

# 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 2015  
in Düsseldorf



Arab Health Fair  
in Dubai 2014

Salmed Fair 2015 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:**

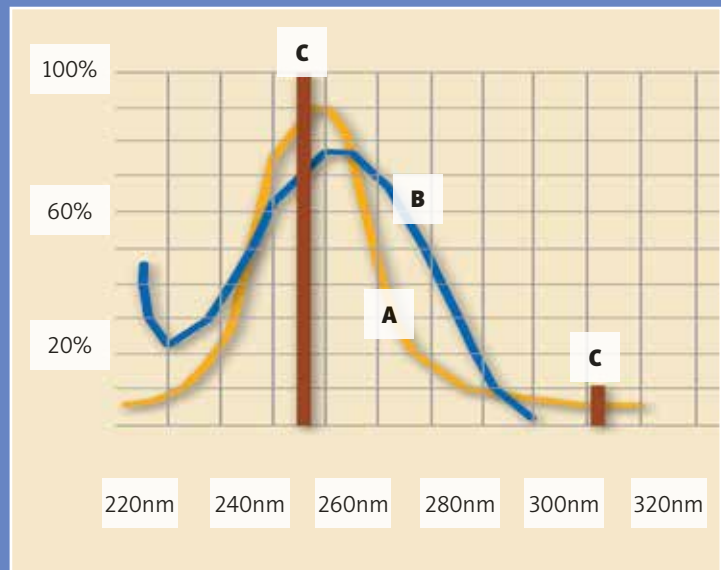
UV-A – long-wave band	400 nm – 315 nm
UV-B – medium-wave band	315 nm – 280 nm
UV-C – short-wave band	280 nm – 100 nm

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 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.

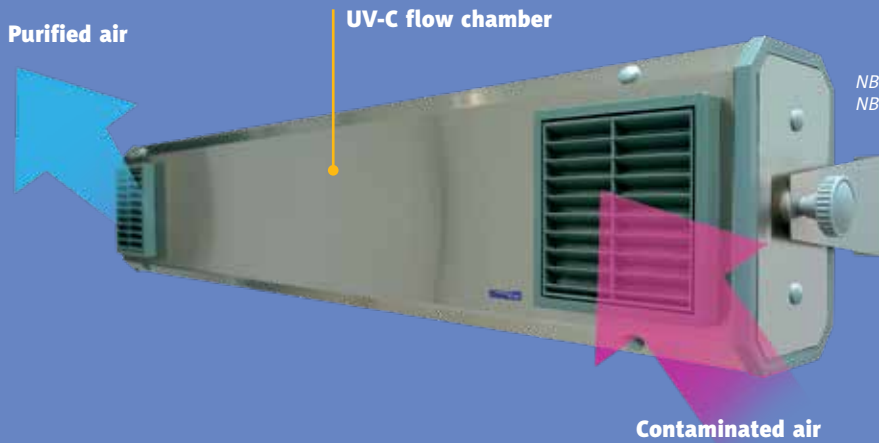
**NEW OPTION**  
ON / OFF  
remote control  
(designation – RC)



NBVE 60NL  
NBVE 110NL

NBVE 60P  
NBVE 110P

*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)*

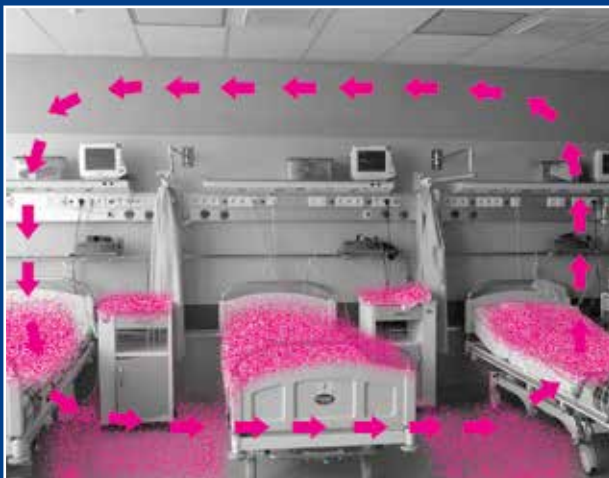
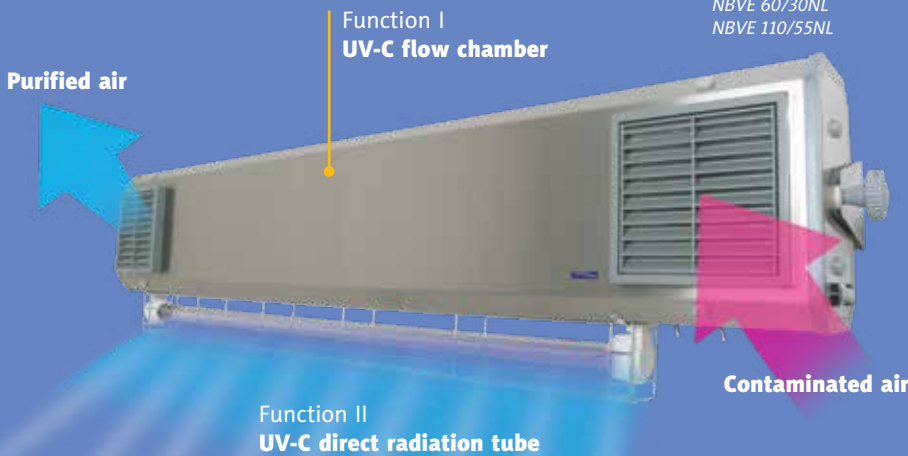
**Dual-function UV-C flow germicidal lamps**

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.

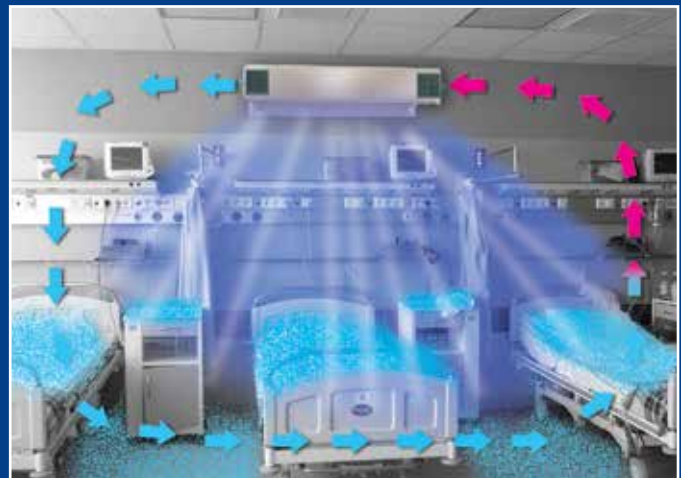
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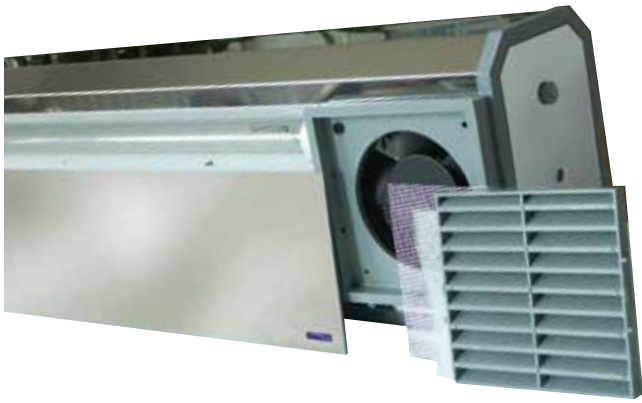
NBVE 60/30NL  
NBVE 110/55NL



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".**



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

NBVE 60 NL  
NBVE 110 NL



*Inductive work time counter*

*Air filter*

*Acid-resistant steel*



*Working signalling*

*Cover of the external tube*

NBVE 60/30  
NBVE 110/55

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

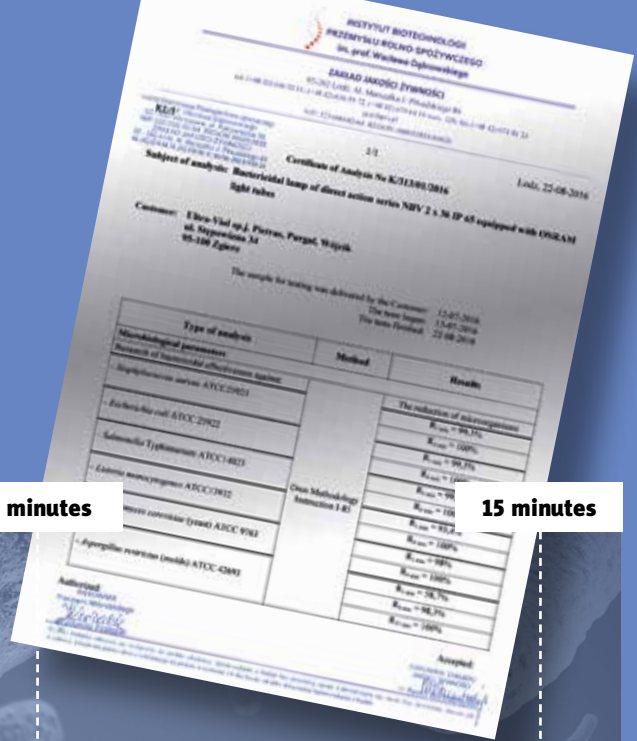
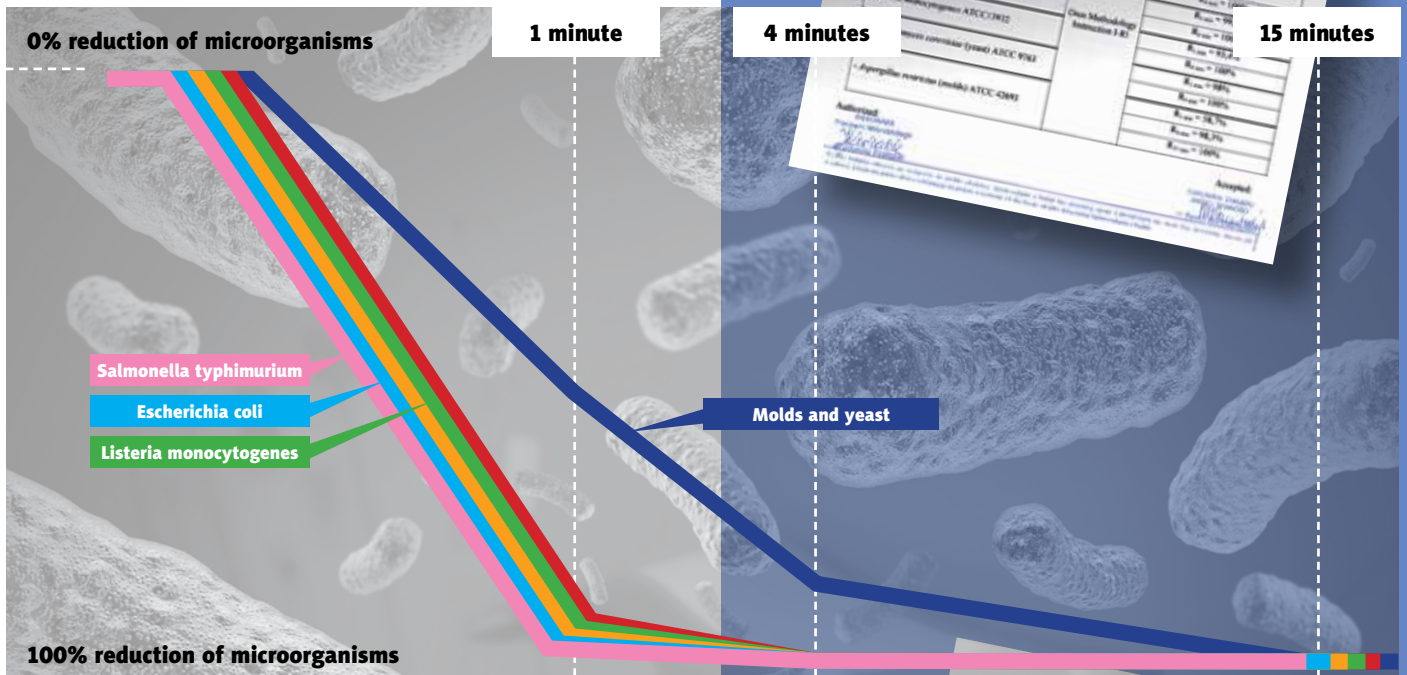


The manufacturer **ULTRA-VIOL Sp.j.** provide advise and consultation on the use of UV-C germicidal lamps.

# EFFECTIVENESS STUDY OF NBV IP65 GERMICIDAL LAMPS OPERATION

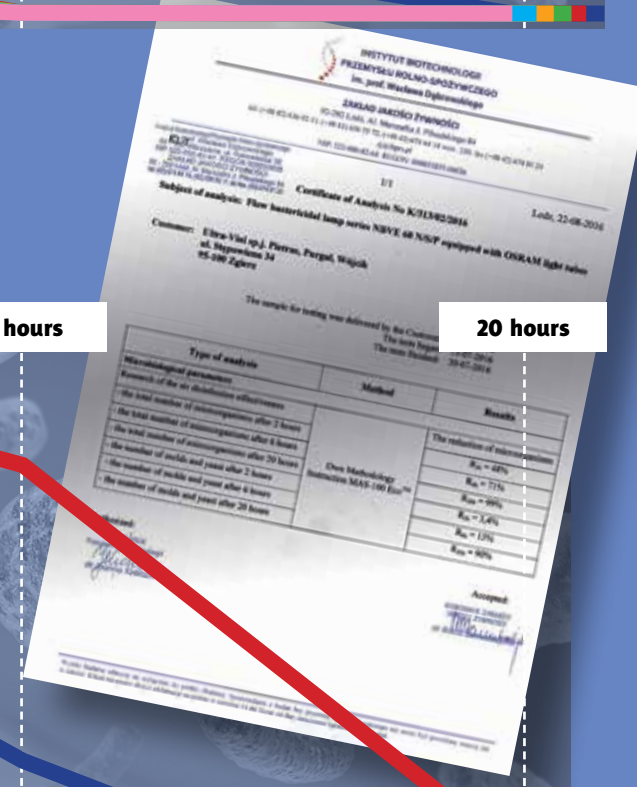
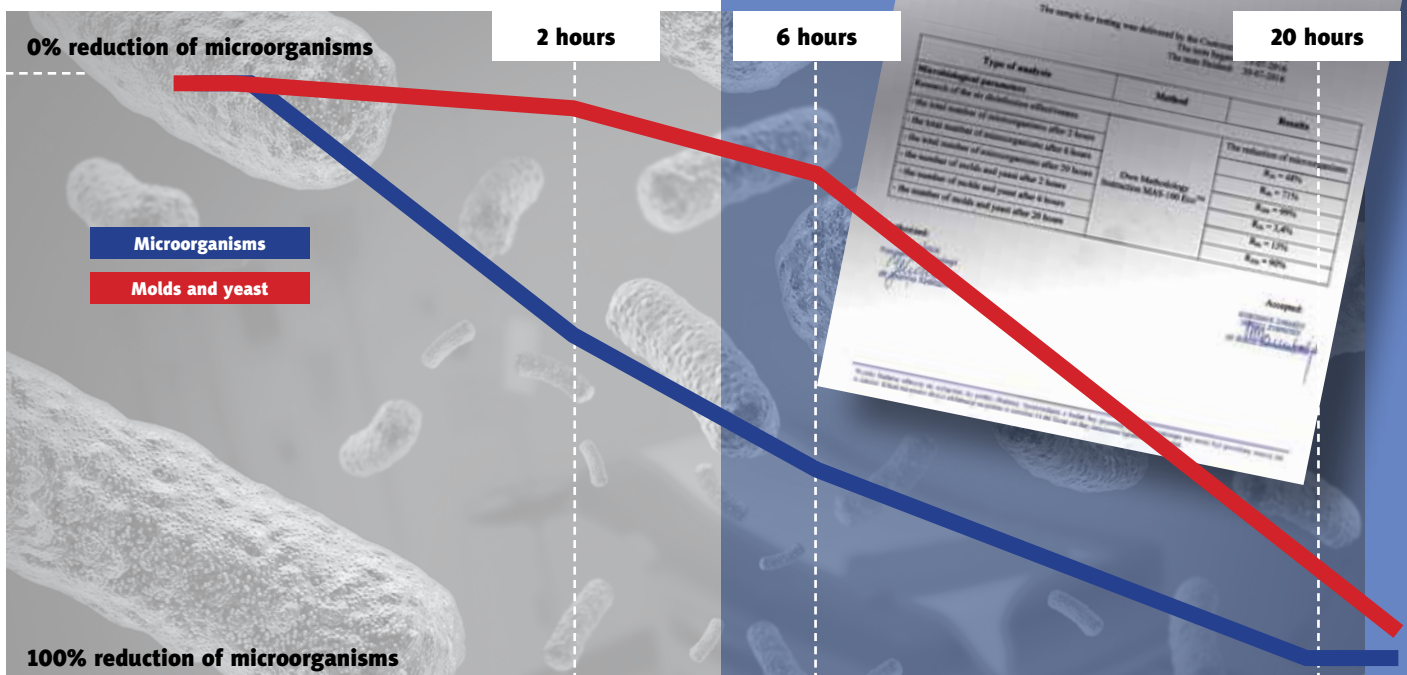
The study has been done by the Institute of Agricultural and Food Biotechnology, Institute of Food Quality in Łódź, Poland. Test results confirm very high biocidal efficacy of **NBV IP65** bactericidal lamps and **NBVE 60** UV-C flow germicidal lamps. Full study results are available on request.

The number of microorganisms exposed to UV-C radiation emitted by NBV 2x36 IP65 germicidal lamp during 1 minute, 4 minutes and 15 minutes.



# EFFECTIVENESS STUDY OF NBVE SERIES GERMICIDAL LAMPS OPERATION

The number of microorganisms exposed to UV-C radiation emitted by NBVE 60 germicidal lamp during 2 hours, 6 hours and 20 hours.





# UV-C DIRECT RADIATION GERMICIDAL LAMPS

series

## NBV...





**NBV 2x30 N**  
Universal wall – ceiling mounted UV-C germicidal lamp (power 60 W; 2 x 30 W)



**NBV 30 N**  
Universal wall – ceiling mounted UV-C germicidal lamp (power 30 W; 1X 30 W).

Rotation at 270°  
Possibility of the effective disinfection of upper layers of the air.

**NBV 15 S**  
Ceiling-mounted UV-C germicidal lamp (Power 15 W; 1 x 15 W)



All lamps are marked with visible and readable warning sign: (“Attention! UV-C Radiation – protect eyes and skin”)  
Wall and ceiling mounting system ensures stability of the lamp. The electric connection is hidden in a sealed box.

**NBV 2x30 S**  
Ceiling-mounted UV-C germicidal lamp



The electric systems of the lamps are placed in longitudinal bars made of stainless steel, powder coated. In addition, the whole is reinforced with a metal grid, coated with a white powder lacquer. The cover is resistant to disinfection agents.  
Reflector made of high-quality aluminum with characteristics similar to the mirror (high reflectivity), easy to keep clean  
UV-C tubes Philips or Osram guarantee high efficiency and long-time performance (8000 h).

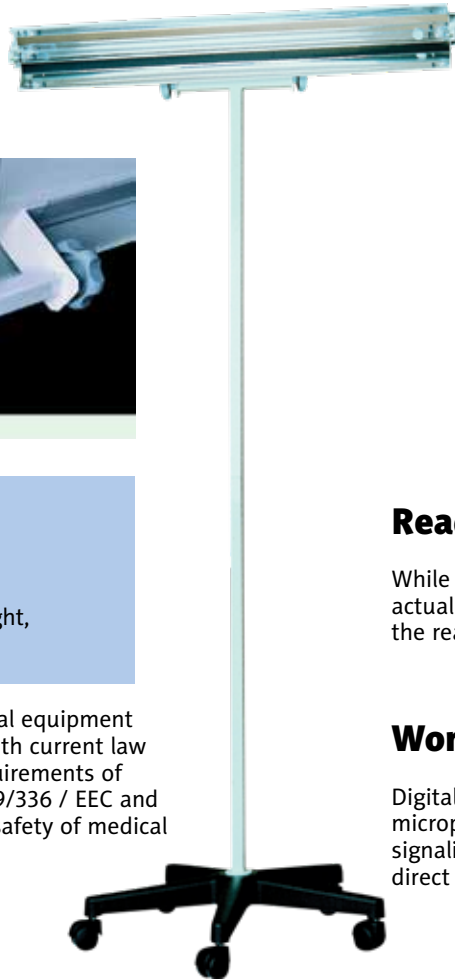
Rotation at 300°. Possibility of the effective disinfection of upper layers of the air.



### NBV 30 P

On mobile stand UV-C germicidal lamp (power 30 W; 1 x 30 W), light, stable, movable

Produced by our company, medical equipment is manufactured in accordance with current law on medical devices meet the requirements of Directive 93/42 / EEC, Directive 89/336 / EEC and ISO / IEC 60601-1 concerning the safety of medical devices.



### Reader CL-2

While working the counter sends, IR signal containing actual counter state. The counter state can be verified with the reader CL-02 offered by our company.

### Working time counter L

Digital working time counter equipped with the microprocessor, without display, with the acoustic signalization of the time of UV-C tubes change, mounted in direct action UV-C germicidal lamps



### Remote control RC NBV

for direct radiation UV-C germicidal lamps  
The remote control RC NBV is used for remote switching on/off the direct radiation germicidal lamps. It can be added as an optional accessory to the direct radiation germicidal lamps NBV 15, NBV 30 or NBV 2x30, regardless of their mounting option.

#### Benefits of the remote controls RC:

- Remote switching on/off the lamp from a safe distance
- Possibility of turning on the lamp after leaving the room
- No need for separate electrical wiring
- Custom coding system prevents from accidental turning on/off the lamp
- The receiver installed in the germicidal lamp.

### 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

Lamp type	NBV 15	NBV 2x15	NBV 30	NBV 2x30
Supply voltage	230 V, 50 Hz	230 V, 50 Hz	230 V, 50 Hz	230 V, 50 Hz
Power requirements	25 VA	50 VA	40 VA	75 VA
Source of UV-C radiation UV-C tube PHILIPS or OSRAM	15W	2x15W	30W	2x30W
UV-C radiation intensity at a distance of 1 m	0,9 W/m <sup>2</sup>	1,5 W/m <sup>2</sup>	2,3 W/m <sup>2</sup>	3,6 W/m <sup>2</sup>
Service lifetime of UV-C tube bulb	8000 h	8000 h	8000 h	8000 h
Class protection against electric shock	I	I	I	I
Type of housing	IP20	IP20	IP20	IP20
Type of device	B	B	B	B
Type of work	constant	constant	constant	constant
Dimensions of the dome	465x85x135	465x85x135	925x85x135	925x85x145
Mass of the dome	2,0 kg	3,0 kg	3,0 kg	5,0 kg
Length of the wall lamp's handle	- 120 mm			
Length of the ceiling lamp's extension arm	- 500 mm			
Height of the on mobile stand lamp's stand	- 1800 mm			

Power (number and power of UV-C tubes)	Design	<b>S</b>	<b>N</b>	<b>P</b>	<b>L</b>	<b>LW</b>
		ceiling – mounted	wall – ceiling mounted (universal)	on mobile stand	with UV-C tubes working time counter, without display	with UV-C tubes working time counter, with display
15 W (1x15W)		NBV 15S	NBV 15N	NBV 15P	...L	... LW
30 W (2x15W)		NBV 2x15S	NBV 2x15N	NBV 2x15P	...L	... LW
30 W (1x30W)		NBV 30S	NBV 30N	NBV 30P	...L	... LW
60 W (2x30W)		NBV 2x30S	NBV 2x30N	NBV 2x30P	...L	... LW

Application of direct action antibacterial lamps is one of the most effective methods of disinfection. These devices produce UV-C radiation of wave length 253.7 nm. This radiation reveals the strongest biocide characteristics and irreversibly deactivates bacteria, viruses, moulds, fungi and all other microorganisms. Due to their high efficiency, antibacterial lamps are used wherever high level of microbiological cleanliness is required and safety of patients and personnel depend on this level of cleanliness.

### Areas for antibacterial lamps use:

- hospitals (operation theatres, treatment rooms, dressing rooms, hospital rooms, admission rooms, isolation wards)
- outpatient clinics (doctor's surgeries and treatment rooms)
- laboratories
- pharmacies
- pharmaceutical industry, food and food-processing industry
- hotel industry and catering

The detailed description of UV-C germicidal lamps application methods is included in the instruction manual.

The lamp selection method depends on many factors such as: the height of the room, its shape, the surface, wall reflection coefficient, temperature, humidity and the degree of air dust, microorganisms resistance. The number of parameters make it impossible to establish a simple formula to determine the number of lamps in a given room.

From the practical point of view, we may assume that satisfactory microbiological cleanliness level shall be obtained when using:

- a 15W lamp for the area of up to 6 m<sup>2</sup>
- a 2x15W lamp for the area of up to 10 m<sup>2</sup>
- a 30W lamp for the area of up to 12 m<sup>2</sup>
- a 2x30W lamp for the area of up to 18 m<sup>2</sup> in a 2.5 – 3 m high room, in room conditions.

Depending on a room's usage (sick room, doctor's surgery, operation theatre) lamps should be turned on for 2 – 8 hours. To achieve a temporary disinfection of air in a room (eg. between 2 treatments), turn lamps on for 15-20 minutes.

**Attention:** Please send the questions to the e-mail address: [biuro@ultraviol.pl](mailto:biuro@ultraviol.pl) or please give us a call: + 48 42 717 11 76

# INDUSTRIAL UV-C IP-65 GERMICIDAL LAMPS



**LEVEL OF MICROBIAL PURITY SIGNIFICANTLY INCREASED**



**UV-C radiation effectively eliminates bacteria, yeast, and fungi.**  
It allows to achieve a high level of purity in the production process.



Area and air disinfection. Additional protection against the secondary contamination of a package and a product before and after wrapping.

## Microbiological contaminations

of components, final products, packaging, production lines, halls and the air has been troubling numerous manufacturers for years. The problem is particularly important in the area of food, cosmetics and pharmaceuticals production, where bacteriological purity is the condition of release the products for sales and - what is even more important - guarantees health and good opinion of the customers.

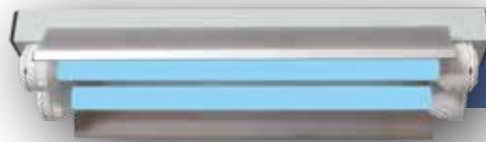
Ultraviolet is pleased to offer you modern and reliable devices, application of which will solve these problems for ever. The method of elimination of both primary and secondary microbial contamination involves the use of germicidal lamps emitting UV-C ultraviolet radiation with wavelength of 254 nm. The light of this wavelength effectively destroys microorganisms together with their spores, with no possibility to become resistant to this mode of disinfection. What is also important, the UV-C light deters rats, mice and other rodents. The use of germicidal lamps which have proven to be efficient in hospitals and other health care facilities, ensure cheap and simple way to guarantee significant improvement in microbiological purity of products and allows to limit the use of expensive and harmful chemicals in the technological process. Installation of germicidal lamps is not complicated and does not require modernization of production lines or any special investments. Our lamps meet all electrical safety requirements. UV-C tubes manufactured by Osram or Philips guarantee longtime and trouble-free operation. Our company has implemented the quality management system according to EN ISO 9001:2008 and EN ISO 13485:2012 concerning medical devices.



**The germicidal action of the UV-C radiation consists of absorption of “UV radiant energy” by nucleic acids and proteins. The absorbed energy induces chemical reactions in cell nuclei and thus destroys microorganisms.**

### Most common applications of germicidal lamps in food industry:

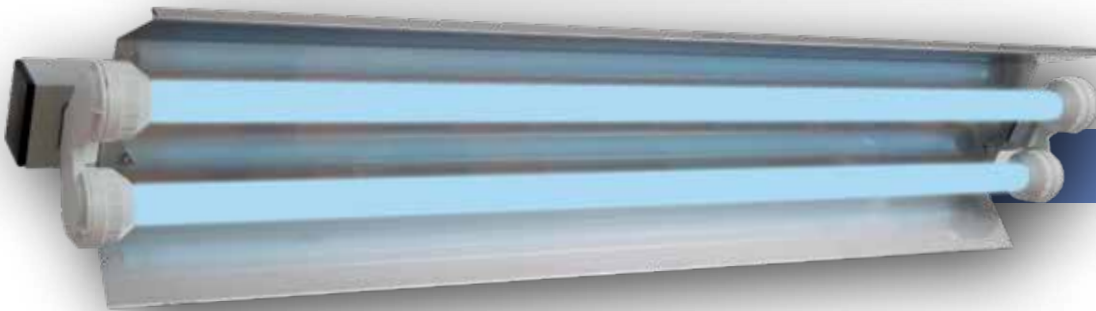
- general disinfection of production facilities and machinery
- general disinfecting of premises where the packing scheme is implemented
- local disinfection of the tape dispenser during packaging
- packaging disinfection - containers, cups, lids, films, foil
- general disinfection of air and storage area
- prevention of secondary infections



NBV 2x15



NBV 2x30



NBV 2x36



NBV 2x55



NBV 2x75

## Technical data - Industrial UV-C IP-65 germicidal lamps

Typ lampy	NBV 2x15 IP65	NBV 2x30 IP65	NBV 2x36 IP65	NBV 2x55 IP65	NBV 2x75 IP65
<b>Lamp type</b>	230V, 50Hz	230V, 50Hz	230V, 50Hz	230V, 50Hz	230V 50 Hz
<b>Supply voltage</b>	37 VA	75 VA	90 VA	123 VA	155 VA
<b>Source of UV-C radiation UV-C tube Philips or Osram</b>	2x15W	2x30W	2x36W	2x55W	2x75 W
<b>Radiation intensity of the external UV-C radiator at the distance of 1 m</b>	1,0 W/m <sup>2</sup>	2,1 w/m <sup>2</sup>	2,8 W/m <sup>2</sup>	3,6 W/m <sup>2</sup>	6,8 W/m <sup>2</sup>
<b>Bulb service lamp</b>	8000h	8000h	8000h	8000h	8000h
<b>Class of protection against electric shock</b>	I	I	I	I	I
<b>Class of housing protection</b>	IP 65	IP 65	IP 65	IP 65	IP 65
<b>Type of work</b>	constant	constant	constant	constant	constant
<b>Dimensions</b>	620 x 300 x 155	1100 x 300 x 155	1275 x 240 x 124	1100 x 300 x 155	1285x230x180
<b>Mass of the dome</b>	2,7 kg	5,0 kg	3,2 kg	5,0 kg	5,6 kg
<b>Effective area of the lamp</b>	spot	ok. 10-20 m <sup>2</sup>	ok. 20-25 m <sup>2</sup>	ok. 25-30 m <sup>2</sup>	ok. 30-40 m <sup>2</sup>



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