

**PHOTOBIOLOGY** 

# DISINFECTION SYSTEMS CATALOGUE



## **Why Polar Bear?**

Polar bears have white, thick fur that protects them from cold since they live in vast areas covered by glaciers. In fact, they have black skin which covered with transparent hairs. The transparent hairs function as fiber optic conductors. The hairs collect ultra-violet light and direct it to the black skin where it is converted into heat. Which means energy saving by heat insulation. Given these facts, we believed a logo design with a "Polar Bear" is the best visual language which describes the perfect harmony of nature and technology for our brand "Fiberli".





## **About Us**

Our company, PSL Elektronic, which is the first Turkish company that applies Fiber Optic lighting systems in Turkey as a manufacturer, was established in Antalya 1991. Our company, which concentrated on "Professional Audio and Light" systems at the outset, pursued studies on decorative Fiber Optic ligting applications in 1997 and accomplished applications which are highly successful and each of which is a first and trendsetter in its field.

The achieved succesful projects have derived our company to concentrate in the filed of decorative architectural lighting and our company, gradually pulling away from the field of "audio and light" systems, completely steered towards the field of lighting by creating the "FİBERLİ" brand in 2000s.

The pioneer works and projects that were conducted during this period, and the technological developments in the LED sector, put forth the first signs that a "LED revolution in Lighting" would occur. Our company,which foresaw this development and progress, made the decision to completely take part in the "LED Lighting" field as a manufacturer in the 2000s and began to make all of its investments in this direction. Within this framework, we began to domestically manufacture our first LED lighting products and supply to our customers in 2002.

We, from the outset, designated our manufacture philosophy on the basis of domestic manufacturing, high quality, customer oriented, respect, and affection towards humans, environments and nature. Our company, which has never made concessions to these principles, has achieved to become one of the frontrunner and leading organisations in the field in our region in a short span of time.

In 2017, for the purpose of providing a service a with much higher capacity, pace and quality, we completed our new factory investment, established on a 20.000 m2 area within the Antalya Organized Industrial Zone and commenced manufacturing. Our company, which has accomplished more than 800 large scaled projects up untill now, at present;

- Has nearly 300 hundred employees
- Sales and service units located in numerous countries
- Carries out projects and applications customly designed for individuals or businesses,
- Research and Development team with 29 employees
- Design unit with a team of experts in lighting field.
- Together with the branches and countless representatives in İstanbul, Antalya, Ankara, İzmir Moscow, Dubai and Ashgabat, we are working to provide you perfect service and products.

We would like to take this opportunity and once again thank you, our esteemed customers, who have guided us to the present day and never refrained their support.







## LET US FIRST GET TO KNOW OUR ENEMY

#### SARS-CoV-2 Virus that causes COVID-19, our biggest enemy

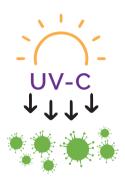








## HOW CAN THIS VIRUS BE DESTROYED?



It is more durable comparing to many other viruses.

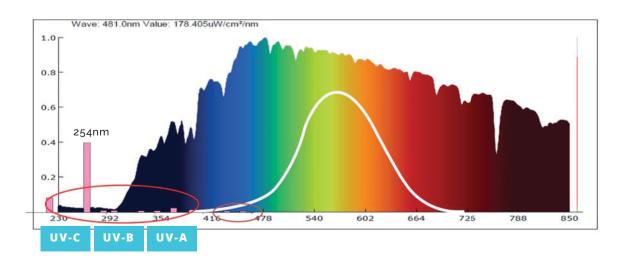
It becomes ineffective in a short time under intense sunlight.

## **BUT HOW?**

UV-C is antiseptic (Biocidal) and there is very little UV-C radiation in solar rays (although the time and geographic location varies) at the noon time. In higher elevations where the atmosphere is thinner and where sunlight is steeper, the amount of UV-C in the sun's rays is higher.

#### However, UVC rays;

- · Can not enter our home from our window.
- · Are not effective under shadow.
- Can not reach earth in cloudy air.
- Can not reach through any eyeglass.
- $\boldsymbol{\cdot}$  Can not enter through plastic bag and covers.
- · Can not pass through our cloths.



For this reason, UV-C sterilized air must be circulated inside the building. (As specified in COVID-19 prevention guide of Turkish Ministry of Health)



n central ventilation systems, instead of re-circulating the air taken from the inside, the method of conditioning 100% outside air should be preferred or, if possible, UV lights should be placed in the central suction duct and viruses, if any, should be killed in the intake air.

In the "Communiqué on New Measures on Corona Virus Outbreak" dated 15.12.20 of the Ministry of Internal Affairs, the obligation of ultraviolet disinfection in accommodation facilities and administrative sanctions were stated.

In accommodation facilities that do not have a conditioned ventilation system, a UV filter will be installed in mechanical ventilation / air conditioning systems, and regular and frequent maintenance will be ensured.

In accordance with Articles 27 and 72 of the General Health Law, these decisions will be taken urgently by the Provincial / District General Health Boards.

There will be no disruption in the implementation and no grievances will be caused. Those who do not comply with the decisions taken will be subject to administrative sanctions in accordance with the relevant articles of the General Hygiene Law. Necessary judicial proceedings will be initiated within the scope of Article 195 of the Turkish Penal Code regarding criminal acts.

## SO, WHAT IS THE QUANTITY OF UV-C REQUIRED TO DESTROY THIS VIRUS?

We need to expose it to 30 mJ / cm<sup>2</sup> / 254 nm (UV-C), that is, 30 mW of 254 nm wavelength (UV-C) per square centimetre for one second.

Source: (Boston University, 17th of June 2020)

In its explanation dated 17th of June, 2020 Boston University:

Has stated that it killed 99% of the SARS-CoV-2 virus that caused COVID-19 in 6 seconds with a dose of 5 mJ / cm<sup>2</sup> UVC.

## IS THIS A NEW INVENTION?



It has been known as (UVGI) "Ultraviolet Germicidal Irradiation" in the world since 1960's and is used in the health and food industry.

In our country, T.R. Ministry of Health Regulation on **Biocidal Products** was prepared by the Ministry of Health in 1902 in accordance with the Directive 98/8 / EC of the European Union and was published in the official gazette No. 27449 and dated December 31, 2009 and entered into force.

## WHAT ARE WE DOING?

We kill microbes by irradiating them with UVC, which we produce artificially, without using any chemical materials, as the sun does.

### WE ARE USING 3 METHODS FOR THIS PURPOSE



**01** ENVIRONMENTAL AIR STERILIZATION

Sterilizing the air in the environment.



**02** VENTILATION SYSTEM STERILIZATION

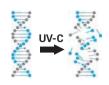
Returning the air sucked from the environments in central ventilation systems to the environment by sterilizing.



**O2** SURFACE STERILIZATION

Sterilizing the surfaces in the environment

### GENERAL FEATURES OF PRODUCTS











It disrupts the DNA and RNA structure of microorganisms and neutralizes them.

Peak Performance

Optional radar motion sensor option

Optional timer

Optional **IoT** application

## APPLICATION AREAS



Hotel and Accommodation Facilities



Schools and training courses



Hospitals and clinics



Offices



Shopping malls - Supermarkets



Cafes and Restaurants



Hairdressers and Beauty Centers



Factories and Industrial facilities



Public transport vehicles



Toilets and bathrooms



Shops and dressing rooms



Industrial kitchens













### CERTIFICATE AND REPORTING DOCUMENTS

**CE certificates,** design and production competence of our disinfection devices are approved by accredited institutions. Its effect on bacteria and viruses has been proven with efficacy test reports.



It provides an optimum disinfection solution for general use.
You can disinfect your living space from viruses and bacteria by operating the device for certain periods according to the width of the environment.





## PRODUCT SOLUTIONS

#### **ENVIRONMENTAL AIR STERILIZATION**







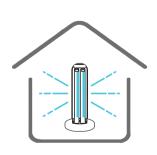


#### **VENTILATION SYSTEM STERILIZATION**





#### **SURFACE STERILIZATION**

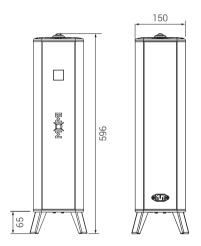












It provides an optimum disinfection solution for general use. You can disinfect your living space from viruses and bacteria by operating the device for certain periods according to the width of the environment.

#### **Functional features**

It destroys 99% of the SARS-CoV-2 virus (Covid-19) by applying UV-C at a dose of 16mj / cm² in a tunnel

#### Areas where it is used

Housings

Meeting rooms

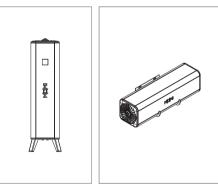
All the closed areas up to a space of maximum 30m²

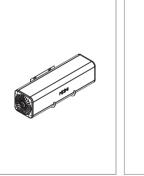
#### **Electrical features**

• 220V AC 60W

#### Mechanical features

- 36W UV-C lamp power
- 19W AC fan
- · Completely aluminium body
- 16mj/cm² UV-C dosage
- 10.513cm³ UV-C radiant tunnel
- · Electrostatic paint
- 30dB/m max noise
- It is suitable for 0-30m² areas
- · Body color RAL9016









**01:** Assembly with feet **02:** Wall hanging mounting

**03:** Ceiling mounting **04:** Table top mounting







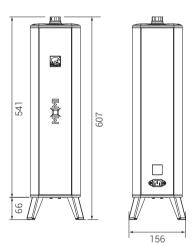












IOT-compatible MOMI devices are controlled with Wi-Fi access and provide smart disinfection. Automatic working intervals can be programmed by determining the disinfection time according to your area width, on the

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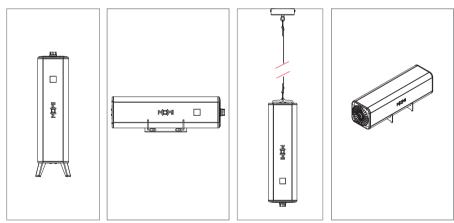
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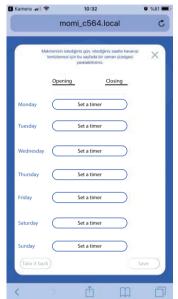
**03:** Ceiling mounting **04:** Table top mounting





#### IoT features

- Engine speed adjustment
- Emission measurement of UV-C lamp
- Message warning when UV-C emission drops
- Sterilizing the environment according to its volume and stopping automatically
- Planning operating and stopping hours





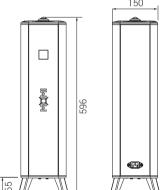


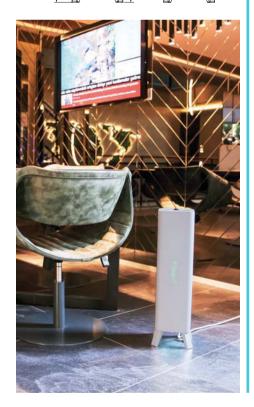


## **Environmental Air Sterilization (HVAC)**

## **MOMI-100-OTEL**







The device, specially developed for the use in hotel rooms, provides ease of use and safe disinfection. When energized after entering the room, the device automatically starts disinfection and turns off automatically at the end of the defined duration. In this way, lamp life is extended and problems caused by unauthorized use are prevented.

#### **Functional features**

It destroys 99% of the SARS-CoV-2 virus (Covid-19) by applying UV-C at a dose of 16mj / cm² in a tunnel of 10.513 cm<sup>3</sup>.

#### Areas where it is used

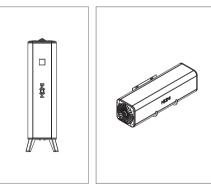
All the closed areas up to a space of maximum 30m<sup>2</sup>

#### **Electrical features**

• 220V AC 60W

#### Mechanical features

- 36W UV-C lamp power
- 19W AC fan
- · Completely aluminium body
- 16mj/cm² UV-C dosage
- 10.513cm³ UV-C radiant tunnel
- · Electrostatic paint
- 30dB/m max noise
- It is suitable for 0-30m² areas
- Body color RAL9016









**03:** Ceiling mounting **04:** Table top mounting

## **Environmental Air Sterilization (HVAC)**

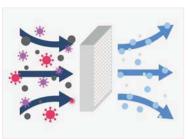
## **MOMI-100 HEPA**







In addition to the disinfection of viruses and bacteria with ultraviolet radiation, it increases the ambient air quality by filtering the dust, pollen and fumes in the air thanks to the HEPA filter. With its high retention filtering and UV-C effect, it makes the environment suitable for those with asthma and allergic diseases as well as air sterilization



Hepa Filter. Increases the ambient air quality by filtering the dust, pollen and fumes in the air.

#### **Functional features**

It destroys 99% of the SARS-CoV-2 virus (Covid-19) by applying UV-C at a dose of 16mj / cm² in a tunnel of 10.513 cm<sup>3</sup>.

#### Areas where it is used

Offices

Housings

Meeting rooms

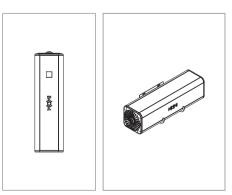
All the closed areas up to a space of maximum 30m<sup>2</sup>

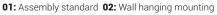
#### Mechanical features

- · 36W UV-C lamp power
- 19W AC fan
- · Completely aluminium body
- 16mj/cm² UV-C dosage
- 8410cm³ UV-C radiant tunnel
- · Electrostatic paint
- 30dB/m max noise
- It is suitable for 0-30m² areas
- · Body color RAL9016

## • 220V AC 60W

**Electrical features** 







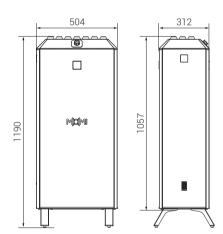


**03:** Ceiling mounting **04:** Table top mounting









It provides an optimum disinfection solution for general use in large areas. You can disinfect your living space from viruses and bacteria by operating the device for certain periods depending on the area of use and intensity

#### **Functional features**

It destroys 99% of the SARS-CoV-2 virus (Covid-19) by applying UV-C at a dose of  $14mj / cm^2$  in a 92.000 cm³ tunnel.

#### Areas where it is used

Large offices

Restaurants

Bars

Educational institutions

Public and bank offices

Hairdressers and beauty centres

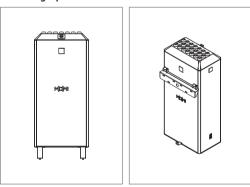
Gyms

#### Mechanical features

- 216W UV-C Ozone-free lamp power
- 114W AC fan
- Aluminium radial fan
- 14mi/cm<sup>2</sup>/254nm UV-C dosage
- 92.000cm³ UV-C tunnel
- Electrostatic paint
- 40dB/m max noise
- It is suitable for 100-200m² areas
- Body color RAL9016

#### Electrical features

• 220V AC 350W



**01:** Assembly with feet

02: Wall hanging mounting



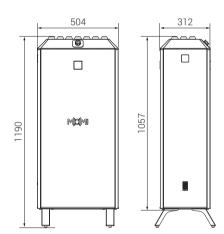












IOT-compatible MOMI devices are controlled with Wi-Fi access and provide smart disinfection. Automatic working intervals can be programmed by determining the disinfection time according to your area width, on the mobile phone.

#### **Functional features**

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#### Areas where it is used

Large offices

Restaurants

Bars

Educational institutions

Public and bank offices

Hairdressers and beauty centres

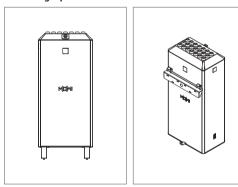
Gyms

#### Mechanical features

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- 114W AC fan
- Aluminium radial fan
- 14mi/cm<sup>2</sup>/254nm UV-C dosage
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#### Electrical features

• 220V AC 350W



**01:** Assembly with feet

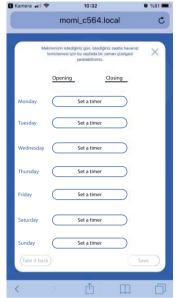
02: Wall hanging mounting





#### IoT features

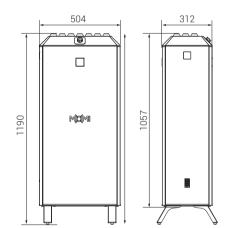
- Engine speed adjustment
- Emission measurement of UV-C lamp
- Message warning when UV-C emission drops
- Sterilizing the environment according to its volume and stopping automatically
- Planning operating and stopping hours











IOT-compatible MOMI devices are controlled with Wi-Fi access and provide smart disinfection. Automatic working intervals can be programmed by determining the disinfection time according to your area width, on the mobile phone.

In addition to the disinfection of viruses and bacteria with ultraviolet radiation, it increases the ambient air quality by filtering the dust, pollen and fumes in the air thanks to the HEPA filter. With its high retention filtering and UV-C effect, it makes the environment suitable for those with asthma and allergic diseases as well as air sterilization.



**Hepa Filter.** Increases the ambient air quality by filtering the dust, pollen and fumes in the air.

#### **Functional features**

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#### Areas where it is used

Large offices

Restaurants

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Educational institutions

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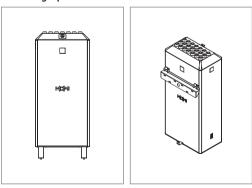
Gyms

#### Mechanical features

- 216W UV-C Ozone-free lamp power
- 114W AC fan
- · Aluminium radial fan
- 14mj/cm²/254nm UV-C dosage
- 82800cm³ UV-C tunnel
- · Electrostatic paint
- 40dB/m max noise
- It is suitable for 100-200m² areas
- Body color RAL9016

#### **Electrical features**

• 220V AC 350W



**01:** Assembly with feet

02: Wall hanging mounting







#### IoT features

- Engine speed adjustment
- Emission measurement of UV-C lamp
- Message warning when UV-C emission drops
- Sterilizing the environment according to its volume and stopping automatically
- Planning operating and stopping hours



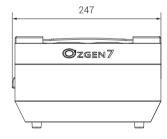




Ozone Generator OZGEN7



## 170 100 251



#### **Technical features**

- Ozone production 7000 mg /hour
- 60 min mechanical timer
- Durable DKP body
- Domestically produced with CE certificate
- It does not require chemical consumable material
- · Low noise level
- Replaceable ceramic ozone plate
- · Stainless steel pre-filter

#### Areas where it is used

Hotel rooms

Cafes and restaurants

Hospitals and clinics

Environments that are collectively used

#### **General Features**

- It neutralizes mould, bacteria and viruses in the environment.
- It provides effective sterilization of collective environments such as hotels, restaurants, cafes, hospitals.
- It is used in disinfection, sterilization and deodorization processes of all closed areas.
- It eliminates bacteria, cigarette smoke, cooking odours, mould odours and all kinds of bad odours in the room.

Electrical features
• 220V AC 110W

- It affects every point that ozone (O<sub>3</sub>) reaches.
- It is safe to use in foods.

#### **Usage Warnings**

When the disinfection is over, do not enter the premises at least as long as the device was in operation. The doors and windows must be closed when the device is in operation. There must be absolutely no people or pets in the premises. When the operation is over, let the device cool down.

After the ozonisation, the premises must be aired.



Ozone Generator OZGEN7



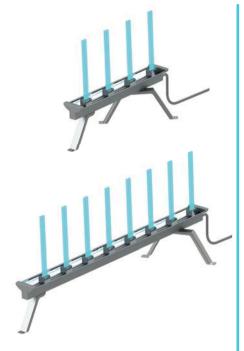






**WARNING:** It should not be used when there are people and other creatures in the environment. The environment should be ventilated for 15-20 minutes after use. People can be present in the environment after ventilation.

## **MOMI HVAC MRA**



Product name	Input Voltage (V)	Power (W)	Area of Influence (m³ / hour)	Dimension (AxB) (mm)
MOMI HVAC MRA - 72x1	220-240V AC	72	2000	430x674
MOMI HVAC MRA - 72x2	220-240V AC	144	4000	830x674
MOMI HVAC MRA - 72x3	220-240V AC	216	6000	1230x674
MOMI HVAC MRA - 72x4	220-240V AC	288	8000	1630x674
MOMI HVAC MRA - 108x1	220-240V AC	108	3000	430x804
MOMI HVAC MRA - 108x2	220-240V AC	216	6000	830x804
MOMI HVAC MRA - 108x3	220-240V AC	324	9000	1230x804
MOMI HVAC MRA - 108x4	220-240V AC	432	12000	1630x804

With its modular application in ventilation systems, the internal cycle provides sterilization of air from viruses and bacteria. It can be easily applied to each unit by selecting and sizing the appropriate configuration according to the system conditions.

#### Mechanical features

- Aluminum body
- Chrome mounting feet
- Steel spiral cable protector
- · Reflective reflector

#### Areas where it is used

Hotels

Shopping malls

Factories

Business centers

Fair and Showroom Areas

Hospitals

Industrial Facilities

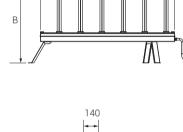
#### Systems Used

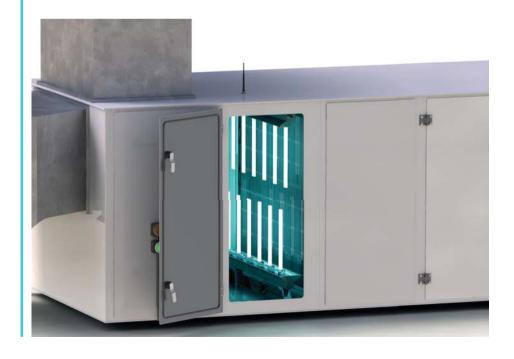
AHU (Air Conditioning plants)

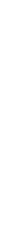
Roof-Top

FCU (Fan-Coil)

Ducted air conditioning systems

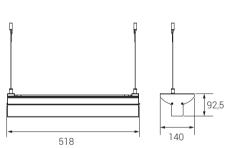












Product name	Input Voltage (V)	Power (W)	Wavelength (nm)
MR15-UVC	220-240V AC	15	180 / 280
MR30-UVC	220-240V AC	30	180 / 280

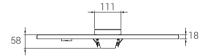
Our Fibre lamps of UV-C series are ready for the sterilization of various pathogenic microorganisms such as viruses, fungi and mould in the living spaces. The UVC light and ozone effect will allow you to neutralize microorganisms without using chemicals harmful to the environment.

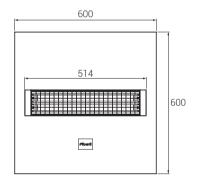
#### **Technical features**

- Provides sterilization of the environment with UVC light
- Eliminates pathogenic microorganisms, viruses, fungi and mould
- Neutralizes microorganisms by disrupting their DNA and RNA structure
- Non-ozone lamp option
- · Aluminium extrusion body
- Built-in radar sensor for safe use (Optional)
- Delayed start (20 seconds)









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#### **Technical features**

- Provides sterilization of the environment with UVC light
- Eliminates pathogenic microorganisms, viruses, fungi and mould
- Neutralizes microorganisms by disrupting their DNA and RNA structure
- Non-ozone lamp option
- Body and frame painted with electrostatic powder paint
- Built-in radar sensor for safe use (Optional)
- Delayed start (20 seconds)
- · Optional drywall mounting kit

#### **Electrical features**

• 220V AC 30W











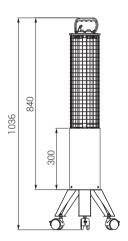
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#### **Technical features**

- Provides sterilization of the environment with UVC light
- Eliminates pathogenic microorganisms, viruses, fungi and mould
- Neutralizes microorganisms by disrupting their DNA and RNA structure
- Non-ozone lamp option
- Body and frame painted with electrostatic powder paint
- Built-in radar sensor for safe use (Optional)

#### **Electrical features**

• 220V AC 108W











## IMPORTANT WARNINGS FOR THE USE OF HVAC SYSTEMS FOR DISINFECTION PURPOSES!

When HVAC air purifier systems are in operation, there is no harm forthe health of people, animals and plants. HVAC air purifier systems can safely operate in the premises with people.



## **IMPORTANT WARNINGS FOR THE OZONE GENERATOR!**

When the disinfection is over, do not enter the premises at least as long as the device was in operation. The doors and windows must be closed when the device is in operation. There must be absolutely no people or pets in the premises. When the operation is over, let the device cool down. After the ozonisation, the premises must be aired.



## IMPORTANT WARNINGS FOR THE USE OF UVC LAMPS FOR DISINFECTION PURPOSES!

\* Published in order to prevent information pollution widespread among the public due to the COVID-19 pandemic.

UVC (250-280nm) consists ofmostly invisible rays, only a very small part of them is visible. In general, UVC has a high disinfectant effect. It has a lethal effect on such microorganisms as viruses, bacteria and fungi. However, its incompetent use at home can be dangerous.

#### Usage for disinfection purposes

As long as the UVC lamp is in operation, there must be no people, animals and plants in the area effectedby radiation. When the UVC lamp is turned off, it cannot cause any harm to the living beings.

The operating time and impact area should be in line with the information and instructions recommended by the manufacturer depending on the lamp power and luminaire structure.

#### Issues that need attention

When exposed to this radiation for a long time, it may cause

- · Burning eye sensation, cataract or vision loss;
- · Permanent skin and tissue damage or skin cancer;
- Texture damage and colour change offood, goods and material surfaces;
- UVC is mostly used in organizations with professionally trained users for curing and disinfection of industrial, medical, r&d, food, plant production and other areas.
- Although there is no law or regulation on this issue yet; the organization or person thatuses it must accept the responsibility for anynegative consequences that may occur.

These effects can only occur when the lamp is on. There is no danger after the lamp is turned off. When the lamp turns off, the area is hygienically clean and available for use

**Information**: When Fiberli deems necessary; it reserves the right to make changes in features, designs and materials, provided that the quality of the products in the product catalog and web page does not change.



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