LoRa enabled NMEA Street Light Controller (with E-Meter)

Model: LoRa®

Technology: LoRaWAN® sensor based

Communication: Wireless

Datasheet 1.0

Sehaj Synergy Technologies Pvt. Ltd. (SSTPL)

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1.Brief Description

LoRa Enabled Street light controller is having feature to control streetlight through ambient light, commands, scheduling etc. With these features this retrofit street light controller makes streetlight smarter. This controller has LoRa module, through which it makes two-way communication. Gateway will work as a mediator between Streetlight controller and LoRa network server. This controller has unique MAC address which is unique identifier as well.

1.1   Features

1.   Light dimming.
2.   On Board E-meter.
3.   On/Off Scheduling
4.   RTC based scheduling.
5.   90-240V power supply
6.   Command centre control.
7.   Multicast for LoRa devices.
8.   120-Watt max load capacity.
9.   Schedule based Automation.
10. Weather based Ambient Light. (optional)
11. Super Cap used for power back-up for LoRa device.
12. Energy meter (KWH, voltage, current, KW, Frequency, power factor)
13. Capable for EMI stander, surge protection, over temperature, Lump failure, and power failure

1.2   Applications

1.   Smart Lighting.

2. Image of Street light Controller

98mm,77mm

Image: - NMEA with 7 pin connectors

3. Specification of LoRa device

| Parameter	Range
Frequency range	865 to 867 MHz
Modulation	LoRa® Spread-Spectrum
RF output power	Up to 20 dBm
Receiver sensitivity	-137 dBm (SF 12; SB 125 kHz, CR 4/6)
RF data rate	0.24 to 5 kbps
RF range	up to 5000 m (line of sight)
Operating voltage	3 V to 3.7 V, Separate 5V option
Current consumption	< 10 µA (module in sleep, RTC running) 23 mA (Rx) 123 mA (Tx mode)
Operating temperature	-40°C to +85°C

4. SOFTWARE DESCRIPTION

4.1 ON, OFF and Dimmer Operation

- **ON and OFF operation**
  Microcontroller STM32 used for ON & OFF operation of streetlight through relay. Dedicated Pin initialize as pull-down, extremely high frequency & output push pull mode.
- **Dimmer operation**
  Dimmer is use for changing the intensity of streetlight. The intensity can be adjusting from 10% to 100%. This dimmer intensity adjustment done by PWM (Pulse Width Modulation). Dedicated Pin used to operate dimmer. In normal condition when streetlight turns to ON dimmer intensity static with 15%. Which can be change as per requirement.

4.2 Weather Based Automation (Optional)

Weather based automation done by using Lux Sensor (Ambient light Sensor). This sensor measures the lux value in environment and give current output to controller using ADC (Analog to digital Converter) output. The Application of "Weather Based Automation" in "Smart Street Light Controller", if lux value less then threshold value then streetlight automatically turns to ON. The controller also calculates the lux percentage and according to lux percentage dimmer intensity will adjust.

5. Streetlight with Controller

LoRa
Enabled
NMEA
Streetlight
Controller

Streetlight
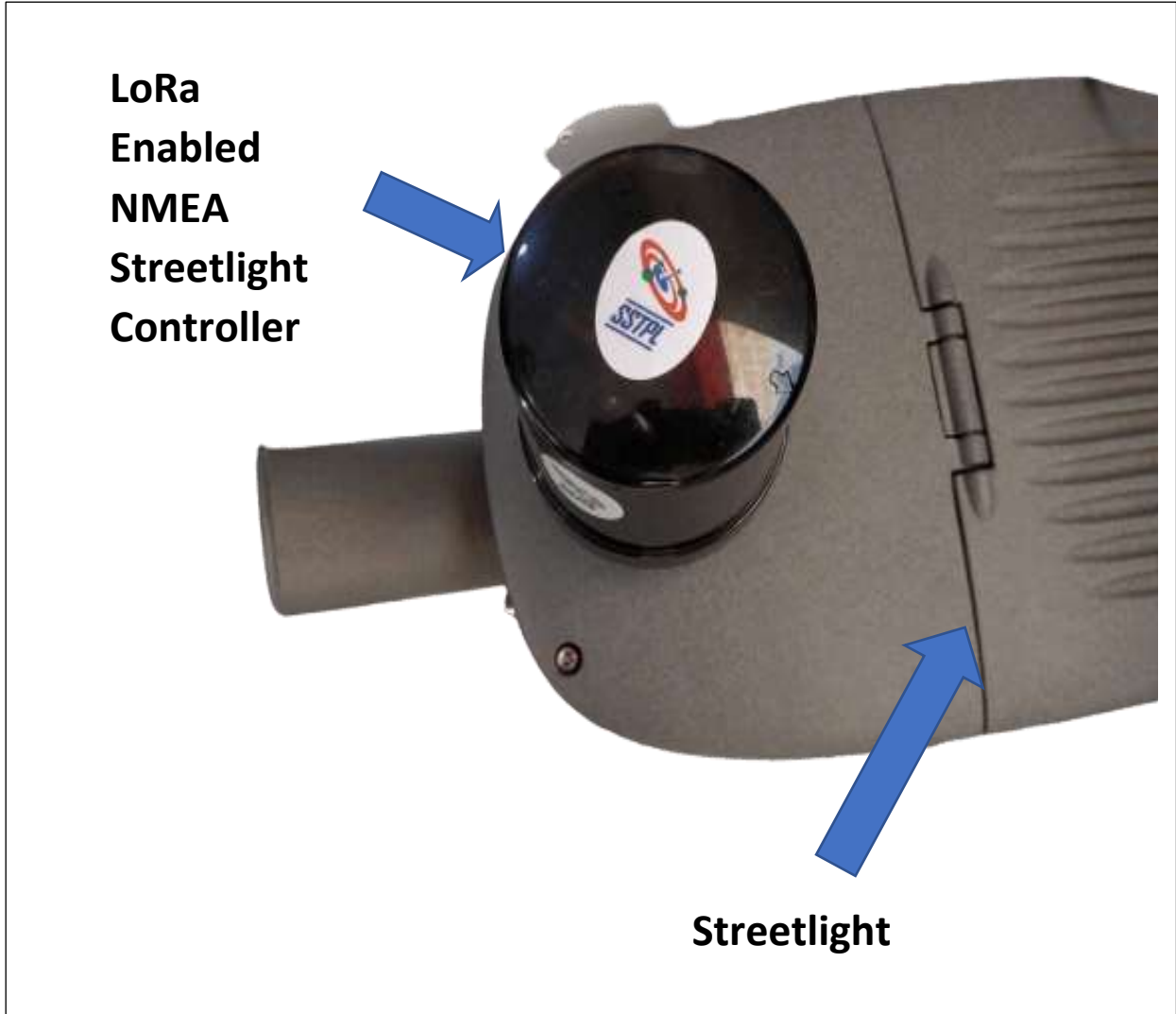
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