PulseX™ UV Light Disinfection* Technology
Frequently Asked Questions

UV LIGHT DISINFECTION TECHNOLOGY

1. What is PulseX?

"PulseX" is the brand identifier for Acuity Brands products that incorporate a pulsed xenon broadband UV germicidal source powered by Violet Defense® technology. Acuity Brands has two pulsed xenon product offerings under its Healthcare Lighting® brand: HXMS (single unit) and HXMD (double unit) UV disinfection luminaires. Typical spacing for the HXMS fixture is 10' x 10' on center. Typical spacing for the HXMD fixture is 12' x 12' on center.

2. What is meant by Broadband UV as produced by a pulsed xenon lamp?

The pulsed xenon lamp emits a powerful, broad-spectrum light that includes germicidal UVC and UVB and antibacterial UVA, in addition to wavelengths through the visible spectrum to 1000nm. Because of the broadband nature of this source, pathogens are targeted with multiple inactivation effects, increasing their susceptibility. Combined with its high power, PulseX acts quickly against pathogens[1].

3. What is a pulsed xenon lamp?

A pulsed xenon lamp is a confined arc flashlamp which produces microsecond to miilisecond duration pulses of high radiant intensities capable of operating at high repetition rates. Xenon is an inert, non-toxic gas used for excitation inside the glass enclosure, which is the lamp in this case.

4. Does a pulsed xenon lamp emit 254nm wavelengths?

The xenon lamp emits broadly in the UV-A, UV-B and UV-C spectrum which does include 254nm wavelengths.

5. How are PulseX fixtures operated in a space during a treatment cycle?

PulseX fixtures will emit a 1-second flash, every 6 seconds. Units are factory programmed to operate for 30 minutes per cycle.

6. What pathogens will broadband UV be targeting?

PulseX fixtures, powered by Violet Defense technology, have been clinically proven to rapidly inactivate over 99% of bacteria, viruses and fungi, specifically E. coli, MRSA, Salmonella enterica, Norovirus, human coronavirus 229E, C. diff, and Influenza A H1N1 at a distance of 3m. These independent lab test studies[1] utilized modified ASTM International Standard Test Method E1153.

7. Are PulseX fixtures effective against SARS-CoV-2?

Yes. PulseX fixtures, powered by Violet Defense technology, have been clinically proven to inactivate >99.9% of live SARS-CoV-2 virus[3] on glass, stainless steel, and plastic in 5 minutes or less at a distance of 1m.

Reference: Pulsed broad-spectrum UV light effectively inactivates SARS-CoV-2 on multiple surfaces, Alexander S. Jureka, Caroline G. Williams, Christopher F. Basler, bioRxiv 2021.02.12.431032; doi: https://doi.org/10.1101/2021.02.12.431032

8. What types of spaces are PulseX fixtures intended for?

PulseX fixtures are intended for unoccupied spaces and can be used in a variety of applications such as hospitals, acute care clinics, veterinarian hospitals, classrooms and public restrooms. These fixtures can be installed in drop-in ceilings, recessed hard ceilings, or surface ceiling/wall mount applications.

9. Do PulseX fixtures have safety features to prevent use in occupied spaces?

While occupants cannot safely be exposed to the emissions from PulseX products while in use, these products utilize built-in redundant protection features (motion sensor, LED indicator, safe stop) that will cycle the unit off if motion or technical issues are detected. Also, the fixtures can be combined with an nLight® UV controls solution from Acuity Brands as an additional means to stop operation of the unit to protect occupants from accidental exposure if they inadvertently enter the space during a treatment cycle.

10. What is the typical PulseX fixture mounting height?

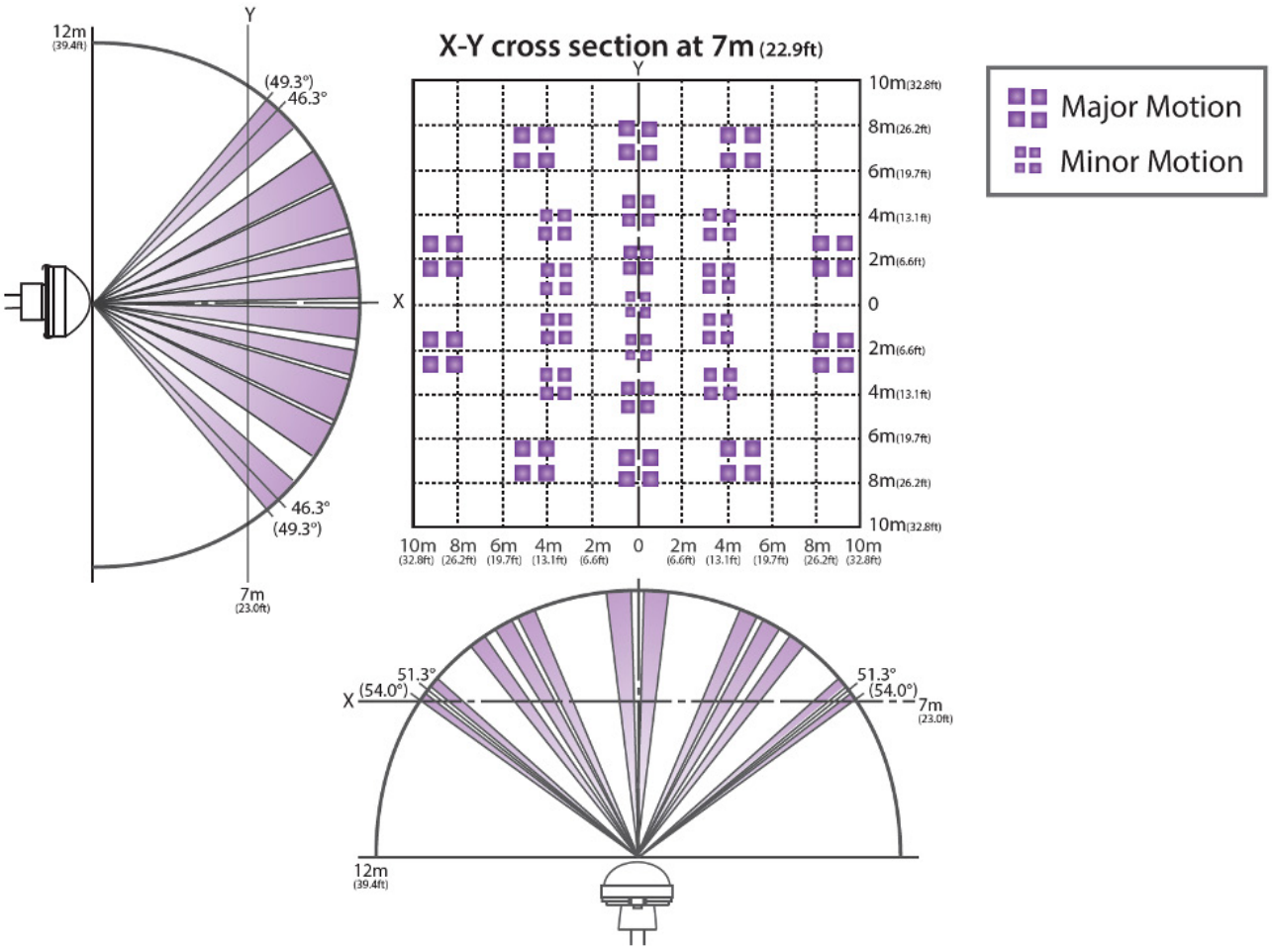
Typical distances from target surfaces are 2-4m (6.56-13.2 ft) depending on the level of pathogen reduction required and the physical parameters of the space being considered. Consult with your local Acuity Brands representative for layout guidance.

11. How are PulseX fixtures being controlled?

PulseX fixtures have a standard PIR sensor to detect anyone entering the space while a cycle is in session. Additionally, PulseX fixtures must be controlled with a lockable line voltage switch on the exterior of the space where the product is located. nLight® control solutions can also be incorporated. Always consult your local Acuity Brands representative for any nLight controls solution option.

12. What is the coverage pattern of the embedded PIR motion sensor?

The embedded PIR motion sensor in PulseX fixtures actively monitors the space and does not allow the unit to activate when motion is detected. The coverage pattern for the sensor is indicated in the chart below. Detection distance is up to 12m with object speed of 1m/s and size of 700mm x 99mm crossing two of 92 detection zones. Field of view is 108° x 99°. In the cross-section view, per NEMA 7 guidelines, major motion detection is indicated by the large squares. Minor motion detection is indicated by the small squares.



13. What is the life of a lamp life in a PulseX fixture?

The pulsed xenon lamp is rated for > 2 million UV flashes. Operating life is dependent on frequency and duration of operating cycles and number of operating cycles per day. For an application using two 30-minute cycles daily, the approximate expected life would be 9 years.

14. Are you offering PulseX mobile units?

No, Acuity Brands will not be offering mobile units at this time. PulseX technology fixtures are intended for permanent installation applications.

15. Who will be doing installation and commissioning of PulseX products?

Installation of this equipment should be performed by a qualified licensed electrician. If installed with an nLight controls system, commissioning must be done by Acuity Brands field service personnel.

16. Is the PulseX unit field serviceable?

No. The unit will need to be returned to Acuity Brands Lighting for repair or replacement in the event of a covered warranty claim. Acuity Brands is offering a 1-year limited warranty on PulseX products. Complete Acuity Brands UV Lighting warranty terms are located at: www.acuitybrands.com/support/warranty/terms-and-conditions. A unit must be replaced when it reaches the end of its operating life.

Footnote References

[1] Refer to product specification sheets at www.acuitybrands.com/UV-Products for efficacy claims and claim substantiation regarding specific products and pathogens.

[2] The references listed below apply to SARS-CoV-2, providing data on inactivation under specific test conditions. Level of inactivation in application will be based on dose/distance/time as delivered from a specific UV technology/product and will vary based on environmental conditions of the installation.

– Storm, Nadia. (2020). Rapid and complete inactivation of SARS-CoV-2 by ultraviolet-C irradiation. DOI: 10.21203/rs.3.rs-65742/v2

– Kitagawa, Hiroki. (2020). Effectiveness of 222-nm ultraviolet light on disinfecting SARSCoV-2 surface contamination. DOI: 10.1016/j.ajic.2020.08.022

– Jureka, Alexander S. (2021). Pulsed broad-spectrum UV light effectively inactivates SARS-CoV-2 on multiple surfaces. DOI: 10.1101/2021.02.12.431032

*All references to "disinfection" are referring generally to bioburden reduction and are not intended to refer to any specific definition of the term as may be used for other purposes by the U.S. Food and Drug Administration or the U.S. Environmental Protection Agency. Bioburden reduction is a function of fixture run time and the distance to the UV light source, airflow, room size, shadow areas and/or other factors, and the level of reduction will vary within a specific space. This fixture is not intended for use in the cure, mitigation or prevention of disease and is not certified or approved for use as a medical device by the FDA. It is the obligation of the end-user to consult with appropriately qualified Professional Engineer(s), a Certified Infection Control professional and a Certified Industrial Hygienist, as applicable, to determine whether this fixture meets [these fixtures meet] the applicable requirements for system performance, code compliance, safety (including safety and hazard alerting signs), suitability and effectiveness for use in a particular application design.