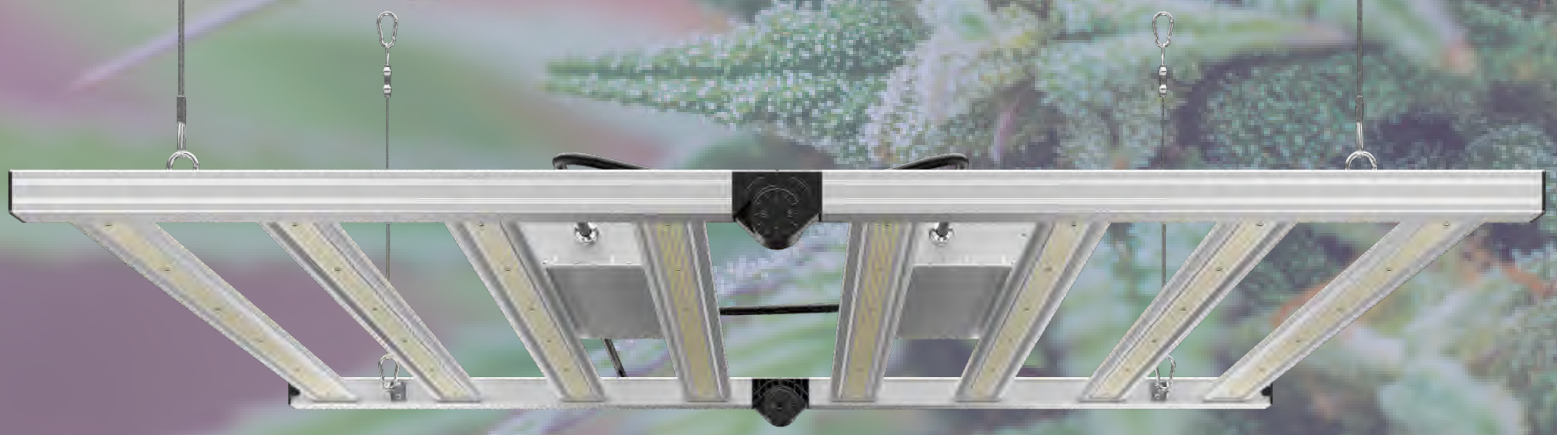
LED GROW LIGHT

NET Series

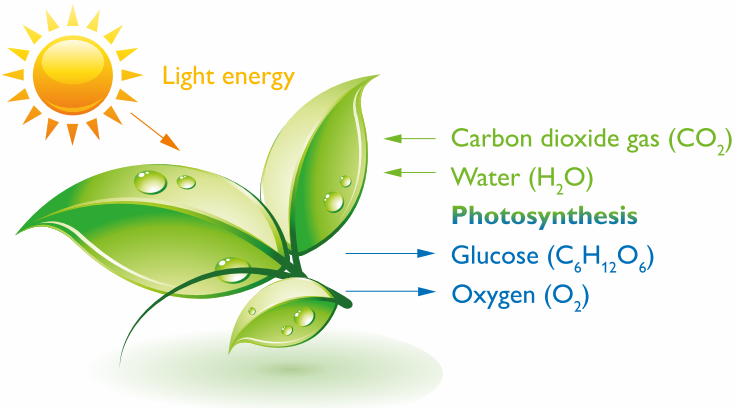
Full Spectrum

Our NET series grow light is designed for indoor and greenhouse cultivation, and will increase the growth rate and yield of a wide variety of plants. The lights can be used for all phases of growing as they are dimmable, programmable, and individually controllable. It effectively support photosynthesis while offering dynamic spectrum control where specific spectral ratios can be created to direct plant growth and promote healthy plant development.



Natural sunlight is the cheapest source available, but for horticulture it is not always attainable in sufficient quantities. Therefore, the use of artificial light has become very common in order to increase production and quality.

All plants, including those flowering, fruiting, and vegetable plants, are strongly influenced by the particular spectrum of light they receive. Farmers have relied on sunlight for years to deliver the perfect recipe. However today's lighting technology can provide what plants need most without help from mother nature.



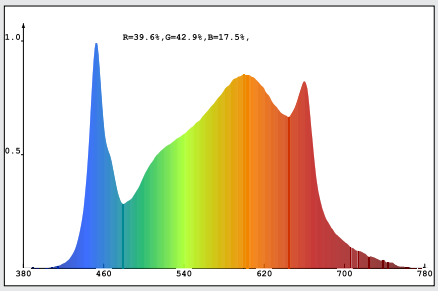
Before, electric light from HID sources such as metal halide and high pressure sodium plays a significant role in the horticultural industry. It enables growers to expose plants to longer hours of light per day in order to influence the growth cycle. Farmers and gardeners using horticulture Lighting as a supplement to sunlight in greenhouses are less reliant on unpredictable factors such as sunlight availability and weather patterns. Electric lighting technology can be used as the sole source of light within grow facilities, however the HID sources commonly used have been electrically inefficient and spectrally insufficient.

Light is essential for plant growth

Now LED lighting can significantly increase crop production efficiency through lighting control. LED grow lighting systems are well-suited to provide the most appropriate light for each phase of growth and type of plant, from seedling to flowering to fruiting. LED lighting provides optimal levels of Photosynthetically Active Radiation (PAR)-the photons that promote growth and yield without wasting energy to produce photons not efficiently used by the plant. The optimum spectrum for plants includes wavelengths of light in the blue and red region of the spectrum.

When using light quality as a tool for controlling plant growth, it is important to establish production requirements, and use light accordingly to achieve specific growth goals. In general, red light will increase stem elongation, while blue light promotes plant compactness and root growth, and is important for plant morphology, photosynthesis, and overall plant health.

We recommend that growers begin by using our LED grow light with standard spectrum settings (Type B). Growers can then adjust spectral ratios and test accordingly to optimize your grow for desired varieties and specific characteristics.

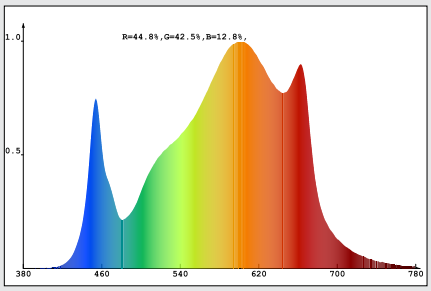


Type B: 3000K+5000K+660nm

Full spectrum with enhanced blue

Application

Greenhouse

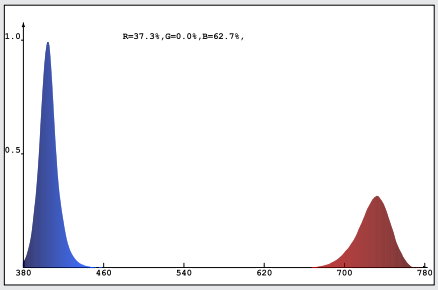


Type C: 3000K+5000K+660nm

Full spectrum with balanced blue

Application

Indoor grow room



Type D: 730nm+400nm

Enhanced far red and UV light

Application

For flowering stage

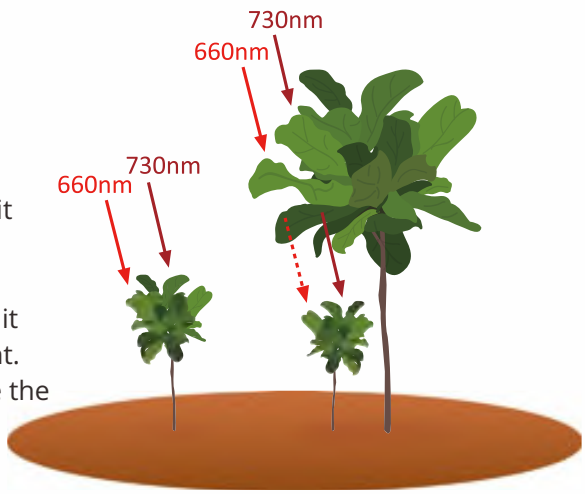
A typical application example for the use of 730nm:

The shade escape reaction

One of the most obvious influence of far red light on a plant is the shade escape reaction.

Illumination with 660nm: If the plant is illuminated mainly with 660nm it feels like illuminated in the direct sun and grows normally.

Illumination with 730nm: If the plant is illuminated mainly with 730nm, it feels like growing in the shadow of another plant that shades the sun light. Therefore the plant is reacting with an increased length growth to escape the shadow. This leads to taller plants but not necessarily to more bio mass.

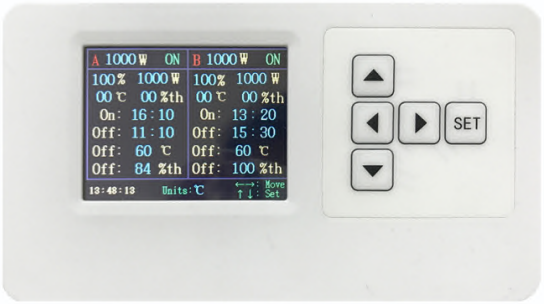


Control Your Growing Season

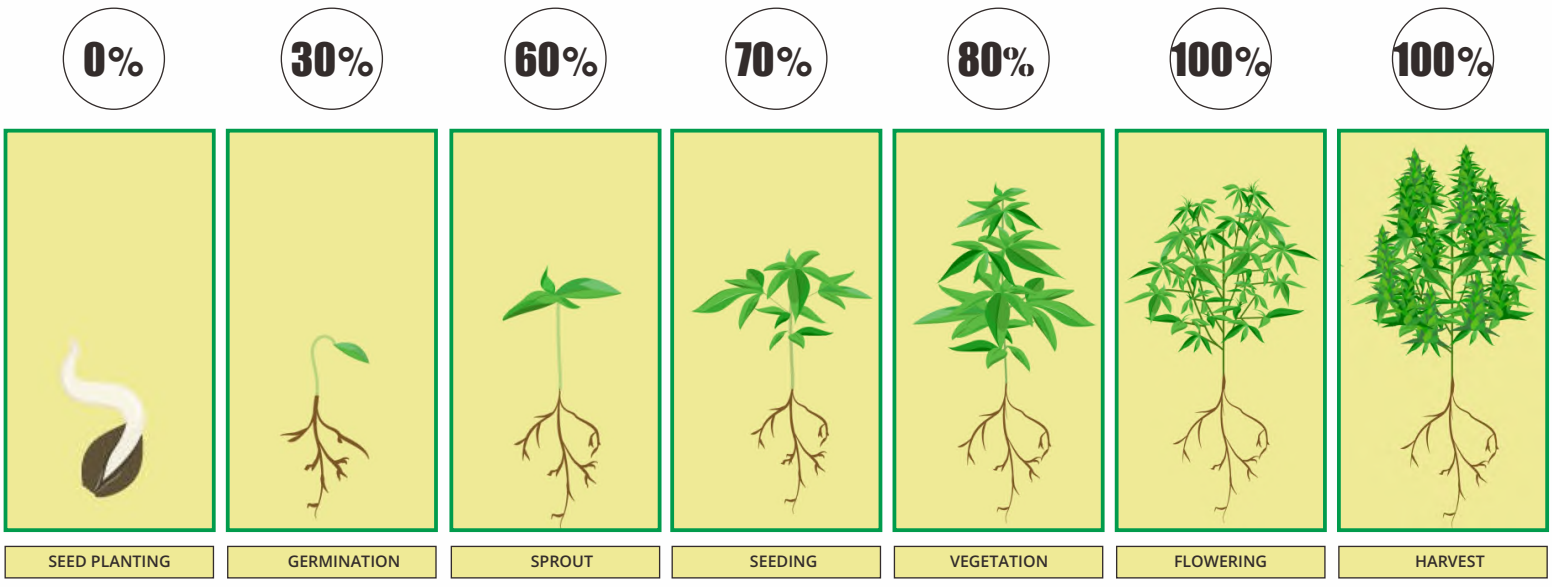
More Light
Adds more daytime light, boosting existing light levels and increasing growth and yield.

Longer Light
Extends the growth cycle. Switch on at dusk for non-daylight illumination. Utilize all winter long.

Controlled Light
Substitute as a complete lighting solution for indoor grow rooms and biological research facilities.



- Timing function
- Temperature Sensor detection
- Humidity Sensor detection
- Bluetooth Communication
- App smart control



Lighting Requirements for Cannabis

	Propagation & Cuttings **14 Days**	Vegetative Growth **21+ Days** *Depending on strategy*	Veg-to-Flower Transition **3-7 Days**	Flowering **8-10 Weeks** *Including transition and depending on cultivar*	Stock Plants (mothers) **Slow Growth**	Stock Plants (mothers) **Rapid Growth**
Avg. Light Intensity *Measured in µmol m^{-2} s^{-1}*	150-200	200 *Increasing gradually to* 450-550 *over 21 days*	450-550 *Increasing to* 700-800	700 - 800	350-450	500-600
Photoperiod *Hours of light*	18	18	12	12	18	18
Ambient Room Temp. (Day) *F ° | C °*	70-72 °F 21-23 °C	80-85 °F 26-29 °C	80-85 °F 26-29 °C	80-85 °F 26-29 °C	70-75 °F 21-24 °C	80-85 °F 26-29 °C
Ambient Room Temp. (Night) *F ° | C °*	60-70 °F 16-21 °C	70-75 °F 21-24 °C	70-75 °F 21-24 °C	70-75 °F 21-24 °C	65-70 °F 18-21 °C	70-75 °F 21-24 °C
Ambient Relative Humidity (Day) *(RH)*	100% *until rooted, within 4-7 days, then vent to 80%*	75-80% *(early)* 55-67% *(mid/late veg)*	55-67%	55-67% *(early)* 50-62% *(mid/late flower)*	50-60%	55-67%
Ambient Relative Humidity (Night)	*Same as daytime, see "Propagation" section below for more information*	75-80% *(early)* 55-67% *(mid/late veg)*	55-67%	55-67% *(early)* 42-57% *(mid/late flower)*	50-60%	55-67%
Vapor Pressure Deficit (Day) *(Measured in kPA)*	0	0.67-1.00 *(early)* 1.11-1.80 *(late)*	1.11-1.80	1.11-1.80 *(early)* 1.28-2.00 *(late)*	1.00-1.49	1.11-1.80
Vapor Pressure Deficit (Night) *(Measured in kPA)*	0	0.50-0.75 *(day)* 0.82-1.34 *(night)*	0.82-1.34	0.82-1.34 *(early)* 1.07-1.73 *(late)*	0.83-1.24	0.82-1.34
CO_2 Enrichment *(Measured in ppm)*	-	1200-1500	1200-1500	1200-1500	0	1200-1500

Cannabis is an obligate short-day plant, which means it flowers when the dark period is shifted to a critical length. This translates into a recommended 12 hour photoperiod when lighting cannabis for flowering and 18 hours a day in the vegetative phase

What are typical µmol/s.m² values for horticulture lighting?

What light level for what type of crop?

Plant	Min (µmol/s.m²)	Max (µmol/s.m²)	Typical (µmol/s.m²)
Tomato	170	350	230
Pepper	120	300	180
Cucumber	120	350	230
Cannabis Vegetative growth	280	550	350
Cannabis Flowering	650	1,000	850

What light level for what potted plant?

Plant	Min (µmol/s.m²)	Max (µmol/s.m²)	Typical (µmol/s.m²)
Orchid / Phalaenopsis	80	180	110
Dendrobium	130	350	195
Bromelia	40	120	90
Anthurium	60	130	90
Kalanchoë	60	120	90
Potted chrysanthemum	40	80	50
Potted rose	40	120	50
Geranium	40	90	50

What light level for what cut flower?

Plant	Min (µmol/s.m²)	Max (µmol/s.m²)	Typical (µmol/s.m²)
Chrysanthemum	105	220	140
Rose	170	350	220
Lily	80	130	90
Lisianthus	170	350	230
Alstroemeria	60	160	120
Anthurium / Orchid - cut	80	160	120
Freesia	70	140	90
Gerbera	80	120	90
Tulip	25	90	60

Different regions of the wavelength in the illumination spectrum have different effects on the plants

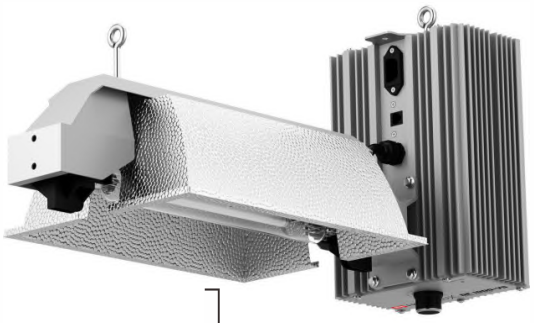
Wavelength range [nm]	Photosynthesis	Further Effects	Further Effects	Further Effects
200 – 280		Harmful		
280 – 315		Harmful		
315 – 380				
380 – 400	Yes			
400 – 520	Yes	Vegetative growth		
520 – 610	Some	Vegetative growth		
610 – 720	Yes	Vegetative growth	Flowering	Budding
720 – 1000		Germination	Leaf building and growth	Flowering
> 1000		Converted to heat		

Difference Between LED and HPS

HPS lights were once the most efficient, longest-lasting solution. Now LED is the newest generation of lighting technology in the horticultural field. It achieves the same horticultural lightins requirements with much higher efficiency and additional functionality. LEDs have advanced to produce 50% less electricity, release much less heat, are more stable over time, and are not hazardous to the environment.

HPS Lighting

In high pressure sodium (HPS) light cultivations, flower development may be related to the temperature of the canopy, as well as other factors. We generally see top-heavy flower development within the canopy usually to a depth of 24-36" ately boosting yields and savingelectricity.



H: 36"(914mm)

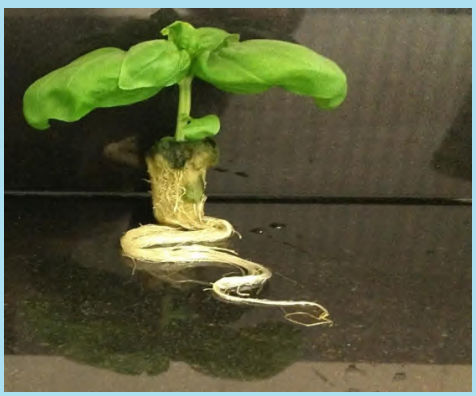
Higher heat
Higher Distance
Lower PPFD
Grow Slowly

LED Lighting

With our LED fixtures, this floral morphology becomes less distinctly "top heavy", as flowers develop more evenly across the vertical crop profile, creating the opportunity for greater total yield. Flowers grown under the LEDs see less variance in plant structure with up to 3feet of consistent development compared to 24-36" seen with HPS.

H: 12"(304mm)

Less heat
Lower Distance
Higher PPFD
Grow fastly



HPS LIGHT

Testing Analysis:

Leaves and Roots Plant: Basil Study
Sector: Leafy Green Vegetables
Growth Days at Testing: 15

LED GROW LIGHT

Designed to Meet the Needs of

MANY APPLICATIONS

Urban Farming – leafy vegetables and soft fruits in vertical arrangements.

Propagation – tissue culture and seedlings, cuttings and young plants.

Floriculture – cut flowers, potted plants, bedding plants and perennials.

AgroTech – plant product for use in pharma, technology and experimental research facilities.

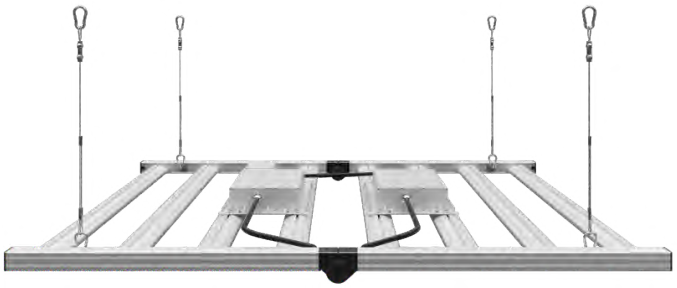
Olericulture – high wire vegetables, leafy vegetables, herbs and fruits.

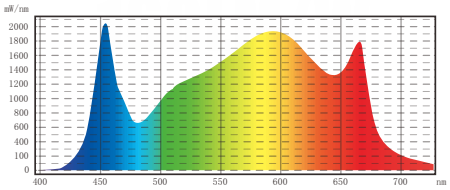
Indoor Hobby Gardening – horticulture in residential settings.

Hydroculture – soilless medium, or aquatic-based environments.

Green Walls – system to improve aesthetics and air quality in indoor environments.

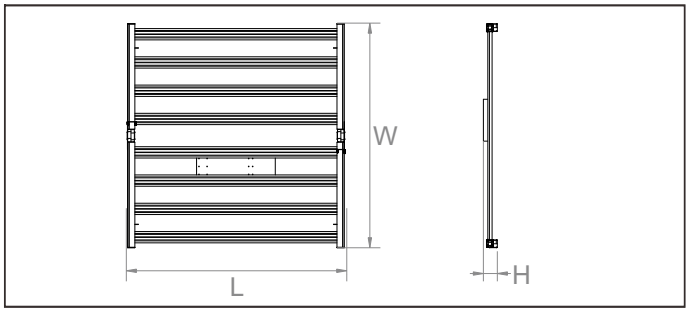
Patent





Features

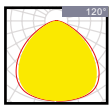
Housing: Pure Aluminum
Thermal Conductivity: 226 W/m·K
Spectrum: Full spectrum
CRI: Ra>90
Efficacy: 2.7umol/j
Power Factor: >0.95
THD: <15
Driver: Sosen
Driver Efficiency: >93%
Protection: OTP, OCP, OVP, SCP
Surge Protection: 10KV
Waterproof: IP54
Impact Test: IK08
Electrical: 100-277V, 50/60Hz
Operating Temperature: -40~50 ℃
TM21: L90B10>54,000H
Lifetime: 50,000H



Functions

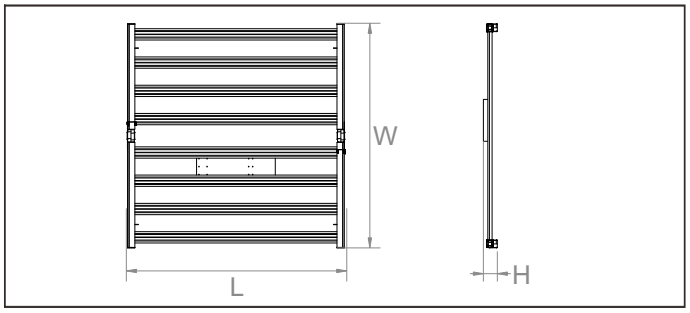
1-10V Knob Dim

Optical options:



Model	Watt	Voltage	Effi.	PPF	IP	Dimension
NET-640FE	640W	100~277V	2.7 umol/s/w	1728 umol/s	IP54	1110*1098*80
NET-720FE	720W	100~277V	2.7 umol/s/w	1944 umol/s	IP54	1110*1098*80
NET-960FE	960W	100~277V	2.7 umol/s/w	2592 umol/s	IP54	1110*1098*80

Packing



Model	L*W*H (mm)	Outer Carton(mm)			QTY / Outer CTN	NW (kg)	GW (kg)
NET-640FE	1110*1098*80	1185	1190	155	1	9.50	11.30
NET-720FE	1110*1098*80	1185	1190	155	1	9.50	11.30
NET-960FE	1110*1098*80	1185	1190	155	1	11.00	12.80