



analytical



Lumidox[®] II

Operating Manual

Thank you for purchasing a Lumidox® II device from Analytical Sales and Services, Inc. The following set of basic operating instructions will allow you to begin working with your device in a few simple steps.

Description and Intended Use

Lumidox® II is an illumination device, intended for research and development use in the pharmaceutical and biotech industries. The unit is comprised of a main controller, and a single channel peripheral LED device. The peripheral components consist of arrays of LEDs (arranged in a grid pattern) or LED lamps. The arrays are cooled actively with onboard fans, or passively by the users with liquid chillers or outside fans. The lamps are cooled via integrated heat sinks.

Safety & Precautions



Hot surface



Optical radiation

WARNING: Lumidox II arrays are high power instruments, blindness or permanent eye damage will occur if mishandled.

WARNING: Lumidox II will ignite combustible materials at close distance.

WARNING: UV Radiation (if applicable). Avoid skin and eye contact.

WARNING: Do not remove the cover of the controller; there are no user-serviceable parts inside.

WARNING: Do not use Lumidox® II in a manner other than intended and/or specified by the manufacturer. Doing so may impair the protection provided by the equipment and/or possibly damage the equipment.

WARNING: Lumidox II is only compatible with the included power supply

Installation & Setup

Ensure controller is placed in a static free environment. Controllers should also not be positioned with the rear face placed against another object. Doing so may make it difficult to operate the ports and switches located on the rear face.

Connecting Device

Connect the light device (LED array/LumLamp) you wish to use to the controller. Light devices have an 8-pin keyed connector. Align and insert the connector into the DEVICE OUT port on the rear of unit. Turn the connector housing to lock in place. **Please note that Lumidox II devices are not “hot-swappable” meaning you will not be able to connect/disconnect light devices while the controller is powered on. Doing so may result in damage to the controller, light device, or both.**

Important note if using a SOLID BASE array: Solid Base arrays are not self cooling and require the use of a Thermal Transfer Deck (TTD) with chiller or a similar device. They may also be placed in a cooling bay.

Powering Up

Connect controller to power supply via the provided 3-pin DC power adapter. Insert the 3 pin connector into the DC POWER IN port on the rear of controller until an audible click is heard. (To remove the DC power adapter, push the metal release tab). Connect the other end of the power adapter to your AC power outlet. Power on the controller by toggling the OFF/ON switch located at the back.



The controller will go through a brief boot sequence. You will see the Lumidox II as well as Analytical Sales and Services logos momentarily appear on the screen.



Illuminating the Light Device

***NOTE:** Before initiating light output, ensure that all personnel in the vicinity of the light device are wearing appropriate protective safety equipment to prevent eyesight (or in the case of UV, skin) damage, due to extreme radiant power. Whenever possible, limit the personnel present in the vicinity of the light device to only those directly involved in the work.*

When booted, the controller will display **Stage 1** as default. Turn the knob to cycle through the power stages and find a stage you wish to use. *Note that your power stage settings may differ slightly from the Typical Values shown on Analytical Sales' website. Those values are typical/average values for the given wavelengths. Each device is individually tuned and calibrated to give the most precise power readouts possible.*

To select the power stage and activate lighting, press and hold the illuminated **START** button for 3 seconds until you hear an audible tone and see the button start to flash. This serves as an audio-visual warning to personnel in the vicinity that a high-power light device is about to illuminate. **Again, ensure proper safety measures are being followed.**

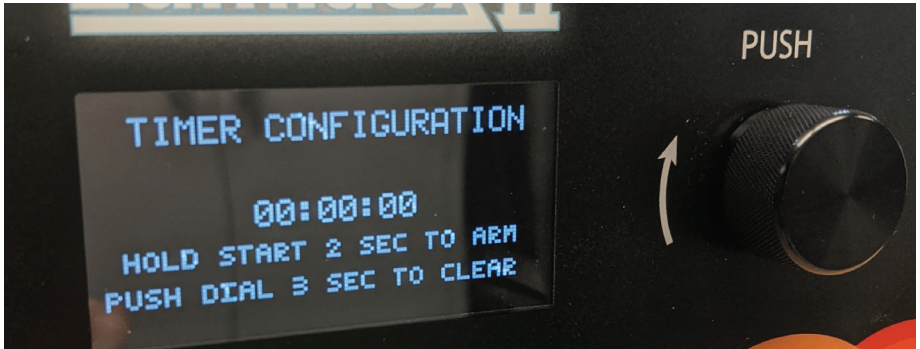
The tone will persist for 10 seconds. Press the button again at anytime within those 10 seconds to activate the light device. If no action is taken within 10 seconds, the device will return to its "off" (non-lighted) state.

Countdown Timer Mode HH:MM:SS (menu selected)

By default, the Lumidox II Controller starts up in "**Elapsed Timer Mode**" which displays the amount of time the light device is illuminated starting at 0 and increases.

In contrast, the "Countdown Timer Mode" is a shutoff feature that is included on each controller. The time is configurable from 10 seconds to 100 hours.

Settings from 10 seconds to 1 minute are configurable in 10-second increments, with 1-minute increments thereafter. The device illumination will cease when the timer reaches 0. Please note that the timer will not begin to count down until the array has reached the programmed power level for the set stage (approx. 2-3 seconds after activation).



To enable the countdown timer, select the menu by pressing the center control knob (“PUSH”) once while on the home screen. Follow the on-screen directions to configure time. Press and hold *START/CANCEL* for 2 seconds to arm. **Ensure safety goggles and shields are in place.** Press *START/CANCEL* again to illuminate. Remaining time is displayed in the upper right of the screen.

Powering Down

Important: Do not power down illuminated devices with the rear power switch, as damage may occur. To turn off the light device, press and hold the *START/CANCEL* button for 3 seconds until it turns off.

Upon conclusion of your experiment, ensure that the device has cooled below a safe handling temperature (typically below 45°C) before disassembling the experimental setup. Doing so while the system is still hot may lead to damage to some of the components. **Note that in particular, avoid removing a 96-well Para-dox reaction block from a lens mat Lumidox array while the system is at high temperature due to potential damage to the silicone lens mat.**

Note that the silicone mat may stretch or expand at high temperatures. This is normal, and the mat will return to its original size and shape upon cooling down.

To turn off the controller, simply ensure that the light device is not currently on, and toggle the OFF/ON switch in the back to turn off.

Power cycling is required for any potential intermittent operations. If the device were to turn off, power cycle the controller before attempting to turn on again.

A Note About Device Cooling

Each Lumidox device can be run as a standalone device without any reactors placed on top for an indefinite amount of time. The Active Cooling Base array has fans that will cool the device and keep it thermally satisfied at all 5 stages. The **Solid Base array** can deliver more light, but **requires additional cooling, such as a Thermal Transfer Deck or placement in a cooling bay**. When this cooling is provided, the array will also be thermally satisfied at all 5 stages. LumLamps feature a unique modular heatsink design that keeps the devices thermally satisfied under all 5 stages.

Important: do not place an active cooling base array inside a cooling bay, or other confined area that may restrict or impede airflow. Any restriction of the flow of air can lead to overheating of the device.

Your experimental setup may call for use of other equipment that can introduce more heat into the system, or you may be working with highly exothermic reactions that could also impart more heat. Additional external fans can be used to cool any equipment placed on top of the Lumidox devices.

For added protection, each device has a built-in thermal cutoff switch that, in case of overheating, will automatically shut down the unit. The trip temperature for solid base arrays is 95°C, while for active cooling base arrays it is 75°C. Devices can be safely used again once they've had a chance to cool back down to a safe operating temperature. The reset temperature is 65°C for solid base arrays and 45°C for active cooling base arrays.

Please note that active cooling base arrays are NOT compatible with tumble stirrers or any other device that emits a strong magnetic field which can slow or stop the internal fans from working and potentially overheat the device.

Cleaning and Maintenance

Use only static-free and lint-free microfiber cloths to clean the Lumidox II controller. Do not use any chemical cleaners, and never use water as doing so may cause permanent damage to the unit. Do not submerge unit in water or any other liquid.

Do not remove the cover of the controller; there are no user-serviceable parts inside.

For troubleshooting, maintenance, and service, please contact Analytical Sales and our technical staff will be happy to assist.

Fuse

Rating: See Technical Specification & Equipment Ratings

Replacement: The fuse can be replaced by using a Flathead screwdriver to turn the fuse holder 90°. The spring-loaded holder will then eject. Replace the old fuse with a new one. Slide the fuse holder back into the housing. Turn back 90° with Flathead screwdriver to close and lock into place.

Remote Connection API / SDK

Remote operation is possible with the Lumidox II controller, via API. Note, remote operation is for experimental use only and is recommended for advanced users with knowledge of scripting and code execution.

The Lumidox II controller can be interfaced with serial commands over a USB cable (provided). Connection notes and example scripts can be found in the additional information tab under the Lumidox Controller area on our site.

Technical Specification & Equipment Ratings

Specified Environmental Operating Conditions	
Temperature Range	0-45°C
Humidity Range	10%-80% RH
Atmospheric Pressure	90-110 kPa
Cabling and Earthing	Earth ground via AC adapter
Indoor/Outdoor Use	Indoor
Electrical Specifications	
Voltage (output)	56VDC
Voltage Frequency	50-60Hz
Phases	1
Current (output)	3.0A
Power (output)	162W
Voltage (input)	100-240VAC
Physical Description	
Device Arrangement	Table Top
Size (HxWxD) inches	3.625 x 8.125 x 5
Weight (lbs)	1.732
Ports and Connections	
DC POWER IN	For DC power
USB	For Serial Interface
DEVICE OUT	For connection to peripheral
Other Information	
Highest Internal Frequency (MHz) used	72MHz
Magnetic Sensitivity	Yes
Fuse	
Rating	4A, 400VDC
Characteristic	5mm x 20mm

