USHIO Applying Light to Life®

Care222® Filtered Far UV-C Excimer Lamp Module

Filtered Krypton-Chloride 222nm Technology

Ushio is proud to introduce the Care222® series, our line of filtered 222nm Far UV-C excimer lamp modules for microbial reduction applications.

Filtered Care222 modules can be safely used in unoccupied and occupied spaces without posing a health risk to humans when used within the current exposure limits recommended by the American Conference of Governmental Industrial Hygienists (ACGIH®) or the requirements of IEC 62471. Exposure within the current ACGIH recommendations and IEC requirements allow microbial reductions using 222nm far-UVC light sources in occupied spaces. Recent studies indicate that higher doses of filtered UV light emitted from the Care222 modules pose a minimal health risk to human skin or eyes.

Features of the Care222 module allow customers to obtain 100% light output in less than a second, whereas conventional germicidal lamps start at only 50% output and take several minutes to achieve 100% output.

The featured Care222 12W B1 module contains 4 highly efficient 222nm excimer lamps and a patented filter that eliminates dangerous longer wavelengths of more than 230nm in an easy to install housing.

Care 222®

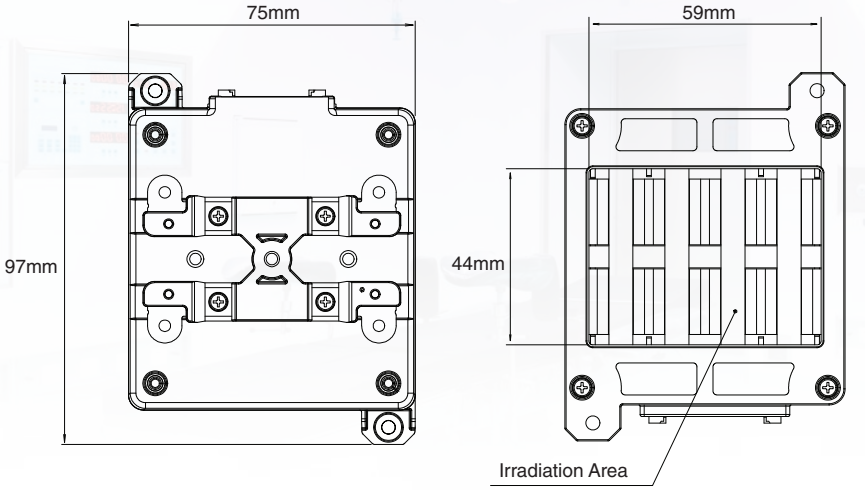
FEATURES & BENEFITS

- Proprietary Safety Filter Technology Included to Ensure Narrowband 222nm Emission
- Mercury Free - Environmental Friendly
- Large Production Capacity
- Effective Germicidal Wavelength
- Effective Reduction of Viruses, Bacteria, and Spores
- Wide Operating Temperature
- Instantaneous On/Off at Full Output Power
- No Lifetime Reduction by Frequent On/Off Cycles
- Minimal Ozone Emission

APPLICATIONS

- Surfaces
- Air

SPECIFICATIONS

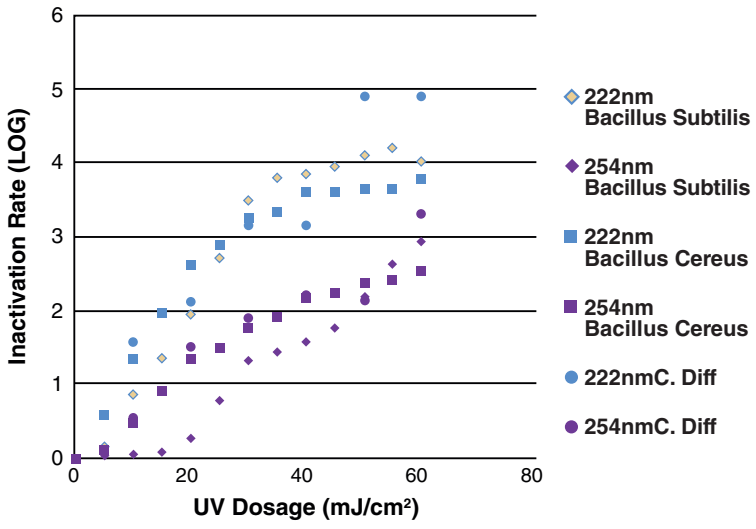


12W 222nm B1 Lamp Module (with filter)

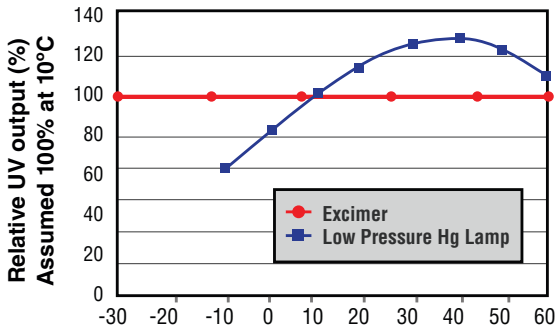
12W 24V B1 222nm Inverter

	Part Number	Type	Size (mm)
B1 Module	5003332	UXFL70-222B4-UIA-Z1	97 x 75
B1.5 Module	5003364	UXFL70-222B4-UIB	97 x 75
Inverter	5003331	PXZ120I2-A	89 x 82

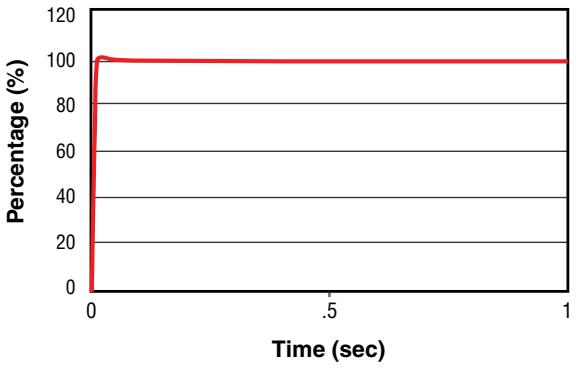
Comparison (254nm vs. 222nm) for Spore Inactivation*



Excimer lamp output is not affected by the ambient temperature.



Full output power available after Turn On.



*Reference Ushio Inc. Internal Data

Domain	Species		Methods[1-7]			
			222nm	254nm	70% ethanol	405nm
Bacteria	MRSA (*Methicillin-Resistant Staphylococcus aureus*)		+++	+++	+++	+
	Pseudomonas aeruginosa		+++	+++	+++	+
	Escherichia. coli O157		+++	+++	+++	+
	Salmonella Typhimurium		+++	+++	+++	+
	Campylobacter jejuni		+++	+++	N.D.	+
	Bacillus cereus	Vegetative cell	+++	+++	++	+
		Spore	+++	++	—	—
	Bacillus subtilis	Vegetative cell	+++	+++	N.D.	+
		Spore	+++	++	N.D.	—
	Clostrium difficile	Spore	+++	++	—	—
Molds and Yeasts	*Candida albicans*		+++	+++	+++	+
	Penichillium expansum		+++	+++	N.D.	+
	Aspergillus niger	Vegetative cell	+	+	+++	+
		Spore	+	+	N.D.	—
Virus	MS2		+++	+++	N.D.	—
	Feline Calicivirus		+++	+++	—	—
	Influenza A		+++	+++	N.D.	—
	SARS-CoV-2		+++	+++	N.D.	—

Table X, Inactivation effect of 222-nm, 254 nm UVC irradiation and 70% ethanol on the various species. Dose of UVC radiation to achieve 3-log reduction of the species is grouped as follows.<50 mJ/cm^2: +++, ~100 mJ/cm^2: ++, ~1000 mJ/cm^2: +, >1000 mJ/cm^2: -. Treatment time with 70% ethanol to achieve 3-log reduction of the species is grouped as follows. <10 sec: +++, ~20 sec: ++, ~30 sec: +, >30 sec: -. N.D. means no data. The data shown in green were studied and provided by Ushio Inc.

Reference

1. CM Springorum et al., Conference: XIV international congress of the International Society for Animal Hygiene, At Vechta, Volume: 2, Page 740-742, 2009
2. D Wang, T Oppenländer, MG El-Din, and JR Bolton, "Comparison of the disinfection effects of vacuum-UV (VUV) and UV light on bacillus subtilis spores in aqueous suspensions at 172, 222 and 254 nm," Photochem. Photobiol., vol. 86, no. 1, pp. 176–181, 2010.
3. A. N. Edwards, S. T. Karim, R. A. Pascual, L. M. Jowhar, S. E. Anderson, and S. M. McBride, "Chemical and stress resistances of clostridium difficile spores and vegetative cells," Front. Microbiol., vol. 7, no. OCT, pp. 1–13, 2016.
4. S. E. Beck, H. B. Wright, T. M. Hargy, T. C. Larason, and K. G. Linden, "Action spectra for validation of pathogen disinfection in medium-pressure ultraviolet (UV) systems," Water Res., vol. 70, pp. 27–37, 2015.
5. J. C. Doultree, J. D. Druce, C. J. Birch, D. S. Bowden, and J. A. Marshall, "Inactivation of feline calicivirus, a Norwalk virus surrogate," J. Hosp. Infect., vol. 41, no. 1, pp. 51–57, 1999.
6. Kitagawa, et al.(2020) DOI: https://doi.org/10.1016/j.ajic.2020.08.022.
7. Welch, et al., Sci. Rep. 8, 2752 (2018). Buonanno, et al., Sci. Rep. 10, 10285 (2020).

SAFETY & CAUTIONS:

- When handling the module, be sure to wear protective gloves.
- Never touch the module when it is on, or soon after it has been turned off, as it is hot and may cause burns.
- Only use approved drivers with Care222 module. Unspecified use could lead to short lamp life, breakage and overheating of the fixtures.
- Follow detailed safety instructions provided by Ushio.

NOTES

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 | 5440 Cerritos Avenue, Cypress, CA 90630 | Toll-free: (800) 838-7446 | www.ushio.com
Refer to website for product availability, compliance, and regulations. Specifications may be subject to change without prior notice.

Form No. S-CARE222/0723