

THE FUTURE IS ON<sup>®</sup>

VISCOR | a **LEVITON**  
company

# MSU-DFX

Powerful Continuous Disinfection for Surgical Suites



## Who We Are

We are Certolux®, which means we are certified to perform in the most demanding surgical suites. The technical solutions of Certolux come from a team of engineers and technicians, each with decades of experience in healthcare lighting.

## Why 365nm UVA?

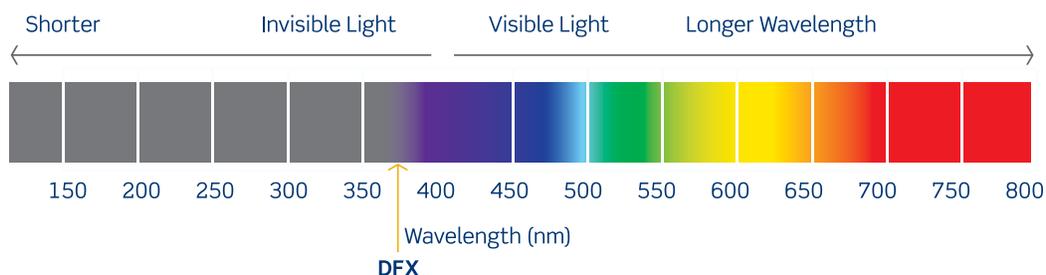
### The Need

Going in for surgery can understandably cause anxiety. In January, the CDC reported that “Surgical site infection (SSI) is the most costly type of hospital acquired infection that cost US hospitals an estimated annual cost of \$3.3 billion, and extends hospital length of stay by 9.7 days, with cost of hospitalization increased by more than \$20,000 per admission”. SSIs remain a substantial cause of morbidity, prolonged hospitalization, and death. It is reported, SSI accounts for 20% of all hospital acquired infections.

Cleaning is episodic in nature. The surfaces of a surgical suite endure heavy use and frequent cleaning. The human element clean, then use, and clean again over and over. Also, with so many surfaces to clean, some get forgotten or overlooked. Even conscientious workers can miss a surface. Wouldn't it be better if a continuous disinfection system was available that did not interfere with work, was always thorough, and never overlooked a spot? However, cleaning is not continuous; clean, then use and clean again, over and over.

### The Solution: MSU-DFX

The introduction of 365nm UVA LEDs allows us to create this special narrow-spectrum light and carefully (and safely) control its output to kill microscopic bacteria. The location of 365nm is near the visible spectrum and allows for cleaner spaces without the level of hazard found at shorter wavelengths. This remarkable technology is brought to you by Leviton, the people who have powered lighting for the past 116 years.



Certolux, a brand of Leviton, offers the MSU-DFX series. These new surgical luminaires with DFX technology have the added benefit of 365nm UVA light. This technology provides a controlled amount of UVA light to reduce the bacteria on surfaces within surgical suites. The use of this low-energy invisible light near the visible spectrum is suitable for 24-hour human exposure yet dramatically reduces bacteria.

This light can continuously treat surfaces without interfering with room use. There is no need to stop procedures or leave the room. Since the light is invisible, it does not affect the visible light. You get the same high-quality light, with or without the DFX disinfection illumination. MSU-DFX is unlike visible light disinfection technologies that often shift the white light into clinically unfamiliar and uncomfortable color temperatures (CCT).

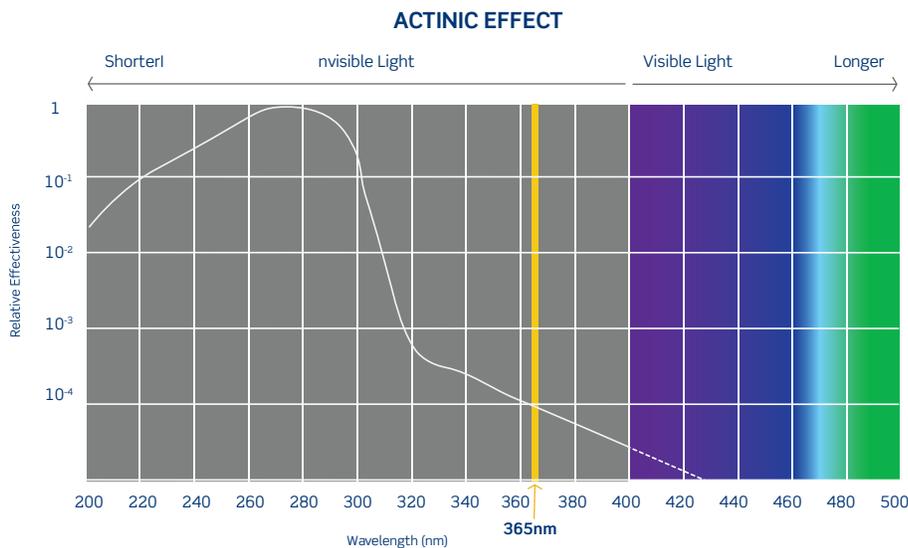
The MSU-DFX with UVA technology does not replace ordinary cleaning. When used in conjunction with traditional cleaning methods, it provides additional bacteria killing power to help disinfect surfaces even between cleanings.

## How does MSU-DFX work?

### Light Changes Things

Light influences chemical changes based on its wavelength. As light wavelengths get shorter, the light becomes more photochemically reactive. This reaction is called Actinic and starts at visible blue light. These effects increase through the visible spectrum and into the invisible spectrum called Ultra-violet, where the effect peaks near 265nm.

Biological changes happen with small things first because they happen at the cellular level. The smaller the thing, the greater the effect. Biological science and testing confirm that bacteria and fungi are greatly affected.



## How does it work?

The simple answer is that the UVA light strikes the bacteria on the room surfaces and penetrates the cell's outer wall. The light changes the chemistry within the cell in a way that interferes with respiration and inactivates the cell, preventing it from replicating and killing the bacteria. This technology works on hard and soft surfaces that directly view the fixture.



### Surface Bacteria and Fungi and % Expected\* Reduction After 24 hr. Exposure @ 365nm

MRSA Staphylococcus Aureus	<b>99%</b>
Enterococcus Faecalis	<b>89%</b>
Escherichia Coli (E-Coli)	<b>72%</b>
Acinetobacter Baumannii	<b>85%</b>
Pseudomonas Aeruginosa	<b>72%</b>
Candida Auris	<b>55%</b>
Salmonella Enterica	<b>95%</b>

*UVA provides expected\* reduction of a range of common bacteria that cover many applications.*

- *Based on photobiological science and mathematical modeling*
- *as described in Livingston, Kvam<sup>1,2</sup>*

## Is It Safe?

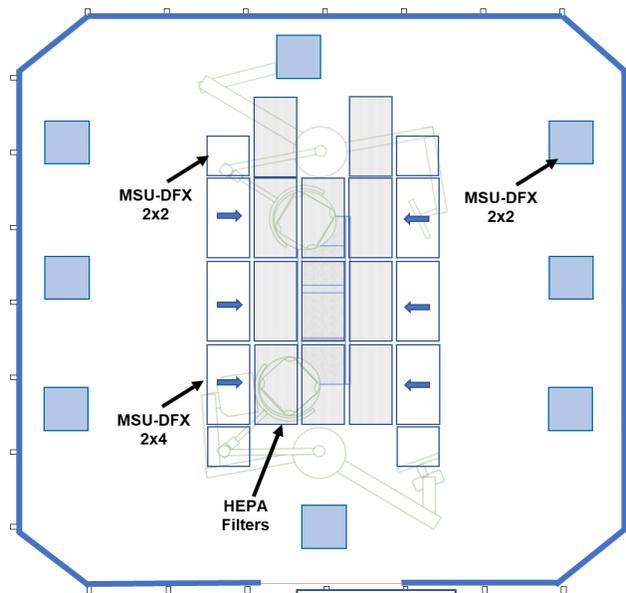
The MSU-DFX series is designed for continuous, 24-hour operation below human health exposure limits per Underwriters Laboratories UL 8802 Outline of investigation for UV Germicidal Equipment and Systems and IEC 62471 Photobiological Safety for Lamps and Lamp Systems standard and the American Conference of Governmental Industrial Hygienists (ACGIH®) TUV guidelines.



## How do I use MSU-DFX?

### **The Arrangement is Simple.**

Replace ordinary surgical recessed luminaires with MSU-DFX. Then, supply the new fixtures with an additional continuous, low-wattage circuit for the disinfection source. No controls or dimming are needed. The fixture provides the correct amount of UVA light in a wide range of surgical suites. To verify a successful arrangement, use the application guide and the supplied IES files within your Illuminance calculation software such as Agi32® (AGI32 is a registered trade mark of the Lighting Analysts, Inc.) or similar.



# MSU-DFX LED

with **365DisInFx™**  
UVA technology

Certolux's MSU-DFX is a LED recessed surgical luminaire with 365DisInFx™ UVA technology to help in the inactivation of surface bacteria even when people are present. It also has advanced cleanroom features for supplemental lighting of the surgical / operating room. It is certified dust-tight and water resistant to IP65 for frequent rigorous cleaning practices. MSU is Mil-Std-461G certified and designed for recessed mounting in surgical ceiling systems and grid and flanged installations.



## Technical Summary:

**Safety:** 24-hour dosage is designed to operate below human health exposure limits per IEC 62471 Photobiological Safety for Lamps and Lamp Systems standard and American Conference of American Hygienists (ACGIH®) TLVs® guidelines. It is listed to UL 8802 Germicidal Systems and is IEC 62471 rated Risk Group Zero, requiring no special warnings or marking.

**Disinfection Light Source:** 365nm UVA light emitted is invisible to the human eye and does not impact CCT or CRI.

**Light Control:** The white LED light may be controlled by wired or wireless controls and is dimmable to 1%. The UVA disinfection lightsource has a fixed output and operates continuously on a separate circuit without the need for controls.



## Cost issues

### Lower Installed Cost

- No complicated and costly control systems
- Simple switching, No dimming required.

### Lower Energy Cost

- Uses up to 90% less energy than many other disinfection solutions.

## Real Time Continuous Disinfection for Occupied High Traffic Spaces



Hospital - Emergency Dept.



Therapy



Patient Rooms



Waiting Room



Meeting Room



Nurse Stations

What do hospitals, patient rooms, therapy centers and nurse stations all have in common? They are all high traffic spaces where potential exposure to bacteria is heightened, requiring frequent cleaning and disinfection. In combination with commonplace cleaning methods, Viscor's luminaires integrated with 365DisInFx™ UVA Technology add a layer of protection for occupants. Our lighting solutions work 24/7 to disinfect spaces without the need for additional operational personnel or complicated control systems.

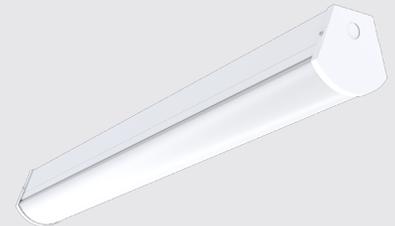
## Our other DFX luminaire suited for High Traffic Medical Spaces



LRTH-DFX  
2x2



LRTH-DFX  
2x4



LCOM-DFX



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**Visit our website at: [www.viscor.com](http://www.viscor.com)**

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