Recent technological advances in lighting sources, electronic power management, and controls have created opportunities to rethink traditional lighting methods especially as they relate to environmental standards. While new, these technologies can be successfully utilized in unique applications like parking garages. In these spaces, LED and high power fluorescents are a compelling proposition offering fast payback, quality illumination, cold weather suitability, and integration with motion and daylight controls.

Kenall is in a particularly favorable position to bridge the worlds of lighting and electronics with its own in-house electronic design, photometer and integrating sphere testing, thermal analysis lab, manufacturing, and assembly capabilities.

I am pleased to introduce the industry’s latest and best parking garage lighting system; TekDek™ designed exclusively for LED and high power linear sources with the SmartSense™ — a simplified, economical control system. TekDek™ is a ground-up LED fixture design with optical and thermal design optimized for higher efficacy illumination. Our LED system is approaching 100 lumens per watt from the enclosure with projected lamp life at 60,000 hours, or substantially more with various options. With our patent pending, simplified, low cost control system, payback can occur in as little as 14 months. Creative use of tax incentives and rebates can further reduce costs, and leasing can be acquired to minimize the amount and duration of cash flow required to fund the investment.

While energy savings and owner benefits alone make this approach compelling, it is also good to know that these systems can contribute significantly to a reduction of carbon emissions and help building owners meet emerging building goals and standards related to energy efficiency. It is worth noting that TekDek meets the recently published ASHRAE 90.1-2010 standard, California Title 24, and the new CBEA High-Performance Lighting Parking Structure Specification. In addition, Kenall’s attention to reducing component toxicity and offering LED product recycling commits to practice the loftier vision of sustainability.

While this guide focuses primarily on the LED product, you will also find a high power, optically effective and efficient linear product that can replace outdated HID products at an attractive cost. Kenall products for stairwells, exteriors, and points of egress are also included.

Kenall’s TekDek™ series is a revolutionary new product line from Kenall that proves advanced lighting technology is a truly compelling story. I invite you to learn more and take advantage of the tremendous opportunity for dramatic savings, intelligent energy reduction, and the preservation of our natural environment.
Kenall Introduces \textbf{TekDek™} Advanced Lighting For Parking Garages

Founded in 1963, Kenall Manufacturing quickly found a niche in creating the industry’s first series of high impact and vandal resistant lighting products. Kenall introduced their first luminaire specifically designed for parking structures in 1986.

With nearly 20 years in electronics design, tooling and manufacturing, Kenall became an early adopter of LED technology, and currently designs and manufactures proprietary high-brightness LED drivers and boards using the highest quality components from industry leading manufacturers. Kenall leverages this vertical integration by designing LED luminaires from the ground up to optimize product performance. The ability to tap into core competencies of electronics design, photometric performance, thermal management and mechanical integrity makes Kenall uniquely qualified to provide the best LED parking structure lighting products in the marketplace. Equipped with optical and thermal design software and a certified photometric laboratory, with Kenall you can be assured of the best performing parking garage luminaires available today.
Kenall Committed to LED Technology

Perhaps the greatest challenges of lighting a parking structure are achieving the horizontal and vertical light levels required for complex automotive and pedestrian interactions while simultaneously addressing discomfort glare. LED sources present an ideal solution for parking garage lighting. Low energy consumption and high efficacy, in concert with a 60,000-hour or better lamp life and low heat output, create the ideal source for many applications. The substantial lamp life of an LED also reduces its maintenance requirements, which limits the fixture's exposure to the elements as well as the potential risk of damage during routine maintenance. In addition, LED sources contain no toxic mercury and emit no harmful, insect attracting UV radiation, creating a truly green source. Its modular design facilitates product upgrades, reducing the material that ends up in landfills, further increasing its sustainability.
Kenall Sophistication in Testing

Whether testing for Ingress Protection required in a parking garage, or stringent electromagnetic interference testing for a surgical suite, Kenall is equipped with a state-of-the-art certified safety laboratory, providing the following in-house testing capabilities:

- Certified for safety testing by Underwriters Laboratory and Intertek Testing Laboratories for Incandescent, Fluorescent and HID Luminaires (UL 1598), LED Luminaires (UL 8750) Hazardous Locations (UL 844, Class I Div II, Class II Div II, Class III), and Emergency Lighting (UL 924)
- Ingress Protection testing (Dust and Water chambers)
- MIL-STD-461F – Conducted electromagnetic interference (EMI)
- Highly Accelerated Stress Screening (-60°C to 150°C Environmental Chamber)
- 25°C and 40°C thermal testing rooms
- LM-79 certified photometric laboratory including a Type C goniophotometer as well as a 2-meter integrating sphere with spectroradiometer
Kenall Lighting  

**TekDek™ Intelligent Design, Durable Construction**

TekDek’s intelligent design minimizes hazardous glare, while delivering a sleek architectural look. Manufactured in the USA, TekDek’s housing is constructed of marine-grade diecast aluminum for maximum strength and durability, and features integrated heat sink technology with concealed fins that draw heat away from the fixture to maximize LED life. TekDek’s specially designed diffusing textured lens is constructed of a high-impact acrylic, or optional UV-stabilized polycarbonate. The various mounting configurations make TekDek easy to install and maintain—a highly desirable feature in the parking garage environment.

**Optional Quick Mount**  
Installation becomes easy — simply lift, rotate, and lock into place.

**Diecast Housing**  
Extensive use of diecast aluminum parts enables materials to be intelligently utilized for maximum performance. The housing design also includes a thermal air gap between the fixture’s temperature sensitive drivers and its heat emitting components.

**Optional Debris Shield**  
Vented plate allows for heat dissipation while preventing unwanted buildup between the heat sink fins.

**Concealed Heat Sink**  
Aesthetically pleasing with no exposed heat sinks. This effective design draws heat away from the driver and LED, allowing for long life operation.

**LED Circuit Board**  
Available in a wide variety of optical configurations, TekDek offers a cost effective, high power version as well as an extremely efficacious lower power version.

Choice of three highly efficient custom drivers work with Kenall’s SmartSense™ control system or a standard 0-10V dimmer.

**100% DR Clear Textured Acrylic Lens**  
TekDek’s textured lens provides all of the characteristics desirable in the illumination of a parking structure: reduced glare, even illumination and appealing uplight, while preserving the optical distribution pattern.

A clear textured polycarbonate lens is also available, and offers Kenall’s Peace of Mind Guarantee® with the Direct-to-Surface Mount installation.

The Kenall product shown on this page is manufactured in the USA with components purchased from US suppliers, and meets the Buy American requirements under the ARRA. Kenall has not determined the origin of its domestically purchased components or the subcomponents thereof.
Kenall Lighting  TekDek™ Cutting Edge Thermal Management

Kenall’s patent pending heat sink technology, essential to maximizing LED life, utilizes an innovative marine-grade diecast aluminum housing that conducts heat away from the mission-critical LED drivers to the perimeter of the fixture. This process is facilitated by a series of fins that conduct heat outward from the core of the housing via convection heat transfer. This intelligent design enables the LED to maintain a 60,000-hour minimum lifetime even at 40°C (104°F) ambient, making it a strong, viable solution for demanding environmental conditions. Moreover, the concealed fins and diffusing textured lens provide a desirable architectural styling atypical of most LED parking structure luminaires.

TekDek Thermal Analysis

Convection Heat Transfer
Heat is drawn away from the fixture via convection heat transfer, as shown by the plume above the luminaire.

Heat Flux
A graphical illustration of the TekDek’s ability to disperse heat, represented by Watts per Square Meter, as depicted by the yellow glow along the edge of the housing.
TekDek™ Unprecedented Optics

Technological Innovation with a Traditional Look

TekDek’s innovative technology and design offers unprecedented glare reduction in today’s parking structure environment. With the addition of a specially designed textured lens working in conjunction with the LED lamp source, discomfort glare is reduced. Desirable uplight and vertical illumination is enhanced. Available with a house-side shield to control light trespass, TekDek also offers an environmentally friendly design for the perimeter of the parking structure.

Sealed Optics
The lens is sealed and gasketed, providing an IP65 rating. (see pg. 29 for rating details)

Uplight Feature
TekDek provides highly desirable uplighting (approximately 3%) and eliminates the problematic cave effect visible in many parking garages.

Vertical Footcandles
Kenall’s parking garage luminaires provide double – often triple – the vertical footcandles typical of LED parking garage lighting.

Glare Reduction
Kenall’s innovative new textured lens design offers unprecedented glare reduction, greatly enhancing both vehicular and pedestrian safety while preserving the optical distribution pattern.

Traditional Aesthetic
The TekDek luminaire delivers an aesthetically soothing feel with a classic architectural look.

Dimensional Details

- 17.00” Dia.
- 9.00” Dia.
- .312” Dia.
- 5.50” Dia.
- 9.31” Dia.
- 3/4” NPS
### TekDek™ Photometrics

#### Flexibility in Design & Illumination

Traditionally, LED lighting in parking garages provides no uplight, creating ‘cave effect’ illumination – distributing light directly beneath the fixture while ignoring peripheral areas, creating dark corners and ceilings. Kenall’s new TekDek LED offers a range of illumination patterns, including two IES Type V distributions to address a majority of applications, as well as Type II, III and IV distributions for applications requiring specific configurations and two unique house-side shield options. With TekDek, aesthetically soothing light distribution is achieved and driver and pedestrian safety are greatly enhanced.

### TekDek Light Output Ratings

The TekDek LED is available in any of nine different engines with either 5700K, 5000K or 4000K color temperatures. These LEDs can be driven at 350mA for maximum efficacy (lumens per watt), at 525mA or at 700mA for maximum output. The performance matrix below summarizes the output for each of these configurations in “delivered lumens,” which is the preferred method of the Department of Energy’s Lighting Facts program. Delivered lumens measures the true light output leaving the luminaire after considering all of the thermal, optical and electrical losses that are present in every luminaire.

#### Performance Matrix

<table>
<thead>
<tr>
<th>LED Color (°K)</th>
<th>Drive Current (mA)</th>
<th>Input Watts (W)</th>
<th>LED Engine</th>
<th>Ambient Temp @ 25°C Delivered Lumens (lm)</th>
<th>Efficacy (lm/W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5700</td>
<td>350</td>
<td>56</td>
<td>50L57K</td>
<td>5600</td>
<td>100</td>
</tr>
<tr>
<td>5700</td>
<td>525</td>
<td>79</td>
<td>80L57K</td>
<td>7071</td>
<td>90</td>
</tr>
<tr>
<td>5700</td>
<td>700</td>
<td>112</td>
<td>108L57K</td>
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<td>50L50K</td>
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<td>525</td>
<td>79</td>
<td>80L50K</td>
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<td>108L50K</td>
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<tr>
<td>4000</td>
<td>350</td>
<td>56</td>
<td>50L40K</td>
<td>5134</td>
<td>93</td>
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<tr>
<td>4000</td>
<td>525</td>
<td>79</td>
<td>80L40K</td>
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<td>700</td>
<td>112</td>
<td>108L40K</td>
<td>8521</td>
<td>76</td>
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</table>

**Ambient Temp @ 40°C**

<table>
<thead>
<tr>
<th>LED Color (°K)</th>
<th>Drive Current (mA)</th>
<th>Input Watts (W)</th>
<th>LED Engine</th>
<th>Ambient Temp @ 40°C Delivered Lumens (lm)</th>
<th>Efficacy (lm/W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5700</td>
<td>350</td>
<td>56</td>
<td>50L57K</td>
<td>5199</td>
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<tr>
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<tr>
<td>5700</td>
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<td>112</td>
<td>108L57K</td>
<td>8630</td>
<td>77</td>
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<tr>
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<td>56</td>
<td>50L50K</td>
<td>4279</td>
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<td>525</td>
<td>79</td>
<td>80L50K</td>
<td>5528</td>
<td>70</td>
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<tr>
<td>5000</td>
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<td>112</td>
<td>108L50K</td>
<td>7102</td>
<td>64</td>
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<tr>
<td>4000</td>
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<td>56</td>
<td>50L40K</td>
<td>4877</td>
<td>88</td>
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<tr>
<td>4000</td>
<td>525</td>
<td>79</td>
<td>80L40K</td>
<td>6301</td>
<td>80</td>
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<tr>
<td>4000</td>
<td>700</td>
<td>112</td>
<td>108L40K</td>
<td>8095</td>
<td>73</td>
</tr>
</tbody>
</table>
Kenall’s TekDek product family has been specifically designed to exceed IES recommended light levels for parking garages (see chart below). TekDek delivers excellent uniformity and quality illumination that translates into enhanced safety for parking garage patrons. The chart below highlights TekDek’s powerful efficacy ratings and max to min ratios, which exceed IES recommendations for all LED engines listed. It also details greatly reduced glare values for TekDek LEDs, a critical contributor to vehicular safety within the parking structure environment.

Sample Calculation Area shown below.

Calculation Summary
Table is based on a 30’x30’ luminaire spacing beginning 15’ from each wall and 9’ ceiling height measured at grade.
The Kenall product shown on this page is manufactured in the USA with components purchased from US suppliers, and meets the Buy American requirements under the ARRA. Kenall has not determined the origin of its domestically purchased components or the subcomponents thereof.

TekDek™ Flexible Mounting Options

The TekDek is available in a range of mounting options, including the Quick Mount, Direct-to-Surface, Pendant, or Trunnion mounts. An optional bird guard is available for the Pendant or Trunnion mounts to prevent birds from nesting in the top of the fixture. A Debris Shield is also available to prevent the accumulation of debris between the cooling fins.

Mounting Options

- **Quick Mount (QM)**
  Includes an integrated hanger bracket to hold the fixture, facilitating ease of installation and maintenance. The quick mount uses a simple twist-and-click motion to set the fixture into place.

- **Direct-to-Surface Mount (DTS)** *
  Secures the fixture directly to the ceiling via a simple and secure four-hole mounting plate.
  *Required for Peace of Mind Guarantee®

- **Pendant Mount (PM)**
  For use whenever an aesthetically pleasing, suspended configuration is desired. Pendant by others.

- **Trunnion Mount (TK)**
  A common mounting option for use when a suspended configuration with additional support is desired. The trunnion mounting kit is included.

Options/Accessories

- **Bird Guard (BG)**
  Available for both the pendant and trunnion mounts, the bird guard protects the fixture from birds nesting in exposed areas.

- **Debris Shield (DS)**
  An optional debris shield is available to prevent the accumulation of debris between cooling fins.
TekDek™ Easy Installation

The Quick Mount option offers ease of installation. Utilize the hanger bracket to hold the fixture while the electrical connections are made, then set the fixture in place with a simple twist-and-click motion.

1 | Fasten the quick mount plate to a secure J-Box.

2 | Align the hanger of the bracket with the center slot on top of the fixture. The fixture can then hang from the bracket while the electrical connections are made.

3 | Secure the wires in the J-Box. Push the fixture up to the mounting plate until the locking hooks slide through the slots.

4 | Twist the fixture until a ‘click’ is felt or heard.

5 | Installation is complete.
Versatility in Design & Function

Versatility in design and function make TekDek an ideal lighting solution for a wide variety of applications. You can obtain a great degree of flexibility to shape, direct and distribute patterns of light by utilizing TekDek’s full range of IES distributions. Durable and eco-friendly, TekDek should be considered anywhere an aesthetically pleasing, high-quality, energy efficient lighting solution is required, such as foyers, natatoriums, multi-purpose rooms, gymnasiums, and supermarkets.

Distribution Options:

- **Type II (2)**
  - Covered pedestrian walkways
  - Pedestrian paths in garage

- **Type III (3)**
  - Underpasses
  - Drive-throughs
  - Bike paths

- **Type IV (4)**
  - Transportation platforms
  - Provides forward throw

- **Type IV (4N)**
  - Narrow
  - Corridors
  - Stairwells
  - Walking paths
  - Bike paths

- **Type V (5S)**
  - Open garage areas
  - Porticos
  - Transportation platforms

- **Type V (5N)**
  - Narrow Round
  - Garage payment locations
  - Garage entrances & exits
  - High ceiling areas
  - Gas-station canopies

- **Type V (3HSS)**
  - House Side Shield
  - Minimizes light trespass
  - Provides wide distribution

- **Type IV (4HSS)**
  - House Side Shield
  - Garage perimeter
  - Minimizes light trespass
  - Provides forward throw

- **Type IV (4NHSS)**
  - Narrow House Side Shield
  - Glass-encased stairwells
  - Walking paths near adjoining properties

*Required for Peace of Mind Guarantee*

*Not available with DTS & QM Mounting types*

**Includes additional surge protection and warranty benefits (see pages 25 and 30 for details)**
Sensing Occupancy and Daylight for Dramatic Energy Savings

A majority of the lighting control systems currently available for parking structures rely on individual occupancy control sensors per luminaire that ‘cascade on’ one after the other, which can make the driving experience particularly hazardous. More complex systems are typically expensive and are often accompanied by a significant ‘field-commissioning fee’.

Kenall’s SmartSense control system meets these challenges head on by utilizing an innovative new design concept. The control system intelligently monitors both motion and daylight, providing flexible dimming capabilities when the space is unoccupied and/or when ambient daylight levels are detected. SmartSense’s ability to dim light levels in response to occupancy and daylight represents significant cost and energy savings.

Sensor
The SmartSense sensor serves as both a daylight sensing photosensor and a passive infrared occupancy sensor.

Control Module
The SmartSense control module receives input from one daylight sensor and up to 6 total occupancy sensors. Each control module can service up to 32 luminaires using 0-10 volt dimming, but can be linked with additional control modules to control an unlimited number of luminaires even if only one sensor is used. The control module can be placed up to 3000 feet away from the sensor.

TekDek Luminaire
This LED-driven luminaire has been specifically designed for use with the SmartSense control system and will quickly achieve full brightness upon detecting motion in the space, and will slowly dim back to standby mode once occupancy is no longer detected.

Control Simulation – Three Story Garage
“Low Level Standby” mode indicates that luminaires are powered to a user defined level between 20-100% of full brightness.

Initial entry into garage
As the car enters the garage, the system senses movement and brings the first level to full brightness. With no movement, floors two and three remained dimmed.

Second floor
As the vehicle progresses up the ramp to the next floor, it is brought to full light output. Floor one begins to dim down, while floor three remains in standby mode.

Third floor
When the vehicle progresses up the next ramp to the third floor, it becomes fully illuminated. Floor one has progressed to standby mode, while floor two begins to dim down.
SmartSense™ Brilliance in Illumination

Intelligent and Cost Effective

The SmartSense control system is self-commissioned with the push of a button, and is fully operational within 24 hours. This feature, combined with the strategic placement of occupancy sensors at the points of vehicular and pedestrian entry, further reduces equipment and installation costs. Unlike competitive systems, SmartSense provides an ‘all on’ advanced placement of light, greatly enhancing both vehicular and pedestrian safety. The LED source to which the control system interfaces is not a glaring, exposed LED board, but rather a lensed LED fixture specifically designed to provide architecturally pleasing illumination. In addition, the system automatically indicates when LED End of Life (L70) has been reached.

Optional ‘sweep off’ and ‘override on’ features provide added levels of control, energy efficiency, and security, making SmartSense far and away the most flexible, cost effective, and eco-friendly lighting control system for today’s parking garage applications.

**Dimming Control**
For greater energy savings, the control module is capable of dimming the luminaire down to 80% (20% light output) while maintaining the IESNA RP-20 minimum footcandle level requirements for parking garages.

**Sensor Ports**
Each control module has the capacity to accept six occupancy sensors—one of which has a light level input. Each bay has a green LED indicating power to the sensor and a red LED indicating occupancy.

**Interconnection**
Interconnect multiple control modules to expand the number of luminaires in a zone. Each control module can operate 32 luminaires.

**24-Hr. Self-Commissioning Button**
This feature allows the system to automatically commission the control system with the touch of a button. The control module measures the light levels during a 24-hour cycle and eliminates the need for expensive field commissioning.

**L70 Indicator Light**
The control system features an “End of Life” indicator that turns red when the TekDek luminaires reach L70, which is 70% of the initial lumen output.

The Kenall product shown on this page is manufactured in the USA with components purchased from US suppliers, and meets the Buy American requirements under the ARRA. Kenall has not determined the origin of its domestically purchased components or the subcomponents thereof.
**SmartSense™ Brilliance in Design**

**System Analysis and Operational Benefits**

The Kenall SmartSense Control System provides powerful garage automation without the typical expense of more traditional control systems. Luminaires will remain in low level standby mode until occupants demand higher light levels by passing through the vehicular or pedestrian entry points. Kenall recommends that dimmed light levels be set to a two footcandle average on the floor of the space (or double the IES RP-20 minimum). The system will immediately raise levels to the maximum light output of the luminaires when occupants enter the garage and will remain at those levels until the system time-out period has elapsed (adjustable from 30 seconds to 30 minutes). Configurations can be designed where a single occupancy sensor triggers the operation of either a single luminaire or an entire building of luminaires. Sub-zones can be developed to isolate luminaires where daylight contributions are present, and the system will continuously dim these luminaires to maintain desired light levels. Sensors can supply daylight and occupancy information to a single zone or multiple zones when required. All system controls can be positioned at any physical location to provide the easiest wiring layout in the facility.

![Diagram of SmartSense System](image-url)

**Control Module**

The main operational control device receives input from occupancy/daylight sensors and actuates the luminaires within the zone based on occupancy detection and daylighting input. Multiple control modules can be interconnected to increase occupancy zones so if any zone detects motion, all interconnected control modules will receive the occupancy input.

**Sensors**

Sensors are dual capability devices with the ability to detect and adjust to occupancy and daylighting. The sensor range is 50 feet in diameter from an eight foot mounting height (higher mounting options available).

**Daylight Zone**

Daylight zones will override electric lighting levels when ambient daylight exists. System will automatically adjust to lower light levels via continuous dimming until luminaires are completely turned-off, and will remain in standby mode until natural light levels decrease to the point where electric light contributions are once again required.

**TekDek Luminaires**

Typical 30’ on-center spacing
SmartSense™ Extends LED Lamp Life

Impacting Temperature and Output

Temperature and average LED drive current are major contributors to the end of life for LED’s. Kenall’s TekDek luminaires boast an estimated LED lifetime of 90,000 hours at 25°C and 60,000 hours at 40°C ambient at 100% output, making them a strong choice even in warmer climates. As depicted in the chart below, the estimated lifetime of the LED increases as its average LED drive current decreases. By employing the SmartSense control system in concert with TekDek luminaires, as the average energy output decreases the estimated L70 LED lifetime steadily increases. By reducing the “dimmed state” setting, the SmartSense system not only provides significant energy savings, but it also significantly increases LED life.

A 4KV standard surge supressor is also built into the fixture’s driver to safeguard its lamp life. If the CBEA option is selected, a higher level of surge protection is included that meets IEEE/ANCI C62.41.2 guidelines.

Because of Kenall’s intelligent thermal management design, the temperature-sensitive LED’s operate at least 25% below the LED manufacturers’ maximum thermal rating, even at Kenall’s maximum drive current and at 40°C ambient.

Please note: These extrapolations are based upon LED manufacture’s LM-80 information and are for informational purposes only. This is not intended as a statement of warranty or specification.

Curves are specific to the 700 mA LED engines — the 525 mA and the 350 mA charts will show even longer L70 LED lifetime.
## SmartSense™ Features & Benefits

<table>
<thead>
<tr>
<th>Feature</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Garage Level Dimming based on Occupancy</td>
<td>• Up to 77% energy savings since garage is only at full power during times of occupancy</td>
</tr>
<tr>
<td>Garage Level Dimming based on Daylight Levels</td>
<td>• Additional energy savings when daylight contributions exist</td>
</tr>
<tr>
<td>• Provides continuous dimming of luminaires to maintain consistent light levels</td>
<td></td>
</tr>
<tr>
<td>Intelligent system design senses and adjusts based on both occupancy and daylight</td>
<td>• Dramatic reduction in purchase and install costs due to occupancy sensors being placed only at points of vehicular and pedestrian entry</td>
</tr>
<tr>
<td>• Intelligent sensing ensures light levels are never below IES-RP-20 minimum requirements</td>
<td></td>
</tr>
<tr>
<td>• Extends LED life by seven years or more</td>
<td></td>
</tr>
<tr>
<td>High Quality Occupancy Control</td>
<td>• Unlike traditional ‘cascading’ occupancy systems, TekDek utilizes an advanced placement of light for the entire floor when occupancy sensors are actuated</td>
</tr>
<tr>
<td>• A specified area can be as small or as large as required and controlled by a single sensor or multiple sensors</td>
<td></td>
</tr>
<tr>
<td>Flexible Light Level Control</td>
<td>• ‘Standby’ light level can be field adjusted (dimmable from 0-80%) beyond the factory pre-set of 50% brightness</td>
</tr>
<tr>
<td>• Maximum energy savings for low-level parking structures with little or no traffic during evenings or weekends</td>
<td></td>
</tr>
<tr>
<td>Standby Mode</td>
<td>• Enables system to adjust to 100% light level within one to two seconds when occupied, without the occupant knowing that the space was ever dimmed</td>
</tr>
<tr>
<td>• System pulls 0.5 watts in standby mode</td>
<td></td>
</tr>
<tr>
<td>Ability to Interconnect Control Modules</td>
<td>• A single module can control up to 32 luminaires using a 0-10 volt dimming signal</td>
</tr>
<tr>
<td>• By interconnecting control modules, an unlimited number of luminaires can be controlled</td>
<td></td>
</tr>
<tr>
<td>Ability to Use Existing Conduit for Wiring*</td>
<td>• Ease of wiring since control modules can be mounted in nearly any location</td>
</tr>
<tr>
<td>• All control wires can be chased through luminaire power conduits utilizing minimum 18-gauge wires</td>
<td></td>
</tr>
<tr>
<td>Auto-Commissioning</td>
<td>• Control system does NOT require expensive field commissioning</td>
</tr>
<tr>
<td>• System is self-commissioned with the push of a button, and is fully operational within 24 hours</td>
<td></td>
</tr>
<tr>
<td>End of Life Monitoring</td>
<td>• The control system will indicate when LED end of life (L70) has been reached</td>
</tr>
<tr>
<td>Sweep Off</td>
<td>• Turn off all luminaires and places them in standby mode</td>
</tr>
<tr>
<td>• Luminaires will turn back on when a sensor detects motion and the system will operate normally</td>
<td></td>
</tr>
<tr>
<td>Override On</td>
<td>• Manually overrides system to force on even without occupancy detection</td>
</tr>
<tr>
<td>• System will remain forced on at full brightness up to 30 minutes</td>
<td></td>
</tr>
</tbody>
</table>

*NEC 300.4.C.1- 600 volts nominal or less. Conductors of AC or DC circuits rated 600 volts nominal or less shall be permitted to occupy the same wiring enclosure, cable or raceway. All conductors shall have the same insulation rating equal to at least the maximum circuit voltage applied to any conductor within the enclosure, cable or raceway.
**TekDek™ & SmartSense™ Makes “Cents”**

**Payback Analysis – A Cost Effective Strategy**

Whether retrofitting an existing parking structure or installing a completely new lighting system, a payback analysis quickly reveals the length of time it will take the system to pay for itself in terms of energy savings. Although a new installation using Kenall’s TekDek luminaires provides a respectable payback of 2 years, when combined with the SmartSense control system the payback period accelerates to an impressive 1.1 years (at 15 cents per kilowatt-hour).

The chart below illustrates how the TekDek LED (111.5 input watts) luminaire compares to an equivalent 175-watt metal halide luminaire, with and without the SmartSense control dimmed down to 42%, for both a retrofit and a new installation at various rates per kilowatt hour. Once the payback period has been realized, the energy savings continue by reducing electricity costs as much as 77%. This represents a considerable savings based on a service life of over 100,000 hours.

The projected energy savings are realized without the reduction of the existing or planned light levels that are utilized for the comparison.

---

**Payback Graph**

![Payback Graph](image)

Not only is the return on investment dramatic, but powerful incentives also exist for both TekDek and SmartSense. The energy savings of TekDek and the SmartSense control system, coupled with the resourceful use of tax incentives and rebates, can substantially reduce the initial cost of investment.

The chart above does not take into consideration additional savings obtained through:

- Utility Rebates
- Federal Tax Incentives (Section 179D)
- Reduced Maintenance

Kenall would be pleased to direct you to a qualified engineering tax consultant to maximize your Section 179D deduction.
Combining Premiere Lighting Performance & Dramatic Energy Savings

Kenall Manufacturing is committed to the economic and sustainable benefits inherent to LED technology as evidenced by the widespread use of LED products we manufacture. As a combined system, Kenall’s new TekDek luminaire and SmartSense controls provide unprecedented savings in the parking garage environment, and comply with Title 24 and the new ASHRAE 90.1-2010 LPD reduction requirements. Simply put, not only are Kenall’s parking garage lighting solutions sensible, they also make a lot of “cents!”

With a focus on energy, resource conservation, and the reduction of hazardous waste, the new TekDek line:

- Boasts an energy efficient design
- Meets RoHS requirements
- Utilizes eco-friendly, long-lasting LEDs
- Is constructed of lead and mercury free materials, and is free of harmful UV radiation
- Qualifies for a variety of rebate and tax incentive programs by the U.S. Department of Energy, and various States, Municipalities, and Utilities
- Meets the Buy American Act requirements under the American Recovery & Reinvestment Act (ARRA)

In support of our ‘go green’ initiative, we have established partnerships with the United States Green Building Council, Design Lights Consortium, and the United States Environmental Protection Agency / Energy Star Program.
TekDek™ Linear

Extending TekDek’s Configurability

The TekDek Linear Fluorescent (LF) is available as an alternative to the TekDek LED luminaire. Offered in either 4- or 8-foot lengths, its continuous lens and highly efficient optical system provides higher quality color rendition, increased energy efficiency, controllability, and lumen maintenance. TekDek LF’s precision, die-formed optics produce a batwing distribution for more uniform illumination across parking garage floors, walls, and ceilings. When used in combination with Kenall’s patent pending SmartSense™ control system, TekDek LF offers yet another intelligent, cost-effective lighting solution for today’s parking garage environment.

Sealed Housing

Cold rolled steel, die formed with removable steel end caps. 1,000-hour salt spray tested finish. Closed cell gasket seals endcap to lens.

Reflector

Parabolic die-formed aluminum reflector providing batwing distribution.

Lamps

Lengths designed specifically for T8 and T5HO lamps provide uniform lens brightness

Lens

Proprietary UV-stabilized, extruded, prismatic polycarbonate lens with 1/8” nominal wall, featuring the Kenall Peace of Mind Guarantee®.

TekDek Linear Distribution Graph

Maximum Candela = 1923 Located At Horizontal Angle = 270, Vertical Angle = 60

1 - Vertical Plane Through Horizontal Angles (270 - 90) (Through Max. Cd.)

2 - Horizontal Cone Through Vertical Angle (60) (Through Max. Cd.)

Dimensional Details

<table>
<thead>
<tr>
<th>Nominal Length</th>
<th>Lamp</th>
<th>Actual Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>48”</td>
<td>T5HO</td>
<td>46.86</td>
</tr>
<tr>
<td>48”</td>
<td>T8</td>
<td>48.50</td>
</tr>
<tr>
<td>96”</td>
<td>T5HO</td>
<td>93.43</td>
</tr>
<tr>
<td>96”</td>
<td>T8</td>
<td>97.00</td>
</tr>
</tbody>
</table>
Features & Benefits

<table>
<thead>
<tr>
<th>Feature</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specially Designed Optics</td>
<td>• Generous batwing distribution producing optimal uniformity of illumination</td>
</tr>
<tr>
<td></td>
<td>• Increased efficiency</td>
</tr>
<tr>
<td>Optimal Sizing (Available in 4’ and 8’ Lengths)</td>
<td>• Readily meets stringent 30’ x 30’ spacing requirements of parking garage applications</td>
</tr>
<tr>
<td>Interface with SmartSense™ Control System</td>
<td>• Energy efficient and eco-friendly</td>
</tr>
<tr>
<td></td>
<td>• Cost effective</td>
</tr>
<tr>
<td></td>
<td>• Rapid return on investment</td>
</tr>
<tr>
<td>Self-Hinging Design</td>
<td>• Ease of installation and maintenance</td>
</tr>
<tr>
<td></td>
<td>• No lanyard required</td>
</tr>
</tbody>
</table>
How long has Kenall provided LED luminaires?
Kenall has been an OEM manufacturer of specialized lighting products since 1963 and has always embraced new lamp technologies. Since 1996, Kenall has offered low-brightness LED sources in its exit sign and low-level steplight products. Kenall’s first commercial offering of a product containing high-brightness white LEDs was the Millenium FreeScale™ product launched in February 2006. It utilized Lumileds Luxeon III lamp sources and Advance Xitanium constant-current drivers. Since then, Kenall has expanded its LED offering to nearly all product lines, utilizing a multitude of brand name LED lamp sources and drivers.

Who are Kenall’s LED suppliers?
Kenall selects LED components from brand name manufacturers (Nichia, Lumileds, Osram, Cree, etc). There are a variety of reasons that Kenall chooses this approach:

- A lower risk of patent infringement and supply chain disruptions
- They are typically at the forefront of research and development break-throughs
- Highest performance levels (lumen output, CRI)
- Highest quality; higher probability of future sustainability

Beyond LED manufacturers, Kenall selects specific LEDs that are most appropriate for the application. No two brands of LEDs will perform identically in a luminaire, which means that the strengths and weaknesses of each LED must be matched up with every product and the product’s intended use.

How does Kenall state LED product performance?
In order to provide a true assessment of delivered light, Kenall is committed to stating LED luminaire performance at the luminaire level, not the lamp level. Lumen output, power consumption, lifetime and even color temperature all depend on the unique characteristics of the lamp enclosure (luminaire). Therefore, it is important to understand that the only way to assess LED luminaire performance is to measure to industry standard testing procedures such as IESNA LM-79. Evaluating products to this standard includes the optical, thermal and electrical losses that will significantly drop the delivered output from the published LED output.

LED LM-79 Testing Protocol
All Kenall LED Luminaires are tested to the IESNA LM-79-08 standard requiring spectroradiometric measurements for CRI and CCT as well as goniophotometric measurements for lighting distributions and total luminous flux in our certified laboratory.

Are LM-79 and LM-80 test results available on Kenall LED products?
Kenall’s policy is to make LM-79 information (regarding photometric and spectroradiometric luminaire performance) and LM-80 information (regarding LED lumen maintenance) available on all LED-based products. Kenall’s published lumen maintenance test results will describe both sets of data.

Kenall is a Lighting Facts Partner and regularly submits our LED products to Lighting Facts for testing. Specific Lighting Facts labels can be found on our website at www.kenall.com

What is the TekDek CBEA Option?
The CBEA option for TekDek brings the luminaire to full compliance with the Commercial Building Energy Alliance (CBEA) Parking Structure Lighting Performance Specification, Version 1.0. This Department Of Energy sponsored performance specification is intended to provide adequate illumination in parking structures and save energy by implementing high-quality, high-performance lighting and controls. This comprehensive specification describes many luminaire requirements such as: light quality light distribution, efficacy, LED reliability, driver operating characteristics, L70 lifetime, IP65 ingress protection, recyclable content and warranty.

While the standard TekDek product meets the majority of these requirements, the CBEA option offers an even higher level of warranty and surge protection. Besides the standard five-year warranty on LED light source and driver, the option provides a five year warranty against defects in materials and workmanship, paint finish and color degradation >0.007 on the CIE 1976 (u’,v’) diagram. An additional internal surge suppressor is also added that meets the requirement of surviving 250 repetitive strikes of “C-Low” waveforms, as described in IEEE/ANSI C62.41.2-2002, Scenario 1 Location, Category C at one minute intervals with <10% degradation in clamping voltage.

For further specification details, please refer to the CBEA specification located at www.eere.energy.gov.

Technological Resources – LED FAQ's
What is the design lifetime of Kenall LED products?
LEDs are notably different in their common failure mode from incumbent lamp sources such as incandescent, fluorescent or HID. Whereas these lamps fail suddenly, LEDs will experience a continuously degrading lumen output until the luminaire becomes ineffective. Although LED light sources can be designed for a very long life expectancy, their functionality can be limited by the failure of the driver or the degradation of components that protect the internal electronics.

Taking these factors into account, the end-of-life of the LED luminaire is defined as the point at which the lumen depreciation of the fixture is 30% or greater from the product’s LM-79 lumen output on the date of manufacture. To that extent, Kenall, to the best of its abilities, will adhere to the following product design policy to design its LED luminaires to a minimum lifetime of 60,000 hours of continuous operation. At which time it is expected that the lumen depreciation of at least 50% of a population will be greater than 30%. The SmartSense™ Control Module LED will flash RED when the sensor reads levels below 70% of original levels, signifying LED end of life, or L70.

What is Kenall’s LED Component & Driver Replacement Policy
Kenall will design and manufacture its LED luminaires to allow for field-replacement of all LED components and power electronics by a certified electrician with the knowledge of handling sensitive electronic devices. Furthermore, Kenall will support its LED products for a period of 5 years from the date the product is discontinued. This includes warranty and non-warranty failures.

Kenall will make a best effort to provide direct replacement components. However, due to the rapid advancement of LED performance levels and their long expected lifetime, it may not be possible to provide a direct replacement. The same is true for the driver/power electronics. Although Kenall will attempt to match the original characteristics as much as possible, replacement LED components may have a slightly different appearance and a higher total flux than originally specified. Nominal color temperature and a minimum CRI will be held constant. In no cases will the rated flux of the LED be lower than the original product when new.
Complementary Parking Garage Products

Building Facade

**Millenium Auracryl™ Sconce**
- UL
- IP64
- ADA
- Wet Locations

**Millenium Freescale™**
- UL
- IP65
- ADA
- Wet Locations

**Millenium FreeScale™ Pyramids**
- UL
- IP64
- ADA
- Wet Locations

**Millenium Rounds™**
- UL
- IP64
- ADA
- Wet Locations

**Millenium™ Squares**
- UL
- IP64
- ADA
- Wet Locations

**Millenium™ Ovals**
- UL
- IP65
- ADA
- Wet Locations

**Millenium Finite™**
- UL
- IP64
- ADA
- Wet Locations

**Millenium Edge™**
- UL
- IP64
- ADA
- Wet Locations

**Herculux™**
- UL
- IP64
- ADA
- Wet Locations

The Kenall product shown on this page is manufactured in the USA with components purchased from US suppliers, and meets the Buy American requirements under the ARRA. Kenall has not determined the origin of its domestically purchased components or the subcomponents thereof.


The Kenall product shown on this page is manufactured in the USA with components purchased from US suppliers, and meets the Buy American requirements under the ARRA. Kenall has not determined the origin of its domestically purchased components or the subcomponents thereof.
Complementary Parking Garage Products

Stairwell Luminaires with optional integral occupancy sensor

- **Millenium Stretch™**
  - Nominal 12”×24”, 12”×48”
  - Wet Locations

- **Nova™**
  - Nominal 10”×48”
  - Wet Locations

- **EnviroSeal™**
  - Nominal 5”×48”
  - Optional

**Emergency Exit and Egress**

- **Millenium Metrex™**
  - Cold Weather Emergency Battery Packs available.
  - Wet Locations
HOSEDOWN RATINGS AND RELATION TO IP RATINGS

Limitations of Wet & Hosedown Ratings – UL Standards
UL standards for “wet” type ratings only offer a wet location rating, which simulates an outdoor rain condition. UL standards for a type 4 or NEMA 4 “hosedown” rating uses a 1 inch diameter nozzle on a fire hose delivering 65 gallons of water per minute. Various conditions exist where a fixture requires a rating better than a wet location label but not NEMA 4. These conditions typically exist in washdown applications where hose directed water or cleaning agents will be directed at the fixture.

Benefits of Ingress Protection Ratings – IEC standards
The IP water rating of “5” (IP_5), described in IEC Standard 60598, provides an intermediate step between the rain rating and the NEMA 4 rating. It also provides an internationally accepted standard which can be used to evaluate fixtures or any other electrical equipment, and the test can be performed by an independent third party testing agency for verification. Underwriters Laboratories investigates products and tests to the IEC standard.

Dust-tight Protection
An additional test criterion that can be applied to fixtures is the ability to exclude solid matter. The IP solid rating of “6” (IP6_) means the fixture will be dust tight. The specified test requires that the fixture be placed in a circulating talc atmosphere for 3 hours. The particle size of the talc is a range of one to 75 microns and the fixture is placed under negative pressure in an attempt to draw the talc into the fixture. No talc shall be found inside the fixture after this test.

The Importance of Recognized Standards & Independent Testing
Other lighting manufacturers that claim a hosedown rating other than NEMA or IP are not testing to recognized standards and cannot have the tests confirmed or audited by an independent outside testing agency.

Beware of statements such as “Tested to 75psi at 1 inch.” No reference is made to the volume of water that is leaving the nozzle and impacting the product. In fact, high nozzle pressures typically have low water volumes because the nozzle is restricting the flow of water causing the pressure in the hose to increase, minimizing the amount of water leaving the nozzle.

Regardless of the hose pressure, any water volume less than 3.3 gal/minute is less severe than the IP_5 test. The most relevant characteristics are the diameter of the nozzle and the flow rate of the water. The following chart shows the test characteristics for various Standards.

What are IEC Standards?
IEC Standards are international standards that many European countries adopt as their national standard. North America has traditionally adopted UL standards as the source for standards. U.S. product manufacturers designed their products to IEC standards initially for sale overseas but are finding them increasingly useful here in North America.

IP STANDARDS CHARACTERISTICS

<table>
<thead>
<tr>
<th>Rating</th>
<th>Standard</th>
<th>Nozzle Dia</th>
<th>Flow Rate</th>
<th>Distance</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP_5</td>
<td>IEC 60598</td>
<td>0.2 inches</td>
<td>3.3 gal/min</td>
<td>8-10 ft</td>
<td>15 min</td>
</tr>
<tr>
<td>NEMA4</td>
<td>NEMA 250</td>
<td>1.0 inches</td>
<td>65 gal/min</td>
<td>10-12 ft</td>
<td>5 min</td>
</tr>
<tr>
<td>Marine</td>
<td>UL 595</td>
<td>1.0 inches</td>
<td>115 gal/min</td>
<td>10 ft</td>
<td>5 min</td>
</tr>
</tbody>
</table>

Kenall’s MedMaster line of hosedown rated products are approved for use in various Standards.

Independent Testing
Kenall has the tests confirmed or audited by an independent outside testing agency.
### EXPLANATION OF “INGRESS PROTECTION” IP NUMBERS

**for Degrees of Protection for Sealed Luminaires**

**Example:**

<table>
<thead>
<tr>
<th>IP65</th>
<th>DEGREES OF PROTECTION INDICATED BY THE FIRST CHARACTERISTIC NUMERAL</th>
<th>Brief details of objects which will be “excluded” from the enclosure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Numeral</td>
<td>Short Description</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>Non-protected</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>Protected against solid objects greater than 50 mm</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>Protected against solid objects greater than 12 mm</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>Protected against solid objects greater than 2.5 mm</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>Protected against solid objects greater than 1.0 mm</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>Dust-protected</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>Dust-tight</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IP65</th>
<th>DEGREES OF PROTECTION INDICATED BY THE SECOND CHARACTERISTIC NUMERAL</th>
<th>Brief details of objects which will be “excluded” from the enclosure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Numeral</td>
<td>Short Description</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>Non-protected</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>Protected against dripping water</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>Protected against dripping water when tilted up to 15°</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>Protected against spraying water</td>
</tr>
<tr>
<td>4</td>
<td>4</td>
<td>Protected against splashing water</td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>Protected against water jets</td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>Protected against heavy seas</td>
</tr>
<tr>
<td>7</td>
<td>7</td>
<td>Protected against the effects of immersion</td>
</tr>
<tr>
<td>8</td>
<td>8</td>
<td>Protected against submersion</td>
</tr>
</tbody>
</table>

**NOTE:** The author thanks the International Electrotechnical Commission (IEC) for permission to reproduce definitions for IP65 from its International Standard IEC 60598. All such extracts are copyright of IEC, Geneva, Switzerland. All rights reserved. Further information on the IEC is available from www.iec.ch. IEC has no responsibility for the placement and context in which the extracts and contents are reproduced by the author; nor is IEC in any way responsible for the other content or accuracy therein.
**TekDek™ Warranties & Lighting Facts**

**Warranty**

The TekDek™ LED product is warranted by Kenall to be free of defects in workmanship and materials for a period of one (1) year from the date of invoice. Kenall warrants LED lamps and internal power regulation components for a period of five (5) years from the date of invoice against defects in materials and workmanship that result in a fixture lumen depreciation of 30% or greater. Lumen depreciation is compared to the published lumen output of the product on the date of manufacture per IESNA LM-79 reporting procedures. Normal accumulation of particulates on the optical surfaces shall not be factored into the lumen depreciation. Kenall’s Peace of Mind Guarantee® is available for the TekDek LED when a textured polycarbonate lens (TP) and the Direct-to-Surface (DTS) mounting options are selected when ordering and installed according to instructions.

Kenall is pleased to be able to offer our exclusive Peace of Mind Guarantee® on the TekDek LF luminaire. When installed according to our instructions, Kenall will repair or replace any fixture rendered inoperable due to physical abuse for the life of the product installation.

The SmartSense™ Control System is warranted by Kenall to be free of defects in workmanship and materials for a period of one (1) year from the date of invoice.

Optional CBEA Warranty: Five year warranty on defects in workmanship and material, LED lamps and power regulation, paint finish (chipping/cracking/fading), color shift greater than .007 (CIE1976).

Kenall reserves the right to issue credit, repair, or replace the defective merchandise, at its discretion, upon notification and confirmation by its local representative of the defect. Kenall also reserves the right to test and examine the defective product if the defect is questionable, and to deny the warranty herein for any product altered, improperly installed, or installed in applications for which it is not intended. This includes operation in ambient temperatures above stated limits for any length of time. Failure by electrical surge shall not be covered under warranty.

Kenall assumes no responsibility for labor or freight costs incurred in connection with the installation, removal, or replacement of products determined to be defective or any other consequential or incidental damages arising from the use of the product. Kenall’s entire liability on any claim of loss or damage resulting from a defective product is limited to the replacement price of the product.

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**LED Lighting Facts — Department of Energy LED Quality Advocate Program For LED Luminaires**

As a member of the Department of Energy’s LED Quality Advocates, Kenall Manufacturing has pledged to include the Lighting Facts label in conjunction with our LED luminaires. The label reports product performance results in five areas from actual test data* in accordance with industry standards measuring photometric performance of LEDs:

- Luminaire light output
- Efficacy (lumens per watt)
- Measured power (watts)
- Correlated Color Temperature
- Color Rendering Index

* Luminaire measurements have been standardized with the issuance of the IESNA Standard LM-79-2008 test procedure.

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Kenall Manufacturing is a registered Lighting Facts Product Partner. For more information about this program or for copies of our Lighting Fact Labels please contact Kenall at info@kenall.com, or visit us on the web at www.kenall.com

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Model Number: TD17-DS-5S-TA-MW-50L57K-DV

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Visit the Kenall website to view our broad selection of lighting for Parking Garages

Look to www.kenall.com for product details, specification sheets, photometric data and Revit® files for our innovative, LED parking luminaires. Whether your project calls for illuminating parking garage stairwells and other public areas, transportation platforms, porticos, or pedestrian walkways, Kenall has the design expertise, performance standards and product quality to meet the needs of any application.
TEKDEK™ LED
Luminaire for Parking Garages

TD17 SERIES

PRODUCT FEATURES:

- Ceiling mount – 17” diameter
- Sealed optics with uplight feature eliminating “cave effect”
- Textured lens for unprecedented glare reduction

SPECIFICATIONS:


MOUNTING: Choice of Direct-to-Surface over recessed J-Box, Quick Mount onto secured recessed, surface mount, or pendant hung J-Box, 3/4” Conduct Pendant Mount or Trunnion Mount.

DISTRIBUTION TYPES: Type II, III, IV, V-Narrow, V-Narrow and V-Square roadway classifications available. Types III and IV, and IV-Narrow available with house-side shielding to control spill light.

LENS: UV-stabilized, high impact resistant, injection molded clear textured 100% DR acrylic or polycarbonate lens. Lens secured with 4 Torx® fasteners.

GASKETING: Die-cut, closed cell neoprene self adhesive gasket seals housing to mounting surface. Closed cell, silicone “O” ring gasket seals lens to housing.

ELECTRICAL: Replaceable high-brightness ANSI 4000K (65 CRI min.), 5000K (65 CRI min.), and 5700K (70 CRI min.) white LED array. See Options for higher CRI lamp availability. 120-277VAC, or 347V High Power Factor Electronic Dimming Constant Current driver. 120-277VAC 50-60Hz or 347VAC 60Hz operation.

WARRANTY: Direct-to-Surface mounting and polycarbonate lens required for Peace of Mind Guarantee®. One year warranty against defects in materials and workmanship. Five year warranty on LED lamps and driver for defects resulting in a fixture lumen depreciation of 30% or greater.

LISTINGS: Luminaire is certified to UL Standards by Intertek Testing Laboratory for Wet Location. IP65 per IEC 60598. All Kenall LED Luminaires are tested to the IESNA LM-79-08 standard requiring spectroradiometric measurements for CRI and CCT as well as goniophotometric measurements for lighting distributions and total luminous flux.

For maximum efficiency, Kenall recommends the SmartSense™ Control System (ordered separately). For more information, visit www.kenall.com for specification sheets.

ORDERING INFORMATION

<table>
<thead>
<tr>
<th>Series</th>
<th>Mounting</th>
<th>Distribution Type</th>
<th>Lens Type</th>
<th>Finish</th>
<th>Lamp Type</th>
<th>Voltage</th>
<th>Options</th>
<th>Accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>TD17</td>
<td>DTS*</td>
<td>Direct-to-Surface</td>
<td>TA*</td>
<td>Textured Acrylic</td>
<td>S0L40K 50 Watt 4000K LED</td>
<td>DV 120-277</td>
<td>**</td>
<td>Bird Guard (n/a with DTS &amp; QM Mounting types)</td>
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<tr>
<td></td>
<td>QM</td>
<td>Quick Mount</td>
<td>TP*</td>
<td>Textured Polycarbonate</td>
<td>S0L50K 50 Watt 5000K LED</td>
<td>347 347 Volts (60Hz, 25° C ambient only)</td>
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<tr>
<td></td>
<td>PM</td>
<td>Pendant Mount</td>
<td></td>
<td></td>
<td></td>
<td>50 Watt 5000K LED</td>
<td></td>
<td>Debris Shield</td>
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<tr>
<td></td>
<td>TK</td>
<td>Trunnion Kit</td>
<td></td>
<td></td>
<td></td>
<td>50 Watt 5000K LED</td>
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<td></td>
</tr>
</tbody>
</table>

**DTS Mounting Only

**Includes additional surge protection and warranty benefits

Accessories

- BG Bird Guard (n/a with DTS & QM Mounting types)
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**Length**
- 48”
- 96”

**Finish**
- LG Gray
- SL Silver
- MB Matte Black
- MW Matte White
- FG Forest Green
- GW Reflectance White
- CC Custom Color

**Specifications:**

**BASEPLATE:** One piece die-formed 20-gauge steel provided with 6-point (4’ luminaire) or 8-point (8’ luminaire) mounting and one wiring hole. TGIC polyester powder coat – 5-stage pre-treatment. Salt spray test: 1,000 hours. See Ordering Information for available finishes.

**REFLECTOR:** Parabolic die-formed specular aluminum (T8) and high reflectance white (T5HO) provides batwing distribution.

**LENS:** UV-stabilized extruded prismatic polycarbonate lens with a smooth exterior. Nominal thickness .100”. Secured in gasketed channel with Torx® fasteners – (10) for 48” length; (15) for 96” length. Self-hinging design (no lanyard required).

**ELECTRICAL:** See Ordering Information for ballasts options and optional equipment. Lamps by others.

**WARRANTY:** Peace of Mind Guarantee®. Not applicable with Philips Fasteners (PH).

**LISTINGS:** Luminaire is certified to UL Standards by Intertek Testing Laboratory for Wet location. IP65 per IEC 60598.

For maximum efficiency, Kenall recommends the SmartSense™ Control System (ordered separately). For more information, visit www.kenall.com for specification sheets.

**Ordering Information**

<table>
<thead>
<tr>
<th>Series</th>
<th>Length</th>
<th>Finish</th>
<th>Baseplate</th>
<th>Lamp Type (Cross Section)</th>
<th>Ballast</th>
<th>Voltage</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>TD13</td>
<td></td>
<td></td>
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<tr>
<td>T5 48”</td>
<td>13.13</td>
<td>6.13</td>
<td>13.07</td>
<td>8.00 46.86 40.00 n/a</td>
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<td>T5 96”</td>
<td>13.13</td>
<td>6.13</td>
<td>13.13</td>
<td>8.00 93.43 47.75 29.90</td>
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<td>T8 48”</td>
<td>13.13</td>
<td>6.13</td>
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<td>8.00 48.50 40.00 n/a</td>
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<td>347</td>
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<td>T8 96”</td>
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<td>6.13</td>
<td>13.13</td>
<td>8.00 97.00 43.50 30.00</td>
<td></td>
<td>n/a</td>
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</table>

For more information, visit www.kenall.com or consult www.kenall.com for current product details. © 2011 Kenall Mfg. Co. All rights reserved.


The Kenall product shown on this page is manufactured in the USA with components purchased from US suppliers, and meets the Buy American requirements under the ARRA. Kenall has not determined the origin of its domestically purchased components or the subcomponents thereof.
SMARTSENSE™ CONTROLLER SYSTEM
Sensor and System Controller

SSCS SERIES

PRODUCT FEATURES:
» Zonal occupancy and daylighting control
» Strategic component placement
» Multiple sensor and controller configurations (including combination units)
» Low-voltage dimming control of luminaires
» Suitable for new and retrofit installations

SPECIFICATIONS
SMARTSENSE CONTROLLER: Centralized, zonal area occupancy and daylighting controller. Automatic self-commissioning of system parameters. L70 LED lifetime detection indicator. Adjustable 'standby' light level setting (20%-100%). Receives input from up to six (6) SmartSense sensors. 0-10VDC dimming signal output to luminaires (see SmartSense Compatibility chart for compatible products). Controls up to 32 luminaires per controller. Controllers can be interlinked to operate additional luminaires and sensors per zone. Integral LED indicators provide system status.

SMARTSENSE SENSOR: Passive infrared occupancy detection with integral light level sensor. Lenses options provide 360° coverage at various mounting heights and coverage areas. Operates by low-voltage power provided by SmartSense Controller.

HOUSING AND DOOR: Seam-welded 18-gauge CRS. White TGIC polyester powder coat finish with five-step pre-treatment. Salt spray test: 1,000 hours. Housings provided with multiple 7/8” and 1” conduit knockouts. Door attached to housing with continuous stainless steel hinge. Silicone gasketing.

CONTROLLER HOUSING WINDOW: 0.25” clear polycarbonate; secured to door with continuous retention system and silicone gasket.

DOOR FASTENER: SENSOR MODULE: One (1) tamper-resistant Torx® fastener secures door to housing. CONTROL MODULE: One (1) pin-tumbler style keyed lock. All control module locks are keyed alike. Two keys included.

INSTALLATION: Suitable for mounting to wall or ceiling surfaces with four-point mounting. All signal cabling shall be wired Class I with 18AWG, 600V TFFN wire. Suitable for temperatures of -40°C to 40°C.

PATENT: U.S. Patents Pending.

WARRANTY: One-year warranty on materials and labor; five-year warranty on sensor.

LISTINGS: SENSOR MODULE: Wet Location – Covered Ceiling Listed to UL 508. Certified IP65 per IEC 60529. CONTROLLER MODULE: Wet Location – Covered Ceiling and Wall Mount Listed to UL 508. Certified IP65 per IEC 60529. All listings and certifications by Intertek Testing Laboratory.

SMARTSENSE COMPATIBILITY MATRIX

<table>
<thead>
<tr>
<th>Product Family</th>
<th>Product Name</th>
<th>LED Compatible Ballast</th>
<th>Fluorescent Compatible Ballast</th>
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<tr>
<td>Tek Dek™</td>
<td>TD17</td>
<td>Dimming Constant Current (DCC)</td>
<td>Specified Ballast (SB) - Dimming (DM7)</td>
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<td>TD13</td>
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<tr>
<td>Millenium Stretch™</td>
<td>MLHA548</td>
<td>Dimming Constant Current (DCC)</td>
<td>Specified Ballast (SB) - Dimming (DM7)</td>
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<td>MLHA848</td>
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<td>Specified Ballast (SB) - Dimming (DM7)</td>
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<td>MLHA1248</td>
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<tr>
<td>Envirosell™</td>
<td>ES348 / FES348</td>
<td>Dimming Constant Current (DCC)</td>
<td>Specified Ballast (SB) - Dimming (DM7)</td>
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<tr>
<td></td>
<td>ESS48 / FESS48 / TESS48</td>
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<td>Specified Ballast (SB) - Dimming (DM7)</td>
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<td></td>
<td>ES848</td>
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<td>ES1248</td>
<td>Dimming Constant Current (DCC)</td>
<td>Specified Ballast (SB) - Dimming (DM7)</td>
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<td>Envela®</td>
<td>ME11</td>
<td>Dimming Constant Current (DCC)</td>
<td>Specified Ballast (SB) - Dimming (DM7)</td>
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<td>HRDL6L / M2RDL6L / MRDL6L</td>
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<td>Specified Ballast (SB) - Dimming (DM7)</td>
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<td>Nova I™</td>
<td>NS48</td>
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<td>Specified Ballast (SB) - Dimming (DM7)</td>
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<td>mighty Mac™</td>
<td>SDSA2</td>
<td>Dimming Constant Current (DCC)</td>
<td>Specified Ballast (SB) - Dimming (DM7)</td>
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<tr>
<td></td>
<td>SDSA4</td>
<td>Dimming Constant Current (DCC)</td>
<td>Specified Ballast (SB) - Dimming (DM7)</td>
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<tr>
<td></td>
<td>CD4 / CC4</td>
<td>Dimming Constant Current (DCC)</td>
<td>Specified Ballast (SB) - Dimming (DM7)</td>
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<tr>
<td></td>
<td>SJA4</td>
<td>Dimming Constant Current (DCC)</td>
<td>Specified Ballast (SB) - Dimming (DM7)</td>
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</tbody>
</table>

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SSCS SERIES

ORDERING INFORMATION – SENSOR MODULE

<table>
<thead>
<tr>
<th>Sensor Module Qty</th>
<th>Lens Type (Coverage Dia. × Mounting Height)</th>
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</thead>
<tbody>
<tr>
<td>1 One</td>
<td>S5208 20&quot; Dia. × 8&quot; Ht. (Dry Location only)</td>
</tr>
<tr>
<td>2 Two</td>
<td>S55020 40&quot; Dia. × 20&quot; Ht.</td>
</tr>
<tr>
<td></td>
<td>S5488 48&quot; Dia. × 8&quot; Ht.</td>
</tr>
<tr>
<td></td>
<td>S56048 60&quot; Dia. × 40&quot; Ht.</td>
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</table>

ORDERING INFORMATION – CONTROLLER

<table>
<thead>
<tr>
<th>Control Module Qty</th>
<th>Controller Quantity</th>
<th>Voltage</th>
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</thead>
<tbody>
<tr>
<td>1 One (One Zone, max. 6 sensors and 32 luminaires)</td>
<td></td>
<td>Dual Voltage 120-277V</td>
</tr>
<tr>
<td>2 Two (Two Zones OR max. 12 sensors and 64 luminaires per zone)</td>
<td></td>
<td>347 347 Volts (60Hz, 25° C ambient only)</td>
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<tr>
<td>4 Four (Four Zones OR max. 24 sensors and 128 luminaires per zone)</td>
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</tbody>
</table>

ORDERING INFORMATION – COMBINATION SET – SENSOR & CONTROLLER

<table>
<thead>
<tr>
<th>Sensor &amp; Module Qty</th>
<th>Sensor &amp; Controller Qty</th>
<th>Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 One (One Zone, max. 5 additional sensors, 32 luminaires)†</td>
<td></td>
<td>Dual Voltage 120-277V</td>
</tr>
<tr>
<td>2 Two (Two Zones, max. 10 additional sensors, 64 luminaires)†</td>
<td></td>
<td>347 347 Volts (60Hz, 25° C ambient only)</td>
</tr>
</tbody>
</table>

† System can be further expanded by additional sensors and controller units
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