



SANITIZATION DEVICES





THE COMPANY

Founded in 1994, ATENA LUX is a dynamic and young reality recognized in Italy and abroad as a manufacturer of lighting systems for the technical and medical sectors. The wide range of lighting fixtures, which are manufactured and manufactured within the production department located in Gruaro (VE), are synonymous with guarantee, comfort and safety. In fact, Atena Lux stands out for the production of bed head beams, certified 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. Equipped with a state-of-the-art tool park and an internal photometric laboratory, the company offers customized solutions and support in lighting design.

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.

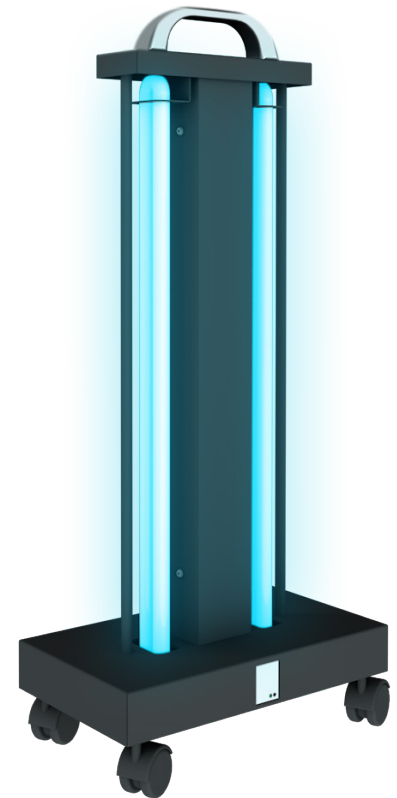
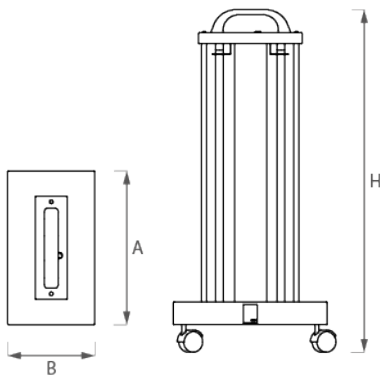
Precautions for the use of germicidal lamps

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



ATENA LUX 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 (≈ 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.



PURIFICATION CYCLE

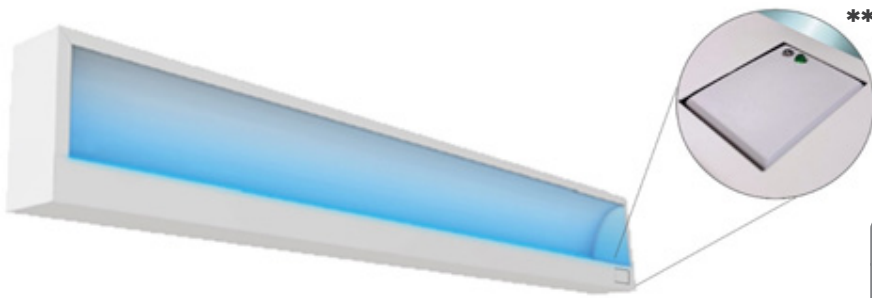
Ignition at 1 minute from START
Duration: 30mins



MOTION DETECTOR

If you enter the room, the UV cycle will be paused

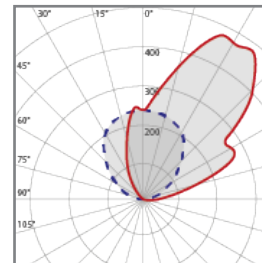
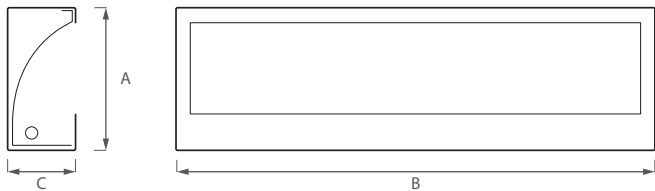
Type of installation	Floor		
Body	Sheet-steel body powder coated by means of opaque white (RAL 9005) polyester powders, UV resistant		
Wiring	CEL version with electronic ballast EEI=A2, 220-240V 50-60Hz, heat ignition. Sensore di presenza e temporizzatore inclusi		
Luminous source	Luminous source FC-L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



Optional **

**PURIFICATION
CYCLE**

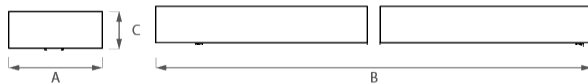
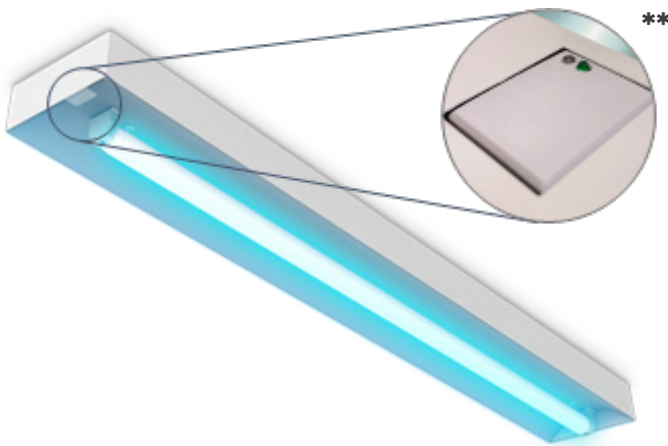
**MOTION
DETECTOR**



MRA
Asymmetrical
recuperator in satin
aluminium

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]	A: 210 B: 955 C: 100	A: 210 B: 1260 C: 100	A: 210 B: 955 C: 100
UV-C Irradiation	0,1W/m ² at 2,5 m	0,12W/m ² at 2,5 m	0,14W/m ² 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 ²	Up to 15 m ²	Up to 18 m ²
Irradiation time *	30 minutes		
Appliance compliant with	EN 60598 EN 55015, EN 61000 EN 60529	electrical safety electromagnetic compatibility degree of protection	

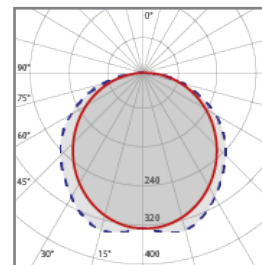
*Necessary to eradicate the most common microorganisms with 99% effectiveness.



Optional **

**PURIFICATION
CYCLE**

**MOTION
DETECTOR**



RSS
Symmetrical recuperator in satin aluminium

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	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]	A: 130 B: 955 C: 60	A: 130 B: 1260 C: 60	A: 130 B: 955 C: 60
UV-C Irradiation	0,1W/m ² at 2,5 m	0,12W/m ² at 2,5 m	0,14W/m ² 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 ²	Up to 15 m ²	Up to 18 m ²
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:

$$\text{UV DOSE (J / m}^2\text{)} = \text{Exposure time} \times \text{UV-C irradiation}$$

Using the data reported by the CIE (International 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. A recent research, led by a team of scientists from the University of Milan, in collaboration with experts from the National Institute of Astrophysics (INAF) and the Department of Diagnostic Imaging and Radiotherapy of the National Cancer Institute (INT), has confirmed that UV-C irradiation is highly effective in inactivating and inhibiting the SARS-CoV-2 virus, the pathogen responsible for the Covid-19 pandemic that is disrupting the world. Low doses of UV-C rays are sufficient to neutralize the virus in a few seconds, specifically 169 J / m².

Microrganism	99%
SARS-COV-2	169
<small>SOURCE: Università degli studi di Milano</small>	
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

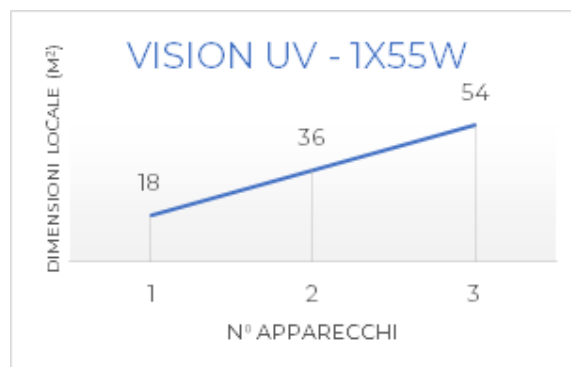
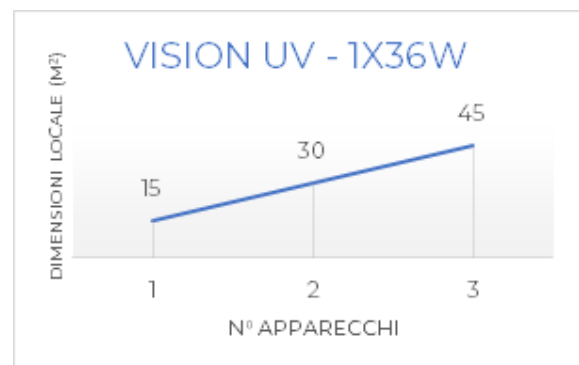
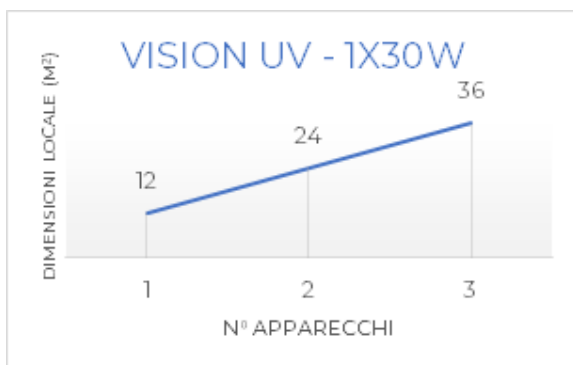
Vision UV

For a 18 m² room we use VISION UV 1X55W, installing it at a height of 2.5 m. To destroy 99% of SARS-COV-2 (169 J / m²) we have to let it run 1207,14 seconds (about 20 minutes).

$$169 \text{ (J / m}^2\text{)} / 0,14 = 1207,14\text{s} = 20\text{mins}$$

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 m², consult the following tables:



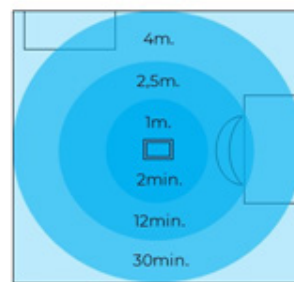
Moovi UV

For a 25m² room we use MOOVI UV 2X55W, installed it in the center of the room. At a distance of 2,5 m, to destroy 99% of SARS-COV-2 (169 J / m²) we must leave it running.

$$169 \text{ (J / m}^2\text{)} / 0,35 = 482,85\text{s} = 8,04\text{mins}$$

For particularly resistant organisms (see attached table) it is sufficient to increase the exposure time, for example after about 12 minutes even the most resistant spores will be knocked down.

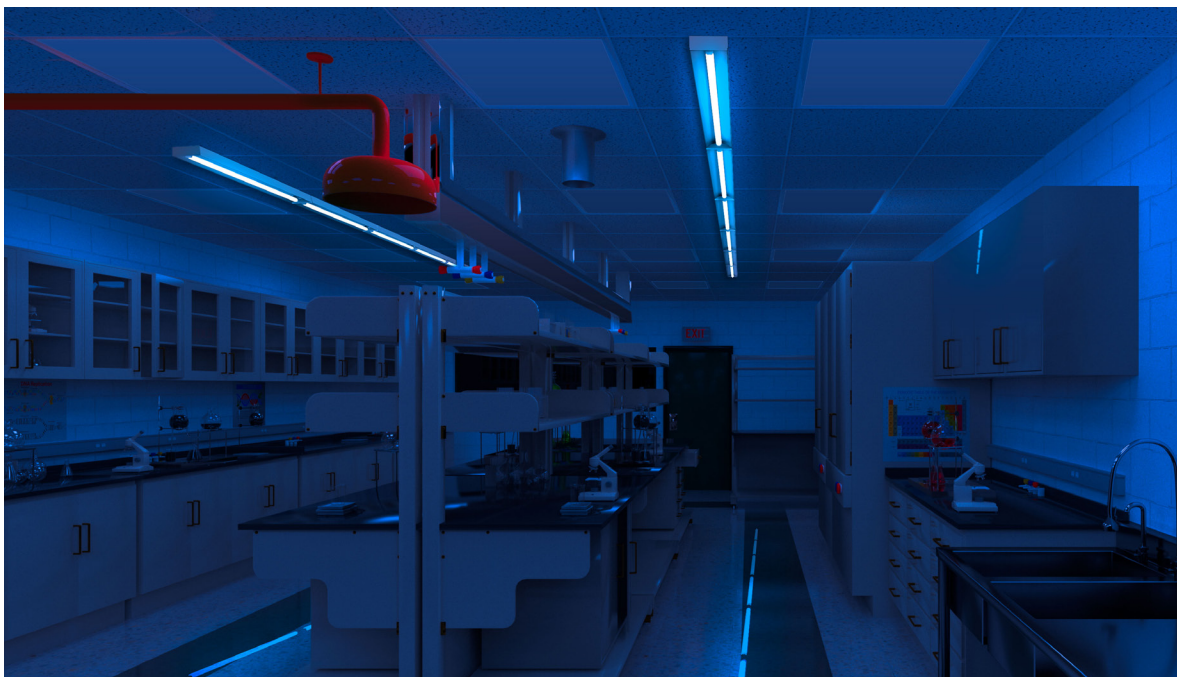
Time needed to break down 99% of the most resistant microorganisms:



Impact UV

For an 18 m² room we use IMPACT UV 1X36W, installing it on the ceiling at a maximum height of 3 m. To destroy 99% of SARS-COV-2 (169 J / m²) we must leave it running.

$$169 \text{ (J / m}^2\text{)} / 0,12 = 1408\text{s} = 23\text{mins}$$



SANITIZING LIGHT

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.

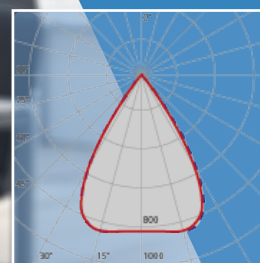
By combining the effect of the bipolar ion generator with UV-C rays, the effectiveness of the air purification and sanitization process is increased.



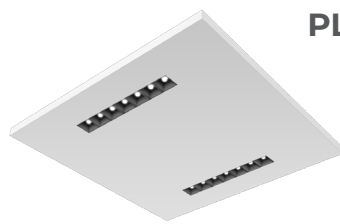
PLAY UV



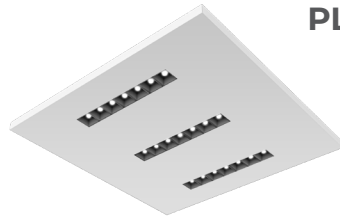
OFC
 Ottica composta da lenti modulari ad emissione luminosa controllata



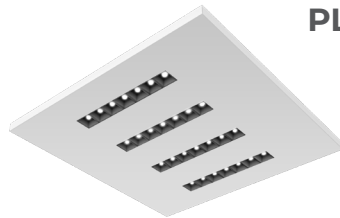
Type of installation	<ul style="list-style-type: none"> • RECESSED • CEILING or SUSPENDED (fixing bracket not included) 		
Body	Steel sheet (6/10) painted with matt white polyester powders (RAL 9003 matt)		
Wiring	<ul style="list-style-type: none"> • Fixed output electronic LED driver (ON / OFF), included • LED DALI standard digital dimmable electronic driver, included. Electronic ballast EEI = A2, 220-240V ; 50-60Hz, hot start		
Optional **	Double sanitizing technology: UV-C RAYS for the elimination of viruses and bacteria BIPOLAR ION GENERATOR for odor control and the elimination of VOCs		
Luminous source	LED	SANITIZATION	
Power	16W	10W	
Color temperature	<ul style="list-style-type: none"> • 3000K (2288lm) • 4000K (2384lm) 		
Dimensions [mm]	50.000 hours L80/F10	11.000 hours	
UV-C Irradiation	A: 595	B: 595	C: 23
Operating temperature	-10°C ~ +35°C		
Suitable for environments of	Up to 80 m ³		
	The device can also be operated in the presence of people		



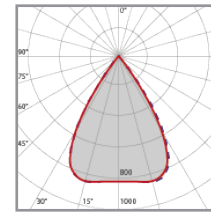
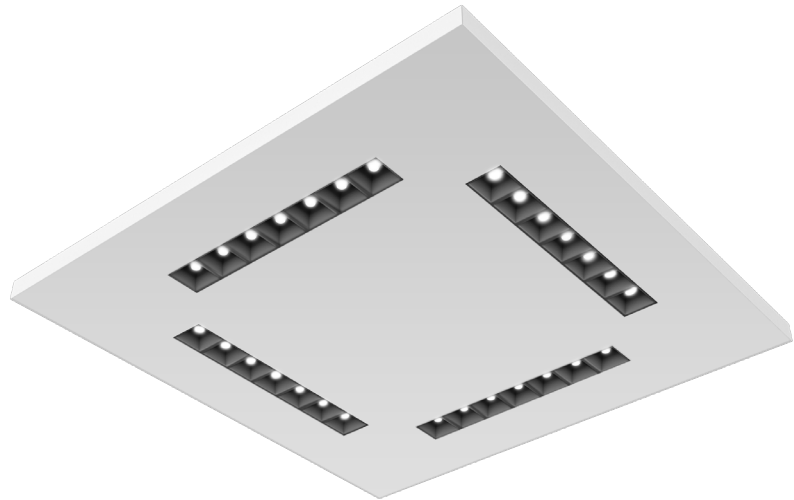
PLAY 2X



PLAY 3X



PLAY 4X



OFC

Optic composed of modular lenses with controlled light emission



Type of installation	<ul style="list-style-type: none"> • RECESSED • CEILING or SUSPENDED (fixing bracket not included) 		
Body	Steel sheet (6/10) painted with matt white polyester powders (RAL 9003 matt)		
Wiring	<ul style="list-style-type: none"> • Fixed output electronic LED driver (ON / OFF), included • LED DALI standard digital dimmable electronic driver, included. Electronic ballast EEI = A2, 220-240V ; 50-60Hz, hot start		
Luminous Source	High efficiency LEDs arranged on rigid modules, color rendering IRC > 90, color temperature 3000K or 4000K (3 MacAdam ellipses), duration > 50,000 hours L80 / F10 at Ta = 25 °		
Optics	OFC optic composed of modular lenses with anti-glare effect, with controlled light emission (UGR < 19)		
Appliance compliant with	EN 61547 EN 55015 EN 61000-3-2 EN 61000-3-3 EN 61347-1 EN 61347-2-13	IEC/TR 62471-2 EN 60061-1 EN 62031 EN 62493 EN 60598-1 EN 60598-2-1	EN 60598-2-2 EN 62471 (classe di rischio 0) EN 62560 EN 60968 CEI 76-10 EN 60529


Model	Power [W]	Color temp. [K]	IRC	Luminous flux [lm]	Lum. efficiency [lm / W]	Dimensions [mm]		
						A	B	C
PLAY 2X	16	3000	>90	2288	143	595	595	23
PLAY 2X	16	4000	>90	2384	149	595	595	23
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	32	4000	>90	4768	149	595	595	23
PLAY	32	3000	>90	4576	143	595	595	23
PLAY	32	4000	>90	4768	149	595	595	23





In order to continuously improve the range, Atena Lux 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.





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