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**11. Warranty**

There is a 1 year limited warranty for this product.

Before initiating a warranty claim please contact us at:

Toll Free: 1.800.924.1585

Local: 416.463.6677

Tech Support: 647.557.3233

Fax: 647.493.9900

email: [info@mossled.com](mailto:info@mossled.com)

MOSS LED INC.

1355 Fewster Drive, Unit B

Mississauga - Ontario L4W 1A2 - Canada

Average life: 8,000h

Ozone free

Initial total radiation flux: 10.8W (at 254nm, each bulb)

## 10. Troubleshooting

10.1-The lamp does not turn on:

-Check if the fuse is damaged. It is located inside the fuse drawer between the on-off switch and the power cord receptacle. To access it, you need to remove the power cord and pull out the fuse drawer. If necessary replace the fuse with a new one of same type and rating - slow blow, 1.6A. For your convenience, a spare fuse is installed in the drawer. If it blows again, do not replace it and contact our customer service.

-Check if the 120V outlet where the unit is connected is operational. The pilot red light inside the on-off switch indicates if the unit is powered (even when it is off).

10.2-The lamp turns on then turns off after a few seconds:

-Check that there are no moving objects in front of the sensor.

10.3-The lamps are not producing the expected UV radiation:

-Check that the bulbs and the reflectors are clean. Please refer to the Maintenance chapter.

-Check that the target area is within the fixture range.

-Check if the bulbs are in their end of life. Bulbs nominal life can be severely reduced if they turn on / off many times a day.

## 1. Contents

Description	Qty
UV-C-Pivot	1 pc
User Manual / Warranty	1 pc
Power cord	1 pc
Wall mount bolt	1 pc
Extra infra-red sensor lens	1 pc
Spare fuse (inside fuse drawer)	1 pc

Note: Additional UV-C bulbs are sold separately. Please refer to the Specifications chapter. Always use Osram GFT36DL-2G11 bulbs purchased from a reputable dealer. Moss LED Inc. is an authorized Osram distributor.



**UV-C RISK GROUP 3. UV-C EMITTED FROM THIS PRODUCT. AVOID EYE AND SKIN EXPOSURE TO UNSHIELDED PRODUCT.**



**GROUPE DE RISQUE UV-C 3 - ÉMETTEUR UV C DE CE PRODUIT. ÉVITEZ L'EXPOSITION DES YEUX ET DE LA PEAU**

## 2. Safety Information - Save for future reference

2.1- Before you use this product, please read this user manual carefully and use the product in strict accordance with the operation and maintenance procedures. **Moss LED Inc. will not be responsible for any consequences caused by failure to follow the correct use of this manual.**

2.2- Due to continual improvements, the actual product may differ from the pictures shown in this manual.

2.3- The recommended bulb for this product is in Risk Group 3 per IEC 62471-2.

2.4- Exposure to UV-C radiation can cause injury to the eyes and skin.

2.5- The maintenance needs to be done by a qualified service technician.

2.6- This product was not designed to be used for any general lighting application.

2.7- This equipment is designed for use with UV-C germicidal bulbs and must be installed in accordance with the safety recommendations to prevent risk of personal injury and property damage.

2.8- UV-C is an efficient germicidal technology capable of deactivating the reproduction of pathogens. Human and animal overexposure to UV-C radiation can cause damage to eyes and bare skin. Plants should be covered or relocated before operation.

2.9- UV-C radiation overexposure can cause some non-metallic objects colour to fade sooner than expected. Covering sensitive objects is recommended. (paintings, fabrics, plastics, etc.)

2.10-Indoor use only.

2.11-Ultraviolet rays have a powerful lethality to germs, and they also can cause injury to the human body. The most vulnerable parts are the cornea of the eyes and bare skin; therefore you must

8.4- When the fixture shuts off power, it will not turn back on automatically: you'll need to switch power off then back on again after 5 seconds.

8.5- The sensor sensitivity is factory set to maximum and cannot be changed.

## 9. Specifications

**Note: below specs are with 2 new Osram FT36DL/2G11 bulbs at nominal voltage after 20 minute warm up.**

Product ID: UV-C Pivot

Input Voltage: 120 to 240VAC

Frequency: 50Hz/60Hz

Input Current: <1A @ 120V or <0.5A @ 240V

Power: <120W

Dimensions (LxHxD): 54×32×12cm (21.3x12.6x4.7")

Shipping dimensions (LxHxD): 59x19x31 (23.2x7.5x12.2")

Net Weight with 2 lamps: 4.1kg (9Lb)

Gross weight without lamps: 5kg (11Lb)

Storage Temperature: -20 to 60°C (-4 to 140°F)

Recommended operational conditions for best disinfection results: temperature 10 to 40°C (50 to 104°F) and relative humidity < 80%

Recommended lamp model: Osram FT36DL/2G11/SE/OF

UV bulb type: Low pressure mercury

Dominant wavelength: 253.7nm

7.8- If the lamp or power cord is damaged, replace immediately with same type and rating.

7.9- As part of site planning, the installer should take into consideration possible reflected radiation by surrounding surfaces such as ceilings and walls. This may require proper assessment of reflected or leaked radiation to surrounding occupied areas.

7.10-This fixture should be mounted in locations and at heights where it will not readily be subjected to tampering by unauthorized personnel.

7.11-If performing an inspection while the fixture is in operation, appropriate Personal Protective Equipment (PPE) is required.

### **8. Passive Infra-Red (PIR) Sensor Operation**

8.1- This fixture is equipped with a PIR motion sensor that shuts off power when it detects motion within its range.

8.2- The sensor is factory set to maximum sensitivity and wide coverage.

8.3- After turning the unit on, there will be a 30 second delay for the operator to leave the area before the lamps are energized. A red light will glow under the sensor lens. After that delay, there will be a 15 seconds “settling time” during which the lamps will be energized while the sensor measures the reflection pattern of the surroundings. Only after those 45 seconds the sensor will be able to shut off power if it detects motion in the area; therefore it is imperative that the area is clear in 30 seconds!

not look directly at the lit lamp tube at any time to avoid injury. If it is necessary to inspect an UV-C emitter during operation you must use a Personal Protective Equipment - PPE - to prevent accidental exposure. Some UV-C overexposure symptoms are: eye discomfort, conjunctival inflammation, skin irritation or burning. If you think you were overexposed to UV-C, please contact your physician immediately.

2.12- The recommended bulbs contain a small amount of mercury vapor inside. Follow local regulations when disposing of used lamps.

2.13-The installation of this product must be conducted by a knowledgeable technician. Line-of-sight, leakage or unintended reflected exposure must be prevented.

2.14-It is the responsibility of the installer to ensure persons will not be exposed to UV-C radiation. Please refer to the Installation Instructions chapter for more details.

2.15-To prevent accidental exposure, this product is equipped with a passive infra-red sensor - PIR- that turns off the unit when it detects movement within its range. Please refer to the Installation Instructions and Specifications chapters for more details.

### 3. Maintenance

#### 3.1- Bulbs installation

-Note: We recommend using only genuine Osram OSR-23392-GFT36DL-2G11 UV-C germicidal bulbs described in the Specifications chapter as replacements.

-Note: If the lamp or fixture exhibits undesirable operation (buzzing, flickering, etc.), immediately turn off power, remove lamp from the fixture and contact your service technician.

1-Make sure power is disconnected!

2-Wear gloves in case a bulb breaks or is already broken.

3-Remove the 2 locking screws that hold the front grille and slide it out.

4-Hold the bulb next to its base and place it in the corresponding socket slot; slide it in gently until it touches the internal contacts.

Do not apply pressure yet.

5-While holding the lamp in place, press the red button on the socket and move the bulb further inside the slots. Release the red button.

6-On the other side open the corresponding bulb clamp about ½” and gently slide the bulb tip into it.

7-Repeat for the 2nd bulb if necessary.

8-Re-install the front grille with the locking screws.

9-Record the installation date for future reference. For your convenience you can use the table provided in the end of this manual.

**⚠ In order for the PIR sensor to work properly, this fixture should NOT be installed in the ceiling!**

**⚠ Pour que le capteur PIR fonctionne correctement, ce luminaire ne doit PAS être installé au plafond!**

7.1- Make sure power is disconnected and power switch is in OFF position before installing it.

7.2- This product is intended for indoor dry locations. Not for use where exposed directly to the weather or water.

7.3- This product must be installed in accordance with the applicable installation code by a person familiar with the construction and operation of the product and the hazards involved.

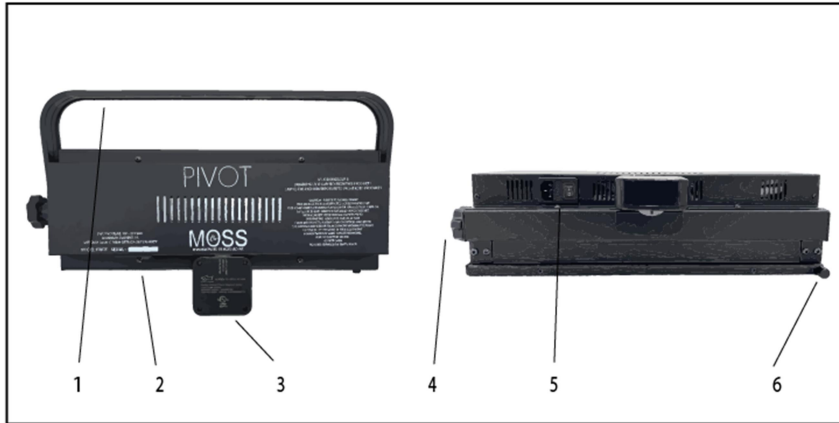
7.4- In order for the PIR sensor to work properly, this fixture should be installed with the sensor facing the UV-C coverage area!

7.5- It is the responsibility of the installer to ensure that the power source for this product be accessed only by trained operators and/or a qualified personnel.

7.6- If the lamp or fixture exhibits undesirable operation (buzzing, flickering, etc.), immediately turn off power, remove lamp from the fixture and contact your service technician.

7.7- This product shall not be used in places where there are flammable and/or explosive materials.

### Fixture components



1: Yoke	2: Power Inlet	3: PIR Sensor	4: Locking knob	5: Power Switch	6: Security Nut for Front Grille
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6.4- Vertical adjustment: loosen the locking knob or lever to adjust the beam angle up and down.

6.5- Horizontal adjustment: you can swivel the unit horizontally 360° around its axis.

### 7. Installation Instructions

**⚠ CAUTION – This product is for restricted access usage only.**

**⚠ ATTENTION - Ce produit est destiné à un usage à accès restreint uniquement**

### 3.2- Bulbs replacement



- 1- Disconnect power and wait until the bulbs cool down!
- 2- Wear gloves in case a bulb breaks or is already broken.
- 3- Remove the 2 locking screws that hold the front grille and slide it out.
- 4- While holding the bulb next to its base, press and hold the red button to release the pins.
- 5- Gently push the lamp out of the socket in the direction of the yellow arrow.
- 6- On the other side, open the corresponding bulb clamp about ½" and gently slide the bulb tip out of it.
- 7- Repeat for the 2nd bulb if necessary. It is recommended to change both bulbs at the same time to ensure consistent UV-C germicidal irradiation.
- 8- Re-install the front grille with the locking screws.
- 9- Record the replacement date for future reference. For your convenience you can use the table provided in the end of this manual.

### 3.3- Cleaning & Care

Warning: Before any cleaning or maintenance, please turn off the fixture and unplug the power cord.

Wear gloves when handling glass bulbs. Internal repairs are only to be performed by trained professionals.

1- Remove the 2 locking screws that hold the front grille and slide it out.

2- We recommend wiping the tubes down with a damp soft clean cotton cloth. You can also use 1 part alcohol to 10 parts water.

3- Remove any liquid residue

4- Re-install the grille and secure with the locking screws.

## 4. Applications

### 4.1- Surface disinfection

-UV-C radiation is directed towards objects within its range. It is important to bear in mind that the UV-C radiation behaves in a similar way as visible light but with very little reflection in most cases. That means target areas should not be shadowed.

-When disinfecting rough surfaces such as paper and fabric, the irradiation time should be appropriately extended, and both sides should be exposed.

-For area coverage and exposure times, please refer to the Application Notes chapter.

## 6.2- Area Coverage and Minimum Recommended Exposure

Distance	Coverage Area	On-Axis UV Power Density* ( $\mu\text{W}/\text{cm}^2$ )	On-Axis Exposure Time*	Off-Axis Exposure Time*
1m / 1.6ft	1m <sup>2</sup> / 11ft <sup>2</sup>	330	0.4	0.8
2m / 6.6ft	4m <sup>2</sup> / 22ft <sup>2</sup>	85	1.5	4
3m / 9.8ft	9m <sup>2</sup> / 97ft <sup>2</sup>	39	3	6
4m / 13.1ft	16m <sup>2</sup> / 172ft <sup>2</sup>	21	6	12
5m / 16.4ft	25m <sup>2</sup> / 269ft <sup>2</sup>	15	8	16
6m / 19.7ft	36m <sup>2</sup> / 388ft <sup>2</sup>	9	13	26
7m / 23ft	49m <sup>2</sup> / 527ft <sup>2</sup>	7	17	34

\*Note: Minimum recommended exposure time in minutes based on a reference dose of  $7000\mu\text{J}/\text{cm}^2$  for 99% deactivation rate. Double the exposure for 99.9%; triple for 99.99% and so on.

### 6.3- Conversion Table

Power Density	$1000\mu\text{W}/\text{cm}^2 = 1\text{mW}/\text{cm}^2 = 10\text{W}/\text{m}^2$
Dose	$1000\mu\text{J}/\text{cm}^2 = 1\text{mJ}/\text{cm}^2 = 10\text{J}/\text{m}^2$
Dose Formula	Dose = Power Density x Time (min) X 60
Exposure Time	Time (min) = Dose / Power Density / 60



### 6.1- Power Density vs. Distance

Test conditions: distance from front grille, on axis, at room temperature, rated voltage (120 V - 60Hz), after 20 minutes warm up, with 2 new bulbs installed.

Distance	Power Density
0.5m / 1.6ft	1100 $\mu$ W/cm <sup>2</sup>
1m / 3.3ft	330 $\mu$ W/cm <sup>2</sup>
1.5m / 4.9ft	153 $\mu$ W/cm <sup>2</sup>
2m / 6.6ft	85 $\mu$ W/cm <sup>2</sup>
2.5m / 8.21ft	57 $\mu$ W/cm <sup>2</sup>
3m / 9.8ft	39 $\mu$ W/cm <sup>2</sup>
4m / 13.1ft	21 $\mu$ W/cm <sup>2</sup>
5m / 16.4ft	15 $\mu$ W/cm <sup>2</sup>
6m / 19.7ft	9 $\mu$ W/cm <sup>2</sup>
7m / 23ft	7 $\mu$ W/cm <sup>2</sup>

### 4.2- Upper-Air disinfection

-The UV-C fixture beam is directed upwards targeting the pathogens in the circulating air in a room. For optimum results, constant air circulation is recommended.  
-For area coverage and exposure times, please refer to the Application Notes chapter.

## 5. UV-C disinfection requirements

5.1- Most pathogens are sensitive to UV-C wavelengths from 200 to 275nm, and the strongest sterilization results happen between 250 and 270nm. The recommended bulbs for this fixture radiate most of its power at 253.7nm with very little radiation outside that wavelength.

5.2- The UV-C power density - PD - is most commonly measured in  $\mu$ W/cm<sup>2</sup> or mW/cm<sup>2</sup> or W/m<sup>2</sup>. Keeping other variables constant, the germicidal effect is a product of the PD versus the exposure time. That means 10mW/cm<sup>2</sup> during 1h has the same germicidal effect as 1mW/cm<sup>2</sup> for 10h. They are said to have the same "dose" and the common units of measurement are  $\mu$ J/cm<sup>2</sup> or mJ/cm<sup>2</sup> or J/m<sup>2</sup>. For conversion tables, please refer to the Application Notes chapter.

5.3- For every 1x increase in the dose, the percentage of disinfection achieved increases 10x. That means if a 7mJ/cm<sup>2</sup> dose deactivates 99% of the pathogens, 14mJ/cm<sup>2</sup> will deactivate

99.9% of the pathogens, 21mJ/cm<sup>2</sup> will deactivate 99.99% and so on.

5.4- The recommended dose for disinfection depends on several variables e.g. type of pathogen, substrate type, dimensions, position and distance from the source, relative humidity, temperature, etc. A minimum dose of 7mJ/cm<sup>2</sup> has been found to be effective for most pathogens.

5.5- The most suitable temperature range for UV disinfection is 20 to 40°C (68 - 104°F). If outside that range, exposure time should be extended.

5.6- The output of the ultraviolet bulb gradually decreases as it ages. Measuring its output periodically is recommended and eventually replacing it once it drops below the required intensity. Inexpensive disposable dosimeters are available on our website at <https://www.mossled.com/products/UV-C-tab-dosimeter>

## 6. Application notes

### 6.1- General information

-This product is not suitable for the cleaning, disinfection or sterilization of medical devices.

-Insufficient UV-C dose may not achieve the intended disinfection effect. It is the responsibility of the user to measure UV-C irradiance to ensure the required UV-C dose is attained in the workspace.

-This product shall be maintained regularly by a qualified service technician.

-The UV-C intensity of this product is determined according to the service time of the lamp. When the accumulated service time of the UV-C lamp exceeds its effective lifetime, the lamp must be replaced to achieve the intended disinfection.

— When using this product, keep the germicidal space clean and dry, close the doors and windows, and avoid outdoor air circulation.

— The original design and testing of this product was based on the recommended bulb as per Specifications chapter. Use of an alternate source as a replacement can result in lower UV-C radiant output and shortened bulb life. Always use Osram GFT36DL-2G11 for reliable performance.