



FLUENCE

B I O E N G I N E E R I N G



FLUENCE

RAZR2
RAZR3
RAZR4

USER MANUAL

IMPORTANT SAFETY PRECAUTIONS & EXPLANATION OF SYMBOLS	2
BEST PRACTICES	2
GENERAL CARE	3
SYSTEM HARDWARE & ACCESSORIES	4
ASSEMBLY INSTRUCTIONS	5
TECHNICAL SPECIFICATIONS	6
CAUTIONS & WARNINGS	7
PRODUCT GUARANTEE & WARRANTY	8

IMPORTANT SAFETY PRECAUTIONS & EXPLANATION OF SYMBOLS

- Please read this manual thoroughly before attempting to install or operate any Fluence RAZR Series system.
- After successful installation and configuration of the system, be sure to retain this manual in a safe place for future reference. Safety is a key component to a long lasting and trouble free installation.
- It is important you read, fully understand, and observe the subsequent safety precautions. If you are not comfortable with the installation of high performance lighting systems, you should seek the services of a qualified installation professional or call us for help.
- NOTICE: RAZR2, RAZR3, and RAZR4 are high-performance lighting systems. Do not touch while in operation.
- Connect the system only to the included power supply enclosure. Protect power cables from being pinched, walked on, or otherwise damaged. Be especially careful where the power cable enters the power outlet and the unit. Only connect the system to an electrical outlet or extension cord of appropriate type and rating. Connect the system only to the power sources of the correct voltage using the plug received.
- The system should only be cleaned as directed in the manual. You should seek service for your system by qualified service personnel if any of the following occur:
 1. The power-supply cord or the plug has been damaged.
 2. The unit has been exposed to rain.
 3. The unit exhibits a marked change in performance.
 4. The unit has been dropped, or its enclosure or chassis is damaged.

CULTIVATION BEST PRACTICES

Fluence encourages everyone to experiment and pursue their own techniques. Every crop is different and everyone has different goals. However, our internal research has given us insight into several strategies we would like to share.

- Regularly check your plants' growth and health. Fluence lighting systems deliver high levels of PAR, typically more than experienced in nature. Adjustments to H₂O, CO₂, RH, nutrients, and temperature are typically required.
- Mount the RAZR fixtures at suggested mounting height (see below) from the top of your canopy to ensure optimal uniformity and consistent PPFD. The RAZR Series was designed to provide uniform light dispersion and requires precise deployment. A 1" variation in either direction will have a significant effect in uniformity and PPFD (which may or may not be desired).

Module	PPF Per Module	Rec. Mounting Hght. Above Canopy	PPFD at Rec. Mounting Hght.
RAZR2	140	12 Inches	125-160 Avg.
RAZR3	200	8 Inches	215-260 Avg.
RAZR4	280	5 Inches	310-375 Avg.

*PPFD averages vary based on deployment of RAZR modules. Higher PPFD is achieved when deployed horizontally with light-overlap.

- Increasing light intensity in dense vertical farming applications may necessitate supplementing CO₂ into your growing environment in order to optimize crop growth for certain species.
- Many plants prefer higher temperatures when exposed to high PPFD. Experiment with higher temperatures to achieve higher yields. Canopy temperature and room ambient temperature often vary. For accurate results, test at the canopy level to gauge leaf surface temperature.

**For cultivation recommendations visit
<http://fluence.science/cultivation-guide>**

GENERAL CARE

RAZR Series systems are passively cooled with zero moving components. They are designed for harsh environments and years of maintenance-free performance. Some basic care will keep your system operating at peak performance cycle-after-cycle.

- Natural convection removes heat away from the heatsink. In order for the system to properly cool itself, at least one inch of space is required between the console and the roof of your grow area. Failure to do so may shorten the fixture's lifespan.
- To achieve the optimal lifespan and performance of your fixtures, routinely check for and remove excess dust, debris, and mineral build up from heatsink and LED array. Cleaning should always be done with the fixture unplugged from its power source using low-pressure compressed air or water to rinse away dirt from light bars.
- Never use a cloth to clean the diode array. Doing so can scratch or compromise the integrity of the silicon seal, or dislodge diodes entirely.
- To limit degradation, avoid touching the diodes with your hands, even in a powered off state.

For detailed instructions for maintenance and cleaning, please visit www.fluence.science/support/

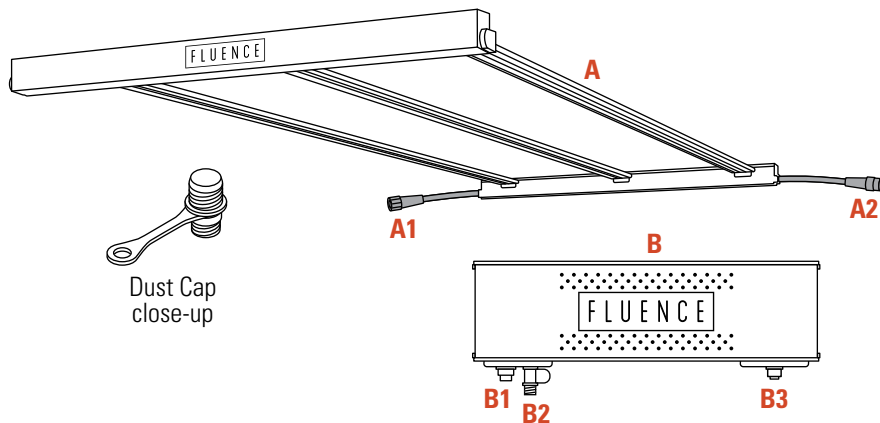
**RAZR2, RAZR3 and RAZR4 are
high-performance lighting systems.
Do not touch while in operation.**

**Last and most important, please
recycle all packaging material.
Future generations will thank you.**

SYSTEM HARDWARE & ACCESSORIES

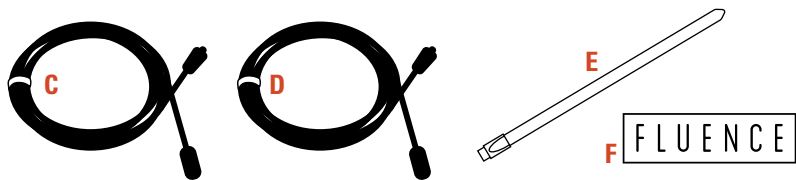
SYSTEM HARDWARE

- A** (10) RAZR2 Modules or
(7) RAZR3 Modules or
(5) RAZR4 Modules
- A1** Female DC Connector
- A2** Male DC Connector
- B** Power Supply Enclosure
- B1** Female DC Out Connector
- B2** Male Dimming Port with Dust Cap
(dimmer sold separately)
- B3** Male AC In Connector



ACCESSORIES

- C** (1) 6' AC Cable
(15' AC Cable option if upgraded at time of purchase)
- D** 3' DC Cable
(6' or 15' DC Cable option if upgraded at time of purchase)
- E** (4) Stainless Steel Zip ties (per module)
- F** (1) Vinyl-cut Fluence Sticker



RAZR2 ARRAY

ASSEMBLY INSTRUCTIONS

- A** To deploy RAZR module(s) refer to the RAZR2, RAZR3, and RAZR4 Installation Guide included in the box.
- B** If connecting RAZR2, RAZR3 or RAZR4 to a dimming system or controller, remove dust cap on the power supply enclosure and use the 3-pin dimming connector.

Note, leave dust cap attached to connector when not dimming fixture. RAZR2, RAZR3, and RAZR4 will not turn on without the dust cap or dimming signal present.



Unbox hardware and place on flush, stable surface. Take caution when handling light bars. Ensure the LED array does not come in contact with sharp objects or force that may damage the diodes.



RAZR3 ARRAY



RAZR4 ARRAY

TECHNICAL SPECIFICATIONS

STOCK KEEPING UNIT (SKU) CONFIGURATOR & OPTIONS

Example SKU: RR-2-P-1-06-N5-03-B

Family	Model	Spectrum	Input Voltage	Cord Length	AC Plug Type	DC Cord Length	Mounting Hardware
RR	RAZR	2 RAZR2 3 RAZR3 4 RAZR4	P PhysioSpec™	1 100–277V 3 347V 4 400V 5 480V	06 6.0' (1.83m) 15 15.0' (4.57m)	N5 NEMA 5–15P N6 NEMA 6–15P L7 NEMA L7–15P PT Pigtails	03 30" (.762m) 06 6.0' (1.83m) 15 15.0' (4.57m) B Stainless Steel Zip Ties

Photosynthetic Photon Flux (PPF)¹

	Per Module	Per Array
RAZR2	140 µmol/s	1400 µmol/s
RAZR3	200 µmol/s	1400 µmol/s
RAZR4	280 µmol/s	1400 µmol/s

Energy Efficiency (PAR/Watt) Per Array

RAZR2	2.3 µmol/J
RAZR3	2.3 µmol/J
RAZR4	2.3 µmol/J

Dimensions

RAZR2	2lbs 12oz 1.25kg 47.5" L x 15.7" W x 1.4" H 120.7cm L x 39.9cm W x 3.6cm H
RAZR3	3lbs 14oz 1.76kg 47.5" L x 20.5" W x 1.4" H 120.7cm L x 52.1cm W x 3.6cm H
RAZR4	4lbs 12oz 2.15kg 47.5" L x 20.5" W x 1.4" H 120.7cm L x 52.1cm W x 3.6cm H

Model	Input Power ²	Amps@120V	Amps@208V	Amps@240V	Amps@277V	Amps@347V*	Amps@400V*	Amps@480V*	Frequency
RAZR2	600W	5A	2.9A	2.5A	2.2A	1.8A	1.5A	1.3A	50/60Hz
RAZR3									
RAZR4									

Note: Technical specifications are listed per array *347V-480V RAZR arrays operate at 3% higher wattage on average

WARNING

Risk of electrical shock. To reduce the possibility of serious injury, always take the proper precautions and unplug the fixture before moving or cleaning.

WARNING

Modules and power supply enclosures are UL 1598 Wet Location rated but are not designed to be submerged in water. In the event that the module or power supply enclosure becomes submersed, **first disengage the circuit breaker**, then unplug submersed components before proceeding to remove from water.

CAUTION

To prevent eye damage, avoid looking directly at the unshielded LEDs.

CAUTION

LED and heatsink surfaces may be hot. Allow sufficient cooling time before handling.

CAUTION

To reduce the risk of overheating or fire, never place operating fixtures face down on a flush surface. Always allow for adequate ventilation of fixtures and power supplies.



ETL Rating: RAZR2, RAZR3 and RAZR4 arrays are rated suitable for wet locations. A “wet location” is defined as an interior or exterior location in which water or other liquids may drip, splash or flow on or against the electrical components of a lighting fixture. RAZR2, RAZR3 and RAZR4 modules and power supply enclosures are certified to meet UL standards (ETL) from the Intertek safety consulting and certification company. Systems are cETL listed and are rated IP66 by IEC standard 60529.



1 PPF calculations compiled using integrating sphere measurements and typical spectroradiometric data for each LED to determine typical fixture performance. Actual photometric results may vary within the LED manufacturer's bin tolerance.

2 Wattage values are typical expected values. Fluence maintains a tolerance of $\pm 10\%$ on flux and power specifications. Target light levels can vary from projected levels depending on ambient temperature, room reflections values and dirt accumulation.

DESIGNED
& BUILT
**AUS
TEX
USA**



Review our products, share your grow and stay abreast of the latest Fluence news and product releases through the channels below:



512.212.4544
fluence.science

© Copyright 2018. Fluence Bioengineering, Inc.
Version 1.2 • 02.2018 • 70618A

OUR PRODUCT GUARANTEE & WARRANTY

Every RAZR system is engineered and built by Fluence Bioengineering in Austin, Texas, USA using state-of-the-art robotics and hand craftsmanship. All RAZR systems are guaranteed against manufacturing defects for three years from date of purchase. Contact us at support@fluencebioengineering.com for information on five year extended warranties.

We stand behind our research, we stand behind our technology and we stand behind our clients. www.fluence.science/warranty/