



Growing value

Save up to 60% energy with the Philips GreenPower LED production module in multilayer cultivation

LEDs are used most effectively if the spectrum and light level are exactly tuned to the crop and growth conditions. In the past years, Philips conducted more than 50 field tests to determine the optimal spectrum and light level for multilayer production. This results in the GreenPower LED production module reducing energy consumption and creating a more uniform light distribution.

The **GreenPower LED production module** for multilayer applications ($50-400 \mu\text{mol/s/m}^2$) can replace conventional TL lighting (36 W or 58 W) reducing energy consumption up to 60%. For most applications, the modules with the mix deep red/blue can be used. Next to energy efficiency, LEDs provide less heat and a more uniform light distribution. This makes the module also perfectly fit for conditioned environments.

PHILIPS
sense and simplicity

Growing value

Optimized lighting

Three spectrum versions are available. Next to the most commonly used deep red/blue mix we offer a deep red/white version if work light is needed. If no blue is required for growth the deep red version can be used.

Consistent quality

The GreenPower LED production module ensures 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 production module radiates very little heat toward the plants. As a result, the layers can be fit closer to each other if required.

Furthermore, no additional cooling (e.g. air, water) is required for the module to function efficiently.



To compare: TL growth light on the left side; LED growth light on the right side

Reliable solution

The GreenPower LED production module is robust and waterproof. It's easy to install with integrated driver (230/240V). Combined with its long service life, this means little or no maintenance. For most common installations a LED alternative is available: the modules have the same length as the 36 W TL (123 cm) or 58 W TL (153 cm). An existing installation with 2x 36 W or 2x 58 W TL can be replaced by only one module producing a comparable light level.

Existing TL installation	Replace by LED module	Result at comparable light level	Payback time
1x 36 W	1x 123 cm 16 W	Up to 60% energy saving *	Less than 3 years
1x 58 W	1x 153 cm 20 W		
2x 36 W	1x 123 cm 32 W		
2x 58 W	1x 153 cm 40 W		

* As well as reducing the amount of current consumed for light, it also affects the heat in the climate room, enabling an additional saving on the climate system, if present.

Application areas

- Multilayer plant production, potted plants and young plants.
- Conditioned environments, including climate cabinets and production units.

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 conducts field tests together with horticultural firms and experts from the research community. These tests are valuable input for product design. They prove the versatility and cost-effective potential of LED solutions to optimize crop yield and quality.

Queen® Kalanchoe

“We found out that different types of LED lighting had a significant impact on Kalanchoe, we also discovered a method for producing the plants using only LEDs as the source of light. We can use the LED light to control the growth while plants are being moved around, and we have also achieved more flexibility in production, since the plants no longer have to be moved as quickly as possible out of the transport lanes.”

Frands Jepsen

Royal van Zanten

“In our company we saw lots of opportunities for LEDs. By carrying out tests, we found solutions for both tissue culture and plant storage. As well as saving energy, LEDs help us to improve plant quality during cold storage, mainly thanks to better heat control.”

Sjoukje Heimovaara

Vitro Plus

“We have put into service in our tissue cultivation laboratory the first real production line for multi-layer cultivation. The plants grow faster and have much bushier development than with conventional fluorescent lighting. In addition, the plugs are very strong. That's a major advantage for traders. Which is why we want to introduce multi-layer cultivation for the entire in vitro hardening process. Because of the test results I'm certain that LEDs are the future.”

Ard Stoutjesdijk

Kwekerij Vreugdenberg

“Following a joint test period with BVB Substrates and Philips in the test greenhouse at BVB we developed a recipe based on which I can grow my Kalanchoes quickly and with high quality in a cultivation without daylight using LEDs. Philips has incorporated the lighting requirements for this Kalanchoe recipe into a special GreenPower LED production module. I now use this on my own farm under my current cultivation layer and I can optimise the recipe more closely in line with my specific climate conditions. Besides the fact that by doing this I can save on space and gas, the most important objective for me is that all year round I can grow continuously high-quality Kalanchoes and this type of cultivation with LED modules can make a major contribution to this.”

Aad Vreugdenhil

Specification and ordering information

Specification

Philips GreenPower LED production module*	Photon flux (typical) $\mu\text{mol/s}$ per module	Power consumption W	Lifetime 90% ** hrs	Lifetime 70% *** hrs	Ingress protection IP
Deep red/blue (DR/B)					
GreenPower LED production DR/B 120 LO	25	16	25,000	50,000	66
GreenPower LED production DR/B 120	50	32	25,000	50,000	66
GreenPower LED production DR/B 150 LO	31	20	25,000	50,000	66
GreenPower LED production DR/B 150	62.5	40	25,000	50,000	66
Deep red/white (DR/W) (if work light is needed)					
GreenPower LED production DR/W 120 LO	28	16	25,000	50,000	66
GreenPower LED production DR/W 120	50	28	25,000	50,000	66
GreenPower LED production DR/W 150 LO	34	19	25,000	50,000	66
GreenPower LED production DR/W 150	62.5	35	25,000	50,000	66
Deep red/blue/far red (DR/B/FR) (when far red is required)					
Greenpower LED production DR/B/FR 120	50	30	25,000	50,000	66
Greenpower LED production DR/B/FR 150	62.5	38	25,000	50,000	66
Deep red (DR) (if no blue is needed for growth)					
GreenPower LED production DR 120	50	28	25,000	50,000	66
GreenPower LED production DR 150	62.5	35	25,000	50,000	66

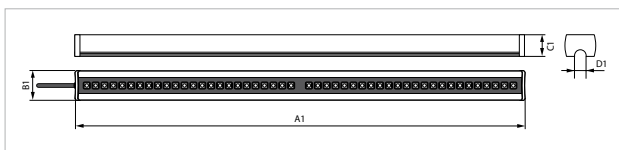
* The GreenPower LED production module is designed for a shelf distance of 50 cm.

** Lifetime and maintenance values are given at an ambient temperature of 25° C, and a photon flux maintenance of 90%.

*** Lifetime and maintenance values are given at an ambient temperature of 25° C, and a photon flux maintenance of 70%.

Specification GreenPower LED production module

Mechanical dimensions



Compliances

- IP66
- Approval mark ENEC
- EN 55015
- RoHS-compliant
- Quality standard ISO 9001-2000
- Environmental standard ISO 14001

Full Product name	Dimensions (in cm)			Ordering code
	A1	B1	C1	
Deep red/blue (DR/B)				
GreenPower LED production module DR/B 120 LO	123	4	4	9290 004 87103
GreenPower LED production module DR/B 120	123	4	4	9290 004 86903
GreenPower LED production module DR/B 150 LO	153	4	4	9290 004 87603
GreenPower LED production module DR/B 150	153	4	4	9290 004 87403
Deep red/white (DR/W) (if work light is needed)				
GreenPower LED production module DR/W 120 LO	123	4	4	9290 004 87203
GreenPower LED production module DR/W 120	123	4	4	9290 004 87003
GreenPower LED production module DR/W 150 LO	153	4	4	9290 004 87703
GreenPower LED production module DR/W 150	153	4	4	9290 004 87503
Deep red/blue/far red (DR/B/FR) (when far red is required)				
Greenpower LED production DR/B/FR 120	123	4	4	9290 006 18703
Greenpower LED production DR/B/FR 150	153	4	4	9290 006 18803
Deep red (DR) (if no blue is needed for growth)				
GreenPower LED production module DR 120	123	4	4	9290 004 86803
GreenPower LED production module DR 150	153	4	4	9290 004 87303
Accessories				
GreenPower LED production module mounting bracket				9290 004 87803



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