

UV Irradiation Chamber NUIC-100

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1. Safety Measures

1.1 Caution









Improper operation under specific circumstances may lead to damage to the equipment. Before using this instrument, please read these warnings, precautions, and instructions. Failure to comply with these instructions may result in serious injury to the operator. This section provides essential safety information for operating the UV-Irradiation Chamber-NUIC-100.

1.2 Warning

- Improper operation under specific circumstances may lead to injury to the operator.
- This instrument is intended for use by professionally trained laboratory personnel only. Before using the instrument, operators must receive comprehensive training and be familiar with the contents of this user manual.
- This instrument is equipped with UV lamps that emit UV radiation. UV radiation is harmful to the human body and may cause eye injury and skin damage. During operation, always wear protective goggles and clothing to prevent skin exposure to UV light. Avoid looking directly at the UV lamps with your eyes. Before opening the door to the exposure chamber, ensure that the UV lamps are turned off.
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- Keep the surface of the instrument and the exposure chamber dry during operation to prevent damage or the risk of electrical shock from liquid spills.
- This is a tabletop device. If it is accidentally dropped, there is a risk of equipment damage and personal injury. When moving the instrument, ensure that at least two people are involved in the transport.

Symbols	Warnings
	Warnings of Optical Radiation (such as UV, IR, or Visible radiation)
	Warning of hot surface

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	Warning of electricity
	Wear Eye Protection
	Opaque eye protection must be worn
	Disconnect the mains plug from an electrical outlet
	Disconnect before carrying out maintenance or repair
	Use Hand Protection
	Wear Foot Protection
	Refer to the instruction manual/booklet

2. Introduction

UV Irradiation Chamber NUIC-100 offers a maximum irradiance of 2.5 / 5.0 mW/cm² for UVA and 1.5 / 3.0 mW/cm² for UVB. It provides a versatile dose range from 0 to 100,000 J/cm² with a 1.0 mJ/cm² resolution. This chamber automatically adjusts UV lamp output to maintain consistent irradiance levels. Our unit features a 4.3-inch touchscreen for intuitive and easy operation. It provides uniform irradiation with an optimized light field for multiple samples.

3. Features

- Real-time monitoring
- UVA/UVB radiometer sensor for accuracy
- Eliminates output fluctuations
- Adjustable dose and time settings

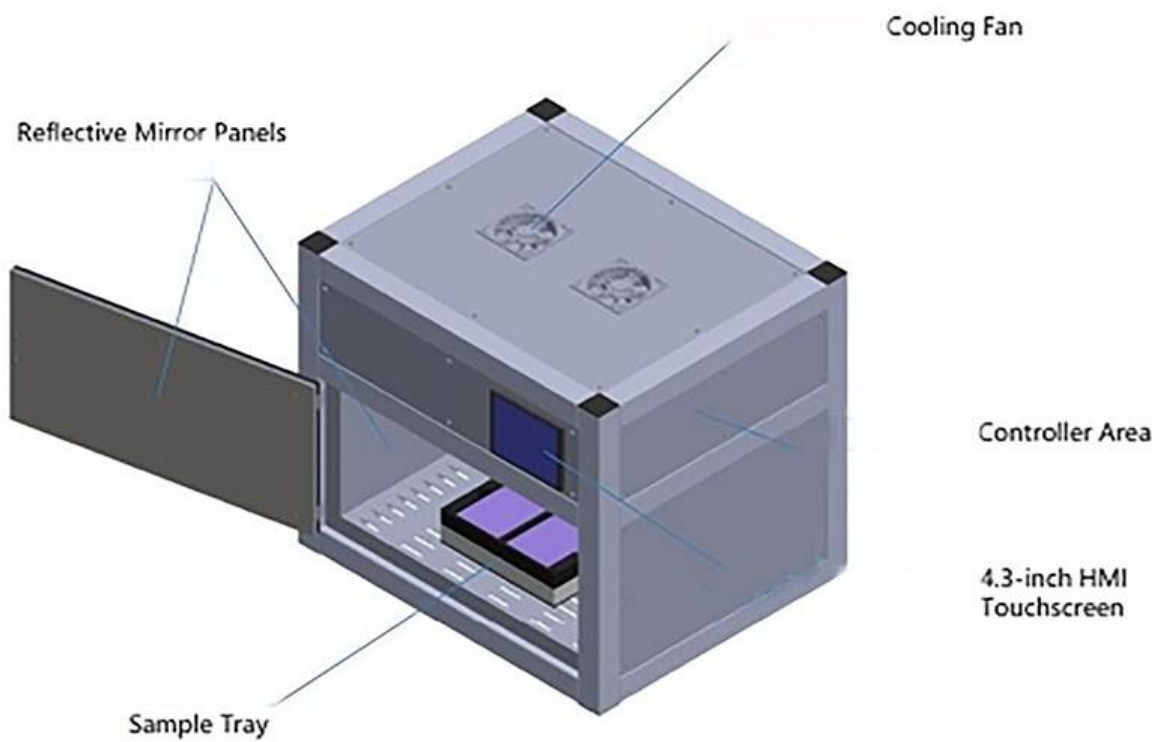
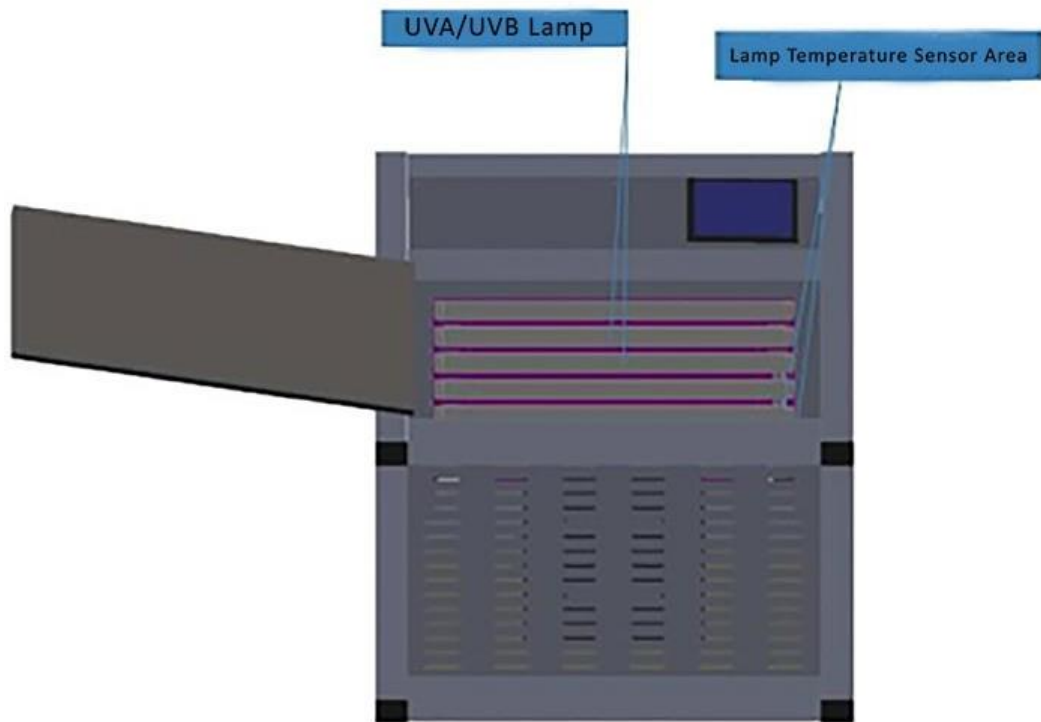
4. Specifications

Model	NUIC-100
Maximum Irradiance	UVA: 2.5 / 5.0 mW/cm ² UVB: 1.5 / 3.0 mW/cm ²
Measuring Resolution	0.1mW/cm ²
Dose Range	0 to 100,000 J/cm ²
Dose Resolution	1.0 mJ/cm ²
Number Of Lamp	2 PCs/group × 4
Power	120W
Inner Chamber Dimensions	400 × 250 × 500 mm
Dimensions	550 × 400 × 600 mm
Weight	40 kgs

5. Applications

UV Irradiation Chamber is used to deliver controlled and consistent UV light for sterilization, material testing, and biological sample analysis. It is commonly employed in research laboratories, industrial settings, and quality control environments.

6. Instrument Introduction

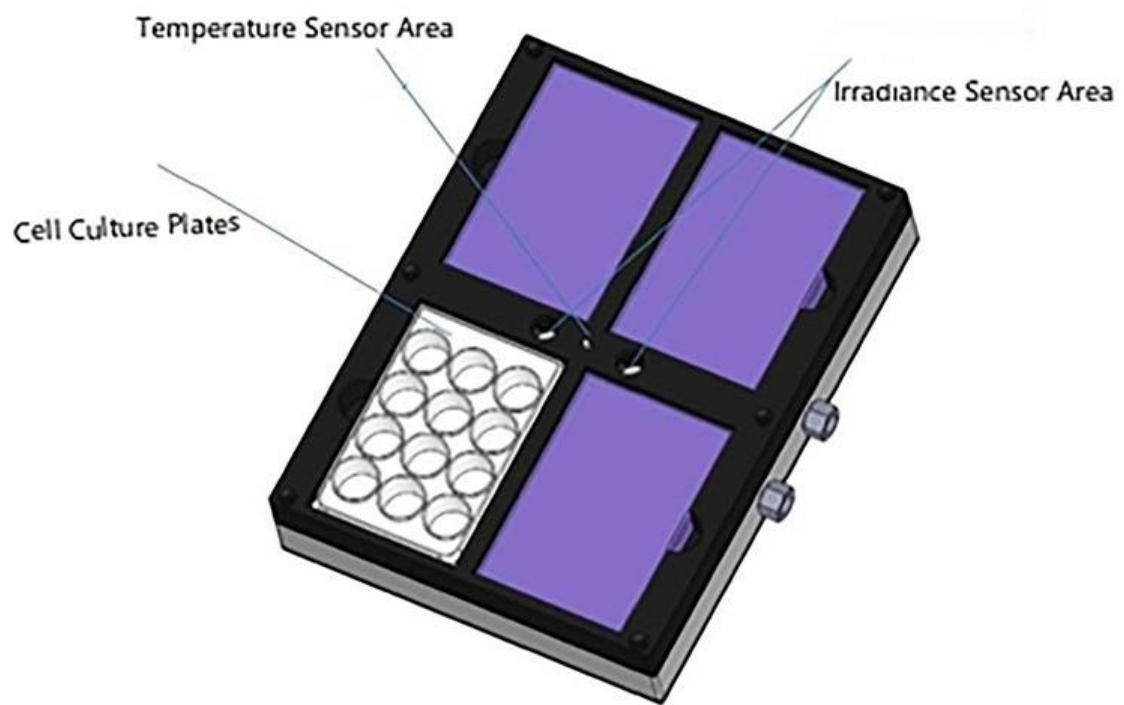


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The exposure chamber can accommodate animal restrainers or the sample tray.



Animal Restrainers



Sample tray

7. Installation

- After the installation of the NUIC-A100 UV irradiation chamber is complete, please verify that all instruments and accessories correspond to the specified configuration list.
- Carefully cross-reference each item, checking for any discrepancies or damage. Next, ensure that all spare parts are securely stored in a designated, clean, and dry location, using labeled containers for easy identification.
- This thorough verification and organization will facilitate the proper operation and maintenance of the chamber in the future.

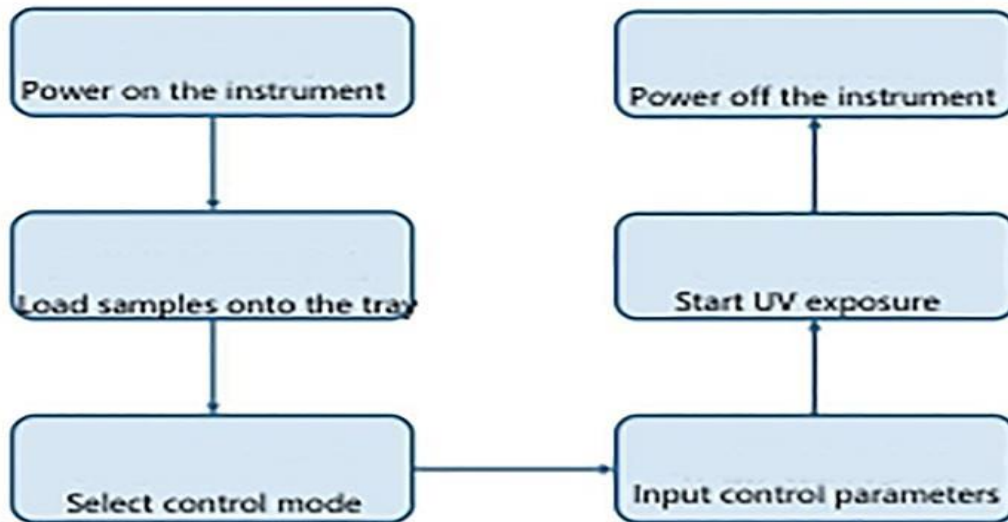
8. Operations

8.1 Powering on the instrument

Before starting the test, please follow the steps below to power on the instrument.

S.No	Step	Instructions
1.	Confirm Instrument Placement	Place the instrument on a level surface.
2.	Connect to Power:	Plug the instrument's power cord into a suitable power outlet (100-230VAC 50/60Hz).
3.	Turn on the Main Power Switch	Turn on the main power switch located at the rear power inlet of the instrument.
4.	Confirm Power Status	Once the power is successfully connected, the front panel touchscreen will light up and display the main interface.
5.	Confirm Sample Tray Placement	Ensure that the sample tray is placed horizontally within the exposure chamber.

8.2 UV irradiation chamber operation process



8.2.1 Touchscreen Operation guide

Main Interface

After powering on, the main interface displays. On the left, you can observe the status of the UV lamp assembly—when the lamps are off, the icons are Gray; if any are colored, the corresponding lamp is active. The **"START"** button is located at the bottom left press this to begin UV exposure once all test parameters are set. The chamber temperature is shown in real-time at the top. The center displays the current settings for the UVA/UVB lamps. The right side includes the **"CONTROL"** button for mode selection and the **"SETTINGS"** button for system settings.

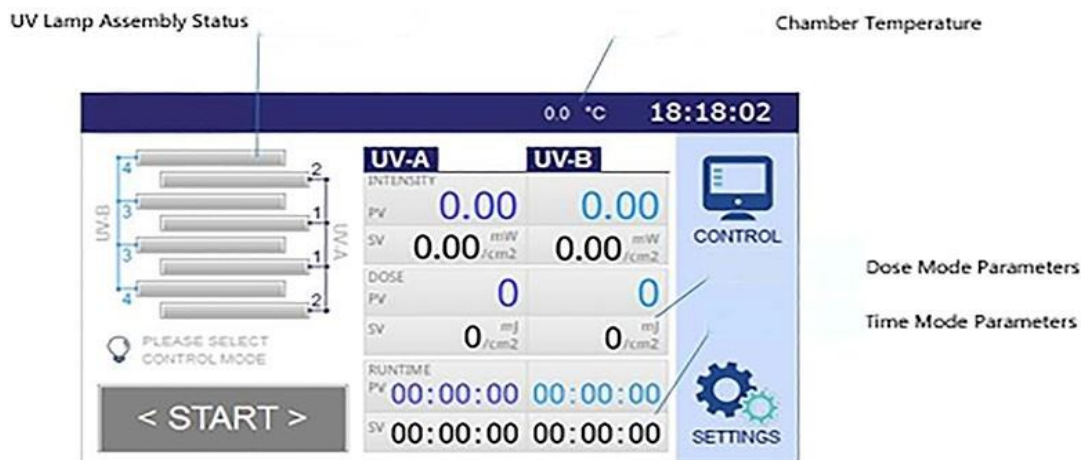


Figure-1 Human Machine Interface

Dose Mode Interface

Press the **"CONTROL"** button on the main interface, then select **"DOSE"** mode. In this mode, input the desired target light intensity and target irradiation dose. The UV lamps will operate according to the set dose and automatically shut off when the target is reached. It is recommended to press **"RESET"** after each test to clear the accumulated dose value.

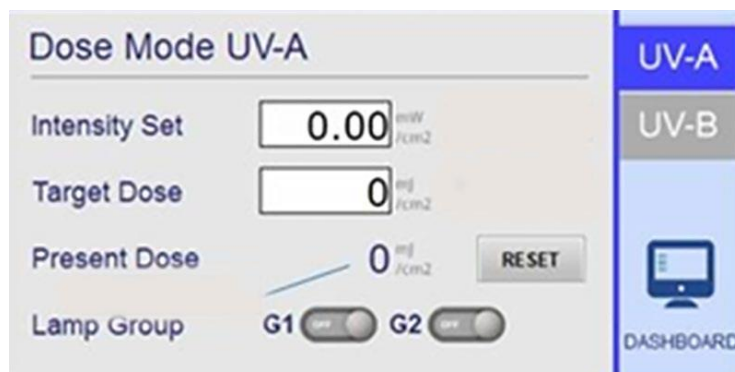


Figure-2 Dose Mode Interface

Time Mode Interface

Press the "CONTROL" button on the main interface, then select "TIME" mode. In this mode, input the desired light intensity and exposure time. The UV lamps will operate for the set duration and automatically shut off when the time is reached. It is recommended to press "RESET" after each test to clear the accumulated dose value.

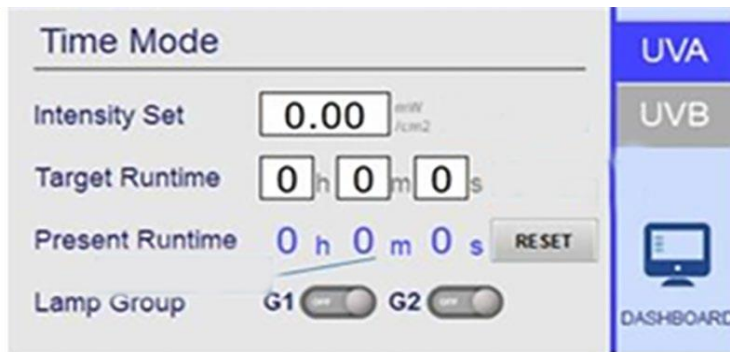


Figure-3 Time Mode Interface

Fan Setting

Press the "SETTINGS" button on the main interface, then select "Fan Setting." This interface shows the current surface temperature of the UVA/UVB lamps (sensors are located on the lamp surfaces, directly reading the temperature; one sensor each for UVA and UVB). Adjust the cooling fan threshold settings to maintain a stable chamber temperature. It is recommended to retain the factory settings.

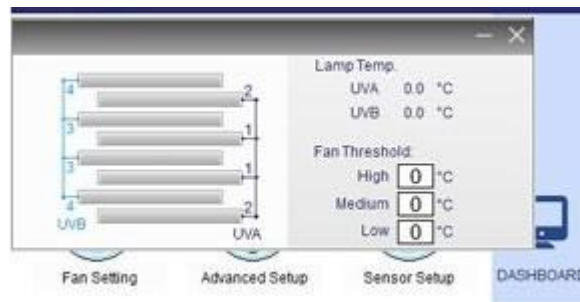


Figure-4 Light source Temperature Monitoring/cooling Threshold settings

Sensor setup

Press the "SETTINGS" button on the main interface, then select "Sensor Setup." This interface displays each lamp group's cumulative usage time, which helps estimate the remaining lamp life. You can press "RESET" to manually clear the data. This section also includes the UV Factor coefficient settings. For more details, refer to Appendix 1, "UV Loss Rate Correction Procedure."

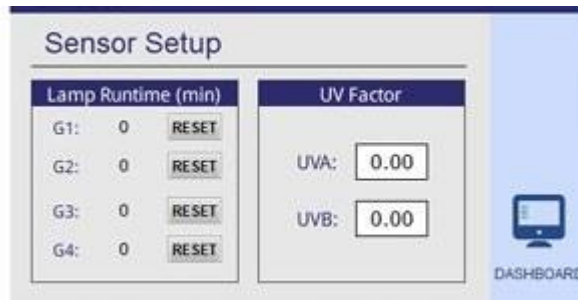


Figure-5 Light Source life/UV correction factor setting

8.3 UV Loss Rate Correction

For detailed instructions, see Appendix, "UV Loss Rate Correction Procedure."

8.4 Powering off the Instrument

S.No	Step	Instructions
1.	Turn Off the Light Source:	On the touchscreen, set the control mode to manual and ensure the Lamp Group switches are off.
2.	Turn Off the Main Power Switch	Turn off the main power switch located at the rear power inlet of the instrument and unplug the device.

9. Maintenance

9.1 Instrument Cleaning

S.No	Cleaning Task	Cleaning Method
1.	Instrument Surface	Wipe with a clean, lint-free cloth dampened with neutral detergent
2.	Sample Tray	Wipe with a clean, lint-free cloth dampened with neutral detergent.
3.	Exposure Chamber Base	Wipe with a clean, lint-free cloth dampened with alcohol.
4.	Screen and Sensors	Wipe with a specialized screen and lens cleaning cloth.

Caution

Ensure the instrument is powered off before cleaning. It is not recommended to clean the lamp tubes.

9.2 Annual Inspection

It is recommended that the UV-Irradiation Chamber-NUIC-100 instrument be inspected annually by authorized technicians to ensure proper operation.

9.3 Preparation of Long-Term Inactivity

If the instrument will be inactive for three months or longer, please follow the steps below to prepare it for long-term storage to maintain its condition:

- Disconnect the main power supply.
- Perform all cleaning tasks listed in the routine maintenance section, ensuring the instrument and lamp tubes are thoroughly cleaned.
- Remove the lamp tubes from the sockets on both sides of the exposure chamber and store them in a dry, dark place.
- Record the date the instrument was deactivated and mark its inactive status.

10. Troubleshooting

Problem	Possible Cause	Suggested Solution
The screen does not turn on after powering up	Power outlet issue	Check if the power outlet is functioning properly.
	The power plug is loose	Check the power plug and ensure its securely connected.
	Blown fuse	Replace the fuse located at the power inlet socket.
After clicking start on the main interface, the UV lamps do not turn on.	The lamp group switch is not turned on.	Check the settings interface to ensure the "Lamp Group" toggle is activated.
	Poor contact between the UV lamp and socket	Check the connection between the UV lamp tubes and the sockets.
After starting the UV lamps, irradiance or temperature readings show zero.	Loose sensor cable connection	Check the sensor cables on the side of the sample tray and ensure they are properly connected.

11. Accessories

Accessories	Quantity
Irradiance Chamber	1
UVA 365nm Lamp	4
UVB 312nm Lamp	4
UVA/UVB Radiometer Sensor	1
4-Position Sample Tray	1

12. Appendix

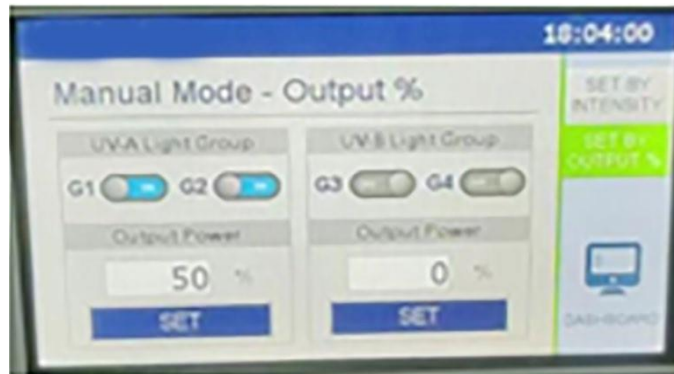
Light Loss Rate Correction Process

- In UV exposure experiments, the material of the plate (cover plate) absorbs and blocks UV light, causing the actual irradiance received by the sample to be lower than the set value. Therefore, it is recommended to manually measure the light loss rate and input it into the correction coefficient field on the screen to adjust the irradiance set value during the experiment.
- As shown in the picture, the light sensor area of the instrument is not covered by the plate, so there is a difference between the UV irradiance feedback to the instrument controller and the actual irradiance received by the sample.



Manual Correction Process

- In the instrument mode, select Manual Mode and adjust the Output% as shown in the picture.



- Set the output ratio to 50% and turn on one group of UV lamps. Run the instrument for at least 5 minutes without placing the plate on the sample tray. This allows the lamp's brightness to stabilize. Watch the UV irradiance value on the screen and record it as P1.
- Pause the instrument, keeping the output set at 50%. Open the exposure chamber door, place a cover plate on the light sensor area in the center of the sample tray, close the door, and resume instrument operation (again, run for more than 5 minutes for stable results). Record the UV irradiance value displayed on the screen at this time as P2.

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- The resulting light loss rate is calculated as $P2/P1$, and the correction coefficient is calculated as $(1 - P2/P1)$. Input this value into the Sensor Setup – Factor UVA/UVB field on the screen. After this, the instrument controller will automatically divide the original set irradiance value by the measured light loss rate to obtain the corrected set value, ensuring that the actual irradiance received by the sample is adjusted accordingly.



- As a Reference:
Using a COSTAR sample plate, the measured light loss for UVA is 27%, resulting in factor $A = 0.73$; For UVB, the light loss is 72%, resulting in Factor $B = 0.28$



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