

CASE STUDY

RAYMOND JAMES STADIUM

TAMPA BAY, FLORIDA



Sportsbeams and the Tampa Sports Authority Bring State-of-the-Art LED Lighting Fixtures to Raymond James Stadium

THE FACILITY

Raymond James Stadium first broke ground in 1996. The 65,000-seat stadium (expandable to 75,000) hosted its first game on September 20, 1998, when the Tampa Bay Buccaneers hosted the Chicago Bears.

Raymond James Stadium is home to the Tampa Bay Buccaneers, University of South Florida Bulls football, Outback Bowl, Monster Jam, Gasparilla Bowl, and the Sunset Music Festival. The stadium has hosted the International Indian Film Academy Awards (IIFA), Super Bowl XXXV, and Super Bowl XLIII. Many superstar concerts were held here, such as Kenny Chesney, U2, Beyonce, one direction, Ed Sheeran and Taylor Swift. Raymond James Stadium hosted the 2017 College Football Playoff National Championship, which marked the first time this event had been hosted in the Southeast United States. Raymond James Stadium also hosted the historic Super Bowl LV and Wrestlemania 37.



Members of the NFL players association have consistently rated Raymond James Stadium's field as the best in the league, and league insiders refer to the stadium as the "crown jewel" of the NFL.

As the last stage of a more than \$160 million renovation process, Raymond James Stadium came to us with the intention of becoming pioneers in the sports lighting world, becoming one of only two stadiums in the world where each and every fixture is RGBW capable.



Sportsbeams introduction to Raymond James Stadium started with the outer bowl, utilizing one Chromabeams 350 per section for an incredibly vivid color wash that the facility could customize for any event, holiday or special occasion. When the team at RJS saw what was technologically possible for their outer bowl, they knew they needed to have Chromabeams illuminating the whole stadium.

"We are very proud to be the first stadium in the world to utilize this advanced Chromabeams technology. This stadium improvement, combined with the many premium upgrades over the last few years to Raymond James Stadium, provide fans an enhanced event experience," said Tampa Sports Authority President/CEO Eric Hart. "These continued improvements will position Raymond James Stadium to host future world-class events, as evidenced by us hosting "Super Bowl 55 on February 7, 2021."

"The sporting world has never seen lighting like this," commented Russ Schroeder, Sportsbeams' President of Sportsbeams, "Athletes will surely love the lack of glare and unbelievable visual acuity, while fans enjoy an awe-inspiring show that will elevate live performances and events."

PROJECT REQUIREMENTS

EQUIPMENT:

- ★ 728 Chromabeams LED 900s
- ★ 12 Arena 600s
- ★ 48 Chromabeams LED 350s
- ★ 12 Intellibeam Fiber Optic Distribution Boxes
- ★ ETC DMX Control System

FEATURES:

- ★ No Significant Glare
- ★ Flicker-Free
- ★ 90+ CRI
- ★ DMX Controllable
- ★ Full RGBW
- ★ UL 924 Egress Certified

THE WORLD'S FIRST FULL RGBW STADIUM

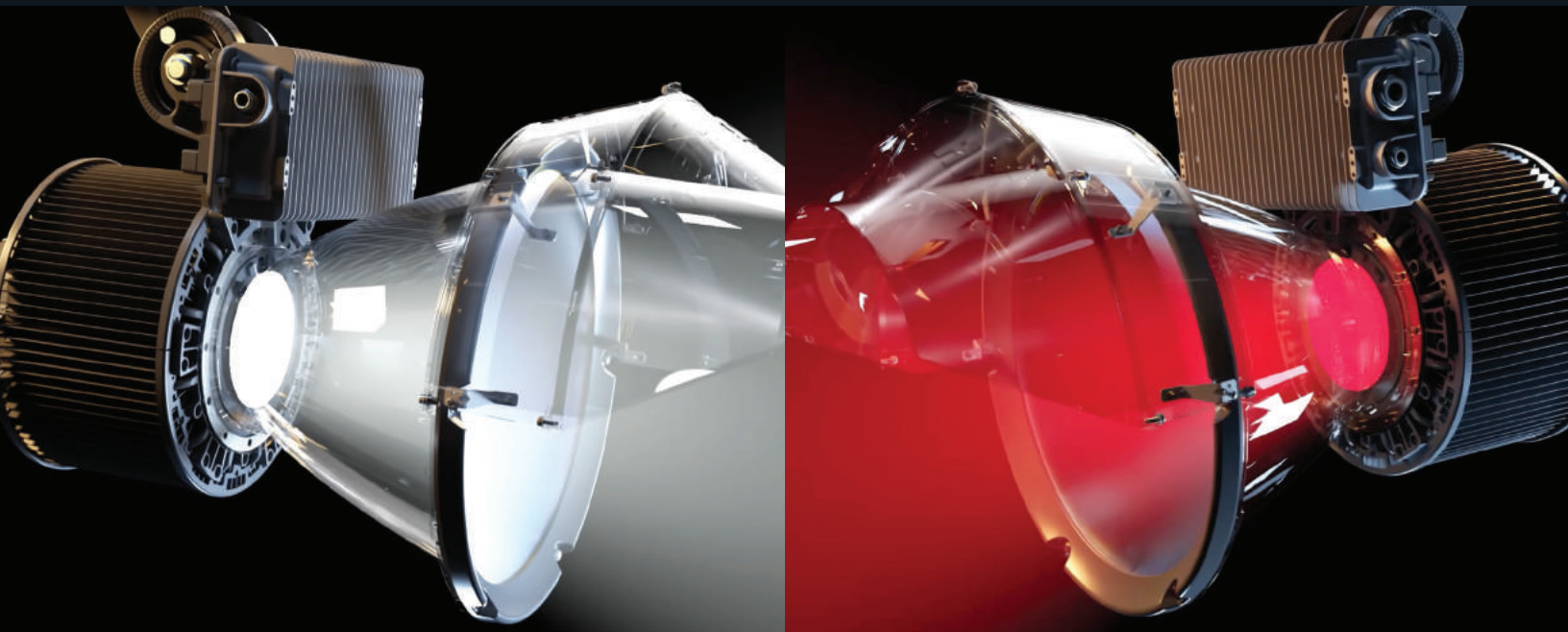
Looking to put on a show-stopping halftime performance at Super Bowl LV, RJS needed unprecedented lighting controls. Every single fixture is capable of instantly switching from white light to one of 2 million RGB color options, through a quick and responsive digital command that can be controlled from a click of a button. This allows any experienced stage lighting professional to create an ambitious, one-of-a-kind light show with rapid speed and ease, while matching the exact mood required for the performance on the field.

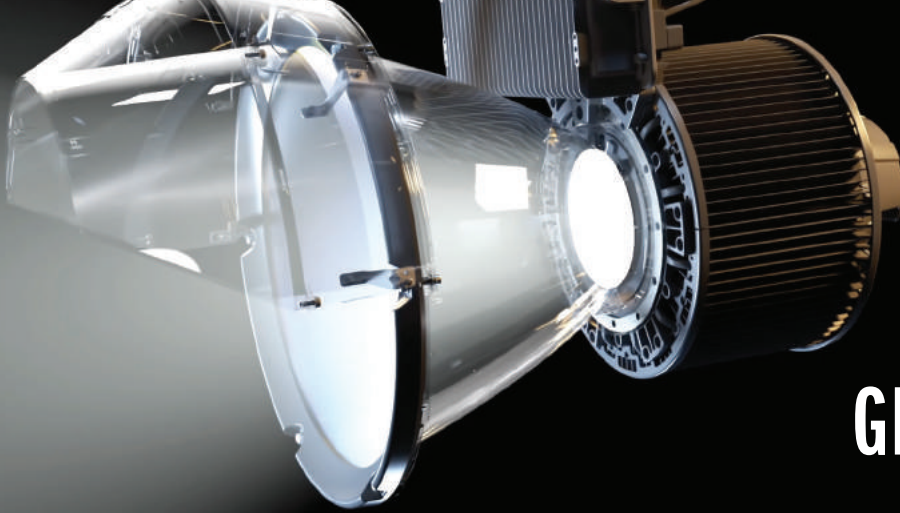
Capable of changing with the beat, and pulsing through colors synchronized with the on-field or on-screen visuals, Chromabeams can be cued to music or video using programs like VenueMagic. This means that every performance can also be a spectacular lighting show drenched in a million different colors, and a visual experience for the audience like no other. Every game, every performance, can look like a world-class concert.

EMERGENCY & EGRESS LIGHTING

Sportsbeams fixtures are UL 924 certified for Emergency lighting applications. When power to the fixture is lost, the fixture automatically restarts to 100% full white.

At Raymond James Stadium, we were able to pick out the most optimally aimed fixtures for the best Egress as well as Emergency lighting conditions. With the aid of ALCR (Automatic Control Load Relay) devices, the stadium's emergency power system ensures that fans stay safe during any unexpected situations.





GLASS SINGLE OPTIC LED

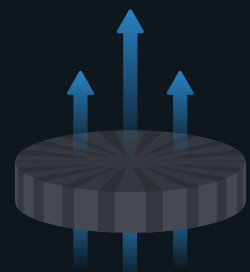
Glare Problems? Sportsbeams took a completely different design approach to address this issue. With over a decade of LED design experience in the movie industry, we knew that eliminating glare had to be a top priority.

Our design incorporates a broad, single glass lens to provide a much more uniform lumen density of 346 lumens/sq. in. This design distributes light evenly over 50,000x the area of each individual LED light source, maximizing both the emitting area of luminaries and uniformly redistributing the originating ultra-bright points of LEDs. This greatly reduces the amount of glare.

Getting bright light from a sports lighting fixture is relatively easy. Designing a fixture that utilizes that light without producing unacceptable levels of glare is physically impossible without incorporating our patented design. This design, in conjunction with numerous other features, makes Sportsbeams' fixtures the absolute best choice for all high-power lighting needs.

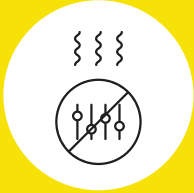


We bunch bare LEDs tightly together and don't cover them with small, plastic lenses.



We have developed the most advanced LED cooling technology on the market.

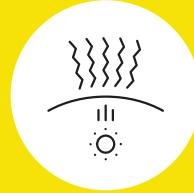
OTHER LED FIXTURES



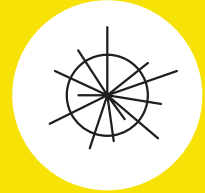
Other light fixtures cannot control the heat. So they have to separate the LEDs.



When LEDs are separated, their light can only be controlled by individual plastic lenses.

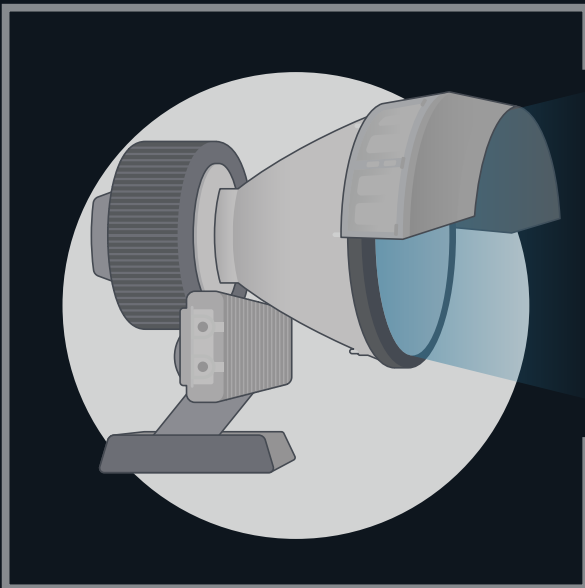


Light is forced through plastic that traps heat that also warps and cracking in sunlight.



Glare is the inevitable result of light and dark spots due to LED separation and forcing too much light through warped and cracked plastic lenses.

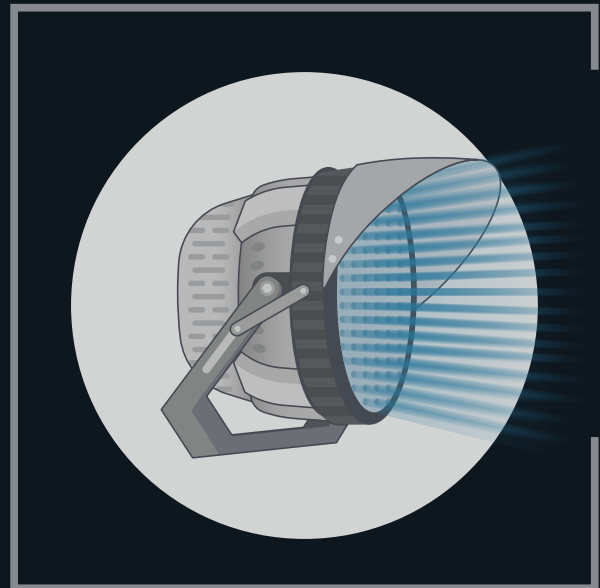
SPORTSBEAMS SINGLE OPTICS



Uniform
Single-Point LED
Distribution

with 346
Lumens
/ sq. in

OTHER SPORTS LIGHTING FIXTURES



Ultra Bright
Multiple-Points
of LEDs

with 1275
Lumens
/ sq. in

KEEPING IT COOL

Sportbeams FIELD LED 800 and the CHROMABEAMS LED 900 are powerful lights. With active cooling, we were able to increase the lifespan of the fixtures, significantly reduce weight, allow the fixture to be mounted at any angle, and increase its ambient temperature range. Using military grade fans that are tested to last over 490,000 hours in any weather conditions, our intelligent cooling system is rugged, reliable, and seriously advanced.

SportsBeams' patented, closed-loop, fan cooled fixtures solve all of these problems. It uses the same type of exterior-rated fans that have been used in telecom, traffic, and industrial control systems, 24/7, for years and has a 70,000 hour warranty.



CONSTANT TEMPERATURE

Our intelligent active cooling maintains consistent temperature for the LEDs and circuit board.



OVER 490,000 HOURS MTBF

Our fans have been on the market for decades and have a proven MTBF rate of over 490,000 hours.



OVER 40% WEIGHT REDUCTION

No big hunk of metal weighing our fixture down. That means little modification to existing structures.



WIDER OPERATING RANGE

Active cooling allows our fixture to operate in a wider range of environments, from extreme heat to bone-chilling cold.



AIM IN ANY DIRECTION

A passive heatsink must be aimed a specific direction for airflow. Our lights operate in any direction for maximum versatility.



MONITORING INTELLIGENCE

Our built-in intelligent system monitors and logs fan speed, operating temperature and much more.

HOW IT WORKS

- **AMBIENT AIR IS DRAWN IN**

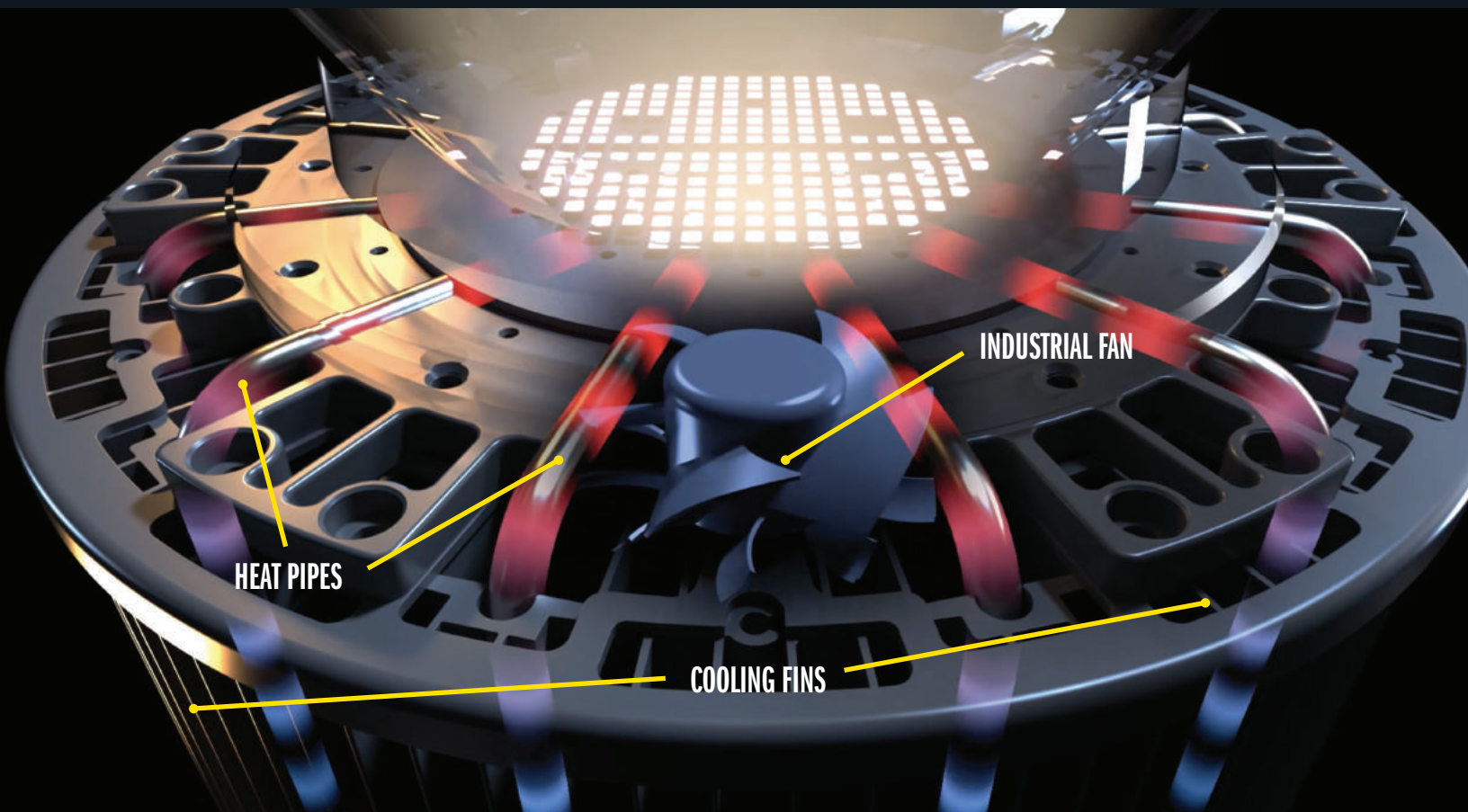
The fan in the rear is intelligently controlled to pull ambient air in at a rate that maintains consistent temperature. If it's colder outside, it spins slower. If it is warmer, it moves faster.

- **FINS DRAW OUT HEAT**

Heat from the light and drivers flow to the fins. Air drawn in from the fan carries it out of the fixture.

- **CONTINUOUS COOLING**

And on it goes. Sometimes air is flowing fast and sometimes slow. But all the sensitive components are kept a comfortable 70° C.



SAFER, TOUGHER DRIVERS

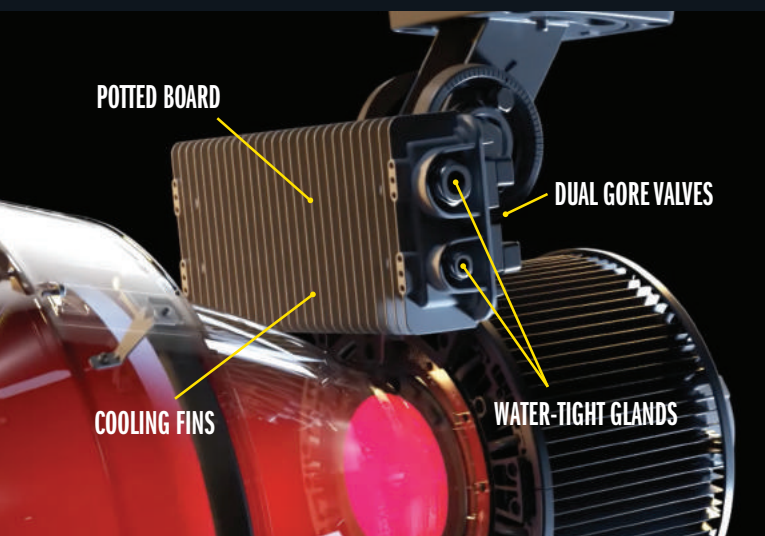
An arc welder to power LEDs?

Most sports lighting companies have their drivers at the base of the light poles. This means they need 700V+ of DC power to reach a fixture from the bottom of its pole — That's the equivalent of an arc welder. Worse, since most remote drivers power three or more fixtures, a failure can mean an instant loss of multiple heads.

So why the need to gamble with such dangerously high levels of voltage? Because their fixtures are too heavy to have their driver next to the lights. That and they rely on third-party manufacturers for their drivers. Sportsbeams designs, engineers and helps manufacture our own drivers.

Our patented technology means our lights are much lighter than our competitors'. That allows us to have our drivers at the base of our fixtures, making it much safer to handle at just 48V of DC power. This also dramatically increases the lifespan of the LEDs.

Just one more reason why our fixtures truly are the best in the world!



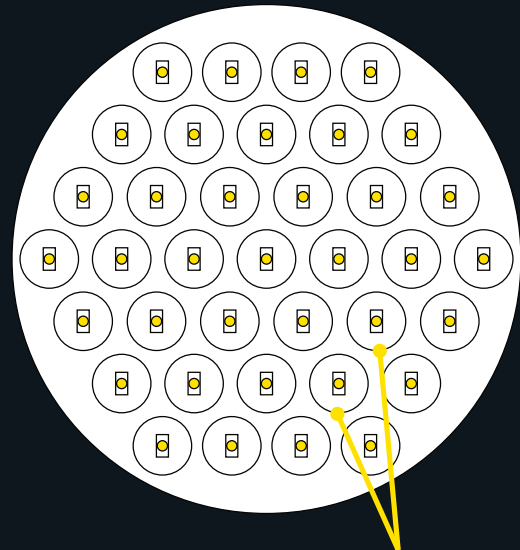
OUR DRIVER FEATURES

- Custom aluminum die cast housing with precisely engineered heat fins reduces heat by over 20% than standard housings.
- Housing sealed with an IP-67 gasket that ensures protection from water ingress.
- Board is potted in heat-conducting resin that further protects from water and heat damage.
- Stainless steel, water-tight glands allow power and data cables in and nothing else.
- All power supplies ready to be included in our exclusive Redundant Array of Independent Drivers (R.A.I.D.) system.

TYPICAL FIXTURE DESIGN

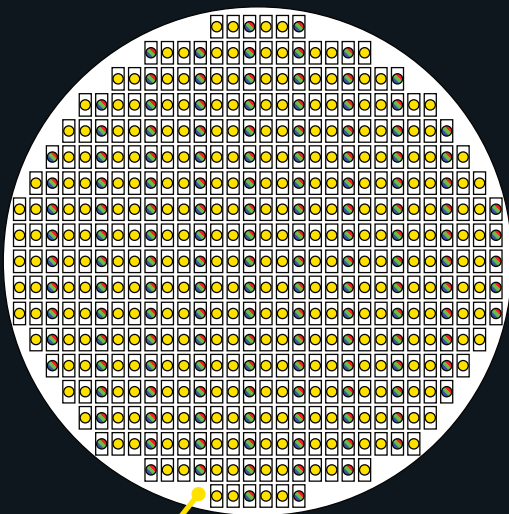
CHALLENGES

- 1. Lenses must be perfectly attached to the light engine to ensure that moisture or other debris is not trapped underneath
- 2. The number of LEDs a fixture can hold is limited because of space requirements for the individual lenses

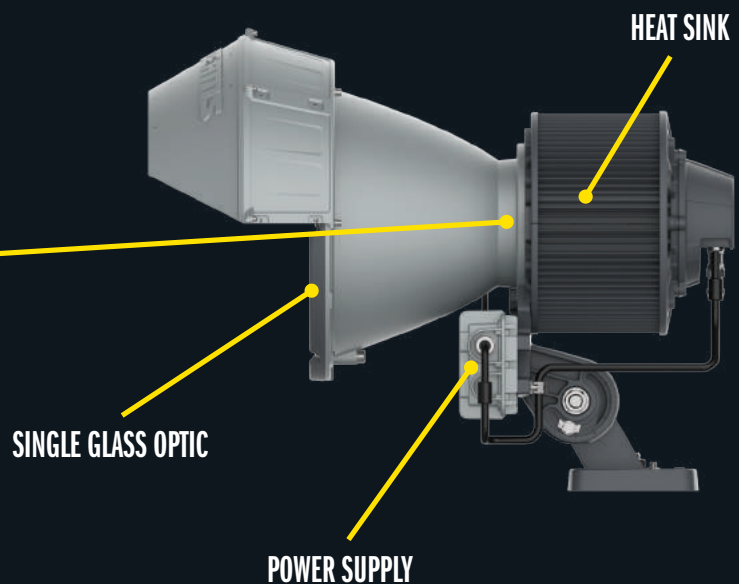


COVERED IN INDIVIDUAL PLASTIC LENSES

SPORTSBEAMS FIXTURE DESIGN



BARE LEDS BUNCHED CLOSELY TOGETHER



CONCLUSION**THE WORLD'S FIRST FULL RGBW STADIUM**

Just four years ago, LED sports lighting was considered expensive and unproven. In that short time, Sportbeams has rewritten the script on the sports lighting industry, and has pushed the envelope on what is technologically possible.

Chromabeams are the new standard for sports lighting in major venues, allowing the addition of double the number of LEDs in a regular unit while delivering the least glare of any sports lighting fixtures available worldwide.

With decades of technology manufacturing experience, combined with more than 15 years of professional LED lighting experience, we've been able to make more advances in sports lighting than any other company of our kind. Raymond James Stadium will be on the forefront of a new movement in sports lighting technology, which was on full display for the world at Super Bowl LV, where in-house lights were utilized during the Super Bowl Halftime Show for the first time in history.

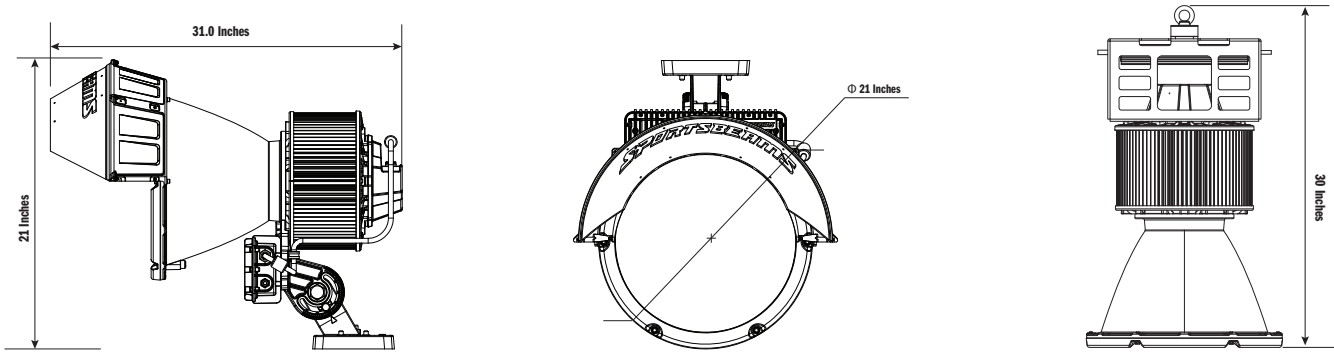




PROJECT NAME:	TYPE:
PREPARED BY:	DATE:

DRIVER INFO: Type Constant Current Input Voltage 208VAC~277VAC Input AC Current 3.9A @ 277VAC Output Current 16.5A Max Output DC 51V Efficiency 95% Typical @277V Power Factor 90% @ 277V	LED INFO: Watts 885W Color Temp 1800-10000 RGB Integrated Color Accuracy 70 to 90+ CRI L80 Lifespan 120,000 Maximum Lumen 95,339 Efficacy 107 LPW
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DIMENSIONS



TECHNICAL SPECIFICATIONS

DRIVER INFORMATION

INPUT:

Voltage Range:	176V ~ 305V
Frequency Range:	45-66 Hz
PF:	0.9 @ 277V
THD:	<15%
Inrush Current:	<40A
Efficiency:	93% Typical 277V
System Power:	880W

OUTPUT:

DC Voltage:	51V
Current Range:	16.5A Max

PROTECTION:

Enclosure:	High Pressure Die Cast Aluminum
Overload:	YES: Automatic Recovery
Over Voltage:	YES: Recovery After Power Cycle
Over Temperature Protection:	YES: Automatic Recovery
Surge Protection:	L-N 5.5kV ~ L-N-PE 11kV

CERTIFICATIONS

CE, ETL, ROHS, LM79, 3G, UL, iK08, CB, KC, UL 924



OPTICAL

Optics Types:

Symmetrical
Asymmetrical (w/visor)

NEMA Types:

NEMA 2/3/4/5 OPTION

LIGHT ENGINE

Color Temperature:

Tunable from 1800K to 10,000K

Lumen Output:

White (5700K CRI90)	78,300lm
White (5700K CRI80)	87,520lm
White (5700K CRI70)	95,339lm
Red	2,260lm
Green	5,612lm
Blue	1,836lm

OTHER

Warranty:

10 Years Standard, Others Available

Visor:

Included

Weight:

55lbs

CONSTRUCTION

IP Rating:

Ingress protection rating of IP66 for dust and water

Maximum Ambient Temperature:

Suitable for use in 122°F

Effective Projected Area:

EPA = 1.93(ft²) with visor or without visor

Cold Weather Starting:

Minimum starting temperature is -40°F

Thermal Management:

Actively Cooled

Lens:

Tempered glass, transparent & diffusive

Housing:

Aluminum Alloy

Mounting:

High grade steel yoke mount

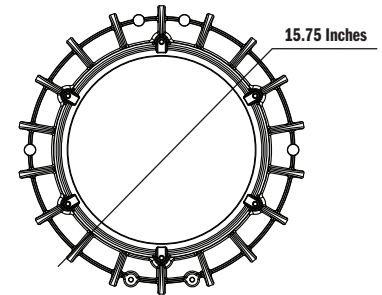
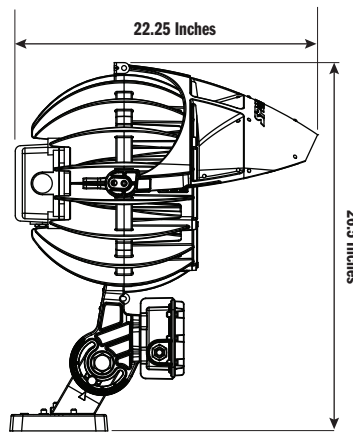
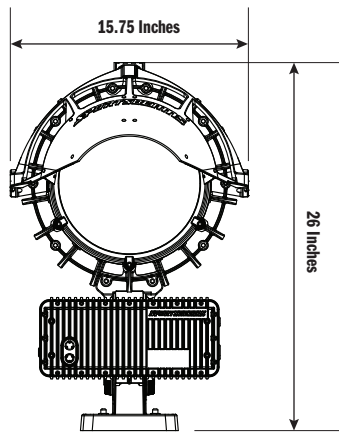
Reflector:

Parabolic Reflector



PROJECT NAME:	TYPE:
PREPARED BY:	DATE:
DRIVER INFO:	
Type	Constant Current
Input Voltage	100VAC~277VAC
Input AC Current	3.5A @ 100VAC
Output Current	6.7A Max
Output DC	48V
Efficiency	91% Typical @115V
Power Factor	99% @ 115V
LED INFO:	
Watts	320W
Color Temp	VARIABLE
Color Accuracy	70 to 90+ CRI
L80 Lifespan	120,000
Lumens	42,000
Efficacy	120 LPW

DIMENSIONS



TECHNICAL SPECIFICATIONS

DRIVER INFORMATION

INPUT:

Voltage Range: 90V ~ 305V
 Frequency Range: 47-63 Hz
 PF: 0.99 @ 115V
 0.96 @ 277V

THD: <20%
 Inrush Current: <75A
 Efficiency: 91% Typical 115V
 94% Typical 277V
 System Power: 350W

OUTPUT:

DC Voltage: 48V
 Current Range: 6.7A Max

PROTECTION:

Overload: YES: Automatic Recovery
 Over Voltage: YES: Recovery After Power Cycle
 Over Temperature Protection: YES: Automatic Recovery
 Surge Protection: L-N 5kV ~ L-N-PE 10kV

CERTIFICATIONS

CE, ETL, ROHS, LM79, 3G, UL, iK08, CB, KC, UL 924



OPTICAL

Optics Types:

Symmetrical
 Asymmetrical (w/visor)

NEMA Types:

NEMA 4/5/6/7 OPTION

LIGHT ENGINE

Color Temperature:

Tunable from 1800K to 10,000K

Lumen Output:

White (5700K CRI90)	32,300lm
White (5700K CRI80)	36,720lm
White (5700K CRI70)	41,115lm
Red	1,160lm
Green	2,500lm
Blue	620lm

OTHER

Warranty:

10 Years Standard, Others Available

Visor:

Included

Weight:

37lbs

CONSTRUCTION

IP Rating:

Ingress protection rating of IP66 for dust and water

Maximum Ambient Temperature:

Suitable for use in 122°F

Effective Projected Area:

EPA = .82 with visor or without visor

Cold Weather Starting:

Minimum starting temperature is -40°F

Thermal Management:

Passively Cooled

Lens:

Tempered glass, transparent & diffusive

Housing:

Aluminum Alloy

Mounting:

High grade steel yoke mount

Reflector:

Parabolic Reflector