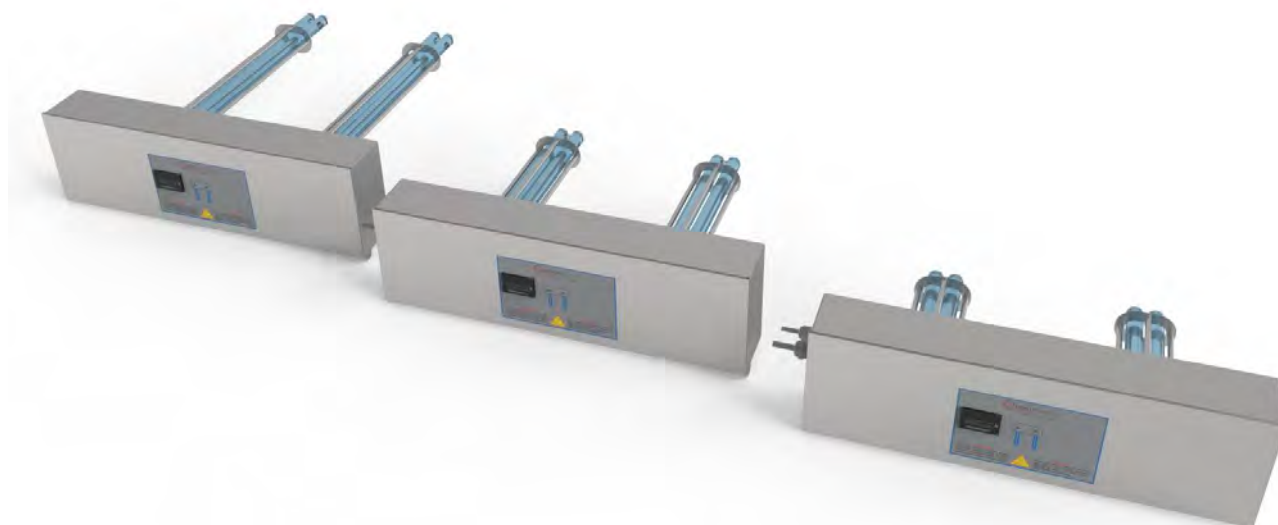


UV-DUCT-FL

***UV-C Germicidal Flanged Modules
for Disinfection in Air Conditioning Ducts***

MODELS:

UV-DUCT-FL 2/35HP-NX
UV-DUCT-FL 2/60HP-NX
UV-DUCT-FL 2/95HP-NX



SECURITY WARNINGS

The Company has ensured that every care is taken in the design and production of its machinery. In order to guarantee as far as possible, that it is safe when used correctly. However, the laws on accident prevention require all users of the machinery to ensure that whoever is responsible for installation, maintenance, use and sale of these products is shown the instruction provided by our company and is made aware of the precautions to be taken. According to the circumstances, the appropriate recommendations made in these instructions must be made available, together with any other relative information, to any company or person involved in the installation of LIGHT PROGRESS products.

Only use this appliance for its intended purpose as described in this booklet.

If the appliance is wrongly operated for a purpose other than that for which it is intended, no liability can be accepted for any possible damage. The manufacturer cannot be responsible for any damage to people, animals, and objects caused by use or operation of the appliance contrary to these instructions.

As with all electrical appliances the safety information and precautions contained in this booklet must be carefully observed, including following:

Before maintenance or cleaning ensure that the appliance is switched off and unplugged from the mains supply.

Should the appliance become faulty please contact our authorized Service Centre direct and in case of repairs ask for genuine parts.

Improper repairs may damage the appliance and place the user at serious risk.

WARNING



Avoid exposition to UV-C rays emitted by germicidal lamps, even for few seconds, as it may cause severe conjunctivitis and erythema.

Plastic or painted surfaces exposed to direct UV-C rays may progressively yellow, similar to a long exposure to sunlight.

The intended use is as a germicidal lamp for sterilization, any other use is improper and dangerous.

The lamp, as supplied, cannot be modified or designed for use with accessories or tools.

Disclaimer: All responsibilities and warranty will be void due to tampering or lack of maintenance.

- Carefully read the following instruction before use
- Before opening of the UV section, ensure the UVC device is OFF and unplugged in order to avoid exposure to UVC light emitted by the germicidal lamp; It may cause severe conjunctivitis and erythema.
- Remove the protection film from the device before turning on the UV-C lamp.
- This device cannot be operated children and by persons with reduced physical and sensory capacities.
- Ensure all users have the required knowledge and the related instructions about the safe use of the device and the related risks.

Refer to ARPANSA Radiation Standard: Occupational Exposure to Ultraviolet Radiation for additional requirements: <https://www.arpansa.gov.au/sites/default/files/legacy/pubs/rps/rps12.pdf>

CONVENTIONAL SYMBOLS NOTICED ON DEVICES

DOESN'T DISPOSE THIS PRODUCT ON THE UNDIFFERENTIATED WASTE DISPOSING OF THE SUBSTITUTED ITEMS MUST BE PERFORMED RESPECTING THE LOCAL LAWS.



RECYCLE THE STUFFS THAT COMPOSES THIS PRODUCT.



OBLIGATION TO CONSULT THESE INSTRUCTIONS BEFORE USE THIS PRODUCT



DANGER OF ELECTRICAL SHOCK; REMOVE TENSION TO THE SYSTEM BEFORE PERFORMING ANY OPERATION.



GENERIC DANGER.



DANGER OF EXPOSITION TO ULTRAVIOLET UV-C RAYS.



THIS DEVICE RESPECTS THE ROHS NORMS.



USE PROTECTIVE GLOVES



WEAR PROTECTIVE GLASSES

MANUAL**ATTENTION!**

This instruction manual must be preserved and be ever at disposal to consultation; it must follow the device in case of passage of property and accompany the device until its demolition. It's possible to contact Light Progress' technical office to ask for updated instruction manuals and information.

DISPOSAL

Do not dispose of these products as unsorted municipal waste but collect them separately as a special waste and entrust them to specialized waste disposal companies. Disposal should be in accordance with Legislative Decree No. 151/2005 (WEEE - Italy), or the law of the country where disposal will occur (WEEE - EC). In case of failure to comply with laws or illegal disposal, heavy penalties are provided. The apparatus consists of plastic parts, electronic components, metal, UV lamps containing mercury (substances dangerous for the environment and human health). The dealer is available to the withdrawal of the apparatus used.

DEVICE DESCRIPTION

The series **UV-DUCT-FL** includes modules for disinfecting air in air conditioning systems, (HVAC) with a reduction of microbial load of 99.9%.

These modules consist of a box structure (flange) from which two UV lamps emerge, in the form of "U", protected by a stainless-steel grid. They are generally applied along the ducts of air conditioning (pic. n.2).

The modularity of this device allows a straightforward application in all types of conduct, also in the final sectors of the UTA (Air Handling Unit), with the ability to adapt to different needs and different sizes of ducts.

The main characteristics of **UV-DUCT-FL**, as the compact dimensions and device controls, allow a quick and easy installation, directly inside the air conditioning ducts.

APPLICATIONS AND RESULTS

The air conditioning systems involve numerous hygienic risks, even when filters are mounted, especially if they are not absolute filters HEPA or ULPA type.

The risks are mainly the following:

- The possible formation of bacterial colonies on the surface of the heat exchangers, of the humidification panels, filters (especially if they are subjected to regular maintenance). The bacteria can then be transported by the flow of air and dispersed in the environment.
- The possible formation of colonies of *Legionella Pneumophila* (Legionnaires' typhoid) due to the presence of water in the humidification sections of the air handling unit (AHU).

Applied to the ventilation duct, **UV-DUCT-FL reduces the airborne contamination by 99.9%**, by means of an installation into the HVAC system making it safe for the personnel.

The apparatus allows for both the microbial blocking of access to the contamination controlled rooms (clean rooms; microbes coming from outside or present in the recirculation air), both the block of cross-contamination, which may occur between two adjacent rooms, via the air conditioning ducts.

Scientific studies demonstrate the existence of a close relationship between air conditioning, airborne microorganisms, and human health. They confirm that there is a microbiological contamination carried by these plants causing various diseases, such as:

- **Sick Building Syndrome**, characterized by disturbances in the eyes and upper respiratory tracts (hyperactivity of these mucous membranes) as well as nervous disorders (numbness, headache).
- **Legionellosis** (*Legionella Pneumophila* - Legionnaires' typhoid). This pathology is frequently observed in environments with air conditioning systems. The *Legionella* infection can result in two distinct clinical pictures: Pontiac fever and Legionnaires' disease. But it can also lead to the death of the infected person.
- **Tuberculosis** (*Mycobacterium Tub.*) which is transmitted by air and enters the body through the respiratory route.
- **Humidifier disease** or "**Monday Fever**", characterized by an influenza-like symptoms that occur at the start-up of humidification systems, and seem triggered by microorganisms able to proliferate in the ducts of air conditioning systems during the weekend shutdown of air.

OPERATION

The device works to direct radiation into the duct, resulting in substantial reductions of airborne microbes, with no contraindications. Thus, the indoor air will be not only conditioned, but also disinfected up to values of more than 99.9%. The ongoing use of modules UV-DUCT (working 24 hours a day), regardless of the operation of the air conditioning system, prevents the germs to move from one room to an adjacent one, through the conduct (blocking back). Our technicians will calculate the configuration of the modules according to the following data:

- Section of the ventilation channel.
- Flow rate in m³ / h (or velocity).
- Air temperature.
- Relative humidity.
- Microorganism reference to inactivate and percentage of destruction (usually *E. coli*, *Mycobacterium t.*, *Legionella p.* with destruction of 90% up to 99.99%).

BENEFITS AND ADVANTAGES

PHYSICAL ACTION AND ENVIRONMENTAL PROTECTION. Treatment by UV-C rays is purely physical, and always achieves the same effect; also, there are no problems of overdose and rooms are always safe and practicable (when devices are off). Rather, many methods of chemical treatment involve the use of dangerous products for the environment, and difficult to biodegrade, as well as the risk of contamination of foodstuffs. Also, using chemicals is likely to develop resistant microbial forms with consequent danger to human health.

IMMEDIATE EFFECT. It takes just a very short time to obtain effective results (99% killing of the bacteria).

PRACTICABILITY AND SAVINGS. The treatment is immediate and ready for use. The maintenance is minimal with low costs of both energy consumption and repairs.

ONGOING AND DEEP DISINFECTION

This system can always be turned on with no contraindications for people who have access to air-conditioned rooms. It therefore remains constantly below the level of the microbial environment and improve indoor air quality (IAQ), as prescribed in the DL 81/2008 legislative act and recommended by the WHO (World Health Organization).

STOP TO CROSS CONTAMINATION

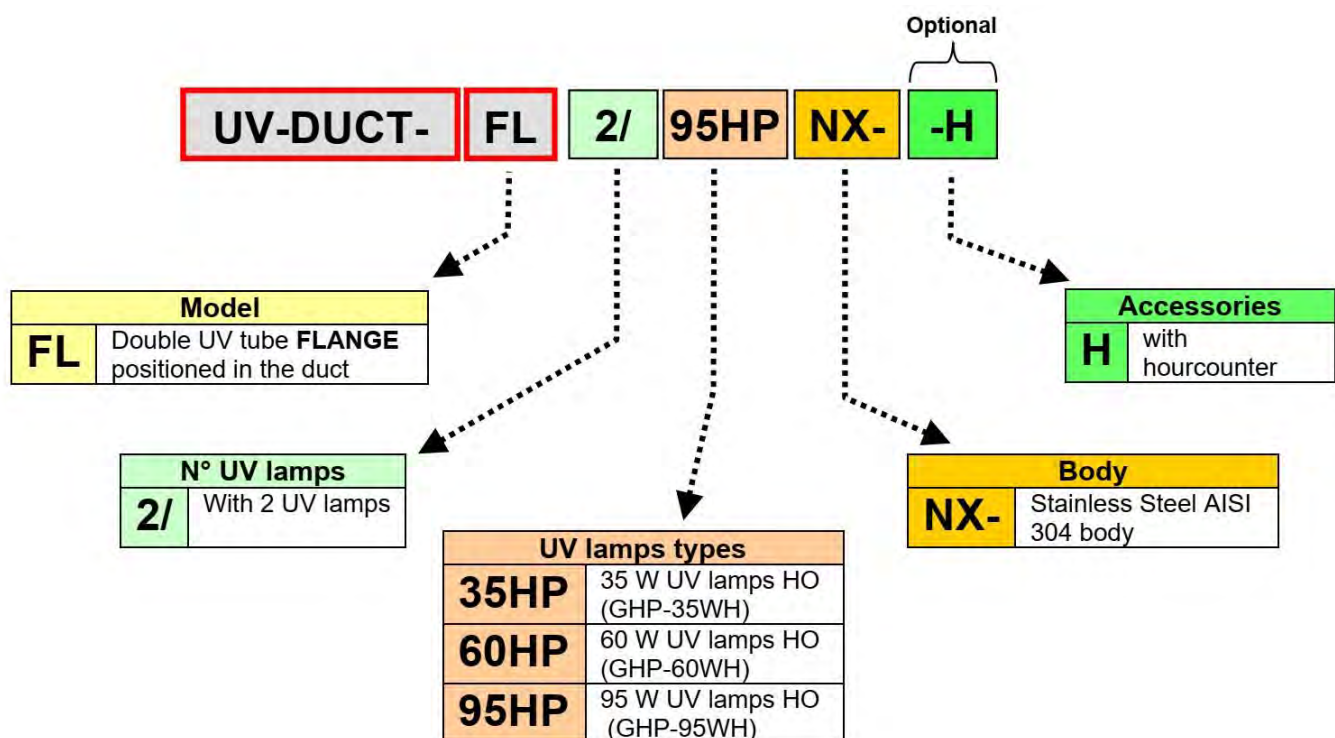
The contamination of an area may spread to other premises by the air conditioning system. The UV-C devices, to be installed near the ridges of emission of air, prevent the spread of microorganisms.

FIGHT AGAINST THE DISEASE FROM AIR CONDITIONING

Any air conditioning system involves considerable hygiene risks if it is poorly engineered or if there is a lack of good maintenance. Moisture(condensation) of filters and heat and adiabatic exchangers may become a receptacle for germs and cause certain diseases such as:

Sick Building Syndrome (sick building syndrome), Legionellosis (Legionella P.; Typhoid Legionnaires'), Tuberculosis (Mycobacterium t.), Etc.

DEVICE CODES



RECEPTION

Please verify the integrity of the package as soon as it arrives at your facilities; then check the device to be sure that the carriage did not caused damages to any part of it. Before installation and using the device, please READ CAREFULLY THE SECURITY WARNINGS and all other instructions that follows.

INSTALLATION

The magnitude of air flow treated by the apparatus UV-DUCT is shown in Table n.1.
Make holes on the wall of a duct by a fully ground hole cutter. Follow these instructions:

- 1) Place the device downstream of the conditioning apparatus, as shown in pic. 1.
- 2) Make three holes on the duct wall, using the supplied drilling template (pic. 3). The installation of more devices should be made to distribute them uniformly (you should avoid creating shadows)
- 3) Join the UV-DUCT-FL to the duct by self-tapping screws, using the three holes to fix the device on the wall, placed on the bottom of the lamps box, after opening the box lid.

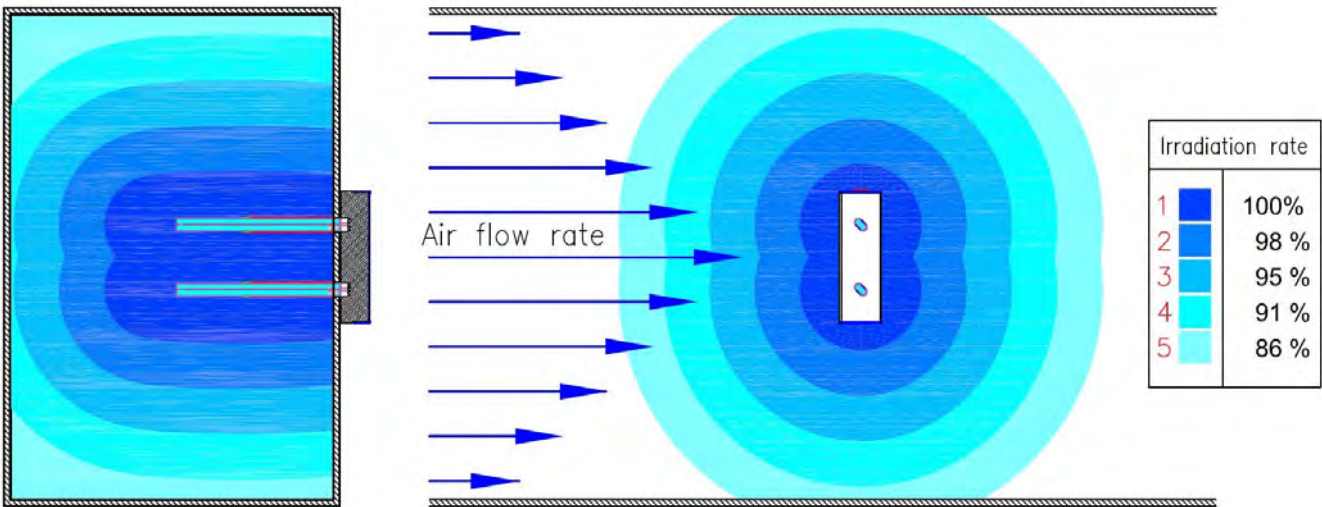
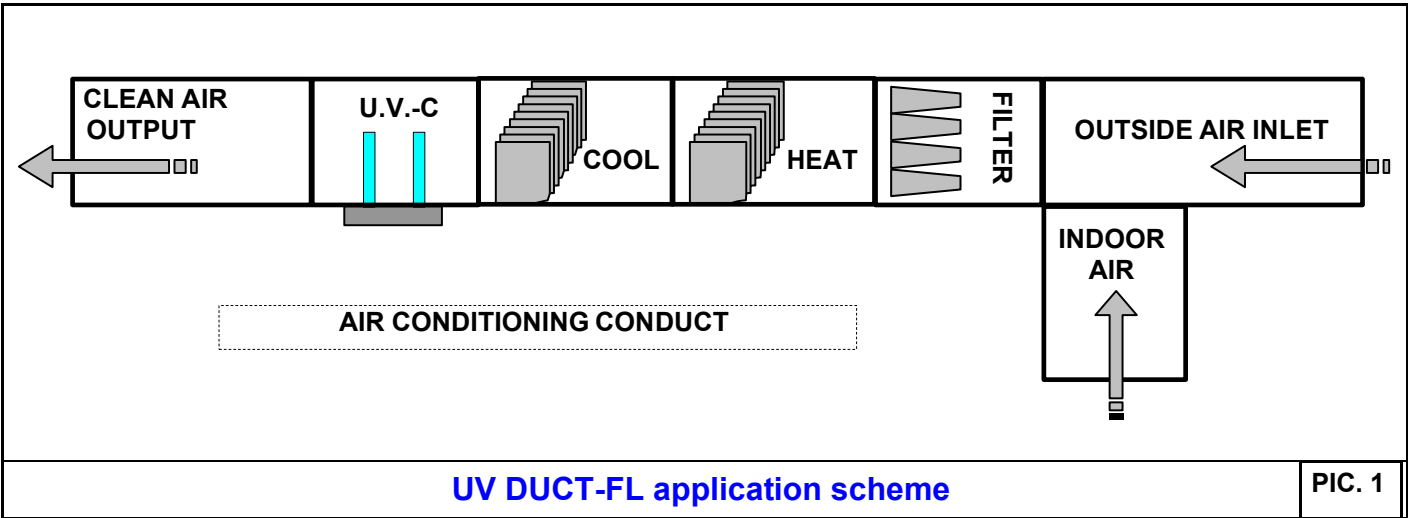
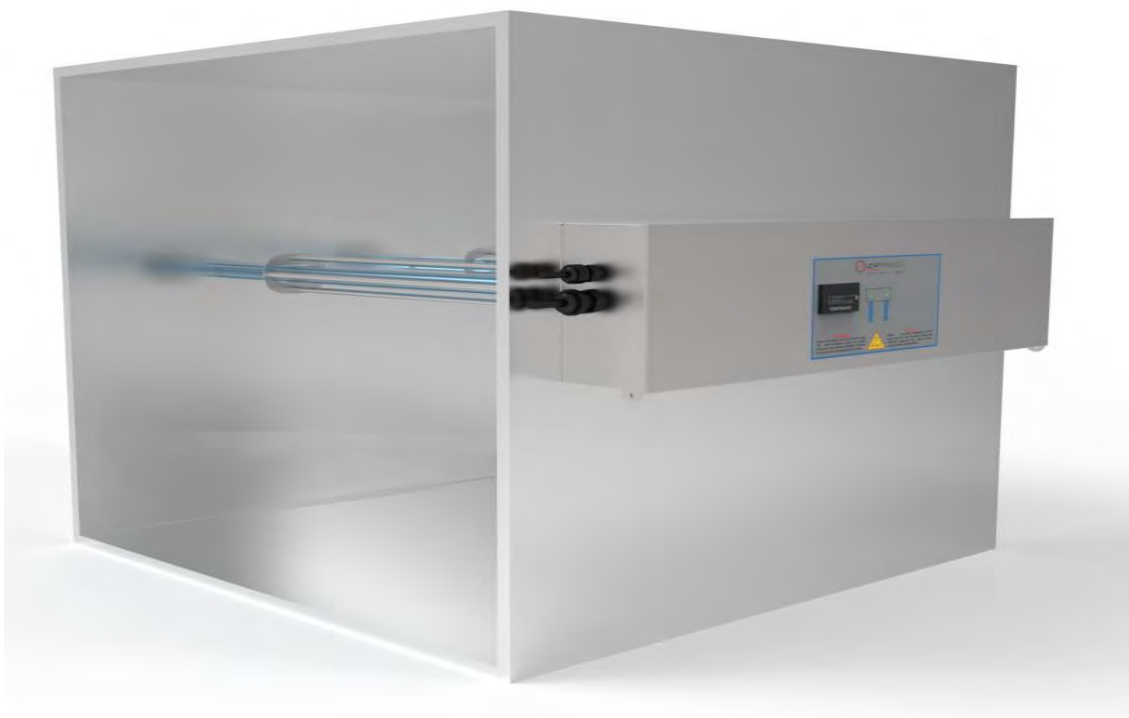
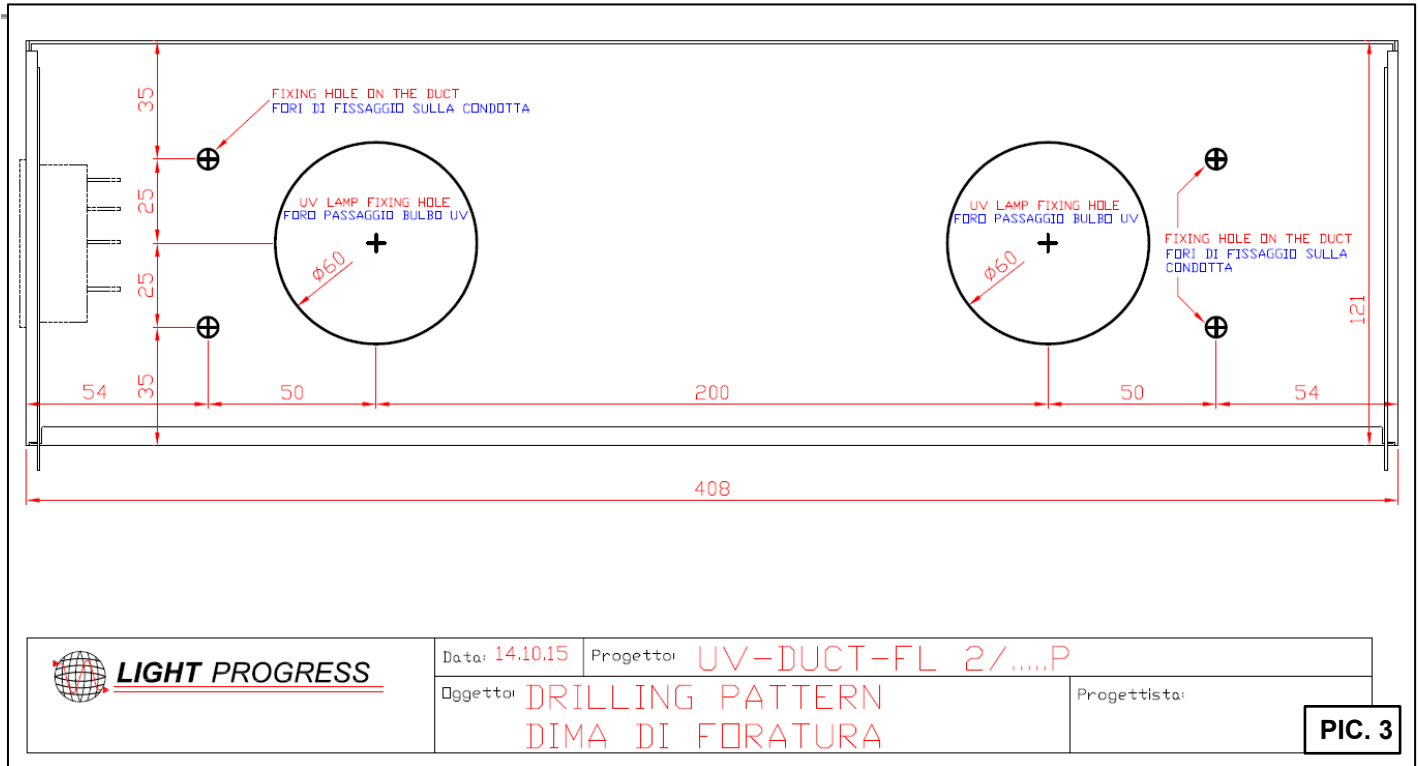


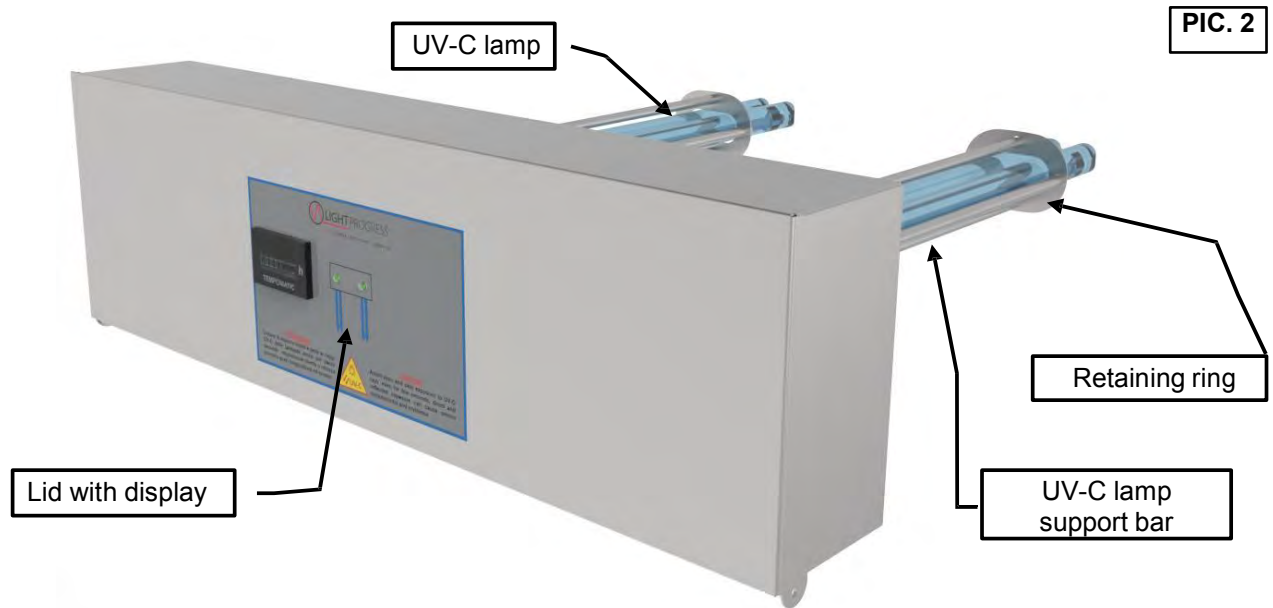
Table 1. Airflow treatment by UV-DUCT



WARNING!!!

Although based on indirect radiation, this device must be turned on only in the absence of people, because reflected radiation can cause eye irritation and skin erythema. To avoid accidental exposure to UV radiation, provide automatic turning off disposals at the entry doors to the ducts (with position switches).

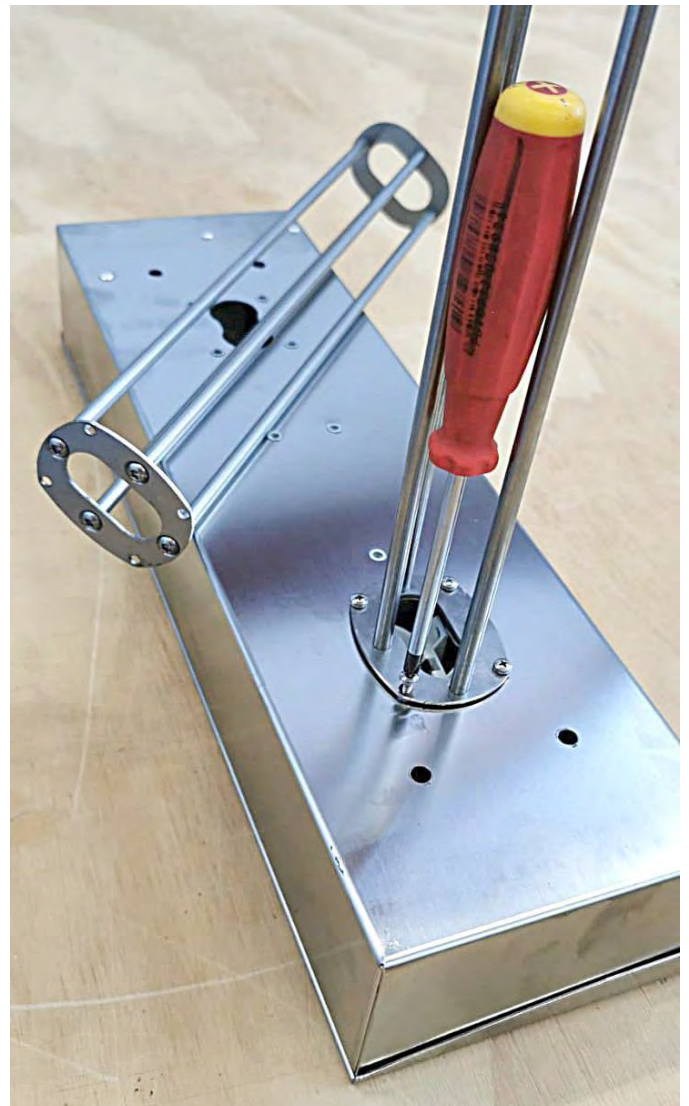
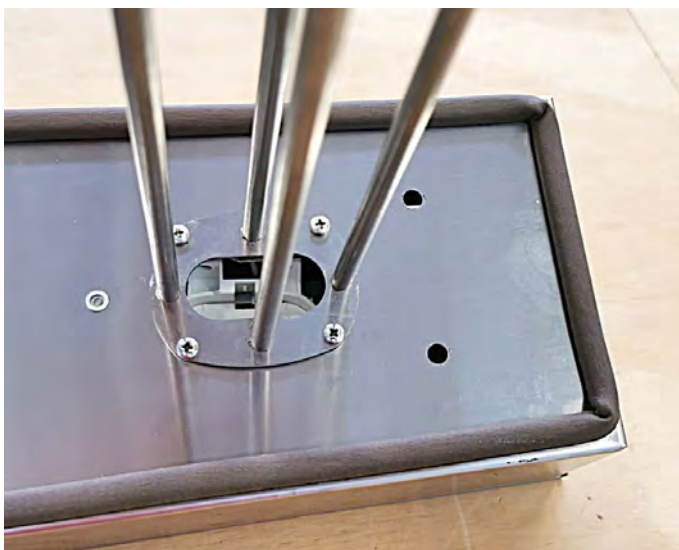
Remember to switch on the device ONLY IF there is adequate shielding and no accidental exposure to rays by the personnel.



ASSEMBLY

UV-DUCT-FL modules are shipped without support bars mounted. Assembling is very easy, 4 + 4 M3x10 stainless steel screws are provided as accessories. Place the support bars kit matching the threaded holes (pictures on the right). Screw tight 4 screws for each support bar and then proceed with the second bar.

For a better seal of the UV- DUCT-FL on the air duct wall, please also apply the gasket supplied with the accessories (see picture below)



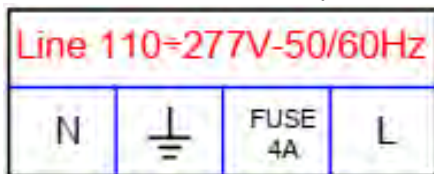
ELECTRICAL CONNECTIONS

- It is recommended that the device must be installed by a qualified electrician who should strictly follow these instructions and general regulation for electrical installations.
- Before connecting the device verify that specifications on the tag correspond to those of the power supply (variation of +/- 5 % are allowed).
- Ensure that the electric supply is suitable for providing the current and voltage required by the device (see tag details)
- The connection to the power network line requires a multi-pole switch.
- The connection must be installed by means of screws, nuts, or devices of equal effectiveness.
- The connection to the mains power supply must be made using a 3 x 1 mm² cable (not supplied).
- Safeguard the power cable of high temperatures, sharp edges, oil, water.
- Ensure that the device is adapted to the physical environmental conditions where it must operate.
- In order to avoid accidental exposure to UV radiation, it is recommended to install automatic sensors, as position switches on the doors, to switch off the UV lamps in case of personnel entry into the duct; otherwise, provide warning pictograms on the AHU doors/walls.

ELECTRICAL CONNECTION TO TERMINAL:

- 1) The **power supply line** must be connected to the input terminal labelled LINE (cable 3 x 1 mm²) (NOT PROVIDED) using the **bigger** cable gland (PG9)

- 2) a FUSE 4A is included for protection

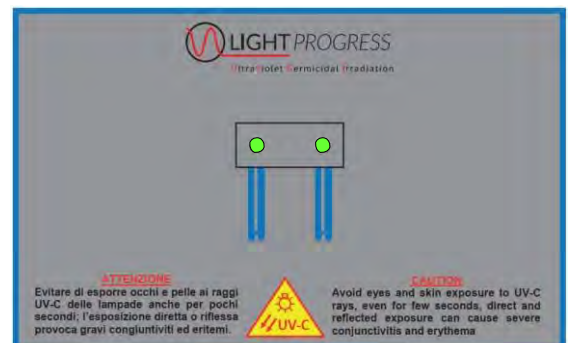


- 3) FAULTY LAMP ALARM (20-21) is a free contact open/closed that reports whether a lamp (or more) is faulty (NC = faulty lamp. Maximum applicable load 500mA -24V). To connect please use a two pole cable (2x0.5 mm²) and insert it on the terminal where "FAULTY LAMP ALARM" is indicated using the smaller cable gland (PG7). To check which lamp does not work, please see the synoptic control panel (Led ON = lamp OK, Led OFF = Faulty lamp), which allows to find immediately which lamp needs to be replaced.



The LEDs on the device cover indicate the correct functioning of the lamps, if a LED is off, the corresponding lamp is not working (Pict. 5). If there are more than one device installed, a series connection can be made between the various contacts to have a single remote fault alarm. To find which appliance is not working you still need to check the LED signaling on the cover, which is carried out by checking the LEDs above the cover.

Pic. 5



ACCESSORY

OPTIONAL -HOUR COUNTER

► UV-DUCT-FL .../...-H

The counter is placed on the lid of the unit.

The purpose of this accessory is to be able to display the wear and tear of the lamps so that they can be replaced correctly. The instrument cannot be reset to prevent from counting accidentally losing.



SCHEDULING

The device can always remain on when the air conditioning system is running. For the first start-up, after installing on the duct and after making all the electrical connections, insert the UV-C lamps following the exact procedure listed. Steps are indicated on the section MAINTENANCE below.

MAINTENANCE

UV LAMP



USE
PROTECTIVE
GLOVES



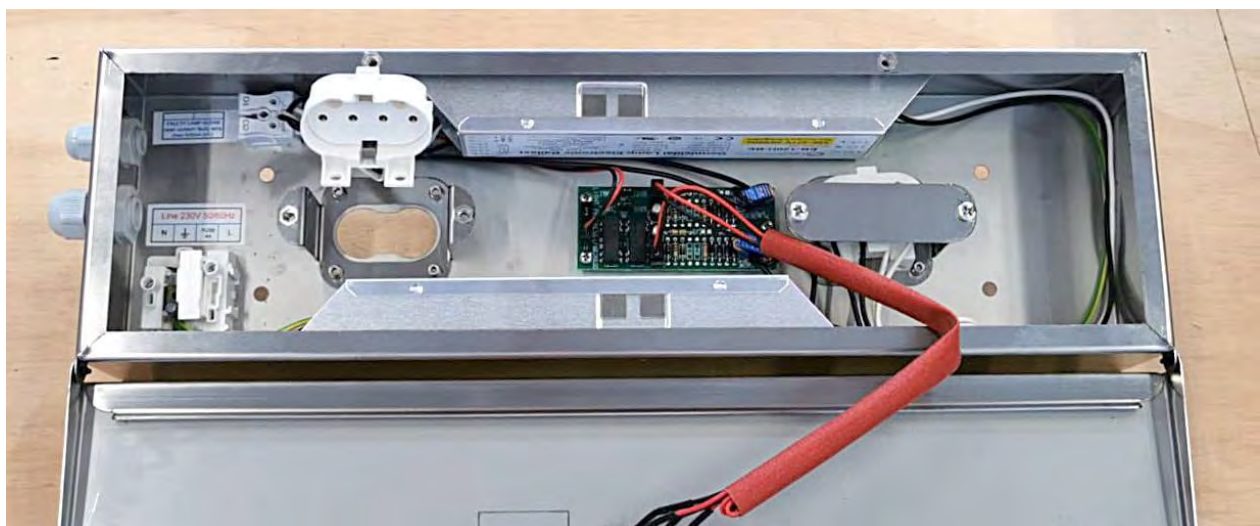
WEAR
PROTECTIVE
GLASSES

Lamp maintenance is very important because UV-C light emitted by the source is not visible to the naked eye, so, although you see the lamp ON, its germicidal effect may not be sufficient to perform disinfection treatment. Before reaching the lamp, **ALWAYS** switch off power supply

If UV-C lamp gets dirty (or gets dusty) clean it with a clean cloth and alcohol and avoid touching the glass part with hands.

Once the lamps life has expired, they must be replaced; this operation is carried out as follows (for the spare lamp code see Tab.1):

- First, make sure that the power supply line to the appliance has been interrupted.
- Unscrew the two closing screws located above, on the cover of the box containing the power supply unit.
- Open the cover by turning it downwards.
- Unscrew the two M4 screws that close the lamp holder compartment (oval cover)
- Unplug the lamp holders from the lamp.
- Remove the lamp from the box by sliding it along the containment guide.
- Repeat the operations in reverse order to reassemble the new lamp.



TROUBLESHOOTING**UV LAMP**

See MAINTENANCE.

POWER SUPPLY

All UV models are supplied with electronic ballasts which guarantee an emission of 15% more if compared with traditional ballasts. Furthermore, lamps are not influenced by environment temperature ($> -20^{\circ}\text{C}$). Finally, switching on is immediate, with no starter, and for this reason lamps last longer.

In case of failure, to replace the electronic power supply, ALWAYS remove the device from the power (mains supply), then proceed as follows (PICS. 2 e 7):

- 1) Remove the locking screw placed on the lid of the box that contains the power supply.
- 2) Open the lid by turning it down.
- 3) Disconnect the wires on the right (4 or 7 wires) and the left (3 wires) placed on the power supply by pressing the blade of a screwdriver on the slot corresponding to each input wire, to set it free. Pay attention to the succession of links because each wire will have to re-occupy the same position at the end.
- 4) Remove the electronic ballast by the aid of a screwdriver.
- 5) Replace with a new ballast like the original (for code see Table n.1) and reconnect the wires paying attention to the succession of steps.
- 6) Repeat the above steps in reverse.

LED + CIRCUIT BOARD

The LEDs on the lid indicate the correct operation of the lamps (Pic. n.6). They are powered by an electronic card, placed inside the box, which also triggers the remote signaling of the failure lamp alarm.

In case of failure, to replace the circuit board or LED, ALWAYS remove the device voltage, then proceed as follows (pic. n.2 and n.7):

- 1) Remove the locking screw placed on the lid of the box, that contains the power supply.
- 2) Open the lid.
- 3) Disconnect the wires placed on the electronic card (three pairs with terminal AMP). Pay attention to the succession of links because each wire will have to reoccupy the same position at the end.
- 4) Unscrew the screws holding the electronic card.
- 5) Replace with a new board like the original (for code see Table n.1) and reconnect the wires paying attention to the succession of steps.
- 6) Repeat the above steps in reverse.



APPLICATION OF UV-DUCT-FL TO AIR HANDLING UNIT (AHU)

TECHNICAL FEATURES

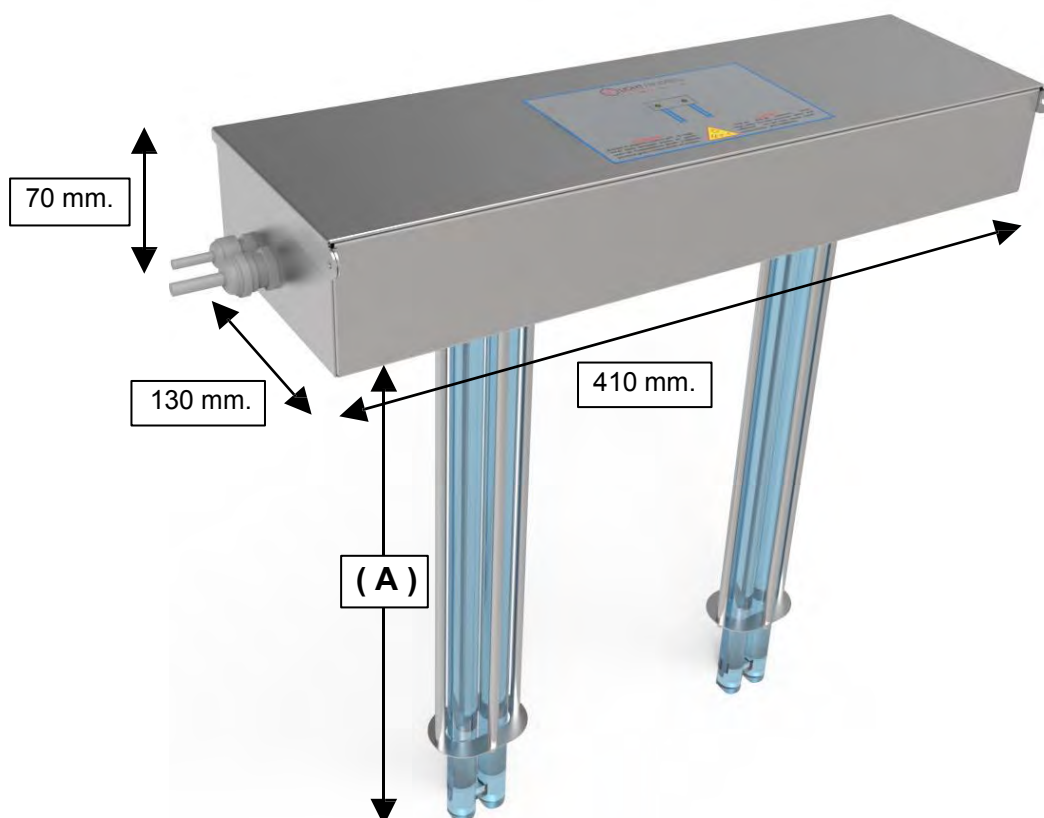


TABLE n°1

UV-DUCT-FL	2/35HP	2/60HP	2/95HP
Average Lamp Lifetime (hour) [°]	≤ 18,000	≤ 18,000	≤ 18,000
Consumption (W)	70	120	190
Dimensions l x w x h	410x130x253	410x130x452	410x130x578
Length "A" (mm)	183	382	508
Weight (Kg)	2.4	2.6	2.7
AIR FLOW (m³/h)*	800 to 2,000	1,300 to 3,400	2,200 to 5,600
SPARE PARTS			
UV TUBE Code	N°2 GHP-35WH	N°2 GHP-60WH	N°2 GHP-95WH
BALLAST Code	N°2 EB-90H o EB-120H-BE	N°2 EB-90H o EB-120H-BE	N°2 EB-90H o EB-120H-BE
ALARM CARD Code	AL-2X	AL-2X	AL-2X
LED	N°2 LED-L800	N°2 LED-L800	N°2 LED-L800

[°] continuous operation

* = 99% E. Coli reduction, square section duct (min. cm.30 – max. cm.100), temp. 20°C, RH 60%.

- Selective UV-C lamp (at 253.7 nm) with high efficiency lighting.
- Body in Stainless Steel AISI 304
- All the used materials are tested for resistance to intense UV-C rays.
- Powered with electronic ballasts specific for UV-C ray lamps
- CE mark (LVD - EMC - MD - RoHS).
- Complies with the noise standards of Directive 2006/42/EC
- Values measured according to UNI EN ISO 3746
- Non-detectable and non-transmissible vibration values
- Suitable for class 1 installations - protected areas

LABEL AND SYMBOLS



SYMBOL			
MEANING	Warning! Check the attached documentation	GROUND TERMINAL (The unit must always be connected to the ground)	Device with CE certification.

WARRANTY

All products made by LIGHT PROGRESS are manufactured with the highest quality materials only, they are subjected to rigorous testing, and are guaranteed to be free of factory faults according to current law and regulations.

Minimum requirements for warranty validity:

Warranty will be considered valid only in case of possession of the purchase document.

Warranty limits:

Warranty excludes:

- Damages caused by not following the instructions that accompany the product at purchase.
- Periodical controls, maintenance, repairs or replacements of parts due to normal wear.
- Consumable parts.
- Use of incompatible spare parts or consumables; Compatibility is ensured only by use of products purchased from or recommended by **Light Progress**.
- Damages caused by modification of device / system without **Light Progress'** previous consent.
- Improper use of the product, falling or crashes.
- Modifications or repairs made by unauthorized personnel.

For defective materials return, you must request the return merchandise authorization (RMA) sending an email to info@lightprogress.it or calling the number +39.0575.749255.

Once you receive the module, it has to be filled up in every part and sent via email to info@lightprogress.it or via fax to +39.0575 789929 to obtain the RMA number that will authorize the shipments of the goods to Light Progress warehouse. Only authorized goods will be accepted, otherwise it will be refused and sent back to the sender on ex- works conditions. The packages must be sent on DDP (Delivery Duty Paid) with packaging suitable for transport. RMA number is valid up to 10 working days from release date.

Europe:

Loc. San Lorenzo, 40 - 52031 ANGIARI (AR) - ITALIA

TEL. 0575 / 74.92.55 - FAX 0575 / 78.99.29

Http: www.lightprogress.it

E-mail: info@lightprogress.it

Australia / NZ:

LAF Technologies Pty Ltd

12 Royan Place

Bayswater North VIC 3132

E: sales@laftech.com.au

T: 1300 306 002

W: www.laftech.com.au

MANUFACTURER RESPONSABILITY AND COMMITMENTS

Light Progress do not assume any responsibility for any damage to persons or property, due to failure to follow these instructions. We recommend you to carefully read all the given instructions.

The manufacturer agrees with the buyer to provide, upon request, schemes of circuits, component parts lists, instructions for calibration of lamps and other information, which are useful to repair those parts that the manufacturer considers repairable.

The company reserves the right to make changes without prior notification or public notice.



DECLARATION OF COMPLIANCE

We, LIGHT PROGRESS S.r.l., hereby declare under our own responsibility that the following units of own production:

UV-DUCT-FL series

- ⇒are in accordance with EEC directive 2014/30/EU (Electromagnetic Compatibility)
- ⇒are in accordance with EEC Machinery Directive dispositions 2006/42/EU
- ⇒are in accordance with EEC Low Voltage Directive 2014/35/EU
- ⇒are in accordance with EEC (RoHS) 2011/65/EU (D.Lgs 4 Marzo 2014, n.27)

TECHNICAL STANDARDS APPLIED

UNI EN ISO 12100:2010	Safety of Machinery - Basic Concepts, General Principles for Design - Risk assessment and risk reduction
UNI EN ISO 13857:2008	Safety of Machinery - Safety Distances to prevent danger zones being reached by the upper and lower limbs (2008)
ISO 14120:2015	Safety of Machinery - Guards - General Requirements for the Design and construction of fixed and movable guards
UNI EN ISO 13849-1:2016	Safety of Machinery - Parts of the Control System related to the Safety – Part 1: General Design Principles
UNI EN ISO 14119:2013	Safety of Machinery - Interlocking devices associated with guards - Principles for design and selection
CEI EN 60204-1:2016	Safety of Machinery - Electrical Equipment of Machines. Part 1: General Rules (2010)
EN 61439-1:2011	Low-voltage Switchgear and Control Gear Assemblies. Part 1: General rules

FURTHER TECHNICAL STANDARDS APPLIED:

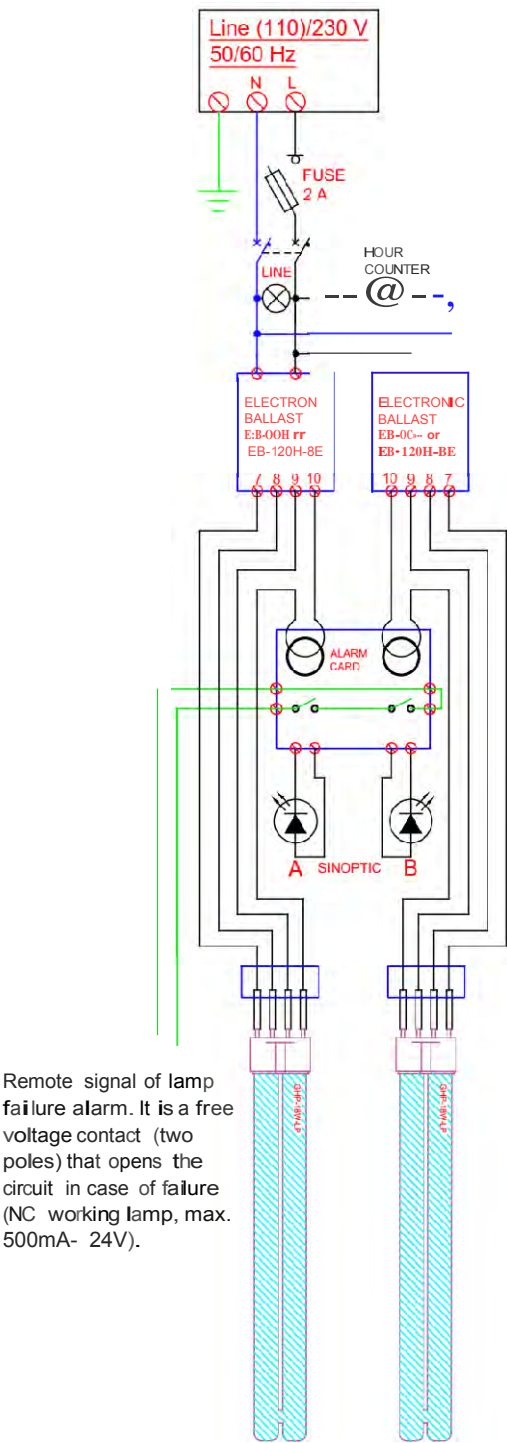
IEC EN 60335-1 "Safety of household electrical appliances and similar"
Electronic Ballasts for the control of the lamps in accordance with the standard EN 60928.
Germicidal UV-C Lamps in accordance with EN 61199.
Electrical Protective Measures in accordance with IEC 70-1, EN 60229.

Anghiari, 8.3.2020



Responsible for Standards: Dr. Aldo Santi

CIRCUIT SCHEME



MODELS:
[UV-DUCT-FL 2/35HP-NX](#)
[UV-DUCT-FL 2/60HP-NX](#)
[UV-DUCT-FL 2/95HP-NX](#)

1/'tOGI'tESS	ELECTRIC PLANE	Date: 20.07.20
	UV-DUCT-FL series	Progettisto: Aldo Sonti

Notes:



Call: 1300 306 002 www.laftech.com.au