Growatt

powering tomorrow

TL-X/XH Series Export Limitation Introduction

Global Leading Inverter Brand

1.33+million	200+	70+	100+
Inverter Ship Globally	Professional R&D Engineers	Patents and Copyrights	Countries with Systems Installed

1、 Inverter Models

This series of inverters can achieve Export Limitation by connecting a meter or CT.
The following models belong to this series of inverters:
MIN 2500TL-XH、MIN 3000TL-XH、MIN 3600TL-XH、MIN 4200TL-XH、MIN 4600TL-XH、MIN 5000TL-XH、MIN 6000TL-XH.
Make sure that the inverter is the latest firmware version and is a single-phase inverter model with RS485 port.

2、 Dynamometer

The model of the meter is Eastron SDM230-Modbus and the model of CT is TOP 90-S10 / SP4 （LEM）.The CT aperture is 10mm and the output cable length is 5m.

Notice: In the case of using a smart meter, when the communication of meter is disconnected from the inverter, the inverter will limit the power according to the "Default power after ExportLimit failure" that you set. CT has not yet activated this function.

3、 Communication Port Definition

Note: Smart meters, CTs and inverters can transmit data and implement to related operations through the ExportLimit communication port. Please carefully confirm the definition of each port of the inverter, meter RS485 and CT.

3.1. **Definition of Inverter SYS COM RS485 Port**

Number	Definition	Function
1	Enable-	BDC Enable
2	Enable+	
3	RS485A+	External RS485 communication port
4	RS485B-	
5	ExportLimit-A	ExportLimit communication port
6	ExportLimit-B	
7	BAT-B	BDC communication port
8	BAT-A	

Table.1. Definition of inverter SYS COM RS485 port

Figure.1. SYS COM RS485 port

As shown in the above table, the inverter ExportLimit communication port is SYS COM 5, 6 pin, you can communicate with the meter or CT through the No.5 and No.6 communication port.

3.2. Definition of Meter RS485 Port

Number	Definition	Function
5	RS485A	External RS485
6	RS485B	communication port
7	GND	
8	⌐⌐ 1+	
9	COM	
10	⌐⌐ 2+	

Table.2. Definition of Meter RS485 port   Figure.2. SYS COM RS485 port

As shown in the above table, the RS485 external communication port is 5 or 6 pins. You can communicate with the inverter through the No.5 and No.6 communication port of the meter.

3.3. Indication of CT Connection

CT has a black wire and a black & white wire. As shown below: Black & White is positive and Black is negative. The arrow on the CT points from the grid side to the load. You can communicate by connecting the CT to the inverter SYS COM 5, 6 pin.
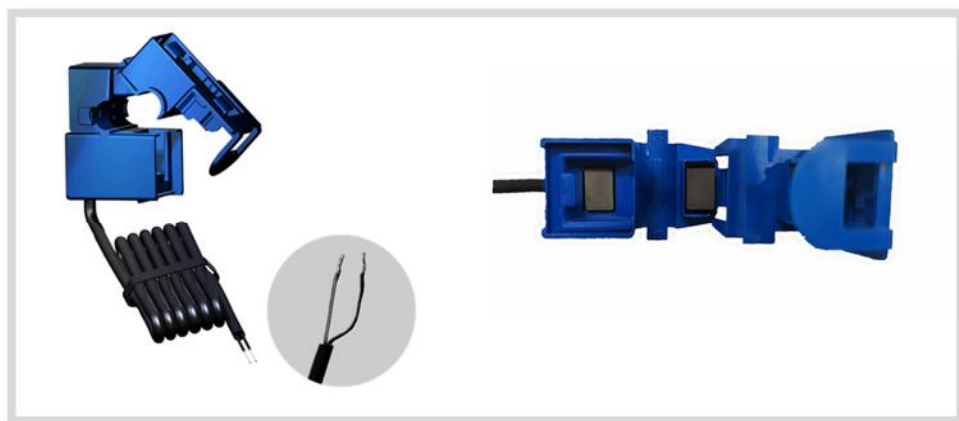
Figure.3. CT Structure

4、Meter / CT Connection

4.1. Indication of Meter Connection

The meter must be installed after the load, close to the grid side, the direction of electricity consumption is positive.

Please install the meter between the grid and the load. Follow the diagram to connect the No. 5 Pin (RS485A) of meter to the COM5 (ExportLimit-A) of inverter; connect the No. 6 Pin (RS485B) of meter to the COM6 (ExportLimit-B) of inverter. The meter input terminal is connected to the grid end, and the meter output end is connected to the load side. The specific meter connection diagram is as follows:
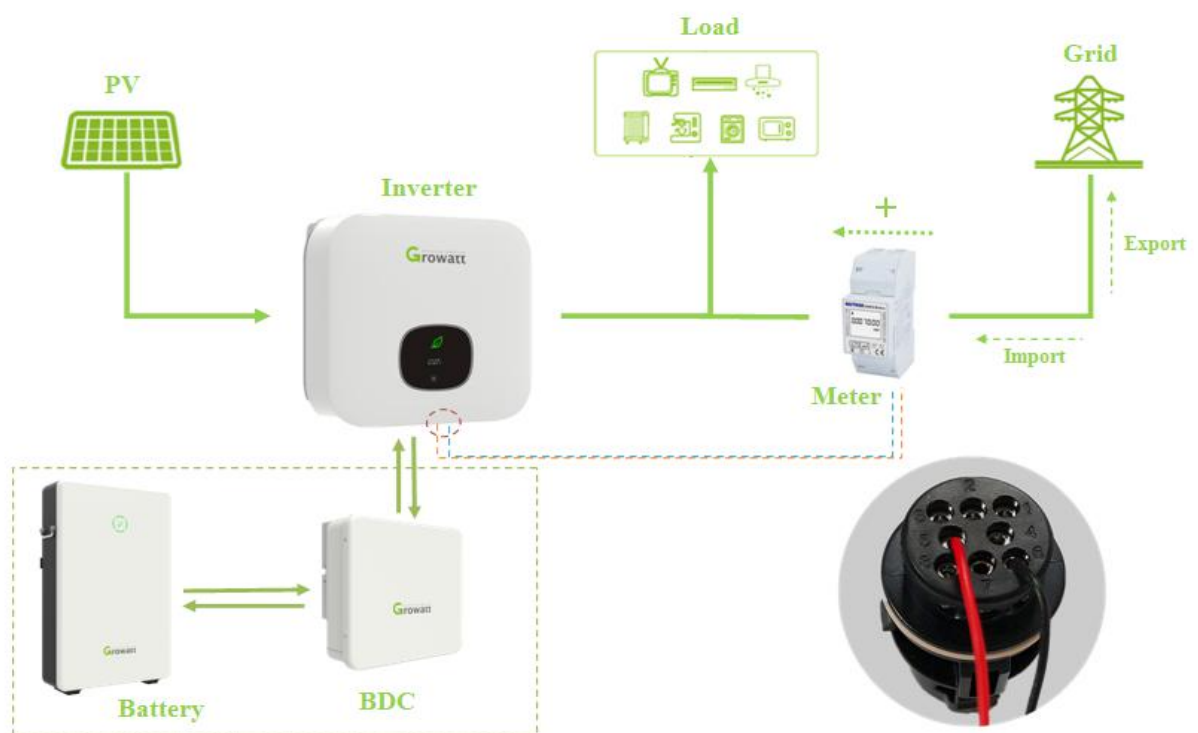

Figure.4. Indication of Meter Connection

4.2. Indication of Meter Connection

The CT must be installed after the load, close to the grid side, the direction of electricity consumption is positive.

Please follow the diagram to connect the CT black & white wire to the inverter COM 5: ExportLimit-A; connect the CT black wire to the inverter COM 6: ExportLimit-B. The CT should be installed on the L line, and its arrow points from the grid side to the load. The wiring diagram of the CT and inverter RS485 port communication is shown below:
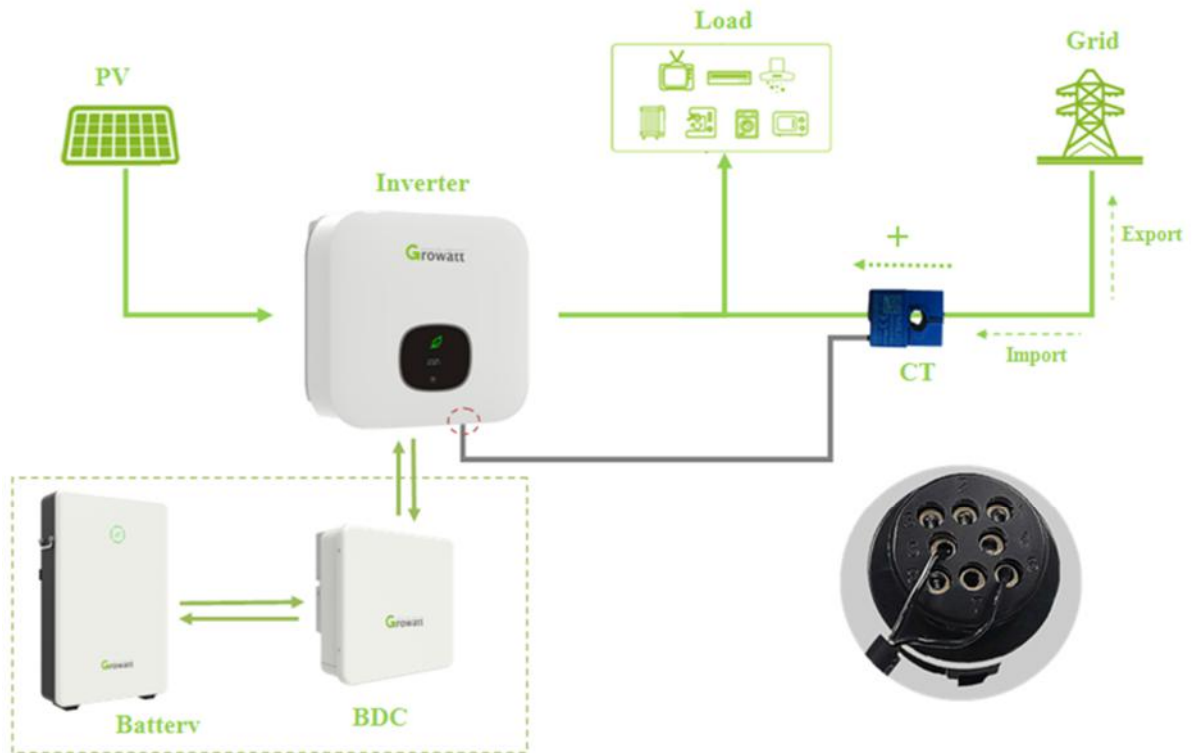
Figure.5. Indication of CT Connection

5、Setting

The following four methods can be used to set the ExportLimit power. This article will use the meter as an example to introduce the four settings of ExportLimit.

5.1. Setting through OLED

OLED Touch Button instructions	The inverter can support multiple touch modes: single touch, two consecutive touches, three consecutive touches, and long press 5S. Different touch methods have different functions. Advanced setup password: 123	
	Touch Methods	Definition
	Single Touch	Move、page turning or number add 1
	two consecutive touches	Enter setting mode or confirm the setting
	Three consecutive touches	Return to the previous page
	Long press 5S	Data zeroing

Table.3. OLED Touch Button instructions

The MIN series inverters have a stand-alone ExportLimit function. You can do this with a meter or CT. First, touch the "Parameter Settings" interface with a single touch, select "Advanced Settings" and enter the password. Touch twice continuously to enter "Export Limit", select "On" and then select "Meter", then set the ExportLimit power to complete the setting. You can set it successfully by touching it twice continuously. The schematic diagram of the OLED ExportLimit function flow is as follows:
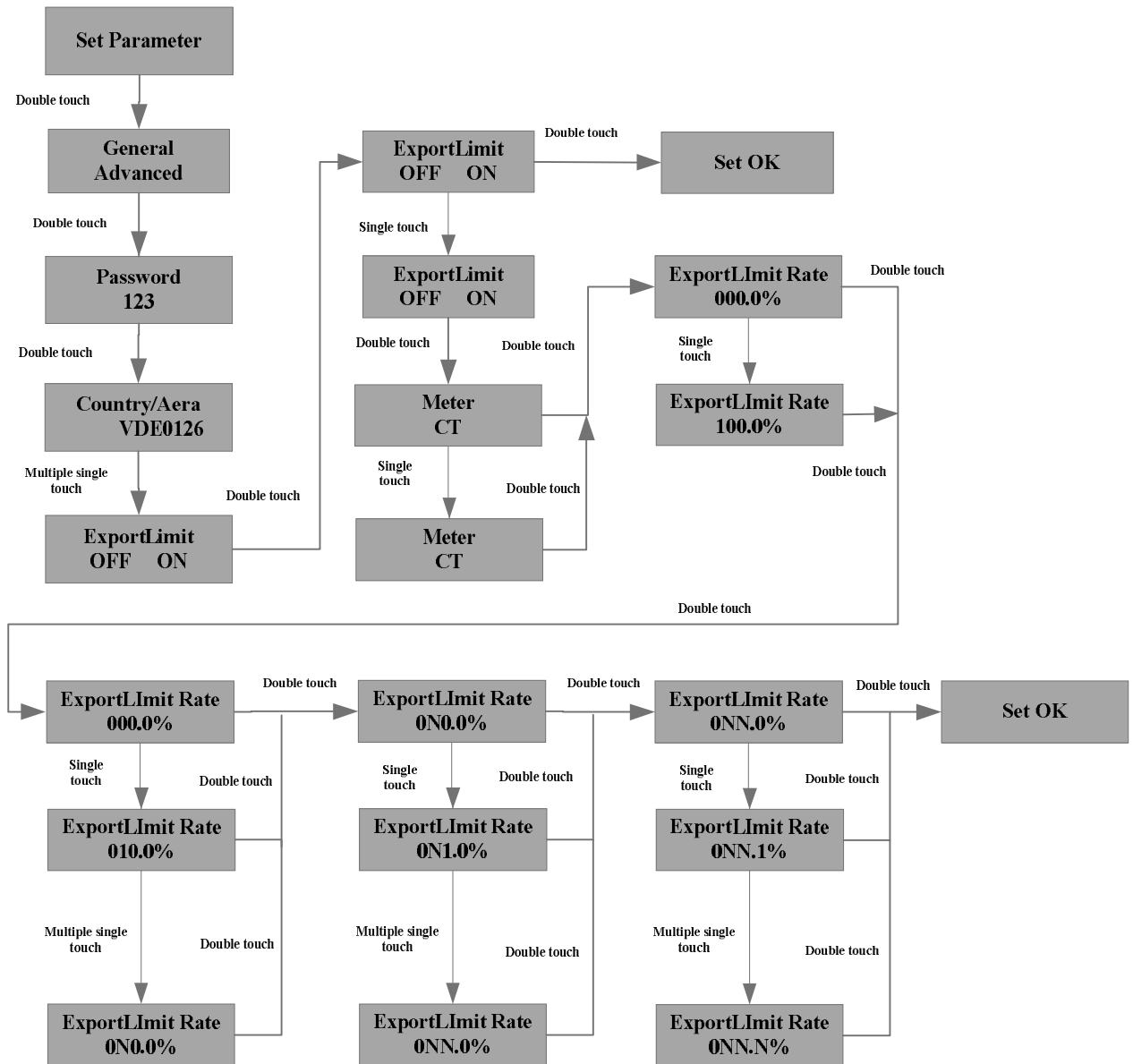
Set Parameter
│ Double touch
↓
General / Advanced
│ Double touch
↓
Password 123
│ Double touch
↓
Country/Aera VDE0126
│ Multiple single touch
↓
ExportLimit OFF ON → (Double touch) → ExportLimit OFF ON → (Double touch) → Set OK
│ Single touch
ExportLimit OFF ON
│ Double touch   Double touch
Meter CT → (Double touch) → ExportLImit Rate 000.0% → (Double touch)
│ Single touch   │ Single touch
Meter CT (Double touch) ← ExportLImit Rate 100.0% → (Double touch)

ExportLImit Rate 000.0% → (Double touch) → ExportLImit Rate 0N0.0% → (Double touch) → ExportLImit Rate 0NN.0% → (Double touch) → Set OK
│ Single touch   Double touch   │ Single touch   Double touch   │ Single touch   Double touch
ExportLImit Rate 010.0%   ExportLImit Rate 0N1.0%   ExportLImit Rate 0NN.1%
│ Multiple single touch Double touch   │ Multiple single touch Double touch   │ Multiple single touch Double touch
ExportLImit Rate 0N0.0%   ExportLImit Rate 0NN.0%   ExportLImit Rate 0NN.N%

Figure.6. Indication of CT Connection

Notice: The OLED cannot be used to set the "Default power after ExportLimit failure", if this setting need to be set, please use other setting methods shows in this article.

5.2. Setting through ShineServer

If the inverter is monitored online via the Growatt monitoring system, you can enable ExportLimit via ShineServer. First login to ShineServer, click "Plant" and go to the "Device List" interface, select to enter "Min", you can see the inverter list. Select the inverter and click the setting icon to enter the setting interface.

Figure.7. Indication of setting the inverter on the ShineServer

Select "Set Export Limit", select "Enable meter 1", fill in the limit power percentage and the password then click save to set export limit successfully.
Notice: "Set Export Limit" can choose "Forbid", "Enable meter 1", "Enable meter 2" and "Enable CT". The MIN series are not support to use "Enable meter 2".
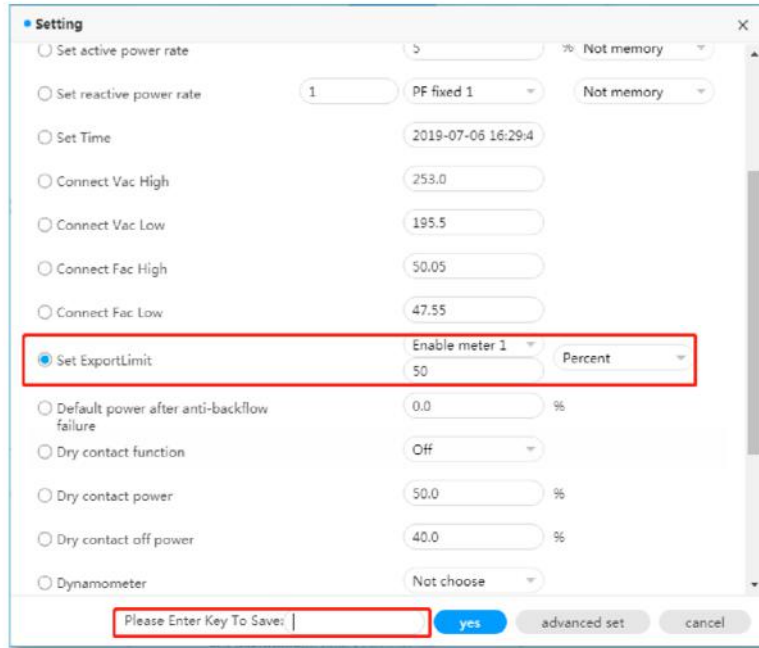
Figure.8. Indication of setting Export Limit on the ShineServer

If the dynamometer you are using is a smart meter and you need to set the "Default power after ExportLimit failure", you can do the following on ShineServer:

After entering the setting interface, fill in the "Default power after ExportLimit failure". After entering the password, click Save to display the success.
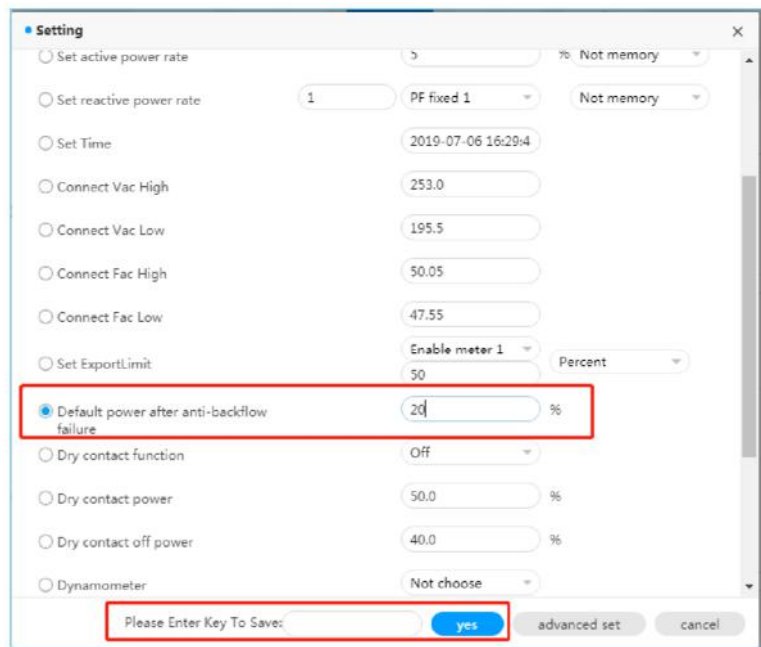

Figure.9. Indication of setting Default power after ExportLimit failure on the ShineServer

5.3. Setting through ShinePhone

If the inverter is monitored online via the Growatt monitoring system, you can enable Export Limit via the ShinePhone. First login to the shinephone, click on "Plant" to see the inverter list. Select the inverter, enter the details page and click the "Control" to enter the setting interface.
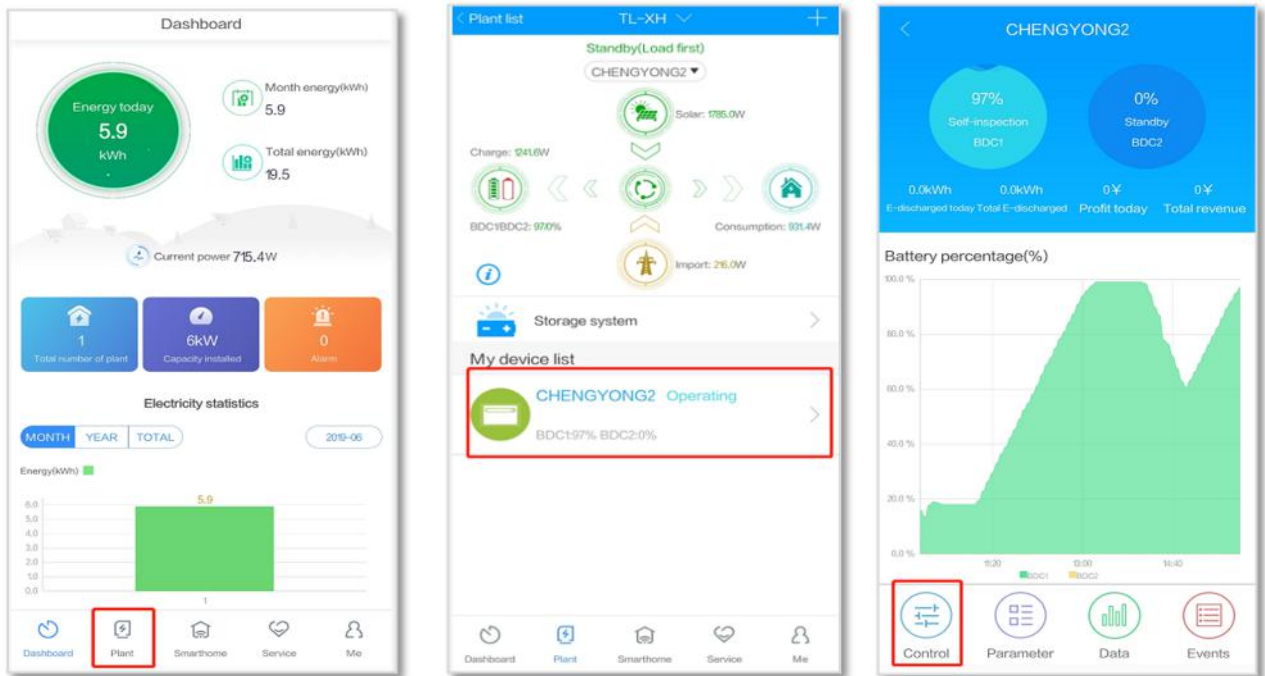

Figure.10. Indication of
finding the setting interface on ShinePhone

Select "Set Export Limit", input the password, select "Enable meter 1", fill in the limit power percentage and then press save to set export limit successfully.
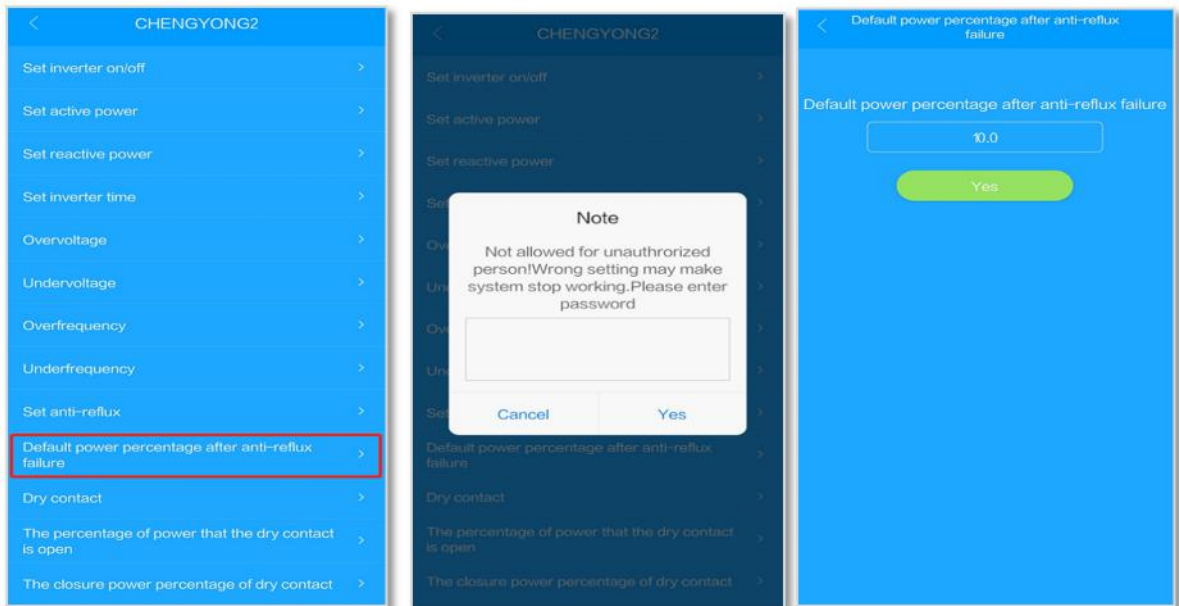

Figure.11. Indication of finding the setting interface on ShinePhone

If you use smart meter as dynamometer and want to set the "Default power after ExportLimit failure". You can operating on ShinePhone like following:
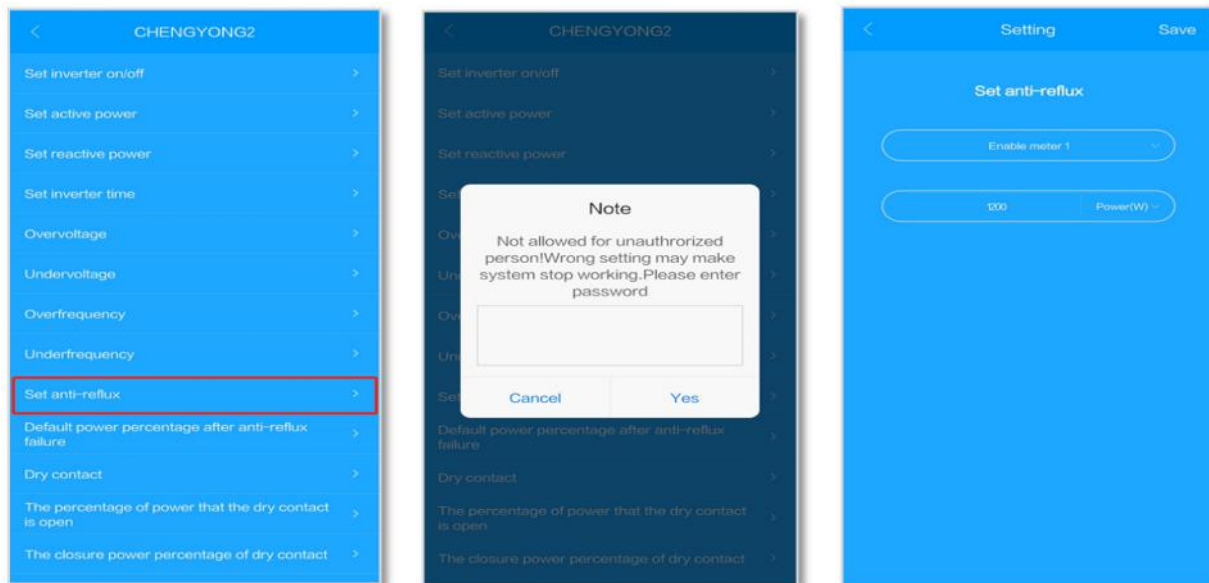Select "Default power after ExportLimit failure", input the password then input the power rate, press "Yes"

Figure.12. Indication of setting "Default power after ExportLimit failure"

Notice: "Set Export Limit" can choose "Forbid", "Enable meter 1", "Enable meter 2" and "Enable CT". The MIN series are not support to use "Enable meter 2".

5.4. Setting through ShineBus

To set up the inverter with ShineBus, the inverter need to connect to the host computer with the communication line, connect the RS485 port of the communication line to the SYS COM 3, 4 pin of the inverter, and connect the USB port of the communication line to the host computer.

First, use ShineBus to read the inverter information to ensure the inverter and the host computer communicate successfully. Click "Configuration" to select "ExportLimit enable" in the "ExportLimit setting", write "1" and click "Set" to display "Set successful". That means the meter 1 ExportLimit function has been successfully set.

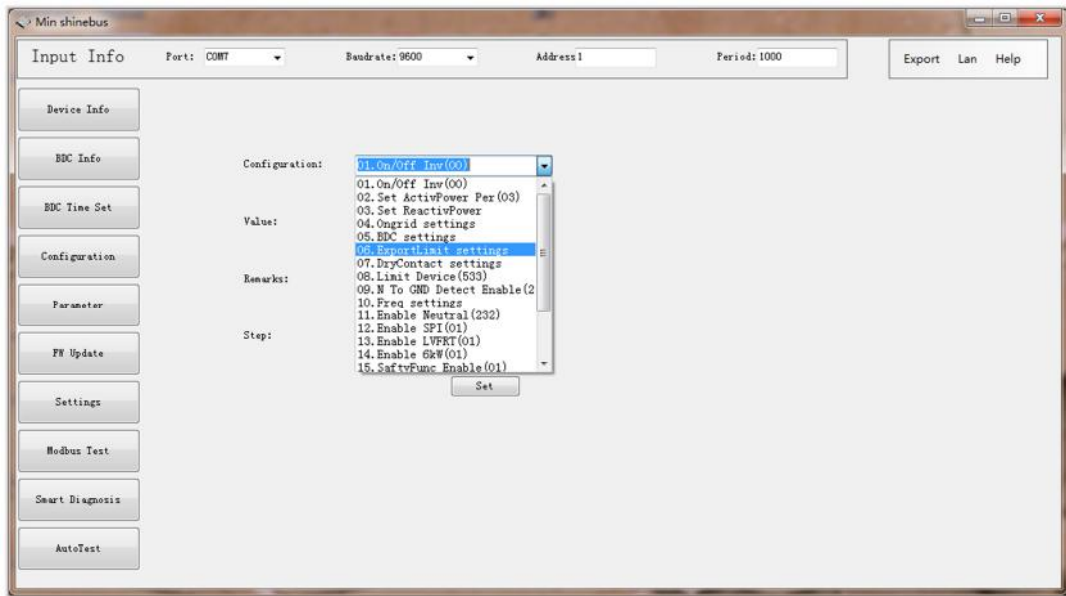Figure.13. Indication of find "Configuration" in ShineBus

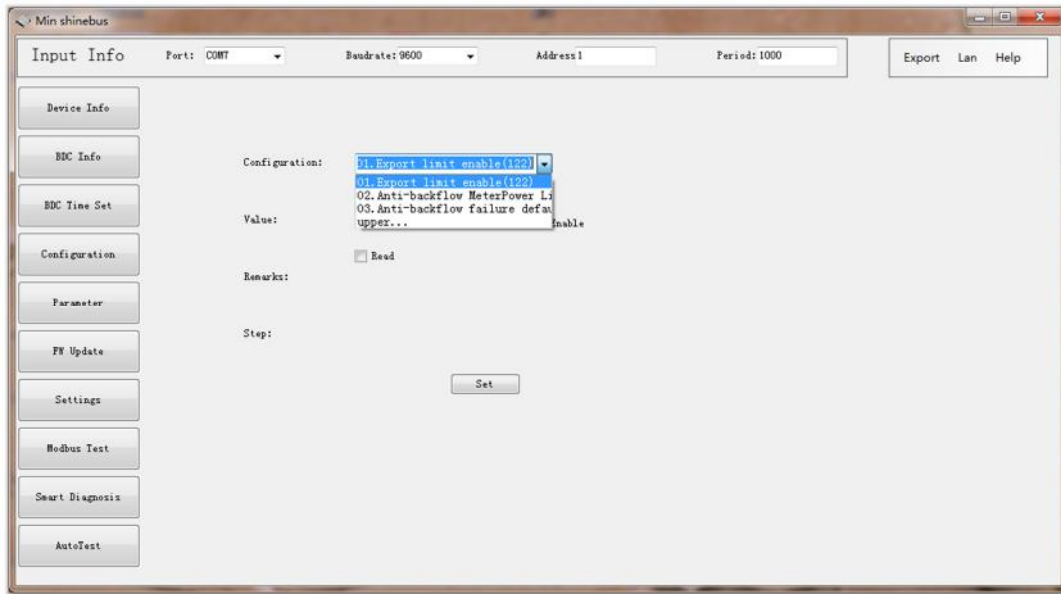Figure.14. Indication of find "ExportLimit setting" in ShineBus

Figure.15. Indication of find "ExportLimit enable" in ShineBus

You can choose "ExportLimit power rate" at "ExportLimit setting" at "Configuration" page, write in the power rate which is between 0 and 100. Click "set", if it shows "Set successful", it means the setting is already successful.
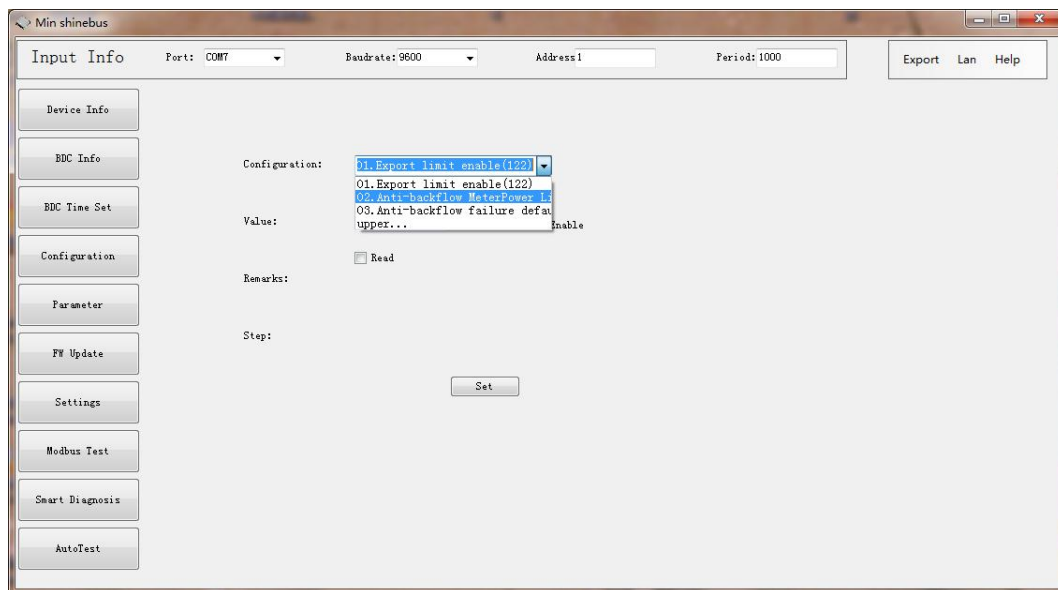

Figure.16. Indication of set "ExportLimit Power rate" in ShineBus

If your dynamometer is meter, you can set"Default power after ExportLimit failure" on ShineBus:

First, in "Configuration" page, select "ExportLimit setting", then select "Default power after ExportLimit failure"; file in the percentage which range is from 0 to 100, after that, click "set", when it shows "Set successful" means the setting is enable now.
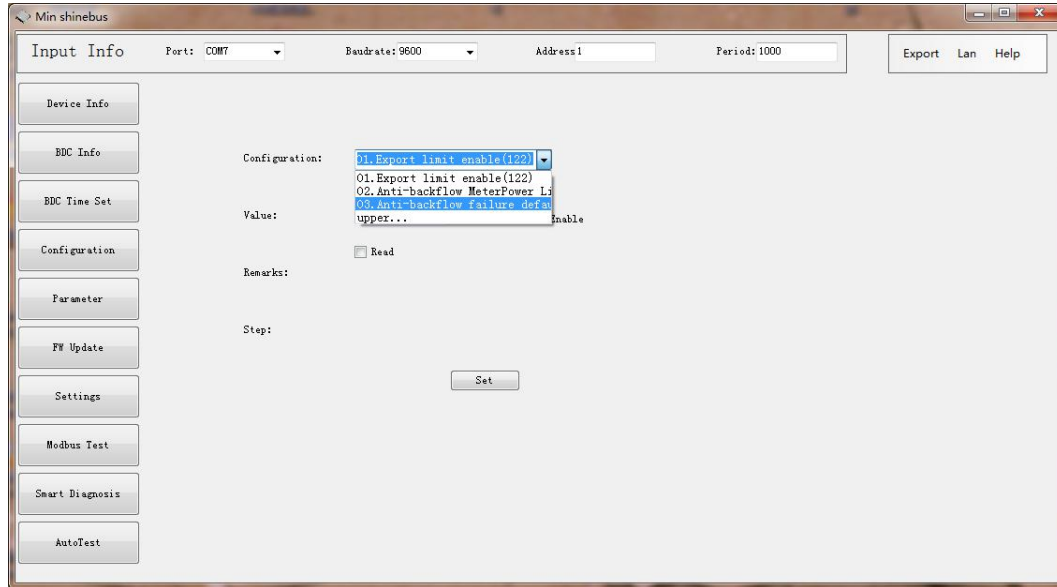
Figure.17. Indication of set "Default power after ExportLimit failure" in ShineBus

6、 ExportLimit Real Test

The ExportLimit power rate is to set the allowed power to the grid. After the meter or CT is enabled, the ExportLimit power rate of 10%, 30%, 50%, 80%, and 100% are respectively set, and the power allowed to the grid is recorded by remote monitoring. As shown in the figure below, it can be observed that the power allowed to the grid during the operation of the inverter is basically consistent with the setting power.

Figure.18.The real test of ExportLimit