

# UV-C FLOW GERMICIDAL LAMPS

UV-C AIR PURIFIERS

series **NBVE**



# UV-C DIRECT RADIATION GERMICIDAL LAMPS

series

**NBV**...



# INDUSTRIAL UV-C IP-65 GERMICIDAL LAMPS



 **ULTRA**ViOL



Company Ultraviol



Medica Fair 2014  
in Düsseldorf



Arab Health Fair  
in Dubai 2014

Salmed Fair 2014 in Poznań



**UltraViol** is a dynamically developing company manufacturing medical equipment. We have been established in 1993.

We offer wide range of X-ray film viewers, including LED modern line, flow and direct radiation germicidal lamps and SAD phototherapy light Fotovita.

Our latest product offer includes the digital and analog images viewing stations, Breis /Ultraviol/ Pacs diagnostic console and Dermalight UV-irradiation units for treatment of skin diseases.

Our company is continuously improving technological solutions to our devices, modernizing their design and quality.

The medical equipment manufactured by our company complies with the requirements of 93/42/EEC (with amendments according to 2007/47/EC) and 2004/108/WE Directives, EN 60601 standard on safety of medical devices and EN 60601-2 standard concerning electromagnetic compatibility of the products.

To confirm the fact that ULTRA-VIOL meets the highest requirements for manufacturers of medical devices, the company obtained ISO 9001 and ISO 13485 certificates granted by TUV NORD CERT GmbH, Essen, Germany.

Our equipment is used by all the best clinics and hospitals in Poland. We export the products to most of the European countries and many other countries all over the world.

The main provider of light sources and power systems, which have a great impact on the high quality of our equipment, is PHILIPS, OSRAM – the worldwide leaders in light technology.

Technological processes used in our production are environmentally friendly.

The detailed information and technical data of our products are available in catalogues and on our website [www.ultraviol.pl](http://www.ultraviol.pl).

**We invite you to become our business partner.**

# DISINFECTION WITH THE USE OF UV-C ULTRAVIOLET RADIATION

Ultraviolet radiation (UV) is a part of electromagnetic spectrum similar to X-radiation, radio waves or visible light.

**For practical purposes the ultraviolet radiation has been divided into three bands:**

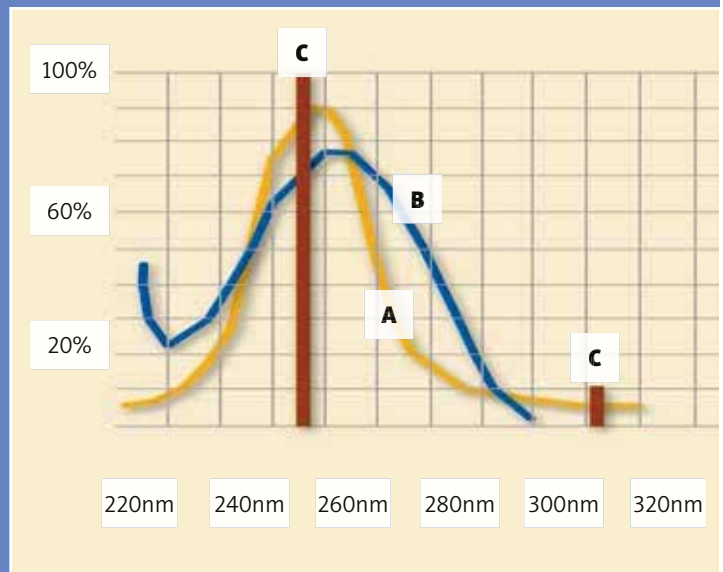
UV-A – long-wave band	400 nm – 315 nm
UV-B – medium-wave band	315 nm – 280 nm
UV-C – short-wave band	280 nm – 100 nm

UV-A radiation is contained in radiant energy from the sun. It activates photochemical and pigment-creating processes. Its erythema effect is of no importance.

UV-B radiation is used mainly in therapy. It creates provitamin D and causes both pigmentation and erythema effect.

## Bactericidal effectiveness of UV-C radiation

Microorganisms being exposed to UV-C radiation are inactivated. This effect is known as a germicidal effect, and as it was confirmed by tests, the radiation at wavelength ranging from 250 nm to 270 nm is of the greatest germicidal effectiveness. The germicidal effect of the UV-C radiation is the result of the photochemical reaction due to absorption of photons by nucleic acids of the cells, which affect on DNA of microbial cells. Since it is short-wave UV radiation it is also high-energy radiation. The energy of photons absorbed by nucleic acids interrupts the molecular bonds of DNA and causes formation of pyrimidine dimers. This results in inactivation of DNA and RNA of the microorganisms.



- A** the greatest germicidal effect is obtained with the UV-C radiation within the wavelength region from 250 to 270 nm
- B** curve of absorption of nucleic acids
- C** cosmic radiation by discharge in low-pressure mercury vapour

## AREAS OF APPLICATION

## Benefits of UV-C flow germicidal lamps

- Provide possibility of intense air disinfection in the presence of patients and medical staff (flow UV-C chamber).
  - Irreversibly destroy bacteria, viruses, fungi and other airborne microorganisms.
  - Reduce the risk of secondary infections of the hospitalized patients, particularly postoperative infections.
  - The lamps form a kind of barrier, effectively protecting people against development and spread of infections.
  - Improve the quality of the inhaled air.
  - Reduce the need to use chemicals without causing any chemical contamination.
  - Microorganisms do not acquire resistance to UV-C radiation.
  - UV-C radiation acts here and now without leaving any signs of its application.
  - In more complex cases of disease, they reduce the risk of infection of people with reduced immunity
  - Reduce the risk of hospital-acquired infections
  - Minimize the number of the strains resistant to antibiotics
  - High effectiveness of the method, also in case of drug-resistant strains
  - Low operating costs - energy efficiency
  - Easy to use.
- *Medicine: operating theatres, treatment rooms, delivery wards, dentists, emergency departments, patient wards, sluice rooms, consulting rooms, ambulatories, corridors etc.*
  - *Veterinary clinics*
  - *Sanatorium, guest houses*
  - *Laboratories*
  - *Food industry (food processing and storage)*
  - *Pharmacies*
  - *Pharmaceutical industry, herbal industry*
  - *Cosmetic industry*
  - *Waiting rooms*
  - *Stations, hotels, cinemas, disco, shops, nurseries, infant schools etc.*
  - *In all places where high level of microbiological purity is required and at the same time people have to stay there.*

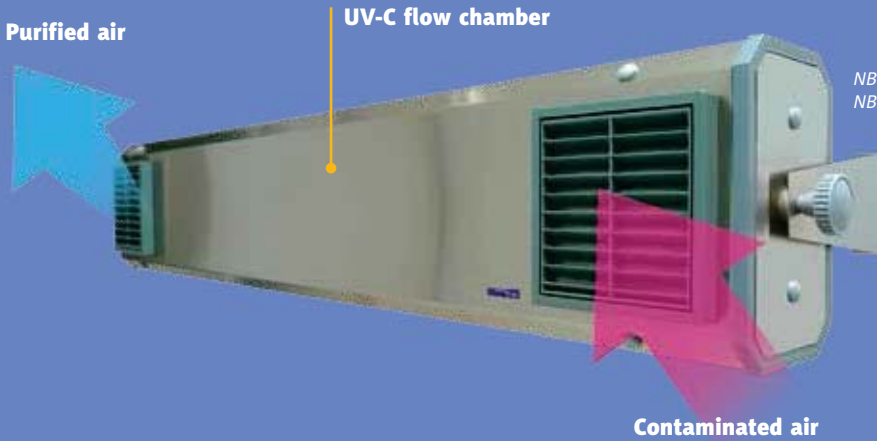
### AREAS PARTICULARLY EXPOSED TO INFECTIONS

- *concentration of sick and infected people and staff*
- *rooms equipped with sophisticated equipment, difficult to sterilize or disinfect*
- *rooms equipped with devices being used by groups of people*

**UV-C flow germicidal lamps**

Disinfection of the air by means of UV-C radiation in the flow germicidal lamps is carried out inside a disinfection chamber. Contaminated air is drawn in by a fan – through a filter catching dust and other contaminations-into the disinfection chamber. The UV-C tube intensity and a time during which air remains in the disinfection chamber are selected so that air blown out from the lamp is practically free of microorganisms. Velocity of air flow through the disinfection chamber is therefore selected as a compromise between a desire to disinfect the greatest volume of air per time unit and germicidal effectiveness. It should also be noted that the forced flow of air results in a smooth circulation of air in the room and thus disinfection of air in the whole room.

**NEW OPTION**  
ON / OFF  
remote control  
(designation – RC)



*a stable stand , easy to move, handles on both sides of the dome*



*One of the important advantages of flow UV-C germicidal lamps with forced air flow is a possibility of their use in the presence of personell and patients (permanent disinfection of the air)*



*Process of the air treatment with the use of internal UV-C tubes (air)*

## Dual-function UV-C flow germicidal lamps

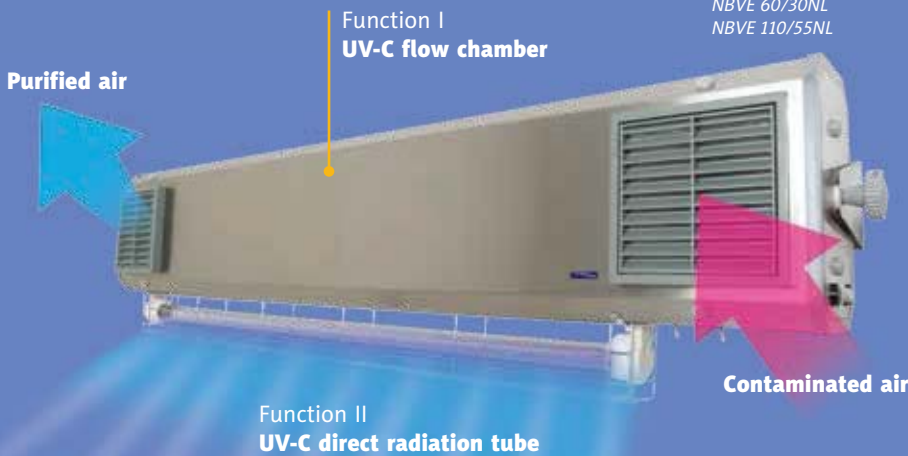
2-function flow germicidal lamps with an external radiator of direct action guarantee a full range of disinfectant action. It gives a possibility of intensive disinfection of the air in the presence of people (UV-C flow chamber – **function I**) and direct disinfection of the whole room when the personell and patients stay outside the room (UV-C direct radiation tube – **function II**). Disinfectant action of the external radiator is similar to standard germicidal lamps NBV series. UV-C radiation disinfects the air and surfaces in the room (walls, table tops, objects, etc.) Thanks to its nature it also reaches different nooks as reflected light. Both functions are independent of each other.

**NEW OPTION**  
ON / OFF  
remote control  
(designation – RC)



Inductive counter with display

NBVE 60/30PL  
NBVE 110/55PL



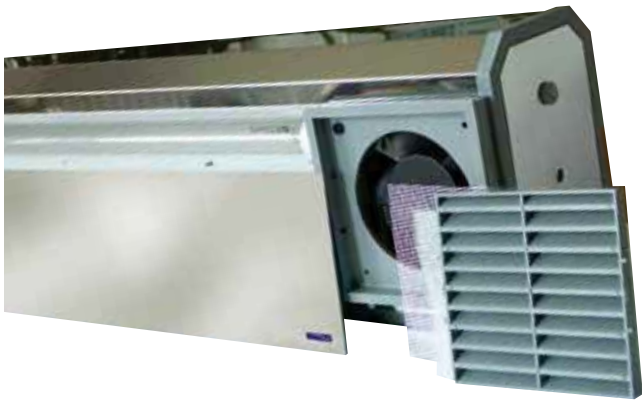
NBVE 60/30NL  
NBVE 110/55NL



Contaminated air in the room without germicidal lamps



Process of the air treatment with the use of internal and external UV-C tube (air and surfaces)



Modern and durable materials guarantee effectiveness and no failure. Replacement of the filter is possible to be done without the use of tools.

**Types of housing:**

- stainless steel (INOX)
- coated aluminium sheet
- coated carbon steel sheet
- any RAL color available on request
- custom mounting elements available on request

**Mounting options:**

- ceiling-mounted (S, SL)
- wall-mounted (N, NL)
- on mobile stand (P, PL)

**Options with working time counter are marked with "L".**

NBVE 60 NL  
NBVE 110 NL



*Safe to people – measurement of the irradiation with the use of counter indicates 0*



*Inductive work time counter*

*Air filter*

*Acid-resistant steel*



*Working signalling*

NBVE 60/30  
NBVE 110/55

*Cover of the external tube*

Lamp type	NBVE 60	NBVE 110	NBVE 60/30	NBVE 110/55
Supply voltage	230 V, 50 Hz	230 V, 50 Hz	230 V, 50 Hz	230 V, 50 Hz
Power requirement	75 VA	115 VA	105 VA	145 VA
UV-C tube PHILIPS or OSRAM	2 x 30 W	2 x 55 W	2 x 30 W internal 1 x 30 W external	2 x 55 W internal 1 x 55 W external
Lifetime of UV-C tube	min. 8000 h	min. 8000 h	min. 8000 h	min. 8000 h
Radiation intensity of the external UV-C radiator at the distance of 1 m	—	—	100 μW / cm <sup>2</sup>	150 μW / cm <sup>2</sup>
Ventilator capacity	132 m <sup>3</sup> /h	199 m <sup>3</sup> /h	132 m <sup>3</sup> /h	199 m <sup>3</sup> /h
Cubage of disinfected room	25-50 m <sup>3</sup>	45-90 m <sup>3</sup>	25-50 m <sup>3</sup>	45-90 m <sup>3</sup>
Effective area of the lamp	10-20 m <sup>2</sup>	18-36 m <sup>2</sup>	10-20 m <sup>2</sup>	18-36 m <sup>2</sup>
Class of protection against electric shock	I	I	I	I
Cover type	IP 20	IP 20	IP 20	IP 20
Dimensions [mm] :				
Dome	1125x215x130		1125x285x130	
Overall dimensions – N making (wall mounted)	1190x215x145		1190x285x145	
Overall dimensions – S making (ceiling mounted)	1190x330x130		1190x400x130	
Overall dimensions – P making (mobile)	600x1740x600		600x1740x600	
Mass - N making (wall mounted)	8,5 kg	9,0 kg	9,0 kg	9,5 kg
Mass - S making (ceiling mounted)	8,5 kg	9,0 kg	9,0 kg	9,5 kg
Mass - P making (mobile)	13,0 kg	13,5 kg	13,5 kg	14,0 kg

We select the number of UV-C flow germicidal lamps taking the cubage of the room into consideration – look at the table above. ULTRA-VIOL fullfills untypical orders as well. The producer reserves the right to innovate in the construction relevant the improvement of the manufacture.

**FLOW GERMICIDAL LAMPS ARE STANDARDLY EQUIPPED WITH WORKING TIME COUNTER WITH DISPLAY**



**Inductive counter L**



**Counter LW**  
Digital counter LW with microprocessor with the display 4 field LED. Acoustic signaling the moment of exchange uv bulbs.



**Counter LW ST**  
Counter LW, ON/OFF key switch



**Counter LW SK**  
Counter LW, ON/OFF key switch, illuminated indicator



**MD motion detector**  
Acoustic signal warning of danger – the lamp is turned on



The manufacturer **ULTRA-VIOL Sp.j.** provide advise and consultation on the use of UV-C germicidal lamps.

# UV-C FLOW GERMICIDAL LAMPS

## UV-C AIR PURIFIERS

series **NBVE**



- Simple and highly effective method of air disinfection
- Irreversibly inactivate bacteria, viruses, moulds, fungi and other pathogenic microorganisms
- Prevent primary and secondary infections of patients and medical personnel caused by airborne pathogens
- Continuous air disinfection (24 hours a day) in the presence of people

 **ULTRA***Vi*OL