

Datasheet

LuxaLight LED Engine Neutral White 4200K Protected (24 Volt, 108 LEDs, 2835, IP64)

LE-24-4200K-108X2835PLX

Version: 2025-03-28.4

Product description

The **LuxaLight Industrial LED Engine (4200K)** is designed as a high-quality component for applications that require high light output, precision, and excellent color rendering. With a color temperature of 4200K, this LED engine provides an ideal solution for applications in **horticulture** and **research environments**, where a full spectrum of light, with a strong emphasis on **650 nm and 675 nm** (red) wavelengths and a high peak at **450 nm** (blue), is crucial for photosynthesis and plant growth. This LED engine delivers an impressive **lumen output of 2726 $\mu\text{mol}/\text{m}^2$ at 5 cm distance**, making it particularly suitable for horticulture and related applications that require intense light to promote plant growth and research.

Key Features:

- **4200K Color Temperature:** The neutral white light at 4200K provides a balanced spectrum, with a strong focus on **650 nm and 675 nm** wavelengths for red light, which is essential for photosynthesis and plant growth. Additionally, the LED engine has a high peak at **450 nm**, ideal for promoting chlorophyll production and other biological processes.
- **High Lumen Output (2726 $\mu\text{mol}/\text{m}^2$ at 5 cm):** The LED engine delivers high light intensity, ideal for promoting photosynthesis and plant growth, making it an excellent choice for horticulture and other related applications.
- **Finished Product:** The LED engine is designed for easy integration into existing systems or enclosures, offering flexibility for a wide range of horticultural and light-related growth applications.
- **Real-Time Temperature Monitoring via NTC Sensor:** The integrated NTC sensor ensures continuous temperature measurement and adjustment, maintaining optimal operating conditions. This helps to prevent overheating and ensures the LED engine always performs at its best, maximizing its output for consistent and long-lasting results.

Applications:

- **Horticulture and Plant Lighting:** The 4200K color temperature and high lumen output make this LED engine ideal for horticultural applications, where a broad spectrum of light is necessary to promote photosynthesis, with a strong focus on **650 nm and 675 nm** for red light and a peak at **450 nm** for blue light. This makes it perfect for applications such as growing facilities, **vertical farming**, and commercial cultivation.
- **Plant Research and Growth Optimization:** With its balanced light spectrum, including specific wavelengths of **650 nm, 675 nm, and 450 nm**, the LED engine is ideal for scientific research on plant growth, photosynthesis, and other biological processes influenced by light intensity and quality.
- **Growing Facilities and Vertical Farming:** The LED engine provides powerful lighting for controlled growing environments in greenhouses, **vertical farming**, and other indoor growing applications, where specific light spectrums and high lumen output are essential for maximum yield and plant health.
- **Plant and Product Quality Control:** The LED engine is also suitable for quality control of plants, crops, or other biological products in agriculture and horticulture, providing consistent lighting that accurately simulates growth conditions.

Benefits:

- **Full Spectrum with High Peaks at 450 nm and Red Light (650 nm & 675 nm):** The extensive light spectrum, with specific wavelengths for blue light (450 nm) and red light (650 nm & 675 nm), offers powerful lighting for photosynthesis and plant growth.
- **High Lumen Output:** The high lumen output of 2726 $\mu\text{mol}/\text{m}^2$ at 5 cm ensures sufficient light intensity, essential for promoting healthy plant growth, especially in commercial growing environments.
- **Integration Flexibility:** The LED engine can be easily integrated into existing systems or enclosures, offering flexibility for applications in greenhouses, **vertical farming**, and other horticulture-related setups.
- **Efficient Performance:** The LED engine provides reliable and efficient performance with consistent light output, making it ideal for intensive growth applications such as horticulture, where long-lasting and dependable lighting is required.
- **Real-Time Temperature Monitoring for Consistent Performance:** The integrated NTC sensor ensures continuous temperature monitoring, preventing overheating and maintaining optimal performance over time. This contributes to maximizing the LED engine's yield, which is crucial for maintaining high performance in a dynamic environment.

Technical specifications

General

Brand	LuxaLight
Application	Food Inspection (Agro-Food) Hyper - spectral Imaging Line Scan Cameras Machine Vision
LED type	2835
PCB color	White
Material	Aluminum
Dimensions	200 × 20 × 2 mm
Mounting	3M tape VHB4905
Warranty	5 years
LEDs per piece	108.00
Lifetime	70000 hours

Lighting

Color temperature	4200 ~ 4400 K
CRI	≥ 95
BIN	3 SDCM
Beam angle	120 °
LB waarde	L80B50

Measurement results

PPFD	Value	Measuring distance
	6220 µmol/m ²	25 mm
	2726 µmol/m ²	50 mm
	1501 µmol/m ²	75 mm
	992,6 µmol/m ²	100 mm
	346 µmol/m ²	200 mm
	184,4 µmol/m ²	300 mm

Irradiance	Value	Measuring distance
	1400 W/m ²	25 mm
	613 W/m ²	50 mm
	337 W/m ²	75 mm
	224 W/m ²	100 mm
	77,5 W/m ²	200 mm
	41,3 W/m ²	300 mm

Illuminance

Value	Measuring distance
407,3 klux	25 mm
177,9 klux	50 mm
97,9 klux	75 mm
64,7 klux	100 mm
22,5 klux	200 mm
12 klux	300 mm

- By combining Pulse Mode with Real-Time Monitoring, the efficiency of LED systems can be increased, resulting in higher output.
- We have the expertise and equipment to perform measurements tailored to the specific requirements of the application.

Electronics

Working voltage	24V
Current per piece	1.25 A / piece
Power consumption per piece	30.00 W / piece
PCB material	Aluminium

Pinout

Symbol	Function
V+	V+
GND	Ground
NTC	NTC sensor
NTC_GND	NTC ground

NTC parameters	Resistance: 5000 Ohm Beta value: 3950
----------------	--

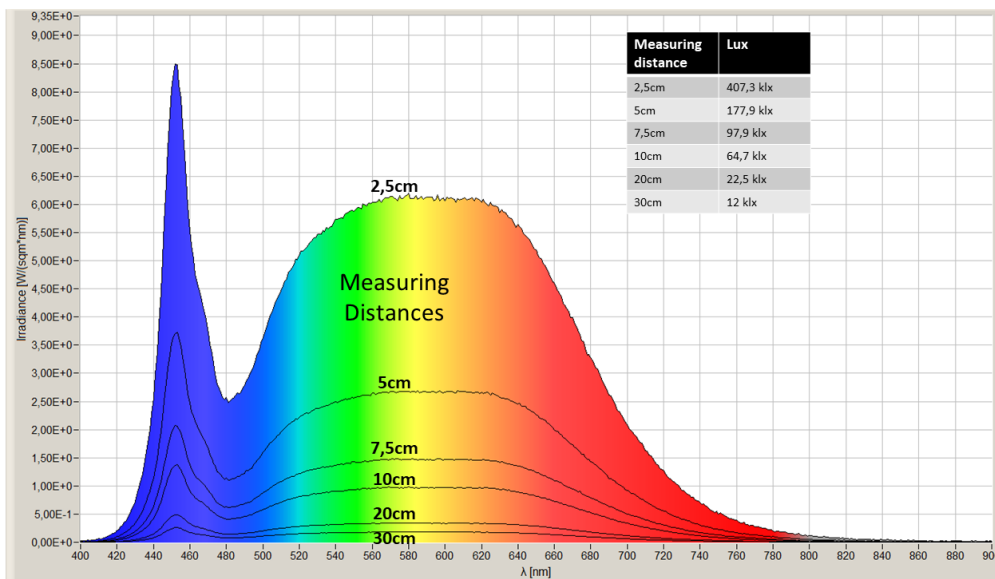
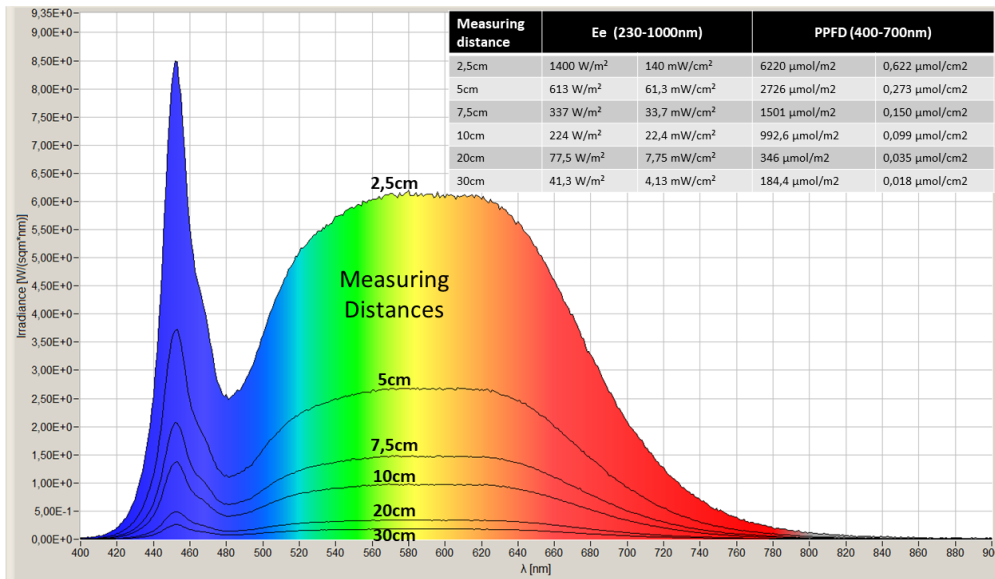
Environmental

Operating temperature	-20 ~ +60 °C
Storage temperature	-40 ~ +80 °C
IP class	IP 64

Directives - standards - certificates

Directives	RoHS CE
Safety standards	EN60598-1 EN62031 IEC62471

Measurement results



While LuxaLight has made every reasonable effort to ensure the accuracy of the information in this brochure, LuxaLight does not guarantee that it is error - free, nor does LuxaLight make any other representation, warranty or guarantee that the information is accurate, correct, reliable or current. LuxaLight reserves the right to make any adjustments to the information contained herein at any time without notice. LuxaLight expressly disclaims all implied warranties regarding the information contained herein, including, but not limited to, any implied warranties of merchantability or fitness for a particular purpose. The dimensions in this catalogue are for reference purposes only and are subject to change without notice. Specifications are subject to change without notice. Consult LuxaLight for the latest dimensions and design specifications.