



30Km Highway MIMO WiFi Wireless Surveillance System Design Planning with Street Lamps DC UPS Power System and 12VDC to 48VDC PoE Converter & 12VDC to 24VAC Power Inverter Power Solution

1 、 Planning purposes

Deployment digital surveillance cameras to the Highway of erect on both sides along the street lamp pole, to carry out real-time monitoring of the Highway stream of vehicles conditions.

2 、 Planning requirements

Total length of Highway 300Km, take each 30Km for a large sector, each 300m to set up a digital camera or speed dome and via the wireless transmission technologies, bringing together all of your digital camera images, transmit to the monitoring control center.

Each 3Km small sector set up a front-end video host, each 30Km large sector set up a management video host.

The devices power source get from Highway's nearby street light power supply, the wireless monitoring equipment set up on the street light poles.

Digital camera images must transmit 30Km by the wireless system in real time for the video recording hosts and the video management system.

The wireless transmission system must provide 30Km the total number of 100 digital cameras bandwidth.

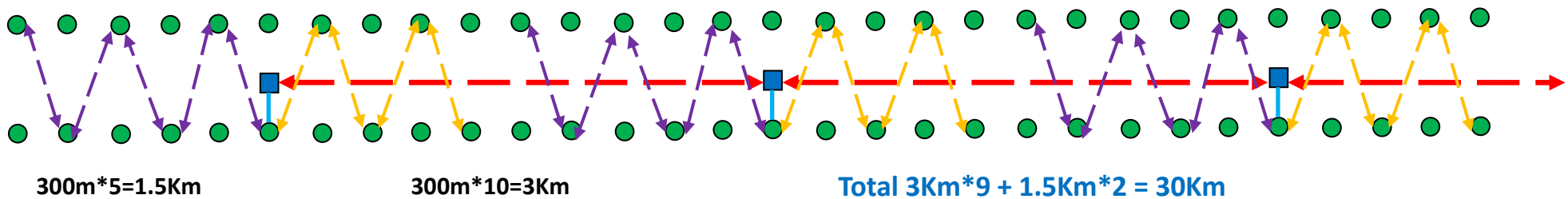


3、30Km planning and design proposal: The wireless surveillance system adopts the double link double-decked backhaul design, the upper formation backbone '480Mbps' and the lower level backbone '260Mbps' the transmission structure.

The Lower level repeater hops backhaul

$130 \times 2 = 260\text{Mbps}$

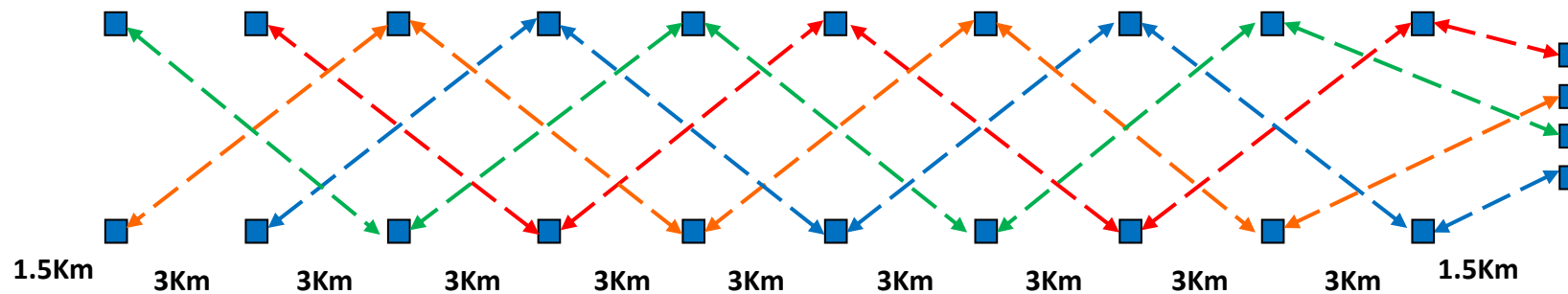
Two Way Backhaul



The upper level repeater hops backhaul

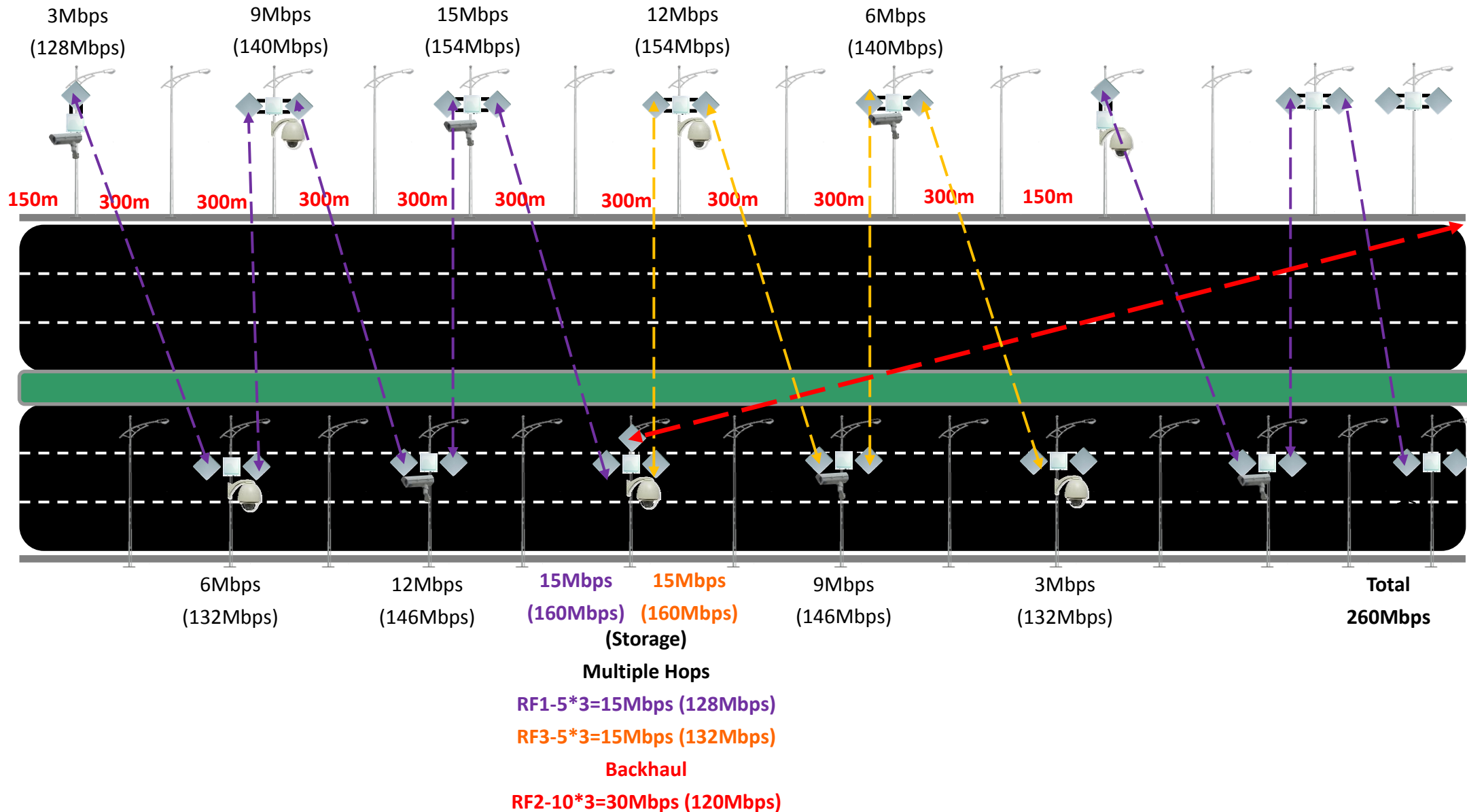
$120 \times 4 = 480\text{Mbps}$

Four Backhaul



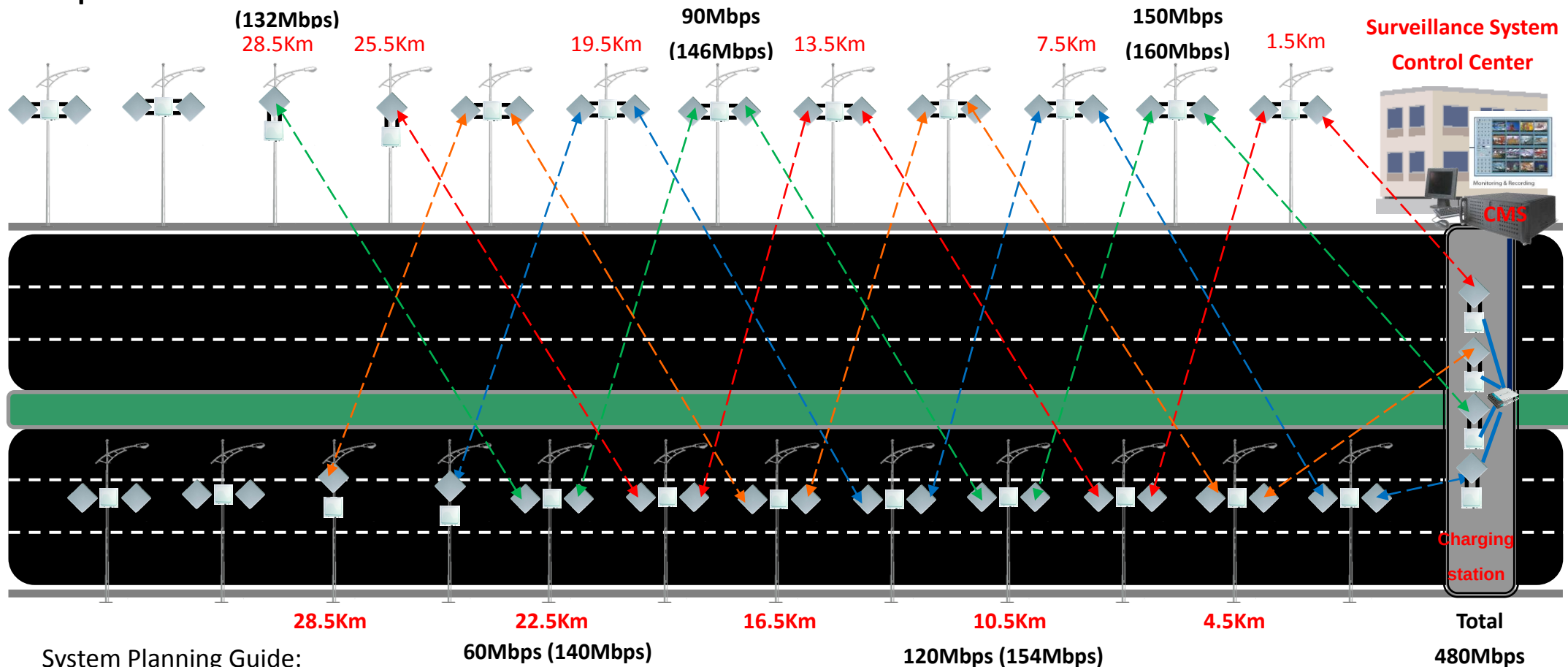


The lower level Multiple Hops: 3Km Throughput 260Mbps for IP Camera * 10 about 30Mbps bandwidth requirement °





The upper level Multiple Hops: 30Km Throughput 480Mbps for IP Camera * 100 about 300Mbps bandwidth requirement

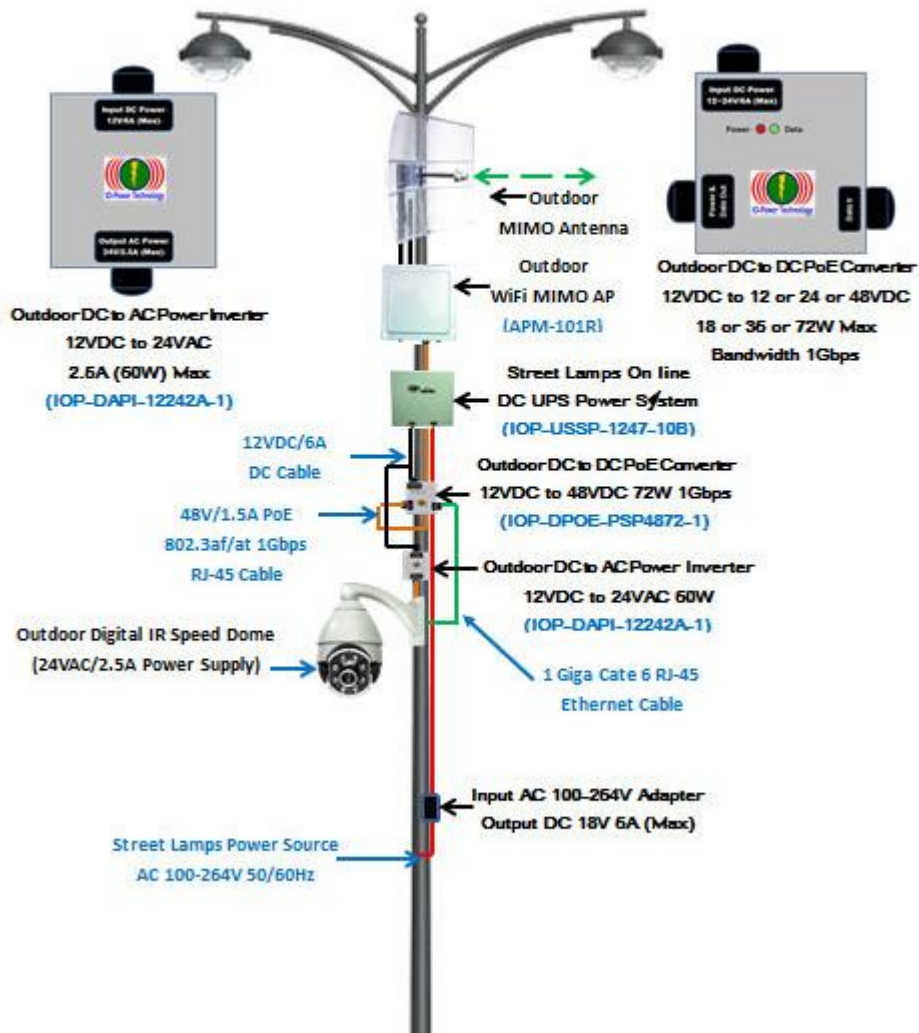




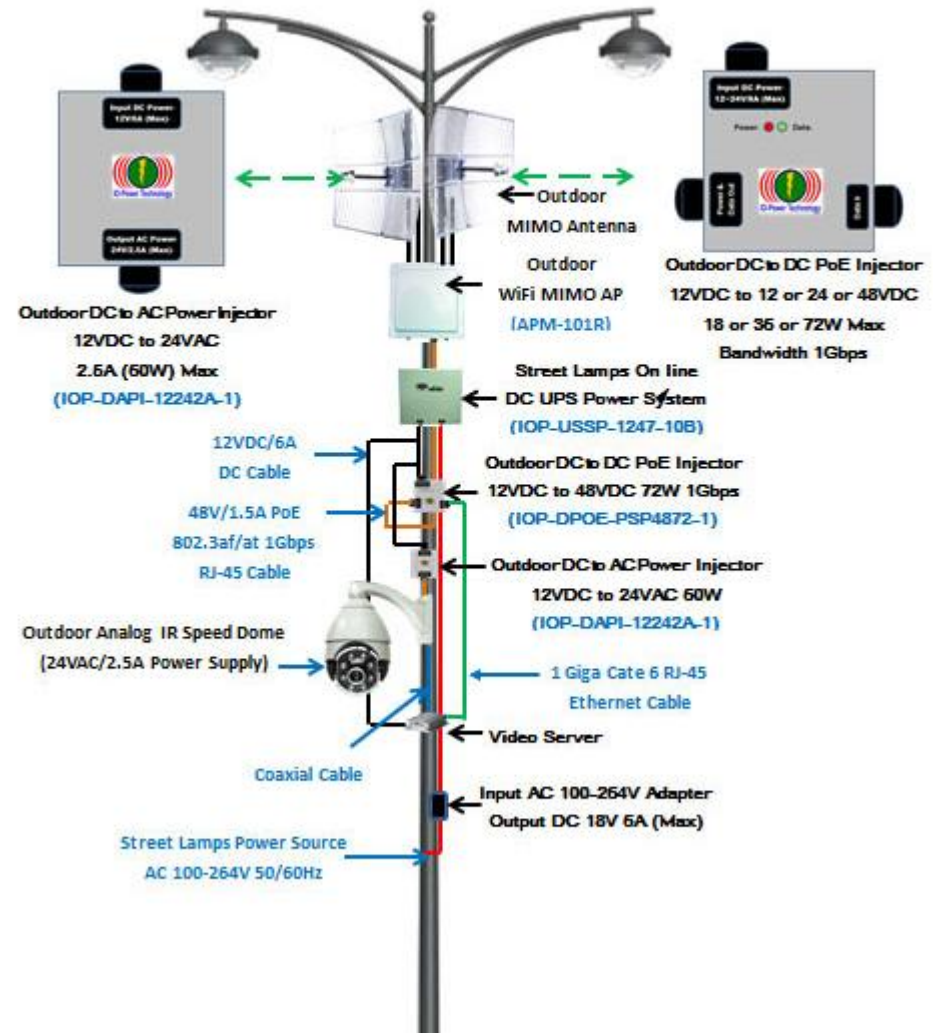
4、『Street Lamps DC UPS Power System with 12VDC to 48VDC PoE Converter & 12VDC to 24VAC Power

Inverter Power Solution 』 the diagram

Outdoor WiFi MIMO Wireless Road Cross Surveillance System
with Street Lamps DC UPS & DC to DC PoE & DC to AC Power Inverter Solution



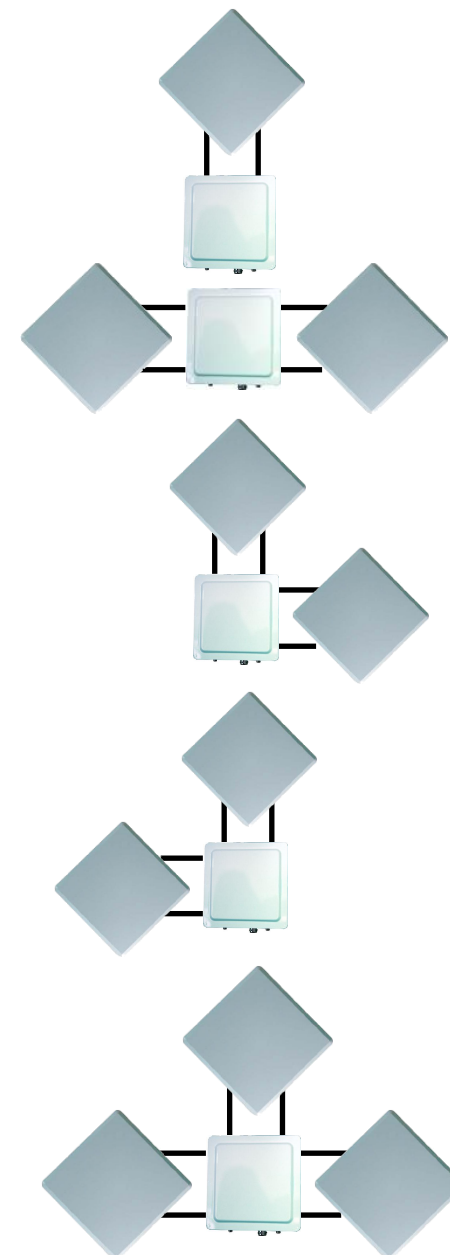
Outdoor WiFi MIMO Wireless Road Cross Surveillance System
with Street Lamps DC UPS & DC to DC PoE & DC to AC Power Injector Solution





5、Device Model and SPEC

Product Images	Model	APM-101R (H)	APM-102R (H)	APM-103R (H)
	Rear Side			
	Top of Antenna Connector			
	Below of Antenna Connector			
	Front Side			





Product Specifications

Hardware Specification

Key Components	
Main Processor	Atheros AR7161(680Mhz)
Wireless Chipset	Atheros AR9220 based miniPCI module, Up to three modules
Switch Controller	Atheros AR8035 / Atheros AR8021
Flash Memory	16MBytes
SDRAM	128MBytes(Up to 128MBytes)
Console	UART x 1(PCBA onboard)

Interfaces	
Wireless	Up to three 2x2 MIMO radios, mini-PCI version 1.0 type 3A Frequency ranges : a. USA : 2.400 ~ 2.483 GHz, 5.15 ~ 5.35 GHz, 5.5 ~ 5.7 GHz, 5.725 ~ 5.825 GHz b. Europe: 2.400 ~ 2.483 GHz, 5.15 ~ 5.35 GHz, 5.47 ~ 5.725 GHz



c. Japan: 2.400 ~ 2.497 GHz, 5.15 ~ 5.35 GHz, 5.47 ~ 5.725 GHz

d. China: 2.400 ~ 2.483 GHz, 5.725 ~ 5.85 GHz

RF output power of DNMA-92 :

a. IEEE802.11a

1. 21dBm@6M(all) 17dBm@54M(5180MHz) 16dBm@54M(5825MHz)

b. IEEE802.11b

1. 20dBm@1M(2412MHz) 19dBm@1M(2484MHz) 21dBm@11M(all)

c. IEEE802.11g

1. 23dBm@6M(all) 19dBm@54M(all)

d. IEEE802.11a/n HT20

1. 21dBm@MCS0/8(5180MHz) 19dBm@MCS0/8(5825MHz)

2. 16dBm@MCS7/15(5180MHz) 14dBm@MCS7/15(5825MHz)

e. IEEE802.11a/n HT40

1. 19dBm@MCS0/8(5190MHz) 18dBm@MCS0/8(5795MHz) 13dBm@MCS7/15(all)

f. IEEE802.11g/n HT20

1. 21dBm@MCS0/8(all) 17dBm@MCS7/15(all)

g. IEEE802.11g/n HT40

1. 21dBm@MCS0/8(2422MHz) 20dBm@MCS0/8(2462MHz)



	2. 16dBm@MCS7/15(all) Receive Sensitivity of DNMA-92 : a. IEEE802.11a 1.-82dBm@6M, 1Rx -95/-91dBm@6M, 2Rx 2. -65dBm@54M, 1Rx -79/-75dBm@54M, 2Rx b. IEEE802.11b 1.-82dBm@1M, 1Rx -95/-91dBm@1M, 2Rx 2. -76dBm@11M, 1Rx -91/-87dBm@11M, 2Rx c. IEEE802.11g 1.-82dBm@6M, 1Rx -95/-91dBm@6M, 2Rx 2. -65dBm@54M, 1Rx -80/-76dBm@54M, 2Rx d. IEEE802.11a/n HT20 1.-82dBm@MCS0, 1Rx -95/-91dBm@MCS0, 2Rx 2. -64dBm@MCS7, 1Rx -77/-73dBm@MCS7, 2Rx e. IEEE802.11a/n HT40 1.-79dBm@MCS0, 1Rx -91/-87dBm@MCS0, 2Rx 2. -61dBm@MCS7, 1Rx -74/-70dBm@MCS7, 2Rx f. IEEE802.11g/n HT20 1.-82dBm@MCS0, 1Rx -95/-91dBm@MCS0, 2Rx 2. -64dBm@MCS7, 1Rx -77/-73dBm@MCS7, 2Rx g. IEEE802.11g/n HT40 1.-79dBm@MCS0, 1Rx -90/-86dBm@MCS0, 2Rx 2. -61dBm@MCS7, 1Rx -74/-71dBm@MCS7, 2Rx
Ethernet	10/100/1000 Base-TX MDI/MDIX RJ-45 x 1 Compliant with :



	a. IEEE802.3 / 802.3u / 802.3at Hardware based 10/100/1000, full/half, flow control auto negotiation
Connector	101R 2 x N-type(1 radio) 102R 4 x N-type(2 radios) 103R 6 x N-type(3 radios)
Power Requirement	48V 1A PoE Support Gigabit Ethernet Link
Watch Dog	Hardware Watch Dog

Physical	
Dimensions	220 x 220 x 77 mm
Weight	101R/101RH—1.8Kg 102R/102RH—1.9Kg 103R/103RH—2.0Kg 2.0kg (3.7kg mount kit included)

Environmental	
Temperature Range	-20°C~70°C



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<http://www.io-power.com> e-mail: io-power@io-power.com.tw Tel: 886 3 5429395 Fax: 886 3 5357297 Cell: 0933168849

Humidity	0% ~ 95% Non-condensing
Storage	-40~ 85°C
Dusty & Waterproof	Outdoor IP67 rated

Regulatory	
Certification	FCC, CE
Safety	Processing

Software Specification

System Operation	
Bridge Mode	Layer 2 Switching Learning Technology
	Store-and-Forward
	Spanning Tree Protocol - IEEE 802.1d STP / IEEE 802.1w RSTP / IEEE 802.1s MSTP
	Static IP / Dynamic IP
	DHCP server / client



	Multicast / Broadcast Storm Limitation
	IEEE 802.1q Tag VLAN
	IEEE 802.1p VLAN Priority Based QoS

Network Interface	
Wireless	IEEE 802.11 a/b/g/n 2.4GHz / 5GHz Dual Band Radio
	2 x 2 MIMO Technology
	Single Radio / Dual Radios / Triple Radios
	AP mode / Client mode / WDS mode
	IEEE 802.11h DFS
	WMM QoS
	Channel / Tx Power / Data Rate / Max Distance Adjustable
	Advanced Wireless Parameters Adjustable



	Multi-SSIDs / VLAN tags mapping(Up to 16 x ESSIDs for each radio)
	Wireless Site Survey
	Node Information
	Concurrent Connected Node Limitation
	Client User Isolation
Wire	48V 1A PoE Support Gigabit Ethernet Speed
	Ethernet Link Speed Configurable
	10/100/1000 Base-TX MDI/MDIX RJ-45

Performance

Wireless	TCP	Up to 180Mbps for one radio to Ethernet
To		Up to 320Mbps for two radios to Ethernet
Wire		Up to 320Mbps for three radios to Ethernet



	UDP	Up to 240Mbps for one radio to Ethernet
		Up to 350Mbps for two radios to Ethernet
		Up to 350Mbps for three radios to Ethernet
	PPS	$\geq 20,000$ @short packet for one radio to Ethernet
		$\geq 28,000$ @short packet for two radios to Ethernet
		$\geq 28,000$ @short packet for three radios to Ethernet
	Latency	$< 5\text{ms}$
Multiple Hops	2 hops	Up to 160Mbps
	3 hops	Up to 150Mbps
	$\geq 4\text{hops}$	Up to 140Mbps
	PPS	$\geq 20,000$ @short packet at multiple hops
	Latency	$< 10\text{ms}$



Security

Hide SSID(turn off ESSID broadcasting)

MAC Address ACL

WEP 64/128/152 bits

IEEE 802.1x EAP-MD5 / EAP-TLS / EAP-TTLS

WPA / WPA2 PSK / EAP with TKIP / CCMP AES based Encryption

Management

HTTP(s) WEB GUI

Telnet

SSH

Console(optional interface)

CLI commands

SNMP v2c/v3, standard / private MIBs



Syslog

Management VLAN Tag

NTP Client

Firmware upgrade / downgrade

Dual Images

Dual Configuration files / Factory Default

Multiple Level Management

Advanced Technology

Multiple Hopping

Up to 10 hops with more than 120Mbps throughput

Configurable Max. Hop Counts(default 20 hops)



IOP-PANFO-5M2001010

5GHz 20dBi Dual Polarization MIMO Panel Antenna

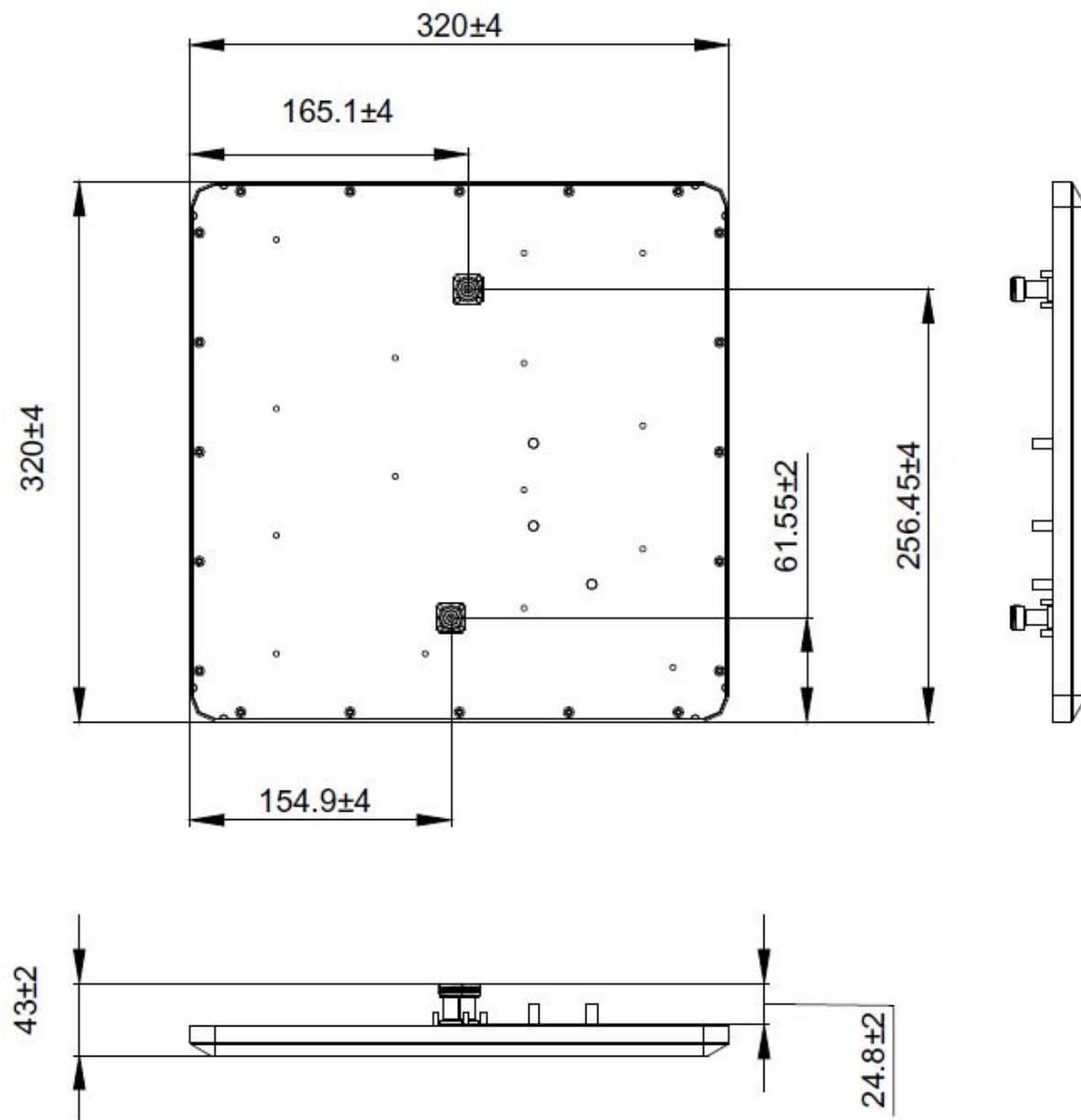
Electrical Specification	
Frequency range	5150 - 5875 MHz
Gain	20 dBi
VSWR	2 : 1 Max.
Polarization	Dual Linear, +- 45°
HPBW / Horizontal	10°
HPBW / Vertical	10°
Standard compliance	N / A
Front to back ratio	-30dB (Max)
Isolation	24dB (Min)
Power handling	6W (cw)





Impedance	50 Ohms
Connector	N Jack × 2
Environmental & Mechanical Characteristics	
Survival wind speed	216Km/hr
Temperature	-40°C to +80°C
Humidity	95% @ 55°C
Lightning protection	DC ground
Radome color	Gray
Radome material	PC, UV resistant
Weight	1245g
Dimensions	320 × 320 × 20 mm
Waterproof	IP-67
Mounting kit	Pole mount & Wall mount

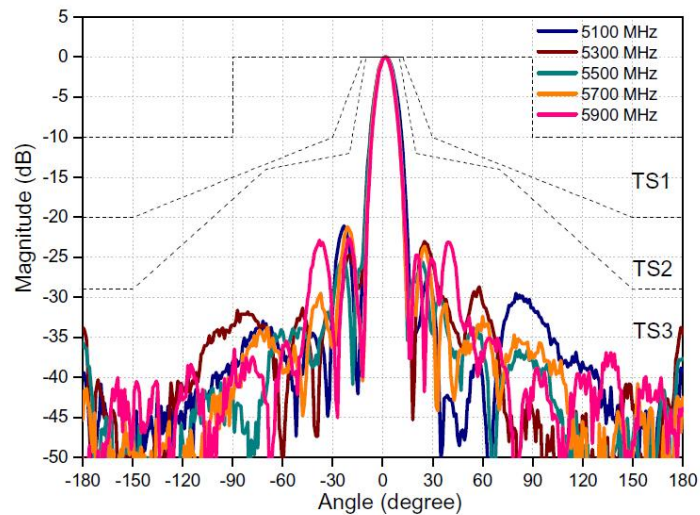
*exclusive of mounting kit



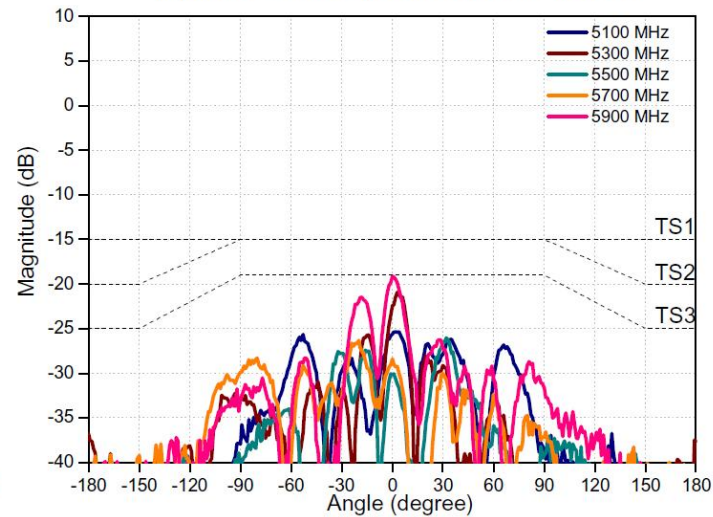


Port 1

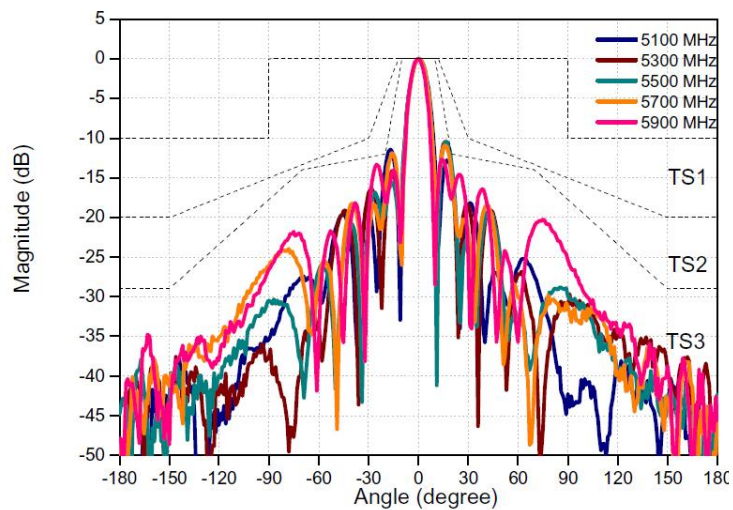
V-plane Co-polarization Pattern



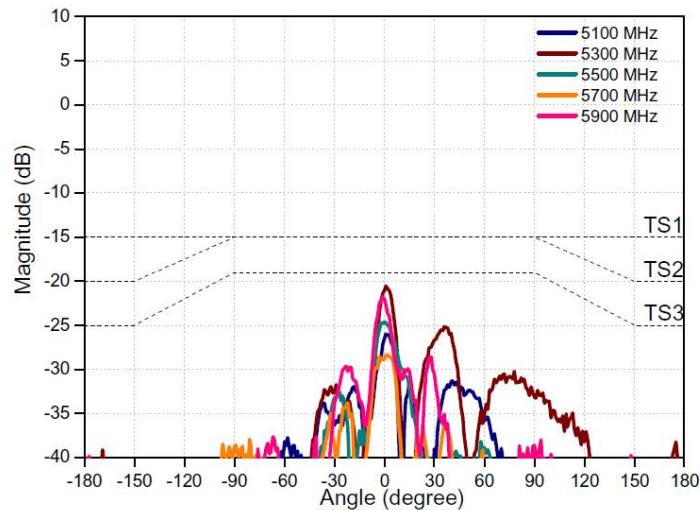
V-plane Cross-polarization Pattern



H-plane Co-polarization Pattern



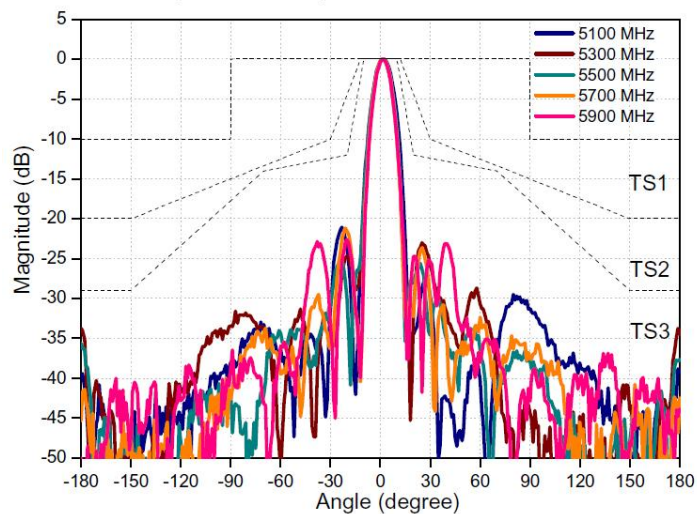
H-plane Cross-polarization Pattern



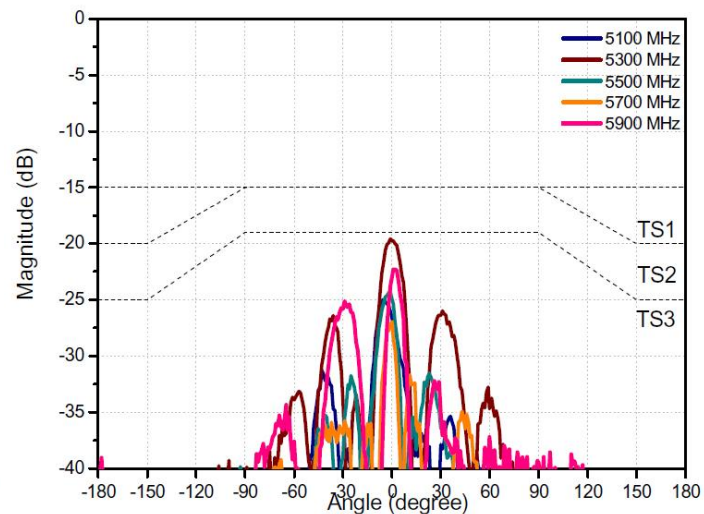


Port 2

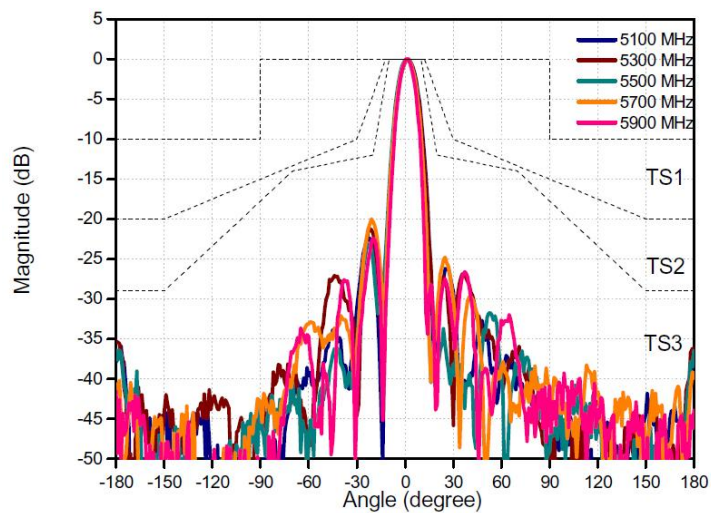
V-plane Co-polarization Pattern



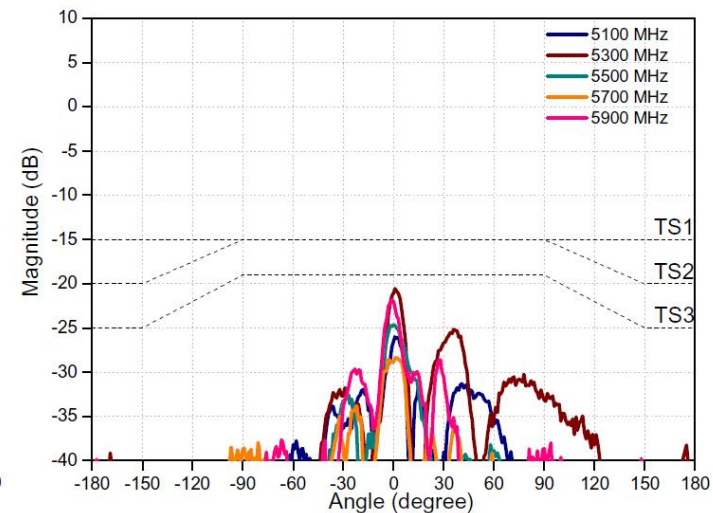
V-plane Cross-polarization Pattern



H-plane Co-polarization Pattern



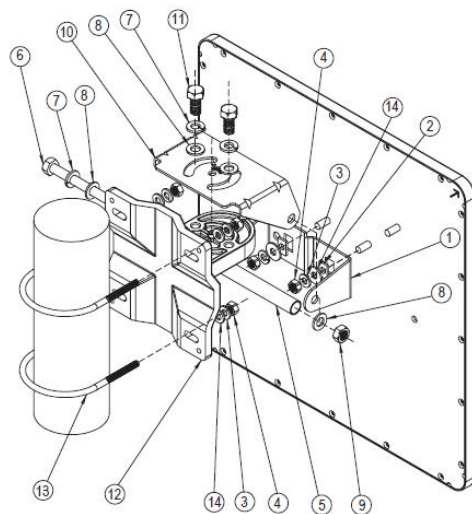
H-plane Cross-polarization Pattern



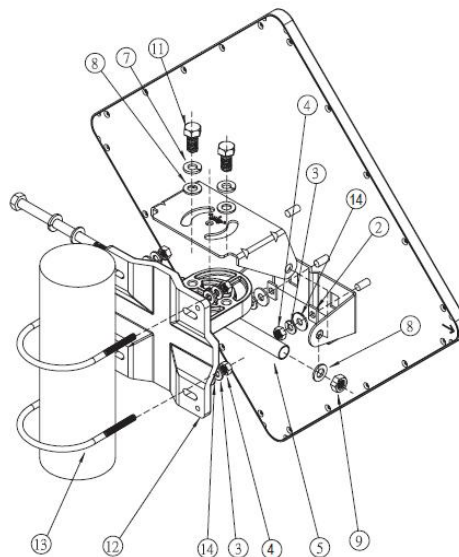


Pole Mount

Slant±45 Degree Polarization



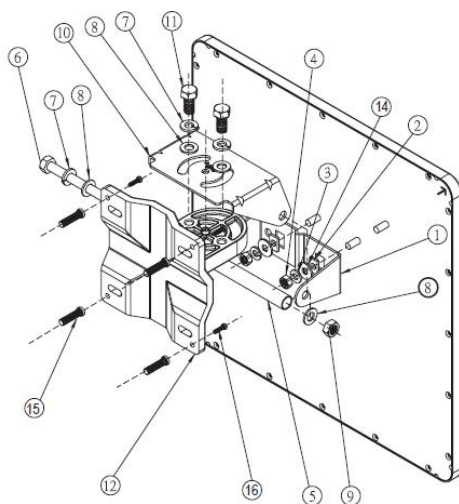
Hor. & Ver. Polarization



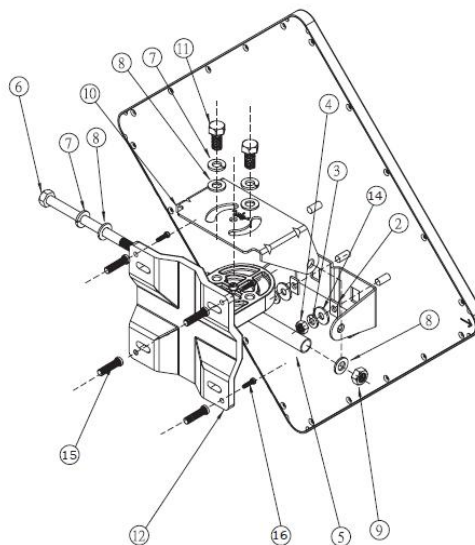
- | | |
|------------------------|------|
| 1. M-Type breaket (L) | 1Pcs |
| 2. Space Keeper | 2Pcs |
| 3. Spaing washer | 6Pcs |
| 4. M6-1.0 Nut | 6Pcs |
| 5. Steel tube 93.2 mm | 1Pcs |
| 6. XHM8-1.25*120 | 1Pcs |
| 7. M8 spring washer | 3Pcs |
| 8. M8 washer | 4Pcs |
| 9. M8 Nut | 1Pcs |
| 10. Rotating bracket | 1Pcs |
| 11. XHM8-1.25*20 | 2Pcs |
| 12. Mounting main fram | 1Pcs |
| 13. U-Type Screw | 2Pcs |
| 14. M6 washer | 6Pcs |
| 15. Wall Tiger | 4Pcs |
| 16. TH 5/32-16*1" | 4Pcs |

Wall Mount

Slant±45 Degree Polarization



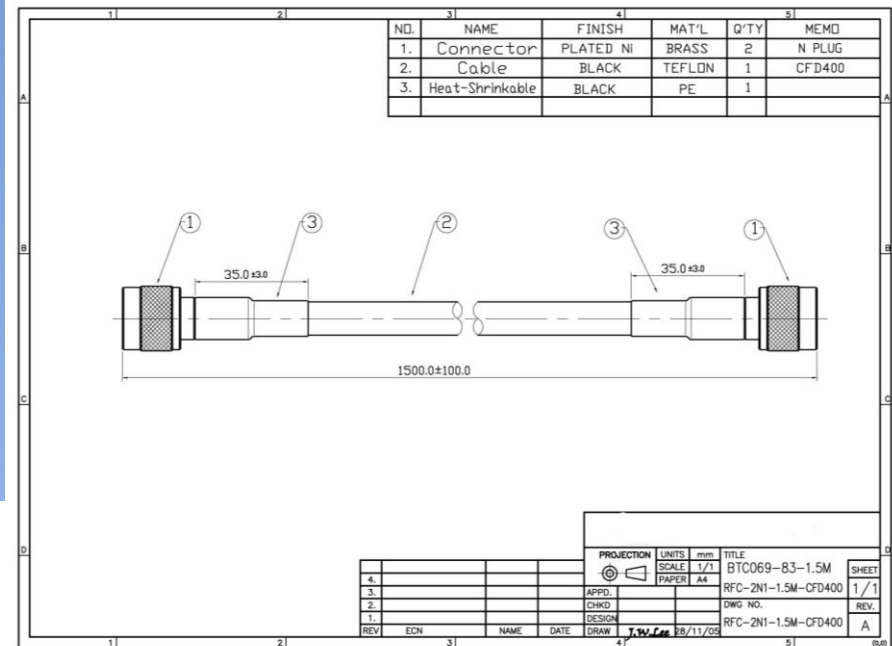
Hor. & Ver. Polarization





IOP-RFCFD-400150NMR

CFD-400 N-Type 1.5M Antenna RF Cable





CFD-400 RF Cable SPEC

Standard: CFD400 (CFD400-E) CABLE 1/2.74MM X 1C

CONSTRUCTION:

ITEM		UNIT	2.74MM
No. of Wire		P · C	1C
1) Conductor	Material	—	Copper Clad Aluminium
	Size	No. /mm	1/2.74
2) Insulation	Material	—	PEF
	Thickness	mm	(NOM.) 2.2
	O.D	mm	(NOM.) 7.24
3) Binder		—	Sealed Aluminum Mylar Tape
4) Braid Shield	Material	—	Tinned Copper Wire
	Coverage	%	85% ↑
5) Jacket	Material	—	PVC or PE
	O.D	mm	10.3+-0.25

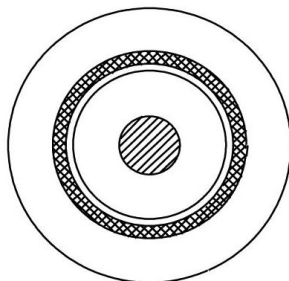
MECHANICAL PROPERTIES:

ITEM	UNIT	
Minimum Bend Radius	mm	25.4
Weight	kG/m	0.1
Tensile strength	kG	72.6
Operating temperature	°C	-40/85

ELECTRICAL PROPERTIES (20°C):

ITEM	UNIT	
Conductor Resistance	Ω /Km	1.67
Impedance	Ω	(NOM.) 50
Capacitance	PF/FT	(NOM.) 23.9
Velocity of propagation	%	(NOM.) 85
DC resistance, inner cond.	Ω /Km	4.56
DC resistance, outer cond.	Ω /Km	5.41
Shielding effectiveness	dB	≥ 90

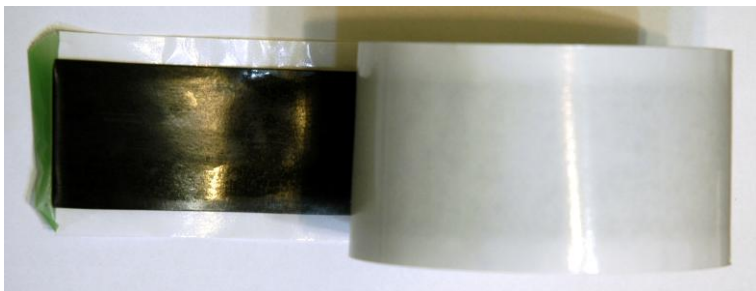
Attenuation (nom.)	
MHz	dB/100ft
30	0.7
50	0.9
150	1.5
450	2.7
900	3.9
1500	5.1
2000	6.0
2500	6.8
5800	10.8





IOP-RMTOC-173830510B

Self-Bonding Rainproof Insulating Tape SPEC





Specifications and instructions for use

1. The scope of:

- 600V Low-voltage connector used for sealing and insulation
- High and low voltage bus of anti-corrosion protection, maintenance of high pressure joints of waterproofing treatment

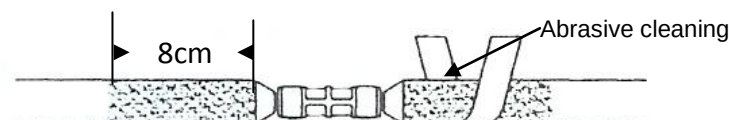
2. Conditions of use:

- Environment temperature is below 40 °C
- Continuous operating temperature: 90 °C below 130 °C under low pressure overload and emergency operation linkage PE joints of copper or aluminum cables.

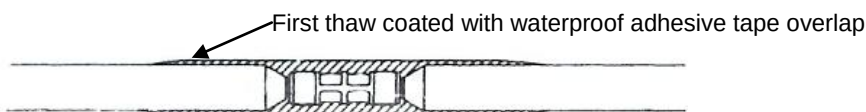
3. Characteristics:

- Voltage level : 600V
- AC voltage : Above 25KV
- Insulation resistance : $1 \times 10^6 \text{M}\Omega$
- Black, thickness : $1.7\text{mm} \pm 0.5\text{mm}$
- Adhesion/split : Below 2cm
- Extension rate : Above 1000%
- Tensile breaking force : Above 2Kg
- Water absorption : Below 0.2%
- Stability : 130°C/100hrs No gum

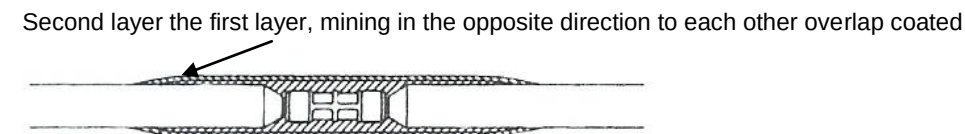
4. Instructions for use: With low-voltage cable straight connector as an example



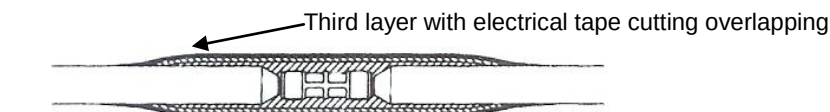
Step 1: abrasive cleaning at the both ends of the cable connectors and covered 8cm



Step 2: using thawed waterproof tape coated joints and covered on average 8cm



Step 3: use thaw average coated joints overlapped each other waterproof tape and covered 10cm



Step 4: finally uses the common PVC tape (electrical tape) overlap each other last average coating 12cm



IO-Power USRP-12V1060-OA Series

Outdoor Multi-function Street Lamps Model

Online Type Street Lamps Uninterruptible Recharge Power System



IO-Power USRP-12V1060-OA series, specifically targeted at systems engineering at the time of outdoor construction, was unable to make stable and effective source of power, resulting in project implementation cannot be complete acceptance problems facing proposed integration of the original street lamps and high and low temperature resistance of C-LiFePO4 lithium batteries power new outdoor power system solution, completely solve the system operators in outdoor construction cannot get stable power problems effectively.

IO-Power technology import high and low temperature resistance of the latest technology batteries, supplemented with independent charge and discharge in parallel invention patented microprocessor design and unique charging and discharging control management system, matching many kinds is designed for all types of data transmission, video monitoring and control system equipment, such as the design of power supply port, construction-become a Multifunctional Online Type Street Lamps Uninterruptible Recharge Power System. It is worth mentioning, outdoor multifunctional online



type street lamps uninterruptible recharge power system, distributed systems application architecture design, easily solve the conventional centralized electricity systems, unable to cope with the outdoor system establishment characteristics around the system in a decentralized, more highlighting the multi-functional online without disrupting the operation of power systems advantages of outdoor use.

IO-Power USRP-12V1060-OA series, take online type does not interrupt of stability long-term street lamps power supply system design, special for take with outdoor street lamps 240V AC power, thought battery night supplementary power of sources, by match long-term of C-LiFePO₄ lithium battery can power supply time over 14 hours above, enough due to should summer more long of device day operation time; day multiple load device through microprocessor of charging and discharging module, indirect by C-LiFePO₄ lithium battery made by required of operation DC power, night is modified by street lamps controller of circuit power made power, the AC power by transformer go DC electric power, through microprocessor circuit on multiple load device for directly supply power, same time of street lamps circuit power also through microprocessor of charging and discharging module, on C-LiFePO₄ lithium battery for their independent of charging control and the battery charging balance.



Multifunctional online type street lamps uninterruptible recharge power system, except match street lamps power application characteristics outside, more provides including: 2 Port 12V/1.5A DC power, 1 Port 5V/1A DC power and the 1 Port 48V/0.6A PoE-PSE Port, can directly application to outdoor surveillance system, outdoor long distance wireless surveillance system, outdoor infrared surveillance security system, outdoor infrared projection lamp, outdoor data capture device system, outdoor alternate power system, expressway charges trading video monitoring and the license plate identification records system, outdoor large electronic advertising licensing transmission system, elevator security video monitoring system, mobile power supply system, mine and the special work environment device system, financial institutions security protection system and fire security system ... and so on.

Also, consider to different of outdoor system exists many different size load power demand and outdoor high and low temperature environment on battery of power supply capacity and the cycle using life of interference, special design can parallel expanded battery capacity of matching platform, from minimum of 11.6Ah (148WH) battery capacity, matching expanded to 62.4Ah (798WH) of battery capacity, to due to should systems engineering commercial erection construction environment of changes using power capacity demand.



IO-Power USRP-12V1060-OA series aluminum metal thermal protective shell and using industrial-grade design of water and dust proof to IP67 and high and low temperature resistance industrial M12 connector, to meet the outdoor temperature of -20° C ~ +45° C harsh of environment temperature trials, day and night for outdoor systems can still normal operation of the security and stability.

USRP-12V1060-OA Series Specification (* Patent Pending)

Model	IOP-USRP-1210-03A	IOP-USRP-1220-05A	IOP-USRP-1230-06A	IOP-USRP-1240-09A	IOP-USRP-1260-10A
Outdoor Model Industrial M12 Connector Industrial Aluminium Radiating Airtight Housing IP67					
Power Capacity	148WH (11.6Ah@12.8V)	297WH (23.2Ah@12.8V)	445WH (34.8Ah@12.8V)	594WH (46.4Ah@12.8V)	798WH (62.4Ah@12.8V)
AC Power Switch Input AC Voltage /Amp	90-264V / 3A 50/60Hz	90-264V / 3A 50/60Hz	90-264V / 3A 50/60Hz	90-264V / 3A 50/60Hz	90-264V / 3A 50/60Hz
AC Power Switch Output DC Voltage / Amp	15.5V / 10A Max (PFC Function Optional)	15.5V / 14A Max (PFC Function Optional)	15.5V / 14A Max (PFC Function Optional)	15.5V / 20A Max (PFC Function Optional)	15.5V / 20A Max (PFC Function Optional)
DC to DC for Device	1.11V ~ 13V +- 3% / 1.5A Max 2.11V ~ 13V +- 3% / 1.5A Max 3. 5V +- 3% / 1A Max 4. 48V / 0.6A PoE (PSE Port)	1.11V ~ 13V +- 3% / 1.5A Max 2.11V ~ 13V +- 3% / 1.5A Max 3. 5V +- 3% / 1A Max 4. 48V / 0.6A PoE (PSE Port)	1.11V ~ 13V +- 3% / 1.5A Max 2.11V ~ 13V +- 3% / 1.5A Max 3. 5V +- 3% / 1A Max 4. 48V / 0.6A PoE (PSE Port)	1.11V ~ 13V +- 3% / 1.5A Max 2.11V ~ 13V +- 3% / 1.5A Max 3. 5V +- 3% / 1A Max 4. 48V / 0.6A PoE (PSE Port)	1.11V ~ 13V +- 3% / 1.5A Max 2.11V ~ 13V +- 3% / 1.5A Max 3. 5V +- 3% / 1A Max 4. 48V / 0.6A PoE (PSE Port)



DC to DC for Battery	Output DC 14.4V +- 3%/ 3A Max	Output DC 14.4V +- 3%/ 3A Max Output DC 14.4V +- 3%/ 2A Max	Output DC 14.4V +- 3%/ 3A Max Output DC 14.4V +- 3%/ 2A Max Output DC 14.4V +- 3%/ 2A Max	Output DC 14.4V +- 3%/ 3A Max Output DC 14.4V +- 3%/ 2A Max Output DC 14.4V +- 3%/ 2A Max Output DC 14.4V +- 3%/ 2A Max	Output DC 14.4V +- 3%/ 5A Max Output DC 14.4V +- 3%/ 2A Max Output DC 14.4V +- 3%/ 2A Max Output DC 14.4V +- 3%/ 2A Max
Transform Efficiency	85%~ (Option PFC Function)	85%~ (Option PFC Function)	85%~ (Option PFC Function)	85%~ (Option PFC Function)	85%~ (Option PFC Function)
Protection	On Line Working System Non Stop Hot-swappable batteries Independent Short circuit Protection* Independent Battery Charging / Discharge Protection Feature* Independent Device Operate Protection Feature* Auto detect Battery Type decide Charging Mode* Detect Battery Low Voltage Charging Protection* Polarity Reversed Protection Standby Consume Protection Charging and Discharge Current limit Protection Overcharge Protection Over discharge Protection Independent battery charging balance Protection Over current Protection Overload Protection				
Support Battery Type (Don't use other battery type for outdoor)	C-LiFePO4 Battery	C-LiFePO4 Battery	C-LiFePO4 Battery	C-LiFePO4 Battery	C-LiFePO4 Battery
Battery Capacity	11.6Ah @ 12.8V	11.6Ah @ 12.8V 11.6Ah @ 12.8V	11.6Ah @ 12.8V 11.6Ah @ 12.8V 11.6Ah @ 12.8V	11.6Ah @ 12.8V 11.6Ah @ 12.8V 11.6Ah @ 12.8V 11.6Ah @ 12.8V	27.6Ah @ 12.8V 11.6Ah @ 12.8V 11.6Ah @ 12.8V 11.6Ah @ 12.8V
Battery Charge Mode	CC/CV Special Design Charge*	CC/CV Special Design Charge *	CC/CV Special Design Charge*	CC/CV Special Design Charge*	CC/CV Special Design Charge *
Battery Charge Voltage	14.4V +- 3%	14.4V +- 3%	14.4V +- 3%	14.4V +- 3%	14.4V +- 3%
Battery Charge Float Voltage	13.8V +- 3%	13.8V +- 3%	13.8V +- 3%	13.8V +- 3%	13.8V +- 3%
Battery Cut-off Discharge	11.5V +- 3%	11.5V +- 3%	11.5V +- 3%	11.5V +- 3%	11.5V +- 3%



Voltage					
Detect Battery Low Voltage Protection	11V +- 3%	11V +- 3%	11V +- 3%	11V +- 3%	11V +- 3%
Max Charge Current	3A Max for Battery 1	3A Max for Battery 1 2A Max for Battery 2	3A Max for Battery 1 2A Max for Battery 2 2A Max for Battery 3	3A Max for Battery 1 2A Max for Battery 2 2A Max for Battery 3 2A Max for Battery 4	5A Max for Battery 1 2A Max for Battery 2 2A Max for Battery 3 2A Max for Battery 4
Max Discharge Current	3A Max from Battery 1	3A Max from Battery 1 2A Max from Battery 2	3A Max from Battery 1 2A Max from Battery 2 2A Max from Battery 3	3A Max from Battery 1 2A Max from Battery 2 2A Max from Battery 3 2A Max from Battery 4	5A Max from Battery 1 2A Max from Battery 2 2A Max from Battery 3 2A Max from Battery 4
Charging Time @95% Capacity	Non discharge 8hrs On line discharging 10hrs	Non discharge 9hrs On line discharging 10hrs	Non discharge 9hrs On line discharging 11hrs	Non discharge 9hrs On line discharging 11hrs	Non discharge 10hrs On line discharging 12hrs
Battery Cycle Life (80% Capacity) 0.2C Charging 0.5C Discharge	@ 25°C 2000 Times @ 45°C 1600 Times @ 50°C 1200 Times @ 60°C 550 Times @ 60°C 720 Times 70% Capacity	@ 25°C 2000 Times @ 45°C 1600 Times @ 50°C 1200 Times @ 60°C 550 Times @ 60°C 720 Times 70% Capacity	@ 25°C 2000 Times @ 45°C 1600 Times @ 50°C 1200 Times @ 60°C 550 Times @ 60°C 720 Times 70% Capacity	@ 25°C 2000 Times @ 45°C 1600 Times @ 50°C 1200 Times @ 60°C 550 Times @ 60°C 720 Times 70% Capacity	@ 25°C 2000 Times @ 45°C 1600 Times @ 50°C 1200 Times @ 60°C 550 Times @ 60°C 720 Times 70% Capacity
Industrial Housing & Connector	Aluminium Radiating Airtight Housing Industrial IP67 M12 Connector	Aluminium Radiating Airtight Housing Industrial IP67 M12 Connector	Aluminium Radiating Airtight Housing Industrial IP67 M12 Connector	Aluminium Radiating Airtight Housing Industrial IP67 M12 Connector	Aluminium Radiating Airtight Housing Industrial IP67 M12 Connector
Connector Type	1.Input AC Power : 90~264V M12 Female – AC Plug 2.Input DC Power :15.5V M12 Female -- M12 Female 3.Output DC 12V : 12V M12 Male – DC Jack 4.Output DC 12V : 12V M12 Male – DC Jack 5.Output DC 5V : 5V M12 Male – DC Jack 6.Output 48V PoE RJ-45 Port (PSE) Waterproof IP 67 Connector 7.Input PoE RJ-45 Data Port Waterproof IP 67 Connector				
Operating Temperature (Discharge)	-20°C ~ 60°C 20~40°C Battery Capacity:100% -10°C Battery Capacity : 60% -20°C Battery Capacity : 48%	-20°C ~ 60°C 20~40°C Battery Capacity:100% -10°C Battery Capacity : 60% -20°C Battery Capacity : 48%	-20°C ~ 60°C 20~40°C Battery Capacity:100% -10°C Battery Capacity : 60% -20°C Battery Capacity : 48%	-20°C ~ 60°C 20~40°C Battery Capacity:100% -10°C Battery Capacity : 60% -20°C Battery Capacity : 48%	-20°C ~ 60°C 20~40°C Battery Capacity:100% -10°C Battery Capacity : 60% -20°C Battery Capacity : 48%



Charging Temperature	-30°C ~ 60°C	-30°C ~ 60°C	-30°C ~ 60°C	-30°C ~ 60°C	-30°C ~ 60°C
Storage Temperature	-20°C ~ 40°C	-20°C ~ 40°C	-20°C ~ 40°C	-20°C ~ 40°C	-20°C ~ 40°C
Rel. Humidity	10~95%RH	10~95%RH	10~95%RH	10~95%RH	10~95%RH
Storage Time (Before the Use, please First Charge)	6 months (Please every three months charge one time)	6 months (Please every three months charge one time)	6 months (Please every three months charge one time)	6 months (Please every three months charge one time)	6 months (Please every three months charge one time)
Dimension	260(L) x 214(W) x 370 mm (H)	260(L) x 214(W) x 370 mm (H)	260(L) x 214(W) x 370 mm (H)	260(L) x 214(W) x 370 mm (H)	370(L) x 214(W) x 370 mm (H)
Weight	4.5Kg	7Kg	9.5Kg	12Kg	14.5Kg
LED Indicator	1.Input AC Power Indicator (Flash is Error) 2.Temp Indicator (Flash is Error) 3.12V Output 1 Indicator (Flash is Error) 4.12V Output 2 Indicator (Flash is Error) 5.5V Output Indicator (Flash is Error) 6.PoE PSE Output Indicator (Flash is Error) 7.Battery Indicator -- Full Capacity 4 LEDs always Light -- Battery Voltage Normal LED Slowly Flash -- Battery Voltage Under 11V LED Quickly Flash -- Error or Non connect Battery LED No Light Battery Voltage ~9V : MCU non-working, All LED No Light Battery Voltage 9V~10.5V : 200mA Charging, LED Quickly Flash, Battery Capacity LED No Light. Battery Voltage 10.5V~11V : Normal Charging, LED Quickly Flash, Battery Capacity LED No Light. Battery Voltage 11V~14.4V : Normal Charging, LED Slowly Flash, Battery Capacity LED Start to Light from 1 until 3 LEDs. Battery Voltage 14.4V~ : Battery Capacity Full (more than 95%), 4 LEDs always Light				
Housing	Weather-proof IP67	Weather-proof IP67	Weather-proof IP67	Weather-proof IP67	Weather-proof IP67
Approvals (Processing)	. CE, FCC	. CE, FCC	. CE, FCC	. CE, FCC	. CE, FCC
Installation	1.Street lamp pole mount 2.Upright pole mount 3.Wall mount installation	1.Street lamp pole mount 2.Upright pole mount 3.Wall mount installation	1.Street lamp pole mount 2.Upright pole mount 3.Wall mount installation	1.Street lamp pole mount 2.Upright pole mount 3.Wall mount installation	1.Street lamp pole mount 2.Upright pole mount 3.Wall mount installation
Warranty	12 months	12 months	12 months	12 months	12 months

Product specifications change, without notice, consultation with agent or dealer before buying the latest specifications