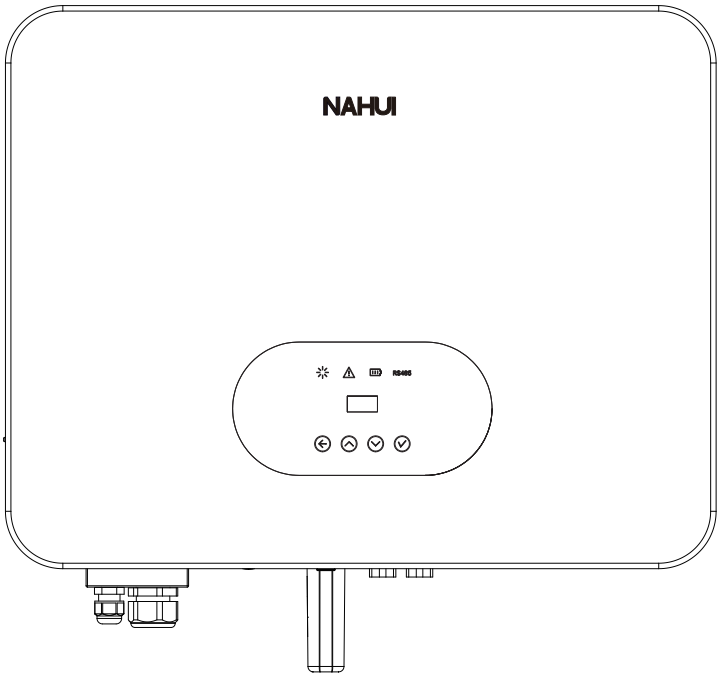
NAHUI

User Manual

Hybrid Inverter



Applicable models

N3PH-1N5K
N3PH-1N6K
N3PH-1N8K
N3PH-1N10K

Applicable System

Three phase system

The picture is for reference only, subject to the actual object.

Version 1.3 Release Date: 12, 2023

Contents

1.About this Manual 03
1.1 Applicability 03
1.2 Target User 03
1.3 Symbols Used 03
2. Safety 03
2.1 General Safety Information 03
2.2 Important Safety Instructions 03
2.3 Explanation of Symbols 05
3. Introduction 05
3.1 Basic Features 05
3.2 Work Modes 06
3.3 Terminals 08
3.4 Dimension 09
4. Technical Data 09
5. Installation 11
5.1 Unpacking 11
5.2 Check for Transport Damage 13
5.3 Installation Preparation 13
5.4 Space Requirement 13
5.5 Installation Tools 14
5.6 Installation Steps 15
5.7 Electrical Connection 16
5.7.1 PV Connection 17
5.7.2 Battery Connection 19
5.7.3 AC Output Connection 22
5.7.4 Earth Connection 23
5.7.5 Communication Connection 24
5.7.6 Multiple Inverters Connection 29
5.7.7 Relay Connection 30
5.8 Inverter Configuration 31
6. Operation Method 32
6.1 Control Panel 32
6.2 LCD Function 33
6.3 LCD Operation 34
6.4 APP Download 42
7. Troubleshooting 42
8. Decommissioning 46
8.1 Dismantling 46
8.2 Packing 47
8.3 Storage 47
8.4 Maintenance 47
8.5 Disposal 48

Notice

This manual contains important safety instructions that must be followed during installation and maintenance of the equipment.

Save the manual!
PLEASE READ THOROUGHLY AND SAVE MANUAL FOR FUTURE REFERENCE

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1. About this Manual

1.1 Applicability

Please read the product manual carefully before installation, operation or maintenance of the inverter. This manual contains important safety instructions and installation instructions that must be followed during installation and maintenance of the equipment.

This manual is applicable to the following inverter models.

N3PH-1N5K N3PH-1N6K N3PH-1N8K N3PH-1N10K-A N3PH-1N10K

1.2 Target User

This manual is intended for qualified electrical engineers / technicians responsible for installation and commissioning of the hybrid inverter.

1.3 Symbols Used

Symbols used have the following meaning:

⚠	**DANGER!** 'Danger' indicates a hazard with a high level of risk that if not avoided may result in serious injury or death.
⚠	**WARNING!** 'Warning' indicates a hazard with a medium level of risk that if not avoided may result in serious injury or death.
⚠	**CAUTION!** 'Caution' indicates a hazard with a low level of risk that if not avoided could result in minor or moderate injury.
NOTICE	**NOTICE!** 'Notice' indicates a situation that if not avoided could result in equipment or property damage.
☞	**NOTE!** 'Note' provides tips that are valuable for the optimal operation of the product.

2. Safety

2.1 General Safety Information

The hybrid inverter has been designed and tested strictly according to international safety regulations. Read all safety instructions carefully prior to any work and observe them at all times when working on or with the hybrid inverter. Incorrect operation or work may cause:

- injury or death to the operator or a third party;
- damage to the inverter or other properties.

2.2 Important safety instructions

⚠	**DANGER!** ◆PV strings will produce electrical power when exposed to sunlight and can cause lethal voltage and electric shock. ◆Only qualified personnel should work on PV panels. ◆Do not open lid when the inverter is operating. Unauthorized opening will void warranty and warranty claims and in most cases terminate the operating license. ◆When lid is opened, live components will be exposed, touching these may result in death or serious injury. ◆Operating damaged inverter can lead to hazardous situations that can result in death or serious injuries due to electric shock. ◆Batteries store large amount of electrical energy, short circuiting or incorrect installation may lead to burns or serious injures. ◆Lethal voltages are present at battery terminals and cables connecting to the inverter. Severe injuries or death may occur if the cables and terminals are touched. ◆PV negative (PV-) and battery negative (BAT-) on inverter side are not grounded intentionally. Connecting PV- or BAT- to EARTH is strictly forbidden.
⚠	**WARNING!** ◆Do not disconnect PV, AC and/or battery plugs and cables while the inverter is operating. Before working on the system power down on all supplies and wait for 5 minutes to discharge. Verify that there is no voltage or current before disconnecting any plugs or cables. Use personal protective equipment, including rubber gloves and protective boots during installation or maintenance.
⚠	**CAUTION!** Do not touch any hot parts such as the heat sink during operation, temperature of inverter surface may exceed 60℃ during operation.
NOTICE	**CAUTION!** ◆Electrical installation and maintenance must only be carried out by trained and qualified electrician, following all local regulations. ◆Do not open inverter lid or change components without Nahui Energy's authorization. Unauthorised work will invalidate warranty. ◆Operate inverter as explained in this manual, failure will damage equipment and invalidate warranty.
☞	**NOTE!** ◆With an integrated universal current-sensitive residual current monitoring unit included, the inverter will disconnect immediately from the mains power once a fault current with a value exceeding the limit is detected. However if an external residual current device (RCD) is mandatory, the switch must be triggered at a residual current of 300 mA (recommended), or it can be set to other values according to local regulations. For example in Australia, the inverter can use an additional 30 mA(type A)RCD in installations.

Anti-Islanding Effect

Islanding is a condition when grid connected PV / batteries back feed energy into the Grid when Grid is turned off for maintenance work, putting maintenance personal at serious risk. N3PH series inverters prevent islanding through Active Frequency Drift (AFD).

2.3 Explanation of Symbols

Symbols on lable:

Symbol	Explanation
CE	CE mark. The inverter complies with requirements of applicable CE guidelines.
	Beware of hot surface. The inverter can be hot during operation. Avoid touching during operation.
	Danger of high voltage. Danger to life due to high voltage in the inverter!
	Danger. Risk of electric shock!
	Inverter should not be disposed off with the household waste. Disposal information can be found in this manual.
	Don't work on this inverter until it is isolated from battery, mains supply and on-site PV modules.
5 min	Danger to life due to high voltage. Inverter holds stored energy, wait for 5 minutes to discharge before opening lid.
	Please read this manual before installation.
	RCM (Regulatory Compliance Mark) The product meets the requirements of the applicable Australian standards.

3. Introduction

3.1 Basic Features

The N3PH Series hybrid inverters are designed to work with PV modules, battery, mains supply and electrical loads. Hybrid inverter helps to optimize on-site consumption, charge battery with surplus PV energy and supply energy from battery to meet load. When PV and battery energy are insufficient, mains supply will be used to support loads.

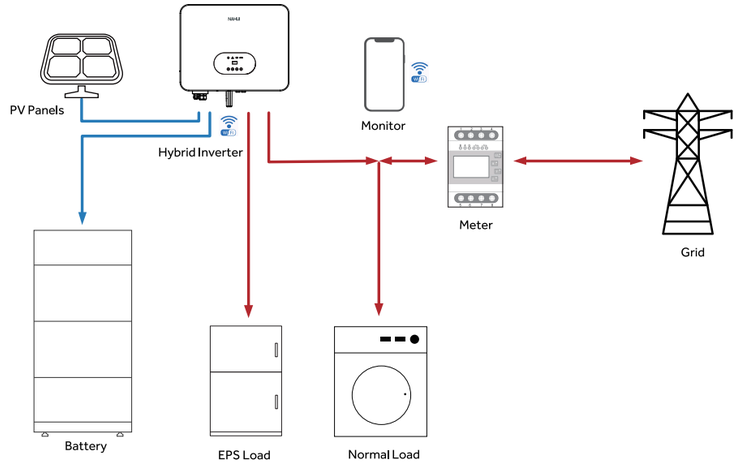


Figure 3-1 Use of Hybrid Inverters

3.2 Work Modes

The N3PH Series hybrid inverter has the following work modes based on the configuration and connected equipment.

Work mode: Self Use

Priority:
PV generated energy to
a. Meet load
b. Charge battery
c. Export to grid

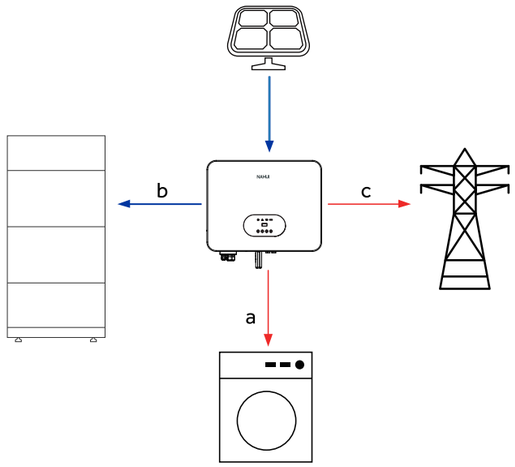


Figure 3-2 Self Use Mode

On site consumption of PV energy is the highest priority. Excess generation is used to charge batteries, and finally export to grid.

Work mode: Feed in Use

Priority:
PV generated energy to
a. Meet load
b. Export to grid
c. Charge battery

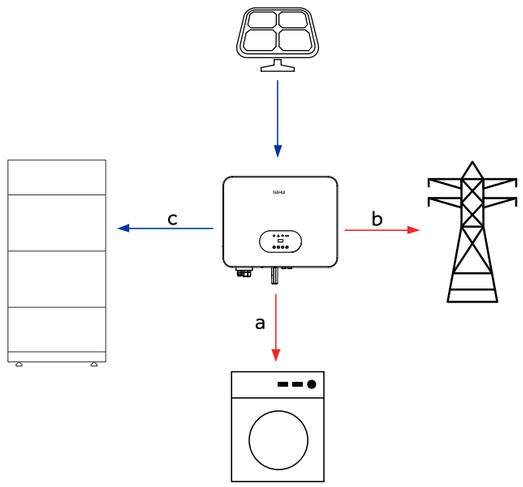


Figure 3-3 Feed in Use Mode

This mode is preferred for areas with Feed-in Tariff. PV energy is first used to meet load, excess exported to grid and finally to charge battery.

Work mode: Time of Use

Priority:
During battery charging
a. Charge battery
b. Meet load
c. Buy from grid

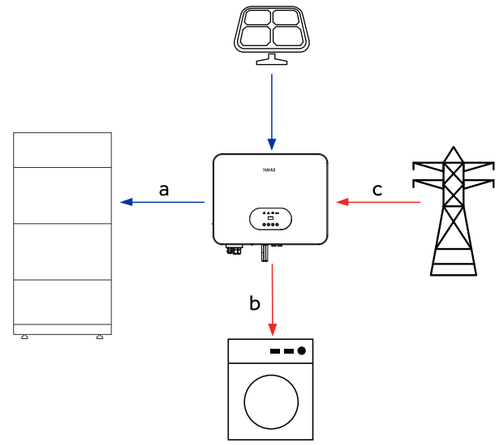


Figure 3-4 Time of Use Mode 1

During battery discharge
a. Meet load
b. Discharge battery
c. Buy from grid

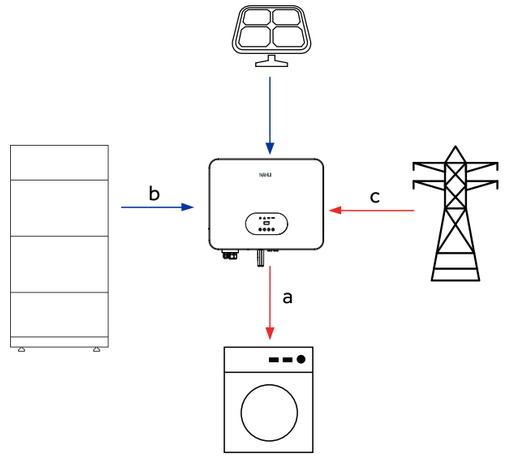


Figure 3-5 Time of Use Mode 2

This mode applies the area that has peak and economy electricity price. User can choose off-peak electricity to charge battery. Charging may be set flexibly, and the rest of time is in self-use mode.

Work mode: Backup Use

Priority:

PV generated energy to

a. Charge battery

b. Meet load

c. Buy from grid

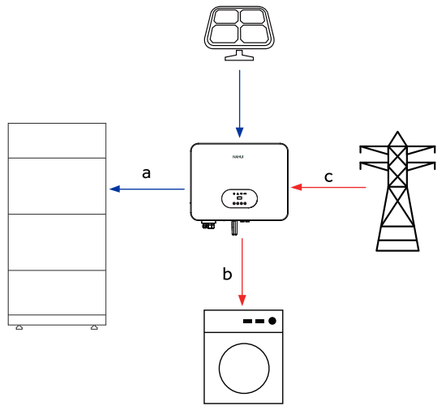


Figure 3-6 Backup Use Mode

This mode applies to area that face frequent power outages. This mode ensures the battery will has enough energy to supply during a grid outage. Back up load could be supported by PV and battery in the event of a blackout.

WARNING!

Ensure that the load powered is with in EPS's discharge power limit, failure will result in inverter shut down with 'Over Load' warning.

When 'over load' error is displayed, adjust load to make sure it is with the range of the EPS output, and turn inverter back on.

For nonlinear load, do pay attention to inrush power, make sure it is within the range of the EPS output.

3.3 Terminals

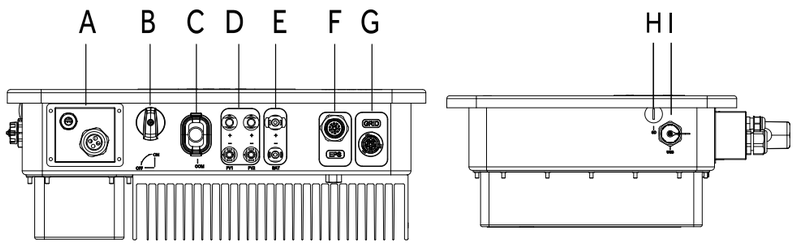


Figure 3-7

Object	Description	Object	Description
A	Communication port	F	EPS port
B	DC switch	G	Grid port
C	Monitoring module port	H	SD port
D	PV connectors	I	USB port
E	Battery connectors		

Table 3-1 Interface Definition

3.4 Dimension

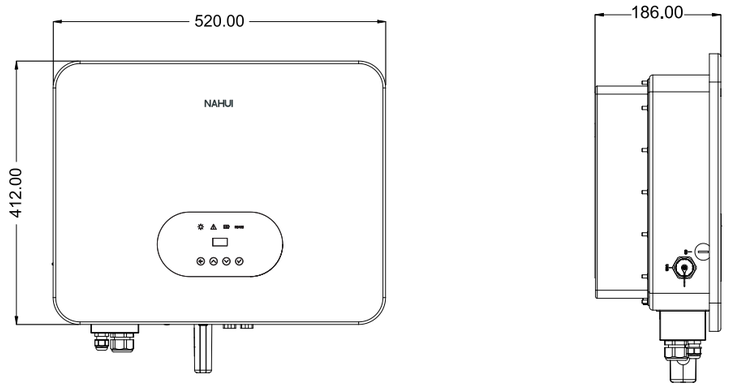


Figure 3-8 Product Size

4. Technical Data

Model	N3PH-1N5K	N3PH-1N6K	N3PH-1N8K	N3PH-1N10K-A	N3PH-1N10K
PV Input Data					
Max. Recommended PV Power (W)	7500	9000	12000	15000	15000
Max.PV Input Voltage (V)	1000				
MPPT Voltage Range (V)	160 ~ 950				
Rated PV Input voltage (V)	600				
Start-up Voltage(V)	160				
No. of MPP Trackers	2				
No. of Input Strings per Tracker	1				
Max. DC Input Current (A)	18 / 18				
Max. Short Circuit Current(A)	23 / 23				
Backfeed Current to Array(A)	0				
DC Switch	Integrated				
AC Output Data					
Maximum Apparent Power [VA]	5500	6600	8800	10000	11000
Rated AC Power (W)	5000	6000	8000	10000	10000
Maximum AC Current (A)	7.6	9.1	12.2	14.4	15.2
Rated AC Current (A)	7.2	8.7	11.5	14.4	14.4
Rated AC Voltage / Range (V)	3 / N / PE, 220 / 380, 230 / 400				
Grid Frequency / Range (Hz)	50 / 60; ± 5				
Adjustable Power Factor [cos ϕ]	0.8 leading ~ 0.8 lagging				
Output THDi (@Rated Output) (%)	< 3				

Model	N3PH-1N5K	N3PH-1N6K	N3PH-1N8K	N3PH-1N10K-A	N3PH-1N10K
AC Input Data					
Max .apparent AC Power(VA)	10000	12000	16000	20000	20000
Max . AC Current(A)	15.2	18.2	24.3	28.8	30.4
Rated AC Voltage / Range (V)	3 / N / PE, 220 / 380, 230 / 400				
Grid Frequency / Range (Hz)	50 / 60				
AC Inrush Current (A)	32				
Maximum Output Overcurrent Protection	40				
AC Maximum output fault current (A)	73				
Output DC (Battery)					
Battery Type	Lithium				
Battery Voltage Range (V)	160 ~ 700				
Max. Charging / Discharging Current (A)	30				
Communication Interface	CAN				
EPS Output (With Battery)					
EPS Rated Power (W)	5000	6000	8000	10000	10000
EPS Rated Voltage (V)	3 / N / PE, 220 / 380, 230 / 400				
EPS Rated Frequency (Hz)	50 / 60				
EPS Rated current (A)	7.6	9.1	12.2	14.4	15.2
Output THDi (@Rated Output) (%)	< 3				
Automatic Switch Time (ms)	≤ 20				
Peak Apparent Power, Duration (VA, s)	7500, 60	9000, 60	12000, 60	15000, 60	15000, 60
Efficiency					
Max. Efficiency (%)	98.00%	98.00%	98.00%	98.00%	98.00%
Euro Efficiency (%)	97.70%	97.70%	97.70%	97.70%	97.70%
Max. Battery Discharge Efficiency (%)	97.60%	97.60%	97.60%	97.60%	97.60%
Protection					
DC Insulation Monitoring	Integrated				
Input Reverse Polarity Protection	Integrated				
Anti-island Protection	Integrated				
Residual Current Monitoring	Integrated				
Over-heat Protection	Integrated				
AC Overcurrent Protection	Integrated				

Model	N3PH-1N5K	N3PH-1N6K	N3PH-1N8K	N3PH-1N10K-A	N3PH-1N10K
AC Short-circuit Protection	Integrated				
AC Overvoltage Protection	Integrated				
DC Surge Protection	Type II				
AC Surge Protection	Type II				
General Data					
Size (Width * Height * Depth mm)	520 * 412 * 186				
Weight (kg)	27				
User Interface	LED+OLED				
Communication	RS485 and USB (Standard), Wifi or 4G or Ethernet (Optional)				
Operating Temperature Range (℃)	-25 ~ +60				
Relative Humidity (%)	0 ~ 100				
Operating Altitude (m)	≤ 2000				
Standby Self Consumption (W)	< 15				
Topology	Transformerless				
Pollution degree	III				
Protective class	I				
OVC categories	DC II / AC III				
Environmental categories	Outdoor				
Cooling	Natural				
Protection Grades	IP65				
Noise (dB)	< 35				
Warranty (years)	5				
Certifications & Standards					
Grid Regulation	VDE-AR-N 4105, CEI 0-21, UNE 217002, EN 50549-PL, AS4777				
Safety Regulation	EN 62109-1, EN 62109-2				
EMC	EN/IEC 61000-6-1 , EN/IEC 61000-6-3				

Table 4-1 Technical Data

5. Installation

5.1 Unpacking

Please check the delivery for completeness and contact your local distribut or if anything is missing.



Object	Quantity	Description
A	1	N3PH inverter
B	1	Mounting Bracket
C	2	Battery Connectors (1* positive, 1*negative)
D	8	PV Connectors (2* positive, 2*negative) &PV Pin contact (2* positive, 2* negative)
E	1	Terminal Resistor
F	1	AC Terminal
G	1	EPS Terminal
H	1	8P Pluggable Terminal Block
I	1	WiFi or 4G or Ethernet Module(Optional)
J	5	Ethernet RJ45 Connector
K	2	M5 Screw
L	1	Earth Terminal
M	4	Expansion tubes& Expansion screws
N	1	Energy Meter(1* Meter & 3* CTs)
O	1	User Manual
P	1	Quality Certificate

Table 5-1 Accessory Kit

Open the package and inspect product, check transportation damage. Also check to ensure receipt of all accessories as listed in page 12.

The instruction manual is an integral part of the unit and should therefore be read and stored carefully for future use. It is recommended that the packaging should not be opened till the unit is delivered to installation site.

5.2 Check for Transport Damage

On opening packaging, inspect product for any damage, in case of concern, please contact dealer immediately.

5.3 Installation Preparation

The N3PH series inverter is designed for outdoor installation (IP65).

WARNING!
- Do not install inverter in direct sunlight.
- Do not mount inverter on flammable material.
- Do not install inverter in areas where flammable materials are stored.
- Do not install inverter in potentially explosive areas.
- Do not install inverter during rain or high humidity (>95%).

Provide adequate ventilation when using batteries, and also read the warning label on the bottom of the inverter.

· Install inverter where air temperature would be below 40°C. Children should not have access to inverter.

· The inverter emits a slight noise when operating, this is normal and will not affect performance.

· Mounting should not tilt more than 5 degrees.

· The inverter is heavy, ensure the mounting is strong enough to hold the weight of the inverter.

· If installed in a cabinet, closet or other small enclosed areas, sufficient air circulation must be ensured in order to dissipate heat generated by the unit.

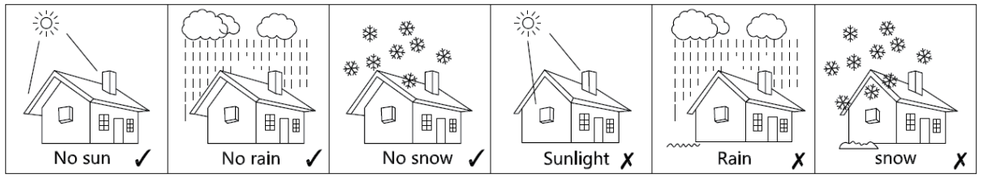


Figure 5-1 Recommended Installation Locations

5.4 Space Requirement

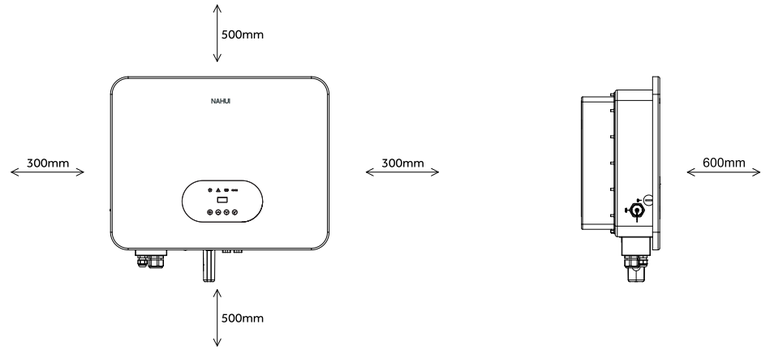


Figure 5-2 Minimum Clearance Required

5.5 Installation Tools

No.	Tool	Model	Function
1		Sprit level	To ensure proper install
2		Two-Speed Hammer Dril	To drill holes on the wall
3		Hammer	Hanging the bracket
4		Impact Wrench Set	Hanging the bracket
5		PV-AZM-410	Stripping plier for PV cable
6		PV-CZM-22100	Crimping plier for PV cable
7		Screwdriver	Wiring
8		RJ45 Crimping Tool	Crimping tool for RJ45 terminal
9		Crimping plier	Crimping Tool For Insulated Electrical Connectors

Table 5-2

NOTE!
These tools are not included in product accessories.

Lifting and Handling

The unit is heavy. Do not lift it alone.
· When lifting, ensure that the unit is firmly held to avoid risk of accidental tipping or dropping.
· Ensure that the method of lifting will not allow the unit to slip from chains, slings or turn-over from lifting devices.

· Transportation must be carried by qualified persons wearing necessary personal protection equipment.
· Do not walk or stand beneath or in the proximity of the load.
· Accessible for maintenance and repair work.
· Loading capacity and hardness of the supporting surface, load rating of mounting bracket should be at least four times the weight of the devices according to IEC62109-1. And supporting characteristics will be impaired by wear, corrosion, material fatigue or ageing, which should be calculated by inspection of the design data of supporting material and consulting construction engineer.

5.6 Installation Steps

Step 1: Fix wall bracket on the wall.
· Use the wall bracket as a template to mark the position of the 4 holes.

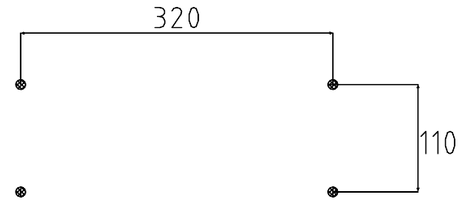


Figure 5-3 Inverter wall mounting

· Drill holes with ϕ10 drill bit carefully, make sure the holes are deep enough (at least 45mm).
· Insert anchors fully into the holes. Install wall bracket using screws provided.

Step2: Hang the N3PH inverter on the wall bracket.
· Lifting inverter needs at least 2 people, use the handles at the sides of the inverter.
· To hang the inverter over the bracket, move the inverter close to it, slightly lower inverter making sure the 4 mounting bars on the back of the inverter is fixed well with 4 grooves on the bracket.

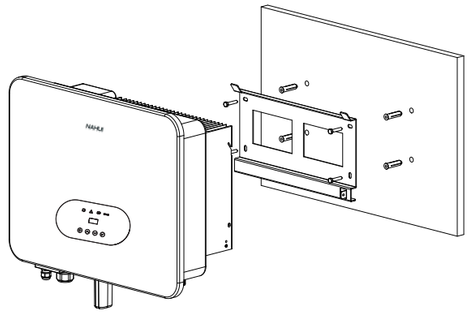


Figure 5-4 Wall Mount Bracket

WARNING!
The inverter must be mounted vertically.

5.7 Electrical Connection

For an overview of the connection terminals of the inverter please refer to Figure 3-7, and for other wiring details , refer to chapter 3.1.

System Connection Diagrams

Note: Diagram below is for Australia, South Africa and New Zealand where neutral line can't be switched.

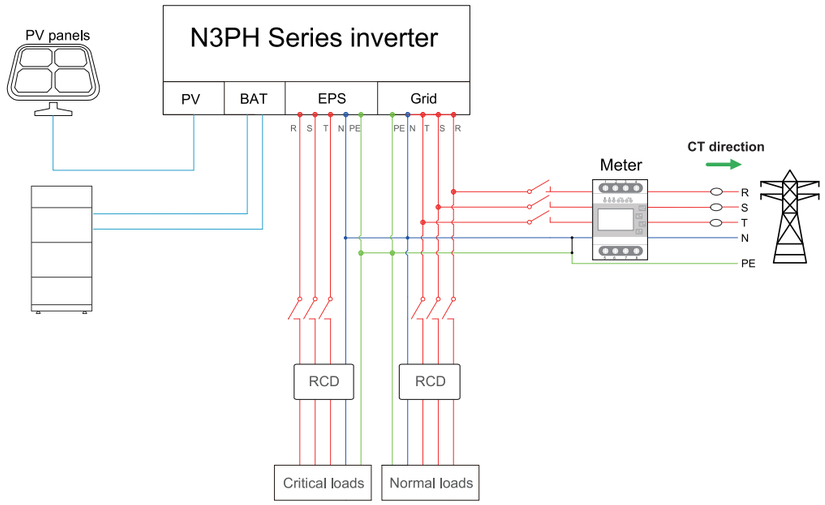


Figure 5-5

Note: Diagram below is for grid system without special requirement.

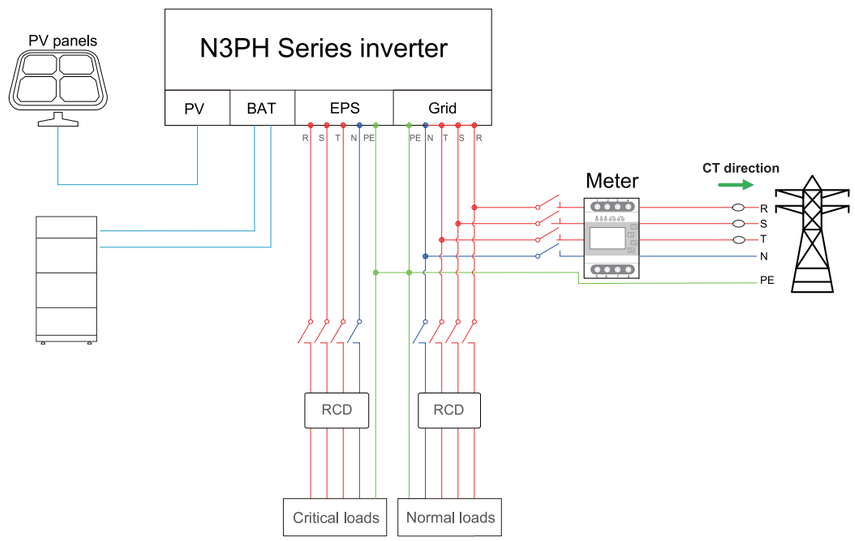


Figure 5-6

Main steps to connect the N3PH series system

- PV string connection
- Battery connection
  - Battery power connection
  - Battery communication connection
- AC output connection
- EPS connection
- Earth connection
- Communication connection

5.7.1 PV Connection

Before connecting PV strings to N3PH Series hybrid inverter, ensure the following :

- The total short- circuit current of PV string must not exceed inverter's maximum DC current .
- Make sure that open circuit voltage of PV string is less than 1000V.
- PV strings are not connected to earth/grounding conductor.
- Use the right PV plugs from accessory box, Battery plugs look similar to PV plugs, do confirm before using.

Connection Steps:

1. Turn off the DC switch.
2. Prepare 2.5-4mm² PV cable and PV plugs as below.
3. Strip 7mm of the conductor with stripping plier. Use a suitable stripping tool for this (e.g. "PV-AZM-410 ").

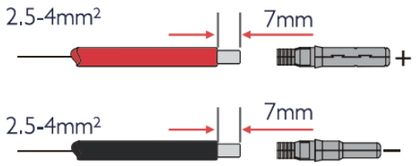


Figure 5-7

4. Insert striped cable into pin contact and ensure all conductor strands are captured in the pin contact.

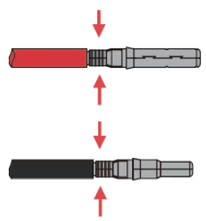


Figure 5-8

5. Crimp pin contact by using a crimping pliers(PV-CZM-22100). Put the pin contact with striped cable into the corresponding crimping pliers and crimp the contact.
6. Insert pin contact through the cable nut to assemble into back of the male or female plug. When clicked the pin contact assembly is seated correctly.
7. Tightening DC connector.

a. Slide the cable nut towards the back shell.
b. Rotate the cable nut to secure the cable.

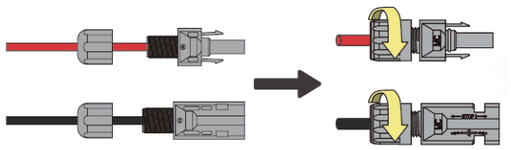


Figure 5-9

8. After securing the cable tightly, align the 2 half connectors and join together by hand until a "Click" is felt or heard.
9. Measure PV voltage of DC input with multimeter, verify DC input cable polarity.

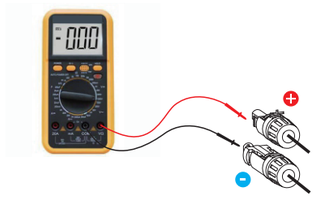


Figure 5-10

10. Connect the wired DC terminal to the inverter as shown in the figure, and a slight "Click" is heard to prove the connection is correct.

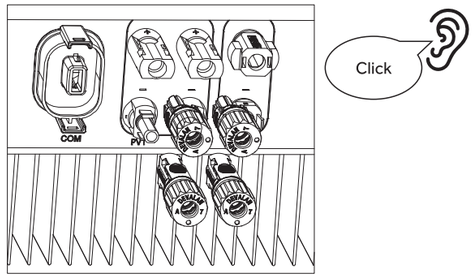


Figure 5-11

11. To separate the DC connector.
a. Use the specified wrench tool.
b. To separate the DC+ connector, push the tool down from upside.
c. To separate the DC- connector, push tool down from the bottom side.
d. Separate the connectors by hands.

CAUTION!
If DC inputs are accidently reversely connected or inverter is faulty or not working properly, it is not allowed to turn off the DC switch. Otherwise it may cause DC arc and damage the inverter or even lead to a fire disaster. The correct actions are:

- Use a clip-on ammeter to measure the DC string current.
- If it is above 0.5A, please wait for the solar irradiance reduces until the current decreases to below 0.5A.
- Only after the current is below 0.5A, you are allowed to turn off the DCs witches and disconnect the PV strings.
- In order to completely eliminate the possibility of failure, please disconnect the PV strings after turning off the DC switch to aviod secondary failures due to continuous PV energy on the next day.

Please note that any damages due to wrong operations are not covered in the device warranty.

5.7.2 Battery Connection

When building a on site consumption storage system, high voltage battery is a necessary part. The N3PH series inverter provides the necessary interfaces to connect the battery.

WARNING!
Make sure to select cables of the right specification. Failure could cause fire and result in death or serious injury.

1. Battery Power Cable Connection

1) Prepare tin-plated cables of conductor cross section of 4 to 8 mm² (AWG 8).
2) Strip 15mm insulation off the conductor. Use a suitable stripping tool for this (e.g. "Knipex Solar 121211").
3) Open spring using a screwdriver (Figure 5-12) .

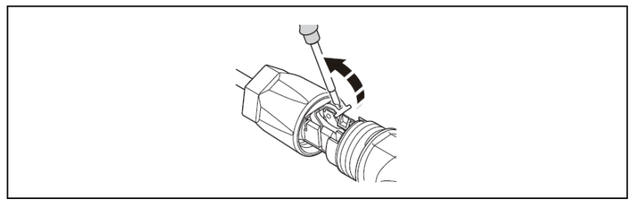


Figure 5-12

4) Carefully insert the stripped wire with twisted conductors all the way in (Figure 5-13, A). The litz wire ends have to be visible in the spring.
5) Close the spring. Make sure that the spring is snapped in (Figure 5-13, B).

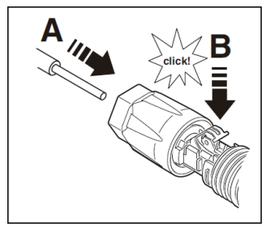


Figure 5-13

6. Push the insert into the sleeve (Figure 5-14, C).
7. Tighten the cable gland to 2 Nm (Figure 5-14, D). Use a suitable and calibrated torque wrench of size 15. Use an open-jaw wrench, size 16, to hold the connector in place.

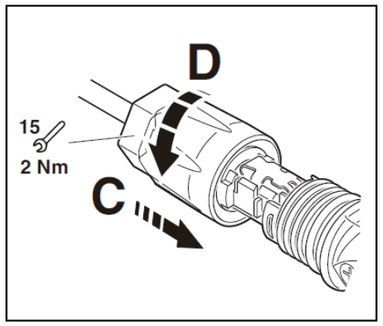


Figure 5-14

8. Fit the two connectors together until the connection audibly locks into place.
9. Check to make sure the connection is securely locked.
10. Measure DC voltage of DC input with multimeter, verify DC input cable polarity.

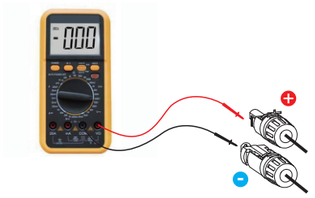


Figure 5-15

11. Connect the inverter end to the battery input port of the inverter as shown below, and push it in until you hear a "Click" sound which proves the fastened connection.

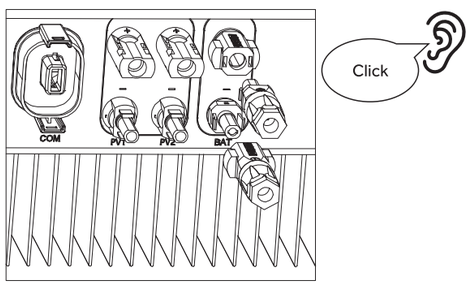


Figure 5-16

12. Separating connectors.
1) Insert the screwdriver into one of the four openings (Figure 5-17, A).
2) Leave the screwdriver in the opening. Pull the two connectors apart (Figure 5-17, B).

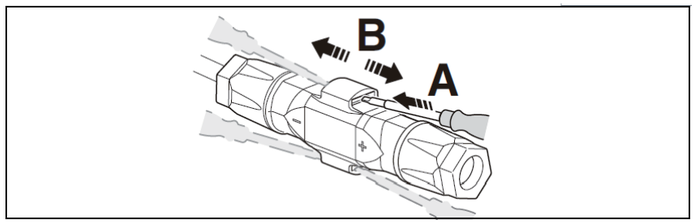


Figure 5-17

2. Battery Communication Connection

The communication interface between battery and inverter is CAN with a RJ45 connector. The Pin definitions are as below.

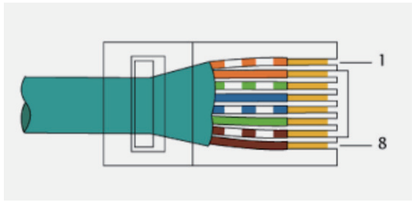


Figure 5-18

Pin	1	2	3	4	5	6	7	8
Function	NC	NC	NC	CANH	CANL	NC	485A	485B

Table 5-3

Overview for all battery connections

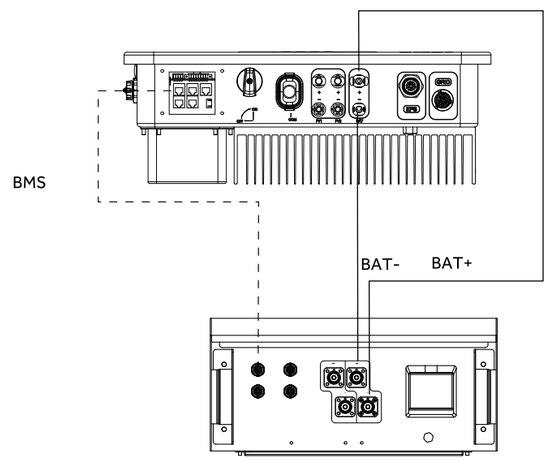


Figure 5-19

5.7.3 AC Output Connection

N3PH series inverters have already integrated RCMU (residual current monitoring unit) inside, however if an external RCD is required, a type A RCD with rated residual current of 30mA or higher is recommended.

There are two AC terminals and the assembly steps for both are the same, just need to check one for 'Grid' another for 'EPS'. The AC cable and micro-breaker/external fuse specification for AC side of N3PH series inverter as below.

Model	N3PH-1N5K	N3PH-1N6K	N3PH-1N8K	N3PH-1N10K-A	N3PH-1N10K
Cable(Cu)	4mm²	4mm²	4mm²	4-6mm²	4-6mm²
Normal Load-Breaker or external fuse	10A	16A	16A	20A	20A
Grid-Breaker	20A	32A	32A	40A	40A

Table 5-4

WARNING!
Select cables of the correct specifications.
Failure could result in in fire and lead to death or serious injury.
Don't connect the line/phase cable to 'PE' terminal, failure will result in improper operation of the inverter.

Connection Step:

1. Lead the AC cable through the cable gland and the housing.

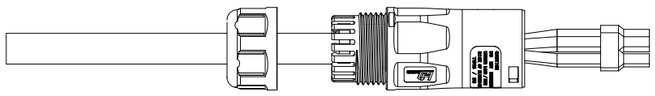


Figure 5-20

2. Remove the cable jacket by 40 mm, and strip the wire insulation by 8 mm–15 mm.

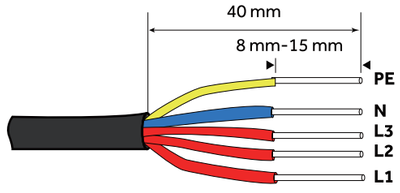


Figure 5-21

3. Fully insert the conductors to the corresponding terminal and tighten the screws to torque of 0.8 Nm. Pull cables outward to check whether they are firmly installed.

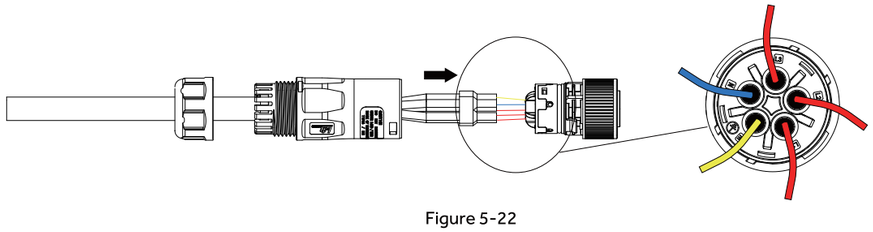


Figure 5-22

4. Assemble the housing, the terminal block and cable gland (torque 4 –5 Nm). Make sure that the rib of the terminal block and the groove on the housing engage perfectly, with a click.

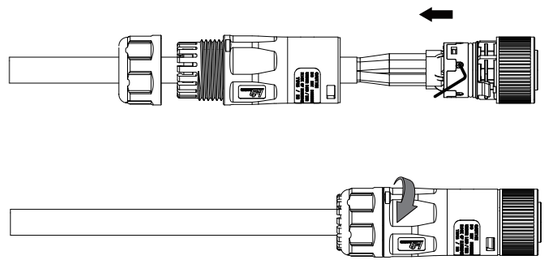


Figure 5-23

5. Push the AC Grid or EPS Connector into the AC Grid Port or AC EPS Port on the inverter and rotate the rotatory ring on the connector to the direction as marked "LOCK" on the connector.

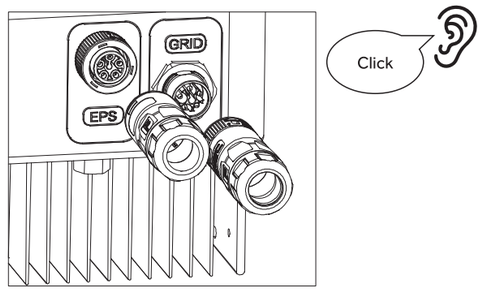


Figure 5-24

NOTE!
A continuity test shall be made to ensure that the correct terminations have been made after field wiring.

5.7.4 Earth Connection

One may earth the inverter enclosure of a second earth or equipotential bonding if required under local regulations. This prevents touch current if the original protective conductor fails.
Cable size: 12AWG

Connection step:

- Strip the earthing cable insulation.
- Insert the stripped cable into the ring terminal.
- Clamp the end of the ring terminal.
- Unscrew the screw of the earthing connector.
- Attach the ring terminal on the earthing connector
- Attach the gasket on the earthing connector.
- Tighten the screw of the earthing connector.

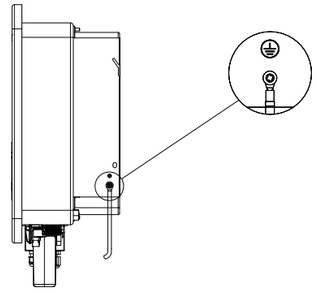


Figure 5-25

5.7.5 Communication Connection

Communication interface

The inverter has a serial communication interface besides WIFI or 4G or Ethernet(Optional). Dry contact, extended port, human and machine communication, etc., can be delivered to PC or other monitoring equipment via these interfaces.

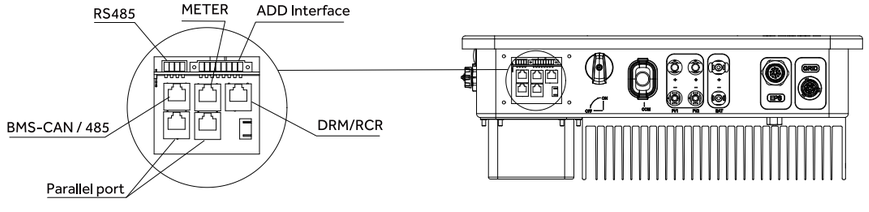


Figure 5-26

1. WIFI or 4G or Ethernet

For details please refer to the WIFI or 4G or Ethernet module user manual.

2. RS485 Interface

Function: Used for Modbus RTU communication with 3rd party external device or controller.
RS485 interface PINS definition:

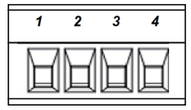


Figure 5-27

Pin	1	2	3	4
Function	+5V	GND	485A	485B

Table 5-5

3. ADD Interface

Function: Used for RS485 communication of meter, generator control signals, shutdown signals and digital output.
ADD interface PINS definition:

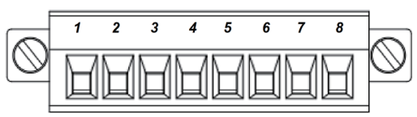


Figure 5-28

Pin	1	2	3	4	5	6	7	8
Function	METER-485A	METER-485B	GENA	GENB	+5V	SHUTDOWN	Relay	GND

Table 5-6

Energy meter communication:
METER_485A & METER_485B----pin1 & pin2
Relay contact output for generator: GENA & GENB----pin3 & pin4
Shut down the hybrid inverter: +5V & SHUTDOWN----pin5 & pin6
Relay & GND---pin7 & pin8

4. METER port

Function: Used for RS485 communication between inverter and the smart meter.
Meter port PINS definition:

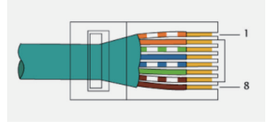


Figure 5-29

Pin	1	2	3	4	5	6	7	8
Function	METER-485A	METER-485B	NC	NC	NC	NC	NC	NC

Table 5-7

The function of meter port same as pin1 & pin2 of ADD interface.

4.1 Meter wiring diagram for Typical Energy Storage System

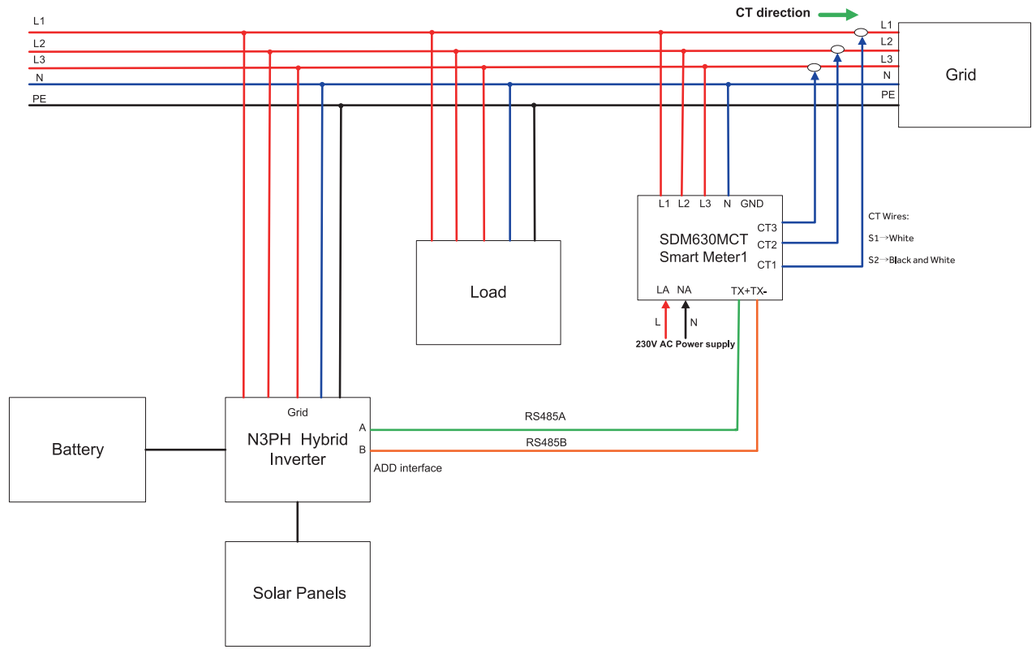


Figure 5-30

The N3PH series energy storage inverter adopts EASTRON SDM630MCT smart meter. The connect steps are as follows:

· Connect the meter output "L1, L2, L3, N" to power Grid. And connect 230V AC power supply to "LA, NA" (LA –Grid L line, NA-Grid Netral line).

· Connect the meter "TX+" "TX-" to inverter RS485 A and B of "MERER" (RJ45 PIN1 to RS485 A, RJ45 PIN2 to RS485 B), referring to Chapter 5.7.5 on Page 24.

· Connect meter CT1 to Grid L1, CT2 to Grid L2, CT3 to Grid L3. CT's white cable connects to S1 of the meter, and the black and white cable connects to S2.

To see a detailed wiring diagram of the meter, please consult the annex A at the end of this document.

NOTE !

1) It is necessary to have the sequence of phases, CT1 must be connected to Grid phase line L1, CT2 must be connected to Grid phase line L2, CT3 must be connected to Grid phase line L3.

2) Please note that the CT direction must be facing to the grid.

3) The local address and the meter address need to be set as "001" on the inverter screen. The address of the smart meter itself needs to be set to "001".

4.2 Meter wiring diagram for AC Retrofit System

Nahui Hybrid inverters can be used in the following situations. If the site already has a grid tied PV system and want to increase module capacity or provide back-up power. Additional meter between the grid-connected inverters and N3PH hybrid inverter is required. One N3PH Hybrid inverter can be connected maximum two PV systems, and in the system, the smart meter must be the EASTRON SDM630MCT.

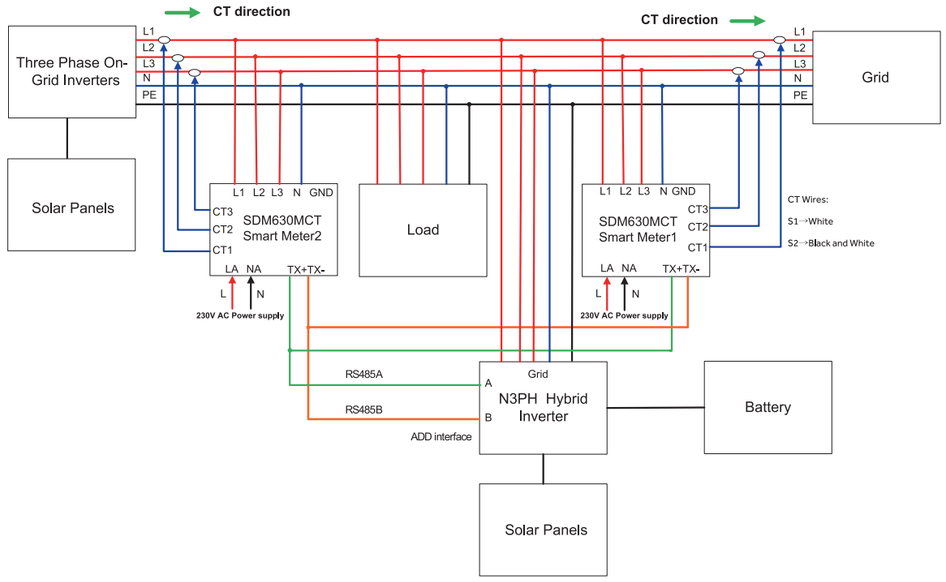


Figure 5-31 Connect one On-Grid three-phase inverter

The connect steps are the same as in the previous chapter.

NOTE !

The mart meter communication cable "TX+ " "TX- " can also be connected to "ADD Interface" port of inverter.

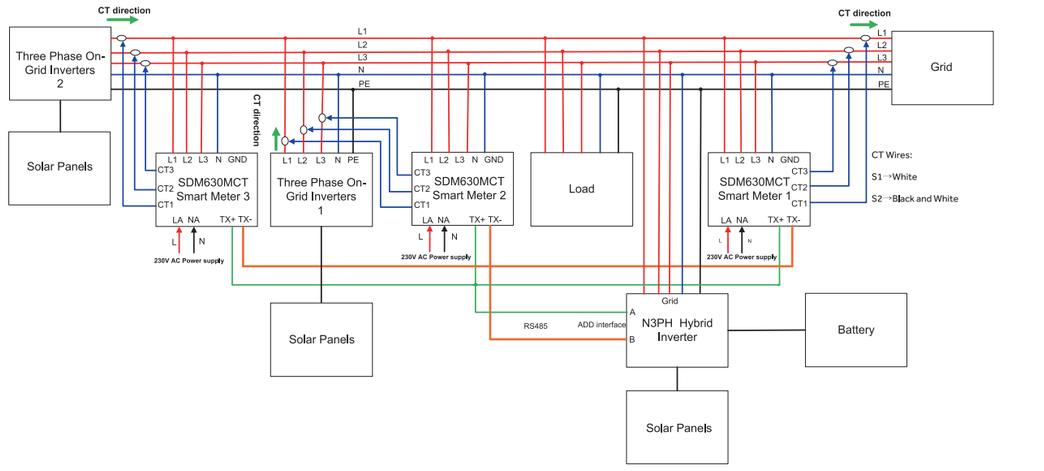


Figure 5-32 Connect two On-Grid three-phase inverters

NOTE !

1) It is necessary to have the sequence of phases, CT1 must be connected to Grid phase line L1, CT2 must be connected to Grid phase line L2, CT3 must be connected to Grid phase line L3.

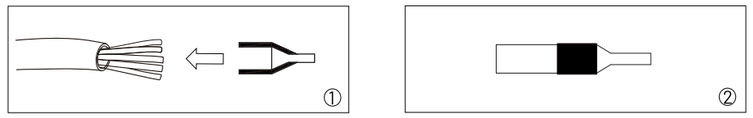
2) Please note that the CT direction must be facing to the grid.

3) Connect one On-Grid three-phase inverter(Figure 5-27): The local address needs to be set as "001" on the inverter screen, and meter1 address set as "001", meter2 address set as "002". The address of meter1 itself needs to be set to "001", and meter2 needs to be set to "002".

4) Connect two On-Grid three-phase inverters(Figure 5-28): The local address needs to be set as "001" on the inverter screen, and meter1 address set as "001", meter2 address set as "002", and meter3 address set as "003". The address of meter1 itself needs to be set to "001", meter2 needs to be set to "002", and meter3 needs to be set to "003".

WARNING!

If one chooses a flexible wire, ensure the cord section is pressed on the crimping terminal before connecting it to the meter as below.



5. DRM/Ripple Control Receiver (RCR)

DRM PINS definition:

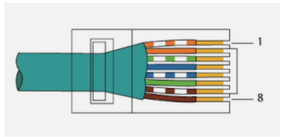


Figure 5-33

Pin	1	2	3	4	5	6	7	8
Function	DRM1/5	DRM2/6	DRM3/7	DRM4/8	+3.3V	COM/DRM0	GND	GND

Table 5-8

This application meets the requirements of local Australian grid code (AS/NZS 4777.2) and Germany grid code (VDE-AR-N 4105).

a) In Australian grid code, requirements for connection call for compatibility with Demand Response Enabling Devices (DRED). The DRED is controlled by a local network operator and allows to put the inverter in one of the Demand Response Modes (DRMs) defined by the standard:

· DRM 0 Operate the disconnection device.
· DRM 1 Do not consume power.
· DRM 2 Do not consume at more than 50% of rated power.
· DRM 3 Do not consume at more than 75% of rated power and source reactive power if capable.
· DRM 4 Increase power consumption (subject to constraints from other active DRMs).
· DRM 5 Do not generate power.
· DRM 6 Do not generate at more than 50% of rated power.
· DRM 7 Do not generate at more than 75% of rated power and sink reactive power if capable.
· DRM 8 Increase power generation (subject to constraints from other active DRMs).

Currently, it is mandatory to respond to DRM0, which allows the network manager to remotely decouple the installation from the distribution network.

b) In Germany grid code, this logic interface is for controlling and/or limiting the inverter's output power. The grid company uses the Ripple Control Receiver (RCR) to convert the grid dispatching signal and send it as a dry contact signal. The wiring of the ripple control receiver dry contact cables is shown in the figure below:

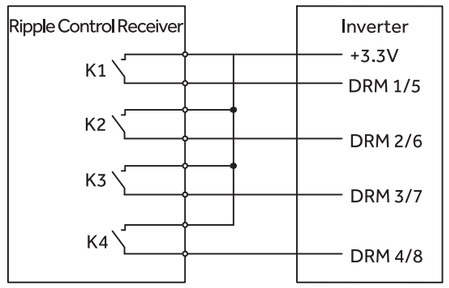


Figure 5-34

K1	K2	K3	K4	Switch Operation on External RCR	Output power (in % of the Rated AC output power)
1	0	0	0	Close K1	100 %
0	1	0	0	Close K2	60 %
0	0	1	0	Close K3	30 %
0	0	0	1	Close K4	0 %

Table 5-9

6. Parallel port

PINS definition:

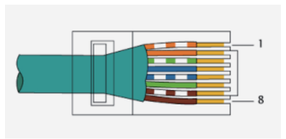


Figure 5-35

Pin	1	2	3	4	5	6	7	8
Function	RS485A	RS485B	VCC	CANH	CANL	GND	SYNA	SYNB

Table 5-10

NOTE!
Only 4 and 5 PIN pins are used.

5.7.6 Multiple Inverters Connection

In system with multiple inverters, one can connect the devices in a Master/Slave configuration. In this configuration, only one energy meter is connected to the Master inverter for the system control. Users should set up the master/slave on the screen after the inverter is connected. The setting steps are in Advanced*. For details, please refer to “LCD Operation” (4.5.6) Parallel Set.

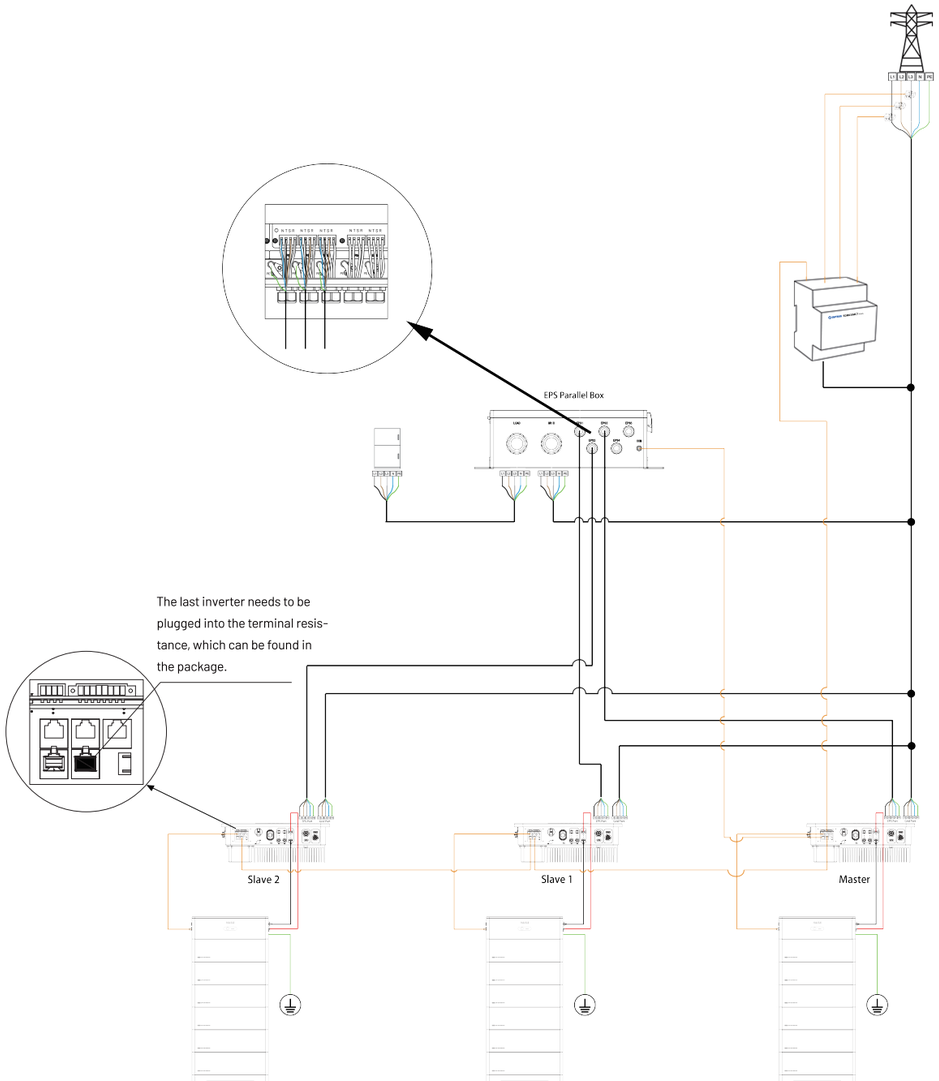


Figure 5-36 System block diagram

NOTE!
Maximum number of parallel is five.
The CAN communication port is the parallel port of the hybrid inverter(Figure 5-26).
All inverters must have the same software version.
All inverters should be the same power.

5.7.7 Relay Connection

In order to better control the load power consumption, a relay can control a contactor that will open or close in certain condition. Please choose a suitable contactor according to the +12VDC power supply by the inverter provided and field load power, e.g. the contactor types of the DATASHEET - CR2020012. Please connect the contactor to the load and power grid according to the field conditions and connect the A1 and A2 of the contactor coil to the Pin7 and Pin8 of the ADD interface of the inverter.

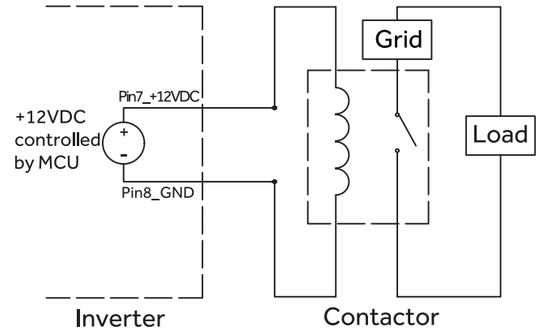
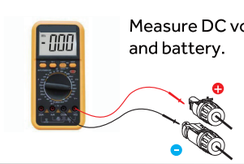


Figure 5-37 Relay function electrical block diagram

There are four function modes in total.
1. Disable: Disable the relay function, and the load under the relay will always be out of power.
2. Manual On/Off: You can manually set the switch state of the relay.
3. Timing: The relay is on according to the setting relay switch-on start time, and it is off according to the setting relay switch-on end time. And it supports setting up to two time periods. (T1, T2).
4. Battery SOC: Under this mode, users need to set relay switch-on battery SOC, relay switch-off battery SOC delay off time.
· RLY On BAT SOC: Relay is on if battery SOC exceeds a defined value.
· RLY Off BAT SOC: Relay is off if battery SOC falls below a defined value.
· Delay Off Time: The relay remains on if battery SOC falls below switch-on SOC for a defined time; the timer will reset if battery SOC exceeds switch-on SOC within a defined time. During the defined time, the relay will be off immediately if battery SOC has fallen below RLY Off BAT SOC.

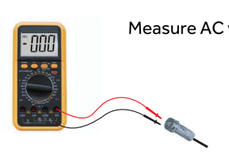
5.8 Inverter Configuration

Start inverter after checking all the following:
· Ensure all the devices are accessible for operation, maintenance and service.
· Check and confirm that the inverter is firmly installed.
· Space for ventilation is sufficient for one inverter or multiple inverters.
· Nothing is left on the top of the inverter or battery module.
· Inverter and accessories are correctly connected.
· Cables are routed in safe place or protected against mechanical damage.
· Warning signs and labels are suitably affixed and durable.
· Switch on the external AC breaker to power on the inverter control board.
· Measure DC voltage of PV strings and battery and ensure the polarity is correct.
· Measure AC voltage and frequency and ensure they are within local standard.



Measure DC voltage of PV strings and battery.

Figure 5-38



Measure AC voltageand frequency.

Figure 5-39

Starting inverter:

· Inverter will start automatically when the PV panel generate enough energy or the battery is charged.
· Check the status of LED and LCD screen, first LED should be green and the LCD screen should display the main interface.
· If first LED is not green please check the below:
-All the connections are right.
-All the external disconnect switches are closed.
-The DC switch of the inverter is in the ' ON ' positon.
· Enter the setting interface.
· Set the safety standard as in page 38; Set the system time as in page 37; PV connection mode as in page 35; Set work mode as in page 37; Set the communication address as in page 37; Set the EPS as in page 36; Set monitoring module according to the manual (ST-WIFI-G2 User Manual V1.1).

NOTE!
Please configure the inverter first time start up.
Above steps is for the regular start-up of the inverter. If it is the first time to start up the inverter, you need to configure the inverter.

Shut down inverter:

· Disconnect the external AC circuit breaker and secure it against reconnection.
· Rotate the DC switch to the "OFF" position for disconnecting all of the PV string inputs.
· Wait about 10 minutes until the capacitors inside the inverter completely discharge.
· Ensure that the DC cable is current-free via a current clamp (Figure 5-40) .



Figure 5-40

6. Operation Method

6.1 Control Panel

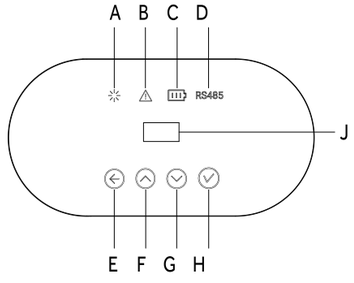
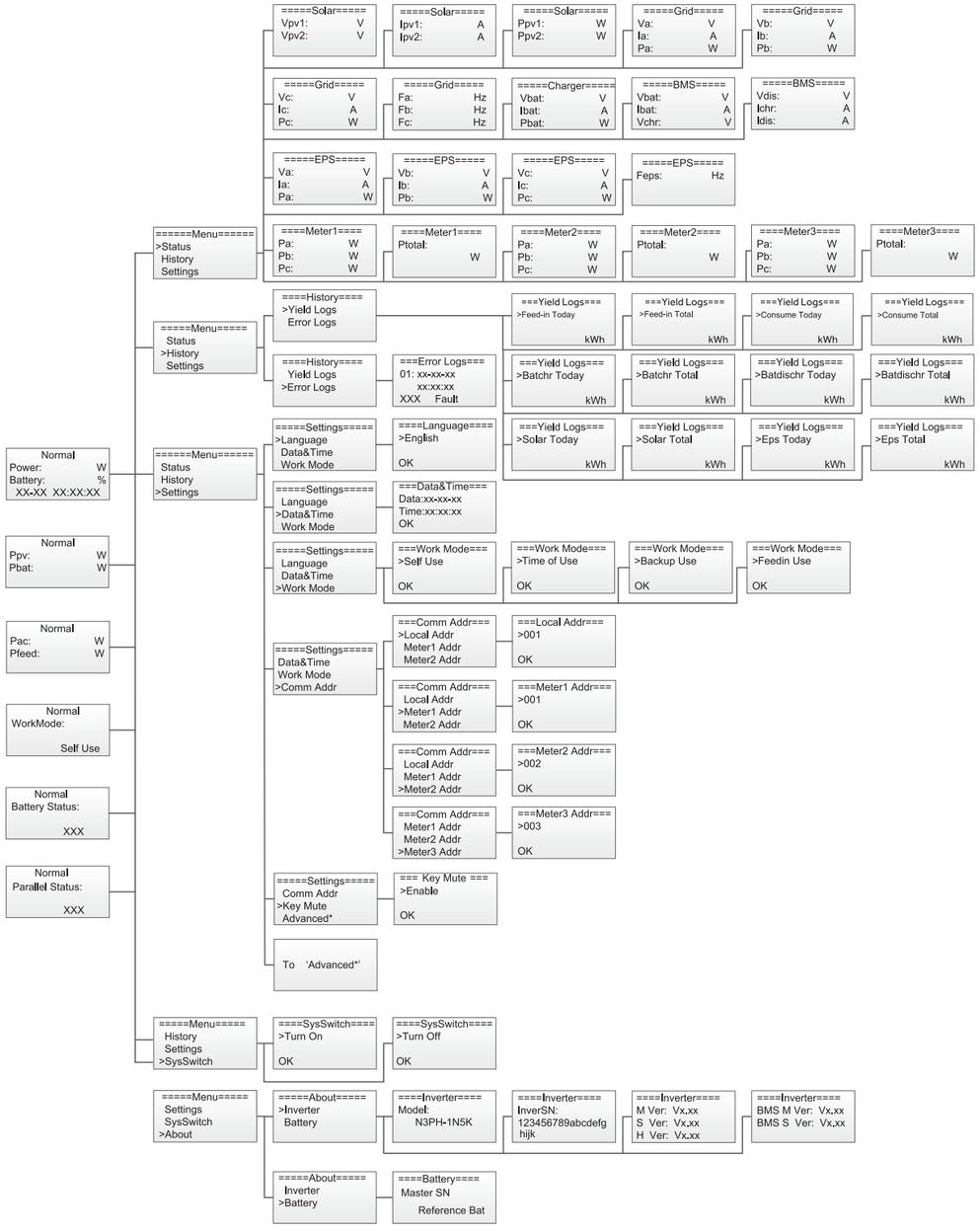


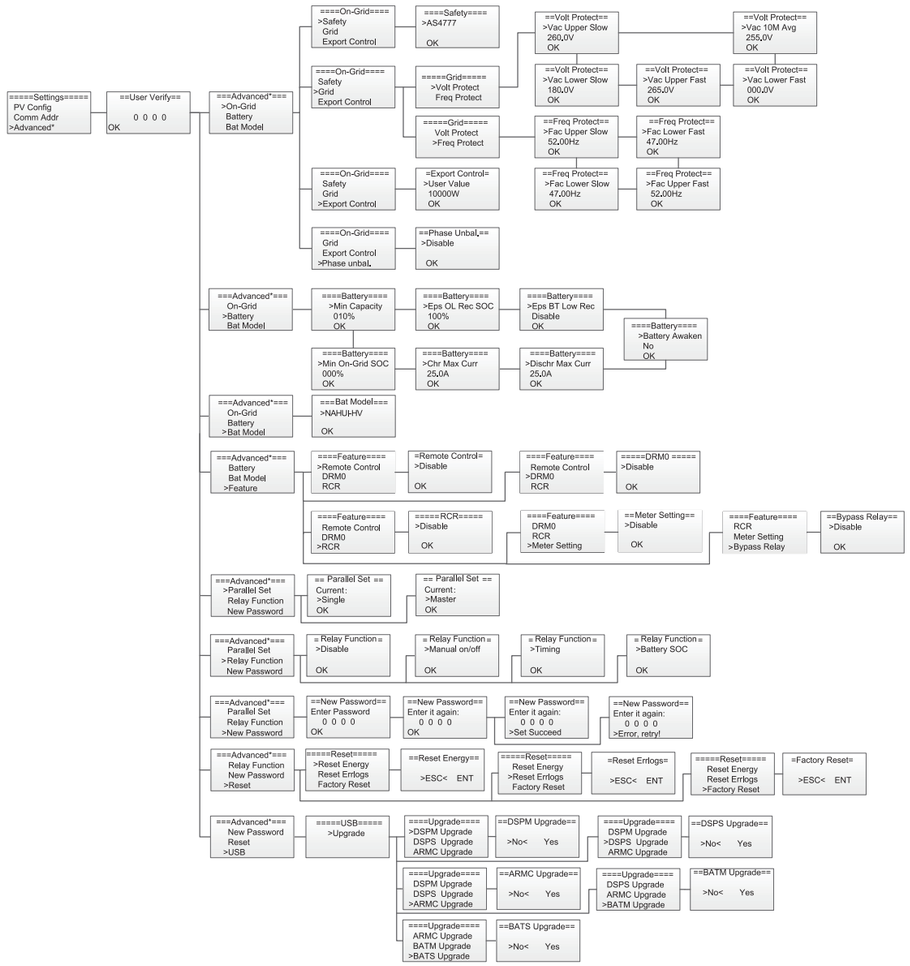
Figure 6-1

Object	Name	Description
A	Indicator LED	Green: Normal working Status.
B		Red: Fault.
C		Green: Battery communication status.
D		Green: RS485 communication status.
E	Function Button	ESC button: Leave from current interface or function.
F		Up button: Move cursor to increase value.
G		Down button: Move cursor to decrease value.
H		OK button: Confirm the selection.
J	LCD Screen	Display the information of the inverter.

Table 6-1

6.2 LCD Function Menu structure :

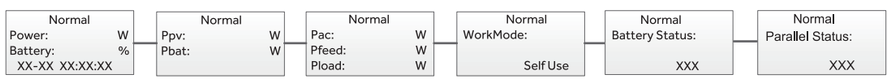




6.3 LCD Operation

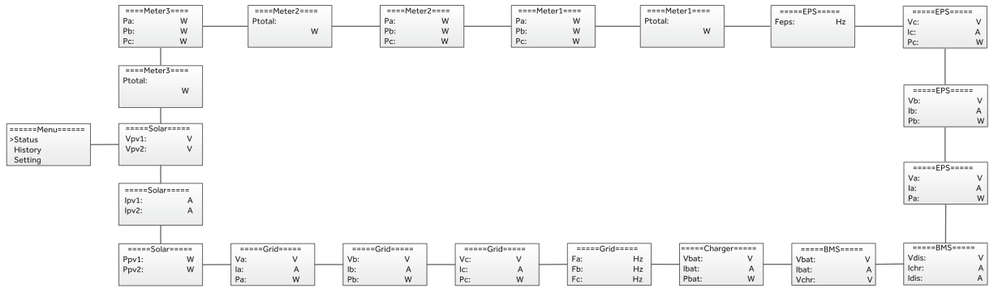
1. Main screen

The main screen as below. Press up or down for more information.



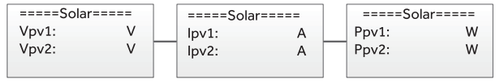
2. Status

Press ‘OK’ to enter the menu, check grid , solar, battery, EPS and temperature of the inverter. Press up and down to select, press ‘ESC’ to return to the Menu.



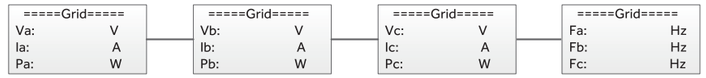
2.1) Solar

This status shows the real time PV parameters of the system. The input voltage, current and power of each PV input. Press up and down button to review the parameter. Press ‘ESC’ to return to status.



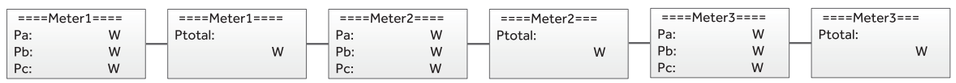
2.2) Grid

This status shows the real time grid parameters such as voltage, current, output power and frequency. Pac measures the output of the inverter.
Press up and down button to review the parameter. Press ‘ESC’ to return to status.



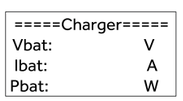
2.3) Meter

This status shows the meter situation of the system. Include the smart meter A, B, and C phase power and total power. Press up and down button to review the parameter. Press ‘ESC’ to return to Status.



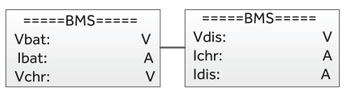
2.4) Charger

This status shows the charger situation of the system. Include the battery voltage, charge or discharge current. Charge or discharge power. ‘+’ means in charging; ‘-’ means in discharging. Press up and down button to review the parameter. Press ‘ESC’ to return to Status.



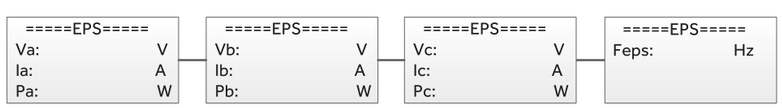
2.5) BMS

This status shows the battery situation of the system. Include the battery voltage and current, charge and discharge voltage, charge and discharge current. '+' means in charging; '-' means in discharging. Press up and down button to review the parameter. Press 'ESC' to return to Status.



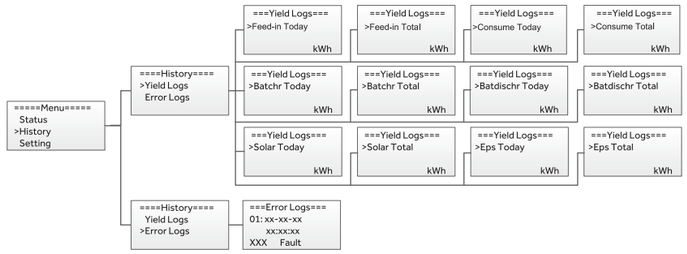
2.6) EPS

EPS will only have data when the inverter is working in EPS mode, it will show the real time data of the EPS output, as voltage , current , power, frequency. Press up and down button to review the parameter. Press 'ESC' to return to Status.



3. History

The history function contains three aspects of the information: inverter yield, battery yield and error log. Press up and down to select, and review the data of system , press 'ESC' to return to the Menu.

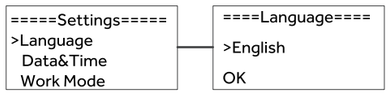


4. Settings

Setting function is used for set the inverter for language, date and time, work mode, communication address, advanced and so on.

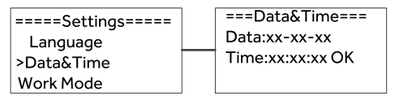
4.1) Language

Press up or down button to change language. Press 'OK' to confirm .



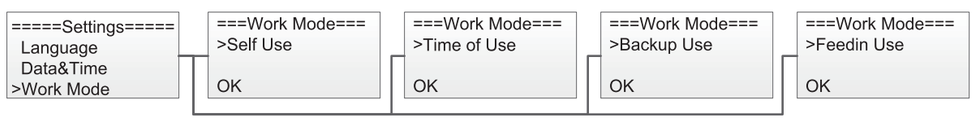
4.2) Date Time

Press up or down button to change date and time. Press 'OK' to confirm.



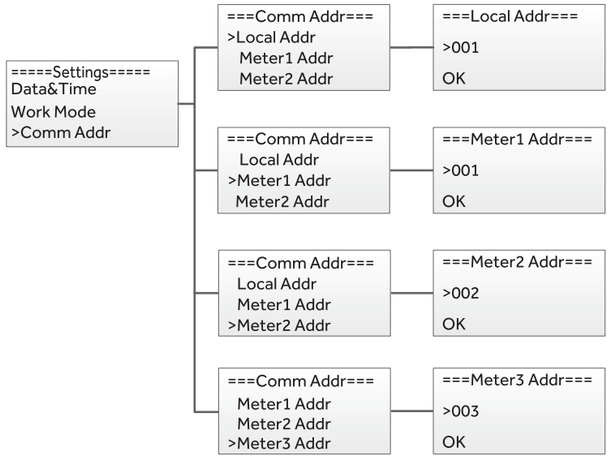
4.3) Work Mode

Press up or down button to select different work modes. Press 'OK' to confirm.

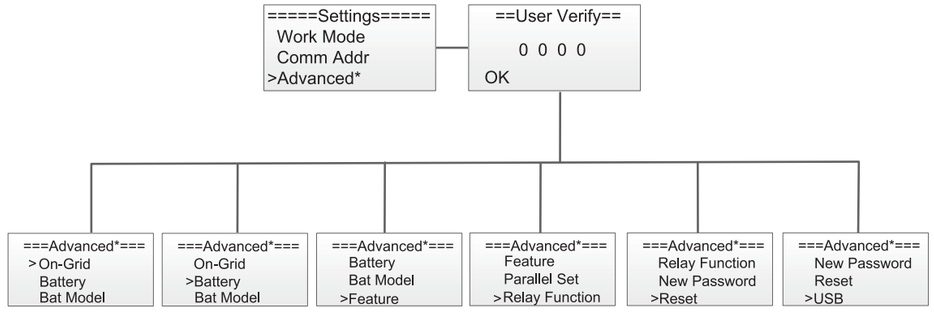


4.4) Communication Address

Press up or down button to change address of local and meter. Press 'OK' to confirm.

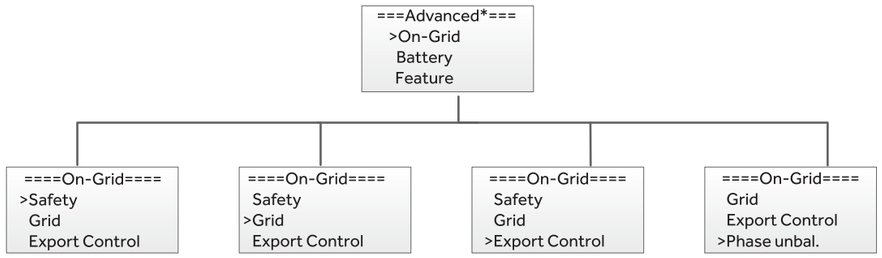


4.5) Advanced settings require the original password '0000', press 'OK' to confirm.



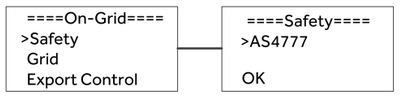
4.5.1) On-Grid

Press up or down button to set the grid functions. Press 'OK' to confirm.



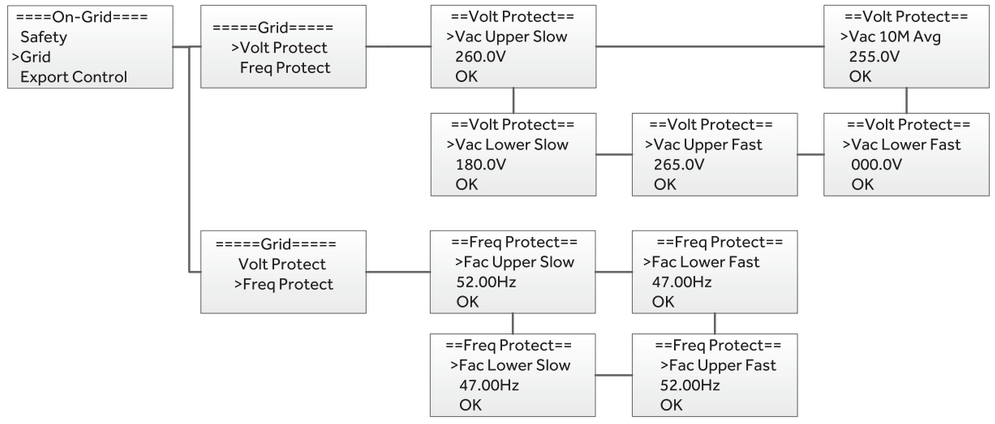
4.5.1.1) Safety

Press up or down button to change the grid code. Press 'OK' to confirm.



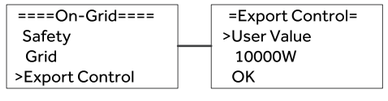
4.5.1.2) Grid

Press up or down button to change the value of grid voltage and grid frequency protect. Press 'OK' to confirm.



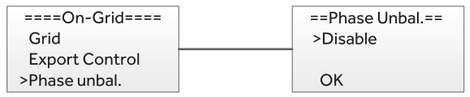
4.5.1.3) Export control

With this function the inverter can control the energy export to the grid. Press up or down button to change the export power. Press 'OK' to confirm.



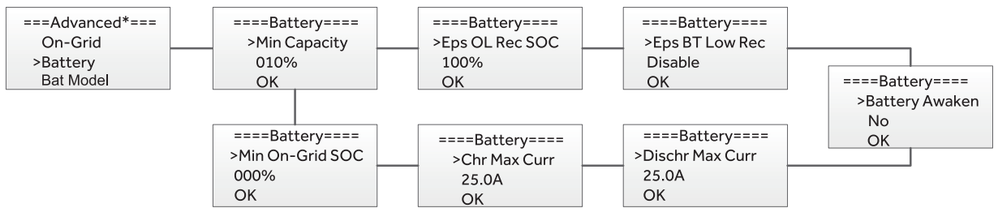
4.5.1.4) Phase unbal

When the system is connected with three-phase unbalanced load or single-phase load, customers can enable the phase unbalance function, the inverter can detect and identify the three-phase current unbalance in the system through the meter and output unbalanced power to different phase.



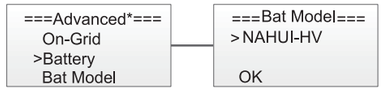
4.5.2) Battery

Press up or down button to set the parameters of battery. 'Eps BT Low Rec' means recovery enable switch when battery low capacity in EPS mode, 'Eps OL Rec SOC' means EPS overload due to low capacity for battery, if recovered, min soc. Press 'OK' to confirm.



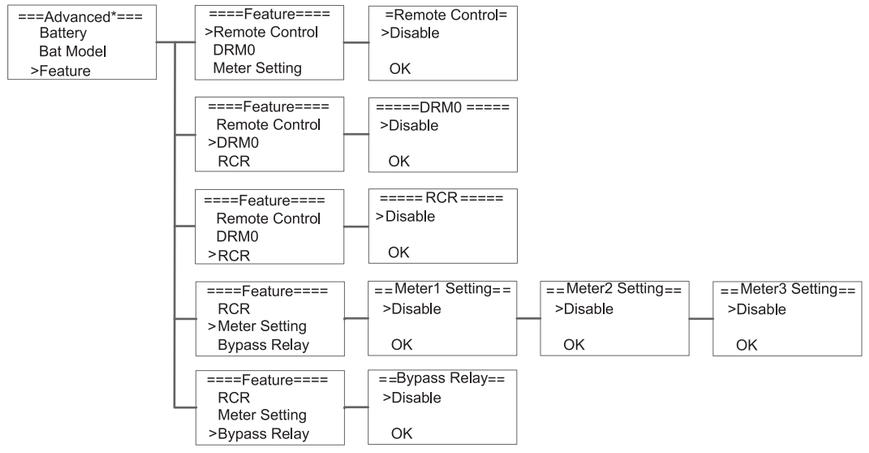
4.5.3) Bat Model

Press up or down button to set the model of battery. Press 'OK' to confirm.



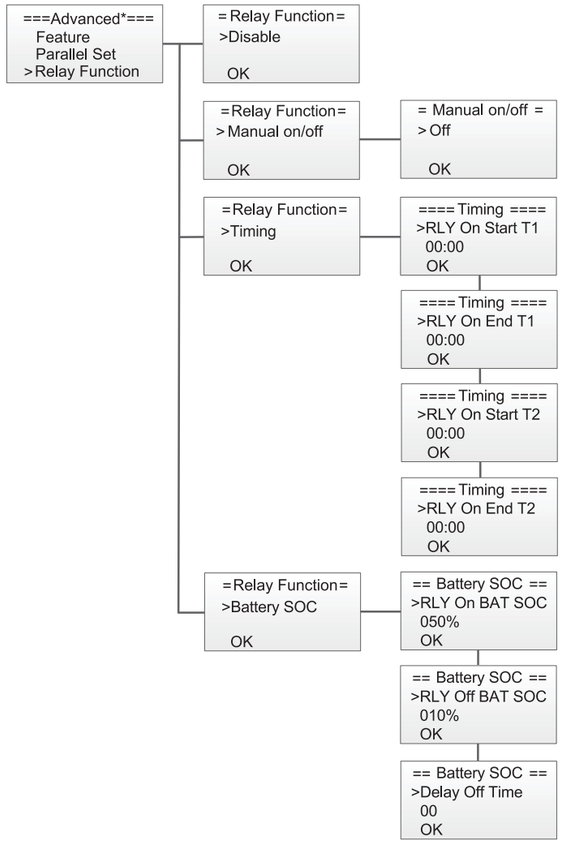
4.5.4) Feature

Press up or down button to enable or disable Remote Control, DRM0, RCR, Meter Setting, and Bypass Relay. Press 'OK' to confirm.



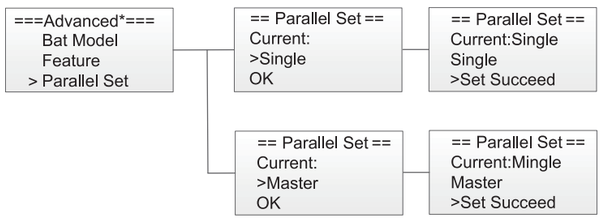
4.5.5) Relay Function

Press up or down button to set the relay function. Press 'OK' to confirm.



4.5.6) Parallel Set

Press up or down button to set the parallel functional mode. Press 'OK' to confirm.



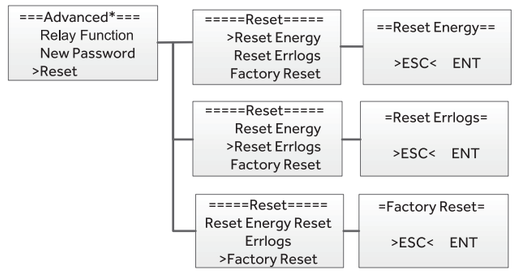
4.5.7) New Password

Press up or down button to set new password. Press 'OK' for more than 3 seconds to confirm.



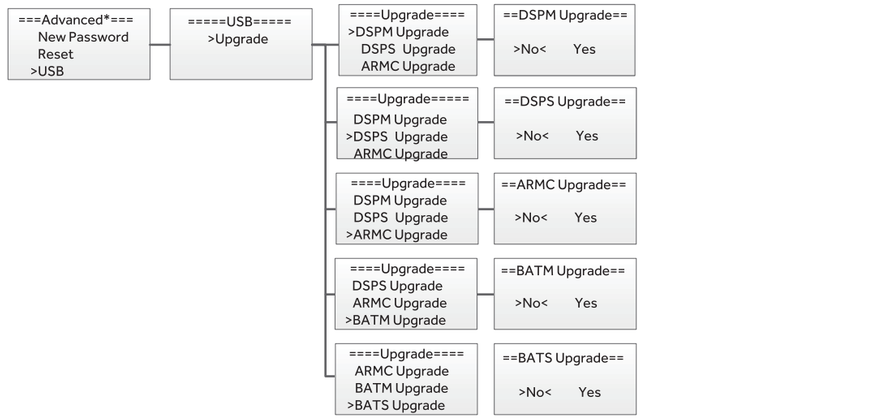
4.5.8) Reset

Press up or down button to reset energy, reset errors or factory reset. Press 'OK' to confirm.



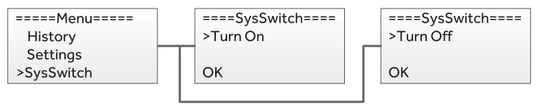
4.5.9) USB

Press up or down button to upgrade DSPM, DSPS, ARMC, BATM or BATS. Press 'OK' to confirm.



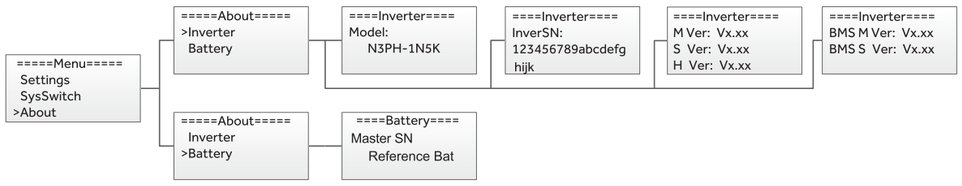
5. System Switch

Press up or down button to turn on or turn off the inverter. Press 'OK' to confirm.



6. About

This interface shows the information of the inverter, such as series number and software version.

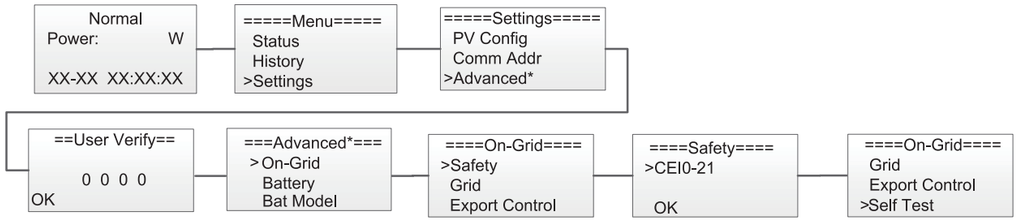


7. Self-Test in accordance with CEI 0-21 (Applies to Italy only)

The self-test is only required for inverters, which are commissioned in Italy. The Italian standard requires that all inverters feeding into the utility grid are equipped with a self-test function in accordance with CEI 0-21. During the self-test, the inverter will consecutively check the protection reaction times and values for overvoltage, under voltage, over frequency and under frequency.
Self-test function is available at any time. It also allows end user get test reports shown on LCD display.

Note: Users need to set the inverter country to CEI 0-21 before testing.

Auto-Test from screen:



6.4 APP Download

There are three ways to download and install the latest APP:
1. You can search the APP in Google Play or App Store.
2. You can scan this QR code below to download.
3. You can search in www.nahui-newenergy.com.

Nahui Business Nahui Energy

Figure 6-2

Please note that "Nahui Business" is for business installers, and "Nahui Energy" is for end users. You can refer to the corresponding user manuals of data loggers to register Nahui APP.

7. Troubleshooting

This section contains information and procedures for solving possible problems with the N3PH series inverters, and provides you with trouble shooting tips to identify and solve most problems that could occur with the N3PH series inverters.
This section will help you narrow down the source of any problems you may encounter. Please read the following trouble-shooting steps.
· Check the warning or fault messages on the System Control Panel or Fault codes on the inverter information panel. If a message is displayed, record it before doing anything further.
· Attempt the solution indicated in below table.

Fault	Cause	Solutions
HW Protect Fault	Inverter over-current, battery over-current, or PV over-current detected by hardware.	1. Disconnect the AC output switch, DC input switch & battery switch, then connect them 5 minutes later. 2. Contact the dealer or the after-sales service if the problem persists.
Grid Lost Fault	1. Utility grid power fails. 2. The AC cable is disconnected, or the AC breaker is off.	1. The alarm is automatically cleared after the grid power supply is restored. 2. Check whether the AC cable is connected and the AC breaker is on.
Grid Volt Fault	1. The grid voltage exceeds the permissible range, or the duration of high voltage exceeds the requirement of HVRT. 2. The grid voltage is lower than the permissible range, or the duration of low voltage exceeds the requirement of LVRT.	1. If the problem occurs occasionally, the utility grid may be abnormal temporarily. The inverter will recover automatically after detecting that the utility grid is normal. 2. If the problem occurs frequently, check whether the grid voltage is within the permissible range.
Grid Freq Fault	1. Utility grid exception. The actual grid frequency exceeds the requirement of the local grid standard. 2. Utility grid exception. The actual grid frequency is lower than the requirement of the local grid standard.	1. If the problem occurs occasionally, the utility grid may be abnormal temporarily. The inverter will recover automatically after detecting that the utility grid is normal. 2. If the problem occurs frequently, check whether the grid frequency is within the permissible range.
PV Volt Fault	PV voltage out of range.	Check the serial connection of the PV array. Make sure that the open circuit voltage of the PV string is not higher than the maximum operating voltage of the inverter.
Bus Volt Fault	Bus voltage out of range detected by hardware.	1. Disconnect the AC output switch, DC input switch & battery switch, then connect them 5 minutes later. 2. Contact the dealer or the after-sales service if the problem persists.
Bat Volt Fault	Battery voltage fault.	Check if the battery input voltage is within the normal range, then restart the system and confirm whether the fault persists.
Vgrid 10M Fault	The grid voltage is out of range for the last 10 Minutes.	1. If the problem occurs occasionally, the utility grid may be abnormal temporarily. The inverter will recover automatically after detecting that the utility grid is normal. 2. If the problem occurs frequently, check whether the grid voltage is within the allowed range. • Contact the local power company if the grid voltage exceeds the permissible range.

		• Modify the grid overvoltage rapid protection threshold after obtaining the consent of the local power company if the grid voltage is within the permissible range.
DCI OCP Fault	DC component is out of limit in output current.	1. Disconnect the AC output switch, DC input switch & battery switch, then connect them 5 minutes later. 2. Contact the dealer or the after-sales service if the problem persists.
DCV OVP Fault	DC component is out of limit in output voltage.	
SW OCP Fault	Output current high detected by software.	
RC OCP Fault	The residual current is high.	1. If the problem occurs occasionally, it may be caused by a cable exception. The inverter will recover automatically after the problem is solved. 2. Check whether the impedance between the PV string and PE is too low if the problem occurs frequently or persists.
Iso Check Fault	1. The PV string is short-circuited to PE. 2. The PV system is in a moist environment and the cable is not well insulated to the ground.	1. Check whether the resistance of the PV string to PE exceeds 50kΩ. If no, check the short circuit point. 2. Check whether the PE cable is connected correctly.
Temp Over Fault	The inverter temperature is high.	Check the ventilation and the ambient temperature at the installation point. If the ventilation is poor or the ambient temperature is too high, improve the ventilation and heat dissipation.
BatConDir Fault	The battery connection is reversed.	1. Check if the positive pole and negative pole of battery are correctly connected. 2. Contact the dealer or the after-sales service if the problem persists.
AD Sample Fault	The sampling value between the main and slave DSP is inconsistent.	1. Disconnect the AC output switch, DC input switch & battery switch, then connect them 5 minutes later. 2. Contact the dealer or the after-sales service if the problem persists.
EPS Over Load	EPS over load.	1. Check the EPS load to ensure it does not exceed the inverter EPS Rated Power. 2. Disconnect the AC output switch and DC input switch & battery switch, then connect them 5 minutes later.
EPS OCP	EPS over current.	1. Check the EPS load to ensure it does not exceed the inverter EPS Rated current. 2. Disconnect the AC output switch and DC input switch & battery switch, then connect them 5 minutes later.
PLL Error	PLL Error.	1. Disconnect the AC output switch, DC input switch &

		battery switch, then connect them 5 minutes later. 2. Contact the dealer or the after-sales service if the problem persists.
Parallel Fault	Inverter parallel connection fault.	1. Check if the parallel wiring is correct. 2. Check the inverter setting, ensure that only one inverter was set to "Master".
Bat Low Fault	Battery SOC is too Low.	1. Wait the battery to be recharged. 2. Disconnect the AC output switch and DC input switch, then connect them 5 minutes later. Contact the dealer or the after-sales service if the problem persists.
Ground Conn.	Inverter grounding issue.	1. Check whether the PE cable of the inverter is connected properly. 2. Check whether the L cable and N cable are connected reversely if output of the PV string is grounded.
BMS Lost	The communication between BMS and Inverter is interrupted.	Check if the communication cable between BMS and inverter is connected correctly.
Other Dev Fault	Other device fault.	1. Disconnect the AC output switch, DC input switch & battery switch, then connect them 5 minutes later. 2. Contact the dealer or the after-sales service if the problem persists.
M/S DspCommFault	The communication between master and slave is fault.	
Fan Fault	Internal fan Device failure.	
HCT Fault	AD sampling failure.	
Inv EEPROM Fault	DSP EEPROM failure.	
RCD Fault	Leakage current detection circuit fault.	
EPS Relay Fault	1. The relay is abnormal or short-circuited. 2. The control circuit is abnormal. 3. The AC cable connection is abnormal, like a virtual connection or short circuit.	1. Disconnect the AC output switch, DC input switch & battery switch, then connect them 5 minutes later. 2. Contact the dealer or the after-sales service if the problem persists.
Grid Relay Fault		
Byps Relay Fault		
HMI EEPROM Fault	HMI eeprom failure.	1. Disconnect the AC output switch, DC input switch & battery switch, then connect them 5 minutes later. 2. Contact the dealer or the after-sales service if the problem persists.
Meter1 Lost Fault	The communication between smart meter1 and Inverter is interrupted.	1. Check if the communication cable between smart meter and Inverter is connected correctly. 2. Check if the smart meter is powered on.
Meter2 Lost Fault	The communication between smart meter2 and Inverter is interrupted.	
Meter3 Lost Fault	The communication between smart meter3 and Inverter is interrupted.	

Dsp Lost Fault	The communication is fail between ARM and master DSP.	1. Disconnect the AC output switch, DC input switch & battery switch, then connect them 5 minutes later. 2. Contact the dealer or the after-sales service if the problem persists.
BMS AD_AFE Fault	The difference between the total voltage of battery AD and AFE is too large.	1. Disconnect the AC output switch, DC input switch & battery switch, then connect them 5 minutes later. 2. Contact the dealer or the after-sales service if the problem persists.
BMS Tepr Fault	Battery temperature sensor fault.	
BMS InCom Fault	Battery internal communication fault.	Disconnect battery, check wiring between inverter and battery, battery internal wiring then reconnect.
BMS PreChg Fault	Battery pre charge fault.	1. Disconnect the AC output switch, DC input switch & battery switch, then connect them 5 minutes later. 2. Contact the dealer or the after-sales service if the problem persists.
BMS Relay Fault	The battery relay is fault.	
BMS Cell Fault	Battery cell error.	
BMS Other Fault	Other battery fault.	
BMS Protect OV	Battery over voltage protection.	
BMS Protect LV	Battery under voltage protection.	
BMS Protect ChgOC	Battery over current charging protection.	
BMS Protect DsgOC	Battery over current discharging protection.	
BMS Prot TemHigh	Battery temperature is high.	
BMS Prot TemLow	Battery temperature is low.	
BMS Volt Fault	Battery voltage sensor fault.	
BMS OutCom Fault	BMS internal communication fault.	
BMS ISO Fault	Battery insulation test failed.	
BMS Check Fault	Battery self-test failed.	
BMS Prot TemDiff	The difference in battery cell temperature is too large.	
BMS Prot AD_AFE	The difference between the total voltage of battery AD and AFE is too large, triggering protection.	
BMS Prot Hard OC	Battery hardware overcurrent protection.	

Table 7-1 Fault Message And Troubleshooting Suggestion

NOTE!
If the inverter displays any alarm message as listed in Table 7-1; please turn off the inverter and wait for 5 minutes before restarting it . If the failure persists, please contact your local distributor or the service center.

Please keep ready with you the following information before contacting us.
· Serial number of Nahui Three Phase Inverter.
· The distributor/dealer of Nahui Three Phase Inverter (if available).
· Installation date.
· The description of the problem together with necessary information, pictures, attachment.
· The PV array configuration (e.g. number of panels, capacity of panels, number of strings, etc.).
· Your contact details.

Remark

If your inverter's information panel is not displaying a Fault light, check the following list to make sure that the present state of the installation allows proper operation of the unit.
· Is the inverter located in a clean, dry, and adequately ventilated place?
· Have the DC input breakers been opened?
· Are the cables adequately sized and short enough?
· Are the input and output connections and wiring in good condition?
· Are the configurations settings correct for your particular installation?
· Are the display panel and the communications cable properly connected and undamaged?
Contact Nahui Energy Customer Service for further assistance. Please be prepared to describe details of your system installation and provide the model and serial number of the unit.

8. Decommissioning

8.1 Dismantling

· Disconnect the inverter from DC input and AC output.
· Disconnect battery wiring.
· Wait for 5 minutes for de-energizing.
· Disconnect communication and optional connection wiring.
· Remove the inverter from the bracket.

8.2 Packing

If possible, please pack the inverter in the original packaging.
If it is no longer available, you can also use an equivalent carton that meets the following requirements.
· Suitable for loads more than 27kg.
· With handle.
· Can be fully closed.

8.3 Storage

Store the inverter in dry place where ambient temperatures are always between -20 °C ~ +60 °C.

8.4 Maintenance

Inverters generally do not need any daily or routine maintenance. Heat sink should not be blocked by dust, dirt or any other items. Before the cleaning, make sure that the DC SWITCH is turned OFF and the circuit breaker between inverter and electrical grid is turned OFF. Wait at least for 5 minutes before the Cleaning.

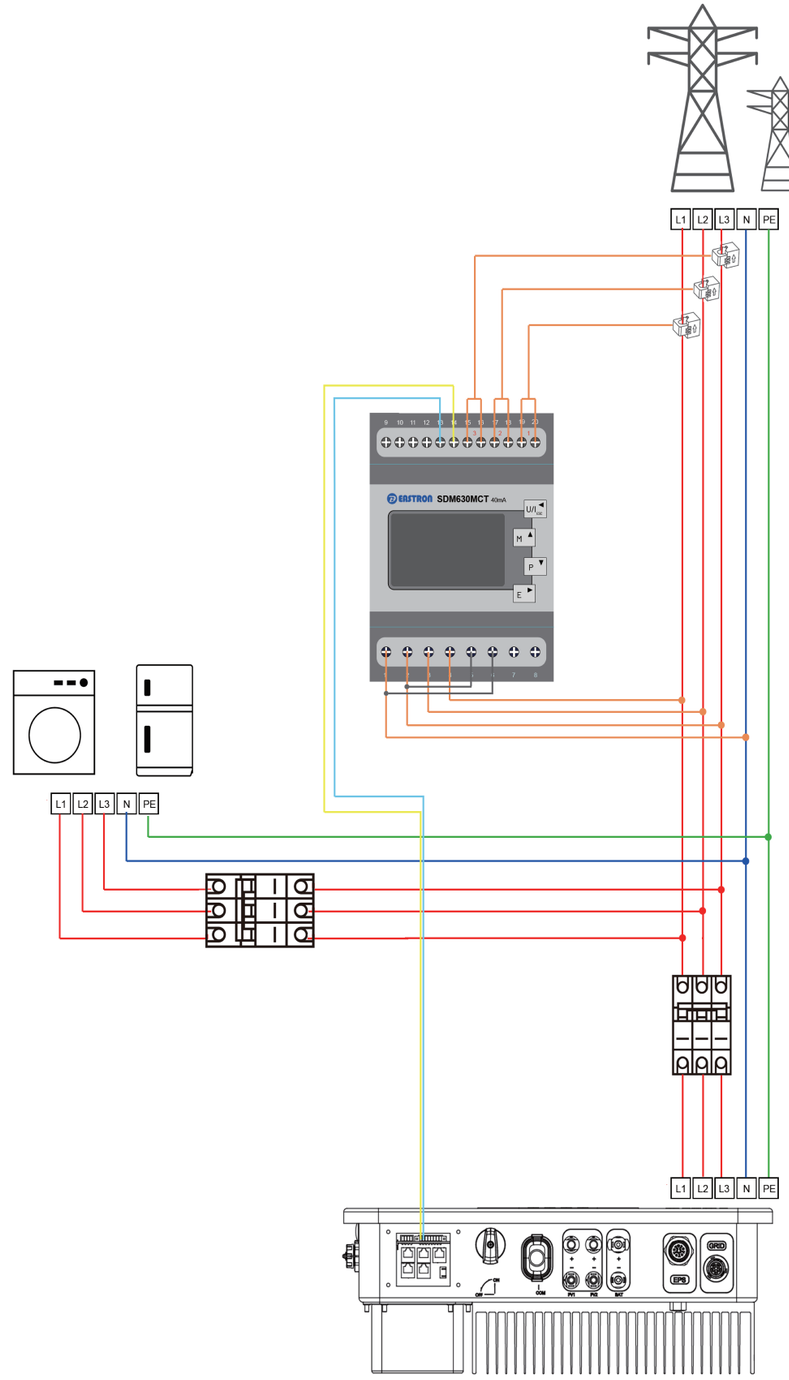
· Check that if the cooling fins on the rear are covered by dirt, if yes, fins should be cleaned. This shall be done at regular intervals.
· Check whether the indicators of the inverter are in normal state, check whether the keys of the inverter buttons are in normal state, check whether the display of the inverter is normal. These checks should be performed at least every 6 months.
· Check the input and output wires for damages or aging. This check should be performed at least every 6 months.
· You should keep the inverter panels clean and their security checked at least every 6 months.

8.5 Disposal

When the inverter or other related components need to be disposed, have it carried out according to local waste handling regulations. For safe disposal, take inverter to appropriate waste recycling center in your local area.

Annex A

Meter wiring diagram for Typical Energy Storage System



422-00195-04

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