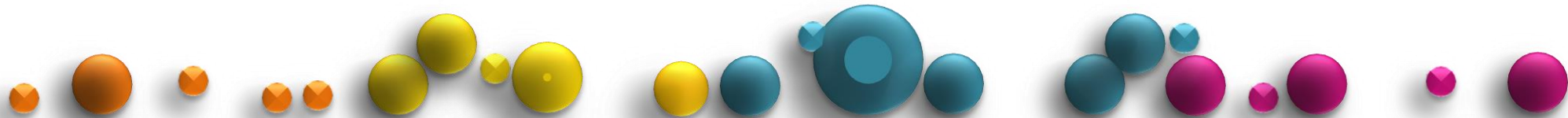


# Smart City Smart Lighting

National Electrical Industries



- 1 COMPANY INTRODUCTION
- 2 SOLUTIONS AND PRODUCTS
- 3 CASE STUDY



# ABOUT NEI

National Electrical Industries was established in 1984 in Abdullah II industrial City – Sahab to contribute in meeting the needs of the local market and neighboring markets starting with lighting units and electrical panels then we followed up the markets needs to include a bigger variety of products.



# ABOUT NEI

- ❖ More than 65 Implemented projects around the Hashemite Kingdom of Jordan.
- ❖ More than 24 clients around the kingdom.
- ❖ More than 1 Million installed lighting units.
- ❖ Excellent and comprehensive solution provider for IOT technology such as PLC, Zigbee, RF, LoRa, NB-IOT, GSM/LTE.



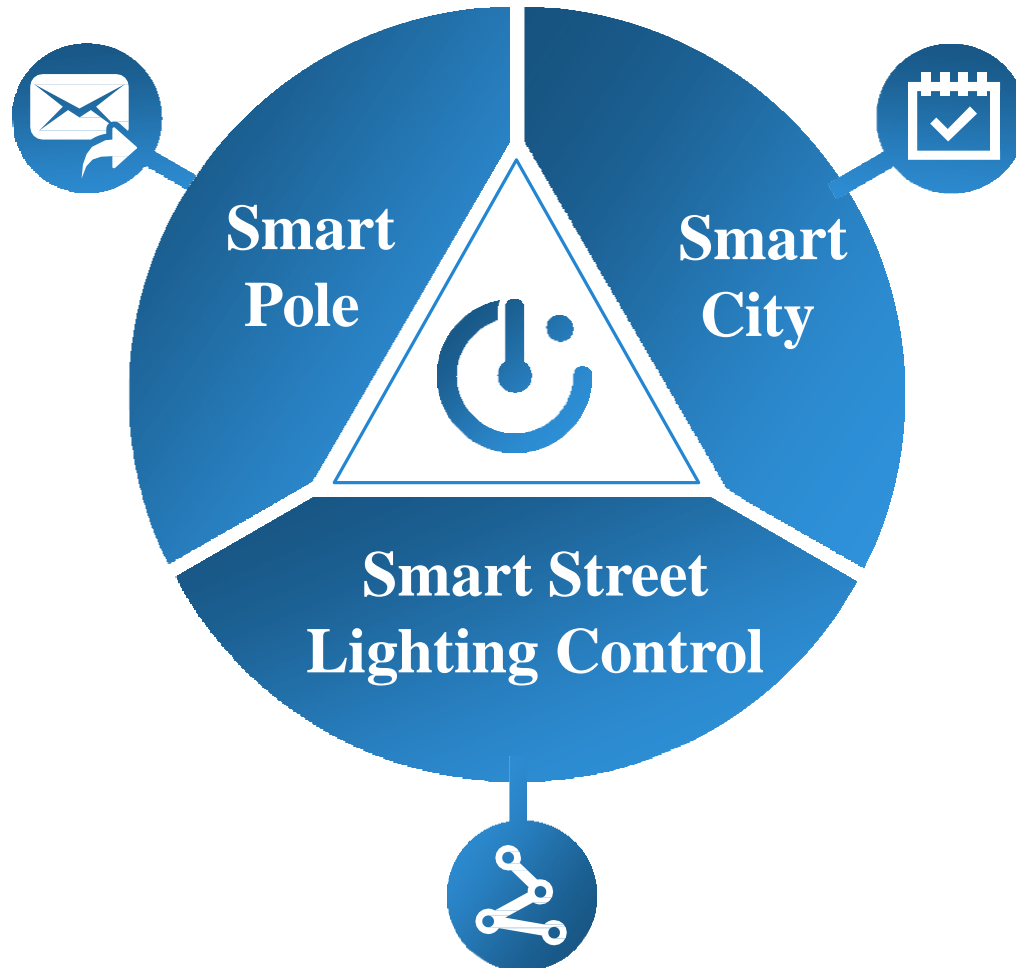
# IOT SOLUTIONS

- ❖ The state-of-the-art solutions and products of NEI are implemented In more than 80 countries, 200 cities or regions all over the world in the past 10 years.



# IOT SOLUTIONS

National Electrical Industries is a company that provides professional lighting solutions for smart city construction. We use variety of IoT technology to control street lamps remotely and intelligently. NEI proudly provides cloud platform NEI City, is now the most powerful Central Management System provided.



## Smart Lighting

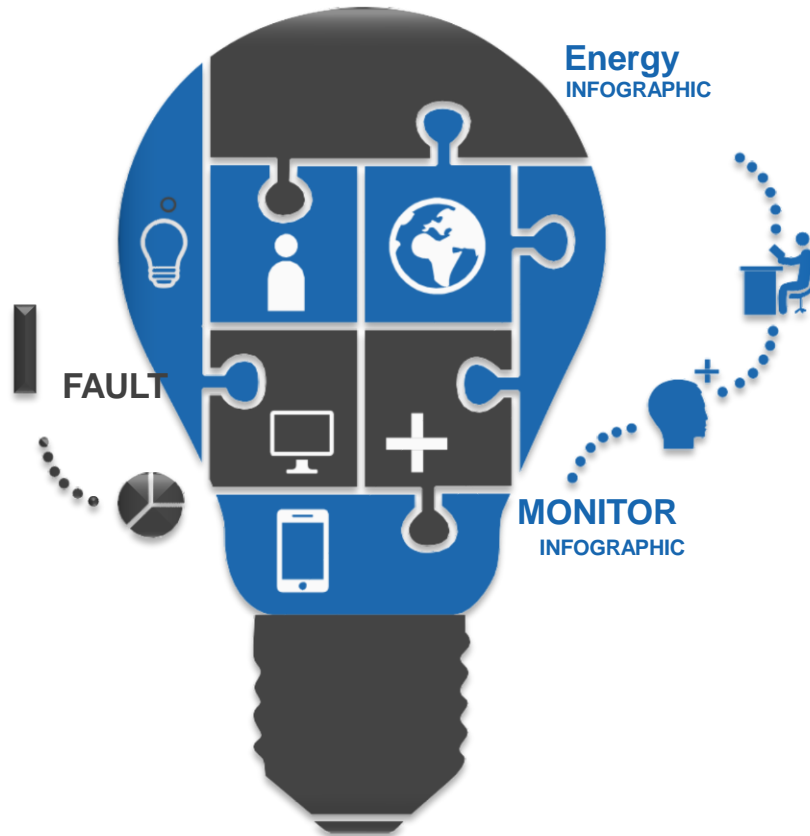
The expertised control logic with different kinds of transmission methods such as PLC, Zigbee, LoRa, NB, GSM, LTE etc.

## Smart Pole

The newly provided product that carries multiple equipment's such as camera, screen, weather station, charging station, and 5G base station. 5G is the future and smart pole is the window to it.

## Smart City

Provided products by NEI can not only control street lamps, but also beautiful and intellegentize the city.



## Do you have similar situations?

- 01** Your street lights are controlled with timers and/or photocells.
- 02** You cannot remotely control your streetlights or retrieve vital information.
- 03** You rely on citizens or workers to report street light faults visually.
- 04** You have no knowledge of burn hours or the exact amount of kWh spent.
- 05** You are met with energy savings requirements from government.
- 06** You have no ability to minimize energy consumption at off-peak traffic hours

# NEI Provided Solutions Brings



Replace the Traditional HPS with LED lights, and install a lamp controller on each lamp, together with NEI's energy saving strategy.

80%

Energy Saving Rate

90%

Maintenance Cost Reduction



All devices are controlled and managed by cloud based platform. All failure info will be instantly sent to specific people via SMS, Email and APP notification.

# NEI Provided Solutions

## Street Lighting

- PLC (Power Line Communication)
- Zigbee, LoRa Mesh
- LoRaWAN
- Cellular: LTE/NB-IoT

## Solar Lighting

- Zigbee
- 2G, LTE

## Tunnel Lighting

- PLC
- RS485

## Facade Lighting

- RS485

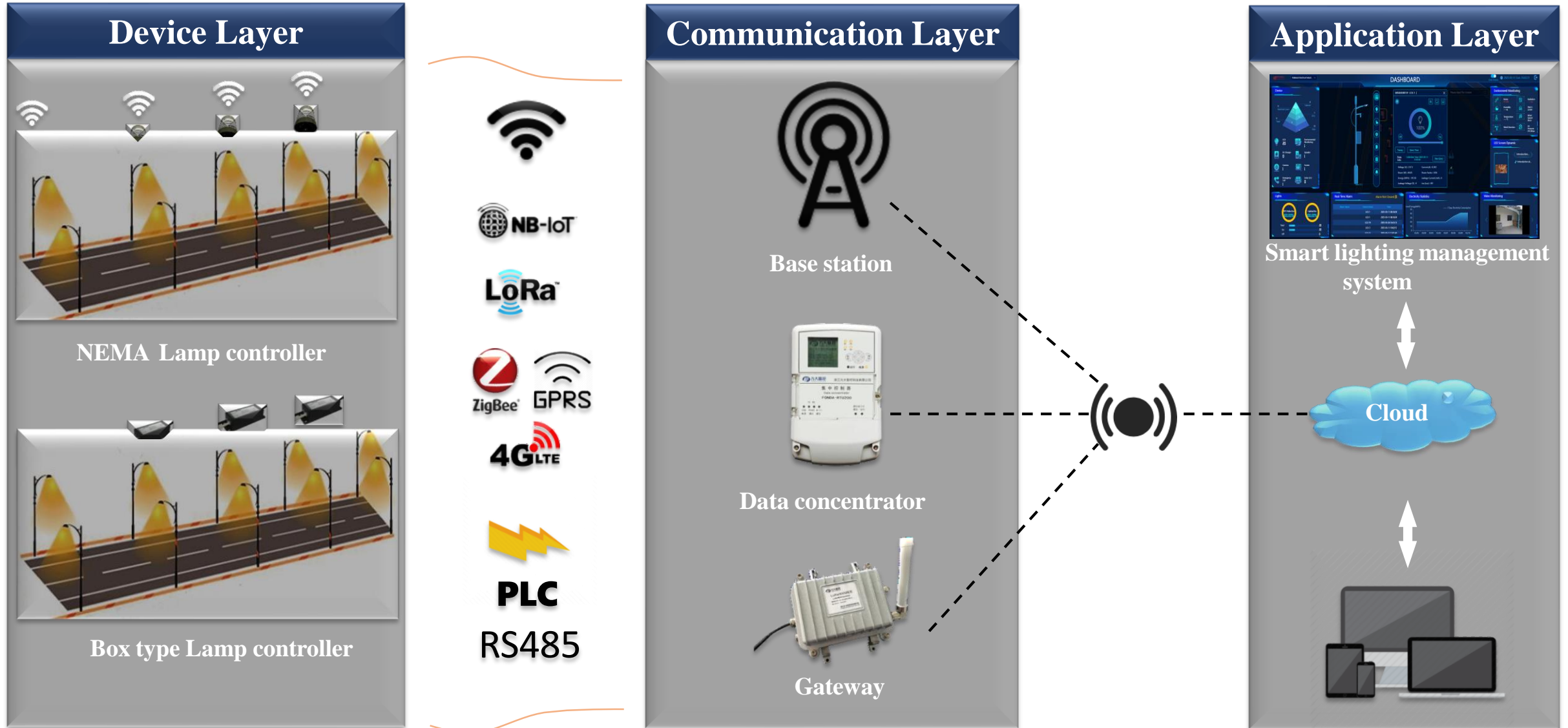
## Smart Pole

- All in one, multifunctional
- Modules and components customizable

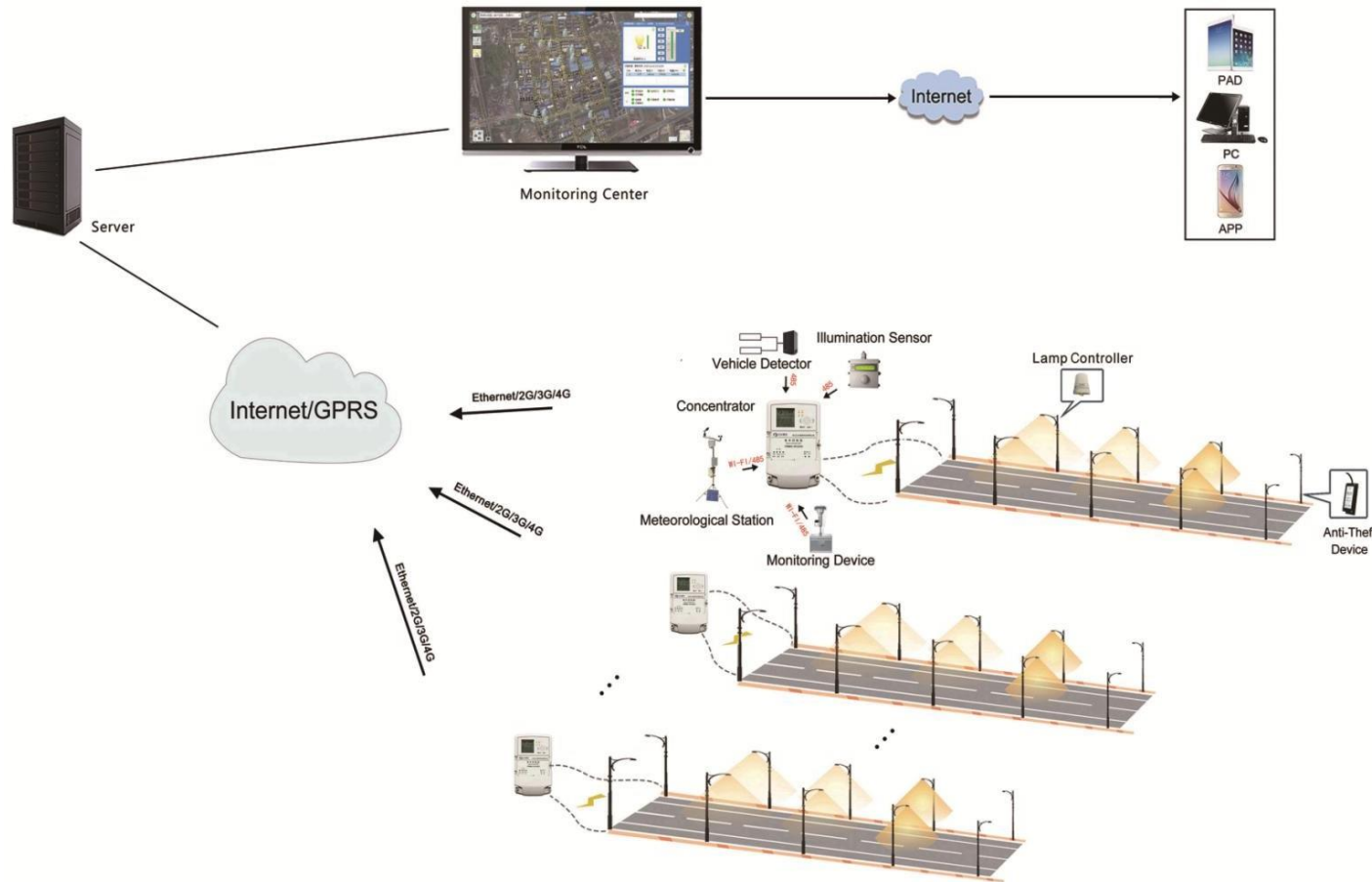
## Smart City



# Diagram of Smart Street Lighting



# PLC Solutions – Street Lighting



## Products of PLC Series



**Concentrator**  
NEI-RTU200



**Lamp Controller -NEMA**  
NEI-LCU16



**Lamp Controller -EMBEDDED**  
NEI-LCU15

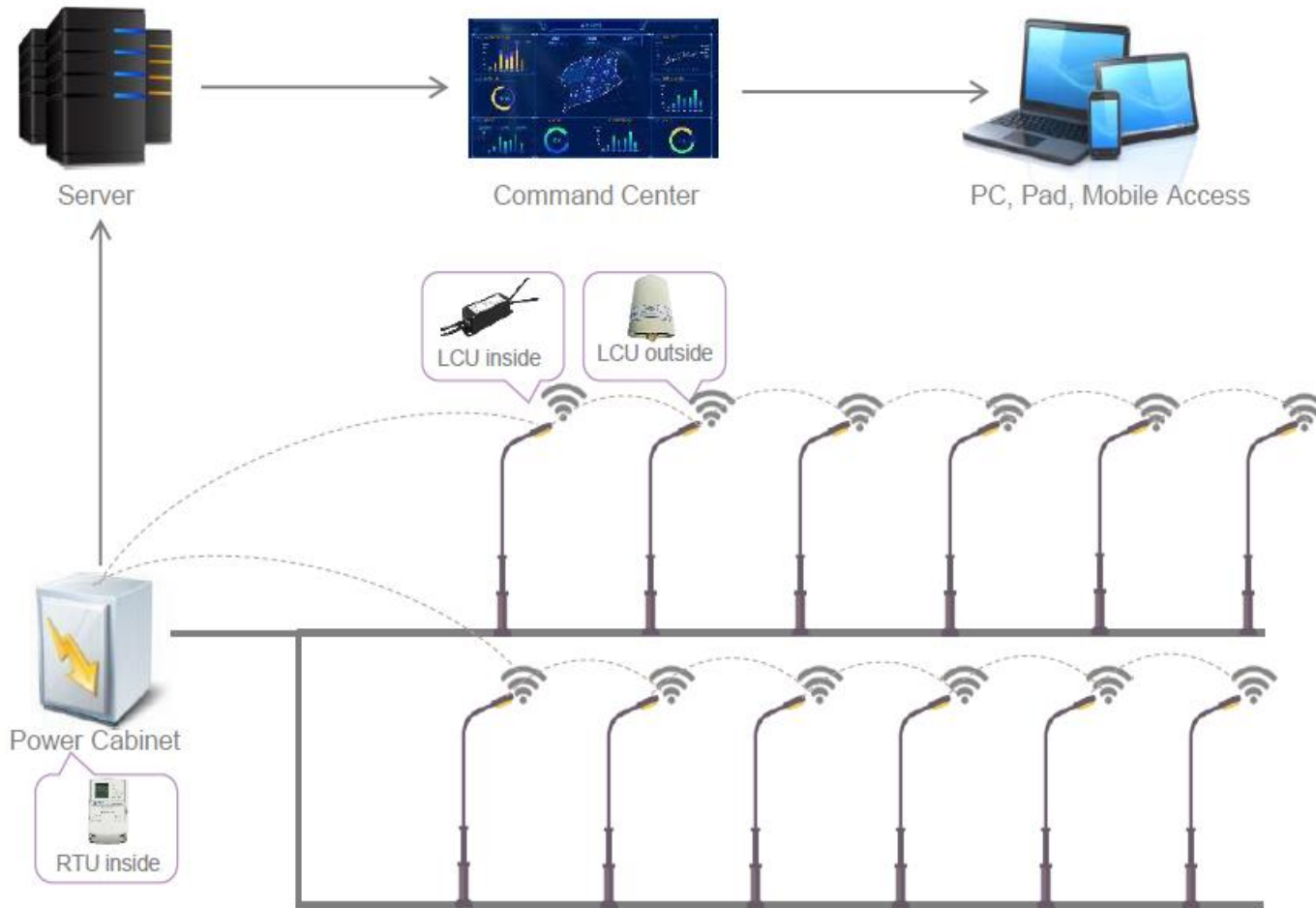
## Features

- 1- Use Power Line for Communication
- 2- Both lamp and circuit control available.
- 3- One lamp controller per lamp, one concentrator per cabinet.
- 4- One concentrator connects up to 500 lamp controllers.
- 5- Node to node distance is 500m, Max distance is up to 2000m.

## Applications

- 1- Street, Tunnel, Parking lot, Façade lighting with cabinet.
- 2- The power supply of the lamps is stable, clean and exclusive of street light. (Not recommended for Generators)
- 3- One lamp controller per lamp, one concentrator per cabinet.
- 4- More suitable for new street construction , project with limited budget.

# RF Solution – Street Lighting



## Products of RF Series



**Concentrator**  
NEI-RTU200Z/M



**Gateway**  
NEI-RTU500Z/M



**Lamp Controller- NEMA**  
NEI-LCU16Z/M



**Lamp Controller- EMBEDDED**  
NEI-LCU12Z/M

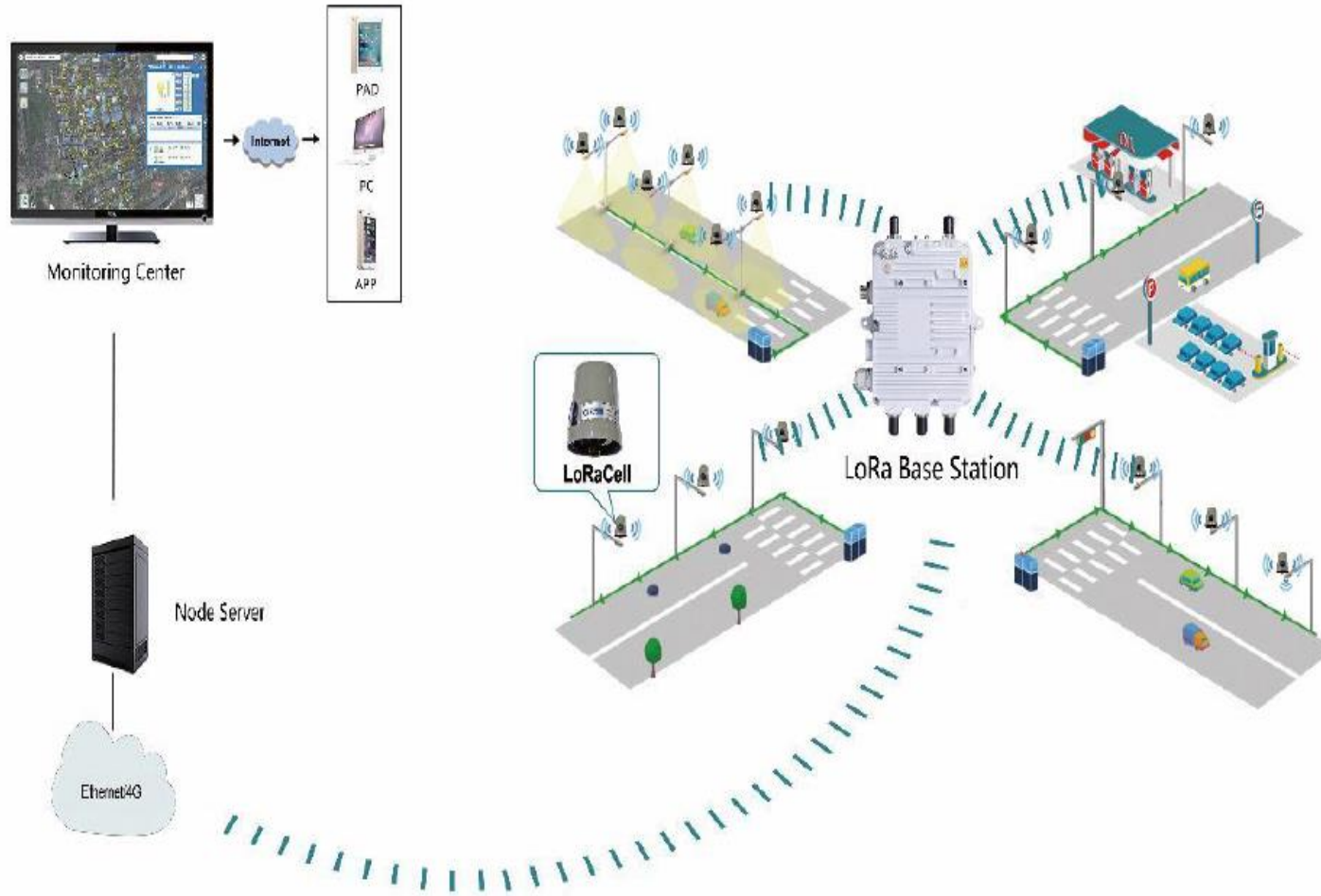
## Features

- 1- RF Mesh communication (2.4Ghz / 915Mhz).
- 2- Both lamp and circuit control available.
- 3- One lamp controller per lamp, one concentrator per cabinet.
- 4- One concentrator / Gateway connects up to 250 lamp controllers.
- 5- Node to node distance is 200m, Max distance is up to 3000m.

## Applications

- 1- Street, Solar, Parking lot, Factory lighting.
- 2- Power supply form the cabinet is not exclusive for street light, but need cabinet control and monitoring.

# LoRaWAN Solutions- Street Lighting



## Products of LoRaWAN Series



**Gateway  
-LoRaWAN**  
NEI-RTU500LORA



**Lamp Controller  
-NEMA**  
NEI-LCU16LORA



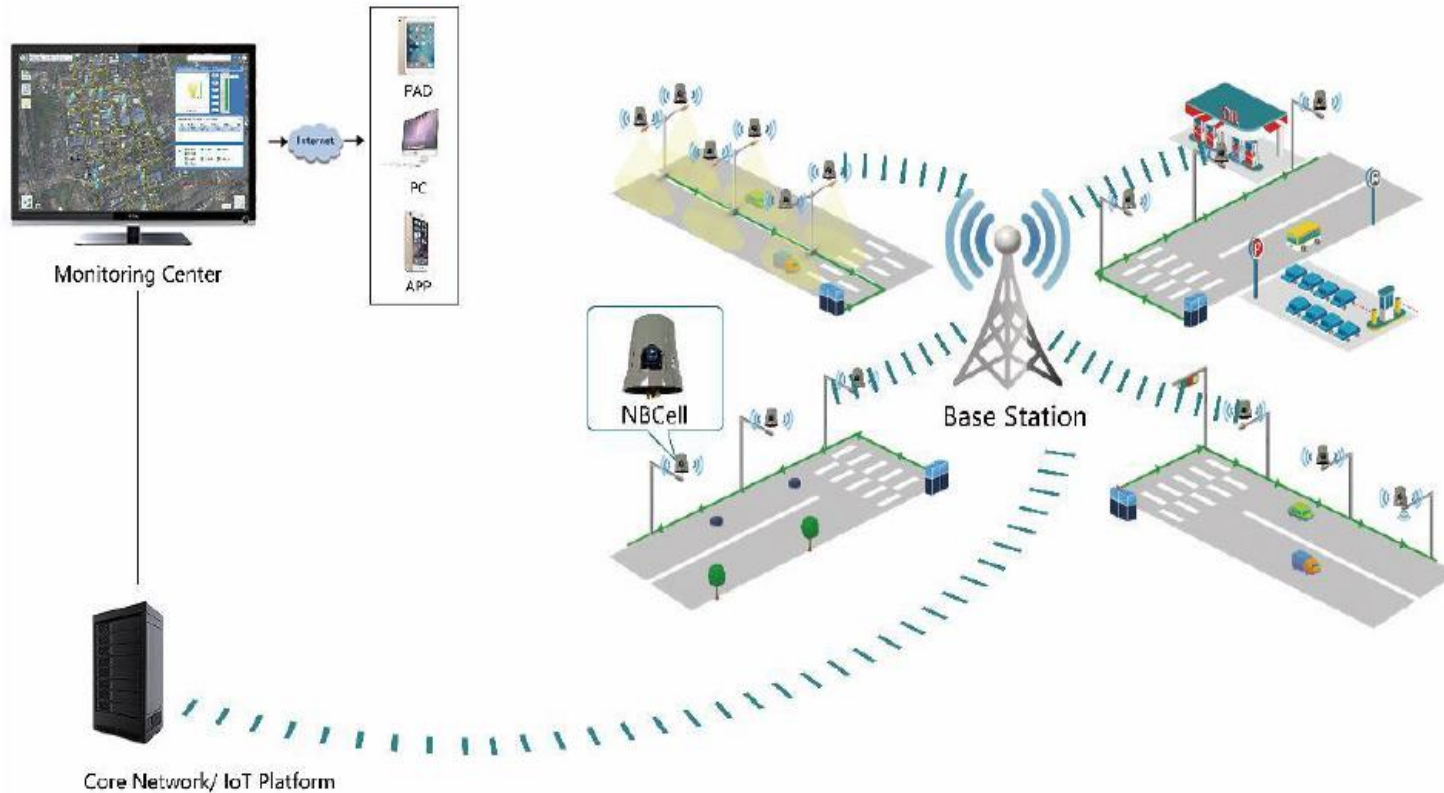
**Lamp Controller  
-Zhaga**  
NEI-LCU71LW

## Features

- 1- LoRaWAN Gateway and network server for device management are needed.
- 2- One lamp controller per lamp, circuit control unavailable.
- 3- One Gateway connects up to 1000 lamp controllers.
- 4- Max. distance is up to 2000 ~ 3000m.

## Applications

- 1- Street, parking lot, park, Island lighting.
- 2- Where LoRaWAN network is already deployed.
- 3- Customer already have CMS platform with LoRaWAN.



## Products of 2G/LTE/NB-IOT Series



**Lamp Controller  
-NEMA**  
NEI-LCU16LTE-C1  
NEI-LCU16LTE-C4



**Lamp Controller  
-ZHAGA**  
NEI-LCU71LTE



**Lamp Controller  
-NEMA**  
NEI-LCU16NG

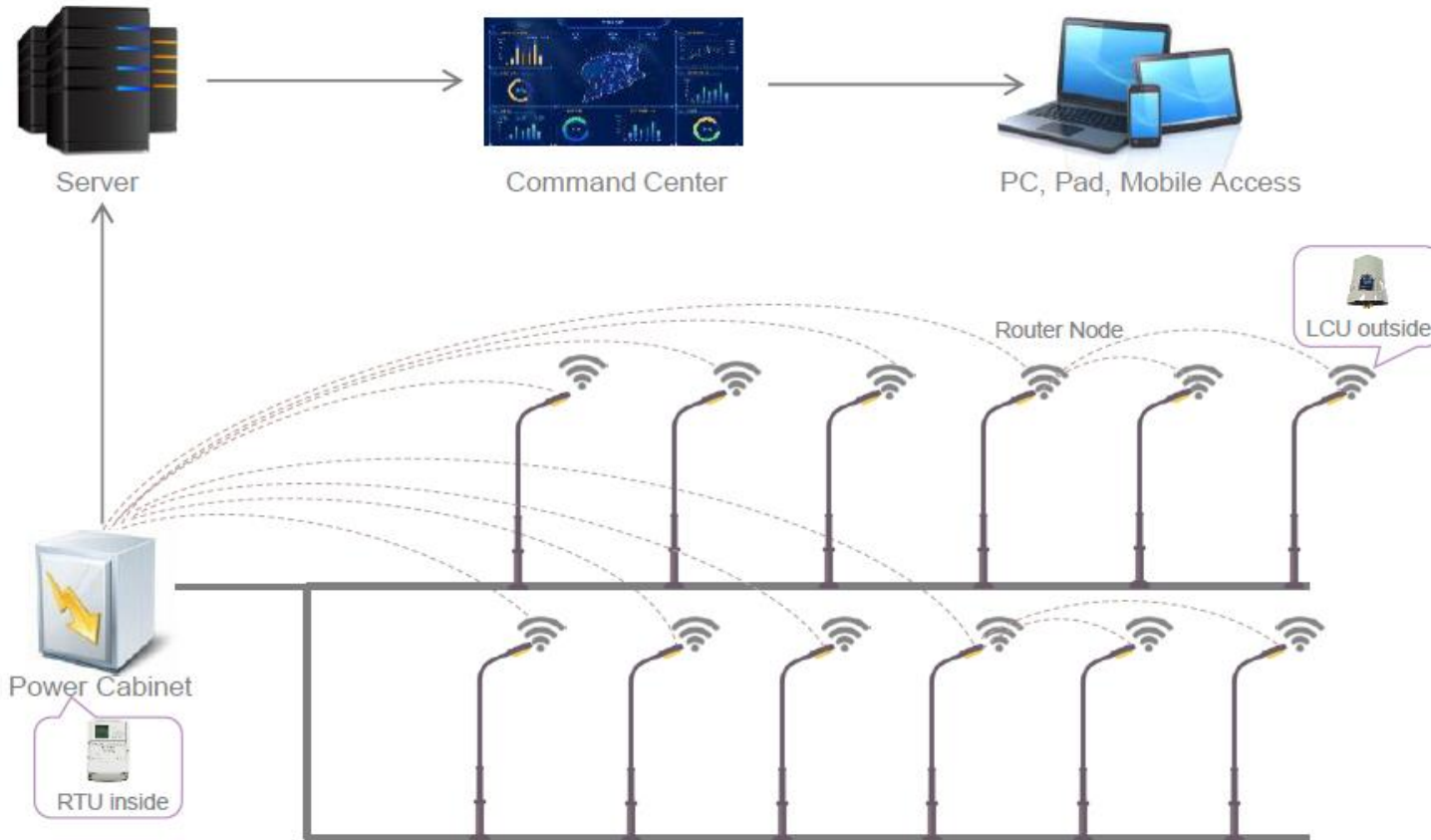
## Features

- 1- Use LTE or NB-IOT network service form local operator.
- 2- One lamp controller per lamp with SIM card.
- 3- No broadcasting or circuit control function.
- 4- Unlimited distance

## Applications

- 1- Any place that can receive LTE/NB signal.
- 2- The lamps are distributed in large area, such as metropolis and mountain.
- 3- Project with sufficient budget
- 4- No need to cabinet control or monitoring
- 5- Plug and play installation, no maintenance on the gateway or concentrator.

# LoRa Mesh Solutions – Street Lighting



## Products of LoRa Mesh Series



**Concentrator**  
NEI-RTU200LR



**Lamp Controller - NEMA**  
NEI-LCU16LR

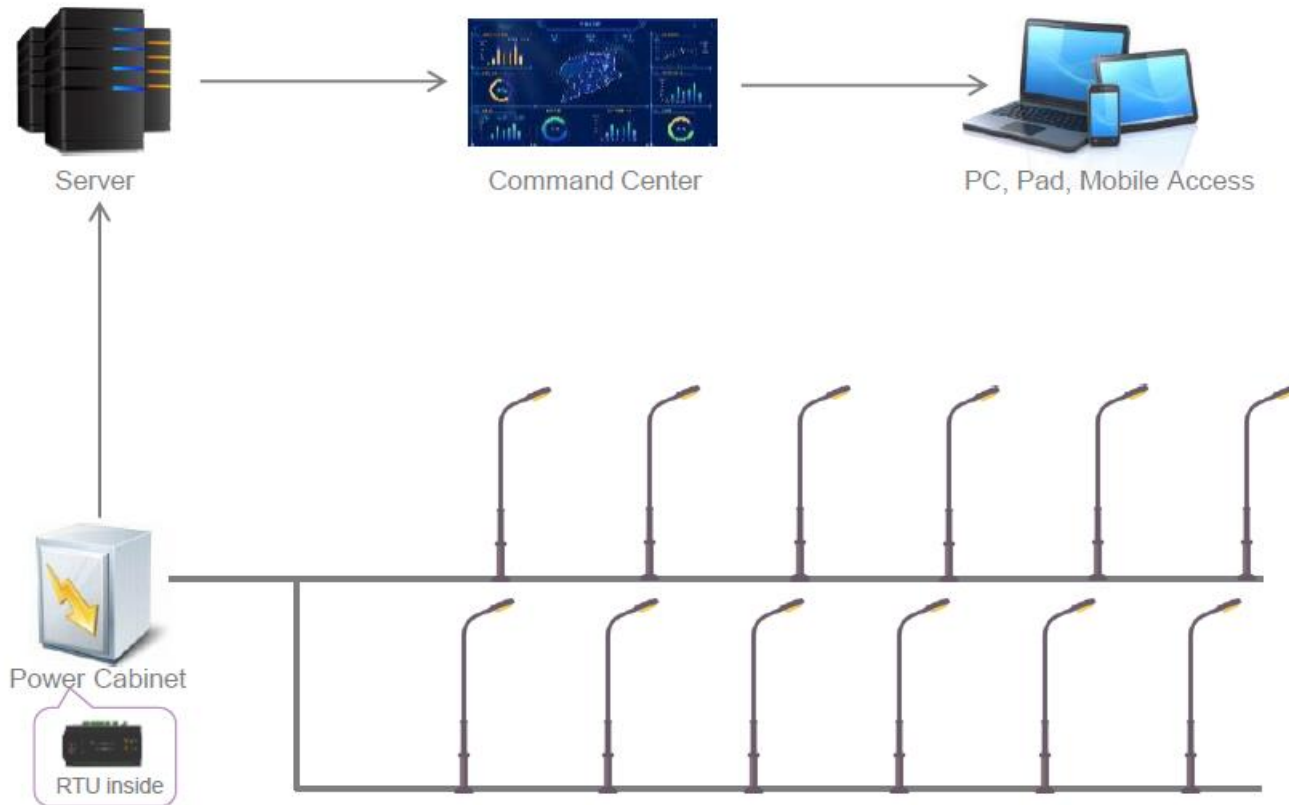
## Features

- 1- LoRa mesh communication with 433Mhz, 868Mhz, 923Mhz.
- 2- Remote real time control and monitor on the lamps, scheduled lighting by group or individual lamp.
- 3- One lamp controller per lamp, one concentrator per cabinet.
- 4- One concentrator connects up to 400 lamp controllers.
- 5- Max transmission distance is 2000~6000m in urban area after relay by a specified lamp controller..

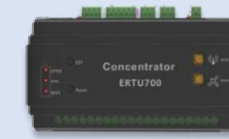
## Applications

- 1- Street, parking lot, Indoor lighting.
- 2- Environments subject to interference in 2.4Ghz frequency.
- 3- Project needs cabinet control and monitoring, with longer distance from cabinet.

# Circuit Control - Street Lighting



## Products of Circuit Control Series



**Concentrator**  
RTU700

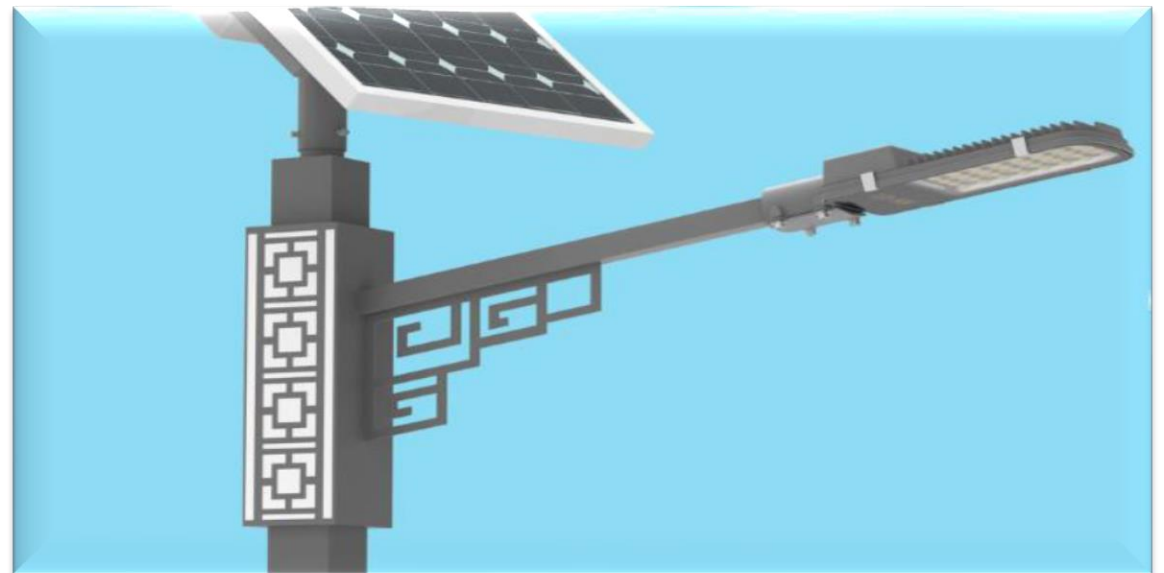
## Features

- 1- Circuit control based on time and sunrise/sunset is available.
- 2- One cabinet needs one concentrator.

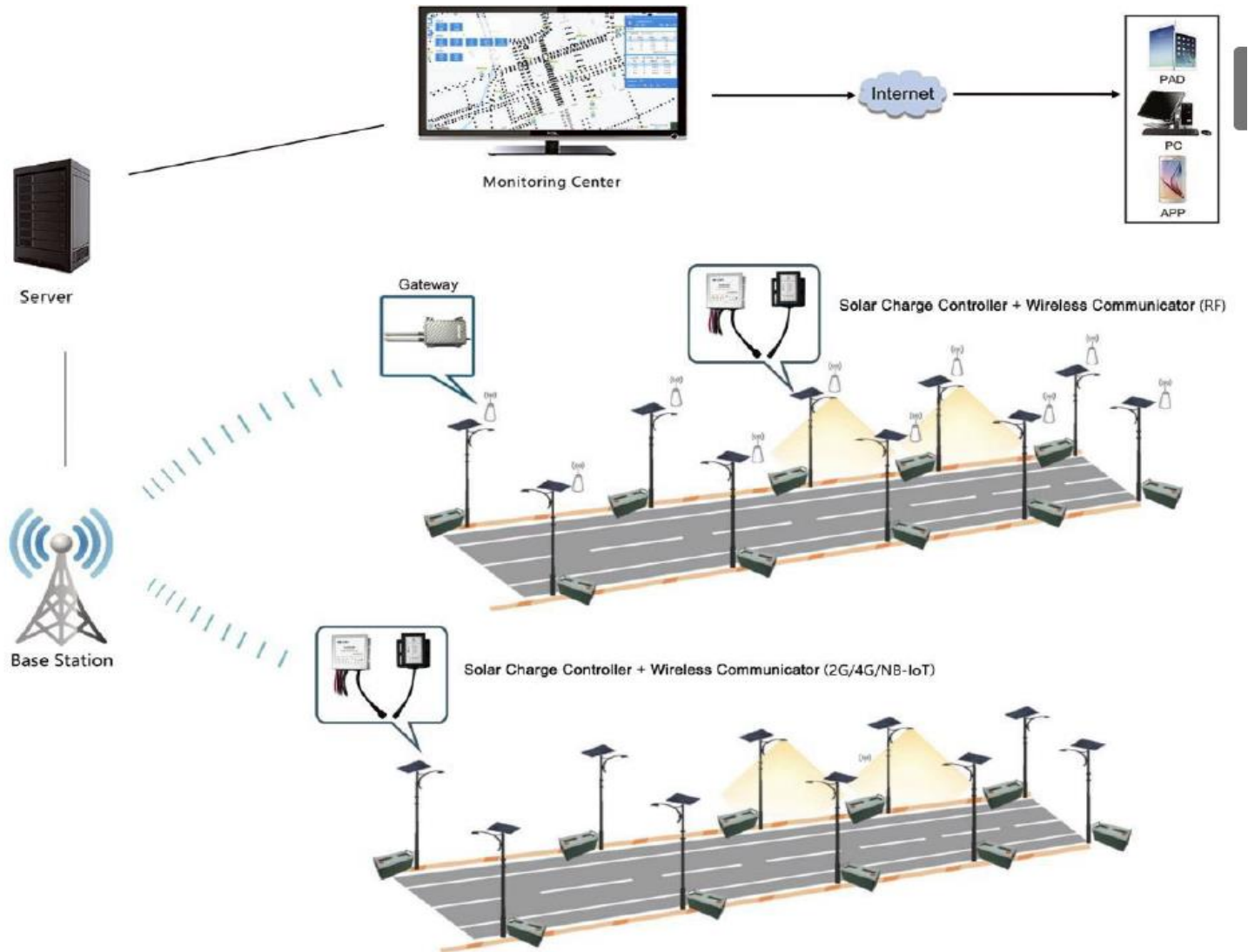
## Applications

- 1- Street, tunnel, parking lot with cabinet.
- 2- Project with limited budget and dimming requirement.
- 3- Suitable for small size cabinet.

**Solar lighting** is powered by the sun; its efficiency, and power by the sun's energy make it one of the most environmentally friendly and sustainable outdoor lighting solutions available. NEI's solar lighting solutions are based on advanced communication technologies such as **RF** and **LTE**, which is a wireless transmission with a faster rate.



# Solar Solutions – Solar Lighting



## Products of Solar Series



**Gateway**  
RTU500Z/M



**Solar IOT Controller**  
(RF/2G/LTE)

## Features

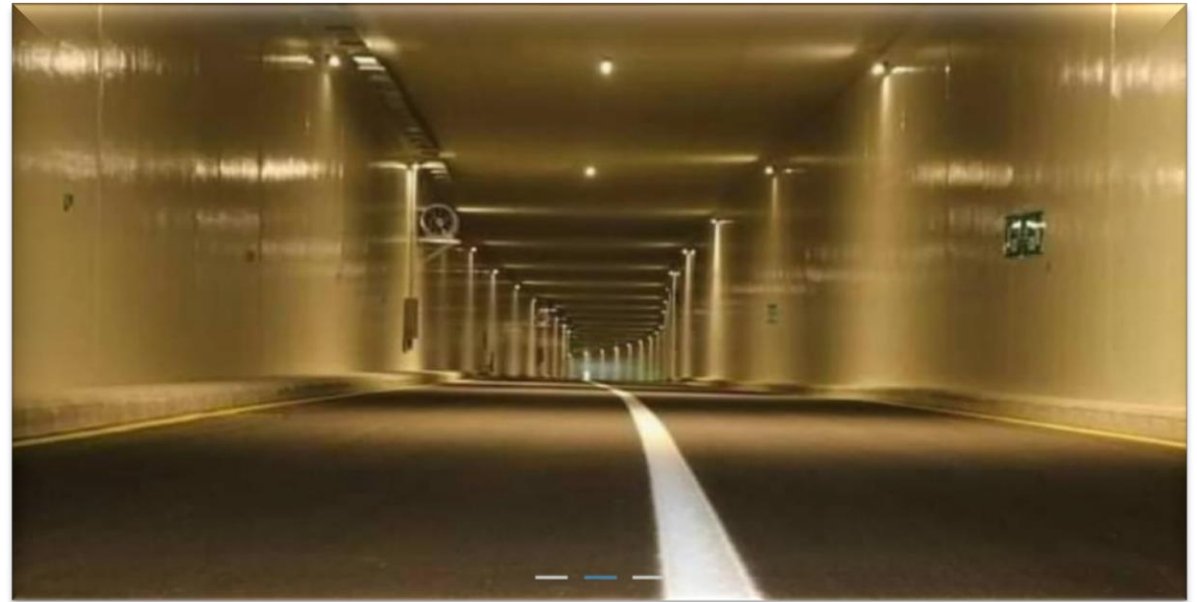
- 1- RF/ 2G/LTE Communication.
- 2- Monitoring on solar panel, solar battery and solar lamp.
- 3- Automatic alarm on solar system.
- 4- Lighting task based on time remotely.
- 5- Solar controllers with designated brands could be applied with IoT controller.

## Applications

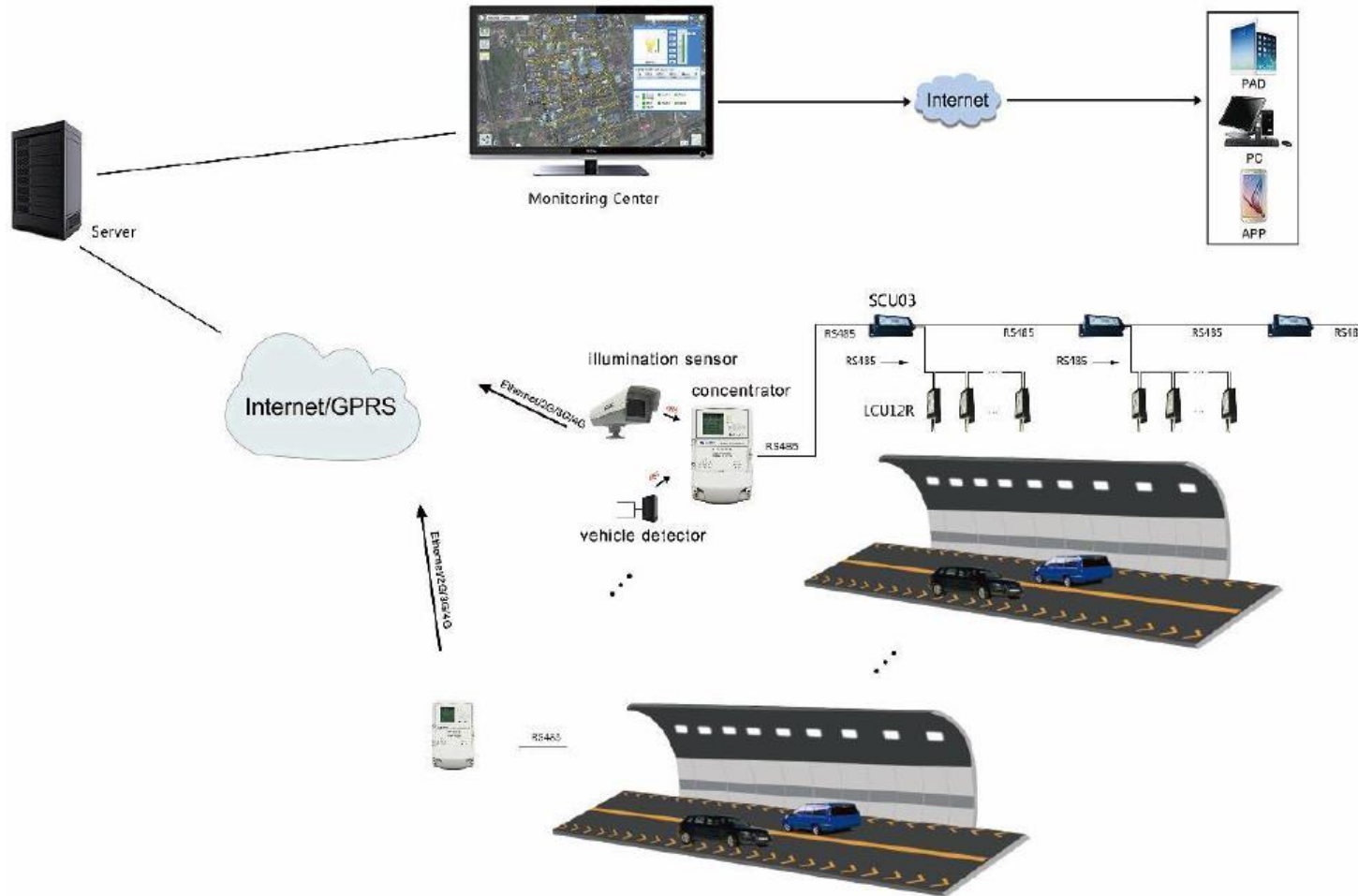
1. RF solution includes gateway, solar IoT controller and solar controller.
2. 2G/4G solution includes solar IoT controller, solar controller and 2G/4G sim.

# Tunnel Solutions

provides good visibility and stable lighting which is vital for safety in tunnels. **Tunnel lighting** solutions make it possible to optimize the luminance in tunnel environments and ensure maximum energy efficiency. NEI's tunnel lighting solutions are based on wire transmission **PLC** and **RS485**, which is more stable.



# RS485 Solutions- Tunnel Lighting



## Products of Solar Series



**Concentrator**  
NEI-RTU200T



**Signal Controller**  
NEI-SCU03



**Lamp Controller  
-EMBEDDED**  
NEI-LCU12R

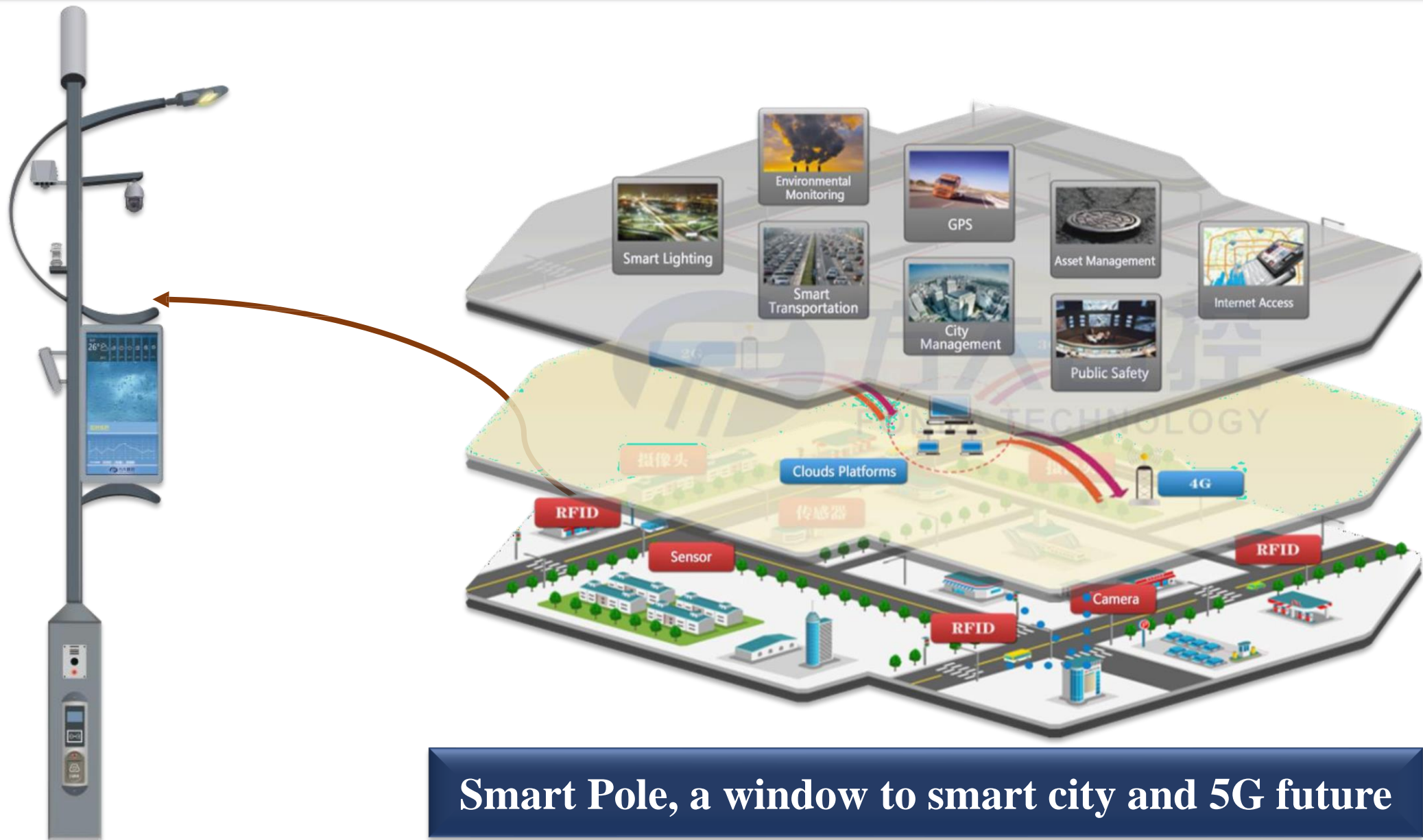
## Features

- 1- One lamp needs one lamp controller.
- 2- One signal controller connects 50 lamp controllers.
- 3- One concentrator controls up to 5000 lamp controllers.
- 4- Absolute timely and accurate control is available.
- 5- Lighting task based on time, lux detector and vehicle detector available.

## Applications

- 1- RS485 Solution is suitable for long tunnel, which includes concentrator, signal controller and lamp controller.
- 2- PLC Solution is suitable for short tunnel with exclusive power supply for lamps, which includes concentrator and lamp controller.

# Next Generation of Street Light Control



**Smart pole** is a multi-functional pole designed from conception with all kinds of unrelated technology to be attached to different parts of the pole. There is **no limit to the potential features** and functions that can be integrated into one pole, resulting in a solution with high energy efficiency.



# Smart Pole Components

The smart devices of smart pole is deployed and integrated into NEI smart city platform, so that all of the management and operation could be done in central platform, making the maintenance work easier and more efficient



**Wireless AP**  
 Provide Wi-Fi hotspot for different distances

**Weather Station**  
 Collect and send weather data to monitoring center, such as PM 2.5(PM10), noise, wind direction, wind speed, temperature, humidity and pressure.

**Broadcasting Speaker**  
 Broadcast audio file uploaded form control center

**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



**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

**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.

**EV Charging Pile**  
 Offer AC charging stations for electrical vehicle

## Smart Devices of Smart Pole



Lamp Controller



AIOT Camera



WiFi Hotspot



Weather Station



Core Gateway



Network Speaker



LED Display



Help Button



Charging Pile

## Scalable Smart Sensors



Tilt Sensor



Flood Sensor



Lux Sensor

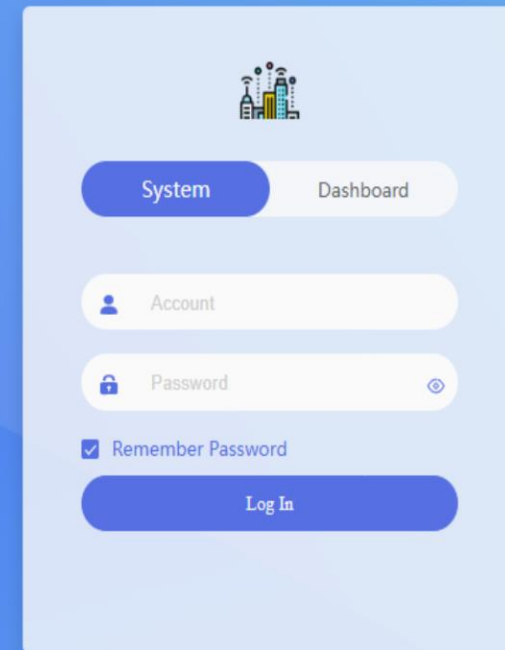


PIR Sensor



## NEI National Electrical Industries

NEI City is now the most powerful Central Management System provided by NEI. NEI city is based on optimizing a previously developed platform that enhances the UI and other modules that affect the user experience. Similarly, NEI city can be used **throughout a project**, facilitating remote control, parameter querying, etc.



System Dashboard

Account

Password

Remember Password

Log In



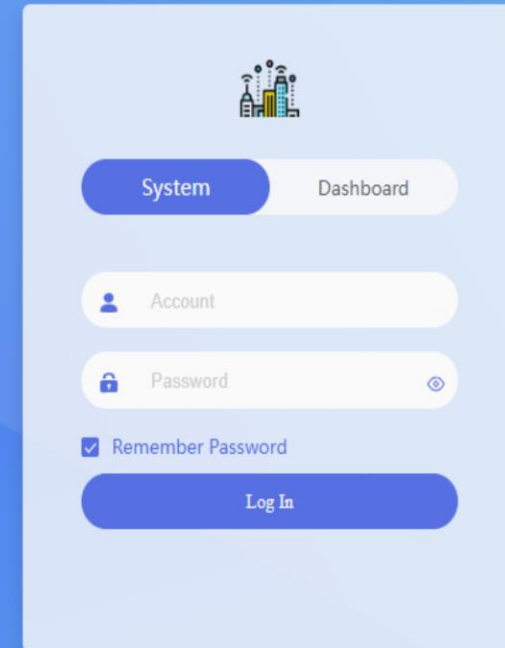
## NEI National Electrical Industries

### Login Page

- ✓ Automatically recognize the language based on the browser.
- ✓ Secured login credential.
- ✓ Auto account lock down if too many retries.

### Homepage

- ✓ Support Multi-languages.
- ✓ Full module access control management.
- ✓ One-stop platform that covers the entire project requirements.



The screenshot shows a login page with a light blue background. At the top, there is a small icon of a city skyline. Below it, there are two tabs: 'System' (selected) and 'Dashboard'. The main form contains an 'Account' field with a user icon, a 'Password' field with a lock icon and a toggle for visibility, and a 'Remember Password' checkbox which is checked. A large blue 'Log In' button is at the bottom.



# Intelligent Lighting

National Electrical Industries

NEI, Welcome

Total: 23 | Today: 3 | Recent Situation

Please Input The Content.

0450245001D7 | LCU 11 | Online | 10dB

Communication Equipment: 20024910004(0000020024910004) Change

100%

0F0021A004B5

Data Info	
Voltage (V): 239.0	Current (A): 0.303
Power (W): 69.07	Power Factor: 0.96
Energy (KW-h): 59.61	Lux (Lux): 525
Tilt (*): 35	Recent Action: Manual operation
Data Source: Actively Report	

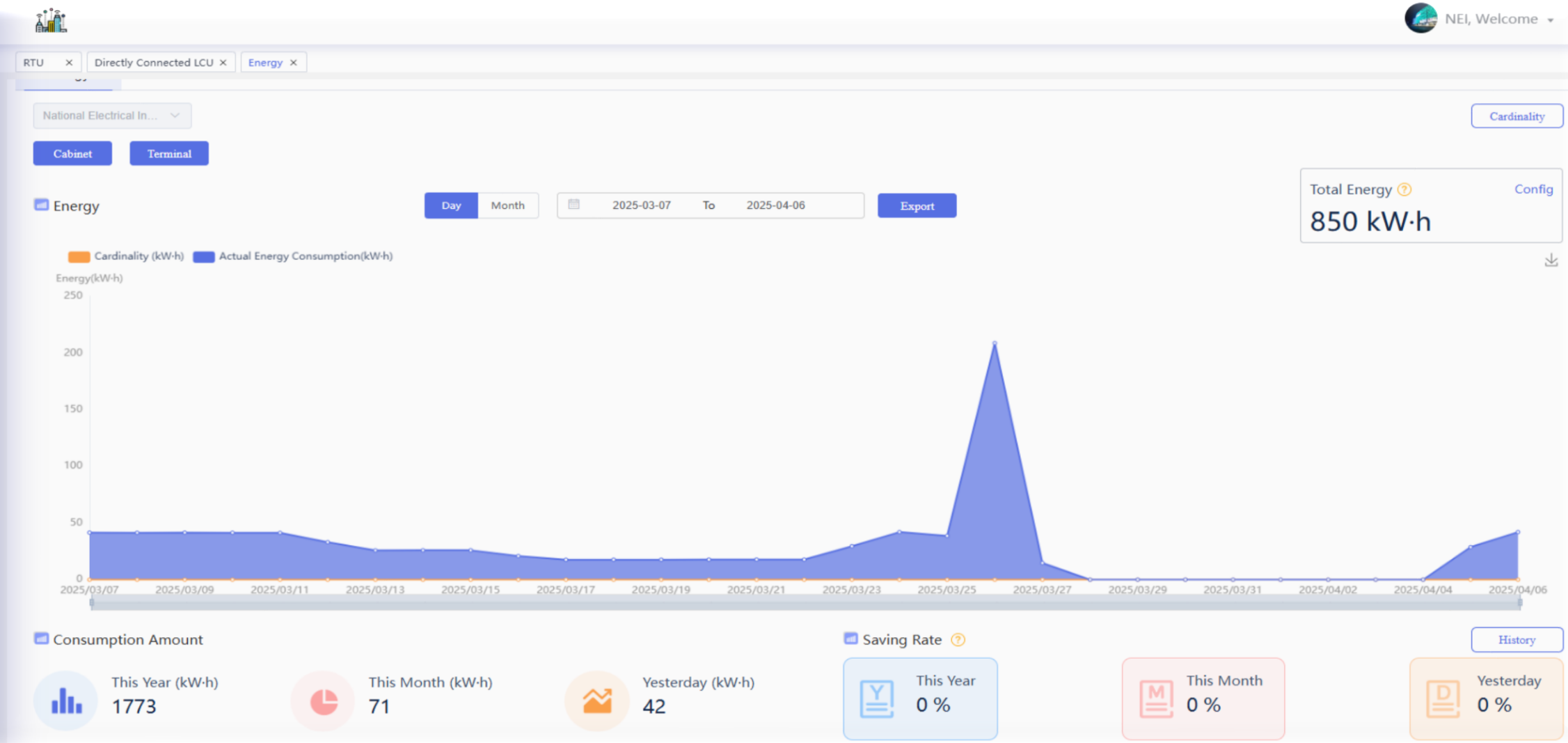
Alarm

Manual Alarm Handle Dispatch List All

This function is mainly used to realize the actual location of the field lamp display, real-time control, status view, group control, overall control of the project and other related management.

# Statistical Analysis

- GIS
- Devices
- Alarms
- Tasks
- Reports
  - Energy
  - Energy Bills
  - Alarms
  - Report Record
  - Passenger Flow
  - Cable Inspections
  - Work Orders
- Maintenance
- Workorder System
- Media Center



This function is used for **statistical analysis** of various project-related parameters, such as energy consumption statistics, electricity statistics, alarm statistics, cable monitoring analysis, etc.

# Thank You



**National Electrical Industries Co.**  
Address: King Abdullah II Industrial  
City, Sahab, Amman, Jordan

## Contact US



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