Monitor System Setting Introduction For LXP 3-5KHybrid-NS Inverter

Version:1.3

Date:2022-8-15

History

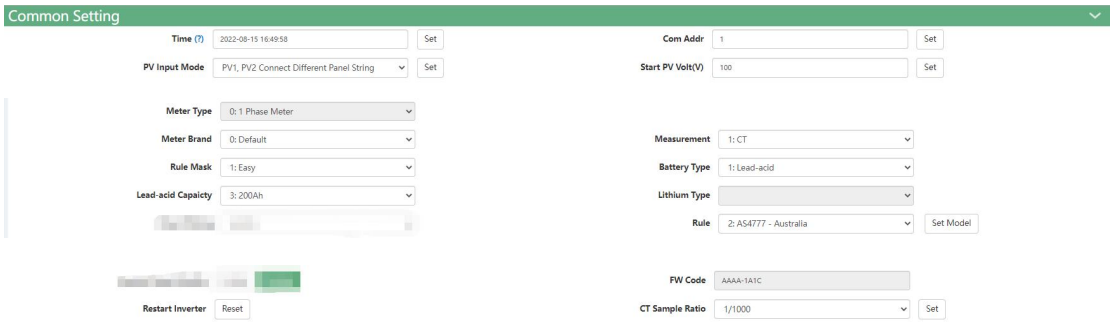
Version	Record of modification	Date
Initial version	Initial version	2020-5-6
1.1	Add some new setttings, batch setting function	2020-7-7
1.2	Add some new settings	2021-7-1
1.3	Update description for Power quality response mode	2022-8-15

This Document is used to give a explanation of settings in the website and APP to Lux Power customers for Hybrid Inverter. The monitor system may change anytime, so if you find the settings described below is different from what you see, you can contact info@luxpowertek.com for help.

Content

PART1： SETTING EXPLANATION

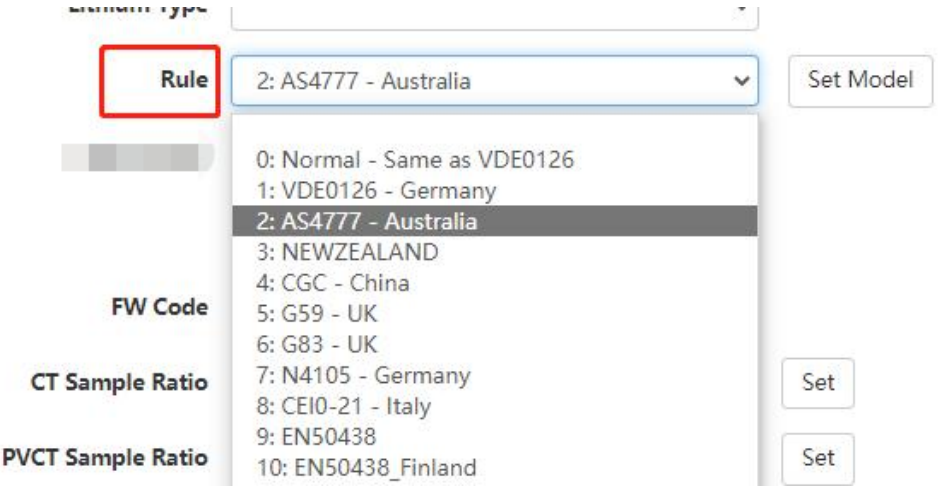
1. Common Setting



- **Time** : Local time of the inverter, the input fomat is 2019-02-14 14:44:00. Format yyyy-MM-dd HH:mm:ss
- **Com Addr :** Communication COM address in 485 communication system. If you installed more than one inverter in the field and use a 485 bus to communicate, you need to set the inverters to different address. The range is from 0 to 150
- **PV Input Mode:** The connection way of solar module
- **Start PV Voltage:** When PV voltage is higher than the setting, the inverter will use solar power to charge battery or feed into grid
- **Battery Type, Lead-acid Type, Lithium Type:** Choose the battery type and then battery brand for Lithium battery or battery capacity for lead-acid. Please note after set the battery, all other settings will be set to default.
- **Measurement, Meter Type, CT Sample Ratio** Choose the correct measurement ,meter type or CT sample Ratio according to the external measuring device you installed.The default measurement is CT with sample

ratio :1000/1, and you can change the measurement if you have installed a meter to the inverter.

- **Restart Inverter:** Restart inverter remotely
- **Battery Type :** Select Leadacid or Lithium battery type
- **Battery Capacity and brand :** Select capacity of Leadacid battery type or select battery brand of the Lithium type and the inverter will work with the corresponding battery protocol.
- **Grid Rule:** Country Grid Code/Region settings, please select the correct code according to your country and region , Before changing the grid rule configuration ,please set inverter to standby mode and make sure the DIP configuration is correct .

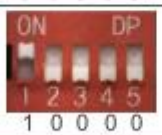


NOTE: Country code can only be set once during commission the dip switch. To change the country grid code after commissioning requires the authorized access via the monitoring platform. Re-adjusting the dip switch will have no effect.

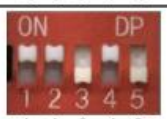
and for end-user account , the customers are still able to view the current rule to work with the inverter , but only the installer account (protected by password) has

the access to change the rules online, the end-user account doesn’ t have feature.

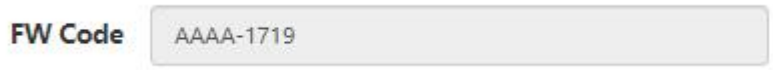
Rule 2: AS4777 - Australia

Country Standard	SW2 Configuration	Country Standard	SW2 Configuration
Default VDE0126		En50549	
Germany VDE0126		United Kingdom G59	
Australia AS4777		United Kingdom G83	
New Zealand NZS		Germany N4105	
Italy CEI0-21		Europe EN50438	
South Africa NRS 097-2-1		Finland EN 50438	
Thailand PEA		Thailand MEA	
Ireland EN 50438		Czech EN 50438	

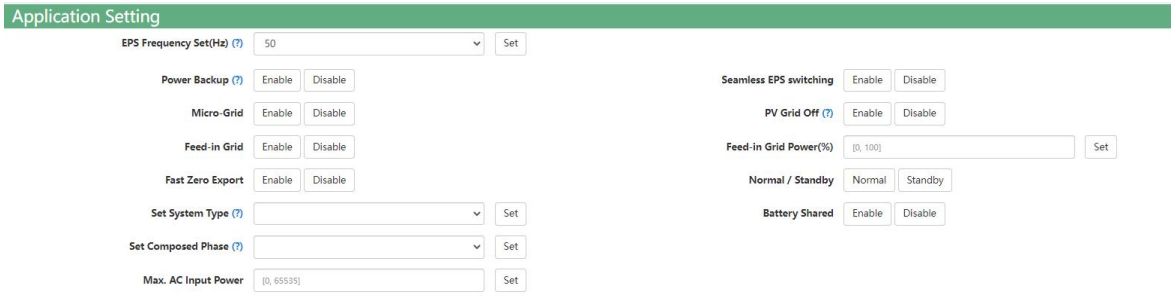
For AU market, to comply with AS/NZS 4777.2:2020 please select from Region A/B/C.Please contact your grid operator on which Region to select.

Australia-A		Australia-B	
Australia-C			

❖ **FW Code:** The current firmware version working with the inverter



2. Application Setting



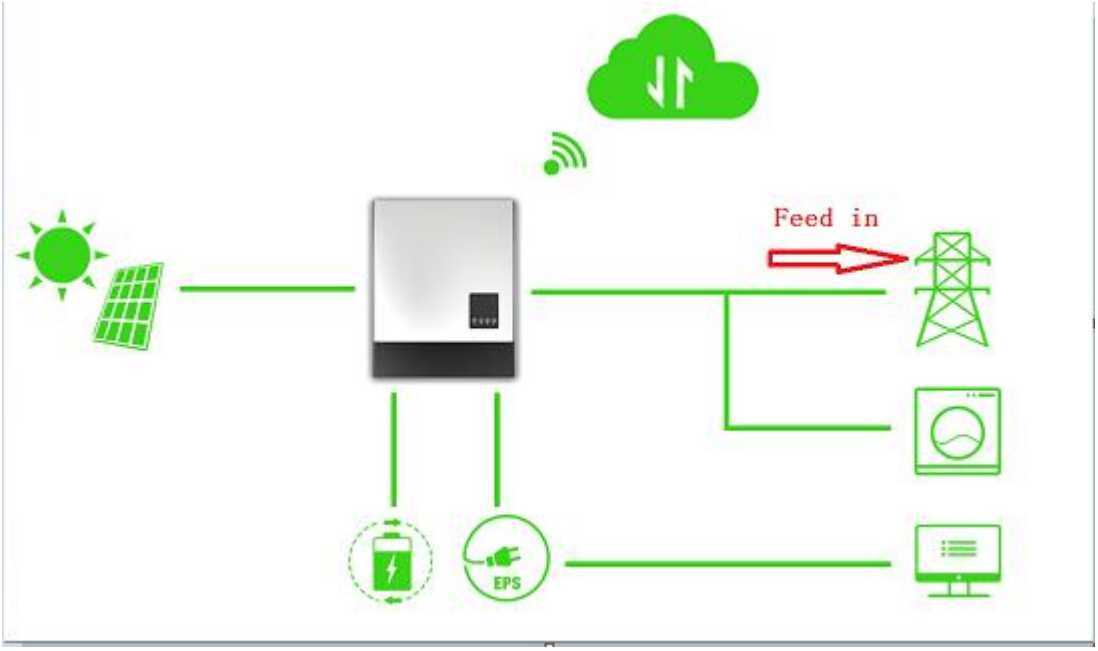
❖ **EPS Frequency Set(Hz)** : If the grid frequency is nominal 50Hz , then the EPS Frequency will be adjusted to 50Hz automatically ; If there is no grid power , and it is read as 50Hz ,but the devices are 60Hz,then you can set to 60Hz manually.

❖ **Power Backup** : If EPS Enabled, the EPS/UPS terminal will keep output when AC interrupted. You can set EPS by web or by LCD. (Enable this mode, EPS output will be uninterrupted)

❖ **Seamless EPS Switch**: When power interrupted, the inverter will turn to EPS mode seamlessly.

❖ **Micro-Grid** : If the inverter is connected to AC generator with the AC terminals, we need to set Micro-Grid Enable. In this situation, the system will not feed into generator and whenever there is output of generator. The inverter will use the generator power to charge the battery. The frequency range will also be enlarged to compatible with the generator.

- **PV Grid Off** : If the customer want the system have off-gird function without install any battery, please enable PV Grid Off. Please note in this situation, the off-grid energy is supplied by solar, it is not stable. We suggest the customer to install battery to keep the EPS/UPS output voltage stable if they want to have off-grid function.(Allow to access the off grid mode when only solar input is availble)
- **Feed-in Grid** : In some countries, the customer can not feed energy into grid, or if the customer do not want to feed energy to grid, you can disable feed-in grid function.



- **Feed-in Grid Power (%)**: If feed into grid function is enabled, you can set the power percentage of feed into grid. And if you need to limit the export power ,just need to change the limitation ,i.e, if you want to limit the max. export 1000W and the inverter is 5kW model, you just set 20%.
- **Fast Zero Export**: Normally inverter will adjust output power every 5 seconds

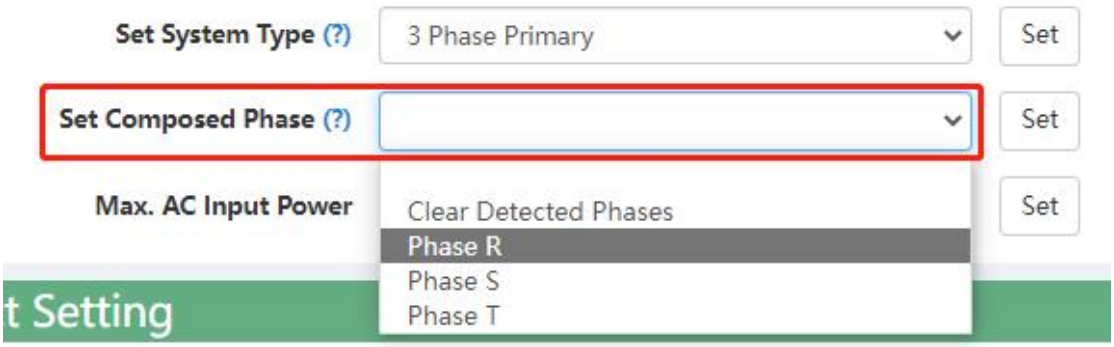
to avoid export, if fast zero export enabled, the inverter will adjust output power very fast.

- **Normal/Standby:** "Standby" is used to set the whole system to standby mode, stop feed in and charge, discharge; "Normal" is used to set the whole system to auto run status.

- **Paralleling Setting Group**

  - **Set Subordinates or Primary** : LXP inverters support paralleling functions, you can connect the EPS terminal together in paralleling system, in this situation, we need to set one of the inverter to primary, and the others are slave. If you install all inverters in one phase, set one of the inverter to "1Phase Primary"; If you want to compose three phase system, set one of the inverter to "3 Phase Primary". All inverters are set to Subordinates in default mode, so when you get the inverters, just need to set one inverter to Primary.(Used for paralleling inverters)

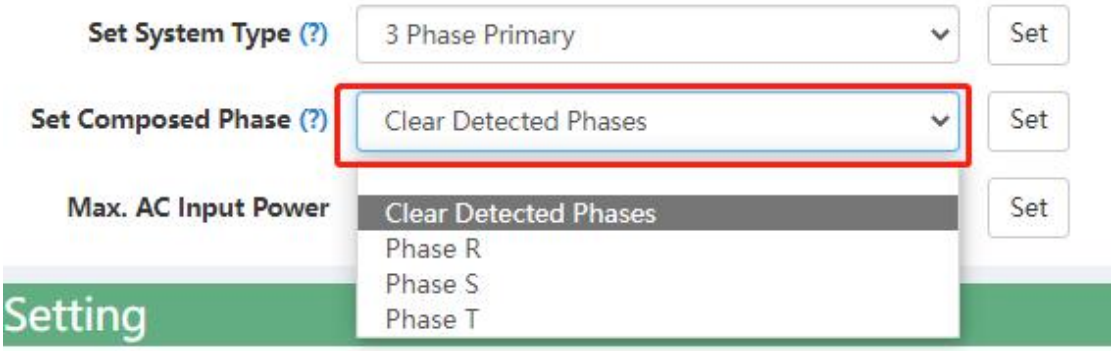
  - **Set Composed Phase**: When you use equal or more than 3 inverters to compose a three phase system, you connect the AC terminals of inverter to three phase grid. (Used when compose a three phase)



  - If there is utility in the filed, the inverter will detect the phase it

connects to automatically and record it. Next time it will output the phase as it detected.

- If the user setting is different from the phase inverter detected, it will output the phase it detected.
- The output phase record will be cleared if customer clears it.



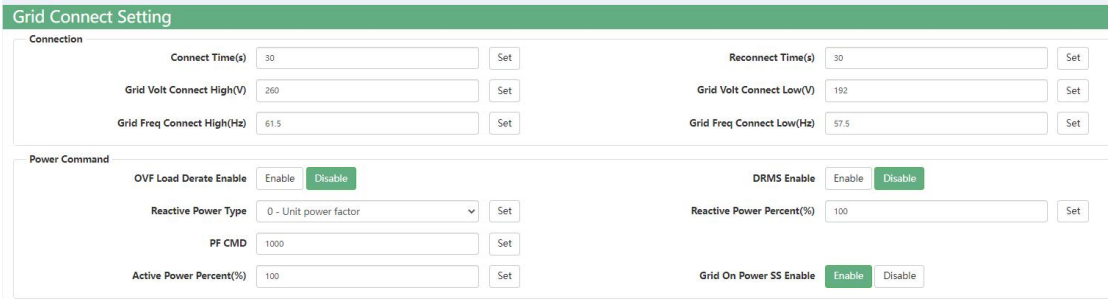
- If there is no utility for the whole time, it will use the user output phase setting to compose three phase output. If the customer set wrong phase, for example 2 R phase and no T phase, the system will report error.

❖ **Battery Shared**: For paralleling system, if all inverters connect to same battery, then we need to enable battery shared and then master inverter will broadcast the battery info to other inverters

❖ **Max. Input Power**: The max. Input power limitation from grid . i.e. If you set Max.Input Power to 5000W , then the inverter will adjust the charge power according to load consumption and make sure the import power from grid not more than 5000W.

3. Grid Connect Setting

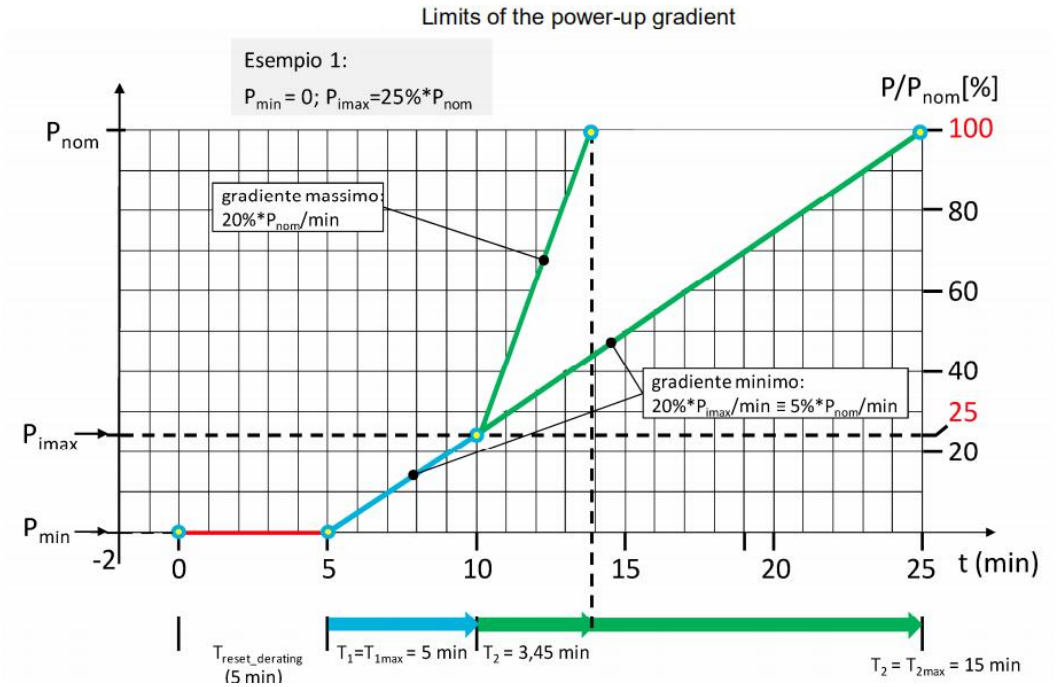
The default Grid connect settings are based on the grid code you selected. If you change the grid code successfully , the grid connect settings will be updated automatically.



- **Connect Time** : the wait time to connect to grid if the solar input is ready and the utility is in range when power on.
- **Reconnect Time** : the inverter will reconnect to grid if the utility is in range after its abnormal situation. It will wait the setting time to reconnect
- **Grid Connect Condition Setting Group**: If the voltage and frequency is in range of belowing setting, the inverter will connect to grid
  - **Grid Volt Connect High(V)**
  - **Grid Volt Connect Low(V)**
  - **Grid Freq Connect High(Hz)**
  - **Grid Freq Connect Low(Hz)**

- **Active Power Percent CMD(%)** : Max AC output power percent of the inverter. You can limit different output power percentage of the active power (i.e. it is the model of 5K , and the max. Output active power is 5000W , if you fill in 10% , then the output power is 10%*5000W=500W)

- **Grid On Power SS Enable** If enabled,inverter will output AC power slowly.



❖ **OVF Load Derate Enable** If you enable "OVF load Derate", the inverter will derate power output at a certain high voltage level, i.e. the inverter will derate output power when AC voltage is higher 250V and output power will decrease to 20% when AC voltage is higher than 259V. Also If the frequency is higher than 50.2/60.2Hz, the output power will derate the output power as the curve.

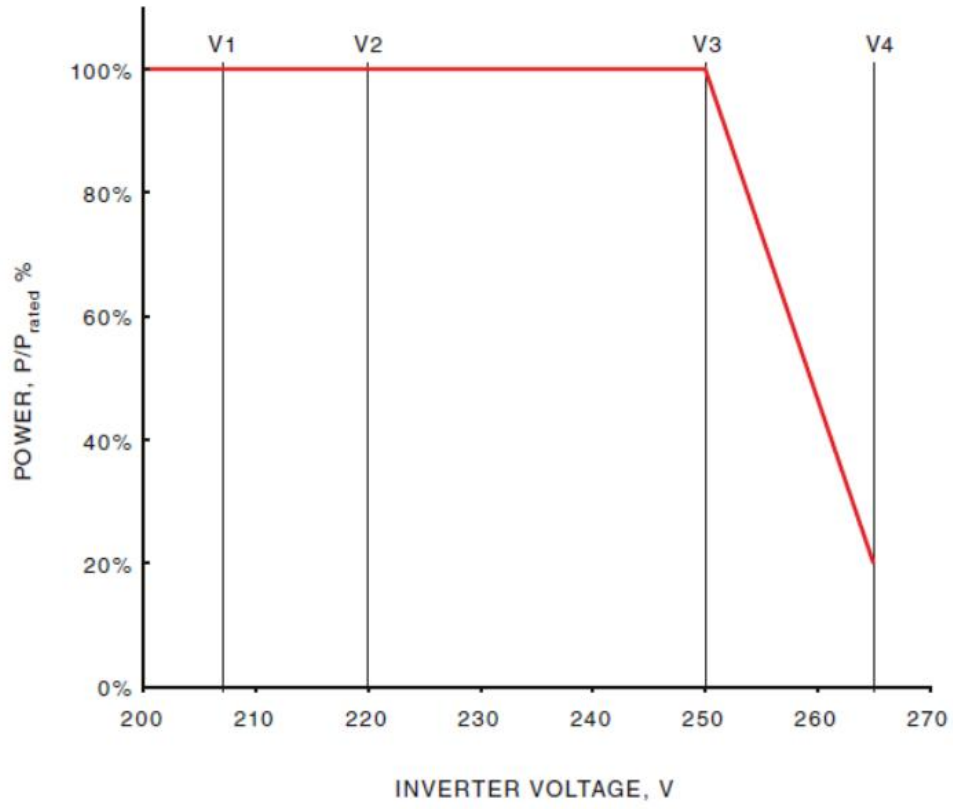
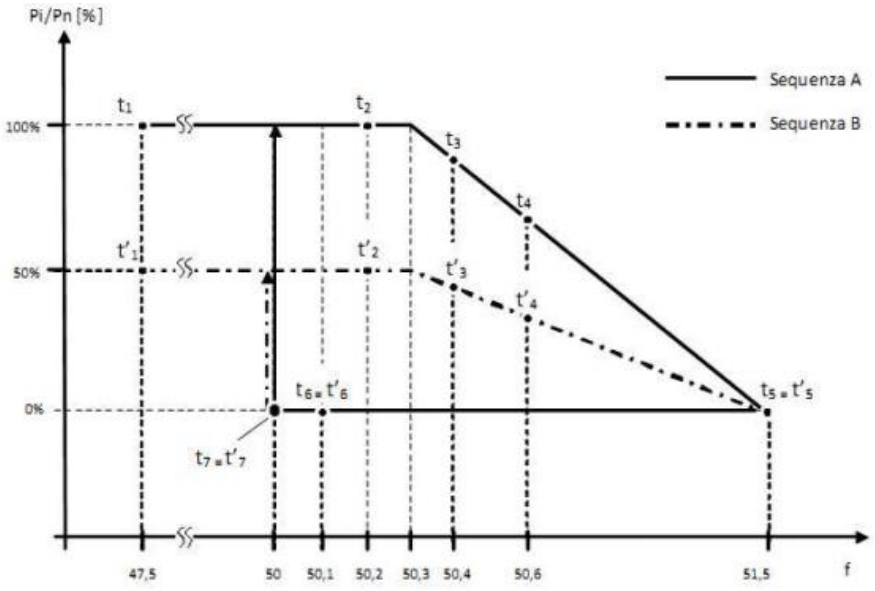


FIGURE 2(A) EXAMPLE CURVE FOR A VOLT–WATT RESPONSE MODE (AUSTRALIA)



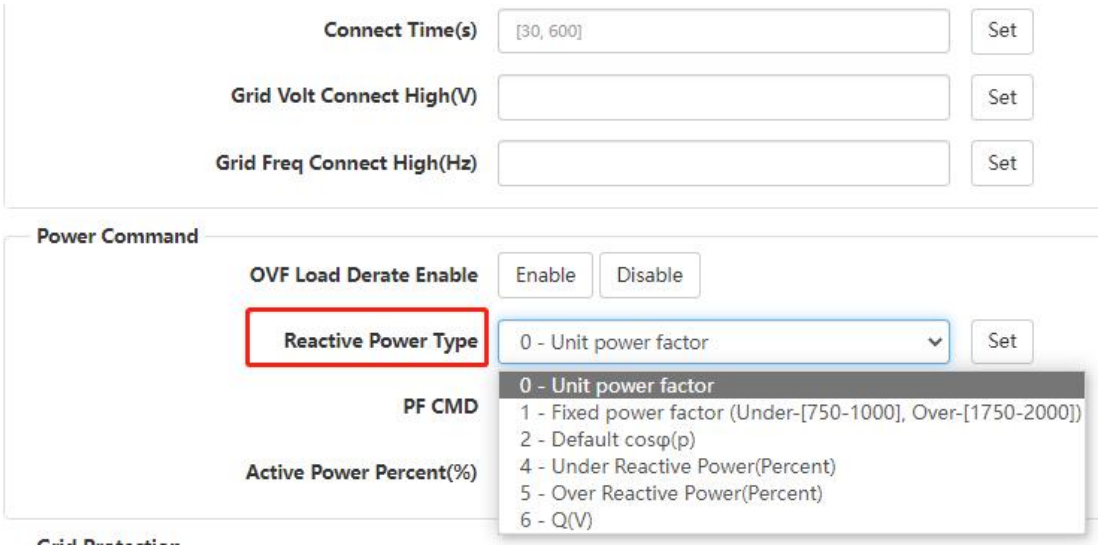
❖ **DRMS Enable** There is DRMS port in the inverter, it is used for dry contact control of Inverter

TABLE 5

DEMAND RESPONSE MODES (DRMs)

Mode	Requirement
DRM 0	Operate the disconnection device
DRM 1	Do not consume power
DRM 2	Do not consume at more than 50% of rated power
DRM 3	Do not consume at more than 75% of rated power AND Source reactive power if capable
DRM 4	Increase power consumption (subject to constraints from other active DRMs)
DRM 5	Do not generate power
DRM 6	Do not generate at more than 50% of rated power
DRM 7	Do not generate at more than 75% of rated power AND Sink reactive power if capable
DRM 8	Increase power generation (subject to constraints from other active DRMs)

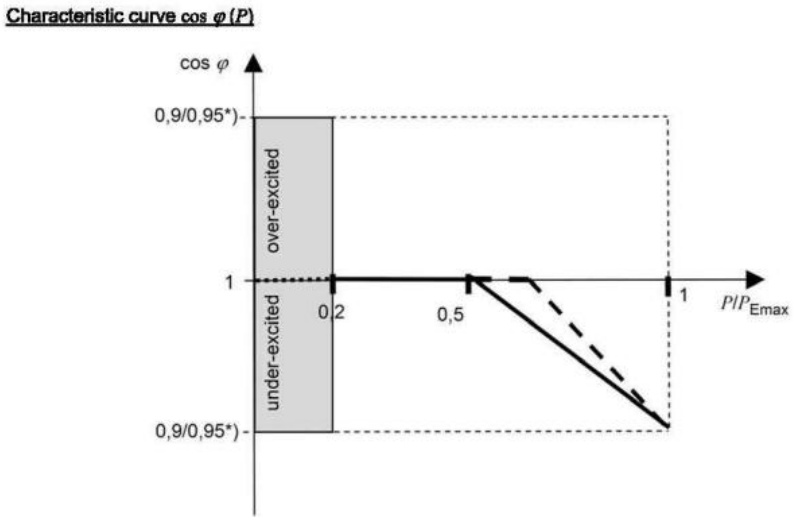
❖ Reactive Power CMD Type



- 0-Unit power factor： the inverter only output active power, PF =1, the default option.
- 1-Fixed power factor: the inverter output power with a fixed PF .If you want to export power with a fixed cosφ, you can select 1-Fixed power factor, and at the same time you need to configure "PF CMD(i.e. The default value

is 1000, if you want to set lagging 0.9 , you just set 900 , and if you want to set leading 0.9, you can set 1900)"

- 2-Default cosφ(P) : the PF is decided by the output active power. If you want the inverter to adjust the PF automatically at different power rate ,you can select it , but for different grid codes , the default limit will be different too, so you should make sure the inverter work with the correct code.



- 4-UnerReactivePower:the inverter will output under-excited reactive power. If you want to export with a certain Under-excited reactive power , you can select it and at the same time you need to limit "reactive power percent %"(i.e. If you want to export 3000Var, you can set 60)
- 5-OverReactivePower: the inverter will output over-excited reactive power, If you want to export with a certain Over-excited reactive power ,you can select it and at the same time you need to limit "reactive power percent %"(i.e. If you want to export 3000Var, you can set 60)
- 6-Q(V): the inverter will output reactive power according to the AC voltage . If you want the inverter to have reactive power response at

different AC voltage level , you can select it . but for different grid codes , the default limit will be different too, so you should make sure the inverter work with the correct code.

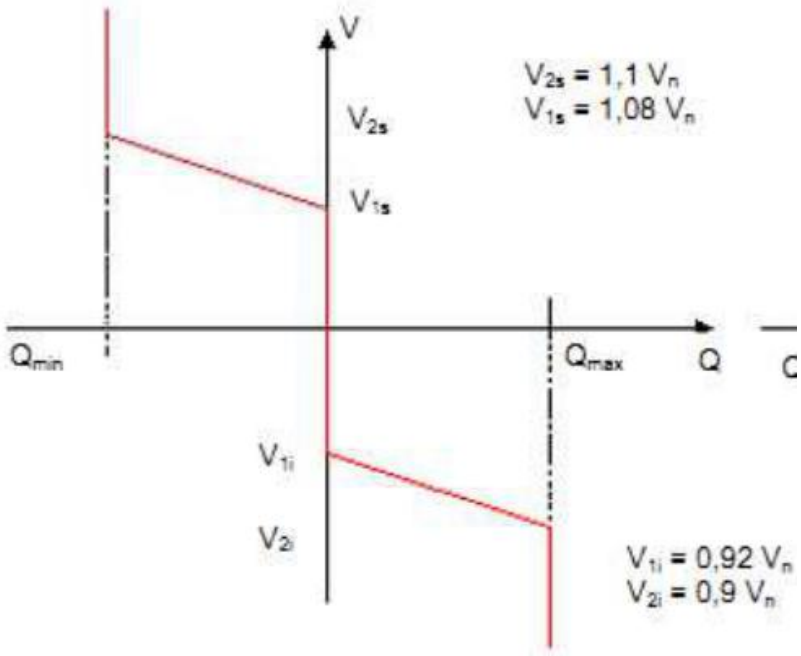
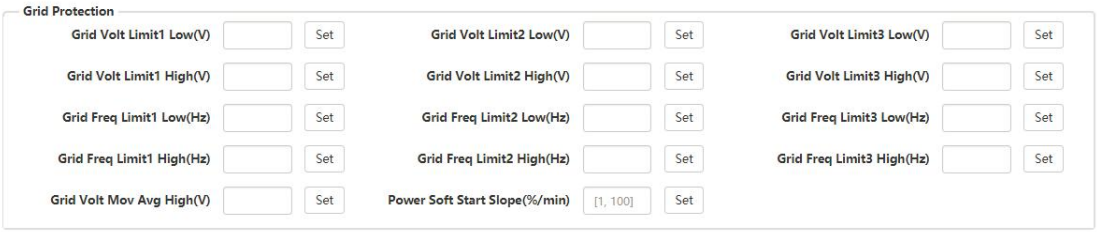


Figura a

- **Reactive Power Percent CMD(%)**: This command is combined used with Reactive Power CMD Type, If you set 4-UnerReactivePower or 5-OverReactivePower, you can set the output reactive power percent here.



- **Grid Protection Setting Group**: If the AC voltage/frequency is lower than low limit, or higher than high limit, the inverter will disconnect from the grid. Note

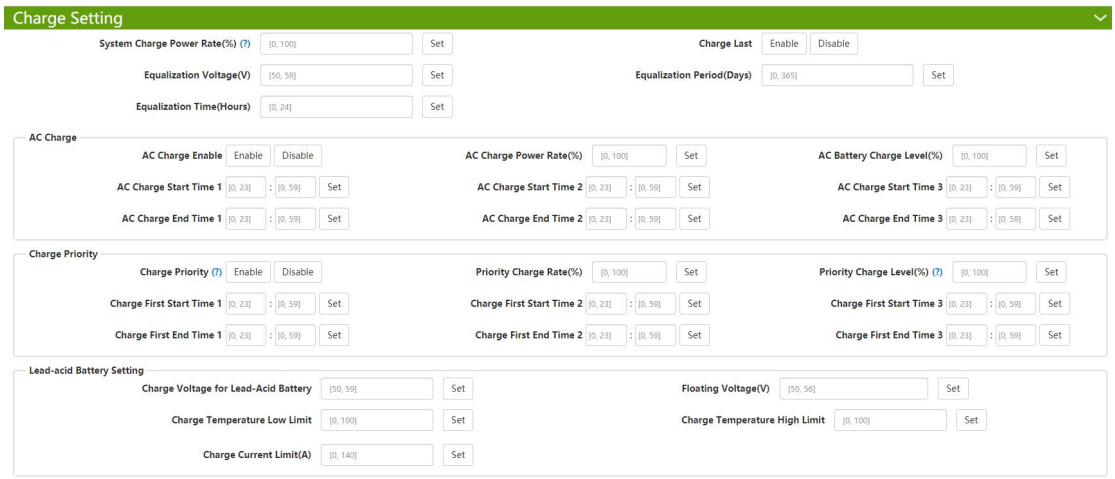
keep Grid Volt/Freq Limit3 Low(V)<=Grid Volt/Freq Limit2 Low(V)<=Grid Volt/Freq Limit1 Low(V) ; Grid Volt/Freq Limit3 High(V)>=Grid Volt/Freq Limit2 High(V)>=Grid Volt/Freq Limit1 High(V)

- **Grid Volt Limit1 Low(V)**
- **Grid Volt Limit2 Low(V)**
- **Grid Volt Limit3 Low(V):**
- **Grid Volt Limit1 High(V)**
- **Grid Volt Limit2 High(V)**
- **Grid Volt Limit3 High(V)**
- **Grid Freq Limit1 Low(Hz)**
- **Grid Freq Limit2 Low(Hz)**
- **Grid Freq Limit3 Low(Hz)**
- **Grid Freq Limit1 High(Hz)**
- **Grid Freq Limit2 High(Hz)**
- **Grid Freq Limit3 High(Hz)**

❖ **Grid Volt Mov Avg High(V):** If average AC voltage for 10 minutes is higher than the set value, the inverter will disconnect from the grid

❖ **Grid on Power SS Enable,Power Soft Start Slope(%/min)**: The inverter output power increase speed when connect to grid at the beginning.If you need to change the power soft start slope ,just leave the" Grid on Power SS" enable.

4. Charge Setting



- **System Charge Power Rate(%)** : The max charge power percent. For example, the max.charge power is 4000W, and if you set 50, the max charge power will be 2000W.
- **Battery Equalization** : Life of Lead acid battery can be extended through timed battery equalization.
- **Charge Last** : The PV power will not be used to charge the battery until the export power to the grid reaching the limitation.(PV to Load > PV to grid > PV to battery).
- **AC Charge Enable:** if the customer want to use AC charge the battery, the customer need to (1) enable " AC charge Enable", and then (2)set the max power he want to charge the battery from AC, (3)set the SOC Limit (4)set the time period he wants to use the AC to charge the battery, there are 3 time periods you can set. So if the battery SOC is less than the limit, the system will use AC to charge the battery during the time he set
  - **AC Charge Enable**

- **AC Charge Power Rate(%)** The max charge power percent from grid. Nominal charge power is 3000W, if you set 50, the max AC charge power will be 1500W
- **AC Battery Charge Level(%)** If the battery SOC is higher than limit, the inverter will stop AC charging
- **AC Charge Start Time 1**
- **AC Charge End Time 1**
- **AC Charge Start Time 2**
- **AC Charge End Time 2**
- **AC Charge Start Time 3**
- **AC Charge End Time 3**

❖ **Charge Priority Setting Group :**For LXP hybird inverter, in default mode, when PV power is sufficient to cover the demands of home loads, then PV power will firstly consumed by home loads, if there is excessive PV power then the excessive power will be used to charge the battery, if there is still PV power rested after load consuming and battery charging, then the rested PV power will be feed-in to the grid. In some situation, the customers want the solar power to charge battery first, and if there is more energy, it take the load in house. So we can enable charge first function. Charge first power CMD is the max power percent when charge battery in charge first mode. If the time is in the period user set and the battery SOC is less than the limit, the solar power will used to charge battery first.

- **Charge Priority(Enable this mode, solar power charge battery first, then take the family load, if there is surplus, feed into grid)**
- **Priority Charge Rate(%)**
- **Charge first SOC Limit** If the SOC is higer than limit SOC, the inverter will

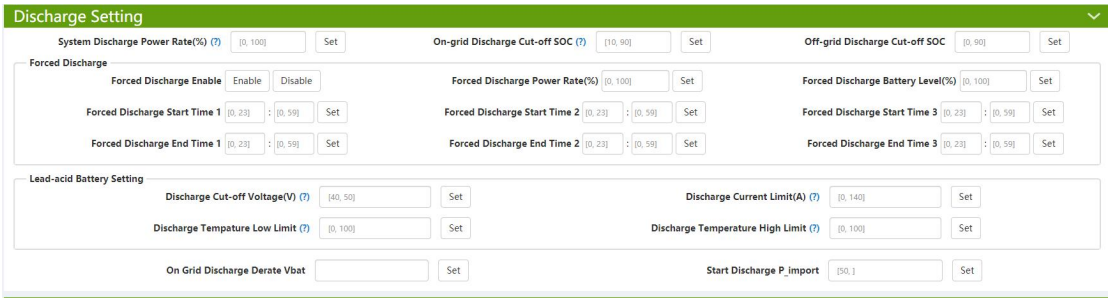
stop charge first function

- **Charge First Start Time 1**
- **Charge First End Time 1**
- **Charge First Start Time2**
- **Charge First End Time2**
- **Charge First Start Time 3**
- **Charge First End Time3**

❖ **Lead-Acid Battery Setting Group**

- **Charge Voltage for Lead-Acid Battery（V）**: The CV charge voltage
- **Floating Charge Voltage （V）**: The float charge voltage for Lead-Acid Battery, it should be lower than the CV voltage.
- **Charge Current Limit（A）** : Charge current can be changed by modifying this value.
- **Charge Temperature Low Limit :** If the temperature is lower than low limit, the inverter will stop charge battery
- **Charge Temperature High Limit** : If the temperature is higher than high limit, the inverter will stop charge battery

5. Discharge Setting



- **System Discharge Rate(%)** The max discharge power percent. Nominal discharge power is 3000W, if you set 50, the max discharge power will be 1500W. (Rated discharge power:3000W)
- **On-grid Discharge Cut-off SOC**: When the inverter connect to the grid, if the battery is discharging to take the load, it will stop discharge when the SOC is lower than this limit
- **Off-grid Discharge Cut-off SOC**: When the inverter is in off grid mode, if the battery is discharging to take the load, it will stop discharge when the SOC is lower than this limit
- **Forced Discharge Setting Group** If the customer want to discharge the battery, you can enable forced discharge function,and set the discharge power percent and period
  - **Forced Discharge Enable**
  - **Forced Discharge Power Rate(%) :** Force discharge power percent
  - **Forced Discharge Battery Level(%):** If Battery SOC is Lower than this limit, the inverter will stop force discharging
  - **Forced Discharge Start Time 1**
  - **Forced Discharge End Time 1**
  - **Forced Discharge Start Time 2**
  - **Forced Discharge End Time 2**
  - **Forced Discharge Start Time 3**
  - **Forced Discharge End Time 3**

- **Lead-Acid Battery Discharge Setting**
  - **Discharge Cut-off Voltage（V） :** When the voltage lower than this limit for lead-acid battery, the system will stop discharging

- **Discharge current limit （A）** : Discharge current can be changed by modifying this value.
- **Discharge Temperature Low Limit**: If the temperature is lower than low limit, the inverter will stop discharge battery
- **Discharge Temperature High Limit** : If the temperature is higher than high limit, the inverter will stop discharge battery
- **On-grid Discharge Derate Vbat** : For leadacid battery mode Discharge power will begin to derate when reaching "On-grid Discharge Derate Vbat" level. The discharge power will be 0 when reaching cut-off voltage -1V. Leave "On-grid Discharge Derate Vbat" equal to "Discharge cut-off voltage",to disable this function automatically
- **Start Discharge P_import (W):** Default value is 100, that means the battery will begin to discharge power to take the load when the import power from grid is higher than 100Watts. (Adjust range[50-100]).

PART2： BATCH SET

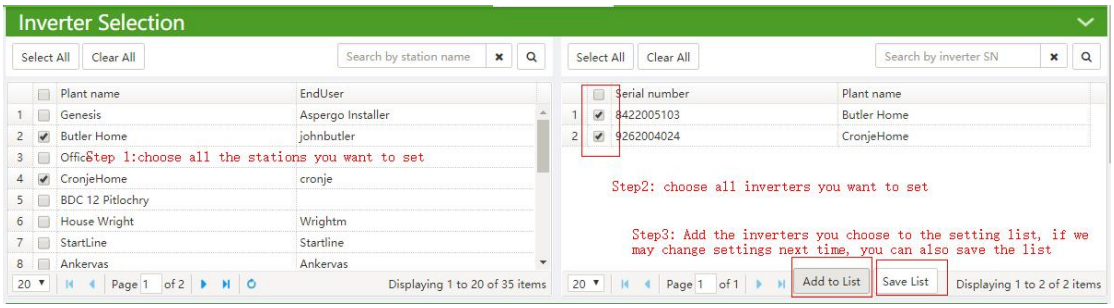
Luxpower monitor system allow distributors to set the charge/ discharge and some other settings at one time. The setting step is as below:

Step1: Select the inverters you need to the setting list

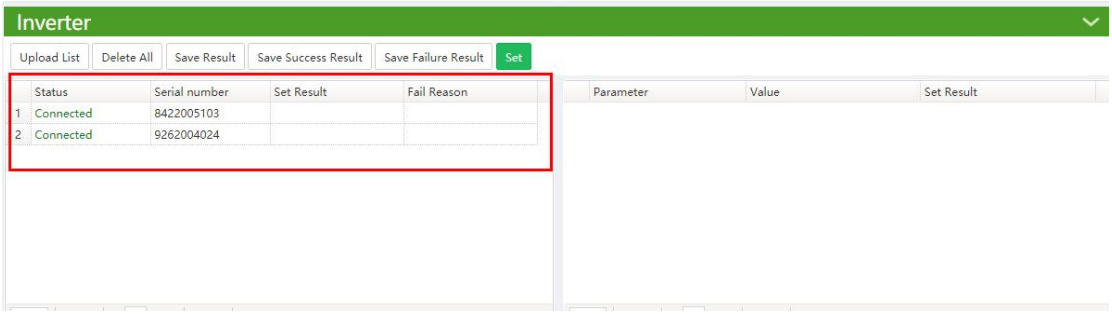
(1) Choose the station first, after choose the station, all inverters in the station will be in the right window

(2) Choose the inverters you need to set

(3) Add inverters in the setting list, if you want to set these inverters next time, you can save the inverters list and next time, you can upload the list directly.



Step2. After add the inverters in the list, they will be showed in the list as below. If you have a list saved before, you can also choose Upload list to add the inverters



Step3. Choose the settings you want to change and input parameters, then all settings will be in the setting list, after select all settings, click "set" to set all the parameters.