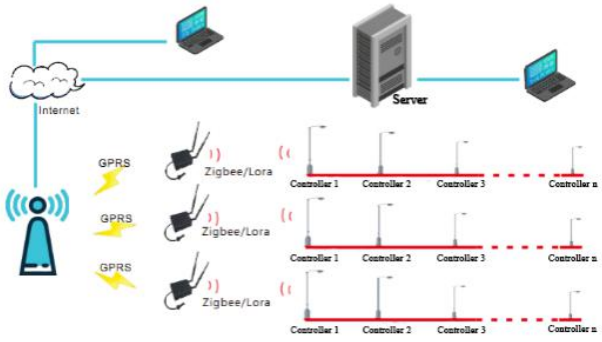
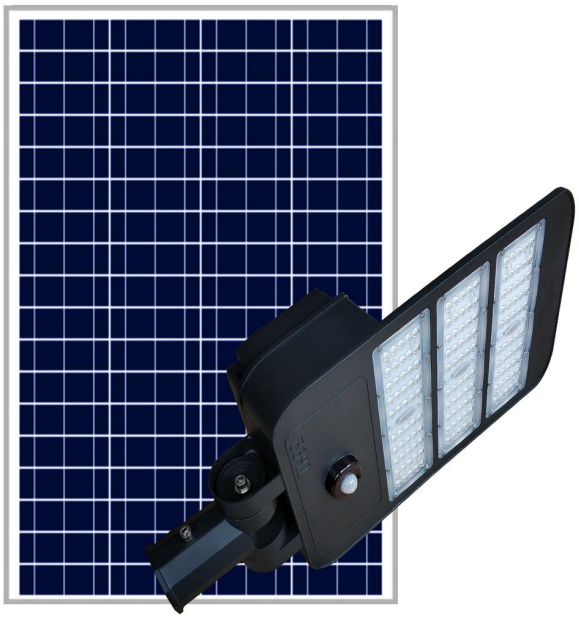
Smart Street Light System

Smart street lighting control is the main way to reduce the public energy consumption, to manage each single lamp and whole public lighting easily. SSL system integrated the most updated IoT technologies to enable the users have online monitoring and control to the all in two solar street light systems at anywhere internet is available.

SSL system integrated the MPPT charging, IoT communication & control technologies in the SSL system controllers. A solar powered DTU is used to connect all the SSL system to a VLAN based on LoRa or ZigBee. The DTU link the VLAN through 4G Cellular Telecom Networks to IoT Server based on Cloud Computing Technologies. Users can connect to IoT server from WEB interface to monitor and control their SSL system online at anywhere, anytime Internet is available.



All In Two Solar Street Light system integrated with **LED lamp, intelligent controller** and A grade **Li-FePO4 battery** packing, and with separate solar panel. It's together with motion sensor, offers a solution of low-energy consumption, long-lasting and high-Luminance as well as free maintenance for at least 6-8 years. The all in two solar street light working mode can be adjusted according to different control requirement. Also it could provide convenient transportation and installation.



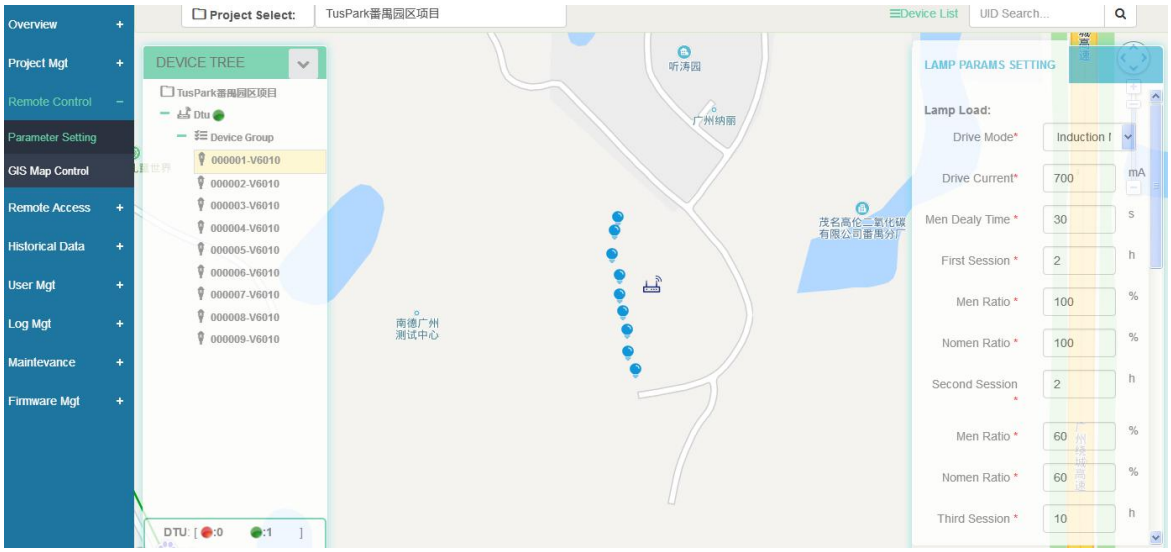
I.SMART STREET LIGHT SYSTEM FUNCTION

SSL system is compatible with 4G networks in countries all around the world. Using Zigbee/LoRa technology, support single point communication and broadcast communication. It has function as below:

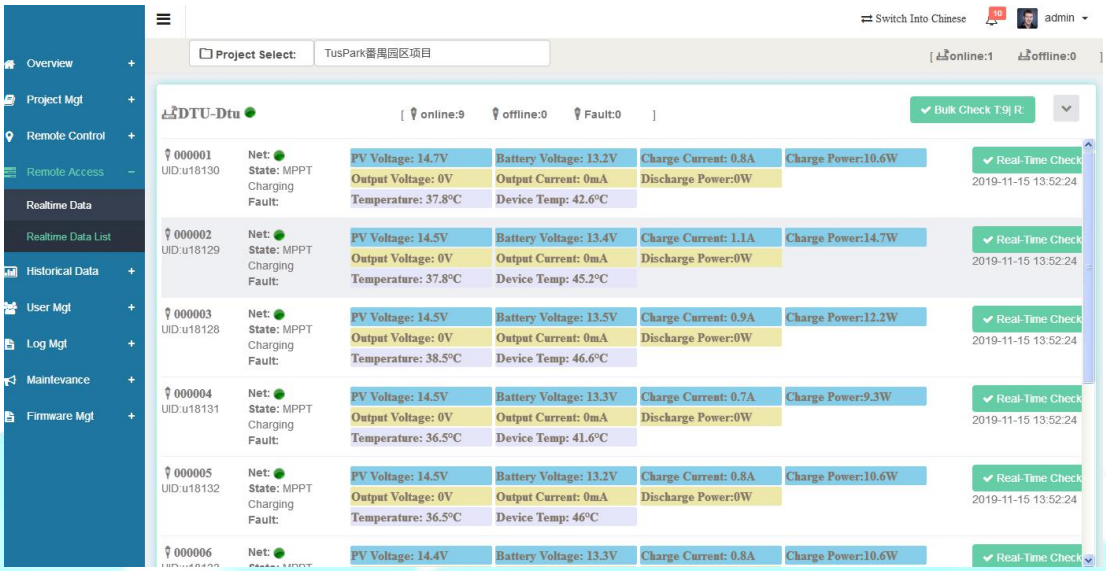
- Overall Management--Unify the lighting management information of each region into an information management platform to monitor the overall situation.
- Remote Monitoring--Fully real-time monitoring of the status of each street lamp through computer remote.
- Intelligent Analysis--Automatically collect detailed data of each lamp every night, and analyze the report.
- Multiple Users Management --PC monitoring center, WeChat applet remote management.
- Fault Alarm--Lamp failure, solar failure, controller short circuit, open circuit alarm.

- Remote Parameters Order --According to the change of weather, environment and season, the operating parameters of the system can be modified remotely.

-- Remote Operation Control



-- List Real-time Display



II.COMPARISON of COMMUNICATION PATTERNS

Compare to 433 solution(many countries restrict to use) and NB-IOT solution(only support in China), the Zigbee and LoRa solution is more universal around the word.

Both Zigbee and Lora has its advantages and disadvantages. For example, Zigbee communication distance is only 500-1000m while Lora is 2000-3000m;But Zigbee has fast transmit speed while Lora is slow.

However, Zigbee has significant advantage. It has relay function. That means in the area where the 4G signal is weak, with its relay function, even some of lamps are disconnected during signal transmission. Other lamps could still communicate with each other by the relay function.

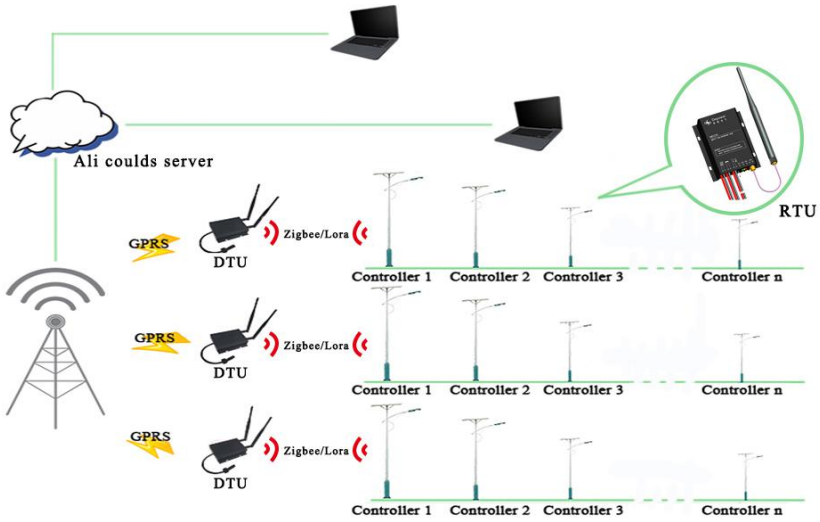
Communication Way	Zigbee	LoRa	433	NB-Iot
Distance	500-1000M	2000--3000M	2000--3000M	Transmit distance without limited
Relay Function	YES	NO	NO	NO
Communication Construction	MESH	NEBULA	NEBULA	NEBULA
Transmit Speed	Fast	Slow	Slow	Slow
Gateway/DTU	Necessary	Necessary	Necessary	Not Necessary
Construction Difficulty	Complicated	Complicated	Complicated	Simple
Regional Restrictions	Universal	Universal	Many countries restrict to use	Only support in China
Power Consumption	Low	Low	High	Low
Cost	Only DTU need	Only DTU need	Only DTU need	Every lamp need

III.ZIGBEE/LORA CONFIGURATION SOLUTION

Standard Zigbee/Lora configuration solution consist of single lamp controller with antenna,DTU with controller and backup system, online system and solar street light.

IV.DTU FEATURES

- Compatible with 4G networks in countries all around the world.
- Intelligent algorithms, Quickly and accurately collect information.
- Smart antennas have intelligent functions such as suppression of signal interference, automatic tracking, and digital beam adjustment.
- MIMO technology, which improves the system's anti-attenuation and noise performance.
- Using Zigbee/Lora technology, support single point communication and broadcast communication.
- Excellent battery compatibility, Under the interference of High voltage spikes, Strong magnetic field, Electrostatic field, Lightning surge, Strong static electricity, Temperature range change, the system can work accurately.



V.ALL IN TWO SOLAR STREET LIGHT SYSTEM FEATURES

- Unique design housing design, patent model.
- High brightness, whole lamp lighting efficiency over 204LM/Watt. Professional optical, and transmittance rate 95%.
- Brand new A grade LiFePO4 battery, >2000 times cycles.
- Battery and built-in MPPT smart solar controller all in packing box, connected to solar panel a system.
- Premium quality, thicken Die-cast aluminum housing, good appearance, small size and light weight, easy to install.
- High efficiency MPPT tracking technology,MPPT tracking efficiency ≥99.9%, system power generation efficiency up to 98%, improve system efficiency and reduce system cost.

- Perfect protection

-Battery reverse connection protection

-Solar panel reverse connection protection

-Prevent battery from discharging to solar panels at night

-Battery under voltage protection

-LED output short circuit protection

-LED output open circuit protection

- Flexible parameter setting function

-Support Infrared wireless communication, 2.4G communication, bluetooth communication

.

VI.TECHNICAL DATA

MODEL	AIO-K-15W	AIO-K-20W	AIO-K-30W
Solar Panel			
Solar Panel	45W Poly	60W Poly	90W Poly
Life Time	25years (The power attenuation of each year is around 1%)		
AIO-K Lamp			
LED Power	15W	20W	30W
Whole Lamp Light Efficiency	202 Lm/W		
LED Chip	3030 LED Bridgelux		
Color Temperature	2700K-6500K		
Color Rendering Index	＞70		
Life Time	＞50,000hrs		
Battery Type			
Battery Capacity	12.8V 18Ah	12.8V 24Ah	12.8V 30Ah
Battery Type	LiFe PO4 battery		
Battery Life Time	(5-8years)		
Working Mode	Light control+Human sensor		
Circuit Protection	Overcharge, discharge, short circuit, open load, lightning protection and other functions		
Charging Time (STC)	6-8Hours (With STC)		
Certificate	CE、RoHS、IP66,IEC		
Working Temperature	-2℃~+65℃ (When the temperature is below -10℃,derating use)		
Installation Height	5m to 9m light pole		
Lamp Size	600*260*130mm		

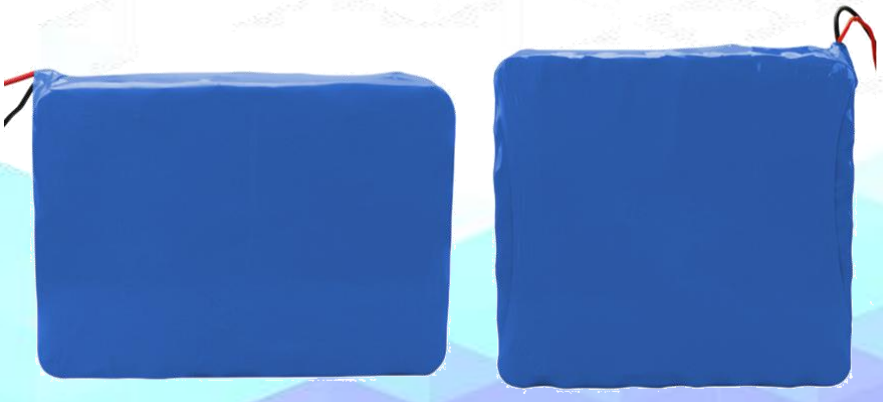
Remark: This parameter is for reference， can design for different project demands.

VII.PACKING DETAILS

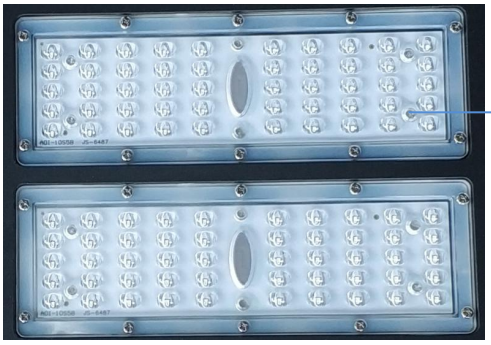
VIII.OUTSTANDING ADVANTAGES

1.Unique design, patent appearance.

2. Lifepo4 battery pack, >2000 cycles, 8years lifespan

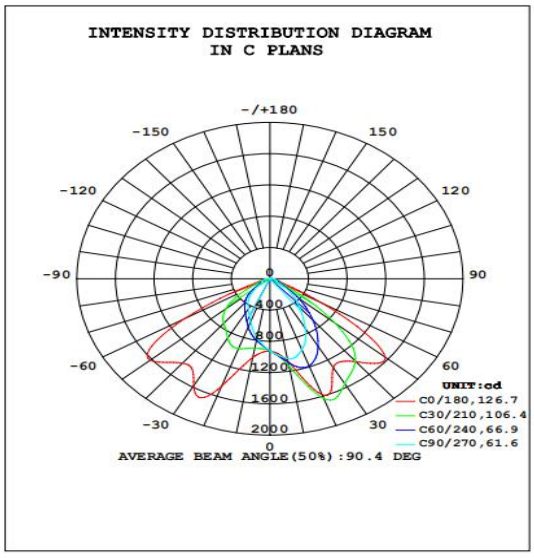


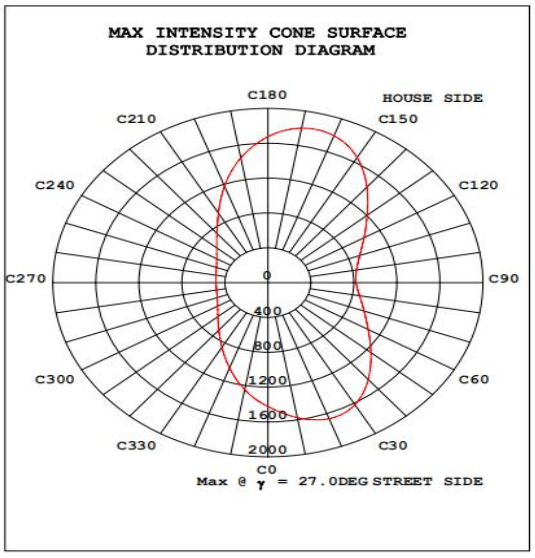
3.Bridgelux led chip, SMD3030, whole lamp lighting efficiency >204LM/W



Brightness Bridgelux Chip:
200--220lm/w
PMMA Lens,transmittance rate:
94%

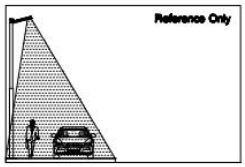
4.Unique lighting curve

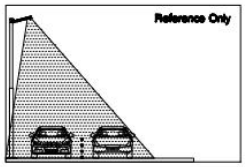


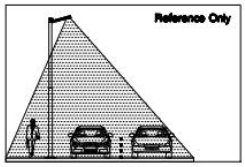


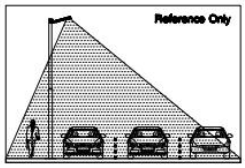
5.Waterproof IP66 test approval.

IX.ROAD APPLICATION & DIALUX SIMULATION

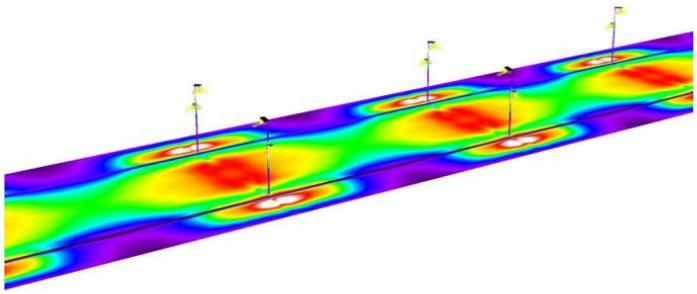




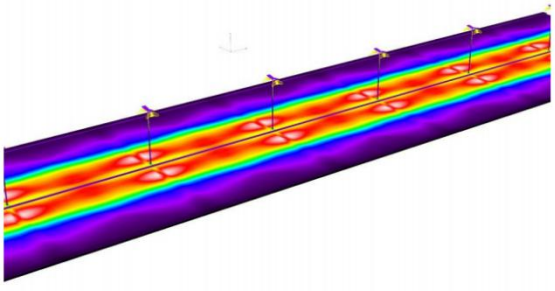




户外场景 1 / False Color Rendering



outdoor / False Color Rendering



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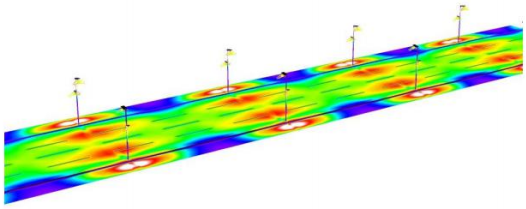

X.PROJECTS