

# Comba Battery Backup Unit

CPBBUV2-48xxx-UL

## Quick Installation Guide

Version: 1.1

**THIS INSTALLATION GUIDE IS FOR FIRMWARE VERSION V8501 ONLY.**

### **IMPORTANT! READ BELOW**

**UPON SYSTEM INSTALL, ONCE THE SYSTEM IS FULLY CONNECTED AND ALL BREAKERS ARE TURNED ON, PRESS AND HOLD THE BATTERY “RESET” BUTTON FOR 30-60 SECONDS UNTIL POWER UP. IF BATTERY STATUS ON WEBOMT SOFTWARE SHOWS “CUT OFF” CHECK THE BATTERY VOLTAGE. IF THE BATTERY MEASURES OVER 46V, RESET CUT OFF STATUS IN MANAGEMENT TAB OF WEBOMT. IF BATTERIES MEASURE LESS THAN 46V, CONTACT COMBA TECHNICAL SUPPORT FOR HELP.**

**COMBA TECHNICAL SUPPORT: (866) 802-7961 ext 4**

## Contents

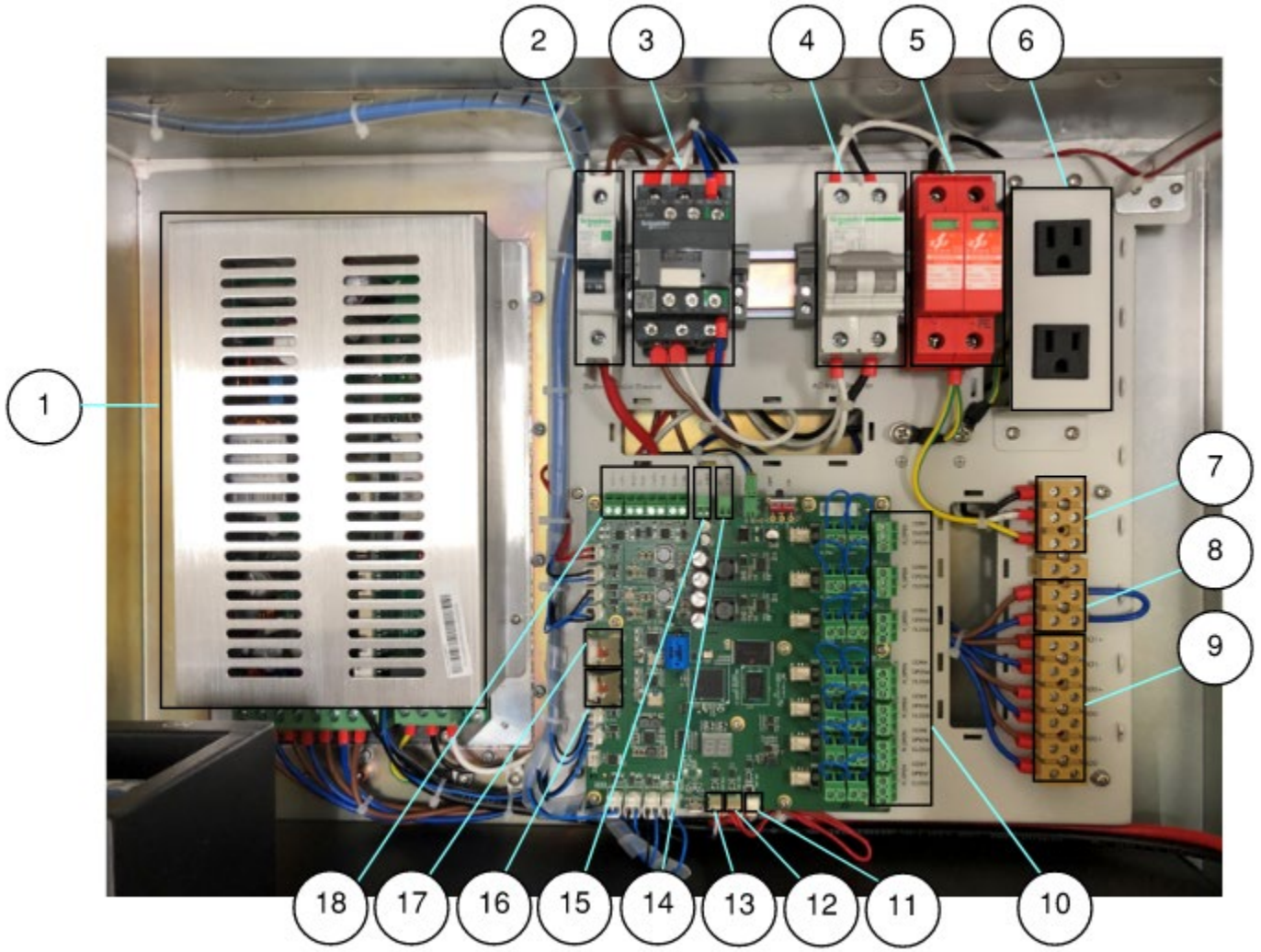
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## LiFePO4 battery explanation and benefits

- **Lightweight, Powerhouse**  
Lithium Iron Phosphate (LiFePO4) batteries typically weigh up to half as much and provide up to 50% more energy than traditional lead acid batteries.
- **Lifespan performance and maintenance**  
Lead Acid: 3-4 years / LiFePO4: 7-10 years for battery storage application  
Lead Acid: will not completely discharge under high temperature / LiFePO4: 100% discharge  
Lead Acid: manual inspection for battery health / LiFePO4: checking parameters by remote login
- **Ultra-Long Life**  
LiFePO4 batteries cycle 5,000 times or more, and higher rates of discharge minimally affect cycle life. Lead-acid batteries typically deliver only 300-500 cycles, as higher levels of discharge greatly reduce cycle life.
- **Green Battery Material**  
Lead-Acid batteries contain Lead, Sulfuric Acid, Lead Sulfate and Lead Alloys which are all carcinogenic and toxic to blood, blood vessel and the nervous system.  
LiFePO4 batteries do not contain any toxic or heavy metals and are not hazardous to the environment during manufacturing and consumption.



**System Diagram:**



Item	Description	Item	Description	Item	Description
1	Charger	7	AC Input	13	Charger Communication
2	Battery Output Breaker	8	EPO Connection	14	24V DC Output
3	Relay for EPO Control	9	48V DC Loads	15	12V DC Output
4	AC Input Breaker	10	Dry Contact Outputs	16	OMT Port
5	Surge Arrestor	11	Annunciator Communication	17	LAN Port
6	110V AC Outlets	12	Battery Communication	18	External Alarm Inputs

## Battery Backup Shipping Contents:

The BBU is shipped with the following. Please check accessories to ensure all are included:

1. Qty. (1) BBU Chassis
2. Qty. (1) 100AH or 60AH LiFePO<sub>4</sub> Battery
3. Qty. (4) Liquid Tight Connectors
4. Qty. (1) Ground Wire
5. Qty. (1) Accessory Kit (Includes 2 Keys, Factory QC Report, and Concrete Mounting Bolts. Note some additional accessories may be included that are relevant only to Lead Acid Battery Installs – these can be discarded)

**Note: For Remote Annunciator, See Remote Annunciator Quick Install Guide.**

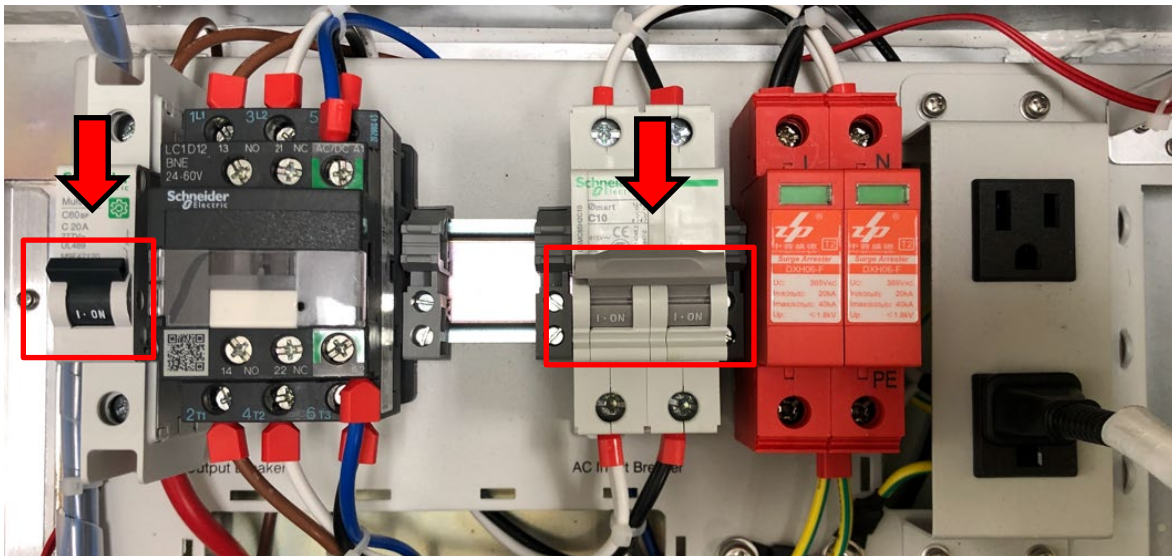
## Before Starting

*Before beginning installation, check the battery and chassis for any shipping damage. If there are any signs of damage to the battery chassis, damaged connections, or other deformities, contact Comba technical support for assistance. Note that the batteries may be shipped with an electrical grease on the battery terminals to prevent corrosion and oxidation.*

After installing the chassis and before following the rest of the procedure, ensure the chassis is properly grounded using the provided ground wire or an equivalent. The unit must be grounded per local or national electric code.

## Cable Connections:

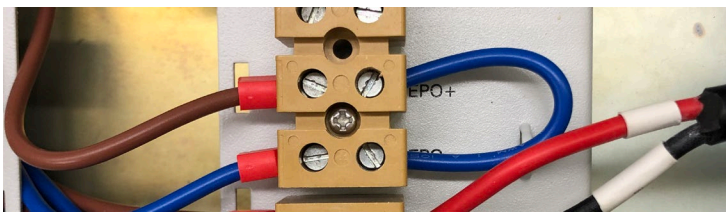
1. Turn off AC Input Breaker and Battery Output Breaker
  - AC Input Breaker disconnects the AC supply to the Charger
  - Battery Output Breaker disconnects the Battery from the Load/Charger





## 2. (Optional) Install EPO switch

- If you wish to install an EPO switch: Note that the EPO connections have a preinstalled wire that shorts the EPO+ and EPO-. Remove the preinstalled wire and connect the EPO switch; then turn the EPO switch to its “Closed” position (Normal Status) and continue to the next step
- DO NOT Set the EPO switch to “Open” (Cut Off Status)
- The EPO switch can be installed at a remote location; note that the voltage-drop caused by the wiring must be <14V
- The EPO function is triggered from a relay and this relay is energized by the battery or the charger; if the battery is over-discharged, then the EPO function may not work properly
- If you do not wish to use an EPO switch, then continue to the next step directly (do not remove the preinstalled shorting wire)



## 3. (Optional) Install Remote Annunciator: See Annunciator Quick Install Guide.

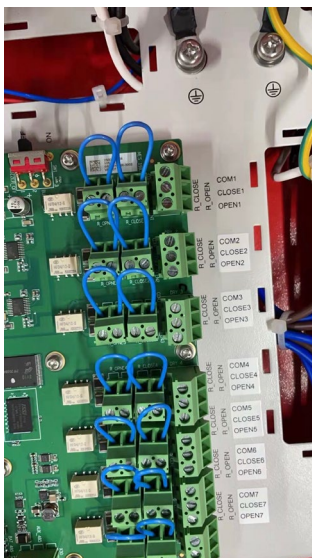
## 4. Wire dry contact alarms and external alarms

### Definitions:

**Dry Contact Alarm:** This is a standard Form-C Relay provided that will change state upon alarm. These will be connected to the fire alarm control panel (or your own provided relay).

**External Alarm Input:** This is a way for the BBU to receive dry contact alarms from other units – in most applications, this will be defined as below. Only connect dry contact outputs from the BDA/other units to these external alarm inputs – connecting anything else may result in damage to the unit.

- EXT ALM 1: Signal Booster Fail
- EXT ALM 2: Donor Antenna Malfunction



Dry contact alarms default configurations:

- ALM 1: AC Fail
- ALM 2: Battery Low
- ALM 3: Charger Fail
- ALM 4: EXT ALM 1
- ALM 5: EXT ALM 2
- ALM 6: EXT ALM 3
- ALM 7: EXT ALM 4

If connecting the BBU directly to a fire alarm control panel, use these dry contacts with the proper NO or NC alarm to connect. You may place an EOL resistor here, which should be provided by the fire alarm contractor.

If you need to define different alarms, it can be done using the WEBOMT tool.

Note that the BBU dry contact alarms provide both Normally Open and Normally Closed configurations; refer to the picture above for wiring.

Alarms from external devices (BDA, AMS, etc.) can be tied into BBU EXT ALMs so they can be annunciated using the LEDs from the BBU front panel. In order to match the order of the BBU Annunciator LEDs:

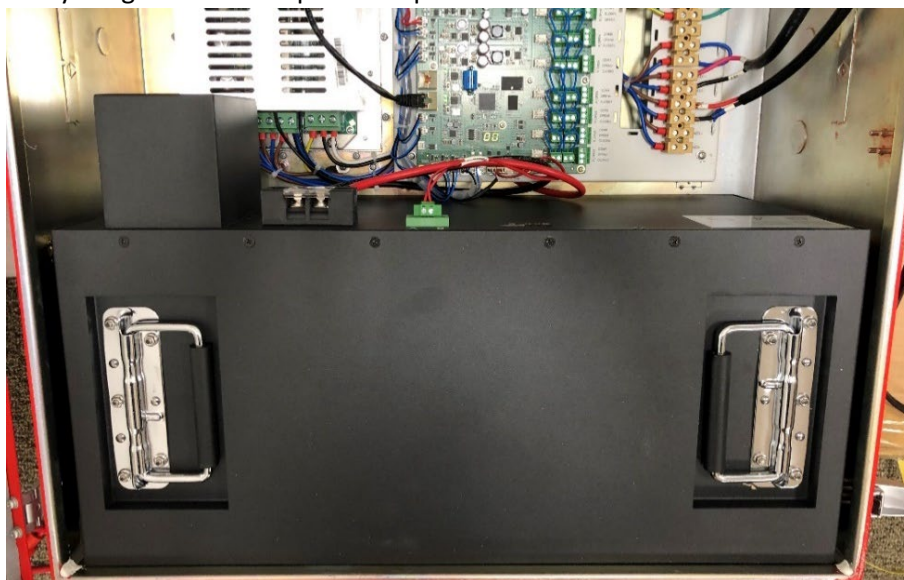
- EXT ALM 1 shall tie to Signal Booster Fail (from BDA)
- EXT ALM 2 shall tie to Antenna Malfunction (Normally from BDA)
- EXT ALM 3 shall tie to System Component Failure (Normally from BDA or AMS)
- EXT ALM 4 not defined



By default, the EXT ALMs work with Normally Open dry contact alarm wiring; the dry contact alarm type (Normally Open or Normally Closed) can be configured using the WEBOMT tool. The two wires from dry contact alarms can be tied to EXT ALMs positive and negative termination block – the polarity does not matter.

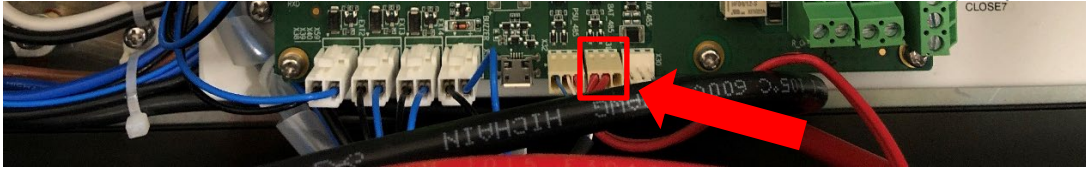
## 5. Connect the Battery

Install the battery into the chassis, picking up by the handles and sliding the battery to the back of the chassis. The battery weighs about 120 pounds – please handle with caution.

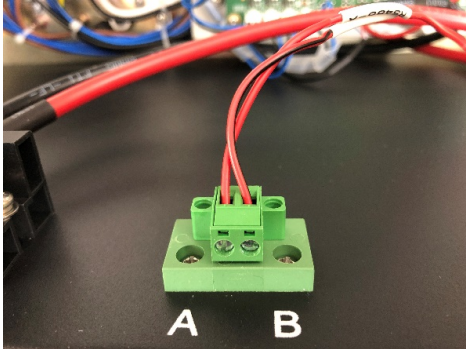


After the battery is installed, connect the communication cable first. Note: The communication cable is how the LiFePO<sub>4</sub> Battery Management System (BMS) communications with the BBU MCU.

- Connect the wire labeled **RS485-A** on the MCU to **Terminal A** on the battery.
- Connect the wire labeled **RS485-B** on the MCU to **Terminal B** on the battery.

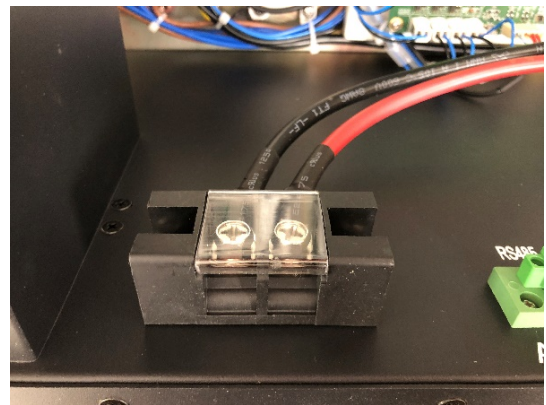


The battery communication cable is the middle connection on the bottom of the MCU board.



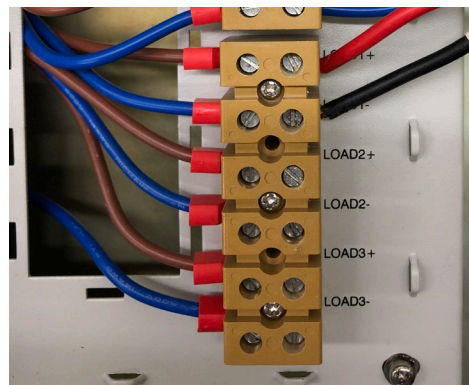
Upon receipt of the unit, these wires are zip tied to the chassis. Carefully cut the zip tie and connect the wire labeled RS485-A to Terminal A, and RS485-B to Terminal B

Next, connect the red battery cable to the positive terminal on the battery, and the black battery cable to the negative terminal on the battery. Replace the plastic cover when complete.



## 6. Install wires for load

- BBU provides 3 sets of terminations for loads
- All 3 loads share the same power being supplied by the charger or batteries
- Note: All Comba BDAs, MUs, RUs, and other -48V products come with a power cable.

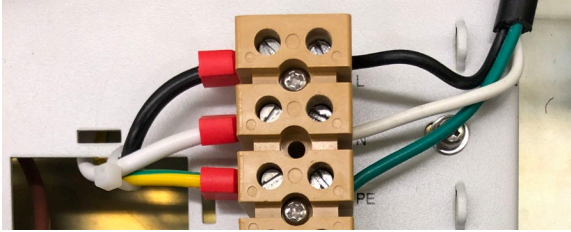




**7. Install AC input wires**

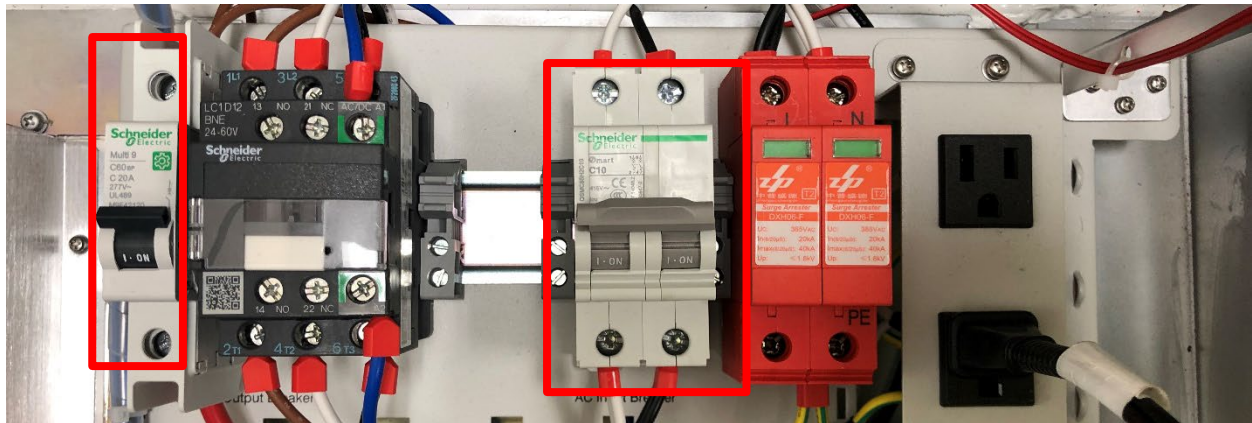
Primary Lead / Earthing Lead: min. 14 AWG (cable is not included).

**Note: This must be done by a qualified electrician in your local jurisdiction.**

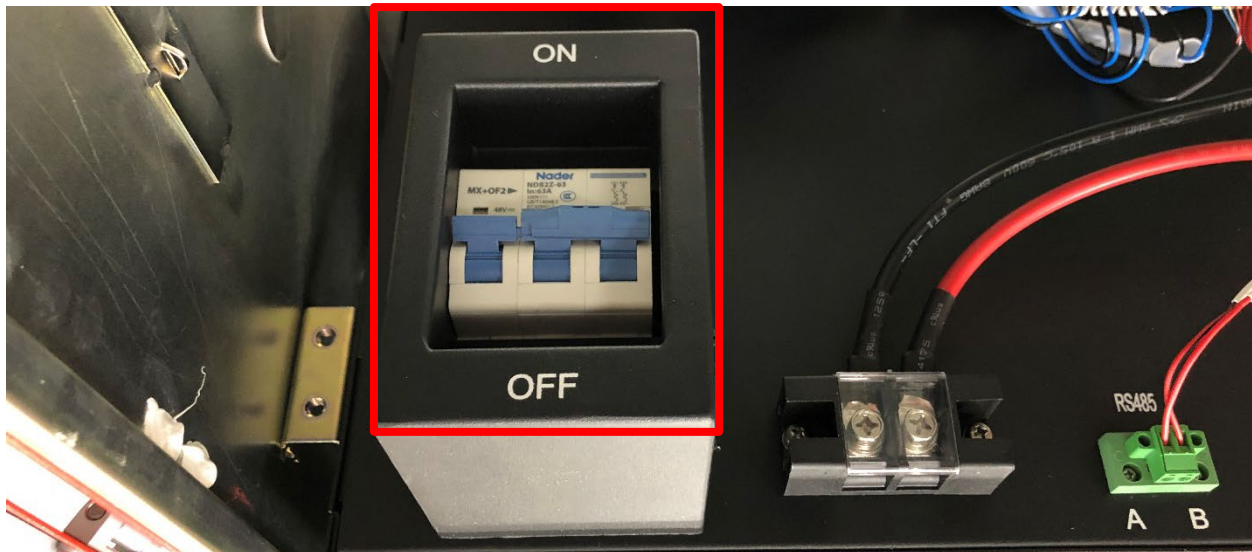


**8. Turning on the system.**

Turn on both the AC and DC breakers at the top of the unit:

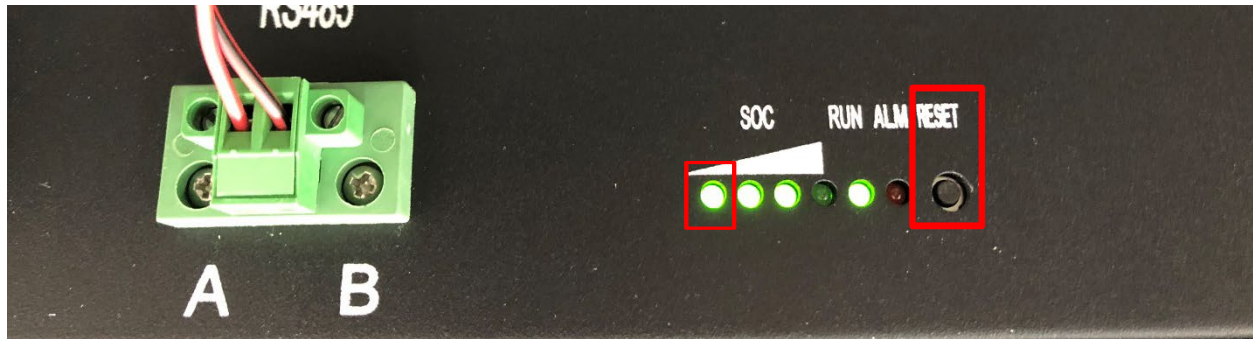


Turn on the breaker on the battery:





Momentarily press the RESET button located on top of the battery. Once the first SOC LED is illuminated, release the RESET button.



Once the BBU boots up, you will be able to log in to complete the BBU commissioning process in about 2-3 minutes.

***If the BBU does not turn on after following these steps, but you see "SOC" lights on the battery after holding the reset button, check the voltage of the battery. All batteries should be above 46V when installed. If the voltage of any battery is below 46V, contact Comba technical support for assistance.***

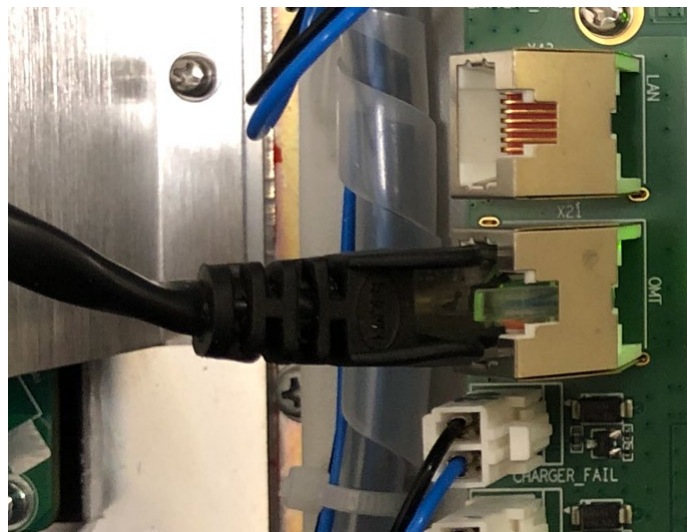
## Software Instructions:

The BBU should now be running; it will be configured to the default settings. To change the settings, or review product identification information, you can log into the unit using the optional WEB interface (WEBOMT). After logging in, the WEBOMT will provide the following information and options to you:

- **Unit information: Serial Number, Firmware versions and upgrade etc.**
- **Unit status: alarms, charging status, temperature etc.**
- **Customize alarming**

### WEBOMT Login:

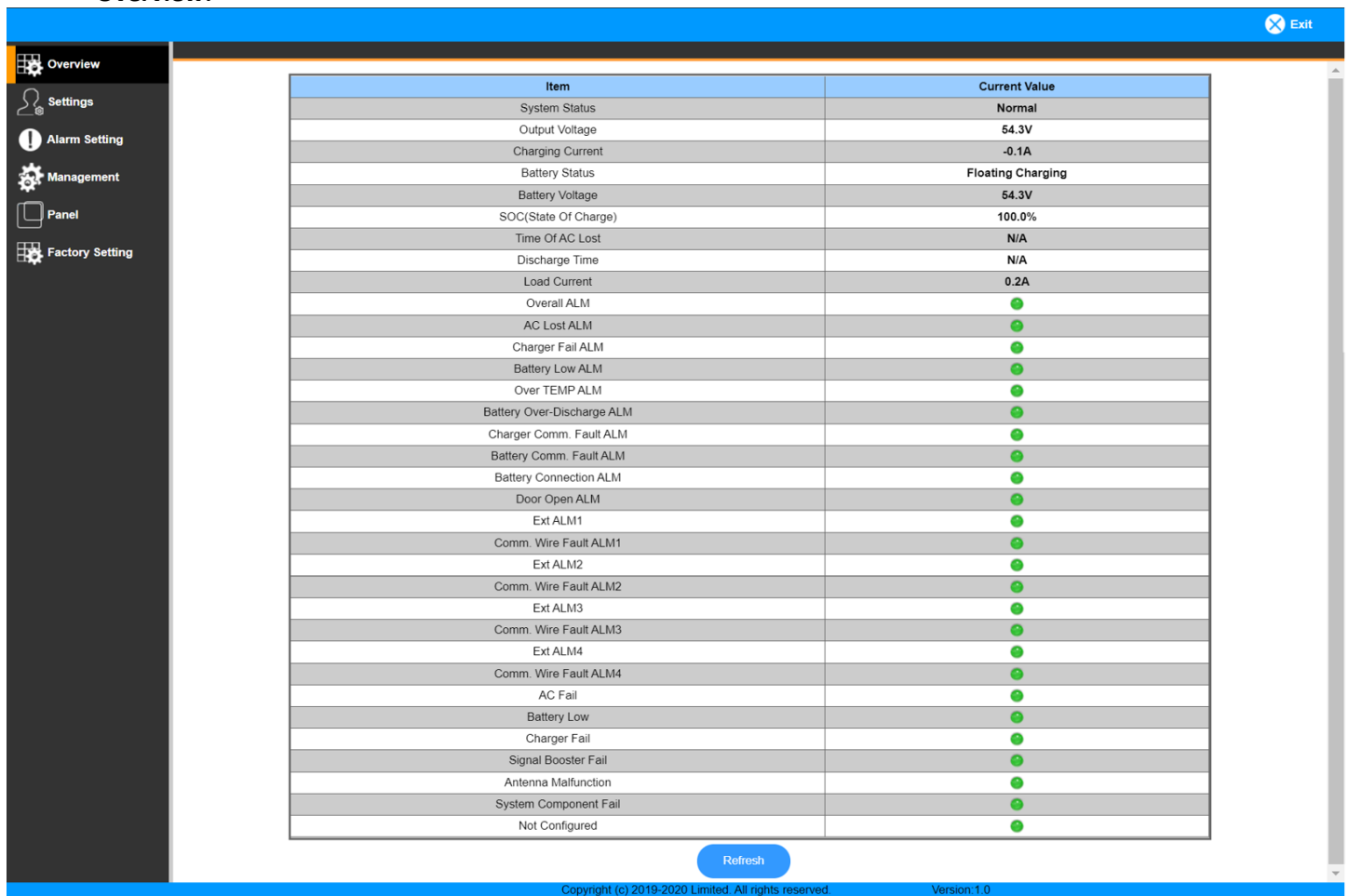
On the left-hand side of the MCU, use the OMT connection to plug in an Ethernet cable into the unit. Make sure you are on the bottom port – the top port labeled LAN is for remote connectivity and will be discussed later.



- Change your local Ethernet IPv4 address manually to 192.168.8.xxx/255.255.255.0 (DO NOT use 192.168.8.101).
- Navigate to 192.168.8.101 in the browser to login (Comba recommends using Chrome in Incognito Mode, or Firefox in private mode)
- Username: admin
- Password: admin

WEBOMT interface:

Overview:



Item	Current Value
System Status	Normal
Output Voltage	54.3V
Charging Current	-0.1A
Battery Status	Floating Charging
Battery Voltage	54.3V
SOC(State Of Charge)	100.0%
Time Of AC Lost	N/A
Discharge Time	N/A
Load Current	0.2A
Overall ALM	●
AC Lost ALM	●
Charger Fail ALM	●
Battery Low ALM	●
Over TEMP ALM	●
Battery Over-Discharge ALM	●
Charger Comm. Fault ALM	●
Battery Comm. Fault ALM	●
Battery Connection ALM	●
Door Open ALM	●
Ext ALM1	●
Comm. Wire Fault ALM1	●
Ext ALM2	●
Comm. Wire Fault ALM2	●
Ext ALM3	●
Comm. Wire Fault ALM3	●
Ext ALM4	●
Comm. Wire Fault ALM4	●
AC Fail	●
Battery Low	●
Charger Fail	●
Signal Booster Fail	●
Antenna Malfunction	●
System Component Fail	●
Not Configured	●

- **System Status:**
  - Normal: the charger is operating normally
  - Fault: the charger is not operating normally
    - In this state, the batteries may not be charging or the charger may not be providing a consistent DC voltage to the load.
- **Output Voltage:**
  - The voltage that the BBU provides to the loads
- **Charging Current:**
  - The current draw while the BBU is charging the batteries
- **Battery Status:**
  - Cycle charging: BBU is using high current while charging the battery  
Refer to Setting page: <Cycle Charge Voltage>
  - Float charging: BBU is using low current to periodically charge the battery  
Refer to Setting page: <Float Charge Voltage>
  - Discharging: NO AC supply; all loads are running on batteries



- Cut off: Battery voltage is lower than the Cut Off Threshold so it has been cut off from the system to ensure it can still be recharged.  
Refer to Setting page: <Cut Off TH>
- No battery: Battery is not connected
- **Battery Voltage:**
  - The voltage of the battery
- **SOC (State of Charge)**
  - The remaining percentage of charge left in the battery as reported by the battery management system.
- **Time of AC Lost**
  - This keeps track of the time that passes when AC power is lost. This can be a tool for inspection showing that the AC has been lost for over 12 or 24 hours.
- **Discharge Time**
  - This is the expected time remaining based on the battery charge level and current loads connected. This will show up as “N/A” unless the system is running on battery.
- **Load Current**
  - Displays the cumulative current draw from the load outputs that are connected to the BBU.
- **Alarm Status:**
  - Refer to Appendix - Alarm section

## Settings:

✕ Exit

Overview
Settings
Alarm Setting
Management
Panel
Factory Setting

Item	Current Value	Config Value
Battery Type	LiFePO4 Battery	▼
Battery Connection Test Switch	OFF	▼
Low Voltage TH	51.0V	▼
Cut Off TH	46.0V	▼
Battery Connection Detection	Once per day	▼
Date/Time	08/24/21 05:46:15	▼
Panel NO.	0	▼
Buzzer Notification	OFF	▼

Refresh
Modify

- **Battery Type: Default = LiFePO4 Battery**
  - LiFePO4 is the only current option here. This sets charging parameters based on the battery type.
- **Battery Connection Test Switch**
  - This is for factory or troubleshooting use – leave set to OFF unless otherwise instructed by Comba Technical Support.
- **Low Voltage TH: Default = 51.0V**
  - This is the voltage threshold at which the low battery alarm will be triggered. The default voltage is selected as an approximately 30% capacity remaining value.
- **Cut Off TH: Default = 46V**
  - Battery supply to the loads will be cut off if the battery voltage is lower than the desired threshold; the charger will try to charge the batteries when AC is restored, but it is not guaranteed that the batteries can be charged if the batteries are over-discharged to the point of being damaged.
- **Battery Connection Detection:** The system will check at the specified interval to verify that the battery is connected.
  - **Off:** Does not check
  - **Once per Day:** Checks once every 24 hours
  - **Smart:** Checks every 3 minutes when the door is open. Does not check when the door is closed.
- **Date/Time:**
  - Click into this field and then modify upon initial commissioning for the unit to be set to local time.
- **Panel NO:** See remote annunciator quick install guide.
- **Buzzer Notification: Default = OFF**
  - Set the alarm buzzer to ON or OFF with this setting. Set to OFF, the buzzer will not be audible with alarms. Set to ON, the buzzer will sound with any dry contact alarm trigger, and will silence with alarm clear or for 24 hours by manually silencing with the silence switch.

**Alarm Setting:**

The screenshot shows the 'Alarm Setting' interface with a sidebar menu containing Overview, Settings, Alarm Setting (selected), Management, Panel, and Factory Setting. The main content area displays three tables:

Item	Status	Name	
Dry Contact ALM1	●	AC Fail	Modify
Dry Contact ALM2	●	Battery Low	Modify
Dry Contact ALM3	●	Charger Fail	Modify
Dry Contact ALM4	●	Signal Booster Fail	Modify
Dry Contact ALM5	●	Antenna Malfunction	Modify
Dry Contact ALM6	●	System Component Fail	Modify
Dry Contact ALM7	●	Not Configured	Modify

Ext Alarm	Status	Name	EOLR	Alarm Type	
Ext ALM1	●	EXT ALARM1	Not Config	Normally Open	Modify
Ext ALM2	●	EXT ALARM2	Not Config	Normally Open	Modify
Ext ALM3	●	EXT ALARM3	Not Config	Normally Open	Modify
Ext ALM4	●	EXT ALARM4	Not Config	Normally Open	Modify

Item	Current Value	Config Value
<input type="checkbox"/> AC Lost ALM	●	▼
<input type="checkbox"/> Charger Fail ALM	●	▼
<input type="checkbox"/> Battery Low ALM	●	▼
<input type="checkbox"/> Over TEMP ALM	●	▼
<input type="checkbox"/> Battery Over-Discharge ALM	●	▼
<input type="checkbox"/> Charger Comm. Fault ALM	●	▼
<input type="checkbox"/> Battery Comm. Fault ALM	●	▼
<input type="checkbox"/> Battery Connection ALM	●	▼
<input type="checkbox"/> Door Open ALM	●	▼
<input type="checkbox"/> Comm. Wire Fault ALM1	●	▼
<input type="checkbox"/> Comm. Wire Fault ALM2	●	▼
<input type="checkbox"/> Comm. Wire Fault ALM3	●	▼
<input type="checkbox"/> Comm. Wire Fault ALM4	●	▼

Item	Current Value	
Alarm Detect Duration(10s)	5	Modify

Buttons: Refresh, Modify

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**- Dry Contact Alarm Settings Table**

- Users can define an alarm or a set of alarms (to trigger a single alarm when any one of the alarms in the “set” triggers) to trigger dry contact alarms through 1-7
- Modifying the Dry Contact Alarms will result in a pop-up menu to enable which alarms trigger the dry contact and the ability to rename the alarm. See image below.

**Dry Contact ALM1**

Alarms	Alarms	Alarms
<input checked="" type="checkbox"/> AC Lost ALM	<input type="checkbox"/> Ext ALM1	<input type="checkbox"/> Comm. Wire Fault ALM1
<input type="checkbox"/> Charger Fail ALM	<input type="checkbox"/> Ext ALM2	<input type="checkbox"/> Comm. Wire Fault ALM2
<input type="checkbox"/> Over TEMP ALM	<input type="checkbox"/> Ext ALM3	<input type="checkbox"/> Comm. Wire Fault ALM3
<input type="checkbox"/> Door Open ALM	<input type="checkbox"/> Ext ALM4	<input type="checkbox"/> Comm. Wire Fault ALM4
<input type="checkbox"/> Battery Low ALM	<input type="checkbox"/> Battery Over-Discharge ALM	<input type="checkbox"/> Battery Connection ALM
<input type="checkbox"/> Battery Comm. Fault ALM	<input type="checkbox"/> Charger Comm. Fault ALM	

Alarm name/remark

Item	Current Value	Config Value
<input type="checkbox"/> Dry Contact Remark1	AC Fail	

Buttons: Ok, Cancel

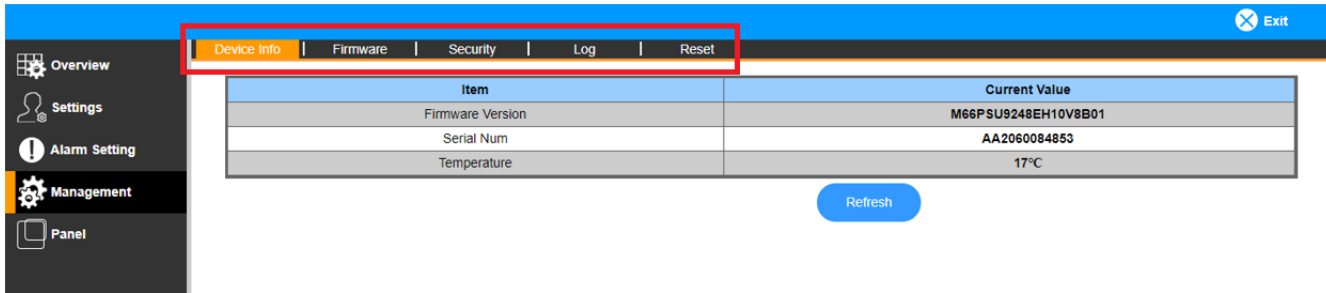
**REFER TO THE APPENDIX FOR A DEFINITION OF ALL OF THESE ALARM CHOICES.**



Ext Alarm	Status	Name	EOLR	Alarm Type	
Ext ALM1	●	EXT ALARM1	Not Config	Normally Open	Modify
Ext ALM2	●	EXT ALARM2	Not Config	Normally Open	Modify
Ext ALM3	●	EXT ALARM3	Not Config	Normally Open	Modify
Ext ALM4	●	EXT ALARM4	Not Config	Normally Open	Modify

- **External Alarm setting page**
  - Users can detect an alarm from an external device (such as the dry contact alarms from BDA), so the external alarms will be triggered accordingly:
  - **Status:** Current Status of the Alarm
  - **Name:** User Configurable text field for the alarm name (Example: Rename EXT ALARM1 to “SIGNAL BOOSTER MALFUNCTION”, etc.)
  - **EOLR:** If it is required to monitor the cable integrity between the device providing a dry contact output and the BBU Ext Alarm Input, you can place an EOL Resistor at the dry contact and this will monitor for resistance, opens, and shorts. This will typically remain unused.
  - **Alarm Type:** Configure this for your dry contact alarm, either normally open or normally closed. Default for Comba units is Normally Open.
- **Alarm Enable/Disable page**
  - Users can enable or disable the listed alarms
- **Alarm Detect Duration**
  - Users can define a time interval to specify the amount of delay before an alarm is triggered; each number set here indicates 10 seconds (e.g. 5 = 50s, 10 = 100s, etc.) – the system will monitor the alarm status during this duration and then will trigger the alarm after the specified delay time.

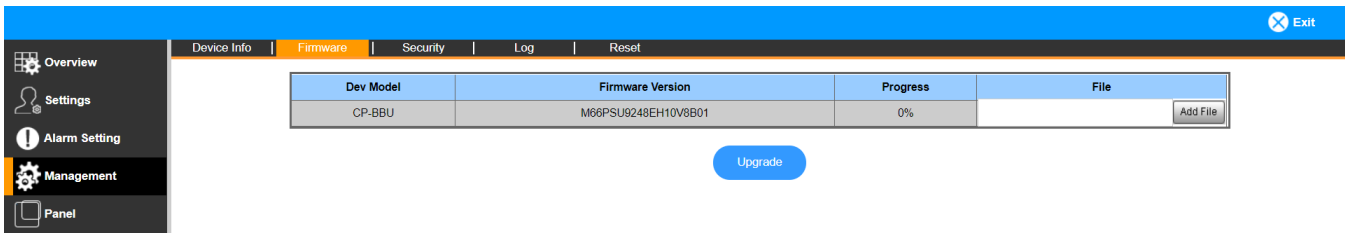
## Management:



Item	Current Value
Firmware Version	M66PSU9248EH10V8B01
Serial Num	AA2060084853
Temperature	17°C

Refresh

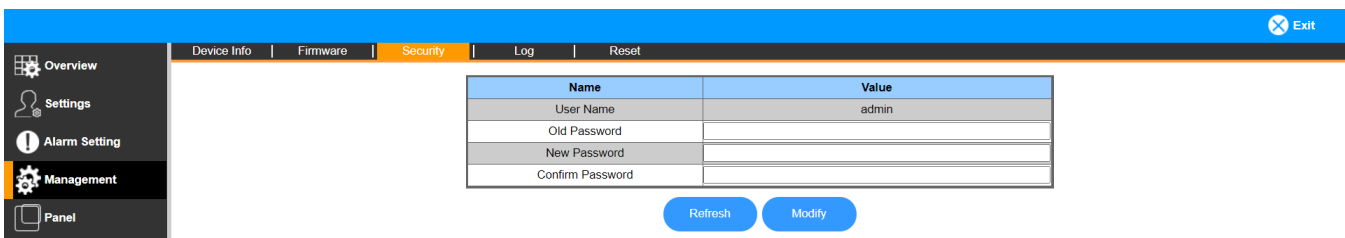
- Get device S/N, temperature, Firmware version
- Upgrade firmware
  - o After upgrading the firmware, the user must recheck all dry contact alarm settings to verify no changes to these have been made by the upgrade



Dev Model	Firmware Version	Progress	File
CP-BBU	M66PSU9248EH10V8B01	0%	<input type="button" value="Add File"/>

Upgrade

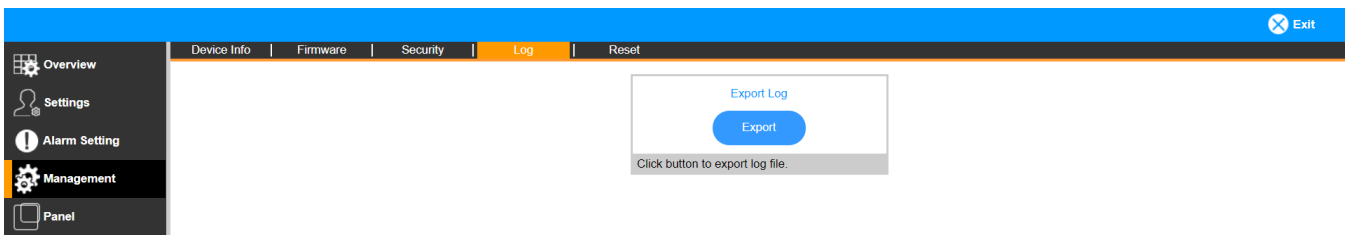
- Change Login Password



Name	Value
User Name	admin
Old Password	<input type="text"/>
New Password	<input type="text"/>
Confirm Password	<input type="text"/>

Refresh    Modify

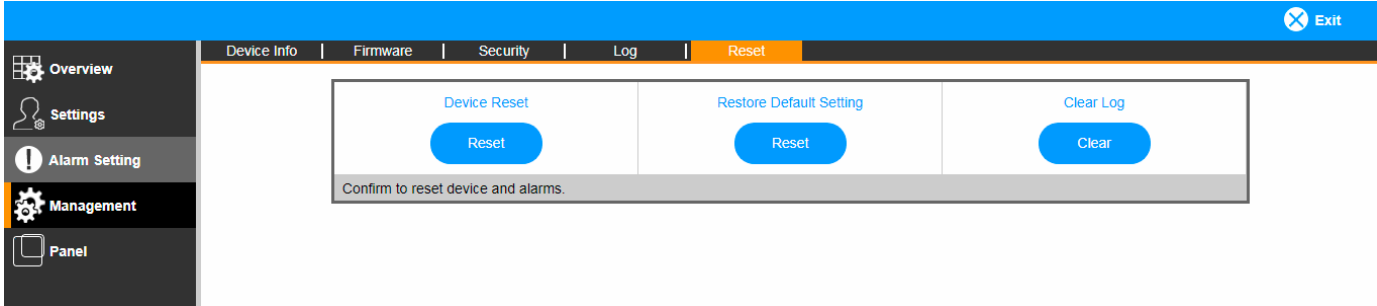
- Export alarms log



Export Log

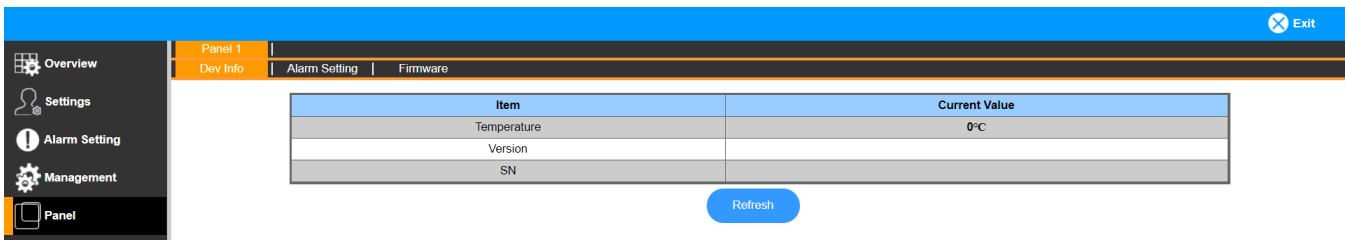
Click button to export log file.

- Reset Functions
  - Device Reset: This will reboot the MCU on the unit.
  - Restore Default Setting: Reset to Factory Defaults
  - Clear Log: This will clear the alarm log of the unit.



**Panel:**

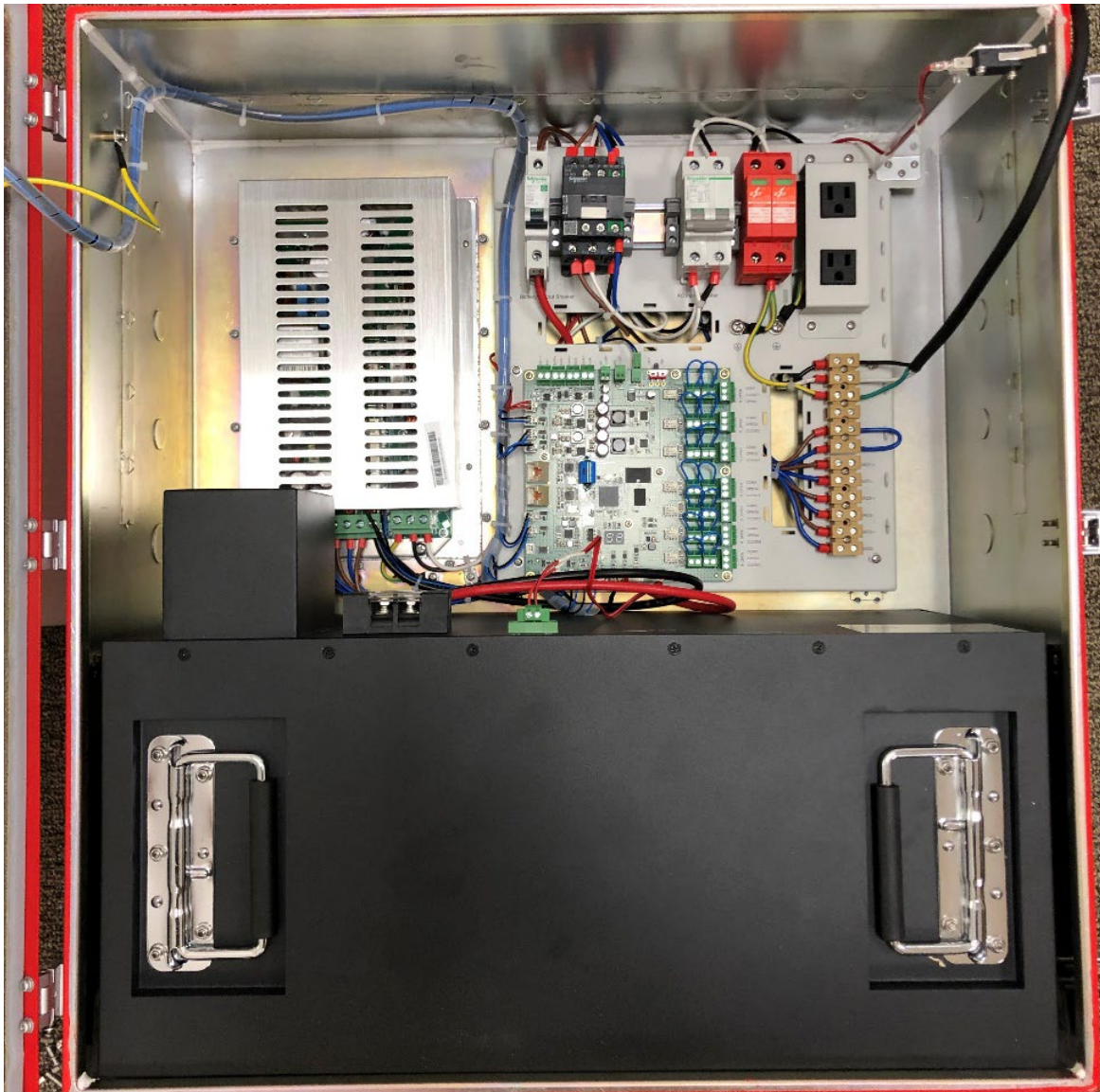
- This BBU firmware version supports Comba’s Annunciator Panel. Please see the Remote Annunciator Quick Install Guide for more information.





## Final Installation:

With battery installed and connected, the BBU inside will look similar to the image below:



## Appendix - Alarms:

The following table shows the alarms that may be present in the WEBOMT software and what triggers them. The alarm configuration for required alarms (and LED lights) is configurable to include any of the following:

Alarms	Causes
Overall	Any of alarms trigger
AC Lost	Triggers when AC is lost and on system shutdown
Charger Fail	Triggers when the charger module fails (Output Voltage High, Output Voltage Low, Current High, Temperature High, Circuit Short Protection Mode)
Battery Low	Triggers when battery voltage is lower than the Low Voltage TH threshold.
Over TEMP	Triggers when the temperature of the BBU is higher than the threshold. Default value is 50C.
Battery Over-Discharge	Triggers when the charger fails to charge the battery
Charger Comm. Fault	Triggers when the charger communication cable (the white connector with red, white, and blue wires on the bottom of the Controller Module) is disconnected from the MCU
Battery Comm. Fault	Communication between the battery and the MCU board has been lost. This is the RS485A and RS485B wire.
Battery Connection	Triggers when batteries are not connected to the BBU
Door Open	The door has been opened.
Comm. Wire Fault	The EOL resistor is not detected between a dry contact output from an external device and the EXT Alarm input on the BBU MCU Board.

## Dry Contact Alarm Setting and Alarm Simulation:

### - **AC Lost: (trigger Dry Contact Alarm 1 by default)**

#### **Confirm Dry Contact Alarm setting:**

- WEBOMT – Alarm Setting Page – Dry Contact ALM1
- Check AC Lost ALM

#### **Either way listed below will trigger the alarm:**

- Unplug AC input
- Switch off AC Input Breaker

### - **Battery Low: (trigger Dry Contact Alarm 2 by default)**

#### **Confirm Dry Contact Alarm setting:**

- In WEBOMT – Alarm Setting Page – Dry Contact ALM2
- Check Battery Low ALM
- Check Battery Connection ALM

#### **Either of the 2 methods listed below will trigger the alarm:**

- Recommended: Change the "Low Voltage TH" in the setting page to be higher than current battery voltage to immediately trigger the alarm for testing purpose (Ex. Change Low Voltage TH to 59V).
- Alternative: Wait for the battery to drain for 70% of the discharge time (this may take 12-24 hours or more). For example, flip the AC breaker to OFF, then wait for "discharge time" to populate. This may show up as a number such as 1800 min. Come back in (1800\*70%) minutes, or 1260 minutes and the alarm should be triggered. The battery is rated at a 5 hour discharge, so this value may be much higher than you expect for a 24 hour test.

### - **Charger Fail: (trigger Dry Contact Alarm 3 by default)**

#### **Confirm Dry Contact Alarm setting:**

- In WEBOMT – Alarm Setting Page – Dry Contact ALM3
- Check Charger Fail ALM
- Check AC Lost ALM (optional, refer to your local AHJ's requirement)
- Check Comm. Fault ALM

#### **Either way listed below will trigger the alarm:**

- Recommended: Unplug the charger communication cable on Controller Module (the white connector with red, white, and blue wires on the bottom of the Controller Module). This should take 1-2 minutes to trigger.

### - **If external alarms are used for BDA/AMS alarming (trigger Dry Contact Alarm 4-7 by default)**

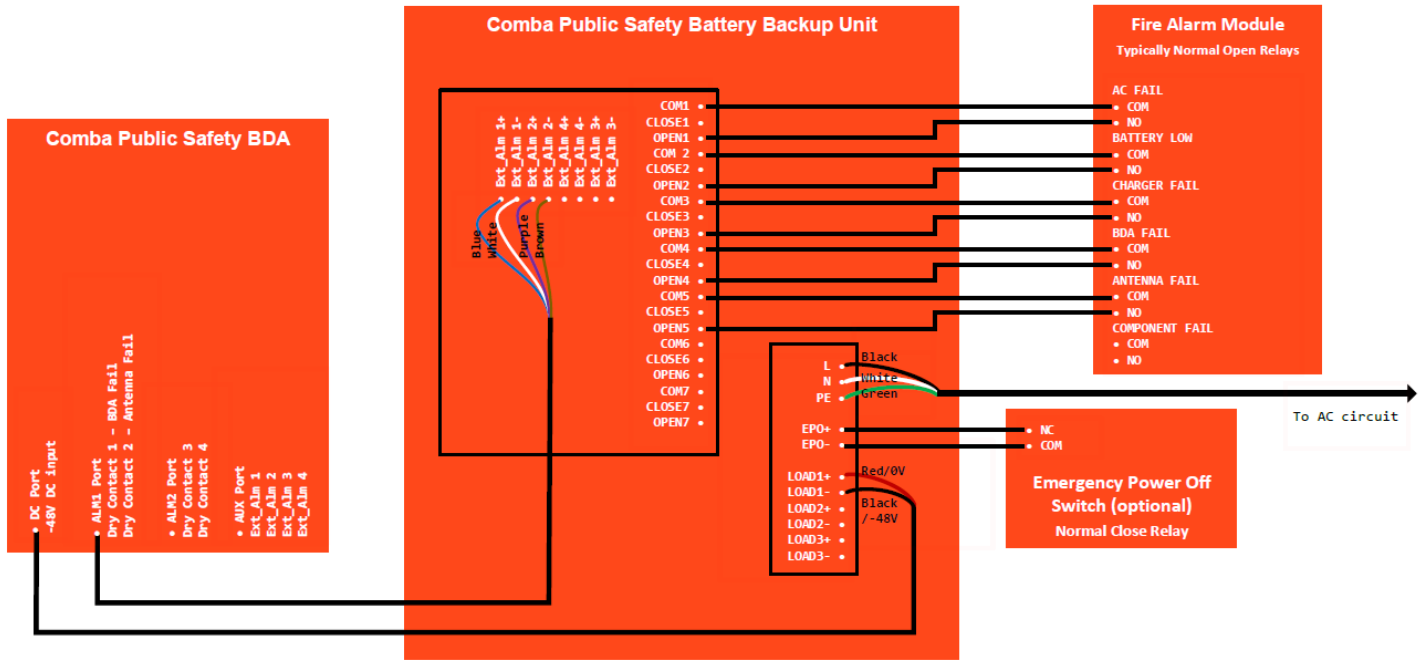
#### **Refer to user manuals for BDA/AMS for alarm simulations**

## Appendix A – Firmware Version Control:

FW Version	Release Notes
M65PSU9248EH10V8401 (Latest Version)	<ol style="list-style-type: none"> <li>1. Energized all Dry Contact alarms</li> <li>2. Added Smart Function to Battery Detection Alarm</li> <li>3. Added option to turn Buzzer Notification OFF in webGUI</li> </ol>
M65PSU9248EH10V8301	<ol style="list-style-type: none"> <li>1. Fixed false AC Fail alarm bug</li> <li>2. Changed Buzzer: Switch ON: unmuted alarms, switch OFF: only gives notification</li> <li>3. Added battery communication alarm</li> <li>4. Fixed Alarm Log Clear bug</li> </ol>
M65PSU9248EH10V8201	<ol style="list-style-type: none"> <li>1. Added Factory Default Setting</li> <li>2. Added System Log</li> <li>3. Removed options for Lead-Acid Batteries</li> </ol>
M65PSU9248EH10V8101	<ol style="list-style-type: none"> <li>1. Initial Release</li> </ol>

## Appendix B – Typical Wiring Diagrams:

### BBU to 700/800 MHz BDA (Typical Connections):



### BBU to UHF BDA (Typical Connections):

