

With the smart city concept, smart transformations are also demanded in street and street lighting in cities. Within the scope of the Paris Agreement, countries have responsible consumption, sustainable smart city and climate actions. A control system that will serve these actions will contribute to realizing multiple goals. For this reason, IOT-based lighting control systems have become increasingly popular and in demand all over the world.

The technologies used in wireless infrastructures that will serve all Smart Cities are Bluetooth, Zigbee, GSM or LoRa. Zigbee solution is not preferred due to its high cost per luminaire, Bluetooth communication method cannot provide service throughout the city and is generally preferred indoors, and GSM-based systems are not preferred due to the monthly subscription costs to service providers per luminaire.

LoRa Wireless technology, named after the initials Long Range, which provides long distance communication in urban lighting in the world, has become popular. Our system is equipped with LoRa wireless technology.

In street lighting luminaire control, the American NEMA and Zhaga Socket, which is still very young, have entered our lives. In our system, more widely preferred NEMA socket compatible RF receivers are used. In this way, you can use it with all NEMA socketed luminaires compatible with ANSI C136.41.



Advantages of the System

- SDG 11,12,13 (Responsible consumption, sustainable smart city, climate action)
- Contributing to Energy Saving and Carbon Emission Reduction
- IEC Adaptive Adaptation-Dynamic Lighting
- Enabling long distance communication (LoRa)
- Remote troubleshooting, saving maintenance and labor costs
- Interoperable technology with LoRaWAN
- Lighting Fixture control and asset management,

LoRa Wireless CITY LIGHTING SYSTEM AND COMPONENTS



Platform Software



PC Control Software



Cloud Network Management



Mobile Control Software



LoRa Gateway



Nema Socket Compatible LoRa
RF Receiver



Nema Controlled Street
Lighting Fixture



General Information

- LoRa Data Collector providing individual communication with nodes using a 470/868/915 MHz wireless interface.
- In addition to its main functions, the LoRa data collector controls all electrical equipment in the cabin, collects data from the electricity meter and other connected devices and sends the live status of the entire LoRa system to the server via GSM/GPRS/3G mobile network. LoRa data collector programming and light level programming is performed remotely from the software.

LoRa Gateway Features

| | |
|-----------------------|--------------------------|
| Input Voltage | : 100 – 277 VAC 50/60 Hz |
| Power | : 2W |
| Power Factor | : >0,9 |
| Protocol | : LoRa |
| RF Frequency | : 470/868/915 MHz |
| RF Tx Power | : 17 dBm |
| Control Capacity | : 200 Armature |
| Protection Class | : IP66 |
| Operating Temperature | : -40°C / +70°C |
| Body | : Aluminum |
| Voltage Protection | : 10 kV |
| Weight | : 4 kg |
| Dimensions | : 230x 200.5 x 85 |



General Information

- Wireless node controller mounted on the body of each luminaire and controlled by LoRa Gateway with RF 433/865/868/915 MHz frequencies. Provides load control (on/off) and dimming function in luminaires.

LoRa Node Controls

Electrical Properties

| | |
|-----------------------|--------------------------|
| Input Voltage | : 100 – 277 VAC 50/60 Hz |
| Idle Operating Power | : ≤ 1,2 W |
| Load Power | : Max. 1000 W |
| Load Current | : Max. 16 A |
| Ripple Factor | : < 3% |
| Operating Temperature | : -40°C / +55°C |

Interface and Protocol Features

| | |
|-----------------------------|-----------------------------------|
| Luminaire Control Interface | : DAC 1-10V/PWM |
| Giriş - Çıkış Konnektörleri | : Leads 3P/5P/7P, Nema Socket |
| Communication Mode | : ISM Band RF 433/865/868/915 MHz |

Mechanical Properties

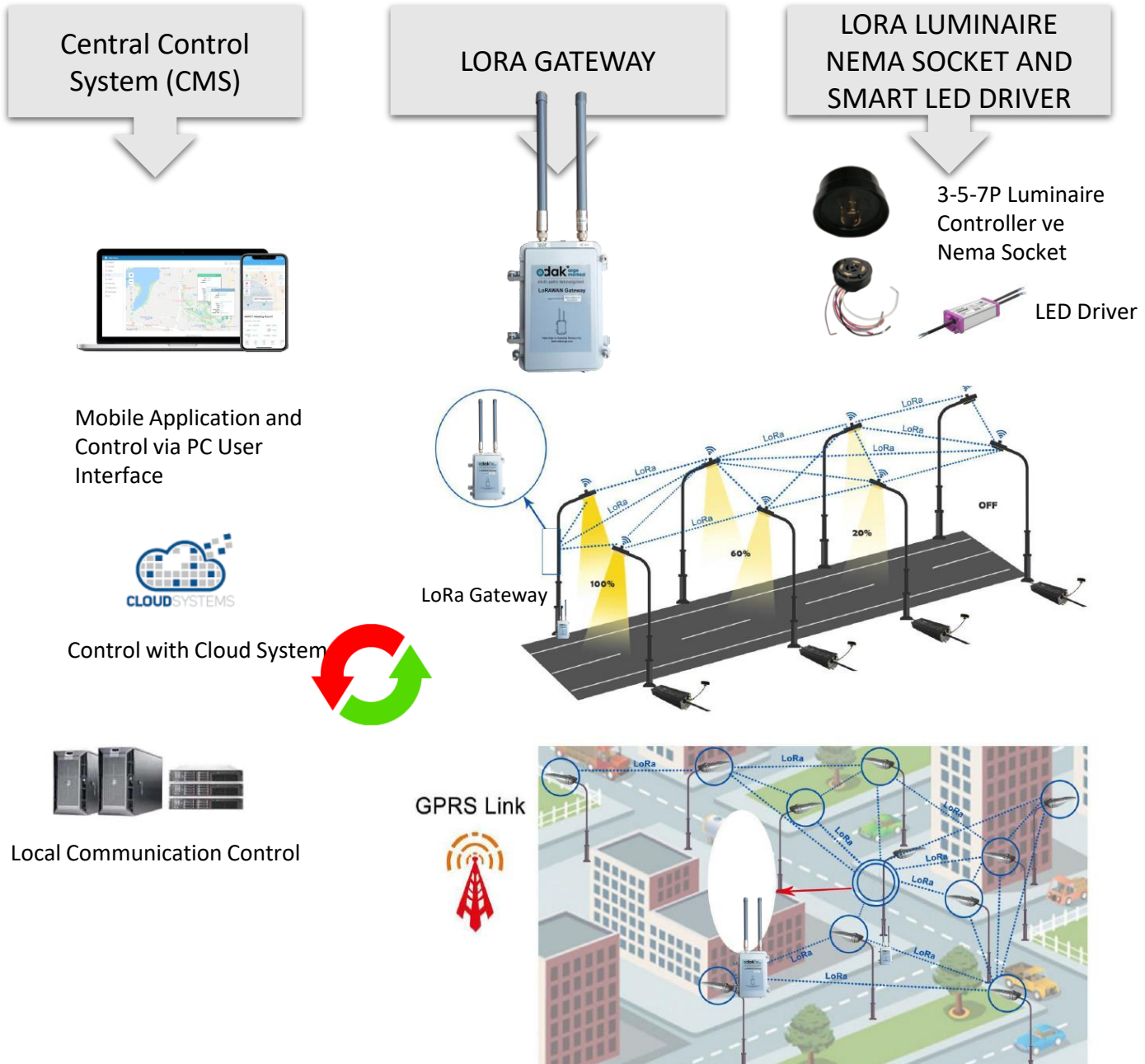
| | |
|------------|---------------------------|
| Body | : Hard Plastic Case, IP66 |
| Dimensions | : Ø94 x 97 mm |
| Ağırlığı | : 0,3 kg |
| Weight | : Purple (+) / Gray (-) |

Odak Arge ve Teknoloji Merkezi A.Ş.

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- Wide Control
- Energy Saving
- Group Management
- Analysis Report
- Lighting Failures and Maintenance
- Different Scenario Settings
- Easy Installation and Deployment
- Dimming and Time Control



LoRa Based Urban Lighting Control System Nema Soket (ANSI C136.41)

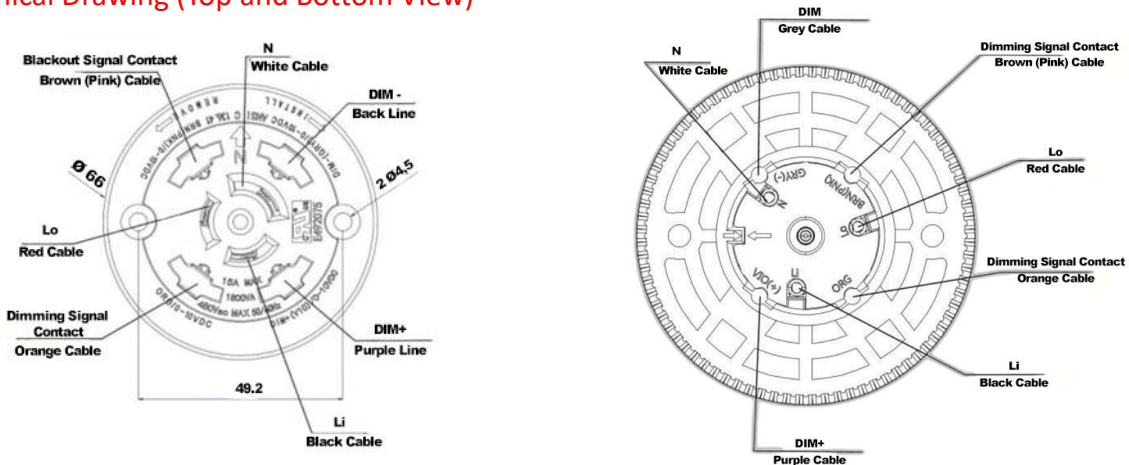


General Information

Nema Sockets provide the electrical and mechanical connection between the control cell and the luminaire. ANSI C136.41 and UL773 clearly define the dimensions, locking type and other details of the standard socket. NEMA Socket is a standardized connection type throughout the lighting industry. NEMA Socket is easily removable and installable.

This makes installation, maintenance and repair easier. NEMA Socket provides a reliable power connection with robust twist lock contacts. In lighting fixtures, NEMA Socket can be 3 pin 5 pin or 7 pin. 3-pin NEMA Sockets can have on/off control, 5-pin NEMA Sockets can have 1-10 VDC control, and 7-pin NEMA Socket versions can have both 1-10 VDC and DALI (digital addressable lighting interface) dimming options.

Technical Drawing (Top and Bottom View)



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LoRa Based Urban Lighting Control System

Nema Soket (ANSI C136.41)

Technical Specifications

| | |
|----------------------------|--|
| Input Voltage (AC) | : 480 VAC max. |
| Dimming Voltage Input (DC) | : 30 VDC max. |
| Input Current | : 15 A max. |
| Dimming Current | : 250 mA max. |
| Operating Temperature | : -40 °C - +70 °C |
| Moisture | : %99 |
| Max. Voltage withstand | : 3 kV / 60 Hz |
| 3 Pin Socket | : 3 power input contact |
| 5 Pin Socket | : 3 power input contact 0-10 VDC Signal Input |
| 7 pin Socket | : 3 power input contact 0-10 VDC Signal Input DALI Signal Input |
| Cable Types | : power input contact (3x2,5 mm ²) Signal Input Cable (2x0,75 mm ² veya 4x0,75 mm ²) |
| Body | : Bakelite |
| Additional Accessory | :SiliconeConta |
| Standards | : ANSI C136.41 - UL773 |

Product Variations

| Product Code | Description | Input Voltage | Input Current | Dimensions | Cable Length |
|--------------|----------------------------|------------------|---------------|------------|-----------------|
| NM01-6603 | 3 pin Nema Socket (On-Off) | 480 VAC 50-60 Hz | 15 A | Ø = 66 mm | 20 - 40 - 60 cm |
| NM01-6605 | 5 pin Nema Socket (1-10V) | 480 VAC 50-60 Hz | 15 A | Ø = 66 mm | 20 - 40 - 60 cm |
| NM01-6607 | 7 pin Nema Socket (DALI) | 480 VAC 50-60 Hz | 15 A | Ø = 66 mm | 20 - 40 - 60 cm |