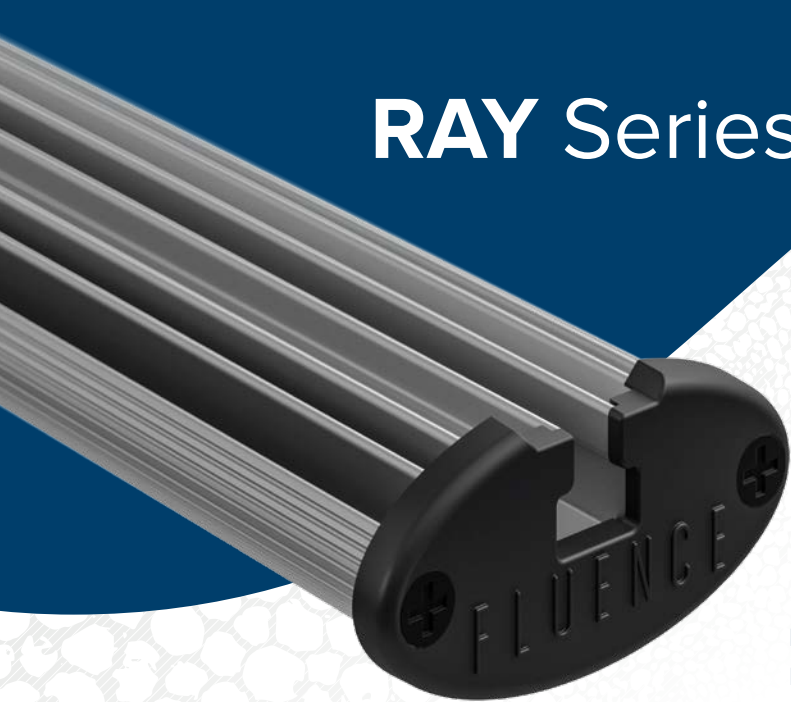


RAY Series



RAY 22
RAY 44
RAY 66

USER MANUAL

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IMPORTANT SAFETY PRECAUTIONS

- The system should only be cleaned as directed in the Fluence's Fixture Cleaning Recommendations which can be downloaded from the Fluence Support Center <https://fluence-led.com/support-center/>.
- 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 fixture at least 6" from the top of your canopy to ensure optimal uniformity and consistent PPFD. The RAY Series was designed to provide uniform light dispersion and requires precise deployment. A 1" variation in either direction will have a significant change in uniformity and PPFD (which may or may not be desired).
- 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.
- Fluence recommends the use of AC circuit contactors to completely disconnect the facility AC voltage from the luminaire to mitigate potential glowing or dimming interruptions of the crop dark period. For more

information, please download the Dim-to-Off Application Note available at the Fluence Support Center <https://fluence-led.com/support-center/>.

For cultivation recommendations visit <https://fluence-led.com/science-articles/>.

GENERAL CARE

RAY Series systems is passively cooled with zero moving components. They are designed for accepted horticulture 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 <https://fluence-led.com/support-center/>.

**RAY is a high-performance lighting system.
Do not touch while in operation.
PLEASE RECYCLE ALL PACKAGING MATERIAL**

SYSTEM HARDWARE & ACCESSORIES

SYSTEM HARDWARE

A RAY fixture pre-configured with:

A1 8' Cord with Male DC Connector

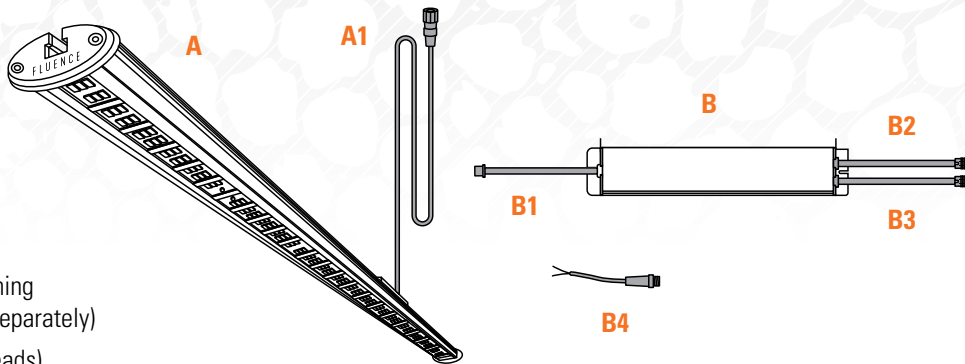
B Power Supply pre-configured with:

B1 14" Cord with Male AC Connector

B2 13.5" Cord with Female DC Connector

B3 13.5" Cord with 3-Pin Waterproof Dimming Connector and Dust Cap (dimmer sold separately)

B4 Pigtail Dimming Adapter (purple/gray leads)



ACCESSORIES

C Mounting Hardware
(depending on your selection at the time of purchase)

C1 (2x) Standard top-light mounting brackets

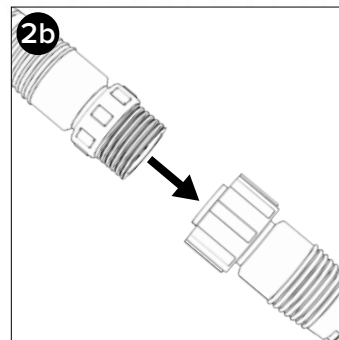
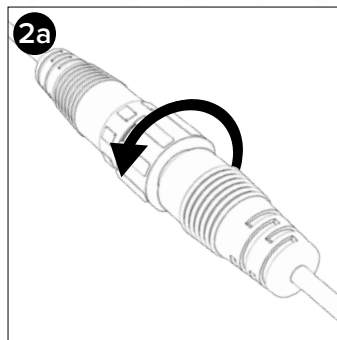
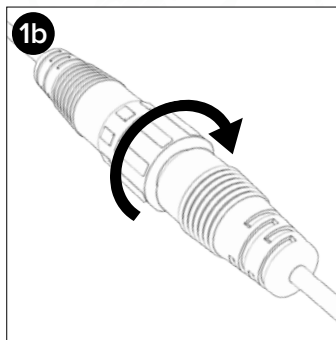
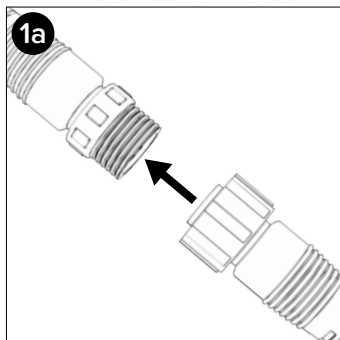
C2 (1x) 6' AC cable
(15' cable option if upgraded at time of purchase)



AC AND DC CABLE INSTALLATION

WARNING: Risk of Electrical Shock. Turn off and disconnect the power before installing, moving, or cleaning to reduce the possibility of serious injury. DO NOT connect or disconnect cables to or from the power supply or LED light bar while energized. Test all cable connections for correct and secure engagement after installation.

SCREW-LOCK (THREADED) CONNECTOR INSTALLATION



INSTALLATION OF THE DC POWER CABLE TO THE LED LIGHT BAR

The DC cable use a screw-lock type M19 2-pin connector to connect the power supply to the LED light bar.

To Attach or Remove the Connectors:

- 1** To attach the connector, match up the keyed pins on the cable (male to female) to the receptacle and push it on. Twist the locking ring on the connector clockwise to tighten until hand-tight. Check that the connector is securely attached by lightly tugging on the cable. The cable will not come off if properly installed. Failure to test the cable connection may result in electrical shock or damage to the product.
- 2** To remove the connector, twist the ring on the base of the connector counter-clockwise until loose, and then pull straight out.

AC AND DC CABLE INSTALLATION

INSTALLATION OF THE AC POWER CABLE TO THE POWER SUPPLY

The AC power cable uses a screw-lock type M19 3-pin connector to connect the cable to the power supply. The connection to power is available in several plug types for receptacles, or in pigtails for direct wiring.

To Attach or Remove the Connectors:

- 1 To install the connector, match up the keyed pins on the cable (male to female) to the receptacle and push it on. Twist the locking ring on the connector clockwise to tighten until hand-tight. Check that the connector is securely attached by lightly tugging on the cable. The cable will not come off if properly installed. Failure to test the cable connection may result in electrical shock or damage to the product.
- 2 To remove the connector, twist the ring on the base of the connector counter-clockwise until loose, and then pull straight out.

INSTALLATION OF THE DIMMING CABLE TO THE POWER SUPPLY

The DC dimming cable uses a screw-lock M16 3-pin connector to connect the cable to the power supply. To install the DC dimming cable:

- 1 Remove the dust cap from the power supply dimming port.
- 2 Match up the connector end on the cable (female) to the power supply dimming port (male) and push it on. Twist the ring on the connector clockwise to tighten until hand-tight. Check that the connector is securely attached by lightly tugging on the cable. The cable will not come off if properly installed. Failure to test the cable connection may result in electrical shock or damage to the product or connected lighting controller.

ASSEMBLY INSTRUCTIONS

- 1 Unbox RAY fixture and place on flush, stable surface.
- 2 To mount fixture, refer to the instructions included in the hanging kit package with the associated accessories. Hang the fixture in the desired location and adjust the mounting height to at least 6" above the plant canopy.
- 3 Connect fixture to power supply using the 8' DC cable attached to the RAY fixture.
- 4 Mount the power supply to a wall or suitable support structure using 4mm/#8 fasteners (not included) through the mounting flange on the sides of the power supply.
- 5 Attach 6' (or 15') AC cable to power supply AC connector. Finally, insert AC plug into wall outlet.
- 6 If connecting RAY to a dimming system or controller, remove dust cap and connect to the 3-pin waterproof dimming connector or the included pigtail dimming adapter.

Note, leave dust cap attached to connector when not dimming fixture.

Take caution when handling RAY fixtures.

Ensure the LED array does not come in contact with sharp objects or force that may damage the diodes.

TECHNICAL SPECIFICATIONS

STOCK KEEPING UNIT (SKU) CONFIGURATOR & OPTIONS
(Example SKU: R-22-I-1-06-N5-R)

Family	Model	Spectrum	Input Voltage	AC Cord Length	AC Plug	Mounting Hardware
RR RAY	2 22"	I PhysioSpec Indoor™	1 120-277 VAC	06 6.0' (1.83m)	N5 NEMA 5–15P	R Standard
	4 44"	G PhysioSpec Greenhouse™	2 120-277 VAC	15 15.0' (4.57m)	N6 NEMA 6–15P	
	6 66"	A AnthoSpec™			L7 NEMA L7–15P	
		F PfrSpec™			PT Pigtailed	
		R PrSpec™				
		U UvSpec™				

PHOTON FLUX AND EFFICACY Photon Flux (360-780nm) | AC Power @ 277 V | Efficacy (360-780nm) @ 277 V AC

Spectrum	RAY 22			RAY 44			RAY 66		
	Photon Flux (μmol/s)	AC Power (W)	Efficacy (μmol/J)	Photon Flux (μmol/s)	AC Power (W)	Efficacy (μmol/J)	Photon Flux (μmol/s)	AC Power (W)	Efficacy (μmol/J)
Indoor	93	40	2.33	185	79	2.34	278	115	2.42
Greenhouse	93	40	2.33	185	79	2.34	278	115	2.42
Antho	79	43	1.84	158	87	1.82	237	126	1.88
Pfr	81	32	2.53	162	65	2.49	243	94	2.59
Pr	91	37	2.46	182	74	2.46	273	108	2.53
UV	33	39	0.85	66	78	0.85	99	114	0.87

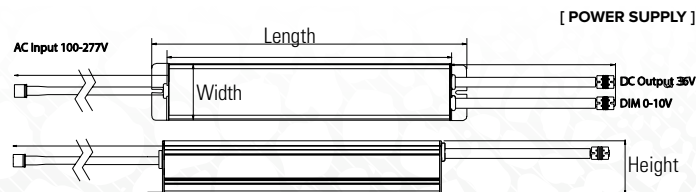
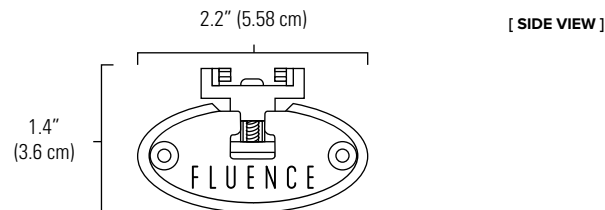
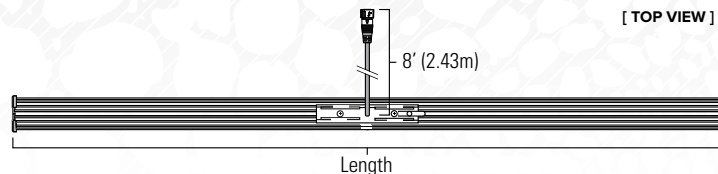
DIMENSIONS`

LIGHT BAR DIMENSIONS AND WEIGHT

Item	SKU Abb.	Length	Width	Height	Weight
RAY 22	RY-2-x-x-xx-xx-R	22"	2.2"	1.4"	1.3 lb
		55.9 cm	5.6 cm	3.6 cm	0.6 kg
RAY 44	RY-4-x-x-xx-xx-R	44"	2.2"	1.4"	2.2 lb
		111.8 cm	5.6 cm	3.6 cm	1.0 kg
RAY 66	RY-6-x-x-xx-xx-R	66"	2.2"	1.4"	3.1 lb
		167.6 cm	5.6 cm	3.6 cm	1.4 kg

POWER SUPPLY DIMENSIONS AND WEIGHT

RAY 22:	Description	Length	Width	Height	Weight
1	120-277VAC	10.0 in	1.9 in	1.6 in	2.2 lbs
		25.8 cm	4.9 cm	4.0 cm	1.0 kg
RAY 44:	Description	Length	Width	Height	Weight
2	120-277VAC	5.8 in	2.4 in	1.4 in	1.5 lbs
		14.8 cm	6.0 cm	3.6 cm	0.7 kg
RAY 66:	Description	Length	Width	Height	Weight
1	120-277VAC	10.0 in	1.9 in	1.6 in	2.2 lbs
		25.6 cm	4.9 cm	4.0 cm	1.0 kg



MAXIMUM AC INPUT AMPERAGE

Spectrum		AC Voltage	120 V	208 V	240 V	277 V
RAY 22	Indoor	Max AC Input Current	0.34 A	0.20 A	0.17 A	0.15 A
	Greenhouse		0.34 A	0.20 A	0.17 A	0.15 A
	Antho		0.38 A	0.22 A	0.19 A	0.17 A
	Pfr		0.28 A	0.16 A	0.14 A	0.13 A
	Pr		0.32 A	0.19 A	0.16 A	0.14 A
	UV		0.34 A	0.20 A	0.17 A	0.15 A

RAY 44	Indoor	Max AC Input Current	0.69 A	0.40 A	0.36 A	0.32 A
	Greenhouse		0.69 A	0.40 A	0.36 A	0.32 A
	Antho		0.76 A	0.45 A	0.39 A	0.36 A
	Pfr		0.57 A	0.33 A	0.30 A	0.27 A
	Pr		0.64 A	0.38 A	0.33 A	0.30 A
	UV		0.68 A	0.40 A	0.35 A	0.32 A

RAY 66	Indoor	Max AC Input Current	1.02 A	0.59 A	0.50 A	0.44 A
	Greenhouse		1.02 A	0.59 A	0.50 A	0.45 A
	Antho		1.12 A	0.65 A	0.56 A	0.49 A
	Pfr		0.84 A	0.49 A	0.42 A	0.37 A
	Pr		0.96 A	0.55 A	0.47 A	0.42 A
	UV		1.01 A	0.58 A	0.50 A	0.44A

CAUTIONS & WARNINGS

WARNING

Turn off and disconnect the power before installation. Installation should be performed by a qualified electrician in accordance with all national and local electrical and construction codes and regulations.

- DO NOT attempt to install or use this product until you have fully read and understand the installation instructions contained in this user and installation guide and on the product safety labels. Failure to follow the Fluence product instructions and safety label advice may result in damage to the product, damage to property, or personal injury. Be sure to retain a copy of this user guide after installation for future reference.
- Risk of Electrical Shock. Turn off and disconnect the power before installing, moving, or cleaning to reduce the possibility of serious injury. DO NOT disconnect cables from the power supply or LED light bar while energized.
- Only connect the system to an electrical outlet or circuit of appropriate type and rating for the cord and plug. Connect the system only to power sources of the correct voltages and frequencies listed in the product specifications.
- Protect power cables from being pinched, walked on, or otherwise damaged.
- Use a strain-relief or power cord grip if needed. Maintain a minimum of 1" (2.5 cm) bend radius for all cables.
- Use IP wet-rated junction boxes and fittings for the power cords equal to the IP rating of the rating of the lighting system for the application.
- DO NOT connect to live power until installation is complete and all connections are made.
- DO NOT modify or alter the product; doing so will void the warranty. Please refer to the Fluence Terms and Conditions and Limited Warranty for further details.
- LED and heatsink surfaces may be hot. DO NOT touch while in operation. Allow sufficient cooling time before handling.
- 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.

CAUTIONS & WARNINGS

CHEMICAL EXPOSURE PRECAUTION

Fluence lighting systems are designed to be resilient against crop protection products. Many chemicals used in the Commercial Horticultural Industry are corrosive to electronic equipment. If the luminaire is accidentally exposed to a corrosive liquid or vapor (e.g. VOC –Volatile Organic Compound and H₂S – Hydrogen Sulfide) the luminaire must be rinsed with clean water as soon as possible. The product warranty will no longer apply if the product is exposed or remains in the corrosive environment. It is recommended the luminaires be removed and protected from the corrosive environment during all periods of disinfection or sanitization of the facility.

CALIFORNIA PROPOSITION 65 WARNING

WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. For more information: www.P65Warnings.ca.gov.

PHOTOBIOLOGICAL HAZARD

To prevent eye damage, avoid looking directly at the unshielded LEDs. Practice safety precautions recommended by (IEC 62471 and IEC TR 62778) for photobiological Risk Group 1.



ETL Rating: RAY fixtures are rated suitable for damp locations. A “damp 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 or ceiling fan. RAY22, RAY44 & RAY66 are certified to meet UL standards (ETL) from the Intertek safety consulting and certification company and are cETL listed.

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.



OUR PRODUCT GUARANTEE & WARRANTY

Every RAY series system is engineered and built by Fluence Bioengineering using state-of-the-art robotics and hand craftsmanship. RAY series systems are guaranteed against manufacturing defects for five years from date of purchase. Contact us at support@fluence-led.com for more warranty information.

We stand behind our research, we stand behind our technology and we stand behind our clients. <https://fluence-led.com/warranty/>



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