

# F.O.G

FUTURE OF GROW



Collaborations and tests with the Swiss confederation.

**AGROSCOPE:** Agricultural research and development.  
**UNIL:** University of Lausanne, Department of Plant Molecular Biology.  
**HEPIA:** University of Landscape, Engineering and Architecture of Geneva, Plants & Pathogens Laboratory

## HORTICULTURAL LED LIGHTING ADVANCED HIGH TECHNOLOGIES

RESEARCH AND DEVELOPMENT IN SWITZERLAND  
OPTIMIZATION OF ENERGY CONSUMPTION

PROJECT STUDY  
AUTOMATION  
FACILITY  
CONSULTING  
LIGHTNING  
SECURITY

SOLAR PANELS  
CULTURE MONITORING  
VENTILATION  
FERTILIZER  
TRAINING  
IRRIGATION



# PRESENTATION

F.O.G FUTURE OF GROW

**F.O.G** revolutionized the horticultural world by producing a range of advanced high-tech products with components imported from Japan, Germany and Korea.

Thanks to the technologies used in its lights and the application of research and tests carried out in Japan on vertical farms and in Switzerland, **F.O.G** has distinguished itself by producing durable LED lights specially designed to increase the quality of crops while reducing costs for professionals.

Japan is more than 20 years ahead compared to the rest of Europe in horticultural technology, it is the first country to have created vertical LED farms to feed its population.

**F.O.G** is the culmination of 8 years of research and testing on over 25 spectra and 9 different LED chips.

**F.O.G** has been guided by a vision focused on researching, designing, developing and manufacturing energy-efficient LED lighting for greenhouses and interiors, as well as for automation equipment.

By applying the latest advancements in lighting technology, **F.O.G** provides to growers around the world with advanced LED grow lights with clear benefits.

All **F.O.G** lights are equipped with horticultural LED chips with high light output.

Compared to an HPS, this results in energy savings of up to 40% to 58%.

**F.O.G** focuses the light energy of LEDs on the bands of the light spectrum that plants absorb the most in order to optimize and maximise your yield.

Unlike many other indoor grow lights, **F.O.G** lights produce approximately 30% to 58% less heat, decreasing the need for additional fans and air conditioners.

If necessary, all components are replaceable with waterproof connectors, thus avoiding the return of the lights to the factory for maintenance and loss of production.

**F.O.G** has developed a complete range of intelligent lighting solutions, with a series that accepts future technologies without having to change the entire light. Most **F.O.G** lights offer dimming possible via 0-10v - PWM - home automation and programmable controller as well as PPF light sensor.

Whether you're a seasoned guru or new to LED growing technology, our lighting solutions are simple to install and use.

In order to offer the best of technology with quality and durable components, **F.O.G** has partnerships with worldwide leaders.

Only high-quality components can maintain stable and profitable production, so plants benefit from the right light at all stages of development to thrive and offer their best.

**F.O.G** is the reference for professionals in horticultural projects. Its know-how and its research and development center in Switzerland allow it to perfectly optimize all installations with a gain in efficiency and energy savings.

## PARTNERS

**HEPIA:** Site Lullier - Plants & Pathogens Laboratory

**AGROSCOPE:** Agricultural research and development.

**UNIL:** University of Lausanne, Department of Plant Molecular Biology.





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# PROJECT STUDY

## FUTURE OF GROW

**A** **project study** is used to assess the effectiveness of your current lighting, it reveals if your plants get the right amount of light to offer the best of their genetics and if the light distribution is balanced.

**The luminous repair** is equally important, it allows to obtain a uniformity in the culture which will result in fruits of the same size at the edge and in the center of the culture.

Our horticultural lighting consultant is equipped with a horticultural spectrometer capable of taking PPFD luminosity and spectrum measurements, he will then be able to create a complete file on your installation including:

- PPFD measurement of your lights (light power received by your plants for photosynthesis).
- Calculation of the current power consumption of HPS with LED consumption projection.
- Calculation of the savings achievable on the lamps.
- 3D light simulation of your LED grow room.
- Replacement quote.
- Quotation for mobile and fixed shelves on several floors.
- Study and quote for ventilation.
- Study and estimate for the electrical installation.
- Study and quote for irrigation.
- Study and estimate for the photovoltaic projects.

To provide a professional and high-quality service **F.O.G** collaborates with Swiss leaders in their fields.

**LIGHTING CONSULTING**

**PPFD MEASUREMENT  
(PHOTOSYNTHESIS)**

**SPECTRUM  
MEASUREMENT**

**LIGHT REPORT**

**REPLACEMENT  
PROPOSAL**





Lighting, like nutrients and water, is part of the primary needs for the development of plants, knowing how to optimize it requires knowledges and expensive measuring devices.

**F.O.G** offers a wide range of services dedicated to growers who are willing to optimize their crops and switch to LED light or simply create a new growing space.

Whether indoors or in a greenhouses, our adviser will always find a solution to optimize your crops.

### **SERVICE 1** **CONSULTING AND CROPS FOLLOW-UP.**

Do you want a study? Have a turnkey horticultural project? Need help optimizing your installation or advice?

**F.O.G** takes care of everything. Crops monitoring is an appointment service, which allowing us to monitor your crop and advise you throughout in order to successfully improve the yield and quality of your crops. It also allows us to give advices and take stock of errors made that should not be repeated. Follow-up is important and will save you a lot of time in order to be profitable quickly.

Formation is offered for customers  
**F.O.G**

### **SERVICE 2** **ILLUMINATION CALCULATIONS AND OPTIMIZATION OF ELECTRICITY CONSUMPTION.**

Illumination calculations are used to know how many lights the grow room needs and how they will be distributed.

It also indicates the space between the lights and the space to leave between the lights and the plants. The calculation will reveal the total consumption of the led installation, which will allow us to compare it to your current installation.

### **SERVICE 3** **INTRODUCTION TO LED GROWING.**

Session on led culture with advices, mistakes not to make, how to cure a plant with deficiencies and explanation on the difference between HPS and LED culture.

### **SERVICE 4** **ADVICE ON ADJUSTING THE HEIGHT OF HPS AND LED LIGHTS.**

The PPFd measurement is used to verify that the lights are at the correct distance to provide the full capacity potential. With the help of our device that measures the light output PPFd, we are able to offer you the best space to keep between the lights and the plants.

### **SERVICE 5** **YIELD OPTIMIZATION.**

The yield depends on more than 26 factors, the main limitation is the genetics of the plant itself, it will define the rate of nutrients, sugar, thc, cbd, yield, flavors and other active ingredients that the plant can offer to the maximum. Then comes human and climatic factors, lighting, climate management, nutrients, soil, plant health, diseases and deficiencies. The secondary factors are very different and variable, they influence the outcome of the culture, the grower needs to control in order for the plant to thrive and give the best of them so that the plants can flourish and offer their full potential. This is where we interfere and help you with our advices and our experience and our automatons if necessary.

### **SERVICE 6** **PROJECT STUDY USING VERTICAL SHELVES.**

Vertical and mobile shelves on multiple levels to increase the cultivation surface and yield. Custom manufacturing.

### **SERVICE 7** **CUSTOM MADE**

- LED LUMINAIRES & SPECTRA
- ELECTRICAL INSTALLATION
- SOLAR PANELS
- AUTOMATION
- VENTILATION
- FERTILIZERS
- EXTRACTION
- IRRIGATION

Since their invention in the early 1970s, MH and HPS lights have become the main technology in horticultural lighting. These lights are transmitting humongous quantity of light but one of the drawback is to have a low spectrum that can be less assimilated by plants with a lot of heat loss. Today there is a new leader in high quality LEDs, they are well placed to assume the role of leader in this market at the dawn of the 21st century.

Over the past decade, the advent of high power LED systems has put an end of HPS dominance for a number of reasons.

### LUMENS (lm)

Lumens indicate the flux of light visible to humans emitted by a lamp, but it does not indicate the flux of light emitted which is assimilated by plants to create photosynthesis.

### THE LUX

The Lux indicates the flow of light visible to humans received at different distances from the light. It does not indicate the flow received light (PPFD) which is assimilated by plants to create photosynthesis.

### PPF (umol/s)

The PPF indicates the flow of total light emitted by a lamp that is assimilated by plants to create photosynthesis.

### PPFD (umol/m2/s)

The PPFD indicates the flux of light assimilated by the plant received at different distances from the lamp.

### LIGHT EFFICIENCY (umol/J)

Indicates the ratio between the power consumed in watts of the lamp and the total light power emitted which can be assimilated by plants (PPF).

The higher the umol/j ratio, the more profitable and efficient your installation is in terms of energy consumption. The ratio grams produced / watt consumed will also be higher.

Example:

$2.95 \text{umol/j} = 1\text{w}$  for 2.95 PPF  
 $600\text{w} \times 2.95 \text{umol/j} = 1794 \text{PPF}$

The purpose of photosynthesis is to create energy for a plant in the form of carbohydrates from light energy, nutrients and CO<sub>2</sub>.

A 1200w HPS produces around 1200 to 400 PPFD at around 60cm and 1.5m high, it cannot be placed closer to the plants or it will burn them.

Thanks to high light output LED chips, our AIR GROW PRO 600w lights produce approximately 1200 to 800 PPFD between 10 and 35 cm from the top of the plants for an area of 1.5m x 1.5m.

With this reduction of approximately 50% in energy consumption, producers can improve their cost price and be more competitive on the market.

### HPS LAMP DEGRADATION AND SPECTRAL INSTABILITY = frequent bulb changes

The performance of HPS lights can deteriorate by up to 30% after only 3 to 9 months of operation depending on the quality of the bulb used.

A change of light bulbs with a large budget occurs, it is for this reason that most professional producers are replacing their HPS lamps with LEDs.

### HOT AND INFRARED LAMPS = significant cooling requirements

HPS, MH lights... have an inner wall temperature of around 400 degrees Celsius, so they can potentially catch fire or explode.

Many city and county safety codes are beginning to prohibit the use of HPS systems in residential indoor homes due to the dramatic increase in the number of "closet fires".

Much of the energy consumed by HPS lights is emitted as heat, with most of this heat in the form of infrared (IR) radiation. Thus, not only do HPS systems require significant air conditioning, but the high levels of infrared radiation also increase the temperature of the plants and the air, decreasing the quality of the crops.

The F.O.G lights can generate up to 40% to 50% less heat than HPS and 100% of the light production is assimilated by plants, in addition the heat given off by the LEDs is directed upwards thanks to a heat sink.



# SPECTRUM AND BENEFITS

FUTURE OF GROW

## PAR SPECTRUM = colors assimilated by plants for their development.

The most active photosynthetic radiation is located in the range of the light spectrum (400-700 nm) that plants use for the photosynthesis process

PAR is not a measurement or metric, but defines the light range needed to support photosynthesis.

The important absorption bands are called chlorophyll A and chlorophyll B. Each has absorption peaks in the red and blue spectra.

LED manufacturers have the ability to concentrate the whole power of their LEDs within the range of colors that vegetals need for photosynthesis (PAR SPECTRUM). Individual LED chips produce very narrow spectral bands. Therefore, LED grow lights can be used to provide an optimized spectrum for maximum plant uptake and utilisation at the desired stage of its development. HPS bulbs emit a PAR SPECTRUM which is not 100% assimilable by plants.

**F.O.G** has developed a complete spectrum fully absorbed at 100% by plants which can improve the quality of your crop under ideal conditions (nutrient levels, sugar, THC, CBD, flavors, fragrances, yield, terpenes).

The spectrum developed by **F.O.G** demonstrates a 30% to 78% increase in sugar, terpenes and active ingredients with a 40 to 58% decrease in energy consumption.



## BENEFITS

The latest really compelling benefits of LEDs are simplicity and ease of use.

LED lights requires no replacement bulbs and need less than 40 to 50% cooling process compared to HPS systems depending on your use.

They create very few infrared (IR) radiation which provides better growing conditions for your plants.

It is highly possible that yield, terpenes, flavours, fragrances, nutrient rates, minerals, THC, CBD, can be enhanced within ideal conditions.

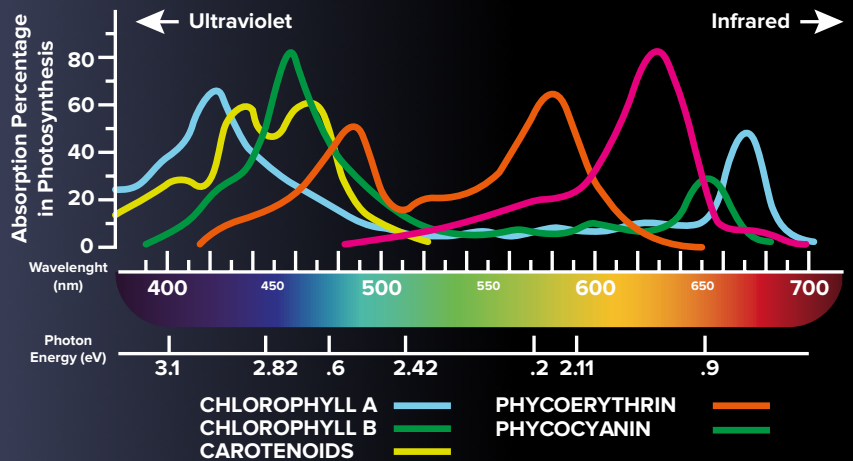
So, if skepticism towards LEDs for flowering is still persisting for smaller grower, there is growing and widespread acceptance for the latest generation of LED lights.

When prominent businessmen consider energy savings, reliability, lack of light maintenance, independent spectrum control, as well as the ability to dim and dim light levels using photocells for different levels in greenhouses, their choice is made without hesitation in favor of LED

**F.O.G**

**F.O.G** is the horticultural LED lighting of the future.

## PAR SPECTRUM



# PPFD APPLICATION

## FUTURE OF GROW

**PPFD** (Photosynthetic PhotonFlux Density)

To maximize production, it is necessary to know the cultivated species and its needs.

Hardwoods all have different photosynthetic light intensity (PPFD) requirements.

Below you will find a list of different species which will be helpful to improve the production

### PPFD REQUIREMENTS (umol/m2/s)

Knowing how to adapt the light output is one of the secret key to improving your harvest and quality.

Plants finally have the right light output they need to flourish to their full potential and offer you the best of them.



PLANTS	MIN umol/m2/s	MAX umol/m2/s
Tomato	170	200
Pepper	70	130
Cucumber	100	200
POT		
Orchidée / Phalaenopsis	80	130
Dendrobium	130	260
Bromeliad	40	60
Anthurium	60	80
Kalanchoe	60	105
Chrysanthème	40	60
Rose	40	60
Geranium	40	60

PLANTS	MIN umol/m2/s	MAX umol/m2/s
Chrysanthemum	105	130
Rose	170	200
Lis	80	100
Lisianthus	170	200
Alstroemeria	60	105
Anthurium / Orchid	80	105
Freesia	70	105
Gerbera	80	105
Tulip	25	40
Cannabis Clone	100	200
Cannabis Growth	200	400
Flowering cannabis	600	1400

ALL THE VALUES INDICATED IN OUR CATALOG ARE LISTED AND INDICATIVE FOR INFORMATION PURPOSES, THEY DO NOT COMMIT OUR COMPANY IN ANY WAY.



## PHOTOSYNTHESIS SPEED (RATE)

As light intensity increases, the photosynthesis rate also increases up to a saturation point of 500 PPFD. The lack of Co2 is an element limiting the speed of photosynthesis, to overcome this point it is therefore necessary to add Co2.

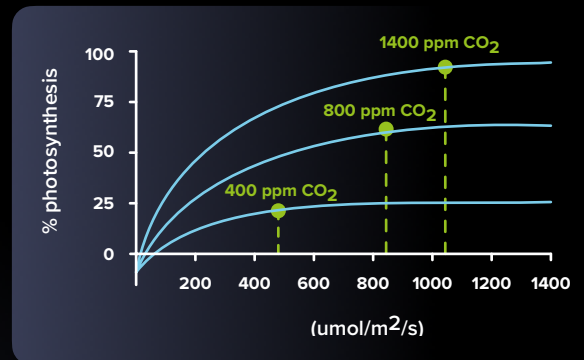
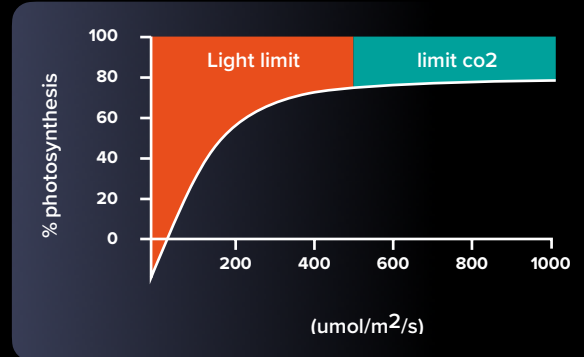
## PPM CO2

Carbon dioxide (Co2) enrichment can improve your crop yield. The ambient level of PPM Co2 is 500 PPM, so photosynthesis is limited by Co2 and not by light intensity. Optimal Co2 levels are 4x higher than normal atmospheric level (800-1400 PPM Co2).

Be careful, increasing Co2 causes a depletion of minerals, proteins and vitamins. Harvard Health Department study with Australia, Israel and Japan. Results presented in the journal Nature.

## TEMPERATURE AND HUMIDITY

Humidity and temperature are factors influencing plant transpiration and VPD. If plants cannot evaporate the water due to high ambient humidity, they will not be able to absorb all the nutrients properly and risk diseases and deficiencies.



## APPLICATIONS



	Seeds & clones	Growth	Pre-flowering	Flowering	Slow growing	Fast growing
INTENSITY PPFD	75-150	200 à 400	400 à 800	500 à 1500	200	400
PHOTOPERIOD	18H	18H	12H	12H	18H	18H
TEMPERATURE C°	20-27	21- 27	21 - 27	21 - 27	18 - 21	21 - 27
HUMIDITY	70-85%	50-70%	50-70%	50-60%	50-70%	50-70%
EC	1.0-1.2	1.4-2.0	1.6-2.2	1.8-2.6	1.0-2.0	1.0-2.0

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# CHOICE OF LIGHT FOR PLANTS

FUTURE OF GROW

Choosing the right light for the right space room is crucial for not over-consuming electricity unnecessarily or underestimate the light and losing efficiency.

The table below has been created in relation to the components used in the **F.O.G** grow lights. It can be used as a basis for growers who do not have a measuring device to define the type of light to be used. The table is available only for our product range and shows you:

- The minimum LED power requirement for the growing space used.
- The light to use to replace your current one.

10W = 0.6m x 0.3m  
30w = 1.2m x 0.6m

Seeds 2 lights  
Cuttings 1 light

**X-CLONE PRO 10 W** Replaces around 18w neon.  
**X-CLONE PRO 30 W** Replaces around 58w neon.

Height: 20cm to 40cm from plants

- Cuttings
- Germination
- Salad in vertical culture
- Flowers and aromatic herbs

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1.2m x 1.2m  
1.44 m<sup>2</sup>

200 W LED  
minimum

**X-FLO PRO 300W ET X-GROW BAR 300W**

Replaces 300W - 400W HPS.

Height: around 80 - 250 cm from plants

- Rose
- Orchid
- Bromelia
- Geranium
- Chrysanthème

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1.2m x 1.2m  
1.44m<sup>2</sup>

-  
1.5m x 1.5m  
2.25 m<sup>2</sup>

200 W LED  
minimum

**X-YES 300W** Replaces 300W - 400W MH.

Height: 80 - 250 cm from plants

- Cuttings
- Mother foot

In greenhouse 1 light every 3 meters.  
Indoors 1 luminaire every 1.2 meters

Page 12

1.5m x 1.5m  
2.25m<sup>2</sup>

600 W LED

**X-GROW BAR 600W** Replaces 1'000W - 1'200W HPS.

**X-GROW BAR 300W** Replaces 400W - 600W HPS.

Height: 80 à 250 cm from plants

For all types of greenhouse plants.

- Rose
- Orchid
- Bromelia
- Geranium
- Aromatic herbs

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## Project study offered

To carry out a project, a study will be necessary.

It will define the type of lights to be used as well as the number and their locations.

Our professional service will support and guide you in your most ambitious projects.

Let yourself be seduced by our know-how.



# CHOICE OF LIGHT FOR CANNABIS

FUTURE OF GROW

Choosing the right light for the right space is important so as not to over-consume electricity unnecessarily or undersize the lamp and loose efficiency.

The table below has been created in relation to the components used in the **F.O.G** grow lights. It serves as a basis for producers who do not have a measuring device to define the type of light to be used. The table is only valid for our product range and tells you:

- The minimum LED power requirement for the growing space used.
- The light to use to replace its HPS light.
- The yield you could achieve under the right conditions.

0.8m x 0.8m  
0.64m<sup>2</sup>

170 W LED  
minimum

**1x BLACK SERIES 320W** Replace 400W and 600W HPS. **(0 à 500 gr.)**

Growing space 0.8m x 0.8m ( 0.64m<sup>2</sup> )  
4 -16 plants 20 - 35 grams

Grow space limits yield to around 450 - 550 grams

Pages 19-20

1m x 1m  
1m<sup>2</sup>

270 W LED  
minimum

**1x BLACK SERIES 400W** Replace 600W and 800W HPS. **(0 à 800 gr.)**  
**1x BLACK SERIES 320W** Replace 400W and 600W HPS. **(0 à 600 gr.)**

Growing space 1m x 1m ( 1m<sup>2</sup> )  
Pots 20x20cm  
6 - 25 plants 20 -35 grams

The growing space limits the yield to 800 grams.

Pages 19-20

1.2m x 1.2m  
1.44m<sup>2</sup>

400 W LED  
minimum

**1x AIR GROW PRO III 600W** Replace around 1'000W - 1'200W HPS **(0 à 1kg.)**  
**1x BLACK SERIES 600W** Replace 1'000W -1'200W HPS. **(0 à 900 gr.)**  
**1x BLACK SERIES 400W** Replace 600W and 800W HPS. **(0 à 800 gr.)**

Grow space 1.2m x 1.2m ( 1.44m<sup>2</sup> )  
Pots de 20x20cmx20cm  
36 plants 20 - 35 grams.

The growing space limits the yield to around 1kg.

Pages 17-20

1.5m x 1.5m  
2.25m<sup>2</sup>

600 W LED  
minimum

**1x AIR GROW PRO III 600W** Replace around 1'000W - 1'200W HPS **(0 à 1.5kg.)**  
**1x BLACK SERIES 600W** Replace 1'000W - 1'200W HPS. **(0 à 1.3kg.)**  
Height about 100 to 40 cm between the light and the plants.

Grow space 1.5m x 1.5m ( 2.25m<sup>2</sup> )  
Pots 20x20cmx20cm  
49 plants 20 to 35 grams.

The growing space limits the yield to around 1.5 kg.

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# X-CLONE PRO

FUTURE OF GROW

CONFIDENTIAL SPECTRUM



PREMIUM SERIE

GROWTH

QUALITY COMPONENTS  
5 YEARS

REPLACES APPROX  
18W - 58W - 2x36W

**X-CLONE PRO** is a high-tech piece of jewelry, elaborated with the latest components created by worldwide leaders, it meets the most demanding standards in terms of cultivation.

**X-CLONE PRO** is very versatile and can be used for seed priming, propagation light and growth of all kind of plants.

It is equipped with our latest generation of resin, which allows it to withstand 95% humidity rate with a light transmittance of 97%.

With the latest SAMSUNG led chips, **X-CLONE PRO** is the most efficient linear lighting device on the market.

Thanks to its spectrum specially developed in Switzerland, it can easily replace any type of neon tube and shortens the space between plant knots while increasing rooting speed.

**X-CLONE PRO** is perfect for professional growers who are willing to optimize both of their growing spaces as well as energy savings.

**Test carried out by the University of Lausanne on page 27.**



### FOR A SPACE OF 60 x 30 cm

Germination use 2 fixtures  
Cuttings use 1 fixture

### X-CLONE PRO 10

Power: **10w**  
PPF Output: **25 umol/s**  
System efficiency: **2.5 umol/j**  
Input voltage: **230V AC**  
Power factor: **0.93**  
Guarantee: **3 years**  
Dimensions: **60 x 3.3 x 5 cm**  
Weight: **0.35kg**  
IP: **54**  
Variation: **NO**  
Certifications: **CE, ROHS**  
Btus: **around 35**  
Tolerance: **+10%**

### FOR A SPACE OF 120 x 60 cm

Germination use 2 fixtures  
Cuttings use 1 fixture

### X-CLONE PRO 30

Power: **30w**  
PPF Output: **75 umol/s**  
System efficiency: **2.5 umol/j**  
Input voltage: **230V AC**  
Power factor: **0.98**  
Guarantee: **3 years**  
Dimensions: **110 x 3.3 x 5 cm**  
Weight: **0.5kg**  
IP: **54**  
Variation: **NO**  
Certifications: **CE, ROHS**  
Btus: **around 103**  
Tolerance: **+10%**

### 1 x 230v power socket for a maximum of 20 lights (not included)

**X-CLONE PRO 30** replaces 1 neon tube of 58w or 2 tubes of 36w.

**X-CLONE PRO 10** replaces 1 neon tube of 18w.

**X-CLONE PRO** has a multitude of advantages:

1. Improves rooting.
2. Reduces installation costs with a possible connection of 20 luminaires in a row.
3. Energy savings of up to 30 to 58% compared to neon tube lights.
4. Better climate management with less heat released by the light.
5. Optimised spectrum for rapid growth.
6. Withstands 95% humidity.
7. 2 fixing clips for shelves.

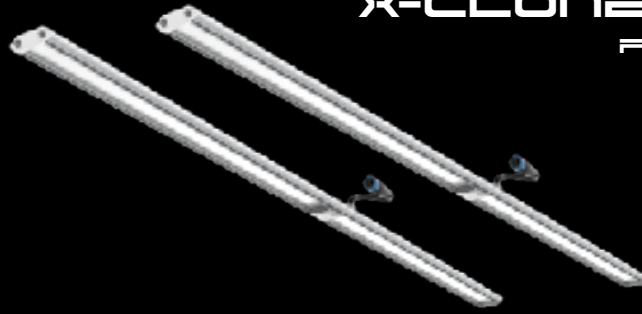
Avoid using corrosive products on silicone or reflectors LED chips.  
Ambient temperature max 35°C.



CONFIDENTIAL  
SPECTRUM

# X-CLONE SUN PRO

FUTURE OF GROW



SAMSUNG

LEDVALL



PREMIUM SERIE

GROWTH + FLOWERING

QUALITY COMPONENTS  
5 YEARS

REPLACE APPROX  
18W and 58W

**X-CLONE SUN PRO** is developed with the latest components created by worldwide leaders, it meets the most demanding standards in culture.

High-tech piece of jewelry developed in Switzerland. The **X-CLONE SUN PRO** series has been specially created to meet the demand of research laboratories.

Energy saving and a full spectrum are the main strengths of these series which can be made to measure to adapt to any type of project.

The advantage of a full spectrum will be to more accurately reproduce the spectrum of the sun in a research room devoid of external light.

#### Various benefits will be observed:

Flowering days can be shortened by 5-10 days.  
Seed production time shortened by 8 to 10 days on Arabidopsis

An increase in active ingredients, terpenes and Brix level (sugar level)

After replacing their 36w and 58w neon tubes with 30w and 60w **X-CLONE SUN PRO** tubes, UNIL (University of Lausanne, plant biology laboratories), saves more than 58% on the electricity consumption of 12 research laboratories and sees an advance of 8 to 10 days in seed production on Arabidopsis.

**123,777 kw/h saved per year.**

According to the experimental results, LED light sources with the same measured correlated temperature and color intensity, but different spectral output, can produce different effects on the growth rate and nutritional content of crops. **X-CLONE SUN PRO** series LED chips increased yield by 13.5% and flavonoids by 41% on lettuce compared to standard LEDs.



Power: **10-20-30-40-50-60-70W**  
PPF Output: **15 With 210 umol/s**  
System efficiency: **1,5 - 3.2 umol/j**  
Input voltage: **230V AC**  
Power factor: **0.93**  
Guarantee: **2 years**  
Dimensions: **custom made**  
Weight: **1-2Kg**  
IP: **65**  
Variation: **0-10v - DALI**  
Certifications: **CE, ROHS**  
Btu: **around 34 - 240**  
Tolerance: **+/-10%**

**Test carried out by UNIL**  
**University of Lausanne**  
**Optimization of 12**  
**culture rooms in plant**  
**biology on page 27.**

For any project, a study is carried out in order to adapt the lighting requirement to your space.

The study will determine the number of lights and their locations.

**X-CLONE SUN PRO** has a multitude of benefits:

1. Better light distribution.
2. 50% to 58% energy savings compared to old neon tubes.
3. Reduce installation costs with click connectors.
4. Full spectrum almost identical to the sun.
5. Variable in 0-10v - DALI - PLCs or manual dimmers.
6. Custom lengths of lights and cables.
7. Plug & play connections with IP65 waterproof connectors
8. Possibility to change the components 1 by 1 in case of defects.
9. Suspension kit or ceiling mounting and shelves.

Avoid using corrosive products on silicone or reflectors LED chips.  
Ambient temperature max 35°C.

# X-FLO PRO 200

FUTURE OF GROW

CONFIDENTIAL  
SPECTRUM

EDITION HYPER RED



WITH DIMMER  
25%-50%-75%-100%



PREMIUM SERIE

GROWTH + FLOWERING

QUALITY COMPONENTS  
5 YEARS

REPLACES APPROX  
400w HPS

**X-FLO PRO 200** is a high-tech piece of jewelry, made with the latest components created by worldwide leaders, it meets the most demanding standards in terms of cultivation.

**X-FLO PRO 200** is a horticultural led light designed for flowering plants, it will be perfect for growing flowers, strawberries, raspberries, orchids and cannabis. It is suitable for germination and growth but its main asset is flowering. It can replace HPS or MH lights of around 300 to 400w and provides a more even distribution of light for your culture, while emitting much less heat than HPS lighting.

With **X-FLO PRO 200**, you will be able to place the light at the desired distance without getting too much heat problems, so you can reach unprecedented levels of lighting for your plants and better control the growing conditions. Thanks to its latest generation chips that produce high quality light, you will best optimize your lighting and production as much as possible.

**X-FLO PRO 200** is equipped with two spectra which are much more efficient than a simple white spectrum and which improve the quality of your production, moreover with its waterproof connector, it is variable in 0-10v and easily adapts to automatons or manual dimmers .

**X-FLO PRO 200** lights offer new possibilities to all greenhouse or indoor producers, they can improve the quality of their productions while offering optimal yields.

Power: **200W = 300w - 400w HPS**  
PPF Output: **500 umol/s\***  
System efficiency: **2.5 umol/j\***  
Input Voltage: **230V AC**  
Power factor: **0.93**  
Guarantee: **2 years**  
Dimensions: **187x198 cm**  
Weight: **4.5kg**  
IP: **65**  
Variation: **0-10v LTT connector**  
Certifications: **CE, ROHS**  
Btu: **around 720**  
\*Tolerance: **+/-10%**

For any project, a study is carried out in order to adapt the lighting requirement to your space.

The study will determine the number of lights and their locations.



**X FLO PRO 200** has a multitude of benefits:

1. Apply the right light at the right place with maximum efficiency.
2. Minimize energy costs.
3. Reduces installation costs.
4. Energy savings that can reach 30 to 50% depending on the light replaced.
5. Variable in 0-10v - PLCs or manual dimmers.
6. Better climate management with less heat than HPS.
7. No maintenance, cleaning with a water lance.
8. Cannabis production from 0 to 400 gr approximately.

Avoid using corrosive products on silicone or reflectors LED chips.  
Ambient temperature max 35°C.



CONFIDENTIAL  
SPECTRUM

**X-VEG 200**  
FUTURE OF GROW

NICHIA



OPTIONAL  
DIMMER

PREMIUM SERIE

GROWTH

QUALITY COMPONENTS  
5 YEARS

REPLACES APPROX  
400w MH

Developed in Switzerland **X-VEG 200** is a 200w led light specially designed for growing plants.

Placed 80-110cm above the plants, it will be suitable for mother plants, aromatic herbs and all other plants. Its high-tech led chips from Japan provide higher light output and lower brightness loss compared to other manufacturers.

**X-VEG 200** is able to replace 400W MH lamps and illuminate an area of 1.2m x 1.2m and 1.5m x 1.5m. Its robust and waterproof casing in IP 65, allows it to be used in wet conditions.

With its waterproof connector, **X-VEG 200** is variable in 0-10 V and can be operated by a controller, so you can interfere with the morphology of your plants and manage the space between the internodes.

Thanks to a heat sink placed above, **X-VEG 200** does not transmit direct heat towards plants, this benefit allows it to be placed lower and offer more light to your plants for faster development. rapid growth and root mass gain.



In the greenhouse, 1 light every 3 meters is sufficient as additional light to maintain growing plants. A 3D projection will be made in order to respect the light needs of the plants.

For architectural and horticultural lighting combined as in a tropical greenhouse, we have developed **X-VEG 200** Plus which is equipped with a reflector and offers the possibility of being fixed on a removable arm.

Power: **200w = 300 à 400w MH**  
PPF Output: **500 umol/s\***  
System efficiency: **2.5 umol/j\***  
Input voltage:: **230V AC**  
Power factor **0.98**  
Guarantee: **2 years**  
Dimensions: **271x186mm**  
Weight: **3.5kg**  
IP: **65**  
Variation: **0-10v LTT connector**  
Certifications: **CE**  
BTUs: **around 700\***  
Tolerance: **+10%**



**X-VEG 200 Plus**

**X-VEG 200** has a multitude of benefits:

1. Stable spectrum and suitable for cultivation with latest generation LED chip, technology from JAPAN.
2. Variable in 0-10v - PLCs or manual dimmers.
3. 40 to 50% savings in energy savings.
4. No direct heat on the plants.
5. Quick amortization.
6. No maintenance.
7. Waterproof.

Avoid using corrosive products on silicone or reflectors LED chips. Ambient temperature max 35°C.

**For any project, a study is carried out in order to adapt the lighting requirement to your space.**

**The study will determine the number of lights and their locations.**



# GROW TUBE

FUTURE OF GROW

CONFIDENTIAL  
SPECTRUM



## PREMIUM SERIES

GROWTH + FLOWERING

QUALITY COMPONENTS  
3-5 YEARS

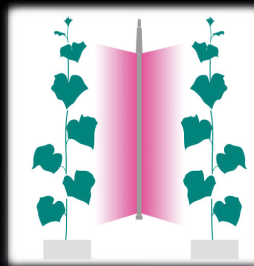
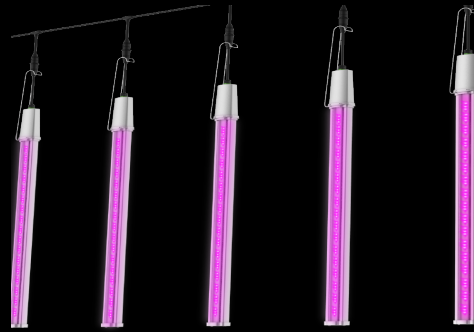
**GROW TUBE** is ideal for illuminating two rows of plants from top to bottom at the same time and helps you to increase your yield.

With its aluminum housing, it can achieve better heat dissipation and be placed near plants

**GROW TUBE** interlining is suitable not only for cucumber, but also for tomato, peppers and raspberries. Its flexible design allows better control of the plant growth process.

**GROW TUBE** is equipped with 36w full-spectrum and 4w infra-red LED chips that can be turned on 1-2 hours a day with a separated infra-red control to increase carbohydrate formation.

Power: **40W**  
PPF: **80 umol/s**  
System efficiency: **2.2 umol/j**  
Input voltage: **230V AC**  
Power factor: **0.98**  
Guarantee: **2 years**  
Dimensions: **120 x 7.7 x 5.4 cm**  
Weight: **2kg**  
IP: **65**  
Certifications: **CE, ROHS,**  
60 tubes per row: **2400w max**  
Tolerance: **+10%**  
**Production on demand.**



Tests and research in greenhouses with solar panels and LEDs in Fribourg, Switzerland.

Collaboration with: the Swiss federal research center AGROSCOPE. The HEIA school of engineering and architecture of Fribourg

For any project, a study is carried out in order to adapt the lighting requirement to your space.

The study will determine the number of lights and their locations.

**GROW TUBE** has a multitude of advantages:

1. A flowering spectrum.
2. A separate command for an infrared addition for 1-2 hours a day to increase carbohydrate formation.
3. A distance of 60 cm between each tube which can be adapted to your custom spacing.
4. Better light penetration from top to bottom of your plants.
5. Possibility of changing a single tube if necessary: plug and play.
6. Custom tube lengths.
7. No maintenance.
8. Lights on both sides.
9. Possible increase in terpenes, flavors, scents, nutrient levels and yield.

Avoid using corrosive products on silicone or reflectors LED chips. Ambient temperature max 35°C.

CONFIDENTIAL  
SPECTRUM

LINE GROW  
FUTURE OF GROW

SAMSUNG

SEDUL



PREMIUM SERIE

GROWTH + FLOWERING

QUALITY COMPONENTS  
3-5 YEARS

**LINE GROW** allows you to grow and harvest fresh and tasty tomatoes, cucumbers, peppers all year round, as well as pharmaceutical cannabis.

Wherever you are it brings more light to compensate for your lack of production.

Bottom leaves can optimally transform the light, thus achieving an increase in yield.

With plug & play connections, the lights can easily be moved thanks to their flexible connections.



The shape of the **LINE GROW** lighting module is designed to minimize maintenance with its exterior design.

Smooth and perfectly waterproof, it will be easy for the grower to water the plants and clean the fixtures.

For any project, a study is carried out in order to adapt the lighting requirement to your space.

The study will determine the number of lights and their locations.

Power: **75w et 150w**  
PPF Output: **150 à 400 umol/s**  
System efficiency **2.2 and 3.0 umol/j**  
Input voltage: **56V DC and 250V DC**  
Power factor: **0.93**  
Approximately lifespan: **30'000h**  
Guarantee: **2 years**  
Dimension: **1,2m and 2,5m**  
Weight: **1,2kg and 2,2kg**  
IP: **65**  
Certification: **CE, ETL**  
Tolerance: **+10%**  
**Production on demand.**

**LINE GROW** has a multitude of benefits:

1. Applies the right light to the right place with maximum efficiency.
2. Minimize your energy costs.
3. Increases your yield
4. Reduces installation costs with daisy-chaining and plug and play design.
5. No maintenance, water lance cleaning.
6. Possible increase in flavors.

Avoid using corrosive products on silicone or reflectors LED chips. Ambient temperature max 35°C.



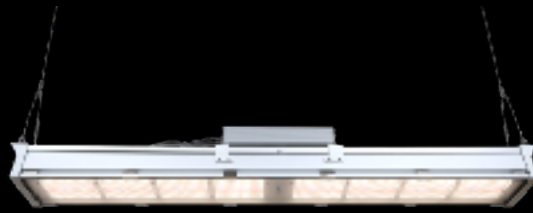
# X-GROW BAR 300 & 600

FUTURE OF GROW

CONFIDENTIAL  
SPECTRUM



OSRAM



50%  
ENERGY SAVINGS.

PREMIUM SERIE

GROWTH + FLOWERING

QUALITY COMPONENTS  
5 YEARS

REPLACE APPROXI  
1'200W HPS

**X-GROW BAR** is a new development of high-end horticultural lighting, made of passively cooled aluminum for a perfect heat dissipation result.

State-of-the-art design with a weight of only 14 kg, it is easy to ship and suitable for most commercial indoor and greenhouse horticultural crops that requires high yield.

Designed with the most reliable and efficient components on the market, it is equipped with the latest LED chip technologies from JAPAN and variable 0-10V transformers.

**X-GROW BAR** is the culmination of 5 years of research and testing on more than 15 spectra and 9 different LED chips.

The most efficient have been chosen to equip all the **F.O.G.** lights.

So you get the best benefits from the latest LED chip technologies.

All luminaires are equipped with horticultural LED chips with high light output.

This results in a saving in energy consumption of up to 40 to 50% compared to HPS light.

## SPECTRUM 3 IN 1

Its 3 in 1 spectrum allows the luminaire to be used in any type of situation.

**SPECTRUM 1** = increase in active ingredients, sugar, terpenes, flavors, cbd, thc.

**SPECTRUM 2** = Tight internodes and production of large leaves for more photosynthesis.

**SPECTRUM 3** = Yield and production of sugar and resin.

Power: **300w +5%**  
PPF output: **810 umol/s**  
System efficiency: **2.75 umol/j**  
Input voltage: **230V option 380v**  
Power factor: **0.95**  
Guarantee: **3 Years**  
Dimensions: **1117 x 139 x 90mm**  
Weight: **14Kg**  
IP: **65**  
Variation: **0-10V LTT**  
Certifications: **CE, ROHS**  
BTU: **1'100 - 1'200**  
Tolerance: **+10%**  
**Production on demand.**

Power: **600w +5%**  
PPF output: **1320 - 1550 umol/s**  
System efficiency: **2.2 ou 3.0 umol/j**  
Input voltage: **230V option 380v**  
Power factor: **0.95**  
Guarantee: **3 Years**  
Dimensions: **1117 x 139 x 90mm**  
Weight: **14Kg**  
IP: **65**  
Variation: **0-10V LTT**  
Certifications: **CE, ROHS**  
BTU: **2200 - 2500**  
Tolerance: **+10%**  
**Production on demand.**

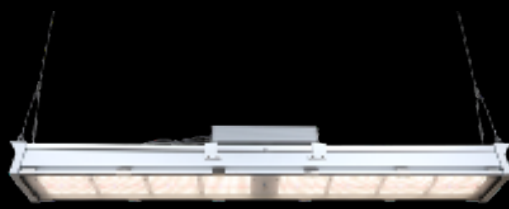
## FOR WHAT X-GROW BAR ?

1. Less direct heat on the plants = harvest all year round with less risk of disease.
2. Energy savings of up to 40% - 50%.
3. Final product that can be tastier and produce more weight, sugar, resin, terpenes, thc, cbd, antioxidants.
4. No maintenance and replaceable components.
5. Variable in 0-10v - PLCs or manual dimmers.
6. Compatible with PPF probe

Avoid using corrosive products on silicone or reflectors LED chips. Ambient temperature max 35°C.



50%  
ENERGY SAVINGS.



PREMIUM SERIE

GROWTH + FLOWERING

QUALITY COMPONENTS  
5 YEARS

REPLACEE APPROXI  
600W HPS

The University of Lausanne UNIL chose **F.O.G** to optimize the electricity consumption of the lighting of their 6 greenhouses.



40x HPS LIGHTS OF 600W



20x LED LIGHTS OF 600W

For any project, a study is carried out in order to adapt the lighting requirement.

The study will determine the number of lights and their locations.



A PPFD probe can be coupled to lights and any type of PLC.

240x 600w HPS lights replaced by 120x 600w LED lights for a 50% energy saving with the same PPFD.

That is a saving of 72kw/h (315,000 Kw/h/year.)

In order to maintain a stable and homogeneous production while optimizing energy consumption, **F.O.G** has developed a lighting dimming system coupled with a PPFD sensor.

The automaton makes it possible to program a desired value in PPFD in the greenhouse which will be reached in the event of a lack of sunshine. The lights will compensate for the lack of sunshine by dimming the lights instead of the traditional ON/OFF of the old HPS lamps, thus creating a double optimization of energy consumption.

# AIR GROW PRO III 600

## HYPER RED

FUTURE OF GROW

EDITION HYPER RED

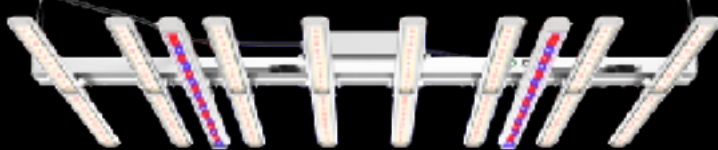
CONFIDENTIAL SPECTRUM

WITH DIMMER  
25%-50%-75%-100%  
UVA-UVB-IR Bars  
OPTIONAL



SAMSUNG

OSRAM



PREMIUM SERIE

GROWTH + FLOWERING

QUALITY COMPONENTS  
5 YEARS

+17% OF RED SPECTRUM  
THAN VERSION 2.7

REPLACES ABOUT  
1'200W HPS

+25% EFFICIENCY THAN  
VERSION 2.7 0 to 2.5Gr/W

Flowering  
LAMP A 20 CM 1.2m x1.2m  
LAMP A 40 CM 1.6m x1.6m

### AIR GROW PRO III

**HYPER RED** Is a high-tech piece of jewelry made in Switzerland. This supercharged version in red spectrum increases production and resin, positions it as the most efficient light on the market with a luminous efficiency of 2.95 and an incomparable amount of red leds. Designed with the most reliable and efficient components on the market, it is equipped with the latest German Osram LED chip technologies offering a light efficiency of 3.4 umol/j and 2 other led chips of 3.43umol/j developed, especially for **F.O.G** in collaboration with engineers in Japan and South Korea.

### AIR GROW PRO III

**HYPER RED** Is variable with an Inventronics 0-10V transformer, this explosive cocktail has been developed for demanding and professional growers who are looking for high-end technology and the latest advances in Swiss research.

Its spectrum improves the medicinal value of cannabis and plants in terms of cannabinoid content, polyphenols.

It inhibits the development of grey mold, helps open stomata and inhibits elongation.

It also increases leaf expansion and increases active and terpene principles.



**SPECTRUM 1** = Increases the active ingredients, thc, cbd, terpenes, flavors.

**SPECTRUM 2** =Tight internodes and production of large leaves for more photosynthesis.

**SPECTRUM 3** = Yield and production of resin.

#### 3 SPECTRUM IN 1

Its 3-in-1 spectrum developed in Switzerland, allows the light to be used in any type of situation and offer significant benefits.

For germination, place the luminaire 1 meter from the plants.

For growth, place the light between 60cm and 1m depending on the spacing of the floors you want, the higher the lamp is the more the plants increase the space between the floors.

For flowering, place the lamp between 20 and 40 cm away from the plants depending on the surface you cover. The closer the light is, the denser and heavier the flowers will be.

Power: **600w (+5%)**  
PPF output: **1800 umol/s\***  
Efficacy : **2.95 umol/j\***  
Input voltage.: **230v option 380v**  
Power factor.: **0.98**  
Guarantee: **3 Years**  
Dimensions: **119 x 117 x 16.3cm**  
Weight: **14.7kg**  
IP: **54**  
Certifications: **CE, ROHS**  
Variation: **0-10V LTT connecteur**  
BTU: **About 2080**  
\*Tolerance: **+10%\***

### WHY AIR GROW PRO III HYPER RED?

1. More balanced distribution of brightness = more homogeneous culture = more yield on the edges.
2. No direct heat on plants = harvest all year round with less risk of disease.
3. 40 to 60% energy savings.
4. Final product that can be more compact, heavier and produce more resin, terpenes, thc, cbd and flavors.
5. No maintenance, replaceable components.
6. Evolving led light that can withstands future technology.
7. Yield from 0 to 1.5kg on 1.6m x 1.6m without co2.
8. With 4m cable to deport the transformer out of the culture room and manual dimmer.

Avoid using corrosive products on silicone or reflectors LED chips. Ambient temperature max 35°C.

# TEST THC - CBD - TERPENES

FUTURE OF GROW

The following test has been carried out at KDC ORGANIC in Switzerland, demonstrates on a STRAW BERRY CBD an improvement in active ingredients ranging from 30 to 78% with our led light

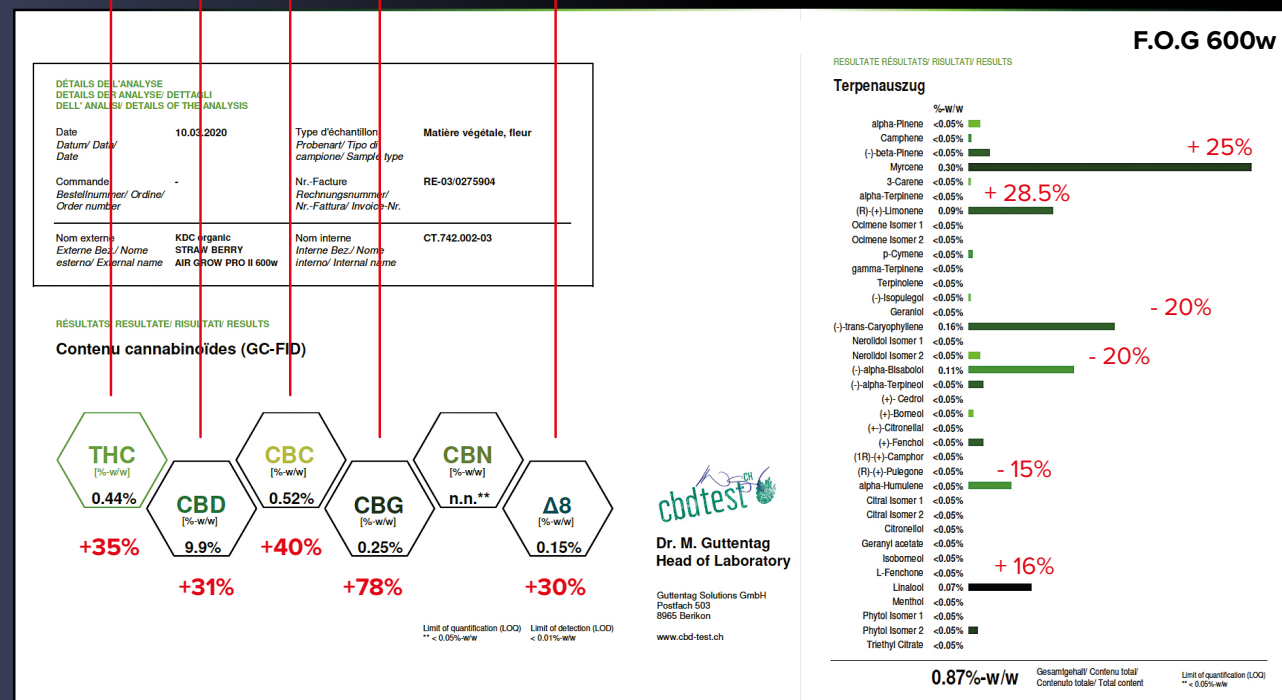
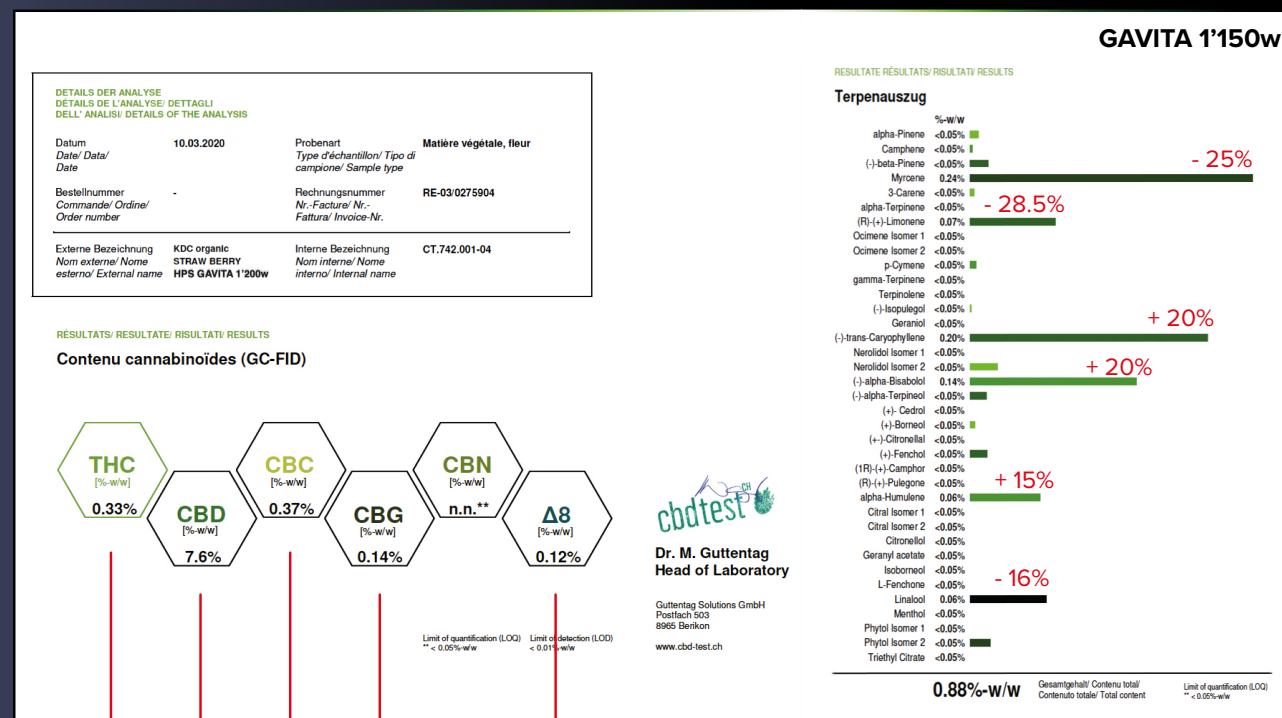
**AIR GROW PRO II 600W 2.4 umol/j (2020)**  
Average yield 700gr at 1'250 gr

**HPS GAVITA 1'150W**  
Average yield 700gr to 900 gr

Our lights allow to reduce by 40 to 50% the electrical consumption and production of heat in the cultivation rooms Our spectrum makes plants produce more branches and fruits.

The analyses show that flavors, terpenes and active ingredients increase under our spectrum.

The density of the fruits is very compact and the yield on 1.5m x 1.5m can reach 1'250 gr depending on the genetics, number of feet and growth time.



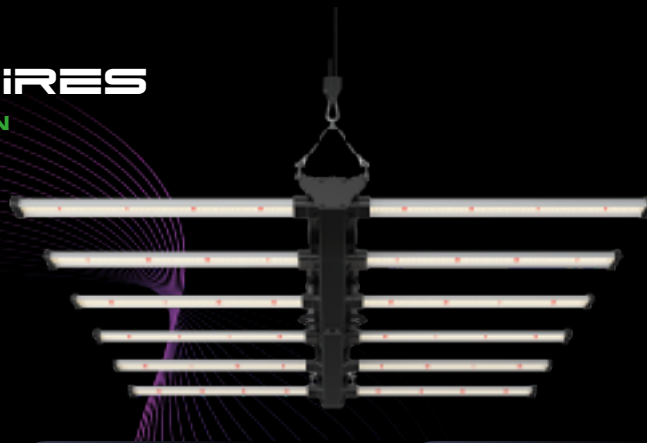


# BLACK SERIES

FUTURE OF GROW

CONFIDENTIAL SPECTRUM

WITH DIMMER  
25%-50%-75%-100%



GROWTH + FLOWERING

QUALITY COMPONENTS  
5 YEARS

REPLACES ABOUT  
400-600W HPS

REPLACES ABOUT  
600-800W HPS

REPLACES ABOUT  
1,000 to 1,200W HPS

COMPACT AND ECONOMIC VERSION



High-tech piece of jewelry, the range of horticultural led lights **F.O.G BLACK SERIES** Was developed by our research and development department in Switzerland, to offer high-performance and modular products with the best value for money.

Designed with reliable and high-performance components, its structure makes it possible to perfectly distribute the brightness on the edges of the culture and be closer to the canopy to increase performance.

This range of high-tech lights is equipped with the latest chip technologies **LED red OSRAM OSOLON SSL The 660nm and SAMSUNG 301H** To allow maximum weight yield and minimum consumption.

**SPECTRUM 1** =Increases active ingredients, thc, cbd, terpenes, flavors.

**SPECTRUM 2** = Tight internodes and production of large leaves for more photosynthesis.

**SPECTRUM 3** = Resin yield and production.

**3 SPECTRUM IN 1**  
Its 3-in-1 spectrum developed in Switzerland, makes it possible to use the light in any type of situation and offer significant advantages proven by.

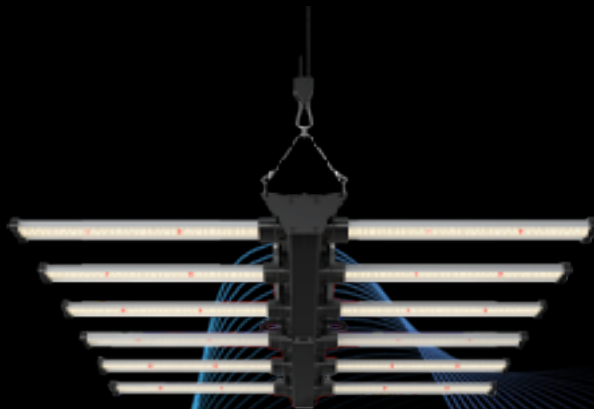
- Swiss producers.
- Swiss analytical laboratories. .
- Research centres of the Swiss confederation.

## ADVANTAGES

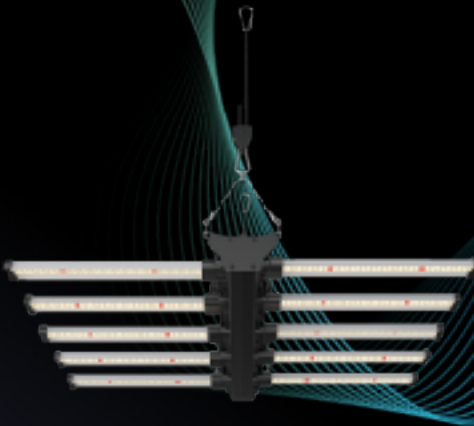
1. More balanced distribution of brightness = more homogeneous culture = more yield on the edges.
2. No direct heat on plants = harvest all year round with less risk of disease.
3. 40 to 60% energy savings.
4. Final product that can be more compact and produce more weight, resin, terpenes, thc, cbd and flavors.
5. No maintenance, replaceable components.
6. Scalable led luminaire that can support future technology.
7. Yield from 0 to 1.2kg on 1.5m x 1.5m without co2.

Avoid using corrosive products on silicone or reflectors LED chips. Ambient temperature max 35°C.

Connect all the led bars before turning on the lamp.



**BLACK  
SERIES 400**



**BLACK  
SERIES 320**



**BLACK  
SERIES 600**

**80 X 80 CM  
100 X 100 CM**

Power\*: **(320w +-10%)**  
PPF output\*: **928 umol/s**  
Efficiency of the system\*: **2.9 umol/j**  
Input voltage.: **100-277 V AC**  
Power factor.: **0.98**  
Guarantee: **3 Years**  
Dimensions: **75 x 65 x 13,5 cm**  
Weight: **4.6 kg**  
IP: **54**  
Certifications: **CE, ROHS**  
Variation: **0-10V**  
BTU\*: **1'350**  
Tolerance\*: **+10%**

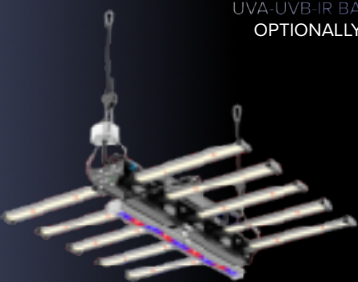
**100 X 100 CM  
120 X 120 CM**

Power\*: **(400w +-10%)**  
PPF output\*: **1'160 umol/s**  
Efficiency of the system\*: **2.9 umol/j**  
Input voltage.: **100-277 V AC**  
Power factor.: **0.98**  
Guarantee: **3 Years**  
Dimensions: **85 x 85 x 13,5 cm**  
Weight: **7 kg**  
IP: **54**  
Certifications: **CE, ROHS**  
Variation: **0-10V**  
BTU\*: **1'666**  
Tolerance\*: **+10%**

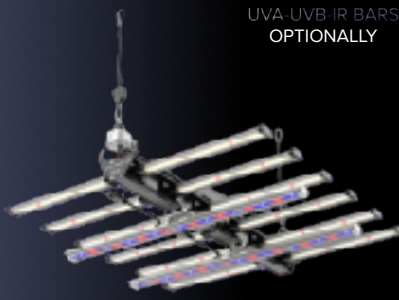
**120 X 120 CM  
150 X 150 CM**

Power\*: **(600w +-10%)**  
PPF output\*: **1'740 umol/s**  
Efficiency of the syst\*: **2.9 umol/j**  
Input voltage.: **100-277 V AC**  
Power factor.: **0.98**  
Guarantee: **3 Years**  
Dimensions: **110 x 110 x 14 cm**  
Weight: **9 kg**  
IP: **54**  
Certifications: **CE, ROHS**  
Variation: **0-10V**  
BTU\*: **2'500**  
Tolerance\*: **+10%**

UVA-UVB-IR BARS  
OPTIONALLY



UVA-UVB-IR BARS  
OPTIONALLY



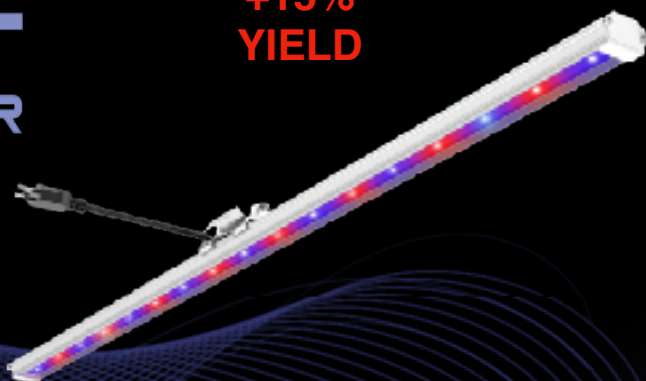
UVA-UVB-IR BARS  
OPTIONALLY





# BOOST UVA+UVB+IR HIGH TECHNOLOGY RESEARCH AND DEVELOPMENT IN SWITZERLAND

**+15%  
YIELD**



**T**he BOOST UVA-UVB-IR LED bar is the latest high-tech piece of jewelry developed by our research and development center in Switzerland.

#### THIS 3 IN 1 LED BAR IS COMPOSED OF:

**LED UVA-UVB:** To boost your yield, rates of active ingredients and terpenes.

**LED INFRA-RED:** To modify the morphology of your plants, increase the spacing of the internodes and yield, as well as activate the effect of EMERSON.

#### Natural defense mechanism of a plant:

To protect themselves against the effects of ultraviolet rays, cannabis plants will develop a natural defense mechanism.

The formation of trichomes by alkaloids and flavonoids acts as protective photo molecules that will protect your plants.

A denser layer of resin, with more THC will form to protect them from ultraviolet rays.

Lydon et al., 1987 - UVB radiation effects on photosynthesis growth and cannabinoid production of two cannabis sativa chemotypes

Plants grown indoors without UV exposure may lack these benefits. That's why it's important to choose indoor culture lighting that includes UV at the right dose.

Despite our choice to use the latest SEOUL VIOSYS UV LED chip technologies, the lifespan of a UV LED chip remains lower compared to red and white LED chips.

We have therefore chosen to add UV separately on our lights so as not to reduce the life of it. Thus you will have the advantage of being able to replace future elements at a lower cost and accept future technologies without limits.

**This spectrum directly influences the quality and quantity of resin during flowering.**

SEOUL VIOSYS LED UVB  
310 nm latest technologies

SEOUL VIOSYS LED UVA  
385 nm latest technologies

When the right amount of UV is present, it:

- Increases oils, resin, and the level of THC and CBD.
- Accelerates the seed germination process.
- Increases root mass. Promotes flowering.
- Causes more branching and less stretching.
- Improves the taste and smell.
- Creates more robust plants.
- Increases resistance to insects, bacteria and fungi.
- Strengthens plants and better prepares them for high-intensity light.
- Reduces shock time and accelerates the production and performance process

When the amount of UV is present at high doses, it:  
Can decrease yield, slow photosynthesis and cause damage to plants.

**This spectrum directly influences the morphology of the plant and its flowering.**

LED PROLIGHT INFRA RED  
730nm

When the right amount of RED INFRA is present, it:

- Triggers flowering faster on long-day plants.
- Lengthen the plants.
- Increases terpenes.
- Brings heat to plants.
- Activates the Emerson effect and increases performance.

When the amount of RED INFRA is too large it:

- Causes a harmful elongation for yield.
- Risk of burning plants.
- Brings too much heat to the culture.





**PLANT MORPHOLOGY MANAGEMENT.**

BOOST UVA-UVB-IR is equipped with infrared LEDs, which applied in growth allow you to increase the space of the inter nodes.

**Use 18h/day as soon as you grow**

**INCREASE IN ACTIVE INGREDIENTS, TERPENES, RESIN AND YIELD**

BOOST UVA-UVB-IR is equipped with UVA-UVB-IR LEDs, which applied in flowering will increase the active ingredients, terpenes, resin.

Infrared will activate the EMERSON effect and increase yield

**Use 12 hours/day during flowering**

**ACCLIMATIZE YOUR CUTTINGS BEFORE GOING OUTDOORS**

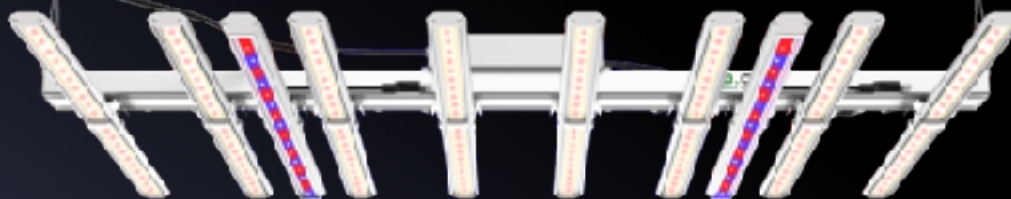
BOOST UVA-UVB-IR is equipped with UVA LEDs, which applied in growth will acclimatize your plants to the UVA present in the solar spectrum.

**Use 18H/day 3 days before putting your plants outdoors**

**STRENGTHENING PLANTS TO REDUCE PATHOGENS SUCH AS OIDIUM AND MITES**

BOOST UVA-UVB-IR is equipped with UVB LEDs, which applied in growth and flowering will activate plant defenses.

**Use 18h/day during growth and 12h/day during flowering**



**BOOST**  
UVA+UVB+IR 60

Use 1 luminaire  
BOOST UVA UVB IR of 15w 60cm  
for a culture area of  
0.8m x 0.8m

**CHARACTERISTICS OF THE**

Power: 15w  
Dimension: 60cm x 7cm x 7 cm  
Weight: 1.5 kg  
Transformation: Entered in the led bar and not variable  
Average lifespan: 6'000h with 10'000h  
Guarantee: 1 Years  
Grab: Switzerland 230v AC

**BOOST**  
UVA+UVB+IR 80

Use 2 luminaires  
BOOST UVA UVB IR of 30w 80cm for  
a culture area of  
1m x 1m et 1.2m x 1.2m

**CHARACTERISTICS OF THE**

Power: 30w  
Dimension: 80cm x 7cm x 7 cm  
Weight: 1.5 kg  
Transformation: Entered in the led bar and not variable  
Average lifespan: 6'000h with 10'000h  
Guarantee: 1 Years  
Grab: Switzerland 230v AC

**BOOST**  
UVA+UVB+IR 110

Use 2 luminaires  
BOOST UVA UVB IR of 30w 110cm for  
a culture area of  
1.2m x 1.2m et 1.5m x 1.5m

**CHARACTERISTICS OF THE**

Power: 30w  
Dimension: 110cm x 7cm x 7 cm  
Weight: 1.5 kg  
Transformation: intégré dans la barre led et non variable  
Average lifespan: 6'000h with 10'000h  
Guarantee: 1 Years  
Grab: Switzerland 230v AC

**Do not use UV without eye and skin protection**

# FIXATION BOOST

FUTURE OF GROW

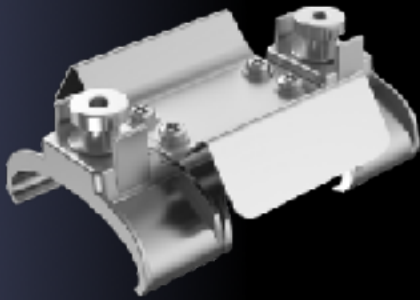
## COMPATIBLE WITH

**AIR GROW PRO II & III 600w:**  
Bring the white fixing clip  
(CLIP AIR GROW PRO II & III)

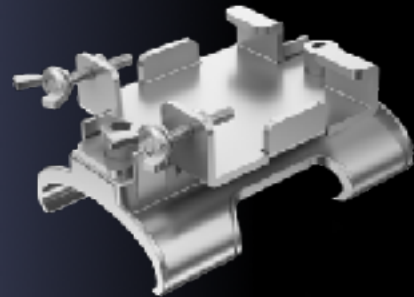
**BLACK SERIES:**  
Bring the fixing clip  
(CLIP BLACK SERIES 320 Or 400 And 600)

**FOR THOSE WHO DO NOT HAVE LIGHTING F.O.G :**  
Bring the kit of 2 suspensions  
(Suspension kit BOOST)

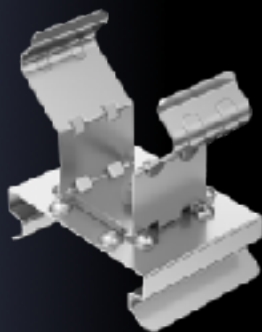
**AIR GROW PRO II & III  
600W**



**BLACK SERIES  
400W & 600W**



**BLACK SERIES  
320W**



**SUSPENSION KIT**



**IS ALLOWED ON THE SILICONE OF LED CHIPS.**

Use a clean feather duster or compressed air at low pressure.

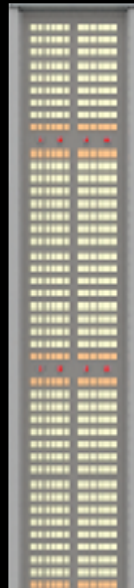
Clean the feather duster before cleaning another lamp.

A solution of mild non-abrasive soap on the silicone is tolerated.

1 teaspoon of soap for 5 liters of water.

Do not apply water directly to silicones, but to a feather duster.

Allow to dry completely before plugging.



**IS STRICTLY PROHIBITED ON THE SILICONE OF LED CHIPS**

Concentrated acids or bases.  
Mineral essences or other petroleum distillates.  
Cleaning products such as the oven vaporizer.  
Window cleaner. .  
Deascaler Do not use cloths, cloths or sponges to clean led chips.  
Do not use excessive force to clean the led chips  
Do not use physical or chemical abrasives on led chips.  
Do not use a spray cleaner.  
Do not power the light until they are completely dry.

The light must not be exposed to the following conditions:  
condensation humidity, thick fog, fog or direct spray, extreme temperatures outside its operating range

**IS ALLOWED ON THE ALUMINUM CHASSIS THE CABLES AND CONNECTORS**

Use a clean soft cotton cloth, feather duster or compressed air.

For light dirt on the heat sink, apply soapy water.

1 teaspoon per 5 liters of water with a hand sprayer  
And let stand for 5 minutes.

For the accumulation of salt due to fertilizers, it can be necessary to repeatedly apply clean water to dissolve the salts before the soapy solution is Applied.

Tilt the luminaire to remove excess water.  
Allow to dry completely before plugging.



**IS STRICTLY PROHIBITED ON THE ALUMINUM CHASSIS THE CABLES AND CONNECTORS**

Do not use steel wool, scrub pads or anything abrasive on the heat sink.

Do not use physical or chemical abrasives on the thermal radiator and cables.

Do not power the light until it is completely dry.

In order to avoid overloads on the led bars in case of defects, check your lights every day.

If a led bar is defective, reduce the light to 75%, the time to replace the led bar.

The voltage will be reduced so as not to overload and burn the other led bars.

Failure to comply with cleaning and maintenance recommendations can damage the light and result in the refusal of a warranty claim.

We reserve the right to analyze the light in case of doubt of misuse or maintenance.



# LIGHT MANAGEMENT

FUTURE OF GROW

**F.O.G**

OFFICIAL IMPORTER  
TROLMASTER

TECHNICAL SERVICE EUROPE  
Fully qualified teacher

Hydro-X PRO Environmental control system.



## Hydro-X Environment Control System (HCS-1)

The Hydro-X system is a professional quality environmental controller. Hydro-x is a modular system designed fully customizable. The installation is simple and the system is easy to expand. The Hydro-X system can control most hps and led lamps, HVAC systems, extractors, air conditioners, dehumidifiers and humidifiers, as well as CO2 generators or regulators.

With the free TroiMaster App software, the user can access all system settings and alerts anywhere and at any time.

HCS-1 is the brain of the Hydro-X system. It comes with a 3-in-1 probe Temperature / Humidity / light sensor.

For greenhouses, the PAR PPFD probe (optional) allows you to vary the lights according to the light needs programmed in the automaton.



Input voltages: **100-240, 50 / 60Hz**  
 Certifications: **ETL / FCC**  
 4-in-1: (**Temp / Moisture / CO2 / VPD**)  
 Catheter: **Max 50pcs by set**  
 CO2 Sensor: **Max 1 pc by set**  
 Smoke detectors: **Max 5 pcs by set**  
 Variation: **0-10V**  
 Water detectors: **Max 5 pcs by set**  
 Currencies: **Max 50 pcs by set**  
 Line: **300m max**  
**VPD**











256 LED lamps per line of the same power.  
 Total 2 line: 512 LED lamps in total.

40 HPS 1'000w per line of the same power.  
 Total 2 line: 80 HPS 1'000w lamps in total.

## SERVICE F.O.G

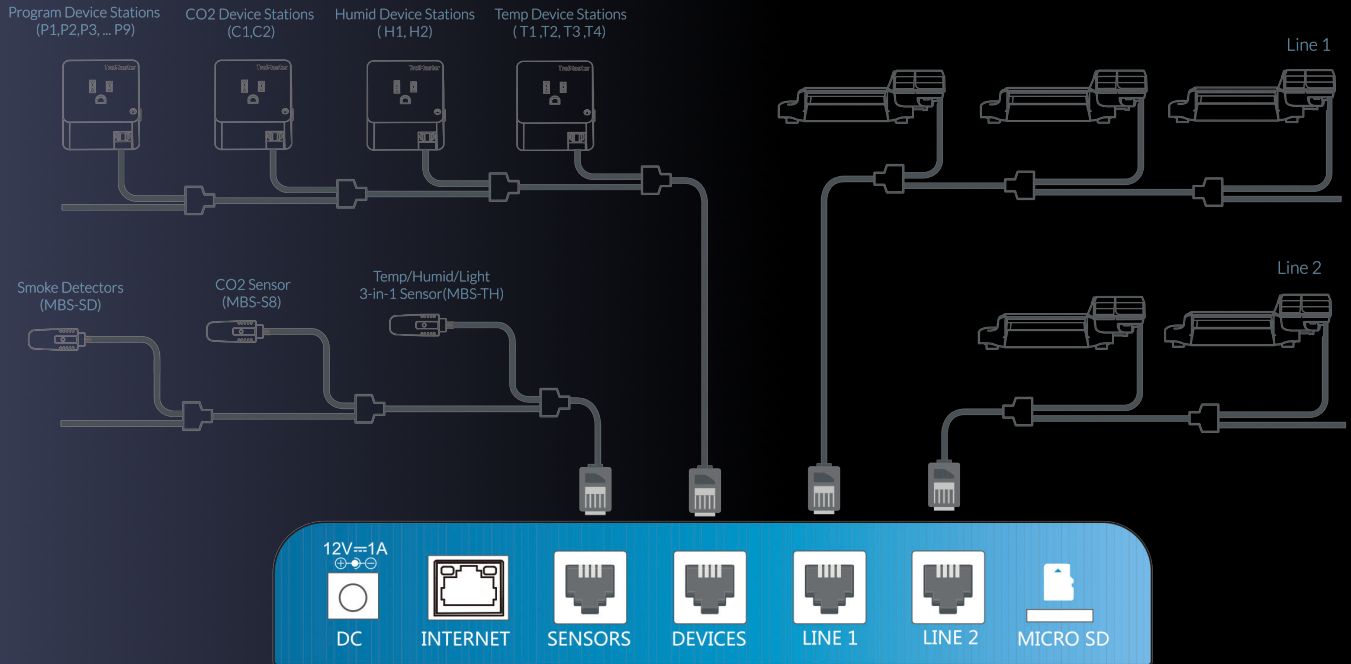
Do you have a project and want to optimize it? In order to offer a complete and professional service, we offer two types of services:

1. Sale with instructions for installation.
2. Quote for the installation of automatons with training on programming.

 <p><b>MBS-SD</b> Détecteur de fumée pour Hydro-X</p>	 <p><b>MBS-S8</b> CO2 Capteur pour Hydro-X</p>	 <p><b>MBS-TH</b> 3-in-1 Temp / humidité / capteur de lumière</p>	 <p><b>WD-2</b> Détecteur d'eau 2</p>	 <p><b>MBS-PAR</b> Full Spectrum Quantum Sensor</p>
 <p><b>LMA-14</b> Éclairage adaptateur de contrôle F</p>	 <p><b>ECS-5</b> Câble convertisseur RJ12 vers connecteur étanche PushLock</p>	 <p><b>DSC-1</b> CO2 station Device</p>	 <p><b>DSH-2</b> Humidité station Device 240V</p>	 <p><b>DST-2</b> Station dispositif de température 240V</p>

## Hydro-X Environmental Control System

Hydro-X is the smarter and versatile environmental control system on the market. It can control up to 512 led lights, 50 devices such as temperature, humidity, CO2 devices. Thanks to its incredible flexibility, everyone can easily customize their own growing room system for maximum yield.



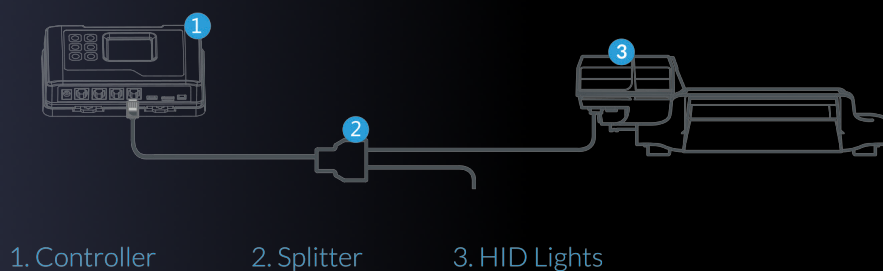
The system is provided with a 3-in-1 sensor for temperature, humidity and light detection.

A CO2 sensor is available to measure the CO2 level. When the measured value is greater than your custom setting range, a warning message will be sent to your smartphone. Smoke detectors are also available for smoke detection to warn you in case of a fire. Hydro-X helps you to monitor your growth environment perfectly.

Hydro-X is specially designed to set up daily lighting management for your lighting system. Having 2 separate lines, it allows the user to create several lighting configurations and the variation sequence according to their individual preferences.

This system allows you to effectively control your lightning system by running a program with advanced functions such as automatic dimming, overheating stop, sunrise and sunset simulation.

Hydro-X goes hand in hand with time, it has the ability to connect directly to the network with a standard network cable. After downloading the application, you can monitor and control your room environment from anywhere and at any time. You can read the historical data through the graph on your smartphone and receive warning messages if the growth environment exceeds your instructions. A micro-SD card is also available for data recording if the Internet is unavailable.

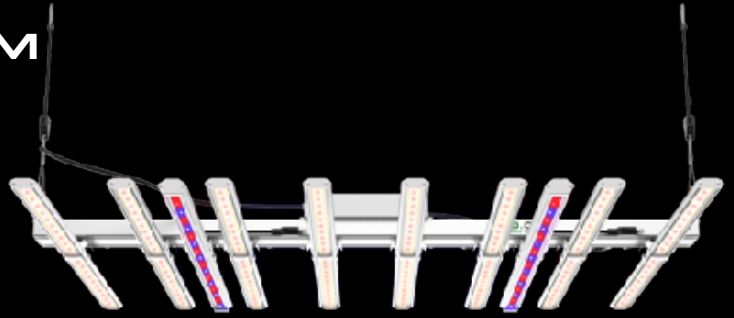


# TEST CBD 1.5M X 1.5M

FUTURE OF GROW

Test 1x LED AIR GROW PRO II 600W 2.4umol/j  
1.5 m x 1.5 m of culture per light.  
49 plants in a 6 liter pot / light ( CRITICAL )

Average of 22 to 35 gr per plant.  
Total 1,075 gr on 44 plants. 5 dead plants



## ROOTING

Light at 100 cm of plants - 100% at light  
Or

Light at 50 cm of plants - 25% light

**EC 1.1 - 1.2 / PH 5.8**

## GROWING

Light at 100 cm of plants - 100% at light  
Or

Light at 50 cm of plants - 50% light

**PLANTS 25 CM HIGH EC 1.4-1.8 / PH 5.8**



## PRE-FLOWERING

150cm x 150cm

Light at 100cm of plants - 100% light  
Or

120cm x 120cm

Light at 50cm of plants - 75% to 100% light

**EC 1.8-2.2 / PH 6 - 6.2**

## FLOWERING

150cm x 150cm

Light at 35 cm of plants - 100% light  
Or

120cm x 120cm

Light at 30cm of plants - 100% light

**EC 2.2-2.4 / PH 6 - 6.2**

The goal is to gradually bring light to the plants without burning them.

A burning reaction will result in dry and brown leaf edges.

A surplus light intake will result in a dark green to light green discoloration of the leaves until yellowing.

**If by increasing the EC you are unable to make up for the deficiency, it is confirmation that there is too much light for the plant.**



# FREQUENT ERRORS

FUTURE OF GROW

The culture with LED light is different, plants not receiving infrared from HPS lamp sweat less.

The most common case is over-watering, followed by a lack of nutrients.

The bottom leaves begin to turn yellow, the plant remains for several days in a substrate that is too moist and refuses to drink.

AIR GROW PRO II 600w produces at 20 cm about 1,000 PPFd which is 2 x more light power than an HPS 1,000w at 1m, so it will be necessary to increase the intake of nutrients quickly so as not to be in deficiency.

**The AIR GROW PRO II 600w light is 1m from the top of the plants.**

Growing space is 1.5m x 1.5m. with 49 Pots of 20x20cm  
100% coconut substrate

- 1st watering 20 liters EC of 0.9 and PH 5.8
- 2-4 days later, watering 20 liters EC 1.1 and PH 5.8
- 2-4 days later, watering 30 liters EC 1.3 and PH 5.8 (10 liters over-watering)
- 2-4 days later, watering 40 liters EC 1.3 and PH 5.8 ( over-watering of 20 liters and onset of deficiencies)
- 1 week that the plants no longer drink and turn yellow from the bottom.
- The substrate must be dried by increasing ventilation and extractions.
- Watering 20 liters EC 1.8 and PH 5.8
- Wait for the substrate to dry and then water with 20 liters and EC 2.0 and PH 5.8
- 2-4 days later watering EC 2.0 and PH 5.8 the plants are green.
- 3 days after watering EC 2.0 and PH 5.8 the plants are dark green.
- 2 days later, flowering at 12 p.m., the plants are 20 to 25 cm high, the lamp is placed 40 cm from the plants.

**How to make up for over-watering followed by a deficiency.**

1. Raise the lamp if it is less than 80cm or 1m from the top of the plants.
2. Add fans to dry the plants and make them sweat.
3. Increase extraction.
4. Wait until the substrate is at 35% humidity before watering again in small quantities 0.4 liters of water per plant.
5. Increase the EC to 1.6 - 2.0 ( EC 0.4 - 0.6 in addition to the previous watering)
6. Water with smaller amounts of water. (every 2 - 3 days)
7. Use a root stimulator.



## ROOTING

D 5 = EC 1.3 PH 5.8  
20 liters  
All the 3 days



## CARRANCES

D 9 = EC 1.3 PH 5.8  
20 liters  
All he 3 days



## ON WATERING CARRANCES

D 12 = EC 1.3 PH 5.8  
30 liters  
All the 3 days



## INCREASE IN NUTRIENTS

EC 1.8 - 2.2 PH 5.8  
20 liters  
All the 3 days

# PHARMACEUTICAL CANNABIS TIPS

## FUTURE OF GROW

### Temperatures

In HPS culture the plants are irradiated with infrared and heat created by the bulbs.

Plant temperature will often be 2 to 4 degrees above room temperature.

In led culture the effect is opposite, having no infrared and little heat released towards the plants, the temperature will be about 2 degrees lower than the ambient temperature.

This difference can lead to:

- Decreased plant transpiration
- Reduced water intake requirements.
- An increase in nutrient requirements.

Too low a temperature can also result in the appearance of purple trunks and a slowdown in metabolism.

We recommend:

- An ambient temperature during the day of 27° 28° degrees and 21 -22° degrees at night.
- Decrease the water supply at the start of growth so as not to drown the roots.

### Fertilizers

The LED technologies used by F.O.G are very efficient and powerful compared to HPS bulbs.

You will therefore have to compensate for this contribution of luminosity, by increasing all the fertilizers, to avoid deficiencies.

A plant with yellowish leaves is a plant that does not receive enough nutrients to assimilate all the light pressure, so it will compensate by fetching the missing nutrients from the leaves..



### Nitrogen deficiency

- Plant growth is slowed down.
- The leaves turn yellow starting with the lower parts of the plant.
- The yellowish color begins at the tips and extends to the center of the leaf.
- Flowering and yield are seriously reduced.
- Seed production is seriously reduced.
- Massive defoliation (leaf drop) after severe chlorosis.

### Advices

Increase nutrient intake (from 0.2 to 0.2 EC) depending on the progress of your deficiency.

If the supply of nutrients does not fill the deficiency, raise your light or lower the light intensity until the deficiency is filled, then increase the light supply again by increasing the nutrients.

Never start flowering with deficient plants.

If leaf edges turn yellow or dry, decrease light intensity until your plants grow taller and don't burn.

Rinsing between waterings should be done meticulously.

The one in three watering method tends to starve plants after flushing if previous EC was low or water only.

Example in flowering:

Watering with fertilizer at each watering: EC 1.8 Watering with fertilizer: 1 out of 3 waterings with water = cycle of 1x WATER and 2x EC.2,2 In watering 1 out of 3, the increase in EC in the first two waterings makes it possible to preserve nutrients in the soil and not to deficiency during watering with water.

**TEST: TUBES FLUORESCENT PHILIPS AU NEON VS F.O.G**

**DEPARTMENT OF BIOLOGY MOLECULAR VEGETALE DE L'UNIL** Lausanne in Switzerland.

- Test carried out by: Tissot Blaise at the University of Lausanne DBMV Quartier UNIL-Sorge Building Biophore
- Test carried out on: Arabidopsis
- Current lights: 4 fluorescent tubes 830 of 36w (total 144w)
- Lights used in F.O.G test: 2 F.O.G luminaires of 30W (total 60w)
- Energy savings of -58% with F.O.G led lights.
- About 10 days ahead of seed production with F.O.G led luminaires

**TEST: GAVITA VS F.O.G** Report on page 18

**KDC ORGANIC** Switzerland. Test carried out by: Mike Arlettaz

Optimization of energy consumption in indoor CBD culture.

Old lights: GAVITA 1'200W double ended.

THC 0.30% - CBD 7.6%

New led lights : F.O.G AIR GROW PRO II 600W 2.3umol/j.

THC 0.44% - CBD 9.9%

- 50% decreases in energy savings of light and cooling needs.
- Average 30% increase in yield, active ingredients and terpenes.
- 70% reduction in pathogens.
- Yield 800 gr to 1'100 gr per 600W led lamp on 1.5m x 1.5m.

**TEST: LUXX LIGHTING VS F.O.G**

**JUNGLE GROW SHOP** Ipsach In Switzerland.

CBD test carried out at the show room in Ipsach with 30 cuttings per lamp (CBD V1 stings from ESSENCE VERT)

Cultivation area: 1.5m x 1.5m / lamp.

1x F.O.G AIR GROW PRO III 600W HYER RED: 927 gr. ( 1.54 gr/w )

3x F.O.G AIR GROW PRO 200W: 850 gr. ( 1.41 gr/w )

1x F.O.G AIR GROW PRO III 600W HYPER BLUE: 761 gr. ( 1.27 gr/w )

1x LUXX LIGHTING 1'000W double ended: 760 gr. ( 0.76 gr/w )

**TEST: FLUENCE VS F.O.G**

**GREEN MIND SA** Switzerland. Test carried out by: Mike Santos.

CBD test carried out with 49 limoncello cuttings per light.

Growing area 1.5m x 1.5m / 600w led light.

Limoncello is not a very productive CBD variety, however we find that the Hyper red light has increased yield by 10%.

1x F.O.G AIR GROW PRO III 600W HYER RED 2.75 umol/j: 808 gr. ( 1.35 gr/w )

1x F.O.G AIR GROW PRO II 600W 2.3 umol/j: 693 gr. ( 1.15 gr/w ) 1 Plant death.

1x FLUENCE SPYDER 640W 2.3 umol/j: 733 gr. ( 1.11 gr/w )

**TEST: GAVITA VS F.O.G**

**PHYTOCANN** Switzerland. Test carried out by: Gabriele Guglielmi.

Replacement of lights GAVITA 400W HPS growth with F.O.G X-VEG 200W led lights.

Replacement of lights for cuttings with F.O.G X-CLONE PRO 30 leds

- Increased speed of growth and rooting.
- 50% energy savings.
- Reduction of pathogens.
- Better plant health.

**TEST: OCL VS F.O.G**

**EXTRACT LAB** - Switzerland. Test carried out by: Arnaud Arent

Optimization of energy consumption in indoor CBD culture and increase of active ingredients.

Old lights: OCL HPS 600W 450gr. - 0.75gr/w THC 0.51% - CBD 10,6%

New lights: F.O.G AIR GROW PRO II 600w 2.3 umol/j 840gr. - 1.40gr/w THC 0.57% - CBD 15,4%

- Improvement of about 30% on CBD active ingredients
- Analysis available on request and on our BLOG section of the website.



# ACHIEVEMENTS AND RESEARCH

## FUTURE OF GROW



### HEPIA site LULLIER research CBD Laboratory Plants & Pathogens.

Test and research on CBD cannabis and strawberries 90% reduction in powdery mildew with UVB.

- F.O.G UVA-UVB-UVC light spectra tests
- Active ingredients.
- Disinfection.
- Morphology.
- Pathogens.

### UNIL: University of Lausanne, Department of Plant Molecular Biology.

Test carried out by: Tissot Blaise at the University of Lausanne DBMV UNIL-Sorge district Biophore building Replacement of neon tubes with X-CLONE PRO 30w full spectrum. 58% energy savings in 12 plant biology research laboratories.

Replacement of 240 600w HPS lights by 120 600w led lights in the greenhouses. 50% energy saving Savings on light energy consumption. (600,000kw/year)

About 10 days ahead of seed production with F.O.G led lights on Arabidopsis

### UNIGE: University of Geneva, Department of Molecular Biology of Plants.

- Creation of custom research rooms with stainless steel cabinets and full-spectrum LED lamps.

### Crousaz flowers - Switzerland test on roses in the greenhouse.

- Research and testing of spectra with prototypes.

### MON JOINT - Switzerland cannabis CBD project

- Energy savings optimization in indoor CBD culture.
- F.O.G X-VEG 200w for mother plants
- F.O.G X-CLONE PRO 30 for cuttings.
- TROL MASTER HYDRO-X for managing X-VEG 200w led lights.
- Rooting in 10 - 12 days.
- By improving the quality of the cuttings, this results in a 20% increase in flower yield.
- 50% energy saving.
- 50% reduction in lamp heat production.

### STARBUDS - Switzerland cannabis CBD project

- CBD project in vertical culture.
- Study and realization of a complete project for a double-storey vertical culture.
- Bespoke vertical shelf, irrigation, ventilation, electricity, lightning, automation.
- 50% reduction in electricity consumption with F.O.G AIR GROW PRO II 600w LED lights
- 50% reduction in the production of heat from the lamps.
- Cultivation area doubled.

### HEIDI FLOWERS - Switzerland cannabis CBD project

- Energy savings optimization in indoor CBD culture.
- Replacement of OCL 1,200w double ended lights with F.O.G AIR GROW PRO II 600w led lights.
- 50% energy savings.
  - Light automation with TROLMASTER PLC.

### CBD SWISSMADE - Switzerland cannabis CBD project

- Energy savings optimization in indoor CBD culture.
- Energy savings of -50% with F.O.G X-VEG 200w LEDs for mother plants.
- Increased growth and rooting speed.
- Improved plant morphology with more branching and tighter internodes.



## GREEN MIND SA - Switzerland cannabis CBD project

Energy savings optimization in indoor CBD culture.

- F.O.G X-VEG 200w for mother feet room
- F.O.G X-CLONE PRO 30 for the cutting room.
- Rooting in 10 - 12 days.
- 50% energy saving.
- 50% reduction in lamp heat production.

## SUISSE CBD SA - Switzerland cannabis CBD project

- Energy savings optimization in indoor CBD culture, climate and Co2 management.
- Installation of a TROLMASTER HYDRO-X PRO controller for the management of extractors and CO2.
- Improved yield and reduced pathogens.
- Climate stabilization.

## CHILLAWEED - Switzerland cannabis CBD project

- Energy savings optimization in indoor CBD culture.
- F.O.G AIR GROW PRO III 600W hyper blue.
- 50% reduction in energy consumption compared to HPS.
- Average increase of 30% on yield, active ingredients and terpenes.



## FACT FARM - Italia cannabis CBD project

- Energy savings optimization for a flowering room, growth and CBD cuttings.

Replacement of GAVITA 1,200w double ended flowering lights with led lights

F.O.G AIR GROW PRO II.

- 50% energy savings.
- Increased growth and root speed.
- Average increase of 30% on yield, active ingredients and terpenes.
- Better plant health.

Replacement of 58w NEON fixtures for cuttings with F.O.G X-CLONE PRO 30w fixtures

- 48% reduction in energy consumption.
- Increased growth and rooting speed.
- Better plant health.

Replacement of GAVITA 400w MH grow lights with F.O.G X-VEG 200w led lights

- 50% energy savings.
- Increased growth and root speed.
- Better plant health.



## SMC THERAPEUTICAL HEALTH CENTER - Portugal cannabis THC project.

Integral installation of led lights for the vegetation room of mother plants with led X-VEG 200w.

- Increased growth and root speed.
- **F.O.G** Light Spectrum Tests

## TERMS AND CONDITIONS

These T&Cs define the contractual relationship:

### BETWEEN

Sciola Import SARL  
Company, whose registered office  
is located at Ch du châtelard 5, CH  
1860 in Aigle CHE-293.814.511  
Hereinafter referred to as "We";  
FIRSTLY ;

### AND

Any natural or legal person  
making a purchase from Us for  
themselves or for a third party,  
Hereinafter referred to as "You,;"  
ON THE OTHER HAND.

#### ARTICLE 01.VALIDITY

Valid from 03-10-2014.

#### ARTICLE 02. CONCLUSION OF CONTRACT

2-1 The contract between the professional customer and our company comes into force by an order from the customer placed by telephone, e-mail, fax, internet, sms, or in person and by its acceptance by SCIOLA IMPORT in the form of the delivery or order confirmation. By payment the customer has read and accepted the 11 conditions. All customers can read the T&Cs published and permanently available on Our website ([www.sciolaimport.com](http://www.sciolaimport.com) and [www.thefuturofgrow.com](http://www.thefuturofgrow.com)) and catalog. When quotes or offers by email, the T&Cs are always attached to the offer by email. Consequently, any order entails Your full and complete acceptance, without exception or reservation, of the conditions set out in this contract. Anyone making a purchase is considered to have full knowledge of it and cannot deny this fact in the event of a dispute. Possibly subject to modification, it is understood that it is the T&Cs in force at the time of registration of each order that are authentic. In the event of a dispute, an amicable solution is sought and, failing that, any dispute of any nature whatsoever is always within the exclusive jurisdiction of the courts in whose territory Sciola Import is domiciled and is therefore subject to Swiss law.

2-2 Our acceptance of Your order forms the sales contract between Us and You, governed by the T&Cs defined by this contract. We then process it in accordance with the clauses provided for in this contract. In other words, when registering Your order – duly completed with all Your mandatory contact details – You expressly accept the conditions of sale, delivery and warranty. This operation constitutes Your signature which validates Your order and implies full acceptance, without reservation, of these GCS.

2-3 All Our contracts, and all Our sales, deliveries and other services, are entirely subject to these GCS, unless they have been modified or supplemented by written agreements. The general terms and conditions of Our business partners only apply if We have expressly acknowledged them in writing.

2-4 Any information or technical data relating to individual goods communicated by the manufacturer thereof is the responsibility of the latter. The technical specifications and/or characteristics of the products delivered may differ from the data and information provided by the manufacturer. We cannot be held responsible for this.

2-5 All the information communicated on the goods during the ordering process is indicative – subject in particular to design changes (technical, in particular) aimed at improving the quality, functionality or performance thereof, as well as errors in descriptions or illustrations. Data sheets and photographs, for example, therefore do not constitute an offer in the legal sense of the term, so that only the order placed between You and Us constitutes such an offer.

2-6 For manufacturing reasons, slight differences/variations may occur between an LED and its technical description, as well as between two theoretically identical LEDs (brightness, color temperature, cri, etc.). Insofar as these differences do not exceed 12%, the customer undertakes not to make a complaint. In terms of color temperature in particular, the customer accepts a tolerance margin of plus or minus 300 K.

2-7 It is possible that over time, the silicones of the led strips, reflectors, lenses of the luminaires may yellow or change colors with wear. Such a case therefore does not entail any support from Us during the warranty.

2-8 Any defect in a portion of LED tape or luminaires less than 5% of its total length is excluded from the warranty conditions. Such a case therefore does not entail any support from Us, this is part of the natural wear and tear of the led components.

2-9 Each roll of LED tape comes with approximately 10-20cm of wire.

2-10 When ordering led strip, the waterproof version can have 100-200k of difference with the non-waterproof version of the silicone that surrounds the led.

2-11 Yields or other data from horticultural led lights are purely indicative and do not bind our company, growers or store.

2-12 The sale of horticultural led luminaires for illegal production is prohibited.

2-13 The levels of thc, CBD, terpenes, resin and yield (weight) cannot be guaranteed by our company more than 26 factors influence the yield on production: Day temperature, night temperature, humidity, VPD, water temperature, root temperature, type of substrate used, genetics, water supply, nutrient supply, nutrient deficiencies, pests, diseases, ventilation, co2 level, air renewal, temperature variation, humidity variation, root system density, grow space size, lamp height, plant stress, pot size, number of plants per lamp, growth, pH, EC, root oxygenation, water oxygenation, size, methods used by grower, water quality, range of fertilizers used, experience of the grower.

#### ARTICLE 03. RETENTION OF OWNERSHIP

3-1 The items delivered to you remain Our property as long as You have not fulfilled Your obligations towards Us and, in particular, the total amount of the invoice corresponding to the order You have contracted with Us.

3-2 The responsibility for the risk of loss or destruction of these items is however yours upon delivery, even if you are not yet the owner.

3-3 In the event of late or non-payment despite reminders, in accordance with the indications of deadlines clearly specified on Your invoice attached to the items ordered upon delivery, and in the event that no reconciliation could have been found, We reserve the right to require You to duly return such items to Us at Your expense in their unopened organ packaging.

Otherwise you will be charged for packaging costs. Items kept, tested and used for more than 3 months will be charged 50% for the refurbishment of components or put up for sale as used items.



#### **ARTICLE 04. PRICE POLICY**

4-1 The selling prices of Our own articles or services are expressed in Swiss francs [CHF], including VAT applicable in Switzerland [VAT (7.7%), excluding postage and packaging. Calculated according to the place of delivery of Your order [Switzerland or outside Switzerland] and according to the shipping method chosen, the postage, packaging and other possible additional costs are in all cases always invoiced to you in addition to the total amount of Your order [the price applicable to each individual package being sent].

4-2 The price announced at the time of confirmation of Your order is guaranteed.

4-3 All invoices are payable in Swiss francs [CHF].

4-4 We reserve the right to modify Our prices at any time and without notice. We also reserve the right to adapt Our prices according to the fluctuation of exchange rates and that of the costs of materials. Items are invoiced at the price in effect at the time of registration of the order.

4-5 We invite Our partners benefiting from a special discount to place an order via Our email address (sciolaimport@gmail.com).

4-6 For any personalized product, a deposit of 80% of the total price communicated is requested when ordering.

#### **ARTICLE 05. SHIPPING TIMES**

The information communicated concerning the time range in which Your order is likely to be shipped to You is only indicative. As such, they cannot be guaranteed. We cannot be held responsible in the event of a delay in delivery due to any external event that does not allow the products to be delivered within standard deadlines. In other words, the delivery times communicated for information purposes cannot give rise, on the part of the customer, to the cancellation of the order, nor to a claim for damages of any kind.

#### **ARTICLE 06. DELIVERY TERMS AND POSTAGE AND PACKAGING COSTS**

Your purchases are delivered to you at the name and delivery address that You indicated during the ordering process. All Our products are shipped by La Poste or any other delivery service and under the customer's responsibility. From the moment the goods leave Our warehouses, the delivery times are then the responsibility of Our partners and We cannot be held responsible for the consequences due to a delay in delivery. A delay in delivery does not give the customer the right to withdraw from the contract or to request compensation, especially if it is a custom order or a large batch for a project. We reserve the right to withdraw from the contract if We cannot obtain supplies from Our supplier or only under difficult conditions. If necessary, We are obliged to inform the customer of this immediately – and to reimburse him in the event of prepayment without damages.

6-1 Delivery problem

In the event of a problem [damaged package, already opened or damaged goods], You must, upon receipt of the package, inform immediately the delivery company. We cannot be held responsible for this.

6-2 Disponibility

If the item ordered is available in stock, the delivery time is 1 to 5 working days for all orders placed before 1 p.m. [working day]. In case of out of stock, or for any personalized item, the delay is approximately 30 working days. Delivery times do not begin until the order is confirmed and any down payment has been made. In the event of force majeure or exceptional events delaying or prohibiting the delivery of the goods, We are released from all liability. In any case, delivery within the deadlines communicated can only take place if all Your obligations towards Us have been fulfilled. A delay in delivery does not give the customer the right to withdraw from the contract or to request compensation.

6-3 Methods of delivery of orders and postage and packaging costs

For any shipment, You must pay postage and packaging costs in addition to the total amount of Your order.

For any delivery by Us, a contribution of five centimes per kilometer [departure from Our warehouses, of course] is requested.

In the case of a withdrawal of the goods directly from Our depots by You, you are not charged anything, that goes without saying.

For any delivery in Switzerland, all Our products are sent by La Poste or any other delivery service. Shipping costs are a flat rate of 10 Swiss francs for standard size shipments and 30 Swiss francs for large packages [the rate that applies to each individual package sent, s 'hears]. We reserve the right to adjust postage and packaging costs at any time depending on the weight and size of the package. No cash on delivery is possible. If You opt for special services [express parcel, for example], the costs of these services are payable by You.

For any delivery outside Switzerland, shipping, packaging and transport costs, as well as any customs fees and specific taxes, are Your responsibility and are invoiced to You in addition to the total amount of Your order. [According to the law in force in the country of destination of Your order, these may be duly claimed from the recipient of the package, even if You were to be the sponsor without being the recipient. It is therefore Your responsibility to inform yourself with the competent authorities of the country of the recipient of Your order.]

#### **ARTICLE 07. PAYMENT METHODS AND CONDITIONS**

For any person domiciled in Switzerland, upon receipt of the equipment, You are required to make payment within 30 days net [maximum] of the invoice for all the items in Your order. After this period, reminder fees ranging from 20 Swiss francs are requested. For any personalized product, a deposit of 80% of the total price communicated is

requested when ordering. In the event of late or non-payment despite reminders, in accordance with the indications of deadlines clearly specified on Your invoice attached to the items ordered at the time of their delivery, and in the event that no reconciliation could be found, We reserve the right to require from You that these items are duly returned at Your expense. All costs caused by late or non-payment [including costs of legal action, lawyers, courts, if applicable], as well as interest on late payment, are the responsibility of the buyer. Payment for orders contracted by persons residing outside Switzerland must be made in advance, in Swiss francs [CHF], by bank transfer.

#### **ARTICLE 08. RETURN POLICY**

No withdrawal period can be granted following the validation of Your order. In the event of a problem [damaged or already opened package], You must, upon receipt of the package, inform the delivery company directly. We cannot be held responsible for this. You have the option of returning the item(s) that You have ordered to us under certain conditions expressly set out in this contract [any return of goods outside of these conditions and our agreement is excluded].

In the case of merchandise that does not comply with Your order, You can return it to us, accompanied by a photo and a detailed written note, within 7 days of receipt. No returns are accepted after this time. The merchandise must be returned to us in perfect condition – not used or damaged – complete and in its original packaging. Subject to compliance with all of these conditions, We undertake to send You, as soon as possible and at Our expense, the replaced goods which now comply with Your order.

For any other return, Our prior express agreement obtained and subject to compliance with all the conditions stipulated in this contract, a credit note corresponding to the value of the returned item(s) is established. A percentage of 30% is deducted from the net value excluding tax of the equipment for return, management and reconditioning costs. No credit note can give rise to a refund. Credit notes are deducted from the total amount of Your next purchase.

No return authorization is granted for items that are custom-made, personalized, modified, "prepared", specially ordered for a project or subject to mark-ups or special conditions.

So that We can respond to Your request and process it as soon as possible, You must attach to Your shipment [photo and detailed written note included] a copy of the invoice sent to You by parcel. All items should be sent to the following address: Sciola Import – ch du châtelard 5 – CH 1860 in Aigle. After a period of 60 days once the goods have been received, no complaints are accepted – except for any case meeting the warranty conditions defined by this contract.

#### **ARTICLE 09. GUARANTEE**

We grant a 24-month warranty [from the date appearing on Your invoice or delivery note] on all Our products – unless otherwise indicated on the item itself. Are categorically excluded from the warranty [non-exhaustive list]:

any wear parts, normal wear, excessive wear;

the normal decrease in power and luminosity;

damage due to mishandling/handling errors, falls, shocks or blows;

equipment that has suffered damage, repairs, modifications or transformations – having been incorrectly assembled, installed or maintained;

defects appearing following any faulty intervention, defects due to negligence, misuse, non-compliance with Our maintenance and use instructions;

non-waterproof products that have been used in a humid or outdoor environment [these products being exclusively intended for indoor and dry use];

damage and defects caused by natural wear and tear, by external accident or by technical intervention by a third party;

damage caused to any third party or property by any material provided by Us;

products returned broken or damaged;

- returned products marked with ink or any other substance [We do not accept under any circumstances to take back under warranty a product on which any annotation has been made

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- means of a pen or any other writing or marking instrument].

For any defect occurring after delivery of the goods to the customer, We have the right to repair or replace the defective products. The customer is not entitled to a modification or a price reduction. A repair occurring within the framework of the guarantee does not in any way extend the duration of the latter – which therefore remains at 24 months. For extended warranty and/or service contracts, the corresponding provisions apply additionally. The guarantee of Our products is valid only on presentation of the invoice or the delivery note. The 24 month warranty covers only the elements of the repair of the defective product - Most of the components are interchangeable with connectors and returned to customers who will change them themselves, all the conditions thereof being validated.

During the warranty period, spare parts are sent to customers who will change them themselves, the products are replaced as far as possible, this does not include disassembly and reassembly at the customer's site. The products are sent and delivered to Sciola Import SARL at the customer's expense.

If it is impossible to repair or replace a product, the customer will be given a product of equivalent performance and perhaps with a different design and measurements. The manufacturer may ask to return the luminaires in order to examine them and find a solution to the problems. The customer agrees not to claim anything as damages. We cannot estimate the time for the analysis and replacement of the luminaires. The customer agrees not to claim any damages or loss of profit.

Insofar as permitted by legal provisions, liability for damages is excluded. In particular, Sciola Import SARL is not liable for damage caused to an installation by the products sold, defective or resulting from improper installation / use or damage attributable to natural wear and tear. Similarly, Sciola Import SARL assumes no responsibility for the collateral consequences of a case of warranty or malfunction of a product (e.g. labor, loss of profit, damages, rental of nacelle, fire, rent, salary, production or any damage attributed to an installation. the yields obtained with horticultural led luminaires are not guaranteed, more than 26 factors influence plants, yield, THC, CBD, (Daytime temperature, nighttime temperature, humidity, vpd, water temperature, root temperature, type of substrate used, genetics, water supply, nutrient supply, nutrient deficiencies, pests, diseases, ventilation, co2 rate, air exchange, temperature variation, humidity variation, root system density, grow space size, lamp height, plant stress, size pots, number of plants per lamp, growth time, pH, EC, root oxygenation, water oxygenation, size. we cannot guarantee a production minimum. The values listed on our catalog, website or other media, are purely indicative and in no

way imply the stores, distributor, manufacturer, Sciola Import SARL u F.O.G. The customer agrees not to claim anything. In the event of defects in luminaires Sciola Import assumes no liability for damages for loss of profit or other. We advise you to take out liability insurance and to have spare equipment available.

The products are guaranteed by the manufacturer, from the date of payment to the manufacturer, in the event of transfer of activity by the manufacturer, the guarantee falls and cannot be claimed from Sciola Import SARL.

In the event of unavailability of the equipment to be replaced, We reserve the right to replace it with similar or equivalent equipment, without the possibility of claiming compensation or compensation. In all cases, the delivery costs remain at Your expense. We do not take under warranty labor costs related to replacement operations or defective products due to incompatibility problems between products supplied by Us and third-party products.

ATTENTION :

- LED lighting requires a stabilized and filtered power supply designed for this type of technology. For a 24 V LED strip, for example, the required low voltage supply is obtained by using a 220 V/24 V converter [or transformer]. For any LED product, it is therefore imperative to scrupulously observe the prescribed indications, at least may affect the correct operation and life of the installation. Please also note that Our warranty conditions only apply if the transformers/converters are in conformity with Our LED products and have been purchased from Us.

- All electrical products must be properly grounded and connected by a professional.

- The installation of LED strips requires the wearing of suitable gloves [latex, vinyl...].

- In order to guarantee optimal dissipation of the heat generated by the LED strips, it is imperative to use a suitable aluminum profile and not to exceed the recommended length in one piece. We only warrant Our products on this express condition.
  - In order to guarantee the sealing of an installation in a humid environment, it is necessary to use a suitable aluminum profile and to follow the sealing procedure during its installation. It is also imperative not to exceed the length of a single piece recommended.
  - Applying a bead of silicone in the grooves, as well as at each end, of an LED profile is a sine qua non condition to ensure the advertised degree of tightness. Without a silicone seal, We do not guarantee the tightness of Our products.
  - DALI controllers: In order to avoid any risk of offset, it is advisable not to go beyond one module per push-button.
- Failure to comply with all of these instructions is the sole responsibility of the purchaser.

## ARTICLE 10. LEGAL INFORMATION

### 10-1 Legal Notice

If You have any comments or questions concerning Sciola Import, SARL You can contact us by sending us an email – at [sciolaimport@gmail.com](mailto:sciolaimport@gmail.com) – or by writing to us at the following postal address: Sciola Import - Ch du Châtelard 5 - CH 1860 eagle. We are at your disposal for any information

### 10-2 Applicable right

All the clauses appearing in these T&Cs, as well as in all the purchase and sale transactions referred to therein, are subject to Swiss law. It applies to any possible dispute. The place of jurisdiction and the place of performance are in Aigle [VD]. However, our company always strives to settle amicably any disputes that may arise between it and its customers.

### 10-3 Responsibility

We undertake to make every effort to provide you with the best possible quality of service, in accordance with the standards and values of Our company. Nevertheless, We cannot be held responsible for any delay in the delivery of the items ordered and in particular in the case of any delay in the delivery of these items by Our parcel delivery partners [La Poste or any other local delivery service or international].

We cannot certify minimum yield with horticultural led luminaires.

### 10-4 Protection of personal data

Whatever the nature of the personal data concerning you which We come to know, We undertake to treat them with the strictest confidentiality, to ensure their protection and to make no use of them other than that necessary for the execution of Your requests or the improvement of the services likely to be offered to You. In particular, we may use

them to provide you with: information, promotional information, offers commercial and services. However, you can at any time exercise Your right of access, rectification or opposition to this data by writing to us an email - at [sciolaimport@gmail.com](mailto:sciolaimport@gmail.com).

### 10-5 Copyright and Credits

Any content produced by Sciola Import – text, commentary, illustration, photography, etc. is Our strict property, protected by national and international legislation on intellectual property. As a result :

Any use, adaptation or representation in any form and by any means whatsoever is strictly prohibited and subject to copyright. You are not authorized to copy, save, reproduce or print this content for any use other than that which allows you to make Your purchases under this contract.

- We reserve the right to take action against You if any of these contents, whatever their nature [image, text, code, etc.], were used without Our express written authorization for purposes other than those mentioned in this contract. Any use, adaptation or representation in any form and by any means whatsoever is strictly prohibited and subject to copyright. You are not authorized to copy, save, reproduce or print this content for any use other than that which allows you to make Your purchases under this contract.

- We reserve the right to take action against You if any of these contents, whatever their nature [image, text, code, etc.], were used without Our express written authorization for purposes other than those mentioned in this contract.

### 10-6 Pictures and photographs

The images, diagrams and photographs of products, as well as the photographs of achievements, are presented for information purposes only and are not contractual.

## ARTICLE 11. ILLEGAL CULTURE

11-1. The products obtained through Sciola import will not be available, delivered, prepared, processed, manufactured, offered for sale, sold, delivered, transported or in stock with the buyer, if Sciola import has knowledge or has serious reasons to suspect that these products are intended to be used to commit criminal offenses under the law on opium, cannabis, hemp in Switzerland or internationally.

11-2. The buyer is deemed to have knowledge of the offering for sale, sale, delivery or supply of products supplied by Sciola import to another buyer guilty of the aforementioned professional or commercial cultivation of hemp or on a large scale. and/or organized, or facilitation of illegal hemp cultivation.

11-3. With respect to the duty of care towards Sciola Import, as the purchaser of the products supplied by Sciola Import, and to prevent Sciola Import from being guilty of violation of the law on opium, cannabis, hemp in Switzerland or internationally.

The buyer declares when placing his order by Sciola Import, the products ordered by him must not be made available, delivered, prepared, processed, manufactured, offered for sale, sold, supplied or transported for the purposes of professional illegal cultivation. or commercial hemp or large-scale and / or organized.

11-4. If the buyer becomes aware in any way that the products purchased or delivered by him will be used for the large-scale and / or organized professional or commercial cultivation of hemp, illegal, as mentioned in this notice of non-responsibility, he undertakes, by purchasing products from Sciola Import, to immediately inform Sciola Import about this.

11-5. The buyer agrees not to export products to countries where the importation of products under the laws of the country constitutes a criminal offense. If the buyer violates this obligation or violates the foreign criminal provisions relating to the possession or use of products under the laws of the country, he will act in accordance with paragraphs 6, 7 and 8 of this disclaimer.

11-6. If the buyer acts contrary to the provisions of this exclusion of liability, Sciola Import will immediately terminate the contract and will not proceed with the delivery. All professional contracts with the buyer in question will be terminated immediately. Sciola Import is then entitled to charge all damages, including loss of profit, to the buyer. In this case, the buyer is not entitled to compensation.

11-7. In the event of the ordering, purchase, sale, delivery or making available to professional or commercial customers, large scale or professional, of products ordered or obtained by Sciola Import, in violation of this disclaimer responsibility and / or Swiss legislation on opium and cannabis, With regard to products and / or cannabis products, it is responsible for all damage caused to Sciola Import as a result of investigations or criminal proceedings, as well as damages related to administrative measures taken against Sciola Import and / or its employees.

11-8. The term “damages” includes all direct or indirect damages, material and immaterial damages, business interruptions, consequential and other damages that Sciola Import will suffer as a result of a judicial investigation and / or lawsuits and / or administrative measures. These losses also include, but are not limited to, loss of profits, costs of legal and other types of advice, damage to reputation, loss of property as well as material and immaterial damage.

Once the product is purchased, the customer makes a commitment not to ask for any damages and interest, we advise him to make a farm loss insurance that is useful for any type of problems in the crops.



# F.O.G

FUTURE OF GROW

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FACEBOOK



Website



INSTAGRAM