



Growing value

Philips GreenPower LED module HF opens up new opportunities for multilayer cultivation

Continuing our tradition of developing innovative and reliable lighting solutions for horticultural applications, we are delighted to introduce the Philips GreenPower LED module. Specially designed for multilayer cultivation and research, it allows you to use light as a tool to control plant growth and development. Any desired light intensity and color ratio can be selected. In the near future, this will make large-scale multilayer production in conditioned environments a viable and attractive proposition.

For the best possible results, plants require dedicated lighting at different stages of growth and at different times of the day. The Philips GreenPower LED module is available in red, blue and far-red versions. Red and blue are the most important colors for crop growth, while far-red – barely visible to the human eye – influences the development of specific plant characteristics. With modules in these three colors, it is now possible to apply the optimum light recipe at every stage of a crop's growth.

PHILIPS
sense and simplicity



Growing value

Tune the light

With the GreenPower LED modules, you can decide for yourself how much red, how much blue and how much far-red light you want at any given moment. And the module's dimming capability allows you to set exactly the level of light you require. With this flexibility, you can truly tune the light to meet the specific needs of each crop.

Consistent quality

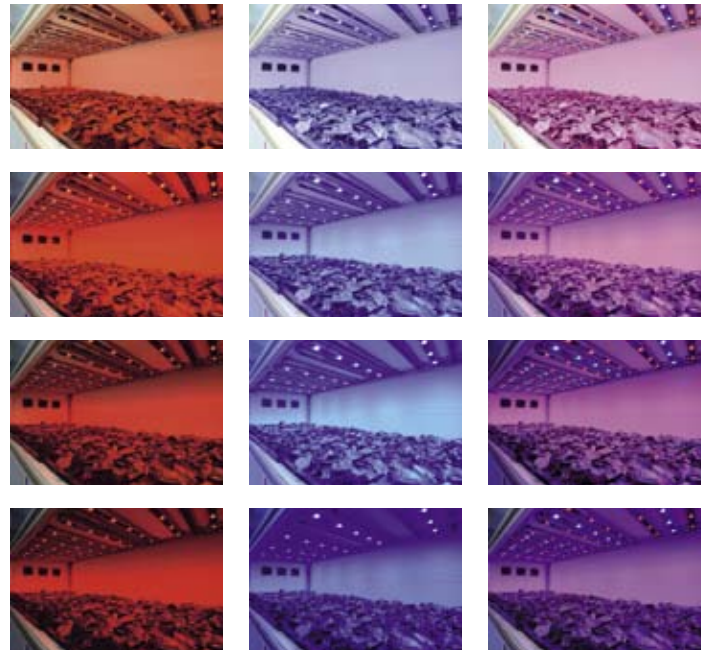
The GreenPower LED module's specially developed optics ensure a uniform light distribution across the shelves, which means that every plant receives the same level and quality of light.

Efficient heat management

Thanks to its LED technology and optimized thermal design, the GreenPower LED module radiates very little heat toward the plants. It can accommodate additional forms of cooling (e.g. air, water) for even more efficient heat management.

Reliable solution

The GreenPower LED module is robust, waterproof and safe (low voltage). Combined with its long service life, this means little or no maintenance.



Tune the light

Application areas*

- Multilayer plant production, especially young plants
- Plant research
- Conditioned environments, including climate cabinets and production units

* The typical GrowthLight is between 50 and 150 $\mu\text{mol/s/m}^2$. Depending on the configuration, higher or lower lighting levels are possible..

Proof positive – experience with field tests

Since light is an important production tool for growers and breeders and a key factor in plant research, Philips has conducted several field tests together with horticultural firms and experts from the research community. These tests prove the versatility and cost-effective potential of LED solutions to optimize crop yield and quality.

Field test - Rijnplant Breeding

The Dutch horticultural firm RijnPlant Breeding is constantly looking for better methods of cultivating Anthurium. Its aim is to be able to make exactly the plants it wants, when it wants them, irrespective of local weather conditions. It is currently developing a multilayer production unit in China. RijnPlant sees LEDs as an important tool that will give them total control over this process.

“Over the past year we have achieved very good results with Philips GreenPower LED modules, using a combination of red and blue light. The next step will be to optimize the yield and quality of our Anthurium production, while taking into account the overall cultivation recipe.”

Martin van Noort

Field test – Utrecht University

Utrecht University conducted scientific tests in a climate cabinet equipped with GreenPower LED modules. The modules are specially designed to deliver a uniform light distribution at a distance of 50 cm, specifically in a climate cabinet.

“We obtained very positive results from the tests we performed with the GreenPower LED module. We can grow our model plant Arabidopsis quickly and easily. We have lots of new ideas for tests which are now possible using LED lighting that can be controlled in terms of time, color and light level.”

Prof. Dr Sjef Smeekens and Dr Marcel Proveniers

Field test - Wageningen University and Research Centre

Wageningen University and Research Centre has conducted many tests with Philips LEDs in the past and has plans for further tests, reflecting the belief that LED technology will open up new methods of plant cultivation in the years to come.

“We require reliable products that can be used flexibly for various tests with different starting points. The GreenPower LED module is clear and reliable in its specifications and gives us a great deal of freedom when working with it.”

Dr Wim van Ieperen

Specification and ordering information

Specification

Product	Photon flux (typical) μmol/s	Power consumption (typical) W	Lifetime** hrs	Photon flux maintenance %	Ingress protection IP
GreenPower LED module HF deep red	10	10	25,000	90%	66
GreenPower LED module HF far red	5	10	tbd	90%	66
GreenPower LED module HF blue	10	14	25,000	90%	66

* Example: 70 μmol/s red light + 30 μmol/s blue for one square meter requires nine GreenPower LED modules HF deep red, and four GreenPower LED modules HF blue (depending on the configuration requirements).

** Lifetime and maintenance values are given at an ambient temperature of 25°C.




*** The GreenPower LED module is designed for a shelf distance of 50 cm.

Ordering information

Philips GreenPower LED module is designed to operate with the Philips LED power driver to ensure optimal performance. Please contact your local sales office for more information.

Compliances

Approval mark ENEC
RoHS-compliant
Quality standard ISO 9001-2000
Environmental standard ISO 14001

Product	Minimum order quantity pcs	EOC
Philips GreenPower LED module HF		
GreenPower LED module HF deep red 	6	9727900 809312 00
GreenPower LED module HF far red 	6	9727900 809329 00
GreenPower LED module HF blue 	6	9727900 809336 00
Accessories		
Mounting bracket 3/8"	100	8727900 813760 00
Mounting bracket 12 mm	100	8727900 813777 00
Connector Xtend+LS Applicator Tool	10 / 1	8711559 763972 30
Connector End Cap	10	8727900 805932 00
Connector Tool	1	8711559 765686 00
Dimming unit		
LGM dimming unit	20	8727900 809343 00
LED power driver		
LED power driver 100V-24V, 100/240V	10	8711500 911964 30



© 2008 Koninklijke Philips Electronics N.V.

All rights reserved. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice. No liability will be accepted by the publisher for any consequence of its use. Publication there of does not convey nor imply any license under patent- or other industrial or intellectual property rights.

September 2008

Document order number: 6322 635 56421

www.philips.com/horti