# Residential Product EMS

# Introduction Manual

V01

# Version Information

| Version | Date | Content |
|---|---|---|
| V01 | 21062019 | New |
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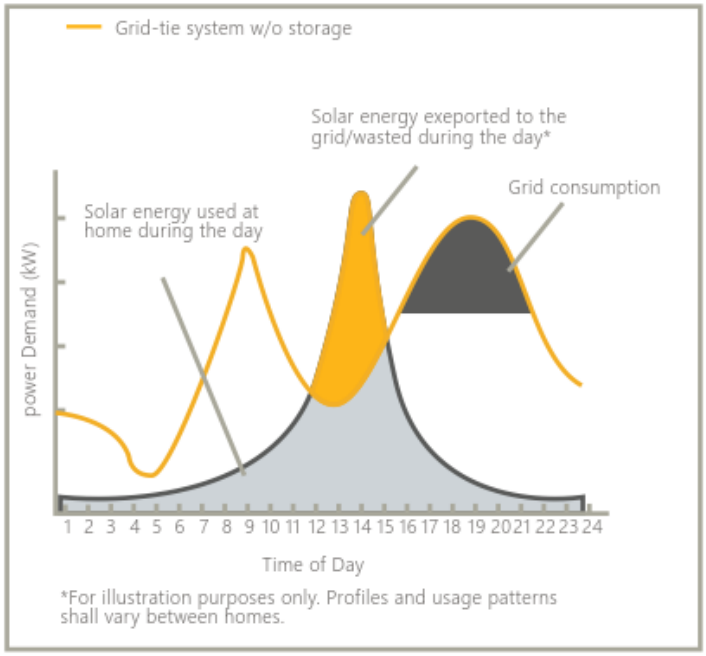
# Content

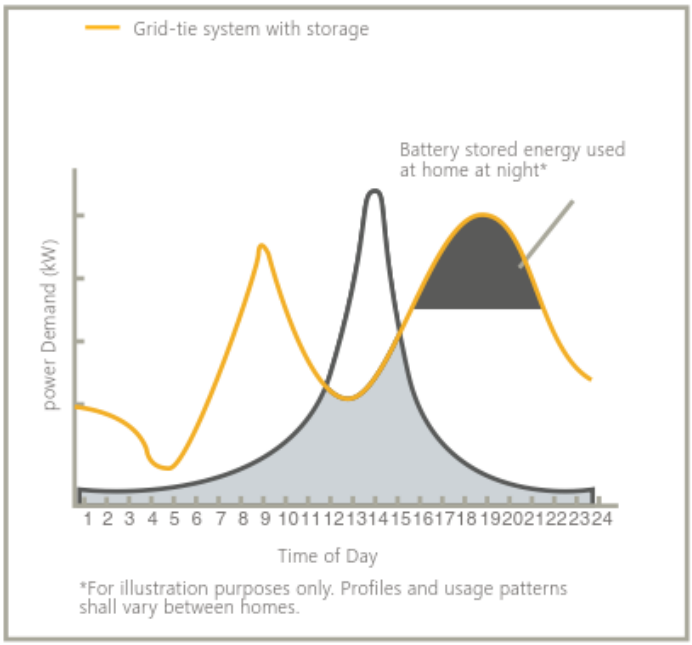
# 1. Self-Consumption Optimization

This is default function logic of AlphaESS energy storage system.

The typical electricity demand curve usually doesn't meet the PV generation curve.



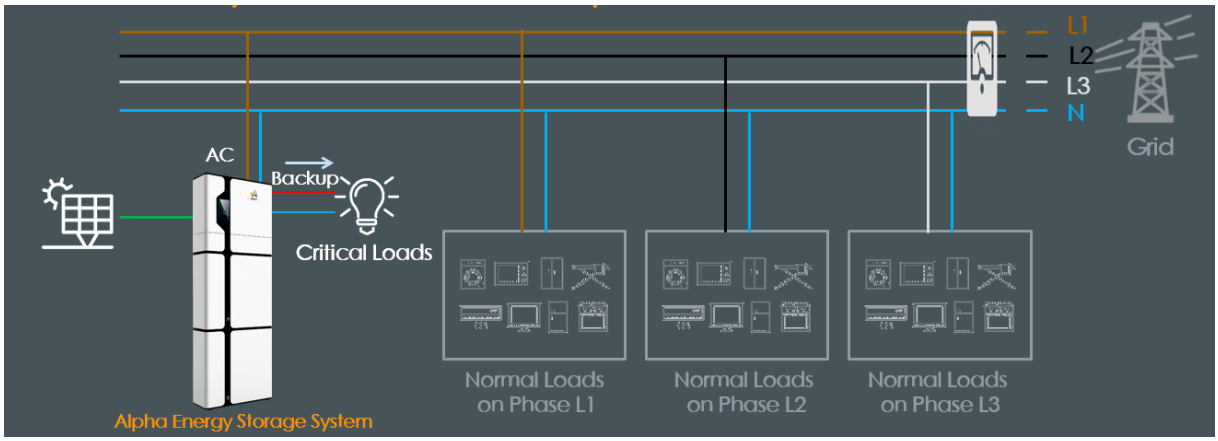

By storing the surplus PV generation into battery storage unit, it can maximize PV generation and reduce electricity bill.



# 2. Backup (UPS)

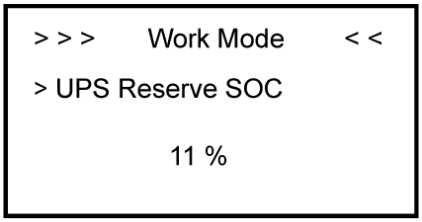
Storage system will provide the power to the critical loads when the grid fails.

The system can switch into an off-grid mode when a power outage occurs or grid power supply is insufficient.




## 2.1 Setting on EMS LCD

### 2.1.1 SMILE5

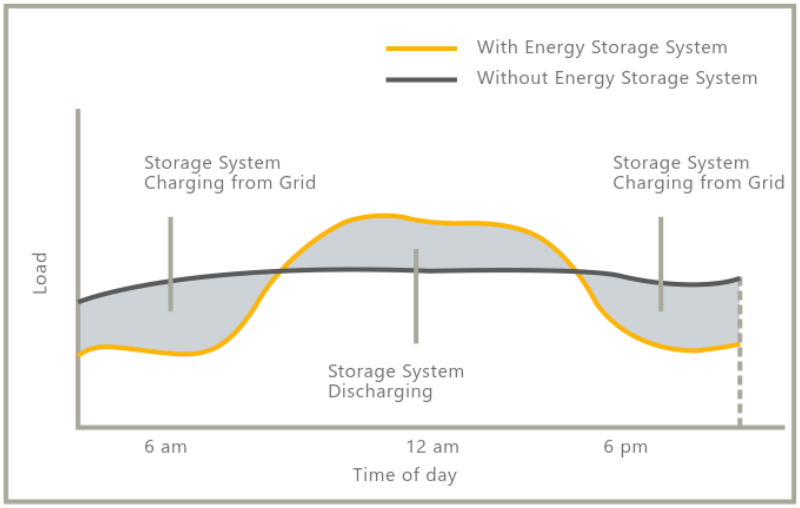



Users can also set UPS emergency priority or UPS emergency reserve to meet the needs of different families for stored electricity.

Please set the UPS Reserve SOC on EMS LCD

# 3. Load Shifting

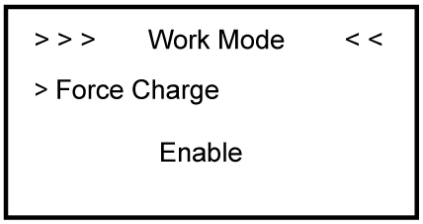
Reduce customer's electricity bill by storing electricity during off-peak time and shift energy to be used at peak time.



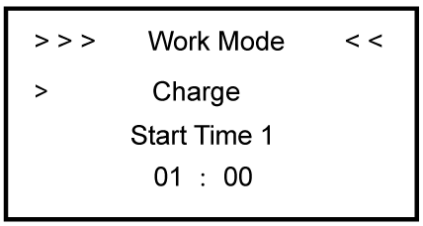

Especially when the electricity tariff is different in one day, you can set battery grid charging time on EMS LCD, on AlphaCloud monitoring portal or through AlphaESS App.

## 3.1 Setting on EMS LCD

### 3.1.1 SMILE5

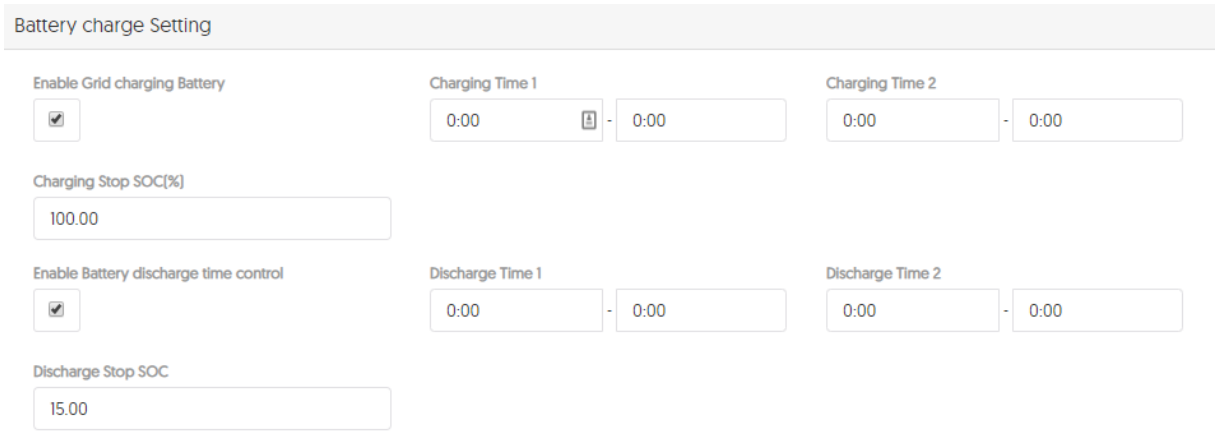



Click the mode then set up force charge mode as enable.




Set the charge and discharge time.

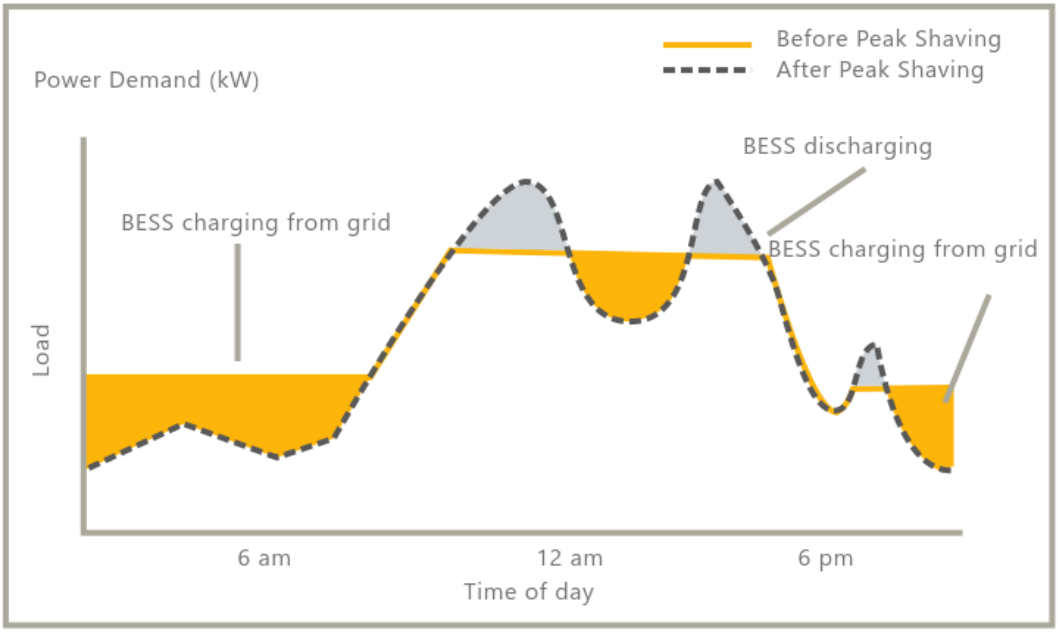
## 3.2 Setting on AlphaCloud




End user can set the grid charging time and battery discharging time on the portal or through AlphaESS App.

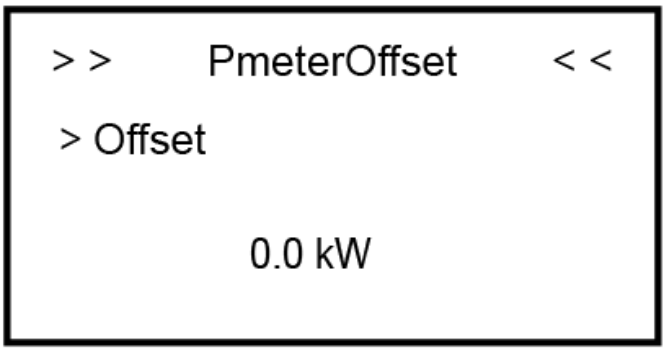
# 4. Peak Shaving

The goal is to avoid the upgrade of transformer capacity to supply the peaks of the highly variable loads. Energy storage provides a fast response and emission-free solution. The ESS benefits customers on their bills by saving cost on infrastructure and peak demand charges.




## 4.1 Setting on EMS LCD

This function is now realized by EMS3.0 platform and you can set the Pmeteroffset parameter on EMS LCD.




The default PmeterOffset of the system is 0, that means the peak shaving function is off.

If this function is on, EMS will adjust the PCS output power so that the total grid power will meet the set value.

# 5. Max Feed-in

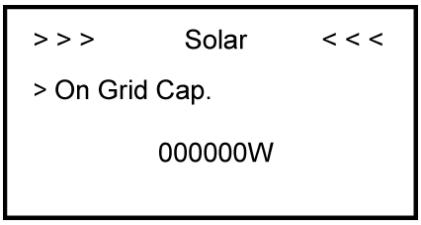
In some countries there is regulation for PV feed-in rate or it must be zero export.

After setting the PV capacity you can set this parameter on EMS LCD or on Alpha Cloud portal. Then the grid feed-in power from the PV generation will be limited.

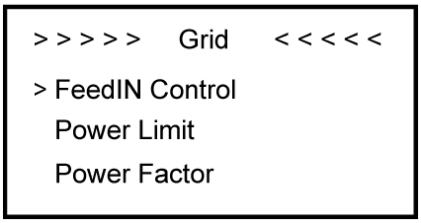
**Note: in AC mode system Alpha ESS can't limit other PV-inverter generated power.**

## 5.1 Setting on EMS LCD

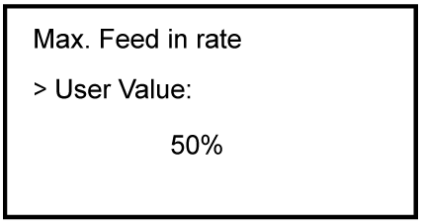
### 5.1.1 SMILE5



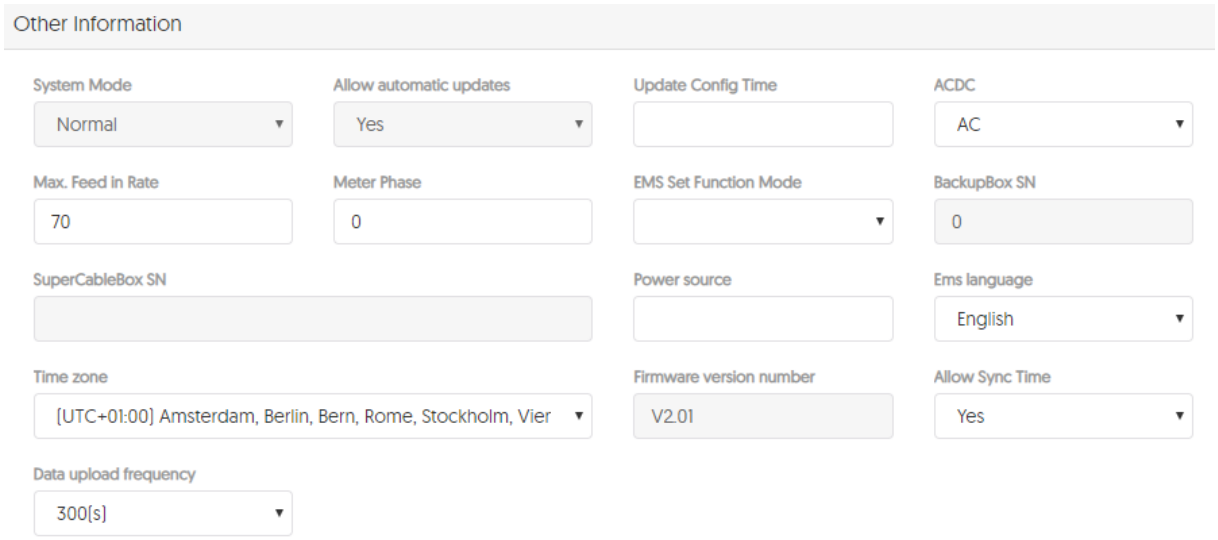

Set on-grid capacity (How much kWp is installed with the on-grid inverter), storage capacity (How much kWp is installed with the AlphaESS storage inverter) and number of PV strings (MPPT number).




Click the Grid Function to set up relevant parameters about the grid.



## 5.2 Setting on AlphaCloud




Installer can set the max feed-in rate on the other information interface of the “System Setup” page.

# 6. Aux Contact

Aux contact function is used for switching on/off other devices automatically or based on defined schedules

Aux contact settings is only for the end user, whose energy storage system has already aux contact function. The device should have dry contact function and has been connected correctly with the system. Or this device can connected correctly with the system by using a suitable relay.

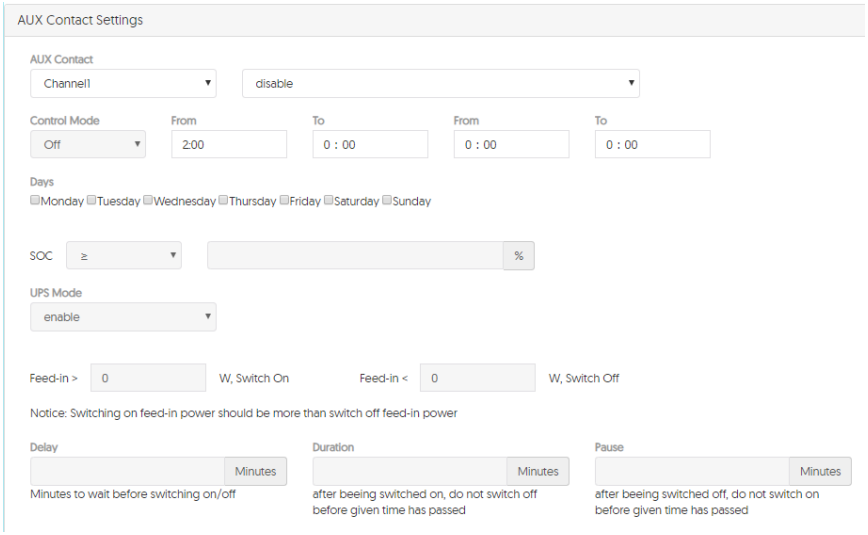
**Currently aux contact function is available on Storion-SMILE-5, later it will be available on Storion-SMILE-T10.**

## 6.1 Setting on AlphaCloud

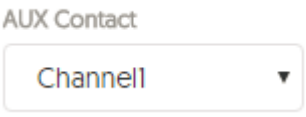
Under aux contact function, the UPS mode should be disable.

After wiring the aux contact function can be set on the server.

1. Click “System setup” and click “AUX Contact setting”, then the following inter-face appears:




2. Click AUX Contact Channel to choose AUX 1 or AUX 2. Two devices can be controlled.

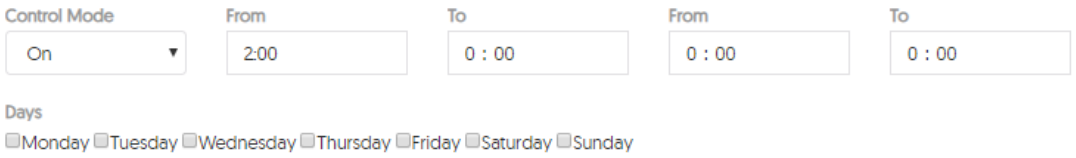



3. Click “enable” to set if the function for the chosen channel is available.

4. Click “Control Mode” to set the function mode, we have 3 modes for the AUX contact: On, Off and Auto.

a. Control Mode On

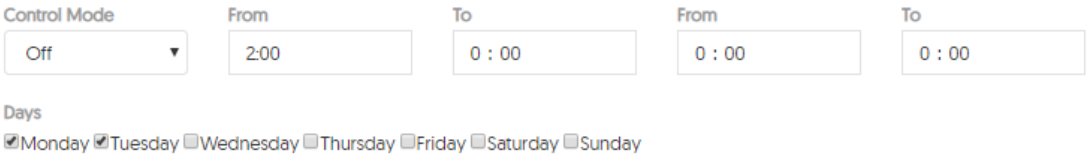
Set the time and days for switching on like the following figure. You can set one or two time periods. In the set periods the Aux contact will be switched on, outside the set periods the Aux contact doesn't work.




If the two periods overlap, only the first period will be active. In this mode the normal self-consumption logic will be used.

b. Control Mode Off

Set the time and days for switching off like the following figure. You can set one or two time periods. In the set periods the Aux Contact will be switched off. If you don't set the period the function doesn't work.




If the two periods overlap, only the first period will be active. In this mode the normal self-consumption logic will be used.

In this mode the normal self-consumption logic will be used.

c. Control Mode Auto

It means the Aux contact will be switched automatically on and off according to the following logic.

Under Auto Mode, the period control function doesn't work. In this mode the following further specifications should be set.

c.1 You can set the SOC to activate. There are three modes can be set:

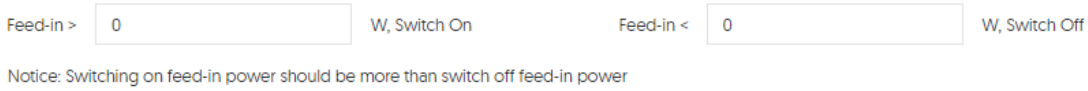

1. "≥", namely when SOC ≥ given value, it works.
2. "≤", namely when SOC ≤ given value, it works.
3. "disable", namely the Aux contact control is not related to the SOC value.

c.2 You can also set surplus energy range, namely the feed-in condition.

Set the feed-in power values as the following figure.

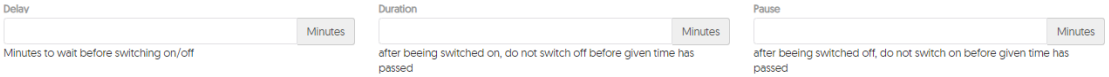
When the feed-in power > left given value, the Aux contact will be switched on.

When the feed-in power < right given value, the Aux contact will be switched off (or back to the initial situation).




Notice: Switching on feed-in power should be more than switch off feed-in power

c.3 The delay, duration and pause time also can be set to prevent too frequent switch on and off.




**Delay**

The Aux contact will work (be switched on/off) after the given time if some condition is fulfilled.

**Duration**

After the Aux contact being switched on, it will not be switched off before the given time passed.

**Pause**

After the Aux contact being switched off, it will not be switched on before the given time passed

In this mode the normal self-consumption logic will be used.

# 7. Backup Box

For System SMILE5, SMILE-T10, SMILE-B3, Backup Box has these functions:

A. Auto Switching on gird and off grid;

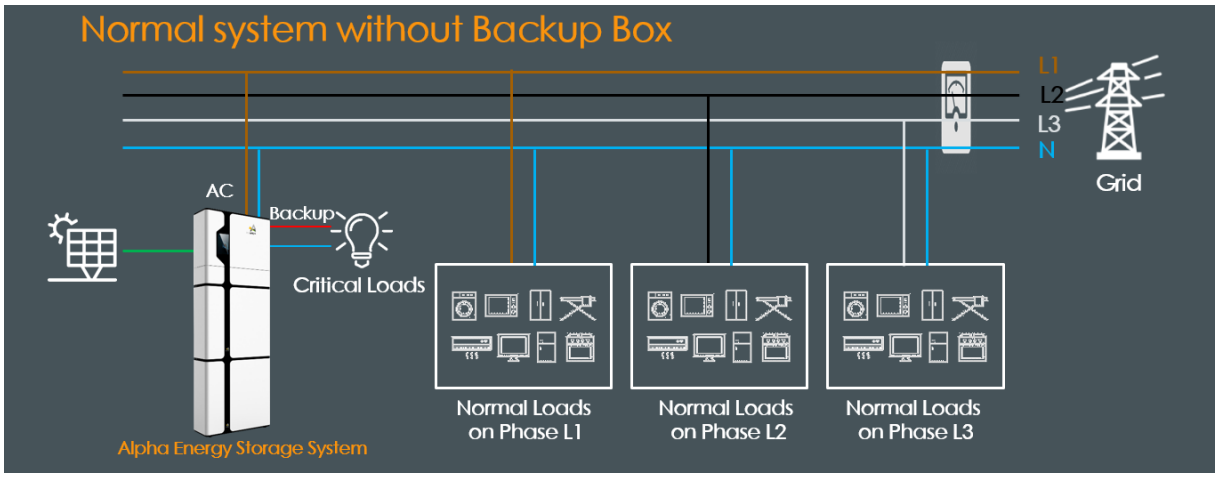
B. No need change the distribution box wiring;

C. Provide power to all loads in every phase in off-grid situation;

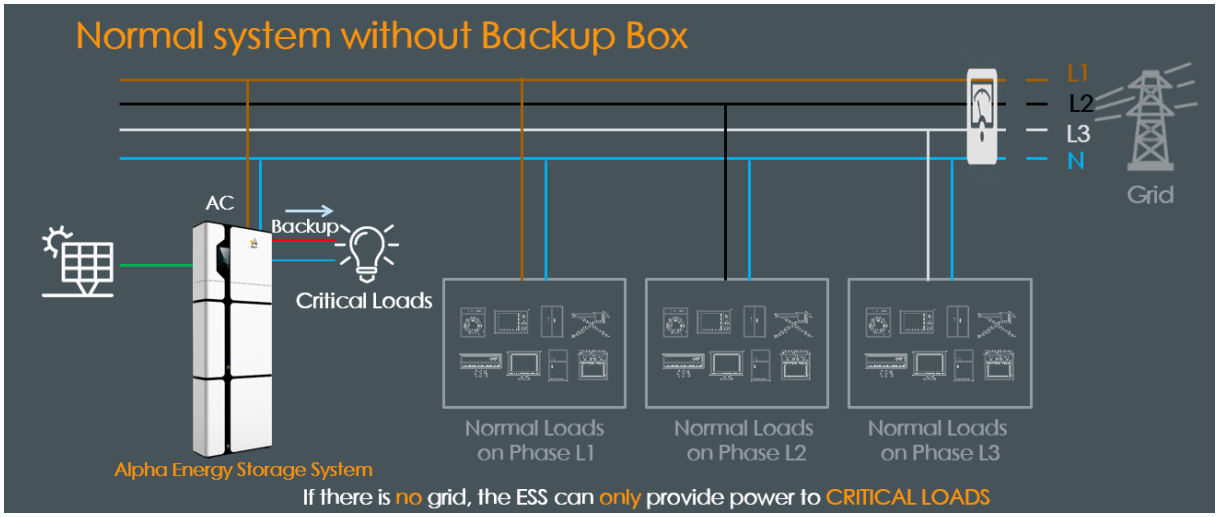
D. Load management in Off grid situation, you can set parameters on EMS LCD, on AlphaCloud portal or through AlphaESS App.

E. Use as Meter for DC/AC/Hybrid Coupling. (Meter function will be available later by T10)

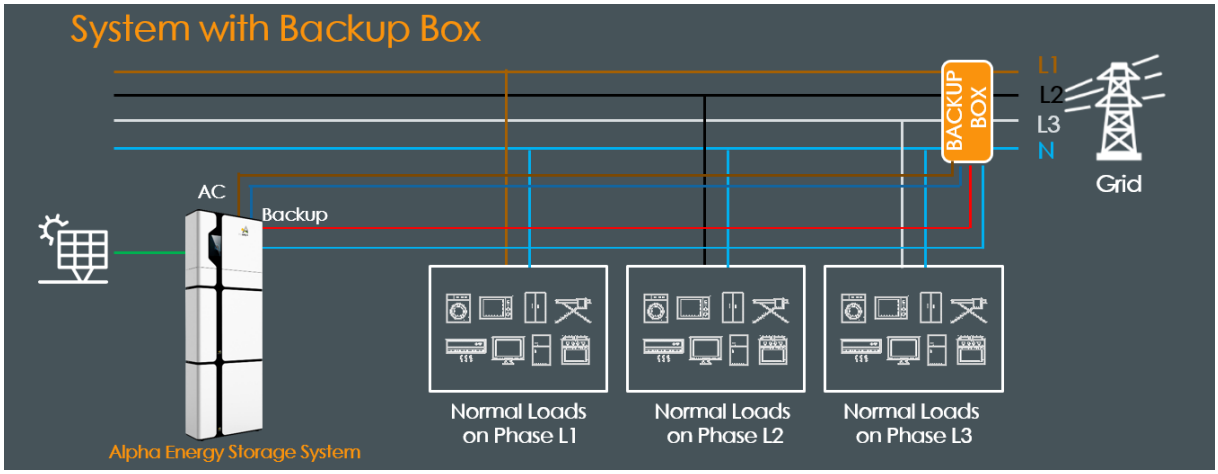
The normal system without backup box is as below diagram:




If the grid fails, the energy storage system will only provide power to the critical loads which are connected to the backup port.

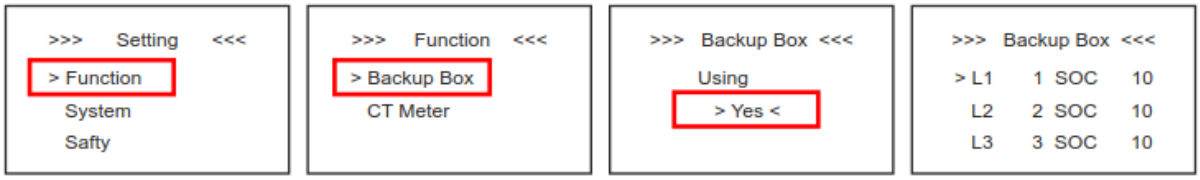


If the backup box is used as meter and connected in the whole system, the diagram is as below:




If the grid fails, the energy storage system will provide power to all loads.

## 7.1 Load Management Function Setting on EMS LCD




Enter “Setting” page and select “Function”. Enter “Function” page and select “Backup Box”. Enter “Backup Box” page and replace “No” to “Yes”. Press “Enter” button on EMS to confirm.

Press “ ↓ ” button and enter “Backup Box” setting page to set up Priority and the SOC to manage your loads.

**NOTE: With the highest priority, the SOC must be lowest. You can set the priority as 1, 2, and 3. If you set L1 as 1, L1 being the highest priority, then the SOC must be set to the lowest. When the SOC is lower than your setting, the load will be cut off in the order as you set.**

## 7.2 Load Management Function Setting on AlphaCloud

You can also set the load management parameters on the portal