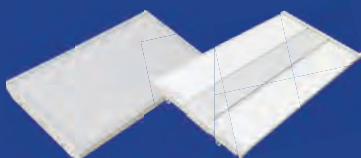




## INDUSTRIAL & WAREHOUSE LIGHTING Application Guide



**Adaptable. Reliable. Simple.**

# About Us

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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 multiple U.S. distribution centers make ordering and delivering reliable and efficient with abundant stock and established shipping channels. We have direct access to the manufacturing process to insure optimum product design, customization, and reliability. This makes us a leader in distribution and quality control.

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 owners 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](http://www.morstarlighting.com)



# Introduction

## Discovery & Design

You receive a comprehensive, custom lighting solution from a team who truly listens to understand your specific goals.

## Product Integration Services

You can choose from abroad portfolio, including the latest LED lighting technologies.

## Innovative intelligent control system

You can choose efficient and reliable based on TUYA The intelligent lighting control system of technology further reduces Manual operation cost.

## ROI Optimization

You see attractive financial benefits with a plan built to deliver – we even assist with utility rebate capture and propose.

## Industrial LED Lighting Solutions

MORSTAR provides industry-leading performance and reliability in high bay, warehouse, and industrial lighting. This complete product series enhances the control capability of the system and meets and exceeds the requirements of local and national codes. It is widely used in industrial and commercial properties including a variety of spaces, including warehouses with shelves, offices, toilets, parking lots, and exit channels. MORSTAR has solutions for all your lighting needs.



## Total Cost of Ownership

Cost of Lighting

Initial Cost **30%**

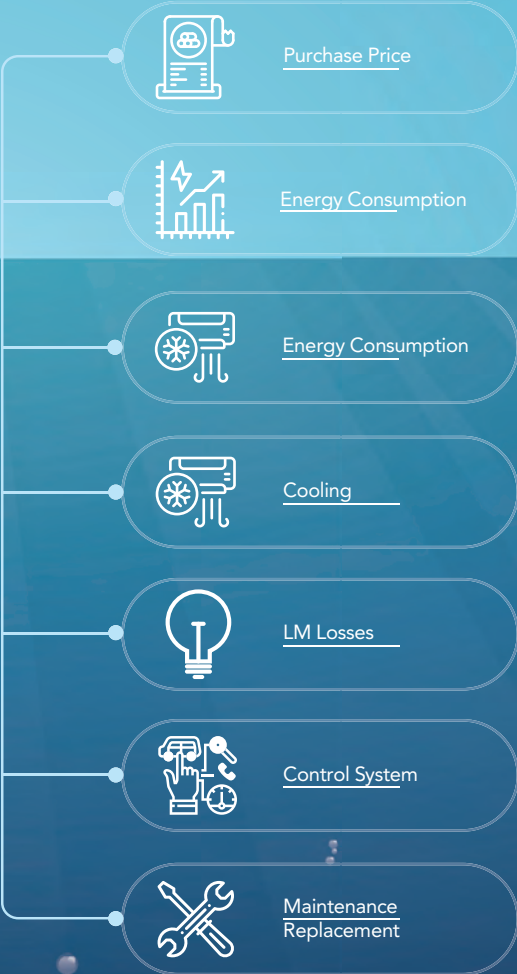
The Hidden Costs

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 impact of lighting on industrial and warehouse quality control is more important than other application areas. Especially in terms of productivity and safety, for facility management, maintenance costs, productivity, and downtime are critical, while costs, consumption, and emissions will all have an impact on energy management. Morstar lighting for industrial and warehouse spaces provides a high-quality lighting environment for facility maintenance and energy saving, thereby bringing new energy, productivity, quality, and 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 unsociable 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 can seem like a luxury at the time of installation, but with many LED lights using 75% less power than traditional bulbs, the payback time is pretty quick. While it might not seem worth the bother if you have a small house with few lights to worry about, when you run commercial premises, such as an office complex or a warehouse, the savings in energy use and costs can be enormous.

LED lights emit barely any heat when they are switched on. Not only is this a safety advantage, it's also an advantage in saving costs. Facilities can save money on the air-conditioning costs associated with trying to cool an uncomfortably hot working environment.

Another important consideration when choosing industrial lighting is maintenance costs. High ceilings can make changing defective and defunct light bulbs an arduous and tricky task. 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, incur less expense 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.



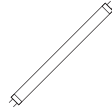
# Industrial & Warehouse Lighting Guide

**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 needs less wattage than similar light fixtures to deliver the same light output, increasing energy savings.

## Reduced Maintenance with longer lasting LED fixtures

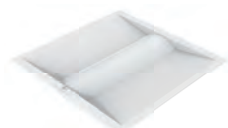
LED fixtures made by Flex Lighting Solutions have a longer lifespan than conventional fixtures and most compete with LEDs, helping you reduce maintenance costs and time spent replacing lamps, ballasts and drivers.

Manufacturing

Office

Low Bay Series

Recessed Series

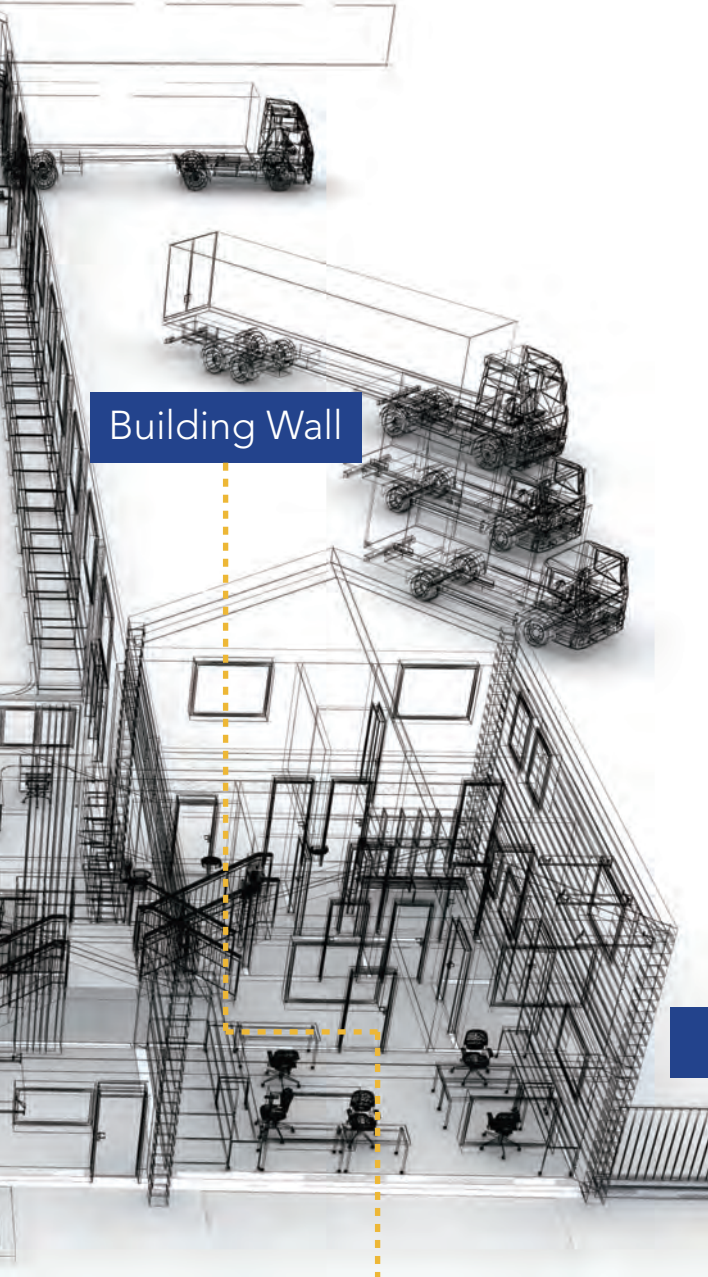




### Linear Series

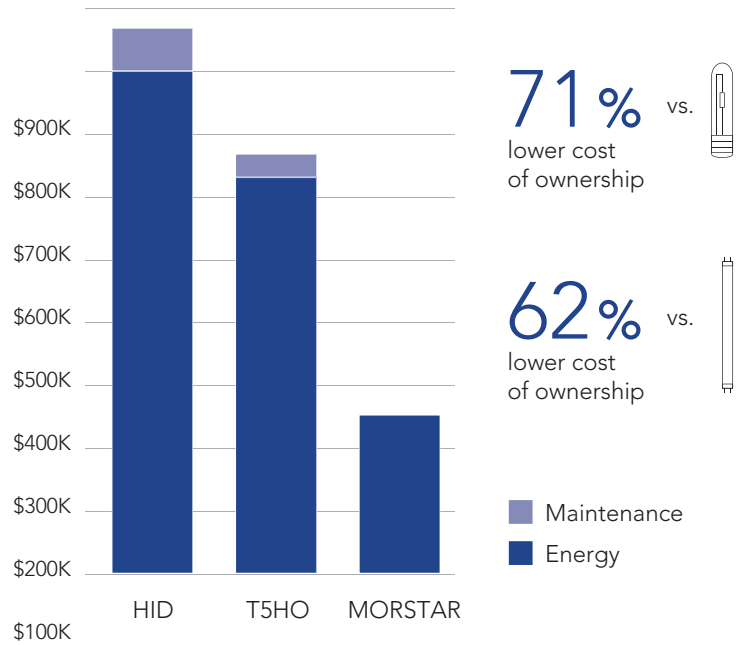


Shipping & Receiving



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





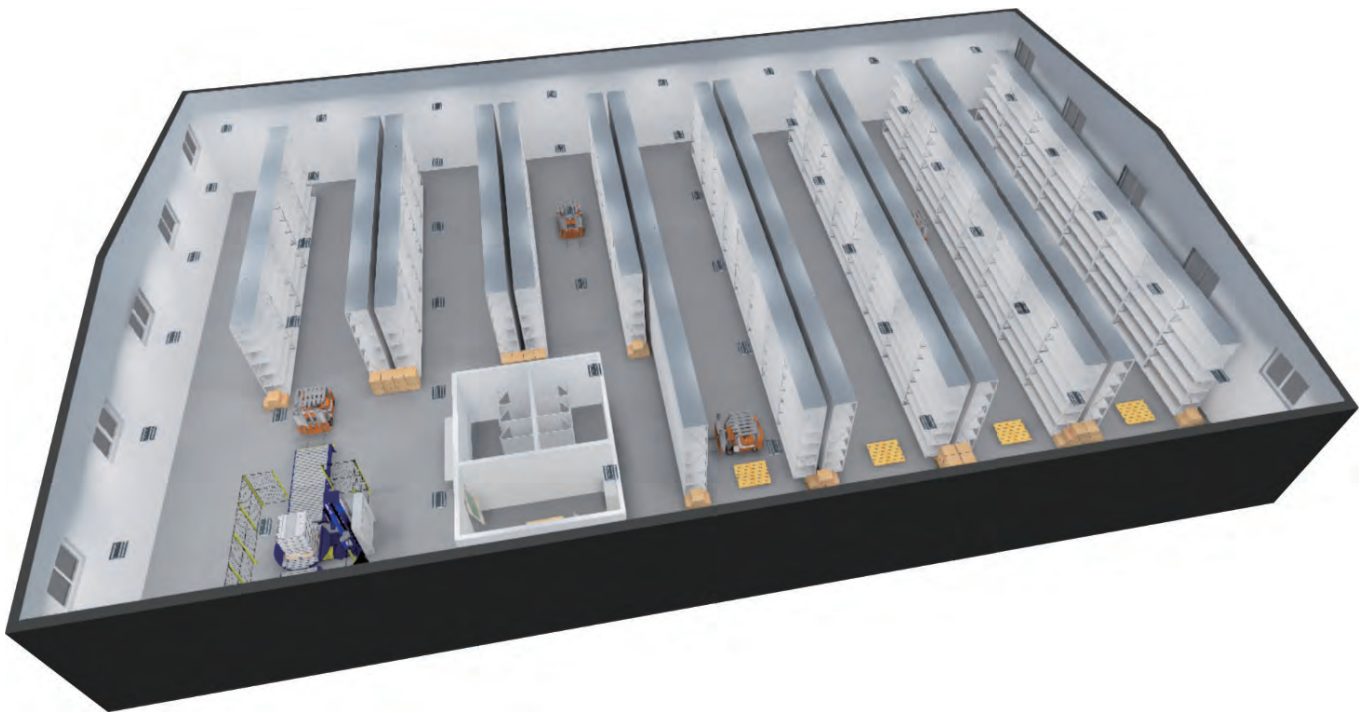


## SMART, HIGH-PERFORMANCE LIGHTING

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.



Smart warehouse lighting solutions from Morstar make business sense. Having the right warehouse facility is costly and unsustainable in today's highly competitive business environment.

Morstar understands the lighting needs of warehouse spaces. Differentiating zones and when light is needed, 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 feel good in their place of work.

# 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.



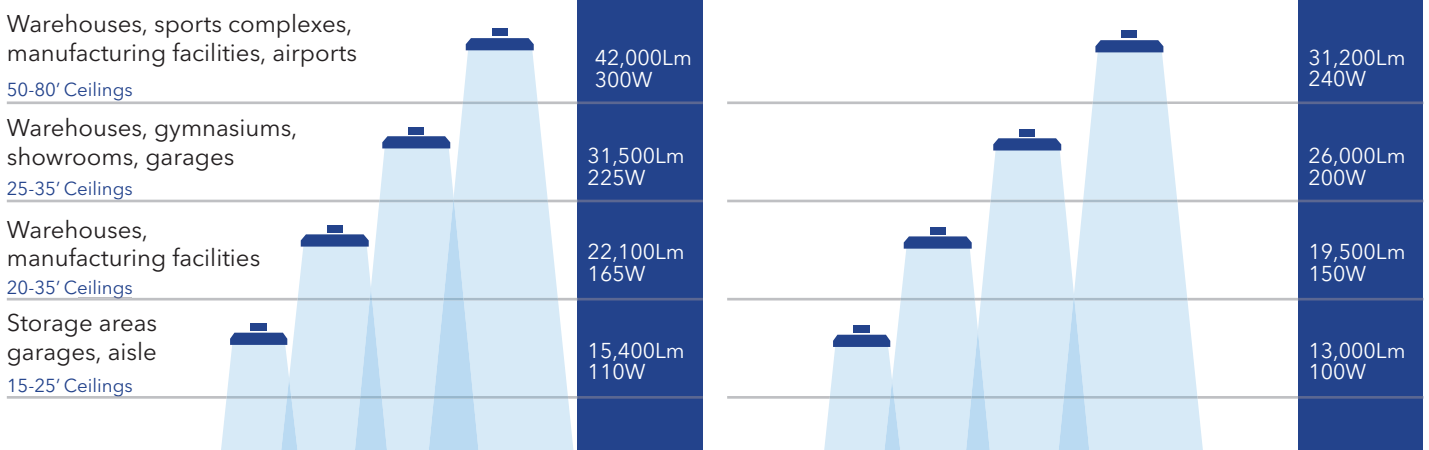
## UFO HIGH BAY

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

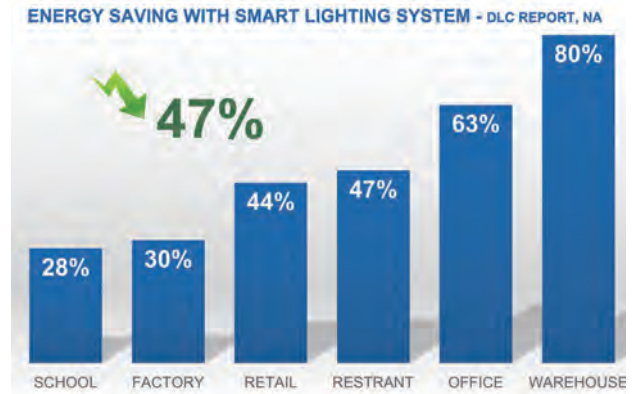
Based On Tuya AI+IoT Platform

Morstar Lighting has launched an innovative wireless control system based on Tuya Bluetooth smart control technology. No gateway, whether it is single-point access or mesh networking access, it will be more secure and faster.



### 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 routers or gateway. Fast, responsive performance and powerful features such as groups, scenes, schedules, and sensor control are easily within reach, even for smaller shops and spaces.



### Secure as well as stable

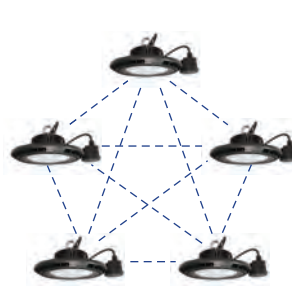
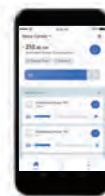
Bluetooth mesh networks or individual subnets and groups have the security covered by encryption and authentication. All Bluetooth communications are encrypted using two decryption keys: 1) a network key for a specific network, and 2) an application key related to a specific function.



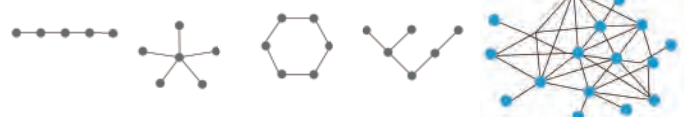
Server



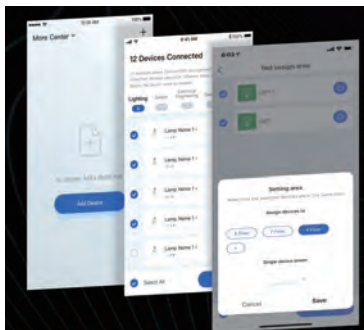
Digital remote control



Bluetooth Mesh



MORSTAR's smart lighting solution we provide 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 are able to identify and implement strategies to reduce operation and maintenance costs.



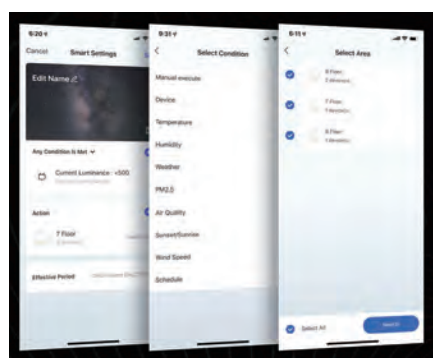
### App Adding Multiple Devices

- Automatically nearby 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.



### 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



### App 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

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MORSTAR Lighting is happy to help you with a one-stop lighting scene solution. We will create more value for you to provide more possibilities.

-  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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