OLE LUMINAIRES

SINCE 1993

LTE | LoRaWAN | ZigBee

OLE EAGLE

SMART LIGHTING SYSTEM

Connected Lighting. Smarter Cities.

www.oversealighting.com

SMART CITY

OLE EAGLE SMART LIGHTING SYSTEM

In the era of digital transformation, **Oversea Lighting's Smart Lighting Systems** are redefining urban landscapes. These systems are not just about illuminating cityscapes; they are about creating intelligent, connected, and sustainable cities.

Our Smart Lighting Systems **leverage the power of IoT and AI** to deliver efficient and adaptive lighting solutions. They automatically adjust the intensity of light based on the time of day, weather conditions, and presence of people or vehicles, ensuring optimal illumination while saving energy.

In the context of Smart Cities, our Smart Lighting Systems play a crucial role. They **enhance safety and security** by ensuring well-lit streets and public spaces. They contribute to energy conservation by optimizing light usage, leading to significant cost savings and a **reduced carbon footprint.**

OLE Eagle Smart System applies to:

Energy Management & Smart Grid

Intelligent Street Control

Internet of Things (IoT)

Data Analytics & Operation

Communication Type	LED Street Lighting	Solar Street Lighting
	AC Powered	DC Powered
LTE	/	/
LoRaWAN	/	/
ZigBee	/	/

Our Smart Lighting Systems are designed for durability and performance. They promise reliability and longevity, even in the harshest weather conditions. Their robust construction and superior heat dissipation features ensure optimal performance over time, with minimal maintenance needs.

Oversea Lighting's Smart Lighting Systems are transforming cities, one light at a time. They are an investment in a brighter, safer, and smarter urban future. Experience the future of urban lighting with Oversea Lighting's Smart Lighting Systems – where innovation meets sustainability, and intelligence meets illumination.

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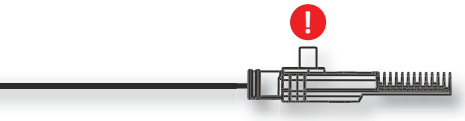
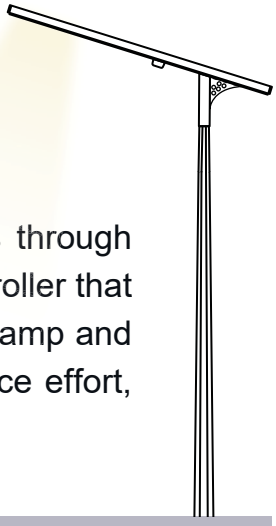
LTE





LTE system enables intelligent control of mains-powered street lights through reliable cellular communication. Each light is equipped with an LTE controller that supports remote on/off switching, dimming, and real-time monitoring of lamp and electrical status, allowing centralized management, reduced maintenance effort, and improved energy efficiency.

LTE AC Powered LED Street Lighting

- Enables intelligent control of mains-powered street lights through reliable cellular communication.
- Each light is equipped with an LTE controller that supports remote on/off switching, dimming, and real-time monitoring of lamp, allowing centralized management, and reduced maintenance effort.

LTE DC Powered LED Solar Street Lighting

- Monitors lamp operation, battery charging and discharging status, and system performance in real time, ensuring stable operation, efficient energy usage, and convenient remote management without the need for wired connections.

LTE Devices

- Street Light Controller (LTE18AC / LTE68DC)

Area of Application

- Advantage for scattered locations
- Compound Area
- Residential Area
- Highway

Connector Diagram

Light Controller
LTE18AC

Solar Light Controller
LTE68DC

e-SIM

or

Micro-SIM
(Optional)

Each street light is installed with a Light Controller. The controller enables remote on/off switching, dimming, and lamp status monitoring.

Using the LTE (4G) cellular network, each controller connects directly to the central management platform—so no gateway is required. This allows every street light to be monitored and controlled individually in real time, making deployment simple and management more efficient.

Features

Light Controller

LTE18AC

Electrical Monitoring
Current, voltage, power, energy, frequency & temperature

Switching & Dimming
On/off control with 0–10V / PWM output

Protection & Fault Detection
Over-current and overload protection with lamp status detection

Smart Control Modes
Time schedule, location-based and photocell control (optional)

Lamp Compatibility
LED, HPS & metal halide lamps

LTE Connectivity
LTE bands B1 / B3 / B5 / B8

Industrial Temperature
Operates from -35°C to +85°C

Easy Installation
Fast response to central commands

OTA Firmware Upgrade
Remote software updates supported

Specifications Light Controller (LTE18AC)

Parameters	Value	Remarks
Supply Voltage	AC85 - 277V	
Dimensions	Φ 84 mm x 97.8 mm	
IP Code	IP66	
Rated Output Current	2A	
Dimming Type	0 - 10V / PWM	Optional
Product Output	Single - phase AC	
Data Collection	U, I, P, Q, COSΦ	

Parameters	Value	Remarks
Transmit Power	23 dBm ± 2 dB	
Sensitivity	-97.5 dBm	
USIM Interface	1.8/ 3.0V, support SIM and USIM	Supports Telecom, Mobile, Unicom
Antenna Gain	3 DB	
Antenna VSWR	≤ 2.0	
Antenna Type	Built-in	

Features

Light Controller

LTE68DC

Zhaga Book 18 Interface
Standard plug-and-play connection

DC 5V Input | RS485 Output
Designed for solar lighting control

LTE Wireless Monitoring
Real-time remote monitoring and control

Switching & Dimming
Remote on/off, dimming, and battery/ load parameter control

System Status Monitoring
Solar panel, battery, load & controller status

Fault Alarm
Automatic fault detection and reporting

GPS Location (Optional)
Location tracking for fault identification

Industrial Temperature
Operates from -40°C to +85°C

LTE Frequency Bands
FDD: B1 / B3 / B5 / B7 / B8 / B20 B28
TDD: B34 / B38 / B39 / B40 / B41

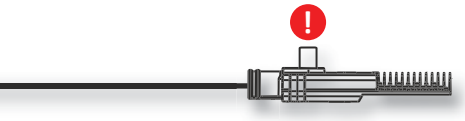
Easy Installation
Fast response to central commands

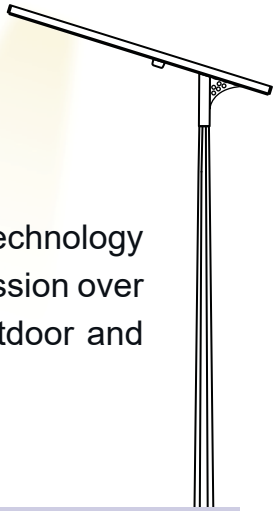
Specifications Light Controller (LTE68DC)

Parameter	Value
IP Code	IP66
Output Interface	RS485
Data Collection	U, I, P, Q, COSΦ
Wireless Frequency	As per channel plan (868MHz, 915MHz, 923MHz, etc.)

Parameter	Value	
Antenna Type	Built-in	
Antenna Gain	3dB	
Antenna VSWR	≤1.5	≤2.0
Transmission Distance	400M (*)	2KM

LoRaWAN





LoRaWAN is a low-power, long-range wireless communication technology designed for large-scale IoT applications. It enables reliable data transmission over long distances with minimal power consumption, making it ideal for outdoor and citywide deployments such as street lighting networks.

LoRaWAN AC Powered LED Street Lighting

- Enables wireless control and monitoring of mains-powered street lights.
- Each light is equipped with a LoRaWAN controller for remote switching, dimming, and real-time status monitoring
- Allows centralized management, reduced maintenance effort, and improved energy efficiency.

LoRaWAN DC Powered LED Solar Street Lighting

- Provides intelligent control for off-grid solar lighting systems.
- The controller monitors lamp operation, battery charging and discharging status, and system performance in real time, ensuring reliable operation, efficient energy use, and easy remote management without the need for wired communication.

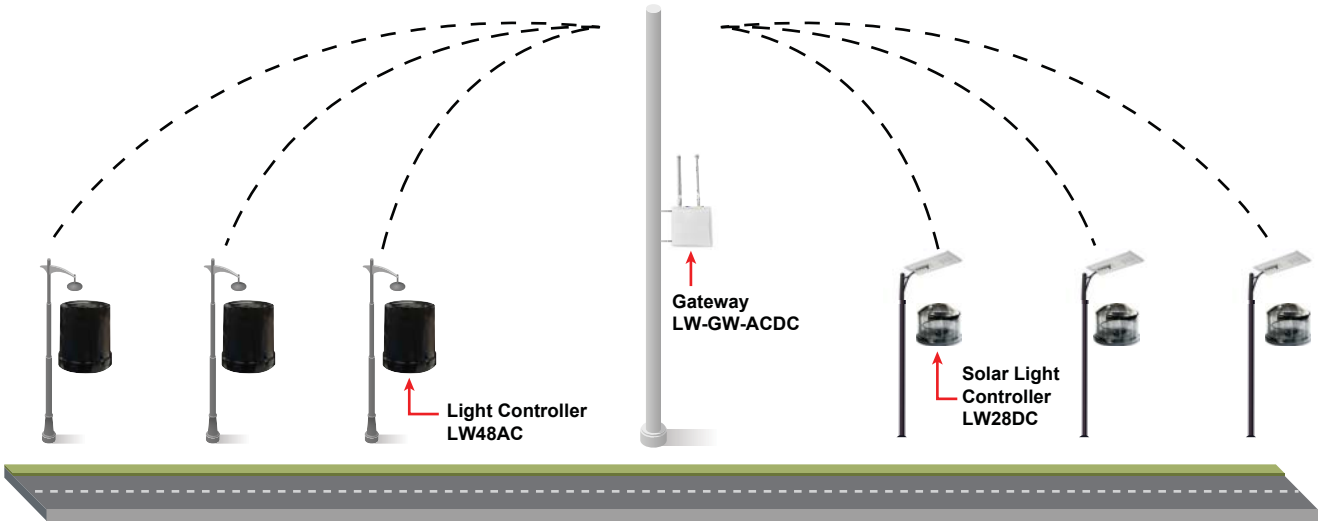
LoRaWAN Devices

- Gateway (LW-GW-ACDC)
- Street Light Controller (LW48AC / LW28DC)

Area of Application

- Highway
- Long Range Distance
- Highmast

Connector Diagram



Light Controller
LW48AC

Solar Light Controller
LW28DC

LoRaWAN Gateway
LW-GW-ACDC

Each street light is fitted with a **Light Controller** to manage on/off switching, dimming, and lamp status. The controllers communicate wirelessly over long distances using LoRaWAN technology.

All controllers connect to a central **LoRaWAN Gateway**, which collects data from multiple lights and sends it to the management platform for centralized monitoring and control.

Features

LoRaWAN Gateway

LW-GW-ACDC

LoRaWAN Gateway
LW-GW-ACDC

Multi-Network Connectivity
4G cellular and Ethernet access with simultaneous multi-network operation

High-Speed WAN Interface
10/100/1000 Mbps Ethernet port with 4G SIM slot

Reliable Cellular Compatibility
Fully compatible with major 3G/4G operator networks

Network Backup & Auto Switching
Intelligent wired and wireless failover for continuous data transmission

Data Buffering & Recovery
Local data storage during network interruption with automatic upload after recovery

Multiple LoRaWAN Bands
Supports CN470, IN865, EU868, RU868, US915, AU915, AS923, KR920

Zigbee Master (Optional)
2.4 GHz global license-free Zigbee support

Protocol Compatibility
Supports MQTT, TCP/IP, and MODBUS RTU to TCP conversion

Industrial-Grade Design
Durable ABS enclosure for 24/7 stable operation in harsh environments

Wide Voltage Input
AC 110–277V or DC 9–24V (optional) for flexible installation

Specifications LoRaWAN Gateway (LW-GW-ACDC)

Interface Definition

Interface	Description	Remarks
Power Supply	AC110~277V Power Input / DC 9-24V	Do not reverse polarity
SIM Card Slot	nano-SIM card *chip side downward, notch side inward	Pull out the SIM card module, insert SIM card and press to lock
WAN	10/ 100/ 1000Mbps, waterproof connector	
Wi-Fi	Built-in	
GPS	Built-in	
RST	Reset button, long press 10s to restore factory settings	
4G	4G antenna port	
LoRa	LoRa antenna port	
Zigbee	Built-in or external antenna	Optional

Product Specification

Interface	Description	Remarks
Power Model	LW-GW-ACDC	LoRaWAN Outdoor Base Station
Network Type	WAN port	10/100/1000Mbps Adaptive network port
	4G	Selective 4G module for targeted country
Power Supply	Power supply range	AC110 ~ 277V
Others	Dimensions	205MM(L) × 205MM(W) × 74MM(H)
	Working Temperature	-40 ～ +80ºC
	Storage Temperature	-40 ～ +85ºC
	Relative humidity	≤95%RH（No condensation）

Product Specification

Interface	Description	Remarks
4G	Working Frequency	FDD LTE: B1/B3 TDD LTE: B38/B39/B40/B41 TDSCDMA: B34/B39 CDMA2000 1x/EVDO: BC0 GSM: 900/1800MHz
	Transmission Rate	LTE-FDD: Max 100Mbps (DL) Max 50Mbps (UL) LTE-TDD: Max 61Mbps (DL) Max 18Mbps (UL) SCDMA-TD: Max 4.2Mbps (DL) Max 2.2Mbps (UL) CDMA: Max 5.4Mbps (DL) Max 14.7Mbps (UL) GPRS: Max 85.6Kbps (DL) Max 85.6Kbps (UL)
	Transmission Power	FDD LTE: 23dbm±2db TDD LTE: 23dbm±2db TDSCDMA: 24dbm +1/-3db GSM 900Mhz: 33dbm±2dbm GSM 1800Mhz: 30dbm±2dbm
	Transmission Rate	FDD B1: -97dBm (20M) FDD B3: -96dBm (20M) TDD B38: -94dBm (20M) TDD B39: -94dBm (20M) TDD B40: -94dBm (20M) TDD B41: -93.5dBm (20M) TDSCDMA B34: -110dbm TDSCDMA B39: -110dbm CDMA BC0: -108dbm GSM 900: -110dBm GSM 1800: -109dBm
System	CPU	MIPS1004Kc, dual-core, main frequency 880MHz
	RAM	256MB
	eMMC	8GB

Product Specification

Interface	Description	Remarks
NPU (Optional)	CPU	Dual-core Cortex-A53 processor, Highest main frequency 1.4GHz
	Computing Power	3TOPS Support IN8/INT16/FP16 Support TensorFlow, Caffe, ONNX and Darknet model 1080p@60fps H.264 decode 1080p@30fps H.264 decode
	System	Debian10
	RAM	1GB
	eMMC	8GB
LoRaWAN Frequency	Optional frequency band	CN470MHz, IN865MHz, EU868MHz, RU868MHz, US915MHz, AU915MHz, AS923MHz, KR920MHz

Features

Light Controller

LW48AC

Electrical Monitoring
Current, voltage, power, energy & temperature

Switching & Dimming
On/off control with 0–10V / PWM dimming

Protection & Alarms
Over-current protection and lamp fault detection

Smart Control
Time-based and location-based control

Lamp Compatibility
LED, HPS, and metal halide lamps

Built-in Photocell
Automatic on/off by ambient light

LoRaWAN Multi-Band
CN470, IN865, EU868, RU868, US915, AU915, AS923, KR923

Industrial Temperature
Operates from -40°C to +85°C

Easy Installation
Fast response to control commands

Specifications Light Controller (LW48AC)

Parameter	Value	Remarks
Supply Voltage	AC110-277V	
Dimensions	Φ84MM x 97.8MM	
IP Code	IP66	
Rated Output Current	2A	400W Max
Dimming Type	0-10V/ PWM	Optional
Product Output	Single-phase AC	
Data Collection	U, I, P, Q, COSΦ	
Transmit Power	20dBm±1dBm (max)	

Parameter	Value
Sensitivity	-136dBm±1dB (@SF=12)
Antenna Gain	3DB
Antenna VSWR	≤2.0
Antenna Type	Built-in
Photo Sensor Type	Built-in
GPS	Optional
Title Sensor	Optional

Features

Light Controller

LW28DC

Zhaga Book 18 Interface
Standard plug-and-play Zhaga interface

DC 5V Input
Designed for solar lighting systems

Wireless Monitoring
Real-time remote monitoring and control

Switching & Dimming
Remote on/off and dimming control

System Status Monitoring
Monitors solar panel, battery, and load status

Fault Alarm
Automatic fault detection and alerts

GPS Location (Optional)
Supports location tracking for maintenance

Wide Temperature Range
Operates from -40°C to +85°C

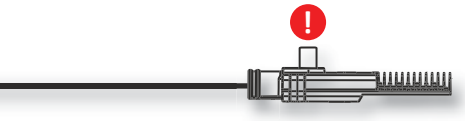
Multi-Band LoRaWAN
Supports 470MHz, 868MHz, 915MHz, 923MHz

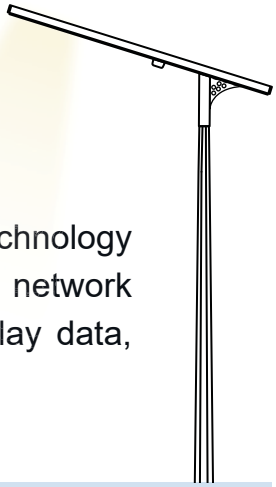
Specifications Light Controller (LW28DC)

Parameter	Value
Model	LoRaWAN
IP Code	IP66
Output Interface	RS485
Data Collection	U, I, P, Q, COSΦ
Wireless Frequency	As per channel plan (868MHz, 915MHz, 923MHz, etc.)

Parameter	Value	
Antenna Type	Built-in	
Antenna Gain	3dB	
Antenna VSWR	≤1.5	≤2.0
Transmission Distance	400M (*)	2KM

ZigBee





ZigBee system is a low-power, short-range wireless communication technology designed for IoT and smart control applications. It uses a mesh network architecture, allowing devices to communicate with each other and relay data, which improves network reliability and coverage.

ZigBee AC Powered LED Street Lighting

- Short-range wireless mesh network to control and monitor mains-powered street lights.
- Each luminaire is equipped with a Zigbee controller that enables remote on/off switching, dimming, and status monitoring.
- The mesh network allows lights to relay data between each other.

ZigBee DC Powered LED Solar Street Lighting

- The Zigbee controller manages lamp operation and monitors battery and system status through a low-power wireless mesh network
- Supports reliable communication, reduced energy consumption, and convenient remote management, making it ideal for intelligent solar street lighting applications.

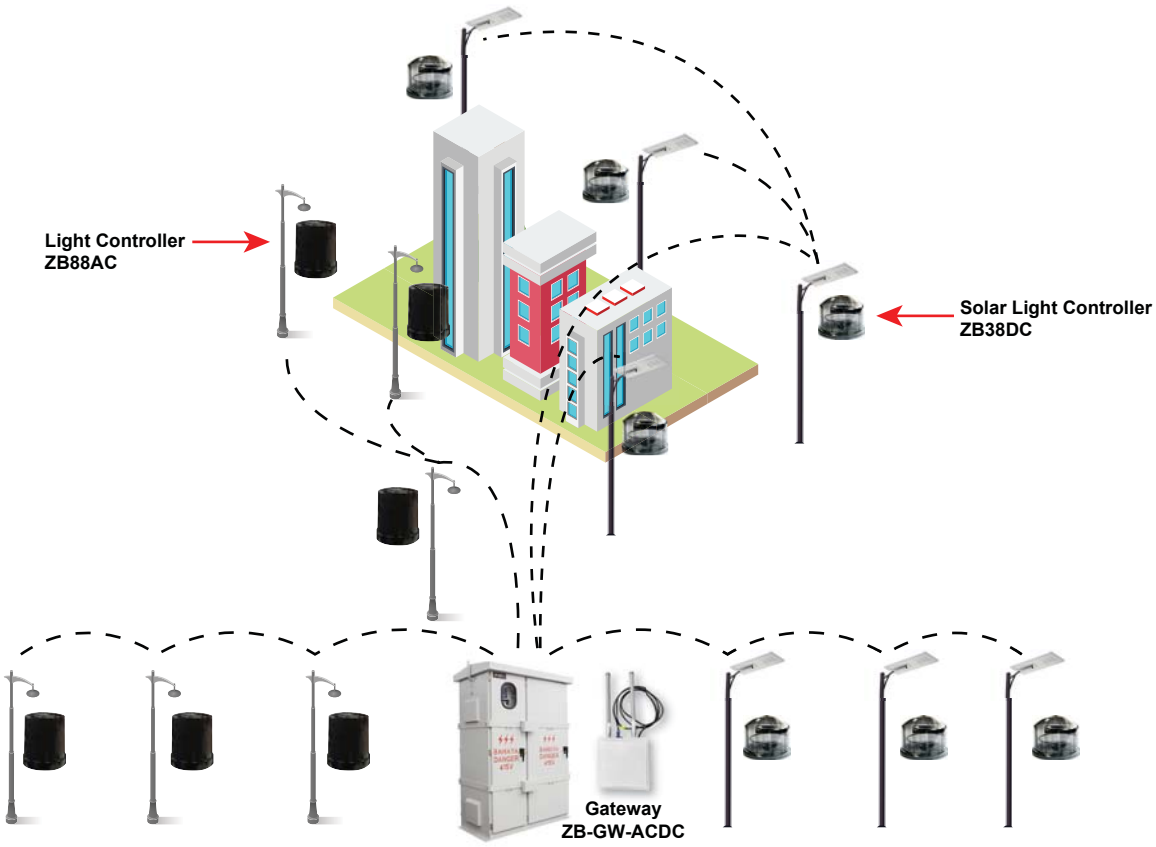
ZigBee Devices

- Gateway (ZB-GW-ACDC)
- Street Light Controller (ZB88AC / ZB38DC)

Area of Application

- Compound Area
- Residential Area
- Highway

Connector Diagram



Light Controller
ZB88AC

SolarLight Controller
ZB38DC

Zigbee Gateway
ZB-GW-ACDC

Each street light is equipped with a Zigbee Light Controller, which manages on/off switching, dimming, and monitors the operating status of the lamp. The controllers communicate with each other using a Zigbee wireless mesh network, allowing stable and flexible data transmission across the lighting area.

All Zigbee controllers connect to a central gateway. The gateway collects data from multiple street lights and transmits it to the central management platform for monitoring and control.

Features

Zigbee Gateway

ZB-GW-ACDC

Gateway
ZB-GW-ACDC

High-Speed WAN Interface
10/100/1000 Mbps Ethernet, 4G SIM, built-in Wi-Fi & GPS

Network Backup & Auto Switching
Intelligent wired/wireless failover with data buffering and recovery

Zigbee Master Function
2.4 GHz ISM band Zigbee master station

Protocol Support
Transparent transmission with MODBUS RTU, TCP/IP & MQTT

Modbus Data Collection
Active polling, protocol parsing, and direct platform reporting

Industrial-Grade Design
Metal enclosure for stable 24/7 operation in harsh environments

Wide Voltage Input
AC 110–277V power supply

Specifications Zigbee Gateway (ZB-GW-ACDC)

Interface Definition

Interface	Description	Remarks
Power Supply	AC110~277V Power Input / DC 9-24V (optional)	Do not reverse polarity
SIM Card Slot	nano-SIM card *chip side downward, notch side inward	Pull out the SIM card module, insert SIM card and press to lock
WAN	10/ 100/ 1000Mbps, waterproof connector	
Wi-Fi	Built-in	
GPS	Built-in	
RST	Reset button, long press 10s to restore factory settings	
4G	4G antenna port	
ZigBee	ZigBee antenna port	

Product Specification

Interface	Description	Remarks
Product Model	ZB-GW-ACDC	Outdoor Base Station
Network Type	WAN port	10/100/1000Mbps Adaptive network port
	4G	Selective 4G module for targeted country
Power Supply	Power supply range	AC110 ~ 277V / DC 9-24V (optional)
Others	Dimensions	205MM(L) × 205MM(W) × 74MM(H)
	Working Temperature	-40 ～ +80ºC
	Storage Temperature	-40 ～ +85ºC
	Relative humidity	≤ 95%RH（No condensation）

Specifications Zigbee Gateway (ZB-GW-ACDC)

Product Specification

Interface	Description	Remarks
4G	Working Frequency	FDD LTE: B1/B3 TDD LTE: B38/B39/B40/B41 TDSCDMA: B34/B39 CDMA2000 1x/EVDO: BC0 GSM: 900/1800MHz
	Transmission Rate	LTE-FDD: Max 100Mbps (DL) Max 50Mbps (UL) LTE-TDD: Max 61Mbps (DL) Max 18Mbps (UL) SCDMA-TD: Max 4.2Mbps (DL) Max 2.2Mbps (UL) CDMA: Max 5.4Mbps (DL) Max 14.7Mbps (UL) GPRS: Max 85.6Kbps (DL) Max 85.6Kbps (UL)
	Transmission Power	FDD LTE: 23dbm±2db TDD LTE: 23dbm±2db TDSCDMA: 24dbm +1/-3db GSM 900Mhz: 33dbm±2dbm GSM 1800Mhz: 30dbm±2dbm
	Receiving sensitivity	FDD B1: -97dBm (20M) FDD B3: -96dBm (20M) TDD B38: -94dBm (20M) TDD B39: -94dBm (20M) TDD B40: -94dBm (20M) TDD B41: -93.5dBm (20M) TDSCDMA B34: -110dbm TDSCDMA B39: -110dbm CDMA BC0: -108dbm GSM 900: -110dBm GSM 1800: -109dBm
System	CPU	MIPS1004Kc, dual-core, main frequency 880MHz
	RAM	256MB
	eMMC	8GB
ZigBee Frequency	Frequency band	2.4GHz

Features

Light Controller

ZB88AC

Switching & Dimming Control
Remote on/off and dimming control

Electrical Monitoring
Current, voltage, power, runtime & dimming value

Lamp Status & Alarms
Real-time monitoring with fault alerts

Smart Control Modes
Time schedule, location-based & photocell control

Zigbee Wireless Communication
2.4 GHz ISM band with 16 channels

Large Network Capacity
Supports up to 65,535 nodes per network

Industrial Temperature
Operates from 40°C to +85°C

Easy Installation
Fast response to central commands

Specifications Light Controller (ZB88AC)

Parameters	Value
Antenna Frequency Band	2.4G
Antenna Gain	3dB
Antenna VSWR	≤1.5
Antenna Type	Built-in

Parameters	Value
IP Code	IP66
Wireless Frequency	2.4G
Dimming Type	0-10V PWM
Transmission Distance	400M

Features

Light Controller

ZB38DC

Zhaga Book 18 Interface
Standard plug-and-play connection

DC 5V Input | RS485 Output
Designed for solar lighting control

Wireless Monitoring
Real-time remote monitoring and control

Switching & Dimming
Remote on/off control with battery & load parameter setting

System Status Monitoring
Solar panel, battery, load & controller status

Fault Alarm
Automatic fault detection and reporting

GPS Location (Optional)
Supports fault location tracking

Industrial Temperature
Operates from -40°C to +85°C

Wireless Communication
Zigbee 2.4 GHz ISM band
LoRa: 470 / 868 / 915 / 923 MHz

Easy Installation
Fast response to central commands

Specifications Light Controller (ZB38DC)

Parameters	Value
IP Code	IP66
Output Interface	RS485
Data Collection	U, I, P, Q, COSΦ
Wireless Frequency	2.4GHz

Parameters	Value
Antenna Type	Built-in
Antenna Gain	3dB
Antenna VSWR	≤1.5
Transmission Distance	400M *Gateway to node under normal road condition *Each ZigBee node can act as a relay with a maximum of 16 hops

APPLICATION

- **Street Lighting**

  Smart lighting control is an effective solution to reduce public energy consumption, enabling easy management of both individual lamps and entire lighting networks.

- **Tunnel Lighting**

  Tunnel lighting requires special attention to safety. With integrated light sensors and vehicle detectors, the smart control system ensures reliable and secure tunnel illumination.

- **Solar Lighting**

  Solar lighting is increasingly popular in regions with abundant sunlight, and when paired with smart control, energy utilization becomes even more efficient.

- **Facade Lighting**

  Adaptive lighting control allows dynamic light effects for different occasions or festivals, enhancing visual experiences in public spaces.

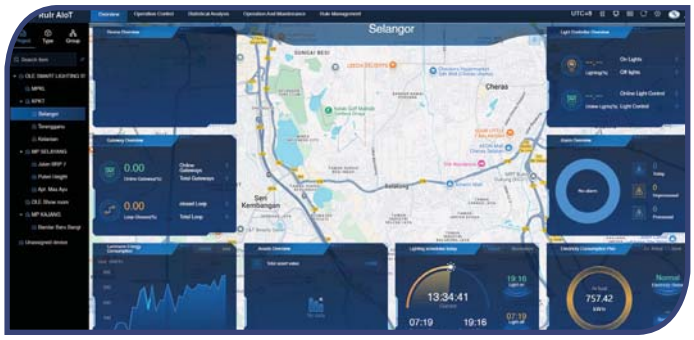
- **Area Lighting (Parking Lot, Sport Facilities & etc)**

  Parking lot management becomes more cost-effective, modern, and energy-saving with the use of a smart lighting control system.

PLATFORM

User-friendly Interface

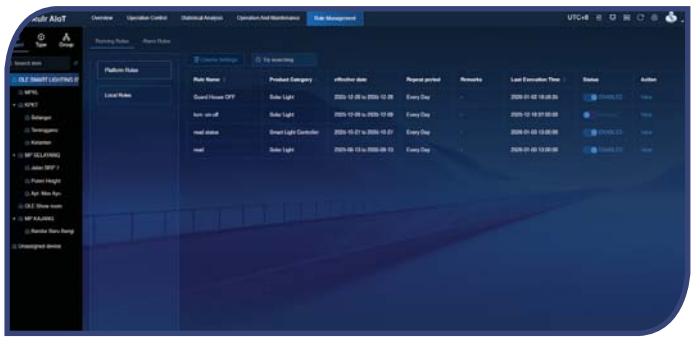
- LED Lighting monitoring system



- Convenient management entry
- Multilingual choices

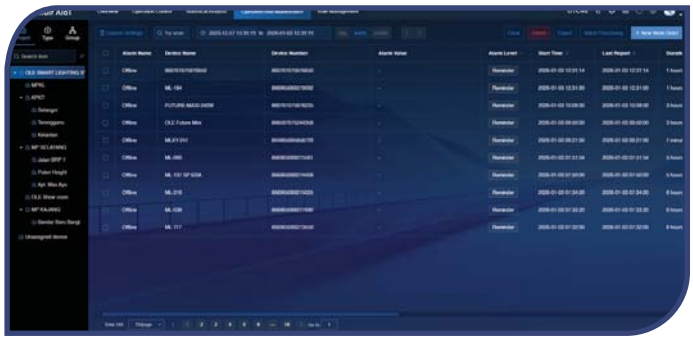
Geographic Information System

- Based on the GIS system design
- 2D / Satellite map
- View location of each lamp

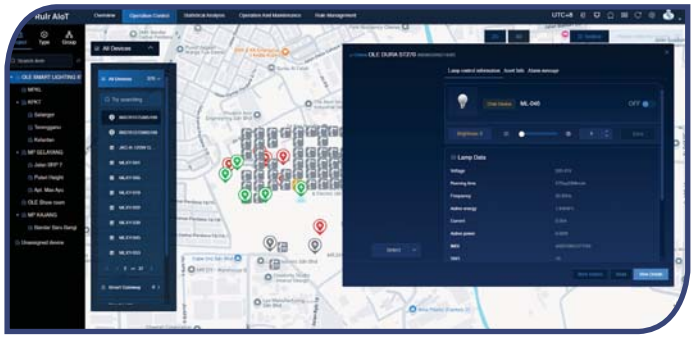


- Real-time alarm warning
- Quick positioning and facilities maintenance
- Equipment partition management
- Batch deployment capabilities

Project Management



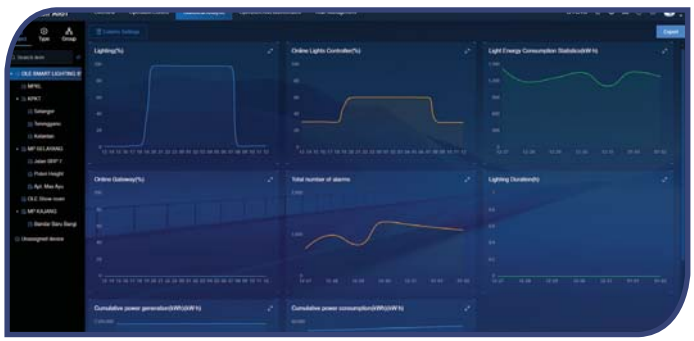
- Add device to the Project
- Add device information



- Device parameter setting
- Duration and brightness setting

Status Monitoring

- Monitors current device status



- Monitors battery charge and discharge voltage
- Monitors lamp power consumption trends
- Monitors lamp voltage current trends

PROJECT REFERENCES

Smart City Project at Pontian, Johor, Malaysia

Smart City Project at PERSADA PLUS Highway, Malaysia

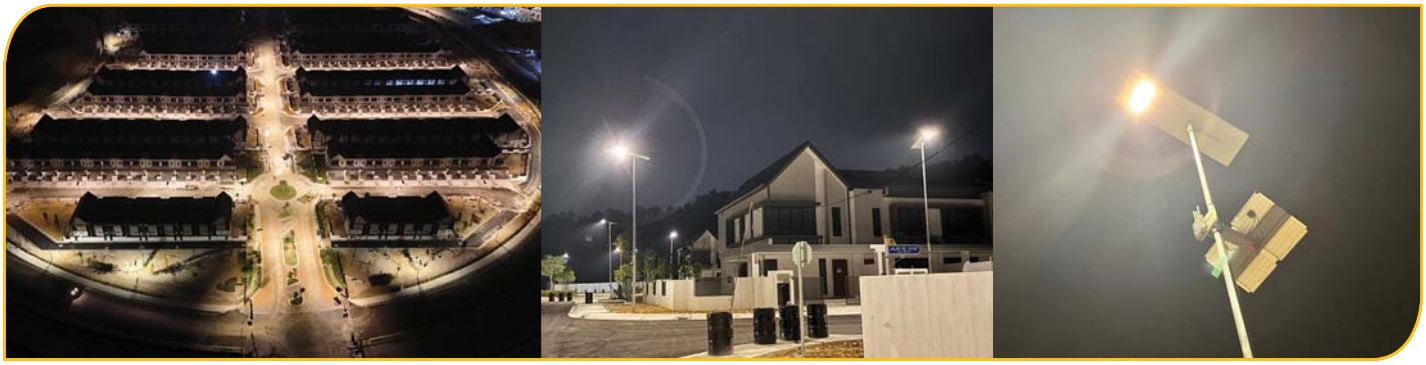
Smart City Project at Jalan Kempas, Taman Desaru Utama, Johor

PROJECT REFERENCES

Smart City Project at Persiaran Perdana, Putrajaya

Smart City Project at Teluk Intan, Perak, Malaysia

Smart City Project at MPS (Kota Emarald West), Malaysia



OVERSEA LIGHTING & ELECTRIC (M) SDN. BHD.

(272782-K)

LED FACTORY

Lot 6595, Jalan KPB 12B,
Kawasan Industri Kampung Baru Balakong,
43300 Seri Kembangan,
Selangor Darul Ehsan, Malaysia.

Tel: +60 3-8964 1878, 8964 1888, 8964 1899
Fax: +60 3-8964 1868
Email: info@oversealighting.com
Website: www.oversealighting.com

POLE FACTORY

PT 3481 (Lot 996), Jalan Sungai Lalang, Batu 22 1/2,
43500 Semenyih, Selangor Darul Ehsan, Malaysia.

Tel: 03-9549 3440 / 012-837 7850
Email: general.odi@outlook.com