Lamp Spot Type UV Curing Systems
ANUP50
Users’ Manual

Panasonic Electric Works SUNX Co., Ltd.
Introduction

Thank you for your purchase of the Lamp Spot Type UV Curing Systems. In order to use the system correctly, please read this manual carefully before use.

<table>
<thead>
<tr>
<th>Safety Precautions</th>
<th>Please use the following precautions to prevent injuries and accidents</th>
</tr>
</thead>
</table>

In order to use the system correctly, read this manual carefully before installation, operation, or inspection. Make sure you have good knowledge of the device, safety information, and these precautions before use.

This manual classifies safety precautions into two categories: Danger and Warning.

**Danger**
- Incorrect handling could result in death or serious injury.

**Warning**
- Incorrect handling could result in serious injury or property damage.

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**Danger**

- Do not subject the eyes or skin to direct or strongly reflected light when the lamp is on. When operating, use UV-blocking protective goggles.
- The ultraviolet light generated by the system includes ultraviolet light with extremely short wavelength, which could induce inflammation (sunburn) if the skin is exposed to it directly, or its reflection. In the case of the eyes, exposure over time (several hours) will cause burning and watering, and the person exposed will not be able to maintain them open.

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**Warning**

- Before repairs or calibration, turn off the power, and unplug the power cord.
- The system is charged with high voltage. Do not operate the device with charged parts exposed, or repair or calibrate the device with the power turned on. Doing so could cause electric shock.
- Always earth the system. Failure to do so could cause electric shock.
- Make sure the lamp is completely cooled (about 30 min. or more after the lamp is turned off), then remove the cover before replacing the lamp. While the lamp is on, and immediately after it is turned off, it is very hot and under high pressure. In this state, it could cause burning. If the lamp breaks, flying shards of glass could cause injury.
- Do not dismantle or modify the system. Doing so could cause fires or electric shock.
- Only press the "LAMP ON/OFF" button when the lead wire is firmly attached to the positive side of the lamp. Pressing the "LAMP ON/OFF" button when the lead wire is touching the frame could cause electric shock.
- If installing or removing the light guide fiber unit while the lamp is on, be sure to close the irradiation shutter first. Exposure to direct or strongly reflected light from the lamp could cause inflammation (sunburn) in the skin or pain in the eyes.
- When unplugging the power cord, be sure to grasp both sides of the plug firmly, and pull out by the plug. Pulling on the cord could break the cord, causing electric shock or a short-induced fire.
- Do not use the system if the power cord or plug is damaged, or the outlet connection is loose. Doing so could cause electric shock or a short-induced fire.
- Keep the power cord unplugged when the system is not in use. Failure to do so could cause deterioration of the insulation, leading to electric shock or electric leakage and fire.
Precautions before use

1) Do not connect the system to a power supply outside the rated voltage/frequency range listed on the system or in this manual. Using with other than the indicated power could cause burnout.
   - Input Power: Commercial 90 to 264 V AC, 50 Hz/60 Hz

2) Please use the system within the ambient conditions listed below. Using under other than the indicated conditions could shorten the system lifetime.
   - Ambient temp.: 10 to 40°C
   - Relative humidity: No greater than 80% RH (at 25°C), with no condensation

3) When handling the lamp, do not touch the glass with your bare hands.
   If foreign matter adheres to the glass, it could shorten the lamp lifetime or impact curing performance, or cause the lamp to break. If the lamp is touched with a bare hand or becomes soiled, wipe clean with alcohol.

4) Make sure the system's rubber legs are set horizontally parallel before use.
   Using the system while it is titled, tipped on one side, or upside down could cause the lamp or main unit to overheat and break. Doing so is also dangerous.

5) The system can be used in two modes: vertical light, and horizontal light. The magnets must be set in accordance with the installation orientation. Failure to do this could cause the lamp to shatter, or shorten its lifetime.

6) In order to avoid damage due to overheating, do not use if the area around the system is blocked, or with two systems back to back. Blocking the bottom or back of the unit could change its internal cooling conditions, causing damage due to overheating. If two systems are used back to back, exhaust could cause damage due to overheating.

7) Do not leave the lamp on for prolonged periods while the cover is off. Doing so could cause the lamp or system to overheat and break.

8) In order to avoid lighting failures due to overcooling, attach the light guide fiber unit to the jack on the front of the main unit, and make sure it is inserted before use.

9) Do not use the lamp for more than 3,000 hours. Doing so could cause it to break.
   Even if the lamp has been used for less time than this, you should always keep a spare lamp on hand.

10) As a rule of thumb, the lamp should be turned on no more than twice per day. Turning the lamp on more than twice per day could shorten its lifetime.

11) Perform periodic system cleaning about once a month. Dust or other foreign matter could cause fires or impact lamp cooling.

12) Opening and closing the shutter in rapid succession, vie panel operation or direct operation, could cause malfunction (minimum shutter open 1 second, minimum shutter closed 1 second)

Warranty and compensation for production

Warranty

Any failures that occur within 1 year (8 hours of use per day) of delivery, under conditions of normal use, will be repaired free of charge. This does not apply, however, if the failure was the fault of the user, or due to normal wear or force majeure, including natural disasters.

Note: If the system is used for 12 or more hours per day, the warranty period is 6 months.

Compensation for Production

We cannot compensate losses due to halted production or defects caused by system issues.
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1. Features of the ANUP50 Aicure

The ANUP50 Aicure is an ultraviolet curing system that quickly hardens UV resins (inks, adhesives, and coatings) via irradiation with ultraviolet light. Focused irradiation of UV resins coated on minute surfaces (3 to 15 mm diam.) such as the lenses of CD, MD, and DVD players, and the LCD panels of notebook PCs and the like, with UV radiation enables precise adhesion.

**Automatically compensate for deterioration of UV intensity via the UV auto control feature**
This feature compensates for decrease of UV intensity due to passage of lamp use time. This maintains stable UV intensity until the end of the lamp lifetime.

**Pattern irradiation matching to the resin/material to cure (programmable UV irradiation)**
Switching irradiation patterns with programmed UV intensities and irradiation time in keeping with the qualities of the material to cure will prevent curing shrinkage, and warping in optical products and the like.

**Eco (energy saving) mode**
A maximum of 15% electric power consumption can be reduced when UV irradiation is not performed.

**Digital display with no individual differences**
Every configuration can be displayed using easy-to-operate switches. UV radiation can be set in minute gradations, between 0 and 100%.

**Long-life, one-touch replacement lamp**
This 200 W lamp does not require calibration of the light axis and can be installed with a single operation.

**Free power source**
Supports world-wide power: 100 to 240 V AC.

**Support for vertical and horizontal use**
Supports vertical mode (vertical lamp type) with its smaller footprint, and the stackable horizontal mode.

**UV intensity control**
In-process UV intensity check and calibration can be performed by using the optional small-size UV sensor.
2. Product Components

Please check the contents of your package.

- **1 lamp (included)**
- **1 power cord (included)**
- **1 user's manual (this document; included)**

Optional parts (Not included with Aicure main unit)

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light guide fiber unit</td>
<td>Always attach the light guide fiber unit when using the Aicure. Different models are available for each type of branch and beam diameter; use the one that suits your purpose.</td>
</tr>
<tr>
<td>Heat-ray cut filter unit</td>
<td>Attach to the light guide fiber unit (input side) to reduce the temperature of the irradiation area.</td>
</tr>
<tr>
<td>Lens unit</td>
<td>When irradiating a small area of about 3 to 4 mm diameter, attach this to the light guide fiber unit (output side).</td>
</tr>
<tr>
<td>UV sensor</td>
<td>Use for UV intensity measuring or calibration.</td>
</tr>
</tbody>
</table>
3. Name and Function of Each Part

Front

Back

Lamp cover

Earth terminal

Power socket (100 to 240 V AC; 50/60 Hz)

Cooling fan vent
Name and Function of Each Part

Operation Panel

Display's LED

Flashes when the setting lock is active

Flashes when the lamp is on
**Operation Panel (on the Whole)**

- **LAMP CHANGE**
  - On the left side of the panel.

- **ERROR**
  - Next to **LAMP CHANGE**.

- **UV POWER**
  - Middle row.

- **TIME**
  - Middle row.

- **AUTO CONTROL**
  - Right side of the panel.

- **LAMP STABLE**
  - Next to **AUTO CONTROL**.

- **COOLING**
  - Below **LAMP STABLE**.

- **MANUAL OPEN/CLOSE**
  - Bottom row.

- **POWER**
  - Bottom right.

### Description

- **“AUTO CONTROL ON/OFF” button**
  - Press to switch to UV auto control mode.
  - While in UV auto control mode, the “AUTO CONTROL ON/OFF” LED is lit.

- **“LAMP ON/OFF” button**
  - Press to turn the lamp on or off.
  - When the lamp is on, the “LAMP STABLE” and “LAMP ON” LEDs are lit.
  - After it is turned off, while it is cooling, the “LAMP COOLING” LED is lit.

- **“SHUTTER OPEN” LED**
  - Lit when irradiating (shutter is open).

- **“AUTO START” button**
  - Press for timer irradiation or pattern irradiation.

- **“POWER” switch**
  - To turn the power on, set in the up position.
  - To turn the power off, set in the down position.

- **“MANUAL OPEN/CLOSE” button**
  - Press for manual irradiation.
4. Assembly

Before assembly, turn off the power, and unplug the power cord.

4.1. Installing the Magnet

The ANUP50 Aicure can be used in two orientations: horizontal illumination and vertical illumination. The orientation of the installed magnet must be changed in accordance with the orientation of the main unit, in order to ensure the stability of the lamp.

Warning: Be sure to set the magnet in accordance with the installation orientation. Failure to do so could cause the lamp to shatter, or shorten its lifetime.

<table>
<thead>
<tr>
<th>Installation Orientation</th>
<th>Mount Direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horizontal Illumination</td>
<td><img src="image1.png" alt="Diagram of horizontal illumination with magnet placement" /></td>
</tr>
<tr>
<td>Vertical Illumination</td>
<td><img src="image2.png" alt="Diagram of vertical illumination with magnet placement" /></td>
</tr>
</tbody>
</table>

*Warning: Magnet Placement Diagrams*
Install the Magnet

1. Loosen 1 bolt, and remove the lamp cover on top of the main unit.

2. Loosen 1 bolt, and remove the magnet plate.

3. Change the orientation of the magnet plate in accordance with the installation orientation, then lock in place again.

4. Mount the lamp cover back in place.
4.2. Installing the Lamp

Do not touch the lamp with your bare hands. Use clean gloves or gauze when installing the lamp.

1. Remove the lamp’s knurl nut.

2. Loosen 1 bolt, and remove the lamp cover on top of the main unit.

3. Lift up the lamp mounting bracket.

4. Press the lamp flange into the hole in the lamp mounting base.

Warning: Put the A part of the lamp up.
5. With the lamp pressed in, push the lamp mounting bracket down.

**Warning** If the lamp is not completely locked in place, illumination output will decrease.

6. Pass the lamp lead wire through the lamp screw hole, then fasten the knurl nut (removed in step 1) securely back in place.

**Warning** Make sure there is no gap between the Thumbscrew, knurl nut and lamp lead wire terminal.

7. Fasten the lamp cover back in place.

When you install a new lamp, you must reset the cumulative lamp use time. After installing the lamp, when you first turn the power on, perform the following steps:

1. Press the "LAMP HOUR" button.
2. Press the "LAMP HOUR" and "SET" buttons simultaneously until you hear a beep sound (at least 1 second).

**Warning** Make sure that the display reads "0".
4.3. Installing the Light Guide Fiber Unit

About the light guide fiber unit
The light guide fiber unit comes in a number of bundle diameters (3.5 mm, 5 mm, and 8 mm), number of branches (1 to 4), and other varieties. Select the type that meets your needs. To increase the UV intensity, attach a lens unit (optional) to the irradiation outlet of the light guide fiber unit. To reduce the temperature of the irradiation unit, attach a heat-ray cut filter (optional) to the irradiation inlet of the light guide fiber unit.

Installing the light guide fiber unit

1. Loosen the bolt on the fiber-unit mounting inlet on the front of the main unit.
2. Press the light guide fiber unit into the fiber-unit mounting inlet all the way, then tighten the bolt and lock it in place.
Installing the lens unit (optional)
Use a lens unit to increase the UV intensity by focusing the UV light.

1. Press the lens unit all the way into the light guide fiber unit irradiation outlet.
2. Using a hexagonal wrench (1.5 mm), tighten the two hexagonal mounting screws.

![Diagram of lens unit installation]

**Warning**
Do not scratch the lens or touch it with your bare hands. If the lens becomes dirty, wipe it clean with alcohol.

Installing the UV-blocking filter (optional)
Use a heat-ray cut filter unit to reduce the temperature of the irradiated application. This unit passes through short-wavelength radiation (254 to 436 nm), and blocks heat rays greater than this.

**Warning**
Mount the heat-ray cut filter before attaching the light guide fiber unit to the Aicure main unit.

1. Screw the heat-ray cut filter all the way onto the light guide fiber unit irradiation inlet.

![Diagram of heat-ray cut filter installation]

2. Press the light guide fiber unit all the way into the fiber-unit mounting inlet on the main unit, then lock it in place with the bolt.
5. Installation

Install the ANUP50 Aicure under the conditions above.

5.1. Installation Orientation

The ANUP50 Aicure can be oriented in two ways: a space-saving vertical illumination (upright) orientation, and a horizontal illumination (sideways) orientation that allows stacking. You must change the mounting orientation of the magnet inside the main unit, in accordance with the installation orientation. See 4-1. Installing the Magnet for details.

Be sure to set the magnet in accordance with the installation orientation. Mounting the magnet in a different position could cause the lamp to shatter, or shorten its lifetime.

5.2. Installation Conditions

1) Ambient temp.: 10 to 40°C (50 to 104°F)
2) Relative humidity: No greater than 80% (at 25°C/77°F), with no condensation
3) Make sure the rubber legs are set horizontally parallel.
4) In order to avoid damage due to overheating, do not use if the area around the system is blocked, or with two systems back to back.

5) The dimensions of the main unit are 165 x 200 x 325 mm (LxHxD), but you should take the state of the unit with a light guide fiber unit attached into account.
6) The minimum allowable bending radius for the light guide fiber unit is 50 mm. (When bundle diameter is 3.5 mm and 5 mm.) Using the unit with a curve radius of less than 50 mm could damage it. Additionally, you should not touch the end of the light guide directly with your bare hands. If it becomes dirty, the level of UV light will be decreased.

Note:
The minimum allowable bending radius is 80 mm with a bundle diameter of 8 mm.
5.3. General Guide for Irradiation Distance and UV Intensity

Set the irradiation distance in accordance with the size of the area to be irradiated (irradiation diameter) and the required UV intensity. Below is shown the relationship between irradiation distance and irradiation diameter, as a general guide for setting the irradiation distance and UV intensity.

Relationship between irradiation diameter and irradiation distance of each fiber unit, with UV intensity of 70% (reference values)

<table>
<thead>
<tr>
<th>Fiber unit model number</th>
<th>Irradiation outlet bundle diameter</th>
<th>No. branches</th>
<th>Irradiation distance (mm)</th>
<th>UV intensity (mW/cm²)</th>
<th>Irradiation diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANUP5051 (No lens)</td>
<td>5 mm</td>
<td>1</td>
<td>15</td>
<td>2,300</td>
<td>3.5 mm</td>
</tr>
<tr>
<td>ANUP5051AS (w/AS lens)</td>
<td>5 mm</td>
<td>1</td>
<td>15</td>
<td>3,560</td>
<td>4.0 mm</td>
</tr>
<tr>
<td>ANUP5051BS (w/BS lens)</td>
<td>5 mm</td>
<td>1</td>
<td>30</td>
<td>1,840</td>
<td>6.0 mm</td>
</tr>
<tr>
<td>ANUP5031 (No lens)</td>
<td>3.5 mm</td>
<td>1</td>
<td>15</td>
<td>1,220</td>
<td>5.0 mm</td>
</tr>
<tr>
<td>ANUP5031AS (w/AS lens)</td>
<td>3.5 mm</td>
<td>1</td>
<td>15</td>
<td>3,900</td>
<td>2.5 mm</td>
</tr>
<tr>
<td>ANUP5031BS (w/BS lens)</td>
<td>3.5 mm</td>
<td>1</td>
<td>30</td>
<td>2,020</td>
<td>3.5 mm</td>
</tr>
</tbody>
</table>

General guide for ratio of UV intensity to number of fiber-unit branches

<table>
<thead>
<tr>
<th>Fiber unit</th>
<th>5 mm diam.</th>
<th>3.5 mm diam.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1B</td>
<td>2B</td>
</tr>
<tr>
<td>UV intensity</td>
<td>No lens</td>
<td>100%</td>
</tr>
<tr>
<td>UV intensity</td>
<td>With lens</td>
<td>100%</td>
</tr>
</tbody>
</table>
6. Starting and Stopping Operation

Start operation of the ANUP50 Aicure in the following order: (1) turn on the power; (2) turn on the lamp; and (3) begin irradiation (open shutter). See Section 7. Irradiation Modes and 8. Irradiation for details about irradiation modes and operation.

Here, we will explain how to turn the power and the lamp on and off (common to every irradiation mode).

6.1. Starting Operation (turn on lamp)

1. Press upper half of the "POWER" switch.
2. Make sure that the display shows the cumulative lamp usage time, and also make sure you hear a beep sound.
3. In the "LAMP" section, press the "ON/OFF" button until you hear a beep sound. The lamp will turn on, and the LED above the "ON/OFF" button will light.
4. Make sure that the "STABLE" (lamp stable display) and "COOLING" (lamp cooling) LEDs in the "LAMP" section are lit.

**Warning**

Wait about 30 seconds after the "STABLE" LED lights before starting irradiation. Immediately after the lamp is turned on, it is unstable and intensity is still low. Beginning irradiation in this state could lead to defective curing, and should be avoided.
6.2. Stopping Operation (turn off lamp)

1. In the "LAMP" section, press the "ON/OFF" button until you hear a beep sound. The lamp turns off, the LED above the "ON/OFF" button and the "STABLE" LED turn off, and the "COOLING" LED (lamp cooling) remains on.

2. Make sure that the "COOLING" LED in the "LAMP" section goes off. The "COOLING" LED will be on while the lamp is cooling (about 20 minutes).

   **Warning** Never turn off the power while the "COOLING" LED is on. Moreover, do not turn on the lamp again while the "COOLING" LED is on. Doing so could shorten life span of the lamp.

3. Set the "POWER" switch in the down position.
7. Irradiation Modes

There are three irradiation modes: Manual Irradiation, Timer Irradiation, and Pattern Irradiation. This chapter describes each of these irradiation modes. This chapter also describes some convenient features.

Manual Irradiation
Manually start and stop irradiation. This can be performed either from the operation panel or via external signals. The irradiation time can be changed at will.

Timer Irradiation
Start irradiation at a predetermined time, and irradiate for the amount of time set. Irradiation can be started either from the operation panel or via external signals.

Pattern Irradiation
If you need to change the UV intensity over time, you can do so automatically by registering a pattern that changes the UV intensity and irradiation time. The changes can be set in up to 10 steps. Up to 10 patterns can be registered. Irradiation can be started either from the operation panel or via external signals.

UV Intensity Setting
Set the UV intensity using the up and down arrow buttons, while watching the display on the operation panel. In manual irradiation mode, it is possible to change the UV intensity during irradiation.
UV Autocontrol Feature
This feature compensates for loss of UV intensity due to lamp wear. This maintains stable UV intensity until the end of the lamp lifetime.

This feature compensates for decrease of UV intensity due to passage of lamp use time by raising the electric power applied to the lamp in response to the cumulative lamp use time.

To begin automatic lamp output compensation, on the "AUTO CONTROL" section of the operation panel, press the "ON/OFF" button until you hear a beep sound (at least 3 seconds). During compensation, the LED above the "ON/OFF" button is lit.

To end UV auto-control, press the "ON/OFF" button again until you hear a beep sound (at least 3 seconds). Automatic lamp output compensation ends, and the LED goes off.

**Warning**

1. The UV Autocontrol feature is retained even if the power is interrupted.
2. Even when you are not using the UV Autocontrol feature, it will keep record of elapsed time; even if you cut into autocontrol midway, it will perform compensation.
3. The UV Autocontrol feature is based on elapsed time. When replacing a lamp, you must install the new lamp, then reset the cumulative lamp use time.

See 12. Replacing the Lamp for details.
Eco (energy saving) Mode Feature

This feature cuts down the power consumption of the ANUP50 when you do not need to irradiate your work (when irradiation is off).

A maximum of 15% of electric power consumption can be reduced when UV irradiation is off by a reduction of the electric power applied to the lamp.

During operation of the autocontrol feature, the electric power applied to the lamp is raised in response to the cumulative lamp use time. Thus, as the lamp use time is longer, the rate of electric power consumption reduction becomes higher and a maximum of 15% of reduction can be acquired.

1. Press the "UV POWER" and "TIME" buttons simultaneously until you hear a beep sound.

2. Set and cancel the eco mode via the up and down arrow buttons.

   Eco mode set
   Eco mode cancelled

3. Press the "SET" button until you hear a beep sound to settle on the setting or cancellation.

   The display of segment 7 returns to the display before setting.

When the eco mode has been set, the UV intensity rise time is less than 0.1 second. This is shorter than operating time of the shutter to open/close. Thus, in fact, there will be no UV intensity loss due to this electrical power control.
Setting Lock Feature
This feature allows you to lock your settings, so no one can accidentally change. On the operation panel, simultaneously press and hold the up and down arrow buttons for at least three seconds. The value becomes locked and cannot be changed.

To release the lock on the setting, press the up and down arrow buttons simultaneously again for three seconds.
8. Irradiation

After turning on the power, irradiation can be commenced once the lamp output is stable. This chapter explains how to control irradiation using the operation panel. For details on controlling irradiation via external signals, see Section 9. Operation via External Signals.

8.1. Manual Irradiation

Manually start and stop irradiation. The irradiation time can be changed at will. Before irradiation, set and/or check the UV intensity setting.

Setting/Checking UV Intensity

1. On the operation panel, press the "UV POWER" button until you hear a beep sound. The "UV POWER" LED lights, and the current UV intensity setting appears in the display (in percent). If you need to change the setting, follow below steps 2 to 4.

2. Press the "SET" button until you hear a beep sound. The "UV POWER" LED begins to flash.

Warning If the setting does not need to be changed, begin irradiation in this state.
ANUP50 Aicure

Irradiation

3 Press the up and down arrow buttons to change the value (%).
Press the up arrow button to increment the value.
Press the down arrow button to decrement the value.
Press and hold one of the buttons to speed the rate of increase/decrease.

Warning The value can be set in a range of 0.0 to 100%, in increments of 0.5%.

4 Press the "SET" button until you hear a beep sound (at least 1 second) You can register the value by pressing "set" button while is shown on display.
The "UV POWER" LED stops flashing, and lights solidly.

Warning It is possible to adjust the UV intensity with the shutter open. See the following page for details.

Starting Irradiation
On the operation panel, in the "SHUTTER" section, press the "MANUAL OPEN/CLOSE" button until you hear a beep sound. The shutter opens, and irradiation begins.
While the shutter is open, the "OPEN" LED in the "SHUTTER" section is lit.

Ending Irradiation
During irradiation, press the "MANUAL OPEN/CLOSE" button again until you hear a beep sound. The shutter closes, and irradiation ends.
Adjusting the UV intensity with the shutter open

With this unit you can set the UV intensity to the level needed for curing by measuring the irradiation level using the measurement sensor. To do this, set the UV intensity while the shutter is open and irradiation is ongoing.

1. In the "SHUTTER" section, press the "MANUAL OPEN/CLOSE" button until you hear a beep sound. The shutter opens, and irradiation begins. While the shutter is open, the "OPEN" LED in the "SHUTTER" section is lit.

2. Press the "UV POWER" button until you hear a beep sound. The "UV POWER" LED lights under the display, and the current UV intensity setting appears in the display (in percent).

3. Press the "SET" button until you hear a beep sound. The "UV POWER" LED begins to flash.

4. Press the up and down arrow buttons to change the value (%).
   - Press the up arrow button to increment the value.
   - Press the down arrow button to decrement the value.
   - Press and hold one of the buttons to speed the rate of increase/decrease.

   **Warning**
   The value can be set in a range of 0.0 to 100%, in increments of 0.5%.

5. Press the "SET" button until you hear a beep sound (at least 1 second)
   - If this is the value you wish to set, press the "SET" button to register it.
   - The "UV POWER" LED stops flashing, and lights solidly.

6. Press the "MANUAL OPEN/CLOSE" button again until you hear a beep sound.
   - The shutter closes, and irradiation ends.
8.2. Timer Irradiation

Set irradiation for a predetermined time, and irradiate for the amount of time set. Before irradiation, set and/or check the UV intensity setting and irradiation time (1.0 to 99.9 seconds/100 to 999 seconds).

Warning

See “8-1. Manual irradiation” for details on checking or setting the UV intensity. Note, however, that during timer irradiation, it is not possible to change the UV intensity.

Setting/Checking the Timer Time

1. On the operation panel, press the "TIME" button until you hear a beep sound.
   The "TIME" LED lights, and the current timer setting appears in the display (in seconds).
   If you need to change the setting, follow steps 2 to 4, below, to set the timer value.
   If the setting does not need to be changed, begin irradiation in this state.

2. Press the "SET" button until you hear a beep sound. The "TIME" LED begins to flash.

3. Press the up and down arrow buttons to change the value (seconds).
   Press the up arrow button to increment the value.
   Press the down arrow button to decrement the value.
   Press and hold one of the buttons to speed the rate of increase/decrease.
   The value can be set up to 99.9 seconds in increments of 0.1 seconds, and from 100 seconds and beyond in increments of 1 second.

4. Press the "SET" button until you hear a beep sound (at least 1 second)
   If this is the value you wish to set, press the "SET" button to register. The "TIME" LED stops flashing, and lights solidly.
Irradiation

Starting Irradiation
On the operation panel, in the "SHUTTER" section, press the "AUTO START" button until you hear a beep sound. The shutter opens, and irradiation begins.
While the shutter is open, the "OPEN" LED in the "SHUTTER" section is lit.

![Shutter Control Panel]

After irradiation starts, release the "AUTO START" button. Even if you hold down the button, after the set time passes, the shutter closes automatically. If you press the button again, irradiation stops before the time runs out.

Ending Irradiation
After the set time passes, the shutter closes automatically, and irradiation ends.

Stopping Irradiation before the Time Elapses
Press the "AUTO START" button again until you hear a beep sound.
The shutter closes, and irradiation ends.

Warning
Manual irradiation is given precedence over timer irradiation. For this reason, pressing the "MANUAL OPEN/CLOSE" button or setting pin 14 ("MANUAL START" signal) to "on" during timer irradiation will disable the timer, and automatically end irradiation.
8.3. Pattern Irradiation

If you need to change the UV intensity over time, you can do so automatically by registering a pattern that changes the UV intensity and irradiation time.

Registering a Pattern

You can register patterns of up to 10 steps. You can register up to 10 patterns, numbered 0 through 9. For each step, you can set an irradiation time (timer value) and UV intensity.

Sample Pattern 1

- Steps are executed in order, from 0 to 9.
- At each step, irradiation is performed at the set UV intensity. After the set time has elapsed, execution proceeds to the next step.

Sample Pattern 2

- To end irradiation before a given step number, set the timer value of the step before the final step to "0.0".
  For example, say you want to perform irradiation in four steps, 0 to 3. You would then set the timer value for step 4 to 0.0.
Irradiation
Setting Procedure

[Switch to Pattern Mode]
1 On the operation panel, press the "PATTERN" button until you hear a beep sound (at least 3 seconds). The system enters pattern mode. The LED above the "PATTERN" button lights, and the pattern number appears in the display.

[Select a Pattern Number]
2 Press "SET" button until you hear a beep sound (at least 1 second). The LED above the "PATTERN" button begins to flash.

3 Press up and down arrow buttons to change the pattern number (0 to 9).
   Press the up arrow button to increment the value.
   Press the down arrow button to decrement the value.

4 Press "SET" button until you hear a beep sound (at least 1 second). The "PATTERN" LED stops flashing and lights continuously.

[Set Each Step]
5 On the operation panel, press "SET" and down arrow buttons simultaneously until you hear a beep sound (at least 1 second). The "TIME" LED under the display begins to flash, and the step number and timer value appear in the display.

6 Press the up and down arrow buttons to change the value (seconds). Press the up arrow button to increment the value. Press the down arrow button to decrement the value. Press and hold one of the buttons to speed the rate of increase/decrease.

   The value can be set from 1.0 to 99.9 seconds in increments of 0.1 seconds, and from 100 to 999 seconds and beyond in increments of 1 second.

7 Press the "SET" button until you hear a beep sound (at least 1 second). If this is the value you wish to set, press the "SET" button to register. The "TIME" LED turns off, and the "UV POWER" LED begins to flash. The step number and UV intensity appear in the display.
8 Press the up and down arrow buttons to change the value (%). Press the up arrow button to increment the value. Press the down arrow button to decrement the value. Press and hold one of the buttons to speed the rate of increase/decrease.

The value can be set in a range of 0.0 to 100%, in increments of 0.5%.

9 Press the "SET" button until you hear a beep sound (at least 1 second).
If this is the value you wish to set, press the "SET" button to register.

Once a step is registered, the system moves to the next step setting automatically. The "UV POWER" LED turns off, and the "TIME" LED under the display begins to flash. The step number and timer value appear in the display.

10 Repeat steps 6 through 9 for the following steps.
Register steps 0 through 9. After step 9 has been registered, step setup ends automatically.
To end irradiation before step 9, set the timer value of the step before the final step to "0.0".

To quit from step setting midway, press the up and down arrow buttons simultaneously, or wait for one minute or more.
Execute Pattern Irradiation
Select a pattern number and press the "AUTO START" button to begin irradiation according to the registered pattern.

Switch to Pattern Mode
1 On the operation panel, press the "PATTERN" button until you hear a beep sound (at least 3 seconds). The system enters pattern mode. The LED above the "PATTERN" button lights, and the pattern number appears in the display.

Select a Pattern Number
2 Press the "SET" button until you hear a beep sound (at least 1 second). The LED above the "PATTERN" button begins to flash.

3 Press the up and down arrow buttons to change the pattern number (0 to 9). Press the up arrow button to increment the value. Press the down arrow button to decrement the value.

4 Press the "SET" button until you hear a beep sound (at least 1 second).
Execute Pattern Irradiation

5. On the operation panel, in the "SHUTTER" section, press the "AUTO START" button until you hear a beep sound. The shutter opens, and irradiation begins in accordance with the registered pattern, starting with step 0. While the shutter is open, the "OPEN" LED in the "SHUTTER" section is lit.

If you would like to check the UV intensity during pattern irradiation, press the "UV POWER" button. The value appears in the display.

End Pattern Irradiation

After the entire pattern ends, the shutter closes automatically, and irradiation ends.

To Forcibly End Irradiation Midway During Pattern Irradiation

Press the "AUTO START" button again until you hear a beep sound. The shutter closes, and irradiation ends.

The pattern mode is retained even if the power is interrupted. It is not necessary to switch to pattern mode or select pattern numbers each time you turn on the power.

Canceling Pattern Mode

To cancel pattern mode and switch to normal mode, press and hold the "PATTERN" button until you hear a beep sound (at least 3 seconds). The LED above the "PATTERN" button turns off, and the system switches to normal mode.
9. Operation via External Signals

The ANUP50 Aicure has a built-in sequence circuit, which can be operated. Use the external-control connector on the back of the main unit.

9.1. How the External Control Connector and Signals Work

Pin layout of the external control connector (18-pin M3 screw terminal board)

Signal functioning and connection

<table>
<thead>
<tr>
<th>Output</th>
<th>Pin No.</th>
<th>Signal Name</th>
<th>I/O</th>
<th>What the signal does</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>LAMP ON</td>
<td>Output</td>
<td>On when &quot;LAMP ON/OFF&quot; LED lit</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>LAMP STABLE</td>
<td>Output</td>
<td>On when &quot;LAMP STABLE&quot; LED lit</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>READY (irradiation OK)</td>
<td>Output</td>
<td>On when irradiation is possible</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>SHUTTER CLOSE (shutter closed)</td>
<td>Output</td>
<td>On when &quot;SHUTTER CLOSE &quot; LED off</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SHUTTER OPEN (shutter opened)</td>
<td>Output</td>
<td>On when &quot;SHUTTER OPEN&quot; LED off</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>LAMP CHANGE (lamp change time)</td>
<td>Output</td>
<td>On when &quot;LAMP CHANGE&quot; LED lit</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>ERROR</td>
<td>Output</td>
<td>On when &quot;ERROR&quot; LED lit</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>+24</td>
<td>Output</td>
<td>Use when using internal power</td>
<td></td>
</tr>
</tbody>
</table>

Note: Please use +24 V of pin 18 exclusively for driving output pins of the ANUP50 and design the circuit of the external device so that the current on each pin is not over 10 mA.
When the lamp first turns on, it creates electrical noise, which could cause a momentary signal output. We recommend placing a noise filter on the output side.
### ANUP50 Aicure

#### Operation via External Signals

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>Signal Name</th>
<th>I/O</th>
<th>What the signal does</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>GND</td>
<td>GND</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>GND</td>
<td>GND</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>GND</td>
<td>GND</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>GND</td>
<td>GND</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>GND</td>
<td>GND</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>INTER LOCK</td>
<td>Input</td>
<td>ON: Normal condition</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>OFF: Inter lock error occurred (E33)</td>
</tr>
<tr>
<td>14</td>
<td>MANUAL START</td>
<td>Input</td>
<td>Shutter opens while signal is applied. (Irradiates)</td>
</tr>
<tr>
<td></td>
<td>(manual shutter open)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>AUTO START</td>
<td>Input</td>
<td>Timer Irradiation or Pattern Irradiation will be executed when signal is applied (one shot pulse longer than 0.3 s).</td>
</tr>
<tr>
<td></td>
<td>(automatic shutter open)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>LAMP START</td>
<td>Input</td>
<td>Lamp turns on while signal is being applied</td>
</tr>
<tr>
<td>17</td>
<td>UV CHECK</td>
<td>Input</td>
<td>When the signal is being applied, UV intensity control mode (calibration) is in action.</td>
</tr>
<tr>
<td></td>
<td>(UV intensity check)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Please design the circuit of the external device so that the time a single pulse is on is at least 0.3 sec.

![Sample circuit diagram](image-url)
9.2. Operating via External Signals

**Manual Irradiation**
Manually start and stop irradiation. The irradiation time can be changed at will.
Operate the "POWER" switch from the operation panel.

**Warning**

<table>
<thead>
<tr>
<th>Input</th>
<th>Operation</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAMP START</td>
<td>ON</td>
<td>Irradiation</td>
</tr>
<tr>
<td>MANUAL START</td>
<td>ON</td>
<td>OK</td>
</tr>
</tbody>
</table>

**Timer Irradiation**
Start irradiation at a predetermined time, and irradiate for the amount of time set.
Operate the "POWER" switch and set the irradiation time (timer value) from the operation panel.

<table>
<thead>
<tr>
<th>Input</th>
<th>Operation</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAMP START</td>
<td>ON</td>
<td>Irradiation</td>
</tr>
<tr>
<td>MANUAL START</td>
<td>ON 0.3 s</td>
<td>OK</td>
</tr>
</tbody>
</table>

**Input**

- LAMP START (16)
- MANUAL START (14)
- LAMP ON (1)
- LAMP STABLE (2)
- READY (3)
- SHUTTER OPEN (5)
- SHUTTER CLOSE (4)

**Output**

- Irradiation
**Pattern Irradiation**

If you need to change the UV intensity over time, you can change automatically by registering a pattern that changes the UV intensity and irradiation time.

Operate the "POWER" switch and switch to pattern mode/set patterns from the operation panel.

---

**Diagram:**

- **Input:**
  - LAMP START (16)
  - MANUAL START (14)

- **Output:**
  - LAMP ON (1)
  - LAMP STABLE (2)
  - READY (3)
  - SHUTTER OPEN (5)
  - SHUTTER CLOSE (4)

- **UV intensity (%)**
  - Time (seconds)
10. UV Measurement and Calibration Mode

You can perform UV measurement and calibration.

Note: In this mode, a special UV sensor (optional part) is necessary.

After connecting the UV sensor, you will not be able to perform manual irradiation, timer irradiation, and pattern irradiation (including operation via external signals). Thus, please do not connect the UV sensor to the ANUP50 main unit unless you need to perform UV intensity measurement and calibration.

In the UV intensity measurement, if positions of the fiber and the UV sensor are not strictly duplicated, measuring result will be different at each measurement. Thus, preparing jigs for measurement (fixing of the fiber and the sensor) is recommended.

10.1. Measuring UV Intensity

You can perform an in-process UV intensity check by connecting the optional small-size UV sensor to the ANUP50 Aicure.
1 Connect the UV sensor. After connecting, confirm that you hear a beep sound.

2 Press the "UV CHECK" button. When you press the button, you will hear a beep sound and the "UV CHECK" LED begins to flash.

3 If the panel display is not "- - - -", press the down arrow button or simultaneously press the up and down arrow buttons to change the display to "- - - -".

4 Press the "SET" button until you hear a beep sound. The "UV CHECK" LED lights.

5 In the "SHUTTER" section, press the "AUTO START" button until you hear a beep sound. The shutter opens, irradiation begins, and the measured value is displayed. (The unit is W/cm².)

6 After the UV intensity check ends, press the "AUTO START" button again until you hear a beep sound. The shutter closes, irradiation ends, and the "UV CHECK" LED begins to flash.

7 Press the "UV CHECK" button. You will hear a beep sound and the "UV CHECK" LED lights.

8 Remove the connector of the UV sensor.
10.2. Calibrating UV Intensity

Automatic adjustment of the UV intensity to the required value is possible by using the optional small-size UV sensor.

1. Connect the connector of the UV sensor. After connecting, confirm that you hear a beep sound.

2. Press the "UV CHECK" button. When you press the switch, you will hear a beep sound and the "UV CHECK" LED begins to flash.

3. Press the up and down arrow buttons to set the panel display to the UV intensity you wish to set. (Upper limit: 4.00 W/cm²)
   - Press the up arrow button to increment the value. Press the down arrow button to decrement the value. Press and hold one of the buttons to speed the rate of increase/decrease.

4. Press the "SET" button until you hear a beep sound. The "UV CHECK" LED lights.

5. In the "SHUTTER" section, press the "AUTO START" button until you hear a beep sound.
   - The shutter opens, irradiation begins, and the adjustment of UV intensity is performed to change the measured UV intensity to the setting.
   - If the calibration has completed, you will hear a beep sound and the "UV CHECK" LED begins to flash.
   - If the UV intensity could not be adjusted to the set value, with the "ERROR" LED lighting, the error code "E40" appears.
ANUP50 Aicure

UV Measurement and Calibration Mode

6 Press the "UV CHECK" button. You will hear a beep sound and the "UV CHECK" LED lights.

7 Remove the connector of the UV sensor.

10.3. Calibration during UV Intensity Measurement

During UV intensity measurement, automatic adjustment of the UV intensity is possible by changing the UV intensity setting.

1 Enter the UV intensity measurement mode, and display the current UV intensity.

2 Press the up and down arrow buttons to set the panel display to the UV intensity you wish to set. (Upper limit: 4.00 W/cm²)

   Press the up arrow button to increment the value. Press the down arrow button to decrement the value. Press and hold one of the buttons to speed the rate of increase/decrease.

   UV intensity is adjusted in a manner of following the change in value.

3 When the target UV intensity has been reached, press the "SET" button until you hear a beep sound.

4 After the UV intensity adjustment and check end, press the "AUTO START" button again until you hear a beep sound.

   The shutter closes, irradiation ends, and the "UV CHECK" LED begins to flash.

5 Press the "UV CHECK" button. You will hear a beep sound and the "UV CHECK" LED lights.

6 Remove the connector of the UV sensor.
10.4. UV Intensity Calibration via External Signals

Automatic adjustment of the UV intensity to the given setting via external signals is possible.

For operations via external signals, you can perform only the calibration while the UV intensity measurement is not available.

Please set the UV intensity (W/cm²) from the operation panel in advance. Moreover, please manually connect and remove the UV sensor before and after external operation.
11. Replace Lamp Indicator Function

When the lamp lifetime approaches, this function informs you that it is time to replace the lamp. The ANUP50 Aicure maintains a count of the cumulative number of hours that the lamp has been on. 30 hours before the set number of hours, the "LAMP CHANGE" LED on the operation panel lights, and the LAMP CHANGE external signal (pin 6) turns on. Please replace the lamp within 30 hours.

Setting the Lamp Replacement Time

If you are using the replace-lamp indicator function, set the lamp-replacement time. The factory setting for lamp warranty time is 2,000 hours. If you need to change this value in accordance with the lamp specifications, please reset.

After starting operation, do not change the setting unless you replace the lamp.

1. On the front panel, press the "LAMP HOUR" button. The LED above the "LAMP HOUR" button lights, and the current cumulative hours the lamp has been turned on appears on the display.

2. On the operation panel, press the "SET" button until you hear a beep sound (at least 1 second). The LED above the "LAMP HOUR" button flashes, and the lamp-replacement alarm time appears in the display.

3. Press the up and down arrow buttons to change the value (hours). Press the up arrow button to increment the value. Press the down arrow button to decrement the value. Press and hold one of the buttons to speed the rate of increase/decrease.

   Warning: The value can be set in a range of 1 to 5,000 hours, in increments of 1 hour.

4. Press the "SET" button until you hear a beep sound (at least 1 second).
12. Replacing the Lamp

Please note the following when replacing the lamp:

1. Turn off the power, and unplug the power cord (after the lamp is turned off, cooling takes about 20 minutes, so be sure to turn off the power after the rear cooling fan stops running).
2. Immediately after the lamp is turned off, it is still hot. Wait at least 10 minutes after pulling out the power cord before starting to work, in order to make sure the lamp is cool.

Replace the lamp when it reaches its lifetime. After replacing the lamp, you must reset the cumulative lamp use time.

12.1. Replace the Lamp

Do not touch the lamp with your bare hands. Use clean gloves or gauze when installing the lamp.

1. Remove the lamp's replacement knurl nut.

2. Loosen 1 bolt, and remove the lamp cover on top of the main unit.

3. Remove the knurl nut holding the lamp in place, and remove the lamp lead wire from the lamp.
4 Pull the lamp out from the lamp mounting base.

5 Press the replacement lamp flange into the hole in the lamp mounting base.

Warning Put the protruding part (A) of the lamp facing up.

6 With the replacement lamp pressed in, push the lamp mounting bracket down.

Warning If the lamp is not completely locked in place, the illumination output will decrease.

7 Pass the replacement lamp lead wire through the lamp screw hole, then fasten the knurl nut (removed in step 1) securely back in place.

8 Replace the lamp cover and lock it in place.

Warning Make sure there is no gap between the Thumbscrew, knurl nut and lamp lead wire terminal. Do not allow too much tension on the lamp lead wire.
When you install a new lamp, you must reset the cumulative lamp use time. After installing the lamp, when you first turn the power on, perform the following steps:

1. Press the "LAMP HOUR" button.
2. Press the "LAMP HOUR" and "SET" buttons simultaneously until you hear a beep sound (at least 1 second).

Make sure that the display reads "0".

### 12.2. Replacing the Positive Lamp Lead Wire

When replacing the lamp, if the lead wire or terminals are dirty or the color has changed, polish with sandpaper. If the damage is severe, replace the lead wire with new. Continuing to use a damaged lead wire could cause a lamp damage.

**Warning**

Take note of the following when replacing the lamp:

1. Turn off the power, and unplug the power cord.
2. Wait at least 30 minutes after pulling out the power cord, before starting work.
3. According to the standard for replacement, please replace the lead wire every two times of the lamp replacement.

1. Loosen 1 bolt, and remove the lamp cover on top of the main unit.
Replacing the Lamp

2 With the lamp mounting bracket pulled down, remove the knurl screw, and remove the lead wire from the lamp. Next, remove the thumbscrew and remove the lead wire.

3 Install the replacement lead wire in the same way.

4 Pass the lamp lead wire through the lamp screw hole, then fasten the knurl nut (removed in step 2) securely back in place.

5 Replace the lamp cover and lock it in place.

Warning

Tighten the thumbscrew and knurl nut sufficiently so that they will not become loose. Do not allow too much tension on the lamp lead wire.
13. Safety Measures

13.1. Safety Circuit

This system is equipped with a safety circuit in case of damage or accidents.

1) Prevent the lamp cover from coming off
   If the lamp cover is off, or the bolt is loose, the lamp will not turn on.

2) Prevent overheating
   A thermal circuit is equipped on the system-internal power circuit and optical device. In the event of an overheat, the thermal circuit will turn off the lamp.

3) Overcurrent protection
   A (5A) fuse is installed on the system-internal power circuit (PCB) for overcurrent protection.

4) If the lamp voltage exceeds the maximum limit over time, the lamp will shut down.

5) When an external terminal is connected, the control circuit will stop if 24 V and GND are mistakenly shorted.
## 14. Troubleshooting

### 14.1. Possible Issues

<table>
<thead>
<tr>
<th>Issue</th>
<th>Checks/Remedies</th>
</tr>
</thead>
</table>
| Lamp won't turn on           | *(1) Is the lamp installed?*  
|                              | *(2) Is the lead wire on the positive side of the lamp loose?*  
|                              | *(2) Is the lead wire/terminal on the positive side of the lamp worn?*  
|                              | Notes: 1. If the terminal is discolored, polish it with sandpaper.  
|                              | 2. If the lead wire/terminal is extremely worn, replace.  
|                              | *(4) Is the top lamp cover securely mounted on the main unit?*  
|                              | Note: If the cover is out of place or loose, the interlock circuit will prevent the lamp from lighting.  
|                              | *(5) Has the lamp reached its lifetime?*  
|                              | Note: If the lamp has been used for more than 2,000 hours, please replace.  
|                              | *(6) Is the power on?* |
| The lamp is not lighting stably | *(1) Is a light guide fiber unit attached?*  
|                              | Note: The lamp will not light stably if it is lit without one attached.  
|                              | *(2) Is the magnet installed with the same orientation as the system?*  
|                              | *(3) Has the lamp reached its lifetime?* |
| UV intensity too weak         | *(1) Is the lamp loose?*  
|                              | *(2) Is there fine dust or debris where the lamp is installed?*  
|                              | Note: Take out the lamp and check.  
|                              | *(3) Has the lamp reached its lifetime?*  
|                              | *(4) Is the light guide fiber unit tip or lens dirty?*  
|                              | Note: If it is soiled, wipe it clean with alcohol.  
|                              | *(5) Is there too much tension on the lamp lead wire?* |
| The shutter doesn't work      | *(1) Are you using the operation panel and external control pins at the same time?*  
|                              | *(2) Is the light level adjusted to 0%?*  
|                              | *(3) Is there foreign matter stuck in it?*  
|                              | *(5) Has the shutter motor reached its lifetime?*  
|                              | Note: If so, replace the shutter motor (please consult your sales representative) |
| The system is too hot         | *(1) Is the cooling fan on the back of the unit operating normally?*  
|                              | Note: If something is stuck in the fan, please remove.  
|                              | *(2) Is the ventilation inlet inside the system blocked?*  
|                              | Note: When using the lamp horizontally, make sure that the back of the system is at least 150 mm from the wall. |
14.2. In Case of an Error

Error Warnings
When the ANUP50 Aicure detects an error, it provides the following error warnings.

1. "ERROR" LED on operation panel lights
2. Alarm sounds
3. Lamp turns off
4. An error code appears in the operation-panel display (see next page)
5. External control connector
   - LAMP ON (pin 1) off
   - LAMP STABLE signal (pin 2) off
   - READY signal (pin 3) off
   - ERROR signal (pin 7) on

Reset Error Status
Press and hold the "SET" button until you hear a beep sound (at least 1 second). The alarm buzzer stops. Note, however, that the error display will not clear until the cause of the abnormality has been dealt with, and the lamp will not come on.
See the following page for measures to take in the event of abnormalities. After taking the measures, press the "SET" button again to clear the error display and end error status.
## Troubleshooting

<table>
<thead>
<tr>
<th>Error Code</th>
<th>Error Details</th>
<th>Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>E10</td>
<td>Lamp will not turn on.</td>
<td>(1) Make sure the lamp is not blackened or broken.</td>
</tr>
<tr>
<td></td>
<td>After the lamp turns on, the lamp voltage does not stabilize after 10 minutes.</td>
<td>(2) Make sure that the lamp’s lead wire is securely connected to the lamp.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(3) Make sure that the lamp is securely mounted.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(4) Make sure that the magnet position has the same orientation as the system.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If nothing is found in above (1) to (4), please replace the lamp. (Reset the cumulative use time of the lamp.)</td>
</tr>
<tr>
<td>E11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E12</td>
<td>The lamp has reached its lifetime (the cumulative lamp use time has reached the set time).</td>
<td>Replace the lamp. (Reset the cumulative use time of the lamp.)</td>
</tr>
<tr>
<td>E20</td>
<td>The shutter does not recover to its origin position after the set length of time.</td>
<td>(1) Reset the error status. If the error-code display does not clear after resetting, turn the power to off, then back on.</td>
</tr>
<tr>
<td>E21</td>
<td>The shutter will not close.</td>
<td>(2) As shown in the next page figure, take off the main-unit cover is removed, the PCB wiring is loose, or there are any objects attached to the PCB. If nothing is found in above (1) to (2), please replace the shutter motor.</td>
</tr>
<tr>
<td>E22</td>
<td>The shutter will not open.</td>
<td></td>
</tr>
<tr>
<td>E23</td>
<td>The shutter is out of alignment.</td>
<td></td>
</tr>
<tr>
<td>E24</td>
<td>The shutter does not recover to its origin position normally.</td>
<td></td>
</tr>
<tr>
<td>E30</td>
<td>The lamp cover is open.</td>
<td>Close the lamp cover.</td>
</tr>
<tr>
<td>E31</td>
<td>The lamp is overheated.</td>
<td>(1) Make sure that the cooling fan is working.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2) Make sure that the cooling fan exhaust vent is not blocked.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If nothing is found in above (1) to (2), please replace the lamp.</td>
</tr>
<tr>
<td>E32</td>
<td>The power source is overheated.</td>
<td></td>
</tr>
<tr>
<td>E33</td>
<td>The pin 13 (INTER LOCK) is OFF.</td>
<td>Connect the pin 13 (INTER LOCK) to unlock.</td>
</tr>
<tr>
<td>E40</td>
<td>The calibration will not end.</td>
<td>Reconsider calibration setting.</td>
</tr>
<tr>
<td>E41</td>
<td>The UV sensor will not work as usual.</td>
<td>(1) Check the connection of the connector.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2) Check if there is a disconnection.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If nothing is found in above (1) to (2), please replace the UV sensor.</td>
</tr>
</tbody>
</table>
Removing Main-unit Cover of the ANUP50
15. Specifications

<table>
<thead>
<tr>
<th>Device Name</th>
<th>ANUP50 (with pattern irradiation feature)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Power</td>
<td>100 to 24 V AC (90 to 264 V AC); dual 50/60 Hz; 280 V A</td>
</tr>
<tr>
<td>UV Lamp</td>
<td>Preset ANUPS204 200W mercury xenon lamp</td>
</tr>
<tr>
<td></td>
<td>Lamp lifetime: 3,000 hours (2000 hrs. guaranteed time: Min. 70% of initial strength for horizontal lighting and min. 80% of initial strength for vertical lighting.)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>UV intensity</th>
<th>Irradiation distance 15 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Average UV intensity 2,300 mW/cm²</td>
</tr>
<tr>
<td></td>
<td>(Guaranteed value 2000 mW/cm²)</td>
</tr>
<tr>
<td></td>
<td>When measuring with 1-mm diam. sensor, UV control is off, and using ANUP5051 fiber unit (5 mm diam. straight)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Features</th>
<th>UV Autocontrol</th>
<th>This feature automatically compensates for deterioration of lamp intensity to maintain stable UV intensity. Even if the power is turned off midway through, the time is recorded, and tracked.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pattern Irradiation</td>
<td>This feature allows you to perform irradiation by programming UV intensity and time as patterns (up to 10 steps) (10 patterns – pattern numbers 0 through 9 – can be set)</td>
</tr>
<tr>
<td></td>
<td>Eco Mode</td>
<td>This feature cuts down the power consumption when you are not performing irradiation to the work (when irradiation is off).</td>
</tr>
<tr>
<td></td>
<td>Setting Lock</td>
<td>This feature prevents values from changing. On the operation panel, simultaneously press and hold the up and down arrow buttons for at least three seconds to lock or release the settings.</td>
</tr>
<tr>
<td></td>
<td>Replace Lamp Indicator</td>
<td>30 hours before the cumulative lamp use time reaches the lamp replacement time, the &quot;LAMP CHANGE&quot; LED lights, and the user is notified that it is time to replace the lamp (at the same time, the &quot;LAMP CHANGE&quot; signal is output).</td>
</tr>
<tr>
<td></td>
<td>Shutter</td>
<td>Open/close manually or via timer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Minimum open/close time: 1 sec open, 1 sec closed (2-sec cycle)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Timer open/close interval: 1.0 to 999 seconds</td>
</tr>
<tr>
<td></td>
<td>External Signal</td>
<td>Input Shutter open/close (manual/timer pattern), lamp on, inter lock, UV intensity calibration</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Output Lamp on, lamp stable, irradiation preparation OK, shutter opened, shutter closed, lamp lifetime, error</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ambient temp. for use 10 to 40°C (50 to 104°F)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Relative humidity No greater than 80% RH (at 25°C/77°F), with no condensation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>External dimensions 165 x 200 x 325 mm (LxHxD) (excluding protruding parts)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Main-unit mass About 7.5 kg</td>
</tr>
</tbody>
</table>
16. Dimension Drawing

*(unit: mm) Protruding parts are not included.*

Irradiation center
## 17. List of Optional and Supplementary Parts

### Optional Parts

<table>
<thead>
<tr>
<th>Part</th>
<th>Specifications</th>
<th>Order Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light guide fiber unit</td>
<td>Irradiation-side bundle diameter; number of branches, presence of heat-ray cut filter, and lens unit can be selected according to your needs.</td>
<td>With heat-ray cut filter unit&lt;br&gt;ANUP50&lt;br&gt;Bundle diameter&lt;br&gt;5: 5 mm&lt;br&gt;3: 3.5 mm&lt;br&gt;8: 8 mm&lt;br&gt;Num. Branches: 1 to 4&lt;br&gt;Example: Bundle diam. 5 mm, 2 branches, with lens unit: Order an ANUP5052AS.</td>
</tr>
<tr>
<td>Irradiation side bundle diam.:</td>
<td>5 mm, 3.5 mm, and 8 mm</td>
<td>With lens unit</td>
</tr>
<tr>
<td>Num. branches: 1 to 4</td>
<td></td>
<td>UV sensor for UJ35 controller&lt;br&gt;ANUJ3800</td>
</tr>
</tbody>
</table>

### Spare Parts: We recommend keeping them on hand at all times

<table>
<thead>
<tr>
<th>Part</th>
<th>Specifications</th>
<th>Order Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lamp</td>
<td>Preset 200W mercury xenon lamp&lt;br&gt;Lifetime: 3,000 hours</td>
<td>ANUPS204</td>
</tr>
<tr>
<td>Lamp lead wire</td>
<td>Special heat-resistant positive-side lamp electrical wire</td>
<td>ANUPS50H2</td>
</tr>
</tbody>
</table>
## 18. Manual Revision History

<table>
<thead>
<tr>
<th>Manual No.</th>
<th>Issued</th>
<th>Revision Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARCT1F518E</td>
<td>December, 2010</td>
<td>Initial version</td>
</tr>
</tbody>
</table>