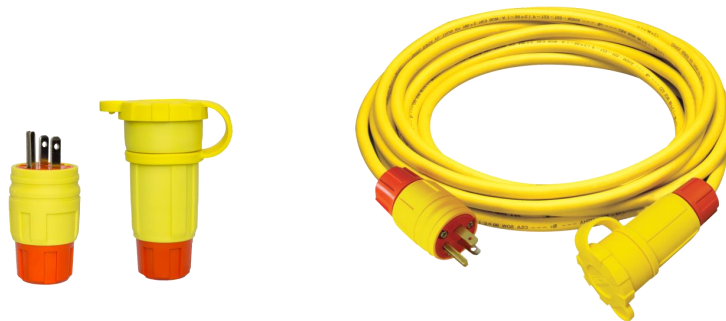


Ericson Expands It's Perma-Kleen Product Offering

- Ericson is expanding their already robust offering of Perma-Kleen products designed to fight bacteria, mold and viruses found in various locations.



Ericson mfg

PERMA~~NO~~KLEEN™

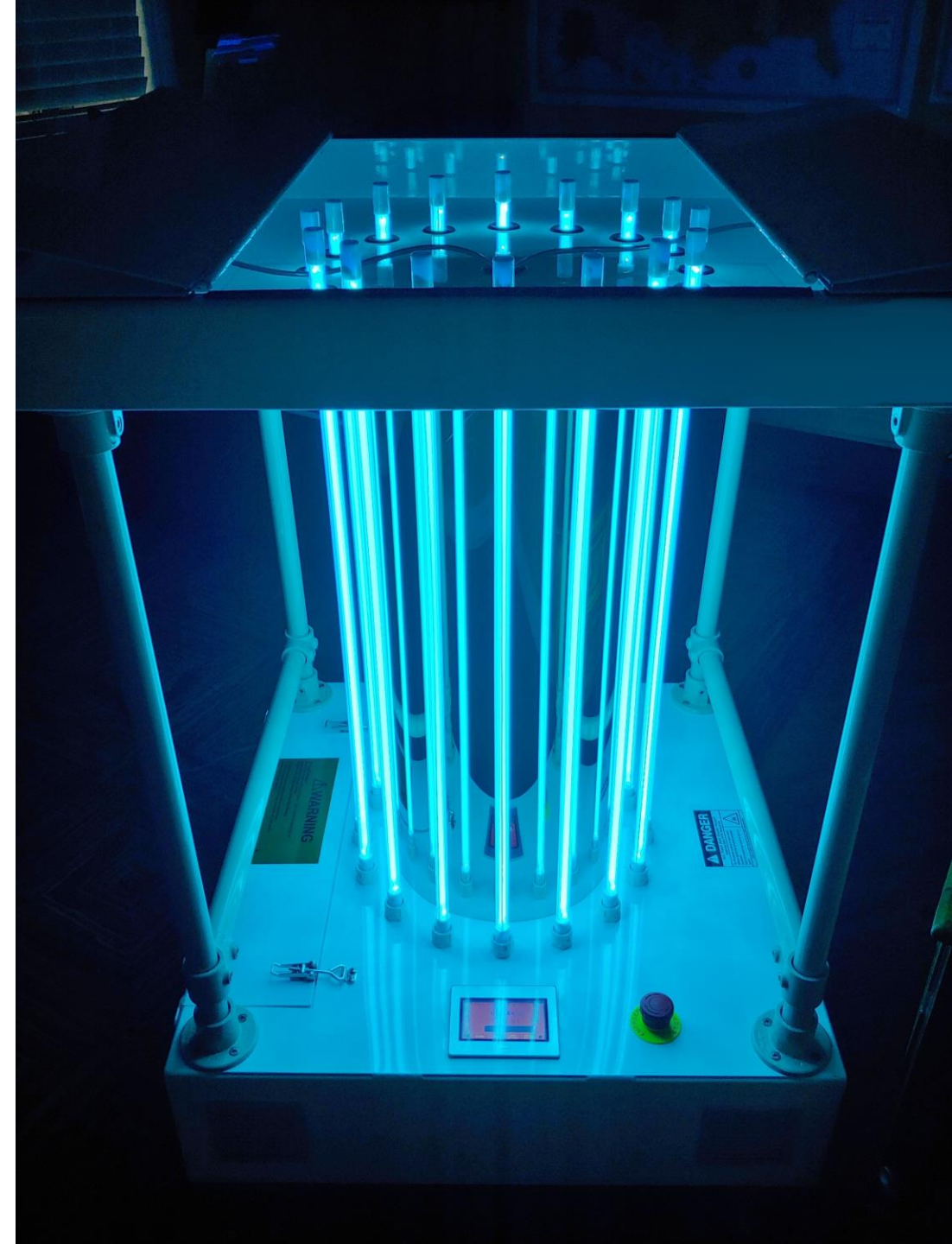
UV-C Mobile Surface Disinfection Unit

A mobile solution that SAFELY disinfects surfaces of
germs (viruses and bacteria) with UV-C lighting that is
repeatable and reliable



What is UV-C Disinfection?

- UVC radiation is a known disinfectant for air, water, and nonporous surfaces. UVC radiation has been effectively used for decades to reduce the spread of bacteria and viruses. For this reason, UVC lamps are often called "germicidal" lamps.
- The PK-CART is a rugged mobile surface disinfection unit that uses UV-C light energy to keep surfaces hygienically clean. It provides consistent repeatable performance in a safe manner, further supplementing existing cleaning protocols, avoiding human error and reducing costly and corrosive chemical use.
- Field experience proves it saves time, money while providing peace of mind.



History & Efficacy of UV



Germ killing properties
discovered 140 years ago.



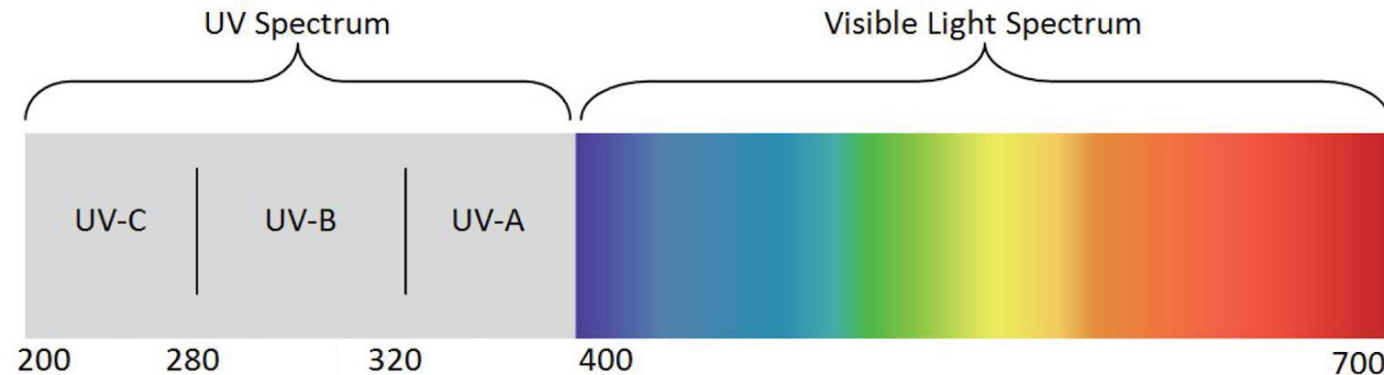
UV-C alters DNA structure of
pathogens.



Pathogens can't develop
resistance to UV light.



10 years of peer reviewed research
proving efficacy reducing HAIs.



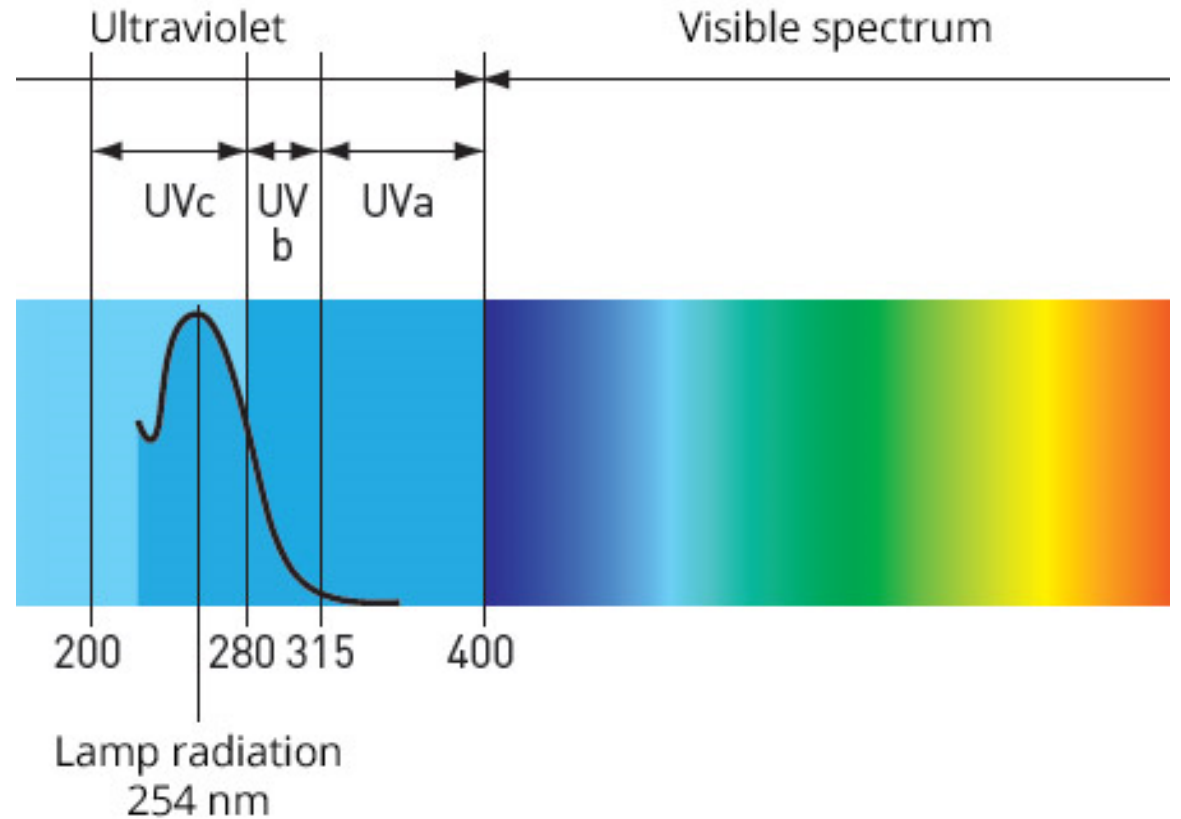
UVGI – A Resurgent Technology

- The germicidal properties of UV have been known for over 100 years
- Health Care
- HVAC/Upper Air Chamber
- Water Treatment



How Does UV-C Kill Germs?

- UV-C has the shortest wavelength and is the most harmful type of UV ray. Almost all of it is absorbed by the Earth's atmosphere. Because UV-C rays disintegrate the nucleic acids in the cells of microorganisms, they are used to sanitize food, air and water. UV-C light can be dangerous to humans if not used properly.
- Ultraviolet germicidal irradiation (UVGI) is a disinfection method that uses short-wavelength ultraviolet (ultraviolet C or UVC) light to kill or inactivate microorganisms by destroying and disrupting their DNA leaving them unable to perform vital cellular functions. UV light requires the use of germicidal wavelengths of 185-254 nanometers (nm).



Other Disinfection Technologies: 405nm Hubbell, Acuity (Kenall),

- “Continuous Disinfection”, safe when occupied
- Only effective on Bacteria: no viruses, fungus or mold
- 24hrs w/out occupancy kills 90% of some bacteria.
- Only slightly better than control
- Data doesn’t verify distance, only time
- Ask for data

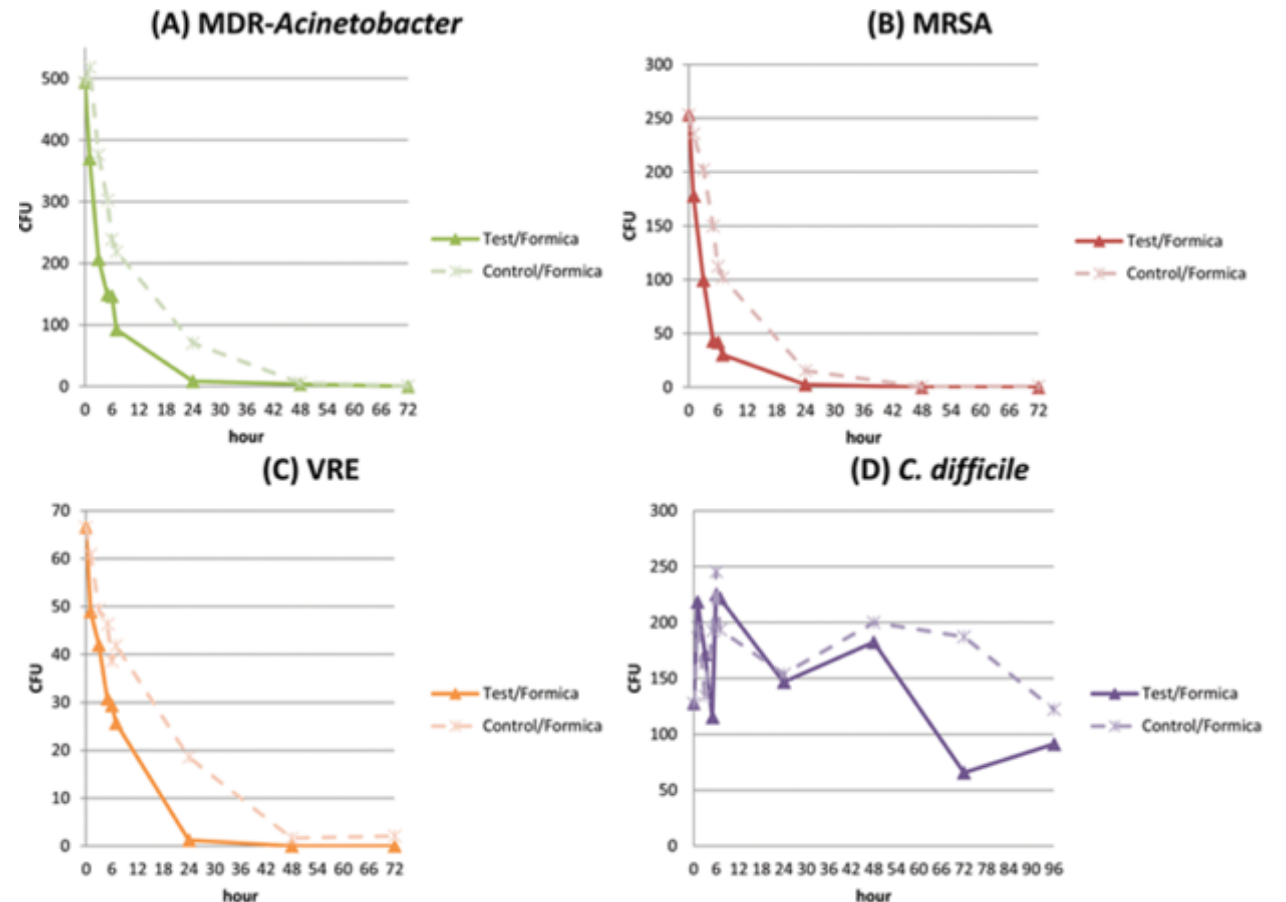
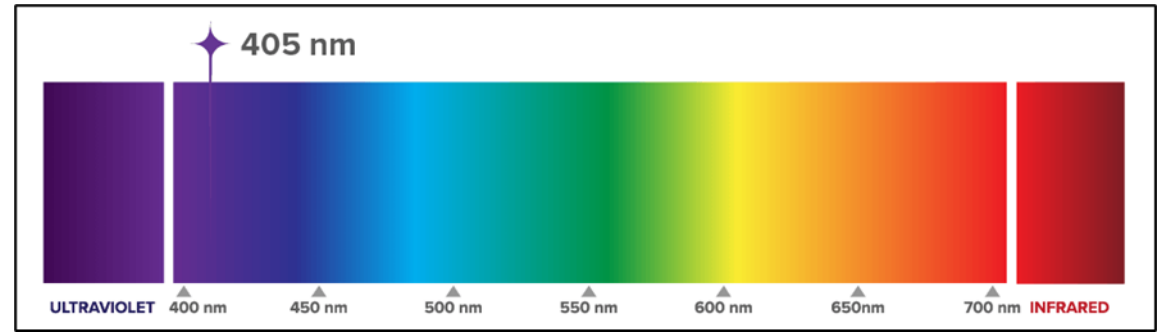


Figure 2. Survival in MDR-Acinetobacter (A), MRSA (B), VRE (C), and *C. difficile* (D) with Blue Light

Current and Emerging Disinfection Practices

HAND HYGIENE



MANUAL CLEANING



ENHANCED CLEANING



405nm Fixtures



Hospital UV Disinfection Pushcarts



Ericson PermaKleen UVC Carts

Three Main Types of Artificial UV Sources



Low pressure mercury-vapor

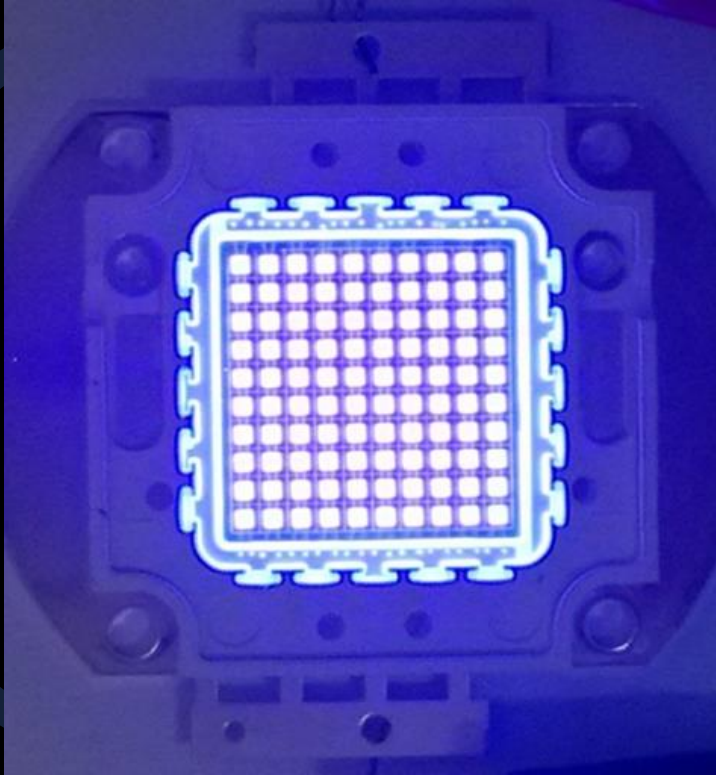


Low pressure mercury vapor HO quartz bulbs



Pulsed-xenon

Current and Emerging Disinfection Technologies: UV-C LED Technology

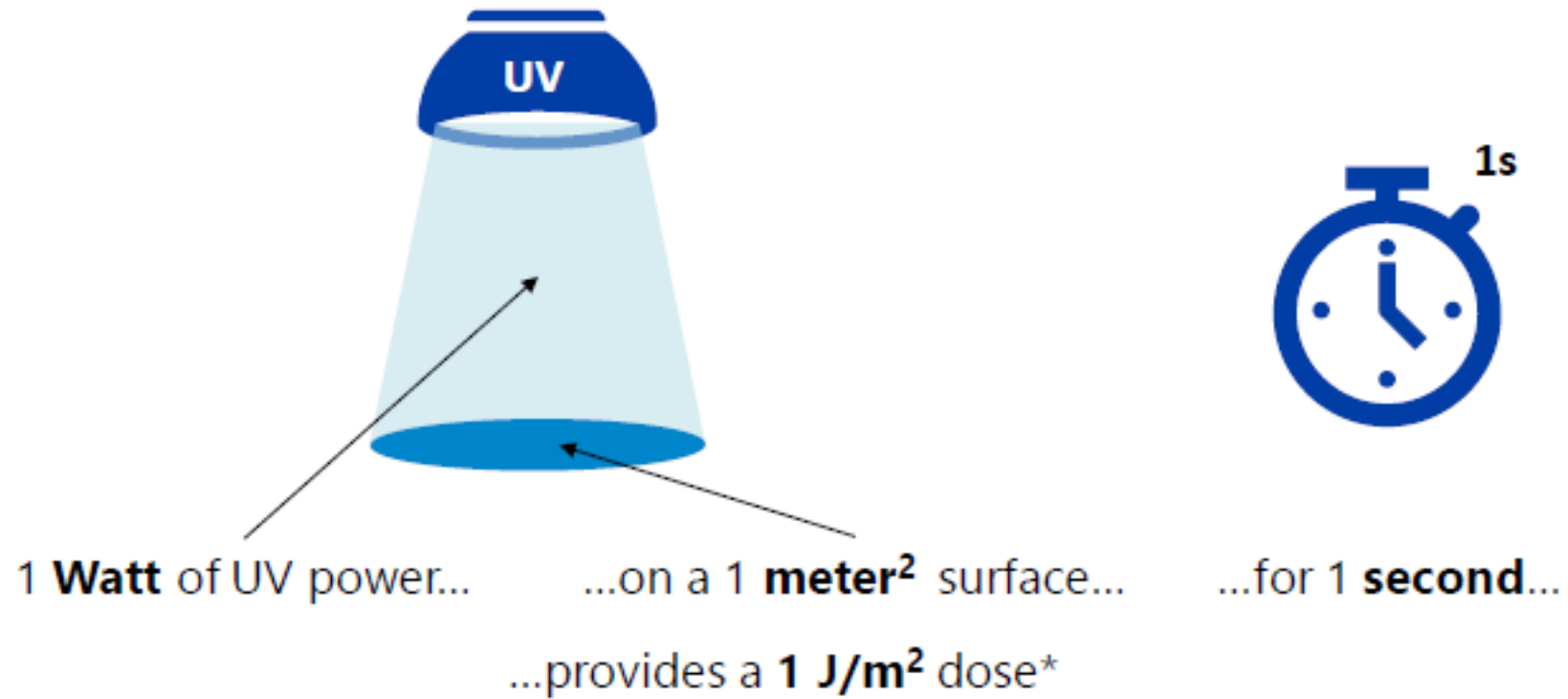


3% Efficient

1500W needed for a 12x12 coverage area

Approximately 4-5 years before viable at 10ft from ceiling

Measuring UV Power and Dosage



$$\text{Dose} = \text{Power} \times \text{Time}$$

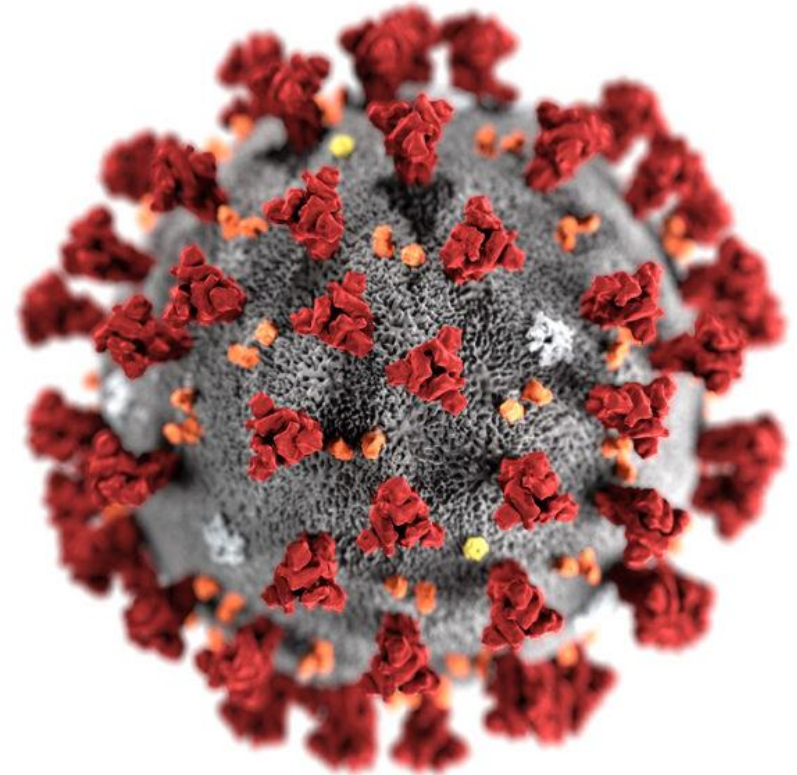
INDUSTRY TERMS of UV-C / GUV / UVGI

- FAQ Report
- EC&M Mag and Illuminating Engineering Society (IES) Committee Report – FAQ – 04/2020
 - Explains GUV/UVC/UVGI disinfection
 - Emphasizes the need for GUV to be applied correctly and monitored for output and safety
 - Cautions that ultraviolet disinfecting “wands” or other ultraviolet products for residential use are unproven, unregulated, unsafe.
- Industry Terms of this technology – ALL THE SAME
 - UV-C or UVC
 - Ultraviolet
 - GUV
 - Germicidal Ultraviolet
 - UVGI
 - Ultraviolet germicidal irradiation



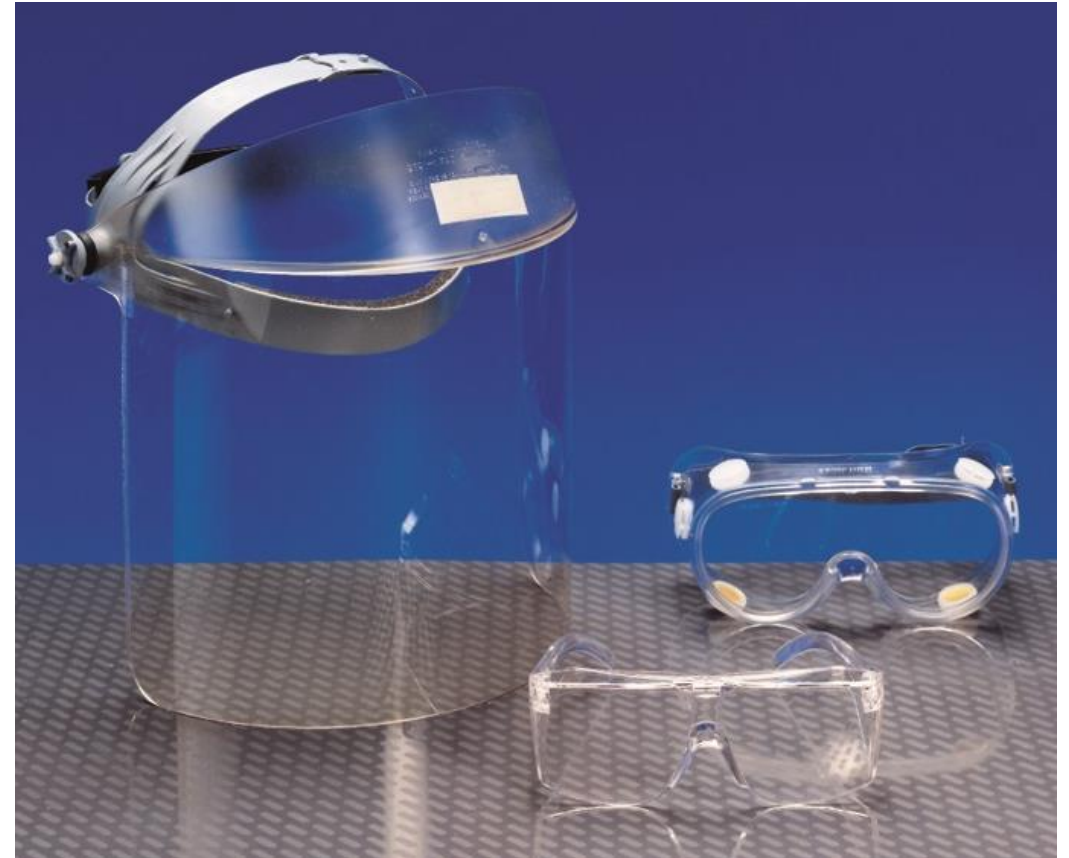
UVC Carts and COVID-19

- Because the COVID-19 virus (SARS-CoV-2) is so new, the scientific community doesn't have a specific deactivation dosage. However, we know the dosage values for comparable viruses in the same SARS and Corona virus family are 10-20 mJ/cm² using direct UVC light at a wavelength of 254nm; this dosage will achieve 99.9% disinfection (i.e., inactivation) under controlled lab conditions. In real-life, the virus is often hidden or shaded from direct UVC light, reducing UVC's effectiveness.
<https://iuva.org/iuva-covid-19-faq>
- Covid-19 is a Human Corona Virus that extremely easy to kill. Our devices have been proven to deactivate Corona Virus and significantly more difficult to kill bugs.
- This and all UVC technologies are meant to be a supplement to already established cleaning regimens. UVC offers another layer of protection and peace of mind designed to other surface cleaning practices performed by humans, minimizing human error.



Personal Protective Equipment (PPE)

- **Protective Clothing and Eyewear**
- It is not recommended that any personnel be subject to direct UV-C exposure. In the event such exposure is probable, personnel should wear clothing providing **full coverage of exposed skin and appropriate eye protection.**
- **Polycarbonate safety glasses** designed to filter UV and those of the wrap-around type are recommended.
- GOAL: ZERO EXPOSURE TO PERSONNEL



PK-Cart Versions

- UVC-PKCART-ECO Economy
 - Economy Version
 - 130 Watt. Manual Timing Operation
- UVC-PKCART-Max
 - Gold Standard
 - 240 Watt Digital Screen. Adjustable Timing
- UVC-PKCART-Max-LP
 - Gold Standard, Low Profile
 - 240 Watt Digital Screen. Adjustable Timing. Low Profile. Open Top
- UVC-PKCART-Ultra
 - Platinum Level
 - 320 Watt. Digital Screen. Auto-Room Sensing

PK-Cart Features

- Standard 120V, 15A circuit required
- Easy Setup and Programming
 - Quick Start Guide
 - Installation/Operations Manual
- Built-in Safety Features
- Rugged, Industrial Design
- Low Maintenance
 - 12,000 hr Bulb Life
- Audit Traceability - Logging
- Repeatable Process

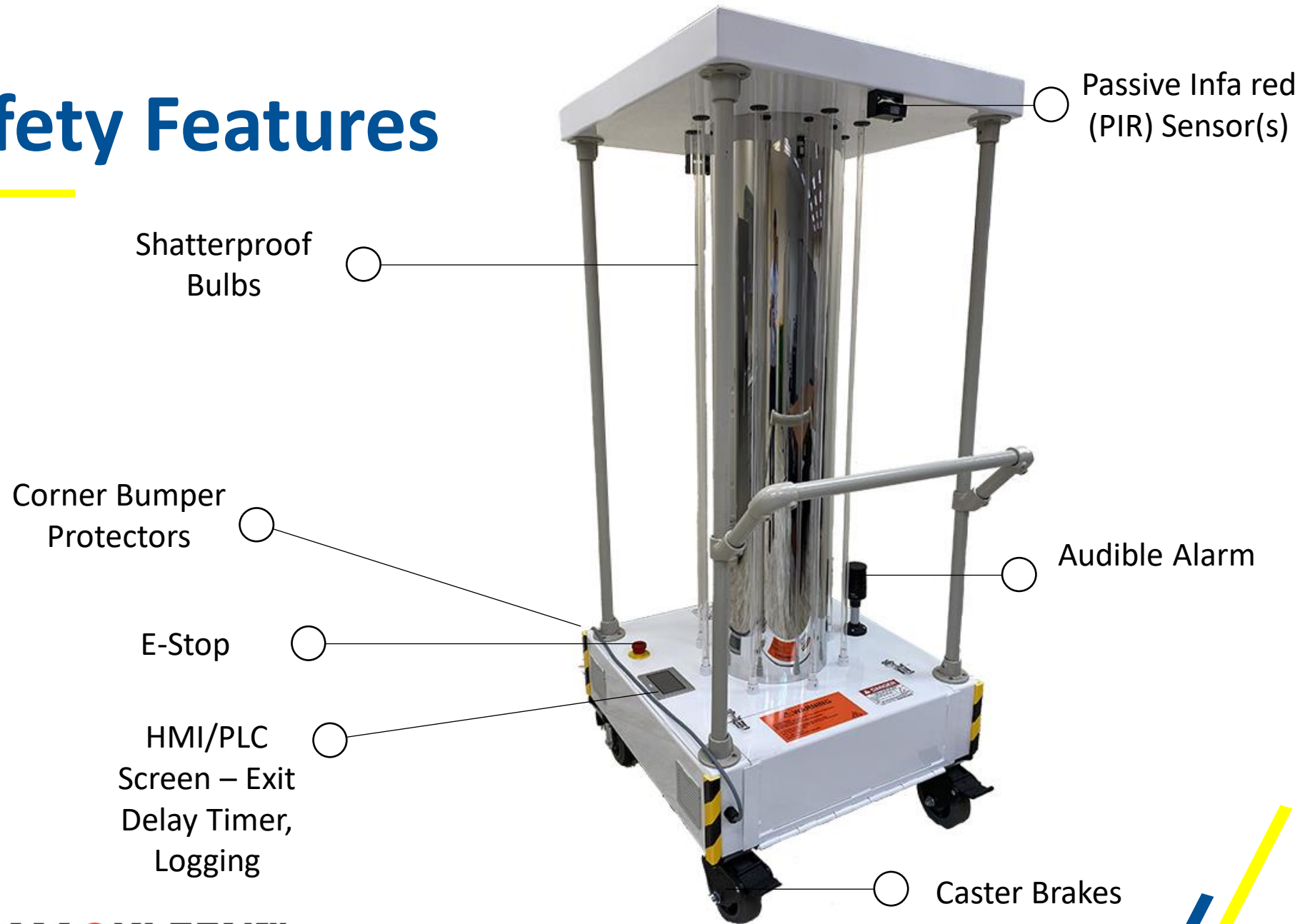


PK-Cart Features

- SAFE use of UV-C lighting to disinfect germs
- Easy to use
- Fast and Efficient
- Reduces Labor
- Chemical Free Technology
- Slip/Fall prevention – “No wet floors”
- “Green” Solution, Reduces use of Harsh Chemicals
- Consistent and repeatable results
 - UV-C light at appropriate dosages can eliminate many types of fungi, molds, bacteria and viruses as well as other dangerous microorganisms



PK-Cart Safety Features



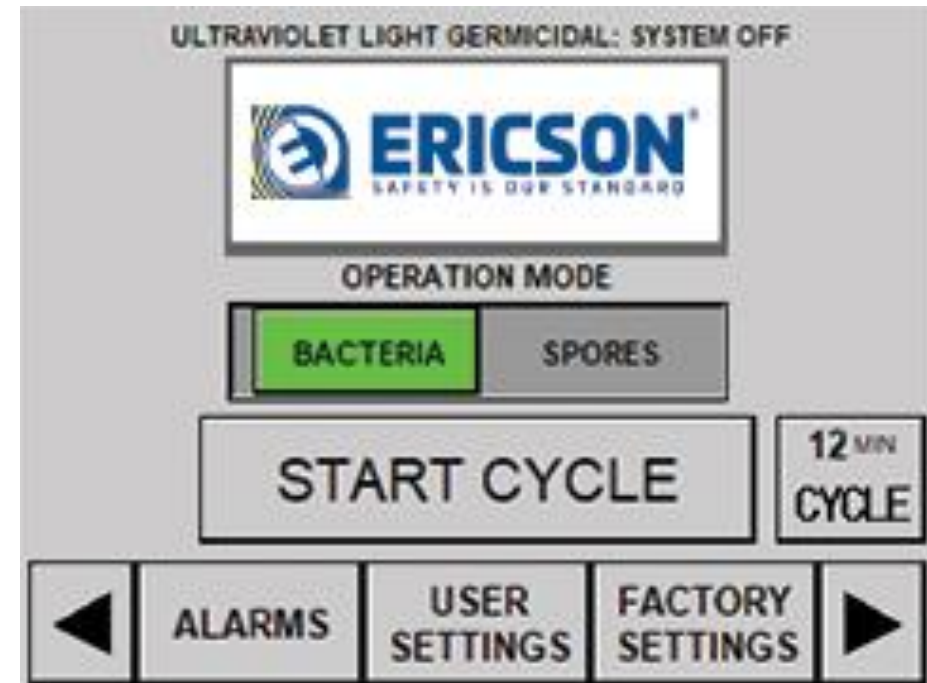
Water & Dust Covers

- Designed to protect carts from water and dust while shipped or in storage.
- Available for both cart sizes



Ease of Setup and Programming

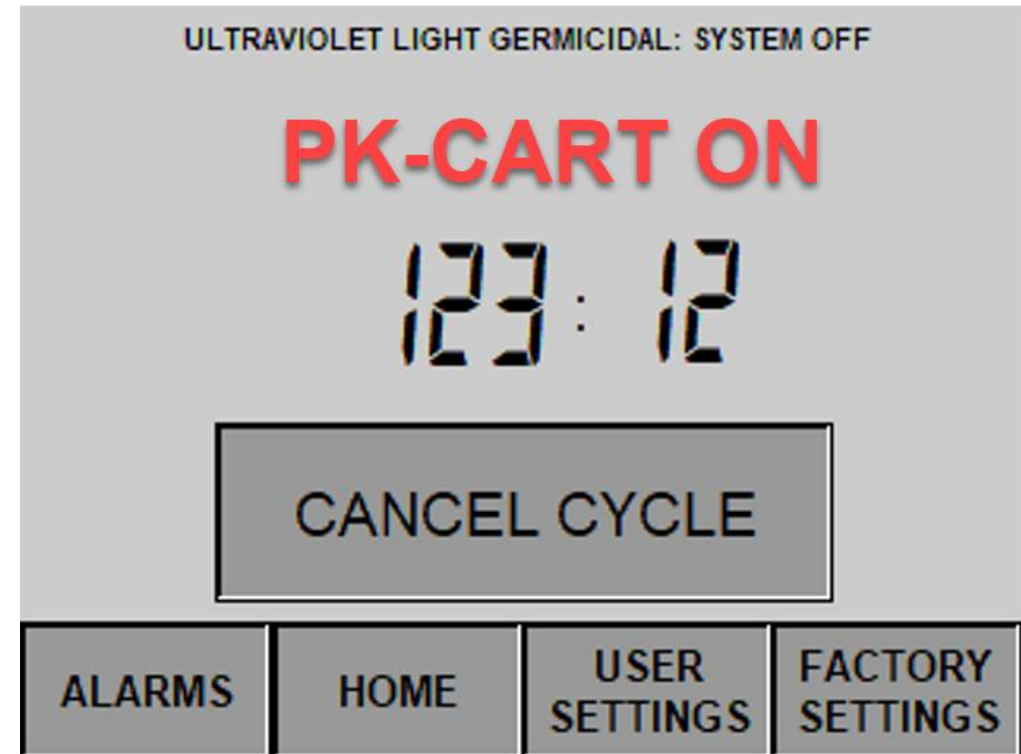
- **Step 1: Position and Plug-In**
 - Inspect PK-CART for damage prior to placement for use.
 - Wear proper PPE when operating PK-CART
 - Place PK-CART in treatment space
 - Position PIR Sensor towards entry point
 - Plug PK-CART into standard 120v NEMA 5-15 or NEMA 5-20 receptacle or connector
- **Step 2: Initiating Treatment Cycle**
 - Press “Perma-Kleen” logo for Home screen
 - Select “Start Cycle” to begin countdown
 - 30 Seconds Exit/Countdown Timer*
 - 10 Minute Treatment Cycle*
 - Optional: For custom programming, select “User Settings”
 - *Times superseded after custom user input



Ease of Setup and Programming

- **Step 3: In Process**
- Treatment cycle "ON" with timer screen
- Cycle will proceed unless Safety PIR Sensor or
- Emergency Shutoff interruption
- Avoid direct exposure to UV light
- Do not look at UV light without approved safety glasses

It's as easy as that!



Markets

- Healthcare
- Senior Living
- Food Processing
- Food Storage and Distribution Facilities
- Prisons/Detention
- Hospitality
- Manufacturing
- Clean Rooms
- Schools / Universities & Dormitories
- Pet Care Facilities
- Fitness Centers



Applications

- Where People Gather and Transition
- Breakrooms, Locker Rooms, Restrooms, Lunchrooms, Cafeterias between shifts or breaktimes.
- Procedure or Production Areas between shifts.
- Commercial Public Spaces after cleaning



MEDICAL /
SURGICAL ROOMS



COMMERCIAL
OFFICE SPACES



RESTROOMS /
LOCKER ROOMS



RESTAURANTS



PRODUCTION /
LOADING AREAS



CAFETERIAS /
BREAKROOMS



SOIL SORTATION
AREAS - LAUNDRY

Pricing

Part	Description	US-List	US-Distributor	Lead-Time	Shipping Dimensions	Shipping Weight	Pallet Qty
UVC-PKCART-ECO	130 Watt - Value Grade	\$39,500.00	\$26,000.00	1 Week	30" L x 30" W x 52" H	400 Lbs	1
UVC-PKCART-MAX	240 Watt - Gold Standard	\$58,500.00	\$38,000.00	1 Week	41" L x 41" W x 86" H	535 Lbs	1
UVC-PKCART-MAX-LP	240 Watt - Gold Standard	\$58,500.00	\$38,000.00	1 Week	41" L x 41" W x 66" H	425 Lbs	1
UVC-PKCART-ULTRA	320 Watt - Platinum Level	\$65,900.00	\$43,000.00	1 Week	41" L x 41" W x 86" H	545 Lbs	1
UVC-PKCART-QL33	REPLACEMENT BULB - ECO AND MAX-LP	\$425.00	\$275.00	1 Week	36" L x 4" W x 4" H	5 Lbs	
UVC-PKCART-QL55	REPLACEMENT BULB - MAX AND ULTRA	\$650.00	\$400.00	1 Week	60" L x 4" W x 4" H	10 Lbs	
UVC-PKCART-WDC1	WATER AND DUST COVER FOR ECO AND MAX-LP	\$795.00	\$525.00	1 Week	30" L x 24" W x 6" H	30 Lbs	
UVC-PKCART-WDC2	WATER AND DUST COVER FOR MAX AND ULTRA	\$1,195.00	\$775.00	1 Week	30" L x 24" W x 6" H	35 Lbs	



Resource Documents – where located?

[Product Information Sheets](#)

[Competitive Comparison and Cross Reference](#)

[Bid Specification Sheets](#)

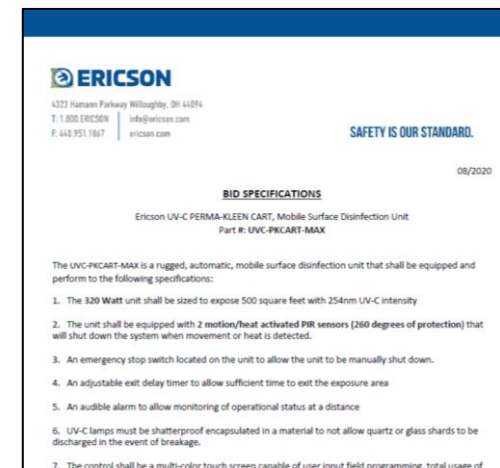
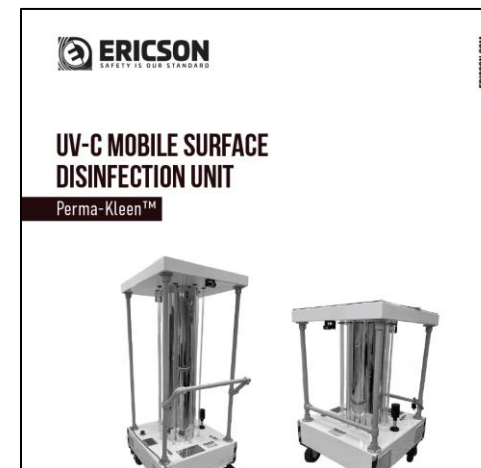
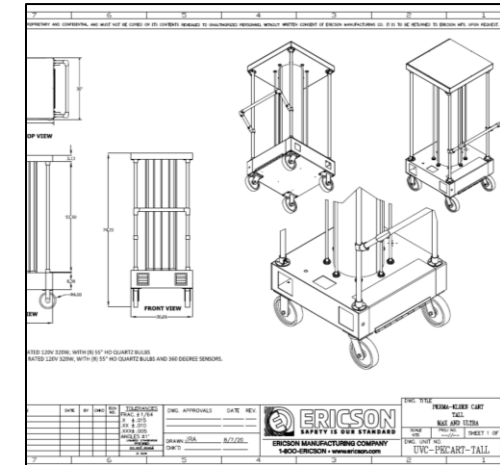
[CAD Sales Drawings](#)

[Quick Start Guide \(4 pages\)](#)

[Installation and Operation Manual \(18 pages\)](#)

[Distributor and End-User Presentations](#)

[Product/Market FAQ](#)



Ericson's Larger Perma-Kleen Strategy

- Each of the target markets for UVC are also target markets for Ericson's Perma-Kleen products.
- Tailor your UVC cart presentation to include the entire Perma-Kleen product line, all dedicated to reducing the spread of bacteria and viruses.
- Our Perma-Kleen anti-microbial wiring devices, cables and cordsets provide control microbial growth by incorporating anti-microbial additives that remain stored in the polymer providing continual, long lasting protection



Additional Perma-Kleen Documents

- [Food & Beverage Solutions Guide](#)
- [Perma-Kleen Whitepaper](#)
- [Case Study – Seafood Manufacturer](#)
- [Perma-Kleen e-specs](#)



Ericson mfg

Additional Information

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PERMAKLEEN™

