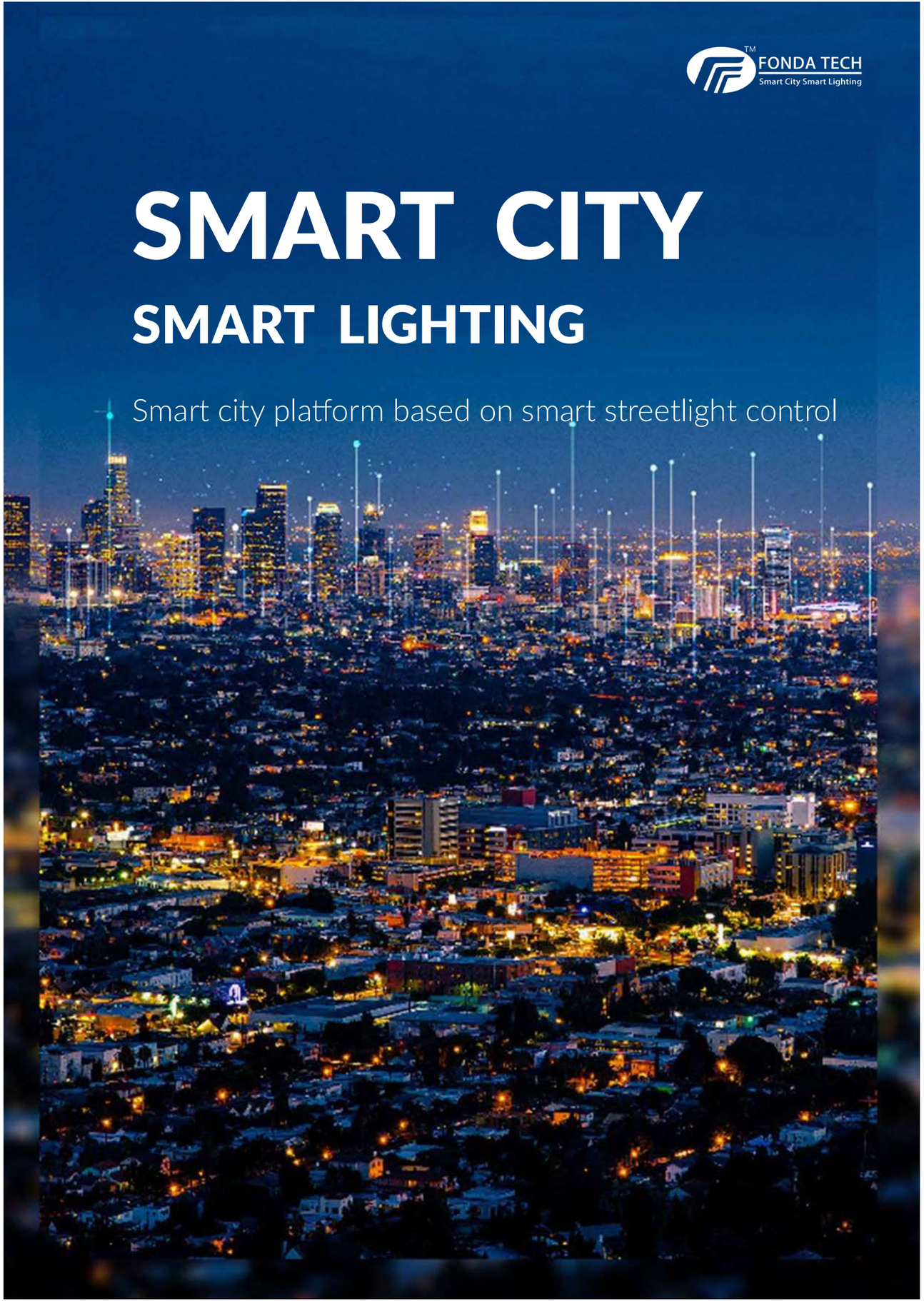
FONDA TECH
Smart City Smart Lighting

SMART CITY

SMART LIGHTING

Smart city platform based on smart streetlight control



SMART CITY STARTS WITH SMART STREET LIGHTING.

A smart city adds digital intelligence with information and communication technology(ICT) to urban world, to solve public problems and achieve a higher quality of life for its residents.

Connected devices and sensors put real-time, transparent information into the governors and citizens to help them make better choices. The intelligent tools can save lives, prevent crime, reduce the disease burden, save time, reduce waste and even boost social connectedness.

Half of the smart city applications are not self-sustaining revenue, and even struggling with identifying the economic models to be profitable. Retrofitting legacy lighting fixtures with LEDs and smart lighting control system is a cost effective and sustainable way to begin smart city project.

Benefits of Smart Street Lighting

Average energy saving 75%

According to the experience of other cities, it can achieve 60% energy saving from LED replacement and further 10-20% from dimming.

Significant O&M saving

Operation and maintenance savings exceeded energy savings in many cases, due to the longer lamp lifetime and reduced truck rolls.

Environmental benefits

Fewer carbon emissions and light pollutions means better environment for citizens and wildlife.

Smart city ready

Connected streetlights provides foundation for future smart city applications and reduce the cost of re-installation.

Pedestrian and traffic safety

On-demand lighting means better lighting quality, lower crime and fewer traffic accidents.

SMART CITY PLATFORM

City Digitalization needs the stand-alone infrastructures to be connected, recorded and monitored in a central command center with big data collecting and processing, IoT and cloud computing technology.

FondaCity

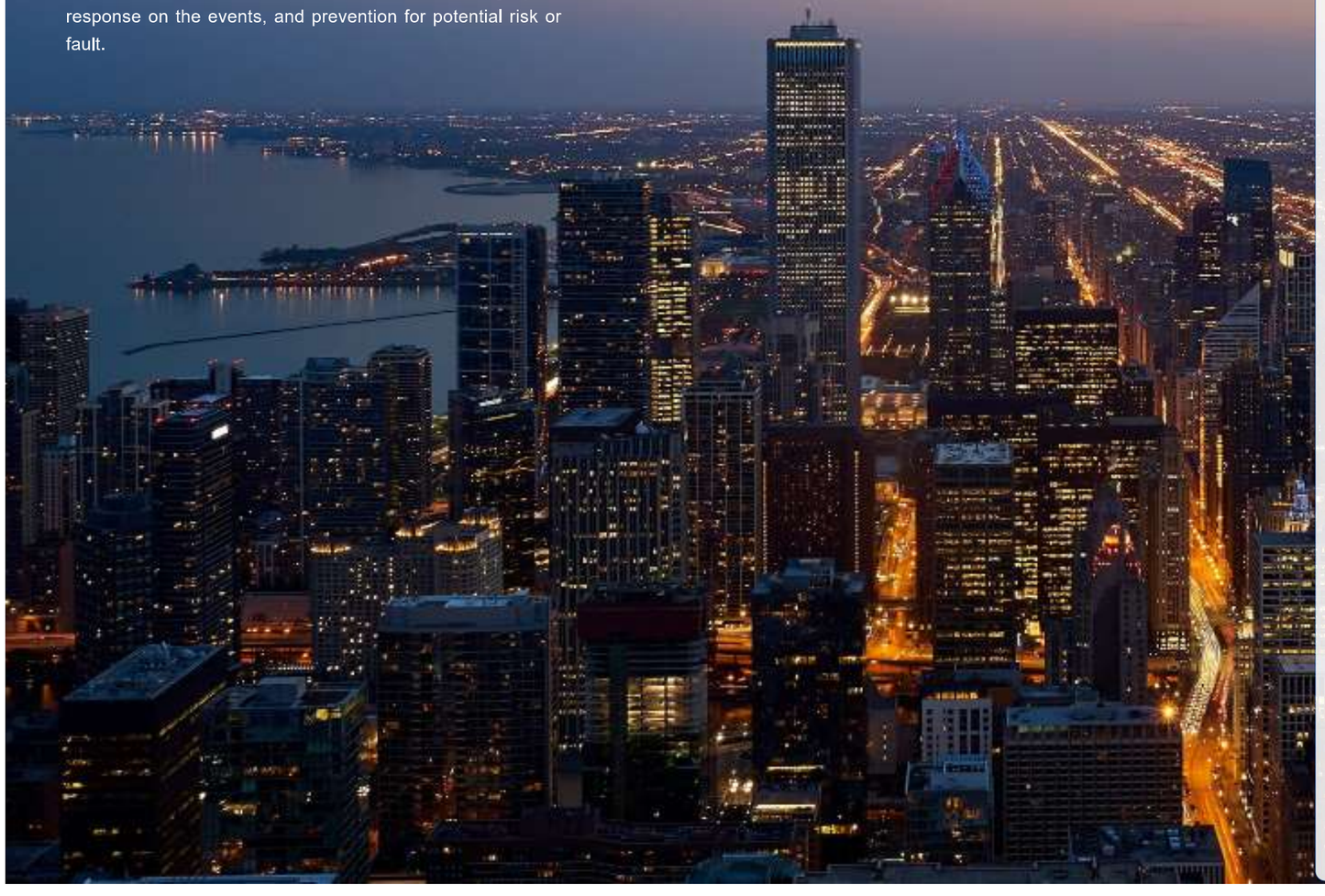
is a smart city platform based on streetlight and scalable to other public infrastructures, which has a wide coverage overall the city.

Data Collecting

The data collected from smart devices attached in existing and new infrastructures transmits to central platform via wired and wireless communications such as Zigbee, LoraWan, NB-IoT, RF Mesh, GSM and LTE. The real-time data will be visualized and displayed in a central command center to provide valuable information for decision making, quick response on the events, and prevention for potential risk or fault.

Remote Control

The actionable smart devices could be remotely controlled in real-time or operated by preset schedule. The tasks based on time, calendar and sensors could be executed in individual level or in group. Besides street lights tasks, it also has audio, video, text format task for LED display and broadcasting speaker.



City Infrastructure Management

The profile of every infrastructure from manufacture to retirement, including product basic information, installation and maintenance history, current status and alarm history will be recorded in the database. The isolated devices will be connected to one central management system, and every information could be traced and analyzed to make the city smarter, more efficient and sustainable.

Proactive Maintenance

The alarms on city infrastructure like power supply abnormal, device malfunction, communication lost, theft, customized notification and alerts sent to desktop, mobile device enable decision makers and city workers to pre-plan for regular inspection and handle the failure in the first time. With tickets handling, prioritizing management, path plan for inspection and maintenance truck, it will reduce labor and truck roll costs, improving maintenance efficiency significantly.

Easy Integration

Smart city has various divisions like smart security, energy, healthcare, mobility, water, waste, and so on, which means there are lots of subsystems in a city. The key to the be a smart city is the integrated data from the previously isolated systems. With open API or MQTT, FondaCity Platform could be integrated into 3rd party software or smart city dashboards. And also, data from 3rd party software is available for integration into FondaCity Platform.

System Security

FondaCity platform adopted event recording and tracking, password protection, multi-level user management, redundant, dual-machine and remote backup, to make it have strong fault tolerance and system recovery capabilities for stable operation in long-term. A variety of protective measures have been designed for network security to prevent the system from malicious attacks with a high degree of security and confidentiality. Strict access authentication is performed on the equipment and users that access the system to ensure the security and stability of access.

FONDACITY

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Devices

- WiFi
- Camera
- Lamp Node
- Charging Pile
- Help Button
- Display
- Weather Station
- Broadcasting Speaker
- Manhole Cover Sensor
- Trashcan Sensor
- Flood Sensor
- Photo Sensor
- Bike Sensor
- Car Sensor

Applications

- Street Lighting
- Tunnel Lighting
- Solar Lighting
- Highway Lighting
- Park & Campus Lighting
- Facade Lighting
- Parking Lot Lighting
- Video Surveillance
- Manhole Cover
- Trashcan
- AD Display
- Emergency Help
- EV Charging

Functions

- GIS
- Statistics & Reports
- Maintenance
- Task Configuration
- Device Deployment
- Asset Management
- Alarm Management
- System Management

Communication Technology

- RF-mesh
- PLC
- GPRS
- RS485
- NB-IoT
- LTE
- LoRaWAN

Compatability

- 4 Major Database
- MQTT
- SDK
- API

Operator Interface

- PC
- Pad
- Screen Wall
- Mobile Apps
- Wechat

SMART LIGHTING PLATFORM

SCCS is a cloud-based solution with advanced communication and easy integration with existing installations, can monitor individual luminaries up to millions of lamp nodes. It facilitates reduction in power consumption, CO2, emission and light pollution and moreover and optimized maintenance planning.

Multi-Functional

SCCS platform is designed to manage and control the power cabinets and street lights with different communication technology, including street lighting control by PLC, RS485, Zigbee, LoRaWAN, RF Mesh and NB-IoT. It also provides different smart lighting applications for street lighting, facade lighting, solar lighting, tunnel lighting and smart poles. Map based visualization, real-time and total energy report and malfunction alarm helps to make decisions in time and reduce operational cost significantly.

User-Friendly

The SCCS has been upgraded for dozens of times in the past 9 years, making it more user-friendly and efficient. The users can remotely control every lamp in the desktop, tablet PC or smart phone application. Based on our project experience worldwide, multi-language version system enables you have a quick-start after deployment.

Flexible

The advanced structure design of SCCS allows almost unlimited quantity of lamp controllers in the cloud-based server, suitable for any size of cities. The SCCS provides different interfaces for hardware and software from third party, and customization to your specific needs.

GIS

Lighting fixtures could be located in the dynamic 2D/satelite map based on the actual GPS position, which provides hawkeye view to the operator and decision maker with geographical environment.

Alarm

By the terminal's automatic reporting and the host computer's monitoring, abnormal can be reported in real time. By setting the alarm parameters, the alarms can be classified into different levels, and the various alarm notifications let you know the fault information anytime and anywhere.

User Center

In user center, it enables management on the organizations and user accounts with different permissions. By tracking and recording each user's operations, it makes the operation controllable and prevents violations. At the same time, the interactive information among the terminal device, platform, and different system allows the system failure traceable.

App

Workers can get positioning data and device identification by mobile App on site, no need to input field information in PC after implementation. Operation and inspection personnel can directly accept the maintenance ticket by mobile, and report by uploading photos, videos, voice in real time. The petrol planning helps to complete multiple O&M work in the shortest time.

Report

Report of energy consumption is displayed by day, month and year, and the detailed power data could be checked in lamp and circuit level. The lighting rate and energy-saving rate provides the overview information of the operation status.

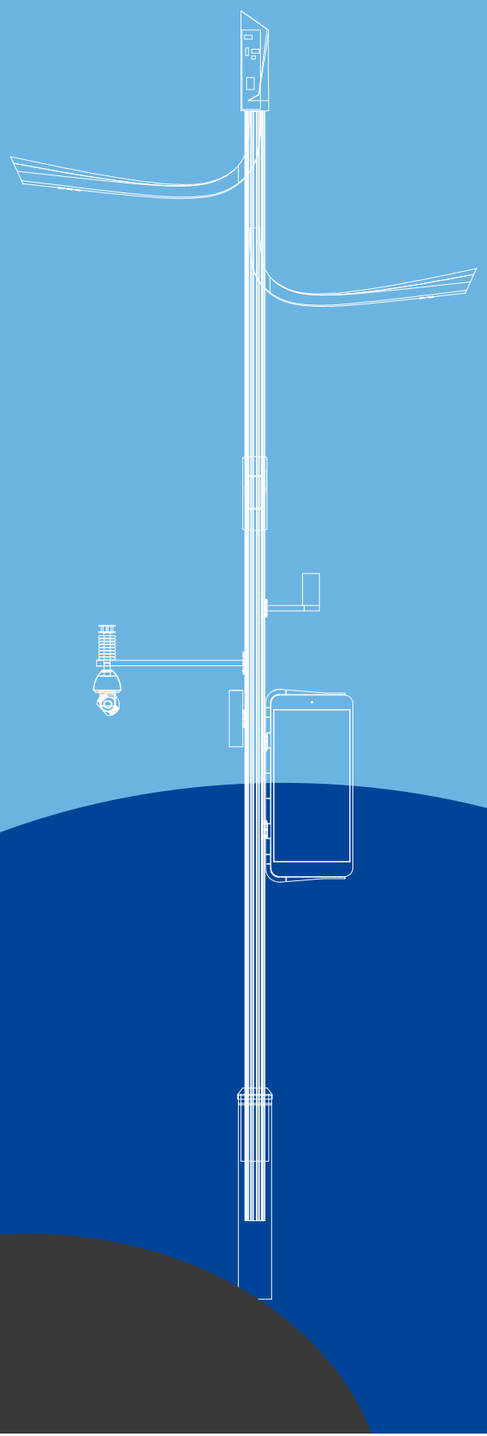
Task

The lamps, breakers and other smart devices are able to run lighting tasks based on time, calendar, sunrise/sunset and lux level with pre-defined groups.

SMART POLE

Smart poles plays an important role as one of the IoT infrastructures in smart city. It can be equipped with 5G micro base station, weather station, wireless AP, camera, LED display, public help terminal, online speaker, charging pile and other devices. Smart pole becomes the data collecting sensors of smart city, and share to each responsible department, ultimately achieving a more efficient and integrated city management. Fonda smart pole is deployed both in FondaCity and SCCS platform, so that all of the management and operation could be done in a central platform, making the maintenance work easier and more efficient.

Multifunction Lamp Pole



Fonda smart pole is deployed both in FondaCity and SCCS platform, so that all of the management and operation could be done in a central platform, making the maintenance work easier and more efficient.

Wireless AP

Provide WiFi hotspot for different distances.

Smart Lighting

Remotely control(ON/OFF, dimming, data collecting, alarm etc.) in real time by desktop, mobile phone, Pad. Zigbee, LoRa, No-IoT communication available.

Weather Station

Collect and send weather data to monitoring center, such as PM2.5(PM10), noise, wind direction, wind speed, temperature, humidity and air pressure.

Broadcasting Speaker

Broadcast audio file uploaded from control center.

Camera

Monitor traffic, public security, city lighting and public infrastructure.

LED Display

Display advertisement, public information in words, pictures, videos in LED screen. Uploading and publishing are done in central platform remotely.

Emergency Call

Direct connection to command center for public emergency, the security team can respond quickly with GPS positioning, live stream and online voice call.

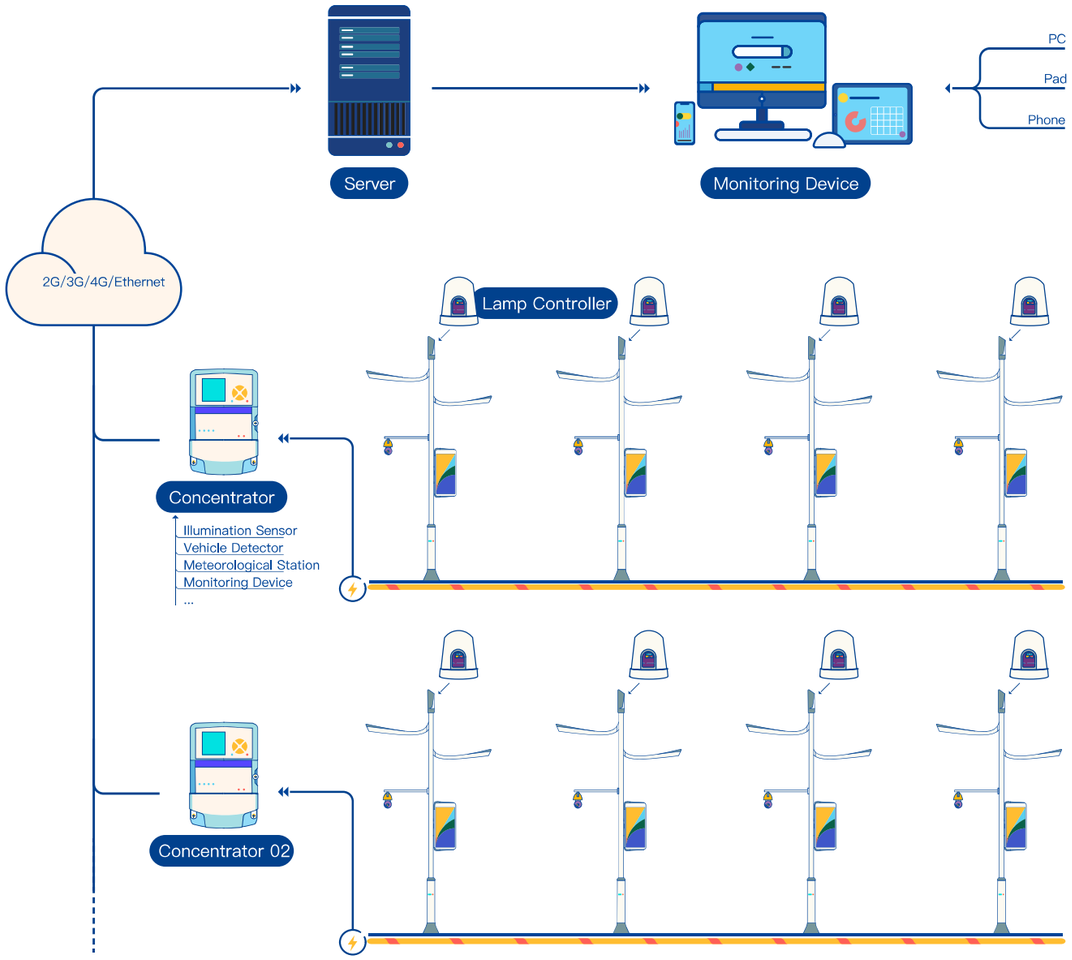
EV Charging Pile

Offer AC charging stations for electrical vehicles.

PLC Solution

Application

Remote lighting control of street lights, façade lighting, Tunnel, parking lot with power cabinet.



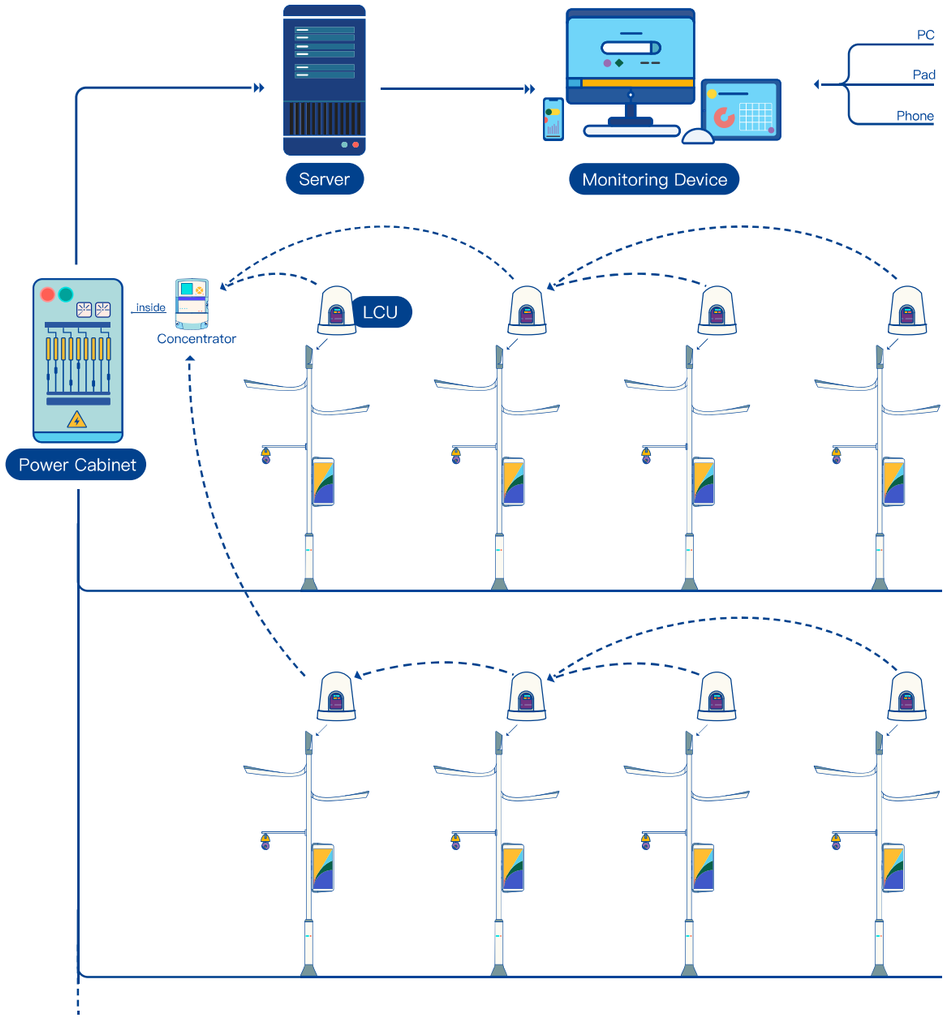
Main Features

- Power line communication, point-to-point transmission distance is up to 500m, the total distance after automatic relay by the lamp controllers is no more than 2km.
- Up to 500 lamp controllers can be managed by a concentrator.
- The lamp controller can control lighting fixtures such as sodium lamp, LED lamp and ceramic metal halide lamp with power up to 400W.
- It supports two dimming modes: PWM and 0-10V , reverse mode can be configured.
- PLC solution uses the original power cable for signal transmission, no need to install signal lines.
- Remote real time control and scheduled lighting by group or individual lamp, remote control on the power circuit.
- Alarm on the power supply of the cabinet and lamp parameters.

RF-Mesh Solution

Application

Remote lighting control of street lights, parking lot, gas station, park, island and etc.



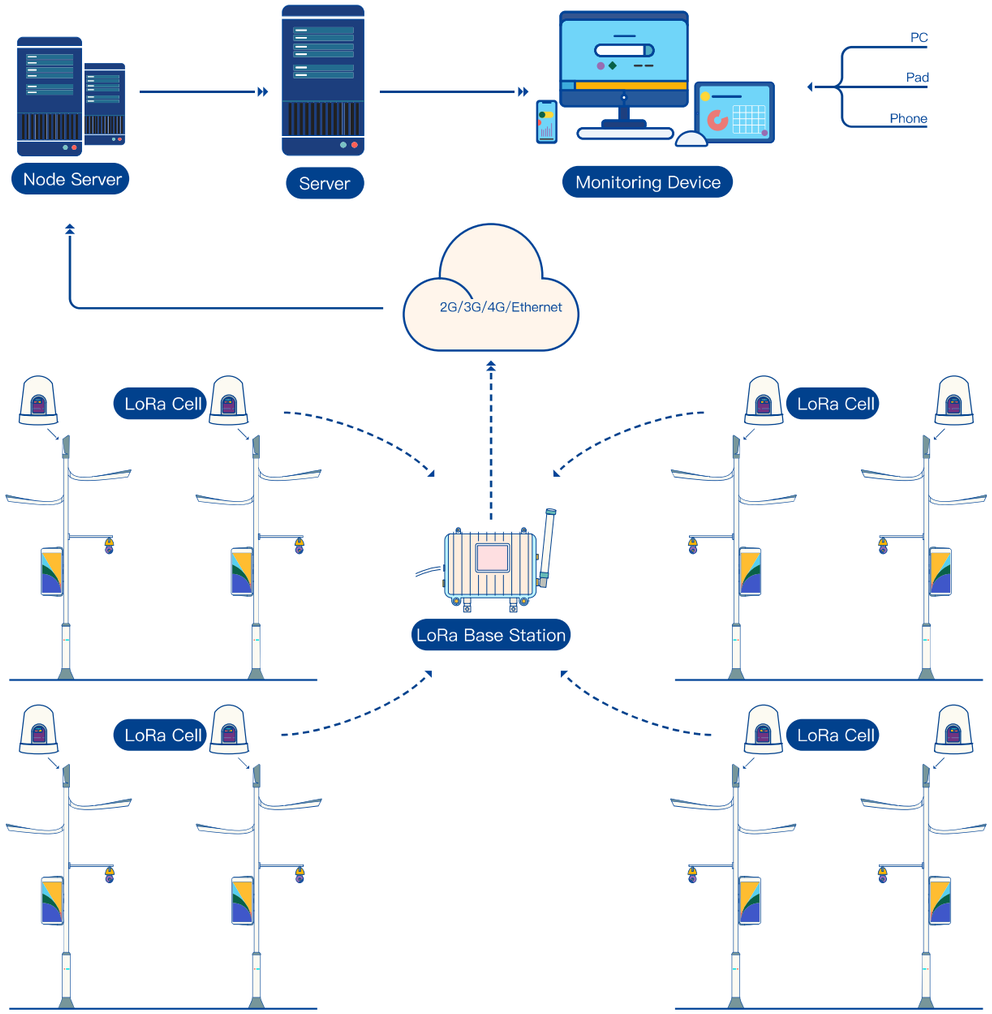
Main Features

- Long range low power radio frequency communication with one time relay.
- Up to 1000 lamp controllers can be managed by a concentrator with maximum transmission distance of 4000m after relay by a lamp controller.
- It supports two dimming modes: 0-10V and DALI.
- Private wireless network by RF-Mesh concentrator, the network server is not needed compared to LoRaWAN.
- Remote real time control and monitor on the lamps, scheduled lighting by group or individual lamp.
- Alarm on the lamp failure.
- Pole tilt, GPS options

LoRaWAN Solution

Application

Remote lighting control of street lights, parking lot, gas station, park, island and etc.



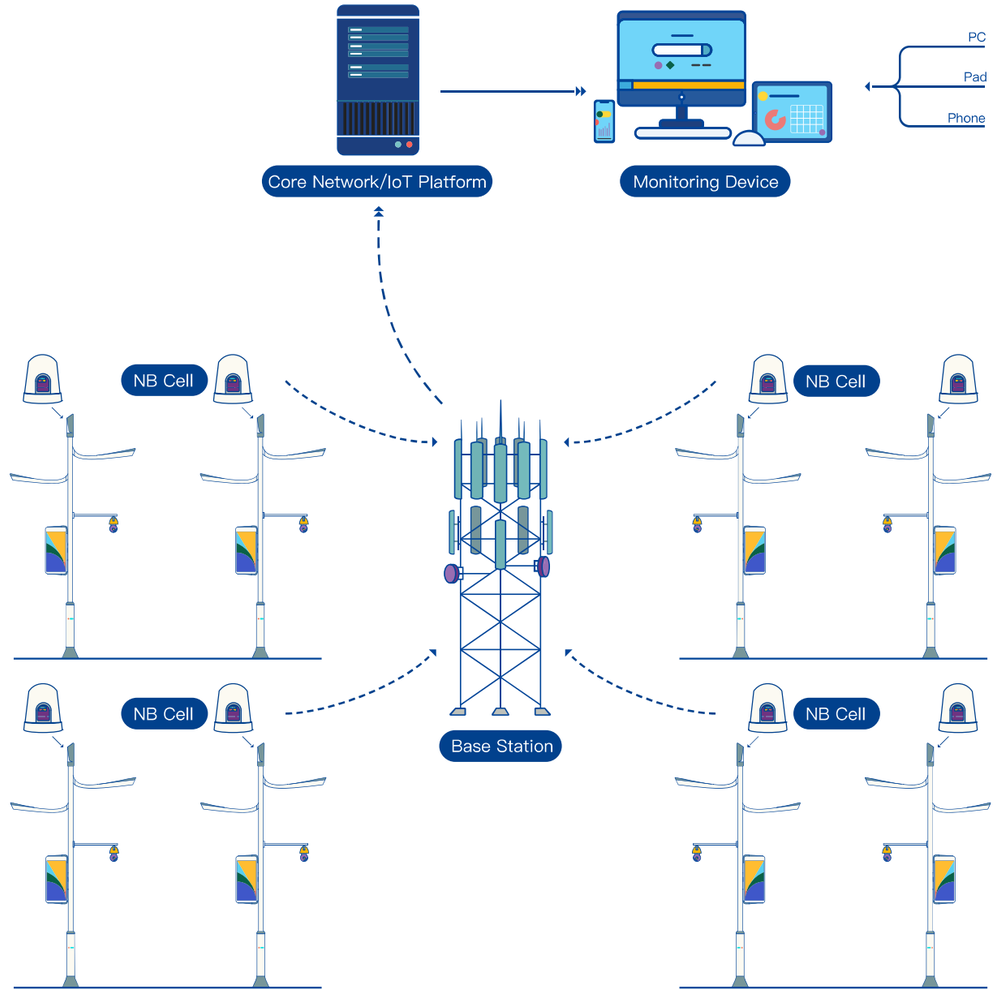
Main Features

- Long range low power radio frequency communication, supports standard LoRaWAN specification.
- Up to 2000 lamp controllers can be managed by a gateway with maximum transmission distance of 1500m.
- It supports three dimming modes: 0-10V and DALI.
- LoRaWAN Gateway and network server for device management are needed.
- Remote scheduled lighting by group or individual lamp and data collecting.
- Alarm on the lamp failure.
- Pole tilt, GPS options.

NB-IoT Solution

Application

Any place that can receive NB-IoT signal.



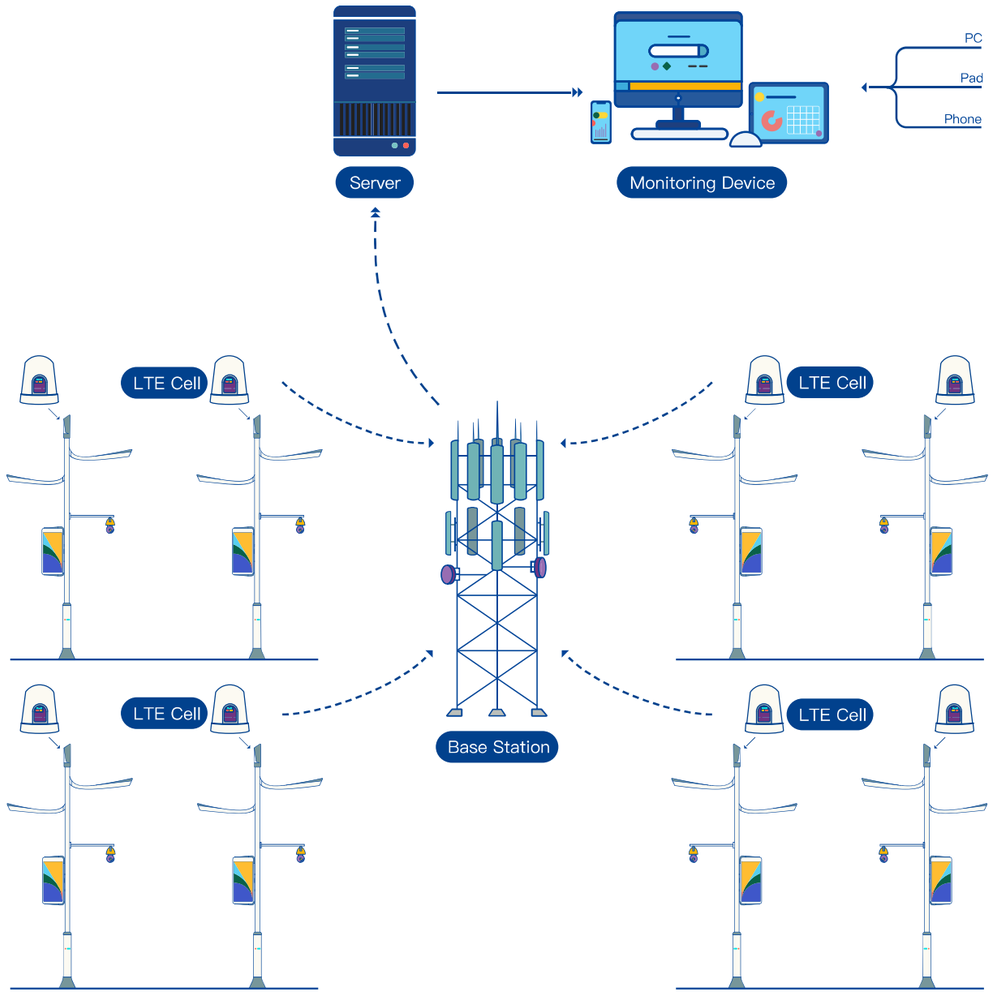
Main Features

- NB-IoT wireless communication.
- No limit on the number of lamp controllers and transmission distance.
- Supports three dimming modes: 0-10V and DALI.
- It uses base station provided by local network operator, no need to install gateways.
- Remote real time control and scheduled lighting by group or individual lamp.
- Alarm on the lamp failure.
- Pole tilt, GPS options

LTE Solution

Application

Any place that can receive LTE(Cat.1/Cat.4) signal.



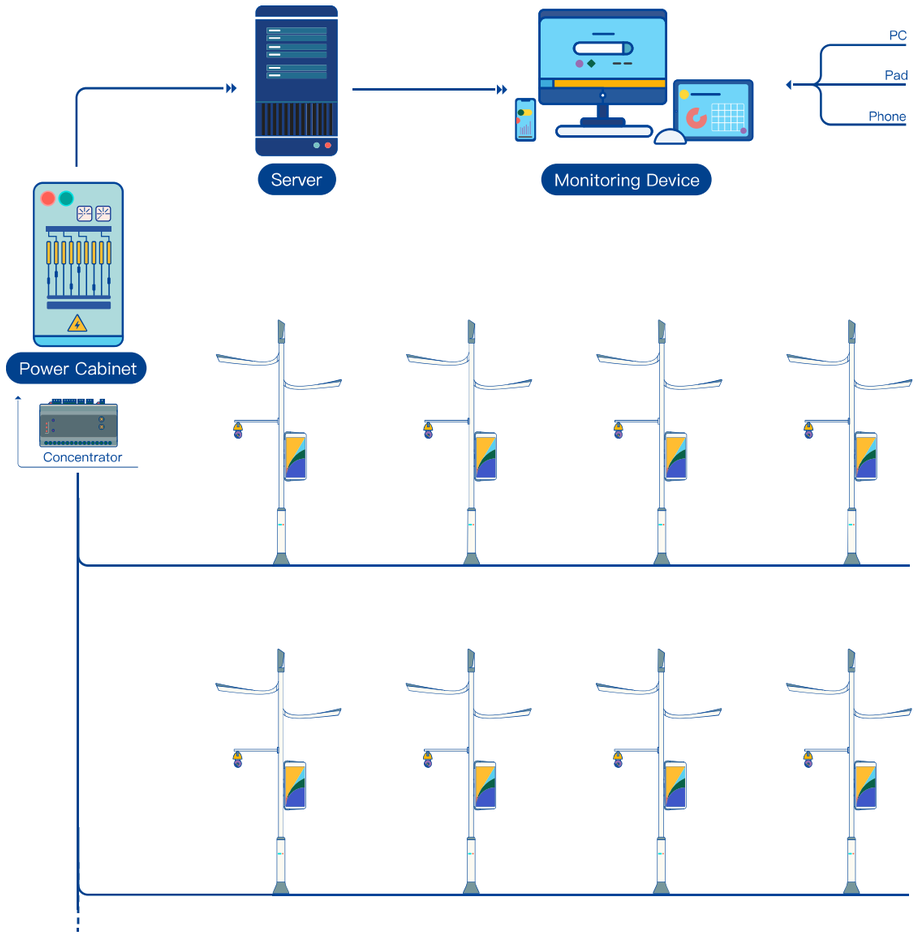
Main Features

- LTE(Cat.1/Cat.4) wireless communication.
- No limit on the number of lamp controllers and transmission distance.
- Supports three dimming modes: 0-10V and DALI.
- It uses base station provided by local network operator, no need to install gateways.
- Remote real time control and scheduled lighting by group or individual lamp.
- Alarm on the lamp failure.
- Pole tilt, GPS options

Circuit Control Solution

Application

Remote lighting control of Street, tunnel, parking lot and tech park with cabinet.



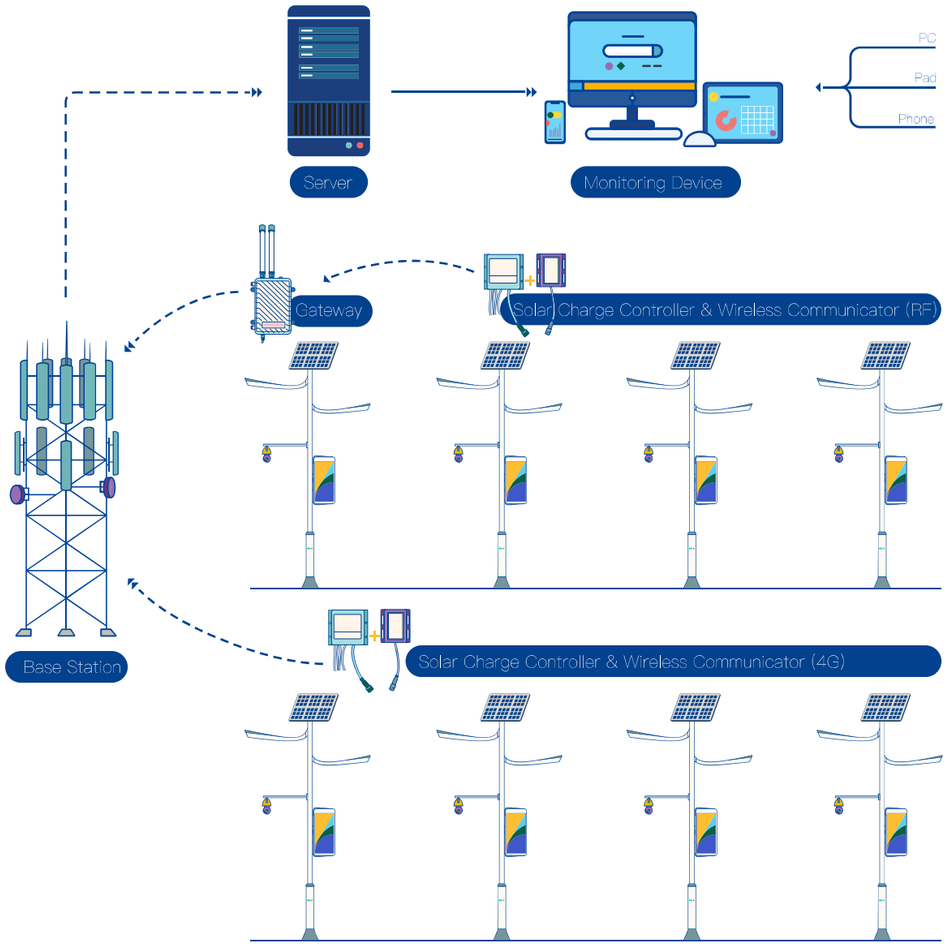
Main Features

- Remote real time control and scheduled lighting on the circuit based on time and sunrise/sunset.
- Alarm on the power supply status of the cabinet and automatic notification.
- Energy monitoring and billing report on cabinet level.

Solar Solution

Application

Remote lighting control of Solar lights, remote areas with unstable network and power supply.



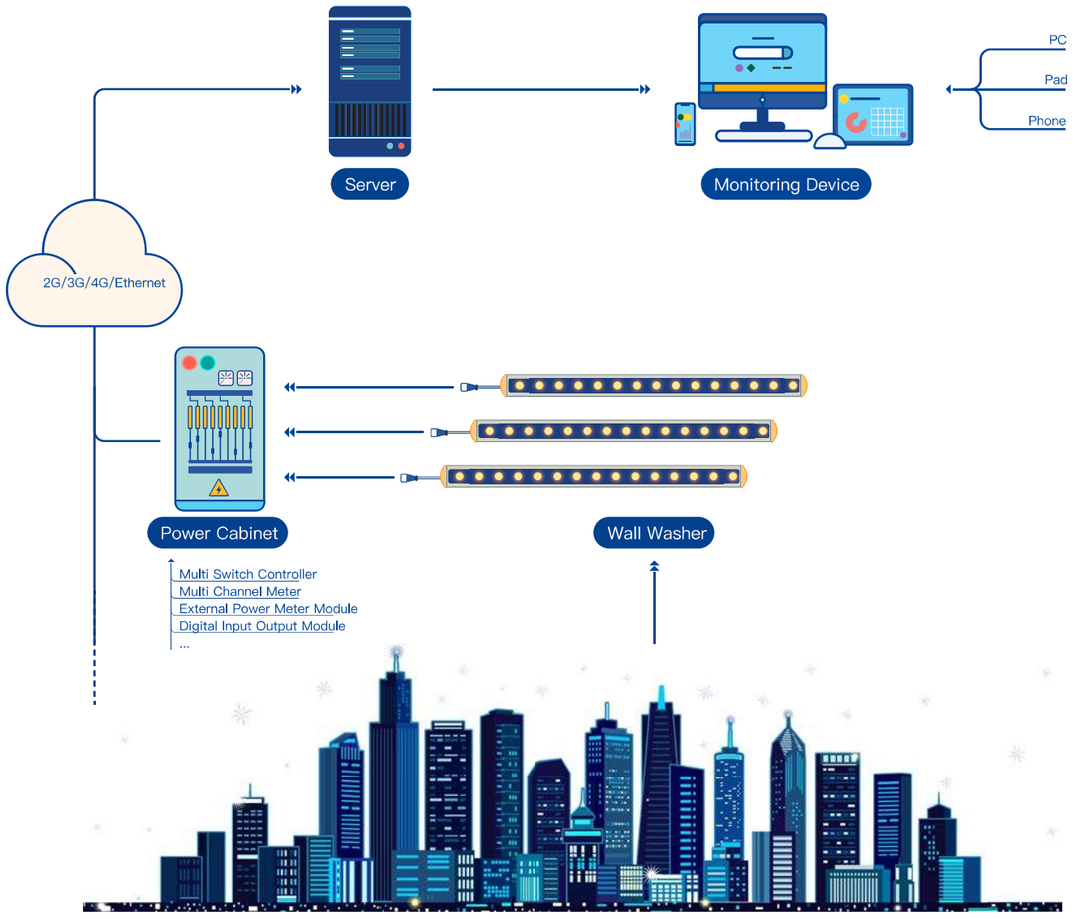
Main Features

- RF-mesh and LTE communication available.
- The IoT communicator work with solar charging controller to control the solar lamps and monitor on the status of solar battery, panel and lamp.
- Lighting time and dimming plan from central management platform
- Alarm on the lamp, battery and panel failure.

Facade Lighting

Application

Remote control on the large number of lighting show cabinets of the buildings.



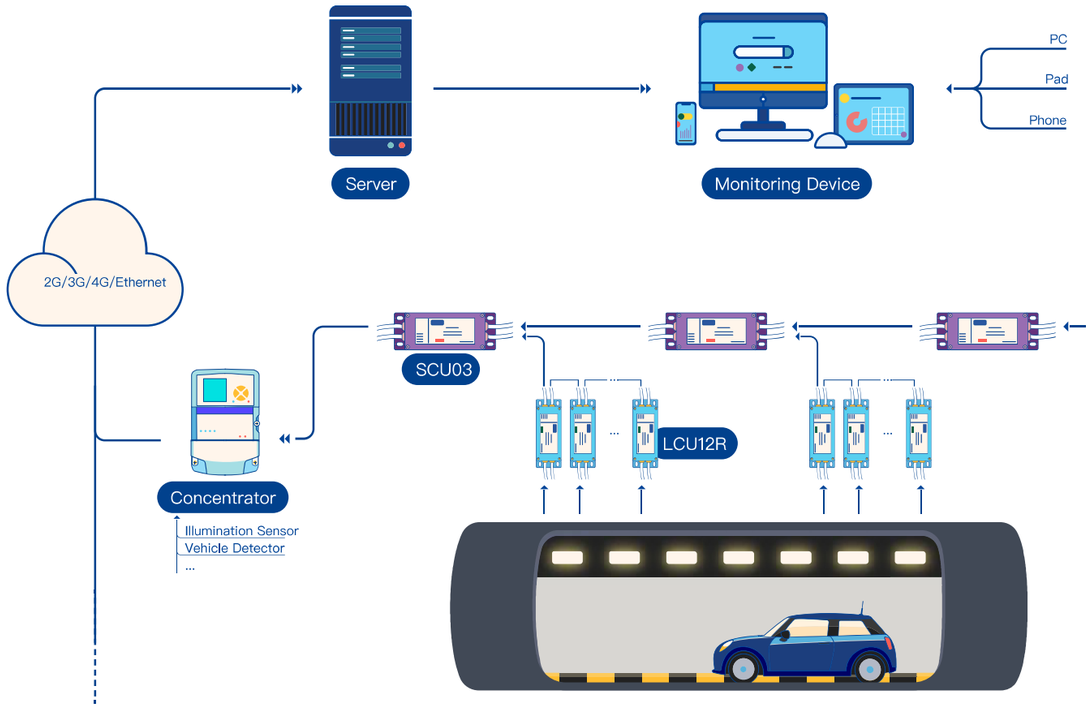
Main Features

- LTE and Ethernet communication.
- Real-time monitoring on the status of lighting facilities and power cabinet.
- Proactive alarm of abnormal information.
- Maintenance management such as alarm management, tickets dispatching and fault repairs.
- Set group lighting strategy to play the same lighting show program synchronously on various buildings.
- Lighting schedule can be set energy-saving, ordinary, weekend and major holiday modes, which reduces a lot of manual work.
- Energy consumption can be calculated per building by day, month and year.

Tunnel Solution

Application

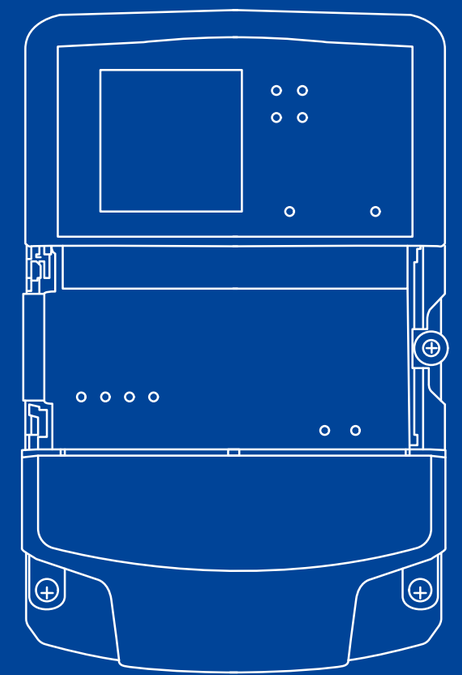
Remote lighting control of tunnel, sports stadium and indoor lighting.



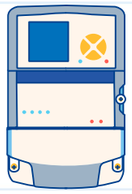
Main Features

- RS485 communication, the total distance after increasing the transmission distance through the signal controller is up to 3km.
- A signal controller can support 50~80 lamp controllers, up to 5000 lamp controllers can be managed by a concentrator.
- The lamp controller can control lighting fixtures such as HPS and LED lamp with power up to 400W.
- It supports two dimming modes: PWM and 0-10V.
- The data transmission rate is 256Kbps, which is suitable for places that require high communication speed and many interference factors, such as real-time dimming of tunnels..
- Remote real time control and scheduled lighting by group or individual lamp, remote control on the power circuit.
- Alarm on the power supply of the cabinet and lamp parameters.

HARDWARE



Concentrator



UPLINK COMMUNICATION GPRS / 3G / 4G / Ethernet

DOWNLINK COMMUNICATION PLC/RF-mesh/RS485

METERING Voltage, current, active /inactive power, power factor, power leakage, energy consumption and etc.

LIGHTING SCHEDULE Based on calendar, sunset / sunrise, lux level

ALARM Day burning or accidental lighting, extinction, power failure, power recover, power leakage, over-voltage, under-voltage, over-current, abnormal of accontactor / circuit breaker, cabinet tilt, water detection of cabinet, door opening of cabinet, cable theft

PROTECTION Anti over current / voltage, waterproof, lightning protection, anti-interference, IP54

PORT 4*DO, 6*DI, 2*AC DI, 2*USB, 1*RS485, 1*RJ45

OTHER LCD display for parameter and status, buttons for manual operation.

FONDA RTU200

UPLINK COMMUNICATION PLC / RF- mesh

METERING Voltage, current, active power, power factor, power leakage, energy consumption and etc.

LIGHTING SCHEDULE Based on calendar, sunset / sunrise

ALARM Day burning or accidental lighting, extinction, power failure, power recover, power leakage, over-voltage, under-voltage, over-current, abnormal of ac contactor/circuit breaker, cabinet tilt, water detection of cabinet, door opening of cabinet. cable theft

PROTECTION Anti over current/voltage, lightning protection, anti-interference

PORT 4* DO 6*DI. 1*USB. 2*R$485. 1* R$232

OTHER RTC and GPS

Compact RTU700

MMUNICATION MODULE PIC / LoRaWAN / RF- mesh / NB-IoT / LTE

METERING Voltage, current, power factor, power, energy consumption and etc.

GHTING SCHEDULE Based on calendar, sunset / sunrise, lux level

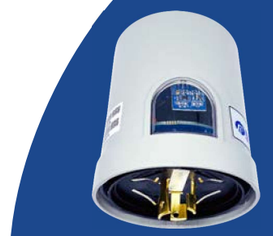
ALARM Lamp failure, lamp lifetime alert, power failure, lamp leakage, compensation capacitor failure, over-voltage, over-current, fuse fault, pole tilt (optional)

PROTECTION Industrial grade casing with waterproof, lightning protection, IP65

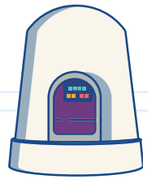
INTERFACE NEMA 7-PIN interface, plug and play

DIMMING 0-10V, DALI

OPTIONS GPS, RTC and Pole tilt



NEMA SERIES



Lamp Controller

COMMUNICATION MODULE LTE / LoRaWAN

METERING Voltage, current, power factor, power, energy consumption and etc.

LIGHTING SCHEDULE Based on calendar, sunset/sunrise. lux level

ALARM Lamp failure, lamp lifetime alert, power failure, lamp leakage, compensation capacitor failure, over- voltage, over- current, fuse fault, pole tilt (optional)

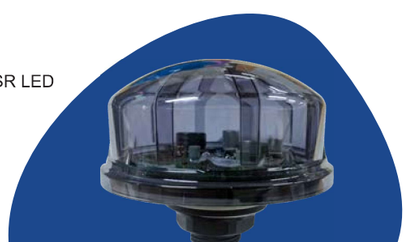
PROTECTION Industrial grade casing with waterproof, lightning protection, IP66

INTERFACE Zhaga 4-pin interface, plug and play, optimized for Philips Xitanium SR LED driver

DIMMING Dali2.0, D4i

BUILT-IN GPS, RTC, photocell

OPTIONS Pole tilt



Zhaga SERIES

FONDA TECH
Smart City Smart Lighting

ABOUT US

Founded by Carnegie Mellon PhD Team in Colorado, USA.

FondaCity platform integrated the wireless remote control for street lighting, façade lighting, tunnel lighting and solar lighting together with intelligent Pole-the bridge to smart city, and also could be scalable to various applications of smart city, such as smart parking, smart waste management, smart traffic and so on.

- National high-tech R&D Center committed to the innovative R&D in the field of Internet of Things and cloud computing.
- Certified by ISO9001:2015 Quality Management System.
- Excellent and comprehensive solution provider for IoT technology such as PLC, Zigbee, RF, LoRa, NB-IoT, GSM/LTE, etc.

Founded in 2011

Fonda is a professional solution provider of smart outdoor lighting control system and smart city infrastructures.

1 Mil +

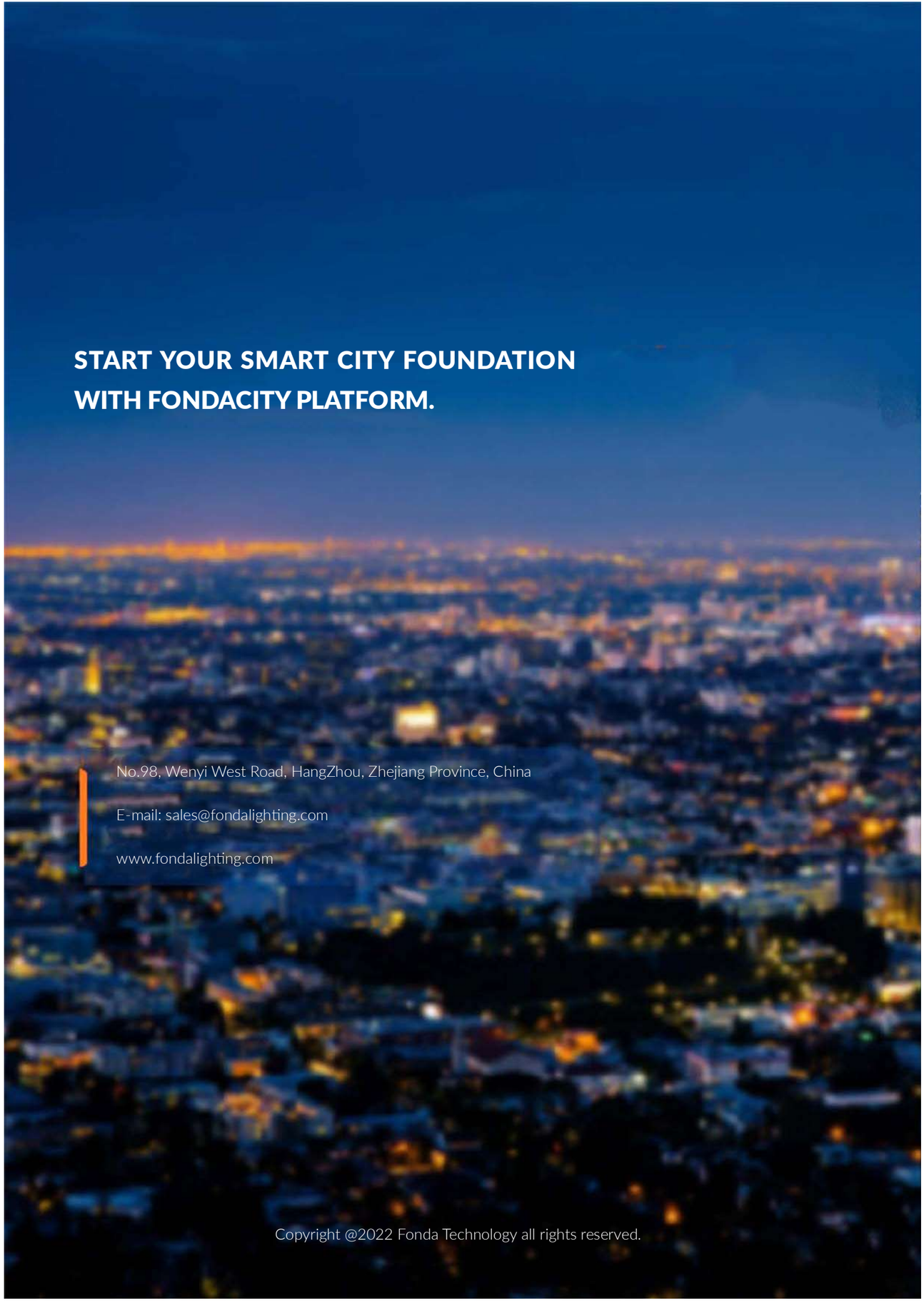
Smart controllers deployed globally

150+

patents holding, owner of core technology

10

Excellent and comprehensive IoT solutions



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