



Medical–Biological
Research & Technologies

UVR-M

UV-air flow Cleaner - Recirculator



**Operating Manual
Certificate**

for versions:
V.2AA
V.2AC
V.2AB

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1. Safety Precautions

The following symbols mean:



Caution: Make sure you have fully read and understood the present Manual before using the equipment. Please pay special attention to sections marked by this symbol.



Caution: Do not switch on the unit with the cover removed or without filters! UV-lamp must be covered at all times during operation. Otherwise it can expose the operator and other people to a dangerous level of UV light.

GENERAL SAFETY

- Use only as specified in the Operating Manual provided.
- The unit should be saved from shocks or falling.
- After transportation or storage keep the unit under room temperature for 2-3hrs before connecting it to the electric circuit.
- Use only cleaning and decontamination methods recommended by the manufacturer.
- The unit is designed only for air decontamination.
- Do not make modifications to the design of the unit.
- The unit is not moisture-resistant.

ELECTRICAL SAFETY

- Connect only to electric circuit with voltage corresponding to that on the serial number label.
- Ensure that the switch and the plug are easily accessible during use.
- Do not plug the unit into an ungrounded power socket, and do not use an ungrounded extension lead.
- Disconnect the unit from the electric circuit before moving.
- UV recirculator must be used only in clean rooms because dust accumulation on the electrical parts of the device can cause a short circuit.
- If liquid penetrates into the unit, disconnect it from the electric circuit and have it checked by a repair and maintenance technician.
- Do not operate the unit in premises where condensation can form. Operating conditions of the unit are defined in the Specifications section.

DURING OPERATION

- Do not operate the unit in environments with aggressive or explosive chemical mixtures. Please contact the manufacturer for possible operation of the unit in specific atmospheres.
- Do not operate the unit without dust filters installed.
- Do not operate the unit if it is faulty or has been installed incorrectly.
- Do not use outside laboratory rooms.

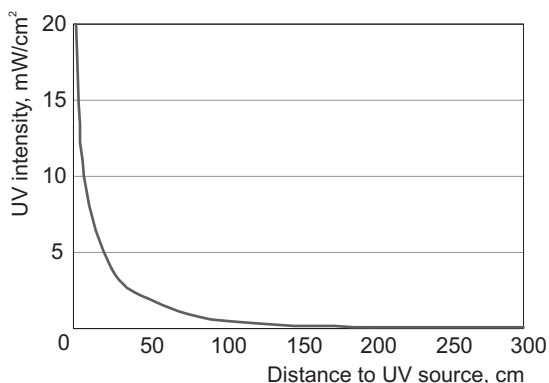
BIOLOGICAL SAFETY

- It is the user's responsibility to carry out appropriate decontamination if hazardous material is spilt on or penetrates into the equipment.

2. General Information

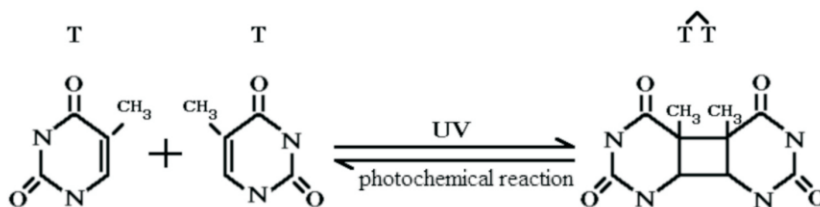
UV DNA/RNA Recirculators are compact airflow exchange chambers with built-in UV lamps and a fan unit equipped with dust filters and a control unit.

UV DNA/RNA Recirculators provide active constant airflow in close vicinity to UV lamps, thus ensuring maximum decontamination efficiency (see Fig. 1). In this version ozone-free TUV 25 W G13 lamps with 9000 hours long life time are used.



**Fig.1 Dependence of UV intensity on distance to UV source
(TUV T8 G25 lamp 254 nm)**

UV radiation affects viability of microorganisms by causing photochemical reactions in the structure of DNA and RNA. Adjacent pyrimidine molecules form dimers and block the reproduction of microorganisms, as a result, causing their death. The diagram (see Fig. 2) shows the process of formation of pyrimidine dimers using thymine as an example.



**Fig.2. The formation of pyrimidine dimers;
thymine taken as an example**
(source <http://www.phys.ksu.edu/>)

3. Getting started

3.1. Unpacking.

Remove packing materials carefully and retain them for future shipment or storage of the unit. Examine the unit carefully for any damage incurred during transit. The warranty does not cover in-transit damage.

3.2. Complete set. Package contents:

Standard set

- UVR-M UV-air flow Cleaner - Recirculator1 pce.
- spare dust filters2 pcs.
- spare fuse1 pce.
- screw with dowel1 pce.
- Operating Manual, Certificate1 copy

Optional accessories

- UVR-S support standon request

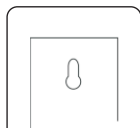
3.3. Set up:

- Choose recirculator location so that the air intake (located in lower part of the unit) and discharge (located in upper part of the unit) operate unimpeded, providing the best air circulation in the room.

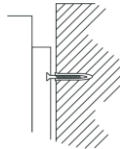


Caution! UV recirculator must be used only in clean rooms because dust accumulation on the electrical parts of the device can cause a short circuit.

- Fix the unit on the wall with screw and dowel, or on the UVR-S movable support stand, using as a guide the enclosed UVR-S assembling scheme (Fig.3).
- Position the unit so there is easy access to the power switch and the power plug.



attachment point
on the unit



method of attachment
on the wall



attachment points
on the UVR-S
support stand



method of attachment
on the UVR-S
support stand

Fig.3 Unit attachment methods

3.4. The number of UV recirculators required for 90% efficiency of room air decontamination (in 1 hour):

Room volume, m ³	Up to 50	100	200
UVR-M	1 - 3	4 - 6	8 - 10

4. Operation

- 4.1. Connect the power plug to a grounded power socket.
- 4.2. Switch ON the power switch situated on the front side of the unit (fig.4/1, position I).
- 4.3. After finishing the operation switch OFF the unit with the switch (position O) and disconnect the power plug from power socket.



Note!

Use the UV lamp operation indicator in the center of recirculator (fig.4/2) to check operation of the UV lamp inside the recirculator. If the indicator is light from inside while the switch is ON, then the UV lamp is functioning. If it is not, replace the lamp.



Caution!

Bactericidal lamp properties reduce by ~12% after 5000 hours of operation (data given by the manufacturer), so lamp replacement or air recirculation time extension by 12% is recommended in such a case in order to achieve the desired air cleaning result.

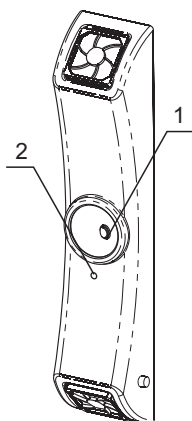


Fig.4 General view

5. Specifications

The unit is designed for operation in cold rooms, incubators and closed laboratory rooms at ambient temperature from +4°C to +40°C in a non-condensing atmosphere and maximum relative humidity 80% for temperatures up to 31°C decreasing linearly to 50% relative humidity at 40°C.

- 5.1. UV light sourceozone-free TUV 25 W G13 UV-C
- 5.2. Wave length253,7 nm
- 5.3. Emission intensity (averaged)..... 18 mW/cm²
- 5.4. Lamp service life9000 hr
- 5.5. Flow speed with standard filters 14 m³/hr
- 5.6. Dimensions660x135x110 mm
- 5.7. Operating voltage / power consumption230 V, 50 Hz, 125 W (540 mA)
120 V, 60 Hz, 160 W (1.3 A)
- 5.8. Weight*3.4 kg

* Accurate within ±10%.

Optional accessories	Description	Catalogue number
UVR-S	movable support stand	BS-040105-AK

Replacement parts	Catalogue number
Dust filter	BS-000000-S31

Biosan is committed to a continuous programme of improvement and reserves the right to alter design and specifications of the equipment without additional notice.

6. Maintenance

- 6.1. If the unit requires maintenance, disconnect the unit from the electric circuit and contact Biosan or your local Biosan representative.
- 6.2. All maintenance and repair operations must be performed only by qualified and specially trained personnel.
- 6.3. **Fuse replacement.** Disconnect the unit from electric circuit. Open the fuse holder located on the side of the unit (fig.3/2) by turning its cover counter-clockwise using a screwdriver. Replace with the appropriate fuse according to the unit operating voltage, see table below (type **M** - time lag: **Medium**).

Unit version	Operating voltage	Fuse rate
V.2AA	230 V, 50 Hz	M 1 A
V.2AC	120 V, 60 Hz	M 1,6 A
V.2AB	230 V, 50 Hz	M 1 A

6.4. Dust filter replacement

The dust filters on either end of the UV-recirculator should be checked monthly and cleaned or replaced when they become clogged.

Simply unclip the covers (fig.5/➔), to check, replace or clean the filters, if it is necessary fit a new or rinse in water, dry and set up existing filters. Clip covers back in place. This operation must be performed by the user.

- 6.5. **Cleaning of the outside parts.** Standard ethanol (75%) or other cleaning agents recommended for cleaning of laboratory equipment can be used for cleaning and decontamination of the unit. This operation must be performed by the user.
- 6.6. **Cleaning of the inside parts.** Cleaning of the inside parts must be performed only by qualified and specially trained personnel. In order to ensure proper efficiency in the long run it is recommended to clean the UV-recirculator once a month.
- 6.7. **UV lamp replacement.** Replacement must be performed only by qualified and specially trained personnel. UV lamp replacement is necessary after lamp stops functioning or at the end of manufacturer specified life time. Use the indicator in the center of recirculator (fig.5/1) to check operation of UV lamp inside the recirculator. If the indicator is alight while the switch is ON, then the UV lamp is functioning. If it is not, replace the lamp.

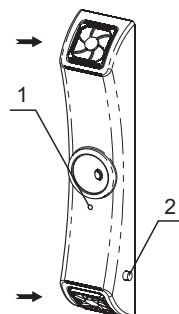


Fig. 5 Dust filters location

7. Warranty and Claims

- 7.1. The Manufacturer guarantees the compliance of unit with the requirements of Specifications, provided the Customer follows the operation, storage and transportation instructions.
- 7.2. The warranted service life of unit from date of delivery to the Customer is 24 months (exclude UV-lamps and dust filters). Contact your local distributor to check availability of extended warranty.
- 7.3. If any manufacturing defects are discovered by the Customer, an unsatisfactory equipment claim shall be compiled, certified and sent to the local distributor address. Please visit www.biosan.lv, Technical support section to obtain the claim form.
- 7.4. The following information will be required in the event that warranty or post-warranty service comes necessary. Complete the table below and retain for your records.

Model	UVR-M UV-airflow Cleaner - Recirculator
Serial number	
Date of sale	

8. Declaration of Conformity

Declaration of Conformity

Equipment name:	UVR-M
Type of equipment:	UV-air flow Cleaner-Recirculator
Directive:	EMC Directive 2004/108/EC Low Voltage Directive 2006/95/EC RoHS 2011/65/EC WEEE 2002/96/EC & 2012/19/EU
Manufacturer:	SIA BIOSAN Ratsupites 7, build.2, Riga, LV-1067, Latvia
Applied Standards:	EN 61326-1: Electrical equipment for measurement, control and laboratory use EMC requirements. General requirements EN 61010-1: Safety requirements for electrical equipment for measurement, control and laboratory use. General requirements

We declare that this product conforms to the requirements of the above Directive(s)



Signature
Svetlana Bankovska
Managing director

12.06.2013

Date



Signature
Aleksandr Shevchik
Engineer of R&D

12.06.2013

Date

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