

Type:

Project:

HIGHLIGHTS

- Featuring Care222® far-UVC disinfection* technology with patented filter for narrow band 222nm emission
- Care222 technology operates continually and meets exposure guidelines for occupied space established by the American Conference of Governmental Industrial Hygienists (ACGIH)¹
- Targets the air and surfaces for pathogen control²
- LED status indicator visible from room
- Fixtures are suitable for damp location
- For existing or new construction
- Ideal applications include nonresidential hospitality, healthcare facilities, offices, conference rooms, educational facilities, and other public spaces
- UV module serviceable from below
- Fixture supplied with a power quick disconnect
- Multiple paint color finishes standard
- Features a 2-year limited warranty

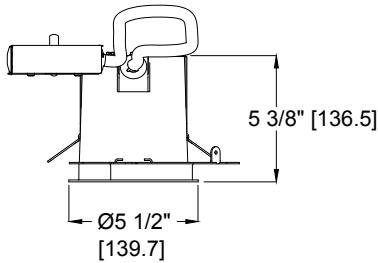
*All references to "disinfection" are referring generally to the reduction of pathogenic bioburden and are not intended to refer to any specific definition of the term as may be used for other purposes by the U.S. Food and Drug Administration or the U.S. Environmental Protection Agency. Reference Specifications page of this document for full disclaimer.

1. ACGIH® 2021 TLVs® and BEIs® - Based on the Documentation of the Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices; when installed and used in accordance with written instructions.
2. Reference page 5-6 of this document under Projected Virus Inactivation and Projected Bacteria Inactivation

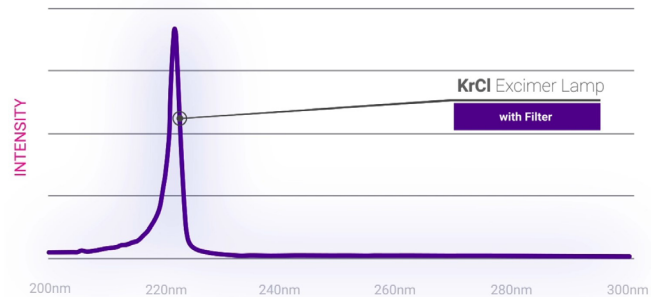


DIMENSIONS

PPDL



WAVELENGTH SPECTRUM



Care222® delivers a narrow band of 222nm UV at energy levels that do not penetrate living tissue in skin or beyond the top layer of the cornea in the eyes.

CATALOG NUMBER

Example: PPDL 222 A090 UNV MF GW

Series	Wavelength	Programming Option	Voltage	Frame Kit	Mounting
PPDL PURO Protect Recessed Downlight	222 222nm	A090 Dose Level for 108 inch (min) to 113.9 inch (max) Height from Floor to Module Face B095 Dose Level for 114 inch (min) to 119.9 inch (max) Height from Floor to Module Face C100 Dose Level for 120 inch (min) to 125.9 inch (max) Height from Floor to Module Face D105 Dose Level for 126 inch (min) to 131.9 inch (max) Height from Floor to Module Face E110 Dose Level for 132 inch (min) or Greater Height from Floor to Module Face	UNV 120-277 Volt	NA Leave blank if FJ or CHI Option Selected MF Mounting Frame Kit with 18" Flexible Whip & Disconnect	NA Leave blank if MF or CHI Option Selected FJ Floating J-Box for Install from Below with Power Quick Disconnect

Territory Compliance	Finish
NA Leave blank if MF or FJ Option Selected CHI Chicago Plenum	GW Gloss White Antimicrobial GB Gloss Black Antimicrobial MB Matte Black Antimicrobial MW Matte White Antimicrobial

For sale only in the United States of America and Mexico.

SPECIFICATIONS

Housing

Constructed of 16-gauge steel.

Frame

Constructed of 16-gauge galvanized steel with pre-installed telescopic mounting bars (maximum 32" [812.8mm] and minimum 15" [381.0mm] extension and 4" [101.6mm] vertical adjustment.)

Finish

Painted in durable polyester powder coat paint with anti-microbial** additive. Available in four standard solid colors. Consult Technical Support for custom colors.

Mounting

For new or existing ceiling construction types.

Source

Care222® mercury-free far-UVC excimer lamp. Emits a soft violet glow from 1.75" x 2.38 [44.5mm x 60.3mm] opening when powered.

Filter

Patented short pass filter for narrow band 222nm emission that removes longer wavelengths that can penetrate the living tissue in skin or beyond the top layer of the cornea in the eyes. Enables operation that can meet ACGIH® guidelines for occupied space.

Wavelength

Emitted Wavelength Range is 200nm ~ 230nm with Peak Wavelength at 222nm far-UVC.

Wiring

Quick disconnect to accept 12 to 16 gauge wire.

Circuiting

Single circuit; Not intended for use with wall switches. Connect to an unswitched circuit intended for 24/7/365 continuous operation.

Wattage

Consumes 14 watts

Power Factor

At 120volt = 99%
At 277volt = 91%

Voltage

120 thru 277v/50-60Hz

Input Current (Maximum)

.14 amps at 120V
.06 amps at 277

Controls and System Networking Options

Requires no external controls or startup commissioning.

Dosing Duration

UV lamp module will operate on 12-minute cycles for a duration of between 10 and 50 seconds each cycle. The duration will depend on the specific dose chosen to meet the application design requirements.

UV Lamp Module Life

Rated for 3000 hours (approximately 5 years of life based on activated hours)***

Ambient Temperature Range

+68° to +104°F [+20° to +40°C]

Ambient Operating Humidity

90% relative humidity non-condensing maximum.

Environment

Suitable for damp locations.

Certification

UL certified to meet U.S. standards for germicidal equipment for use in occupied spaces. Product is IC rated.

Registration Information

EPA Est. No.: 97727-IN-1

Precautionary Statements

- See Installation Instructions for proper usage guidelines and warnings regarding risks resulting from misuse.
- See below for information about potential limited photodegradation of materials.
- This fixture may generate ozone. Each emitter in the fixture has an ozone emission maximum concentration of 0.001 ppm over an 8-hour period, as tested in accordance with UL 867. Precautions that can be taken, if needed, to ensure that ozone concentration stays within applicable permissible exposure limits are described in the Installation Instructions.
- Emitters used in this fixture are in the EXEMPT RISK GROUP for photobiological risk, as described in IEC 62471, when correctly commissioned and properly installed in accordance with written instructions.

Ozone Emissions

Maximum concentration of 0.001 ppm over an 8-hour period, as tested in accordance with UL 867.

Meets California ozone emissions limits. California Air Resources Board (CARB) certified.

Fixture Weight

PPDL = 5lbs [2.27kg]
MF = 11lbs [4.99kg]
CHI = 18lbs [8.17kg]

Buy American Act

This product is assembled in the USA and meets the Buy America(n) government procurement requirements under FAR, DFARS and DOT regulations.

Warranty

2-year limited warranty. This is the only warranty provided and no other statements in this specification sheet create any warranty of any kind. All other express and implied warranties are disclaimed. Complete warranty terms are located at: www.purolighting.com/warranty

UV Disinfection* Technology

- Reference page 5-6 of this document under Projected Virus Inactivation and Projected Bacteria Inactivation.
- Application design layout and associated projected reduction of pathogenic bioburden available by requesting a consultation with a PURO Lighting specialist.

Notes:

Actual performance may differ as a result of end-user environment and application.

All values are design or typical values, measured under laboratory conditions at 25 °C.

Specifications subject to change without notice.

For sale only in the United States of America and Mexico. Not registered as a pesticide device and not intended for sale into the following U.S. states: Hawaii, New Mexico, Wyoming, Colorado, Oklahoma, West Virginia, Indiana, and the District of Columbia.

Disclaimer

*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. These fixtures are not intended for use in the cure, mitigation or prevention of disease and are not certified or approved for use as or for the disinfection of medical devices 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 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.

**Antimicrobial properties are built in to inhibit the growth of bacteria that may affect this product. The antimicrobial properties do not protect users or others against bacteria, viruses, germs or other pathogens.

***Average rated life based on industry standard measurements and not a performance claim specific to any individual product.

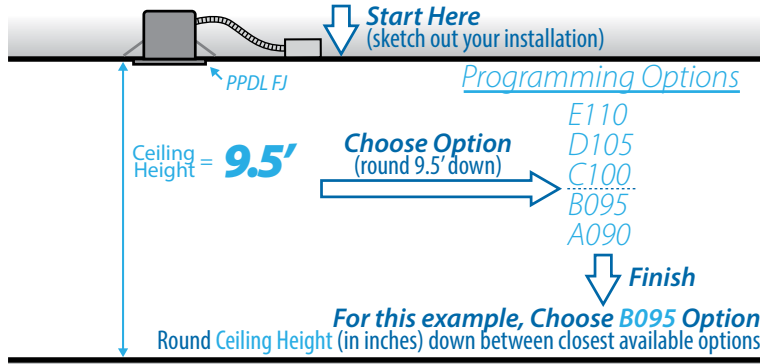
PROGRAMMING OPTION SELECTION

Select Programming Option

The Programming Option changes the duty cycle of the UV emitter activation to keep UV exposure levels in the occupied space (i.e. the portion that is 7 feet or less above finished floor) below ACGIH® published exposure limits. The correct Programming Option to specify depends on the height of the UV emitter module face above the floor, which is the same as ceiling height for PPDL.

Example: PPDL FJ (mounted to 9' 8" ceiling)

What programming option should I select given my ceiling height?



Projected UV Exposure and Exposure Limits

This chart illustrates mounting height configurations for the PPDL fixture, incorporating Care222® technology, that provide a UV exposure dose within the exposure guidelines¹ established and published by the American Conference of Governmental Industrial Hygienists (ACGIH®). For the UV exposure dose to remain within the ACGIH guidelines for the level of UV exposure a typical worker can be exposed to without adverse health effects, the maximum exposure dose must not exceed 23 mJ/cm² (millijoules per square centimeter) for an 8-hour period of time. Per the UL 8802 standard, the upper limit of occupied space is defined to be a test plane 7' Above Finished Floor (AFF). This calculated maximum exposure dose represents the dose an individual would receive over an 8-hour period at 7' Above Finished Floor (AFF) even if stationary in the location of maximum dose.

The levels of exposure in the ACGIH guidelines are quantified as Threshold Limit Values (TLVs®) and are expressed as Time-Weighted Averages (TWAs). The TLVs for incoherent ultraviolet (UV) radiation are established for wavelengths between 180 and 400nm and represent conditions under which it is believed that nearly all healthy workers may be repeatedly exposed without acute adverse health effects such as erythema and photokeratitis. ACGIH guidelines are designed for use by industrial hygienists in making decisions regarding safe levels of exposure to hazards in the workplace.

1. ACGIH® 2021 TLVs® and BEIs® - Based on the Documentation of the Threshold Limit Values for Chemical Substances and Physical Agents & Biological Exposure Indices; when installed and used in accordance with written instructions.

	Distance		Maximum 8 hr Dose	Meets ACGIH
	Mounting Ht.	Mounting Ht. to Head Ht.	mJ/cm ²	<23 mJ/cm ²
A090	9'	2'	18.99	Yes
B095	9'-6"	2'-6"	20.26	Yes
C100	10'	3'	19.7	Yes
D105	10'-6"	3'-6"	20.26	Yes
E110	11'	4'	19.31	Yes
E110	11'-6"	4'-6"	15.26	Yes
E110	12'	5'	12.36	Yes

Projected Virus Inactivation

Use this chart to estimate the effectiveness of one PPDL fixture, mounted at various mounting heights (Z) and having different areas of coverage (X x Y), at inactivating the pathogens listed below on surfaces. The calculated average dose for each scenario is determined from Visual® lighting application software radiometric modeling¹ and is then correlated with laboratory research² to derive predicted inactivation effectiveness for specific pathogens. The analysis assumes that a horizontal plane positioned 2'-6" Above Finished Floor (AFF) is receiving the dose. For different areas of coverage or multiple fixture layouts, consult a PURO Lighting Specialist.

- The results presented here are based upon a 12'x12'x15' high empty room with all surface reflectance assumed to be 5%.
- Reference [Pathogen Inactivation Dose Reference List](#) - 222nm, 254nm & Pulsed Xenon UV Light Sources.
- As a result of computational limitations and simplifying modeling assumptions in Visual, variations in actual product performance from tested product samples, and/or variations in field conditions from laboratory testing conditions, the accuracy of calculated output values identifying radiometric quantities and any resulting derived radiation dose predictions may be adversely affected. See complete disclaimer at: [VISUAL LIGHTING DISCLAIMER](#)

4'x4' Area (X x Y)		Calculated Average Dose ³	Surface Pathogen Inactivation ²																	
Programming	Mounting Ht (Z)	mJ/cm ²	Feline Calicivirus			Influenza			SARS-CoV-2			MRSA			E. coli			Salmonella		
			% in 24 Hours	Hrs to 90%	Hrs to 99.9%	% in 24 Hours	Hrs to 90%	Hrs to 99.9%	% in 24 Hours	Hrs to 90%	Hrs to 99.9%	% in 24 Hours	Hrs to 90%	Hrs to 99.9%	% in 24 Hours	Hrs to 90%	Hrs to 99.9%	% in 24 Hours	Hrs to 90%	Hrs to 99.9%
A090	9'	4.6	81.0 %	33.3 hr	100.0 hr	99.5 %	10.4 hr	31.3 hr	>99.9 %	6.3 hr	18.8 hr	91.0 %	23.0 hr	68.9 hr	99.5 %	10.4 hr	31.3 hr	97.5 %	14.9 hr	44.8 hr
B095	9.5'	6.8	91.2 %	22.7 hr	68.1 hr	>99.9 %	7.1 hr	21.3 hr	>99.9 %	4.3 hr	12.8 hr	97.1 %	15.7 hr	47.0 hr	>99.9 %	7.1 hr	21.4 hr	99.6 %	10.2 hr	30.5 hr
C100	10'	8.4	95.1 %	18.3 hr	54.9 hr	>99.9 %	5.7 hr	17.2 hr	>99.9 %	3.4 hr	10.3 hr	98.7 %	12.6 hr	37.9 hr	>99.9 %	5.7 hr	17.2 hr	99.9 %	8.2 hr	24.6 hr
D105	10.5'	10.4	97.7 %	14.7 hr	44.1 hr	>99.9 %	4.6 hr	13.8 hr	>99.9 %	2.8 hr	8.3 hr	99.6 %	10.1 hr	30.4 hr	>99.9 %	4.6 hr	13.8 hr	>99.9 %	6.6 hr	19.7 hr
E110	11'	11.7	98.5 %	13.2 hr	39.5 hr	>99.9 %	4.1 hr	12.4 hr	>99.9 %	2.5 hr	7.4 hr	99.8 %	9.1 hr	27.2 hr	>99.9 %	4.1 hr	12.4 hr	>99.9 %	5.9 hr	17.7 hr
E110	12'	9.5	96.7 %	16.2 hr	48.5 hr	>99.9 %	5.1 hr	15.2 hr	>99.9 %	3.0 hr	9.1 hr	99.3 %	11.1 hr	33.4 hr	>99.9 %	5.1 hr	15.2 hr	>99.9 %	7.2 hr	21.7 hr

6' X6' Area (X x Y)		Calculated Average Dose ³	Surface Pathogen Inactivation ²																	
Programming	Mounting Ht (Z)	mJ/cm ²	Feline Calicivirus			Influenza			SARS-CoV-2			MRSA			E. coli			Salmonella		
			% in 24 Hours	Hrs to 90%	Hrs to 99.9%	% in 24 Hours	Hrs to 90%	Hrs to 99.9%	% in 24 Hours	Hrs to 90%	Hrs to 99.9%	% in 24 Hours	Hrs to 90%	Hrs to 99.9%	% in 24 Hours	Hrs to 90%	Hrs to 99.9%	% in 24 Hours	Hrs to 90%	Hrs to 99.9%
A090	9'	3.8	74.4 %	40.6 hr	121.7 hr	98.7 %	12.7 hr	38.1 hr	>99.9 %	7.6 hr	22.9 hr	86.1 %	28.0 hr	83.9 hr	98.7 %	12.7 hr	38.1 hr	95.2 %	18.2 hr	54.5 hr
B095	9.5'	5.7	87.3 %	26.8 hr	80.4 hr	99.9 %	8.4 hr	25.2 hr	>99.9 %	5.0 hr	15.1 hr	95.0 %	18.5 hr	55.4 hr	99.9 %	8.4 hr	25.2 hr	99.0 %	12.0 hr	36.0 hr
C100	10'	7.3	92.7 %	21.1 hr	63.3 hr	>99.9 %	6.6 hr	19.8 hr	>99.9 %	4.0 hr	11.9 hr	97.8 %	14.6 hr	43.7 hr	>99.9 %	6.6 hr	19.9 hr	99.7 %	9.5 hr	28.4 hr
D105	10.5'	9.2	96.4 %	16.6 hr	49.9 hr	>99.9 %	5.2 hr	15.6 hr	>99.9 %	3.1 hr	9.4 hr	99.2 %	11.5 hr	34.4 hr	>99.9 %	5.2 hr	15.6 hr	>99.9 %	7.5 hr	22.4 hr
E110	11'	10.4	97.7 %	14.7 hr	44.1 hr	>99.9 %	4.6 hr	13.8 hr	>99.9 %	2.8 hr	8.3 hr	99.6 %	10.1 hr	30.4 hr	>99.9 %	4.6 hr	13.8 hr	>99.9 %	6.6 hr	19.7 hr
E110	12'	8.7	95.7 %	17.6 hr	52.9 hr	>99.9 %	5.5 hr	16.6 hr	>99.9 %	3.3 hr	9.9 hr	98.9 %	12.2 hr	36.5 hr	>99.9 %	5.5 hr	16.6 hr	>99.9 %	7.9 hr	23.7 hr

8' X 8' Area (X x Y)		Calculated Average Dose ³	Surface Pathogen Inactivation ²																	
Programming	Mounting Ht (Z)	mJ/cm ²	Feline Calicivirus			Influenza			SARS-CoV-2			MRSA			E. coli			Salmonella		
			% in 24 Hours	Hrs to 90%	Hrs to 99.9%	% in 24 Hours	Hrs to 90%	Hrs to 99.9%	% in 24 Hours	Hrs to 90%	Hrs to 99.9%	% in 24 Hours	Hrs to 90%	Hrs to 99.9%	% in 24 Hours	Hrs to 90%	Hrs to 99.9%	% in 24 Hours	Hrs to 90%	Hrs to 99.9%
A090	9'	2.8	63.8 %	54.4 hr	163.1 hr	96.1 %	17.0 hr	51.1 hr	99.6 %	10.2 hr	30.6 hr	77.1 %	37.5 hr	112.5 hr	96.1 %	17.0 hr	51.1 hr	89.6 %	24.4 hr	73.1 hr
B095	9.5'	4.5	79.9 %	34.4 hr	103.3 hr	99.4 %	10.8 hr	32.4 hr	>99.9 %	6.5 hr	19.4 hr	90.2 %	23.8 hr	71.3 hr	99.4 %	10.8 hr	32.4 hr	97.2 %	15.4 hr	46.3 hr
C100	10'	5.8	87.8 %	26.2 hr	78.8 hr	99.9 %	8.2 hr	24.7 hr	>99.9 %	4.9 hr	14.8 hr	95.3 %	18.1 hr	54.3 hr	99.9 %	8.2 hr	24.7 hr	99.1 %	11.8 hr	35.3 hr
D105	10.5'	7.7	93.7 %	20.0 hr	60.1 hr	>99.9 %	6.3 hr	18.8 hr	>99.9 %	3.8 hr	11.3 hr	98.2 %	13.8 hr	41.5 hr	>99.9 %	6.3 hr	18.8 hr	99.8 %	9.0 hr	27.0 hr
E110	11'	8.9	95.9 %	17.3 hr	51.8 hr	>99.9 %	5.4 hr	16.2 hr	>99.9 %	3.2 hr	9.7 hr	99.0 %	11.9 hr	35.8 hr	>99.9 %	5.4 hr	16.3 hr	>99.9 %	7.7 hr	23.2 hr
E110	12'	7.7	93.7 %	20.0 hr	60.0 hr	>99.9 %	6.3 hr	18.8 hr	>99.9 %	3.8 hr	11.3 hr	98.2 %	13.8 hr	41.3 hr	>99.9 %	6.3 hr	18.8 hr	99.8 %	9.0 hr	26.9 hr

Projected Bacteria Inactivation

Use this chart to estimate the effectiveness of one PPDL fixture, mounted at various mounting heights (Z) and having different areas of coverage (X x Y), at inactivating the pathogens listed below on surfaces. The calculated average dose for each scenario is determined from Visual® lighting application software radiometric modeling¹ and is then correlated with laboratory research² to derive predicted inactivation effectiveness for specific pathogens. The analysis assumes that a horizontal plane positioned 2'-6" Above Finished Floor (AFF) is receiving the dose. For different areas of coverage or multiple fixture layouts, consult a PURO Lighting Specialist.

- The results presented here are based upon a 12'x12'x15' high empty room with all surface reflectance assumed to be 5%.
- Reference [Pathogen Inactivation Dose Reference List](#) - 222nm, 254nm & Pulsed Xenon UV Light Sources.
- As a result of computational limitations and simplifying modeling assumptions in Visual, variations in actual product performance from tested product samples, and/or variations in field conditions from laboratory testing conditions, the accuracy of calculated output values identifying radiometric quantities and any resulting derived radiation dose predictions may be adversely affected. See complete disclaimer at: [VISUAL LIGHTING DISCLAIMER](#)

10' X 10' Area (X x Y)		Calculated Average Dose ³	Surface Pathogen Inactivation ²																	
Programming	Mounting Ht (Z)	mJ/cm ²	Feline Calicivirus			Influenza			SARS-CoV-2			MRSA			E. coli			Salmonella		
			% in 24 Hours	Hrs to 90%	Hrs to 99.9%	% in 24 Hours	Hrs to 90%	Hrs to 99.9%	% in 24 Hours	Hrs to 90%	Hrs to 99.9%	% in 24 Hours	Hrs to 90%	Hrs to 99.9%	% in 24 Hours	Hrs to 90%	Hrs to 99.9%	% in 24 Hours	Hrs to 90%	Hrs to 99.9%
A090	9'	2.0	51.4 %	76.6 hr	230.0 hr	90.0 %	24.0 hr	72.0 hr	97.8 %	14.4 hr	43.2 hr	64.8 %	52.9 hr	158.6 hr	90.0 %	24.0 hr	72.1 hr	80.0 %	34.4 hr	103.1 hr
B095	9.5'	3.3	69.0 %	47.2 hr	141.5 hr	97.6 %	14.8 hr	44.3 hr	99.8 %	8.9 hr	26.6 hr	81.7 %	32.5 hr	97.6 hr	97.6 %	14.8 hr	44.4 hr	92.7 %	21.1 hr	63.4 hr
C100	10'	4.4	79.7 %	34.7 hr	104.0 hr	99.4 %	10.9 hr	32.6 hr	>99.9 %	6.5 hr	19.5 hr	90.1 %	23.9 hr	71.8 hr	99.4 %	10.9 hr	32.6 hr	97.1 %	15.5 hr	46.6 hr
D105	10.5'	6.0	88.3 %	25.7 hr	77.2 hr	99.9 %	8.1 hr	24.2 hr	>99.9 %	4.8 hr	14.5 hr	95.6 %	17.7 hr	53.2 hr	99.9 %	8.1 hr	24.2 hr	99.2 %	11.5 hr	34.6 hr
E110	11'	7.1	92.3 %	21.6 hr	64.7 hr	>99.9 %	6.8 hr	20.3 hr	>99.9 %	4.1 hr	12.2 hr	97.6 %	14.9 hr	44.6 hr	>99.9 %	6.8 hr	20.3 hr	99.7 %	9.7 hr	29.0 hr
E110	12'	6.4	90.2 %	23.8 hr	71.4 hr	>99.9 %	7.5 hr	22.4 hr	>99.9 %	4.5 hr	13.4 hr	96.5 %	16.4 hr	49.2 hr	>99.9 %	7.5 hr	22.4 hr	99.4 %	10.7 hr	32.0 hr

12' X12' Area (X x Y)		Calculated Average Dose ³	Surface Pathogen Inactivation ²																	
Programming	Mounting Ht (Z)	mJ/cm ²	Feline Calicivirus			Influenza			SARS-CoV-2			MRSA			E. coli			Salmonella		
			% in 24 Hours	Hrs to 90%	Hrs to 99.9%	% in 24 Hours	Hrs to 90%	Hrs to 99.9%	% in 24 Hours	Hrs to 90%	Hrs to 99.9%	% in 24 Hours	Hrs to 90%	Hrs to 99.9%	% in 24 Hours	Hrs to 90%	Hrs to 99.9%	% in 24 Hours	Hrs to 90%	Hrs to 99.9%
A090	9'	1.4	40.5 %	106.5 hr	319.4 hr	80.9 %	33.3 hr	100.0 hr	93.7 %	20.0 hr	60.0 hr	52.9 %	73.4 hr	220.2 hr	80.9 %	33.4 hr	100.1 hr	68.6 %	47.7 hr	143.2 hr
B095	9.5'	2.4	57.4 %	64.7 hr	194.1 hr	93.5 %	20.3 hr	60.8 hr	98.9 %	12.2 hr	36.5 hr	71.0 %	44.6 hr	133.8 hr	93.5 %	20.3 hr	60.8 hr	85.1 %	29.0 hr	87.0 hr
C100	10'	3.3	69.3 %	46.7 hr	140.2 hr	97.7 %	14.6 hr	43.9 hr	99.8 %	8.8 hr	26.3 hr	82.0 %	32.2 hr	96.7 hr	97.7 %	14.6 hr	43.9 hr	92.8 %	21.0 hr	62.9 hr
D105	10.5'	4.5	80.3 %	34.0 hr	102.0 hr	99.4 %	10.6 hr	31.9 hr	>99.9 %	6.4 hr	19.2 hr	90.5 %	23.4 hr	70.3 hr	99.4 %	10.7 hr	32.0 hr	97.3 %	15.2 hr	45.7 hr
E110	11'	5.5	86.2 %	27.9 hr	83.6 hr	99.8 %	8.7 hr	26.2 hr	>99.9 %	5.2 hr	15.7 hr	94.4 %	19.2 hr	57.7 hr	99.8 %	8.7 hr	26.2 hr	98.8 %	12.5 hr	37.5 hr
E110	12'	5.2	84.7 %	29.5 hr	88.4 hr	99.7 %	9.2 hr	27.7 hr	>99.9 %	5.5 hr	16.6 hr	93.4 %	20.3 hr	61.0 hr	99.7 %	9.2 hr	27.7 hr	98.5 %	13.2 hr	39.6 hr

Projected Photodegradation Effect

Use the "Years to 54,000 mJ/cm²" data reported on the chart (below left) and the Photodegradation Testing Results reported on the chart (below right) to estimate the photodegradation effect on surfaces resulting from UV irradiation from one PPDL fixture, with the coverage areas (X x Y)¹ and at the mounting heights specified in the chart (below left). The calculated average dose² for each scenario identified in the chart (below left) is determined from Visual[®] lighting application software radiometric modeling and is used to calculate the amount of time required to reach the dose used in independent laboratory photodegradation testing³. The analysis assumes that a horizontal plane positioned 2'-6" Above Finished Floor (AFF) is receiving the dose. Note that the calculated doses as presented in the chart (below left) are average values on the designated calculation plane. Calculated doses at specific points may be higher or lower than the average value. To estimate the photodegradation effect for different areas of coverage, at specific points, or multiple fixture layouts, consult a PURO Lighting Specialist.

1. The results presented here are based upon a 12'x12'x15' high empty room with all surface reflectance assumed to be 5%.
2. As a result of computational limitations and simplifying modeling assumptions in Visual, variations in actual product performance from tested product samples, and/or variations in field conditions from laboratory testing conditions, the accuracy of calculated output values identifying radiometric quantities and any resulting derived radiation dose predictions may be adversely affected. See complete disclaimer at: [VISUAL LIGHTING DISCLAIMER](#)
3. Independent laboratory photodegradation testing performed by Assured Testing Services, Ridgeway, PA, Test Report 28545, August 12, 2020.

4'x4' Area (X x Y)		Calculated Avg. 24hr Dose ⁵	Years to Dose of 54,000 mJ/cm ² *
Programming Option	Mounting Ht (Z)	mJ/cm ²	
A090	9'	4.6	32.16
B095	9.5'	6.8	21.76
C100	10'	8.4	17.61
D105	10.5'	10.4	14.23
E110	11'	11.7	12.64
E110	12'	9.5	15.57

6' x 6' Area (X x Y)		Calculated Avg. 24hr Dose ⁵	Years to Dose of 54,000 mJ/cm ² *
Programming Option	Mounting Ht (Z)	mJ/cm ²	
A090	9'	3.8	38.93
B095	9.5'	5.7	25.96
C100	10'	7.3	20.27
D105	10.5'	9.2	16.08
E110	11'	10.4	14.23
E110	12'	8.7	17.01

8' x 8' Area (X x Y)		Calculated Avg. 24hr Dose ⁵	Years to Dose of 54,000 mJ/cm ² *
Programming Option	Mounting Ht (Z)	mJ/cm ²	
A090	9'	2.8	52.84
B095	9.5'	4.5	32.88
C100	10'	5.8	25.51
D105	10.5'	7.7	19.21
E110	11'	8.9	16.62
E110	12'	7.7	19.21

10' x 10' Area		Calculated Avg. 24hr Dose ⁵	Years to Dose of 54,000 mJ/cm ² *
Programming Option	Mounting Ht (Z)	mJ/cm ²	
A090	9'	2.0	73.97
B095	9.5'	3.3	44.83
C100	10'	4.4	33.62
D105	10.5'	6.0	24.66
E110	11'	7.1	20.84
E110	12'	6.4	23.12


12' x 12' Area		Calculated Avg. 24hr Dose ⁵	Years to Dose of 54,000 mJ/cm ² *
Programming Option	Mounting Ht (Z)	mJ/cm ²	
A090	9'	1.4	105.68
B095	9.5'	2.4	61.64
C100	10'	3.3	44.83
D105	10.5'	4.5	32.88
E110	11'	5.5	26.90
E110	12'	5.2	28.45

PHOTODEGRADATION TESTING RESULTS³

Material	Before UV Exposure	After UV Exposure	Photodegradation Effect at Dose of 54,000 mJ/cm ² *	
			Average Δ E**	Average Δ - Durometer Hardness***
Polyvinyl chloride (PVC)			27.27	3
Polypropylene			3.86	-1
Polyethylene			5.50	0
Polytetrafluoroethylene (PTFE)			1.02	0
Clear polymethyl methacrylate			2.50	3
White polymethyl methacrylate			9.08	-3
Polyoxymethylene			4.47	5
Polycarbonate			6.89	-3
Acrylonitrile butadiene styrene (ABS)			0.90	0
Polyester			1.13	-1
Nylon			6.77	-4

PROJECTED PHOTODEGRADATION EFFECT (CONTINUED)

PHOTODEGRADATION TESTING RESULTS³

Material	Photodegradation Effect at Dose of 54,000 mJ/cm ² *		Average Δ E**	Average Δ - Durometer Hardness***
	Before UV Exposure	After UV Exposure		
Cotton			2.12	N/A
Wool			2.73	N/A
Pine/Fir			7.79	1
Oak			8.73	-14
Poplar			11.65	-7
Low grade paper (copy paper)			4.15	N/A
Rag paper (stationary writing paper)			7.44	N/A
Oil paint on paper			1.47	N/A
Watercolors on rag paper			3.12	N/A
Window glass			0.11	N/A
Vinyl flooring			2.13	-2
Wall paper			3.83	N/A
Newsprint color			8.13	N/A
Barcode paper label			1.34	N/A

Independent Lab Test Results¹ for Determining Photodegradation Effect for Far-UVC Filtered 222nm technology (Care222[®])

*The independent test lab results compared materials at an initial state of no UV exposure and a final state of UV exposure at 54,000 mJ/cm².

** ΔE is a benchmark used to measure color difference compared to a known set of CIELAB color coordinates defined by the International Commission on Illumination (CIE). The Photodegradation Testing Results table presents data calculated by the CIE76 formula, ΔE*ab. CIE76 is a formula that relates a measured color difference to a known set of CIELAB coordinates. ΔE*ab ~ 2.3 equates to a Just Noticeable Difference

*** Durometer Hardness is a benchmark of material hardness, as measured by a Shore Durometer device. The Photodegradation Testing Results table presents the difference in measured material hardness over the exposure dose. For the majority of the materials tested there was no or only a very small change in Durometer Hardness. Unvarnished Oak and Poplar showed some change in Durometer Hardness.

Comparing Far-UVC Filtered 222nm Disinfection Technology (Care222[®]) Photodegradation Effect to General Illumination Photodegradation Effect

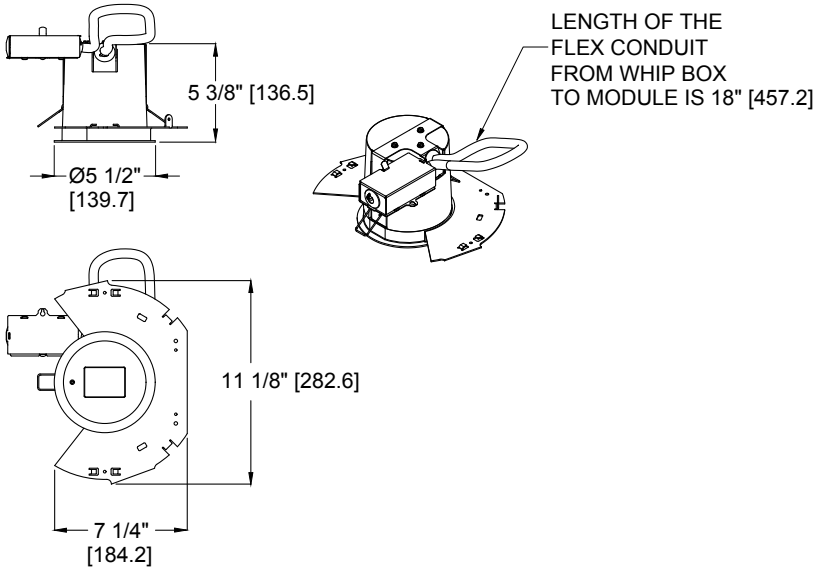
To compare photodegradation caused by UV to photodegradation caused by general illumination, which also causes a photodegradation effect, a Just Noticeable Difference (ΔE*ab ~ 2.3) in a space illuminated by a white light source to an illuminance of 50 fc would occur as soon as 6 months for highly sensitive materials and as long as 30 years for minimally sensitive materials.* There is recognizable photodegradation of materials caused by almost all light sources including incandescent, fluorescent, halogen, metal halide, LED, and UV. While some UV sources, depending on spectral content and intensity, can cause substantial photodegradation, the information presented in the Photodegradation Testing Results table illustrates specifically the generally minimal photodegradation effect of far-UVC filtered 222nm technology (Care222[®]) when utilizing these products in typical application.

* ANSI/IES RP-30-20 Recommended Practice: Lighting Museums, Table C-2

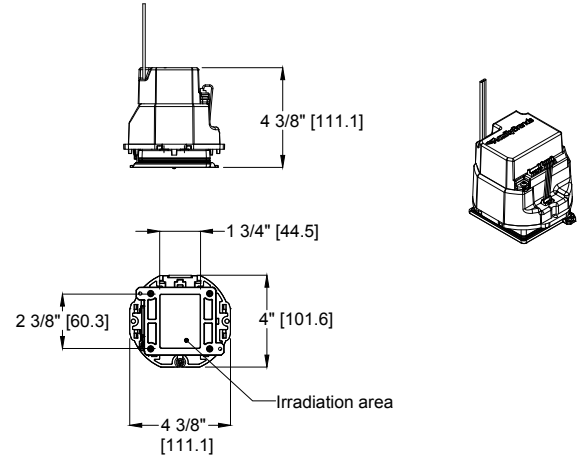
1. Independent laboratory photodegradation testing performed by Assured Testing Services, Ridgeway, PA, Test Report 28545, August 12, 2020.

DIMENSIONS

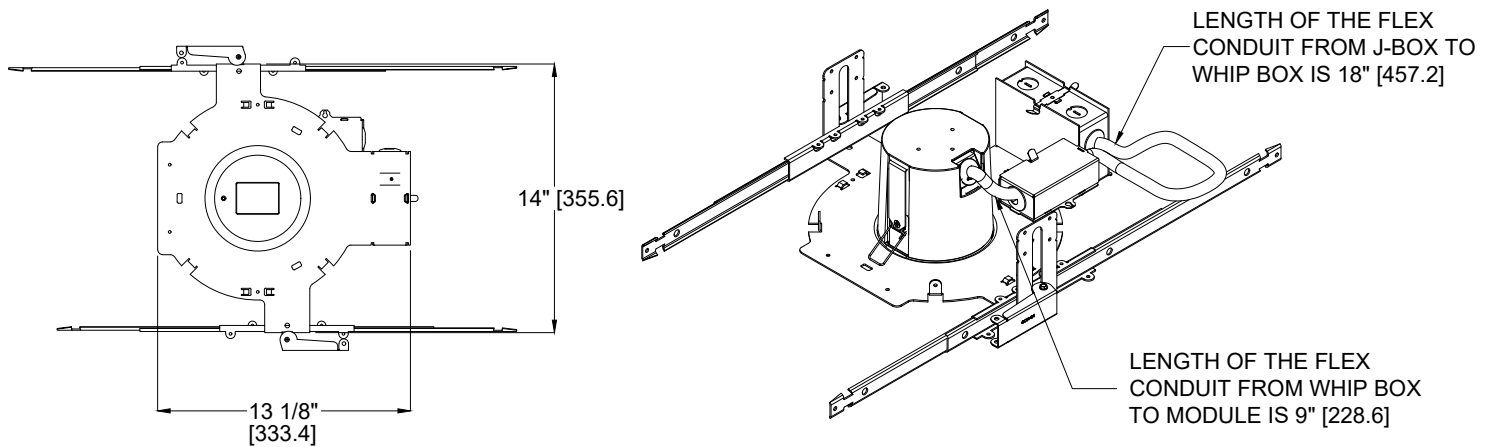
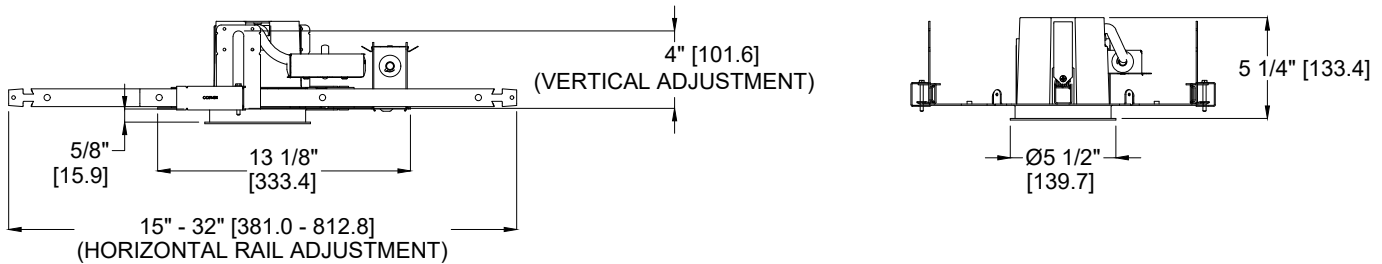
PPDL with FJ Floating Junction Box
(Installation from below ceiling)



Module
Ushio Care222® Mercury-Free Far-UVC Excimer Lamp

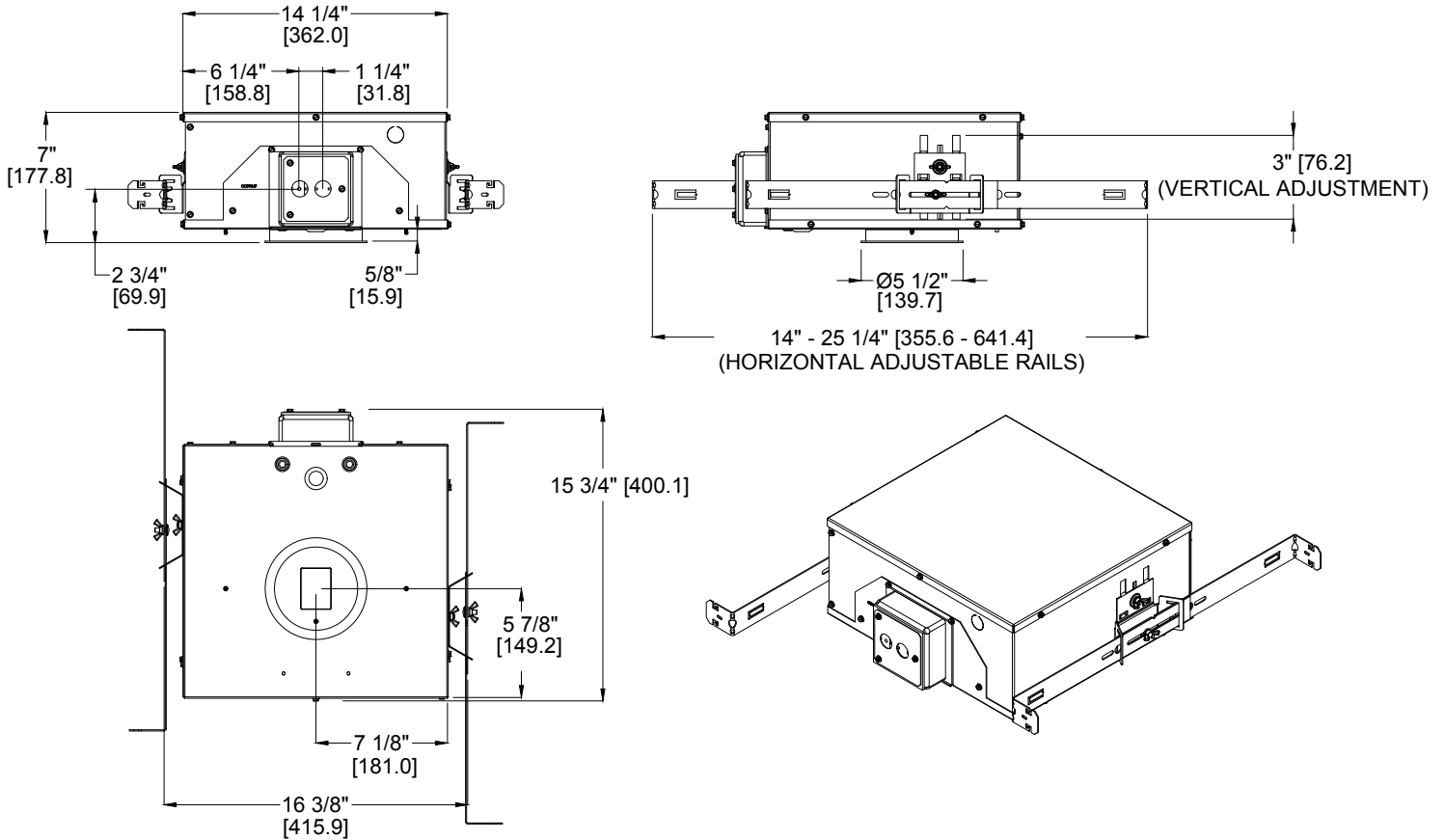


PPDL with MF Mounting Frame Kit
(Installation for grid or hard ceiling)



DIMENSIONS

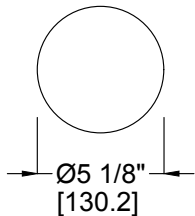
PPDL with CHI Chicago Plenum Housing
(Installation for grid or hard ceiling)
(Fixture can be rotated within CHI housing for field adjustment)



MOUNTING

Rough-In Dimensions

For more mounting information and detailed views, please read the installation instructions



INDICATOR DATA

Embedded Status Indicator LED

