

PureFize® UVC chip (255–300 nm)

LightLab Sweden's UVC chip light sources are based on a new technology called PureFize® UVC Disinfection Technology.

PureFize® offers significant advantages compared to other existing and emerging sanitizing technologies. High performance in combination with attractive cost make it uniquely suited for consumer near applications.

The chips deliver a broad UVC spectrum with the main peak at 267 nm. The technology and the devices are designed for easy integration with a proven high germicidal effectiveness.

The low power dissipation and optimized power density allow plug'n'play operation without any further thermal management considerations needed.



Key benefits

- 100% mercury-free
- 99.999999% germicidal reduction proven
- Powerful and efficient
- Wide operating temperature, from -20 to +100°C
- Freedom of design
- Instant on/off
- Plug'n'play



Product performance and characteristics

Characteristics

	Min	Typ	Max
Radiant power @ 500mW input power (mW) ¹	8	10	
Peak wavelength (nm)		267	
View angle (deg)		100	
Output power variation -20°C – 80°C ²			+/-10%

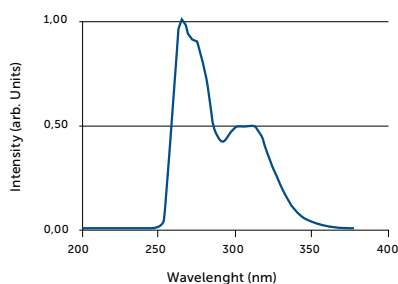
¹ Measured by far field radiometry at 40 mm.

² Relative room temperature (RT)

Electronic driver

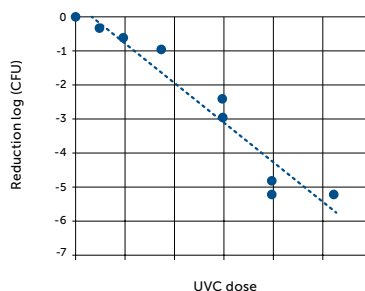
The PureFize® UV Disinfection Technology is based on field emission and nanotechnology and the Purefize® UVC chips are operated in a high voltage/low current mode, with an input voltage in the range of 5,000–8,500 V, and drive currents in the order of 100 µA only. An electronic driver is available and can be supplied to support 1 to 6 chips in parallel. The PureFize® UVC chips must use this driver in order to guarantee functionality, performance and reliability. For more information please see our detailed product specification no. D000521 RevB.

Spectral properties (typ.)

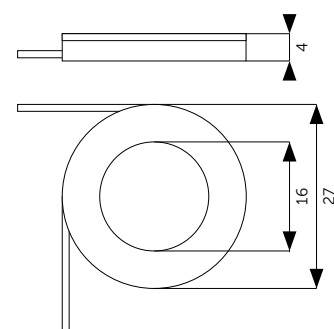


Bacterial performance - E. coli

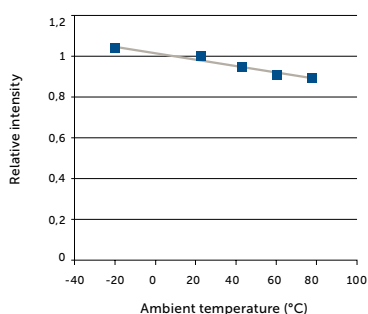
(500 mW, distance = 75 mm)



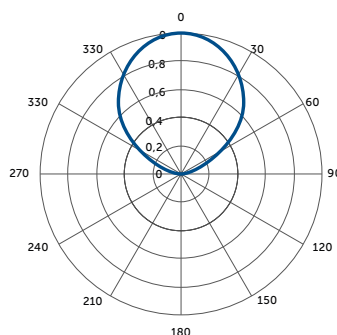
Dimensions



Radiant power vs. temperature



Angular power distribution



Reliability test results

Test	Detailed description	Result
Storage, high temp, 70 °C	70 +/-5 °C, 168 h	20/20 passed
Storage, low temp, -40 °C	-40 +/-5 °C, 168 h	20/20 passed
Temp cycling, -40 °C/+80 °C	80 °C down to -40 °C, 10X	20/20 passed
Humidity test, 40 °C, 90% RH	40 +/-5 °C, 90% RH, 168 h	20/20 passed
Vibration	3 mm amplitude, 1 kHz, 1 h, operating	10/10 passed
Drop test	30 cm, on wood, 3 X	5/5 passed
Isolation	2,000 V, both polarities and to independent ground	5/5 passed
Surface temperature at operation	@ Tamb =20–25 °C after 4 h operation	5/5 passed
On/Off (90% RH, 50,000 X)	40 +/-5 °C, 90–95% RH, 5 s / 5 s, 50,000 cycles	12/12 passed
Shelf life (10 years)	Storage 80 °C	10/10 passed

Ordering and availability

The PureFize® UVC chips, electronic drivers and development kits are delivered to selected customers.

Item	Ordering code
UVC chip	12000
500 mW driver, 1 channel	15001
500 mW driver, 6 channels	15006
Development kit, 1 channel, 500 mW	13011
Development kit, 6 channels	13012

Handling precautions

1. During handling and processing, mechanical stress on the PureFize® UVC chip surface should be minimized as much as possible. Sharp objects of all types could cause cracks and/or scratches.
2. In general, the PureFize® UVC chips should only be handled from the side. Grabbing the top glass surface part could damage the glass, being the active light emitting area.
3. Glass can be damaged by force. Therefore, be careful not to touch the glass with tweezers or sharp tools. Also, the product can break when it falls.
4. The PureFize® UVC chips are not allowed to be used in any type of fluid such as water, oil, organic solvent, etc. Ultrasonic cleaning is not recommended and may cause damage to the device. When washing is required, IPA (Isopropyl Alcohol) should be used.
5. Avoid molding this product into another resin (epoxy, urethane, etc.) and do not treat this product with acid or sulfur materials.
6. Avoid leaving fingerprints on the glass parts, being the active light emitting area.
7. The Purefize® UVC chips should be stored in a clean environment. We recommend storing them in an environment with RH <60% RH and T <30 °C.

8. When attaching PureFize® UVC chips, do not use adhesives that outgas organic vapor. Also, do not mount them directly on a metallic surface.
9. The PureFize® UVC chips must use the high-voltage driver recommended by LightLab Sweden, in order to guarantee functionality, performance and reliability.
10. To connect the PureFize® UVC chips to the high-voltage driver, proper high-voltage cables specified for 10 kV DC should be used. A minimum bending radius of 1 cm is recommended for the cables.
11. The dielectric isolation at the connection has to be taken care of when connecting PureFize® UVC chips to the high-voltage cables from the driver.
12. The appearance and specifications of the product may be modified for improvement without notice.

Safety guidelines

Caution – UV Radiation:

The Purefize® UVC chips emit high intensity ultraviolet (UV) light, which is harmful to skin and eyes. Only about 2% of the emitted light is visible.

- Do not look directly into the UV light during operation. This can be harmful to your eyes.
- Avoid direct skin exposure to the UV light. This can be harmful to your skin.
- Wear protective eyewear to avoid exposure to UV light
- Shield the UV light source with UV blocking material

Caution – High Voltage:

The Purefize® UVC chips are operated in a high voltage/ low current mode, with an input voltage in the range of 5,000–8,500 V, and drive currents in the order of 100 uA.

- Even if the power is low, below 1 W, do not touch the Purefize® UVC chips or the cables while the power is on

Regulatory

LightLab's UV chips and electronics are RoHS compliant according to EU directive 2011/65/EU.



Partner up with us

LightLab Sweden is a Swedish cleantech company with a strong belief in sustainable technological innovation. Being Swedish, our heritage reminds us to take care of each other and to live close to and in harmony with nature.

We are also raised in a culture of high-quality standards, where functionality is prioritized and where science continuously inspires us to evolve. We innovate with sustainability in mind to improve quality of life for ourselves and our loved ones, here and now, and for future generations to come.

LightLab Sweden

LightLab Sweden AB
Uppsala Business Park
Virdings Allé 32B,
SE-754 50 Uppsala, Sweden
www.lightlab.se

LightLab Sweden AB disclaims all warranties, expressed or implied. The customer must ensure that the UVC chips and electronics are handled complying with all relevant requirements (legal and others) and standards in whichever country it is used. The customer accepts any and entire risk arising out of the use of the UVC chips and electronics. In no event shall LightLab be liable to any loss, damage related to the use of its product. This document is for information purposes only and any information given herein shall in no event be regarded as a warranty, guarantee or description of any functionality, conditions and/or quality of the products, or any suitability for a particular purpose. We reserve the right to change this document and/or the information given herein at any time without notice. LightLab Sweden AB specifically disclaims any and all liability for harm arising from buyer's use or misuse of UVC devices either in development or end-use.