PHILIPS

UV-C disinfection luminaires

Disinfection with the power of light

UV-C light is a proven and effective way to disinfect air, surfaces and objects

Absolute confidence, in a world of uncertainty

The global pandemic has put UV-C lighting firmly into the spotlight. The quality of the air we breathe, the cleanness of surfaces and objects we touch, and the purity of water we drink have a profound effect on our health and well-being.

Bacteria and viruses can cause a wide range of common infections. They can live in air, on surfaces and on objects, even after normal cleaning routines. That means any contamination left behind in the air we breathe and on the surfaces we touch can have a profound effect on our day - to - day health and wellbeing.

UV-C disinfection

UV-C lighting disinfects radiated air and surfaces which contain bacteria and viruses and helps to reduce them from spreading further. All micro-organisms tested to date respond to UV-C lighting[1]. UV-C surface disinfection products, fitted with our UV-C light sources, can inactivate SARS-CoV-2 virus on surfaces by more than 99% to below detectable levels[2].

Philips UV-C disinfection luminaires

With 35 years of experience in UV-C lighting, we have built up strong application expertise. This has led us to develop a new range of UV-C disinfection luminaires and chambers, ideal for use in offices, retail outlets, factories, in hospitality areas, schools, public washrooms and even on modes of transport such as aircraft, buses and trains.

1 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 Chevrefils (2006) and Eric Caron (2006) With peer review by Benoit Barbeau, Harold Wright (1999) and Karl G. Linden.

2 Nadia Storm et al, Rapid and complete inactivation of SARS-CoV-2 by ultraviolet-C irradiation, 2020. Report available at https://www.nature.com/articles/s41598-020-79600-8. The UV-C irradiance used in this study was 0.849 mW/cm^2.

3 According to results obtained from a laboratory test conducted by Innovative Bioanalysis, a CAP, CLIA, AABB Certified Safety Reference Laboratory, in a room with sufficient air circulation. For more information, please refer to the Innovative Bioanalysis report available as download in the link.

“Our test results show that above a specific dose of UV-C radiation, viruses were completely inactivated: in a matter of seconds we could no longer detect any virus.”

Dr. Anthony Griffiths, Associate Professor of Microbiology
at Boston University School of Medicine

Shining a light on UV technology

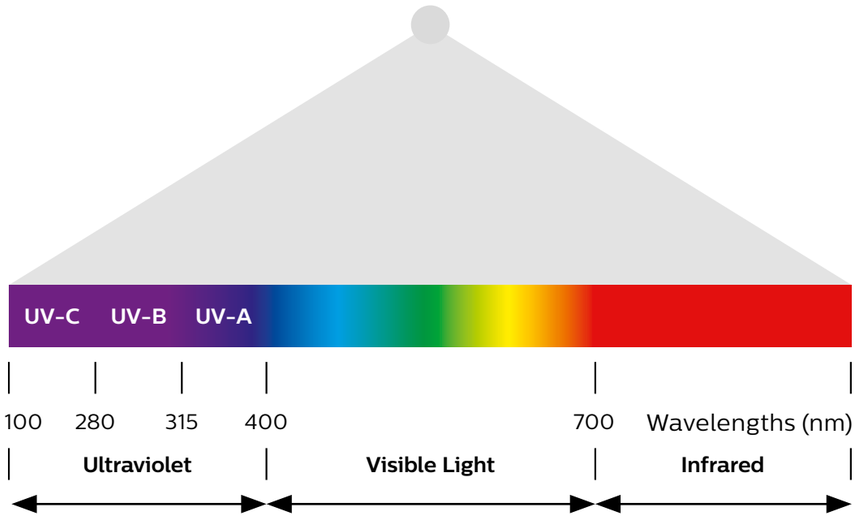
UV-C radiation is a known disinfectant for air, surfaces and objects that can help mitigate the risk of acquiring an infection.

What is UV technology?

Ultra-Violet (UV) light is invisible to the human eye and is divided into UV-A, UV-B and UV-C.

UV-C is found within 100-280 nm range.
The germicidal action is maximised at 265 nm. Philips Low pressure UV-C lamps have their main emission at 254 nm where the action on DNA is 85% of the peak value. As a result, our germicidal lamps are extremely effective in breaking down the DNA and RNA of micro-organisms. This means that they cannot replicate and cause disease[4].

The technology has primarily been used in areas where there is a risk of microbiological contamination, and has been used safely and effectively for more than 40 years[5].



4 A comparison of pulsed and continuous ultraviolet light sources for the decontamination of surfaces. McDonald K.F., Curry R.D., Clevenger T.E., Unklesbay K., Eisenstark A., Golden J., Morgan R.D. IEEE Trans. Plasma Sci. 2000;28:1581–1587. doi: 10.1109/27.901237.

5 EPA Report, “Building Retrofits for Increased Protection Against Airborne Chemical and Biological Releases” Pg. 56.

Designed with safety in mind

Correct usage

Our UV-C products are either provided with physically integrated equipment or time safeguards (such as presence or motion detection sensors or timers) or are to be installed together with the adequate containment safeguards to ensure that our UV-C products can be operated in line with the relevant safety standards. UV-C disinfection luminaires that we provide without physically integrated equipment or time safeguards are meant to be used only as components in disinfection systems that contain the adequate safety safeguards such as, but not limited to, those indicated in the mounting instructions and/or user manuals of such luminaires.

Warning: Plants and/or materials that are exposed to higher dosages of UV-C may become damaged and/or discoloured. For surface disinfection luminaires, ensure plants are not exposed to UV-C radiation. For using UV-C disinfection upper air, plants can be affected by UV-C radiation, whereby some plants are more sensitive than others. In tests, Ficus Elastica “Robusta”, Sansiferia Laurentii and Peperomia Obtusifolia showed good resistance to UV-C. Switch off luminaires when no disinfection is required.

UV-C Services

End-to-end Services Offer

The effectiveness and safe application of a UV-C solution starts with the right application design. We can support your business’s UV-C project in the following key areas:

Plan and design

Our team will assess your facility to identify potential areas for UV-C, customising a solution with the right light output, optimum installation position, mounting height, angle and system functionality.

Build

For total peace of mind we provide end-to-end project management. We supply, deliver, install and commission your UV-C system, so you enjoy a smooth, seamless experience.

Operate

We’ll check your UV-C system is operating correctly on a regular basis, performing irradiation measurements, checking for faults and carrying out preventative checks.

Maintain and optimise

We can also carry out maintenance and repairs, optimising your installation, verifying performance and providing fast replacements at the end of your UV-C light’s useful life.

Direct exposure to UV-C is dangerous. Philips UV-C disinfection luminaires must only be sold through qualified UV-C partners and installed by professionals according to our stringent safety and legal requirements.

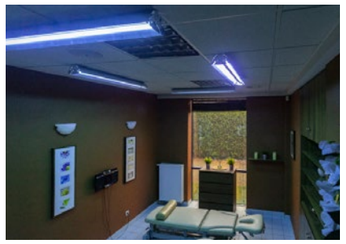
Professional air, surfaces and objects disinfection

Everywhere it’s needed

For more information on the benefits of Philips UV-C disinfection luminaires in your chosen application, please contact your local Signify representative.

The power to protect in real-world applications

Retail
Disinfecting shopping carts, shelves and counters

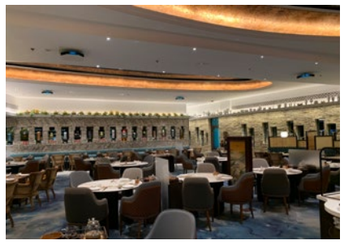


Hair and beauty salons
Disinfect client rooms, floors, mirrors, chairs, counter surfaces and other sensitive areas

Schools
Disinfect classroom walls, floors, desks and surfaces

Offices
Disinfect work rooms, meeting spaces and corridors

Banking
Disinfect counters, cash machines and work surfaces



Restaurants and hotels
Disinfect guest rooms, reception areas and health club facilities

Supermarkets
Disinfect preparation surfaces and equipment

Washrooms
Disinfect vanity units, basins and mirrors

Sports facilities
Disinfect interior and exterior surfaces of different vehicles and passengers’ waiting spaces

Philips UV-C disinfection luminaires

The power to protect

We have more than 35 years of experience and expertise in developing and manufacturing UV-C products. Our Philips UV-C disinfection luminaires portfolio with UV-C lamps deliver on all the promises of UV technology.

Designed for efficacy

In laboratory testing, Signify's UV-C light sources reduced SARS-CoV-2 virus infectivity on a surface to below detectable levels in as few as 9 seconds[2]. Our Philips UV-C disinfection upper air wall mount luminaires inactivated 99.99% of SARS-COV-2, the virus responsible for the COVID-19 disease, in the air of a room within 10 minutes. At 20 minutes, the virus was below detectable levels[3].

A lifetime of reliability

Made from durable, UV-C resistant materials, our UV-C solutions are designed to provide reliable disinfection over the useful long lifetime of the lamp and luminaire. This is supported by our stringent manufacturing and testing processes to guarantee the highest quality.

Environmentally friendly

For added peace of mind, all our UV-C solutions are also environmentally friendly. We guarantee that no ozone gases will be emitted during or after use.

Safety in mind

Philips UV-C products are delivered with a range of safeguards and instructions. They come with physically integrated equipment or time safeguards, such as presence or motion detection sensors or timers, or otherwise they are to be installed with containment safeguards to enable correct operation. In addition, we provide extensive training and certification programs to help ensure correct installation, usage and maintenance of our UV-C products.

A wide range of applications

The Philips UV-C disinfection luminaires and components are innovative, high-quality solutions that are suitable for a wide range of applications. This includes upper air systems that disinfect passing air, as well as cabinets that are used to disinfect specific objects.

2 Nadia Storm et al, Rapid and complete inactivation of SARS-CoV-2 by ultraviolet-C irradiation, 2020. Report available at https://www.nature.com/articles/s41598-020-79600-8. The UV-C irradiance used in this study was 0.849 mW/cm².

3 According to results obtained from a laboratory test conducted by Innovative Bioanalysis, a CAP, CLIA, AABB Certified Safety Reference Laboratory, in a room with sufficient air circulation.

UV-C lighting
for commercial applications

Bacteria and viruses are transmitted through the air and via surfaces. We recommend to consider 3 main types of Ultraviolet Germicidal Irradiation (UVGI) using UV-C lighting for:

Air applications

Viruses, bacteria, or fungi can be airborne, spreading through breathing, talking, coughing, sneezing, raising of dust or any activities which generate aerosol particles or droplets. Heating, cooling and air circulation in your spaces can further distribute airborne bacteria and viruses.

Surface applications

When someone coughs or exhales, they release droplets of fluid. Most of these droplets fall on nearby surfaces and objects - such as desks, tables or telephones. If they are carrying a virus, staff could become infected by touching contaminated surfaces or objects, then touching their eyes, nose or mouth.

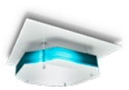
6 Source: World Health Organization

Overview
Philips professional UV-C disinfection luminaires

Philips offers a range of luminaires with compatible reflectors, lamps and drivers that are suitable for use in commercial applications.

Air Disinfection solutions

Philips UV-C disinfection upper air luminaires



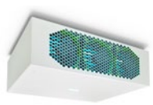
Ceiling

Wall

Philips UV-C disinfection air unit

Floor standing

Philips UV-C disinfection active air



Ceiling/Wall

Surface Disinfection solutions

Philips UV-C disinfection batten

Bare

Reflector

Philips UV-C disinfection linear luminaire with sensor

Sensor

Philips Dynalite UV-C control systems

Air
Disinfection solutions

Philips UV-C disinfection upper air

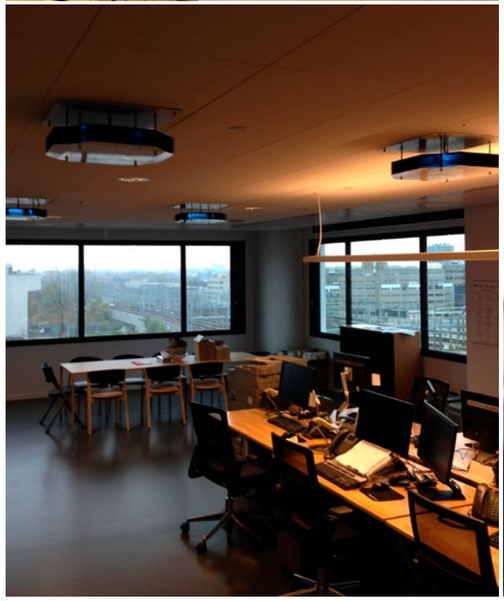
Airborne viruses and bacteria contaminate the air trapped indoors and can pose a real health threat. Upper air UV-C systems are powerful instruments to disinfect the upper air layers within rooms. Our Philips UV-C disinfection upper air wall mount luminaires inactivated 99.99% of SARS-COV-2, the virus responsible for the COVID-19 disease, in the air of a room within 10 minutes. At 20 minutes, the virus was below detectable levels[3].

Benefits:

- Optimised for low ceiling heights, the UV-C rays are distributed at device level and above.
- The beam of UV-C rays is controlled by specific reflectors and the louvre design. This allows for the disinfection of the air in a space, while ensuring that day-to-day business activities can continue underneath the area where the device is active.
- Radiates UV-C in the upper part of rooms, where it does not reach people directly.
- Quietly and effectively deactivates airborne viruses and bacteria with Philips UV-C (253.7 nm) lamps.
- Effective disinfection over the useful long lifetime of lamp and luminaire.
- Environmentally friendly - no ozone emissions during or after use.

Features:

- Shortwave UV radiation peak at 253.7 nm (UVC).
- Louvres and reflector control the distribution of UV-C at the device level and above, where people are not usually present.
- Complies with IEC 62471 standard for photobiological safety.



Philips UV-C disinfection upper air wall mounted

Designed for the disinfection of air in a variety of applications:

- Wall mounted installation.
- Philips T5 TUV lamp included: 25W.

Philips UV-C disinfection upper air ceiling mounted

Designed to be installed on false or concrete ceilings for the disinfection of air in a wide range of applications.

- Philips PL-S TUV lamp included: 4x9W.
- Possibility of suspending the device.

3 According to results obtained from a laboratory test conducted by Innovative Bioanalysis, a CAP, CLIA, AABB Certified Safety Reference Laboratory, in a room with sufficient air circulation.

Air
Disinfection solutions

Philips UV-C disinfection air unit

The Philips UV-C disinfection air unit is a powerful and effective way to disinfect circulating air. It draws air into the unit where UV-C radiation inactivates up to 90% of micro-organisms in 80m^3 within just 2 hours (circular coverage 28m^2)[8]. With no need for mounting, the freestanding unit can be wheeled into place in a wide range of professional applications - from offices and retail to hospitality. The aesthetic design delivers well-controlled UV-C radiation (Risk Group 0) and can also be used when people are present.

Benefits

- Achieves 90% air disinfection in 80m^3 in 2 hours[6].
- Circular coverage of 28m^2.
- No fixed installation or mounting required and replaceable in the room.
- Reliable and strong UV-C irradiance inner chamber.
- User-friendly interface with clear display and range of flexible options.

Features

- Housing material: anti UV plastic.
- Touch panel: timer button 30/60/120mins & On options, fan speed button with low, medium and high options, lock button to avoid unwanted operations, power on/off button.
- Display on user interface, which starts counting down on pre-set disinfection duration.
- Four wheels for portable & flexible movement.

Safeguard benefits

Mechanical safety and germicidal effectiveness validated by independent scientific reports:

- Germicidal effectiveness validated by independent scientific report[6].
- Easy maintenance with display notification for spare parts.

6 Guangdong Detection Center of Microbiology. Test conclusion: Turned the sample UV lamps on and the fan speed to maximum for a duration of 1 hour in a 10m^3 test chamber. The test was repeated 3 times. The detection result of the killing rate of staphylococcus while in the air was > 99.9%, which met the standard requirements of the Technical Standard for Disinfection (2002 Ministry of Health P.R.China).

7 Guangdong Detection Center of Microbiology. Test conclusion: Turned the sample on maximum fan speed for testing, and after stabilisation, the ultraviolet radiation luminance collected at 30cm around the device was less than 5μ w/cm2, which met the requirements of GB 28235-2011 (safety and sanitary standard for ultraviolet appliance of air disinfection) -6.2.9.1.

Air
Disinfection solutions

Philips UV-C disinfection active air

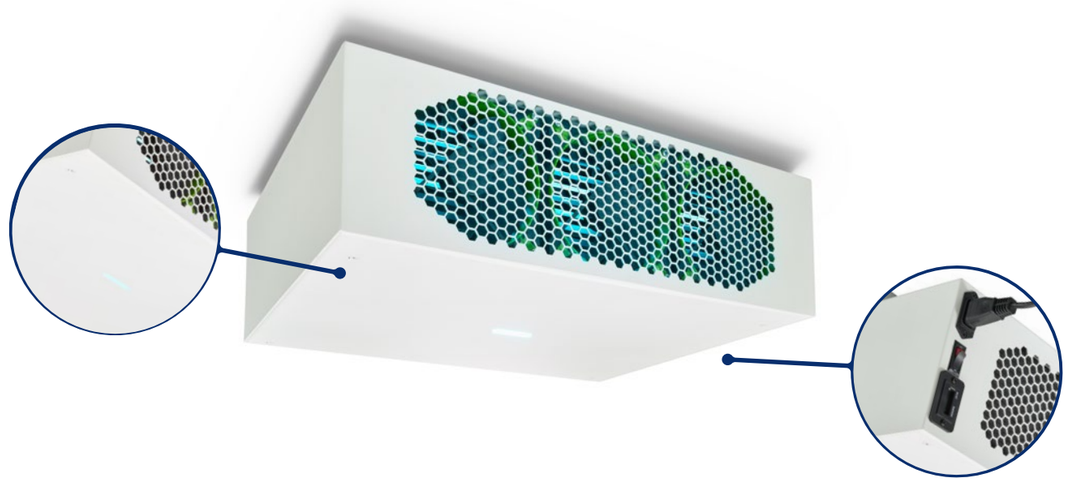
The UV-C Active air device is designed to disinfect the air during day-to-day business activities, without interruption. It can be installed on a wall or on a ceiling in many different types of location, even UV-C sensitive ones. Thanks to ventilators, the air from the room is pulled inside the device, filtered, and then submitted to an intense disinfection thanks to 2x60W UV-C lamps. The air comes out of the UV-C Active air device clean into the room.

Benefits

- Continuous operation while business activity continues.
- High air disinfection power (Microbiological test to show more than 90% microbial reduction after 2h in a room of 30m² and 2.9m ceiling height)[8].
- Easy to install/commission.
- Safe use with UV-C fully contained inside the product.
- Easy maintenance.

Features

- Philips PL-L TUV lamps included: 2x60W.
- Wall mount or ceiling mount.
- Dust filter.
- UV-C emitted only inside the device, not outside.



8 Prof. Waclaw Dabrowski Institute of Agriculture and Food Biotechnology – State Research Institute. Assessment of the effectiveness of air disinfection using device: SM310C 2xTUV PLL 60W HFS flow disinfection lamp.

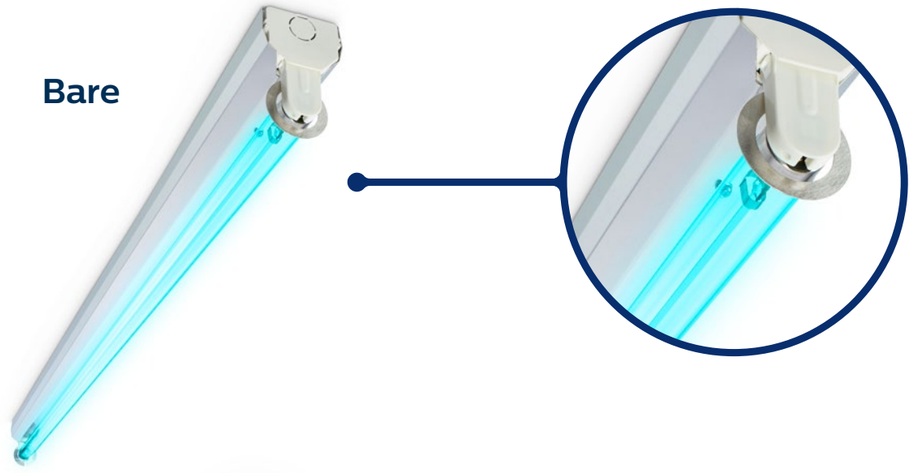
Surface
Disinfection solutions

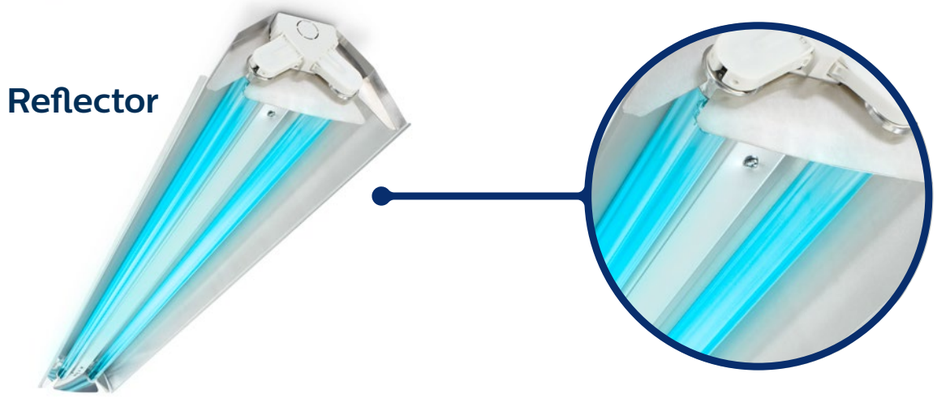
Philips UV-C disinfection batten

A fixed installation of luminaires on the ceiling is used at controlled times to fill a room or enclosed space with disinfecting UV-C radiation. Philips UV-C batten provides disinfection for high contact areas, such as meeting rooms, restaurants, supermarkets, washrooms and public buildings.

Benefits:
- All microorganisms tested to date respond to UV-C lighting[1].
- UV-C surface disinfection products, fitted with our UV-C light sources, can inactivate SARS-CoV-2 virus on surfaces by more than 99% to below detectable levels[2].
- Proven, effective disinfection over the useful long lifetime of lamp and luminaire.
- Environmentally friendly - no ozone emissions during or after use.

Features:
- Lamp configurations possible: 1-lamp or 2-lamps version.
- Available: bare batten or with reflectors.
- Philips T8 TUV lamp included: 18W or 36W.
- Shortwave UV radiation peak at 253.7 nm (UVC).
- High reflective aluminum housing for better reflectivity and performance.
- All plastic components are protected by dedicated UV-C shielding.





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Philips Dynalite control system

When using UV-C lighting, the safety of people is always the priority. That's why the Philips Dynalite UV-C automated control system is designed to help ensure safe and risk-free management and correct operation of UV-C for surface disinfection.

Safety first - why controls
The Philips Dynalite UV-C disinfection control system's multiple mechanical and network safeguards help prevent exposure to harmful UV rays while at the same time applying the appropriate UV-C dosage.

The control system includes safety mechanisms such as authorised activation, UV-C cycle about-to-start warning, movement sensors and emergency stop switches to deactivate in case of potential hazards.

Surface
Disinfection solutions

Philips UV-C disinfection linear luminaire with sensor

The Philips UV-C disinfection linear luminaire with sensor is designed for the disinfection of surfaces and is suitable for a wide range of applications. It provides universal UV-C irradiance with homogenous distribution. Its disinfection capability is based on wattage used and a specific exposure time for a given distance from that surface. The performance is enhanced by a highly-reflective and durable aluminium body, which improves efficacy even further and directs the UV-C light towards the surfaces to-be-irradiated. (within the safety range of the sensor)

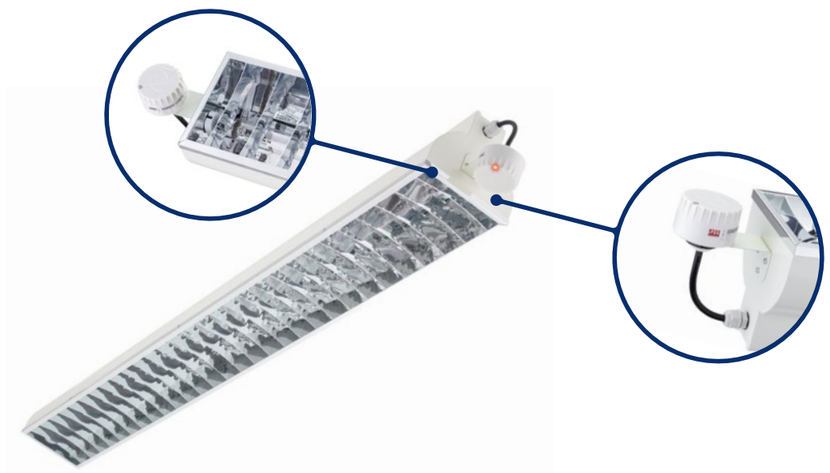
Benefits:

- Available with safeguard controls using sensor monitoring which makes it safe to use.
- In laboratory testing, Signify's UV-C light sources reduced SARS-CoV-2 virus infectivity on a surface to below detectable levels in as few as 9 seconds[2].
- Proven, effective disinfection over the useful long lifetime of lamp and luminaire.
- Environmentally friendly - no ozone emissions during or after use.

Features:

- Specially engineered mirror optics to cut off UV-C irradiation beyond the sensor range to avoid any accidental exposure beyond the coverage area.
- Philips T8 TUV lamp included: 36W.
- Shortwave UV radiation peak at 253.7 nm (UVC).
- Various mounting options.
- Specially designed mirror optics improve efficacy by average 90% by controlled distribution of the irradiance (Compared to UVC Batten with Al Cover).
- Dip Switch available in sensor for time settings as per application.

2 Nadia Storm *et al*, *Rapid and complete inactivation of SARS-CoV-2 by ultraviolet-C irradiation*, 2020.
Report available at https://www.nature.com/articles/s41598-020-79600-8. The UV-C irradiance used in this study was 0.849 mW/cm 2.



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