

# **Outdoor SmartUPS Installation Guide**

April 2019

Version 1.4

## About This Document

This document describes the Baicells Outdoor SmartUPS battery backup product and how to install and configure models EPB41211 and EPB42133 for operation. Users of this document should already be familiar with eNodeB installation and configuration procedures.

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## Disposal of Electronic and Electrical Waste



Pursuant to the WEEE EU Directive, electronic and electrical waste must not be disposed of with unsorted waste. Please contact your local recycling authority for disposal of this product.

## Revision Record

Date	Version	Description	SMEs/Contributors	Author/Editor
1-Apr-2019 7-Dec-2018	V1.4	Updated configuration section and operating temp	Yang Yanan	Sharon Redfoot
3-Dec-2018	V1.3	Spec and SME updates	Ronald Mao Yang Yanan	Sharon Redfoot
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17-Oct-2018	V1.1	English draft	Yang Yanan Xie Yanjun	Sharon Redfoot

		Ronald Mao	
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## Related Documents

Other Baicells [technical documents](#) may be found on the Baicells support website:

User Equipment	<ul style="list-style-type: none"> <li>Atom 5dBi Indoor CPE User Manual</li> <li>Atom 11dBi Outdoor CPE User Manual</li> <li>Atom 19.5dBi Outdoor CPE User Manual</li> <li>Atom ID04/06-3.5/6.5 &amp; ID06-6.5 User Manual</li> <li>Atom OD04/06-14/19.5 User Manual</li> <li>Spectra LTE-U Outdoor FDD u4G-UE1000 User Manual</li> </ul>
eNodeB Equipment	<ul style="list-style-type: none"> <li>Nova 1W ENB Installation Guide</li> <li>Nova 1W Quick Start Guide</li> <li>Nova 10W ENB Installation Guide</li> <li>Nova 10W Quick Start Guide</li> <li>Nova-227 Outdoor 2x250mW TDD eNB Installation Guide</li> <li>Nova-227 Quick Start Guide</li> <li>Nova-233 Outdoor 2x1WG2 FDD-TDD eNB Installation Guide</li> <li>Nova-233 Quick Start Guide</li> <li>Nova-243 Outdoor 2x10WG2 FDD-TDD eNB Installation Guide</li> <li>Nova-243 Quick Start Guide</li> <li>Nova-436 Outdoor 4x1W CCA TDD eNB Installation Guide</li> <li>Nova-436 Quick Start Guide</li> <li>Spectra LTE-U Outdoor FDD eNodeB Installation Guide</li> <li>SmartUPS Installation Guide (this document)</li> </ul>
EPC, OMC, BOSS	<ul style="list-style-type: none"> <li>Configuration &amp; Network Administration Guide</li> <li>Operation, Maintenance, &amp; Troubleshooting Guide</li> </ul>

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## Safety Information



**Caution:** Before handling the SmartUPS, read the following information concerning stored battery power.

For air and sea transportation safety, during shipment the Baicells SmartUPS product can only be charged about 20% to 30%. Because of the self-discharge of the lithium battery, if the SmartUPS device is not installed within 3 months after reaching its destination, it must be recharged to 80%. After recharging, the SmartUPS device may be stored for up to 6 months. If the device must be stored longer than 6 months, repeat the recharging to 80%.

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For the safety of installation personnel and for the protection of the equipment from damage, please read all safety warnings. If you have any questions concerning the warnings, before installing or powering on the eNB, contact the Baicells support team.



**Warning** IMPORTANT SAFETY INSTRUCTIONS

This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents.



**Warning** Read the installation instructions before you connect the system to its power source.



**Warning** Installation of the equipment must comply with local and national electrical codes.



**Warning** This product relies on the existing building or structure for short-circuit (overcurrent) protection. Ensure that the protective device is rated no greater than 20A.



**Warning** Do not operate this wireless network device near unshielded blasting caps or in an explosive environment unless the device has been modified and qualified for such use.

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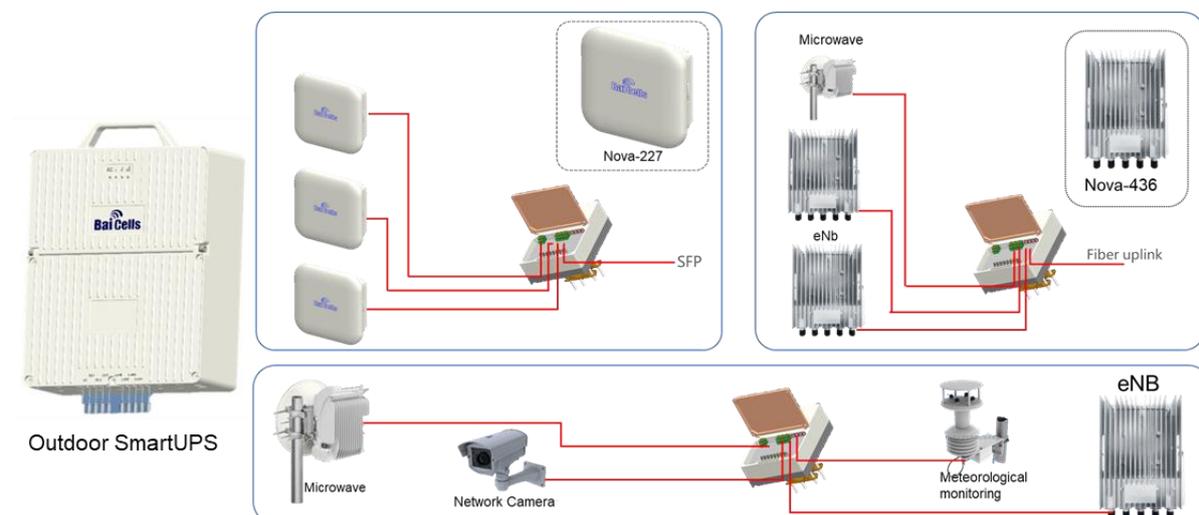
# 1. Introduction

## 1.1 Overview

Wireless Internet Service Providers (WISPs) typically rely on electrical infrastructures to power their network equipment. During times of power outages, or in rural and remote locations where the availability of power is limited, operators need a reliable backup power source. The Baicells Smart Uninterruptible Power Supply (SmartUPS) converts AC to DC 48V and supports GigE speeds. It can power Baicells Long-Term Evolution (LTE) eNodeBs (eNBs) and other equipment such as cameras, meteorological monitoring equipment, microwave antennae, and security systems (Figure 1-1).

The SmartUPS product has a high protection grade rating of IP66 and is very cost-effective, especially when compared to traditional indoor and outdoor power cabinets.

**Figure 1-1: Baicells Outdoor SmartUPS**



## 1.2 Features

Following are some of the key features of the Baicells SmartUPS.

- Up to 400 Watt power supply
- High IP66 ingress protection rating
- Intelligent battery / OMC management
- 3-year Lithium battery service life
- Supports optional solar input and gigabit optical interface (SFP)
- Supports multiple devices
- User-friendly LEDs and interfaces
- Multiple power options: 48 VDC or PoE+

## 1.3 Transportation & Storage Requirements



**Caution:** Before installing, read the following information concerning stored battery power.

For air and sea transportation safety, during shipment the Baicells SmartUPS product can only be charged about 20% to 30%. Because of the self-discharge of the lithium battery, if the SmartUPS device is not installed within 3 months after reaching its destination, it must be recharged to 80%. After recharging, the SmartUPS device may be stored for up to 6 months. If the device must be stored longer than 6 months, recharge to 80% again.

General guidelines:

- The storage environment:
  - Should be dry, shady, and cool;
  - Should not be in contact with corrosive material such as organic solvent; and
  - Should be kept away from fire.
- In storage, the battery must be recharged every 6 months to avoid irreversible damage.
- The self-discharge of the battery is affected by temperature and humidity in the storage environment. High temperatures and humidity will accelerate the self-discharge process. For optimum conditions, Baicells recommends storing the battery in a dry environment within a temperature range of 4°F to 158°F (-20°C to 70°C).



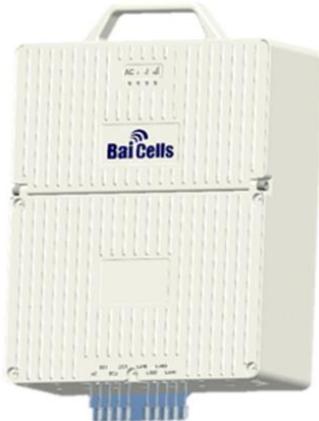
**Caution:** If the lithium battery is not recharged in time and runs out of power, it will be damaged permanently. To ensure proper device operation, this situation will require replacing the original battery with a new one.

## 1.4 Description

The Baicells SmartUPS backup power supply models are small and easy to deploy (Figure 1-2).

**Figure 1-2: Size and Weight**

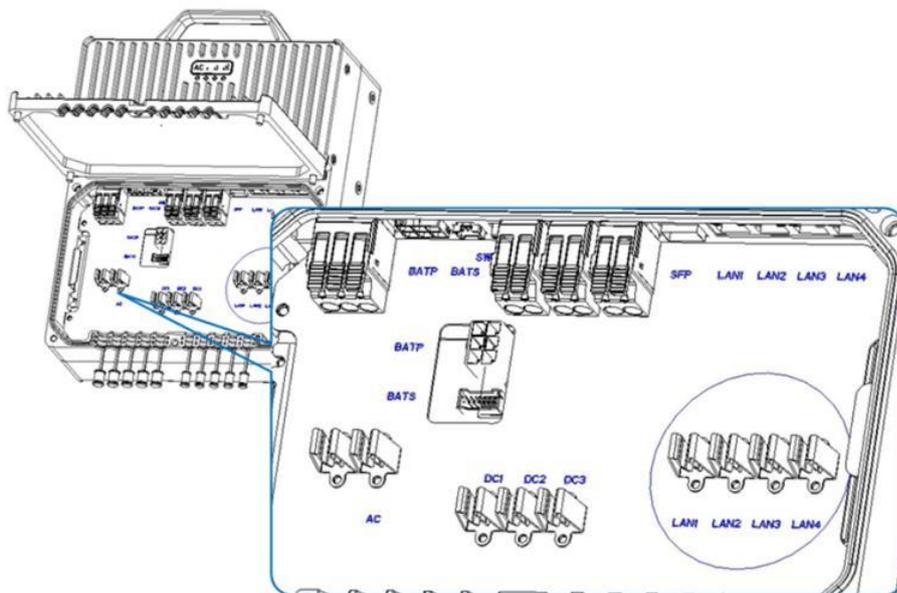
Dimensions (HxWxD):  
 10.6 x 4 x 12.6 inches  
 270 x 320 x 105 millimeters



Weight  
 5Ah 15.2 lbs / 6.9 kg  
 10Ah 18.7 lbs / 8.5 kg

The SmartUPS interfaces are in a covered wiring cavity on the front of the unit, as shown in Figure 1-3. Table 1-1 describes each interface.

**Figure 1-3: Interfaces**



**Table 1-1: Interfaces**

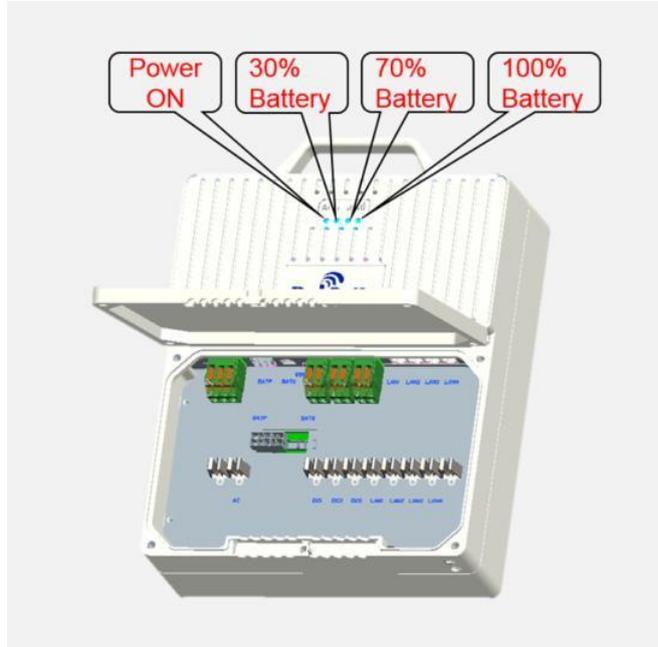
Interface Name	Description
AC	Power input interface: 110V AC (90 V~ 264 V) AC Used for recharging the Smart UPS
DC1	Power output interface 1: +48V (+37V~+54V) DC Connects to the device which receives the power from the SmartUPS
DC2	Power output interface 2: +48V (+37V~+54V) DC Connects to the device which receives the power from the SmartUPS
DC3	Power output interface 3: +48V (+37V~+54V) DC

Interface Name	Description
	Connects to the device which receives the power from the SmartUPS
SFP	Gigabit SFP cage Connects to the backbone network for backhaul
LAN1 (PoE+)	Gigabit Ethernet switch 1 or PoE+ interface Connects to the backbone network for backhaul
LAN2	Gigabit Ethernet switch 2 Connects to the backbone network for backhaul
LAN3	Gigabit Ethernet switch 3 Connects to the backbone network for backhaul
LAN4	Gigabit Ethernet switch 4 Connects to the backbone network for backhaul

Note: Output interfaces vary according to model.

On the upper front of the unit are the LED indicators Figure 1-4. Table 1-2 describes the meaning of the power and battery LED states.

**Figure 1-4: LEDs**



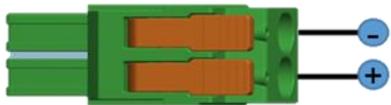
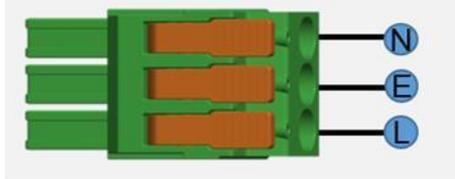
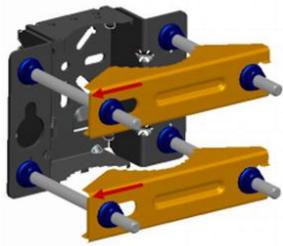
**Table 1-2: LEDs**

Indicator	Color	Status	Remarks
PWR	Green	Steady on	Power on
		Off	Power off
30% Battery	1 green bar 	Steady on	10-40% battery power remaining
70% Battery	2 green bars 	Steady on	40-70% battery power remaining
100% Battery	3 green bars 	Steady on	70-100% battery power remaining

## 2. Out-of-Box Audit

Table 2-1 provides a list of the parts you should receive with the BaiCells SmartUPS backup power supply. If the box arrives wet or damaged, please contact your supplier within 10 days.

Table 2-1: Parts List

Item	Qty	Description	Photograph of Item
<b>SmartUPS Backup Power Supply</b>	1	Baicells SmartUPS Backup Power Supply unit. Check that the equipment tag identifies the model you ordered.	
<b>Light Module</b>	1	SFP LC optical module	
<b>Battery Cable</b>	1	Lithium battery power line	
<b>Battery Control Bus</b>	1	Lithium battery data detection bus	
<b>AC Power Adaptor</b>	1	2-pin (green wire) power terminal	
<b>DC Power Adaptor</b>	1	3-pin (green wire) power terminal	
<b>Mounting Bracket</b>	1	Assembled kit: <ul style="list-style-type: none"> <li>• (1) Installation bracket</li> <li>• (4) Omega clamps</li> <li>• (4) M10 x 160 outer hex bolts</li> </ul>	

Item	Qty	Description	Photograph of Item
		<ul style="list-style-type: none"><li>• (10) M10 flat gaskets</li><li>• (10) M10 spring gaskets</li><li>• (10) M10 nuts</li></ul>	
<b>Bolts</b>	2	M8 x 80 expansion bolts for wall mount	 Two stainless steel expansion bolts, one with a hex head and one with a hex head and a long threaded section.
<b>Ground Terminal</b>	2	Used for making ground cable	 A blue metal ground terminal with a circular ring at one end and a threaded section at the other.
<b>Screw Package</b>	1	Screws for various parts of the installation	

## 3. Installation Preparation

### 3.1 Materials & Tools

You will need the materials and tools shown in Tables 3-1 and 3-2, respectively, to install the SmartUPS.

**Table 3-1: Materials**

Item	Description
AC Power Input Cable	AWG16 shorter than 100m
DC Power Output Cable	AWG13 shorter than 50m
Ground Cable	5AWG yellow-green wire
Optical Fiber Cable	LC-LC SMF fsc-507, single-mode
Ethernet Cable	Outdoor Cat6 RJ-45 Ethernet cable

**Table 3-2: Tools**

				
Level bar	Marking pen	Knife	Pliers	Wrench
				
Percussion drill and drill heads	Hammer	Cross screw driver	Cable vice (crimper)	Tape measure
				
5mm L-shaped Allen wrench	Torx screw-driver	T7 screwdriver head	Cable Stripper	

### 3.2 Placement Considerations

#### 3.2.1 Environment

When determining where to place the SmartUPS unit, you need to consider factors such as climate, hydrology, geology, the possibility of earthquakes, reliable electric power, and transportation access. Refer to the technical specifications in [Appendix A](#), specifically concerning temperature and humidity

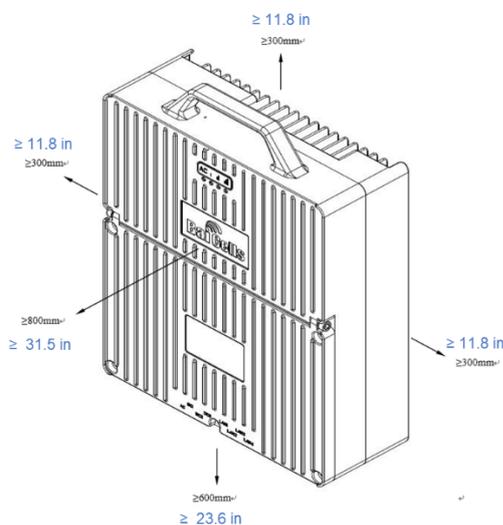
limits and voltage requirements.

Avoid locating the unit in areas where there may be extreme temperatures, harmful gases, unstable voltages, volatile vibrations, loud noises, flames, explosives, or electromagnetic interference (e.g., large radar stations, transformer substations). Avoid areas that are prone to impounded water, soaking, leakage, or condensation.

### 3.2.2 Spacing

Another consideration for planning where to install the SmartUPS unit is space allowance. Follow the guidance shown in Figure 3-1 concerning the amount of space to leave on each side, front, and back of the unit.

Figure 3-1: Spacing



### 3.3 Lightning and Grounding Protection



**Caution:** Baicells recommends testing the SmartUPS **on the ground** before installing it on a tower or other structure that may be difficult to reach.

You must protect the SmartUPS against lightning and other types of electrical overload. Follow the ground cable specifications in [Table 3-1](#). You will need to make the grounding cable based on the specific installation site where the SmartUPS will be installed. Use yellow-green wire that is no smaller than 5AWG. The wire should be no smaller than 16 mm<sup>2</sup>.

Grounding notes:

- Ground as close to the device as possible.
- The Outdoor SmartUPS connects to a reliable outdoor grounding point (earth) through one ground screw.
- The connection of the grounding points and the ground bar need to be tight and reliable. Rustproofing the terminals is required. This can be done with rust preventing paint,

antioxidation coatings, grease, and so on.

## 3.4 Weatherproof Protection

Installation of the Outdoor SmartUPS must satisfy the following waterproof requirements:

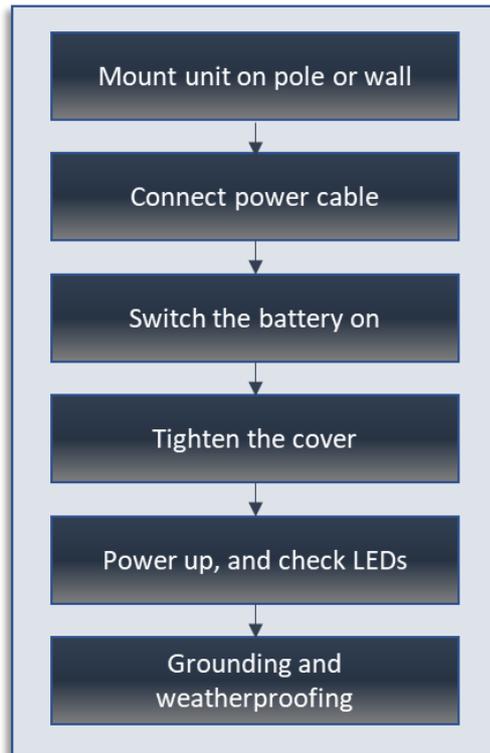
1. The power cable is configured according to the specifications and appropriate placement.
2. The screw of the door that closes over the unit's interface connections must be tightened.

## 4. Installation Procedures

### 4.1 Process Overview

Figure 4-1 provides an overview of the SmartUPS installation process. Follow each section to complete the installation.

**Figure 4-1: Installation Process**



### 4.2 Mount Unit on Pole or Wall

Refer to section [4.2.1](#) if you are installing the SmartUPS on a pole. Refer to section [4.2.2](#) if you are installing the SmartUPS on a wall.

#### 4.2.1 Pole Installation

The diameter of the pole must be between 1.6–3.9 inches (40–100 millimeters). The recommended height of the installed SmartUPS is greater than 47 inches (120 centimeters).

Follow the steps below for a pole installation.

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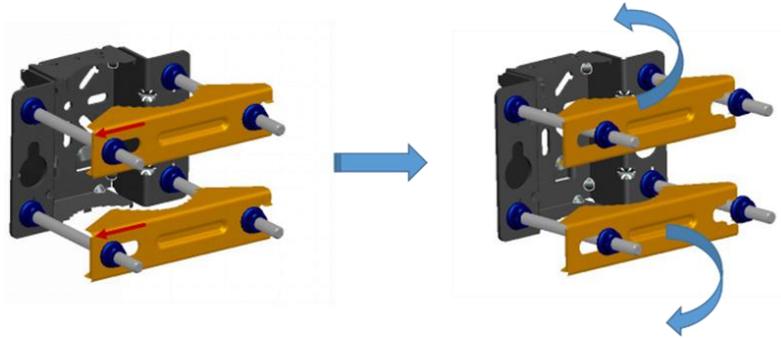
NOTE: The unit comes with the mounting bracket already assembled.

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1. Unscrew the 4 screws on the assembled bracket and slide the 2 outer omega clamps to the end of the threeadd road, as shown in Figure 4-2. Then, turn the upper omega clamp up and the lower omega clamp down so they are out of the way when you place the bracket on the

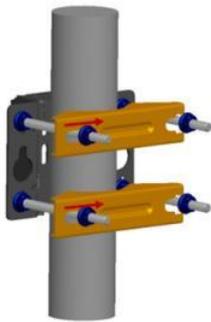
pole.

Figure 4-2: Mounting Bracket



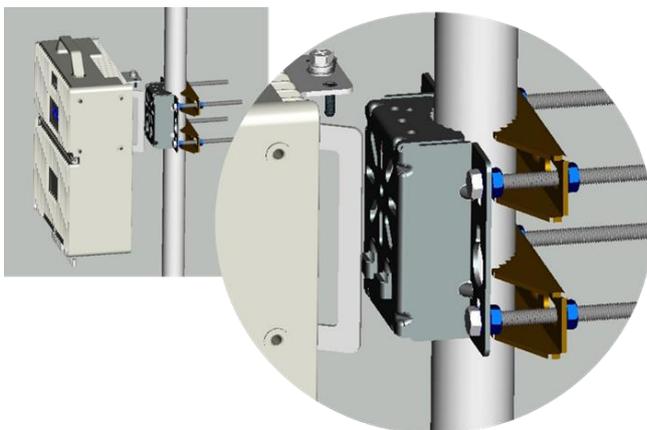
2. Fit the bracket to the pole at the appropriate height. Turn the 2 omega clamps to the proper position, as shown in Figure 4-3, and tighten the 4 screws. **Make sure the arrow on the installation bracket is pointing upward.**

Figure 4-3: Attach Bracket to Pole



3. Using the 2 pins on the back of the SmartUPS, securely attach the unit to the bracket on the pole (Figure 4-4).

Figure 4-4: Attach SmartUPS to Bracket



4. Tighten the 2 screws on the top of the bracket using a cross screwdriver (Figure 4-5).

Figure 4-5: SmartUPS Pole Installation

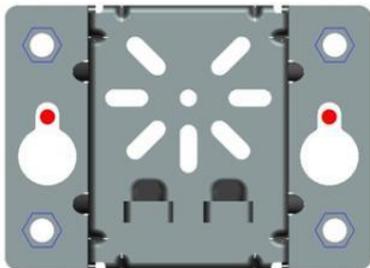


## 4.2.2 Wall Installation

When installing the SmartUPS on a wall, the wall must bear at least 4 times the weight of the SmartUPS.

1. Take apart the assembled installation bracket kit.
2. Fit the mounting bracket on the wall and mark the drilling locations (Figure 4-6). **Make sure the arrow on the bracket is pointing upward.**

Figure 4-6: Mark Drilling Locations



3. Drill (2) 10-mm diameter and 70-mm deep holes in the wall on the marked locations, and insert the expansion pipes.
4. Check the up/down direction of the installation rack, and then fit the SmartUPS unit to the wall bracket using the M8 x 80 expansion bolts.
5. Tighten the 2 screws on the top of the bracket using a cross screwdriver.

## 4.3 Connect the Power Cables

Review the AC and DC power cable specifications provided in [Table 3-1](#). Since each installation site is different, the installer must determine the appropriate length of the cables. The power adaptor is, therefore, shipped with bare terminal ends. You will need to assemble the power plugs. The following sections explain how to prepare and connect the input and the output power.

Baicells recommends keeping the power cable length under 330 ft (100m).

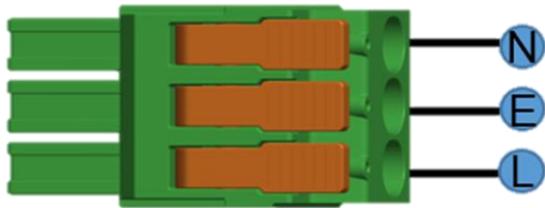
NOTE 1: Refer to [section 3.3](#), Lightning and Grounding Protection, before connecting the power cable.

NOTE 2: If you will be using a solar panel and not AC power to supply the SmartUPS, please contact your Baicells representative to ensure you receive the correct installation guide. The SmartUPS model will be different when using solar input power.

### 4.3.1 Connect Input Power

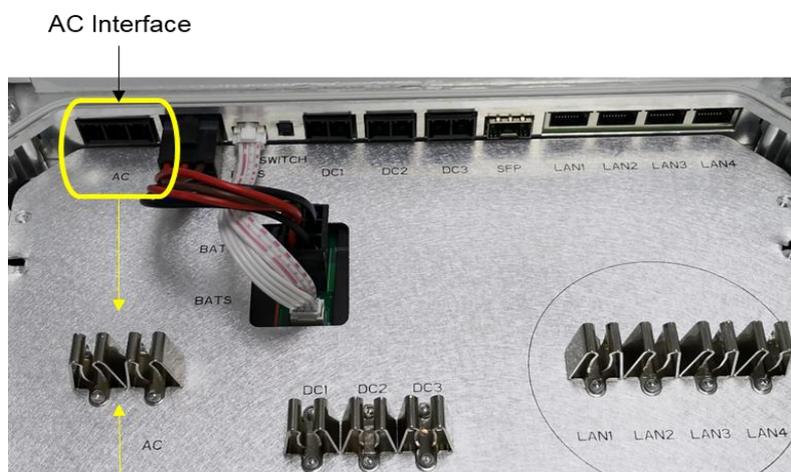
The input power uses a 3-pin power terminal. The 3-pin power plug, as shown in Figure 4-7, requires a “+” live/positive wire (L), a neutral/negative “-” wire (N), and a ground wire (E). Follow the steps below to assemble the input power plug and connect it to the SmartUPS.

Figure 4-7: Input Power Terminal



1. **Prepare the wires:** In preparation for attaching the wires to the power terminals, use a wire stripper to strip 0.5 inch (12mm) of the insulating layer.
2. **Assemble the power plug:** Refer to the labels on the power plug (Figure x-x) to connect the live wire (L), neutral wire (N), and ground wire (E) to the corresponding terminals on the plug, and tighten the screws.
3. **Connect to SmartUPS:** Connect the assembled input power plug to the **AC** interface that is inside the SmartUPS wiring cavity. Lay the wires using the wiring guides, stretch the wires through the wiring duct slot so that they stretch out of the wiring cavity. Refer to Figure 4-8.

Figure 4-8: SmartUPS AC Interface



Wiring Guides

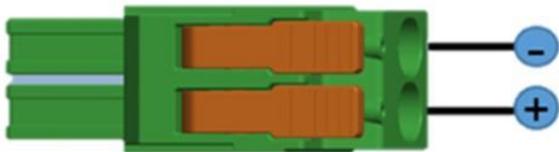
4. **Connect to power:** Connect the other end of the wires to an AC plug, and plug it into an AC outlet.
  - a. If the outlet is indoors, place the power adaptor indoor.
  - b. If the outlet is outdoors, place the power adaptor in a waterproof box.

NOTE: After the cable connections in the wiring cavity are complete, you will tighten the screws on the cover using an M4 cross screwdriver.

### 4.3.2 Connect Output Power

The output power uses a 2-pin power plug. The 2-pin power plug requires a live/positive wire (+) and a neutral/negative wire (-), as shown in Figure 4-9. Follow the steps below to assemble the output power plug and connect it to the eNodeB or other device that will use SmartUPS backup power.

Figure 4-9: Output Power Terminal

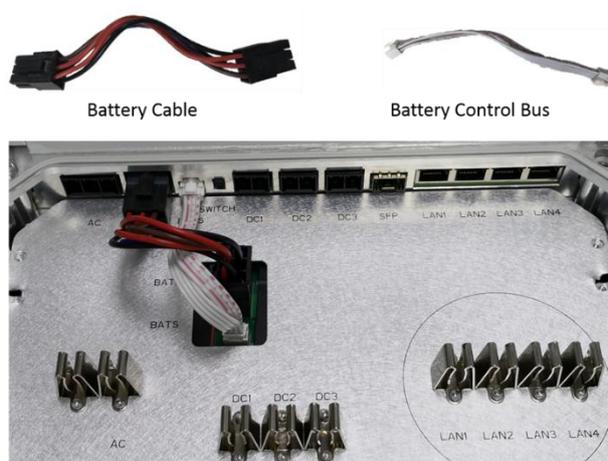


1. **Prepare the wires:** In preparation for attaching the wires to the terminals on the plug, use a wire stripper to strip .5 inch (12mm) of the insulating layer.
2. **Assemble the power plug:** Refer to the labels on the power plug (Figure 4-9) to connect the live wire (+) and neutral wire (-) to the corresponding terminals on the plug, and tighten the screws. Lay the wires along the wiring duct slot so that they stretch out of the wiring cavity.
3. **Connect to eNodeB or other device:** Connect the assembled output power plug to the **DC** interface on the eNodeB or other device that will use SmartUPS backup power.

## 4.4 Connect Battery Cable & Control Bus

Connect the battery cable and battery control bus to the interfaces as shown in Figure 4-10.

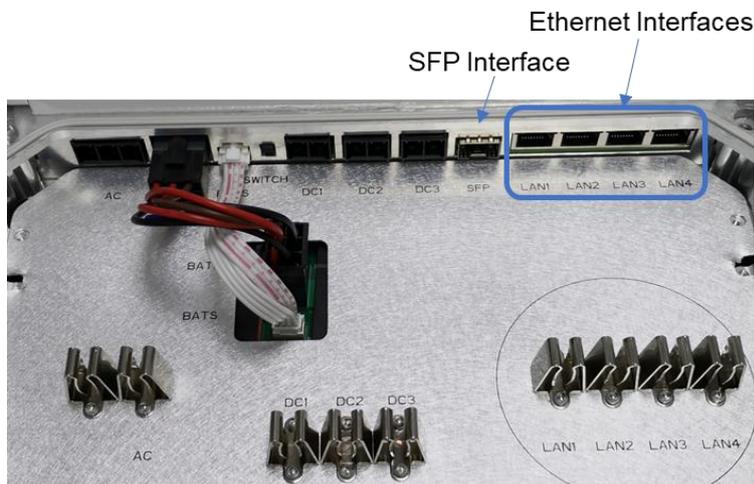
Figure 4-10: Battery Cable & Control Bus



## 4.5 Connect SFP & Ethernet Cable

As required for your installation, connect the SFP or Ethernet cables used for backhauling or debugging. Refer to Figure 4-11.

**Figure 4-11: SFP & Ethernet Interfaces**



## 4.6 Connect Ground Cable

Review the ground cable specifications provided in [Table 3-1](#), and the lightning and grounding guidelines described in [section 3.3](#). Since each installation site is different, the installer must determine the appropriate length of the cable.

The SmartUPS has 2 grounding screws that are located on the bottom of the unit. Unscrew one of the grounding screws, connect the ground cable, and then fasten the screw securely. The other end of the ground cable needs to be connected to a good grounding point (earth).

## 4.7 Turn on Battery Switch & Check LEDs

Turn on the battery switch (Figure 4-12) before closing the wiring cavity cover, which is covered in the next section.

**Figure 4-12: Battery Switch**

Refer to [Table 1-2 LEDs](#) to check that the power LED is indicating the SmartUPS is powered on. As the SmartUPS begins accumulating current, you will be able to see the battery LEDs progressively light up: 30%, 70%, and then 100%. At 100%, the SmartUPS is fully charged.

## 4.8 Close the Wiring Cavity Cover

After all of the cables have been connected to the SmartUPS, the battery switch has been turned ON, and the LEDs are lighting as expected, close the cover on the wiring cavity and use an M4 cross screwdriver to tighten the screws.

## 5. Configuration

### 5.1 Preparation

1. Turn on the battery switch of SmartUPS.



2. Indicators will light up. (If indicators do not light up, connect to AC power.)

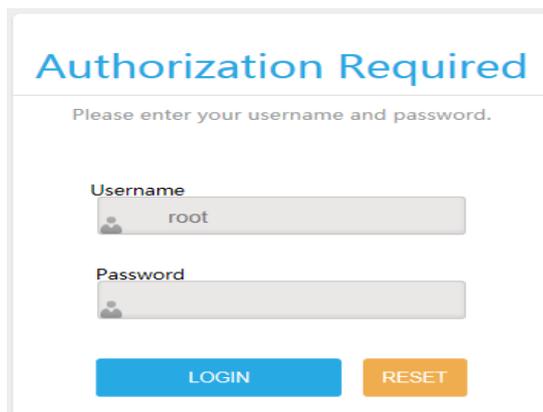


3. Connect the PC to the Ethernet interface of SmartUPS through Ethernet cable, and configure the IP address is 192.168.150.X on PC side. The following configuration can be operated.

### 5.2 Log In

In the browser's address column, type in <http://192.168.150.1>, click "Enter" to open web client login page, as shown in Figure 5-1.

Figure 5-2 UPS Web Client Login Page

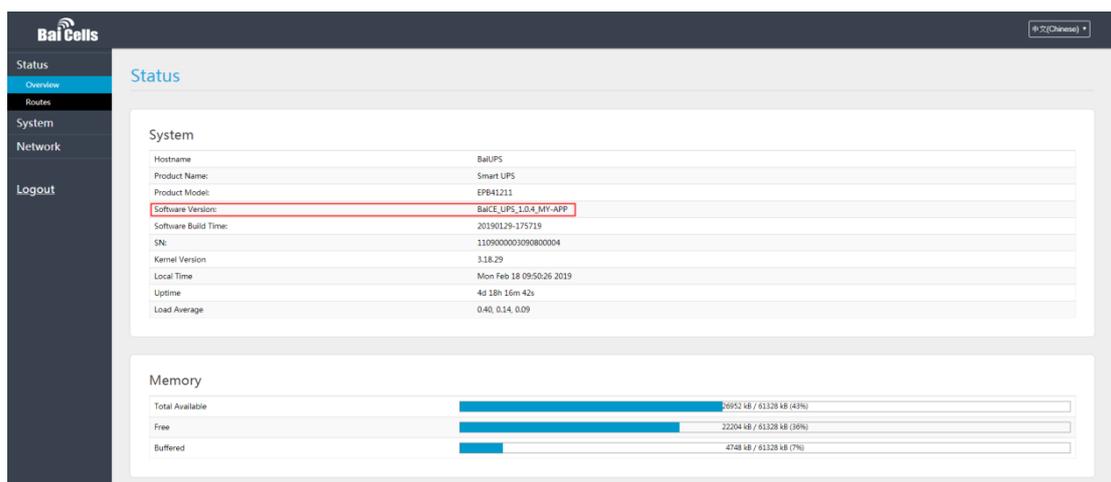


The image shows a web client login page titled "Authorization Required". It prompts the user to enter their username and password. The username field contains "root" and the password field is empty. There are "LOGIN" and "RESET" buttons at the bottom.

Field	Value
Username	root
Password	

Input user name "root", password "root123", and click "Login". The homepage of web client is given in Figure 5-3. The home page displays basic information of Smart UPS.

Figure 5-4 Home Page of Web Client



The image shows the home page of the Bai Cells web client. The page displays system status information, including hostname, product name, product model, software version, software build time, SN, kernel version, local time, uptime, and load average. The software version is highlighted with a red box.

System	Value
Hostname	BaiUPS
Product Name	Smart UPS
Product Model	EP841211
Software Version	BaiCE_UPS_L0.4_MY-APP
Software Build Time	20190129-175719
SN	110900003090800004
Kernel Version	3.18.29
Local Time	Mon Feb 18 09:50:26 2019
Uptime	4d 18h 16m 42s
Load Average	0.40, 0.14, 0.09

Memory	Value
Total Available	20952 kB / 61328 kB (43%)
Free	22204 kB / 61328 kB (36%)
Buffered	4748 kB / 61328 kB (7%)

## 5.3 Configure NTP

This page includes the time zone and the NTP configuration, which are configured according to the actual needs. If the NTP is used by the base station as an external clock source, up to three NTP servers are supported, where one for master NTP service and the others for backup.

1. In the navigation column in the left, select "System > System" to enter the time zone and NTP setting page, as shown in Figure 5-5.

Figure 5-6 Time Zone and NTP Server Settings

System Properties

General Settings | Logging | Language and Style

Local Time: Mon Dec 17 17:03:08 2018 [SYNC WITH BROWSER](#)

Hostname: BaiUPS

Timezone: Asia/Shanghai ▼

---

Time Synchronization

Enable NTP client

Provide NTP server

NTP server candidates

- time.windows.com
- time.nist.gov
- openwrt.pool.ntp.org

[SAVE & APPLY](#) [SAVE](#) [RESET](#)

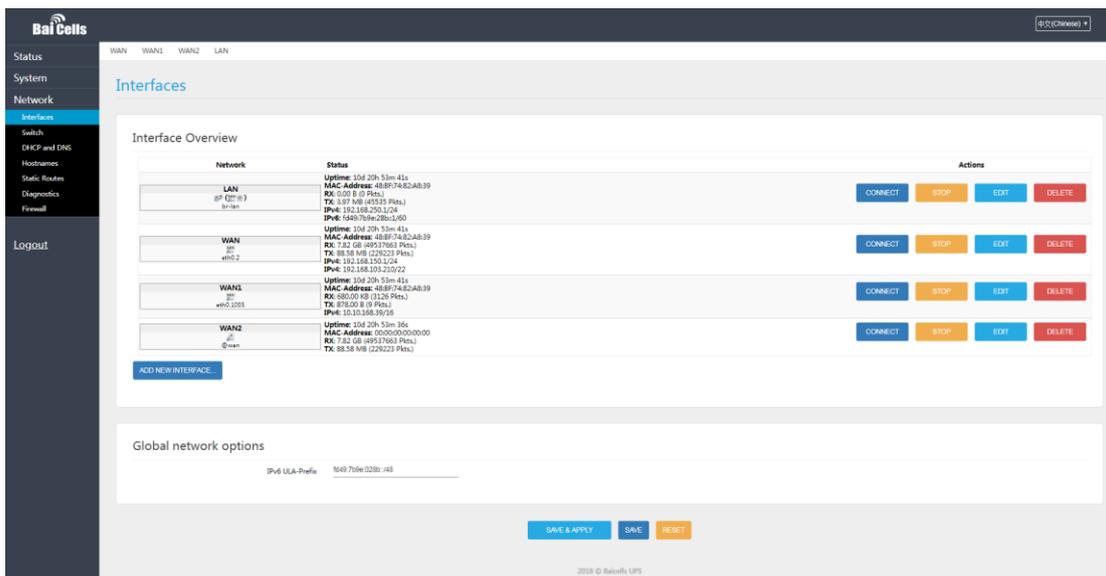
Click **“SAVE & APPLY”** to complete the time zone and NTP server configuration

## 5.4 Network Settings

1. In the left navigation bar, choose **“Network> Interfaces>WAN”**, to enter the network interface configuration page, shown in Figure 5-7 WAN Settings and Table 5-1 WAN Interface Parameter Description

In **“Network”**, you can complete WAN settings. WAN1 for VLAN, WAN2 for DHCP

Figure 5-7 WAN Settings



1. Input the configuration parameters for the WAN interface, which supports three protocols, namely, DHCP, Static IP. The DHCP and Static IP are recommended. The configuration parameters depend on which protocol is selected. The descriptions of the parameters are given in Table 5-1.

Table 5-1 WAN Interface Parameter Description

Parameter Name	Description
Protocol	The interface protocol used by WAN interface, include: <ul style="list-style-type: none"> <li>• DHCP: If DHCP is selected, no parameter is needed to be configured.</li> <li>• Static IP</li> </ul>
IPv4 address	When “ <b>Protocol</b> ” is “ <b>Static Address</b> ”, the parameter displays. IP address of the WAN interface.
IPv4 netmask	When “ <b>Protocol</b> ” is “ <b>Static Address</b> ”, the parameter displays. Subnet mask of the WAN interface.
IPv4 gateway	When “ <b>Protocol</b> ” is “ <b>Static Address</b> ”, the parameter displays. IP address of the WAN interface’s gateway.
DNS Servers	When “ <b>Protocol</b> ” is “ <b>Static Address</b> ”, the parameter displays. IP address of the DNS server. Multiple IP addresses are allowed.

2. Click “**Save**” to complete the WAN interface configuration.

## 5.5 Configure VLAN

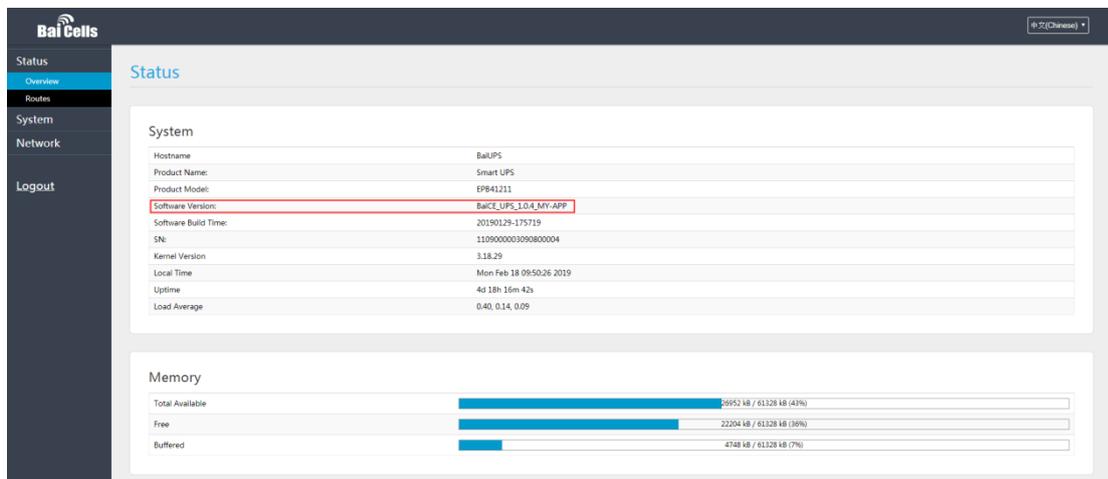
When the UPS needs VLAN ID to connect to OMC, it should be configured the WAN interface with VLAN ID.

Two steps should be followed:

1. Set VLAN ID, it can be done either by modifying existing VLAN ID, or by adding one new VLAN ID (other than VLAN ID 1, VLAN ID 2)
2. Set the IP protocol, IP address of the WAN1 interface (new VLAN ID bundled)

Please make sure the UPS software version is above **BaiCE\_UPS\_1.0.4\_MY-APP**. It can be checked by one web browser.

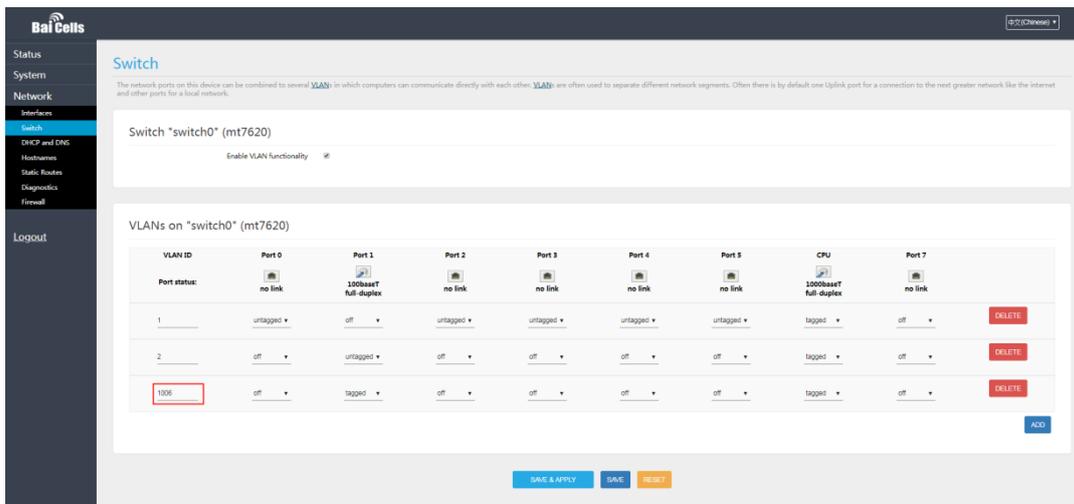
Figure 5-8 UPS software version



The default VLAN TAG is 1005, in case 1005 is not the chosen VLAN ID, please go through the following steps.

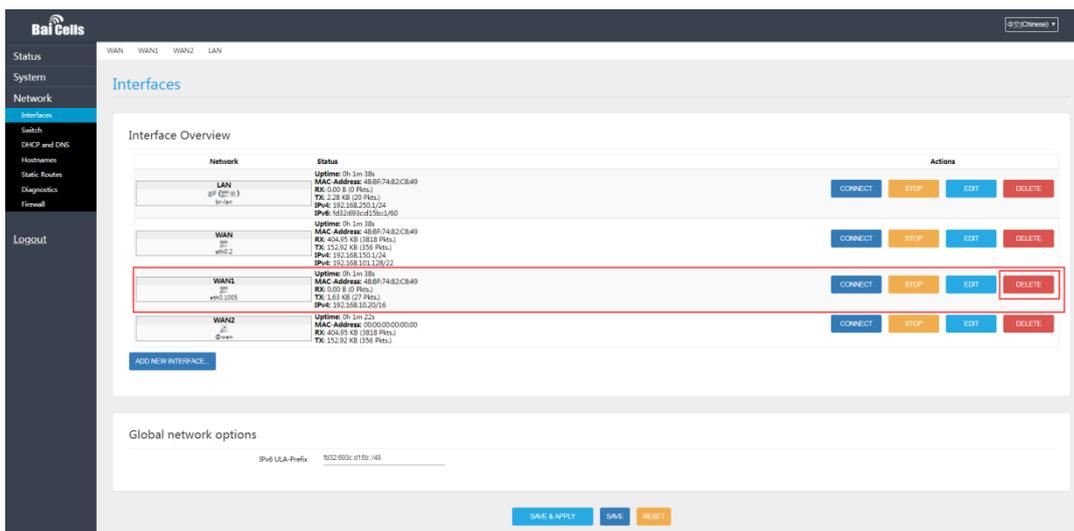
1. Go to the Switch setup page, modify the VLAN ID, then click 'SAVE & APPLY' button, shown in Figure 5-9 modify VID

Figure 5-9 modify VID



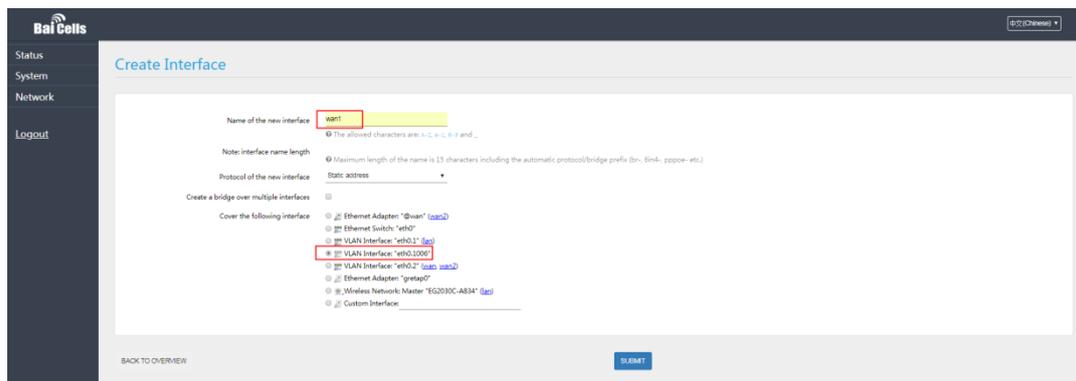
2. Delete the existing WAN1 eth.1005 interface, shown in Figure 5-10 delete existing WAN1 Interface

Figure 5-10 delete existing WAN1 Interface



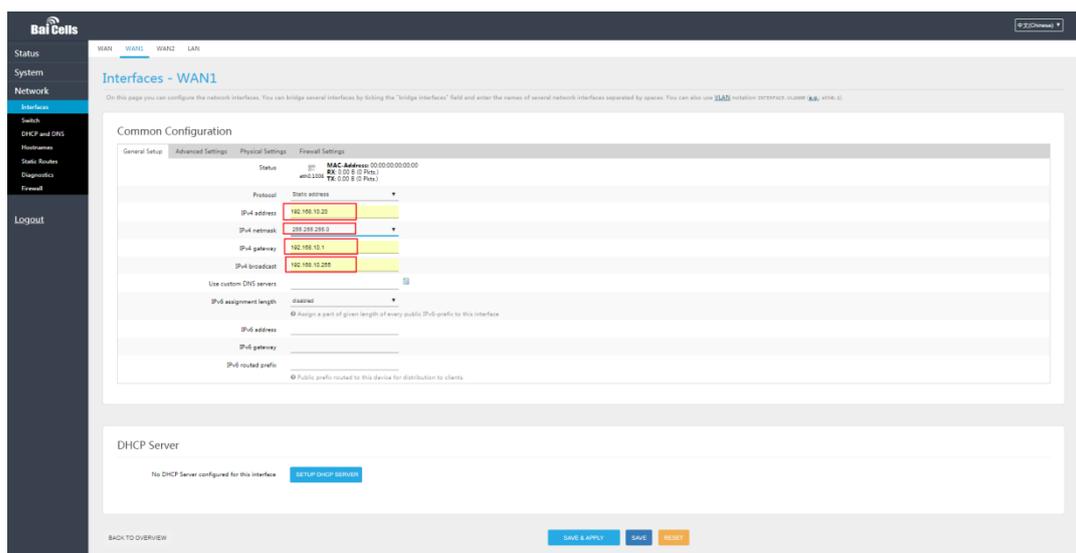
3. Click 'ADD NEW INTERFACE...' button to create new WAN1 interface, shown in Figure 5-11 Create WAN1 Interface with VLAN ID Settings. Set the interface name as 'wan1', select VLAN Interface: "eth0.VID#" (wan1) where VID# is the VID set in first step

Figure 5-11 Create WAN1 Interface with VLAN ID Settings



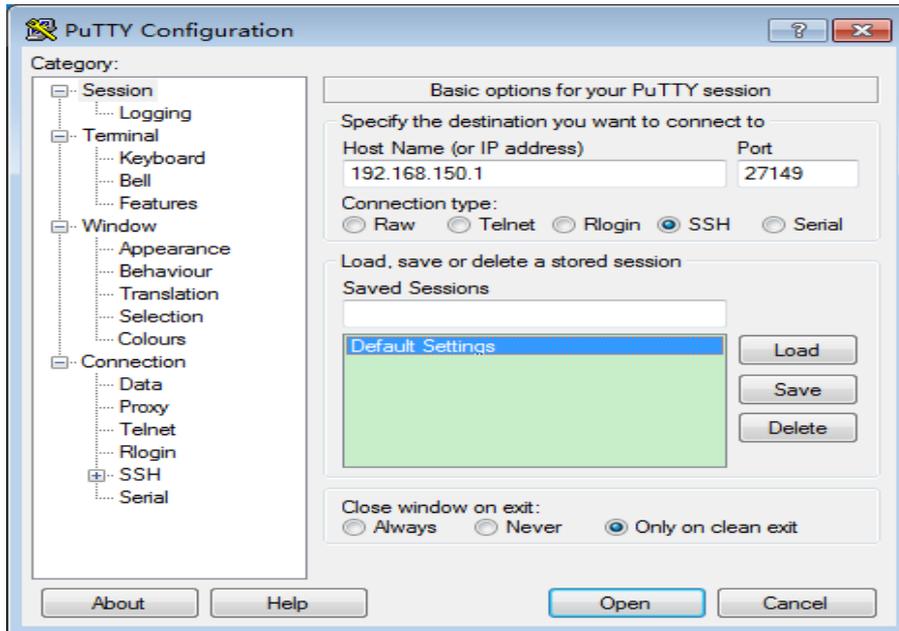
4. Set up the WAN1 interface configuration, shown in Figure 5-12 WAN1 configuration Settings. Setup the IP address, mask, gateway, broadcast address, then click the 'SAVE&APPLY' button

Figure 5-12 WAN1 configuration Settings



5. To make sure all those settings are done correctly, next step is to check the UPS configuration file
6. Start putty or other ssh client tools program. Here we take putty as ssh client, set the configuration as Figure 5-13 ssh client configuration

Figure 5-13 ssh client configuration



7. Click YES to accept the ssh server's rsa fingerprint. Figure 5-14 server's fingerprint

Figure 5-14 server's fingerprint



8. Using vi to check the network configuration file. Figure 5-15 UPS shell environment



Figure 5-16 UPS network configuration file

```
192.168.150.1 - PuTTY
config interface 'loopback'
    option ifname 'lo'
    option proto 'static'
    option ipaddr '127.0.0.1'
    option netmask '255.0.0.0'

config globals 'globals'
    option ula_prefix 'fd07:be2a:d6f4::/48'

config interface 'lan'
    option ifname 'eth0.1'
    option macaddr '48:bf:74:82:a8:39'
    option type 'bridge'
    option proto 'static'
    option ipaddr '192.168.250.1'
    option netmask '255.255.255.0'
    option ip6assign '60'

config interface 'wan'
    option ifname 'eth0.2'
    option macaddr '48:bf:74:82:a8:39'
    option proto 'static'
    option ipaddr '192.168.150.1'
    option netmask '255.255.255.0'

config interface 'wan2'
    option ifname '@wan'
    option proto 'dhcp'

config interface 'wan1'
    option ifname 'eth0.1005'
    option mtu '1496'
    option proto 'static'
    option ipaddr '192.168.10.20'
    option netmask '255.255.255.0'
    option macaddr '48:bf:74:82:a8:39'

config switch
    option name 'switch0'
    option reset '1'
    option enable_vlan '1'

config switch_vlan
    option device 'switch0'
    option vlan '1'
    option vid '1'
    option ports '0 2 3 4 5 6t'

config switch_vlan
    option device 'switch0'
    option vlan '2'
    option vid '2'
    option ports '1 6t'

config switch_vlan
    option device 'switch0'
    option vlan '3'
    option vid '1005'
    option ports '1t 6t'

~
- /etc/config/network 61/61 100%
```



## Appendix A: Technical Specifications

### System Specifications

Dimensions (HxWxD)	10.6 x 4 x 12.6 inches 270 x 105 x 320 millimeters
Weight	5Ah – 15.2 lbs / 6.9 kg 10Ah – 18.7 lbs / 8.5 kg
Cooling Mode	Natural cooling
Installation Mode	Pole or wall
Pole Diameter Support	4 to 8.3 in / 105 to 210 mm
Noise Grade	≤ 35 dB (A) @ 1.5 m Meets standard GR487
Ingress Protection Rating	IP66

### Power Performance Specifications

Input Voltage	110 VAC (90 to 264 VAC)
Battery Capacity	5Ah or 10Ah Lithium Ion. Optional external battery available for 48V 20Ah and battery N+1 ( $N \leq 2$ ) parallel.
Output Voltage	37 to 54 VDC
Total Output	200 Watts - 5 AMP battery, 10 AMP battery 400 Watts – 10 AMP battery Future: 1.5kW external customized battery

### Communications Specifications

Switch	Max 4-port Gigabit Ethernet RJ-45 switch port
SFP	1 Gigabit SFP cage
PoE Port	1 PoE+ (use with LAN1)

## Environmental Specifications

Operating Temperature Range	<p>-40°F to 159°F / -40°C to 55°C (solar radiation included)</p> <ul style="list-style-type: none"> <li>• <b>Rectifier:</b></li> </ul> <p>When solar radiation:-40° C to +50° C          No solar radiation: -40° C to +55° C          Discharge: -40°C to 55°C</p> <ul style="list-style-type: none"> <li>• <b>Battery:</b></li> </ul> <p>When solar radiation:-40° C to +45° C          No solar radiation: -40° C to +55° C</p>
Storage Temperature Range	<p>-4°F to 158°F          -20°C to 70°C</p>
Operating Humidity Range	5% to 95% RH, no dewdrops
Altitude	0-4000m (2000m to 4000m). With every 200m altitude increase, max operating temperature decreases 1°C.

## Global Part Numbers

### SmartUPS:

EPB41211	200W, 5A/H battery, (1) 48VDC outlet, 4-port exchange, PoE+ Outdoor SmartUPS. Extended battery support. With network management.
EPB42121	400W, 10A/H battery, (2) 48VDC outlet, Optical, 4-port exchange, (1) PoE+ Outdoor SmartUPS. Extended battery support. With network management.
EPB42125	400W, 10A/H battery, (2) 48VDC outlet, Optical, 3-port exchange, (3) <b>PoE++</b> Outdoor SmartUPS. Extended battery support. With network management.
EPB93531	<p>1500W, 20A/H battery, (3) 48VDC outlet, Optical, 3-port exchange, (1) PoE+ Outdoor SmartUPS. Extended battery</p> <p>Single power output up to 2 kilowatts maximum ,</p> <p>Support N+1 (<math>N \leq 2</math>) power</p> <p>supply parallel Support battery N+1 (<math>N \leq 2</math>) parallel, With network</p>

	management
EPB93535	1500W, 20A/H battery, (3) 48VDC outlet, Optical, 3-port exchange, (3) PoE++ Outdoor SmartUPS. Extended battery , Single power output up to 2 kilowatts maximum , Support N+1 (N ≤ 2) power supply parallel Support battery N+1 (N ≤ 2) parallel, With network management

Management System:

CSPMS001	Power Management System
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Battery Backup:

EB421	20A Power Box Extended Battery, Support battery N+1 (N ≤ 2) parallel
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## Appendix B: FAQs

If you have questions, please check the list of frequently asked questions (FAQs) on the Baicells support website or the Facebook support forum.

- Baicells support website - <https://na.Baicells.com/support/>
- Baicells support forum on Facebook - <https://www.facebook.com/groups/Baicellsoperatorsupportgroup/>

## **Appendix C: FCC Compliance**

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.