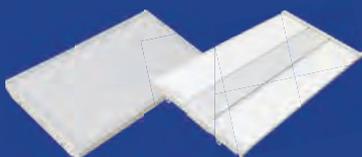




INDUSTRIAL & WAREHOUSE LIGHTING Application Guide



Adaptable. Reliable. Simple.

About Us

Since 1999, Morstar has been a manufacturer of quality lighting and dedicated to providing certified energy-efficient lighting solutions for commercial use. Our headquarters are located in Livonia, Michigan. We have LED Lighting distribution warehouses in California, Texas and Michigan. Our numerous distribution centers across the United States ensure that ordering and delivery are both reliable and efficient. With ample stock and well-established shipping channels, we guarantee timely service. Moreover, our direct access to the manufacturing process enables us to ensure optimal product design, customization, and reliability. This places us at the forefront of quality control and distribution.

Morstar is committed to true innovation by employing the state-of-the-art design and engineering technologies that meets or exceeds international standards of design, quality, performance, and energy efficiency. We have earned the respect of engineers, designers, lighting distributors, architects, project stakeholders and related professionals worldwide. Join us on the path of innovation and brilliance.



Call MORSTAR Lighting today for the ideal energy-efficient lighting solution for your industrial.

(877) 977-3732 | www.morstarlighting.com



Introduction

Discovery & Design

We will provide a comprehensive, custom lighting solution from an experienced team of lighting professionals who will work closely with you to understand your specific needs.

Product Integration Services

You have a choice of LED lighting fixtures and control systems from a broad portfolio.

Innovative intelligent control system

You can opt for efficiency and reliability with Morlink automated control technology. Intelligent control minimizes manual control operating costs and increases energy efficiency.

ROI Optimization

You will experience almost immediate financial benefits with a comprehensive lighting design plan built to deliver. We can assist in obtaining any available utility rebates or enrollment in energy-saving programs.

Industrial LED Lighting Solutions

MORSTAR provides industry-leading performance and reliability in high bay, warehouse, and industrial lighting. This comprehensive product line provides a complete lighting solution for entire facilities, for both indoor and outdoor applications. All products meet applicable local and national standards. Our products are widely used in commercial and industrial applications all over the globe. Morstar has a solution for any lighting challenge.



Total Cost of Ownership

Cost of Lighting
Initial Cost **30%**

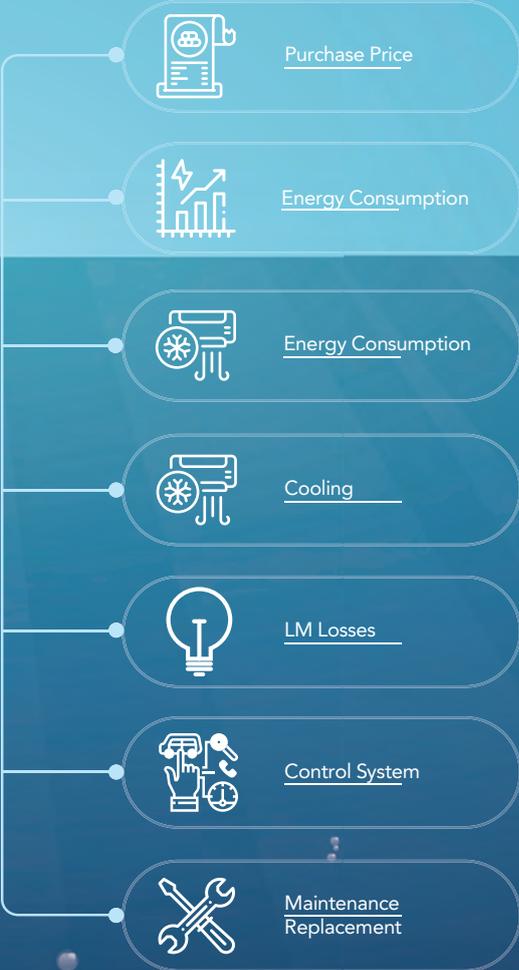
The Hidden Costs

Ongoing Cost
70%

Calculating Cost

Total cost of ownership is a financial estimate that helps owners and managers determine the direct and indirect costs of a lighting system. Going beyond energy consumptions and wattage comparisons, calculations should include all the less apparent costs related to the installation and should consider the full cost of an asset over its useful life. This includes ongoing maintenance, affects on cooling systems, sensors and code requirements, and lumen maintenance calculations. When the full cost is examined it makes it easy to see how high-efficient LEDs reduce energy costs and increase the lifetime of the luminaires.

Cost Breakdown



CREATE A HIGH-QUALITY LIGHTING ENVIRONMENT

The significance of lighting in industrial and warehouse settings for quality control surpasses that of other application areas. Particularly concerning productivity and safety, factors such as facility management, maintenance costs, productivity, and downtime are critical. Additionally, costs, consumption, and emissions significantly affect energy management. Morstar lighting solutions tailored for industrial and warehouse spaces offer a top-tier lighting environment, facilitating facility maintenance and energy conservation. This, in turn, ushers in a new era of energy efficiency, productivity, quality enhancement, and heightened employee morale.





Industrial & Warehouse Lighting Guide

Having the right lighting conditions for your factory or warehouse is of paramount importance. Industrial spaces are often unique and operate in a variety of different ways. With their high ceilings, large spaces and narrow aisles, industrial spaces can be challenging to light. As such, it's essential to ensure an effective, largescale lighting solution is installed.

Safety considerations
Energy efficiency and maintenance considerations
Recommended industrial led light fittings



HOW TO CHOOSE THE RIGHT INDUSTRIAL LIGHTING?

The right lighting helps to create a safe working environment. Suitable lighting can prevent accidents from happening and improves the overall health and safety performance of an organisation. Choosing the right lighting solution is vital for a wide range of tasks to be completed successfully. The right lighting will complement your working conditions and have a positive impact on the performance and productivity of your workforce.



WHAT ARE THE SAFETY CONSIDERATIONS FOR INDUSTRIAL LIGHTING?

From precision work to forklift safety, high and consistent lighting levels are essential in factory and warehouse settings. High ceilings and narrow aisles make it particularly challenging for light to reach all areas. However, the consequences of a dark or dimly lit workplace can be serious. Therefore, it's important to choose products that control the light distribution. A narrow beam angle, for example, will illuminate aisle spaces efficiently, while wide beam angles are best suited for open areas.

Keeping glare to a minimum is important in any workplace setting. In high risk environments, where staff operate machinery or look up at racks, a momentary loss of visibility, caused by glare, could lead to a serious accident. Importantly, the lens

design in LED lights can provide both efficient and glare free operation.

In industrial environments, staff often work non-standard hours under artificial light which can affect their wellbeing and productivity.



Choosing the appropriate LED colour temperature can make a big difference to the look and feel of a space. Good factory lighting will improve the working environment as it will make your factory safer, look brighter, and mean your products can be better seen, leading to better quality. Don't make your staff work in a dim and dull environment. Bright white daylight colours are ideal for use in warehouse or factory applications, where staff are working for long periods of time.

ENERGY EFFICIENCY AND MAINTENANCE CONSIDERATIONS



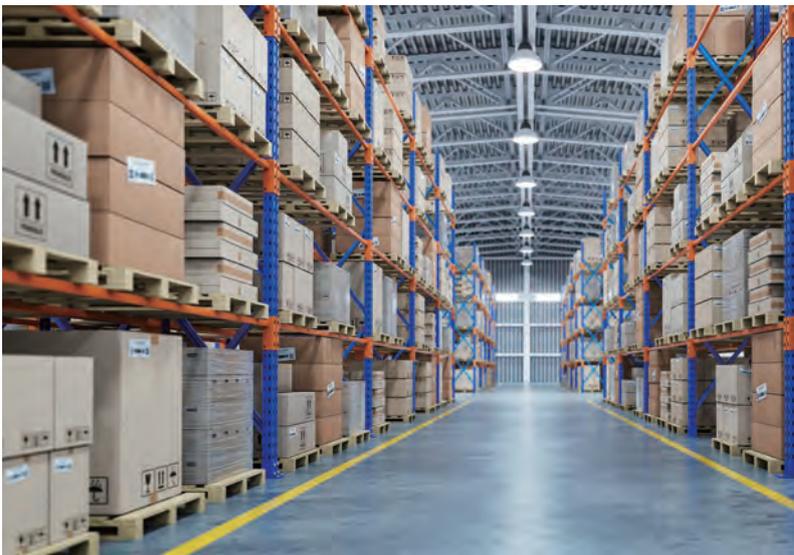
LED lighting may initially appear to be a luxury during installation. However, given that many LED light fixtures consume 75% less power than traditional bulbs, the return on investment (ROI) is relatively short. While it may not seem significant for homeowners with few lighting fixtures in small houses, the savings in energy consumption and costs can be substantial for commercial properties like office complexes or warehouses.

LED lights emit considerably less heat than most traditional bulbs. Not only is this a safety advantage, it's also an advantage in cost savings. Decreased heat emissions assist in temperature regulation within facilities. This is beneficial while trying to manage temperatures in hot working environments.

Another important consideration when choosing industrial lighting is maintenance costs. High ceilings can make changing defective and defunct light bulbs arduous and costly. As such, the less frequently bulbs require replacement, the better.

LED lights have a much longer life expectancy than comparable alternatives. A good quality LED light can last approximately ten years. Requiring less frequent replacement, LED lights offer greater longevity and ensure enhanced energy efficiency.

To operate around the clock, industrial spaces require constant artificial light which can incur considerable energy costs. LED lighting offers the ideal solution for industrial settings. Boasting energy efficiency and superior light quality, LED installations far outshine the alternatives. LED lighting is far more energy efficient than the traditional alternatives, offering far superior light output and distribution. Furthermore, the lights also turn on instantly, unlike the older lamp types that take minutes to warm up to full brightness. While switching to LED lighting will inevitably incur a large financial outlay, once you've made the leap, you'll undoubtedly see an almost instant reduction in your energy bill.



Usually, in a larger indoor space, the use of high bay lighting can adapt to and meet the needs of many applications. Elevated lighting fixtures are generally hung from the ceiling by hooks, chains or pendants, and can also be directly fixed on the ceiling. Industrial spaces require powerful lighting, so many high-bay lighting products integrate side reflectors to improve light distribution and directional lighting to provide appropriate lighting levels.

Maintenance is a particularly important consideration for industrial lighting. High-bay luminaires installed in higher positions always need some special equipment for replacement or maintenance. The modular design of modern luminaires means less maintenance or replacement.

While low bay lights are often recommended for use in spaces with lower ceiling heights, they too are often fitted in difficult to reach areas. An important consideration with any high or low bay light is whether it boasts a handy, 'fit and forget' feature. High-strength non-corrosive lighting products with slide-out mounting brackets are very suitable for installation in various industrial environments. They can provide powerful lighting environment support.



Industrial & Warehouse Lighting Guide

Example:
200 fixtures



HID
458W

vs.



6L T5HO 54W
356W

vs.



High Bay Series
150W

High Bay Series

Warehouse

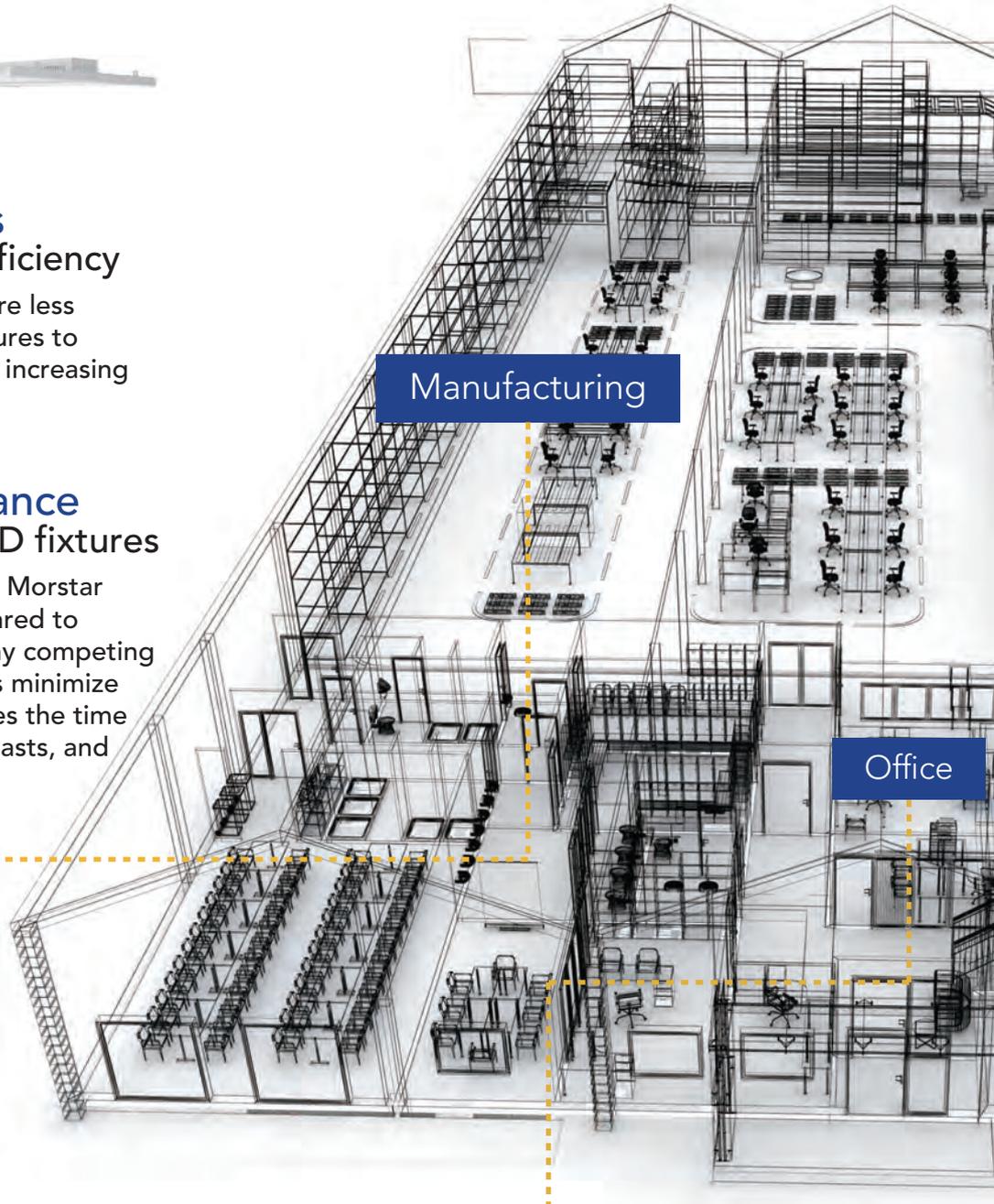


Lower Energy Bills with higher energy efficiency

High Bay Series fixtures require less wattage than similar light fixtures to deliver the same light output, increasing energy savings.

Reduced Maintenance with longer lasting LED fixtures

LED fixtures manufactured by Morstar boast a longer lifespan compared to conventional fixtures and many competing LEDs. This characteristic helps minimize maintenance costs and reduces the time spent on replacing lamps, ballasts, and drivers.



Manufacturing

Office

Low Bay Series

Recessed Series

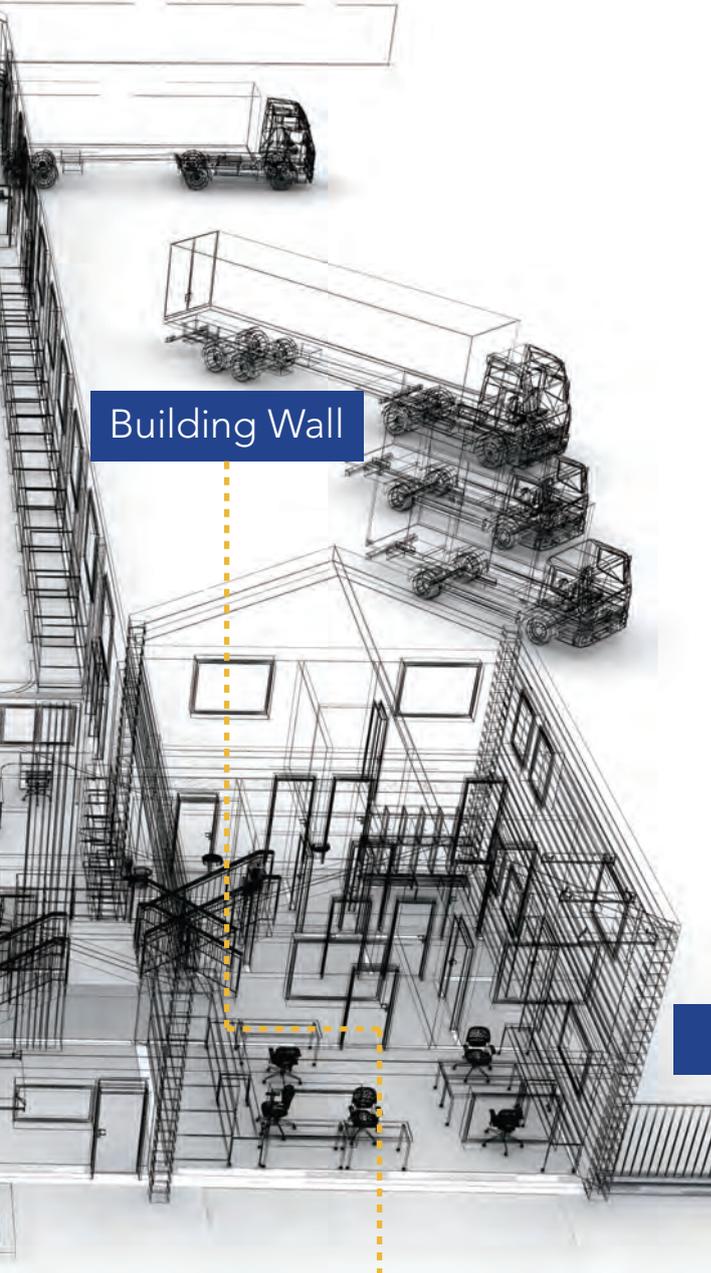




Linear Series

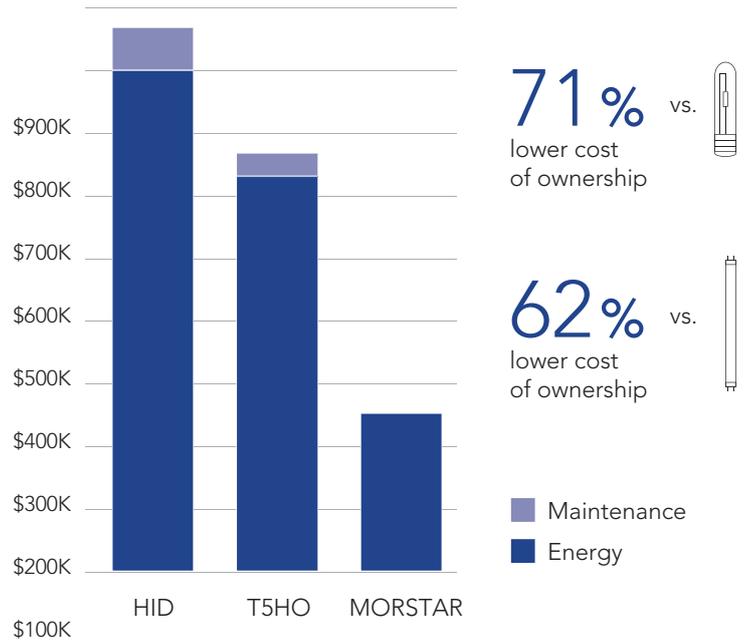


Shipping & Receiving



Building Wall

TOTAL COST OF OWNERSHIP OVER 10 YEARS (24/7)



Energy cost: \$0.10/kWh. 24/7 usage. HID (life: 20Khrs, lamp: \$12, ballast: \$40). T5HO (life: 20Khrs, lamps (6): \$3 each, ballast: \$50). Labor: \$80/hr

Parking Lot

Wallpack Series



Area Light Series





Smart, High-Performance Lighting

The U.S. Department of Energy in 2015 reported the adoption of LEDs stated that by 2030, 84 percent of all lighting sales will be LEDs.

The report also stated in 2014, there were 139 million low/high bay fixtures installed in the U.S., and 3.1 million of those were LED. If all of the lights installed were LED, the entire country would save collectively around \$12 billion in energy costs. This is equivalent to about 1,165 tBtus of source energy.

The potential financial benefits show all that can be gained by choosing warehouse lighting with smarter LED systems.



Investing in smart warehouse lighting solutions from Morstar makes business sense. Maintaining a large warehouse facility with outdated lighting technology is expensive and unsustainable in today's highly competitive business environment.

Morstar understands the lighting needs of warehouse spaces. Differentiating zones and automating when light is needed and the intensity, provides a smart lighting solution that reduces costs and energy consumption while creating optimum lighting conditions for the workforce.

By gaining a deep understanding of how your warehouse space is used, we offer bespoke solutions based on our knowledge of better lighting that will reduce energy costs, lower carbon emissions and provide your workforce with the lighting they need to improve morale, efficiency, and safety.

CHOOSE YOUR IDEAL HIGH BAY

LINEAR HIGH BAY

The LED linear high bay light is an ideal choice for high-performance, long-life replacement of HID and linear fluorescent high bay lights. Various color temperatures and light uniformity will ensure comfortable and safe conditions, So as to maximize the productivity of each application site.



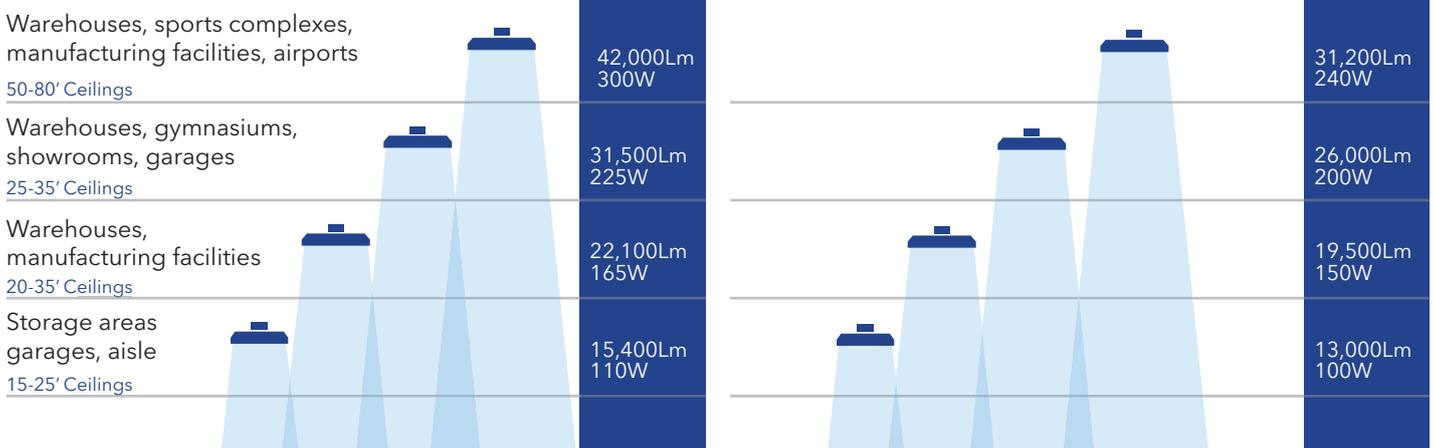
UFO HIGH BAY

MORSTAR UFO high bay light combines long life and excellent efficacy of up to 150LPW. It is a cost-effective solution that can save energy and maintenance costs to the greatest extent. Fast start-up, easy installation and sturdy structure design make it suitable for various application requirements.



Comparison Chart	Lumens	11,200	15,400	22,100	30,800	31,500	42,000	13,000	19,500	26,000	31,200	
	Efficiency	140						130				
	CRI	84						83				
	CCT	4000K & 5000K						3000K /4000K /5000K / 5700K				
	Optics	Clear & Diffuse						Beam angle: 60°/90°/120°				
	Sensor Options	HD408VRH, BRI819P-B-D,HD4VRH						HD408VRH, BRI819P-B-D,HD4VRH				
	Ambient Range	-4° to 122°F (-20° to 50°C)						-40° to 122°F (-40° to 50°C)				
	Input Voltage	120-277V, 100-347V, 347-480V						100-277V				
	Ratings	    						    				
	DLC	5.0 Premium						5.0 Premium				

High Bay Comparison





MORSTAR Smart Led Control System

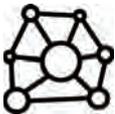
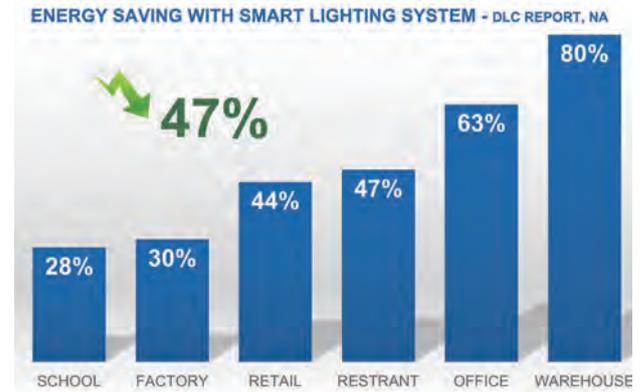
Based On Morlink AI+IoT Platform

Morstar Lighting has launched an innovative wireless control system based on Morlink Bluetooth smart control technology. No gateway is required. Functions as single-point access or mesh network, which is faster and more secure.



Cost Savings

Reduce energy bills by utilizing only when needed. Expands the fixture life by running either at lower output or fewer hours, this also reduces the maintenance cost.



Delivers a robust control network

Morstar's Bluetooth intelligent lighting control systems can achieve point-to-point, group, and many-to-many control of lighting fixtures. The system has scalability, compatibility and two-way high-speed communication data.



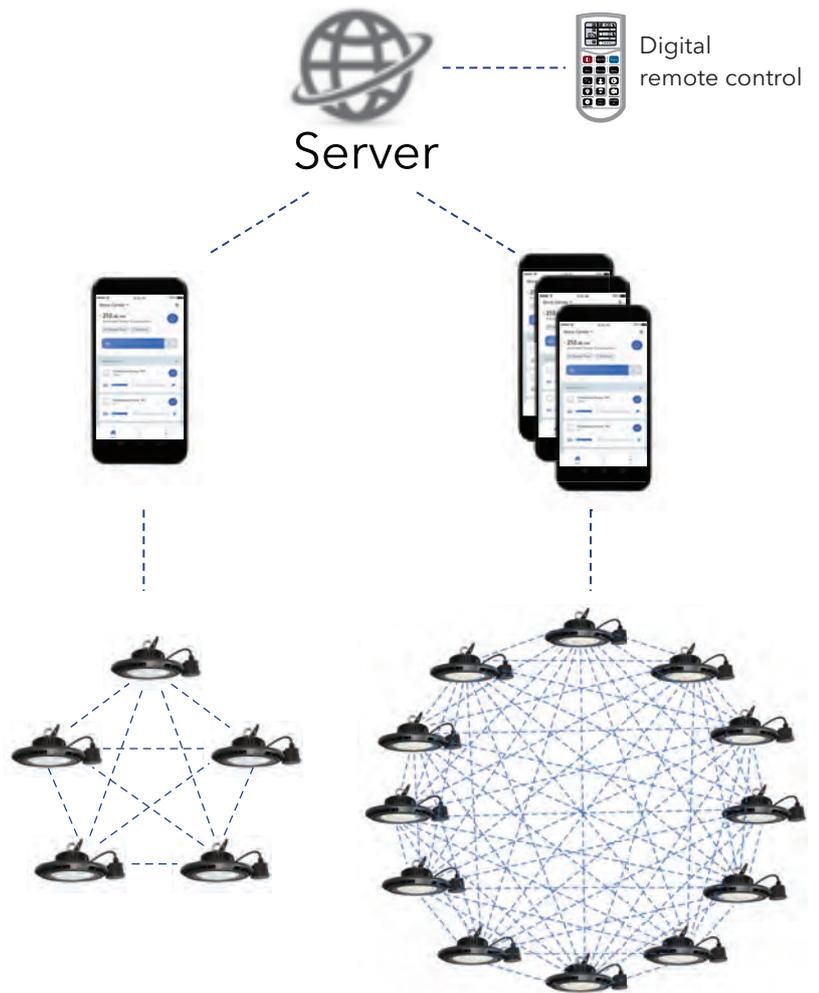
Faster & Simpler

The lighting controls can be installed and commissioned in hours. No need for routers or gateways. Fast, responsive performance and powerful features such as groups, scenes, schedules, and sensor control are within easy reach, even for smaller shops and spaces.

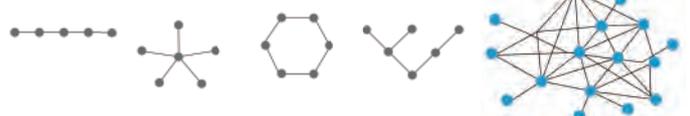


Secure as well as stable

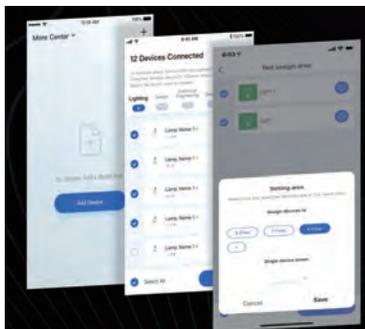
Bluetooth mesh networks or individual subnets and groups have the security covered by encryption and authentication. All Bluetooth communications are encrypted using two decryption keys: 1) a network key or a specific network, and 2) an application key related to a specific function.



Bluetooth Mesh

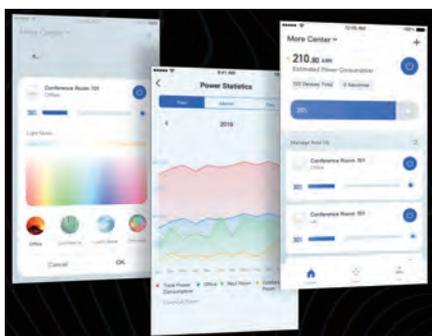


MORSTAR's smart lighting solution enables customers to monitor the operation and maintenance needs of all devices through a graphic user interface. With built-in reporting and system insights, businesses can identify and implement strategies to reduce operation and maintenance costs.



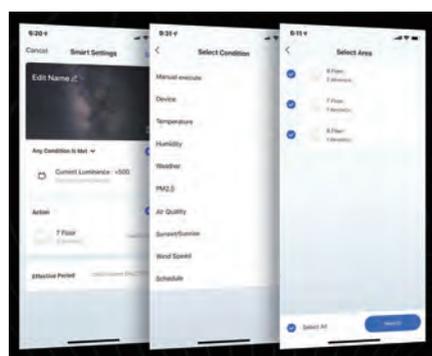
Adding Multiple Devices

- Automatically sees nearby compatible devices in pairing mode and adds them.
- Quickly assign new devices to areas and groups.
- Multiple device types available, including lighting fixtures, wall switches, sensors, remote controllers etc.
- Create scenes to automatically control devices using sensors, switches and other criteria.
- Control other types of devices including security, HVAC, etc.
- Control multiple protocols in one app.



Devices Management and Control

- Control all of the devices in a building, floor, group etc. at once.
- Shortcut buttons to change power, brightness, CCT and color.
- Classify the devices by categories.
- Calculation of energy usage by day, month and year based on entered wattage. Power meters available for the most accurate power consumption.
- Calculation of the total use time of each device and replacement reminders.
- Alarm for abnormal conditions.
- All group and device status displayed



Scene and Automation

- Create automations based on multiple trigger types including sensors, switches, schedules, and settings of other devices.
- Set the effective time of the scene.
- Receive a push notification when a scene is activated.
- Create multiple conditions to trigger scenes. Control multiple devices and areas at once.
- Can be used to implement energy-saving strategies and to calculate the results.
- Preset scenes and actions for circadian rhythms.

For more cool features, please download the app to experience

All the functions
can be setting through the APP



Please let us know if you need other functions for different scenarios. Thank you!

Let Us Help

MORSTAR Lighting is happy to help you with a one-stop lighting provider. We will create cost-saving solutions to keep your operation efficient and more profitable.

-  Custom Lighting Design
-  Integration Services
-  Inventory & Shipping
-  Lighting Controls



Call MORSTAR Lighting today for the ideal energy-efficient lighting solution for your industrial.

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