

User Manual

Power Limit Solution for Grid-Tied PV Inverters

V1.0-2022-09-15

1 Safety Precaution

General Safety

NOTICE

- The information in this user manual is subject to change due to product updates or other reasons. This guide cannot replace the product labels or the safety precautions in the user manual unless otherwise specified. All descriptions in the manual are for guidance only.
- Before installations, read through the corresponding user manual to learn about the product and the precautions. Strictly follow its requirements.
- All installations should be performed by trained and knowledgeable technicians who are familiar with local standards and safety regulations.
- Use insulating tools and wear personal protective equipment when operating the equipment to ensure personal safety. Wear anti-static gloves, cloths, and wrist strips when touching electron devices to protect the inverter from damage.
- Strictly follow the installation, operation, and configuration instructions in this manual. The manufacturer shall not be liable for equipment damage or personal injury if you do not follow the instructions.

System Safety

WARNING

1. Power off the equipment in the system before operations and maintenance. Otherwise, the equipment may be damaged or electric shocks may occur.
2. The installation, electrical connection, and commissioning of the inverter, smart meter, communication box and other devices in the system are not mentioned in this document. Please refer to the related user manual from the official website: <https://en.goodwe.com/>

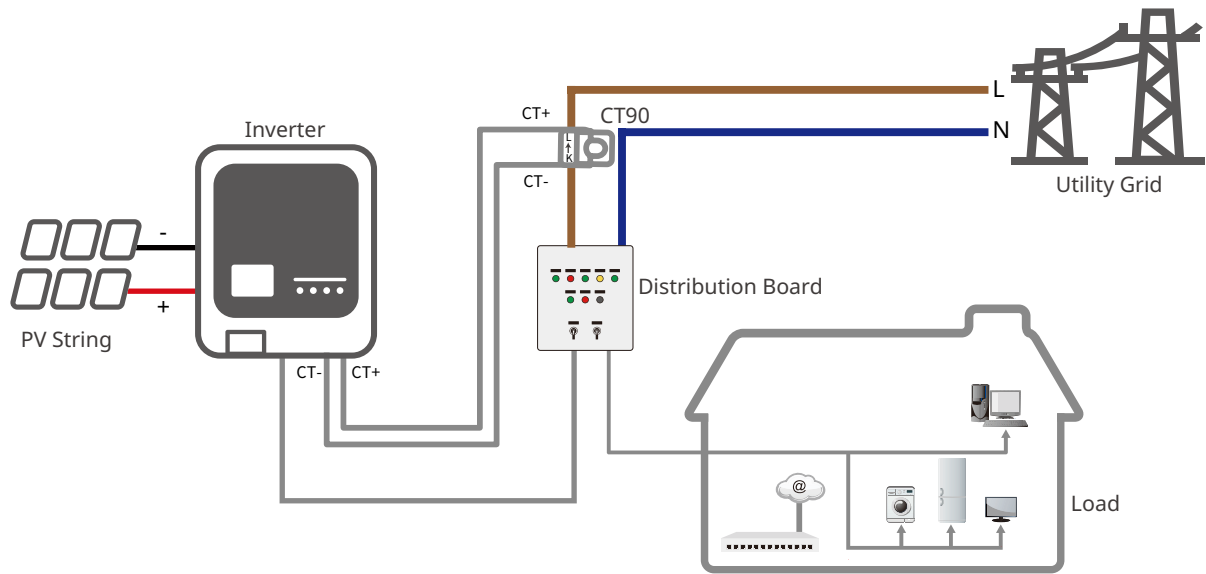
2 Networking

Matching Table

Product	CT90	GM3000	HK3000	GM3000C	SEC1000
DNS Series	○	×	×	×	×
XS Series	○	×	×	×	×
MS Series	○	×	×	×	×
NS Series	○	×	×	×	×
SDT G2 Series	×	○	○	○	○
SMT Series	×	○	○	○	○
MT Series	×	○	×	○	○
HV 1100 Series	×	×	×	○	○
Note	The load current shall be less than 90A.	The load current of each phase shall be less than 120A.		The load current of any phase shall be more than 120A.	

- For some inverter series, the power limit function is not available. Please contact After-sales Service if needed.
- In networking systems with GM3000C + EzLogger Pro, or SEC1000, the power limit function can be fulfilled for multiple inverters in parallel.
- In networking systems with CT90, GM3000 or HK3000, it is only able to realize power limit function for single inverter.

2.1 Single-Phase Inverter + CT90 Networking



Parts Description

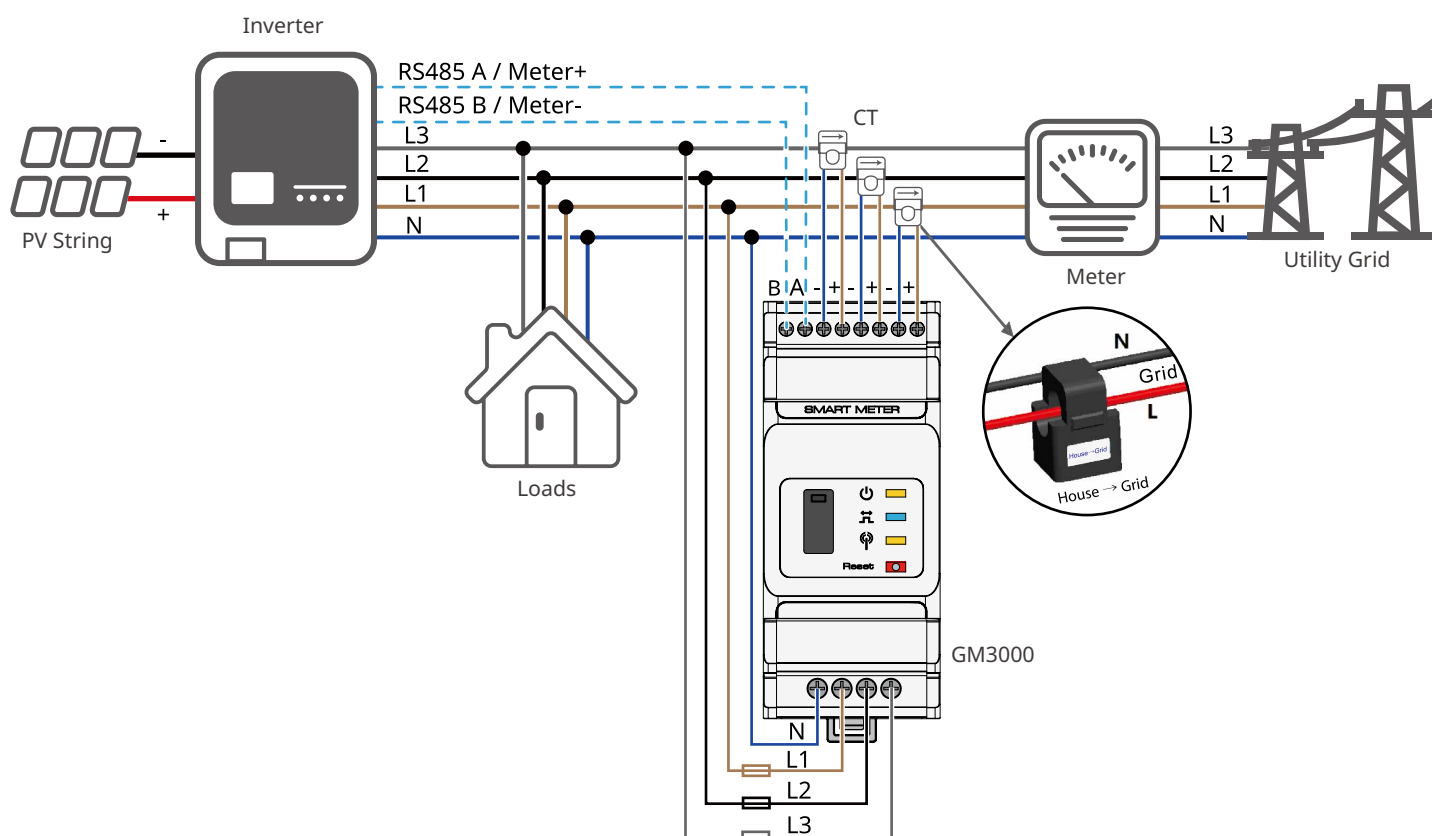
No.	Parts	Description
1	Inverter	- Applicable inverters are DNS series, XS series, MS series and NS series. - It is only applicable to install one inverter in the system, not for multiple inverters in parallel.
2	CT90	You can purchase CT from GoodWe with a standard length of 5 meters. Or select one with 30 meters in length. The cable length of CT depends on the actual distance between the inverter and the entry point of the distribution board.
3	Load	The load current shall be less than 90A.

Wiring Description

WARNING

- Make sure the CT direction is right during installing. If CT is installed reversely, the inverter will be triggered with an alarm and unable to realize the power limit function.
- The appearances of the inverter and its communication port for CT connection vary according to different types. Please refer to the related inverter's user manual or quick installation guide for specific CT wiring.
- CT shall be snap fitted on Cable L. Do not fit it on Cable N.

2.2 Three-Phase Inverter + GM3000 Networking



Parts Description

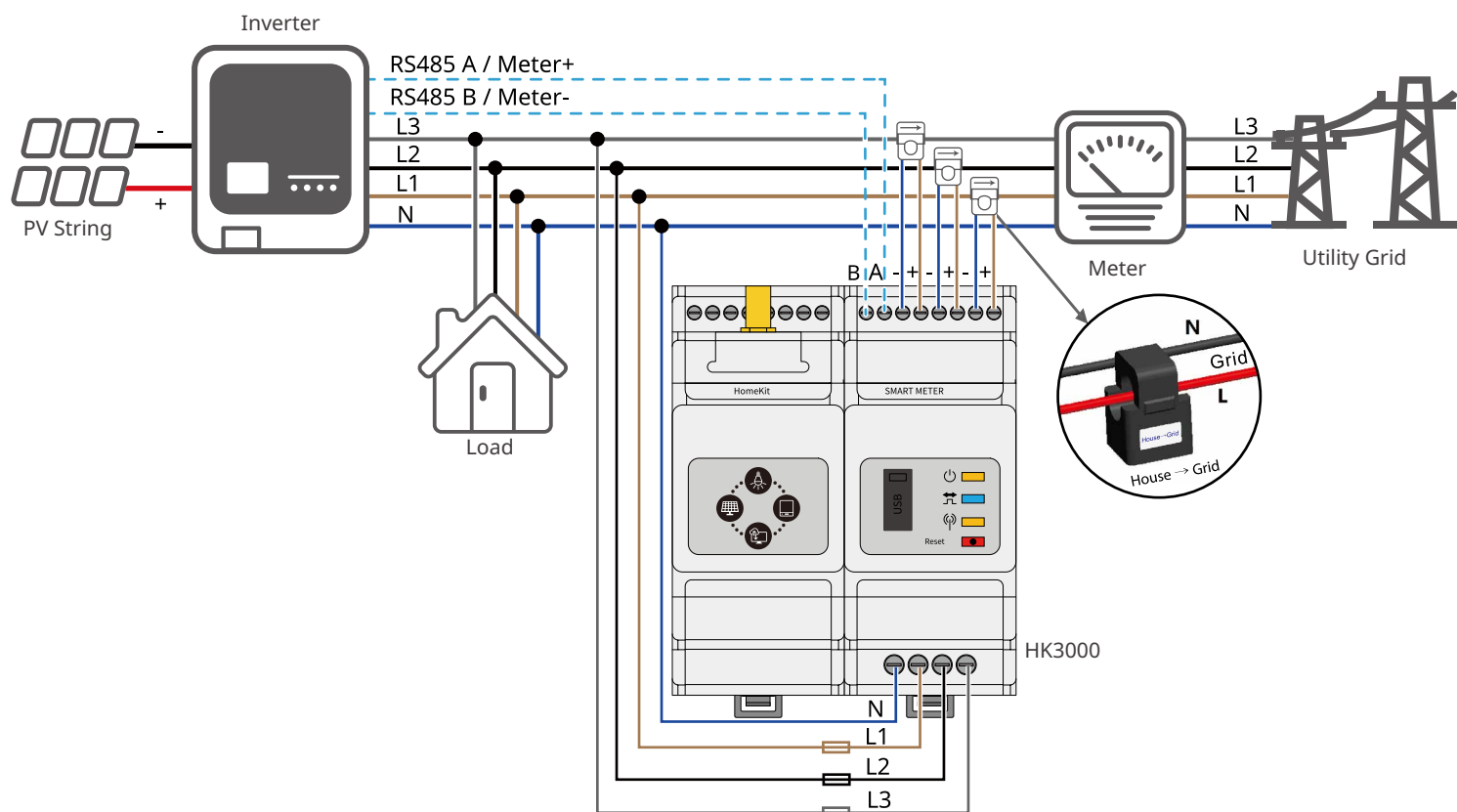
No.	Parts	Description
1	Inverter	- Applicable inverters are SDT G2 series, SMT series, and MT series. - It is only applicable to install one inverter in the system, not for multiple inverters in parallel.
2	GM3000	Select whether to use GM3000 smart meter according to the maximum over current, the cables or the copper busbar in the system. For details, please consult GoodWe Solar Academy for help. CT is delivered with the smart meter.
3	Load	The load current of each phase shall be less than 120A.

Wiring Description

⚠ WARNING

- Make sure the CT direction is right during installing. If CT is installed reversely, the inverter will be triggered with an alarm and unable to realize the power limit function.
- The appearances of the inverter and its communication port for CT connection vary according to different types. Please refer to the related inverter's user manual or quick installation guide for specific CT wiring.
- CT shall be snap fitted on Cable L1, L2 and L3. Do not fit it on Cable N.

2.3 Three-Phase Inverter + HK3000 Networking



Parts Description

No.	Parts	Description
1	Inverter	- Applicable inverters are SDT G2 series and SMT series. - It is only applicable to install one inverter in the system, not for multiple inverters in parallel.
2	HK3000	Select whether to use HK3000 smart meter according to the maximum over current, the cables or the copper busbar in the system. For details, please consult GoodWe Solar Academy for help. CT is delivered with the smart meter.
3	Load	The load current of each phase shall be less than 120A.

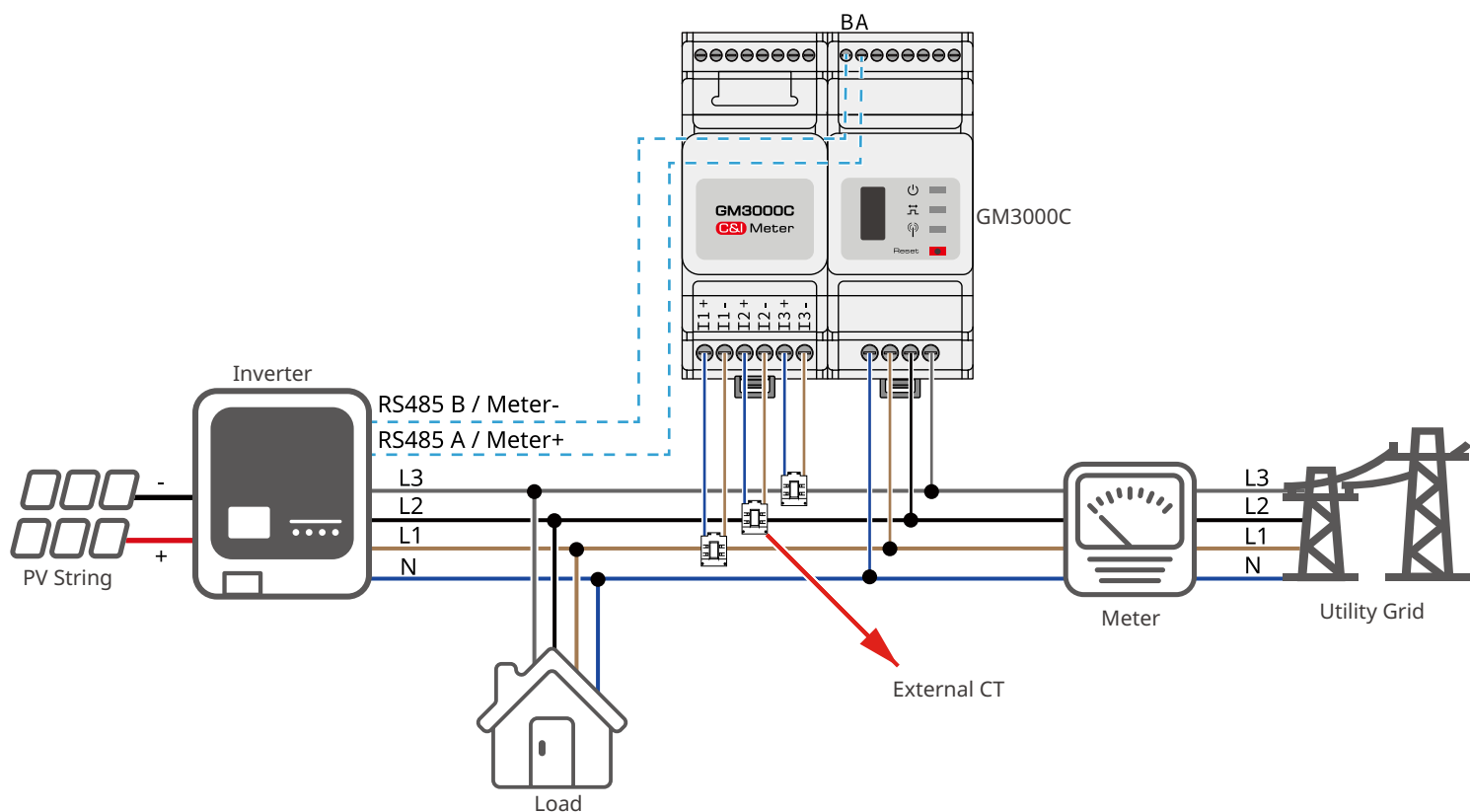
Wiring Description

⚠ WARNING

- The place to snap fit the CT shall be near the entry point in the right direction. "-->" of CT refers that the inverter current flows to the Grid. If CT is installed reversely, the inverter will be triggered with an alarm and unable to realize the power limit function.
- The appearances of the inverter and its communication port for CT connection vary according to different types. Please refer to the related inverter's user manual or quick installation guide for specific CT wiring.
- CT shall be snap fitted on Cable L1, L2 and L3. Do not fit it on Cable N.

2.4 Three-Phase Inverter + GM3000C Networking

System with Single Inverter



Parts Description

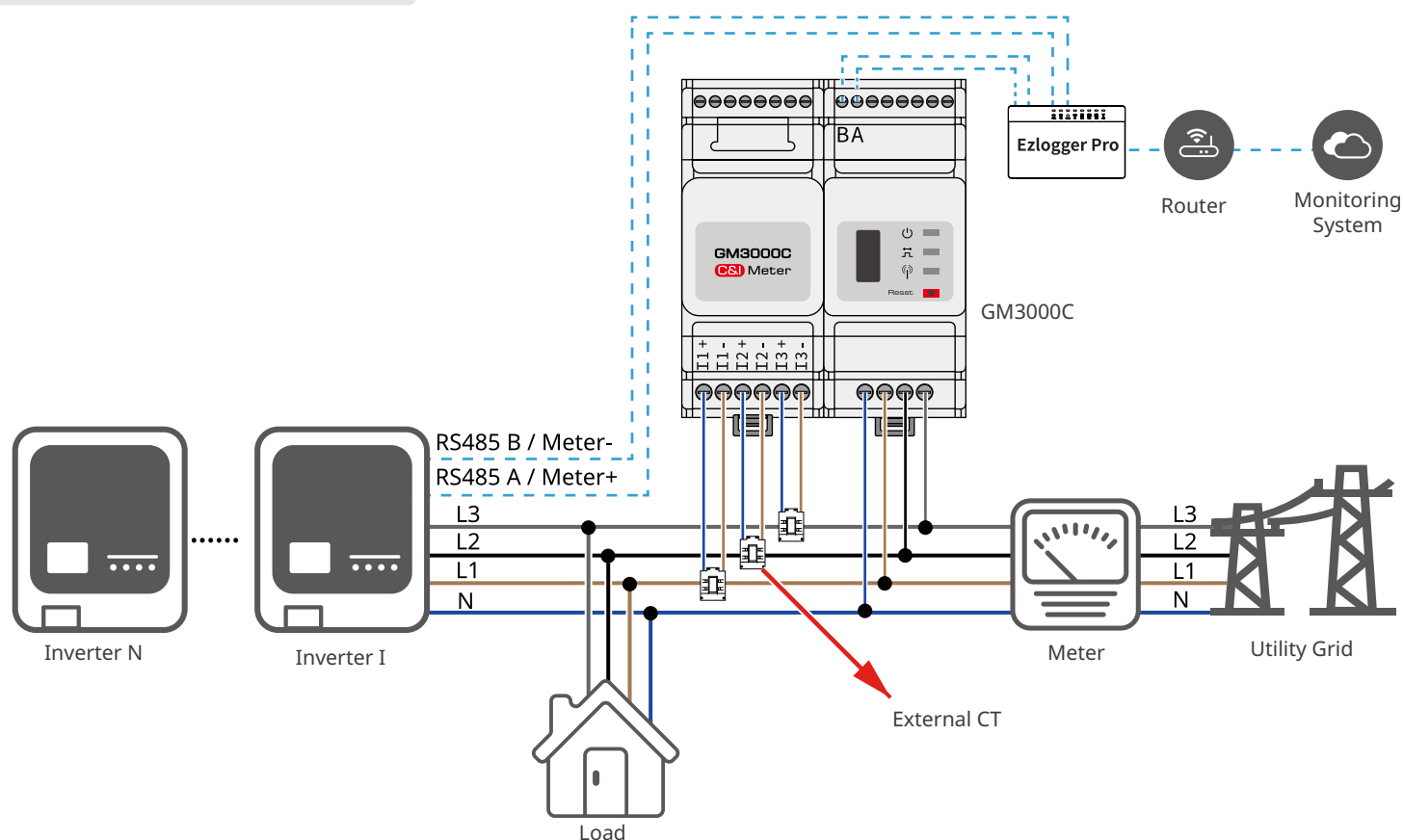
No.	Parts	Description
1	Inverter	Applicable inverters are SDT G2 series, SMT series, MT series and HT 1100V series.
2	GM3000C	Prepare CT by yourself for external installation when selecting 3000C smart meter. Specification of CT: 1. Choose nA/5A for the current transformation ratio of the external CT. (n refers to CT primary input current value, which is between 200 - 5000, chosen by the user according to the actual conditions. 5A refers to CT secondary output current value.) 2. The sampling error for the CT current shall be $\leq 1\%$ (the recommended precision is 0.5, 0.5s, 0.2, or 0.2s). 3. The recommended wire diameter for the CT secondary output cable is 1.5mm, corresponding to 1.5mm ² in cross-sectional area.
3	Load	The load current of any phase shall be more than 120A.

Wiring Description

WARNING

1. The place to snap fit the CT shall be near the entry point in the right direction. "-->" of CT refers that the inverter current flows to the Grid. If CT is installed reversely, the inverter will be triggered with an alarm and unable to realize the power limit function.
2. The appearances of the inverter and its CT wiring port vary according to different types. Please refer to the related inverter's user manual or quick installation guide for specific CT wiring.
3. The CT bore diameter shall be bigger than the outer diameter of AC power cable, to ensure the AC power cable can be inserted into CT.
4. For specific CT wirings, please refer to the documents provided by the respective manufacturer, to ensure that the wiring direction is correct and CT is able to work properly.
5. CT shall be snap fitted on Cable L1, L2 and L3. Do not install it on Cable N.

System with Multiple Inverters



Parts Description

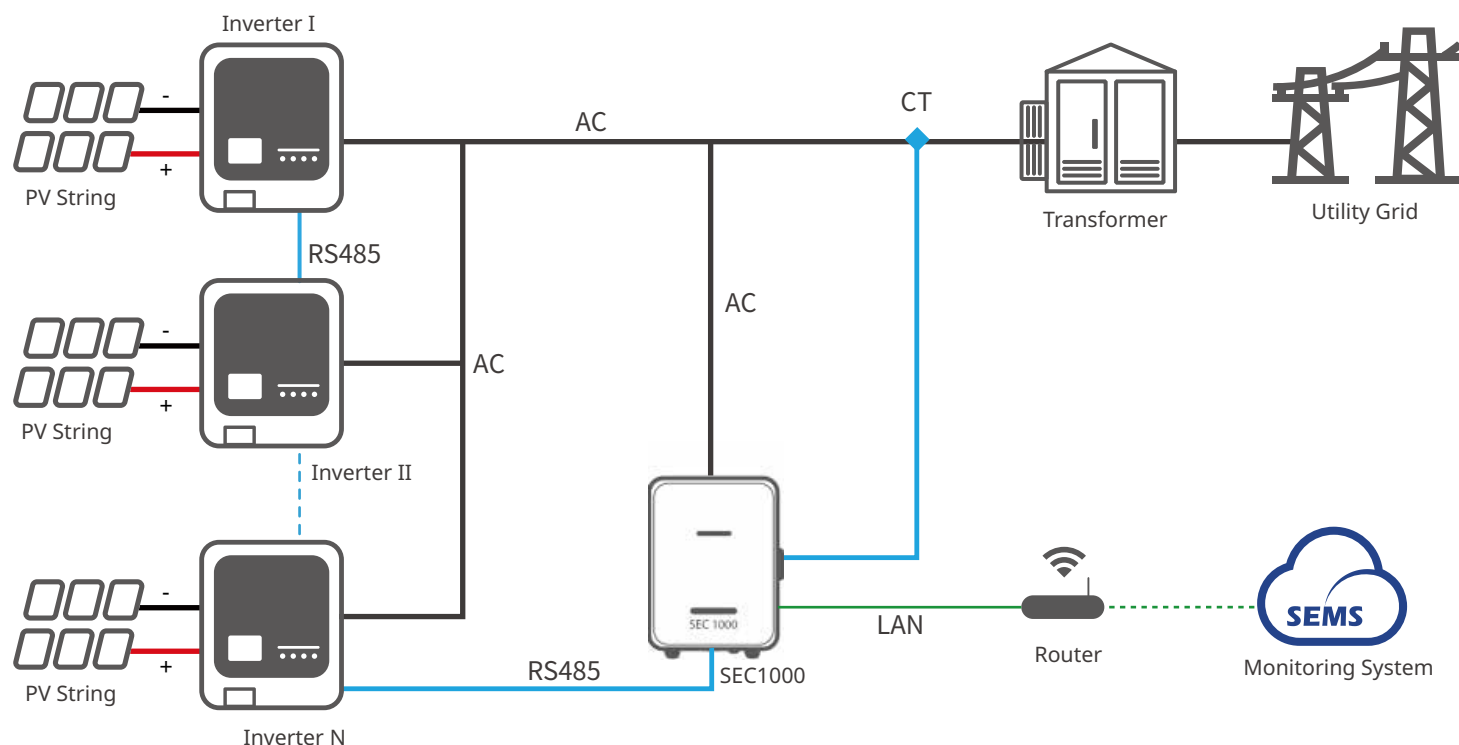
No.	Parts	Description
1	Inverter	Applicable inverters are SDT G2 series, SMT series, MT series and HT 1100V series.
2	GM3000C	Prepare CT by yourself for external installation when selecting 3000C smart meter in networking. CT Specification: 1. Choose nA/5A for the current transformation ratio of the external CT. (n refers to CT primary input current value, which is between 200 - 5000, chosen by the user according to the actual conditions. 5A refers to CT secondary output current value.) 2. The sampling error for the CT current shall be $\leq 1\%$ (the recommended precision is 0.5, 0.5s, 0.2, or 0.2s). 3. The recommended wire diameter for the CT secondary output cable is 1.5mm, corresponding to 1.5mm ² in cross-sectional area.
3	EzLogger Pro	Install an EzLogger Pro in systems with multiple inverters for power limit function.
4	Load	The load current of any phase shall be more than 120A.

Wiring Description

⚠ WARNING

1. The place to snap fit the CT shall be near the Grid-Tied entry point. Make sure the connecting direction is right. If CT is installed reversely, it is unable to realize the power limit function.
2. The appearances of the inverter and its communication port for CT connection vary according to different types. Please refer to the related inverter's user manual or quick installation guide for specific CT wiring.
3. The CT bore diameter shall be bigger than the outer diameter of AC power cable, to ensure the AC power cable can be inserted into CT.
4. For specific CT wirings, please refer to the documents provided by the respective manufacturer, to ensure that the wiring direction is correct and CT is able to work properly.
5. CT shall be snap fitted on Cable L1, L2 and L3. Do not fit it on Cable N.

2.5 Three-Phase Inverter + SEC1000 Networking



Parts Description

No.	Parts	Description
1	Inverter	- Applicable inverters are SDT G2 series, SMT series, MT series and HT 1100V series. - It is applicable to install one inverter or multiple inverters in the system.
2	SEC1000	Prepare CT by yourself for external installation when selecting SEC1000.
3	Load	The load current of any phase shall be more than 120A.

Based on the external CT test current, the recommended CT specification are:

No.	Current Scope	Description	Note
1	$I_{\max} < 250A$	CT 200A Acrel/AKH-0.66 (200A/5A)	CT for power limit, closed type (born dimension 31mm*11mm, $\Phi 22mm$)
		CT 250A/5A Acrel/AKH-0.66-K-30x20-250/5	CT for power limit, open type (opening size 32mm*22mm), 0.5% in precision
		CT 250A/5A Acrel/AKH-0.66-K-60x40-250/5	CT for power limit, open type (opening size 62mm*42mm), 1.0% in precision
2	$250A \leq I_{\max} < 1000A$	CT 1000A/5A Acrel/AKH-0.66-K-60x40-1000/5	CT for power limit, open type (opening size 62mm*42mm), 0.5% in precision
		CT 1000A/5A Acrel/AKH-0.66-K-80x40-1000/5	CT for power limit, open type (opening size 82mm*42mm), 0.5% in precision
		CT 1000A/5A Acrel/AKH-0.66-K-80x80-1000/5	CT for power limit, open type (opening size 82mm*42mm), 0.5% in precision
3	$1000A \leq I_{\max} < 5000A$	CT 5000A/5A Acrel/AKH-0.66-K-140x60-5000/5	CT for power limit, open type (opening size 142mm*62mm), 0.2% in precision
		CT 5000A/5A Acrel/AKH-0.66-K-160x80-5000/5	CT for power limit, open type (opening size 162mm*82mm), 0.2% in precision

Wiring Description

⚠ WARNING

1. Connect SEC1000 AC cable to a 3L/N/PE Grid. The voltage of the Grid shall be within allowable voltage sampling scope of SEC1000.
2. The place to snap fit the CT shall be near the Grid-Tied entry point. Make sure the connecting direction is right. If CT is installed reversely, it is unable to realize the power limit function.
3. The appearances of the inverter and its communication port for CT connection vary according to different types. Please refer to the related inverter's user manual or quick installation guide for specific CT wiring.
4. The CT bore diameter shall be bigger than the outer diameter of AC power cable, to ensure the AC power cable can be inserted into CT.
5. For specific CT wirings, please refer to the documents provided by the respective manufacturer, to ensure that the wiring direction is correct and CT is able to work properly.
6. CT shall be snap fitted on Cable L1, L2 and L3. Do not fit it on Cable N.

3 Parameter Setting

3.1 Setting Power Limit Parameters via LCD

Preconditions

- Non-MT Series and Non-SMT Series Inverters;
- Inverters with LCD;
- Inverters finished wiring and power on.

If none of the above conditions can be satisfied, no EzLogger Pro or SEC1000 applied in the system as well, you can set the related parameters via SolarGo App.

Operations for Inverters with LCD

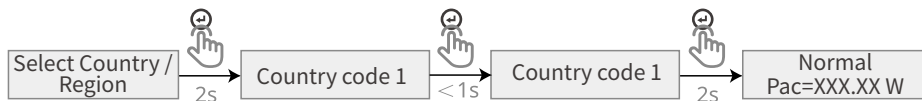
- Stop pressing the button for a period on any page, the LCD will get dark and go back to the initial page.
- Short press the button to switch menu or adjust parameter values.
- After adjusting the parameter values, long press the button, and the parameters will be set successfully; enter into the sub menu.

Steps

Notice

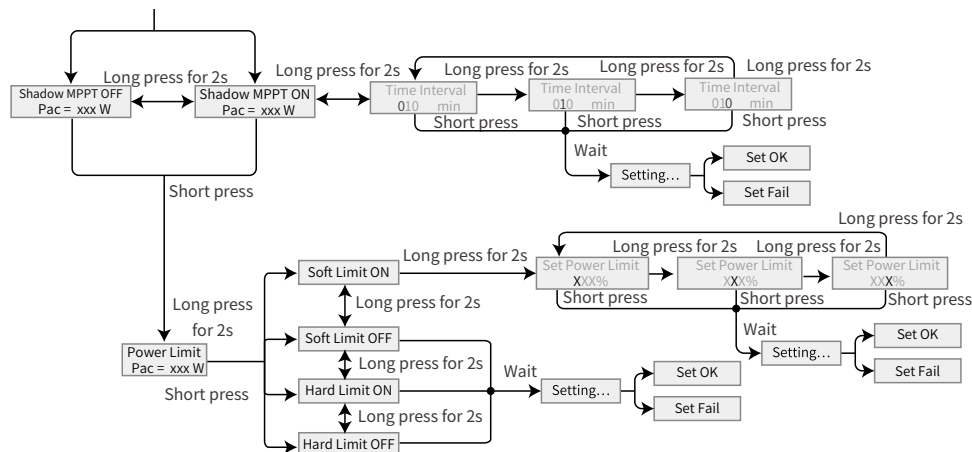
- Below User Interface (UI) figures in this document are from DNS series inverters with firmware version V1.00.00 and communication version V1.00. The screenshots are for reference only. For detail information, please find in the related inverter' user manual to set the parameters.
- The name, range, and default value of the parameters are subject to change or adjust. The actual display prevails.
- The power parameters should be set by professionals, to prevent the generating capacity from being influenced by wrong parameters.

Step 1 (Optional) Set the safety country/region in compliance with the local grid standards and application scenario of the inverter.



Step 2 Short press the buttons on the LCD till "Set the power limit value" appearing.

Step 3 Set the "power limit value" according to the power value which is actually able to feed back into the utility grid.



3.2 Setting Power Limit Parameters via SolarGo App

Preconditions

- Inverters finished wiring and power on;
- Inverters connected with WiFi, LAN, 4G, GPRS, Bluetooth or Wi-Fi/LAN module, and in normal communication.

Operations

Notice

- All the UI figures in this document are based on SolarGo App V4.0.2. The UI may be different due to the version upgrading. The data on the UI screenshots is for reference only.
- The method to set parameters is the same for all inverters. But the parameters displayed will be different based on the inverter model.
- Before setting any parameters, read through this document and the related inverter's user manual to learn the product functions and features. If the inverter parameters are set improperly, operations such as issuing start or stop gridding command to the inverter may fail or not in compliance with the related requirements, thus affecting the inverter's power generation.
- For more details, refer to the SolarGo APP User Manual. Visit https://en.goodwe.com/Ftp/EN/Downloads/User%20Manual/GW_SolarGo_User%20Manual-EN.pdf or scan below QR to get the user manual.

Step 1 Download the APP.

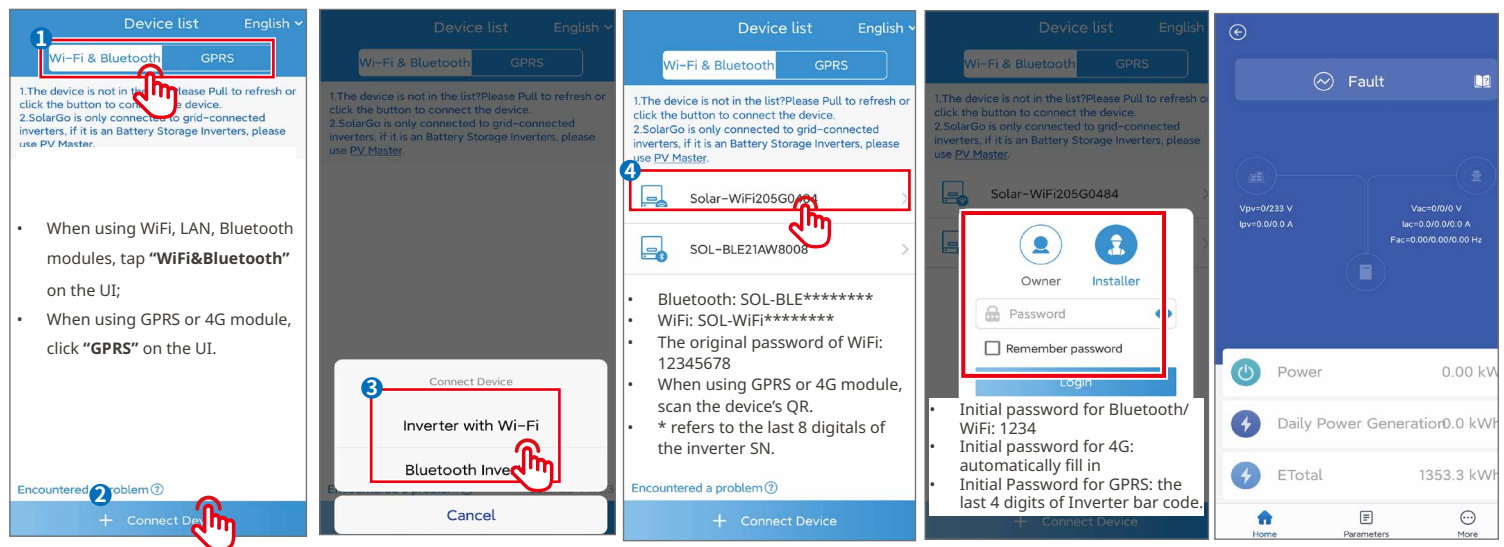
Method I Search SolarGo in Google Play (Android) or App Store (iOS);



Method II Scan below QR.



Step 2 Log into the APP.



Notice

Type the original password to log in for the first time. Modify the password as soon as possible and remember the new one. To ensure a safe account, modify the password regularly.

Step 3 Tap **Home** > **More** > **Advanced Setting** > **Power Limit Settings** to enter into the parameter setting page.

Step 4 Enter the parameters based on actual needs, tap “✓” and the parameters are set successfully.

No.	Parameters	Description
1	Export/Power Limit	Enable Export/Power Limit when power limiting is required by local grid standards and requirements.
2	Mode	Select the power limit model according to the applied scenarios under local region and country's requirement. The current software is available both for single phase and three phase power limit.
3	Export Power	Set the value based on the actual maximum power feed into the utility grid.
4	External CT Ratio	Set the ratio of the primary current to the secondary current of the external CT.
5	Export Power Limit Protection	After enabling this function, the inverter will stop grid tying once the export power limit fails.

3.3 Setting Power Limit Parameters via ProMate

Preconditions

- Already obtained ProMate from the website and installed it in computer;
- Already finished the inverter wiring and power on. No fault has occurred;
- Set power limit parameters via ProMate software when EzLogger Pro or SEC1000 is connected in the system.

Operations

Notice

- Before setting any parameters, read through this document and the related inverter's user manual to learn the product functions and features. If the inverter parameters are set improperly, operations such as issuing start or stop gridding commands to the inverter may fail or not in compliance with the related requirements, thus affecting the inverter's power generation.
- For more details, refer to *SEC1000 User Manual*. Visit https://en.goodwe.com/Ftp/EN/Downloads/User%20Manual/GW_SEC1000_User%20Manual-EN.pdf or scan below QR to get the user manual.
- For more details, refer to *EzLogger Pro User Manual*. Visit https://en.goodwe.com/Ftp/EN/Downloads/User%20Manual/GW_Ezlogger%20Pro_User%20Manual-EN.pdf or scan below QR to get the user manual.



EzLogger Pro
User Manual



SEC1000
User Manual

Parameter Setting (for Dynamic IP Mode)

Step 1 SEC1000 is in the dynamic IP mode as default. Connect the SEC1000 NET port to the Router LAN port with the network cable. (Press RELOAD button for about 4 seconds, and the EzLogger Pro inside of SEC1000 is reset and switched to dynamic IP mode.)

Step 2 Connect the computer to the Router network for communication.

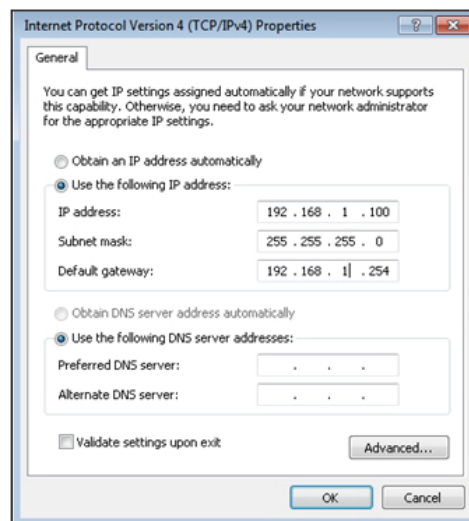
Step 3 Set the Total Capacity, Power Limit and Ratio of CT, then click "Export Enab" on ProMate UI to finish export power limit setting.

Step 4 Monitor the data such as Active Power, Voltage and Current on ProMate UI in real time, ensuring power limit function is enabled.

Parameter Setting (for Static IP Mode)

Step 1 Press RELOAD button for about 10 seconds, and the EzLogger Pro inside of SEC1000 is reset and switched to static IP mode. (The default IP:192.168.1.200 and default gateway: 192.168.1.254)

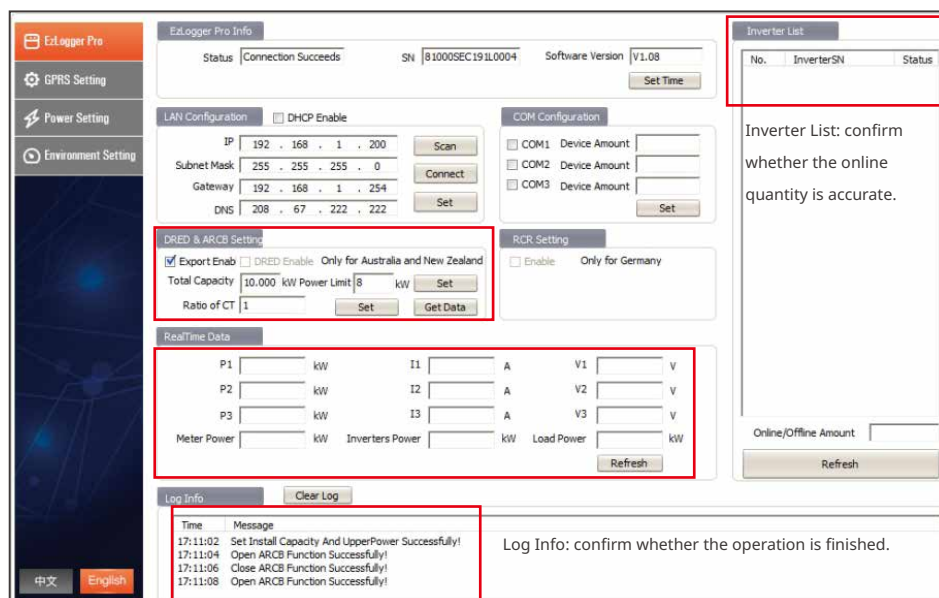
Step 2 The IP addresses for the computer and EzLogger Pro shall be in the same network segment. Set the computer IP address at 192.168.1.xxx ($1 \leq \text{XXX} \leq 250$ and $\text{XXX} \neq 200$).



Step 3 Set the Total Capacity, Power Limit and Ratio of CT, then click "Export Enab" on ProMate UI to finish export power limit setting.

Step 4 Monitor the data such as Active Power, Voltage and Current on ProMate UI in real time, ensuring power limit function is enabled.

ProMate UI



4 Troubleshooting

- Power limit for single inverter: when the communication is disconnected, the inverter can derate based on the setting power limit percentage.
- Power limit for multiple inverters: when the communication with SEC1000 or EzLogger Pro is disconnected, the inverters continue to run for 10 minutes and then become standby. If it is disconnected with the smart meter, the inverters are able to run based on the setting power limit percentage.