LoRaWAN NEMA SLC-500-LWN

Fig. 1 - LoRaWAN NEMA SLC-500-LWN

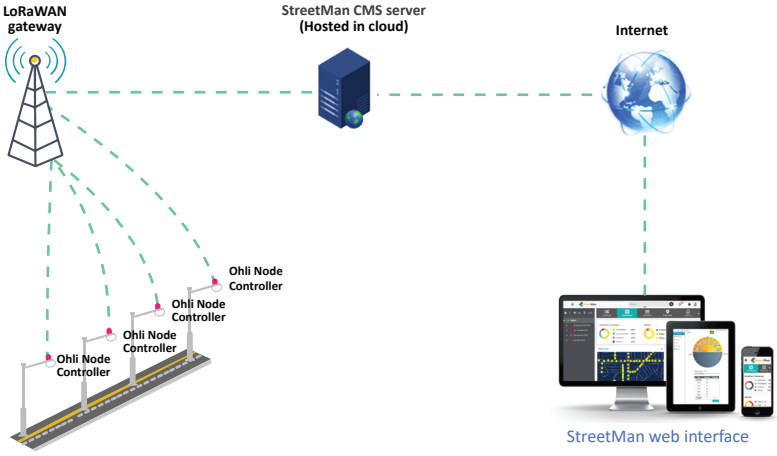


Fig. 2 – Smart Street Light Implementation

Overview

LoRaWAN is a low-power WAN communication technology with promising prospects. It has been widely used in various fields of the Internet of Things. It can be seen that the LoRa communication module occupies an important position on the Internet of Things industry.

LoRaWAN® NEMA Smart Light Controller (SLC) as shown in **Fig. 1** is a remote- control device for HID or LED luminaires equipped with ANSI C136.41 NEMA receptacle. The controller connects with a LoRaWAN® gateway in a wide area network installation. The gateway in turn connects with the remote management platform for management and control as shown in **Fig. 2.** The controller is exceptionally suitable for flat terrain with low-rise buildings. It comes with integrated GPS positioning, tilt sensor, light sensor and RTC for local scheduled dimming/on-off control.

Features

- NEMA interface, compatible with standard ANSI C136.41
- Built-in standard LoRaWAN communication module to realize long-distance transmission, low-power operation, large-capacity networking, and high-reliability communication
- Can be connected to standard LoRaWAN gateways and supports remote control such as on/off, dimming, status monitoring of the street light etc.
- Built-in electric energy metering chip with 1% accuracy
- Built-in with tilt sensor to detect the uprightness of lamp post
- Built-in GPS positioning chip for auto-mapping of streetlight positioning
- Built-in light sensor for environment-based turning on/off of streetlights based on brightness level
- Built-in RTC for onboard scheduled dimming
- Monitored parameters includes: voltage, power, current, energy consumption, power factor, temperature and frequency, etc.
- Supports Class A and Class C device types
- Built-in real-time clock, can store device energy consumption data per day
- Supports OTAA access method
- Service life- > 5 years

Electrical Parameters

Input Voltage	100Vac~240VAC	Short Circuit Protection	No
Rated Voltage	220VAC	Over-Temperature Protection	Yes
Power Frequency	47Hz to 63Hz	IP Protection	IP66
Maximum Output Power	500W	MTBF	>200khours
Output Power	20dBm	Receiving Sensitivity	-142dBm @ SF=12, BW=125kHz
Maximum Current	4A	Operating Temperature	-40℃ to +60℃
Standby Power Consumption	<2W	Storage Temperature	-40℃ to +85℃
LoRaWAN Frequency	CN470, US915, AU915, EU868	Dimensions（L*W*H）	89mm*89mm*120mm
Dimming Output	• 0V-10V @ 27mA(max), PWM	Weight	0.3kg
Metering Accuracy	<1%	Maximum Ambient Temperature	80℃
THD	<10%	Safety Standard	CE
Overload Protection	Yes	Electro Magnetic Compliance	EN55015、EN55022

Fault Alerts and Resulting Operations

Fault Alert	Conditions	Resulting Operations	Notes
Over Temperature	> 95℃±2℃	Reports fault alert, shutdown, recovers to pre-shutdown condition[1] @ temperature < 90℃±2℃	NEMA SLC internal temperature, not environment temperature
Under Temperature	< -25℃±2℃	Reports fault alert, no shutdown, removes fault alert @ temperature > -25℃±2℃	NEMA SLC internal temperature, not environment temperature
Open Circuit (at Output)	Power < 5W±1W	Reports fault alert @ Power < 5W±1W, no shutdown, removes fault alert @ > 5W±1W	
Over Power	> 520W±5W or > 4.2A±200mA	Reports fault alert, shutdown, resets[2], then recovers。	
Over Voltage	> 285V±3V	Reports fault alert, shutdown, recovers to pre-shutdown condition @ <	

		280V±3V	
Under Voltage	< 95V±3V	Reports fault alert, shutdown, recovers to pre-shutdown condition @ > 100V±3V	

Note:

1. State before shutdown: Working state of the product when no alarm is generated, if the product fails at 50% dimming, it will be restored to this state after the failure is removed.

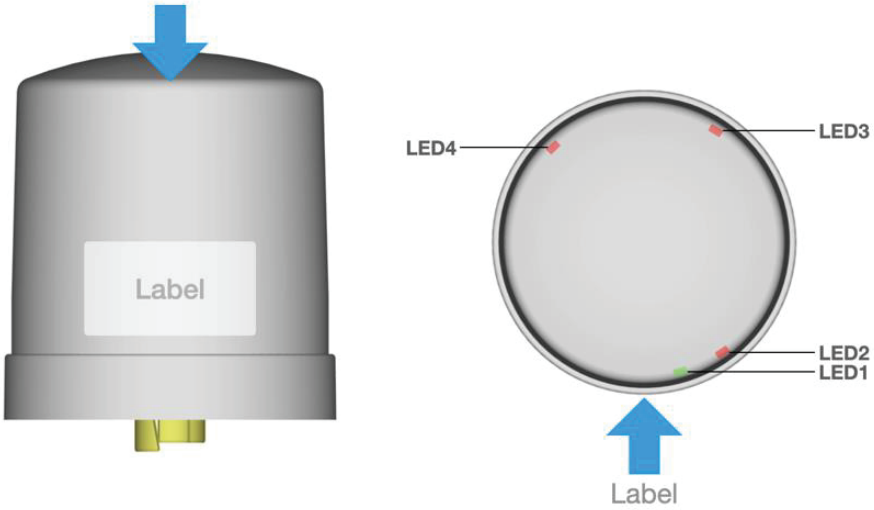
2. Restart: The product needs to be powered off and then powered on again.

3. Execution actions: All execution within 4 seconds

Smart Functions Details

Smart Function	Details
Dimming	Dimming control is carried out over LoRaWAN with 0-10V output and PWM output. PWM outputs 0-100% at <2% accuracy, non-polarity
Energy Metering	Integrated with metering circuitry at 2% accuracy reading Input Voltage, Input Current, Active Power. Power Factor and Temperature. Performs electrical parameter read-back via LoRaWAN.
Fault Reporting	Reports real-time fault conditions such as Open-Loop, Over-Voltage, Under-Voltage, Temperature, pole tilting etc.

LED Indications



LED	Color	Function indications
LED1	Green	TX Indication, turn on 300ms when data is transmitting
LED2	Red	RX Indication, turn on 300ms when data is receiving
LED3	Red	MQTT broker connection Indication 1, 1000ms ON/1000ms OFF: disconnected with LoRaWAN network server 2, 100ms ON/100ms OFF: Connected to LoRaWAN network server
LED4	Red	LoRaWAN status Indication: 1, 64ms ON/800ms OFF: Unregistered network 2, 64ms ON/3000ms OFF: Registered network 3, 64ms ON/3000ms OFF: Connected to TCP/HTTP network 4, OFF: LoRaWAN Access is not working

Dimensions

The overall dimensions of Hybrid NEMA SLC-500-HN are shown in Fig. 3.

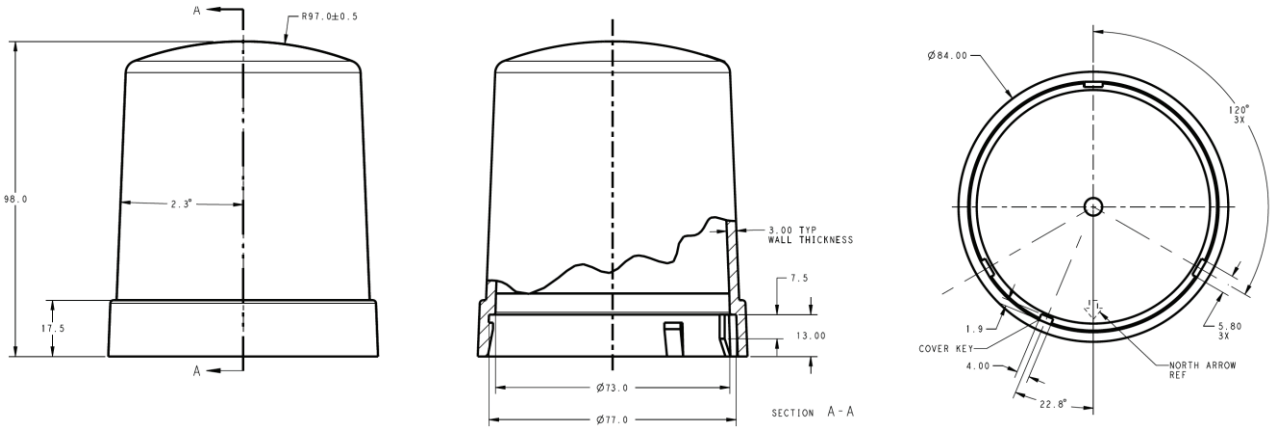


Fig. 3 - LoRaWAN NEMA SLC-500-LWN Dimensions

Wiring and Installation

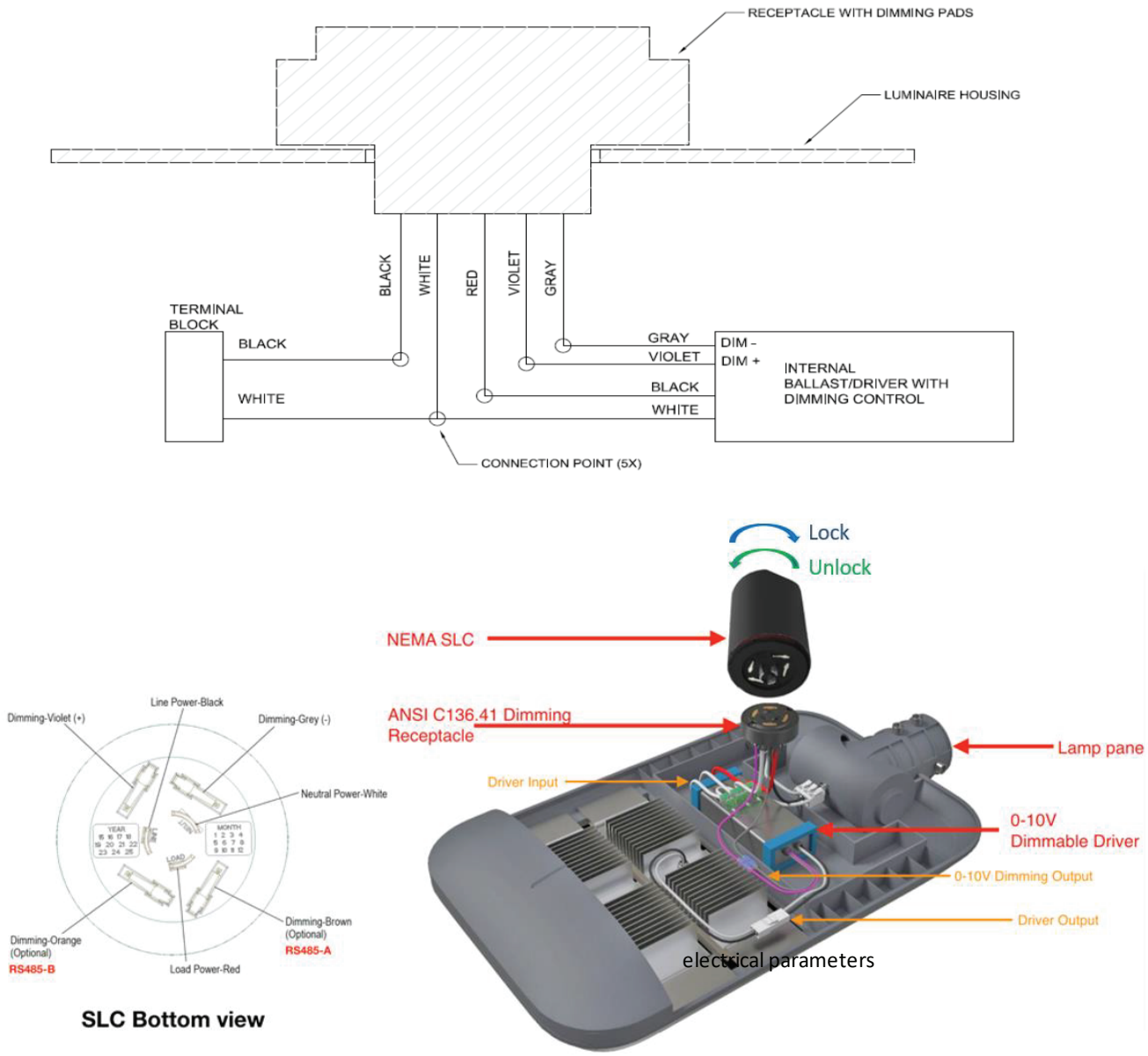


Fig. 4 – LoRaWAN NEMA SLC-500-LWN Installation Diagram

To lock the NEMA SLC onto the NEMA-enabled lamp, align the pins and mount the unit onto the NEMA adaptor in clockwise manner. To unlock, turn anti-clockwise.

Contact Information

For more information regarding the LoRaWAN NEMA SLC-500-LWN including pricing, and ordering please contact:

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