



DN1H Series(3-6KTL)

User Manual

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Notice

This manual contains important safety instructions, installation, electrical connections, commissioning, maintenance, and troubleshooting of the equipment.

Save the manual!

This manual must be stored carefully and be available at all times.

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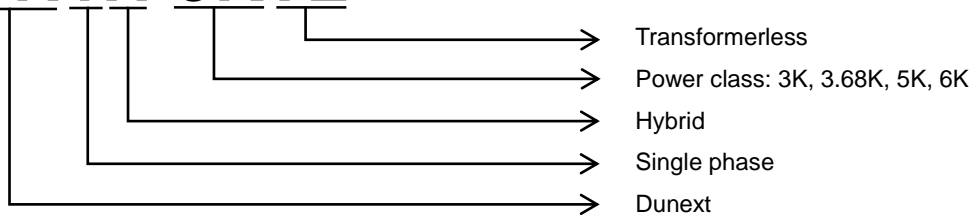
1. About this manual

1.1 Applicability

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

Designation explanation of the DN1H Series(3-6KTL):

DN1H-3KTL



1.2 Target group

This manual is intended for technical professionals for installation, commissioning and maintenance of the hybrid inverter. The technical personnel has to be familiar with the product, local standards, and electric systems.

1.3 Symbols used

The following types of safety instructions and general information appear in this document:

	'Danger' indicates a hazard with a high level of risk that, if not avoided, will result in death or serious injury.
	'Warning' indicates a hazard with a medium level of risk that, if not avoided, will result in death or serious injury.
	'Caution' indicates a hazard with a low level of risk that, if not avoided, could result in minor or moderate injury.
<p>NOTICE</p>	'Notice' indicates a situation that, if not avoided, could result in equipment or property damage.
	'Note' provides tips that are valuable for the optimal operation of the product.

1.4 Acronyms and abbreviations

A	ADD	additional
B	BAT	battery
E	EMI	electromagnetic interference
	EPS	emergency power supply
	EPS Box	emergency power supply combiner box
L	LED	light emitting diode
M	MPP	maximum power point
	MPPT	maximum power point tracking
O	OLED	organic light-emitting diode
P	PV	photovoltaic
T	THDi	total harmonic distortion

2. Safety

2.1 General safety

The hybrid inverter has been designed and tested strictly in accordance with 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.



WARNING!

During operations, wear personal protective equipment such as protective clothing, insulated shoes, goggles, safety helmets, and insulated gloves.

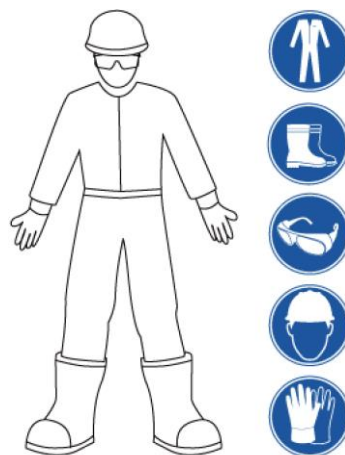







Figure 2-1

2.2 Important safety instructions











	<ul style="list-style-type: none"> ◆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 the enclosure lid is removed, live components could be touched which can result in death or serious injury due to electric shock. ◆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 injuries. ◆Lethal voltages are present at battery terminals and cables connecting to the inverter. Serious 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.
	<ul style="list-style-type: none"> ◆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. <p>Use personal protective equipment, including rubber gloves and protective boots during installation or maintenance</p>
	<p>Do not touch any hot parts (such as the heat sink) during operation, temperature of inverter surface may exceed 60°C during operation.</p>
<p>NOTICE</p> 	<ul style="list-style-type: none"> ◆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 Dunext's authorization. Unauthorized work will invalidate warranty. ◆Operate inverter as explained in this manual, failure will damage equipment and invalidate warranty.
	<p>Installation and maintenance must be carried out by competent electricians following all local regulations.</p> <p>With an integrated universal current-sensitive residual current monitoring inverter included the inverter will disconnect immediately from the mains power once a fault current with a value exceeding the limit is detected.</p>

When installing, operating, and maintaining the product, comply with local laws and regulations. The safety instructions in this manual are only supplements and cannot cover all the precautions.

Dunext will not be held liable for any damage caused by violating general safety operation requirements, general safety standards, or any safety instruction in this manual.

2.3 Explanation of symbols

Symbols on the type label:

Symbol	Explanation
	TÜV mark
	CE mark. The inverter complies with requirements of applicable CE guide-lines.
	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 of 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.
	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 Block diagram

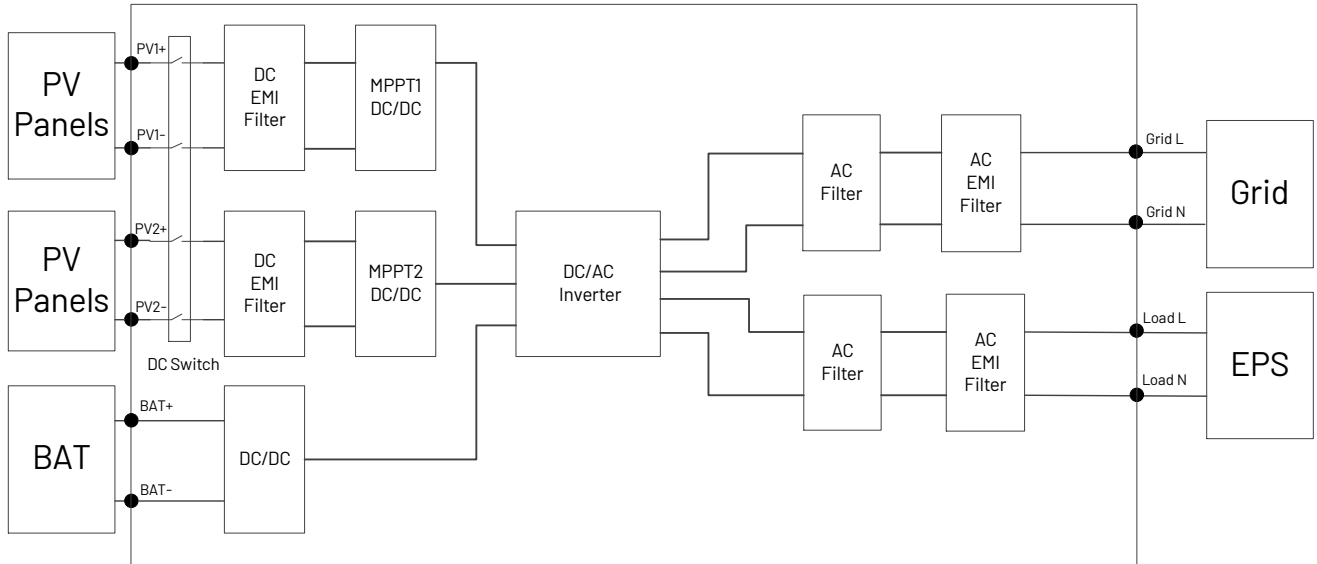


Figure 3-1 Block diagram of DN1H Series(3-6KTL)

3.2 Basic features

The DN1H Series(3-6KTL) is developed for PV energy storage system with PV panels, battery, loads and grid.

Energy produced by PV system shall be used to optimize self-consumption (on site consumption), surplus production will charge battery and the rest power would be fed to the grid. Battery shall be discharged to support loads when PV power is insufficient to meet self-consumption. If both PV power and battery power is insufficient, the system will take power from grid to support loads.

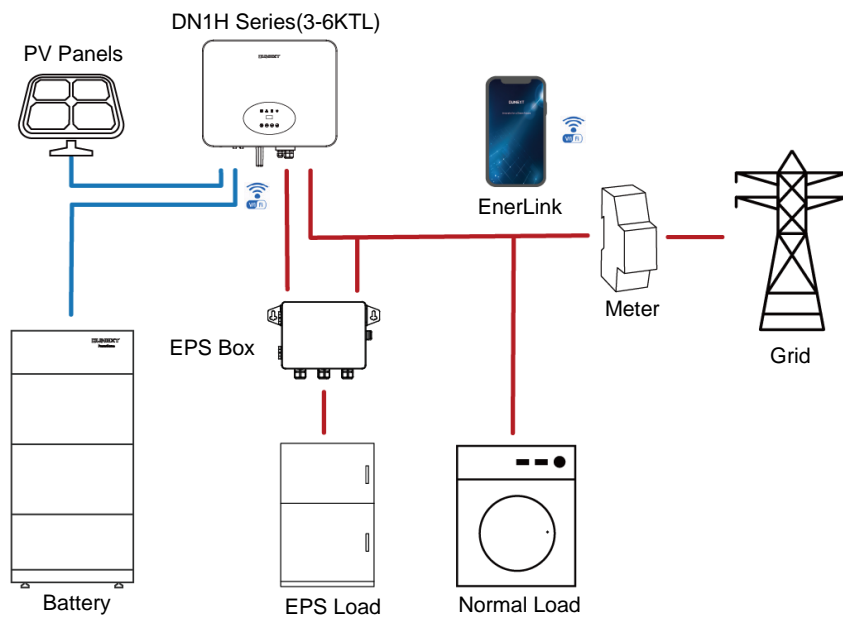


Figure 3-2 DN1H Series(3-6KTL) system

3.3 Work modes

The DN1H Series(3-6KTL) has the following work modes based on the configuration and connected equipment.

Work mode: Self Use

This mode is applicable to areas with low subsidies and high electricity prices. Self-consumption of PV renewable energy is the highest priority. Excess PV generation is used to charge batteries, and then feed back into the grid.

1. When the PV power is sufficient, PV power will supply the following sequence:

Priority: Load -> Battery -> Grid

2. When the PV power is insufficient, the battery will discharge to supply loads, and the grid will join in if the battery power is not enough.

Priority: PV power -> Battery -> Grid

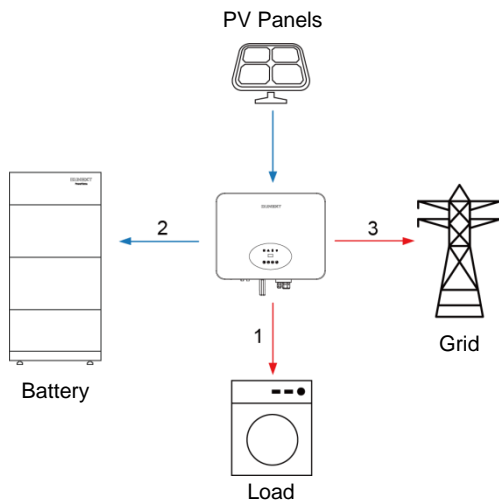


Figure 3-3 Self Use mode 1

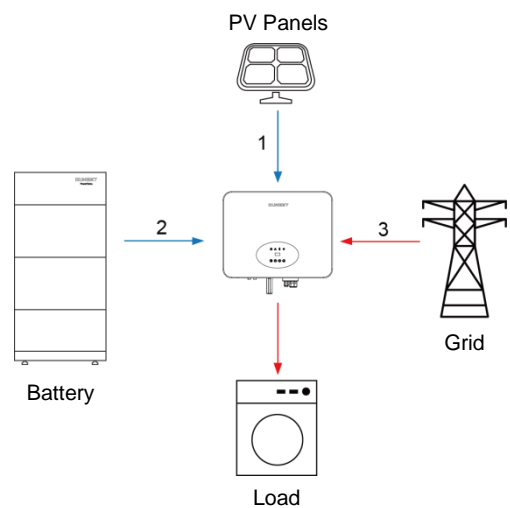


Figure 3-4 Self Use mode 2

Work mode: Time of Use

Applicable to the areas with large gaps between peak and valley electricity prices. Users can set time-based schedules to charge the battery by App or inverter display.

1. During charging time period inverter will use the power from PV or grid to charge the battery.

Priority: Battery -> Load

2. Outside the charging time period inverter will work in Self Use mode. Using the power from PV and battery to supply loads and the insufficient part will be supplied by the grid.

Priority: PV power -> Battery -> Grid

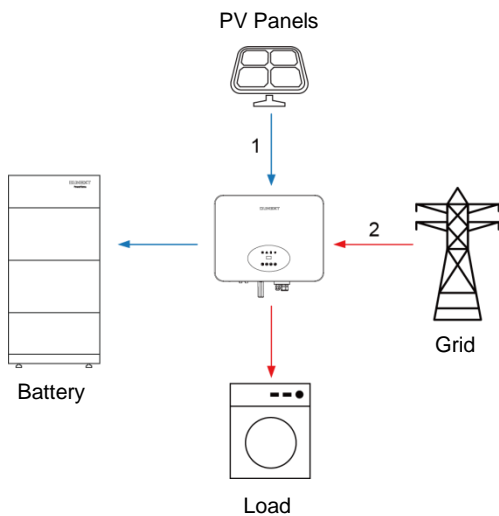


Figure 3-5 Time of Use mode 1

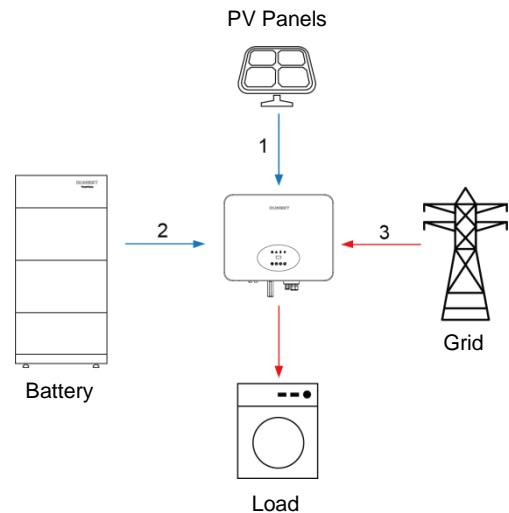


Figure 3-6 Time of Use mode 2

Work mode: Backup Use

It is suitable for the areas with frequent power outages. When the grid is off, the battery is used as backup power to supply load. This mode ensures that the battery will have enough energy to supply loads during a grid outage. PV and battery could support the backup load in the event of a blackout.

1. When grid is on, the battery will be in charging state and will not be discharged.

Priority: Battery -> Load

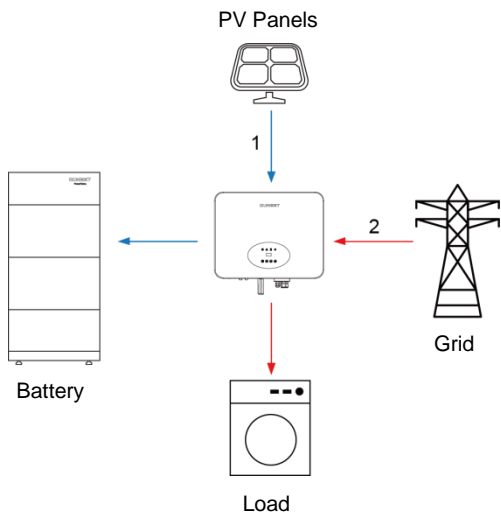


Figure 3-7 Backup mode 1

2. When grid is off, the battery will be discharged to supply load. The inverter will connect grid automatically when grid goes back on.

Priority: PV power -> Battery

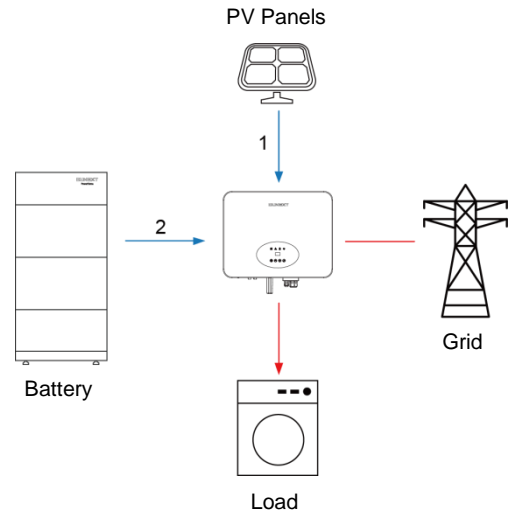


Figure 3-8 Backup mode 2

Work mode: Feed in Use

This mode applies to the area that has high feed-in tariff and export control. This model prioritizes grid feeds with sufficient PV power to maximize the tariff subsidy earned.

1. When the PV power is sufficient, the PV generation will supply load first, then feed into grid, and the excess power will charge the battery last.

Priority: Load -> Grid -> Battery

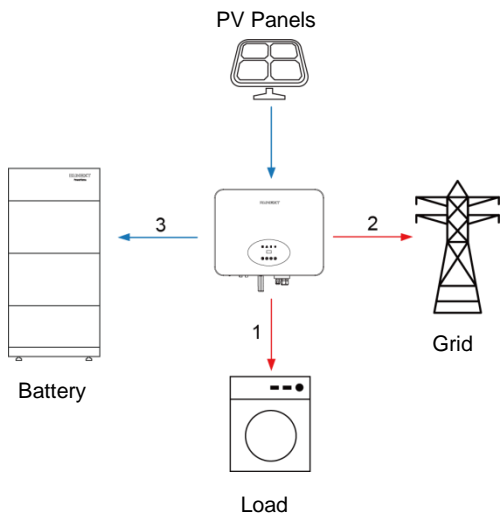


Figure 3-9 Feed in Use mode 1

2. When the PV power is sufficient, using the power from PV and battery to supply loads and the insufficient part will be supplied by the grid.

Priority: PV power -> Battery -> Grid

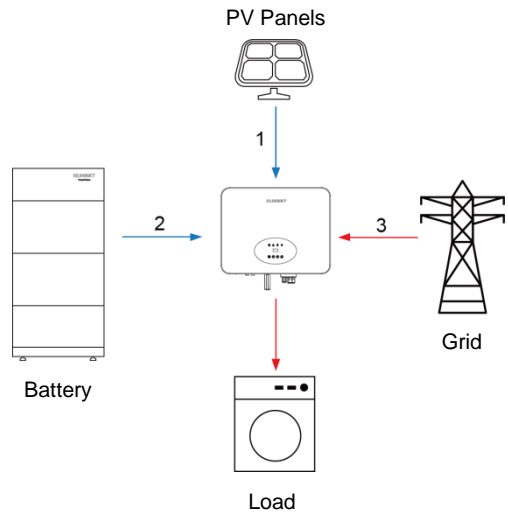


Figure 3-10 Feed in Use mode 2

Work mode: EPS mode (additional)

When grid is off, during daytime PV generation will supply load, excess energy is stored in the battery. At nighttime inverter will discharge battery to supply load.

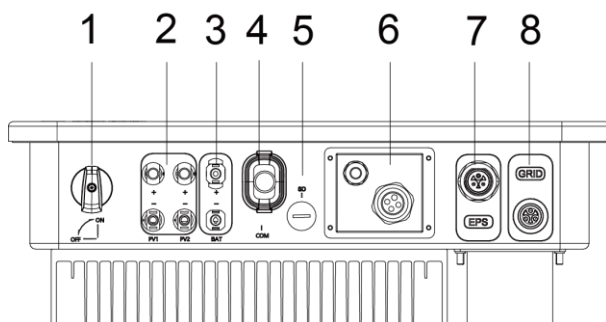
In this mode, you have to make sure that the EPS load power is within the EPS's output power rating. Otherwise, the inverter will report an EPS Over Load warning.

When EPS Over Load warning appears, reduce load to be with in power rating of the EPS's output power rating and the inverter will return to normal after ESC button on the LCD screen pressed.

For inductive load such as fridge, air conditioner, washing machine, etc. ensure that the start power does not exceed the EPS peak power.

Model	DN1H-3KTL	DN1H-3.68KTL	DN1H-5KTL	DN1H-6KTL
EPS Data: Peak Apparent Power, Duration [VA, s]	4500, 10	5520, 10	7500, 10	9000, 10

3.3 Ports



- | | |
|---------------------------------|------------------------|
| (1) DC switch | (5) SD port |
| (2) PV connector | (6) Communication port |
| (3) Battery connector | (7) EPS port |
| (4) WIFI or 4G or Ethernet port | (8) AC port |

Figure 3-11 Ports of DN1H Series(3-6KTL)

Note: The DC switch is used to isolate PV strings.

3.4 Dimensions

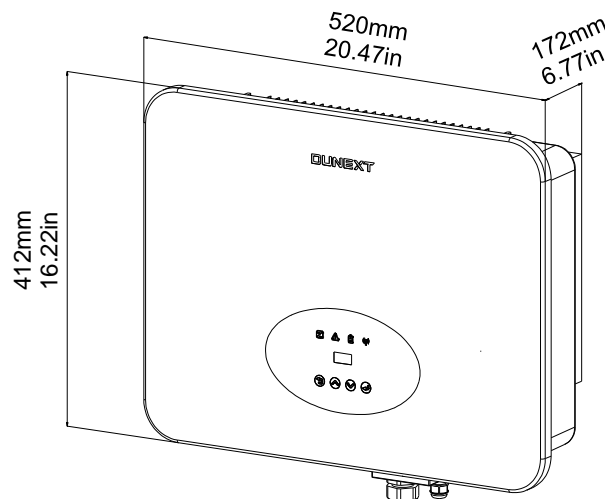


Figure 3-12 DN1H Series(3-6KTL) dimensions

4. Technical specifications

Model	DN1H-3KTL	DN1H-3.68KTL	DN1H-5KTL	DN1H-6KTL
PV Input				
Max. Recommended PV Power [Wp]	4500	5500	7500	9000
Max. PV Input Voltage [V]	600			
MPPT Voltage Range [V]	120 ~ 550			
Rated PV Input Voltage [V]	360			
Start-up Voltage [V]	150			
No. of MPP Trackers	2			
No. of Input Strings per Tracker	1			
Max. Input Current per MPPT [A]	13.5 / 13.5			
Max. Short-circuit Current per MPPT [A]	17 / 17			
DC Switch	Integrated			
AC Output (On-Grid)				
Max. Apparent Power [VA]	3000	3680	5000 ^[1]	6000
Rated AC Power [W]	3000	3680	5000 ^[1]	6000
Rated AC Current [A]	13	16	21.7 ^[1]	26.1
Rated AC Voltage [V]	220 / 230			
Grid Frequency [Hz]	50 / 60			
Adjustable Power Factor [cos φ]	0.8 leading ... 0.8 lagging			
Output THDi [@Rated Output]	< 2%			
Battery				
Battery Type	Lithium			
Battery Voltage Range [V]	80 ~ 450			
Max.Charging/Discharging Current[A]	25			
Communication Interface	CAN			
AC Output (Backup with Battery)				
Rated AC Power [W]	3000	3680	5000	6000
Rated AC Voltage[V]	220 / 230			
Rated Frequency [Hz]	50 / 60			
Rated Current [A]	13	16	21.7	26.1
Output THDi (@Rated Output)	< 3%			
Automatic Switch Time [ms]	< 0.5			
Peak Apparent Power, Duration [VA, s]	4500, 10	5520, 10	7500, 10	9000, 10
Efficiency				
Max. Efficiency	97.4%	97.5%	97.5%	97.5%
European Efficiency	97.2%	97.2%	97.2%	97.2%
Protection				
DC Insulation Monitoring	Yes			
DC Reverse Polarity Protection	Yes			
Anti-islanding Protection	Yes			

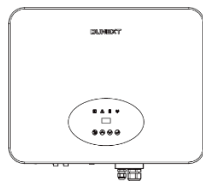









Model	DN1H-3KTL	DN1H-3.68KTL	DN1H-5KTL	DN1H-6KTL
Residual Current Monitoring		Yes		
Over-heat Protection		Yes		
AC Overcurrent Protection		Yes		
AC Short-circuit Protection		Yes		
DC Surge Protection		Yes (Type III)		
AC Surge Protection		Yes (Type III)		
AC Overvoltage Protection		Yes		
General Data				
Dimension (W * H * D) [mm]		520 * 412 * 172		
Weight [kg]		20		
Display		LED + OLED		
Communication		RS485 and USB (Standard), WIFI (Standard), 4G or Ethernet (Optional)		
Ambient Temperature Range [°C]		-30 ~ +60		
Relative Humidity		0 ~ 100%		
Operating Altitude [m]		≤ 2000		
Standby Self Consumption [W]		< 15		
Topology		Transformerless		
Cooling		Natural		
Degree of Protection		IP65		
Noise(dB)		< 35		
Certifications & Standards				
Grid connection standards		EN50549-1, EN50549-PL, CEI 0-21, G98/G99		
Safety Regulation		IEC 62109-1, IEC 62109-2		
EMC		EN/IEC 61000-6-1, EN/IEC 61000-6-3		



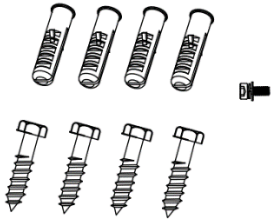



[1]: The AC output power for VDE-AR-N 4105, VDE 0126, and NRS 097-2-1 are limited to 4600VA & 20A, and AS/NZS 4777.2 is limited to 4999VA & 21.7A.

5. Installation

5.1 Unpacking

Before unpacking the inverter, check the outer packing materials for damage, such as holes and cracks, and check the inverter model. If any damage is found or the inverter model is not what you requested, do not unpack the package and contact your manufacturer as soon as possible.

No.	Name	Shape	Quantity
1	DN1H Series(3-6KTL)		1
2	Mounting Bracket		1
3	Battery Connectors (positive)		1
4	Battery Connectors (negative)		1
4	PV Connectors (positive*2) & PV Pin contact (positive*2)		4
5	PV Connectors (negative*2) & PV Pin contact (negative*2)		4
5	AC Terminal & Tubular terminal*3		4
6	EPS Terminal & Tubular terminal*3		4
7	8P Pluggable Terminal Block		1
8	Ethernet RJ45 Connector		3

No.	Name	Shape	Quantity
9	M5x12 Phillips hexagonal screw		2
12	Earth Terminal		1
13	Expansion tubes*4 & Expansion screws*4 & M5x12 Hexagon socket screw*1		9
14	Energy Meter(EASTRON SDM230-Modbus)		1
15	User Manual		1
16	Quality Certificate		1

After placing the equipment in the installation position, unpack it with care to prevent scratches. Keep the equipment stable during unpacking.

5.2 Checking for transport damage

Check if the DN1H Series(3-6KTL) has any visible external damage, such as cracks in the housing or display, if any damage is found, please contact with your dealer immediately.

5.3 Installation precaution

The DN1H Series(3-6KTL) is designed for outdoor installation (IP65).

- Make sure that the installation does not fall into one of the following:
 - 1) Do not install inverter in direct sunlight.
 - 2) Do not install inverter on flammable construction material.
 - 3) Do not install inverter in areas where highly flammable materials are stored.
 - 4) Do not install inverter in potentially explosive areas.
 - 5) Do not install inverter during rain or high humidity (>95%); Moisture trapped within the inverter may cause corrosion and damage electric components.
- Provide adequate ventilation when using batteries, also read the warning label at the bottom of the inverter.
- Install inverter in a location that maintains ambient air temperature less than 40°C. This is to maintain safe internal component temperature; inverter would reduce power if ambient air temperature exceeds 40°C.
- The inverter should only be installed in locations that are not accessible to children.
- The inverter emits a slight vibration noise when operating, this is normal and will not affect performance.
- Tilt of mounting surface should be within +5°.

- Please select a concrete wall with load-bearing capacity and a non-flammable surface for installation.
- The inverter is heavy; ensure the mounting surface is strong enough to take the weight of the inverter.
- If the inverter is installed in a cabinet, closet, or other small enclosed areas, sufficient air circulation must be provided in order to dissipate heat generated by the inverter.

5.4 Space requirement

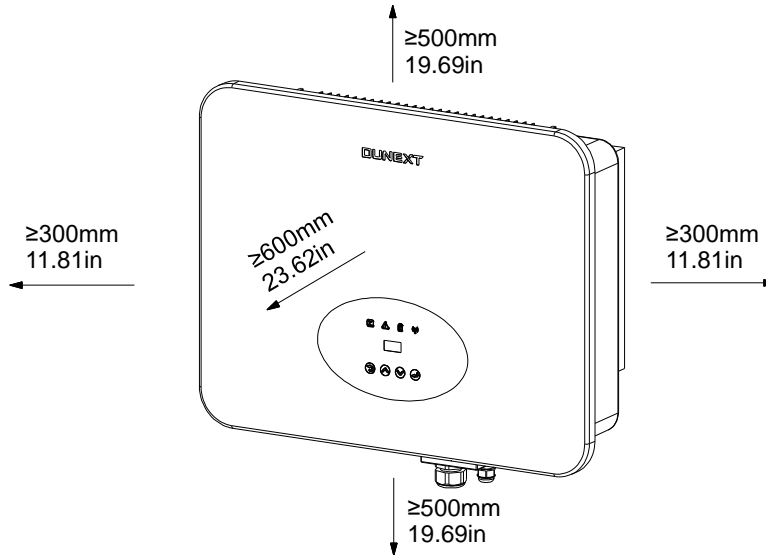







Figure 5-1 Installation space







5.5 Preparation

Tool preparation:

No.	Tool	Model	Function
1		Sprit level	To ensure proper install
2		Two-speed hammer drill	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 cables

No.	Tool	Model	Function
6		PV-CZM-22100	Crimping plier for PV cables
7		Phillips screwdriver	Wiring
8		RJ45 crimping tool	Crimping tool for RJ45 terminals
9		Crimping plier	Crimping tool for insulated electrical connectors
10		Hex key	Wiring

Personal protective equipment preparation:

No.	Tool	Model	No.	Tool	Model
1		Insulated gloves	4		Goggles
2		Protective gloves	5		Insulated shoes
3		Dust mask	6		safety helmet

Cable preparation:

No.	Name	Cable size	Source
1	Earth cable	4mm ²	Prepared by the users
2	PV cable	4-6mm ²	Prepared by the users
3	Battery cable	4-6mm ²	Prepared by the battery package
4	Battery communication cable	Standard network cable	Prepared by the battery package

No.	Name	Cable size	Source
5	AC cable	4-6mm ² (depends on inverter model)	Prepared by the users
6	Meter communication cable	0.2mm ²	Prepared by the meter package

Lifting and Handling

The inverter is heavy. Do not lift it alone.

- During lifting procedures, ensure that the inverter is firmly secured to avoid the risk of accidental tipping or dropping.
- Parts serving for support or immobilization of the inverter shall be designed and manufactured so as to minimize the risk of physical injuries and accidental loosening or fixing.
- Ensure that the method used for lifting does not allow the inverter to slip from chains and slings, turn-over, or slide from lifting devices.
- Transportation must be carried by qualified persons wearing necessary personal protection equipment.
- Avoid sudden movements and jolts when unloading and positioning the inverter. Handling procedures must be conducted with care. Do not exert leverage on the components of the machine.
- If the inverter is not balanced properly, use ballast.
- The inverter should be installed so that the operating panel is easily accessible and also ensure easy access to the electrical connection points.
- Regarding the loading capacity and hardness of the supporting surface, the load rating of the mounting bracket should be at least four times the weight of the devices, according to IEC62109-1. Supporting characteristics will be impaired by wear, corrosion, and material fatigue or aging; this should be calculated by inspecting the design data of the supporting material and consulting the construction engineer.

5.6 Installation steps

1. Fix mounting bracket on suitable wall.

- Use the wall bracket as a template to mark the position of the 4 holes.

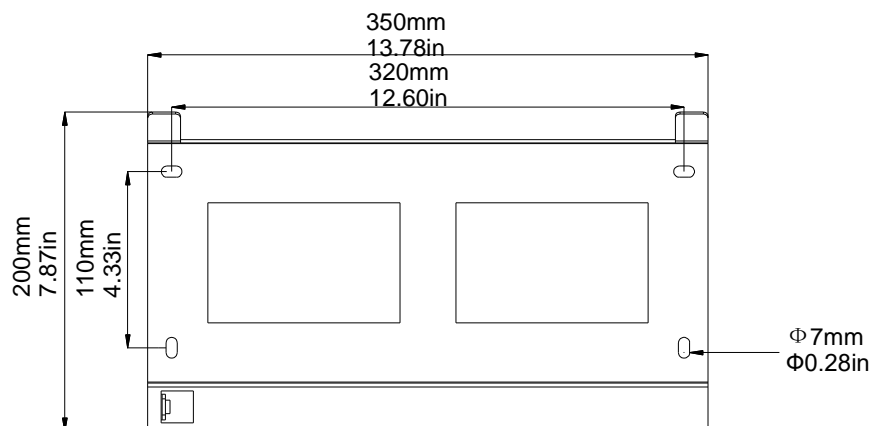


Figure 5-2 Inverter wall mounting

- Drill holes with $\phi 10$ drill carefully, make sure that holes are deep enough (at least 45mm) for installing grips.
 - Install grips in the holes, and tighten. Install the wall bracket using the expansion screws provided in screw package.
2. Hang the DN1H Series(3-6KTL) on the wall bracket.
- Lifting inverter needs at least 2 people, use handles provided at the sides of the inverter for lifting.
 - To hang the inverter over the bracket, move the inverter close to the bracket and carefully lower the inverter onto the bracket, making sure the 4 mounting bars on the back of the inverter are fixed well with the 4 grooves on the bracket.

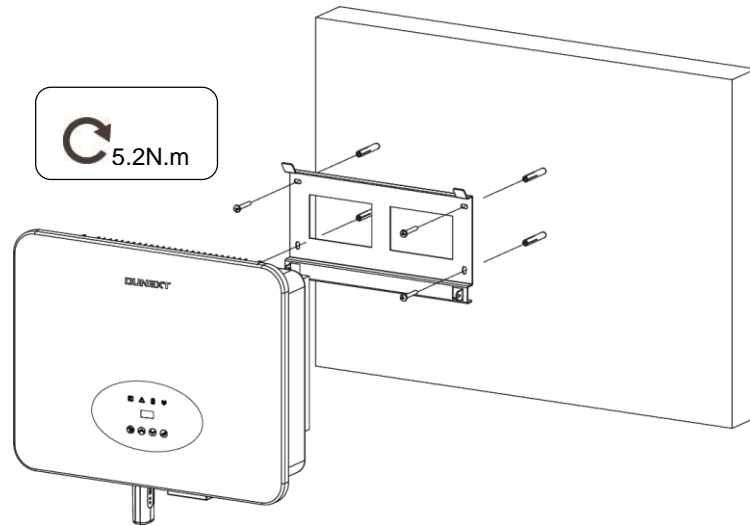


Figure 5-3 Wall mount bracket

3. Install the M5 fix screw.

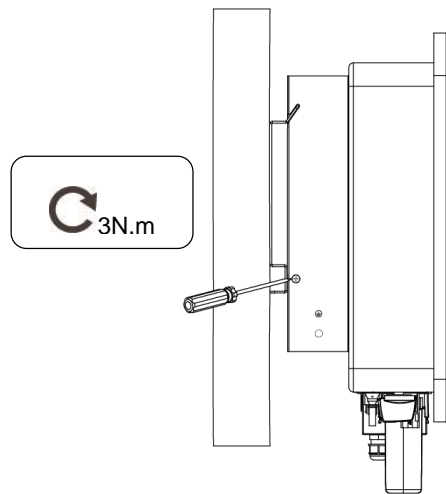


Figure 5-4

5.7 Electrical wiring connection

For an overview of the connection terminals of inverter please refer to Figure3-11, and for wiring connections please refer to Figure 3-2.

System connections diagrams

Note: This diagram is an example for Australian, South Africa and New Zealand grid system where neutral line should not be switched.

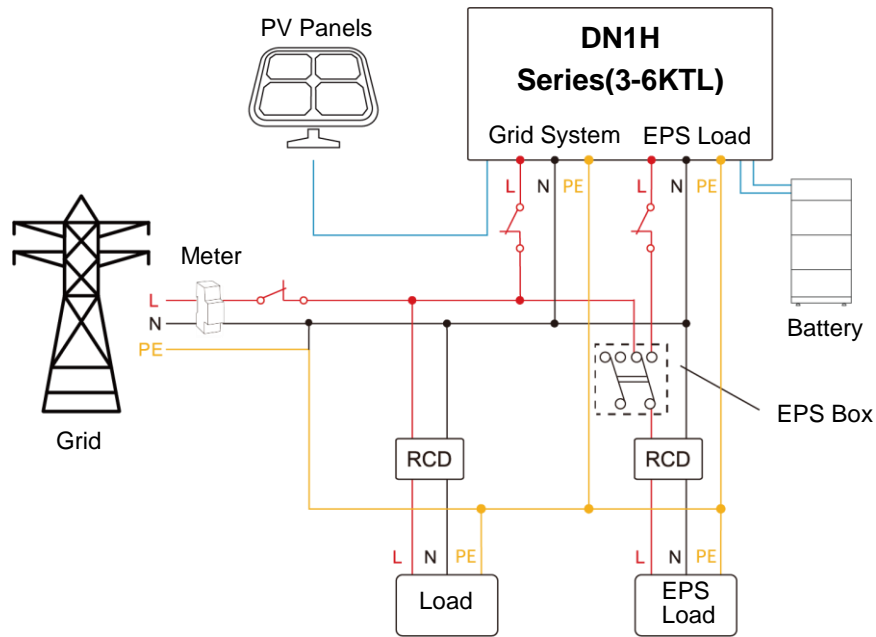


Figure 5-5

Note: This diagram is an example for grid system without special requirement on electrical wiring connection.

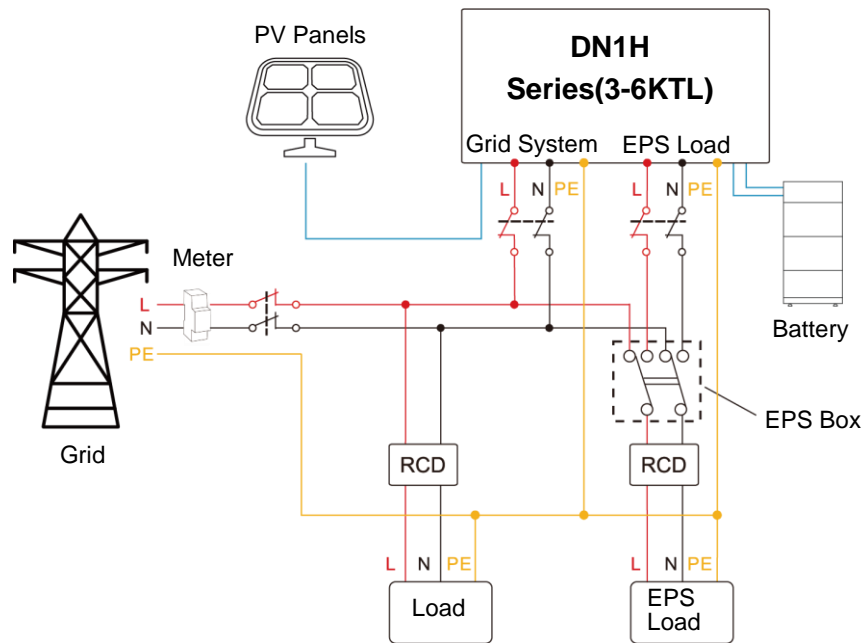


Figure 5-6

NOTICE

NOTICE!

- The EPS Box is not included as part of the inverter.
- Inverters have not been tested to AS/NZS 4777.2:2020 for multiple phase combinations.

The main steps to connect the DN1H Series(3-6KTL) system

- 1) Earth connection
- 2) PV string connection
- 3) AC output connection

- 4) Battery connection:
 - Battery power connection
 - Battery communication connection
- 5) EPS connection
- 6) Communication connection

5.7.1 Earth connection

One can additionally earth the inverter enclosure of a second earthed or equipotential bonding, which is required under local regulations. This prevents touch current if the original protective conductor fails.

Cable size: 4mm²

Connection steps:

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

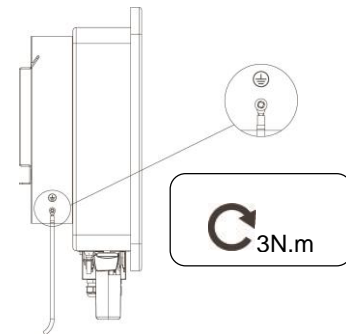


Figure 5-7

5.7.2 PV wiring connection

Before connecting PV strings to DN1H Series(3-6KTL), please make sure requirements are followed as below:

- The total short-circuit current of PV string must not exceed inverter's max DC current .
- Make sure open circuit voltage of PV string is less than 600V.
- PV strings could not connect to earth/grounding conductor.
- Use the right PV plugs in the accessory box. BAT plugs are similar with PV plugs, please confirm before use it.

Connection steps:

1. Turn off the DC switch.
2. Prepare 4-6mm² 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."PY-AZM-410").
4. Insert striped cable into pin contact and ensure all conductor strands are captured in the pin contact.

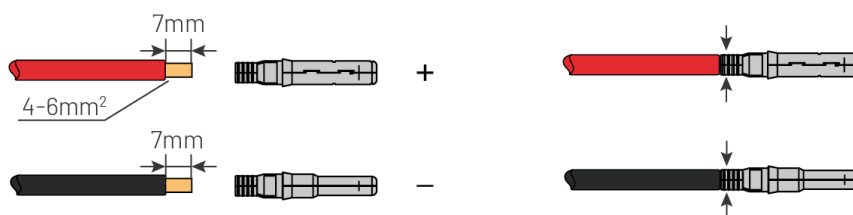


Figure 5-8

5. Crimp pin contact by using a crimping plier (PV-CZM-22100). Place 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 one feels or hear a "click" sound the pin contact assembly is attached correctly.
7. To assemble the DC connector.
 - (1) Slide the cable nut towards the back shell.
 - (2) Rotate the cable nut to secure the cable.

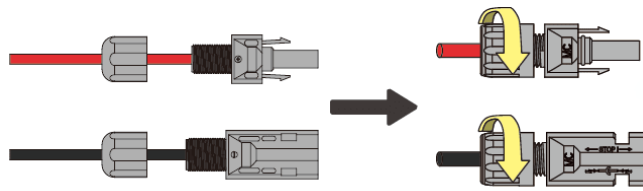


Figure 5-9

8. After securing the cable tightly, align the two half connectors and attach them together by hand until a "click" is felt or heard.
9. Separate the DC connectors.

- (1) Use the specified wrench tool.
- (2) When separating the DC+ connector, push tool down from upper side.
- (3) When separating the DC- connector, push tool down from the bottom rear side.
- (4) Separate the connectors by hands.

5.7.3 AC output connection

DN1H Series(3-6KTL) has integrated RCMU (residual current monitoring inverter) built inside the inverter, however if an external RCD is required, a type A RCD with rated residual current of 100mA or higher is recommended.

There are two AC terminals and the assembly steps for both are identical, need to ensure that one is for Grid and the other for EPS. The AC cable and micro circuit breaker specification for the AC side of the DN1H Series(3-6KTL) are as below.

Model	DN1H-3KTL	DN1H-3.68KTL	DN1H-5KTL	DN1H-6KTL
Cable (Cu)	4mm ²	4mm ²	6mm ²	6mm ²
Micro Circuit Breaker	25A	25A	32A	32A



WARNING!

Make sure to select cables of correct specification cables for installation.
 Failure could over heat or burn cables resulting in death or serious injury.
 Do not connect the line (phase) to PE terminal. Failure will result in incorrect operation.

Connection Steps:

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

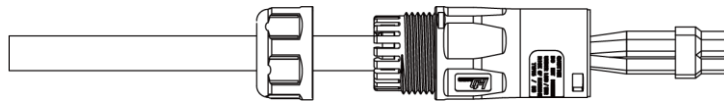


Figure 5-10

2. Remove the cable jacket by 40 mm, and strip the wire insulation by about 10mm.

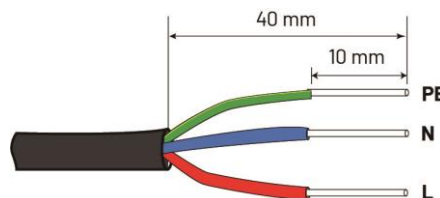


Figure 5-11

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

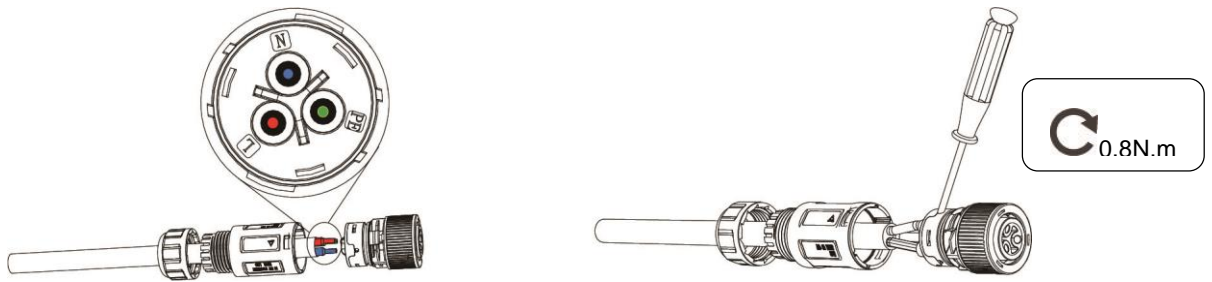


Figure 5-12

4. Assemble the housing, the terminal block and cable gland (torque 4 Nm-5 Nm). Make sure that the rib of the terminal block and the groove on the housing engage perfectly until a 'Click' is heard or felt.



Figure 5-13

5.7.4 Battery connection

When one wants to build a self-use storage system, the high voltage battery is a necessary part. The DN1H Series(3-6KTL) provides the necessary parts of the interface to connect the battery.



WARNING!

Make sure to select cables of the correct specification for installation.
Failure to do so could overheat or burn cable resulting in death or serious injury.

1. Battery Power Cable Connection

1. Select the tin-plated cables with a conductor cross section of 4 to 6 mm².
2. Strip 15mm insulation off the conductor. Use a suitable stripping tool for this (example "Knipex Solar 121211").
3. Open the spring in the plug using a screwdriver (Figure 5-14).

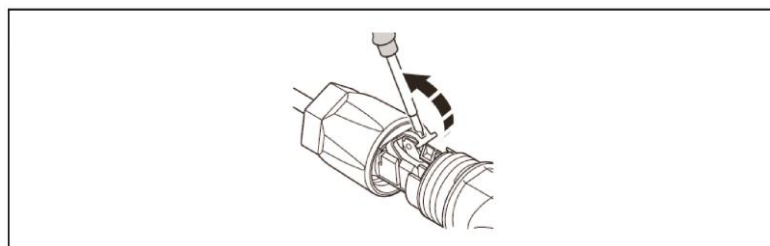


Figure 5-14

4. Carefully insert the stripped litz wires all the way in (Figure 5-15, A). The litz wire ends have to be visible in the spring.
5. Close the spring making sure that the spring is snapped in (Figure 5-15, B).

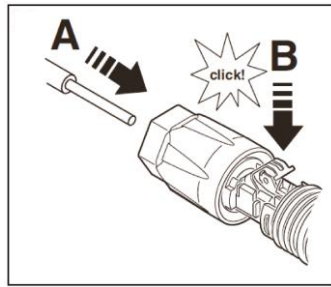


Figure 5-15

6. Push the insert into the sleeve (Figure 5-16, C).

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

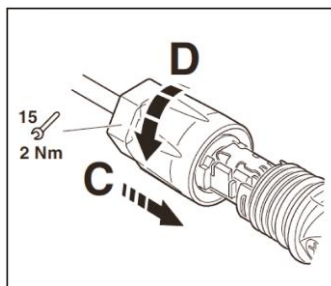


Figure 5-16

8. Fit the two connectors together until the connection audibly locks into place.

9. Check to make sure the connection is securely locked.

10. 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).

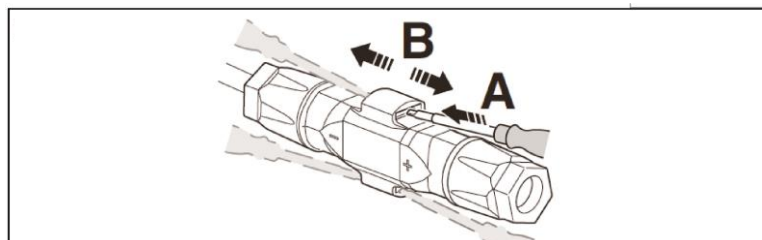


Figure 5-17

NOTE:

If resistance to earth of each conductor of the PV array and battery system is lower than, the inverter will report Earth Fault Alarm.

Inverter complies with IEC 62109-2 clause 13.9 for earth fault alarm monitoring. If an Earth Fault Alarm occurs, the red light will be ON and ISO Check fault will be displayed on the LCD screen, and the fault can be found in the fault history. For Inverter with WIFI / 4G, the alarm information can be seen on the corresponding monitoring website, and can also be received by the APP on the mobile phone.

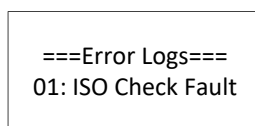


Figure 5-18

2. Battery Communication Connection

The communication interface between battery and inverter is a RJ45 connector. Pins definition is as below.

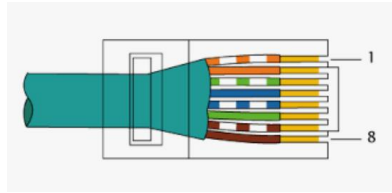


Figure 5-19

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

Overview for all battery connections:

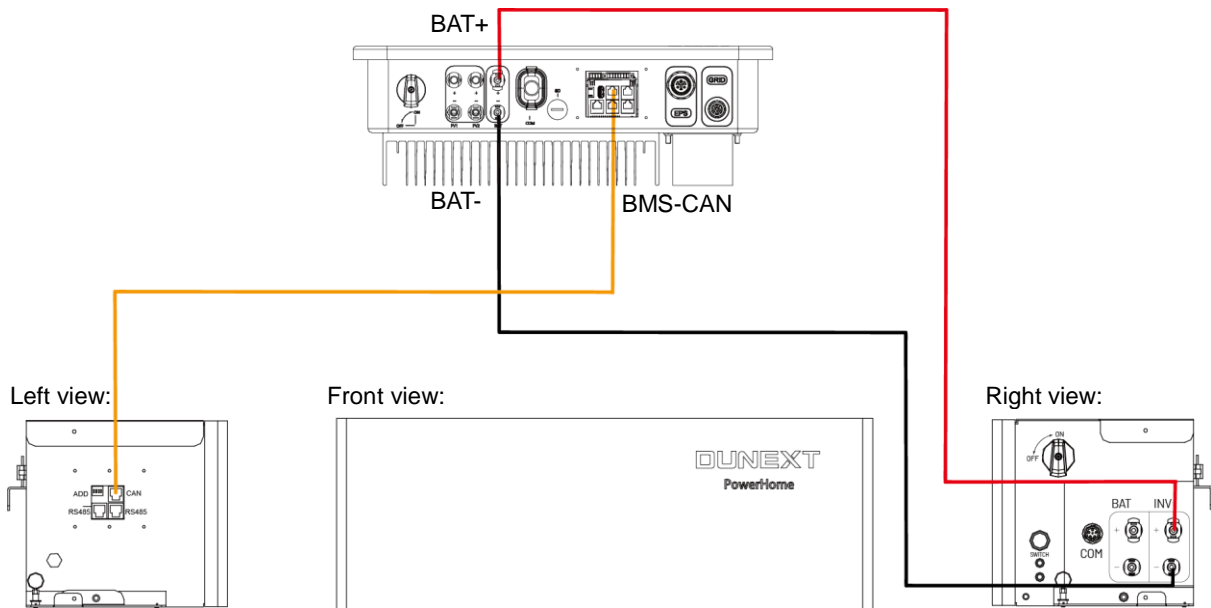


Figure 5-20 Connection diagram between DN1H Series(3-6KTL) and one battery cluster

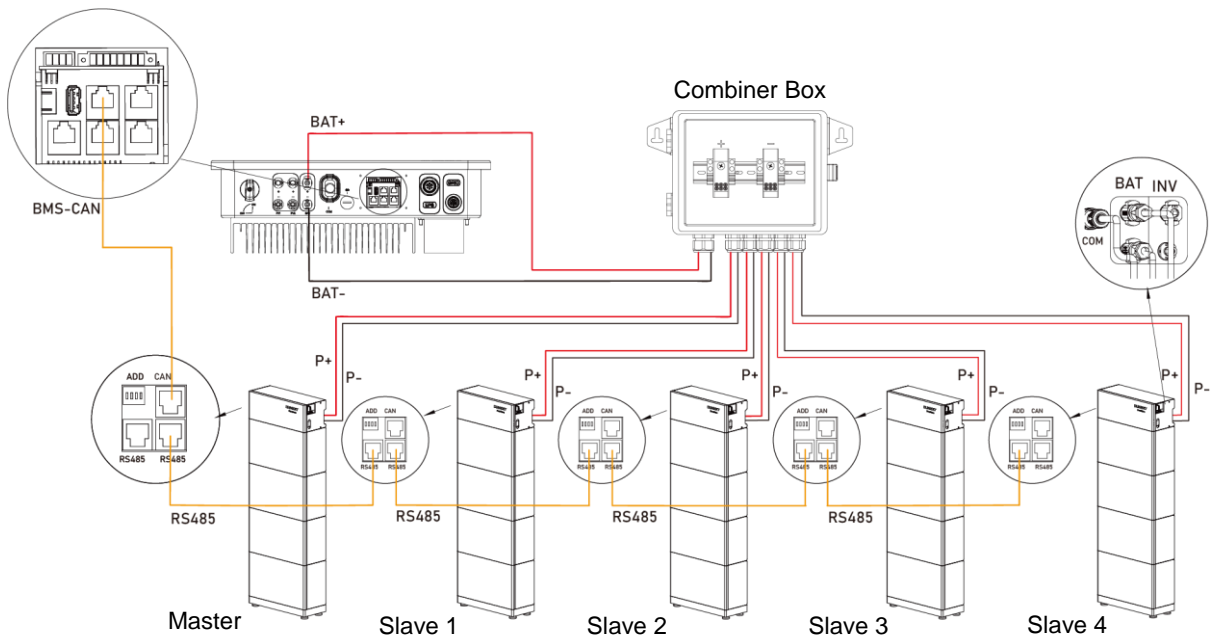




Figure 5-21 Connection diagram between DN1H Series(3-6KTL) and five battery clusters

 NOTE!	<p>For the parallel connection of 2 battery clusters and 3 battery clusters, please use the power cable in an accessory bag of the battery package to make the connection.</p> <p>For the parallel connection of 4 battery clusters and 5 battery clusters, please use the power cable in an accessory bag of the combiner box to make the connection.</p> <p>The combiner box is not standard and needs to be purchased separately.</p> <p>See the PowerHome-H1 User Manual for details on battery settings.</p>
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 WARNING!	<p>The length of power cables between battery clusters and combiner box must be the same.</p> <p>When connecting multi-cluster battery systems in parallel, ensure that the number of clusters connected in series is the same in each battery system.</p>
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5.7.5 Communication connection

Communication interface

This product has a series communication interfaces besides WIFI or 4G or Ethernet (optional). Dry contact and extend port and for human and machine communication, etc., can be sent to a PC or other monitoring equipment via these interfaces.

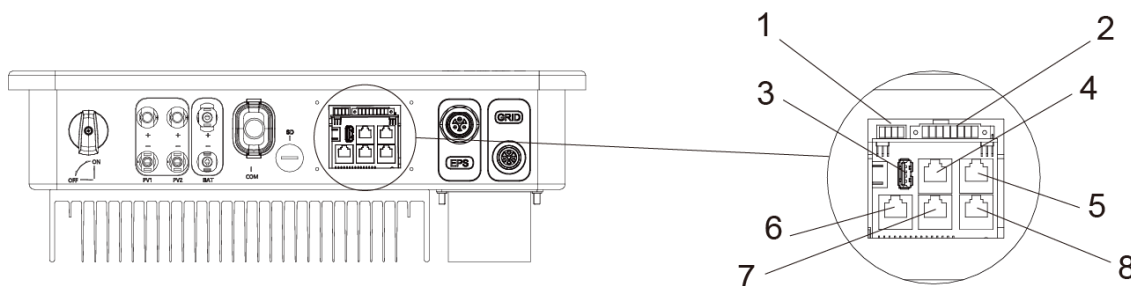


Figure 5-22 Communication interface

No.	Name	Description
(1)	RS485	Used for Modbus RTU communication with 3rd party external device or controller.
(2)	ADD interface	Used for RS485 communication of meter, generator control signals, shutdown signals and digital output.
(3)	USB	Universal Serial Bus interface.
(4)	BMS-CAN / 485	Used to communicate with the battery management system using CAN or RS485 communication protocol.
(5)	Reserve	Reserved functions.
(6)	DRM	This application meets the requirements of local Australian grid code (AS/NZS 4777.2).
(7)	METER	Used for RS485 communication between inverter and the smart meter.
(8)	Reserve	Reserved functions.

1. WIFI or 4G or Ethernet

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

2. RS485 interface

RS485 interface PINS definition:

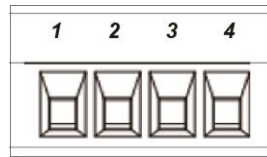


Figure 5-23

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

3. ADD interface

ADD interface PINS definition:

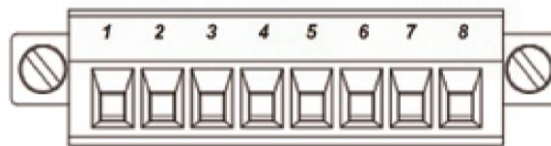


Figure 5-24

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

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

Temperature of Lead-acid battery Temp & GND—pin7 & pin8

4. METER port

Meter port PINS definition:

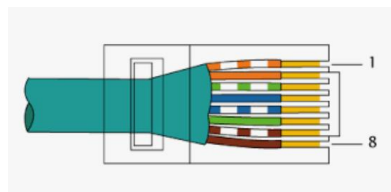


Figure 5-25

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

The function of meter port is the same as pins 1 & 2 of ADD interface.

4.1 Meter wiring diagram for Typical Energy Storage System

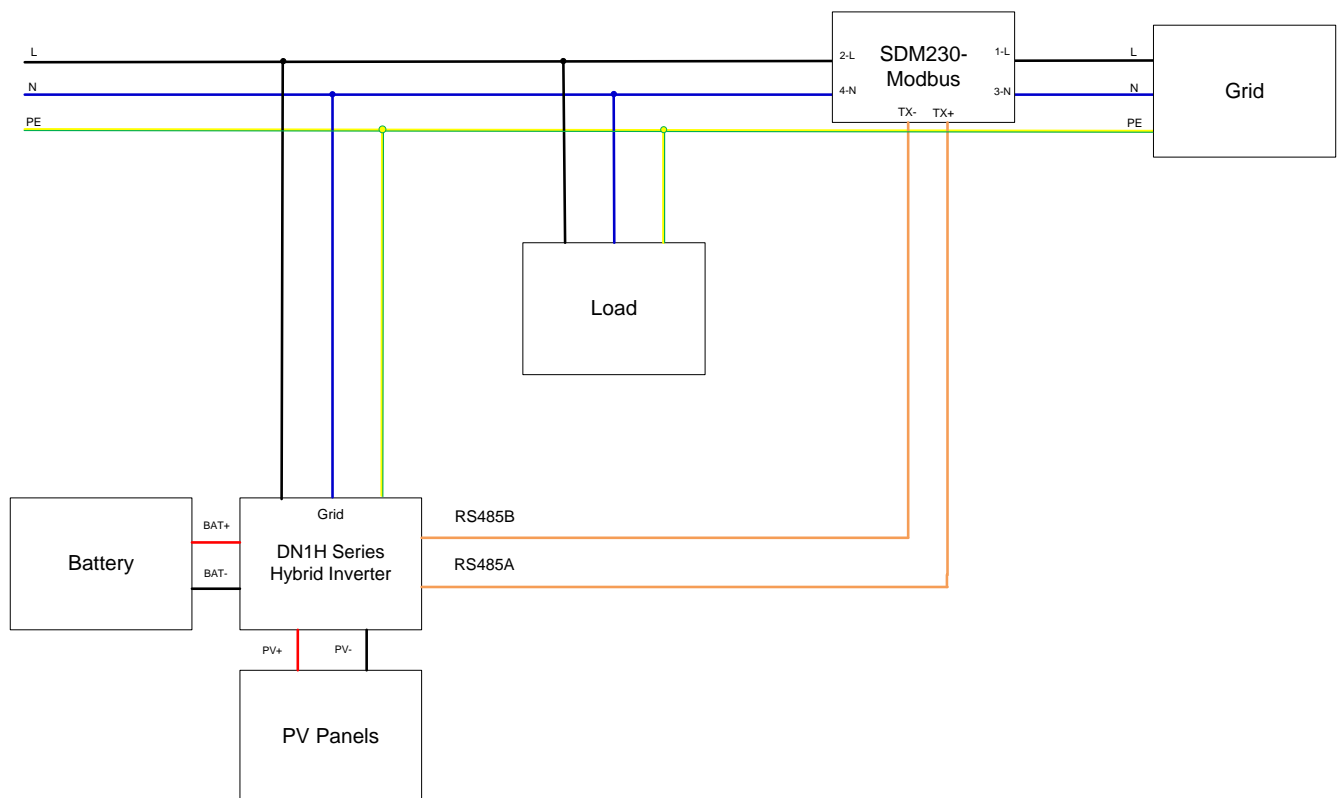


Figure 5-26

The DN1H Series(3-6KTL) adopts EASTRON SDM230-Modbus smart meter. The connect steps are as follows:

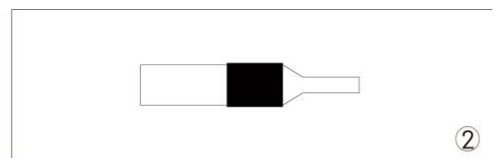
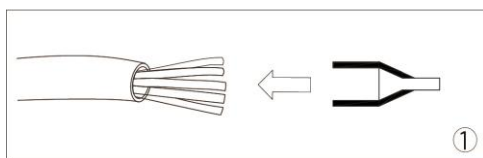
- Before connecting the smart meter to the system, please read the signs on the meter carefully. Please connect the PIN1 and PIN3 of the meter to the grid, and connect the PIN2 and PIN4 of the meter to the inverter and load.
- Connect the smart meter PIN5, PIN6 to the ADD interface of inverter (meter PIN5 to inverter RS485 A, meter PIN6 to inverter RS485 B).

Note:

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".



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



4.2 Meter wiring diagram for AC Retrofit System

Dunext Hybrid inverters can be used in the following situations also. If the site already has a grid tied PV system and wants to increase module capacity or provide back-up power. Additional meter between the grid-connected inverters and DN1H Series(3-6KTL) is required. One DN1H Series(3-6KTL) can be connected maximum two On-Grid single-phase inverters, and in the system, the smart meter must be the EASTRON SDM230-Modbus.

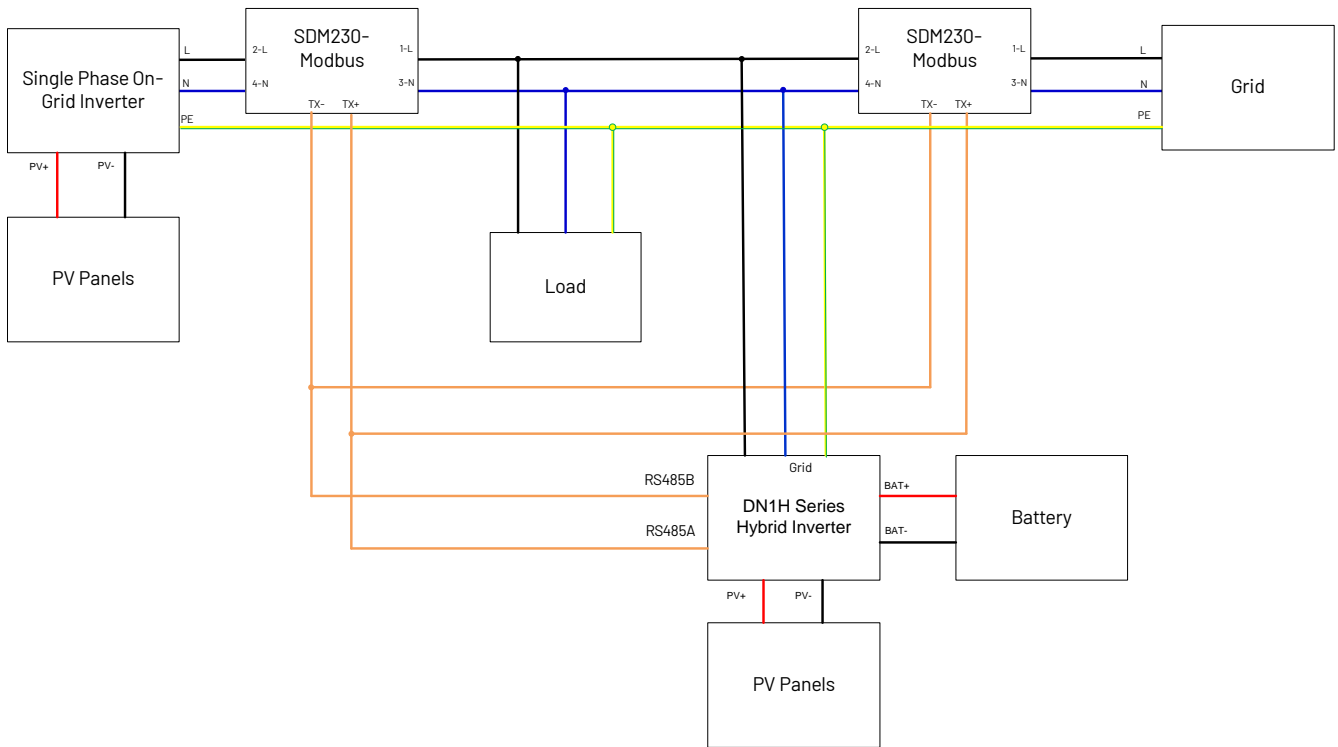


Figure 5-27

Note:

The local address needs to be set as “001” on the inverter screen, and meter1 address set as “001”, meter2 address set as “004”. The address of the smart meter1 itself needs to be set to “001”, and the smart meter2 needs to be set as “004”.

5. DRED

This application meets the requirements of local Australian grid code (AS/NZS 4777.2) which among specific requirements for connection, calls for compatibility with Demand Response Enabling Devices (DRED). The DRED is under control of 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 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 more than 50% of rated power.
- DRM 7 Do not generate 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.

DRM PINS definition:

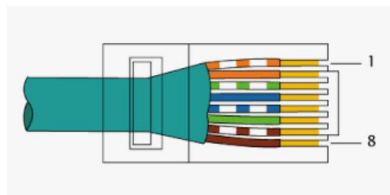


Figure 5-28

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

6. Power the inverter on and off

6.1 Power on the inverter

<p>NOTICE</p> <p>NOTICE!</p>	<p>Make sure that all the PE cable is connected.</p> <p>Make sure that all the PV and AC cables are connected.</p> <p>Make sure that Energy meter are connected properly.</p> <p>Make sure that battery is connected correctly.</p>
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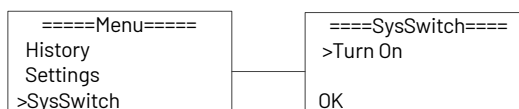
Follow the steps to power on the inverter:

- 1) Turn on the external AC switch and ensure the switch does not trip.
- 2) Turn on the DC switch of the inverter. If the PV cables are reversed, the inverter will report an error when turning the DC switch on.
- 3) Set the ADD switch of the battery, referring to the table below to set the ADD switch for parallel connection of different battery clusters. ADD switch is a 4-bit dial switch to manually distribute the communication address of battery clusters. 1-3 bit means the communication address of battery clusters, the status of 4th bit means if this BMC is the master or not. For the master, the communication address is largest and the fourth digit must be ON status.

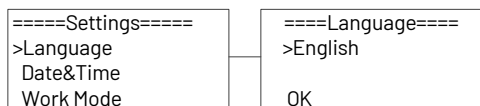
	Master	Slave 1	Slave 2	Slave 3	Slave 4
1 battery cluster					
2 battery cluster					
3 battery cluster					
4 battery cluster					
5 battery cluster					

- 4) Turn on the DC switch of the battery and press the start button. If the battery cables are reversed, the inverter will not query the battery voltage when the battery is switched on.

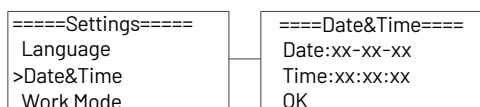
5) Turn on the system switch: Menu>- SysSwitch. Set SysSwitch to 'Turn on' and press 'OK' to confirm.



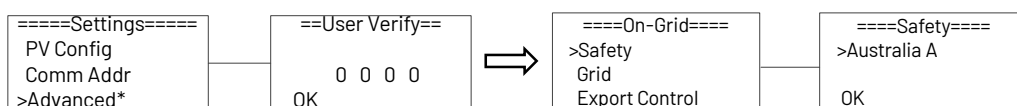
6) Set the language: Menu>- Settings>- Language. Set the language of the installation site and press 'OK' to confirm. The default language is English.



7) Set date and time: Menu>- Settings>- Date&Time. Set the current date and time of the installation site and press 'OK' to confirm.



8) Set the grid code: Menu>- Settings>- Advanced*>- On-Grid>- Safety. Advanced settings require the original password "0000" and press 'OK' to enter. Set the safety code of the installation site and press 'OK' to confirm.



Note:

For compliance with AS/NZS 4777.2:2020, please select from Australia A/B/C/ or New Zealand.

Please contact your local grid operator to select the region according to the grid code list.

The grid codes are subject to change. The listed codes are updated without notice.

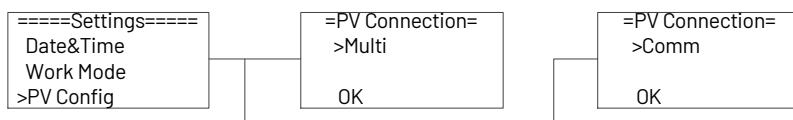
Grid codes

No.	National/Regional Grid Code	Description
0	VDE4105-DE	Germany power Grid, meet Grid standards "VDE-AR-N-4105".
1	CEI0-21	Italy power Grid.
2	Australia A	For large interconnected power systems. e. g. all Australian networks other than Australia B/C and New Zealand.
3	RD1699	Spain power Grid.
4	EN50549	Default EN50549 Grid setting.
5	EN50549-DK-W	West Denmark power Grid.
6	Greece	Greece power Grid.
7	EN50549-NL	Netherland power Grid, meet Grid standards "EN50438".
8	C10/11	Belgium power Grid.
9	G99	UK power Grid.
10	China	China power Grid, meet Grid standards "CN-NBT".
11	VDE0126-FR	France power Grid, meet Grid standards "VDE 0126".
12	EN50549-PL	Poland power Grid.
13	Brazil-180s	Brazil power Grid ,connect/reconnect time 180s
14	VDE0126-DE	Germany power Grid, meet Grid standards "VDE 0126".
15	CEI0-16	Italy power Grid, meet Grid standards "CEI 0-16".

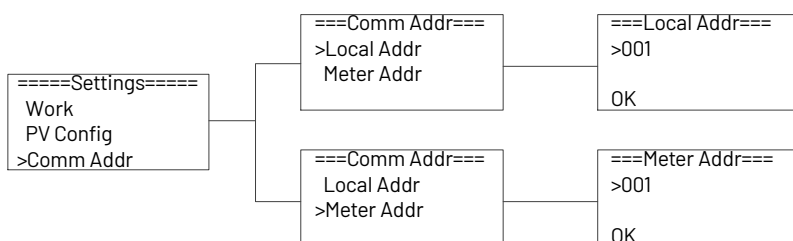
No.	National/Regional Grid Code	Description
16	G98	UK power Grid.
17	Greece Island	Greece Island power Grid.
18	EN50549-CZ	Czech Republic power Grid, meet Grid standards "EN50438Y2007-CZ"
19	IEC61727-IN	India power Grid.
20	Korea	Korea power Grid.
21	EN50549-SW	Sweden power Grid.
22	China-W	China power Grid, Grid voltage range: 160-290V. Grid frequency range: 47-53HZ.
23	China-H	China power Grid, meet standards" CQC".
24	IEC61727-IN-W	India power Grid, meet Grid standards "IEC61727".
25	Brazil	ABNT NBR 16149/16150.
26	IEC61727-SL	Sri Lanka power Grid, meet Grid standards "IEC61727".
27	Mexico	Mexico power Grid, meet Grid standards "IEC61727 60HZ".
28	New Zealand	All systems in New Zealand.
29	Philippines	Philippines power Grid, meet Grid standards "IEC61727 60HZ spec.
30	IEC61727-SL-W	Sri Lanka power Grid, Grid voltage range: 160-280V, Grid frequency range: 47-52HZ.
31	PEA	Thailand power Grid.
32	PEA-W	Thailand power Grid, Grid voltage range: 160-280V, Grid frequency range: 47-52HZ.
33	IEC61727-VN	Vietnam power Grid.
34	IEC61727-VN-W	Vietnam power Grid, Grid voltage range
35	Tunisia	Tunisia
36	MEA	Thailand power Grid.
37	MEA-W	Thailand power Grid, Grid voltage range: 160-280V, Grid frequency range: 47-52HZ.
38	Brazil-LV	120V 60Hz voltage of grid L to N(R3-10-15K-LV only, others reserved
39	EN50549-DK-E	East Denmark power Grid
40	Tunisia-W	Tunisia wide range
41	Chile	Chile Power Grid
42	Brazil-W	Brazil power Grid, meet Grid standards "NBT 16150".
43	EN50549-PL-W	Poland power Grid.
44	Brazil-180s-W	Brazil power Grid, meet Grid standards "NBT 16150".
45	UNE217002-ES	Spain power Grid.
46	G98-NI	G98 for Northern Ireland
47	G99-NI	G99 for Northern Ireland
48	EN50549-NW	Norway-400VLine
49	EN50549-NW-LV	Norway-230VLine-R3-10-15K-LV only, others reserved
50	IEC61727-LV	133V 50Hz, low voltage power grid
51	Australia B	For small interconnected power systems. e.g. Western Power

No.	National/Regional Grid Code	Description
52	Australia C	For isolated or remote power systems e.g. Horizon Power and TasNetworks.

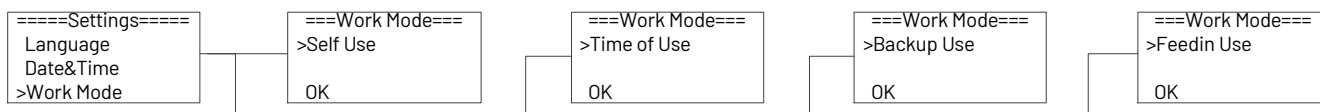
9) Set the PV configuration: Menu>- Settings>- PV Config. There are two modes for selection: Comm and Multi. The 'Comm' mode means single MPP tracking, 2 MPPT working together; 'Multi' means multi-MPP tracking, 2 MPPT work independently. The default PV connection is Multi. Set the mode of PV input and press 'OK' to confirm.



10) Set the local and meter address: Menu>- Settings>- Comm Addr. Set the local address and meter address and press 'OK' to confirm. The default local address is 001, and meter address is 001.

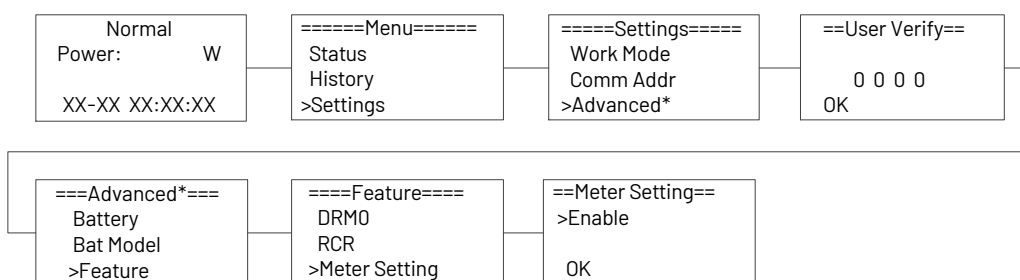


11) Set work mode: Menu>- Settings>- Work Mode. Set the work mode according to the installation site and press 'OK' to confirm.

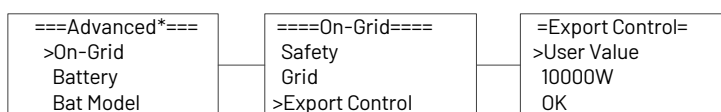


12) Set the export control:

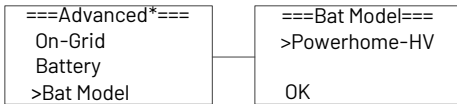
Step1: Enable the meter setting first. Menu>- Settings>- Advanced*>- Feature>-Meter Setting. Advanced settings require the original password "0000" and press 'OK' to enter. Enable the Meter Setting and press 'OK' to confirm. The default Meter Setting is Enable.



Step 2: Setting the power exported to the grid. Menu>- Settings>- Advanced*>- On-Grid>- Export Control. Set the safety code of the installation site and press 'OK' to confirm.



13) Set the battery model: Menu>- Settings>- Advanced*>- Bat Model. Set the battery model to match the inverter and press 'OK' to confirm.



14) Refer to the WIFI user manual for network configuration.

6.2 Power off the inverter



Danger of burns!
Even if the inverter is shut down, it may still be hot and cause burns. Wear protective gloves before working on the inverter.

For maintenance or other service, you must power off the inverter. The steps are as follows:

- 1) Turn off the external AC switch and secure it against reconnection.
- 2) Turn off the DC switch of the inverter for disconnecting all of the PV string inputs.
- 3) Turn off the DC switch of the battery.
- 4) Wait about 5 minutes until the capacitors inside the inverter discharge completely.

7. Operation

7.1 Control panel

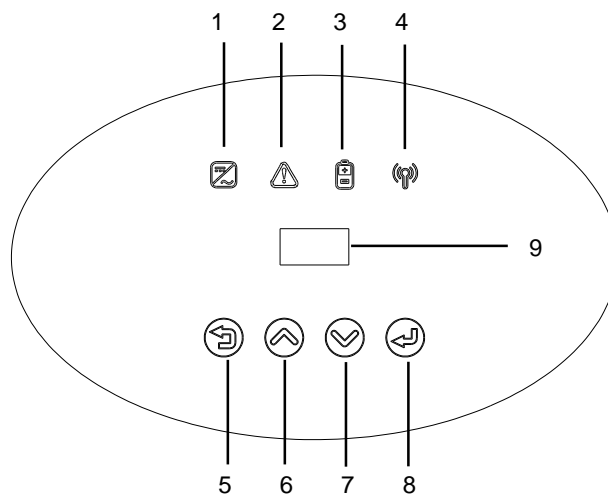


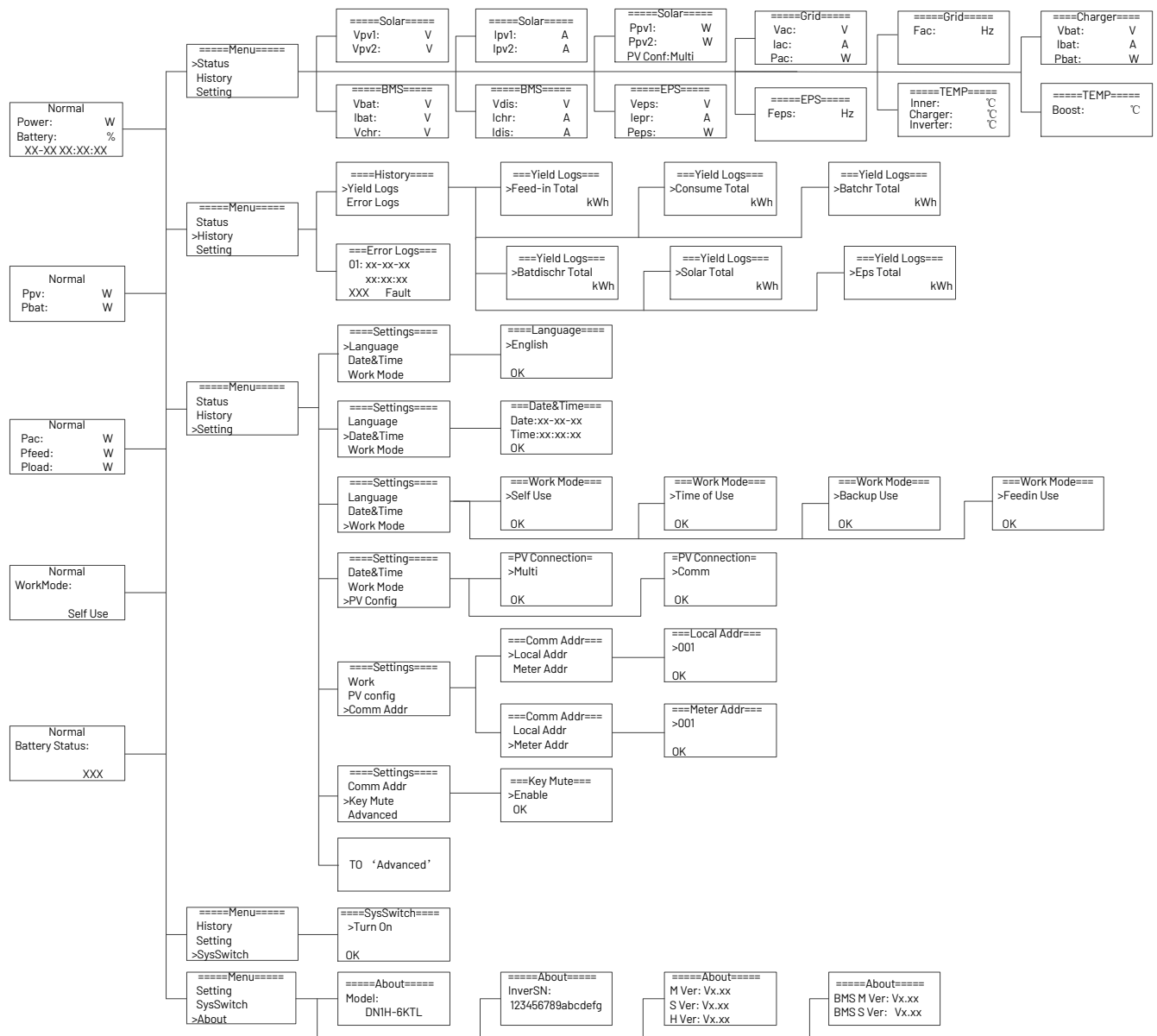
Figure 7-1

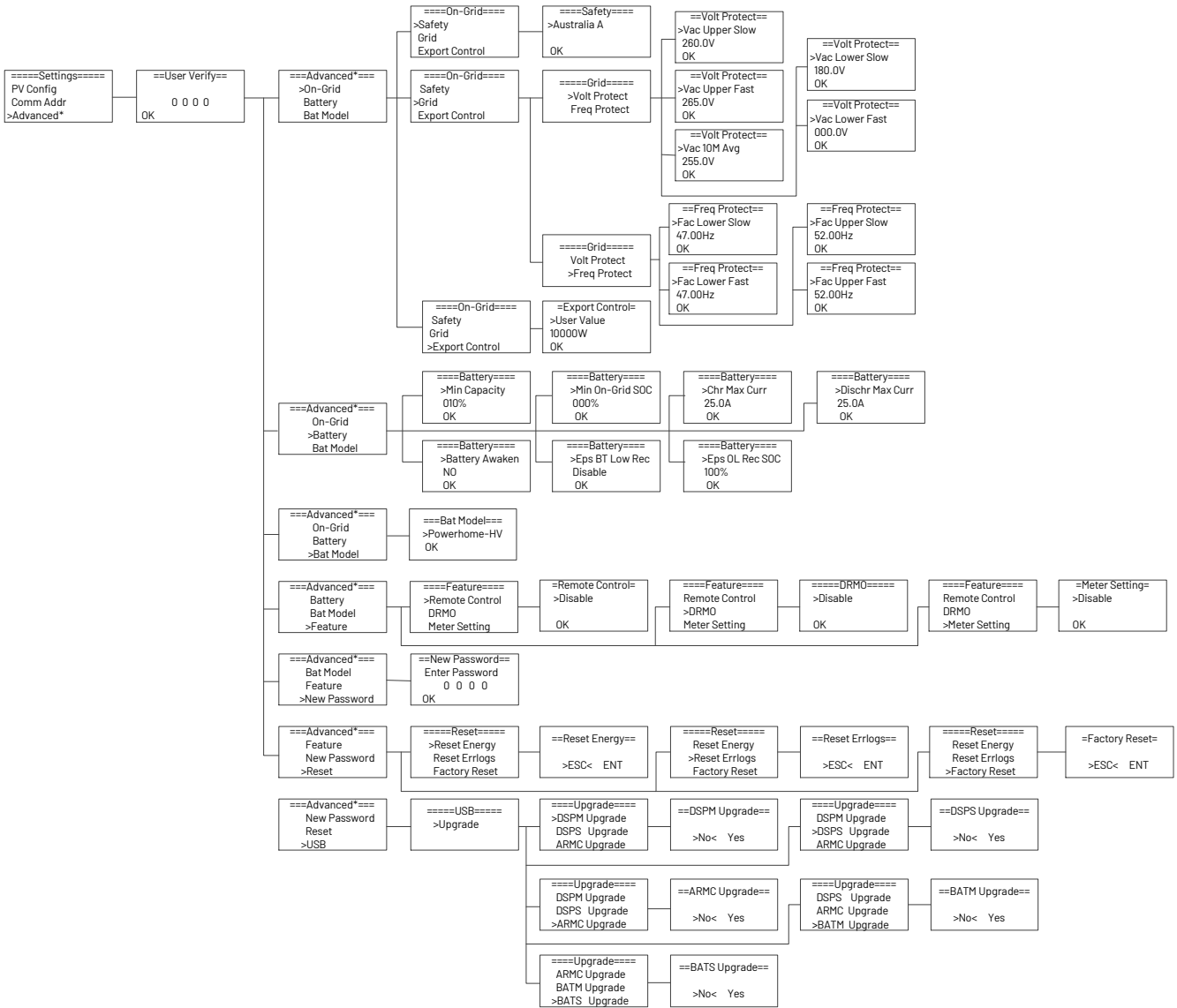
No.	Name	Description	
1	Green indicator	Steady	The inverter is operating in on-grid mode.
		Blinking	1. The inverter enters the self-test mode. 2. The DC is on, the AC is on, but the energy transfer between the inverter and the grid is abnormal.
		Off	The DC is off and the AC is on.
2	Red indicator	Steady	The inverter has a warning.
		Off	The inverter is normal.

No.	Name	Description	
3	Blue indicator	Steady	Communication between the inverter and the battery is normal.
		Off	Communication between the inverter and the battery is abnormal.
4	Yellow indicator	N / A	Reserve
5	ESC button	Leave from current interface or function.	
6	Up button	Move cursor to upside or increase value.	
7	Down button	Move cursor to downside or decrease value.	
8	OK button	Press and hold for 2~3 seconds to confirm the selection.	
9	LCD Screen	Display the information of the inverter.	

7.2 LCD function

Menu structure:

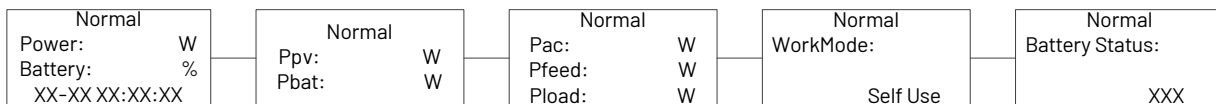




7.3 LCD operation

7.3.1 Main screen

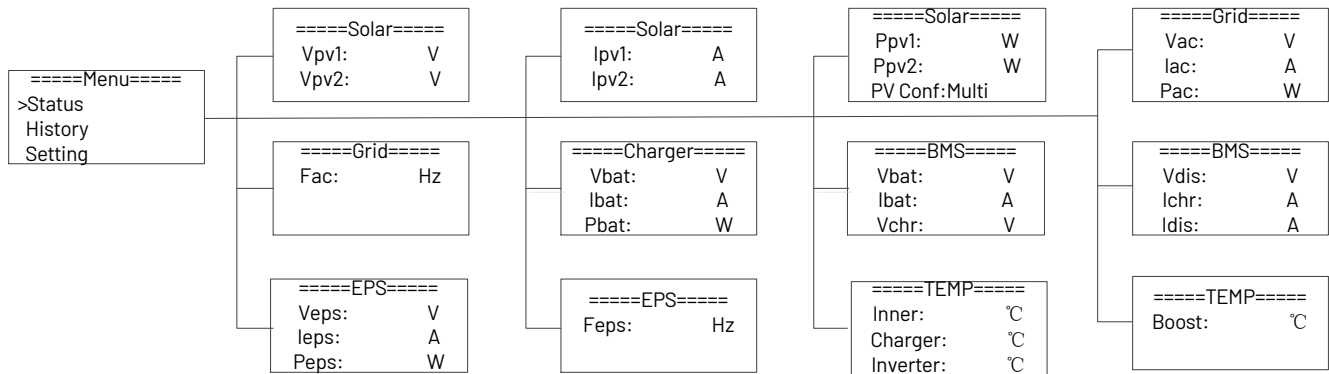
The main screen is as below. Press up or down for more information.



7.3.2 Status

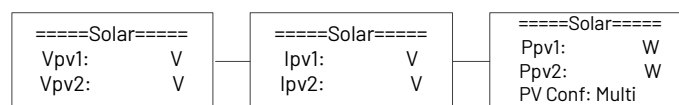
Press 'OK' to enter the menu, check grid, solar, battery, EPS and temperature of the inverter.

Press up and down to select, press 'ESC' to return to the Menu.



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) Grid

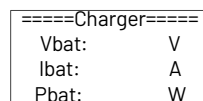
This status shows the real time grid parameters such as voltage, current, output power and frequency. Pac measures the output of the inverter.

Press up and down button to review the parameter, press 'ESC' to return to status.



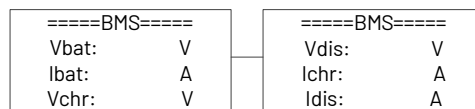
3) Charger

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



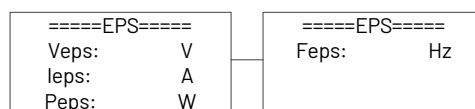
4) BMS

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



5) EPS

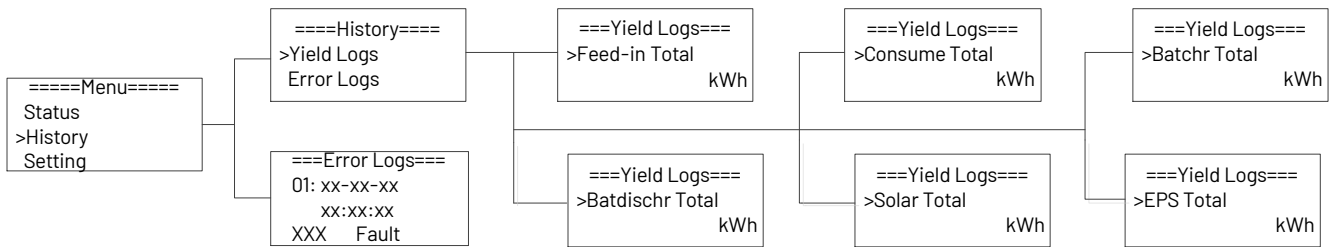
EPS will only have data when the inverter is working in EPS mode it will show the real time data of the EPS output such as voltage current, power, and frequency. Press up and down button to review the parameter. Press 'ESC' to return to Status.



7.3.3 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.

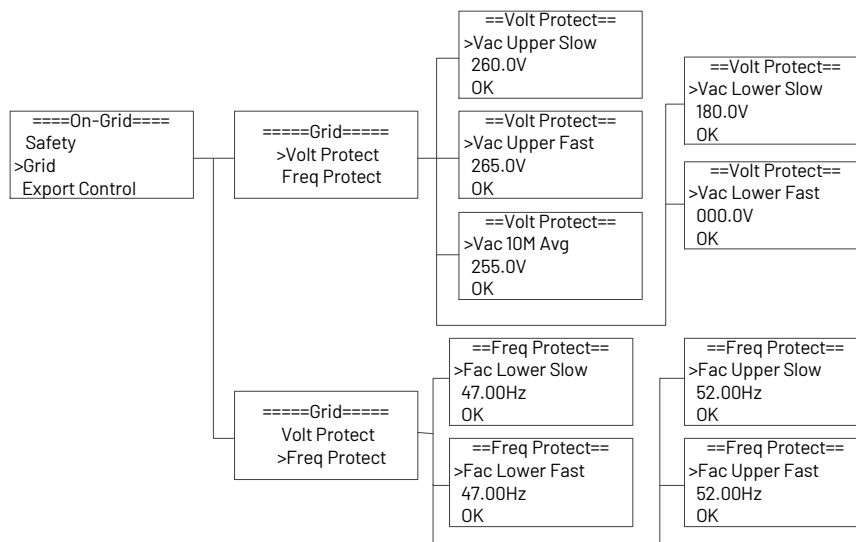


7.3.4 Advanced settings

1) Grid

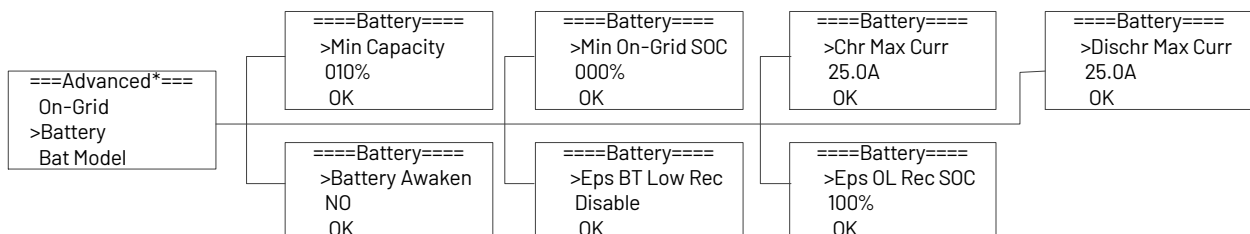
Normally, the end user do not need to set the grid parameters, all default value has set on factory according to safety standards of different countries.

If need to reset please refer to the requirement of local grid to do changes. Press up or down button to change the value of grid voltage and grid frequency protect. Press 'OK' to confirm.



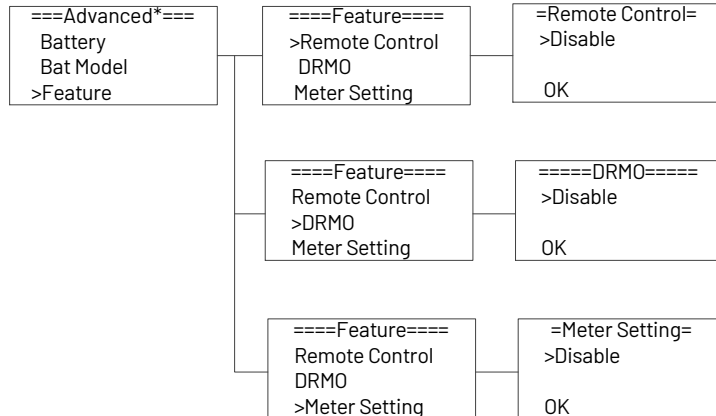
2) Battery

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 0L Re SOC" means EPS overload due to low capacity for battery, if recovered, min soc. Press "OK to confirm. Users need to set the battery model before using, press 'OK' to confirm.



3) Feature

Press up or down button to enable or disable remote control, DRMO, and Meter. Press 'OK' to confirm.



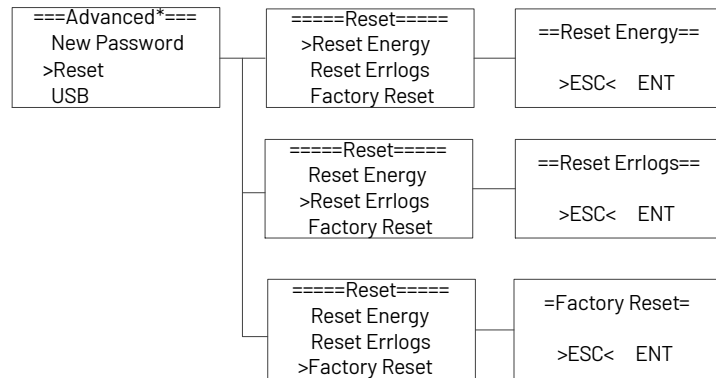
4) New Password

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



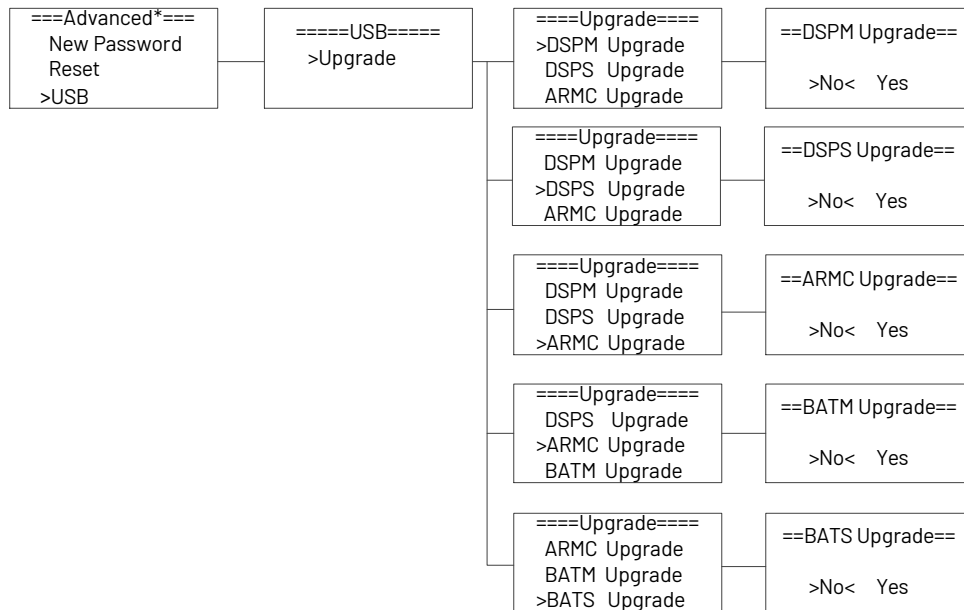
5) Reset

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



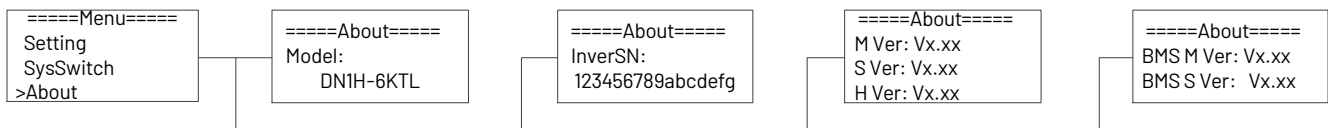
6) USB

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



7.3.5 About

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



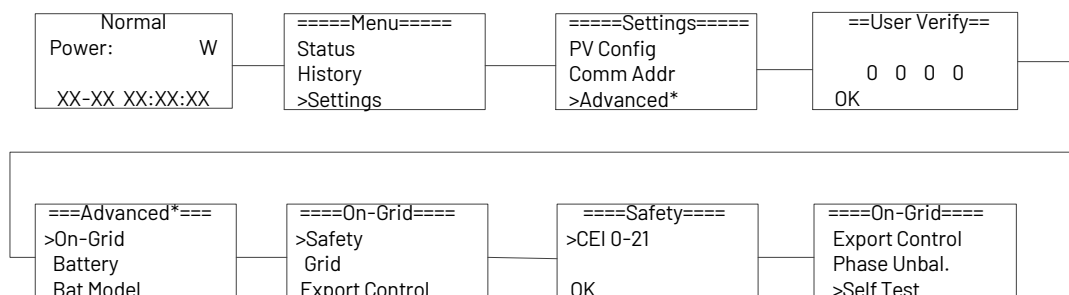
7.3.6 Self-Test in accordance with CEI 0-21 (Applies to Italy only)

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 over voltage, 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.

Self-Test from screen:



You can view the test report after the DN1H Series(3-6KTL) has completed its self-test.



8. Troubleshooting and maintenance

8.1 Troubleshooting

This section contains information and procedures for solving possible problems with the DN1H Series(3-6KTL), and provides you with troubleshooting tips to identify and solve most problems that could occur with the DN1H Series(3-6KTL). This section will help you narrow down the source of any problems you may encounter. Please read the following troubleshooting steps.

- Check the warning or fault messages on the System Control Panel 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.	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 1. Utility grid power fails. 2. The AC cable is disconnected, or the AC breaker is off. 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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.	<ol style="list-style-type: none"> 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

Fault	Cause	Solutions
		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.	<ol style="list-style-type: none"> 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. If the problem occurs frequently, check whether the grid voltage is within the allowed range. <ul style="list-style-type: none"> • 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.	<ol style="list-style-type: none"> Disconnect the AC output switch, DC input switch & battery switch, then connect them 5 minutes later. 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.	<ol style="list-style-type: none"> If the problem occurs occasionally, it may be caused by a cable exception. The inverter will recover automatically after the problem is solved. Check whether the impedance between the PV string and PE is too low if the problem occurs frequently or persists.
Iso Check Fault	<ol style="list-style-type: none"> The PV string is short-circuited to PE. The PV system is in a moist environment and the cable is not well insulated to the ground. 	<ol style="list-style-type: none"> Check whether the resistance of the PV string to PE exceeds 50kΩ. If no, check the short circuit point. 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.	<ol style="list-style-type: none"> Check if the positive pole and negative pole of battery are correctly connected. 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.	<ol style="list-style-type: none"> Disconnect the AC output switch, DC input switch & battery switch, then connect them 5 minutes later. 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

Fault	Cause	Solutions
		the inverter EPS Rated Power. 2. Disconnect the AC output switch and DC input switch & battery switch, then connect them 5 minutes later.
Over Load Fault	Over load in on grid mode.	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.
PV Cnf Fault	PV connection setting is wrong.	Reset the PV connection.
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.
M/S DspCommFault	The communication between master and slave is 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 Lost	The communication between BMS and Inverter is interrupted.	Check if the communication cable between BMS and inverter is connected correctly.
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.
Inter Fan Fault	Internal fan device failure.	
AC HCT Fault	AD sampling failure.	
Inv EEPROM Fault	DSP EEPROM failure.	
GFCI HW Fault	The residual current circuit is fault.	1. Please check if the insulation of the electric wires is damaged. 2. Disconnect the AC output switch, DC input switch & battery switch, then connect them 5 minutes later. 3. Contact the dealer or the after-sales service if the problem persists.
ByPassRelay 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.
EPS Relay Fault		
Grid Relay Fault		
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.
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.

Fault	Cause	Solutions
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.	
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.	
BMS Tepr Fault	Battery temperature sensor fault.	
BMS InCom Fault	Battery internal communication fault.	
BMS Other Fault	Other battery fault.	
BMS PreChg Fault	Battery pre charge fault.	
BMS Relay Fault	The battery relay is fault.	
BMS Cell Fault	Battery cell error.	
BMS Protect OV	Battery over voltage protection.	
BMS Protect LV	Battery under voltage protection.	
BMS Prot ChgOC	Battery over current charging protection.	
BMS Prot 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 external 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.	

Remark

If you find the inverter has serious problems, including but not limited to the above content, please call Dunext dealer or the after-sales service. Please provide the following information to service@dunext.com for better service.

- 1) Customer Name
- 2) Contact Info
- 3) Project Name and Location
- 4) Project Scale
- 5) Quantity of Faulty Inverters
- 6) Problem Description
- 7) Inverter Model
- 8) Inverter SN

8.2 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.

During the process of using the inverter, the manager shall examine and maintain the machine regularly. The concrete operations are as follows.

- 1: Check that if the cooling fins on the rear of house are covered by dirty, and the machine should be cleaned and absorbed dust when necessary. This work shall be check time to time.
- 2: Check that if the indicators of the inverter are in normal state, check if the keys of the inverter are in normal state, check the display of the inverter is normal. This check should be performed at least every 6 months.
- 3: Check that if the input and output wires are damaged or aged. This check should be performed at least every 6 months.
- 4: You should keep the inverter panels clean and their security checked at least every 6 months.

- Inverter cleaning

Please clean the inverter with an air blower, a dry & soft cloth or a soft bristle brush. Do not clean the inverter with water, chemicals, detergent, etc.

- Heat sink cleaning

For the long-term proper operation of inverters, ensure there is enough space around the heat sink for ventilation, check the heat sink for blockage (dust, snow, etc.) and clean them if they exist. Please clean the heat sink with an air blower, a dry & soft cloth or a soft bristle brush. Do not clean the heat sink with water, corrosive chemicals, detergent, etc.

9. Decommissioning

9.1 Dismounting inverter

Before dismounting the inverter, ensure you have powered off it as described in section 6.2.

- Disconnect the PV, AC, battery, and communication cables.
- Disconnect the PE cable.
- Remove the fixing screws between the inverter and the bracket.
- Remove the inverter from the bracket.
- Remove the mounting bracket.

9.2 Packaging

If possible, please pack the inverter with 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 25kg.
- With handle.
- Can be fully closed.

9.3 Storage

Store the inverter in dry place where ambient temperatures are always between -40°C (-40°F) ~ $+70^{\circ}\text{C}$ ($+158^{\circ}\text{F}$).

9.4 Disposal

When the inverter or other related components need to be disposed of, have it carried out according to local waste handling regulations. Please be sure to deliver wasted inverters and packing materials to a certain site where the relevant department can dispose of and recycle them.



Innovate for a Green Future

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