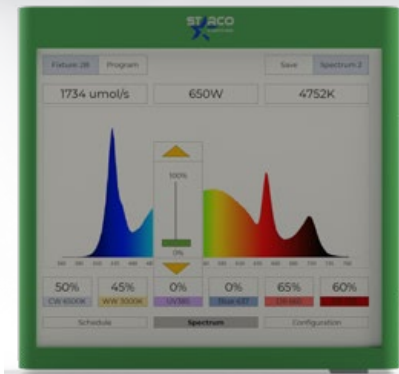
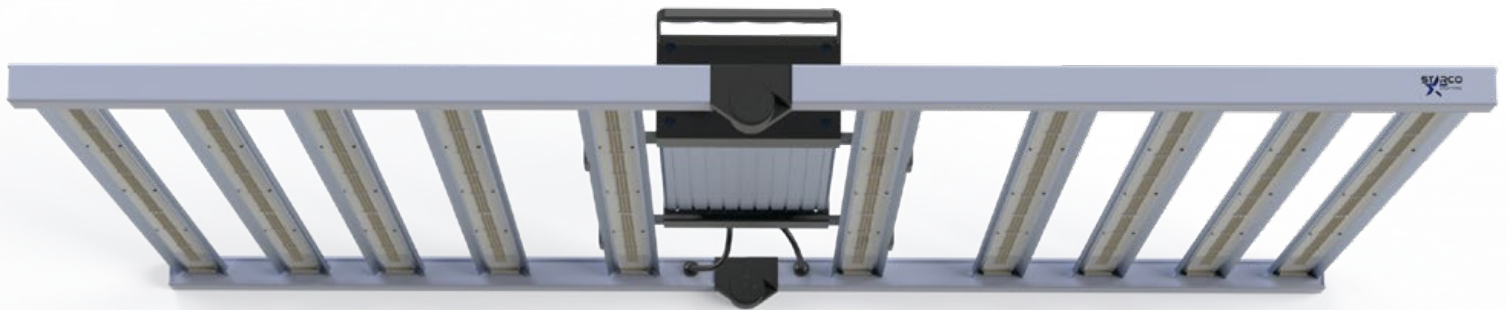


Starco Lighting's Horticulture Lighting Guide



The Most
**Powerful &
Tunable**
Grow Light in the Market

- Highest Efficiencies
- Designed to Last
- Most Tunable Lighting
- Future Proof Setups





Hardworking Lights for Hardworking Growers

Where Horticulture Lighting Meets Large-scale Industrial Design

- Longest warranty in the market. 6-years, no caveats.
- Most powerful and most tunable grow light in the market. 1,500W 6-channel dimming R&D Light.
- Future-proof solution designed for modular add-ons.
- Vendor-neutral connections for flexibility with controls upgrades and modular add-ons.
- Customized spectrums for orders of 500 units or more.
- Plug and play solutions with daisy-chained digital and analog control systems.
- Lighting for all your growing needs from mothering to flowering, for indoor grow and greenhouses.
- Lighting for all your general lighting needs from office lighting to warehousing, for interior and exterior.



You need solutions FAST from a partner you can TRUST.

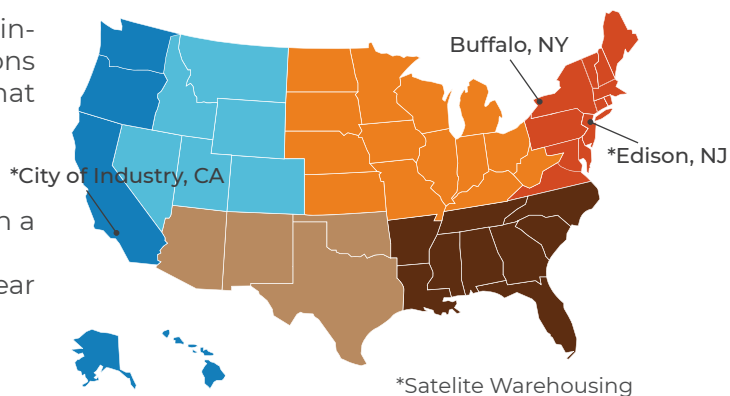
Starco delivers the product you need: when, where and how you need it.



Fast Shipment Program

The “Fast Shipment Program” enables low lead times on inventoried Starco Lighting Products. Starco carries millions of dollars of inventory and clearly delineates between what is and isn't in stock in its marketing material.

- General stock ships out within 48 hours.
- If we don't have in inventory, we will connect you with a distributor that does and maintain any discounts.
- Ask about our integrated LED High Bays and Linear Lights



Grow Light Leasing Program \$\$\$

We can work with you to find the leasing option you need to get your grow operation going.

- For orders of \$500k and above.
- Certain restriction may apply. Must have an established business in place for more than 2-years and application approval is based on the credit worthiness of parent business and owners.
- Quick turn-around. We can give you an answer within 48 hours.

State-of-the-Art Manufacturing

You'll see the difference in the quality

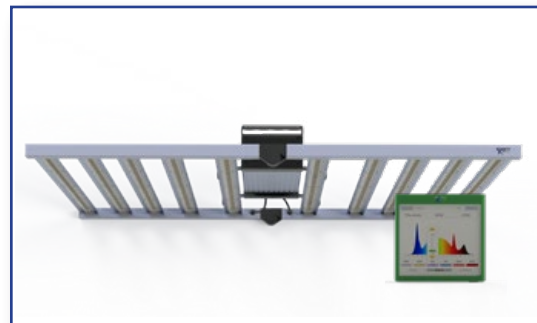


Starco Lighting designs, manufactures, and tests all of our lighting in house. We are constantly advancing the market frontier by continually evaluating best-in-class technology advancements to incorporate into our products.

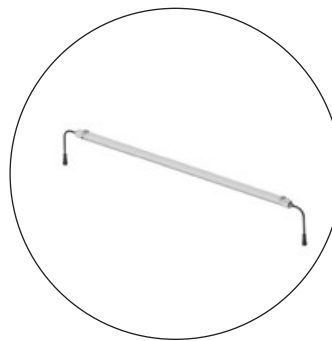
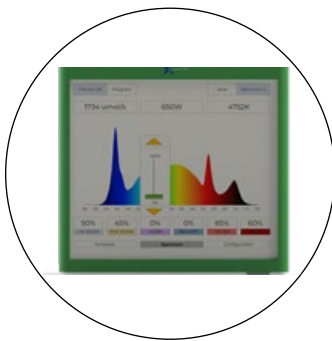
Starco Lighting's Horticulture Line is developed and designed in the US by our engineering team working hand-in-hand with growers and researchers across the country to find the optimal balance between functionality and cost.



The Lighting Your Plants Need!



Controls, Ancillary & Supplement Modules



Horticulture Lighting Solutions



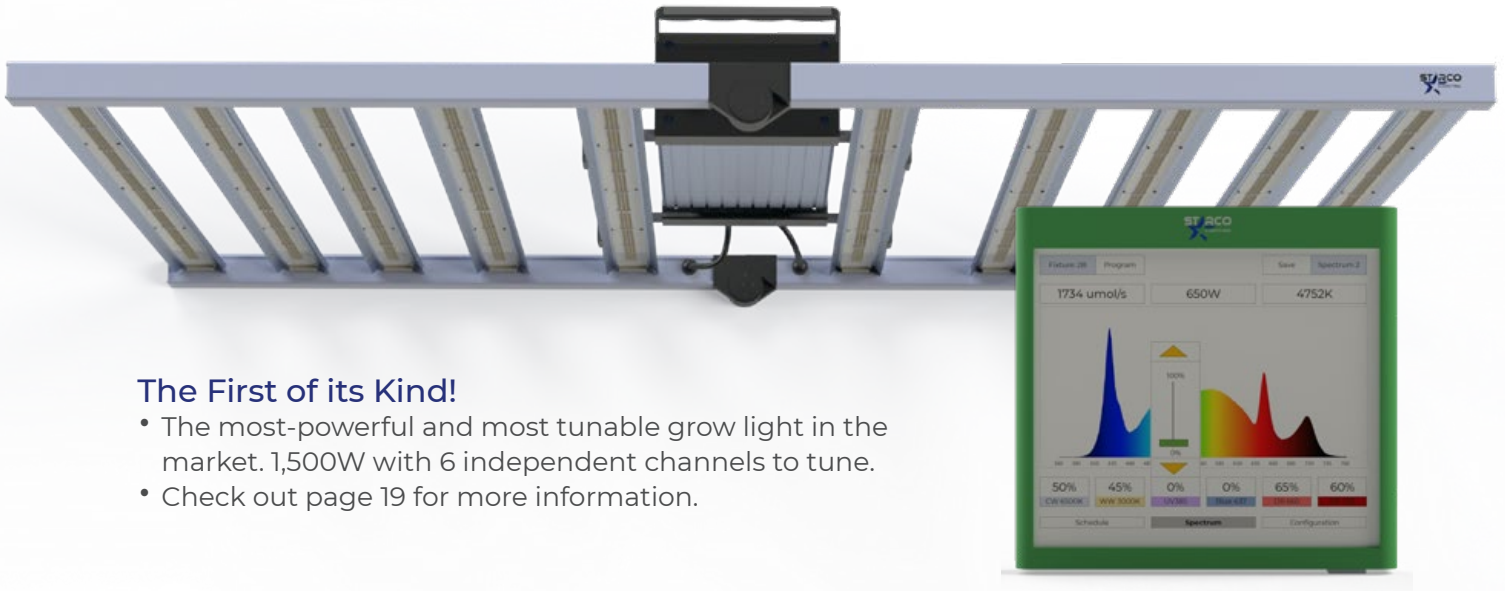
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Scan this code for
website and spec sheets
www.starco.us.com

For R&D Horticulture Labs and Researchers



The First of its Kind!

- The most-powerful and most tunable grow light in the market. 1,500W with 6 independent channels to tune.
- Check out page 19 for more information.

Morphological Effects

UV 280-400nm

Triggers a defense mechanism which increases essential oils in herbs and terpenes in cannabis. This protects plants from pests and disease while enhancing taste, aroma and nutrition. Encourages branching and reduces stretching. Strengthens plants for exposure to greater light intensity during transplanting.

Green 500-600nm

Increases overall plant photosynthetic efficiency and penetrates the canopy to encourage growth of lower leaves. Makes detecting issues like pests and disease on plants easier to see.

Far-Red 700-750nm

Promotes expansion and stretching of leaves and stems. Penetrates the canopy to encourage growth of lower leaves. When used with 660-680nm wavelengths, plant photosynthesis rates increase via the Emerson effect.

Blue 400-500nm

Improves overall plant health and quality including taste, aroma, color and nutrition. Helps promote plant compactness, root development and phytochemical production. Blue light is essential for driving photosynthesis when used with formulated red wavelengths.

Red 600-700nm

Promotes plant photosynthesis and increased biomass. Essential for leaf expansion and stem growth. Helps regulate plant flowering, photoperiod and germination. Red light is essential for driving photosynthesis when used with formulated blue wavelengths.

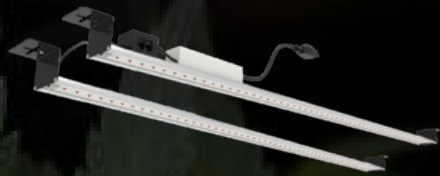
Infrared 750-800nm

Influences leaf size, stem length and plant height. Helps promote flowering in long-day plants. Penetrates the canopy to encourage growth of lower leaves.

Designed for **Vertical Growing**



Add on Flower and THC Booster modules later in the project to maximize yield. Increase your yield and reduce cycle time significantly.



***2.7 - 3.5 $\mu\text{mol}/\text{J}$**
1,700-3,500 $\mu\text{mol}/\text{s}$
6-Year Warranty
Full Spectrum

Custom spectrums available

*Depending on spectrum

SLGL - Standard 4'x4' Grow Light



Up to 3.5µmol/J



Q90 > 50,000




6-Year Warranty


Features

- For hydroponic Cannabis vertical growing
- 4'x4' design for flowering and vegging stages
- Input voltage: 110-277V. 480V available
- 0-10V dimming, daisy-chained control lines
- Samsung or Seoul white & Osram red LEDs
- Custom spectrums achieving up to 3.5 µmol/s
- Foldable design for easy handling and install
- PIPP racking mounting gear available
- 6-year, no-caveat warranty
- THC and flower booster add-ons available

Remote Power Supply
Mounting on racking or above fixture as pictured above



Foldable Design
Enables convenient packaging and easy setup

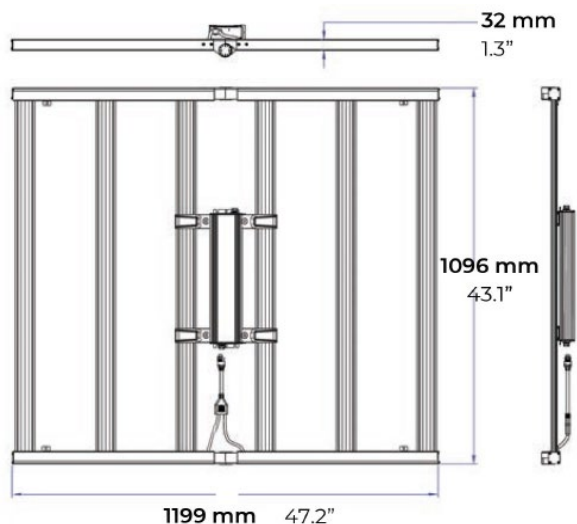


State-of-art LEDs
Highest efficiency LEDs for horticulture. Samsung 2835 or 3030 and Osram Red LEDs

Aluminum Heat Sink
Extruded aluminum heat-sink with fins to ensure maximum heat dissipation prolonging LED lifetime.

Performance Data

Model Number	Wattage	Size	Bars	PPF	PPE	Spectrum
SLGL-320-R-FS-D-W	320	43"x47"	4	830	2.7	Full Spectrum
SLGL-630-R-FS-D-W	630	43"x47"	6	1,700	2.7	Full Spectrum
SLGL-700-R-FS-D-W	720	43"x47"	6	1,950	2.7	Full Spectrum
SLGL-840-R-FS-D-W	840	43"x47"	8	2,250	2.7	Full Spectrum
SLGL-1000-R-FS-D-W	1000	43"x47"	10	2,700	2.7	Full Spectrum



Custom spectrums available

Included Accessories	Optional Accessories
<ul style="list-style-type: none"> Data Cable Air Craft Cable Lifting Cables Power Cables 	<ul style="list-style-type: none"> Analog Dimming Module Digital Dimming Module Pipp Racking Mounts LED Cover Lens

SLLGL - Linear Grow Light



Up to 3.0µmol/J



Q90 > 50,000



5-Year Warranty

Features

- For hydroponic Cannabis growing
- Greenhouse spectrums available
- Linear design for flowering and vegging stages
- Input voltage: 110-277VAC. 480V available
- 0-10V dimming, daisy-chained control lines
- Samsung white & Osram red LEDs
- Custom spectrums achieving 3.0+ µmol/s
- 5-year no caveat warranty

Remote Power Supply
Side mounted Power Supply



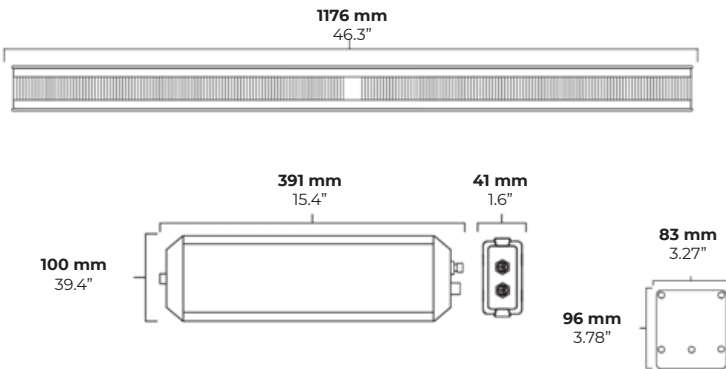
Aluminum Heat Sink
Aluminum heatsink with fins to ensure maximum heat dissipation prolonging life of LEDs



State-of-art LEDs
Highest efficiency LEDs for horticulture. Samsung or Seoul 2835 or 3030 and Osram Red LEDs

Performance Data

Model Number	Wattage	Size	PPF	PPE	Spectrum
SLLGL-630-R-FS-D-W	630	47"	1,575	2.5	Full Spectrum
SLLGL-630-R-CS-D-W	630	47"	--	--	Custom Spectrum



Included Accessories

Data Cable
Power Cables
Mounting Hooks

Optional Accessories

Analog Dimming Module
Digital Dimming Module
LED Cover Lens

Designed for **Greenhouses**



2.4 - 3.0 $\mu\text{mol}/\text{J}^*$
1,500+ $\mu\text{mol}/\text{s}$
5-Year Warranty



Custom spectrums available

*Depending on spectrum

Designed for **Indoor Growing**



**2.4 - 3.0 $\mu\text{mol}/\text{J}^*$
1500+ $\mu\text{mol}/\text{s}$
5-Year Warranty**

Custom spectrums available

*Depending on spectrum

SLCGL - Compact Grow Light



Features

- For hydroponic Cannabis growing
- Compact design for flowering and vegging
- Input voltage: 110-277VAC, 480V available
- 0-10V dimming, daisy-chained control lines
- Samsung or Seoul white & Osram red LEDs
- Custom spectrums achieving 3.0+ $\mu\text{mol/s}$
- 5-year no caveat warranty



Up to 3.0 $\mu\text{mol/J}$



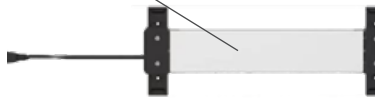
Q90 > 50,000



5-Year Warranty

Remote Power Supply

Mounting between Light Modules



State-of-art LEDs

Highest efficiency LEDs for horticulture. Samsung or Seoul 2835 or 3030 and Osram Red LEDs

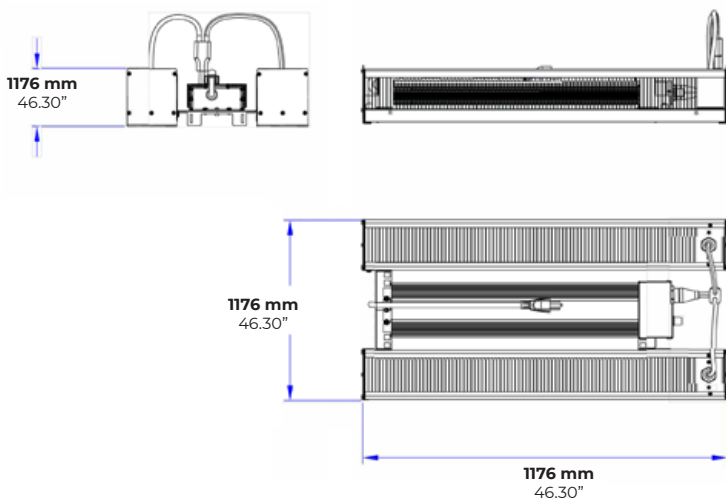


Aluminum Heat Sink

Extruded aluminum heat-sink with fins to ensure maximum heat dissipation prolonging LED life

Performance Data

Model Number	Wattage	Size	PPF	PPE	Spectrum
SLCGL-630-R-FS-D-W	630	43"x47"	1,575	2.5	Full Spectrum
SLCGL-630-R-CS-D-W	630	43"x47"	--	--	Custom Spectrum



Included Accessories

Data Cable
Air Craft Cable
Power Cables
Mounting Hardware

Optional Accessories

Analog Dimming Module
Digital Dimming Module
Pipp Racking Mounts
LED Cover Lens

WHY WORK WITH STARCO LIGHTING

■ Built to Last

- **Quality Components** - Starco Lighting uses only the highest-grade components. Unlike other manufacturers that look for the lowest cost IC's, capacitors, and other components, we ensure that the life and functionality of our product will not be undermined by a component oversight which can lead to your operations being hindered. Our lights will do their job so that you and your team can do yours.
- **Quality Control** - Every one of our grow lights are tested for a minimum of 4 hours and go through a hi-pot, ground-bond and vibration test. Everyone of our models are 3rd-party tested and reviewed by nationally recognized testing labs and associations including UL, ETL & DLC.
- **Lifetime:** Our design and manufacturing process ensures that our products last, even in more demanding applications. Our failure rates in extreme applications are better than most integrated LED fixtures in the market. Due to this instilled confidence, we provide the best warranty in the industry.

■ Optimal Performance

- **Efficacy** - Our grow lights use the latest Samsung and Osram LEDs . The LEDs we select along with the drive current and optics all ensure the maximum light output from our grow lights.
- **Uniformity** - Instead of the modular designs you see in the market that have a concentration of white light and separate concentration of red and far red supplementary light, the different wavelengths of LEDs in our lighting are evenly distributed to provide uniform lighting.
- **Efficiency**- Our integrated drivers are designed to be as efficient as possible while providing reliable, uninterrupted functionality for years to come.
- **Customizations** - We provide custom spectrums for growers that know exactly what they want, and for those that know what they want when they want it, we provide customs spectrums with tunable supplementary wavelengths.

■ Customer Service

- **Direct Ship Program** - In stock standard models are shipped out within 36 hours.
- **Turn-key Assistance** - We work with your suppliers to ensure streamline adoption for your facility needs. We provide photometrics, audit services and ROI's. We work with your installer to ensure the installation goes as smoothly as possible. We work with your utility company to maximize energy efficiency incentives.
- **Immediate response** - Direct contact to sales teams including engineers and and management because we know your operation depends on our lights working perfectly.

■ Who We Are

- **Vertically Integrated** - Starco Lighting is a vertically integrated company which enables flexibility to accommodate the market and our customers as needed. We have no significant reliance on suppliers and therefore no disruptions or surprises in the supply chain.
- **Customer First** - We are not just designing another commodity to sell through a supply chain that values the lowest cost and brand-name. We develop products with the end-user in mind. We focus on improving reliability, longevity, and performance. Our products are not designed to compete with the "race to the bottom" products out in the market but are made to ensure customer satisfaction in a variety of applications.
- **Starco Difference** - We develop products for niche applications like prison systems, hospitals and industrial plants. We are exclusively specified for fortune 100 companies and public organizations because when we develop a product for a vertical market, we develop it with competitive advantages no one can match.
- **Product Breadth** - We provide a total lighting system that includes your interior and exterior general lighting as well as lighting for all your grow lighting needs.

State-of-the-Art Marijuana Grow Facility in Fayette County, PA Uses Starco Lighting and Saves!

Over \$68k of Energy Savings Annually



- 4,000 Sq-ft of canopy using Starco lights
- (250) Starco 4x4 685W-1700 μ mol/s grow lights
- 80kW of demand saving over 1000W HPS
- Over 675 MWh of savings annually w/ cooling
- First Energy incentive received

Being one of only 25 approved medical marijuana growers/processors in the state of Pennsylvania, this state-of-the-art facility was designed to cultivate over 20,000 sq-ft of flowering canopy using a vertical grow methodology.

The group behind this facility, mostly Pennsylvania locals, received the highest score overall for both rounds on their application to the state, eventually procuring their license from the state of Pennsylvania in July of 2018.

“We are committed to providing the highest quality and most effective medical marijuana products to the residents of Pennsylvania who suffer from qualifying medical conditions,” said the Executive Vice President. “Ultimately, our goal is to help improve patients’ health and overall quality of life.”

This group produces distillate cartridges, flower and RSO products. Their RSO in particular is what they consider one of their specialties. RSO is a full-spectrum cannabis extract that is fully decarboxylated and ready to use. Utilizing an ethanol extraction process, they refine the marijuana oil twice, giving the product more of an amber color as opposed to the traditional black. For them, this arguably makes it a better-tasting and potent medicine recommended for oral consumption.

The overall facility houses over 37,000 sq-ft of medical marijuana growing and processing space. The flowering portion of the facility includes 6 rooms with individual environments mitigating any risks of contamination between the crops. The rooms employ 3 levels of vertical racking. The lighting currently being used for the flowering rooms are from Fluence and from Starco Lighting.

Starco Lighting was able to be specified for the project after being tested for two cycles by the group's lead grower. The installation of the lighting was implemented July of 2020. The installation is being staged as they get their first rooms operational with the others to follow after a few cycles and some fine tuning. After all the rooms are completed, the expected demand savings, over HPS lighting, is over 600kW with an annual energy cost savings of over \$500k.

The lighting used a mounting system made for PIPP Racking system. The control system daisy chained the fixtures to an to ensure easy setup and reliable control. Working with the grower, management and contractors, Starco Lighting was able to provide the product and streamline the supply ensuring everything worked in accordance to the the customer's schedule and needs.

Starco lighting is certified with all 3rd-party testers and validation associations. Starco was able to working with the utility company and provide a large rebate for the customer. Using the Starco product, the customer was able to produce a yield better than the other lighting being tested at the time, even against many industry known grow lighting companies. Starco's full spectrum lighting is providing the PPFD along with the different wavelengths they need on the canopy all the while saving energy.

Ancillary & Supplemental Spectrum Lighting

Our ancillary and supplemental lighting can help you reduce time-till-harvest and increase your yield significantly. These units are designed to compliment our primary grow lighting lines to ensure optimal lighting conditions for your plants. Ask one of our sales engineers how our modules and add-ons can help your grow operation.

GROW LIGHTING

Full Spectrum Side Light - 180W

The 200W Full Spectrum Side Light is designed as a supplemental light to provide more uniform lighting on the edges and throughout the depth of the canopy.

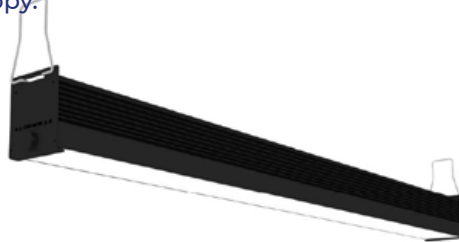


Performance Summary

Power	200W
PPF	500 $\mu\text{mol/s}$
PPE	2.5 $\mu\text{mol/J}$
Input Voltage	100-277VAC
THD, PF	<20%, >90%
Operating Temp	-20°C to 40°C
Lifetime	>50,000 hrs

Full Spectrum Linear Side Light

The 200W Full Spectrum Linear Side Light is designed as a supplemental light to provide more uniform lighting on the edges and throughout the depth of the canopy.



Performance Summary

Power	200W
PPF	500 $\mu\text{mol/s}$
PPE	2.5 $\mu\text{mol/J}$
Input Voltage	100-277VAC
THD, PF	<20%, >90%
Operating Temp	-20°C to 40°C
Lifetime	>50,000 hrs

Clone Lighting

The 100W Full Spectrum Clone Light is designed for the clone stage.



Performance Summary

Power	100W
PPF	250 $\mu\text{mol/s}$
PPE	2.5 $\mu\text{mol/J}$
Input Voltage	100-277VAC
THD, PF	<20%, >90%
Operating Temp	-20°C to 40°C
Lifetime	>50,000 hrs

Grow Room Worker Light

The 50W Green Worker Light is designed as a general ambient light with minimal effect to your crops. Provides light in the 530nm spectrum.



Performance Summary	
Power	50W
Control	Non-dim
PPE	N/A
Input Voltage	100-277VAC
THD, PF	<20%, >90%
Operating Temp	-20°C to 40°C
Lifetime	>50,000 hrs

Booster Lights

The 100W Booster Light is designed as a supplemental light to modify your plants as needed. The THC booster can boost yield significantly while the flower initiator and booster can reduce cycle time and increase yield.

Available in 1 or 2 modules:
 THC Booster: 315nm &/or 385nm, 405nm
 Flower Booster: 730nm &/or 660nm, 780nm
 Flower Initiator: 730nm



Performance Summary	
Power	100W
Control	Dimmable
PPE	N/A
Input Voltage	100-277VAC
THD, PF	<20%, >90%
Operating Temp	-20°C to 40°C
Lifetime	>50,000 hrs

Inter-Canopy Lighting

The 200W RED Inter-canopy light is designed as a supplemental light to provide more uniform lighting on the edges and throughout the depth of the canopy.

Available in 2 or 3 faceted models. Provides light in the 660nm spectrum



Performance Summary	
Power	200W
Control	Non-dim
PPE	N/A
Input Voltage	100-277VAC
THD, PF	<20%, >90%
Operating Temp	-20°C to 40°C
Lifetime	>50,000 hrs

Tubular Clone Light

The 20W full spectrum clone light is designed for the clone stage.



Performance Summary	
Power	20W
PPF	50 µmol/s
PPE	2.5 µmol/J
Input Voltage	100-277VAC
THD, PF	<20%, >90%
Operating Temp	-20°C to 40°C
Lifetime	>30,000 hrs

Controls and Accessories

Ask about our controls and accessories for each product. Our accessories are designed to work as seamlessly and as issue-free as possible. Ask one of our sales engineers about our grow light meters and Spectrum Controller for our R&D Light found on page 19.

Digital Controller

This digital controller can control most of our grow lights. It can turn them on and off on a schedule and can dim the lighting intensity from 0%-100%.



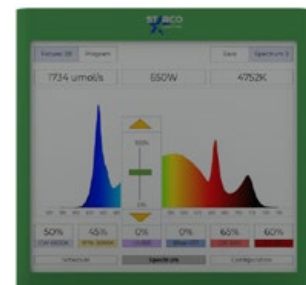
Analog Dimmer

This analog controller can control most of our grow lights. It can dim the lighting intensity from 0%-100%.



R&D Grow Light Spectrum Controller

The Spectrum Controller works with our 6-channel R&D Grow Light. Ask about the adaptor and how we can connect this controller to our THC and Flower Boosters to provide you with 3 channel control with our standard grow lights.



Cabling Accessories

Data and power cable extenders and adaptors. We have extenders for up to 50 ft.



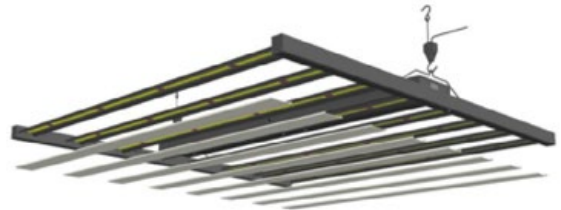
Rack Mounts and Air Cables

We have mounting for our fixtures that work with racking systems like PIPP and air craft cables that enable easy setup.



Fixture Lens Covers

We have glass and acrylic LED covers. Up to 8% of the light output is reduced with these covers. However, for operations that either want there fixtures wet location or to protect the LEDs fro the environment, these will do the job. Warranty is the same with and without the covers.



Grow Light Meters

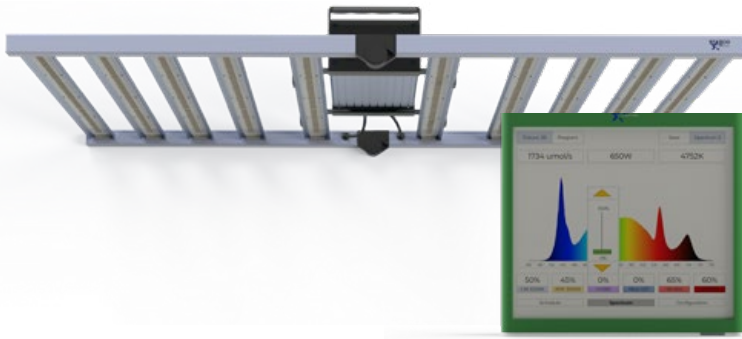
Ask about our PAR and Spectrum Meters. Make sure of the spectrum your plants are getting, don't just go by the manufacturer's labels.



6-Channel Fully Tunable R&D Grow Light

Features

- For grow research labs
- 4'x4' design for flowering and vegging
- 1,500W total power
- 6-Channel Tunable
 - Cool White 6500K
 - Warm White 3000K
 - UVB 315nm (optional)
 - UVA 385nm &/or Violet 405nm
 - Red 660nm
 - Far Red 730nm
 - Infrared 780nm (optional)



Up to 3.5µmol/J



Q90 > 50,000



5-Year Warranty

Remote Power Supply
Mounting on the side or above fixture

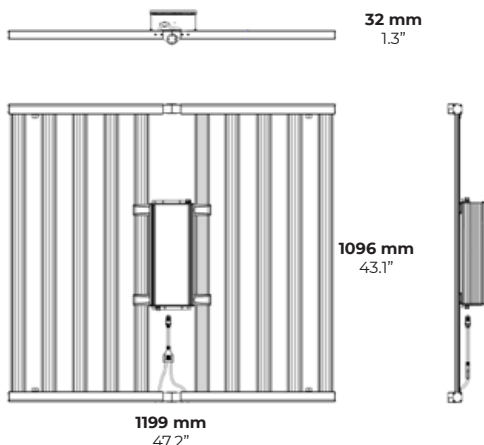
Foldable Design
Enables convenient packaging and easy setup

State-of-art LEDs
Highest efficiency LEDs for horticulture. Samsung or Seoul 2835 and 3030 and Osram Red LEDs

Aluminum Heat Sink
Extruded aluminum heat-sink with fins to ensure maximum heat dissipation and prolong LED life

Performance Data

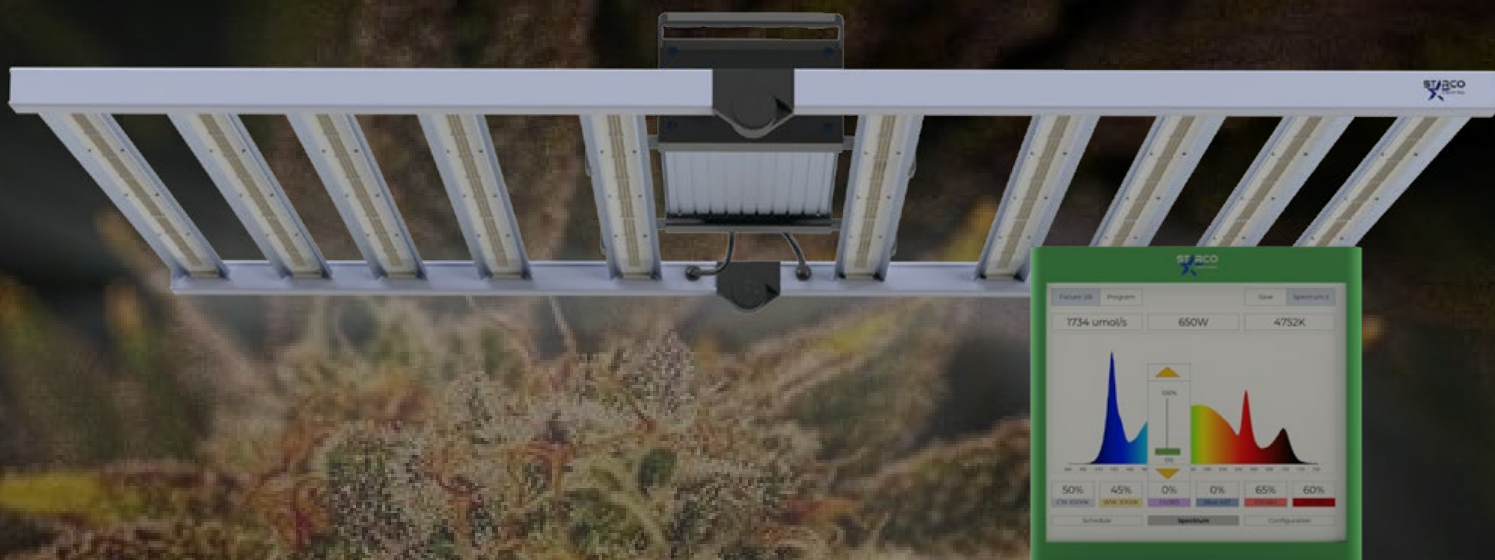
Model Number	Wattage	Size	PPF	PPE	Spectrum
SLRDGL-1000W	1000W	43"x47"	2,700	2.7	Tunable Spectrum
SLRDGL-1500W	1500W	43"x47"	4,000	2.7	Tunable Spectrum



Included Accessories
Data Cable Air Craft Cable Lifting Cables Power Cables Digital 6-Channel Dimmer

Optional Accessories
Pipp Racking Mounts LED Cover Lens

Designed for Researchers



The Most Power & Tunable Light in the Market!
6-Channel Fully Tunable
1,500W Total Power

Find the ideal spectrum and intensity that works for your plants.
We then build you cost-effective lights for your grow operation.

**Give your plants what they need, when they need it.
Maximize your profits significantly!**

Don't trust what you hear.

PPFD is not all it's cracked up to be!

LED technology is evolving every day, changing the horticulture landscape drastically. Designers and manufacturers are creating more customizable grow light fixtures and interoperable setups, affording growers the ability to adjust different spectral intensities with different schedules unheard of with traditional lighting technologies. However, the metrics used to compare different lighting products are very outdated and often leading growers down the wrong path.

Horticulture lighting is a rapidly expanding market; with predictions stating that the market will grow by upwards of 25% every year for the next 10 years. Large-scale projects are being implemented every day domestically and abroad, with many others being proposed and developed. LED grow lights have been shown to improve crop stability, improve environmental resistance, provide more predictable growth cycles, save energy, increase yield, and cut cost. In addition, qualitative benefits have been observed such as higher color pigmentation and flavor alteration. Improvements in LED technology afford even greater spectral targeting and ever-increasing efficiencies – widening the gap between LED and traditional lighting technology.

It is becoming ever-clearer that LED lighting is the way to go, not just for general lighting, but for horticulture as well. The issue is that a lot of growers are just too comfortable with industry metrics and standards that are very outdated. LED lighting can do things that old technology could never come close to doing. In order to discuss these issues, a few definitions need to be put in place.

PAR: Photosynthetic Active Radiation – the area of the electromagnetic spectrum that plants “mostly” use for photosynthesis and covers the wavelengths from 400nm to 700nm, which is roughly the same as the visible light portion of the electromagnetic spectrum for humans.

PBAR: Plant Biologically Active Radiation - a wider range of the electromagnetic spectrum that plants are affected by and includes wavelengths from 280nm-800nm.

PPF: Photosynthetic Photon Flux – the main measure of total light output from a grow lighting fixture, and the current industry standard; and is how many photons, in the PAR region, produced by the fixture every second, measured in micromoles, a quantity.

PPFD: Photosynthetic Photon Flux Density – this is the amount of photons that fall on a square meter per every second.

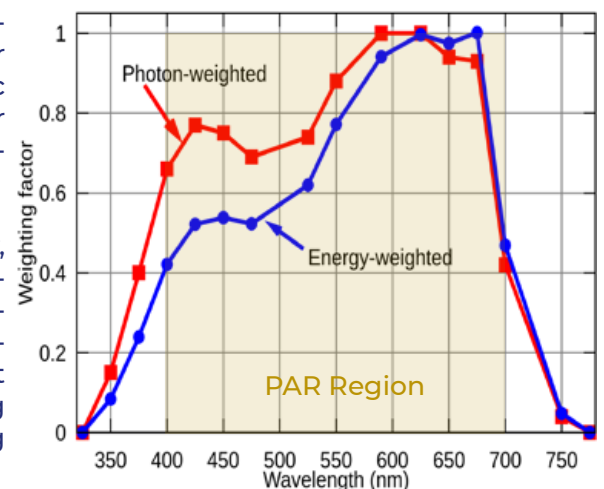
The equivalent terms for customers and suppliers familiar with general lighting would be that the PAR is equivalent to the Photopic region of the spectrum, where PPF is the same as lumens of a fixture and PPFD is the same as foot-candles or lux levels on the ground.

The issue arises when these terms are used as metrics for quality and quantity of light. All of these terms basically measure the amount of light with no regard to the type of light or the quality. This issue is compounded by the industry metric being used for efficiency, namely PPF/W or PPE (photons per joule). This metric leads to harmful effects to the plants because of how it can be exploited.

Growers and specifiers focusing on this measure, arguably, influence the development of new fixtures by pushing manufacturers to use more red content, as red photons can be produced using less energy than blue photons or for that matter any lower wavelength. The chart to the right shows that PAR weighs all wavelengths equally at 1 and ignores anything below 400nm and above 700nm. PBAR does the same thing only from 280nm to 800nm.

It is widely known that a purely red-light source is very poor for growth despite being very efficient or having high PPF/W. This one metric has more grow light manufacturers in the market pushing high PPE using a lot of red, far red or only 3000K white LEDs. A better measure of efficiency would be to look at the spectrum and see a more distributed spectrum and still achieve those efficiencies.

Plant Sensitivity Curve



A good analogy that we've seen and think best captures this affect would be to think of calories. Two people eating 2,000 calories would intake the same amount of energy. However, if one person ate a well-balanced diet and another ate one food, e.g. butter, both would consume the same amount of calories and one would do it with a lot less intake. But the nutritional value and the ability to extract the energy needed would be vastly different leading to poor health in one over the other. Considering both diets the same would be clearly wrong and yet this is exactly what is happening with grow lighting in the market now.

Is there a better metric?

There are other measures that are available to growers including YPF or Yield Photon Flux which is a significant improvement over PPF and encompasses the photosynthetic sensitivity of a plant and broadens the range from 400-700 to a more appropriate 360-760. It considers the relative photosynthetic efficiency of different wavelengths of light assigning less weight to less useful light.

But the research is focused the photosynthetic response of the leaves and not the response of the whole plant. It broadens the range which is the goal of PBAR, and weighs the spectrum, but again doesn't take into account the non-photosynthetic response that the 400nm and below and 700nm and above produce. Recent research has shown that green light passes through the plant's upper leaves but is absorbed by lower "shaded" leaves. Therefore YPF underestimates the absorbance of green light and its importance for driving photosynthesis. In addition, far-red can be used to encourage rapid flowering and more compact growth in some plants while potentially improving hardines. UV can produce a stress repsonse for marijuana plants that can yeild more THC and CBD while increasing resistance to pathonogens. These waveleg-nths can be delivered only in certain stages and in greater amounts to manipulate plant growth and yield favorably.

The point is, that the industry and indoor horticulture is still immature due to the wide nature of possibil-ities that still need to be explored with endless options of LED lighting. Different species in different envi-ronments have contributing roles as to which spectrums and intensities will work well to produce needed outcomes.

Collaboration between manufacturers and growers is needed. Researchers working with project developers need to closely work with manufacturers to develop a system that works as whole. We at Starco lighting have used this approach to develop general lighting that has been specified nationally and globally for for-tune 100 companies. We are not here to tell anyone what the magic spectrum is because we know better. We are here to tell our customers that we can work with you to provide the spectrum that works for your plants and operation. With our custom spectrums and our research lights, we have a two-phase setup that can help customers get the most out of their plants. Our research light gives full discretion to the user to tweak the UVA, UVB, Blue, 3000K, 6500K, Red and Far Red all in one fixture. We then work with you to de-velop a standardized cost-effective light for your large-scale operation.

There is a great deal not yet understood about plant response and ideal spectra for different crops, environments, and outcomes. Closing the gap between product brochure and optimal spectra should be a collaborative effort between supplier and customer, but the right measures can help bring specifiers closer to the ideal product for their requirements. Starco Lighting is leading way by working directly with customers to develop and customize products that provide specific and tunable spectrums that give growers more control over their crops.



SLLB LED LINEAR LUMINAIRE



140+ lm/W



21 to 45 W



Light weight



L90 > 48,000



10-Year Warranty



IP65 Rated

Description

The Starco SLLB Linear Light is a well designed LED luminaire suitable for a variety of applications and is a balanced mixture of high performance and value. Unlike other linear lights in the market it is designed to handle the harsher conditions in industrial applications. Applications include manufacturing, warehouses, convention centers, gymnasiums and other large indoor spaces. SLLB is ideal to replace traditional linear vapor proof fluorescent fixtures in industrial and commercial buildings with uncompromised quality and 10 year warranty. Multiple lumen outputs and electrical and control options make SLLB practical, as well as versatile. SLLB offers a range of lumen packages from 2,800 to 6,800 lumens and delivers up to 145 lumens per watt for maximum rebate eligibility and years of free maintenance.

Performance

Model	Wattage	CCT	Size	Lumen Output	
				Frosted	Diffused
SLLB-21-4-x-30-ZWK	21	3000K	4'	2835	2948
SLLB-21-4-x-40-ZWK	21	4000K	4'	2940	3058
SLLB-21-4-x-50-ZWK	21	5000K	4'	3045	3167
SLLB-23-4-x-30-ZWK	23	3000K	4'	3105	3229
SLLB-25-4-x-40-ZWK	25	4000K	4'	3500	3640
SLLB-25-4-x-50-ZWK	25	5000K	4'	3625	3770
SLLB-32-4-x-40-ZWK	32	4000K	4'	4480	4659
SLLB-32-4-x-50-ZWK	32	5000K	4'	4640	4826
SLLB-35-4-x-40-ZWK	35	4000K	4'	4900	5096
SLLB-35-4-x-50-ZWK	35	5000K	4'	5075	5278
SLLB-41-4-x-40-ZWK	41	4000K	4'	5740	5970
SLLB-41-4-x-50-ZWK	41	5000K	4'	5945	6183
SLLB-45-4-x-40-ZWK	45	4000K	4'	6300	6552
SLLB-45-4-x-50-ZWK	45	5000K	4'	6318	6786

**"x" can be F for Frosted, and D for Diffused.

SLHB LED INTEGRATED HIGH BAY



Up to 185



75 to 220 W



Light weight



L90 > 90,000



10-Year Warranty



Integrated

Description

The Starco SLHB High Bay is a well designed LED luminaire suitable for a variety of applications and a balanced mixture of high performance and value. Applications include manufacturing, warehouses, convention centers, gymnasiums and other large indoor spaces. SLHB is ideal to replace traditional linear fluorescent and HID fixtures in industrial and commercial buildings with uncompromised quality and 10 year warranty. Multiple lumen outputs and electrical and control options make SLHB practical, as well as versatile. SLHB offers a range of lumen packages from 12,000 to 38,000 lumens and delivers up to 185 lumens per watt for maximum rebate eligibility and years of free maintenance.

Performance Data

Model Number	Wattage	Size	4000/5000K @ 70 CRI Diffused Lens		4000/5000K @ 70 CRI Frosted Lens	
			Lumens	Efficacy	Lumens	Efficacy
SLHB-75-R1-x	75	R1	13500	185	12825	176
SLHB-100-R1-x	100	R1	18000	185	17100	176
SLHB-120-R1-x	120	R1	21000	180	19950	171
SLHB-135-R1-x	135	R1	23625	175	22444	166
SLHB-150-R1-x	150	R1	25500	175	24225	166
SLHB-150-R2-x	150	R2	25500	175	24225	166
SLHB-165-R2-x	165	R2	28875	175	27390	166
SLHB-200-R2-x	200	R2	35000	175	33200	166
SLHB-220-R2-x	220	R2	38500	175	36520	166

**X* can be F for Frosted, and D for Diffused.

Ordering Guide	Wattage	Size	Optics	CCT	Dimming	Sensor	Mount
SLHB = LED High Bay	75=75W 100=100W 120=120W 135=135W 150=150W 165=165W 200=200W 220=220W	R1=420x420 R2=420x620 unit:mm	F=Frosted D=Diffused	30=3000K 40=4000K 50=5000K	D=0-10V Dimming N=No Dimming	M=Integrated Occupancy Sensor S=Integrated Occupancy & Daylight Sensor w/ Bluetooth remote O=No Sensor	H=Suspended Mount C=Surface Mount P= Pendant Mount
Accessories: SLHB5VCKS =3ft Hanging Chain AC10 = 10ft Aircraft Cable/Hook AC15 =15ft Aircraft Cable/Hook WP10 =10ft Whip 16AWG PC-1-LC-3-6 =120V PLUG-N-GO w/ 3-conductor, 6ft Whip PC-2-LC-5-3 =277V PLUG-N-GO w/ 5-conductor, 3ft Whip L7-15PLUG =277V twist-lock L7-15P plug FSIR-100 =Sensor remote controller							



Hardworking Lights For Hardworking People

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