

Delta9 NX3 Smart Hydroponic Lighting System

Delta9 is a groundbreaking horticultural lighting system. Our systems enable our customers grow bigger, healthier crops, using less energy and resources, while providing a wealth of configuration, monitoring automation and data to help growers of all sizes optimise and automate their growth.

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Delta9 NX3 Mechanicals

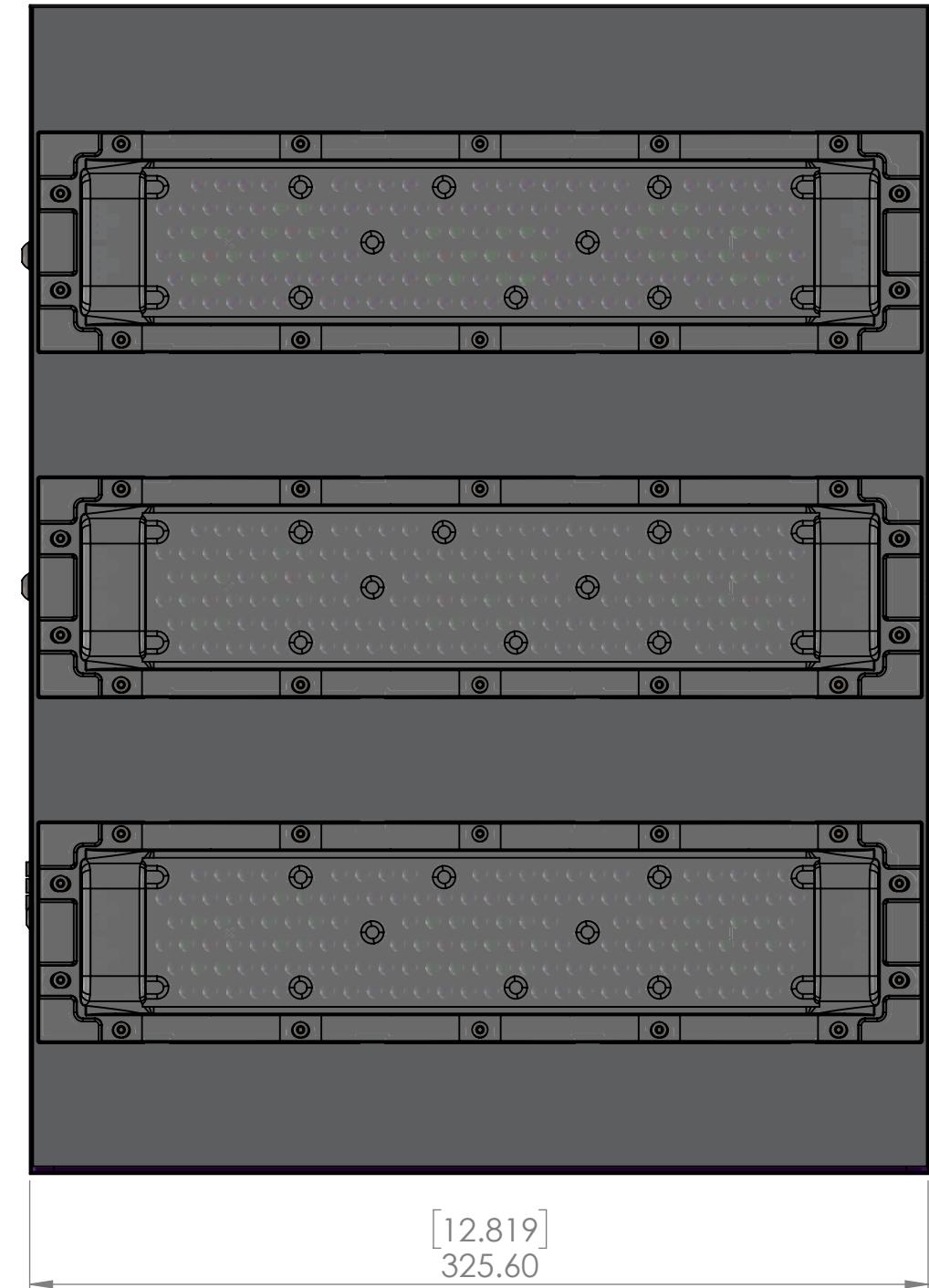
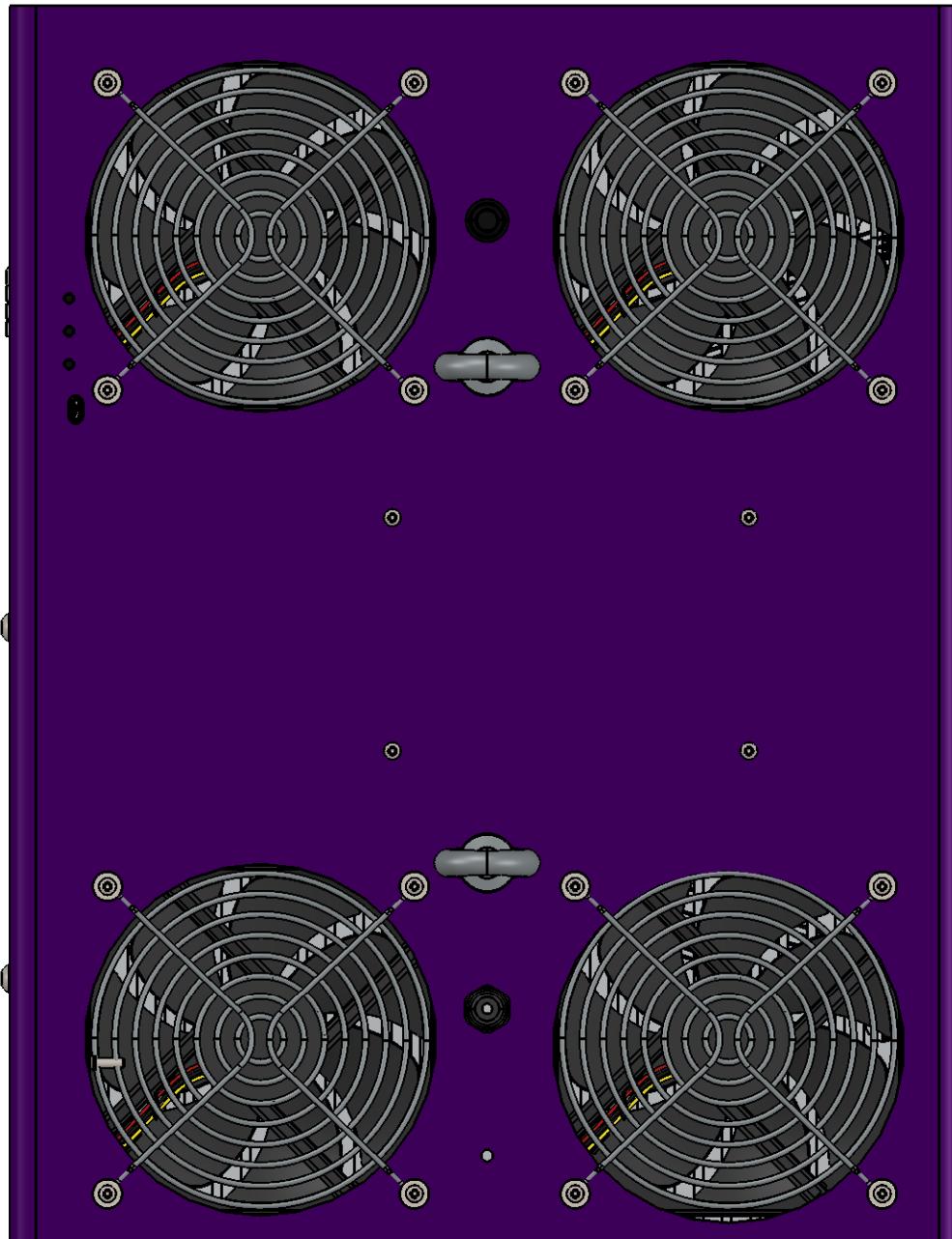
These drawings describe the D9 NX3 system in mechanical terms.

The systems weight around 15kg [33lbs]

For each one of these D9 systems,
you can replace two full 1,000W
HPS/MPS systems.

The optical design used in the NX3 enables the fixture to cover a much larger area than the equivalent traditional fixture, with better optical performance.

Installation with a variable height hoist or chain is highly recommended for optimal performance.



[12.819]
325.60

A technical drawing of a rectangular component. The bottom edge has three small feet. The top surface features two vertical pins on the left and right sides, and a central vertical pin. Dimension lines indicate the following measurements: a total width of 423.50, a top width of 205.90, a side height of 3.962, and a total height of 16.673.

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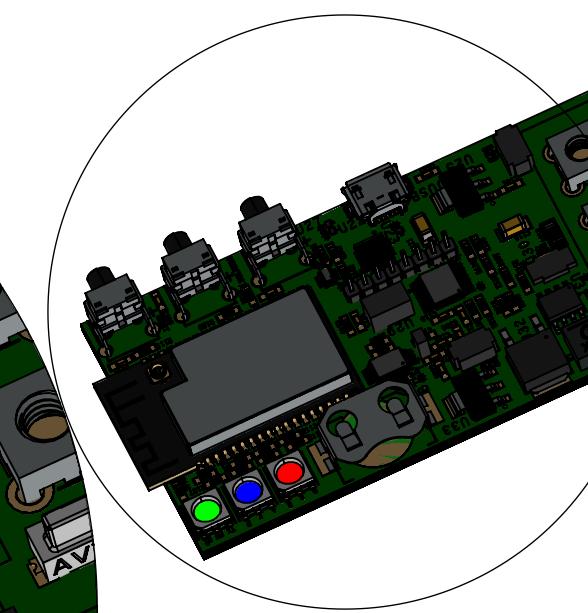
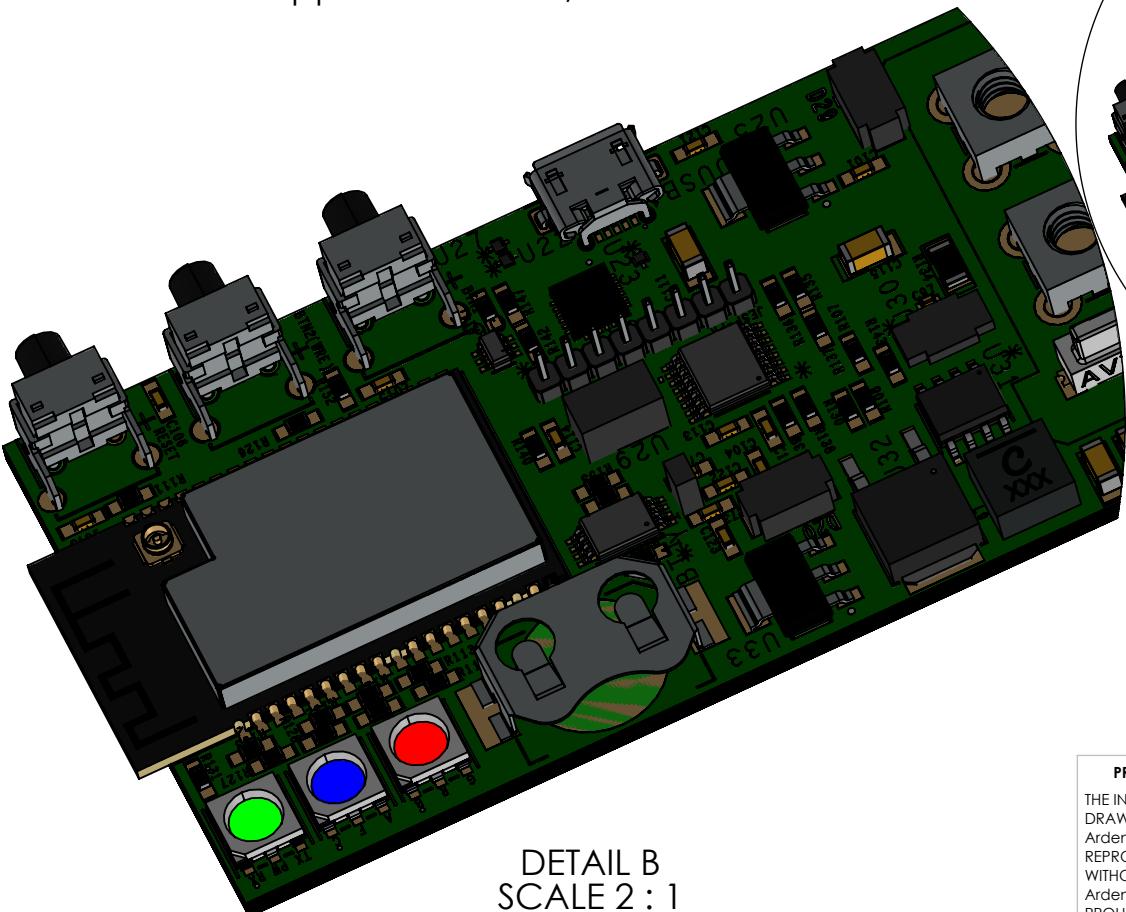
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Delta9 NX3 Control and Automation Features

The brains and heart of the D9NX3 are compromised by our custom-designed, advanced Smart Power Distribution Unit (PDU). This revolutionary board enables a whole suite of functionality for the D9NX3 family that sets it apart from all other horticultural lighting systems.

All Delta9 NX3 Fixtures ship feature-packed, thanks to the Smart PDU:

- Up to 1,000W of full output power; assignable to any combination of output channels, from 0 to 100% for each Red, Blue or Green Channels.
 - Integrated WiFi and BT control Infrastructure with client-accessible, web-based configuration and management software.
 - Battery-backed up, Real Time Clock controller to keep track of times and cycles, and to enable controls without external clocks or timers.
 - Integrated Four-Channel Fan Control with PWM and Thermal Feedback.
 - Support for external Sensors and automation equipment via our standard powered USB interface.
 - Ten integrated slots to create custom light output profiles, which can specify power output for each channel for every minute of a 24 hour period.
 - Seven integrated Light output profiles:
 - 100% static output: 66% Blue-Red, 33% Green. (Always on)
 - 100% static output: 75% Blue-Red, 25% Green. (Always on)
 - 100% static output: 50% Blue, 50% Red (Always on)
 - 100% static output: 100% Blue / 100% Red / 100% Green (One only, always on)
 - Summer Light: Dynamic 16-on 8-off Sun-like output profile to boost Vegetative Growth.
 - Fall light: Dynamic, 12-on, 12-off Sun-like output profile to boost Blooming Growth.
 - Harvest Mode: Static, White output for interacting with your plants or harvesting.
 - Easy switching between custom and integrated profiles using on board buttons.
 - Integrated on board LEDs for diagnostics.
 - Fully open source Software Stack - Documentation is available for custom solutions.
 - Open source Sensor hardware design and Software API.
 - Integrated USB port for firmware updates and configuration.
 - Coming in a future upgrade:
 - WiFi/BT Mesh Control
 - Remote Monitoring
 - Out-of-the-box support for our O2, PH and CO2 sensors.



D9 NX3 Smart PDU

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Delta9 NX3 Spectrum and Output

D9NX3 is unique amongst growing systems: It does not provide a *fixed* Blue:Red ratio or a static output profile. Leveraging the unique control systems that we've designed into the Smart PDU, we are proud to offer a system that can be customised and fine-tuned to your specific growing application - and the target plant species:

Each of the four specific frequencies we have included into the D9NX3 design are carefully chosen - we give plants exactly what they need, and we leave everything else out. In contrast to "wide band" white LEDs, our design targets the four key frequencies that drive plant metabolism.

When combined with the PDU design and its control architecture; it becomes possible to mix and match the frequencies below in minute-long increments for every grow day: With the D9NX3 you can switch between Veg/Bloom cycles, and even to simulate Summer and Fall natural cycles to boost plant growth.

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In short, plants absolutely love Delta9 Light!

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Deep Red (600~700nm):

Max: 1,500uMol @ 1.5uMol/W

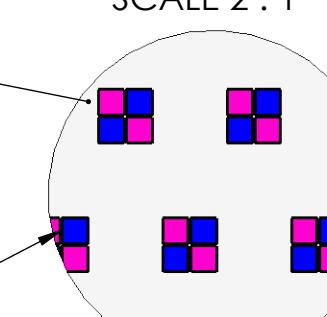
Deep Red Light is the other of the bulk types of flux used by plants to drive photosynthesis and growth. More Deep Red promotes blooming.

Deep Blue (445~455nm):

Max: 1,950uMol @ 1.98uMol/W

Deep Blue Light is the bulwark of flux that plants use for photosynthesis and growth. More Blue promotes vegetative growth.

DETAIL C
SCALE 2 : 1



Lime Green (520~545nm):

Max: 1,300uMol @ 1.98uMol/W

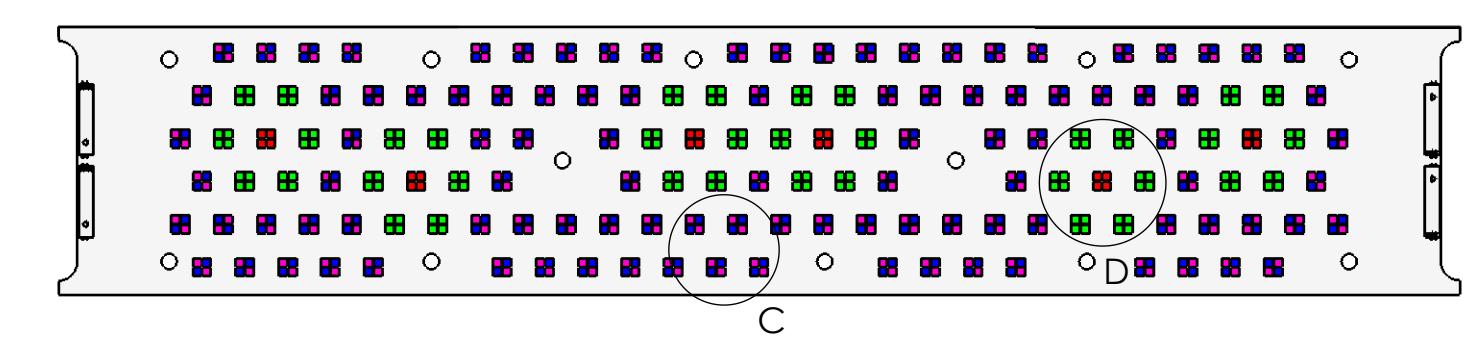
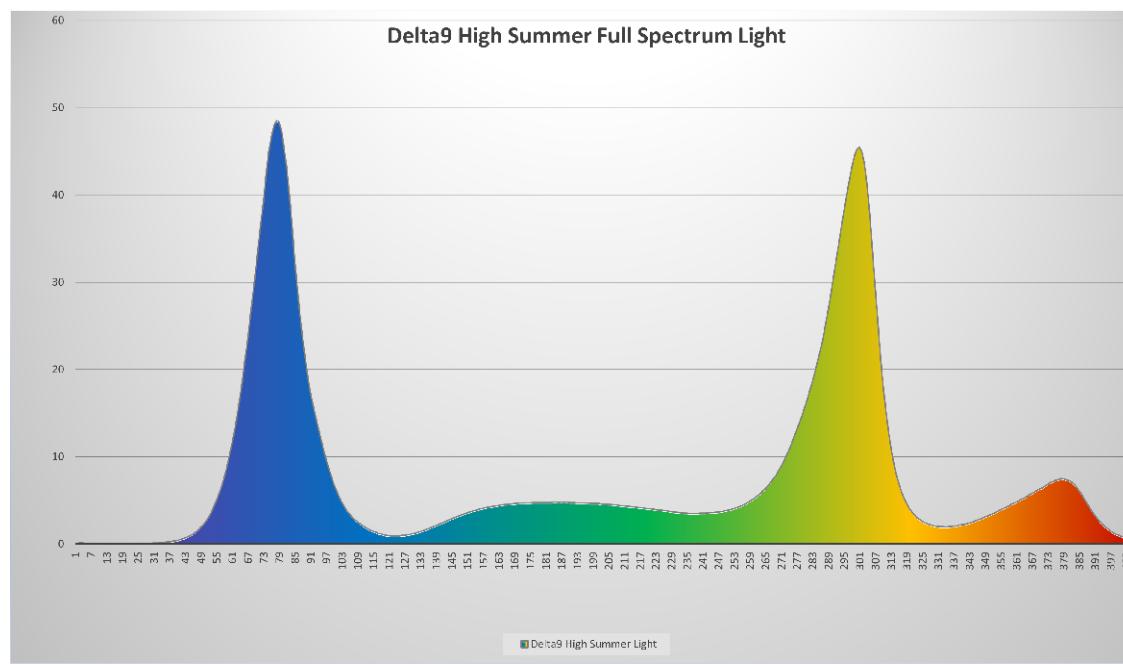
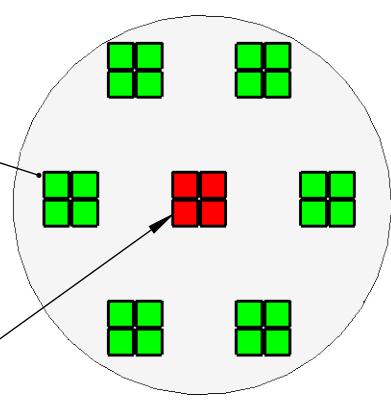
Green light provides signals that control plant photomorphism and growth. It has (some) photosynthetic power but it mostly regulates plant metabolism.

Far Red (720~750nm):

Max: 140uMol @ 1.2uMol/W

Far Red light is needed for a complete, normal daytime pattern: For plants. Far red light signals dawn, and dusk. It also controls the shadow response and most metabolic cycles for all plants.

DETAIL D
SCALE 2 : 1



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Delta9 NX3

Delta9 NX3: Optical Design:

D9 NX3's precise optical setup to deliver almost* all of the light towards your plants.

The square shape of our lenses enables several unique advantages over traditional HPS and MPS systems:

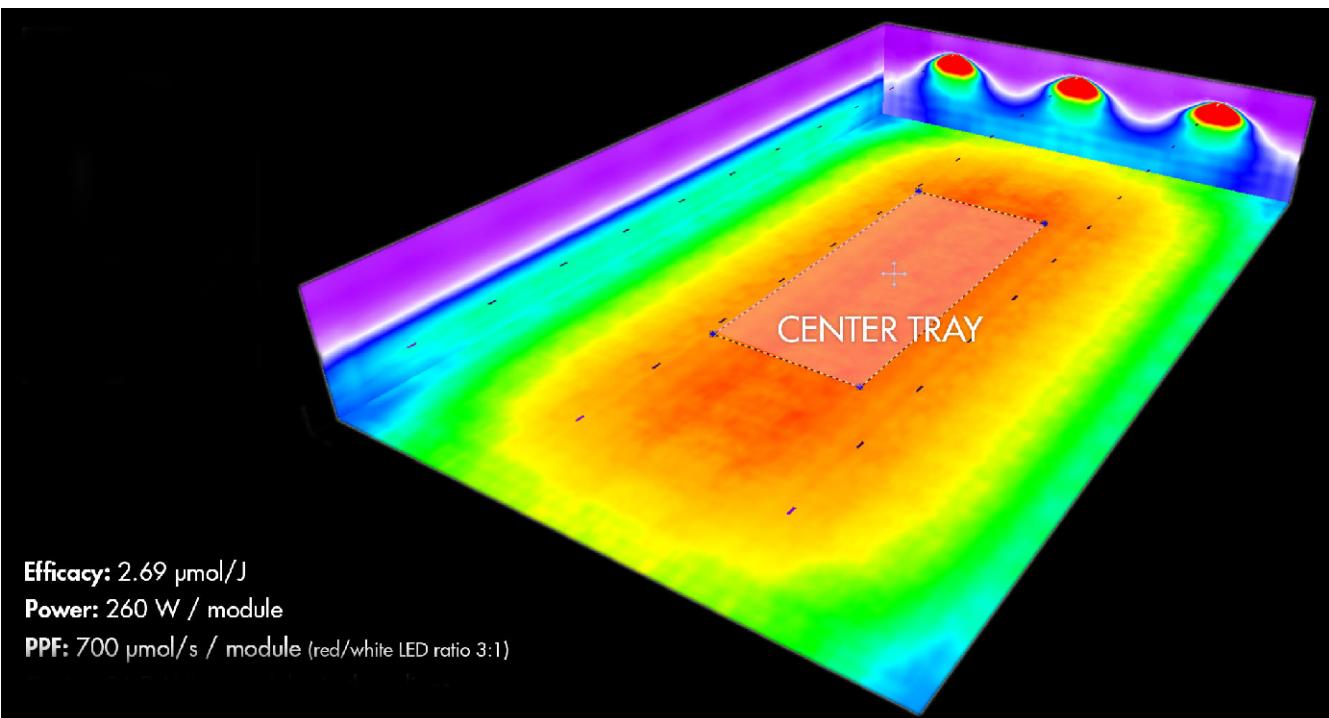
Our light flux output pattern is shaped in the same way as grow trays and boxes.

The light output is highly regular in PPFd. It delivers an even grow flux surface.

The light output area of each D9 can replace the output of about two

750-1,000W HPS/MPS bulb lights - with a better, more even output that never needs relamping or rebulbing

Achieve optical performance and uniformity across 6 meter grow trays:

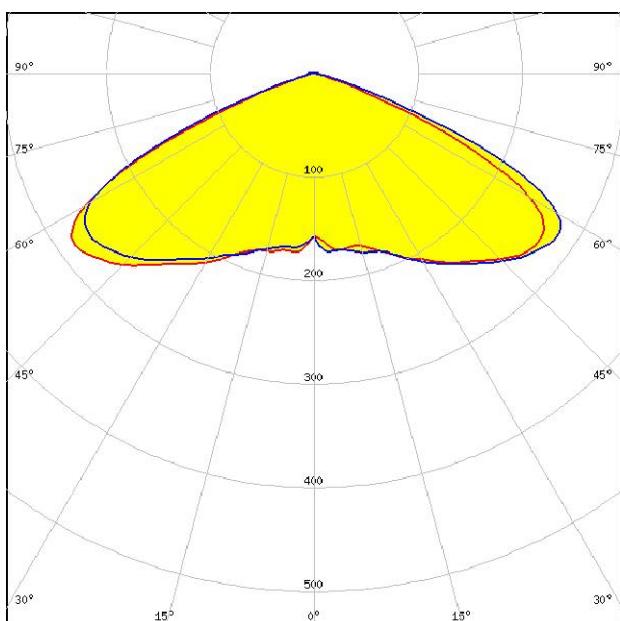


Efficacy: 2.69 $\mu\text{mol}/\text{J}$

Power: 260 W / module

PPF: 700 $\mu\text{mol}/\text{s} / \text{module}$ (red/white LED ratio 3:1)

Polar Output Chart:

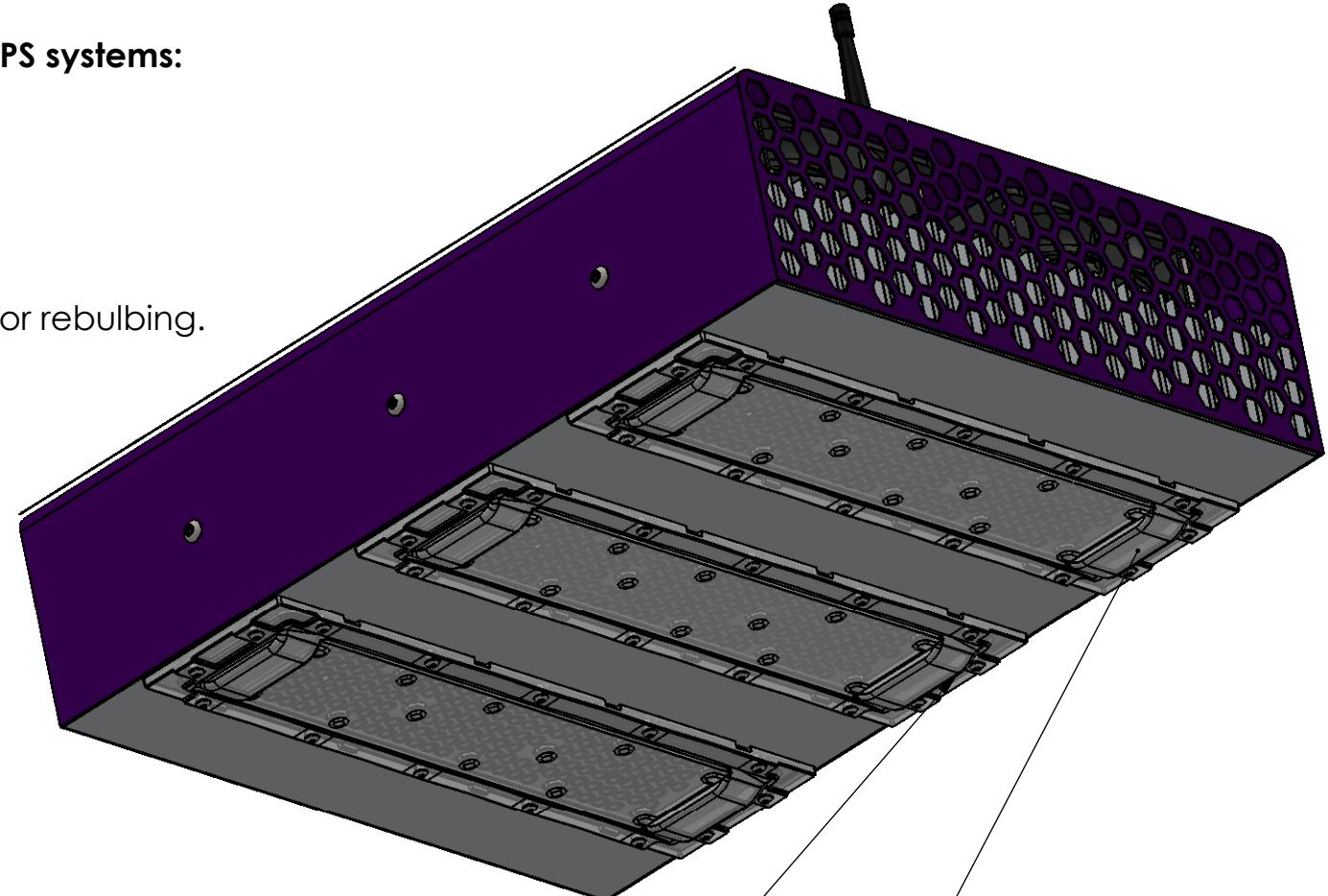


This chart represents in polar (spherical) coordinates, how Delta9 outputs luminous flux.

In a nutshell, our design is perfectly even to spread out grow light in both directions (North to South) and (East to West) with a perfectly even coverage.

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Each Lens provides the maximum equivalent PPF_d/Flux of a 750W to 1000W HPS/MPS.

Light is directed into an even square that keeps PPFd distribution even as seen to the left.

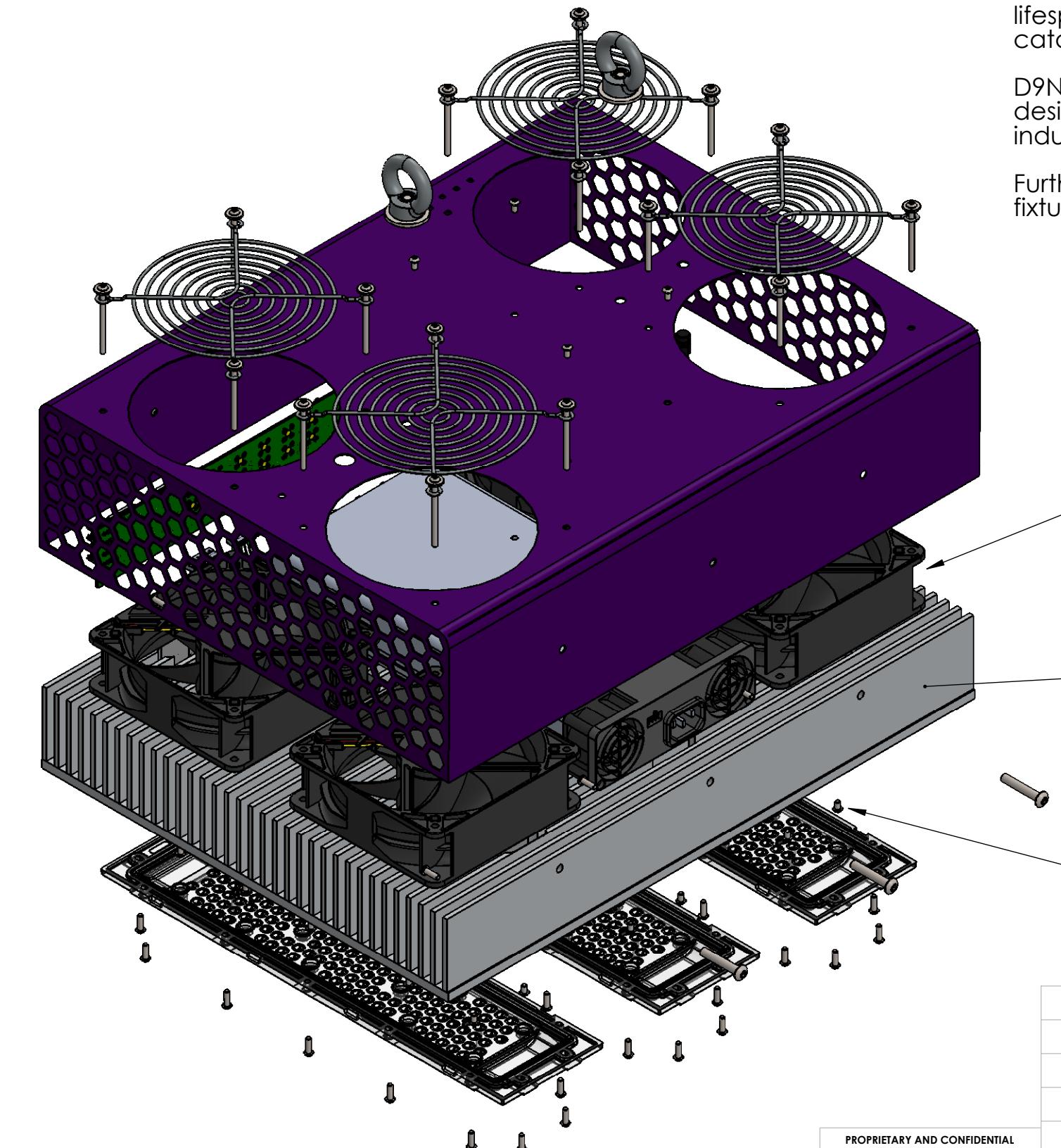
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Delta9 NX3: Robust, Reliable Thermal Design:

It is an undeniable fact that all LED fixtures, for horticultural and general lighting alike, will always most likely fail because of an overheat, or a thermal runaway condition. At the very least, a moderately overheated lamp will have a huge impact on the lifespan and performance. At the other extreme, the fixtures will experience early catastrophic failures.

D9NX3 is designed to prevent this from happening. All of the thermal features of the design have been carefully calculated, designed, simulated and refined to exceed industry standard requirements.

Furthermore; the high efficiency of D9NX3 generates much less heat than HPS/MPS fixtures, vastly reducing the need for HVAC cooling per fixture.

Four High Flow Fans:

High air flow of 200CFM (5.6 m³/min) with PWM control and a guaranteed lifespan of at least 65,000 hours. For energy efficiency and low noise, the SmartPDU controls the fans depending on the ambient temperature and system load.

American-made, High quality Aluminum Heatsink:

We do not use bent metal bodies or indirect thermal management. We built the D9NX3 system around a heavy-duty, high-purity Aluminium Heatsink.

Built in Thermal Feedback in each Light Engine:

A high-precision thermal sensor is built into each of the light engines that make the output system of the D9NX3. This signal is fed back into the Smart PDU, which is tasked with making sure no part of the fixture, especially the light engines, ever overheat.

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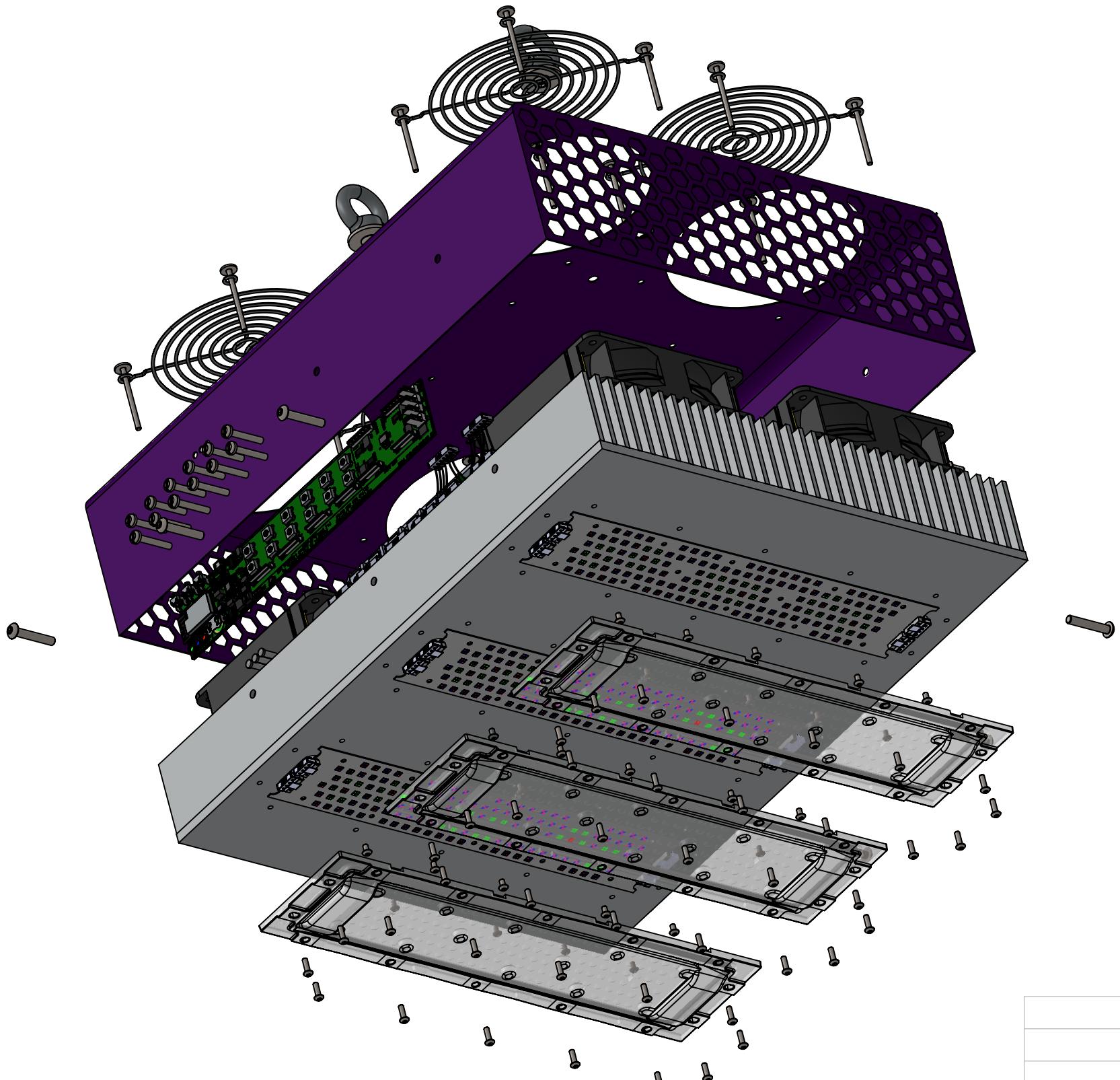
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PARAMETER	VALUE
Length:	423.50 mm / 27.5"
Width:	310 mm / 12.2"
Height:	92.55mm / 3.65"
Operating Temperature:	-25 to 55 C
Weight	15 Kg / 33 Lbs
Operating Conditions:	0 to 80 RH%
Installation Style	20mm Eye Hooks for Suspension
Cord Plug Type	IEC 60320 Type C13/C14
Blue Frequency:	445-455nm
Blue Output:	1,208uMol
Deep Red Frequency:	635-670nm
Deep Red Output:	1,353uMol
Green Frequency:	520-545nm
Green Output:	400uMol
Far Red Frequency:	720-750nm
Far Red Output:	300uMol
Maximum Power:	1,152W
Input Voltage:	90 to 277 Vac
Warranty:	63,000 hours

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