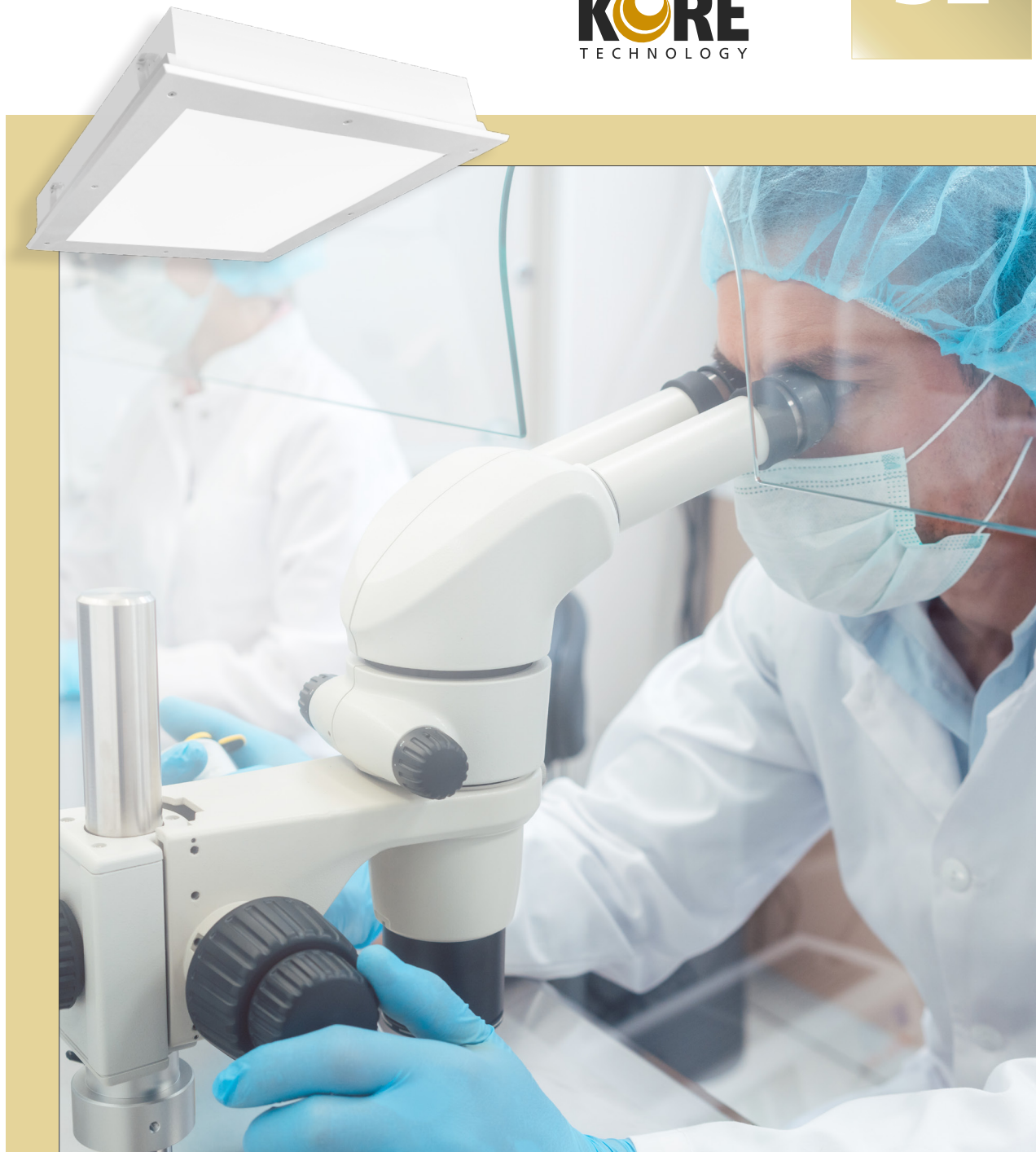


**SimpleSeal™ CSERO/CSERI Luminaires**  
*A NEW LEVEL of Performance for Cleanroom Lighting*

**KORE™**  
TECHNOLOGY

SE



A brand of  **legrand**

**KEVALL®**

# Kenall Delivers a New Level of Performance in Cleanroom Lighting:



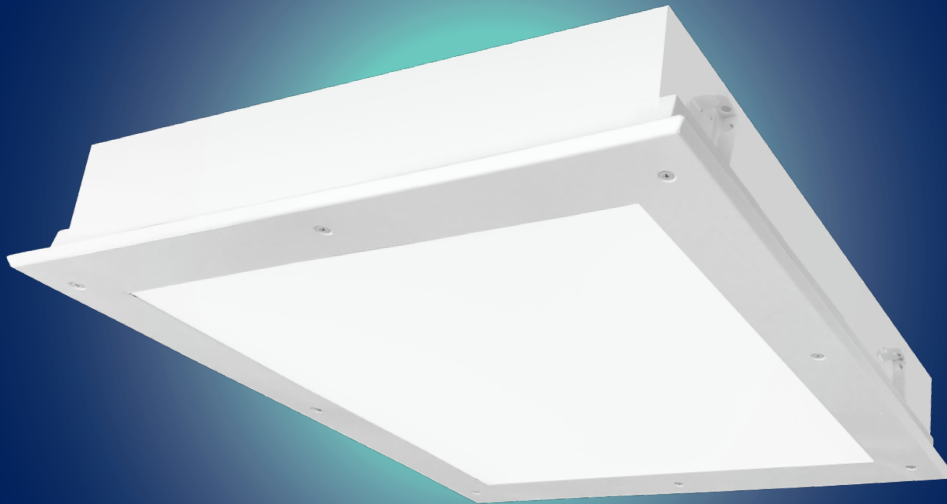
## **KORE Technology Provides the Ultimate Glare & Contrast Control**

- Elimination of debilitating glare on glossy surfaces
- Low total cost of ownership
- Unmatched efficacy: 175 lm/W
- Even uniformity across the lens
- Less penetrations into highly valued ceiling space
- Serviceability without breaching the cleanroom seal

## Kenall...Leading the Way in Cleanroom Lighting

- Continuing & significant investment in R&D spurs lighting innovation in cleanrooms
- Understanding the highly specialized demands of a wide variety of cleanrooms
- Molding the future by using our expertise to help create industry standards and protocols
- Offering unparalleled expertise in the design and manufacture of sealed, certified LED luminaires
- Designing fully optimized LED technology to benefit and improve your applications

IP66



Kenall's **NEW** CSERO/CSERI provides superb visibility & industry leading efficacy, as high as 175 lm/W, using proprietary KORE Technology ...all at a lower total cost of ownership.

**KORE**<sup>™</sup>  
TECHNOLOGY

# Tackling Cleanroom Lighting's Biggest Challenges

## Completely Eliminate Debilitating Glare

Science and industry's most visually challenging tasks take place in the cleanroom — but the debilitating glare of a poorly diffused fixture can cause workers to suffer eyestrain, even migraine headaches — leading to lower productivity and reduced quality and accuracy of work. Eliminate glare and optimize research results in your cleanroom using KORE Technology's patented optical design.

## Preserve Highly Valued Ceiling Space

Complicating matters, cleanroom ceiling space is highly valuable: filters and mechanical elements take precedence over luminaires. Lighting designs with fewer fixtures provide more room for equipment placement, reduce the need for ceiling penetrations and improve air filtration; creating a superior cleanroom.



# End Uneven Lighting, Usher in Energy Efficiency, Reduce Cost

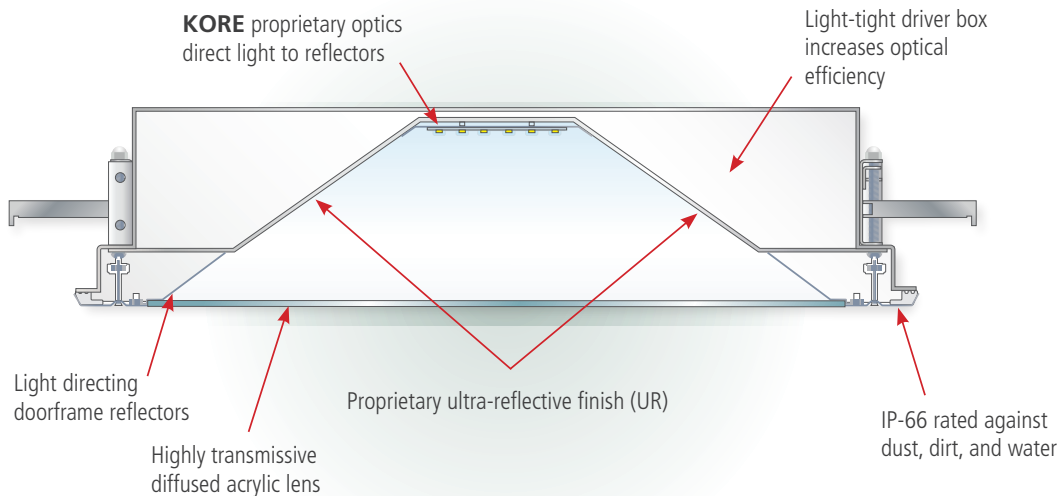
Lowest Total Cost of Ownership... by Far

The NEW SimpleSeal CSERO luminaire with patent-pending **KORE Technology™** creates bright, diffused light evenly across the lens with an unparalleled level of energy efficiency.

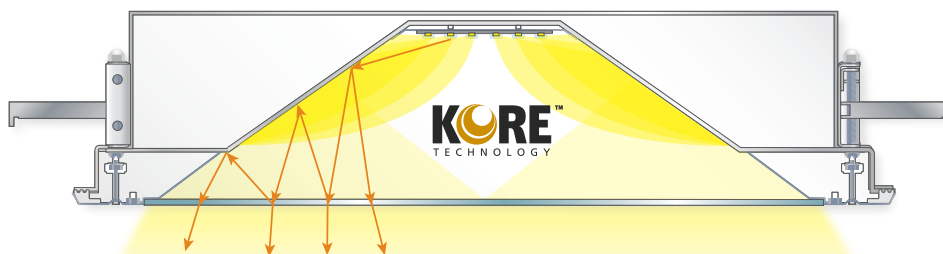
KORE Technology's advanced diffusion utilizes proprietary optics and reflectors to produce light that fills the space with optimal efficiency.

The result? *Less fixtures, less energy, less cost.*

## Patent-Pending Design



## KORE Technology How It Works

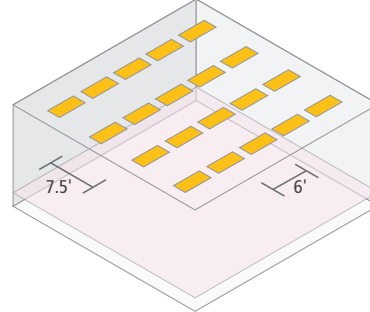
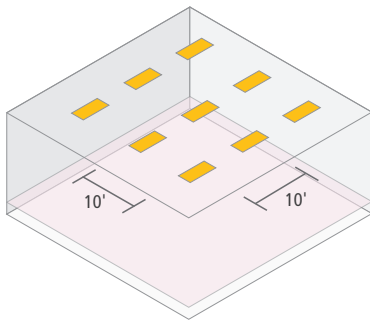


The trapezoidal reflector and optics work together to evenly distribute radiant flux across the lens, creating a **1.5:1 lens uniformity**

# New Build? Save Money Now & in the Future While Enhancing Lighting Performance

Kenall CSERO/CSERI using KORE Technology

Competitive brand name fixture without KORE Technology



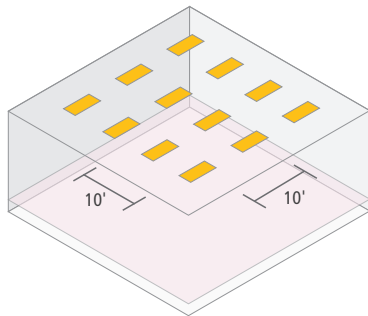
Area = 900.00 Sq.ft (30' x 30' x 10'h)  
 Design Illuminance: 100 fc avg.  
 Light Loss Factor: 0.85  
 Reflectance: 80,50,20  
 Fixture Size: 2' x 4'

Cost Comparison		
Fixture	CSERO/CSERI with KORE Technology	Brand Name Competitor @ Max. Output
Fixture Count	9	20
Circuits	1	2
Power	837	1498
Labor	55% less	100%

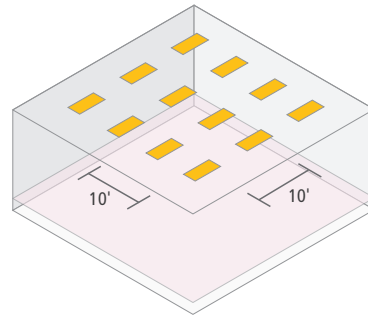
**55% Installed Cost Savings**

# Relighting Existing Space? Cut Your Energy Bill Dramatically While Optimizing Performance

Relight of existing space using CSERO/CSERI with KORE Technology



Competitive brand name fixture without KORE Technology



Area = 900.00 Sq.ft (30' x 30' x 10'h)  
 Design Illuminance: 100 fc avg.  
 Light Loss Factor: 0.85  
 Reflectance: 80,50,20  
 Fixture Size: 2' x 4'

Energy Use Comparison 30' x 30' Space		
Fixture	Fixture Count	Watts
Kenall	12	624
Competitor	12	1086

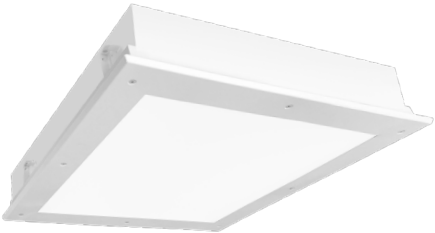

**42% Energy Reduction**





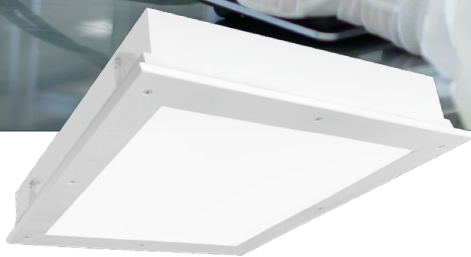
# Why is KORE Technology Unique?

The difference between the lowest and highest points of light is called contrast ratio. For KORE Technology, this is imperceptible, meaning at just 1.5:1. The effect is that glare is eliminated; having been reduced to its lowest point for any given wattage, while still providing remarkable efficacy.

CSERO/CSERI <b>KORE</b> TECHNOLOGY	VS Typical P12 LED
 <ul style="list-style-type: none"> <li>• Provides greatest amount of surface area illumination at 100%</li> <li>• No hot spots or striping</li> <li>• Eliminates veiling reflections and debilitating glare</li> </ul> <div data-bbox="269 1297 682 1507"> <p><b>1.5:1</b> Contrast Ratio</p> </div> <p><b>KORE Technology</b> removes hot spots to greatly enhance visual comfort.</p>	 <ul style="list-style-type: none"> <li>• Poor-performing luminous contrast</li> <li>• Combines poor diffusion of light with a patterned lens</li> <li>• Hotspots, or striping, are 5 times higher than KORE Technology luminance</li> </ul> <div data-bbox="915 1297 1328 1507"> <p><b>18:1</b> Contrast Ratio</p> </div> <p>P12 lenses cause concentrated areas of brightness up to 18 times higher than the darkest area</p>
<p><b>The Bottom Line?</b> <i>Low contrast &amp; high efficacy have been unavailable together from any other technology, including edge-lit panels...UNTIL NOW!</i></p>	

**CSERO Overlapping Door Series**

Select overlapping door luminaires for the most stringent cleanliness standards and protocols, including those that involve caustic chemicals and extreme abrasion. Fixtures of this kind feature a one-piece, seam-welded housing that is sealed behind a one-piece doorframe with a doorframe gasket.



2' x 2'



1' x 4'

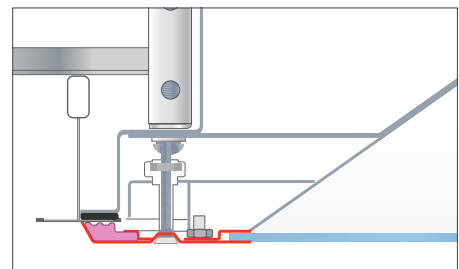
**SimpleSeal™ CSERO Series**

- Input watts: 18 – 136W
- Lumen range: 2,109 – 21,637 lm
- Lumens per watt: up to 175 lm/W
- CCT: 3000K, 3500K, 4000K, 5000K; 82 or 90 CRI



Nominal sizes: 1' x 4', 2' x 2', 2' x 4'  
 Installation Type: Universal installation into 1.0" and 1.5" grid or flange (drywall) ceilings  
 Lamp Type: LED

**Overlapping Door**



### CSERI Inset Door Series

Compatible with both drywall and grid ceilings, the Inset Door series is comprised of a one-piece, seam welded, hole-free housing, a doorframe in either aluminum, cold-rolled or stainless steel, and a housing-to-doorframe gasket.

This clean design provides excellent performance that is defined and measured to the highest available standards, and certified an independent testing laboratory.



2' x 2'



1' x 4'

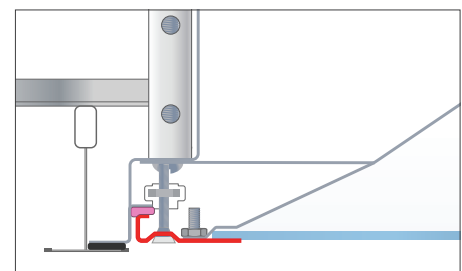
### SimpleSeal™ CSERI Series

- Input watts: 18 – 136W
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- CCT: 3000K, 3500K, 4000K, 5000K; 82 or 90 CRI



Nominal sizes: 1' x 4', 2' x 2', 2' x 4'  
 Installation Type: Universal installation into 1.0" and 1.5" grid or flange (drywall) ceilings  
 Lamp Type: LED

### Inset Door



www.kenall.com | P: 800-4-Kenall | F: 262-891-9701 | 10200 55th Street Kenosha, Wisconsin 53144

A brand of **legrand**

This product complies with the Buy American Act: manufactured in the United States with more than 50% of the component cost of US origin. It may be covered by patents found at [www.kenall.com/patents](http://www.kenall.com/patents). Content of specification sheets is subject to change; please consult [www.kenall.com](http://www.kenall.com) for current product details.

# Lighting Controls Compatibility... the Choice is Yours

The advent of LEDs introduced technology-based lighting; ideal for pairing with smart, connected control systems. These systems gather intelligence via sensors to detect and respond to occupancy, execute lighting schedules, and/or integrate into robust building control systems.

Kenall's LED solutions are designed for seamless integration into a variety of wired or wireless systems, enabling them to be fully optimized for comfort and energy efficiency. As energy codes become more stringent and requirements for high performance buildings more robust, connected lighting controls are key to reducing energy costs and enhancing health and wellness now...and into the future.

It's great to have choices, and the choice is all yours. Kenall's New SimpleSeal series is compatible with the following lighting controls solutions:



# Expanding the SimpleSeal Series

As leaders in cleanroom lighting, Kenall is proud to offer a full complement of sealed luminaires, certified to perform. Below is a selection of fixtures from our extensive cleanroom lighting portfolio. For additional information, visit us online at [kenall.com](http://kenall.com).



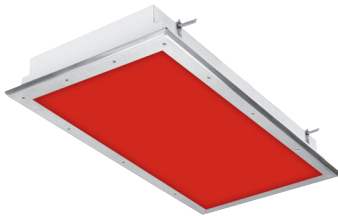
CSEDO Overlapping Series



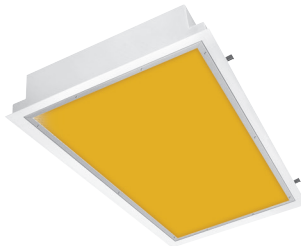
CSEDI Inset Door Series



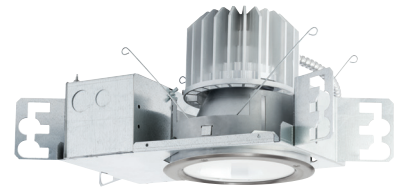
CSEPO Plenum Access Series



CSEDO/CSEDI Series  
Narrow Spectrum Red LED



CSEDO/CSEDI Series  
Narrow Spectrum Amber LED



CDL Downlight Series



CSETO Series  
Top Access



CSESTD Teardrop Linear Series



Surface and Recessed Series  
for Hazardous Applications

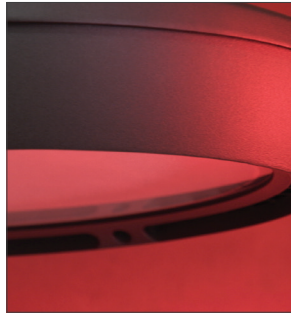
## State-of-the-art, certified testing facility

Kenall is equipped with a state-of-the-art certified safety laboratory, providing comprehensive in-house testing capabilities:

### Thermal Testing



Cold Weather Testing

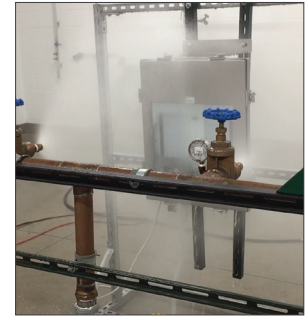


High Temperature Testing

### Ingress Testing

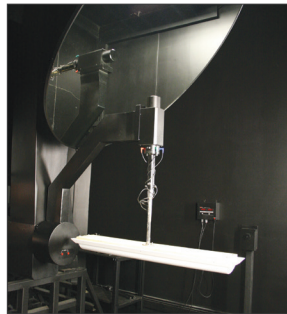


Solids and Particulates Testing



Water Ingress Testing

### Photometrics Testing



Luminous Intensity Distribution Testing

## Listings, Certifications, Warranties

Fixtures designed for use in cleanroom settings must satisfy a large number of demanding lighting and environmental requirements. Listings applicable to these requirements are shown below. Please refer to the [www.kenall.com](http://www.kenall.com) to determine product specific listings.



**BSL BioSafety Level (BSL-x)** classifies the relative danger from biohazardous material to the surrounding people and environment. There are four biosafety levels (BSL1 – BSL4), with the highest number representing the greatest risk. Luminaires in each class are designed to provide the protections necessary for containing the risks associated with that level.



**CCEA Approved**—The City of Chicago Environmental Air (CCEA) rating ensures that the luminaire is inherently airtight. Wiring and/or branch circuit terminations are sealed off and gasketed from the plenum air space. This listing ensures that the luminaire is sealed to limit air flow from the room side to the plenum.



**ETL**—A product bearing the ETL Listed mark is determined to have met the minimum requirements of prescribed product safety standards as certified by a Nationally Recognized Testing Laboratory (NRTL). The mark also indicates that the manufacturer's production site conforms to a range of compliance measures and is subject to periodic follow-up inspections to verify continued conformance.



**FN Option** — FN refers to Food Zone/Non-Food Contact. Fixtures are located in food preparation and handling areas but do not come in contact with food under normal conditions. All fixtures in this category have a higher level of construction: housing painted with paint that meets U.S. Code of Federal Regulations; fasteners constructed with stainless-steel and removable without tools; and FDA approved Food Grade polycarbonate material outer exposed lensing.



**IP66** —UL Certified IP66 per IEC 60598 ensures that the enclosure is dust tight and protected against water projected in powerful jets without any harmful effects.



**ISO 3** — Suitable for ISO 3, Class 1 Rated Rooms (FED-STD209E). Measures the number of particles equal to or greater than 0.5 mm in one cubic foot of air. The measurement must not exceed specified particle limits in order for the space to be considered a controlled 'clean room' environment.



**NSF2**— An NSF2 Listing denotes that the luminaire has been evaluated for corrosion resistance, cleanliness and the ability of exposed material to withstand normal wear. This supports the infection control standards established by healthcare facilities as it indicates that the luminaire is easy to sanitize.

## Kenall Market Segments

Kenall offers luminaires designed according to industry best practices and certified performance standards in each market segment we serve. From high abuse fixtures with an exclusive 'Peace of Mind' Guarantee® against breakage and health-care fixtures sealed for infection control, to sealed enclosure fixtures that comply with stringent military standards for RFI/EMI and food processing fixtures that carry mission critical NSF, NEMA and IP ratings, our fixtures are designed with your specific needs in mind.

High Abuse  
**HA**

Guaranteed against breakage for the life of the installation.

Main Applications

- Schools & Universities
- Public environments
- Military
- Restrooms & Stairwells



Correctional  
**COR**

Leader in heavy gauge, welded enclosures to deter even the most determined attempts to destroy, enter or vandalize.

Main Applications

- Cells
- Common areas
- Behavioral health
- Dayrooms



Healthcare  
**HC**

Engineered to the specialized demands of healthcare environments with an attention to cleanability and infection control.

Main Applications

- Patient rooms
- Surgical suites
- MRI
- Labs

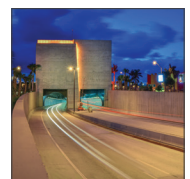


Transportation  
**TR**

Meeting the specialized demands of transportation related structures for high performance, corrosion resistance and serviceability.

Main Applications

- Tunnel & Underpass
- Platform & Depot
- Parking decks & Surface lots
- Bridges



Sealed Enclosure  
**SE**

One piece, seam welded enclosures for containment, controlled and sealed spaces.

Main Applications

- Pharmaceutical & Research labs
- Cleanrooms
- Corrosive environments
- Hazardous locations

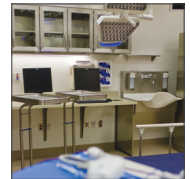


Task Lighting  
**TL**

High-efficiency LED, modular undercabinet lighting for professional spaces.

Main Applications

- Nurses stations
- Labs/MRI suites
- Military/Government
- University dorms & Administration areas



Food Processing  
**FP**

Sealed, NSF listed, high-efficiency lighting for food processing and preparation.

Main Applications

- Food processing & preparation
- Freezers
- Hosedown environments
- Hazardous locations



Emergency  
**EE**

High abuse, extreme environment LED exit and emergency egress lighting.

Main Applications

- Schools & Universities
- Recreational
- Sealed & Correctional environments
- Outdoor/cold weather/extreme conditions





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[www.kenall.com](http://www.kenall.com)

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