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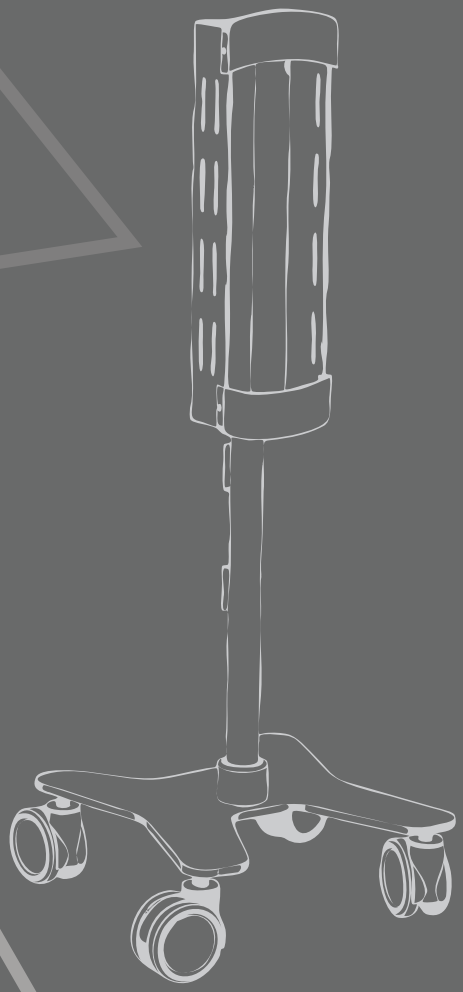


LO 20

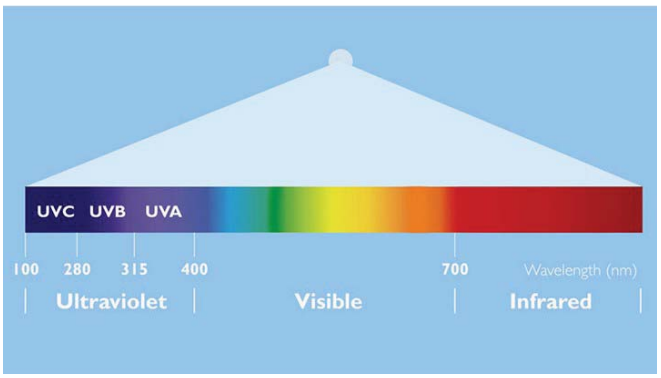
Mobile UV-C lamp for disinfection

25 years

The Power of UV-C Light

What is the UV Technology

The ultraviolet (UV) light is a part of the invisible light spectrum. UV light is divided into three types: UV-A, UV-B, and UV-C.

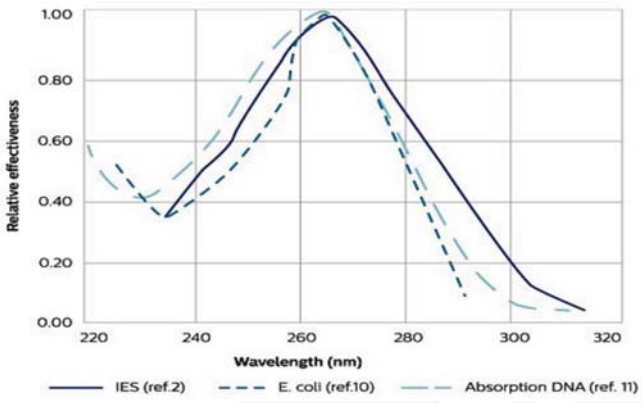


- UV-A light has the longest wavelength of the three types. 95% of the UV-A light reaches the Earth's surface. It is the radiation that causes the complexion of human skin. Prolonged exposure to UV-A may have long-term harmful effects on the skin and can cause skin cancer.

- UV-B light has shorter wavelength than UV-A. It is almost fully absorbed by the Earth's atmosphere. UV-B radiation cannot penetrate deep into the skin but even in low intensity it is biologically very active. It causes severe burns, which in addition to accelerated aging of the skin increases the risk of skin cancer.

- UV-C light has the shortest wavelength of the three types. It is fully absorbed by the Earth's atmosphere. UV-C is lethal to living organisms. Even short-term exposure can cause irreversible changes in biological tissues. UV-C is absorbed by microorganisms and destroys their intracellular structure. Viruses, bacteria, and fungi are not resilient to this type of radiation. UV-C at higher intensity is a reliable and environmentally friendly method of disinfection with no chemical agents required.

UV-C takes place in the 100-280 nm wavelength range. The figure to the right shows maximum germicidal effectiveness at 265 nm with reductions on either side. The UV-C low pressure lamps by PHILIPS have their main emission at 254 nm, where the action on DNA is 85% of the peak value and 80% on the IES curve (light intensity distribution of light source or lamp in all directions of space). As a result, the germicidal lamps are extremely effective in breaking down the DNA of microorganisms. This way the germs are stopped from reproducing and causing deceases. The effective resilience of microorganisms to ultraviolet light varies considerably. Furthermore, the habitat of a targeted microorganism is a factor in determining the lethal dose of UV radiation.



Laboratory tests performed by Dr. Anthony Griffiths (associate professor of microbiology at Boston University) and his team from NEIDL at the Boston University School of Medicine proved that a UV-C dose of 5mJ/cm2 (6 sec. exposure time) resulted in 99% reduction of SARS-CoV-2 (the virus that causes COVID-19) on the treated surface. The same study found that a UV-C dose of 22mJ/cm2 (25 sec. exposure time) resulted in 99.9999% reduction of SARS-CoV-2.

Safety Precautions

As described above, the short-wavelength UV-C light provides strong germicidal effectiveness. Due to safety reasons, the exposure of humans to UV-C light must be avoided else erythema (redness of the skin) and conjunctivitis (inflammation or infection of the transparent membrane of the eyes) may appear. Both the erythema and the conjunctivitis, although temporal, can be extremely painful.

When exposed to UV-C light care must be taken not to exceed the permissible exposure levels. Sources of UV radiation with wavelengths shorter than 240 nm create ozone (O3) out of the oxygen in the air. Ozone is highly reactive and precautions against exposure of humans must be taken.

Permissible exposure time	UVC flux ($\mu W/cm^2$)
8h	0.2
4h	0.4
2h	0.8
1h	1.7
30min	3.3
15min	6.6
10min	10
5min	20
1min	100

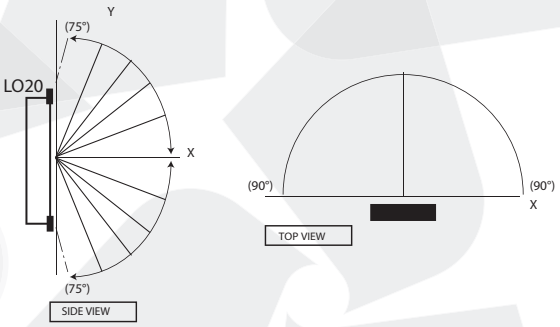
Table 1. Permissible exposure times to 254 nm UV radiation as per ACGIHна 254 nm UV

Application Notes

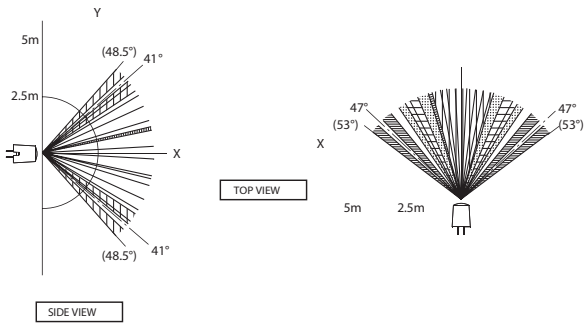
DANGER: Risk Group 3 Ultra Violet product. These lamps emit high-power UV radiation that can cause severe injury to skin and eyes. Avoid eye and skin exposure to unshielded product. Use only in an enclosed environment which shields users from the radiation.

When prolonged disinfection is required in the presence of people, the UV lamp must be faced away from people.

UV-C direct radiation zone



Motion sensor Detection zone



Theoretical calculations show disinfection of 50m^3 volume require approximately 120-minute operation of LO 20.

LO 20

The quality of air we breathe, the water we drink, and the cleanliness of the surfaces around us have a profound effect on our health and well-being. We are all at risk of becoming infected or spreading viruses and bacteria. Patients in hospitals and healthcare facilities are the most vulnerable as any form of viral infection can complicate their recovery. Although not intended for direct application on people, UV-C lamps can boost significantly our success in the fight against harmful viruses and bacteria. For more than 40 years the UV-C light has been a scientifically proven reducer of health risk by disinfecting air, water, and surfaces. All bacteria and viruses tested so far (many hundreds of species over the years, including various types of coronaviruses) are susceptible to UV-C disinfection. In laboratory tests UV-C light sources inactivated 99% of SARS-CoV-2 virus on a surface within an exposure time of 6 seconds. It is a clear indication that UV-C light can play a valuable role in one's protection strategy.

LO 20 is a mobile UV-C lamp for active disinfection against bacteria and viruses. It is intended for use in enclosed populated spaces such as business offices, shops, medical centers, etc. LO 20 simultaneously eliminates pathogens by direct exposure to UV light and filters the air by means of forced convection.

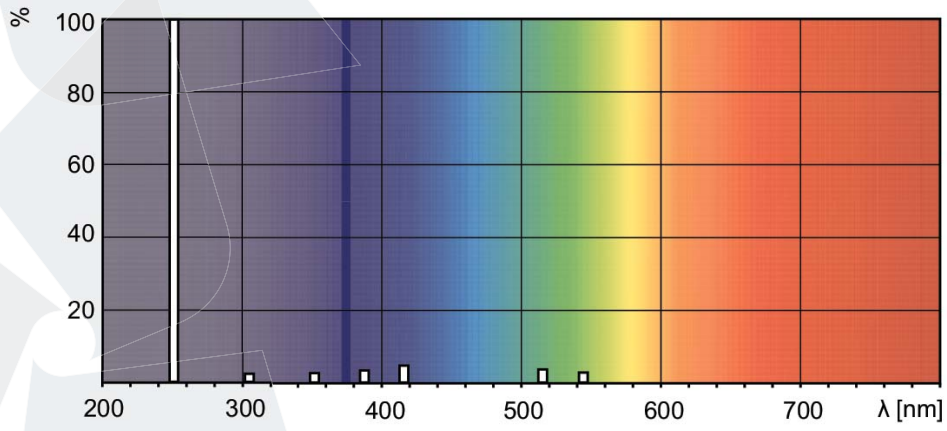
Technical specifications

Electrical	Power Supply	220-240 Vac, 50-60 Hz
	Max. power	180 VA (68 W)
	Continuous mode of operation	Uninterrupted / programmable 24 h timer with 2 individually adjustable On-Off cycles
	Fuses	2 pcs. T 2,0 A (slow)
Light	UV Light sources	TUV 15W SLV/25
	UV-C wavelenght	254 nm
	Efective UV dose	10W / 100h (96μJ/cm^2 /1m)
	Life cycle	9000 h
Convection	Forced convection flow	38м^3 / h
Safety	Construction	EN 60601-1
	Protection class	I
	Integrated motion sensor	User-selectable activation
	Earthing terminal	Available

Dimensions

Length x width x height: 420 x 400 x 1100 mm
Weight: 17 kg

Supported light spectrum



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