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EN

# User Manual

STM/STK/STK-Pro

## » 1 About This Document

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### ▼ 1.1 Overview

This manual is an integral part of Sunways STM/STK/STK-Pro series. It mainly introduces the assembly, installation, electrical connection, commissioning, maintenance, and troubleshooting. Before installing and operating the device, please read through this manual carefully and get familiar with the features, functions and safety notes.

### ▼ 1.2 Target Groups

This document is intended for the electrical installers with professional qualifications and end-users. If there are any problems during the installation process, please call Sunways service telephone at +86 400-9922-958 or email Sunways at [service@sunways-tech.com](mailto:service@sunways-tech.com) for consultation.

## » 2 Safety Instructions

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### ▼ 2.1 Safety Notes

- ① Before installation, please read this manual carefully and follow the instruction .
- ② Personnel who plan to install the equipment must receive thorough training or obtain electrical qualification certificates.
- ③ All electrical installations must meet local regulations.
- ④ If the equipment needs maintenance, please contact the local designated personnel for system installation and maintenance .

### ▼ 2.2 Statement

Sunways Technologies Co.,Ltd. has the right not to undertake quality assurance of the following circumstances:

- ① Damages caused by improper transportation.
- ② Damages caused by incorrect storage, installation, or use.
- ③ Damages caused by installation and use of equipment by non-professional or untrained personnel.
- ④ Damages caused by failure to comply with the instructions and safety warnings in this document.

- ⑤ Damages of running in an environment that does not meet the requirement stated in this document.
- ⑥ Damages caused by operation beyond the parameters specified in applicable technical specifications.
- ⑦ Damages caused by unauthorized disassembly, alteration of products or modification of software codes.
- ⑧ Any damages caused by abnormal natural environment (force majeure, such as lightning, earthquake, fire, storm, etc.)
- ⑨ Products beyond the warranty period.

## » 3 Product Description

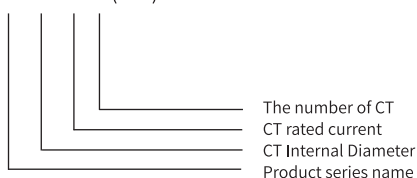
### ▼ 3.1 Function

STx series is a home smart energy management device and support different voltage levels and power grid. The series can collect the data in real time, including grid voltage, current, power and energy yield. By cooperating with Sunways monitoring system, STM/STK/STK-Pro can realize real-time management and monitoring of household energy.

### ▼ 3.2 Model Description

The product model is defined as follows. For details, see the product Parameter page.

STx-xxDxx-x-(Pro)



### ▼ 3.3 Storage Conditions

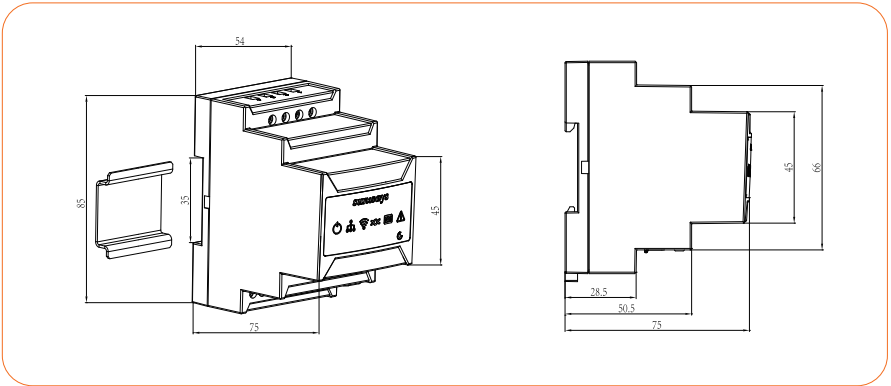
- ① Equipment must be stored in its original packaging.
- ② The storage temperature should always between 0°C and 30°C. Humidity is less than 90%.

### ▼ 3.4 Packing list

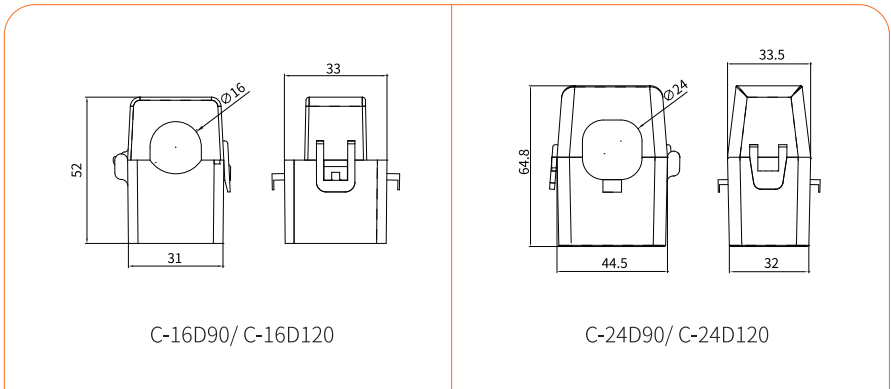
1	1*Slotted screwdriver	4	8*Pinhole terminal
2	2*RJ45 connector	5	1*User Manual
3	1*WiFi/ANT(STM no ANT)	6	1-3*CT

### ▼ 3.5 Product Appearance and Dimensions

Unit: mm

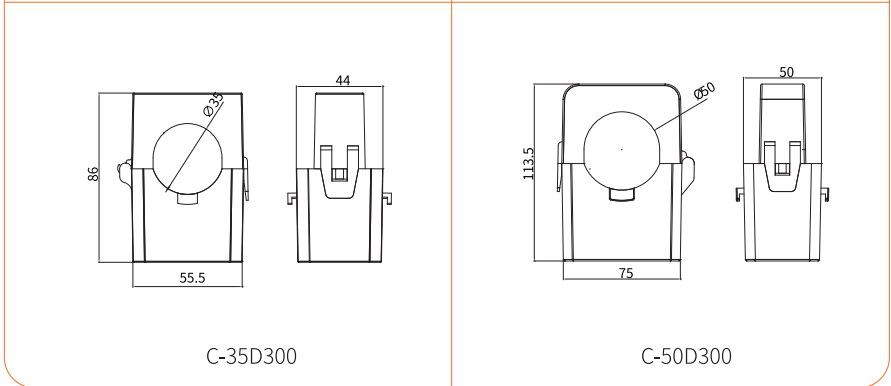


STM/STK/STK-Pro



C-16D90/ C-16D120

C-24D90/ C-24D120

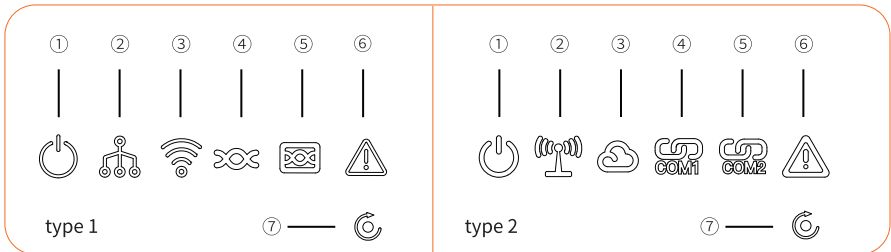


C-35D300

C-50D300

### ▼ 3.6 Product Appearance and Dimensions

Depending on the delivery time, the label may be either of the following two types.



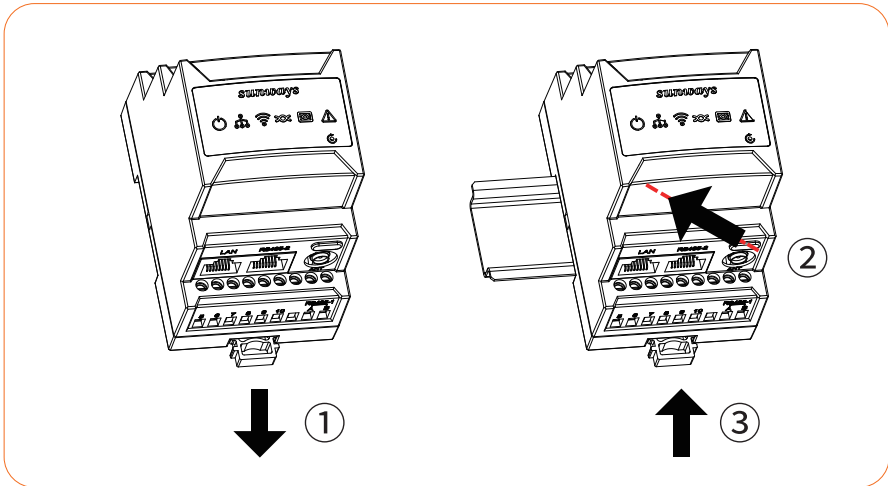
No.	Indicator	Status	Description	Remark
1	Running indicator	Off	The equipment is not powered on.	
		Steady on	The equipment is powered on.	
2	Local communication indicator	Off	Local communication with APP fails.	STM does not have this indicator
		On	Local communication with APP succeeds.	
3	Remote communication indicator	On	Remote communication with severe succeeds.	STM does not have this indicator
		Slow flashing	The device is not connected to the router.	
		Quick flashing	The device is connected to the router but not connected to the server.	
4	RS485-1 communication indicator	Flashing	A communication data interaction has been conducted.	STM
		Off	No communication data interaction has been conducted.	STM
		Flashing	Communication is not established with all connected devices.	STK, STK-Pro
		On	Communication is established with all connected devices.	STK, STK-Pro
5	RS485-2 communication indicator	Flashing	A communication data interaction has been conducted.	
		Off	No communication data interaction has been conducted.	
6	Alarm indicator	Off	The device is running normally.	
		On	An alarm or faults is generated, fault information can be viewed from the APP.	
7	Reset button		Long press for 3 seconds to reset.	

## » 4 Installation

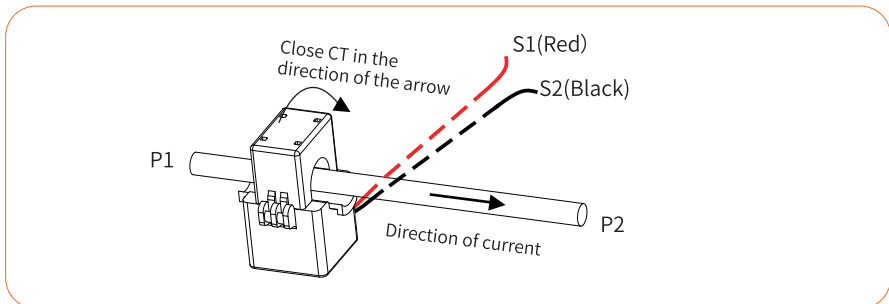
Sunways STM/STK/STK-Pro series is rated to IP20 and can be installed indoors only.

### ▼ 4.1 STM/STK/STK-Pro

STM/STK/STK-Pro installed on DIN 35mm standard guide.

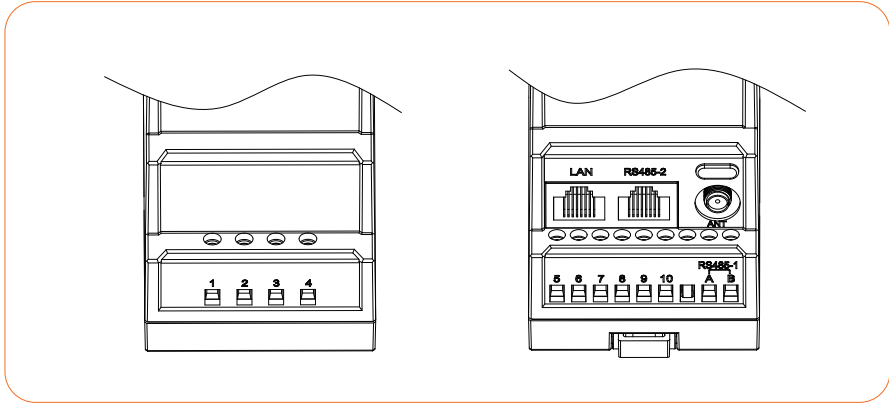


### ▼ 4.2 Current Transformer



No.	P1	P2	Application Scenarios
1	House	Grid	Monitoring Grid Power
2	Power Generator	House	Monitoring Power Generator
3	Grid	Load	Monitoring Load

## » 5 Wiring Connection



Port	Function	Remark
1	Connect to L1 or L	
2	Connect to L2	STx-xxDxx-1 does not have this port
3	Connect to L3	STx-xxDxx-1/2 does not have this port
4	Connect to N	
5	Connect to CT1-S1 of L1 or L	
6	Connect to CT1-S2 of L1 or L	
7	Connect to CT2-S1 of L2	STx-xxDxx-1 does not have this port
8	Connect to CT2-S2 of L2	
9	Connect to CT3-S1 of L3	STx-xxDxx-1/2 does not have this port
10	Connect to CT3-S2 of L3	
RS485-1	RS485 port 1	
RS485-2	RS485 port 2	
LAN	LAN communication port	STM does not have this port
ANT	WIFI antenna port	
Type-C	Specified Debug Interface	

CT(s) supplied are calibrated and tested to be used with the device in this package. These CT(s) cannot be interchanged within the same device and cannot be used for other devices from other packaging.

Wiring connection methods vary according to application scenarios. Scan the QR code beside to obtain the supported scenarios and corresponding wiring diagrams.



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# Application Scenarios and Wiring Connection

STM/STK/STK-Pro

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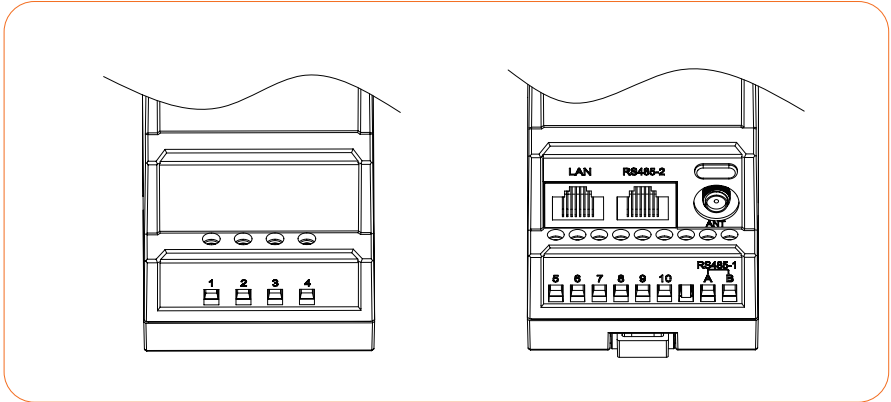
## Attention

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Due to product version upgrades or other reasons, the contents of this document will be updated periodically. Unless otherwise agreed, this document serves only as a guide to use, and all statements, information and recommendations in this document do not constitute any express or implied guarantee.

## » 1 STM/K-xxDxx-1

### ※ 1.1 Communications Port



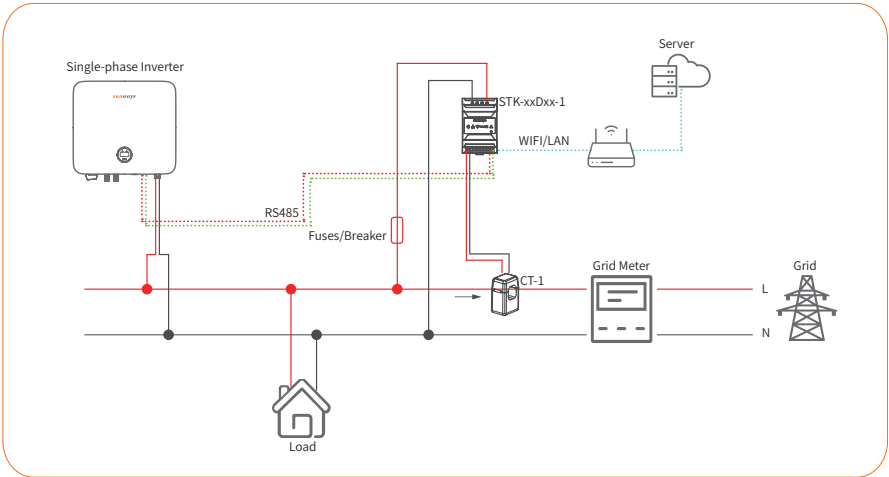
Port	Function	Remark
1	Connect to L	
4	Connect to N	
5	Connect to CT1-S1 of L	
6	Connect to CT1-S2 of L	
RS485-1	RS485 port 1	
RS485-2	RS485 port 2	
LAN	LAN communication port	STM does not have this port
ANT	WiFi antenna port	STM does not have this port
Type-C	Specified Debug Interface	

### ※ 1.2 Application Scenarios and Wiring Connection

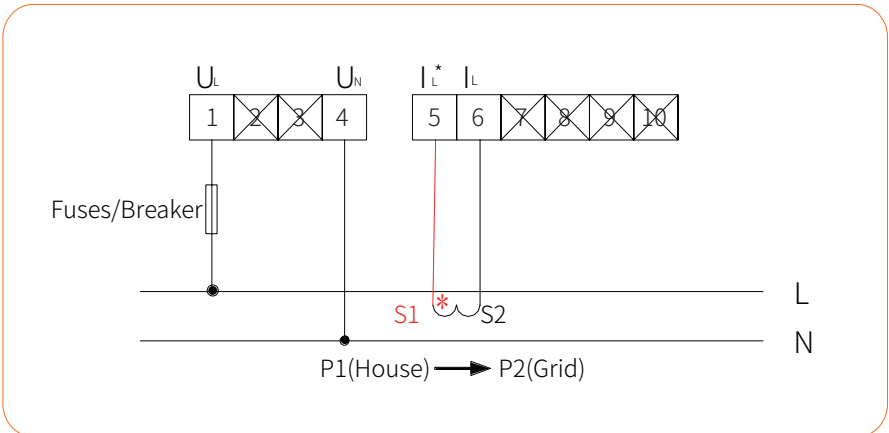
Product functions are under continuous development, please contact Sunways for more scenario solutions.

▼ 1.2.1 Scenario 1-1 (STK)

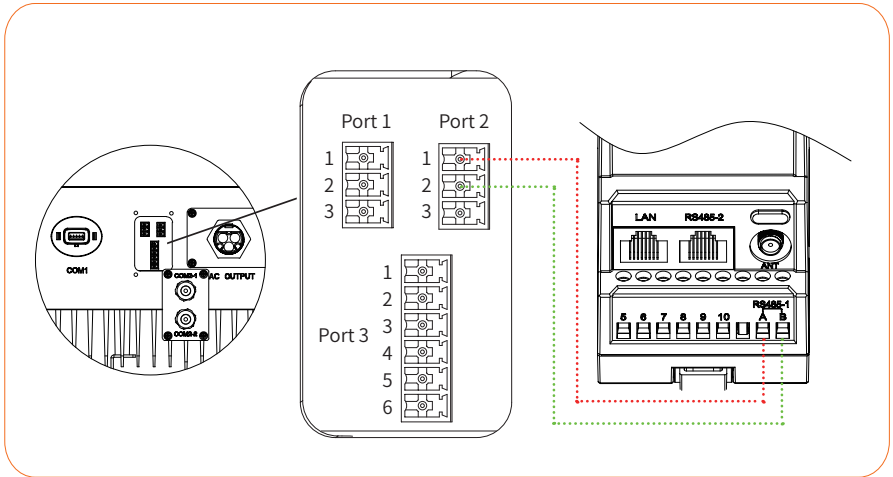
- ① Description: In single-phase system, export limitation and 24 hours energy consumption monitoring can be realized.
- ② System configuration: 1 x Sunways Single-Phase inverter, 1 x STK-xxDxx-1.
- ③ Applicable grid mode: Single-phase system, L+N, 110/120/127(L-N), 220/230/240V(L-N).



According to different design requirements, it is recommended to add fuses or circuit breakers to the voltage input terminals to meet the safety requirements of relevant electrical codes.

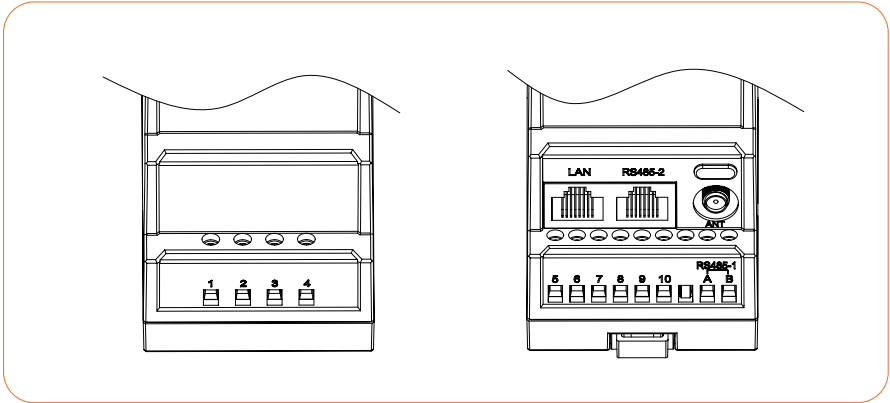


The communication wiring diagram of STK and single-phase grid-connected inverter (STS-1-3KTL/ STS-3-6KTL(-P)/STS-7-11KTL) is as follows:



## 2 STM/K-xxDxx-2

### ※ 2.1 Communication Port



Port	Function	Remark
1	Connect to L1	
2	Connect to L2	
4	Connect to N	
5	Connect to CT1-S1 of L1	
6	Connect to CT1-S2 of L1	
7	Connect to CT2-S1 of L2	
8	Connect to CT2-S2 of L2	
RS485-1	RS485 port 1	
RS485-2	RS485 port 2	
LAN	LAN communication port	STM does not have this port
ANT	WIFI antenna port	STM does not have this port
Type-C	Specified Debug Interface	

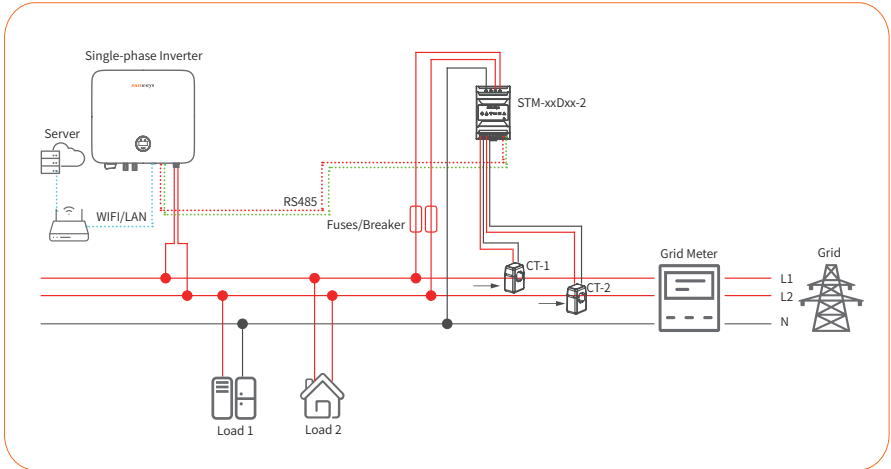
### ※ 2.2 Application Scenarios and Wiring Connection

Product functions are under continuous development, please contact Sunways for more scenarios.

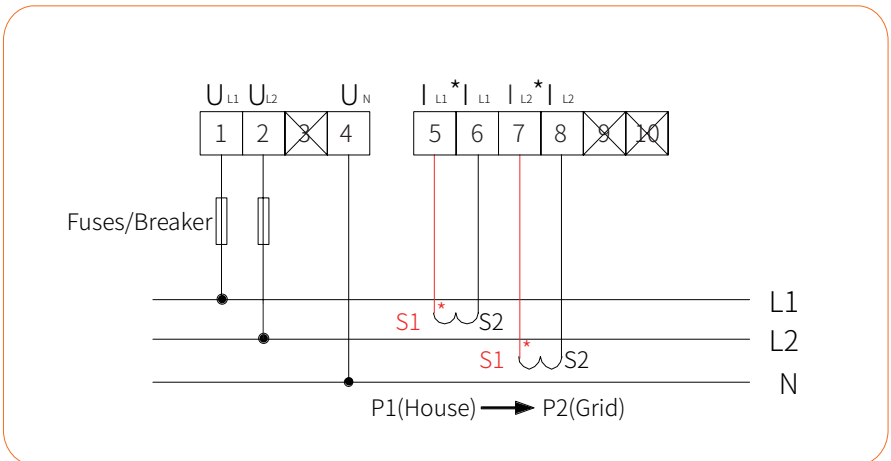


▼ 2.2.1 Scenario 2-1 (STM)

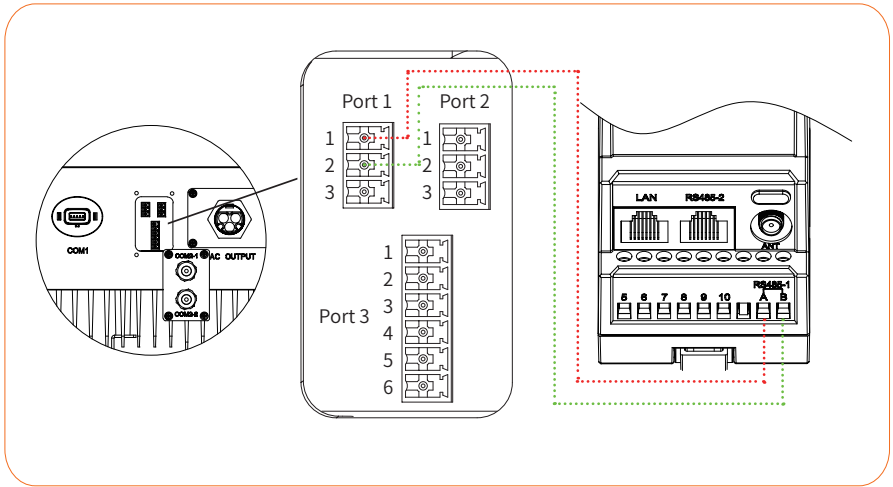
- ① Description: In split-phase system, export limitation can be realized.
- ② System configuration: 1 x Sunways Single-Phase Inverter, 1 x STM-xxDxx-2.
- ③ Applicable grid mode: Split-phase system, 2L+N, 220/230/240V(L-L).



According to different design requirements, it is recommended to add fuses or circuit breakers to the voltage input terminals to meet the safety requirements of relevant electrical codes.

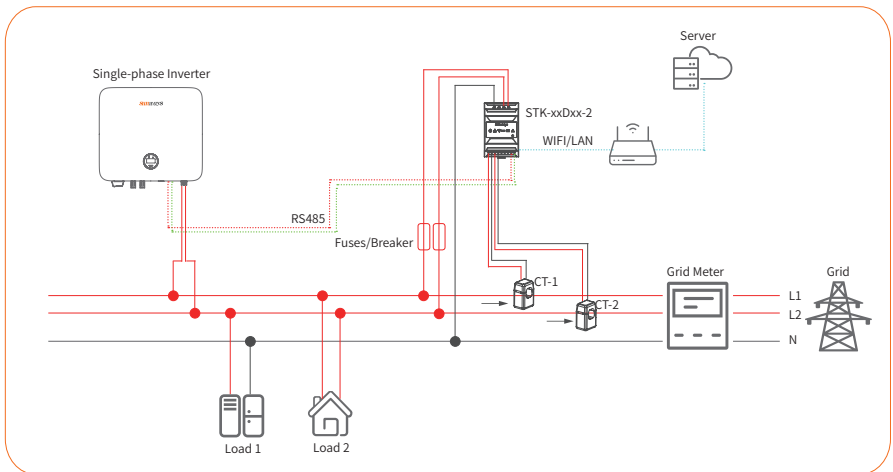


The communication wiring diagram of STM and single-phase grid-connected inverter (STS-1-3KTL/ STS-3-6KTL(-P)/STS-7-11KTL) is as follows:

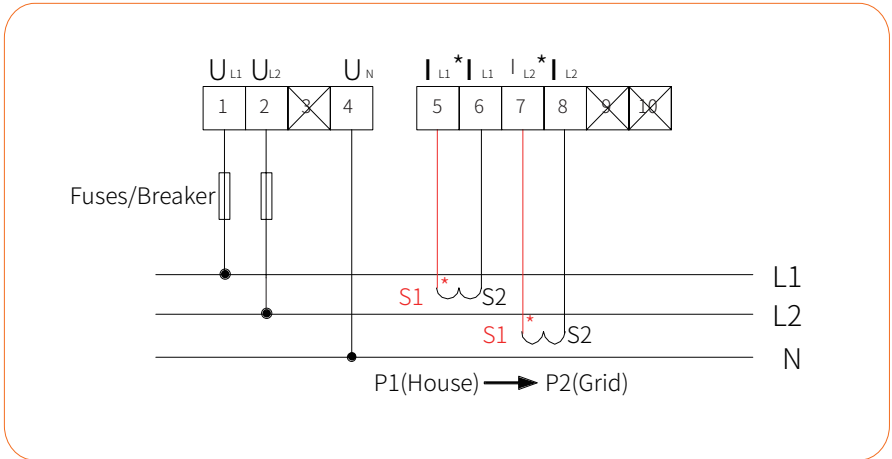


▼ 2.2.2 Scenario 2-2 (STK)

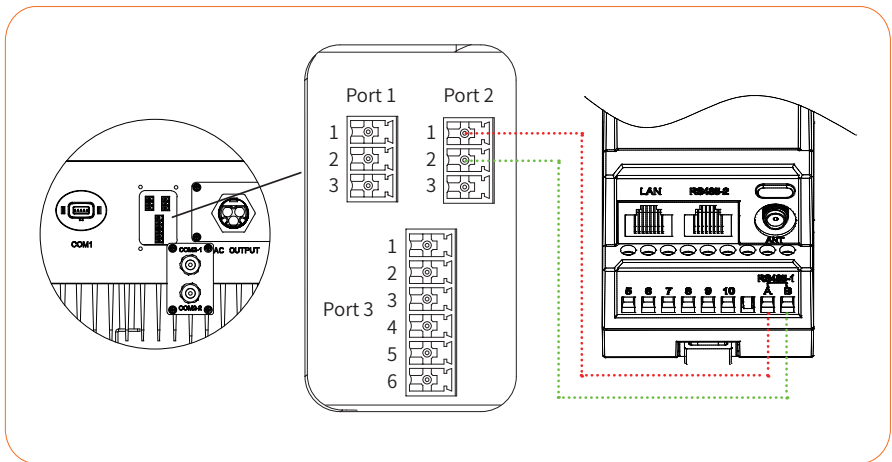
- ① Description: In split-phase system, export limitation and 24 hours energy consumption monitoring can be realized.
- ② System configuration: 1 x Sunways Single-Phase Inverter, 1 x STK-xxDxx-2.
- ③ Applicable grid mode: Split-phase system, 2L+N, 220/230/240V(L-L).



According to different design requirements, it is recommended to add fuses or circuit breakers to the voltage input terminals to meet the safety requirements of relevant electrical codes.

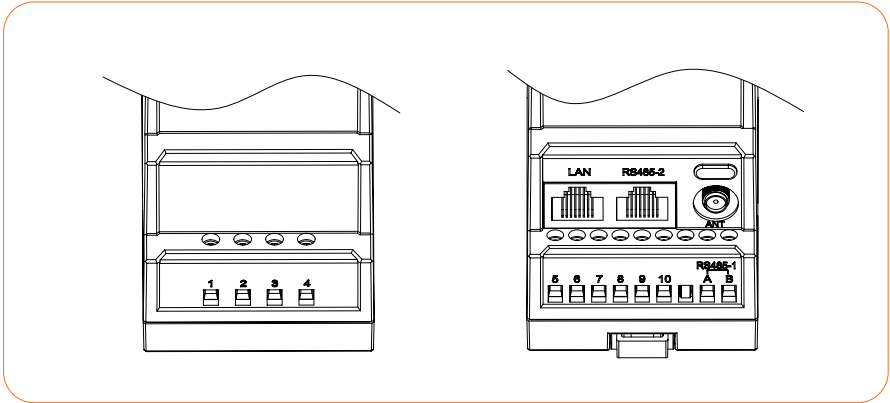


The communication wiring diagram of STK and single-phase grid-connected inverter (STS-1-3KTL/ STS-3-6KTL(-P)/STS-7-11KTL) is as follows:



### 3 STM/K-xxDxx-3

※ 3.1 Communications port

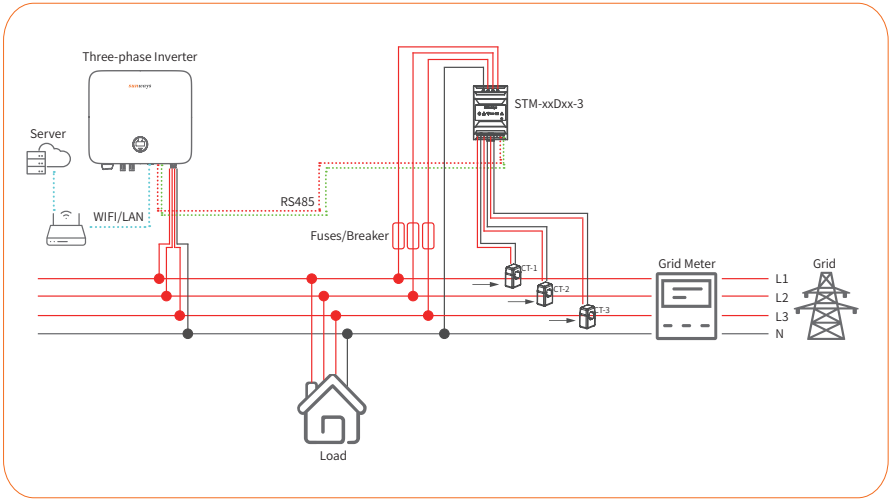


Port	Function	Remark
1	Connect to L1	
2	Connect to L2	
3	Connect to L3	
4	Connect to N	
5	Connect to CT1-S1 of L1	
6	Connect to CT1-S2 of L1	
7	Connect to CT2-S1 of L2	
8	Connect to CT2-S2 of L2	
9	Connect to CT3-S1 of L3	
10	Connect to CT3-S2 of L3	
RS485-1	RS485 port 1	
RS485-2	RS485 port 2	
LAN	LAN communication port	STM does not have this port
ANT	WIFI antenna port	STM does not have this port
Type-C	Specified Debug Interface	

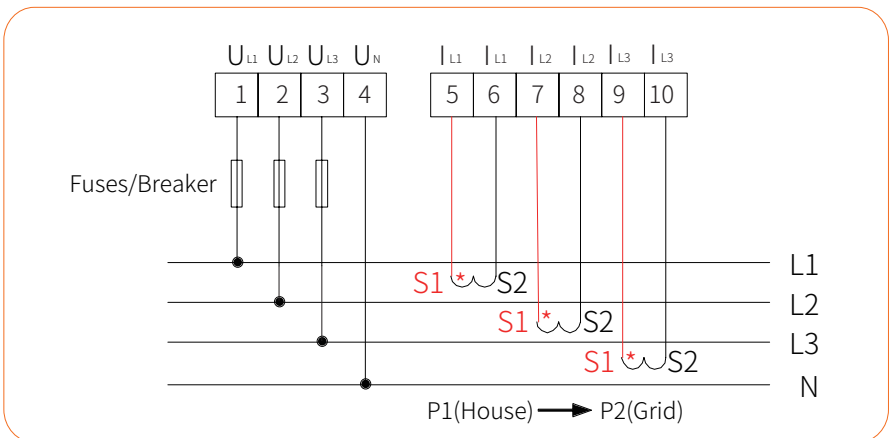
### ※ 3.2 Application Scenarios and Wiring Connection

#### ▼ 3.2.1 Scenario 3-1a (STM)

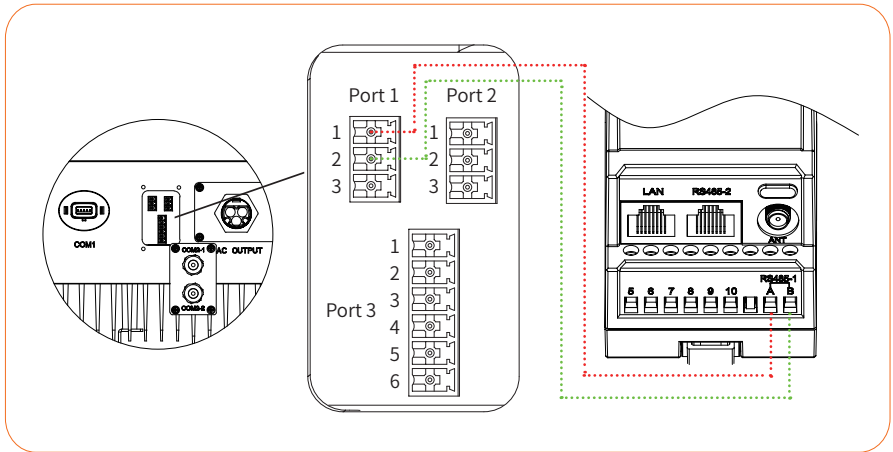
- ① Description: In WYE system, the export limitation can be realized.
- ② System configuration: 1 x Sunways Three-Phase Inverter, 1 x STM-xxDxx-3.
- ③ Applicable grid mode: Three-phase system, 3L+N, 208/220/240V(L-L), 380/400V/415V(L-L).



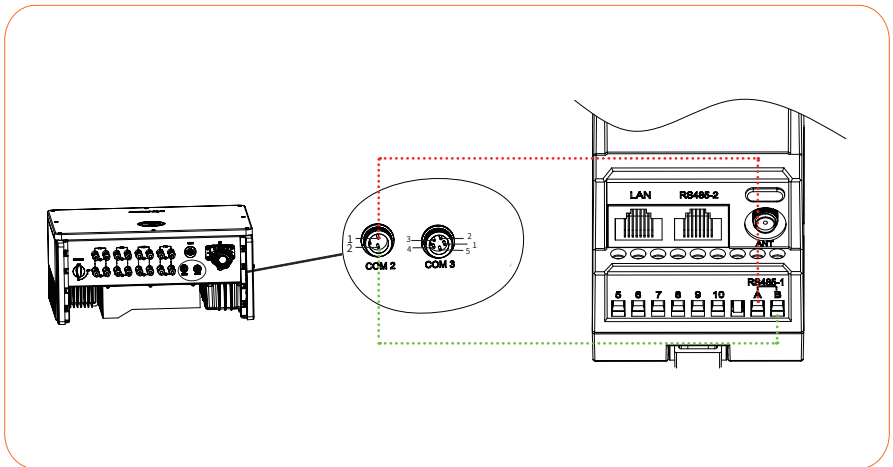
According to different design requirements, it is recommended to add fuses or circuit breakers to the voltage input terminals to meet the safety requirements of relevant electrical codes.



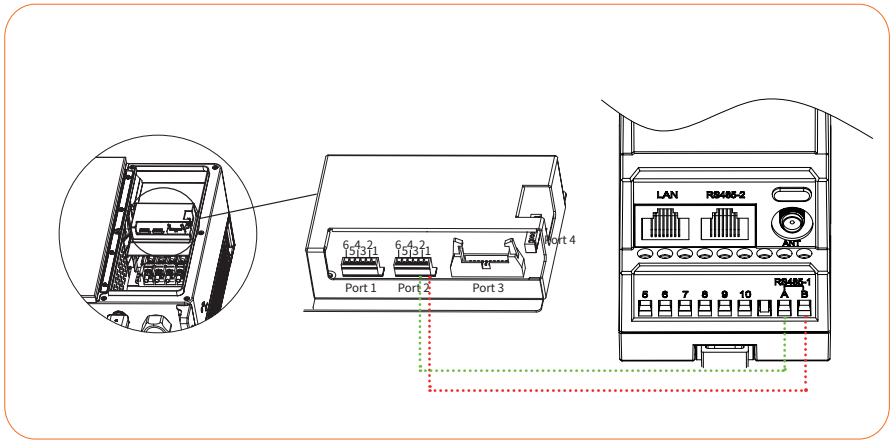
The communication wiring diagram of STM and three-phase grid-connected inverter (STT-3-6KTL-M/STT-4-25KTL(-P)) is as follows:



The communication wiring diagram of STM and three-phase grid-connected inverter (STT-30-60KTL) is as follows:

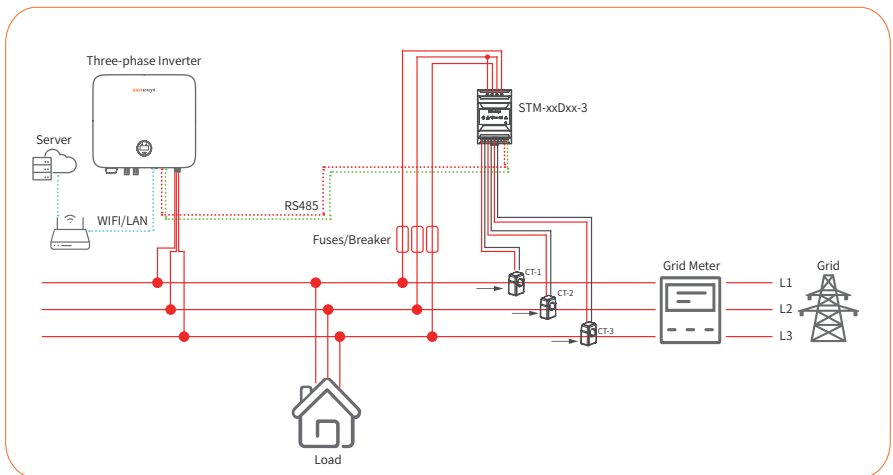


The communication wiring diagram of STM and three-phase grid-connected inverter (STT-50-60KTL(-P)/STT-80-125KTL) is as follows:

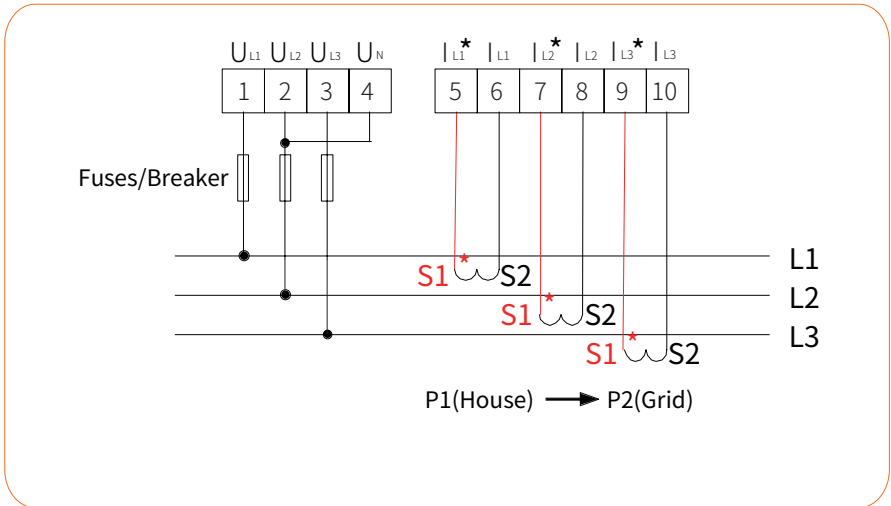


▼ 3.2.2 Scenario 3-1b (STM)

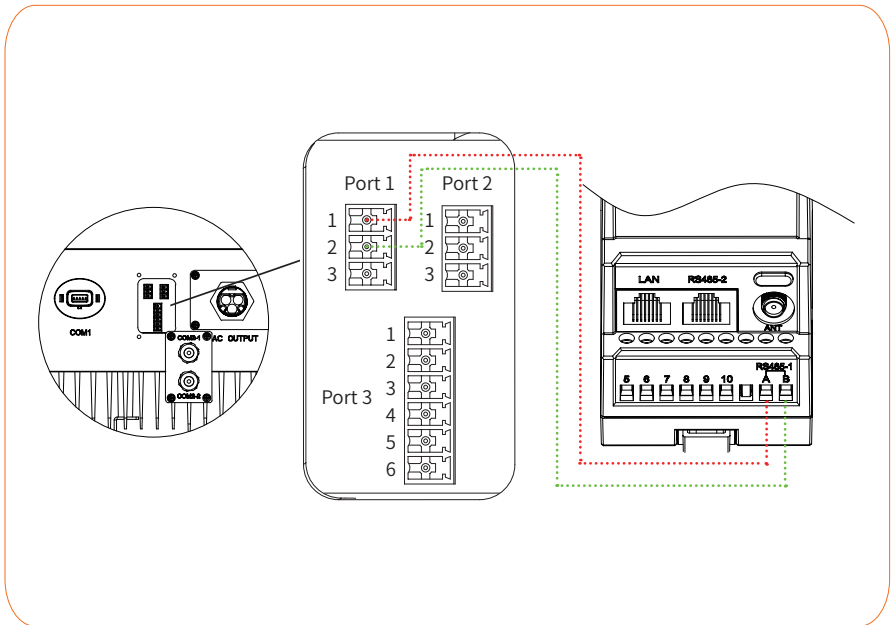
- ① Description: In Delta system, the export limitation can be realized.
- ② System configuration: 1 x Sunways Three-Phase Inverter, 1 x STM-xxDxx-3.
- ③ Applicable grid mode: Three-phase system, 3L, 208/220/240V(L-L).



According to different design requirements, it is recommended to add fuses or circuit breakers to the voltage input terminals to meet the safety requirements of relevant electrical codes.

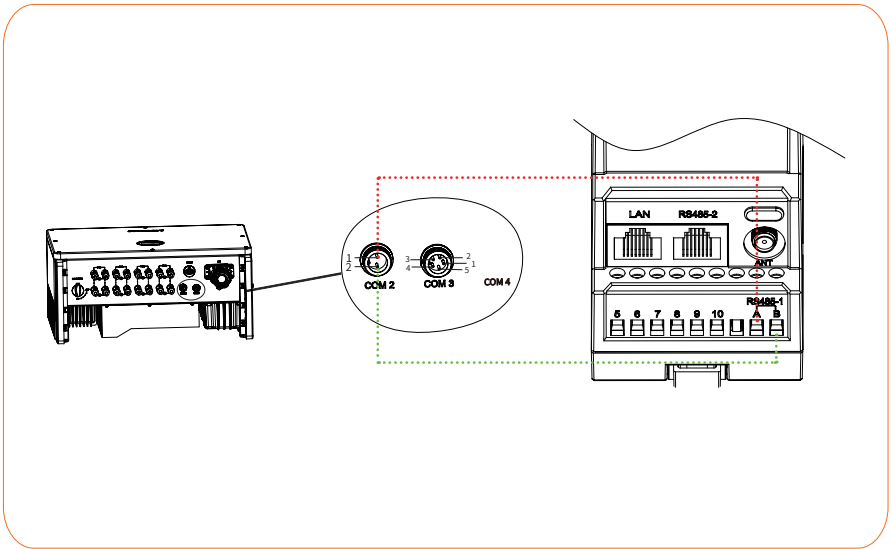


The communication wiring diagram of STM and three-phase grid-connected inverter (STT-3-6KTL-M/STT-4-25KTL(-P)) is as follows:

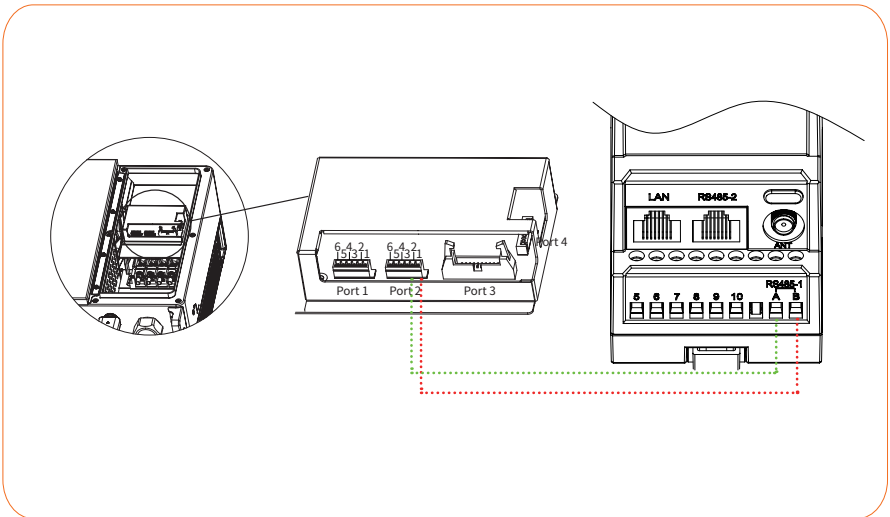




The communication wiring diagram of STM and three-phase grid-connected inverter (STT-30-60KTL) is as follows:

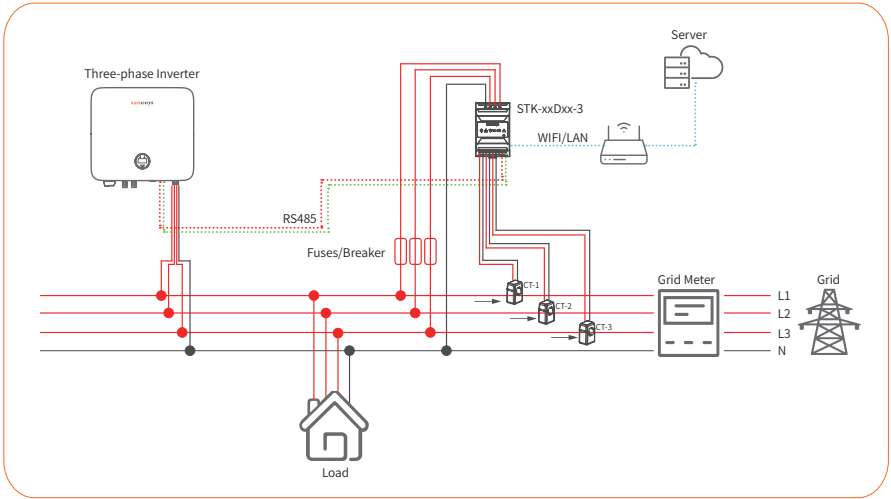


The communication wiring diagram of STM and three-phase grid-connected inverter (STT-50-60KTL(-P)/STT-80-125KTL) is as follows:

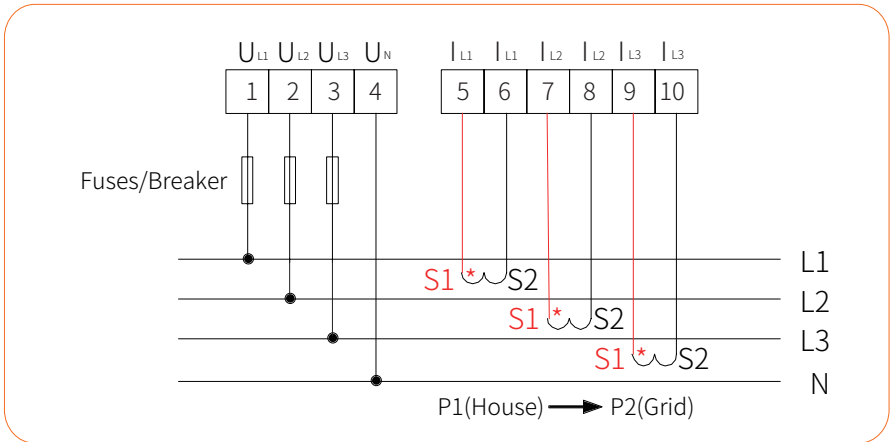


▼ 3.2.3 Scenario 3-2a (STK)

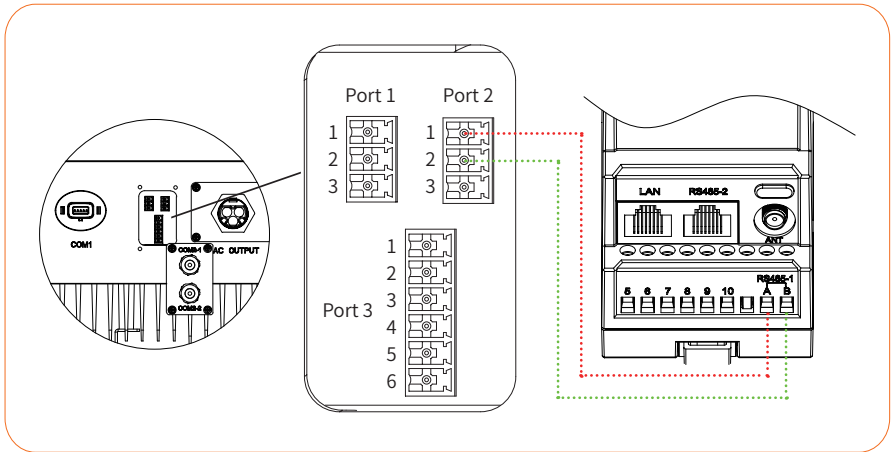
- ① Description: In WYE system, export limitation and 24 hours energy consumption monitoring can be realized.
- ② System configuration: 1 x Sunways Three-Phase Inverter, 1 x STK-xxDxx-3.
- ③ Applicable grid mode: Three-phase system, 3L+N, 208/220/240V(L-L), 380/400V/415V(L-L).



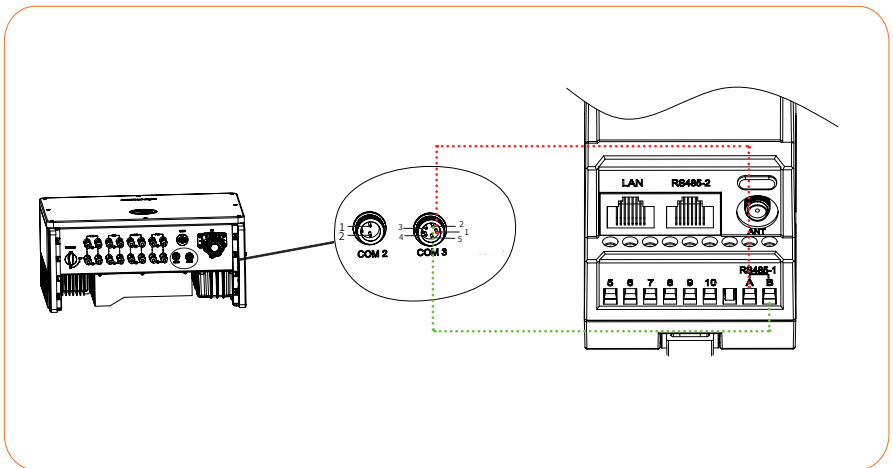
According to different design requirements, it is recommended to add fuses or circuit breakers to the voltage input terminals to meet the safety requirements of relevant electrical codes.



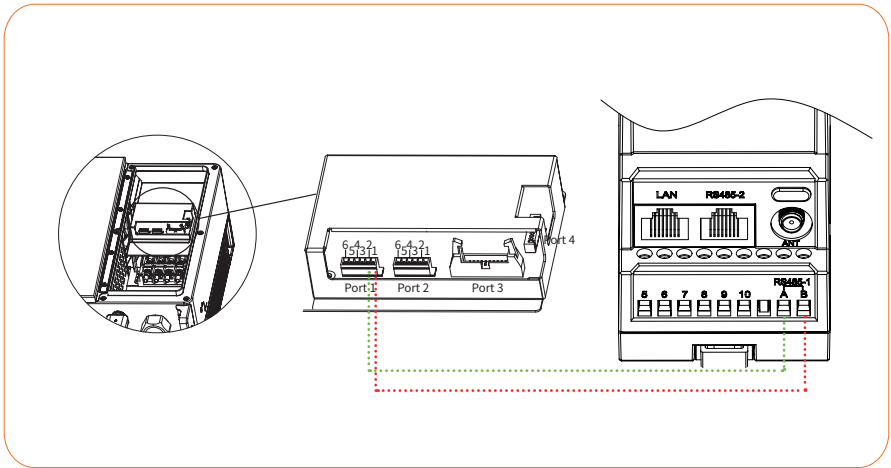
The communication wiring diagram of STK and three-phase grid-connected inverter (STT-3-6KTL-M/ STT-4-25KTL(-P)) is as follows:



The communication wiring diagram of STK and three-phase grid-connected inverter (STT-30-60KTL) is as follows:

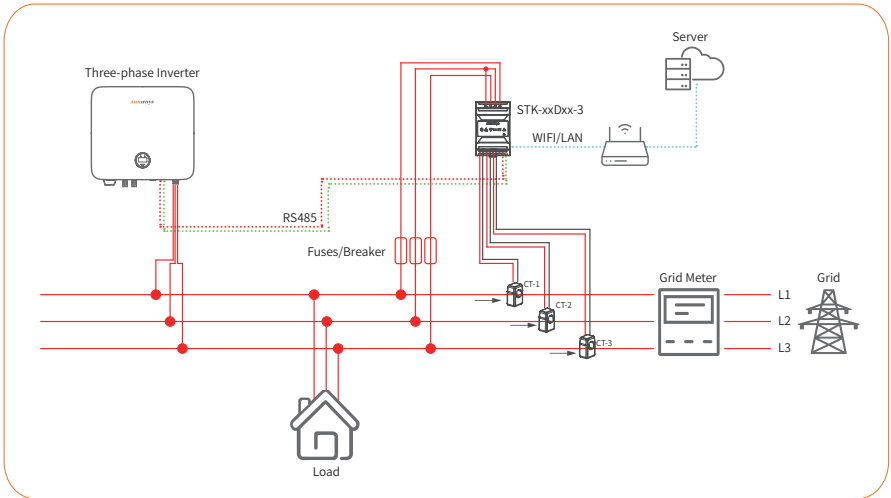


The communication wiring diagram of STK and three-phase grid-connected inverter (STT-50-60KTL(-P)/ STT-80-125KTL) is as follows:

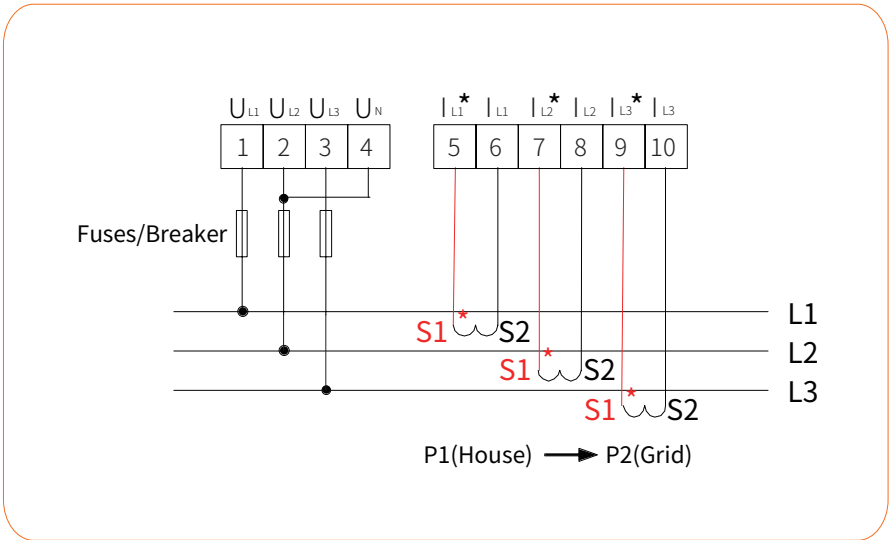


▼ 3.2.4 Scenario 3-2b (STK)

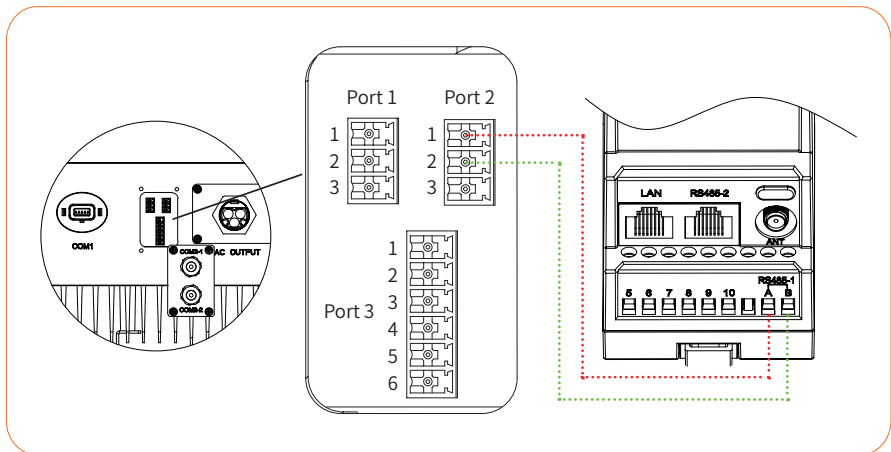
- ① Description: In Delta system, export limitation and 24 hours energy consumption monitoring can be realized.
- ② System configuration: 1 x Sunways Three-Phase Inverter, 1 x STK-xxDxx-3.
- ③ Applicable grid mode: Three-phase system, 3L, 208/220/240V(L-L).



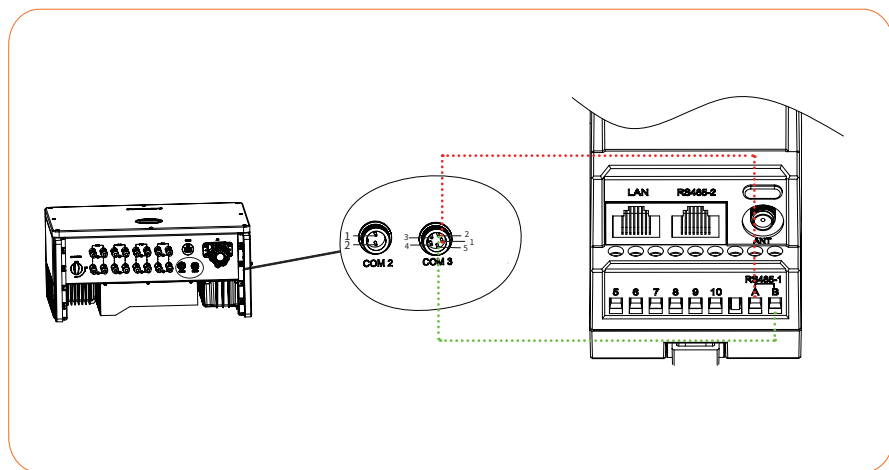
According to different design requirements, it is recommended to add fuses or circuit breakers to the voltage input terminals to meet the safety requirements of relevant electrical codes.



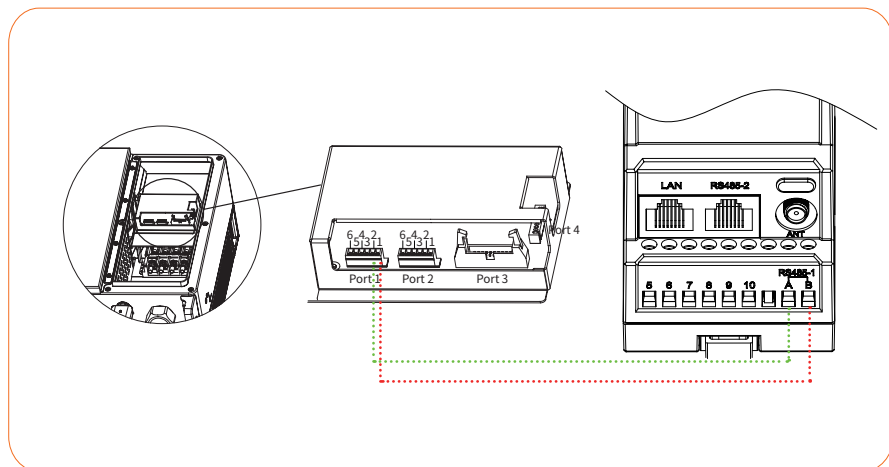
The communication wiring diagram of STK and three-phase grid-connected inverter (STT-3-6KTL-M/STT-4-25KTL(-P)) is as follows:



The communication wiring diagram of STK and three-phase grid-connected inverter (STT-30-60KTL) is as follows:



The communication wiring diagram of STK and three-phase grid-connected inverter (STT-50-60KTL(-)/STT-80-125KTL) is as follows:



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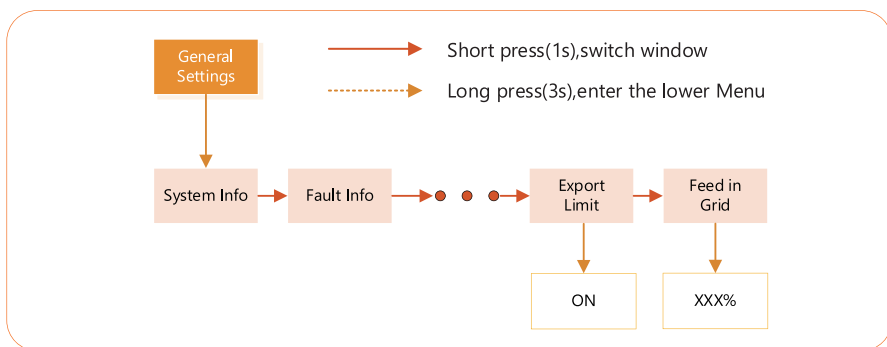
# Setting

STM/STK/STK-Pro

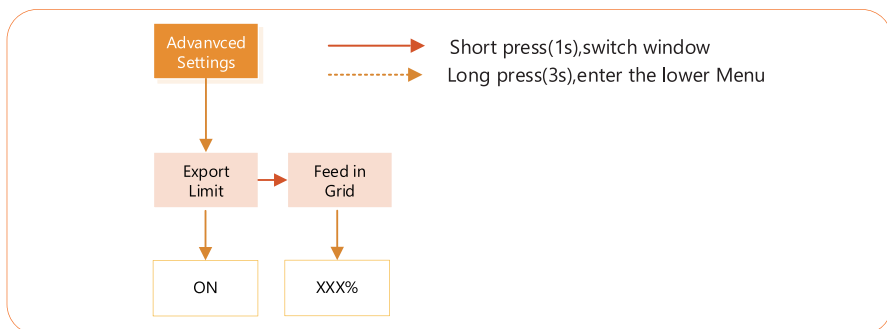
# ➤ 1 STM Settings

## ▼ 1.1 Export Limit Setting

- ① Enable the Export Limit function by short pressing or long pressing the button on the inverter display.
- ② Set the percentage of the power that allowed to feed into grid, when set to XXX%, it means that the maximum allowed feed in grid power is XXX% of the inverter's rated output power. If Zero Export is needed, set the percentage to 0%.



General Version Setting Interface



Australia Version Setting Interface

CT ratio will be preset in STM/STK/STK-Pro before delivery, no need to set on inverter.

## ▼ 1.2 ADD Device to Monitoring System

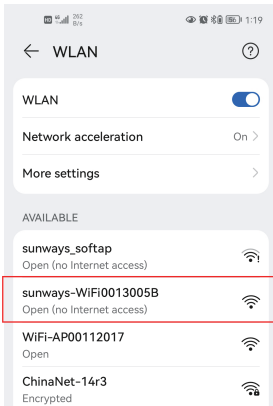
- ① Power on the inverter and STM.
- ② According to the operation instructions of the monitoring APP(sunways Portal) , create a PV plant and bind Inverter to the plant.
- ③ The APP(sunways Portal) can be downloaded via the QR code on the back cover of this manual.



## » 2 STK Settings

### ▼ 2.1 Setting WiFi

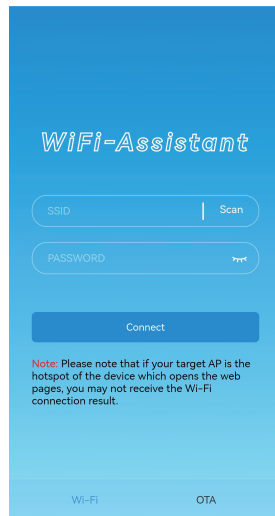
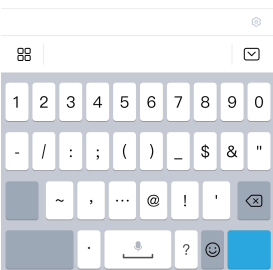
- 1 Prepare a laptop, tablet or smart phone and turn on the wireless network function on the device.



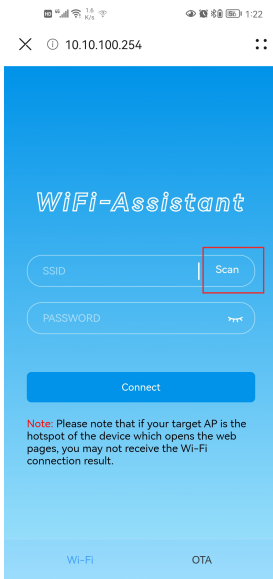
- 2 Searching for the corresponding WLAN in the WLAN connection list" sunways-WiFi\*\*\*\*\*" (\*represent s digital), and tap connect.



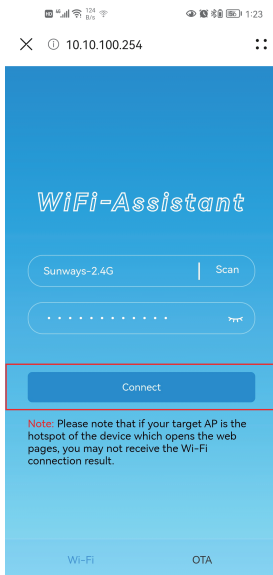
- 3 Open the browser and access 10.10.100.254, system information page is displayed.



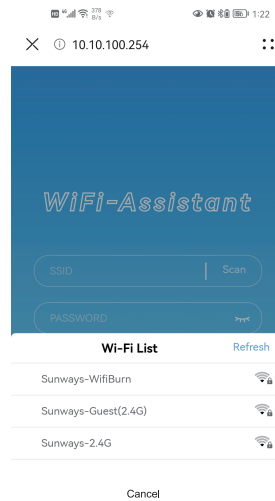
- 4 Tap "Scan", A list of WiFi network names pops up.



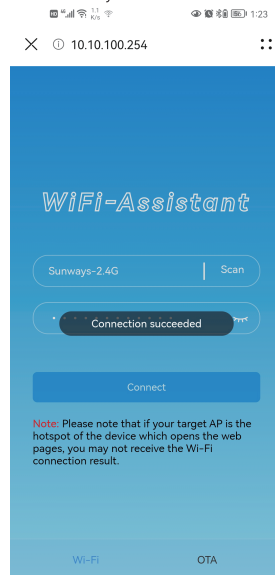
- 6 Input the password of wireless network, (note the case difference), Tap "Connect".



- 5 Click and select the corresponding router network you want to configure.



- 7 If connected successfully, "Connection succeeded" will be displayed. After successful configure, the indicator status of WiFi will be steady on.

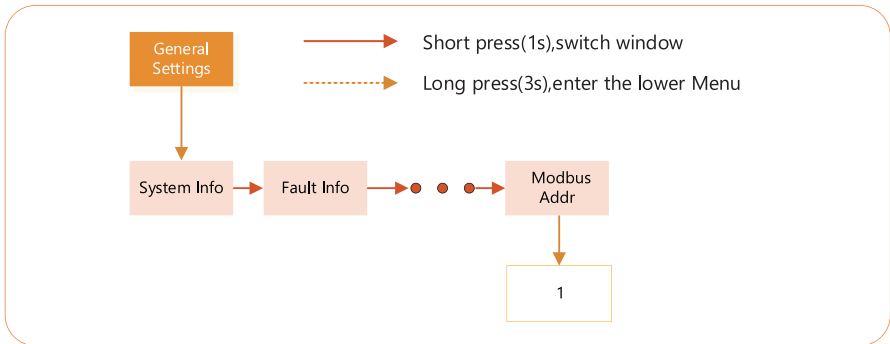


## ▼ 2.2 Setting LAN

Only support DHCP mode. When DHCP is enabled on the router, no need to configure the LAN parameter and can be used directly.

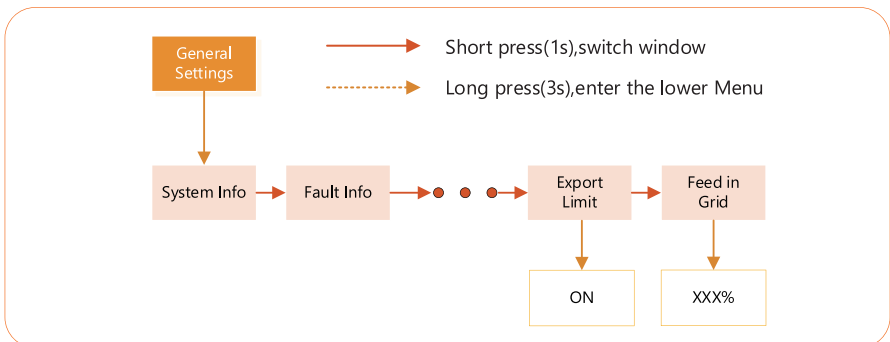
## ▼ 2.3 Setting Inverter Modbus Address

Set the Modbus address to 1 by short pressing or long pressing the button on the inverter display.

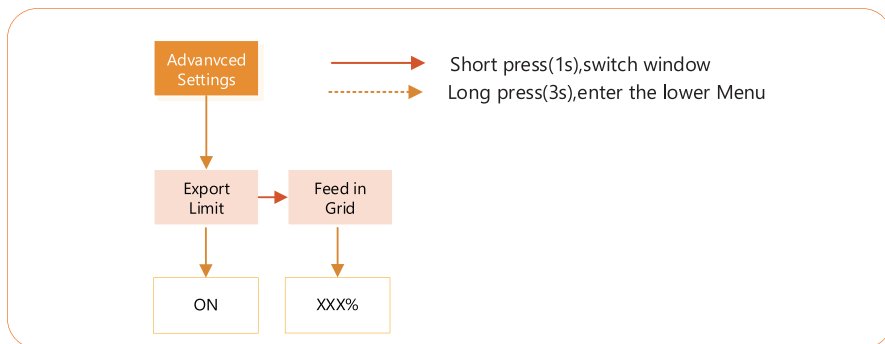


## ▼ 2.4 Export Limit Setting

- ① Enable the Export Limit function by short pressing or long pressing the button on the inverter display.
- ② Set the percentage of the power that allowed to feed into grid, when set to XXX%, it means that the maximum allowed feed in grid power is XXX% of the inverter's rated output power. If Zero Export is needed, set the percentage to 0%.



General Version Setting Interface



Australia Version Setting Interface

CT ratio will be set in STM/STK/STK-Pro before delivery, no need to set on inverter.

## ▼ 2.5 ADD Device to Monitoring System

- ① Power on the inverter and STK energy manager.
- ② According to the operation instructions of the monitoring APP(sunways Portal) , create a PV plant and bind Inverter to the plant.
- ③ The APP(sunways Portal) can be downloaded via the QR code on the back cover of this manual.

## » 3 STK-Pro Settings

### ▼ 3.1 Setting WiFi

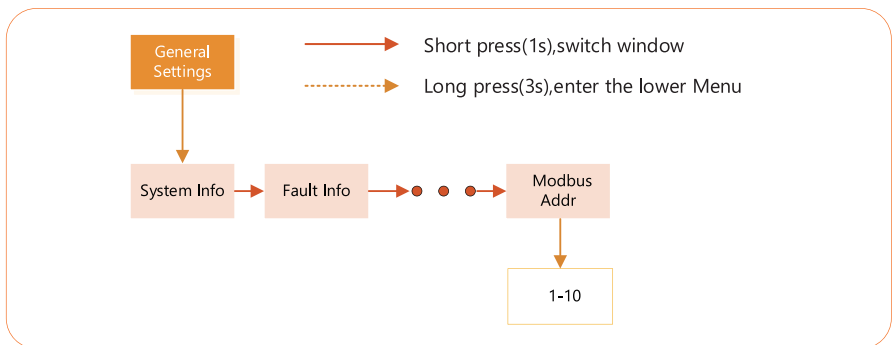
Same with STK Settings, please refer to 2.1 Setting WiFi.

### ▼ 3.2 Setting LAN

Only support DHCP mode. When DHCP is enabled on the router, no need to configure the LAN parameter and can be used directly.

### ▼ 3.3 Setting Inverter Modbus Address

Set Modbus address of the inverter that connect with STK-Pro to 1~10 by short pressing or long pressing the button on the inverter display.



### ▼ 3.4 Export Limit and Other Setting

More Settings over the APP directly connected to STK, please follow the operation instructions of the APP or contact Sunways.

### ▼ 3.5 ADD Device to Monitoring System

- ① Power on the inverter and STK -pro.
- ② According to the operation instructions of the monitoring APP(sunways Portal) , create a PV plant and bind Inverter to the plant.
- ③ The APP(sunways Portal) can be downloaded via the QR code on the back cover of this manual.

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