USHIO Applying Light to Life

Care222® Far UV-C Excimer

Mercury-Free Far UV-C Excimer Lamps

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

The filtered Care222 lamps can be safely used not only in unoccupied spaces but also in 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 Care222nm lamps pose a minimal health risk to human skin or eyes.

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

These mercury-free and instant-start excimer lamps (available in 12W module, 20W and 300W lamp) are ideal for bathrooms, toilets, counter tops, and other occasional-use applications.

The featured 12W B1 module contains a patented filter that eliminates dangerous longer wavelengths of more than 230nm.

Care 222®

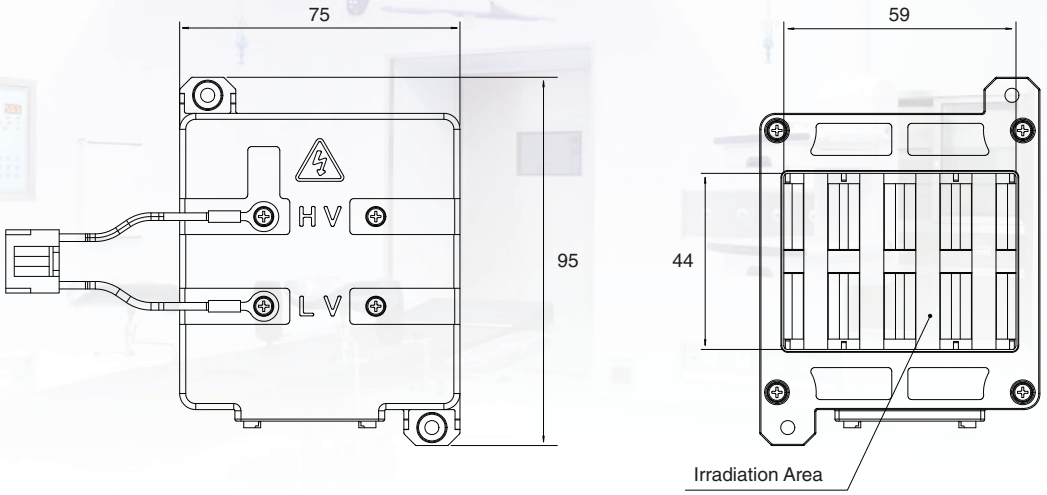
FEATURES & BENEFITS

- 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
- Proprietary Safety Filter Technology Available to Ensure Narrowband 222nm Emission

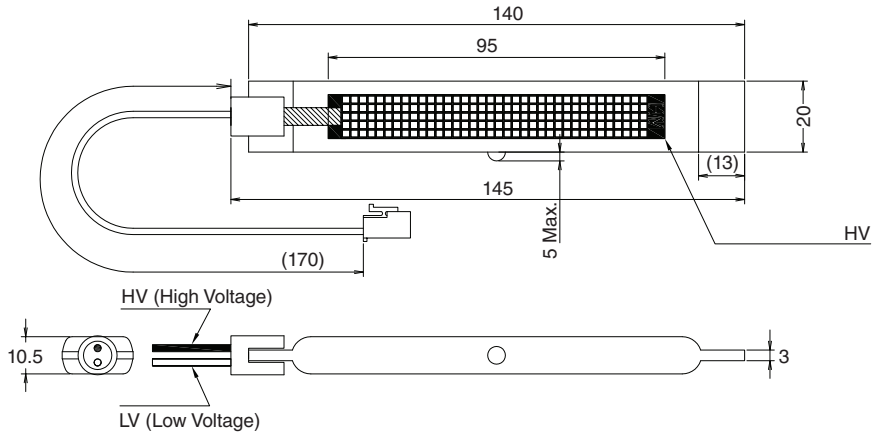
APPLICATIONS

- Surfaces
- Air
- Water

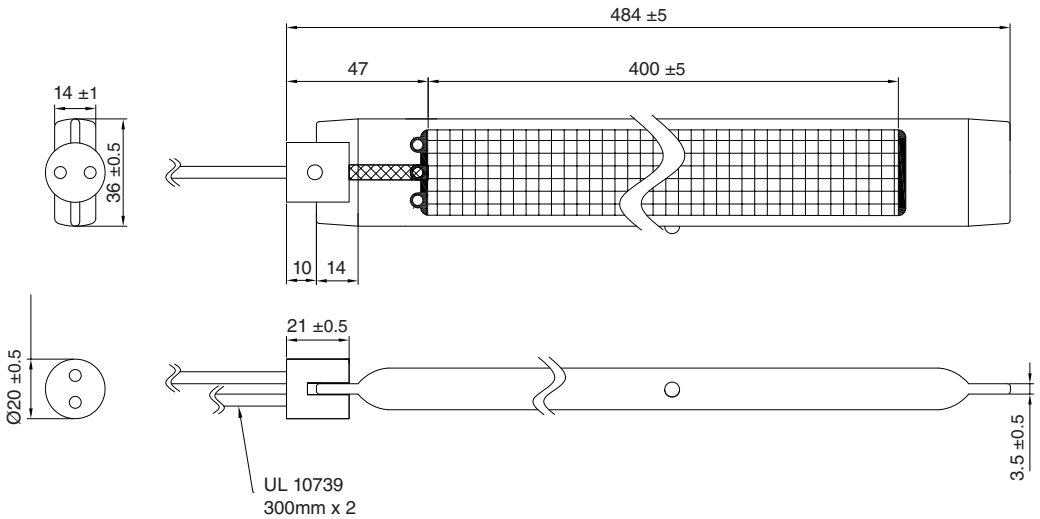
SPECIFICATIONS



12W 222nm B1 Lamp Module (with filter)

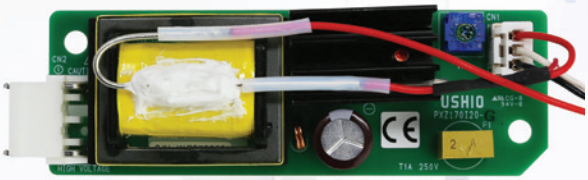


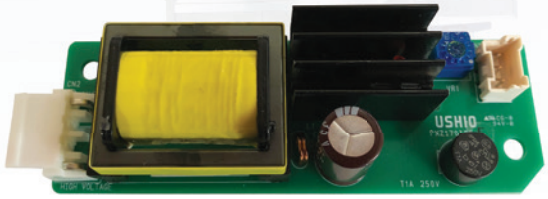
20W 222nm Excimer Lamp (filter sold separately)

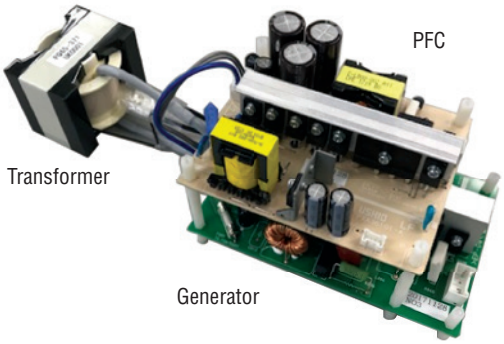


300W 222nm Excimer Lamp (filter sold separately)

All dimensions are in millimeters.







12W 24V B1 222nm Inverter

	Type	Size (mm)
Inverter	PXZ170I20-G-Z1	90 x 30 x 19 (h)

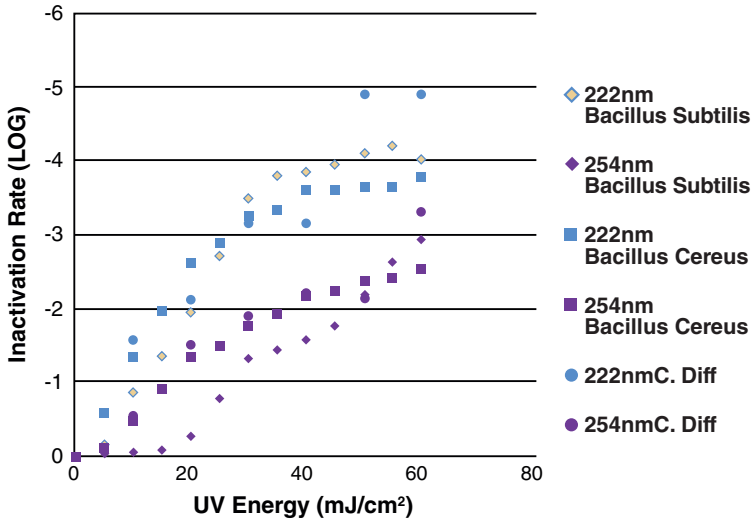
20W 222nm Inverter

	Type	Size (mm)
Inverter	PXZ170I20-E-Z2	90 x 30 x 22 (h)

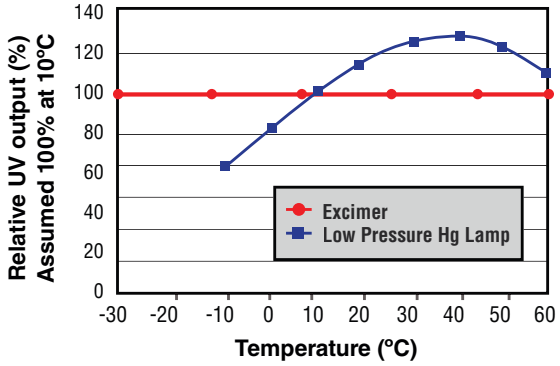
300W 222nm Inverter

	Type	Size (mm)
PFC	PXA361G1	122 x 97 x 44 (h)
Generator	PXG331J1	150 x 97 x 46 (h)
Transformer	PQ65-371	68.2 x 46.8 x 55 (h)

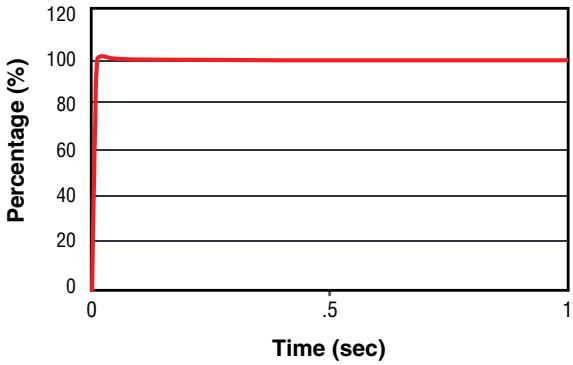
Comparison (254nm vs. 222nm) for Spore Inactivation*



Excimer lamp output is not affected by the ambient temperature.



Full output power available after Turn On.



*Reference Ushio Inc. Internal Data

SPECIFICATIONS

Domain	Species		Methods[1-5]			
			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		+++	+++	—	—

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.

SAFETY & CAUTIONS:

- When handling the lamp, be sure to wear protective gloves and protective glasses.
- Never touch the lamp when it is on, or soon after it has been turned off, as it is hot and may cause serious burns.
- Make sure lamps of specified wattage and voltage are only used with appropriately rated fixtures and drivers. Unspecified use will lead to short lamp life, breakage and overheating of the fixtures.
- Follow detailed safety instructions provided by Ushio.

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Form No. S-CARE222/0620