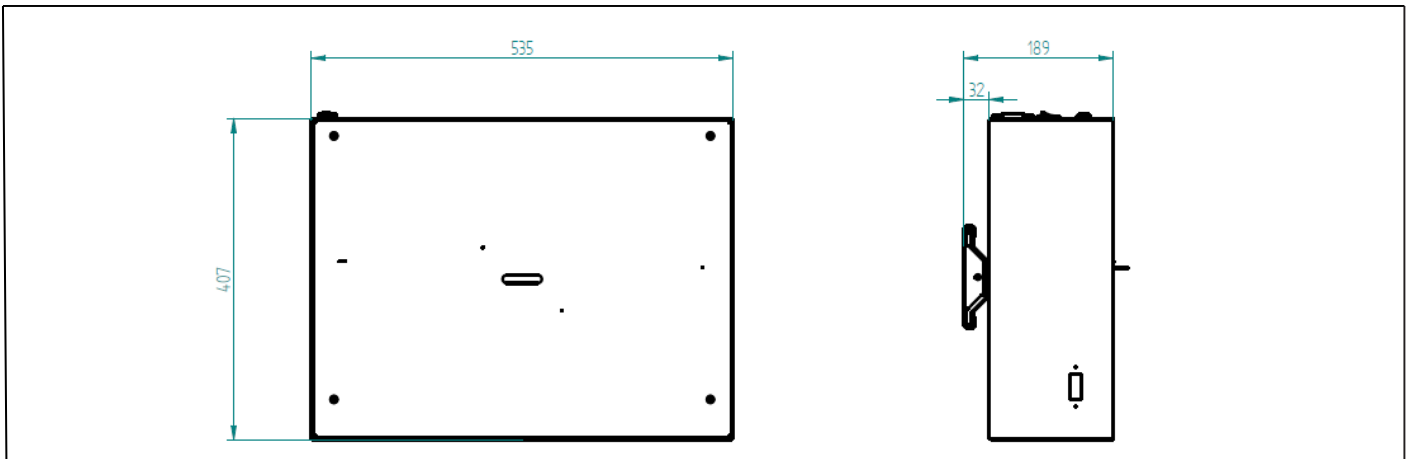


| FAMILY NAME                                    | UV-C lamp type                            | Ballast type                                | Useful lamp lifetime | kg   |
|--|---|---|----------------------|------|
| SM310C 2xTUV PLL 60W HFS<br>12NC: 912401483298 | PL-L 60W 4P HO UV-C<br>12NC: 927909004007 | HF-S 175 UV TL-D/PL-L<br>12NC: 912401483302 | 9000 hrs             | 13,0 |

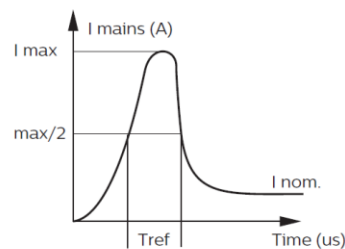
## Effective disinfection area

| Product description      | Product 12NC | Total energy consumption | Flow rate | Effective disinfection area* |
|--------------------------|--------------|--------------------------|-----------|------------------------------|
|                          |              | [W]                      | [m3/h]    | [m2]                         |
| SM310C 2xTUV PLL 60W HFS | 912401483298 | 160                      | 120       | 30                           |

| Service Type | Service Description | Service 12NC |
|--------------|---------------------|--------------|
| Filter       | SM310A FILTER       | 912401483303 |

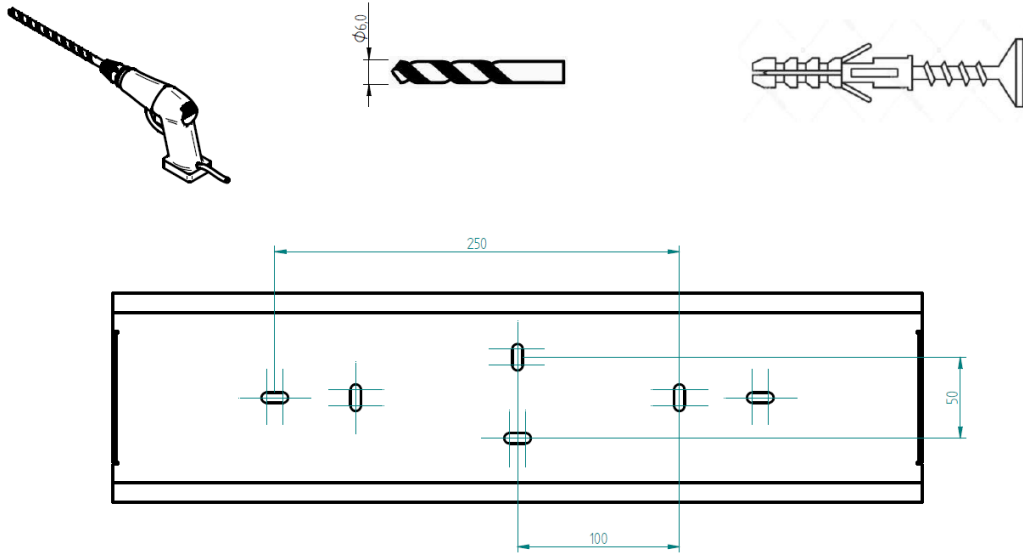


Inrush current



| Electrical characteristics |              |
|----------------------------|--------------|
| I <sub>max</sub> (A)       | 9,2          |
| T <sub>ref</sub> (us)      | 200          |
| MCB                        | Max. devices |
| B-10 A                     | 8            |
| B-16 A                     | 13           |
| C-10 A                     | 8            |
| C-16 A                     | 13           |

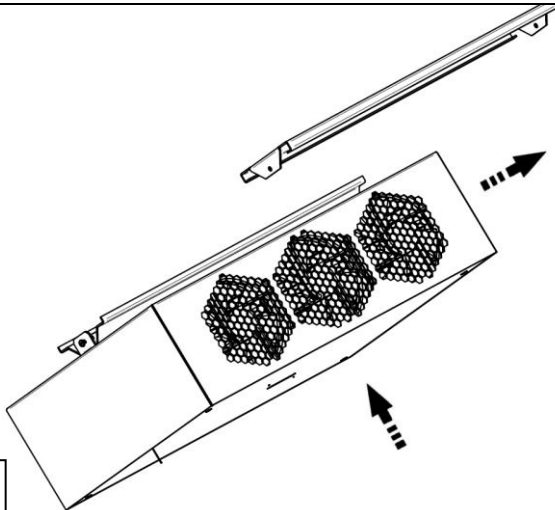
### Assembly of the mounting plate



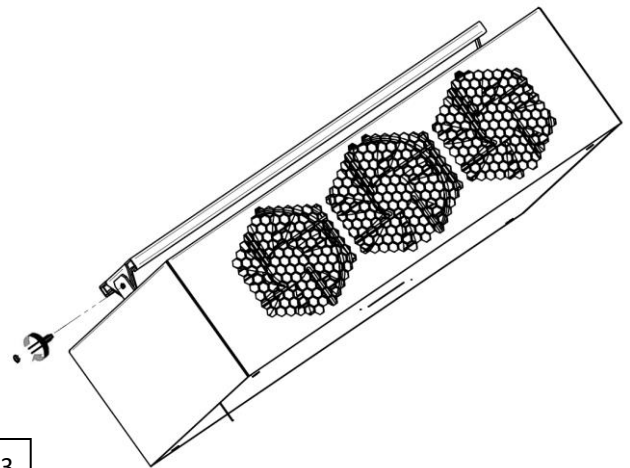
1

Place the mounting plate at least 500mm of the nearest wall or ceiling!

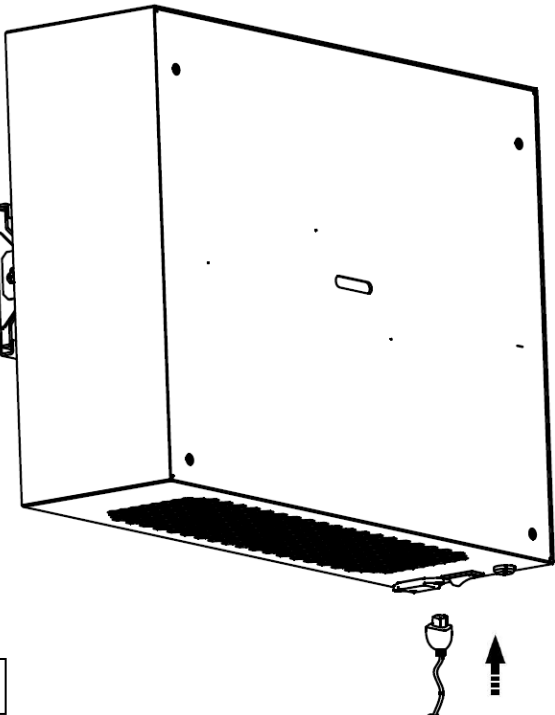
### Wall / ceiling attachment



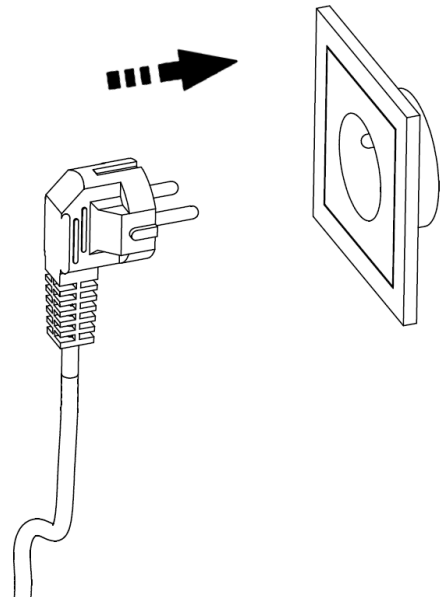
2



3

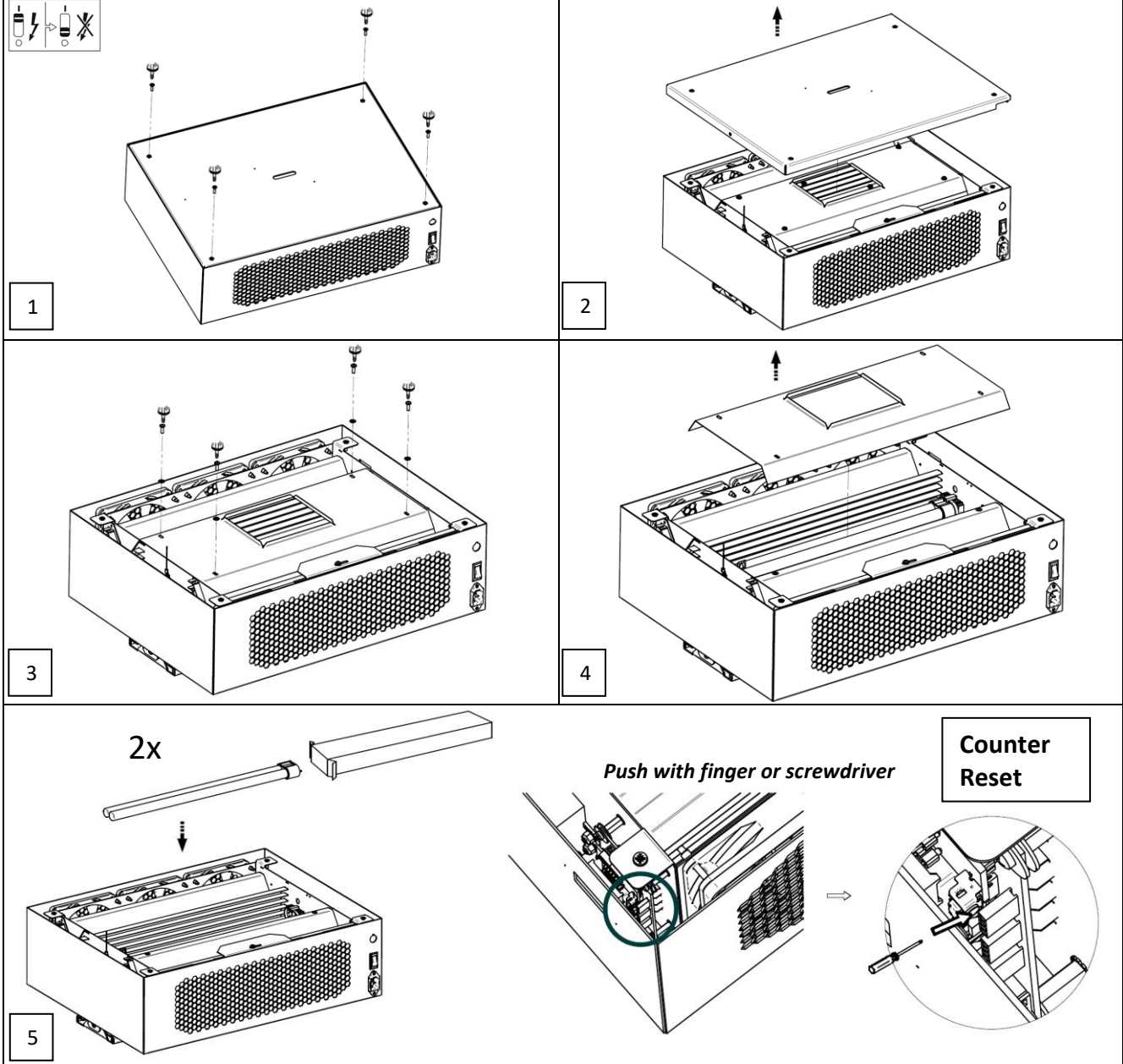


4

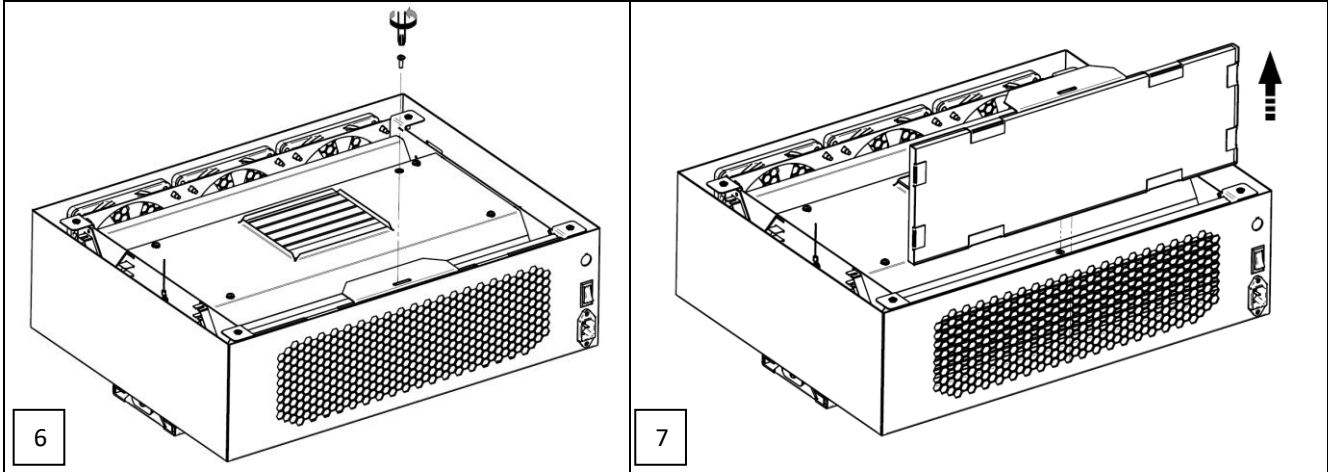


5

### Lamp replacement (de-attached cable)



### Filter replacement



## User Manual SM310C 2xTUV PLL 60W HFS

### Content

- 1) UV-C basic information
- 2) Maintenance and safe usage
- 3) Warnings concerning reasonably foreseeable improper usage, malfunctions, and hazardous failure modes.

### 1) UV-C basic information

What is UV-C?

Ultraviolet (UV) light is invisible to human eyes. It can be subdivided into three categories:

- UV-C from 200 to 280 nm – For disinfection purposes and germicidal application.
- UV-B from 280 to 315 nm – For medical use (i.e. phototherapy to treat skin conditions, including psoriasis).
- UV-A from 315 to 400 nm – For use with curing, tanning and insect traps.

How does UV-C work?

- UV-C radiation can break the DNA and RNA of bacteria, viruses and spores, meaning that they leave them harmless. There are no known micro-organisms resistant to UVC.<sup>1</sup>
- UV-C technology has been used safely and effectively in hospitals and governmental buildings for more than 40 years.<sup>2</sup>
- Most UV-C solutions utilize conventional lighting, with LED now improving in efficiency.
- The peak output of our germicidal lamps (253.7nm) is close (80-85%) to the maximum effectiveness of UV-C (265nm).
- Smaller UV-C wavelengths (222nm) are being explored as less harmful alternatives.

### 2) Maintenance and safe use

- a) Maximum operating altitude of the device is 3000m. On higher altitudes, reduced fan power and airflow substantially decrease disinfection performance.
- b) After turning the device off – do not turn it on within 10 minutes, until it cools down.**
- c) Never operate luminaire when the cover is detached.
- d) Never look into a source of UV-C.
- e) The appliance is not to be used by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction.**
- f) Useful life – Luminaire is equipped with UV-C source (TUV lamp) which has specified useful lifetime of 9000h securing minimum 90% of initial irradiance level. Always replace lamp before reaching 9000h. Lamp will work electrically much longer, but radiated amount of UV-C after 9000h may be less than in specification causing reduction of disinfection capability. Mounting timer can support monitoring of lamp lifetime.
- g) Be aware worn filter can reduce the airflow and therefore disinfection efficiency. Exchange filter regularly after 4500h or 6 months and clean it every 1 month.
- h) Replace lamp carefully once it reaches 9000h. Lamp contains Mercury (Hg) which is hazardous to human. **Replacement of UV-C emitter is allowed only for trained personnel!**
- i) Detach power cable from the power plug before any maintenance work!**
- j) Detach power cable from the power plug for 15 seconds to reset the error in the steering system.

In case of lamp breakage follow below instruction:

### Before Cleanup

- Have people and pets leave the room and avoid the breakage area on the way out.
- Open a window or door to the outdoors and leave the room for 5-10 minutes.
- Shut off the central forced-air heating/air conditioning (HVAC) system if you have one.
- Collect materials you will need to clean up the broken bulb:
  - Stiff paper or cardboard
  - Sticky tape (e.g., duct tape)
  - Damp paper towels or disposable wet wipes (for hard surfaces)
  - Glass jar with a metal lid (such as a canning jar) or a sealable plastic bag(s)

### Cleanup Steps for Hard Surfaces

- 1) Carefully scoop up glass fragments and powder using stiff paper or cardboard and place debris and paper/cardboard in a glass jar with a metal lid. If a glass jar is not available, use a sealable plastic bag. (NOTE: Since a plastic bag will not prevent the mercury vapor from escaping, remove the plastic bag(s) from the home after cleanup.)
- 2) Use sticky tape, such as duct tape, to pick up any remaining small glass fragments and powder. Place the used tape in the glass jar or plastic bag.
- 3) Wipe the area clean with damp paper towels or disposable wet wipes. Place the towels in the glass jar or plastic bag.
- 4) Vacuuming of hard surfaces during cleanup is not recommended unless broken glass remains after all other cleanup steps have been taken. [NOTE: It is possible that vacuuming could spread mercury-containing powder or mercury vapor, although

<sup>1</sup> Fluence (UV Dose) Required to Achieve Incremental Log Inactivation of Bacteria, Protozoa, Viruses and Algae Revised, updated and expanded by Adel Haji Malayeri, Madjid Mohseni, Bill Cairns and James R. Bolton. With earlier contributions by Gabriel Chevretils (2006) and Eric Caron (2006) With peer review by Benoit Barbeau, Harold Wright (1999) and Karl G. Linden

<sup>2</sup> EPA Report, "Building Retrofits for Increased Protection Against Airborne Chemical and Biological Releases" Pg. 56

available information on this problem is limited]. If vacuuming is needed to ensure removal of all broken glass, keep the following tips in mind:

- a Keep a window or door to the outdoors open,
  - b Vacuum the area where the bulb was broken using the vacuum hose, if available; and
  - c Remove the vacuum bag (or empty and wipe the canister) and seal the bag/vacuum debris, and any materials used to clean the vacuum, in a plastic bag.
- 5) Promptly place all bulb debris and cleanup materials, including vacuum cleaner bags, outdoors in a trash container or
  - 6) Next, check with your local government about disposal requirements in your area, because some localities require fluorescent bulbs (broken or unbroken) be taken to a local recycling center. If there is no such requirement in your area, you can dispose of the materials with your household trash.
  - 7) Wash your hands with soap and water after disposing of the jars or plastic bags containing bulb debris and cleanup materials.
  - 8) Continue to air out the room where the bulb was broken and leave the HVAC system shut off, as practical, for several hours.

### **Cleanup Steps for Carpeting or Rugs**

- 1) Carefully scoop up glass fragments and powder using stiff paper or cardboard and place debris and paper/cardboard in a glass jar with a metal lid. If a glass jar is not available, use a sealable plastic bag. (NOTE: Since a plastic bag will not prevent the mercury vapor from escaping, remove the plastic bag(s) from the home after cleanup.)
- 2) Use sticky tape, such as duct tape, to pick up any remaining small glass fragments and powder. Place the used tape in the glassjar or plastic bag.
- 3) Vacuuming of carpeting or rugs during cleanup is not recommended unless broken glass remains after all other cleanup steps have been taken. [NOTE: It is possible that vacuuming could spread mercury-containing powder or mercury vapor, although available information on this problem is limited].If vacuuming is needed to ensure removal of all broken glass, keep the following tips in mind:
  - a Keep a window or door to the outdoors open.
  - b Vacuum the area where the bulb was broken using the vacuum hose, if available, and
  - c Remove the vacuum bag (or empty and wipe the canister) and seal the bag/vacuum debris, and any materials used to clean the vacuum, in a plastic bag.
- 4) Promptly place all bulb debris and cleanup materials, including vacuum cleaner bags, outdoors in a trash container or protected area until materials can be disposed of. Avoid leaving any bulb fragments or cleanup materials indoors.
- 5) Next, check with your local government about disposal requirements in your area, because some localities require fluorescent bulbs (broken or unbroken) be taken to a local recycling center. If there is no such requirement in your area, you can dispose of the materials with your household trash.
- 6) Wash your hands with soap and water after disposing of the jars or plastic bags containing bulb debris and cleanup materials.
- 7) Continue to air out the room where the bulb was broken and leave the HVAC system shut off, as practical, for several hours.

### **Future Cleaning of Carpeting or Rugs: Air Out the Room During and After Vacuuming**

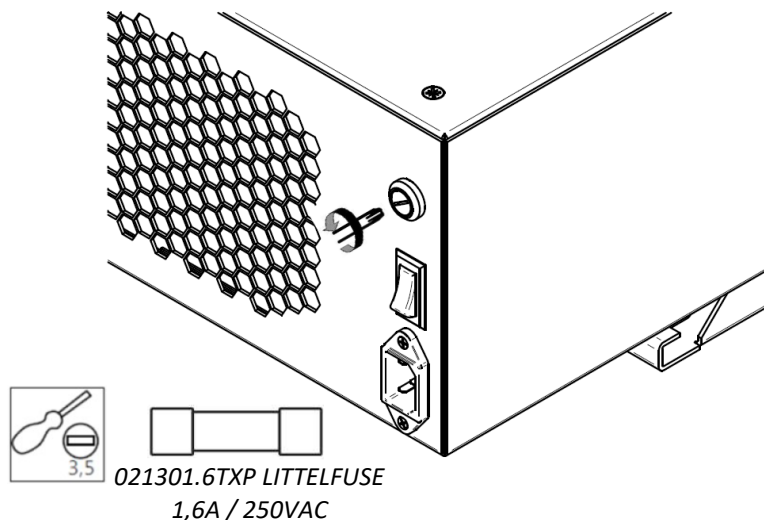
- 1) The next several times you vacuum the rug or carpet, shut off the HVAC system if you have one, close the doors to other rooms, and open a window or door to the outside before vacuuming. Change the vacuum bag after each use in this area.
- 2) After vacuuming is completed, keep the HVAC system shut off and the window or door to the outside open, as practical, for several hours.

### **3) Cord replacement**

- 1) In case of cord damage, turn of the device immediately via the switch near the air-inflow.
- 2) Wait for 5 seconds and remove the plug from the power plug.
- 3) De-attach damaged cord from the device.
- 4) Replace the cord with a new one.

### **4) Fuse replacement**

- 1) In case of fuse failure, remove and replace littelfuse from the outerbody, using flat screwdriver.



**5) Reasonably foreseeable improper usage, malfunctions, and hazardous failure modes.**

| Issue – Failure mode                           | Potential Effects of Failure   | Potential Cause(s)/Mechanism(s) of Failure                 | Prevention  |
|--|--|--|---|
| No dose at all – thus no disinfection function | Device is not on   | Device is not connected                                    | Connect device according to manual instruction  |
|  |  | Device is not switched on                                  | Switch on device  |
|  | Driver not working   | End of life or failure of driver                           | Replace driver  |
|  | Lamp not working   | End of life or failure of lamp                             | Replace lamp, working lamp emits bluish light. It should be visible via the visor on the cover  |
| Disinfection is too low                        | Dose too low leading to reduced disinfection rate which may cause pathogens remain in the room | Tambient temperature of application                        | Temp monitoring.<br>Keep temperature within limits described in product specification   |
|  |  | Cubature of the room is too high                           | Make sure device is mounted in room with cubature according to specification  |
|  |  | Lamps replaced by different (not Philips) lamp             | Make sure lamp is replaced by Philips and with frequency in accordance to lamp specification  |
|  | Flow rate is too low   | Intake or outlet of device is too close to wall or ceiling | Make sure that intake and outlet of the device are at least 500 mm of the nearest wall or ceiling   |
|  |  | Intake or outlet of device is obstructed                   | Make sure that nothing obstructs the flow in front or behind the device   |
|  |  | Filter is filled   | Replace filter  |
|  |  | One of the fans is not working                             | Replace fan   |
|  |  | All fans are not working                                   | Replace fans' driver  |
| Lamp is broken during replacement              | Mercury from the lamp may contaminate surface and room   | Accidental fall of lamp while relamping                    | Be careful and focused while relamping. Follow replacement instruction. In case of breakage follow instruction how to clean Mercury contamination |



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