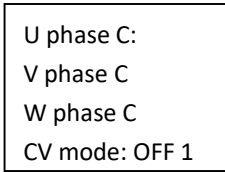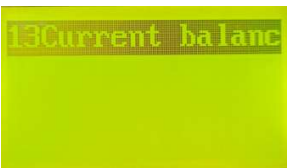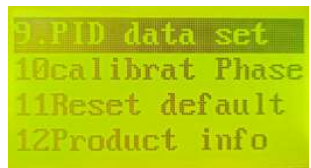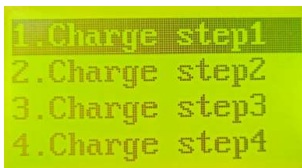* Charge/Dischg V: charging/discharge voltage
* Charge/Dischg C: charging/discharge current
* Charge/Dischg T: charging/discharge time
* CV mode: Load running condition, constant voltage mode
(CC mode means constant current mode, OL mode means open loop mode)
* OFF 1: OFF means not at working, number means the charge step

Short press ESC change into the AC side current value query under the standby and no fault mode. Short press ESC again or no operation in 10 seconds it will back into standby mode, display format as below:

| U phase C: |
| V phase C |
| W phase C |
| CV mode: OFF 1 |

| U Phase Current: xxxxA |
| V Phase current: xxxxA |
| W Phase current: xxxxA |
| (CV/CC/OL) mode: OFF |
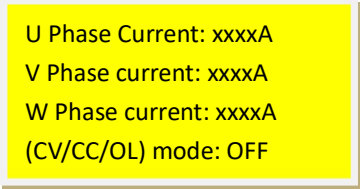
* Primary menu as below

* Charge step1 –step5
Those are the charging steps users going to need to set their charging steps.
If the version you bought is with charging function only, then the total 5 charge steps will all be shown as Charge stepX
If the version you bought is with charging function and discharging function, then the former 4 columns will be shown as Charge stepX, and 5th column will be shown as Discha step5 (means discharge step5)
*Basic data set: Basic parameter setting
Basic parameters, set according to users' needs.
*Protection data set: Protection function parameter setting
Protection functions and parameter setting.
*Comm data set: Communication parameter setting
When users uses the version with RS485 communication function, need to enter this menu and set accordingly.
*PID data set: PID parameter setting
When users uses different loads, different dynamic parameters can be adjusted according to the characteristics of the load to achieve the optimal or stable operation adjustment state.
*Calibrat Phase: Phase parameter calibration
When users changes the main loop voltage, or connect the transformer at the primary side, or connect a synchronization transformer to the synchronization signal terminal, then users need to enter here for phase parameter calibration.
In the phase calibration mode, it is recommended that the user access the 1K~10KW resistive dummy load to test. The system defaults to the output voltage of 50% of the main loop, and presses the start button to run the work.
At this time, when the output voltage is adjusted by pressing the ▲ (up) or ▼ (down) key to half of the main loop voltage, the calibration work is completed. The default parameters are with AC380V, users do not need to calibrate if the main circuit voltage is AC380V.
* The output is about DC256V when main circuit is AC380V, and about DC150V when is AC220V
* The phase calibration value of AC380V without synchronous transformer: 0
* Phase calibration value when AC380V, 660V, 1140V connect with synchronous transformer: -250
*Reset default: to restore all the parameters to its default version, all the parameters set by user will be cleared.
Password: ▲▲▼▼▲▲, and then press SET + ESC at the same time, after the password is verified, the factory recovery operation will be performed automatically, and the control system will be restarted after completion.

*Product information: Manufacturer information

*Current balanc: current balance parameter setting (STB63 don't have this parameter, only in STB66)

I.　　　　Charge stepX parameters
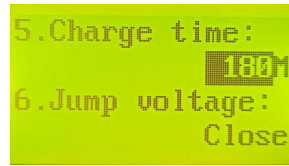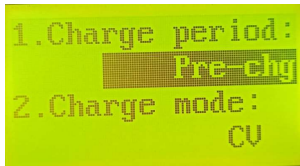
1. Charge period:

It is the chagring method users going to use, there are in total 5 methods can be chosen，they are

Pre-chg (Pre-charge), Float-chg (Float charge), Equaliz-chg (Equalize charge), Trickle-chg (trickle charge), Fast-chg (Fast charge / or boost charge), the default charge period is pre-charge

2. Charge mode:

Users can choose CC (constant current), CV (constant voltage) or OL (open loop), default is CV

3. Given voltage/current:

It is the voltage or current you give to the board in charge stepX. In constant voltage mode is given voltage, constant current mode is given current.

4. Current/ voltage limit:

The current limited use at constant voltage mode, the voltage limited use at constant current mode, and it is useless to set limit current and voltage during open loop.

5. Charge time:

The time you are going to charge for this period, when time is up, it will switch to next step automatically. When in Float charge step, the unit is count as Hours, other charge stpes are using minutes.

6. Jump voltage:

Default is Close, users can open this function and set the value by their own will. It's the voltage users set for the present charge period, it will jump into next step when the charge voltage is over than the set jump voltage for 1 minute.

7. Jump current:

Default is Close, users can open this function and set the value by their own will. It's the current users set for the present charge period.

When in Float charge period, it will jump into next step, when the charge current is over than the set jump current for 1 minute.

When in other charge steps, it will jump into next step when the charge current is less than the set jump current for 1 minute.

8. Next step:

It is the next step after the present charge period, when battery full filled a certain requirements, it will switch into next step automatically. Users can set to Step1 if they only need 1 charge step. Or set to Step2, and it will run to step2 after this charge time of this period is over or reaches the set jump voltage or current.

II.　　　　Basic data set
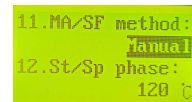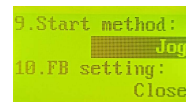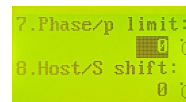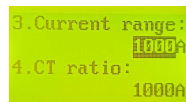
1. Ctl method:

Control method, user can choose from Key B, Local or Comminucation. But in battery control version, they are not usefull, it is controled by fixed rated value you set in Charge steps, users don't need to set.

2. Voltage range:

Set according to the rectified DC output voltage of the silicon/thyristor controlled rectifier, the actual load maximum voltage or the full range of the voltage sensor corresponds to the voltage feedback terminal VF5V, constant voltage value, overvoltage value, undervoltage and the pressure value are all set based on this parameter.

3. Current range:

Set according to the rectified DC output voltage of the silicon/thyristor controlled rectifier, the actual load maximum voltage or the full range of the voltage sensor corresponds to the voltage feedback terminal VF5V, constant voltage value, overvoltage value, undervoltage and the pressure value are all set based on this parameter.

4. CT ratio: users can set the CT ratio according to their needs.

Set according to the current transformer transformation ratio of the primary AC terminal, CT1-3 is connected to a transformer with secondary side current of 1A, with over current protection or three-phase current imbalance protection of the primary side AC measurement. Don't need to connect if not in need.

5. Soft start T:

User can set the soft start time they want, adjust range is from 1 ~ 200 seconds.

6. Soft stop T:

User can set the soft stop time they want, adjust range is from 1 ~ 200 seconds, if set to "0" means closed this function.

7. Phase/p limit: phase position angle

Limit the phase shift angle of the thyristor output, the angle is fully open at 0 degrees without limit, and output the highest voltage; at 60 degrees, it is half of the rectified voltage output

8. Host/S shift:

Normally, the setting parameter is a number between -30° ～ +30°. When there is a transformer in the main circuit, such as a △/Y transformer, then there will be a phase difference between the primary and secondary of the transformer, at this moment, users will need to adjust this parameter. △/Y transformer: +30, Y/△ transformer: -30.

9. Start method:

The starting method has two options: "jog" or "self-locking". Please refer to Part Five. Users can choose according to their actual needs. Default is "jog".

10. FB setting:

Feedback setting, can set to close or detect. (ON/ OFF)

11. MA/SF method:

The initial state setting of the control board after power-on. "MA" means "manual", it is in shut down mode after power-on; and "SF" means "Self" means, the control board runs automatically after power-on.

12. St/Sp phase: "St" short for "Start", "Sp" short for "Stop

The start and stop phases are 0~180 degree SCR phase shift angle control. When start, it output voltage from the set phase value. When stop, the output voltage value drops to the set phase value and directly stops; this parameter is needed when discharging in order to make the discharge in the inverter state.

III. Protection set

1.Overvoltage: Close	3.Undervoltage: Close	5.IF Overload: Close	7.CT Overload: Close	9.Phase loss: Open
2.Overvoltage T: 10S	4.Undervol T: 10S	6.IF Overload T: 10S	8.CT Overload T: 10S	10.I imbalance: Close

1. Overvoltage: Press ▲ or ▼ to set the range, can be set from 1~6000V, must be lower than the set max voltage range. VF voltage signal feedback terminal, when output voltage over than this value and after the set overvoltage time, it will be in overvoltage protection. Default overvoltage protection function is closed.

2. Overvoltage T: Press ▲ or ▼ to set, the over voltage protection action time, default is 10 seconds.

3. Undervoltage: Press ▲ or ▼ to set the range, can be set from 1~6000V, must be lower than the set max voltage range.
   VF voltage signal feedback terminal, when output voltage lower than this value and after the set under voltage time, it will be in under voltage protection. Default under voltage protection function is closed.

4. Undervol T: Press ▲ or ▼ to set, the under voltage protection action time, default is 10 seconds.
   IF overload: IF current signal feedback terminal, when the load current higher than this value and after the set over load time, it will be in over load protection mode. Default over load protection function is closed.

5. IF overload T: Press ▲ or ▼ to set, the over load protection action time, default is 10 seconds.

6. **CT Overload:** Current tansducer over load. Transducer signal input detection function, when the load current is higher than the set value and after the set CT over load time, it will be in over current protection, default is closed.

7. **CT Overload T:** The transducer over load protection act time, can be set from 0-200 seconds, default is 10s.

8. **Phase loss:** When one of a certain phase disappears, it will enter the phase loss proteection mode. The phase loss protection function can be chosen. Default is open (ON)

9. **I imblance:** Three phase current balance protection.

   This function is used to detect the balance state of the three-phase current during the operation of the load. It represents the percentage value of the current difference between two phases and the maximum value. The adjustable range is 10% to 60%. Default is closed (OFF).

IV.　　Comm data set:

```
1.Comm add:     1
2.Baud R:    9600
3.Parity: None2
4.Comm Chk:Close
```

Communication data set: for specific pls refer to RS485 communication protocol.

V.　　PID set:

```
1.PID mode: M/S
2.P set:      80
3.I set:      60
4.D set:    Auto
```

According to the load features to set different dynamic parameters in order to achieve the best or stable operation adjustment state, users need to set the PID parameter at this moment

Function Parameter	Parameter Value	Default	Remark
PID parameter setting	Refer to the Remark	Medium Speed (M/S)	PID setting has F/S-fast speed (Suitable for resistive load, constant voltage and constant current), M/S-medium speed, S/S-slow speed (Suitable for inductive and conductive load, constant voltage and constant current) and user-defined PID regulation. Under the user-defined mode, users can set the P and I parameters all by themselves, but parameters under other three kind of mode cannot be adjust.
P parameter setting	1～128	--	
I parameter setting	1～128	--	
D parameter setting	Not adjustable	--	

VI.　　Phase calibration

```
calibrat Phase
Output vol 50%
Parameter:      0
Work mode: OFF
```

When users changes the main loop voltage, or connect the transformer at the primary side, or connect a synchronization transformer to the synchronization signal terminal, then users need to enter here for phase parameter calibration. In the phase calibration mode, it is recommended that the user access the 1K~10KW resistive dummy load to test. The system defaults to the output voltage of 50% of the main loop, and presses the start button to run the work.

At this time, when the output voltage is adjusted by pressing the ▲ (up) or ▼ (down) key to half of the main loop voltage, the calibration work is completed. The default parameters are with AC380V, users do not need to calibrate if the main circuit voltage is AC380V.

* The output is about DC256V when main circuit is AC380V, and about DC150V when is AC220V

* The phase calibration value of AC380V without synchronous transformer: 0

* Phase calibration value when AC380V, 660V, 1140V connect with synchronous transformer: -250

VII.   Current balance: Current balance, only when the version is STB66, will have this function.

Due to the two sets of secondary output of the transformer, that is, the star or angle connection is connected to the twelve pulse wave control, the current imbalance phenomenon will occur. At this time, the user needs to enter the current balance manually adjust mode.

In the trickle charge adjustment mode, users can directly adjust the parameters in the shutdown state and then test; for example, in the operation adjustment, the system default output voltage is 50% of the main loop rectified voltage, Press the start (ON) key to run, and adjust the output by pressing the ▲ (up) or ▼ (down) key. At this time, the manual adjustment realizes the increase or decrease of the two groups of currents.