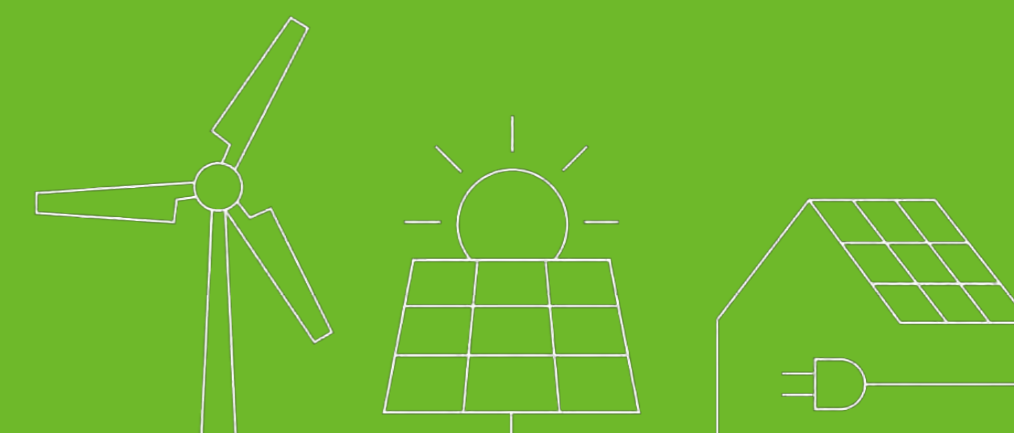




# Growatt Energy Management Solutions

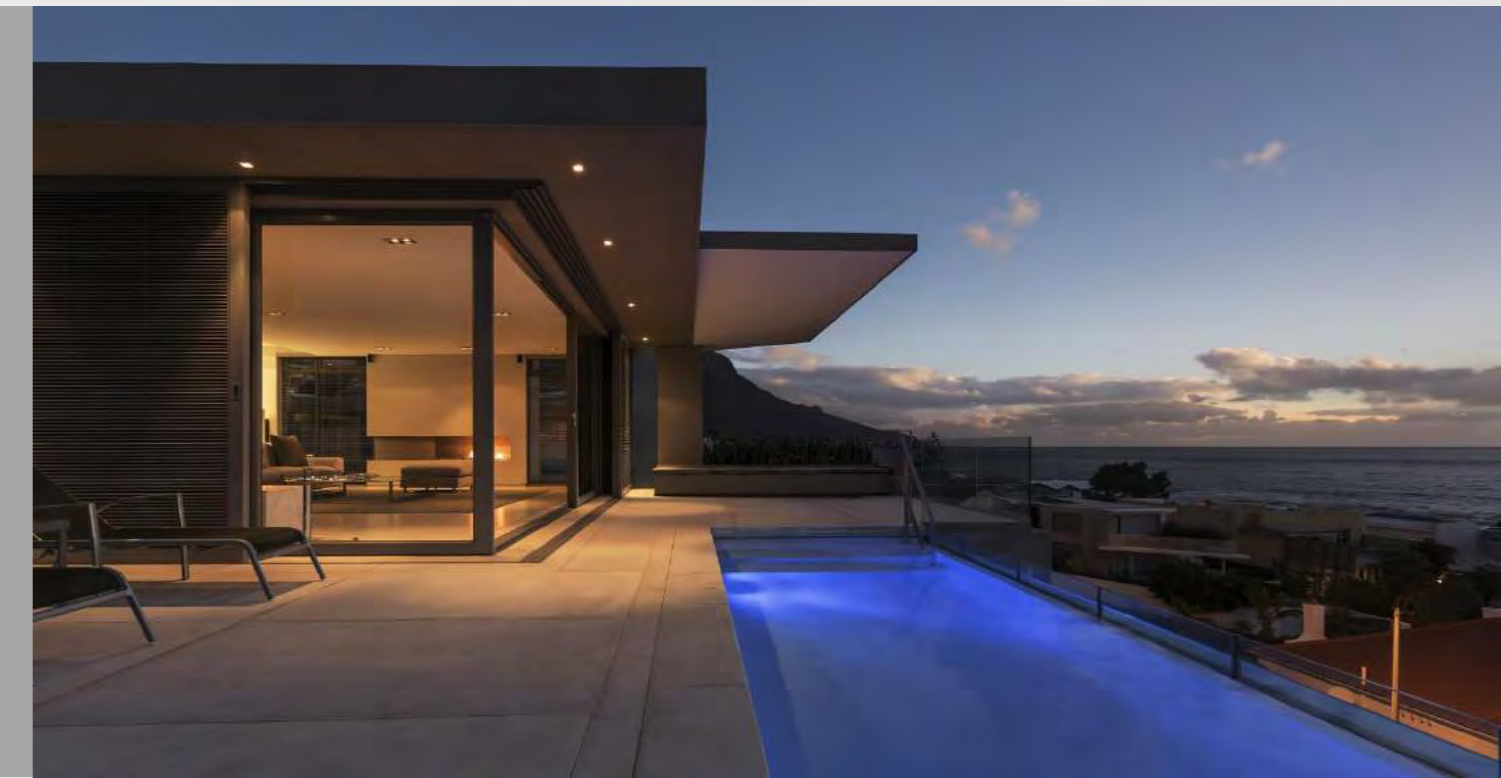


SHENZHEN GROWATT NEW ENERGY CO.,LTD

**GROWATT**

01

**System Solutions**



# Solution for Single Inverters



-X series Inverter



Smart Meter



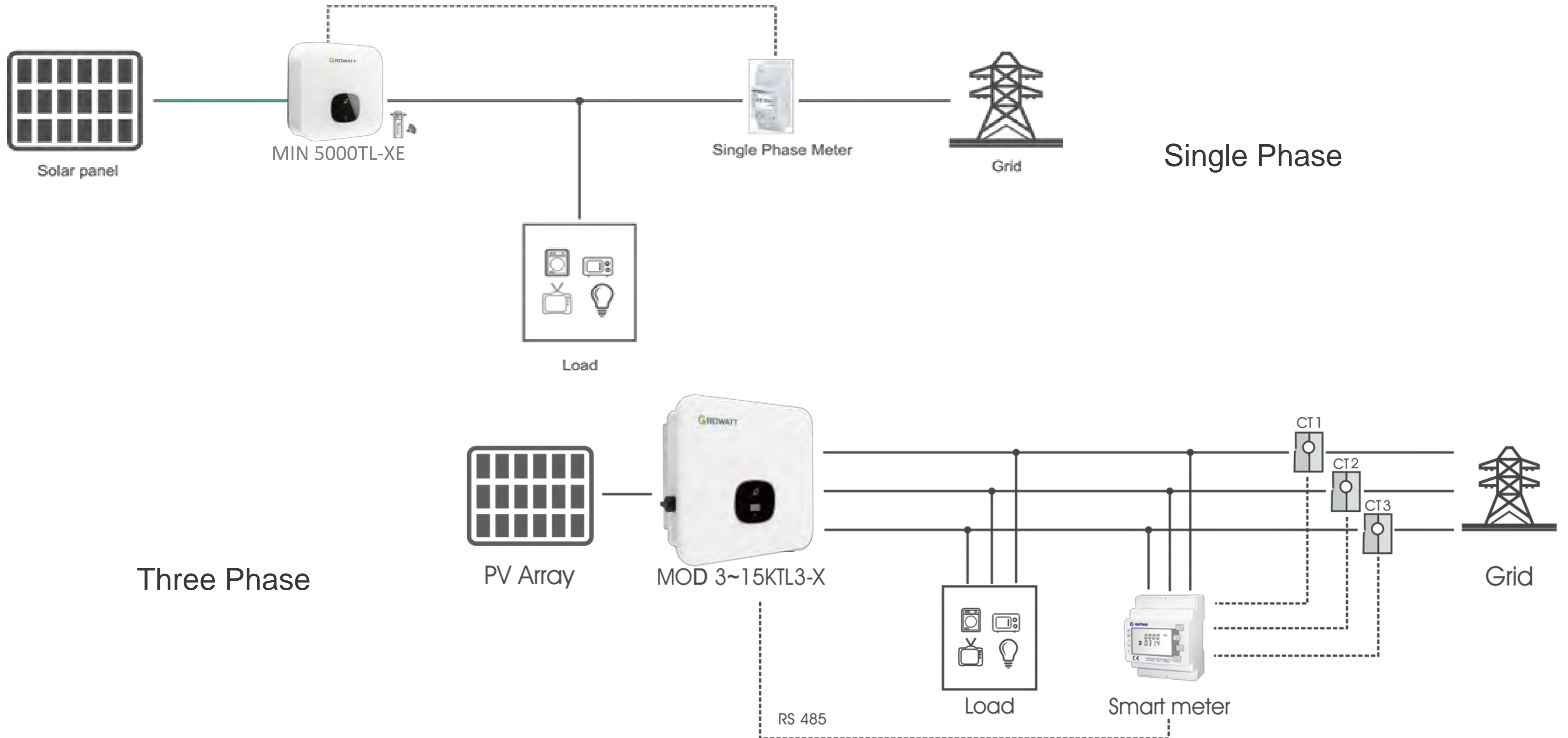
Monitoring



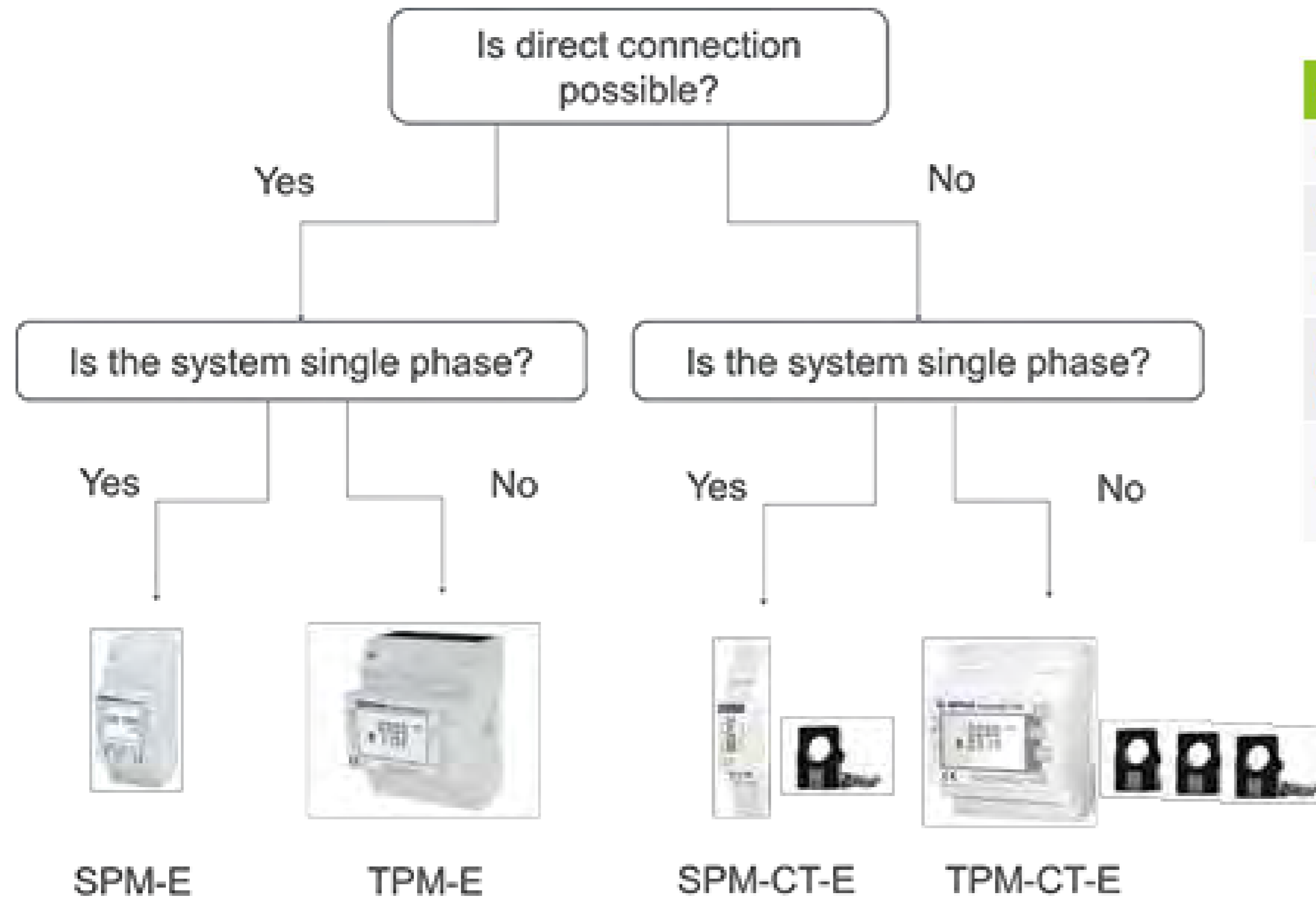
USB-WiFi

All Growatt X series inverters support export limitation function with Growatt Smart Meter  
Use USB-WiFi to do the local configuration, if you use WiFi-X for monitoring, you can use  
WiFi-X for configuration before configurate for online monitoring.

# System Diagram



# Meter solution



Model	SPM-E	TPM-E	SPM-CT-E	TPM-CT-E
Connection	1P2W	3P4W	1P2W	3P4W
Voltage range (L-N)	176~276V	100~289V	176~284V	100~289V
Current	10A (max.100A)	10A ( max.100A)	40mA	40mA
Max RS485 communication range	100m	100m	100m	100m
CT	/		1CT 100A	3CTs 100A
250A CT is optional				

Note: Make sure the system current are not over the 80% of max. allowed current.

# Monitoring Solution



**ShineLAN-X**

- Storage data max 30 days
- Plug & Play
- Up to 100m



**ShineWiFi-X**

- Storage data max 30 days
- Up to 50m
- Support remote service



**ShineLink-X**

- Monitoring up to 8 inverters
- Storage data max 30 days
- Up to 120m
- Automatically acquire IP  
Support remote service
- RF communication

# Solution for Multiple Inverters

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**Growatt Inverters**

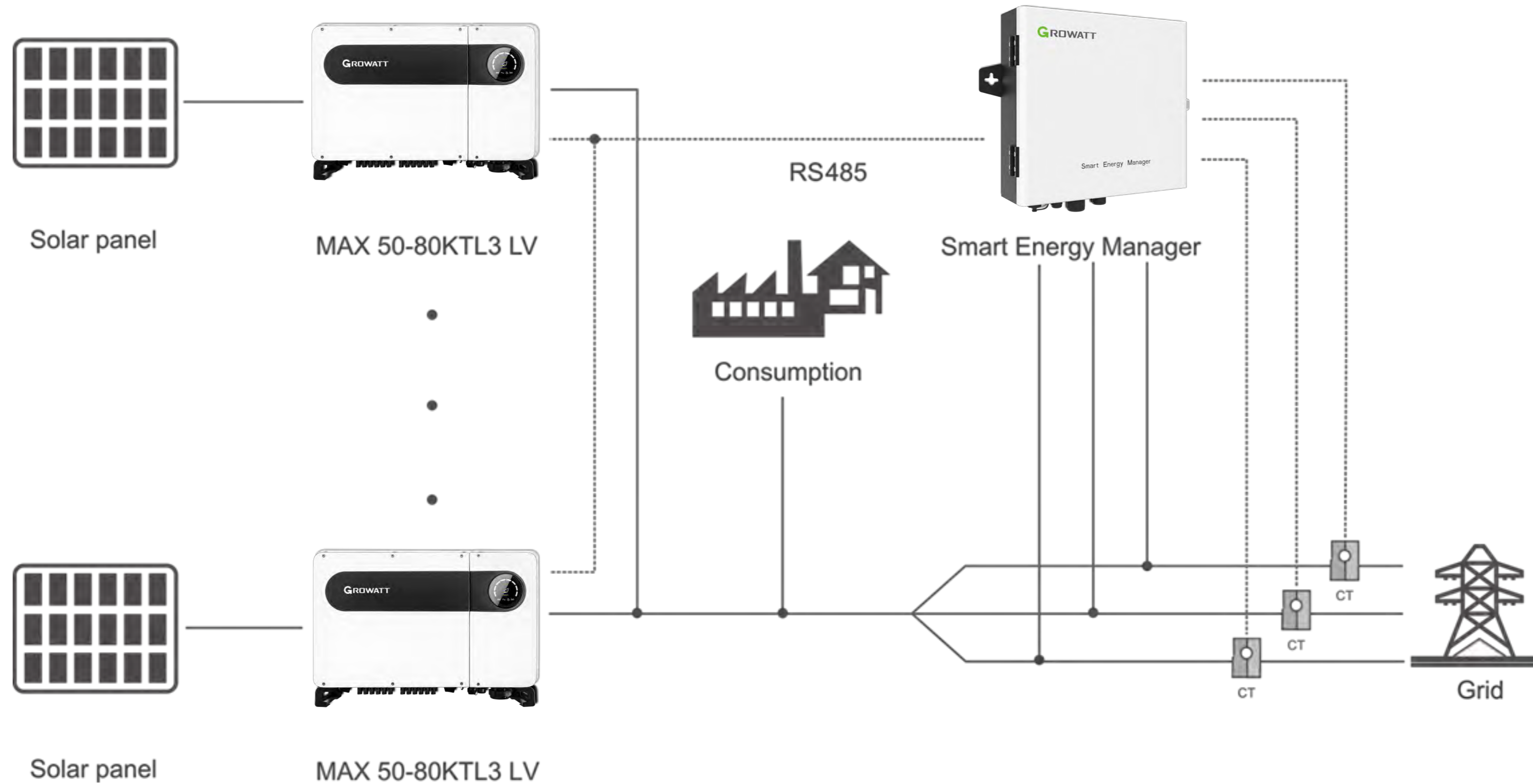


**Smart Energy Manager (SEM)**

SEM is the solution to do 24h self-consumption and system export limitation.

Max. control inverter number is 32.

# System Diagram





# How to Select SEM Model

1. What's the size of the solar plant and the system consumption
2. What's the max. current of the Main Switch
3. Choose according the max. current
4. Make sure the CT aperture is suitable to connect to the main Line.



40mA CT

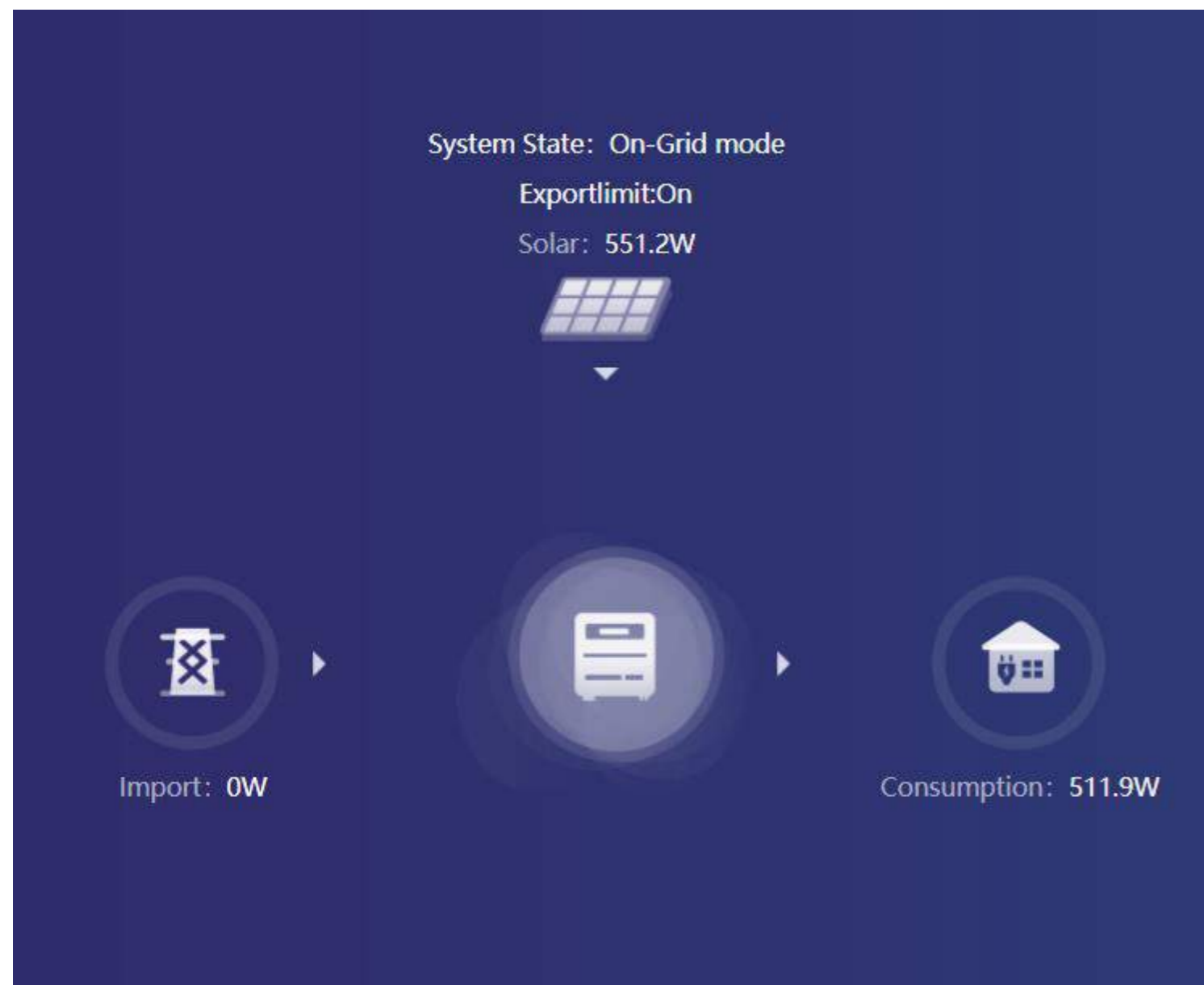


5A CT

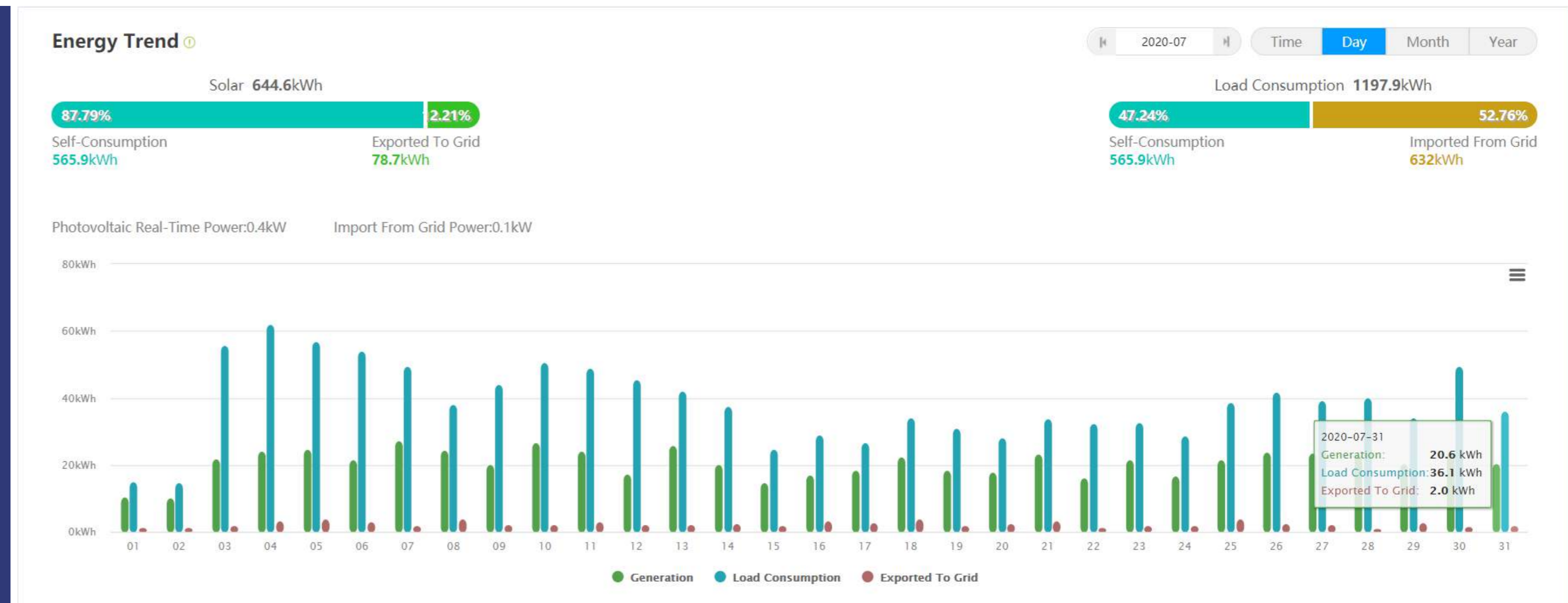
SEM Model	SEM-E 50kW	SEM-E/SEM 100kW	SEM 300kW	SEM 600kW	SEM 1MW	SEM 2MW
Voltage	230/400Vac (100-264Vac)					
CT data	150A/40mA	250A/40mA 250A/5A	600A/5A	1200A/5A	2000A/5A	4000A/5A
	Ø24mm	Ø24mm 22/23mm	42/46mm	82/122mm	82/162mm	82/162mm

# 24H Self-consumption Monitoring\*

Growatt Smart Meter and monitoring device are required for single inverter system, SEM is for multiple inverters solution.



System Overview



Self-consumption Data

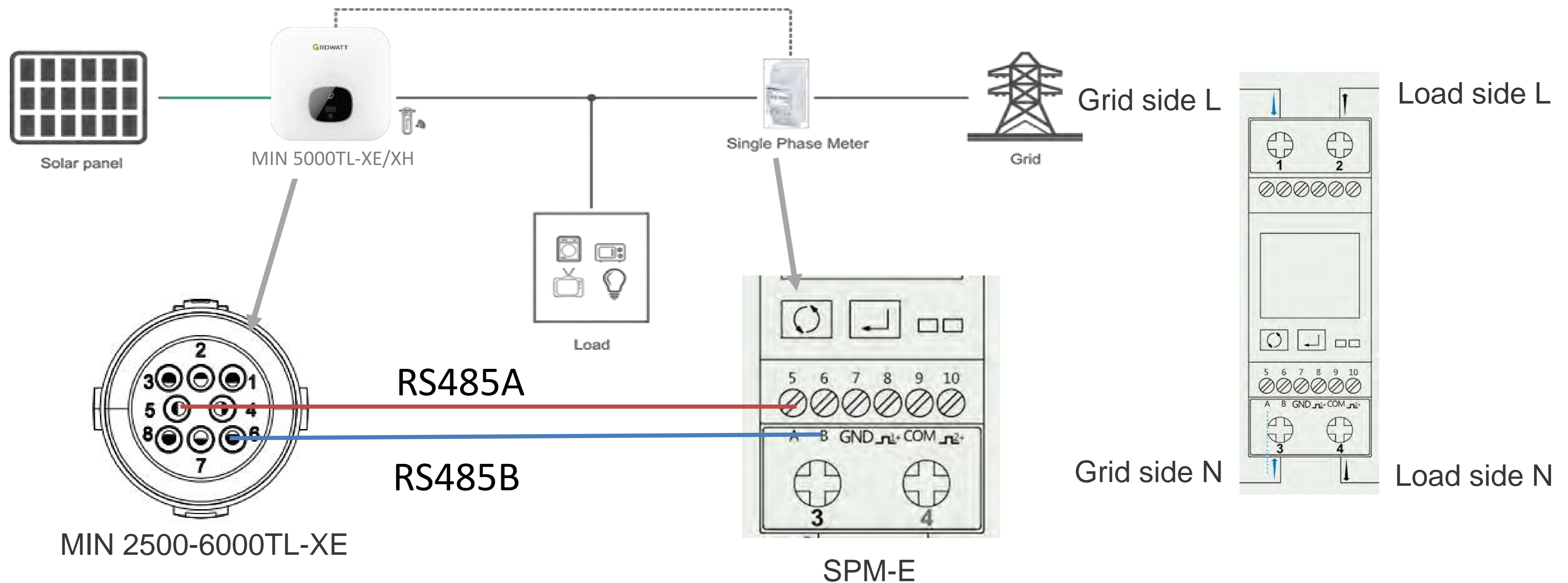
- Check with Growatt engineer for details, MIC, MIN, MOD with special version for this function
- SEM can do self-consumption for all X models.

# 02

## System Connection and Configuration



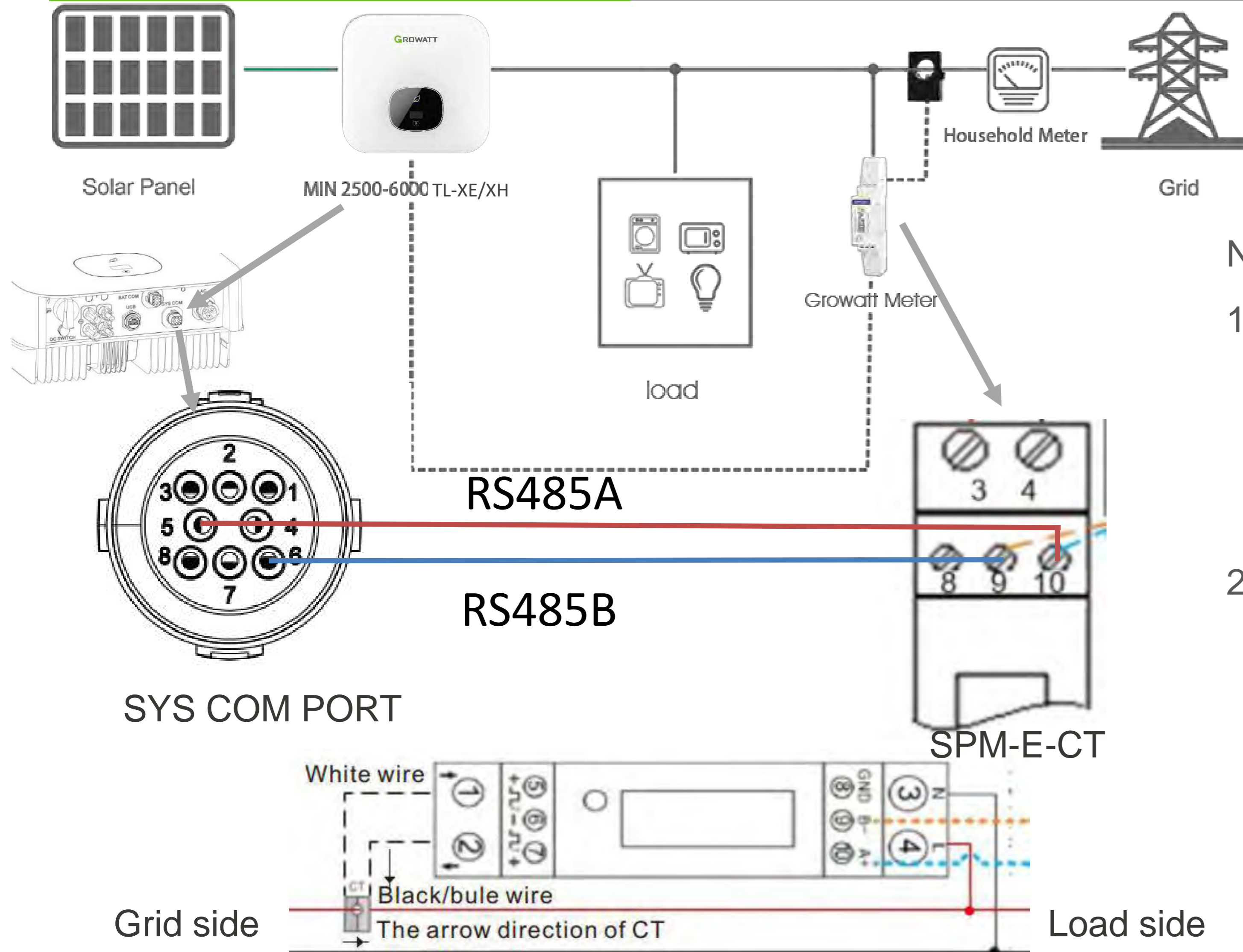
# System Connection (MIN 2500-6000TL-XE/XH)



Note:

1. The direct connection meter need install at the grid connection point, after the main switch
2. RS485 connection between inverter and meter must be correct

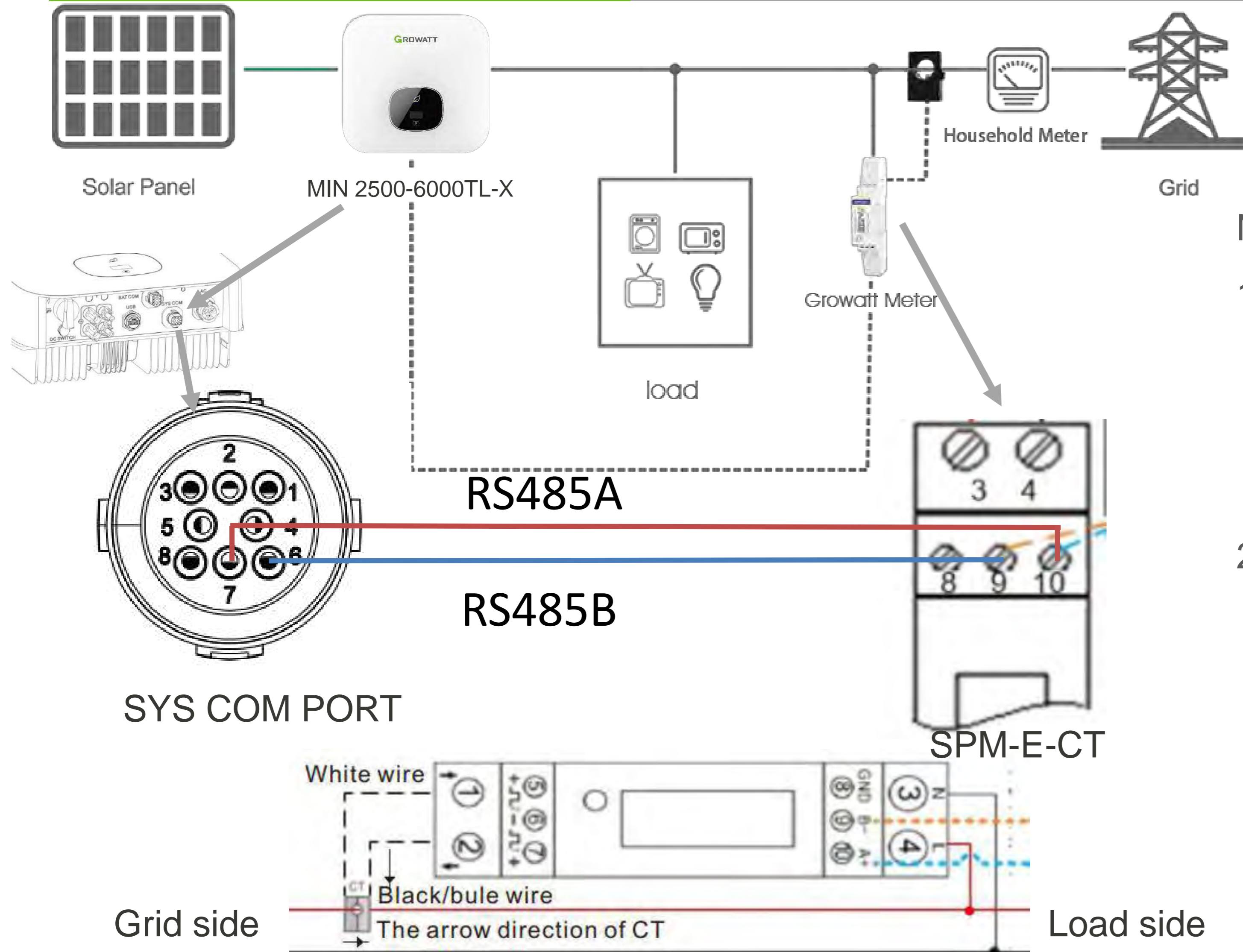
# Single Phase Inverter + Meter (CT) MIN XE/XH



Note:

1. The CT need install at the grid connection point, after the main switch, and the arrow point from grid to load side
2. RS485 connection between inverter and meter must be correct

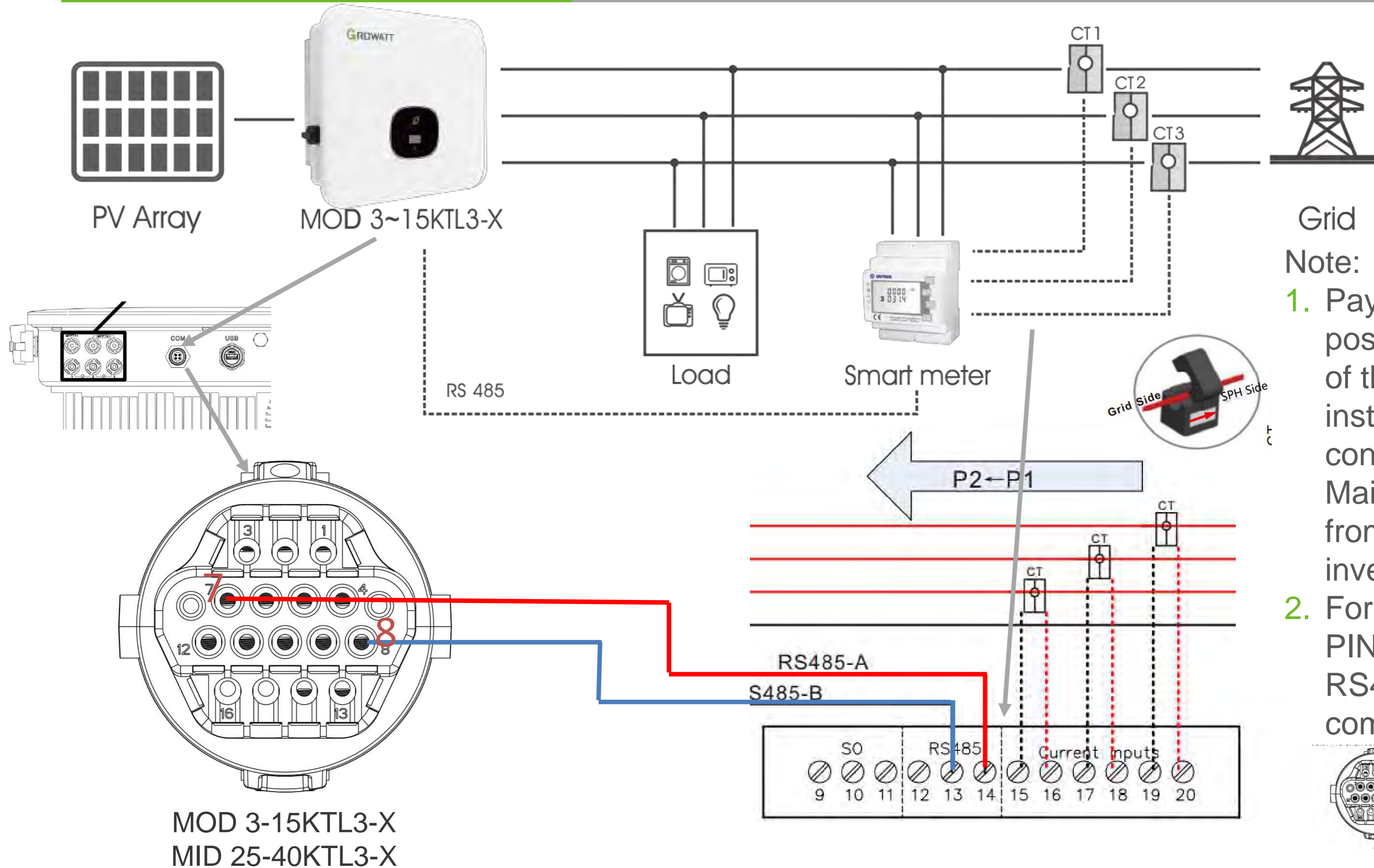
# Single Phase Inverter + Meter (CT) **MIN/MIC TL-X**



Note:

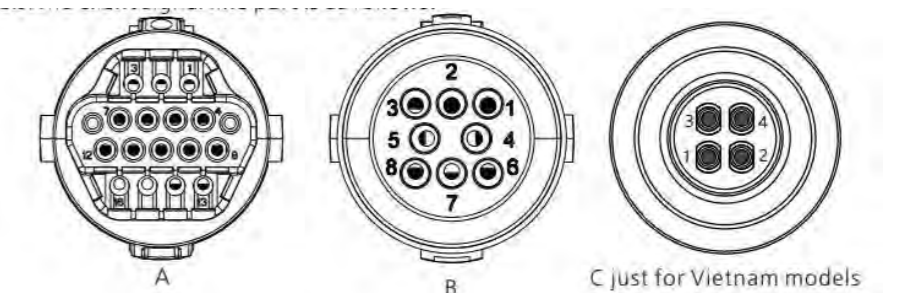
1. The CT need install at the grid connection point, after the main switch, and the arrow point from grid to load side
2. RS485 connection between inverter and meter must be correct

# System Connection (MOD 3-15K/MID 25-40KTL3-X)



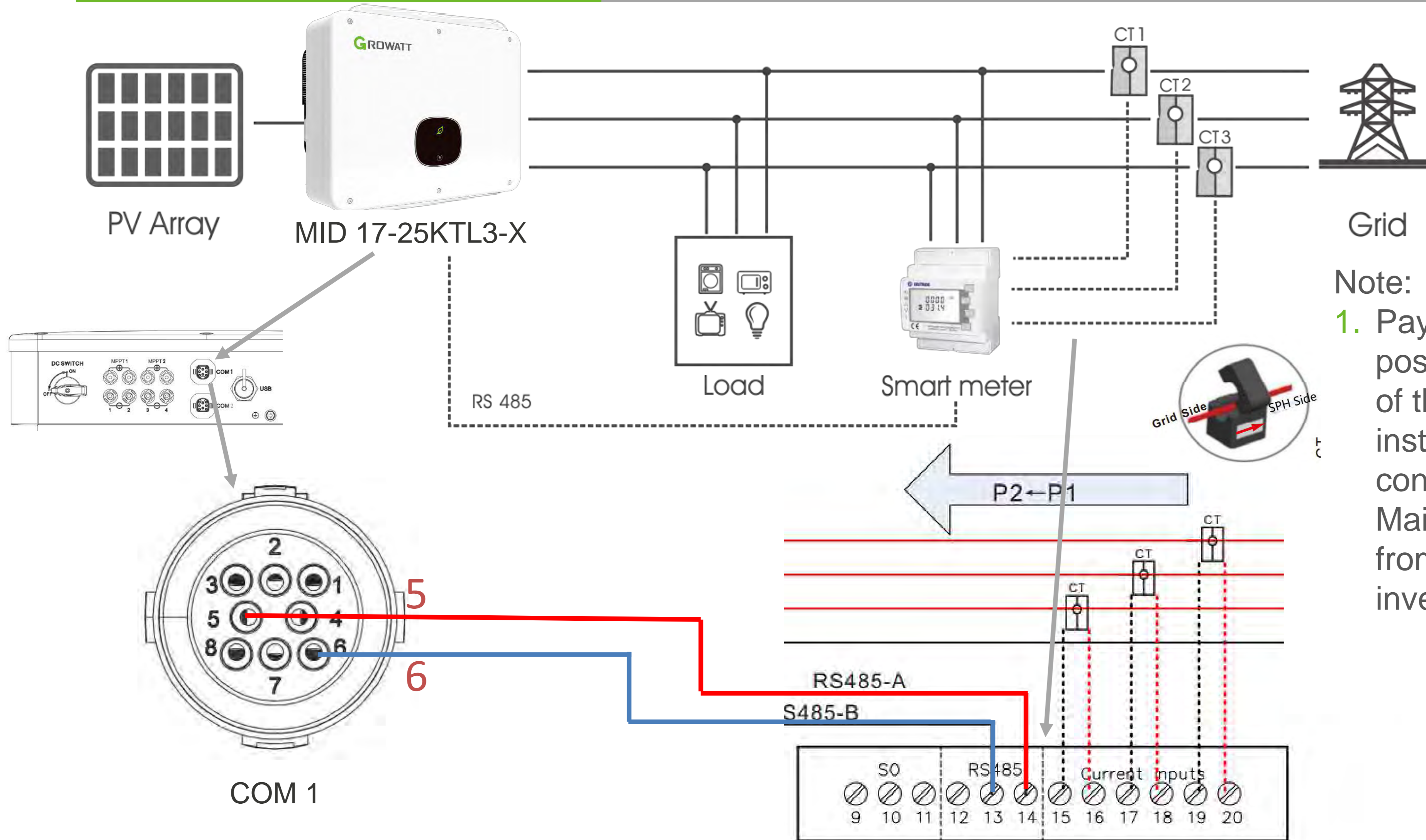
Grid  
Note:

1. Pay attention of CT position and the direction of the arrow, CTs should install at the grid connection point, after the Main Switch, and the arrow from grid side to the inverter side
2. For Vietnam model, PIN 3, PIN 4 are RS485A and RS485 B for meter communication



MOD 3-15KTL3-X  
MID 25-40KTL3-X

# System Connection for Three Phase Inverter

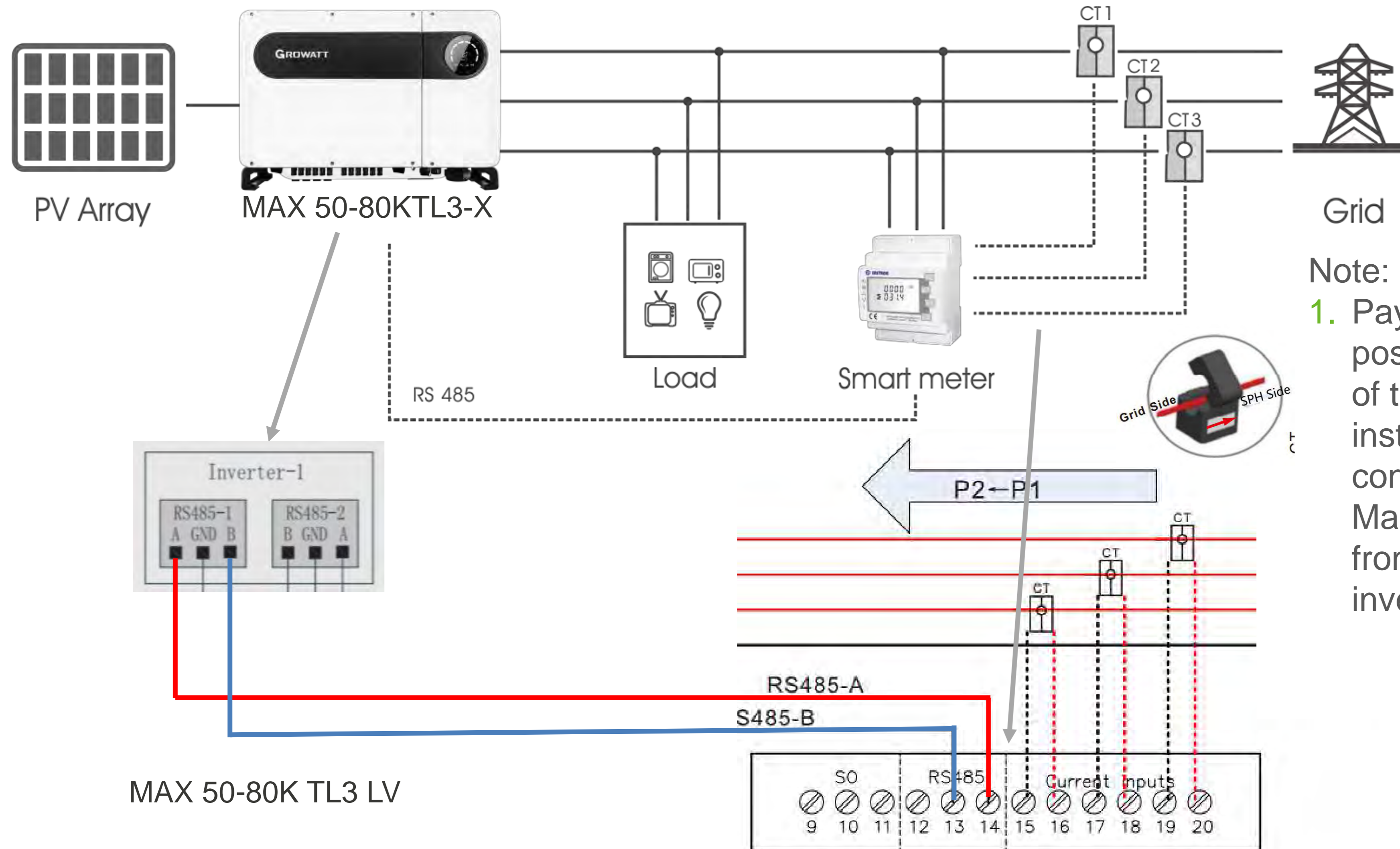


Note:

1. Pay attention of CT position and the direction of the arrow, CTs should install at the grid connection point, after the Main Switch, and the arrow from grid side to the inverter side

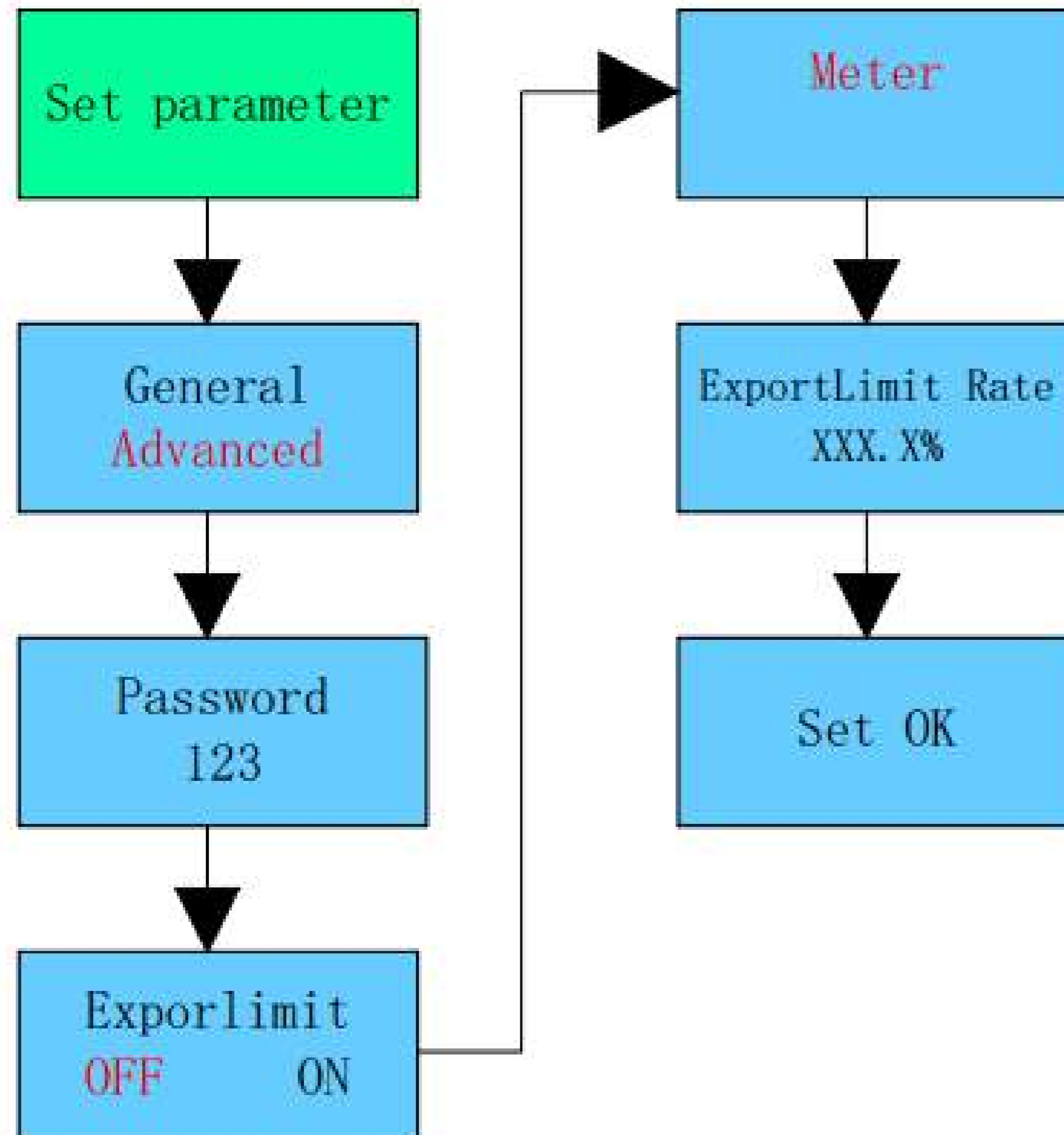


# System Connection for Three Phase Inverter



Note:  
 1. Pay attention of CT position and the direction of the arrow, CTs should install at the grid connection point, after the Main Switch, and the arrow from grid side to the inverter side

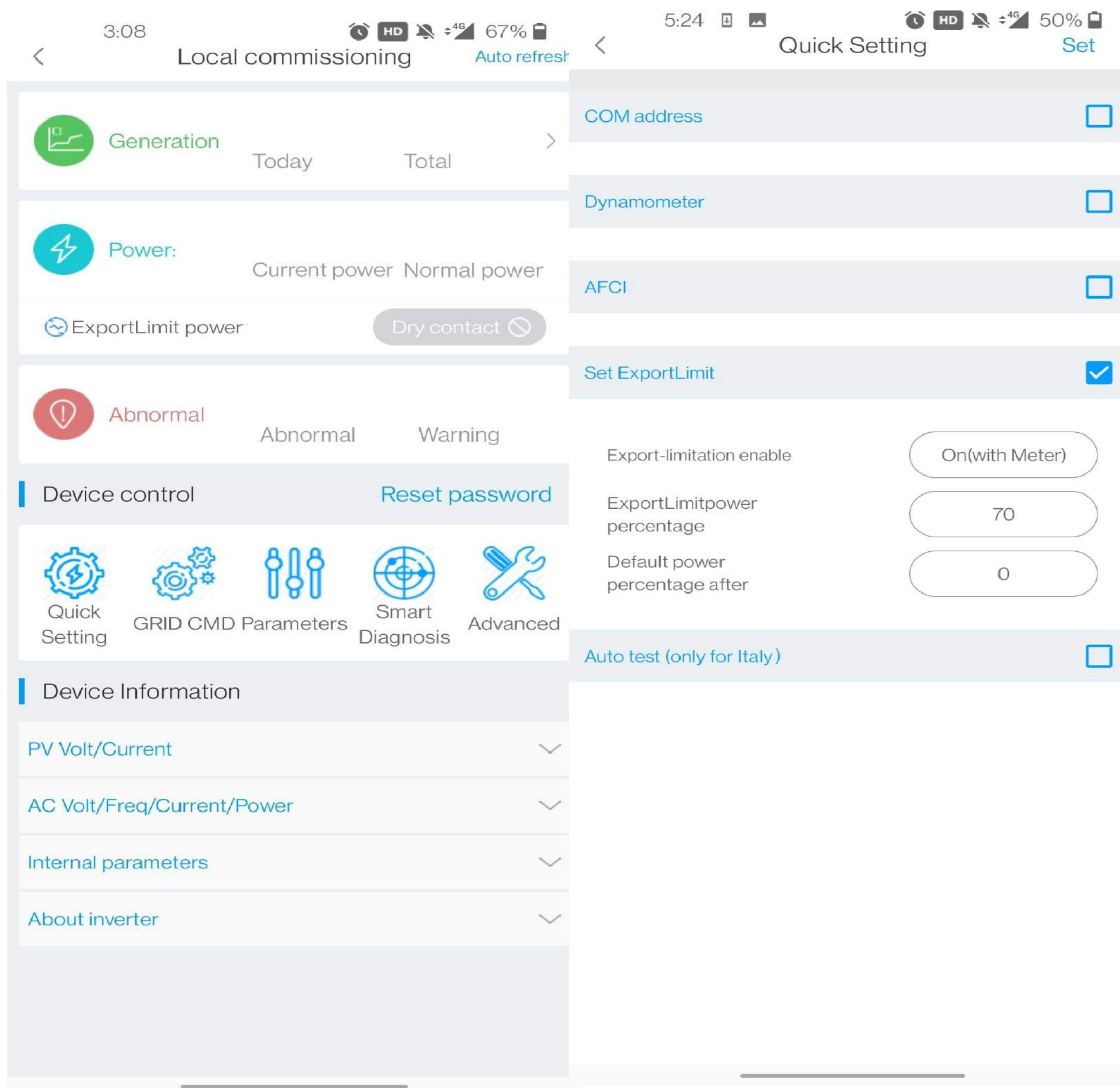
# How to configuration-Via LCD



Note:

1. The Advanced setting password for MIN and MIC are 123, for MOD, MID are 111
2. Turn on and select meter, and set the export limit rate, if you set 70.0%, means allowed export to grid 70%Pn.
3. Note: MAX and MID, MOD suggest to use USB-WiFi to do the setting.

# How to configuration-Via ShinePhone APP+USB-WiFi



1. Login OSS account and go to local commissioning page
2. Click Quick Setting, and set Export limitation
3. Failsafe setting is a protection when communication between meter lost, the inverter run at the default setting to not over the limitation value.

Note: If you use ShineWiFi-X for monitoring, you can use ShineWiFi-X to configurate the inverter before configure for monitoring.

# How to configuration-Via OSS

Set MAX

- Set Active Power Ratio: 100, Not Memory
- Set Reactive Power Ratio: 1, Pf Fixed 1, Not Memory
- Set Pf Value: 467.6, (-0.8 - -1/0.8 - 1)
- Set Inverter Time: 2021-03-11 09:23:21
- High Grid Voltage Limit: 467.6
- Low Grid Voltage Limit: 277.1
- High Grid Frequency Limit: 54.0
- Low Grid Frequency Limit: 46.0
- Set Exportlimit: Enable Meter, 70, Percent
- Default Power After Exportlimit Failure: 10, %
- Restore Factory Settings: Restore Factory, Cancel

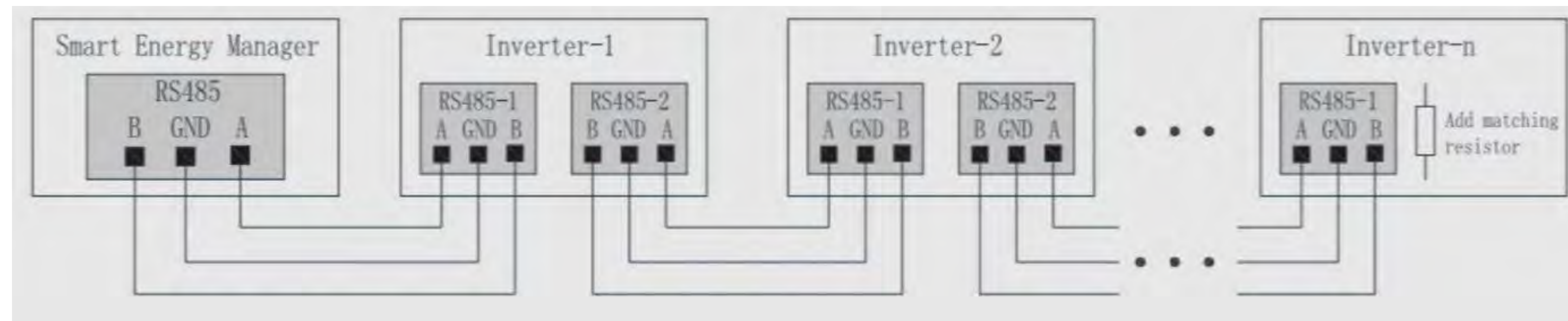
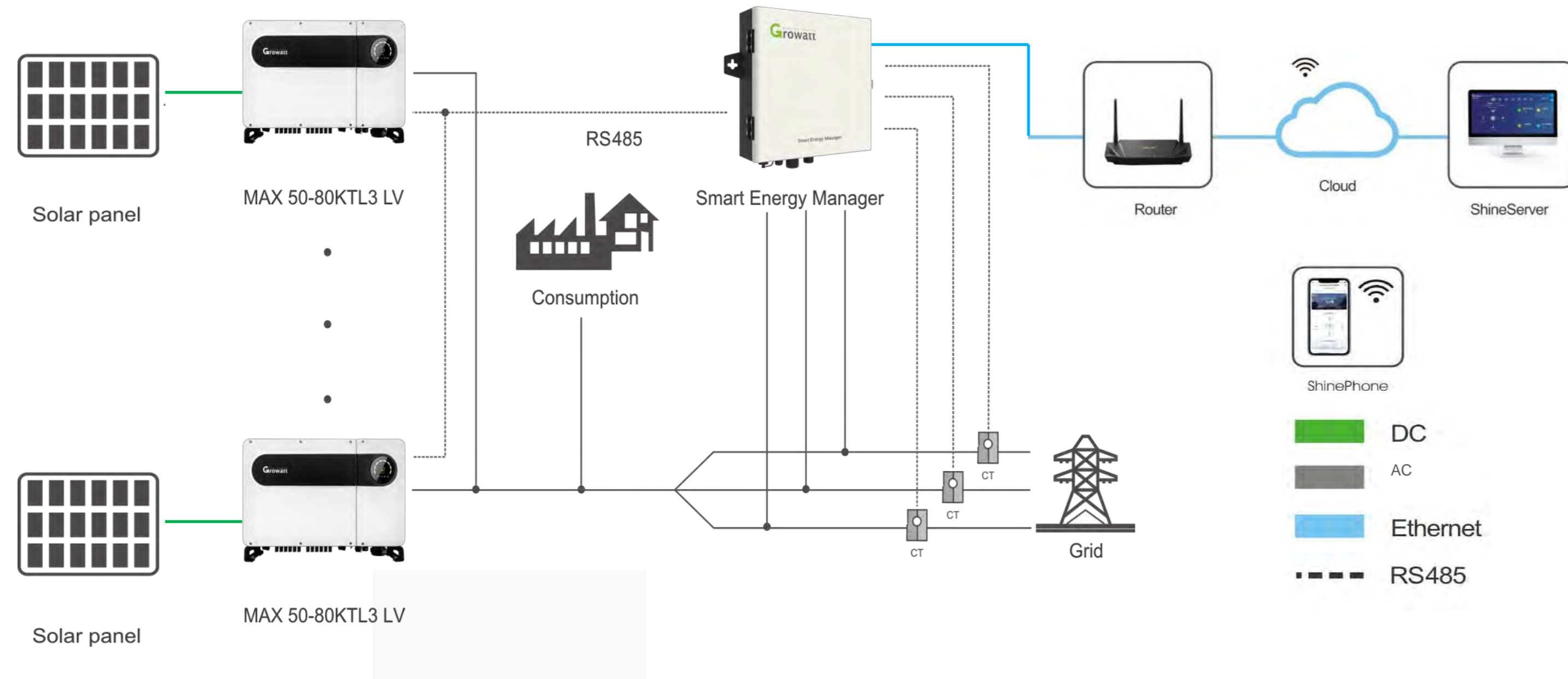
Step 2

Step 3

Step 1

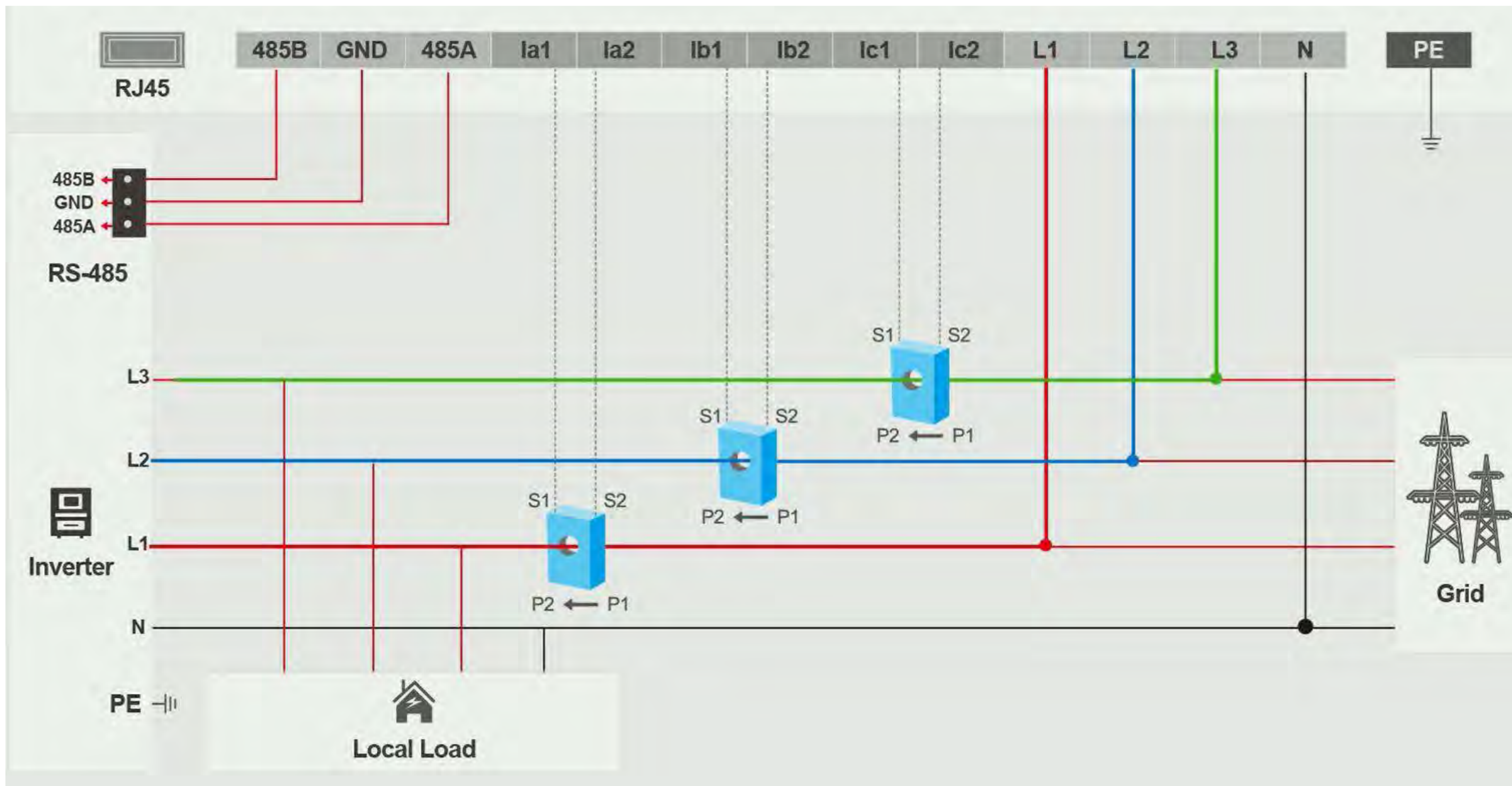
Go to the Device list page, and click setting button, and fill in the setting value, then click Yes to save the settings.

# Cable Connection- RS485



1. Inverter RS485 connection in parallel as above to SEM
2. Refer to inverter manual for RS485 PIN details

# Cable Connection-CT and voltage sampling



1. Voltage sampling must be on same phase of the current sensor
2. The current points from P1 to P2, P1 is grid side, P2 is load side

# Export limitation Settings

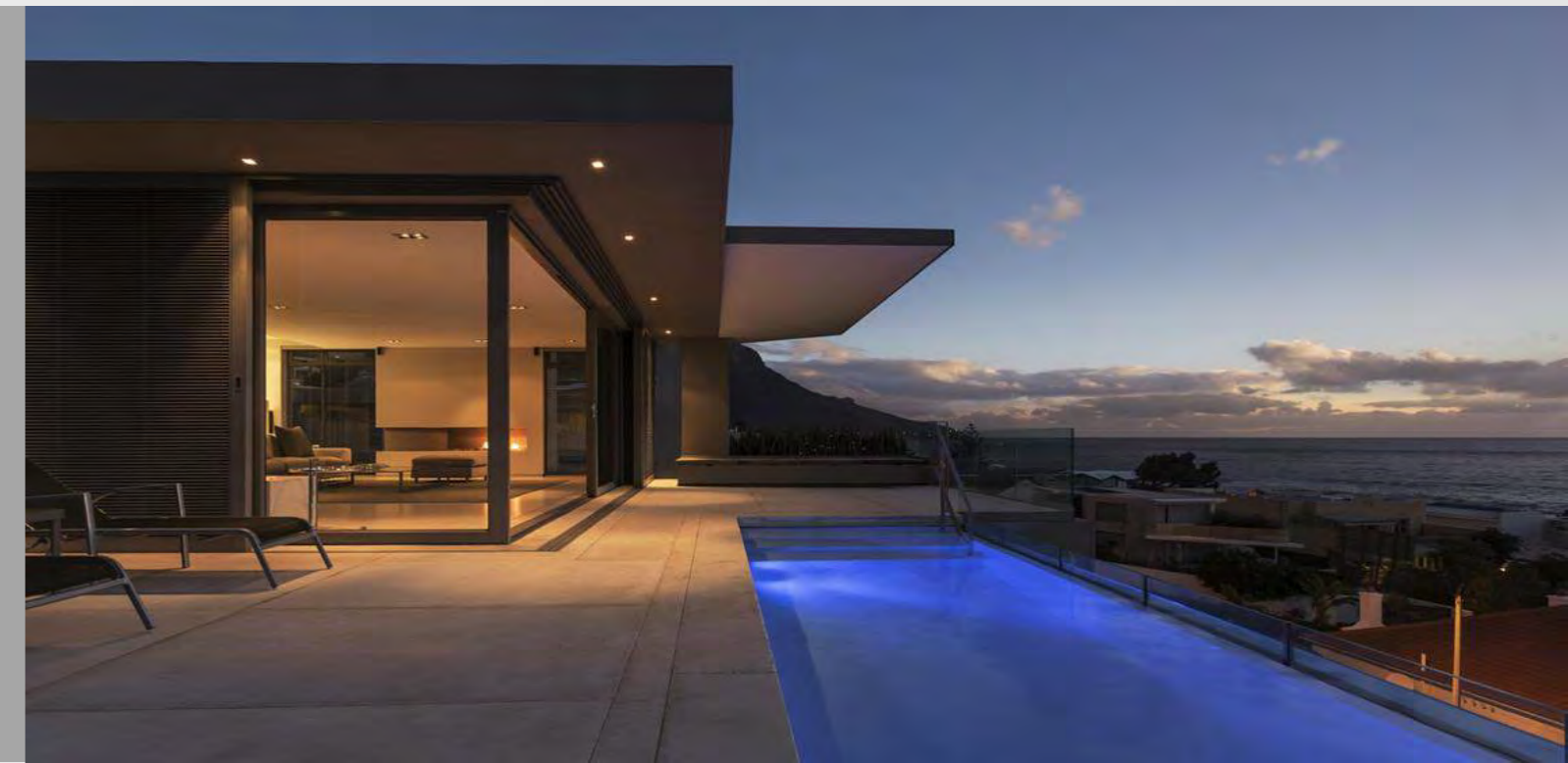


Export limit & Datalogger setting	
Meter channel	RS485_2 ▾
Meter address	1
Export limit function	<input checked="" type="radio"/> On <input type="radio"/> Off <input type="checkbox"/>
Export limit power (kW)	100 (XX:Export, -XX:Import)
Fallback activated	<input checked="" type="radio"/> On <input type="radio"/> Off
Active power	20% (0 ~ 100)%
Fallback activates after	120 s (120 ~ 5000) seconds
Reactive power regulation	<input type="radio"/> On <input checked="" type="radio"/> Off
Usage Scenario	<input type="radio"/> NO_1 <input checked="" type="radio"/> NO_2
Add or delete devices	NULL ▾ NULL ▾ <input type="text"/> <input type="radio"/> Add <input type="radio"/> Del
Update firmware	<input type="radio"/> Yes <input checked="" type="radio"/> No
Reboot	<input type="radio"/> Yes <input checked="" type="radio"/> No
<input type="button" value="Save"/> <input type="button" value="Cancel"/>	

1. Turn on Export limit function
2. Set limit power value, here means allowed export 100kW to grid.
3. Fallback function: when communication problem happened, the inverter work as this default setting.

# 03

Q&A





# Single Inverter Solution Q&A

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## **Q1, The export limitation function is not working.**

Check if the export limitation is turned on, and the limit power rate, if it's correct. Check meter's cable connection, CT's arrow direction and connection.

## **Q2, Self-consumption data is not update on ShineServer/ShinePhone**

Make sure Meter communication is connect good.

Make sure you have turned on the export limitation function, if problem still there, set register 553 to 1 , otherwise, check with Growatt service engineer.

## **Q3, I can't see 24h self-consumption on monitoring**

Make sure your inverters are X generation, and the version with AC power supply. Now only some EU model with AC power supply as standard.

## SEM Solution Q&A

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### **Q1, The export limitation function is not working.**

Check ShineMaster internal website setting, if everything is correct.

Check the RS485, CTs, voltage sampling cable connection, if everything is correct.

Make sure not turn on the export limitation on inverter, only do the settings on ShineMaster inside SEM.

### **Q2, Self-consumption data is not update on ShineServer/ShinePhone**

Check if meter connect ok to SEM.

Check the internet setting of ShineMaster, not block port 5027.

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# THANKS

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