



# Tunable White Lighting™

Healthcare, Correctional, Cleanroom/Containment and High Abuse Applications

Tunable  
LED Lighting

TW

**FOCUSED**  
TUNED TO 5000K

**ALERT**  
TUNED TO 4000K

**COMFORTABLE**  
TUNED TO 3500K

**RELAXED**  
TUNED TO 2700K



## Proven, Reliable Lighting Solutions, Now with Tunable White Technology

As lighting technology thoughtfully advances, so does Kenall's extensive portfolio. Where once, ambient lighting merely illuminated a room, scientists have discovered that specific wavelengths and intensities of light can alter biological processes and encourage physiological effects, including sleep and stimulation.

Kenall takes functional light a step further with the addition of tunable white technology into more than 30 luminaires; enabling the adjustment of color temperature and intensity of white light. Now you can simply and affordably add tunability without requiring more power, or sacrificing function.

And, as always, these luminaires meet or exceed the rigorous requirements of hospitals, behavioral health facilities, detention centers, classrooms, cleanrooms, food and pharmaceutical manufacturing plants and vivariums.

For detailed specifications and an up-to-date list of luminaires with tunable white technology, visit [kenall.com](http://kenall.com).

## Table of Contents

What is Tunable White Technology?	3
Color Tuning Technology in Application	4
Healthcare	6
Correctional	8
Cleanroom/Containment, Vivarium	10
High Abuse: Education, Fitness and More	12
Narrow Spectrum Lighting	14
Testing, Listings, Certifications, Warranties	15



# Tune Your Lighting to Your Needs



## What Is Tunable White Technology?

Tunable white technology enables the user to independently control both color temperature and intensity of light within a given application. This provides the ability to change the color of light from warm to neutral to cool in appearance, over time, based on the needs of the occupant or the space.

Recent studies on health, productivity and comfort suggest that the ability to tune the color temperature of light based on application, event need, or occupant preference yields significant benefits.

Kenall combines our white color tuning with dimming to provide even greater flexibility in adjusting the ambience of these spaces:

- Healthcare
- Education
- Cleanroom & Containment
- Correctional
- High Abuse
- Behavioral Health

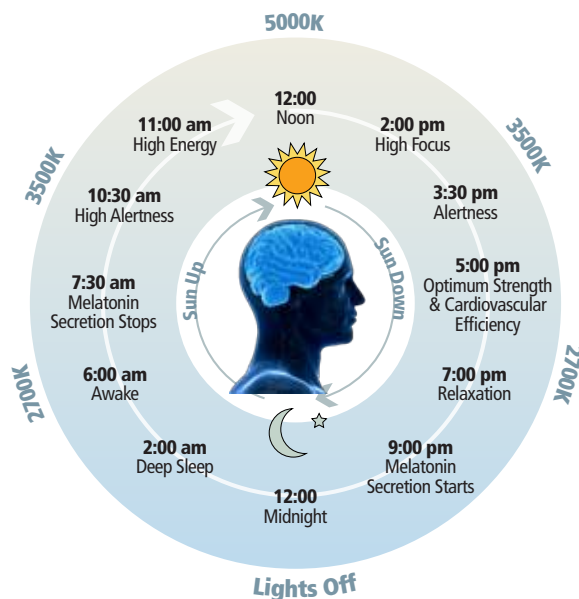
## Controls

The key to achieving the perfect balance of color and intensity is the use of appropriate controls. Kenall offers a choice of 0-10V Dimming or Digital Addressable Lighting Interface (DALI), for more sophisticated capabilities. Both options provide the ability to interface with your choice of building automation systems. For your convenience, Kenall's tunable white products are compatible with a wide range of controls; from the simpler Pico and EcoSystems® to the more sophisticated Fresco™ system. Consult factory regarding specific controls compatibility.

## The Primary Benefit of Tunable Lighting: Circadian Entrainment

Scientific studies have shown that when indoor light mimics the warm-to-cool cycle of natural daylight, people receive a number of benefits, including a more restful night's sleep and greater alertness during the day. This circadian entrainment is especially beneficial for those who do not have access to natural daylight, such as shift workers, office workers, hospital and nursing home patients, and correctional inmates.

## Natural Light Simulation



# Tunable White Technology: Benefits Beyond Basic Illumination



## Healthcare

- Improved patient rest and recovery<sup>1</sup>
- Assists shift workers with staying alert while on duty
- Integrates simply with existing controls



## Behavioral Health

- Reduces sleep disturbance
- Helps prepare residents for sleep<sup>2</sup> (circadian entrainment)
- Reduces depression<sup>3</sup>



## Senior Care

- Reduces yelling, agitation<sup>4</sup>
- Improves sleep quality
- Reduces reliance on certain medications<sup>5</sup>



## Education

- Promotes a higher level of student alertness
- Promotes higher cognitive performance<sup>6</sup> in the classroom
- Improves testing and focus



## Correctional

- Keeps staff mentally alert during overnight shifts
- Helps inmates maintain daily circadian rhythms<sup>7</sup>
- Reduces agitation and irritability



## Cleanroom/Vivarium

- Office workers with lighting that mimics natural patterns experience better sleep and less depression<sup>8</sup>
- Helps entrain laboratory animals, ensuring more accurate research outcomes

<sup>1</sup><https://www.hfmmagazine.com/articles/2244-lighting-it-up-with-tunable-white-light>

<sup>2</sup> [http://www.therepublic.com/2017/04/30/new\\_hospital\\_rewrites\\_rules\\_of\\_psychiatric\\_care/](http://www.therepublic.com/2017/04/30/new_hospital_rewrites_rules_of_psychiatric_care/)

<sup>3</sup> <sup>4</sup> <https://www.slideshare.net/LEducationNYC/lighting-for-behavioral-health-by-lauren-roberts-and-brienne-willcock>

<sup>5</sup> [https://energy.gov/sites/prod/files/09/f33/2016\\_gateway-acc.pdf](https://energy.gov/sites/prod/files/09/f33/2016_gateway-acc.pdf)

<sup>6</sup> <https://www.slideshare.net/LEducationNYC/evidence-based-lighting-review-of-classroom-case-studies-by-natalia-lesniak>

<sup>7</sup> <https://www1.nyc.gov/assets/ddc/downloads/Sustainable/quality-energy-efficient-lighting.pdf>

<sup>8</sup> [http://www.sleephealthjournal.org/article/S2352-7218\(17\)30041-4/pdf](http://www.sleephealthjournal.org/article/S2352-7218(17)30041-4/pdf)



## WELL Building Certification

The International WELL Building Institute promotes health and wellness in buildings, interior spaces and communities: several features of WELL certification can be addressed with color-tunable LED lighting<sup>9</sup>.

- Circadian Lighting Design
- Color Quality
- Emulate daylight conditions, promoting circadian entrainment

For more information about the WELL Building Standard, visit [www.wellcertified.com](http://www.wellcertified.com).

<sup>9</sup> <https://www.wellcertified.com/en/articles/manufacturers-guide-well>



# Tunable Healthcare Luminaires

## Impacting Physiological Processes



# Tune In to Health & Wellness

From waiting rooms to emergency departments, healthcare spaces are flexible by nature. Patient rooms are also multi-functional spaces that include exam, visiting, sleeping and task areas. Tunable lighting can be adjusted based on the highly specialized needs of each of these functional areas, making it particularly ideal for healthcare settings.



## The MedMaster™ TW Series Patient Room Luminaires



**MPCADE**  
(2'×4')

Multi-functional: provides direct exam, ambient and optional reading lighting with ingress barrier.



**MPCAIE**  
(2'×4')

Multi-functional: provides indirect exam and ambient with optional reading lighting from a single compartment with ingress barrier.



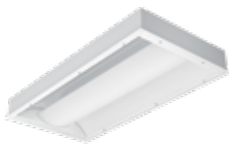
**MPCNGX**  
(2'×2' and 2'×4')

Sealed, multifunctional luminaire with up to three compartments providing ambient, exam and optional reading light.



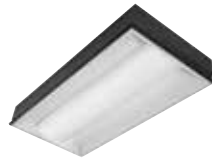
**MAEC**  
(8"×48")

Sealed, indirect ambient and direct asymmetric exam luminaire with ingress barrier.



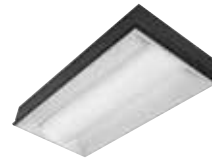
**MAC**  
(1'×4', 2'×2' and 2'×4')

Sealed, single-function, center diffuser direct ambient luminaire with ingress barrier.



**ME**  
(1'×4', 2'×2' and 2'×4')

Sealed, single-function, ambient center diffuser luminaire without the need for a secondary ingress barrier.



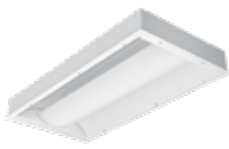
**MEP**  
(2'×4')

Sealed, bi-level compartment, ambient and exam luminaire without the need for a secondary ingress barrier.



**AMB**  
(2'×2' and 2'×4')

Single-function, single compartment ambient luminaire without an ingress barrier.



**MMAC**  
(1'×4', 2'×2' and 2'×4')

Sealed, single-function ambient luminaire with heavy-gauge door and tamper-resistant hardware for behavioral health applications.



**MPWUD**  
(24", 36" & 48" lengths)

Multi-function headwall luminaire with ambient and reading illumination.



**MDL Downlight**  
(4" and 6" aperture)

Specification-grade, sealed downlight with easy-to-clean surfaces.



The luminaires pictured on this page may bear the above certifications. See individual product spec sheets for current listings.  
Note: All individual functions may not have tunable capability. Consult spec sheets for details.



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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.

# Tunable Correctional Luminaires

## Calming Inmates, Protecting Staff



# Tune In to Safety & Security

From the residential feel of common areas in minimum security facilities to the necessity for acute focus in processing areas, MightyMac tunable white fixtures are designed to support the varied needs of correctional facilities. Together with the signature features of Kenall's correctional lighting—including irretrievable blade traps, anti-ligature fasteners and clamshell housings—we're confident you'll find our MightyMac Tunable White series second to none in the industry.



## The MightyMac™ TW Series



**SSA**  
(1' × 4')

Slope-sided, clamshell-style ceiling-mount luminaire.



**SDSA**  
(1' × 4')

Slope-sided surface/ceiling-mount luminaire with heavy-gauge, hinged door.



**CC**  
(9" × 48")

Corner-mount clamshell luminaire with concealed internal piano hinge.



**CD**  
(8" × 48")

Corner-mount luminaire with heavy-gauge, hinged door.



**RMCD**  
(2' × 2', 2' × 4')

Recessed convertible ceiling luminaire with concealed internal piano hinge and heavy-gauge door.



The luminaires pictured on this page may bear the above certifications. See individual product spec sheets for current listings.

# Tunable Cleanroom & Containment Luminaires

Supporting the Quality and Integrity of Research



## Tune In to Research & Results

The highly specialized nature of cleanroom and containment applications requires lighting that supports critical research, staff comfort and accurate results. Studies have shown that using color temperature and intensity to mimic dawn to dusk—the circadian cycle—is preferable for staff and for researchers interested in the changes in animal behavior when animals are primarily active during twilight. Combined with stringent ingress protection (IP), and NSF standards for cleanability, Kenall's SimpleSeal series is ideal for specialized cleanroom and containment applications.



### The SimpleSeal™ TW Series



**CSEDO**  
(1'×4', 2'×2', 2'×4')

Recessed, overlapping-style doorframe cleanroom luminaire.



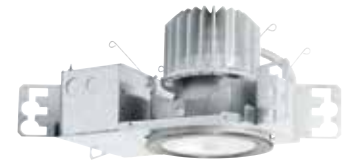
**CSEDI**  
(1'×4', 2'×2', 2'×4')

Recessed, one-piece, inset-style doorframe cleanroom luminaire.



**CSEDI**  
(1'×4', 2'×2', 2'×4')

Switchable 630nm red and tunable white recessed luminaire with overlapping-style doorframe—designed specifically for use in vivariums.



**CDL6**  
(6" aperture)

LED downlight for cleanrooms featuring a flush, sealed lens.



The luminaires pictured on this page may bear the above certifications. See individual product spec sheets for current listings.

# High Abuse Luminaires

## Adjusting Focus and Concentration



## Tune In to Learning & Lifestyle

From a highly engaged classroom to an energized gym or calming yoga studio, Kenall's high abuse luminaires can now be tuned to support active learning and lifestyles. Combined with the signature features of Kenall's high abuse series — including our exclusive Peace of Mind Guarantee®—they are ideal for a wide variety of public spaces: classrooms, gymnasiums, fitness centers and more.



### High Abuse Tunable White Luminaires



**MLHA5**  
(5"×48")

Low-profile, surface-mount, architectural high-abuse luminaire.



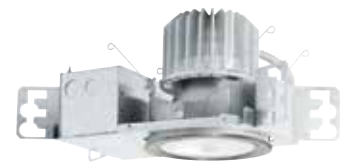
**MLHA8**  
(8"×48")

Surface-mount, architectural high-abuse luminaire.



**MLHA12**  
(12"×48")

Low-profile, high-output, surface-mount, architectural high-abuse luminaire.



**BHDL6**  
(6" aperture)

Sealed, recessed downlight with flush-lens trim secured by tamper-resistant Torx® screws; for behavioral health applications.



The luminaires pictured on this page may bear the above certifications. See individual product spec sheets for current listings.

# Bringing the Applied Science of Color to Light

In addition to Tunable White technology, Kenall has utilized the applied science of color to develop high quality, sealed, narrow spectrum luminaires for specialized applications. Rather than employing color filters or color mixing, specific wavelengths of the color spectrum are pinpointed to provide the best delivery of light tailored to your unique healthcare, scientific and manufacturing application needs.

## 405nm

for continuous environmental disinfection in healthcare applications



### Indigo-Clean™

M4SEDIC Series

1' x 4', 2' x 2' and 2' x 4'

- Indigo-Clean is NOT UV light; it uses safe 405nm visible light
- Automatically kills bacteria in the air and on hard and soft surfaces, reducing risk of human error and eliminating the need for special training or a technician
- Ideal for use in OR's, ED's and procedure rooms

## 530nm

for improved monitor visibility in operating room applications



### MedMaster™

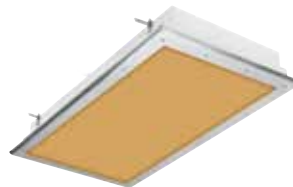
M4SEDI Green Series

1' x 4', 2' x 2' and 2' x 4'

- 530nm green LED light enhances the visibility of monitors during surgical procedures, and reduces staff eyestrain
- Diffused high-efficiency lens for reduced glare
- Symmetric and asymmetric optical distributions
- Dual-function white and green LED sources provide individually dimmable illumination. Also available in green only.

## 570nm

for photochemical safety and heightened visual acuity in semiconductor, healthcare and pharmaceutical manufacturing applications



### SimpleSeal™

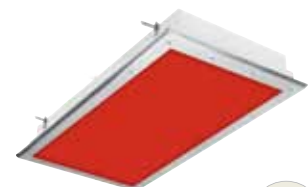
CSEDO Amber Series

1' x 4', 2' x 2' and 2' x 4'

- Kenall's 570nm amber series provides visual acuity for detailed tasks without the damaging effects of white light to light-sensitive products and processes
- Features 570nm Phosphor-Converted (PC) amber LED light, which performs better than native amber, especially in warm temperatures

## 630nm

for circadian entrainment in vivarium (scientific) applications



### SimpleSeal™

CSE\_O Red Series

1' x 4', 2' x 2' and 2' x 4'

- 630nm red LED light provides consistent, controllable red light; supports the natural circadian rhythm of laboratory animals in research environments
- Offers pure, consistent and controllable red light intensity over time. Does not degrade in purity, even when light output has degraded.
- Now available with tunable white option



For detailed information on Kenall's Narrow Spectrum product offering, visit [kenall.com](http://kenall.com) and download the brochure.

## Testing, Listings, Certifications, Warranties

Fixtures designed for use in healthcare, correctional, cleanroom/containment and high abuse settings must satisfy a large number of demanding lighting and environmental requirements. Listings applicable to the luminaires featured in this brochure are shown below. To determine product specific listings, download the spec sheets at [kenall.com](http://kenall.com).



**UL/CUL Listed**—The UL symbol signifies that Underwriter’s Laboratory (UL) has determined that a manufacturer has demonstrated the ability to produce a product complying with UL’s requirements with respect to specific risk, performance under specific conditions, compliance with regulatory codes and specified standards, or any other conditions as determined by UL.



**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.



**OSHPD**—OSHPD also monitors the construction, renovation, and seismic safety of hospitals and skilled nursing facilities and provides loan insurance to assist the capital needs of California’s not-for-profit healthcare facilities



**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.



**IP64**—UL Certified IP64 per IEC 60598 ensures that the enclosure is dust-tight and protected against splashing water without any harmful effects.



**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.



**IP65**—UL Certified IP65 per IEC 60598 ensures that the enclosure is dust-tight and protected against jet streams of water from any direction without any harmful effects.



**IP66**—UL Certified IP66 per IEC 60598 ensures that the enclosure is dust-tight and heavy seas and water projected in powerful jets will not enter the enclosure in harmful quantities.



**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.



**ADA Compliant**—Although ADA is not specific to lighting, it does impact fixture design by creating standards for wall sconce projection space and hanging light clearance. Section 4.4 of the ADA states that “objects projecting from walls with their leading edges between 27” and 80” above the finished floor shall protrude no more than 4” into walks, halls, corridors, passageways or aisles.”



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



**MIL STD 461F**—Military Standards testing measurements cover both radiated and conducted electromagnetic emissions in addition to maximum allowable amounts of emitted energy based on both frequency range and field strength. Luminaires meeting MIL STD 461F pose the lowest possible likelihood of causing EMI-related issues.

## Warranties

On behalf of our valued customers, Kenall promises to stand behind our luminaires. Our commitment to excellence enables us to offer a variety of product warranties, including the Kenall exclusive Peace of Mind Guarantee, 5-year LED and 10-year limited product warranties. For more detailed, product specific warranty information, please visit our website at [kenall.com](http://kenall.com).



**Peace of Mind Guarantee**  
Kenall’s High Abuse luminaires are designed and built to take exceptional physical punishment. When installed according to our instructions, Kenall will repair or replace any unit rendered inoperable due to physical abuse for the normal service life of the fixture.



**LED 5-year Warranty**  
Kenall offers a 5-year limited power system warranty on LED products. For complete warranty information, please visit us on the web at [kenall.com](http://kenall.com).



**LED 10-year Warranty**  
Kenall offers a 10-year limited power system warranty on LED products. For complete warranty information, please visit us on the web at [kenall.com](http://kenall.com).





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