

IO-Power Outdoor Point to Point High Speed Mobile Wireless Transmission System

ML-N-1/ ML-N-2 / ML-N-3



4 Step PTP MESH Hi-mobile Quick Installation Guide

Step 1: System login (**wireless device default IP is 192.168.1.1**)

- First set the computer's IP address of the area, set to 192.168.1.X fixed IP
(Example: 192.168.1.100)

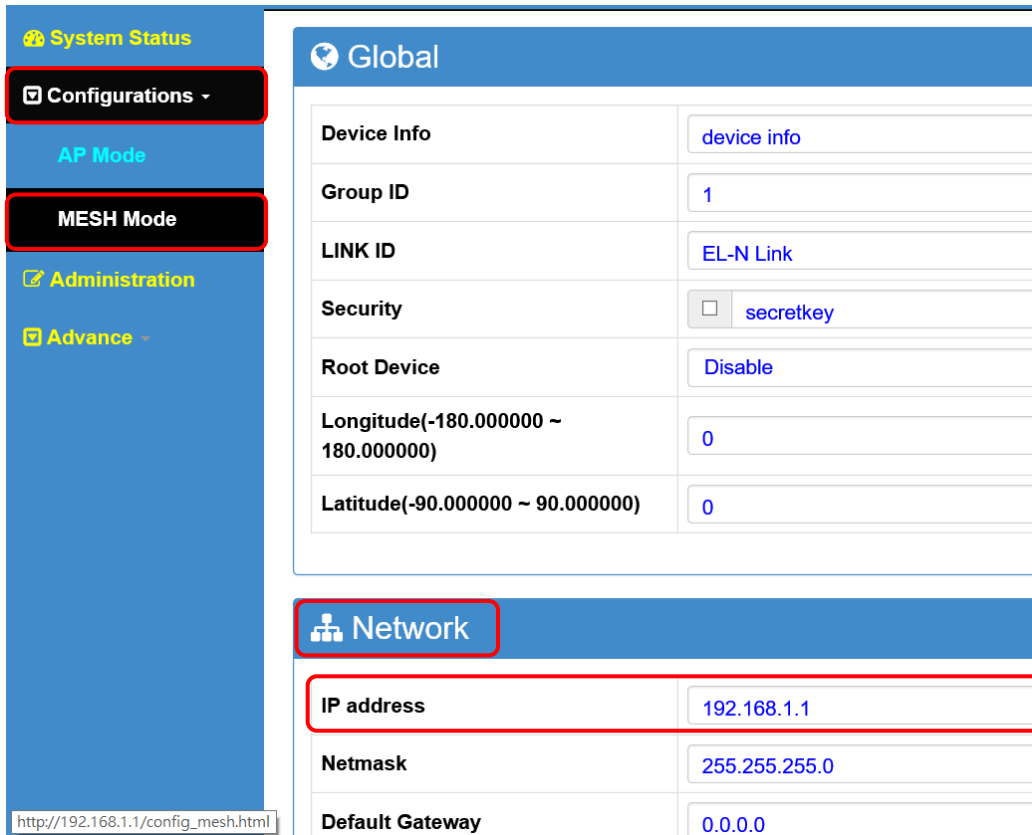
Special reminder: computer and wireless equipment, IP network segment shall be same,
in order to connect each other setting.

- Enter <http://192.168.1.1> in the web browser
- Press Login to enter the account number and password, enter the system settings
(**Default account: admin, default password: admin**)



Step 2: Change the wireless device default IP address

- Operation setting / MESH mode / Network Setting IP Address of the Wireless Device.
- It is recommended that you change the original 192.168.1.1 network segment to avoid conflicts with IP of other network devices, for example to 100 network segments of 192.168.100.11.



Global	
Device Info	device info
Group ID	1
LINK ID	EL-N Link
Security	<input type="checkbox"/> secretkey
Root Device	Disable
Longitude(-180.000000 ~ 180.000000)	0
Latitude(-90.000000 ~ 90.000000)	0

Network	
IP address	192.168.1.1
Netmask	255.255.255.0
Default Gateway	0.0.0.0

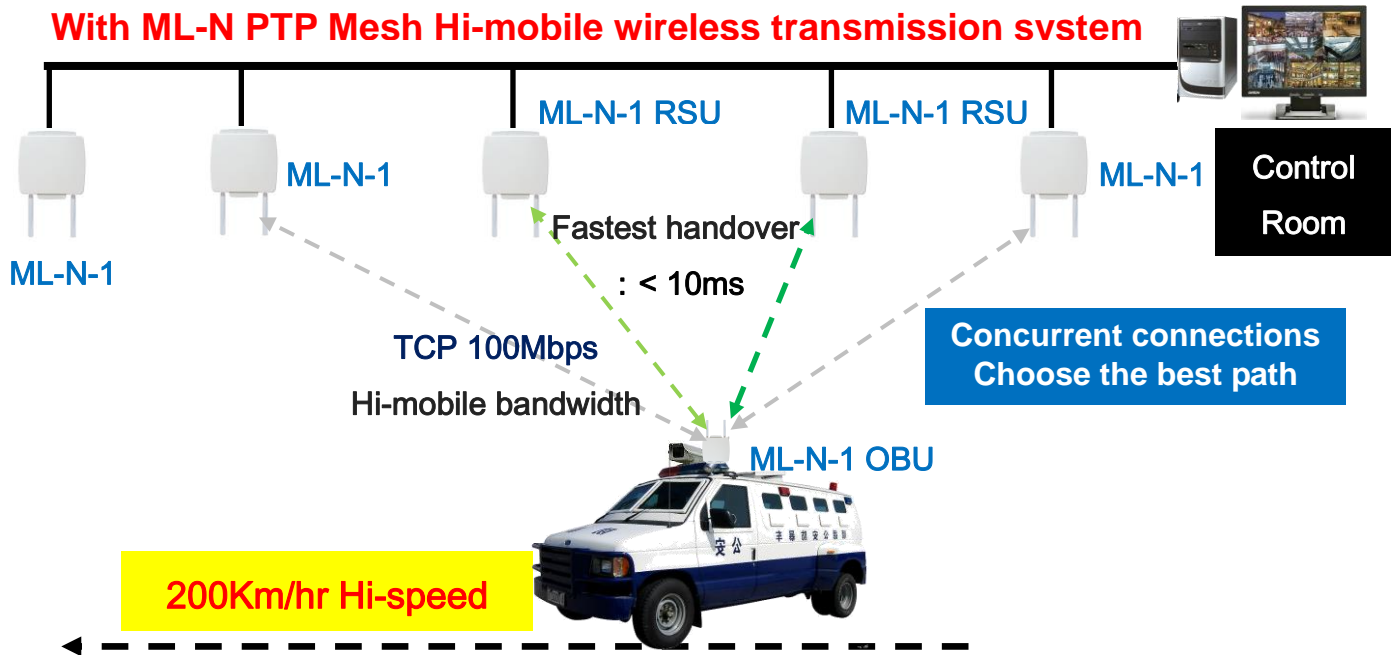
Special reminder: When the wireless device has been changed to a new IP network segment (such as 192.168.100.11), be sure to remember the computer IP network segment also changed to the same 100 network segment (such as 192.168.100.99), in order to mutual connection settings.

PTP Mesh Wireless Hi-mobile Network System Settings

- Fiber optical network backbone / general cable network backbone

Fiber optical network backbone

With ML-N PTP Mesh Hi-mobile wireless transmission system



Step 3: Set RSU roadside wireless coverage and OBU vehicle mobile wireless "global" setting

All ML-N series RSU and OBU in the same system must set the same Link ID

Global	
Device Info	device info
LINK ID	ML-N Link The Link ID must be set the same; the default can be
Longitude(-180.000000 ~ 180.000000)	0
Latitude(-90.000000 ~ 90.000000)	0
Node Index	0 Node Index node set up order to mark, in order to facilitate OBU learning Link Priority and switching order to determine the learning; initial erection of the default can not set; large system or large-scale set up wireless high-speed mobile transmission system, be sure to plan to set this function.

Description: The red frame option is required to be selected with the set item. Other options, set by default, do not need to be changed.

- Link ID: The default Link ID is ML-N Link, the wireless signal coverage RSU (Road Side Unit) must same as the OBU (On Board Unit) Vehicle Mobile to do point to point transmission.

- **Node Index:** Node set up in order to facilitate OBU learning Link Priority and switching order to determine learning.

Special Note 1: The erector is numbered according to the location of the RSU, and the OBU will automatically learn the order of the number of the linked Node Index and automatically determine the order of the subsequent link order. For example, when OBU is linked to RSU on the 7th, the OBU will determine that the next "priority" link number should be No. 8 and then No. 9, thus reducing the time to find the RSU.

Special Note 2: When the OBU is located at the intersection or multiple RSU environments, the OBU will automatically determine the order of the link number. If the actual transmission path is not transmitted in the direction of the link label, the OBU will pass several judgment errors; Re-learn the new link sequence number logic, to achieve the normal transmission operation.

Step 4: RSU and OBU radio frequency settings: RF related parameters

Radio 1	
Radio	<input type="radio"/> ON Please select "On" mode for radio frequency card; the default can be
Parameters	20 MHz, 2x2 MIMO, 800ns GI Please select 40MHz 2X2 MIMO 400ns GI;the default can be
Tx Power Level	Maximum The output power level is selected by the survey result; the default can be
Frequency(MHz)	5500 Channel frequency according to the planning settings;the default can be (Frequency Range: 4920 ~ 5150 ~ 5850 ~ 6080)

Description: The red frame option is required to be selected with the set item. Other options, set by default, do not need to be changed.

- **RF card:** the default is "open" to start the operation of the RF card, unused RF card interface suggest to select "off" to disable and it will reduce the probability of interference.
- **Parameters:** The default is "40MHz 2X2 MIMO 400ns GI", the default can be used.
- **Output power level:** default is "Maximum", the default can be used.

- Channel frequency (MHz):Default is "5500MHz channel frequency", it is recommended to use the EL-N wireless backbone products for environmental scanning detection first, select a minimum use of the wireless channel frequency (channel spacing width, please by 40MHz estimation).

Both ends of the RSU and OBU wireless equipment to complete steps 1 to 4 after the operation, PTP MESH Hi-mobile wireless transmission system can be linked to each other success!!

➤ Test PTP MESH Hi-mobile wireless devices are kinked at both ends

A. Confirm whether or not to connect in a continuous ping mode



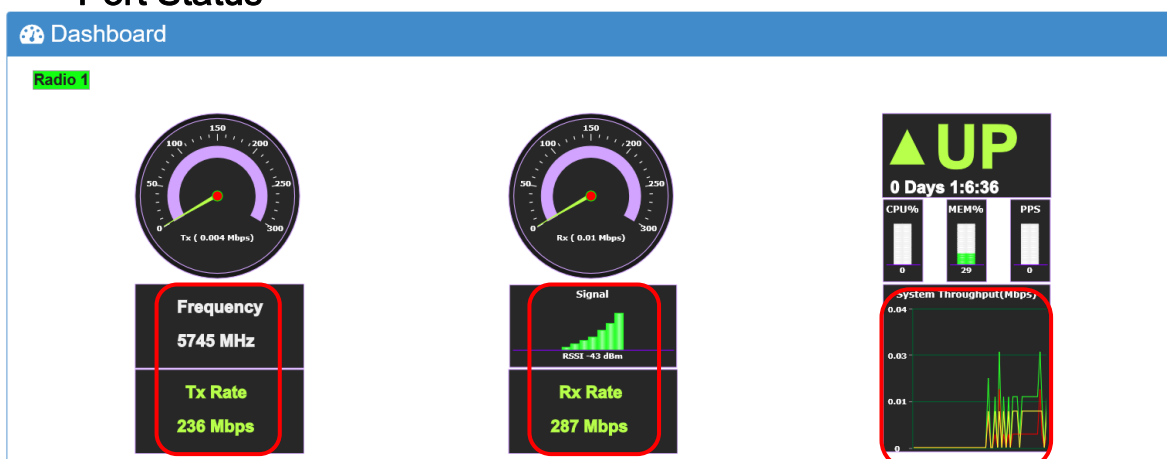
```
命令提示字元 - ping 192.168.100.21 -t
(c) 2016 Microsoft Corporation. 著作權所有，並保留一切權利。
C:\Users\user>ping 192.168.100.21 -t

Ping 192.168.100.21 (使用 32 位元組的資料):
回覆自 192.168.100.21: 位元組=32 時間<1ms TTL=64
回覆自 192.168.100.21: 位元組=32 時間<1ms TTL=64
回覆自 192.168.100.21: 位元組=32 時間<1ms TTL=64
回覆自 192.168.100.21: 位元組=32 時間<1ms TTL=64
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回覆自 192.168.100.21: 位元組=32 時間<1ms TTL=64

微軟注音 半 :
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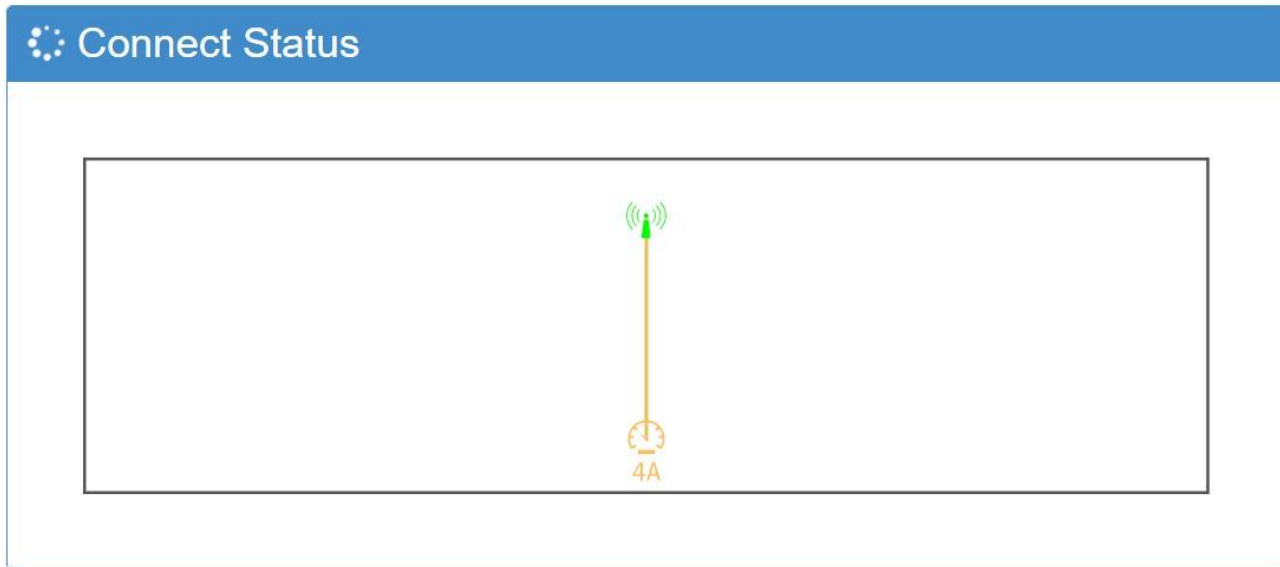
B. Observe the TX / RX transmission rate change of the two devices from the "Dashboard"

- See the "Dashboard" to define the TX Rate / RX Rate transmission rate status weather have change in real time or the status of the Radio RF card showing the Port Status

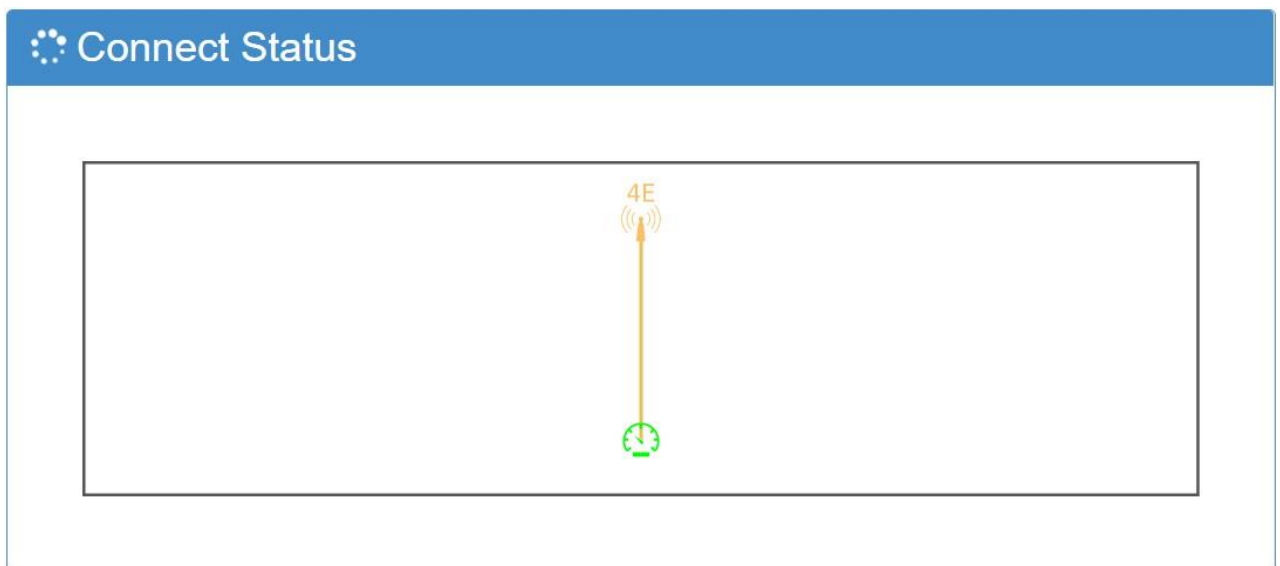


C. Direct to see the display status of the immediate view link status.

- The RSU (Road Side Unit) wireless signal covers the base station link status



- OBU (On Board Unit) mobile device (Vehicle) wireless device link status



➤ Product Appearance and Antenna N-type Connector Number

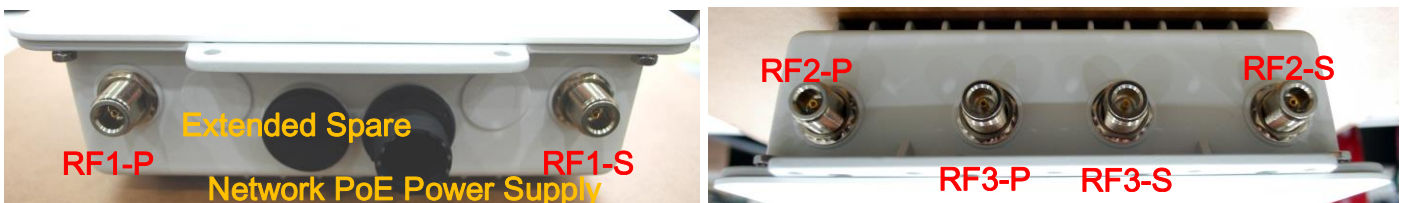
■ Product Appearance :



■ MIMO 2X2 Antenna Connector Number

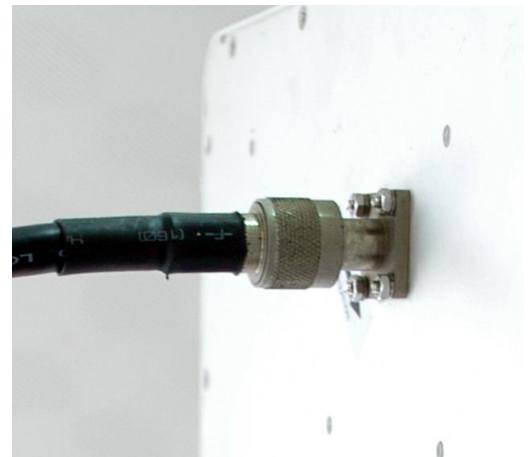


■ MIMO 2X2 Antenna Connector and Network Port - PoE Power Supply Hole



➤ Wireless Antenna Installation & Power Supply

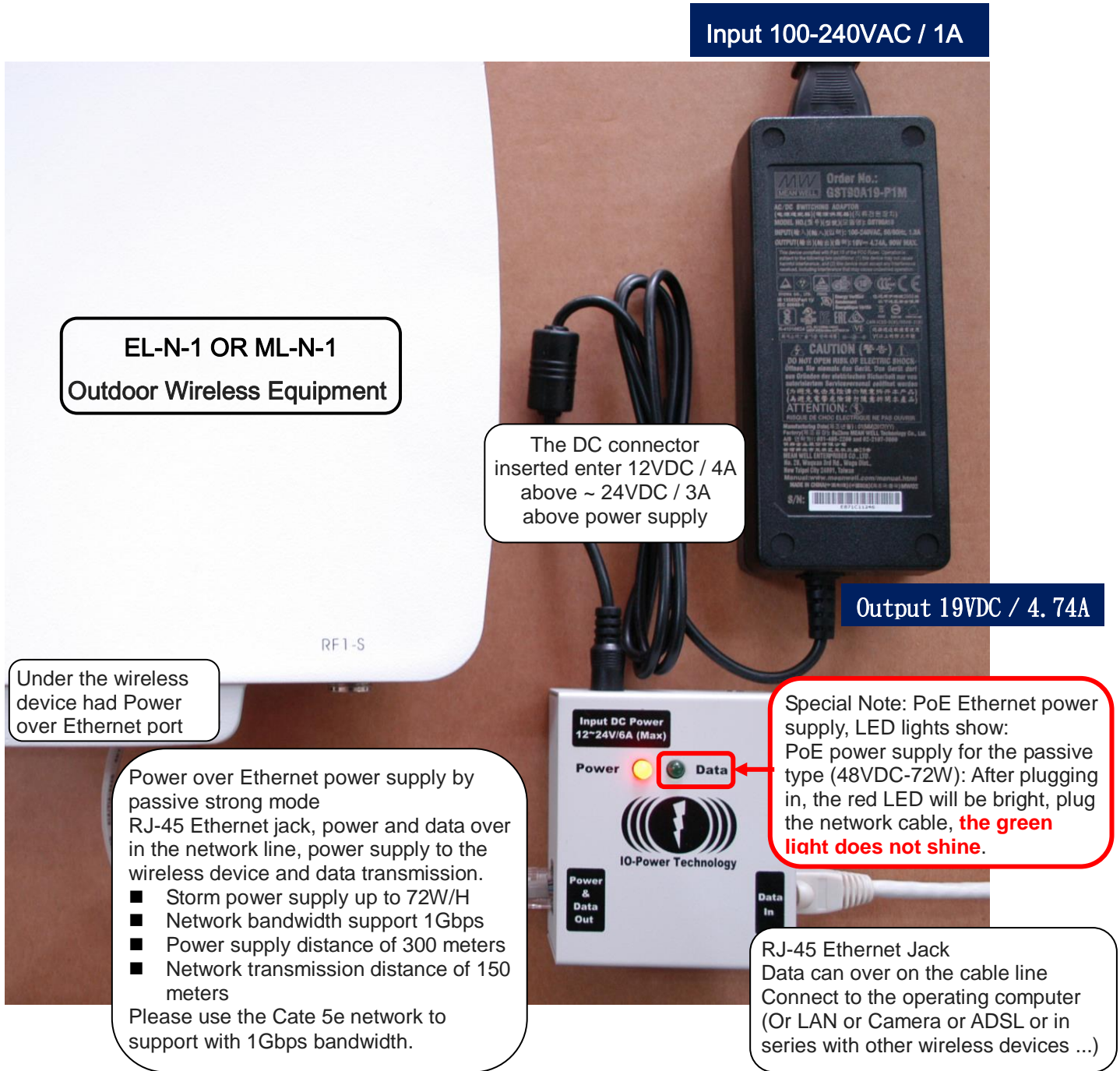
■ Wireless product system erection :



CFD-400 N-to-N Type
1.5 m Antenna Extension Cable

PoE-PSE
Ethernet Power Supply Cable

➤ Accessories PoE through Ethernet Power Supply:



Input 100-240VAC / 1A

EL-N-1 OR ML-N-1
Outdoor Wireless Equipment

The DC connector
inserted enter 12VDC / 4A
above ~ 24VDC / 3A
above power supply

Under the wireless
device had Power
over Ethernet port

Power over Ethernet power supply by
passive strong mode
RJ-45 Ethernet jack, power and data over
in the network line, power supply to the
wireless device and data transmission.

- Storm power supply up to 72W/H
- Network bandwidth support 1Gbps
- Power supply distance of 300 meters
- Network transmission distance of 150 meters

Please use the Cate 5e network to
support with 1Gbps bandwidth.

Special Note: PoE Ethernet power
supply, LED lights show:
PoE power supply for the passive
type (48VDC-72W): After plugging
in, the red LED will be bright, plug
the network cable, **the green
light does not shine.**

RJ-45 Ethernet Jack
Data can over on the cable line
Connect to the operating computer
(Or LAN or Camera or ADSL or in
series with other wireless devices ...)

Output 19VDC / 4.74A

Special Note: PoE power supply, LED lights show:

- PoE Ethernet power supply **strong passive mode (48VDC-72W)**: After plugging in, the red LED will light, plug the network cable, **the green light does not shine.**
 - PoE Ethernet power supply standard mode (48VDC-32W): After the plugs, the red LED will be light, plug the cable, the green light will be bright.
- ML-N-1: basic operation power consumption 6W / H, 100Mbps full speed transmission 8W / H maximum, start the maximum power consumption 12W
 - ML-N-2: basic operation power consumption 8W / H, 100Mbps full speed transmission 10W / H maximum, start the maximum power consumption 16W
 - ML-N-3: basic operation power consumption 10W / H, 100Mbps full speed transmission 12W / H maximum, start the maximum power consumption 20W