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

ULTRAVIOLET
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.

We invite you to become our business partner.
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 erythemal effect is of no importance.

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

**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.

**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

**AREAS OF APPLICATION**

- 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.
**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.

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

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 personnel and patients (permanent disinfection of the 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 personnel 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.
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”.

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NBVE 60 NL
NBVE 110 NL

Acid-resistant steel

Air filter

Working signalling

Inductive working time counter

Safe to people – measurement of the irradiation with the use of counter indicates 0
## TECHNICAL DATA SERIES

<table>
<thead>
<tr>
<th>Lamp type</th>
<th>NBVE 60</th>
<th>NBVE 110</th>
<th>NBVE 60/30</th>
<th>NBVE 110/55</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply voltage</td>
<td>230 V, 50 Hz</td>
<td>230 V, 50 Hz</td>
<td>230 V, 50 Hz</td>
<td>230 V, 50 Hz</td>
</tr>
<tr>
<td>Power requirement</td>
<td>75 VA</td>
<td>115 VA</td>
<td>105 VA</td>
<td>145 VA</td>
</tr>
<tr>
<td>UV-C tube PHILIPS or OSRAM</td>
<td>2 x 30 W</td>
<td>2 x 55 W</td>
<td>2 x 30 W internal</td>
<td>2 x 55 W internal</td>
</tr>
<tr>
<td></td>
<td>1 x 30 W external</td>
<td>1 x 55 W external</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lifetime of UV-C tube</td>
<td>min. 8000 h</td>
<td>min. 8000 h</td>
<td>min. 8000 h</td>
<td>min. 8000 h</td>
</tr>
<tr>
<td>Radiation intensity of the external UV-C radiator at the distance of 1 m</td>
<td>—</td>
<td>—</td>
<td>100 µW / cm²</td>
<td>150 µW / cm²</td>
</tr>
<tr>
<td>Ventilator capacity</td>
<td>132 m³/h</td>
<td>199 m³/h</td>
<td>132 m³/h</td>
<td>199 m³/h</td>
</tr>
<tr>
<td>Cubage of disinfected room</td>
<td>25-50 m³</td>
<td>45-90 m³</td>
<td>25-50 m³</td>
<td>45-90 m³</td>
</tr>
<tr>
<td>Effective area of the lamp</td>
<td>10-20 m²</td>
<td>18-36 m²</td>
<td>10-20 m²</td>
<td>18-36 m²</td>
</tr>
<tr>
<td>Class of protection against electric shock</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>I</td>
</tr>
<tr>
<td>Cover type</td>
<td>IP 20</td>
<td>IP 20</td>
<td>IP 20</td>
<td>IP 20</td>
</tr>
<tr>
<td>Dimensions [mm]</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dome</td>
<td>1125x215x130</td>
<td>1125x285x130</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall dimensions – N making (wall mounted)</td>
<td>1190x215x145</td>
<td>1190x285x145</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall dimensions – S making (ceiling mounted)</td>
<td>1190x330x130</td>
<td>1190x400x130</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall dimensions – P making (mobile)</td>
<td>600x1740x600</td>
<td>600x1740x600</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mass - N making (wall mounted)</td>
<td>8,5 kg</td>
<td>9,0 kg</td>
<td>9,0 kg</td>
<td>9,5 kg</td>
</tr>
<tr>
<td>Mass - S making (ceiling mounted)</td>
<td>8,5 kg</td>
<td>9,0 kg</td>
<td>9,0 kg</td>
<td>9,5 kg</td>
</tr>
<tr>
<td>Mass - P making (mobile)</td>
<td>13,0 kg</td>
<td>13,5 kg</td>
<td>13,5 kg</td>
<td>14,0 kg</td>
</tr>
</tbody>
</table>

*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 fulfills 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](image)

**Inductive counter L**

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

![Counter LW](image)

**Counter LW**

Counter LW, ON/OFF key switch

![Counter LW ST](image)

**Counter LW ST**

Counter LW, ON/OFF key switch, illuminated indicator

![Counter LW SK](image)

**Counter LW SK**

Counter LW, ON/OFF key switch, illuminated indicator

![MD motion detector](image)

**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

- 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
UV-C DIRECT RADIATION GERMICIDAL LAMPS

series NBV...
UV-C DIRECT RADIATION GERMICIDAL LAMPS

NBV SERIES

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

**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).

**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.

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

**Reader CL-2**

While working the counter sends, IR signal containing actual counter state. The counter state can be verified with the reader CL-O2 offered by our company.

**Working time counter L**

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

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.
Application of direct action antibacterial lamps is one of the most effective methods of disinfection. These devices produce UV-C radiation of wavelength 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

<table>
<thead>
<tr>
<th>Lamp type</th>
<th>NBV 15</th>
<th>NBV 2x15</th>
<th>NBV 30</th>
<th>NBV 2x30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply voltage</td>
<td>230 V, 50 Hz</td>
<td>230 V, 50 Hz</td>
<td>230 V, 50 Hz</td>
<td>230 V, 50 Hz</td>
</tr>
<tr>
<td>Power requirements</td>
<td>25 VA</td>
<td>50 VA</td>
<td>40 VA</td>
<td>75 VA</td>
</tr>
<tr>
<td>Source of UV-C radiation</td>
<td>15W</td>
<td>2x15W</td>
<td>30W</td>
<td>2x30W</td>
</tr>
<tr>
<td>UV-C radiation intensity at a distance of 1 m</td>
<td>0.9 W/m²</td>
<td>1.5 W/m²</td>
<td>2.3 W/m²</td>
<td>3.6 W/m²</td>
</tr>
<tr>
<td>Service lifetime of UV-C tube bulb</td>
<td>8000 h</td>
<td>8000 h</td>
<td>8000 h</td>
<td>8000 h</td>
</tr>
<tr>
<td>Class protection against electric shock</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>I</td>
</tr>
<tr>
<td>Type of housing</td>
<td>IP20</td>
<td>IP20</td>
<td>IP20</td>
<td>IP20</td>
</tr>
<tr>
<td>Type of device</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Type of work</td>
<td>constant</td>
<td>constant</td>
<td>constant</td>
<td>constant</td>
</tr>
<tr>
<td>Dimensions of the dome</td>
<td>465x85x135</td>
<td>465x85x135</td>
<td>925x85x135</td>
<td>925x85x145</td>
</tr>
<tr>
<td>Mass of the dome</td>
<td>2.0 kg</td>
<td>3.0 kg</td>
<td>3.0 kg</td>
<td>5.0 kg</td>
</tr>
<tr>
<td>Length of the wall lamp's handle</td>
<td>- 120 mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length of the ceiling lamp's extension arm</td>
<td>- 500 mm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Height of the on mobile stand lamp's stand</td>
<td>- 1800 mm</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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 makes 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 m²
- a 2x15W lamp for the area of up to 10 m²
- a 30W lamp for the area of up to 12 m²
- a 2x30W lamp for the area of up to 18 m² 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 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.

Microbiological contaminations

of the components, final products, packages, production lines, halls and the air, are real concerns of manufacturers for years. This problem acquires significant importance in the area of food, cosmetics and pharmaceutics production, that purity is the condition of release for sales and – what is more important – the prerequisite for health and good reputation among customers. Ultra-viol Sp. j. is pleased to offer you modern and tested in the world devices, that application will solve these problems for ever.

Our method of primary and secondary microbiological contaminations involves the use of germicidal lamps emitting UV-C radiation of wavelength 254 nm. The light of such a wavelength effectively eliminates all kinds of microorganisms together with its sporulated forms, without the possibility of getting resistant to this method of disinfection. What is more the UV-C light deters rats, mice and other rodents. Using UV-C lamps – that for years were commonly applied in hospitals and other medical facilities – ensures in a cheap and simple way significant improvement in the microbiological purity of the products and allows to limit the number of expensive and harmful chemicals in the technological process.

Installation of the lamps does not require any modernization of the production lines or any special investments. Our lamps meet all requirements concerning electrical safety, are easy - mounted, UV – C radiators made by Philips ensure longtime and trouble- less work. Our company applied quality management system ISO 9001 and concerning medical devices ISO 13485, issued by TUV NORD.

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

<table>
<thead>
<tr>
<th>Typ lampy</th>
<th>NBV 2x15 IP65</th>
<th>NBV 2x30 IP65</th>
<th>NBV 2x36 IP65</th>
<th>NBV 2x55 IP65</th>
<th>NBV 2x75 IP65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lamp type</td>
<td>230V, 50Hz</td>
<td>230V, 50Hz</td>
<td>230V, 50Hz</td>
<td>230V, 50Hz</td>
<td>230V 50 Hz</td>
</tr>
<tr>
<td>Supply voltage</td>
<td>37 VA</td>
<td>75 VA</td>
<td>90 VA</td>
<td>123 VA</td>
<td>155 VA</td>
</tr>
<tr>
<td>Source of UV-C radiation</td>
<td>2x15W</td>
<td>2x30W</td>
<td>2x36W</td>
<td>2x55W</td>
<td>2x75 W</td>
</tr>
<tr>
<td>UV-C tube Philips or Osram</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radiation intensity of the external UV-C radiator at the distance of 1 m</td>
<td>1,0 W/m²</td>
<td>2,1 W/m²</td>
<td>2,8 W/m²</td>
<td>3,6 W/m²</td>
<td>6,8 W/m²</td>
</tr>
<tr>
<td>Bulb service lamp</td>
<td>8000h</td>
<td>8000h</td>
<td>8000h</td>
<td>8000h</td>
<td>8000h</td>
</tr>
<tr>
<td>Class of protection against electric shock</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>I</td>
<td>I</td>
</tr>
<tr>
<td>Class of housing protection</td>
<td>IP 65</td>
<td>IP 65</td>
<td>IP 65</td>
<td>IP 65</td>
<td>IP 65</td>
</tr>
<tr>
<td>Type of work</td>
<td>constant</td>
<td>constant</td>
<td>constant</td>
<td>constant</td>
<td>constant</td>
</tr>
<tr>
<td>Dimensions</td>
<td>620 x 300 x 155</td>
<td>1100 x 300 x 155</td>
<td>1275 x 240 x 124</td>
<td>1100 x 300 x 155</td>
<td>1285x230x180</td>
</tr>
<tr>
<td>Mass of the dome</td>
<td>2,7 kg</td>
<td>5,0 kg</td>
<td>3,2 kg</td>
<td>5,0 kg</td>
<td>5,6 kg</td>
</tr>
<tr>
<td>Effective area of the lamp</td>
<td>spot</td>
<td>ok. 10-20 m²</td>
<td>ok. 20-25 m²</td>
<td>ok. 25-30 m²</td>
<td>ok. 30-40 m²</td>
</tr>
</tbody>
</table>