海）电子科技有限公司 系统版本:F-UVLED OS2.5      www.futansi.com      售后电话：13917846211

#### 4.1.2 有紫外光强度检测主界面

通道	模式	功率	时间	温度	状态
通道一时间：	手动	60%	0.0s	28°C	关闭 打开
通道二时间：	自动	60%	8.0s	28°C	关闭 打开
通道三时间：	阶梯	60%	8.0s	0°C	关闭 打开
通道四时间：	手动	60%	0.0s	0°C	关闭 打开

紫外光能量实时监测\自动补偿

1000.0 mw/cm<sup>2</sup>      0.0 mw/cm<sup>2</sup>      复坦希（上海）电子科技有限公司      www.futansi.com

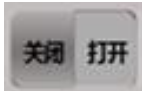
注:



能正常检测到温度，表示 LED 光源连接正常，可以正常使用。



表示 LED 光源正在运行使用中。



表示没有检测到 LED 光源，此状态下 关闭/打开 无效，点击无反映。



表示温度异常报警，点击可解除报警。当运行中出现此警示图标时，表示 UV 光源温度过高。请检查散热装置是否正常工作。



表示 LED 异常，点击可解除报警。当运行中出现此警示图标时，表示 LED 短路或开路。请检查 LED 光源是否正常点亮。如不能排除故障，请及时联系本公司。

\*部分机型如遇此页面，表示未连接水冷机或水冷机故障，请检查外接水冷设备。水冷散热有连接水冷机的，必须先开启水冷机，否则会提示报警。



## 4.2 系统设置

系统设置主界面

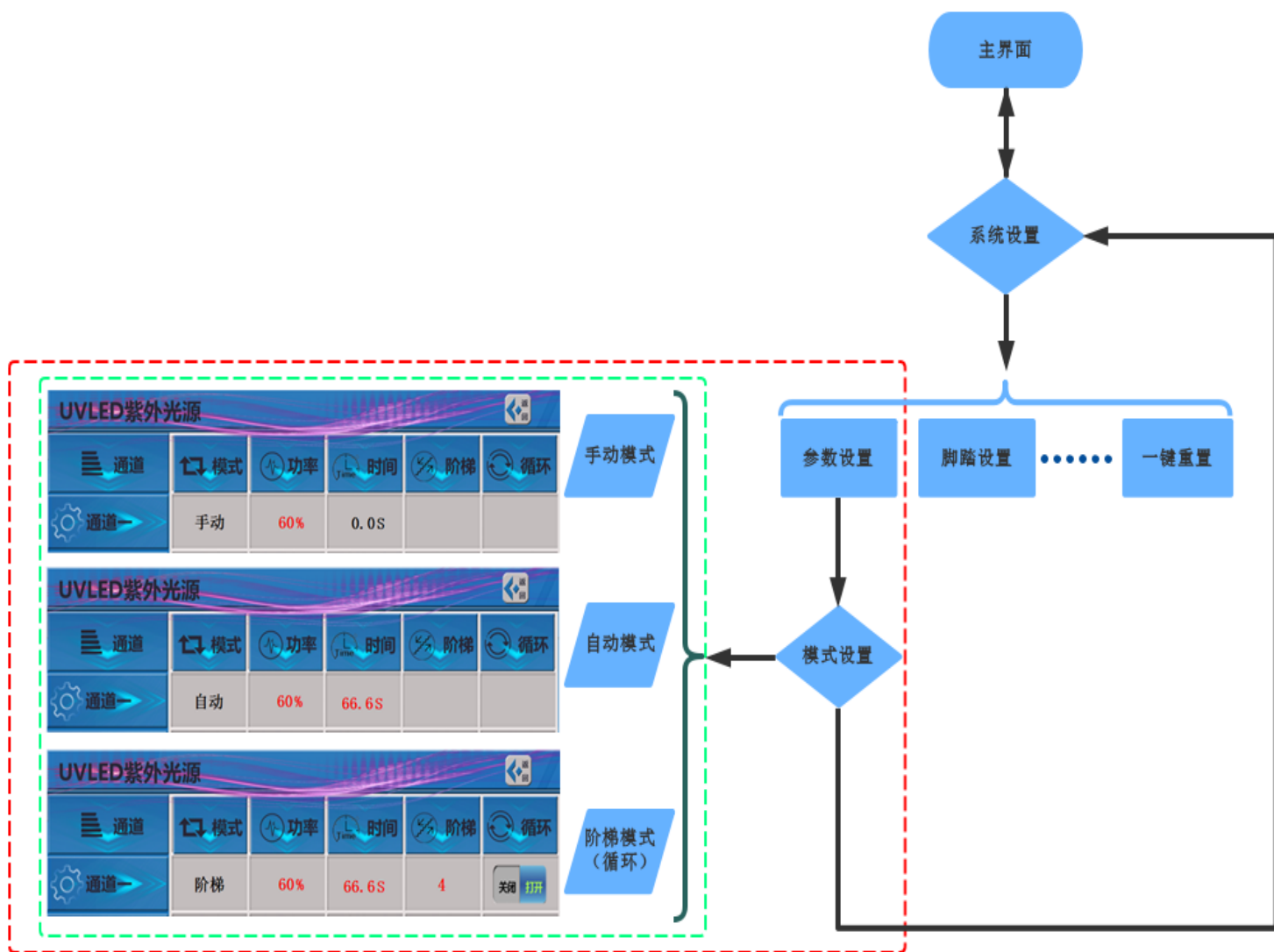


### 4.2.1 参数设置

参数设置主界面

通道	模式	功率	时间	阶梯	循环
通道一	手动	60 %	0.0 S		
通道二	自动	60 %	10.0 S		
通道三	阶梯	60 %	10.0 S	2	关闭 打开
通道四	阶梯	60 %	10.0 S	2	关闭 打开

备注：红色区域和字体表示可点击设置区域



每个通道可独立设置（四种）不同照射模式：手动、自动、阶梯、阶梯循环模式

手动照射模式：可进行照射功率设置, 时间不能设置（0-999.9 秒自动循环）

自动照射模式：可进行照射功率和照射倒计时设置

阶梯照射模式：可进行照射功率、照射倒计时以及阶梯步数设置

阶梯循环模式：在阶梯模式下，打开循环即重复执行阶梯设置步数

照射功率可调范围：10%—100%

时间可设置范围：000.0s—999.9s

阶梯照射步数范围：0—20

阶梯照射循环范围：无限循环

阶梯：只有在阶梯模式下才会出现阶梯数量

循环开关：只有在阶梯模式下才会出现循环按钮

例 1：模式设置。点击通道对应模式区域，会弹出模式选择框，选择需要的模式，模式对应栏会自动显示选择的模式。



例 2：点击通道对应功率区域，会弹出功率数值设置小键盘，设置好功率、时间后点击确认。















例 3：阶梯设置。第三通道为阶梯模式，点击第三通道对应功率、时间区域，会弹出例 4 界面

返回					
通道	模式	功率	时间	阶梯	循环
通道一	手动	60 %	0.0 S		
通道二	自动	60 %	10.0 S		
通道三	阶梯	60 %	10.0 S	2	关闭 打开
通道四	阶梯	60 %	10.0 S	2	关闭 打开

例 4：功率和时间都可以设置，绿色方框阶梯数为例 3 界面设置阶梯数，数字对应阶梯数为蓝色背景，其它显示灰色表示未设置。设置完成后点击返回按钮，返回到参数设置主界面。













返回					
阶梯设置 (1-10阶梯)					下一页 (11-20阶梯)
阶梯	功率	时间	阶梯	功率	时间
一阶梯	60 %	10.0 S	六阶梯	60 %	10.0 S
二阶梯	60 %	10.0 S	七阶梯	60 %	10.0 S
三阶梯	60 %	10.0 S	八阶梯	60 %	10.0 S
四阶梯	60 %	10.0 S	九阶梯	60 %	10.0 S
五阶梯	60 %	10.0 S	十阶梯	60 %	10.0 S

#### 4.2.2 联动设置

 返回		
 通道	 联动通道	 联动设置
 通道一 >>	联动 一	 点击设置
 通道二 >>	联动 二	 点击设置
 通道三 >>	联动 三	 点击设置
 通道四 >>	联动 四	 点击设置

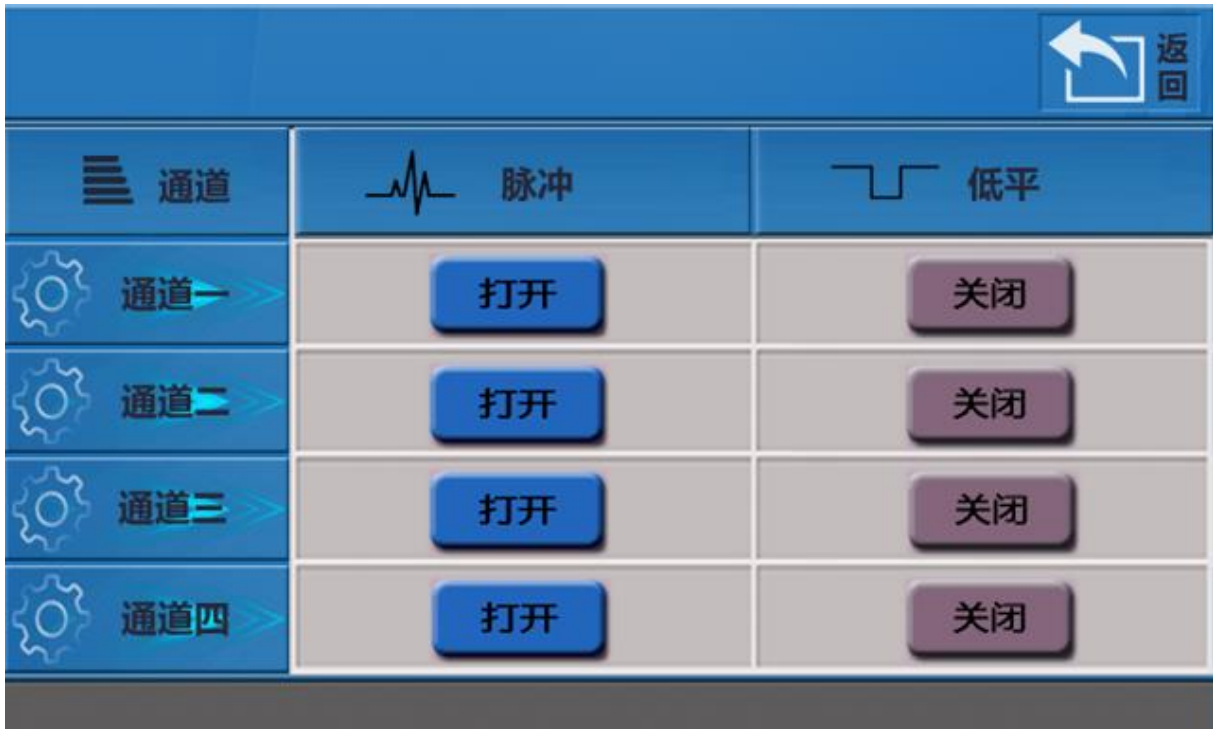
联动状态含四组联动：联动 1/联动 2/联动 3/联动 4  
 将任意通道的联动状态调整为相同组合，即可实现联动

例：调整联动为如下状态

 返回		
 通道	 联动通道	 联动设置
 通道一 >>	联动 一	 点击设置
 通道二 >>	联动 一	 点击设置
 通道三 >>	联动 三	 点击设置
 通道四 >>	联动 三	 点击设置

此时，通道 CH1/CH2 皆为联动组合 联动 1，故实现 CH1/CH2 联动；通道 CH3/CH4 皆为联动组合 联动 3，故实现 CH3/CH4 联动。

### 4.2.3 脚踏设置

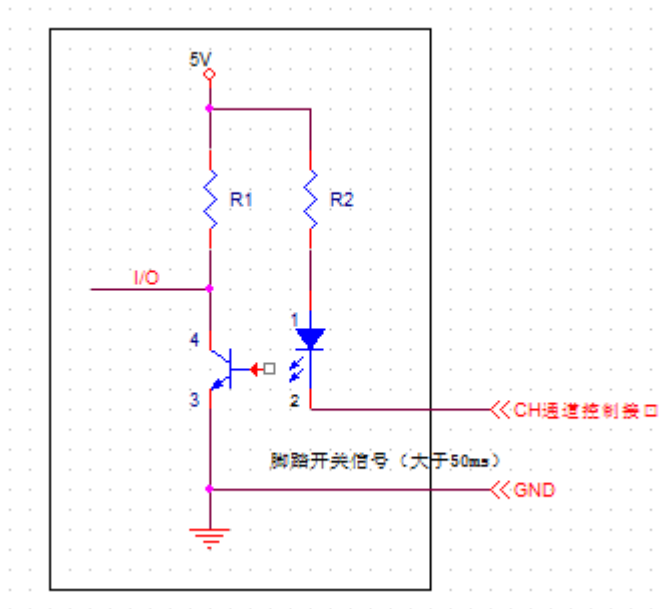


脚踏启动方式分为脉冲和低平模式。默认开启状态为：脉冲

脉冲：踩下脚踏开关即启动照射，再次踩下时停止照射。

低平：踩下脚踏开关开始照射，松开时停止照射。

本机提供四通道脚踏开关控制，接地开关控制接口除了和脚踏开关连接外，还可以和 PLC、单片机、上位机 I/O 口等设备直连，控制接口协议要求如图所示，按图连好线后，所给信号低电平持续时间大于 50ms 即可。



#### 4.2.4 语言设置



支持中、英两种语言切换。默认中文，点击可切换。

#### 4.2.5 声音设置



默认为打开状态，字体高亮。  
报警提示音无法被关闭。

#### 4.2.6 报警记录查询

能查询最近 50 次报警时间、状态以及开启关闭报警功能的时间。此功能暂时只支持 RS232 查询。

#### 4.2.7 一键重置



进入重置页面后，会弹出警示框，进一步确认后恢复出厂设置。恢复完成后，自动返回主界面。所有功能参数和设置都恢复到默认状态。（如下图）



## 5 RS232 串口通信

本公司 UV 系列产品为便于系统集成，增加了 RS232 串口通讯技术，可使用电脑、PLC、上位机等设备进行操作。RS232 可直接控制开关状态、更改模式、设置功率大小以及时间（阶梯模式除外）。

设置步骤如下：

**Step1:** 使用 9 针串口连接器连接 UVLED 控制器与电脑或者 PLC 等设备

**Step2:** 通讯参数设置：波特率为 9600bps, 8 个数据位 1 个停止位，无奇偶校验位

**Step3:** 通讯协议“握手”：上位机或 PLC 设备发送通讯协议指令，发送字符串“FUTANSI”（大写字母），UVLED 控制器如果成功接收该字符串后，会返回字符‘OK’或十六进制‘4f4b’，表示握手成功，此时可通过 RS232 接口控制 LED 光源以及更改主机参数。

**Step4:** 发送控制指令

控制方式如下：

图一

数据头	控制指令	注释
A55A	11/10	通道一打开/关闭
A55A	21/20	通道二打开/关闭
A55A	31/30	通道三打开/关闭
A55A	41/40	通道四打开/关闭

图二

数据头	通道控制位	手动/自动（模式）	功率(0-100%)	时间(0-999.9s)
A55A	11/10	00/01	00-64	0000-270F
A55A	21/20	00/01	00-64	0000-270F
A55A	31/30	00/01	00-64	0000-270F
A55A	41/40	00/01	00-64	0000-270F

图一为控制指令，可打开或关闭 LED；

图二为系统参数修改指令，可修改模式（手动、自动）、功率（0%-100%）、时间（0-999.9 秒），手动模式下时间不可以设置。

详细说明如下：

**通道开关:** 通道开关第一位表示对应通道，第二位代表开关状态；11 代表修改完系统参数后直接打开一通道；10 代表修改完系统参数后直接关闭一通道；

**模式:** 00 表示手动模式；01 表示自动模式。

**功率:** 通过串口可设置的最大功率为 100%；

**时间:** 四位数分别表示时间百位、十位、个位、小数位。最大可设置时间长度为 999.9 秒

**注释:** 1、以上串口命令均按十六进制发送；设置功率时，0-100%功率分别对应十六进制 00-64；具体对应关系请查看 ASCII 码表。

2、时间设置范围为 0-999.9 秒；分别对应 0000-270F；具体对应关系为时间最高位到最低位分别为 16 的 3 次方；16 的 2 次方；16 的 1 次方；16 的 0 次方。

3、串口发送 A55AC0 会实时读取四个通道光源的温度值，温度值以十六进制显示，没有接光源的通道温度值为 00；

## 6 日常维护保养

FUTANSI 的 UV 系列设备只需要少量的维护和清洁工作。保养设备前，请务必切断电源、拔出电源线，并静置 5 分钟后方可进行。保养完毕，待设备完全干燥后方可使用，以防危险发生！

控制器保养（建议 1 次/月），使用压缩气体或吸尘设备去除控制器内部和栅格上过多的灰尘和垃圾。

UVLED 光源长期使用时，需要定期的保养（建议 1 次/月），保养时请检查光源的保护玻璃是否有异物，在有异物的情况下建议使用柔软的清洁布加以酒精轻轻拭去，请勿用力过大或使用含有氨水的清洁材料，以免损坏保护玻璃影响透光。严禁使用酒精、丙酮等化学试剂擦拭或直接接触 LED。

## 7 注意事项：

当设备出现故障时，请第一时间联系我司售后服务部门，会有专业的技术人员进行指导。

为避免不必要的问题。当设备出现故障后，请勿私自打开壳体，问题故障的排除只允许在 FUTANSI 技术人员的指导下进行或在 FUTANSI 公司内部进行，如果自行打开故障机将失去向本公司维修索赔的权利。

设备出现故障时，应第一时间进行紧急处理，最快速度切断电源并立即致电 FUTANSI 公司。

当设备需要维修时请寄往 FUTANSI 公司 UV 固化部门。

设备安装使用建议：

安装在没有灰尘的工作间可保证设备的使用寿命

尽量使工作间的温湿度在设备最适合的范围内

设备应安装在远离水源的地方

设备应安装在远离天然气、煤气等可燃气体易泄露的区域内

设备安装的工作台确保稳定，不能摇晃

设备安装的工作台确保水平放置，长时间的倾斜放置会减少设备的使用寿命

设备的电源插座尽量单独配置，尤其是不要和大功率其它设备共享使用一个插座



此设备所有设计用途以外的应用都可能会导致危险，一定严格按照设备使用说明书进行操作，否则会存在一定安全隐患。



任何人在使用此设备前请务必仔细阅读本说明书并正确理解其内容，即使是具备类似设备使用经验或参加过生产厂商培训的人员，如有不理解之处请及时和我们取得联系，在 FUTANSI 技术服务人员的指导下进行操作此设备。



当心！紫外光设备。



必须佩戴防护眼镜。请避免直视光源，防止 UV 射线直接或间接对眼部造成伤害。



请在使用该设备时穿着个人防护装备，在少于 1m 的距离内不可以将皮肤直接暴露在光束下。



使用此设备时请带好防护手套，可有效防护由于摩擦，磨蚀，毛刺等所引起的手部伤害，也可防止手部直接接触照射体高温表面和 UV 射线可能引起的严重伤害。



设备应安装在通风的空间，并应定期检查控制主机和照射光源的散热风扇是否正常转动，避免散热不好带来的不良结果



设备应安装在远离天然气、煤气等可燃气体易泄露的区域内，尽量使工作间的温湿度在设备最适合的范围内，同时设备也应安装在远离水源的地方。

## 8 客户服务

复坦希（上海）电子科技有限公司

地址：上海市青浦区华徐公路 3029 弄 86 号（民兴工业区）

电话：+86-21-69790531

+86-13917846211

邮箱：futansi@futansi.com

salesassistant@futansi.com

<http://www.futansi.com>

# 安全警告事项:

使用产品请一定遵守以下事项!

⚠ 注意		⚠ 警告	
⊘ 禁止	<ul style="list-style-type: none"> <li>● 产品内部不可有液体, 可燃物, 金属等异物进入。否则将导致本产品异常发热, 冒烟。</li> <li>● 不可在电源接通状态下进行施工 (接线、拆卸等)。否则可能导致触电。</li> <li>● 请勿在本产品上放置物品等而造成通风孔堵塞。否则可能因加热而导致烧损。</li> <li>● 照射过程中或照射刚结束后, 请勿赤手触摸。否则可能因高温而导致烫伤。</li> </ul>	⊘ 禁止	<ul style="list-style-type: none"> <li>● 请勿在可燃性气体环境中使用本产品。否则可能引发爆炸。</li> <li>● 请勿将本产品投入火中。否则将导致电子部件等破裂。</li> <li>● LED亮起时, 切勿直视直射光或反射光, 或使其照射到皮肤上。否则可能导致眼睛或皮肤损害或炎症。</li> </ul>
⚠ 请务必遵守	<ul style="list-style-type: none"> <li>● 请在本产品的保证特性, 性能范围内使用。超过保证特性, 性能的极限值将导致烧损。</li> <li>● 通电时请勿触摸接线端子。否则可能导致触电。</li> <li>● 电线、连接器等请切实连接。否则将导致本产品异常发热、冒烟。</li> <li>● 请勿使用规格范围外的输入电源。否则可能导致烧损。</li> <li>● 请切实进行接地。否则可能导致触电或误动作。</li> <li>● 请勿在温度变化剧烈, 发生结露的地方使用。否则会导致故障。</li> <li>● 请勿在有剧烈振动或冲击的地方使用。否则会导致故障。</li> </ul>	⚠ 请务必遵守	<ul style="list-style-type: none"> <li>● 安装主体时, 请避免将人体暴露在LED-UV光下。接触LED-UV光可能导致皮肤损害或炎症。如果可能暴露在LED-UV光及UV反射光下, 请戴上可阻挡UV光的具有适当透射率和热性能的外壳。</li> <li>● 安装和操作时请务必佩戴护目镜和防护用具。否则可能导致眼睛或皮肤损害或炎症。</li> <li>● 主机产生的放射光中含有365nm或385nm波长的UV光, 因此请务必使用防UV护目镜。</li> <li>● 请务必在切断电源的状态下进行LED照射头的清洁。在供电状态下进行清洁, 可能导致眼睛或皮肤损害或炎症, 还可能造成触电。</li> </ul>
⊘ 禁止分解		⊘ 禁止分解	<ul style="list-style-type: none"> <li>● 请勿分解, 改装。否则可能导致事故, 受伤或触电。否则将导致本产品异常发热, 冒烟。接触LED-UV光可能导致眼睛或皮肤损害或炎症。</li> </ul>

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 《8-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 have 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.

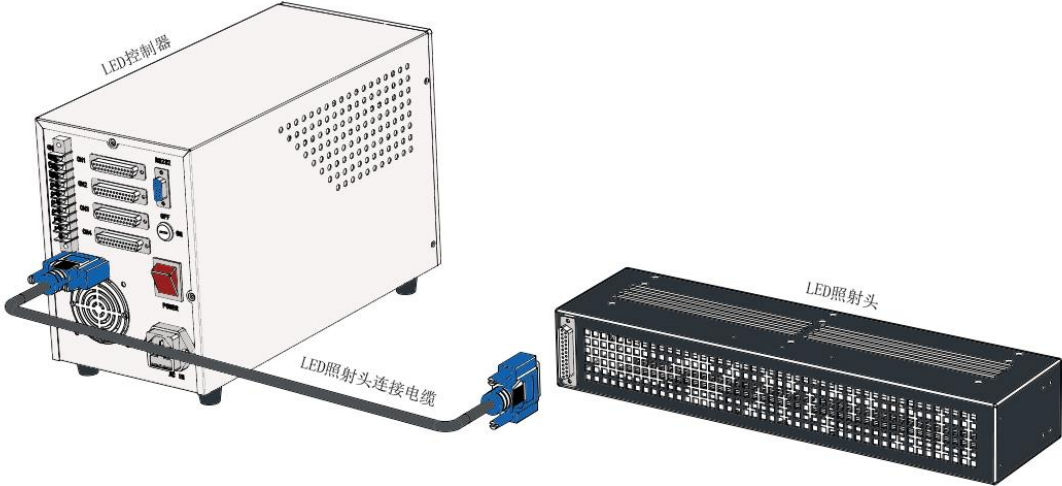
### 3 Technical parameters

#### 3.1 Equipment component combination

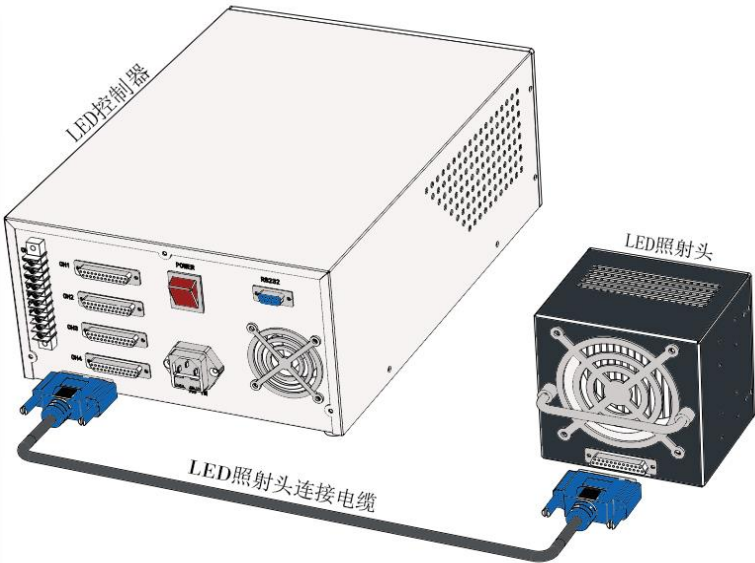
##### 3.1.1 point light source



##### 3.1.2 line light source



##### 3.1.3 surface 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	Automatic	70%	8.0 s	28 °C	Close Open
Channel-3	Ladder	80%	8.0 s	0 °C	Close Open
Channel-4	Manual	90%	0.0 s	0 °C	Close Open

Futansi (ShangHai)Electronic Technology Co.,Ltd System version : F-UVLED OS2.5 www.futansi.com

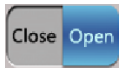
#### 4.1.2 UV light intensity detection main interface

Channel	Model	Power	Time	Temp	State
Channel-1	Manual	60%	0.0 s	28 °C	Close Open
Channel-2	Automatic	70%	8.0 s	28 °C	Close Open
Channel-3	Ladder	80%	8.0 s	0 °C	Close Open
Channel-4	Manual	90%	0.0 s	0 °C	Close Open

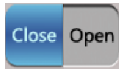
Real-time detection of ultraviolet light energy  
 1000.0mw/cm<sup>2</sup> 0.0mw/cm<sup>2</sup>

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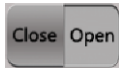
notes:



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.



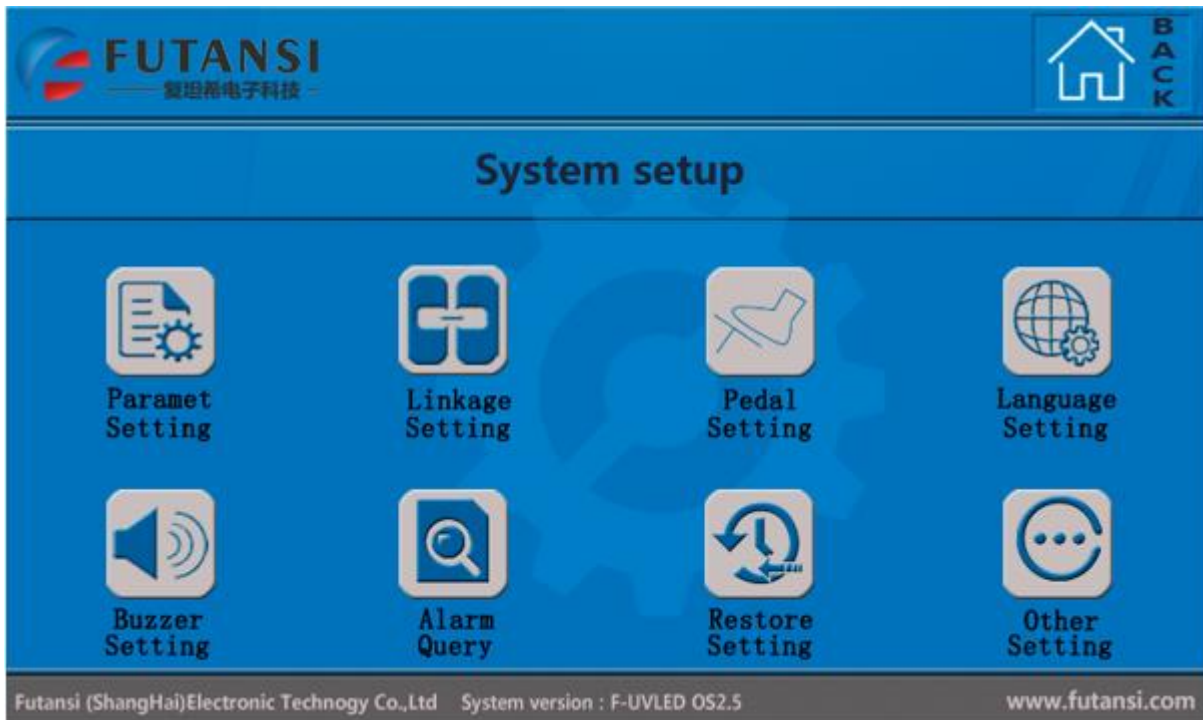
It indicates that the LED is abnormal. Click to cancel the alarm. When this alert icon appears during operation, it indicates that the LED is shorted or open. Please check if the LED light source is lit normally. If you cannot solve the problem, please contact the company in time.

\*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.

The screenshot shows the FUTANSI control interface. At the top, there is a blue header with the FUTANSI logo and a 'Setting' icon. Below the header is a navigation bar with icons for Channel, Model, Power, Time, Temp, and State. The main area displays four channels: Channel-1, Channel-2, Channel-3, and Channel-4. Channel-1 is currently selected and shows a warning message: 'The cooling device is not connected or failed.' with a red exclamation mark icon. Below this message are 'Yes' and 'No' buttons. Channel-2 shows a red exclamation mark icon and the text 'Please check the water cooling device.' Channel-3 and Channel-4 show their respective settings: Channel-3 has 'Manual' mode and Channel-4 has '90%' power, '0.0 s' time, and '0 °C' temperature. Each channel has 'Close' and 'Open' buttons on the right side.

## 4.2 System settings

System settings main interface

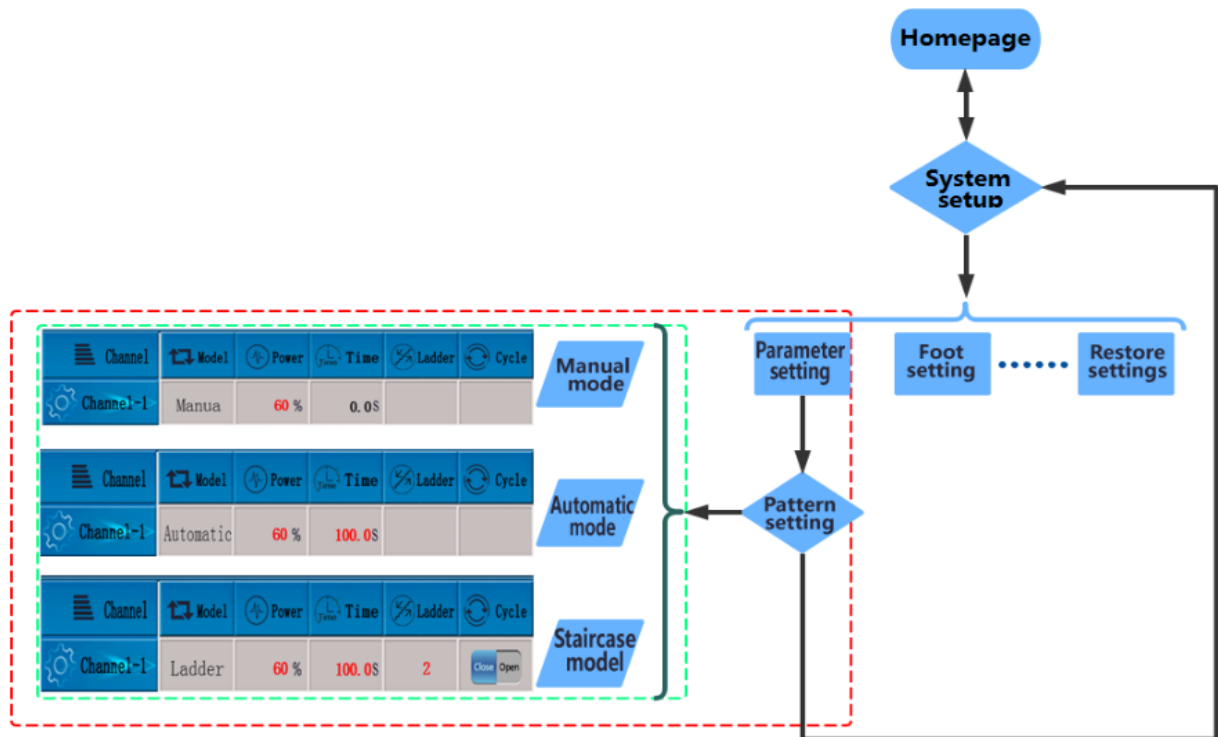


### 4.2.1 Parameter setting

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	60 %	10.0 S	2	Close Open
Channel-4	Ladder	60 %	10.0 S	2	Close Open

Note: Red area and font indicate clickable settings area



### Parameter setting process

Each channel can be independently set (four) different illumination modes: manual, automatic, ladder, ladder cycle mode

Manual illumination mode: illumination power setting available

Auto Illumination Mode: Allows for illumination power and illumination countdown settings

Ladder illumination mode: illumination power, illumination countdown, and step count settings

Ladder loop mode: in step mode, open the loop and repeat the step setting steps

Irradiation power range: 10% - 100%

Irradiation time range: 000.0s--999.9s

Ladder irradiation step range: 0-20

Ladder illumination cycle range: infinite loop

Ladder: The number of steps will only appear in the ladder mode

Cycle switch: Loop button only occurs in ladder mode

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.



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.









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.

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












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.

BACK						
Ladder setting ( 1-10 Ladder )						Down ( 11-20 Ladder )
Ladder	Power	Time	Ladder	Power	Time	
Step1	60 %	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

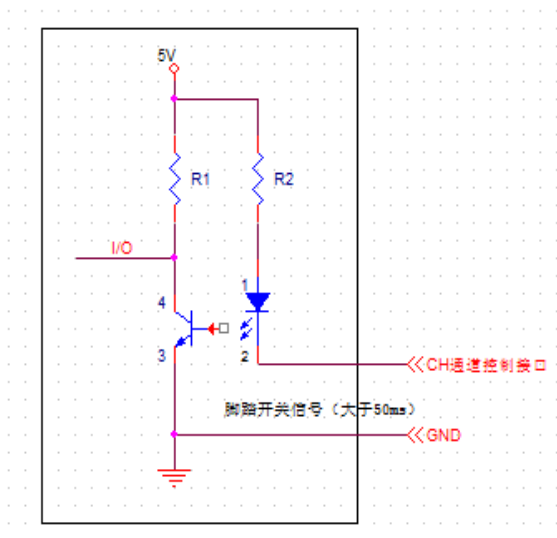


Pedal starting mode is divided into pulse mode and level mode. And its default on state is pulse.

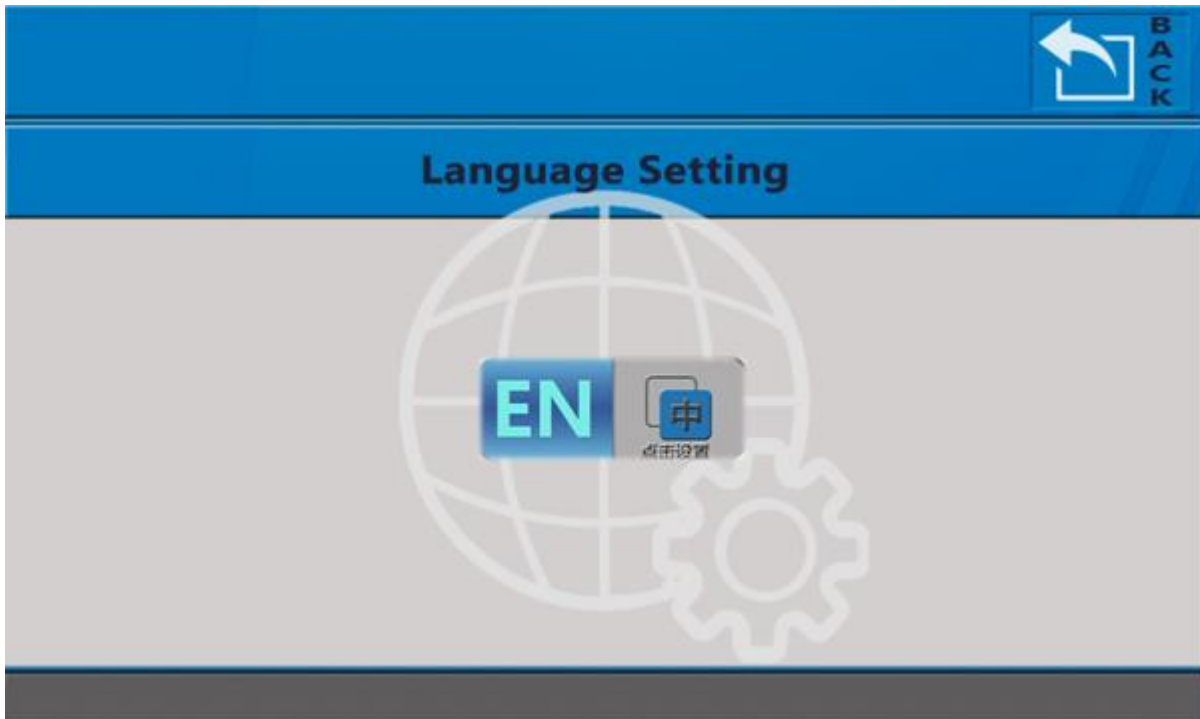
Pulse: step on the pedal switch to start illuminating, step again to stop illuminating

Level: step on the pedal switch to start illuminating, stop illuminating when it is released.

This device provides four-channel pedal switch control. In addition to the connection with the pedal switch, the grounding switch control interface can also be directly connected with PLC, MCU, PC IO port and other devices. The control interface protocol requirements are as shown in the figure. After a good wiring, the signal low level duration is greater than 50ms.

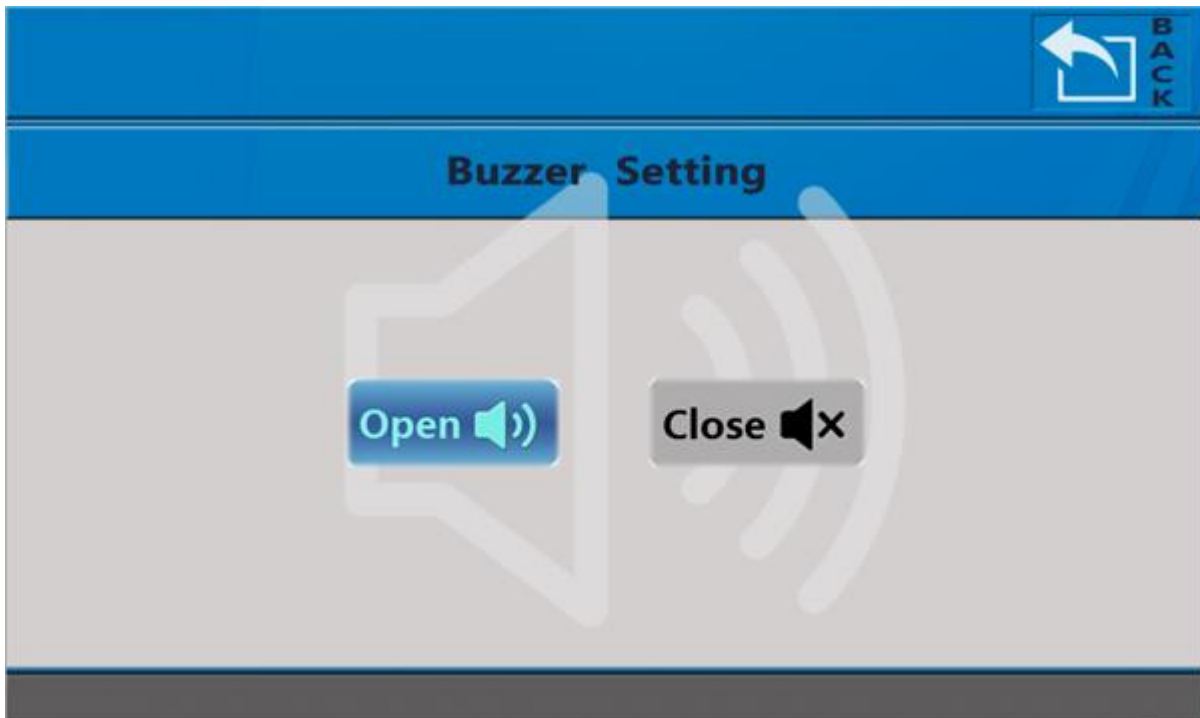


#### 4.2.4 Language setting



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

#### 4.2.5 Voice setting

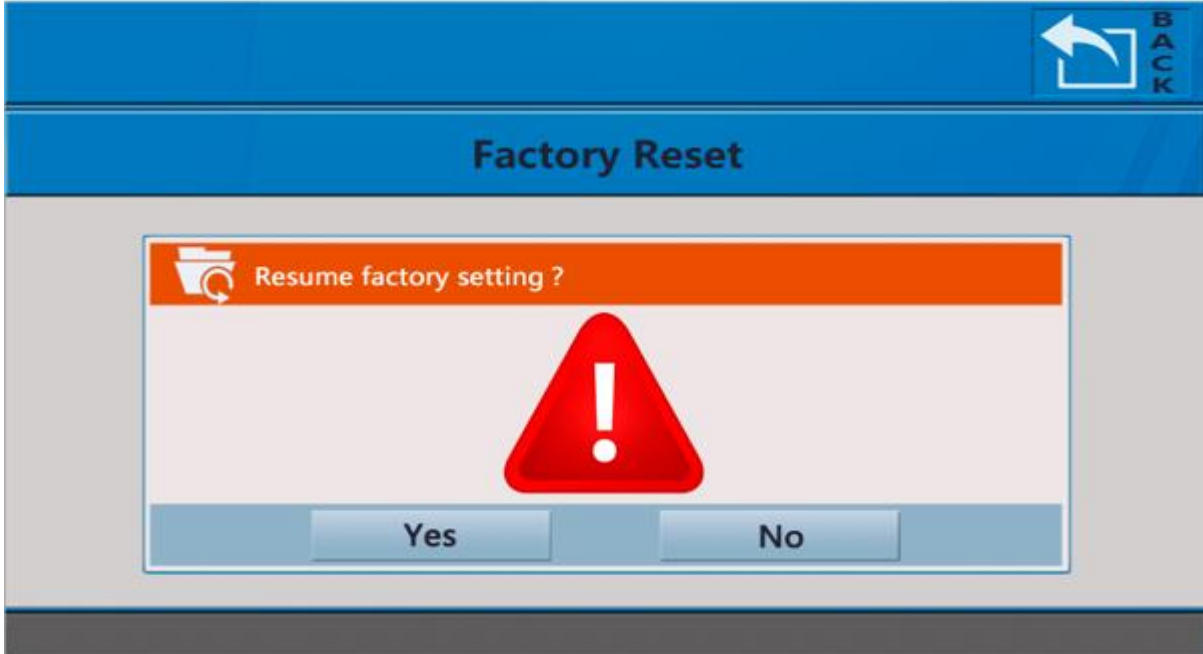


The default is on and the font is highlighted.  
The alarm tone cannot be turned off



#### 4.2.6 Query of Alarm Record

You could inquiry last 50 alarm time, status, and time of turning on and off the alarm function. This function supports 232 query only.

#### 4.2.7 One-button Reset



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%	0.0 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 OS2.5 [www.futansi.com](http://www.futansi.com)

## 5 RS232 Serial 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	CH1 on / off
A55A	21/20	CH2 on / off
A55A	31/30	CH3 on / off
A55A	41/40	CH4 on / off

Figure2(the system parameter modification command)

Data header	Channel control bits	Manual / automatic (mode)	Power (0-100%)	Time (0-999.9s)
A55A	11/10	00/01	00-64	0000-270F
A55A	21/20	00/01	00-64	0000-270F
A55A	31/30	00/01	00-64	0000-270F
A55A	41/40	00/01	00-64	0000-270F

**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;

**Mode:** 00 indicates manual mode; 01 indicates automatic mode.

**Power:** The maximum power that can be set through the serial port is 100%;

**Time:** The four digits indicate the hundreds, tens, ones, decimal places. The maximum settable time is 999.9 seconds.

**Note:** 1. The above serial commands are sent in hexadecimal; when setting the power, the 0-100% power is corresponding to hexadecimal 00-64; for the corresponding relationship, please check the ASCII code table.

2. The time setting range is 0-999.9 seconds; corresponding to 0000-270F respectively; the specific correspondence from the highest to the lowest is 16<sup>3</sup>; 16<sup>2</sup>; 16<sup>1</sup>; 16<sup>0</sup>.

3, the serial port sends A55AC0 will read the temperature value of the four channel light source in real time, the temperature value is displayed in hexadecimal, the channel temperature value without the light source is 00;

## 6 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.

## 7 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.

## 8 Customer service

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