



Dark Sky® lighting Management System offers a sophisticated lighting control system, developed from a whole system approach, grouping the entire system into a logical hierarchy, from the city, to the street and control-device level. This ensures that you have a “zoom” to adjust the view over each unit, or at any every level, within the system.

Core of the system, is a point to multipoint mesh networking technology, based on a three tier architecture, incorporating the luminaire controller, the area controller, and centralized web server and MySQL Database.

The luminaire controller, typically installed within the luminaire, facilitates the controlling and monitoring, of each individual luminaire. Each controller or electronic “all in one “ control gear, supplies a dimmable output well suited for High pressure Sodium, Ceramic Metal Halide, Compact HID or LED-based luminaire.

All **Dark Sky®** devices communicate via the self-discovering, self-healing mesh network, in order to transmit the data between themselves and a segment controller, each segment controller co-ordinates the interaction of manual and preprogrammed commands, switching schedules with up to 400 luminaire controllers and also interacting directly with the centralized web server for data logging and error reporting.

Dark Sky® Web based operation monitors, controls and manages your lighting installation from anywhere in the world, to the level of a single each luminaire. From street level, to web level, it’s only a matter of browsing the internet. Locate and monitor your installation in geographic maps, access predefined reports, configure the system, while updating and rapidly embedding into the devices, in remote, new dimming profiles or switching schedules.

All received information, sent to the central web server, are stored in a MySQL Database and are accessible for reports, or to program a fault rectification, or a load balancing, or to evaluate the lamp life time forecasting. Where maximum security is essential, specific user firewall rule and VPN functions, provide remote stations, secure authentication and data traffic encryption.

The **Dark Sky®** segment and area controllers are installed in the existing control cabinets and enable communication from the central server location to the control cabinets via wireless or wired communication, without requiring new cabling. The communication is based on both wired and wireless carriers such as: GPRS/GSM; SMS or Wi-Fi; or Fiber optics or Ethernet.

1 The modules can withstand extreme temperatures from -40°C to $+60^{\circ}\text{C}$ and are installed and thoroughly tested, in climates around the world, from cold areas in Norway & Denmark to dry desert environments of the Gulf region.

2 In other words **Dark Sky®** is an advanced & complete web based lighting telemanagement system with easy integration with existing installations and a perfect mix of cost saving, higher energy efficiency without compromising quality and safety.

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The **Dark Sky®** features:

- **Central Real-time control & Complete remote monitoring:**
 - The lighting failures are automatically reported by the system, saving time and costs;

- **Dimming:**
 - Lights are dimmed during low traffic hours to save energy or enhanced in problematic neighborhoods to improve safety;

- **Accurate policies for switching on/off:**
 - Every day the correct operating time calculated on the basis of sunrise, sunset timings and the season, to determine when it has to be switched on or turned off;
 - Remote metering;
 - Power quality metering;
 - Automated reading of digital power meters in control cabinets;

- **Intelligent energy metering & billing:**
 - A smart meter accurately calculates the energy consumption taking into account the varying rates and automatically bills all entities with a full web based report.

- **Smart asset management:**
 - The digital system smartly plans and routes the maintenance works to minimize operating & maintenance costs due to :

- Burning hours reports, for proactive lamp change;
- High up-time and immediate fault rectification;
- Control cabinet fault monitoring;

The **Dark Sky®** benefits:

- **Quality:**
Improved quality of light;
The right quantity of light with specific settings for area or for each luminaire;
A wide range of dimming strategies to create a safe lighting environment for all situations;
Lighting uniformity with optional central photocell command;
Voltage stabilization:
 - Mains voltage fluctuations do not affect light output, so costs can be reduced by specifying lighter-duty cabling and/or fewer switching cabinets;
 - Load balancing and Load shedding.
- **Energy & cost savings:**
 - Up to 40% extra energy savings;
 - High system efficiency to save energy;
 - Increasing, to the level of a single each luminaire, the power factor up to 0,99;
 - Lowering of lamp high inrush current;
 - An extended lamp life due to soft ignition and control of electrical and thermal stresses;
 - Up to 50% of reduction of the total cost of ownership, while at the same time maintaining consistent lighting performance.
- **Simplified maintenance & retrofitting;**
 - No power factor correction needed so no capacitor to fail;
 - Only one component to simplify servicing;
 - Peak voltage protection to safeguard lamp, and surge protected to safeguard gear;
 - Fully protected components against dust, moisture and vibrations
 - The universal small size of the product ensures an easy fit into any new or existing luminaire or pole;
 - Compact size and low weight provide design flexibility and easy installation
- **Dark Sky is a sustainable lighting solution:**
 - Less CO₂ is generated over the products lifetime;
 - Less waste and recycling costs.