# SANITIZATION DEVICES







## THE COMPANY

ÈCLAIRÉ is an ATENA LUX brand that deals with the sale of lighting fixtures and equipment dedicated to the dental sector. Present for over 25 years in the field of lighting, ATENA LUX is recognized in Italy and abroad for its specific production dedicated to the medical sector. It stands out in fact for the production of bed head beams, certi fi ed as electro-medical devices, and lighting fixtures for operating theaters and clean rooms. In recent months, the health situation has prompted the company to develop new models of lamps with UV-C light sources with a germicidal effect that represent an effective solution for the sanitation of environments.

# **UV-C TECHNOLOGY**

### **Germicidal Lamps**

UV-C ultraviolet rays are electromagnetic waves with germicidal properties. Their wavelength ranges from 100 to 280 nm and their maximum effectiveness occurs at the wavelength of 265 nm. UV-C rays have a destructive effect on RNA and DNA of bacteria, mold, yeasts and viruses, preventing their proliferation. Germicidal lamps emit light at 254 nm, approximately 85% of maximum efficiency and are ozone-free.

#### What are the advantages of using UV-C germicidal lamps?

Ultraviolet (UV) purification is a very effective method to clean the environment of biological pollutants such as bacteria, viruses, molds, mites and fungal spores. Lighting devices with germicidal UV sources are a very efficient tool as an alternative to the use of normal chemical disinfectants and antibiotics which, in addition to causing damage to the human body by coming into direct contact through inhalation or ingestion, are inevitably the cause of environmental pollution.

It is therefore a safe disinfection system recommended by recognized bodies and organizations such as World Health Organization, American Society of Heating, Refrigerating and Air-Conditioning Engineers, International Ultraviolet Association. Several scientific publications are available and in particular the CIE (International Commission on Illumination) has published a series of technical reports and international standards over the years on the topic of ultraviolet radiation, on how to measure it, on its effects and use as a means of disinfection:

- CIE 187:2010 UV-C Photocarcinogenesis
   Risks from Germicidal Lamps
- CIE 155:2003 Ultraviolet Air Disinfection

UV-C lighting fixtures are used in various areas and mainly in:

- Hospitals (medical clinics, clean rooms)
- Veterinary clinics, stables and stables
- Food and pharmaceutical industries
- Air conditioning systems
- Water treatment systems

But more and more often they are also requested in shops, warehouses, offices, in areas open to the public. There are no limits to the possible applications of UV-C rays: even in domestic environments they are used to avoid the formation of mold, against dust mites and for the maintenance of healthy air and water.





#### How germicidal UV-C lamps work?

UV-C radiation has a photolytic effect on DNA and RNA, thus preventing microorganisms such as bacteria, mold, yeasts and viruses from reproducing. The purification effect is obtained with wavelengths less than 320 nm, with maximum efficiency at 260nm. For the elimination of microorganisms with UV-C rays, they must be on the surface of an object or transported by air. Each microorganism needs a different UV-C dose for its inactivation or elimination. Among the various universally recognized documents, the one produced by CIE (CIE 155: 2003 Ultraviolet Air Disinfection) shows a table that explains for each type of microorganism the quantity of UV-C radiation (expressed in J / m2) necessary for it to be destroyed.

#### Precautions for the use of germicidal lamps

Since UV-C TUBES are classified according to IEC / EN 62471 (photobiological risk): Risk group 3, the radiation of this UV-C lamp represents a health risk: The lighting fixtures with UV lamps are specially designed for the disinfection of air in rooms not occupied by people. In fact, the reflections of the ceiling and walls and the presence of free radiation produced by the appliances themselves can cause the propagation of ultraviolet intensity waves that cause conjunctivitis and erythema. It is necessary to protect the skin and eyes from direct exposure by wearing appropriate protective devices. UV-C lamps cannot be used for general room lighting.

#### Presence sensor and timer Optional



ÈCLAIRÉ wall luminaires can be equipped with a presence sensor and a timer to safeguard the health of the customer and of those who come into contact with the product. Thanks to these options, the lamp turns on 1 minute after pressing the button, to allow staff to leave the room: the device will not turn on as long as it detects movement within its range of action ( $\approx$  3 m). Once the sanitization cycle has started, the device will remain on for 30 minutes. If the sensor does detect a movement, the lamp will turn off immediately and will restart 10 seconds after the last movement obviously detected without resetting the duration of the cycle.

# **MOOVI UV**





<b>T C C C C C C C C C C</b>								
Type of Installation	Floor							
Body	Sheet-steel body powder coated by means of opaque white (RAL 9005) polyester powders, UV resistant							
Wiring	<b>CEL</b> version with electronic ballast EEI=A2, 220-240V 50-60Hz, heat ignition. Sensore di presenza e temporizzatore inclusi							
Luminous source	Luminous source FC-L compact lamp, UV-C lamp with wavelength 254 nm, lamp coupling 2G1							
Power		2 x 55W						
UV-C Rendering	2 x 17W							
Dimensions [mm]	<b>A:</b> 300 <b>B:</b> 170 <b>H:</b> 67		<b>H:</b> 670					
UV-C Irradiation	2,2W/m <sup>2</sup>	2,2W/m² at 1m		² at 2,5 m	0,14W/m² at 4 m			
Life time of UV-C sources	9000 hours							
Operating temperature	-10°C ~ +35°C							
Suitable for environments of	Up to <sup>25</sup> m <sup>2</sup>							
Irradiation time *	30 minutes							
Appliance compliant with	EN 60598 EN 55015, EN 61000 EN 60529		electrical safety electromagnetic compatibility degree of protection					

# **VISION UV**





Type of installation	Wall							
Body	Sheet-steel body powder coated by means of opaque white(RAL 9010) polyester powders, UV resistant. Installation through ABS spacers which are supplied with the luminaire.							
Wiring	CEL version with electronic ballast EEI=A2, 220-240V 50-60Hz, heat ignition							
Optional **	Motion detector with timer							
Luminous source	FL T26 linear UV-C lamp with wavelength 254 nm, lamp coupling G13.							
Power	1x30W	1x36W	1x55W					
UV-C Rendering	12W	15W	18W					
Dimensions [mm]	<b>A:</b> 210 <b>B:</b> 955 <b>C:</b> 100	<b>A:</b> 210 <b>B:</b> 1260 <b>C:</b> 100	A: 210 B: 955 C: 100					
UV-C Irradiation	0,1W/m² at 2,5 m	0,12W/m² at 2,5 m	0,14W/m² at 2,5 m					
Lifetime of UV-C sources	8000 hours							
Operating temperature	-10°C ~ +35°C							
Suitable for environments of	Up to 12 m <sup>2</sup>	Up to 15 m <sup>2</sup>	Up to 18 m <sup>2</sup>					
Irradiation time *	30 minutes							
Appliance compliant with	EN 60598 EN 55015, EN 61000 EN 60529	electrical safety electromagnetic compatibility degree of protection						

# IMPACT UV





Type of installation	Ceiling								
Body	Sheet-steel body powder coated by means of opaque white(RAL 9010) polyester powders, UV resistant. Installation through ABS spacers which are supplied with the luminaire.								
Wiring	<b>CEL</b> version with electronic ballast EEI=A2, 220-240V 50-60Hz, heat ignition.								
Optional **	Motion detector with timer								
Luminous source	FL T26 linear UV-C lamp with wavelength 254 nm, lamp coupling G13								
Power	1x30W			1x36W			1x55W		
UV-C Rendering	12W			15W		18W			
Dimensions [mm]	<b>A:</b> 210	<b>B:</b> 955	<b>C:</b> 100	<b>A:</b> 210	<b>B:</b> 1260	<b>C:</b> 100	<b>A:</b> 210	<b>B:</b> 955	<b>C:</b> 100
UV-C Irradiation	0,1W/m² at 2,5 m			0,12W/m² at 2,5 m			0,14W/m² at 2,5 m		
Lifetime of UV-C sources	8000 hours								
Operating temperature	-10°C ~ +35°C								
Suitable for environments of	Up to 12 m <sup>2</sup>		Up to 15 m <sup>2</sup>		Up to 18 m <sup>2</sup>				
Irradiation time *	30 minutes								
Appliance compliant with	EN 60598 EN 55015, EN 61000 EN 60529		electrical safety electromagnetic compatibility degree of protection						



### How to calculate the irradiation time:

The amount of UV-C radiation needed to destroy microorganisms is given by a mathematical formula:

#### UV DOSE $(J / m^2)$ = Exposure time x UV-C irradiation

Using the data reported by the CIE (Internation Commission on Illumination) body on the effect of UV-C radiation in microorganisms, it is possible to obtain what is the necessary dose of UV-C to eradicate 99% of the most common viruses, bacteria, molds and spores. Being recently emerged, laboratory studies are currently underway to prove the efficacy of UV-C radiation also on the new Covid-19 virus, however the efficacy is also high on other viruses of the same family.

Microrganism	<b>99</b> %
Bacillus anthracis (vegetative)	90,4
S. enteritidis	80
B. megatherium sp. (vegetative)	75
B. megatherium sp. (spore)	56
B. paratyphosus	64
B. subtilis (mixed)	142
B. subtilis (spore)	240
Corynebacterium diptheriae	68
Eberthella typhosa	42,8
Micrococcus candidus	121
Micrococcus piltonensis	162
Micrococcus sphaeroides	200
Neisseria catarrhalis	88
Phytomonas tumefaciens	88
Proteus vulgaris	54
Staphylococcus aureus	99

Source: CIE 155: 2003 Air disinfection with UV rays

# **PRACTICAL EXAMPLES**

### Vision UV

For a 18 m<sup>2</sup> room we use VISION UV 1X55W, installing it at a height of 2.5 m. To destroy 99% of Micrococcus candidus (121 J / m<sup>2</sup>) we have to let it run 864 seconds (about 14 minutes).

#### 121 (J / m<sup>2</sup>) / 0,14 = 864s = 14,4mins

For particularly resistant organisms (see table) it is sufficient to increase the exposure time, for example after about 28 minutes even the most resistant spores will be knocked down.

To identify the number of appliances required for air treatment in relation to the size of the premises in m<sup>2</sup>, consult the following tables:







### Moovi UV

For a  $25m^2$  room we use MOOVI UV 2X55W, installed it in the center of the room. At a distance of 4 m, to destroy 99% of Staphylococcus aureus (99 J / m<sup>2</sup>) we must leave it running 707 seconds (about 12 minutes).

#### 99 (J / m<sup>2</sup>) / 0,14 = 707s = 11,78mins

For particularly resistant organisms (see attached table) it is sufficient to increase the exposure time, for example after about 28 minutes even the most resistant spores will be knocked down.

Time needed to break down 99% of the most resistant microorganisms:



### Impact UV

For an 18 m<sup>2</sup> room we use IMPACT UV 1X55W, installing it on the ceiling at a maximum height of 3 m. To destroy 99% of mixed B. subtilis (142 J / m<sup>2</sup>) we must leave it running 789 seconds (13 minutes).

#### 142 (J / m<sup>2</sup>) / 0,18 = 789s = 13mins



# THE LIGHT THAT SANITIZES

### UV-C + IONIZATION Sanitation according to nature

The air in nature is purified from mold, bacteria and viruses thanks to the active action of the ions generated by the sun, wind and the motion of the seas.

On average, in the mountains we find a concentration of 15,000 ions / cm3, at the sea 50,000 ions / cm3, while in homes the value is drastically reduced to less than 100 ions / cm3.

Thanks to the introduction of bipolar ion generation technology, Atena Lux combines the lighting experience with the sanitization of environments, creating a new product concept, created to be installed in homes, offices or in closed environments where it is necessary to improve the quality of the 'air.

PLAY / UV is a lighting body with a minimal and versatile design that carries out a constant sanitizing action through the use of UV-C germicidal lamps together with the bipolar ion generator.

The sanitization device is integrated inside the device and this allows its continuous operation even in the presence of people, protecting their health.

The luminaire has been designed to make work environments healthier and is suitable for recessed installation on false ceilings or ceiling and suspension, to replace or add to existing lighting devices.

The sanitization system includes the germicidal action of UV-C rays, which have a destructive effect on the DNA of viruses, bacteria and molds, with the purifying action of cold plasma ions.

The technology of generating bipolar ions with cold plasma makes it possible to produce the same positive and negative ions produced in nature, ensuring a sanitizing action, making the air in the environments in which we live and work healthier. The generation of positive and negative ions triggers natural chemical reactions by destroying the protein structure of viruses and bacteria, effectively rendering them harmless and oxidizing volatile organic compounds in the air (VOC). In this way, both the growth of viruses, microbes and bacteria in the specific area and the VOC content in the air are monitored.

By combining the effect of the bipolar ion generator with UV-C rays, the effectiveness of the air purification and sanitization process is increased.









Type of installation	<ul> <li>RECESSED</li> <li>CEILING or SUSPENDED (fixing bracket not included)</li> </ul>						
Body	White pre-painted steel sheet						
Wiring	<ul> <li>Electronic LED driver (ON / OFF), included</li> <li>LED DALI standard digital dimmable electronic driver, included</li> <li>Electronic ballast EEI = A2, 220-240V</li> <li>50-60Hz, hot start</li> </ul>						
Sanitization	Double sanitizing technology: UV-C RAYS for the elimination of viruses and bacteria BIPOLAR ION GENERATOR for odor control and the elimination of VOCs						
	LED						
Power	16W	10W	_				
Color temp.	<ul> <li>3000K (2288lm)</li> <li>4000K (2384lm)</li> </ul>		-				
Sources duration	50.000 hours L80/F10	11.000 hours					
Dimensions [mm]	<b>A:</b> 595	<b>B:</b> 595	<b>C:</b> 23				
Operating temperature	-10°C ~ +35°C						
Sanitization system suitable for environments	Up to 80 m <sup>3</sup>						
Irradiation mode	The device can also be operated in the presence of people						

### **PLAY** General lighting version

### 

1000		PLAY 2X						
and the second s	- Samanan			11111	and the second s	1111 111		
ARRANGE ARRA	and a	PLAY 3X		ALL		-		
A STREET	and the second s	PLAY 4X					DFC optic component ontrolled lig	osed of ses with ght emission
Type of installa	ation	•	RECESSE	D or SUSPENDED (	fixing bracket n	ot include	ed)	
Body		White p	re-painte	ed steel sheet				
<ul> <li>Wiring</li> <li>Electronic LED driver (ON / OFF), included</li> <li>LED DALI standard digital dimmable electronic driver, included</li> <li>Electronic ballast EEI = A2, 220-240V</li> <li>50-60Hz, hot start</li> </ul>								
Luminous sou	rces	High eff tempera L80 / F10	iciency L ture 300 ) at Ta = 2	EDs arranged on 10K or 4000K (3 M 25 °	rigid modules, I 1acAdam ellipse	RC color r s), duratio	endering> n> 50,000	90, color hours
Optics		<b>OFC</b> con emissior	nposed c n (UGR <1	of modular lenses 19)	with anti-glare	effect, wit	h controlle	ed light
Appliance compliant with EN 61547 EN 55015 EN 61000-3-2 EN 61000-3-3 EN 61347-1 EN 61347-2-13			IEC/TR EN 600 EN 620 EN 622 EN 605 EN 605	IEC/TR 62471-2EN 60598-2-2EN 60061-1EN 62471 (risk class 0)EN 62031EN 62560EN 62493EN 60968EN 60598-1CEI 76-10EN 60598-2-1EN 60529				
Model	Power	Color temperature	CRI	Lum. flux.	Lum. efficiency	Di	mensions [mr	n]
DI AV OV	[vv]	[K]	200	[Im]	[IIT / VV]	A	B	C
	16	4000	>90 >90	2288	143	595 595	595	25
PLAY 3X	24	3000	>90	3432	143	595	595	23
PLAY 3X	24	4000	>90	3576	149	595	595	23
PLAY 4X	32	3000	>90	4576	143	595	595	23

PLAY 4X

PLAY

PLAY

>90

>90

>90



In order to continuously improve the range, Èclairé reserves the right to make changes, at any time and without notice, to the specifications of the products described. The images and reproductions of the products are to be considered as examples.



- Atena Lux srl via Giai 33 30020 Gruaro Venice, Italy
- +39 0421 760100
- +39 0421 760225
- @ info@atenalux.com
- S atenalux
- 🔅 www.atenalux.com



100% MADE **ITALY** in **ITALY**