PRODUCT MANUAL

ver. 2024.06.26

HYBRID INVERTER

ULTRA HYBRID 3600

VOLT POLSKA Sp. z o.o.
ul. Swiemirowska 3
81-877 Sopot
www.voltpolska.pl

pomoc@voltpolska.pl | hurt@voltpolska.pl | (58) 500 85 62

Contents

1 Notes on this manual
1.1 Validity

This User Manual describes instructions and detailed procedures for installing, operating, maintaining, and troubleshooting of the following energy storage inverter: 3.6KW,4.2KW,4.6KW, 5KW,6KW.

Please keep this manual all time available in case of emergency.

This manual does not cover any details concerning equipment connected to the unit (e.g. PV modules). Information concerning the connected equipment is available from the manufacturer of the equipment.

1.2 Use instructions

1.2.1 Only professionals who have read and fully understand all the safety rules contained in this manual can install, maintain and repair this inverter. The operator must be aware that this is a high-voltage device. Qualified personnel must be trained to deal with the danger of installing electrical equipment.

1.2.2 Before using the inverter, read all labels and warning labels on this machine and instructions carefully and store the instructions in a place easily found. We are not responsible for any damage caused by non-compliance with these instructions.

1.2.3 The energy storage inverter strictly comply with local laws and regulations in testing and design.

1.2.4 The local safety standards should be complied with during the installation, operation and maintenance of the inverter.

1.2.5 Incorrect operation may cause electric shock or damage to the inverter.

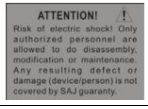
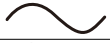
1.3 Symbols

Pay attention to the relevant identification in the product manual and product packaging.

1.3.1 Markings in the manual

SYMBOL	DESCRIPTION
 DANGER	**Danger** indicates a hazardous situation which, if not avoided, will result in death or serious injury.
 WARNING	**WARNING** indicates a hazardous situation which, if not avoided, could result in death or serious injury or moderate injury.
 CAUTION	**CAUTION** indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
 NOTE	**NOTICE** indicates a situation that can result in potential damage, if not avoided.
	Read the manual.

1.3.2 Markings on this product

Symbol	Description
	**Warning regarding dangerous voltage** The product works with high voltage. All work on the product must only be performed as described in its documentation.
	**Beware of hot surface** The product can become hot during operation. Do not touch the product during operation.
	**Observe the operating instructions** Read the product's documentation before working on it. Follow all safety precautions and instructions as described in the documentation.
	**CE Mark** Equipment with the CE mark fulfills the basic requirements of the Guideline Governing Low-Voltage and Electro-magnetic Compatibility.
	**SAA Mark** The inverter complies with the requirement of Equipment and Product Safety Act in Australia.
	**CQC Mark** Equipment standard with China Quality Inspection Center safety directive.
	No unauthorized perforations or modifications Any unauthorized perforations or modifications are strictly forbidden, if any defect or damage(device/person) is occurred, The company shall not take any responsibility for it.
	**Point of connection for grounding protection**
	**Direct Current (DC)**
	**Alternating Current (AC)**
	Signals danger due to electrical shock and indicates the times (5 minutes) to allow after the inverter has been turned off and disconnected to ensure s afety in any installation operation.

2 Safety and conformity

SYMBOL	INSTRUCTIONS
	**Danger to life due to lethal voltages!** Lethal voltages are present within the unit and on the power supply lines. Therefore, only authorized electricians may install and open the unit. Even when the unit is disconnected, high contact voltages may still be present within the unit.
	**Danger of burn injuries due to hot enclosure parts!** During operation, the four sides of the enclosure lid and the heat sink may become hot. Only touch the front enclosure lid during operation.

 CAUTION	**Possible damage to health as a result of the effects of radiation!** In special cases, there may still be interference for the specified application area despite maintaining standardized emission limit values (e.g. when sensitive equipment is located at the setup location or when the setup location is near radio or television receivers).In this case, the operator is obliged to take proper action to rectify the situation. Do not stay closer than 20 cm to the inverter for any length of t ime.
 NOTE	**Grounding the PV generator!** Comply with the local requirements for grounding the PV modules and the PV generator. We recommend connecting the generator frame and other electrically conductive surfaces in a manner which ensures continuous conduction with ground in order to have optimal protection of the system and personnel.
 NOTE	**Capacitive Discharge Currents**! PV modules with large capacities relative to earth, such as thin-film PV modules with cells on a metallic substrate, may only be used if their coupling capacity does not exceed 470nF. During feed-in operation, a leakage current flows from the cells to earth, the size of which depends on the manner in which the PV modules are installed (e.g. foil on metal roof) and on the weather (rain, snow). This "normal" leakage current may not exceed 50mA due to the fact that the inverter would otherwise automatically disconnect from the electricity grid as a protective measure.

2.1 DC and AC breaker

Separate the unit securely from the grid and the PV, generators and battery using DC and AC breaker. DC and AC breaker shall be able to disconnect all non-ground conductors after installation.

2.2 Grounding the PV modules

The unit is a energy storage inverter. That is why it has no galvanic separation. Do not ground the DC circuits of the PV modules connected to the unit. Only ground the mounting frame of the PV modules.

If you connect grounded PV modules to the unit the error message "PV Isolation Low".It can even lead to damage to the inverter.

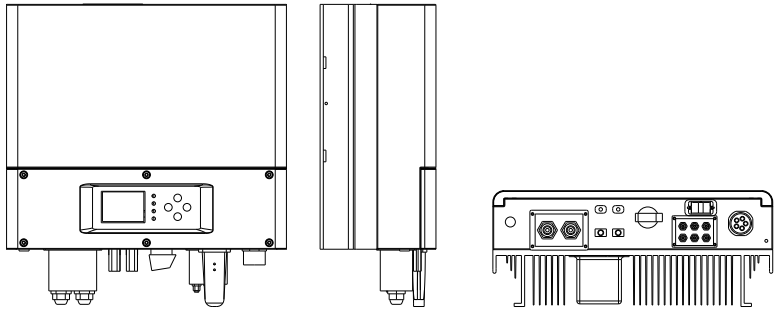
2.3 Qualification of Skilled Workers

Only workers with the following skills should install this inverter:

- Knowledge of how an inverter works and is operated.
- Instructed in how to deal with the dangers and risks associated with installing and using electrical devices and plants.
- Training in the installation and commissioning of electrical devices and plants.
- Knowledge of all applicable standards and guidelines.
- Knowledge and observance of this manual and all safety instructions.

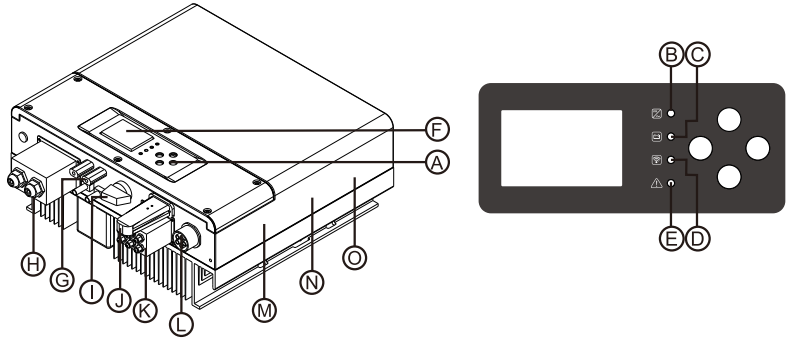
3 Product Description

3.1 Inverter Overview



3.2 Information of the unit

The uint is a bidirectional energy storage inverter, suitable for photovoltaic systems with batteries to store energy. The unit is bidirectional which applies to PV systems with batteries to store energy. Energy produced by the PV system is used to optimize self-consumption; excess energy is used to charge the batteries, and then fed into the public grid when the PV energy is adequate. When PV energy output is insufficient to support connected loads, the system automatically draws energy from the batteries if battery capacity is abundant. If the battery capacity is insufficient to meet own consumption requirements, electricity will be drawn from the public grid.



A	Function button
B	The inverter operation status indicator
C	Battery indicator
D	Wi-Fi status indicator
E	Fault indicator
F	LCD display panel
G	PV input terminals
H	Battery input terminals and cover
I	PV input switch
J	Wi-Fi com module
K	BTS terminal, BMS terminal, load monitor terminal, dry contact terminal, CAN communication terminal, USB terminal and cover
L	AC Output terminals and cover
M	Inverter Serial No.
N	Rating label
O	Warning signals label

3.3 Storage of Inverter

If you want to store the unit in your warehouse, you should choose an appropriate location:

- The unit must be stored in its original package and desiccant must be left in the package.
- The storage temperature should always be between -25℃ and +60℃.
- The storage relative humidity should always be between 0 and 95%.
- A maximum of four units can be stacked vertically.

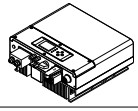
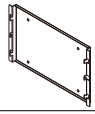
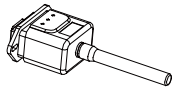
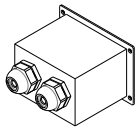
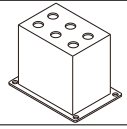
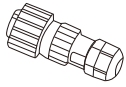
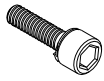
4 Unpacking

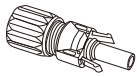
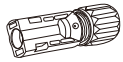
4.1 Check the Package

Although The inverter have surpassed stringent testing and are checked before they leave the factory, it is uncertain that the inverter. may suffer damages during transportation. Please check the package for any obvious signs of damage, and if such evidence is present, do not open the package and contact your dealer as soon as possible.

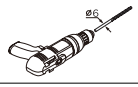
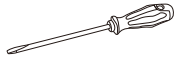
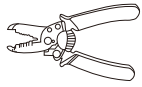
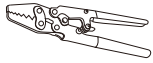
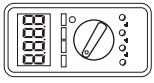
4.2 Check the Assembly Parts

After opening the package, please refer to Table 4-2 to check the completeness of the assembly parts. Please contact your dealer if anything is damaged or missing.

NO.	Pictures	Description	Quantity and Unit
1		inverter	1PCS
2		Mounting frame	1PCS
3		Wi-Fi module	1PCS
4		BAT wire cover	1PCS
5		BMS,RS485 com wire cover	1PCS
6		AC output cover	1PCS
7		Blasting screws	4PCS
8		Inverter hold screw	2PCS

9		Battery input terminal	2PCS
10		PV+ input terminal	2PCS
11		PV- input terminal	2PCS
12		Metal terminals secured to PV+ input power cables	2PCS
13		Metal terminals secured to PV- input power cables	2PCS
14		CT	1PCS
15		User Manual	1PCS

4.3 tools

NO.	Tool	Model	Function
1		Hammer drill Recommend drill dia. 6mm	To drill holes on the wall
2		Unscrew screw	Lock the screws that mounting frame, battery terminals, and AC terminals
3		Removal tool	Removal PV terminal
4		Wire stripper	Strip wire
5		Crimping tools	To crimp power cables
6		multimeter	Measuring grid voltage

5 Installation and Electrical Connection

5.1 Safety

DANGER

Danger to life due to fire or explosion

Despite careful construction, electrical devices can cause fires. Do not install the inverter on easily flammable materials and where flammable materials are stored.

DANGER

Risk of burns due to hot enclosure parts

Mount the inverter in such a way that it cannot be touched inadvertently.

DANGER

All electrical installations shall be done in accordance with the local and national electrical codes.

Do not remove the casing. Inverter contains no user serviceable parts. Refer servicing to qualified service personnel. All wiring and electrical installation should be conducted by a qualified service personnel.

Other installation points:

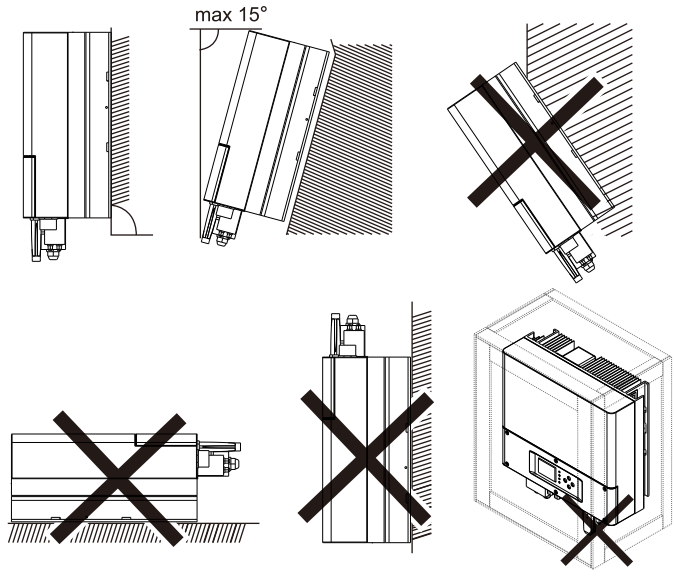
- Carefully remove the unit from its packaging and inspect for external damage. If you find any imperfections, please contact the installation contractor or supplier.
- Be sure that the inverter connect to the ground in order to protect property and personal safety.
- The inverter must only be operated with a PV generator. Do not connect any other source of energy to it.
- Both AC and DC voltage sources are terminated inside the PV Inverter. Please disconnect these circuits before servicing.
- This unit is designed to feed power to the public power grid (utility) "Do not connect this unit to an AC source. Connecting the inverter to external devices could result in serious damage to your equipment".
- When a PV panel is exposed to light, it generates a DC voltage. When connected to this equipment, a PV panel will charge the DC link capacitors.
- Energy stored in this equipment's DC link capacitors presents a risk of electric shock. Even after the unit is disconnected from the grid and photovoltaic panels, high voltages may still exist inside the PV-Inverter. Do not remove the casing until at least5 minutes after disconnecting all power sources.
- Although designed to meet all safety requirements, some parts and surfaces of Inverter are still hot during operation. To reduce the risk of injury, do not touch the heat sink at the back of the PV-Inverter or nearby surfaces while Inverter is operating.

5.2 Selecting the installation location

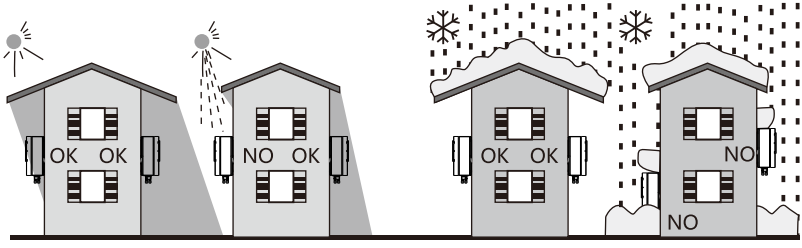
This is guidance for installer to choose a suitable installation location, to avoid potential damages to device and operators.

- The unit shall be mounted at least 914 mm (3 feet) above the ground.
- The installation location must be suitable for the inverter's weight and dimensions for a long period of time.
- Select the installation location so that the status display can be easily viewed.
- Do not install the inverter on structures constructed of flammable or thermolabile materials.
- The humidity of the installation location should be 0~95% without condensation.
- The installation location must be free and safe to access at all times.
- Installation must be vertical or tilted backwards by max. 15° and make sure the connection of the inverter is downwards. Never install horizontally. Avoid forward or sideways tilt.

- Be sure that the inverter is out of children's reach.
- Don't put anything on top of or cover the inverter.
- Do not install the inverter near television antennae or any other antennae/antennae cables.
- The inverter requires adequate cooling space. Ensure good ventilation for the inverter to ensure the heat escape adequately. The ambient temperature should be below 40°C to ensure optimum operation.



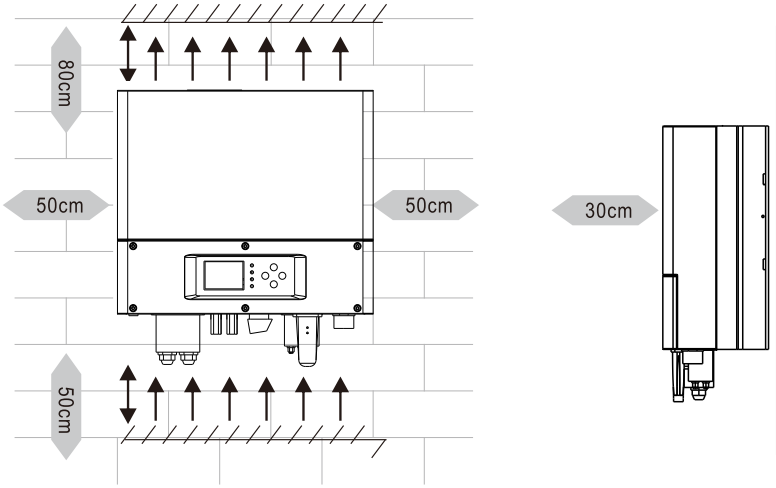
- The inverter should not be installed in direct sunlight and should have some coverage from the elements:



- Observe the minimum clearances to walls, other inverters or objects as shown in the diagrams below in order to guarantee sufficient heat dissipation.

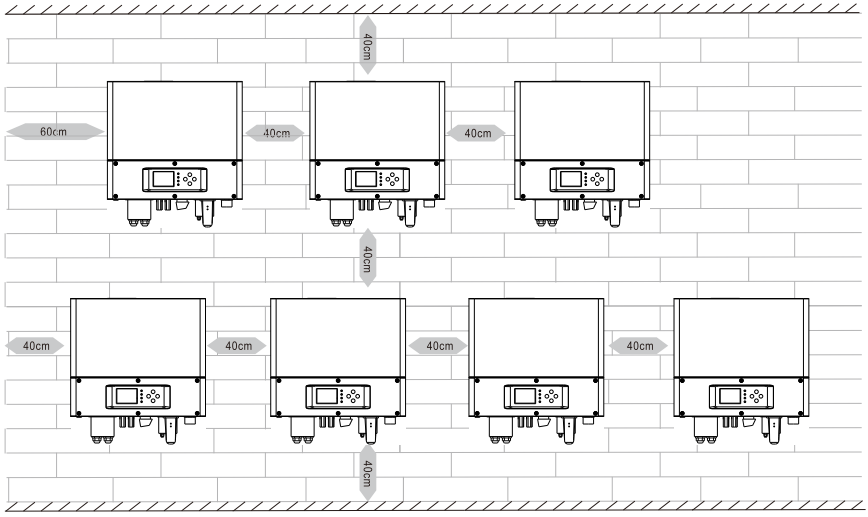
Direction	Min. clearance (cm)
above	**80**
below	**50**
sides	**50**
front	**30**

Ambient dimensions of one inverter:



Ambient dimensions of a series inverters:

- There must be sufficient space between each individual inverter to ensure that the cooling air of the adjacent inverter is not taken in.
- If necessary, increase the clearance space and make sure there is enough fresh air supply to ensure sufficient cooling of the inverters.

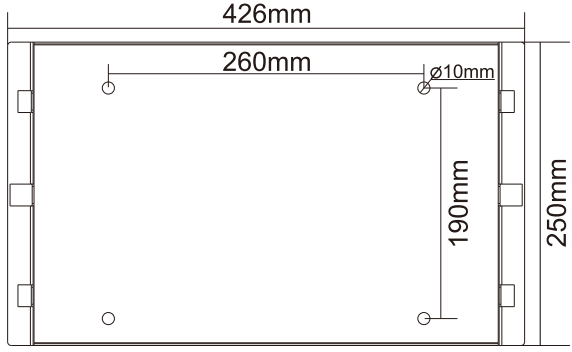


5.3 Mounting the Inverter with bracket

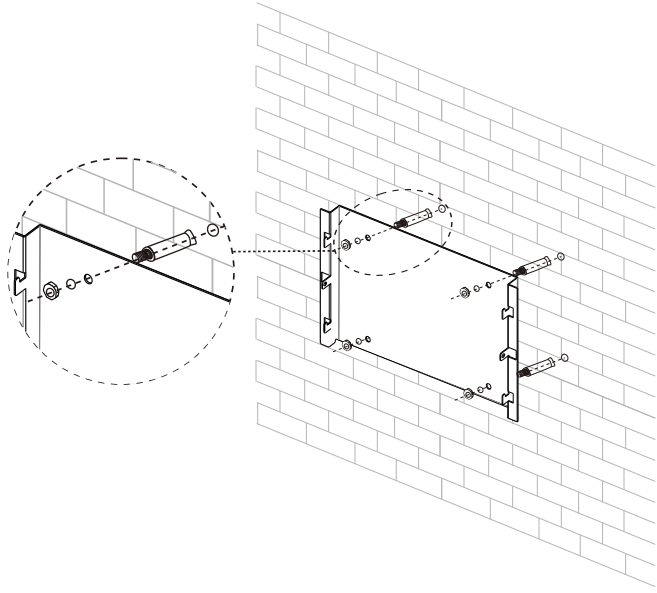
WARNING

In order to avoid electrical shock or other injury, inspect existing electronic or plumbing installations before drilling holes.

The dimension of bracket as follows:



- Using the mounting frame as a template, drill holes as illustrated in image.
- Fix the mounting frame as the figure shows. Do not make the screws to be flush to the wall, Instead, leave 2 to 4mm exposed.



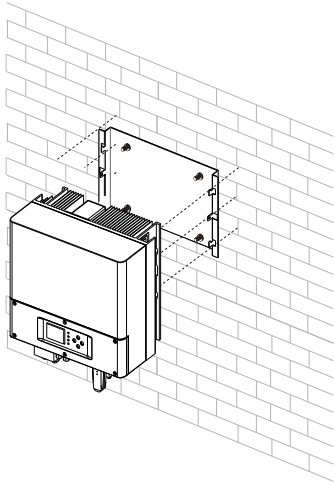
5.4 Fixed the inverter on the wall

WARNING

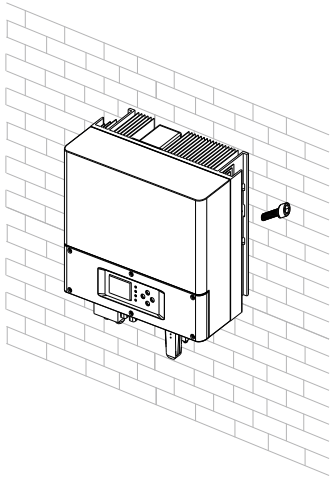
Falling equipment can cause serious or even fatal injury, never mount the inverter on the bracket unless you are sure that the mounting frame is firmly mounted on the wall after cautious checking.

Raise the inverter a little higher than the bracket whilst maintaining the balance of the inverter.

- Hang the inverter on the bracket through the match hooks on bracket.



- After confirming the inverter is fixed reliably, fasten two M5 safety-lock sockets head cap screws on the left and right side firmly to prevent the inverter from being lifted off the bracket.



5.5 Check Inverter Installation Status

- Check the upper straps of inverter and ensure it fits on to the bracket.
- Check the secure mounting of the inverter by trying to raise it from the bottom. The inverter should remain firmly attached.
- Choose a strong mounting wall to prevent vibration while inverter is operating.

5.6 Electrical Connection

5.6.1 Safety

WARNING

Danger to life due to lethal voltages!
High voltages which may cause electric shocks are present in the conductive parts of the inverter. Prior to performing any work on the inverter, disconnect the inverter on the AC side, PV side, battery side.

Do not reverse input the battery as this will destroy the inverter!

WARNING

Danger of damage to electronic components due to electrostatic discharge.
Take appropriate ESD precautions when replacing and installing the inverter.

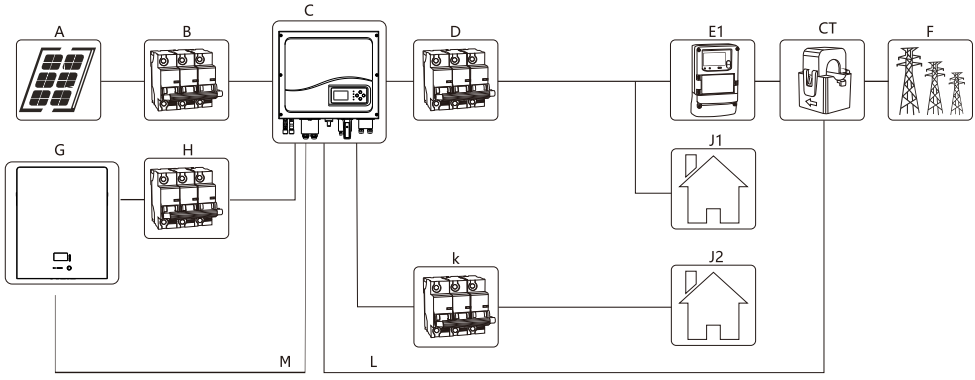
WARNING

Grounding
Before connecting the power cables, you much connect ground wire first.

Note:

- The electrical connection must be carried out by professional technicians. Before any electrical connection is made, it must be kept in mind that the inverter is bi-directionally powered. Professional personnel must wear personal protective equipment such as insulating gloves, insulating rubber shoes and safety helmet when making electrical connections.
- Electrical connections should follow appropriate rules such as conductor cross-sectional area, fuses, and grounding protection.

5.6.2 System Diagram with Inverter Electrical

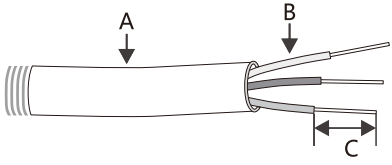


Position	Description
A	PV module
B	PV side breaker
C	Inverter
D	Main AC output breaker
E1	Energy meter, E1 is used to detect utility power consumption
F	Utility grid
G	Battery
H	Battery DC breaker
I	Inverter side breaker
J1&J2	J1 is normal load, J2 important load
K	Back-up output breaker
L	Load monitor
M	BMS communication connection
CT	Detect current flow from grid / out to grid

5.6.3 Connecting to the grid (AC utility)

NOTE

- Use only solid or stranded wire but not fine stranded wire.
- Use cables with high ambient temperatures.
- Use cables with a large cross-section.



Bare length C=8mm,Output cable requirements:

Product Model	Area(mm^2) B	AWG No.
3.6KW	4.17	AWG11
4KW	5.26	AWG10
4.6KW	5.26	AWG10
5KW	5.26	AWG10
6KW	6.63	AWG9

NOTE

The cable length should not exceed 48 m as the resistance of the cable will consume inverter output power and reduce the inverter efficiency.

WARNING

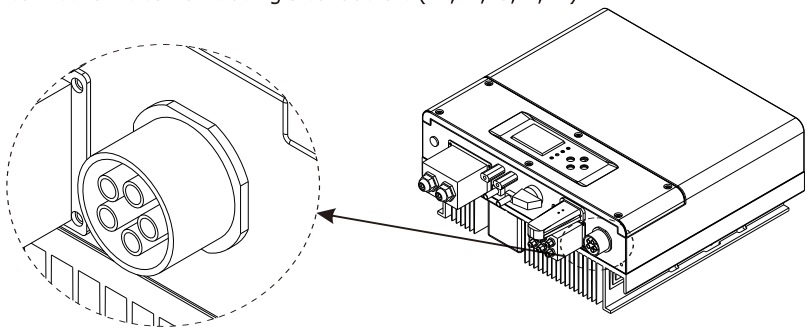
● A separate single-phase AC circuit breaker must be installed between the inverter and the bi-directional meter for each inverter. The separate disconnection unit has below requirement:
Voltage: the voltage must not be less than the AC grid voltage which you connect.
Current: the current must not be less than 1.2 times of the inverter max output current which defined in the inverter spec.
● The bidirectional meter must be installed near the inverter, and the total length of the incoming and outgoing meter lines should not exceed 2m.

We suggest the AC separate unit spec as follow:

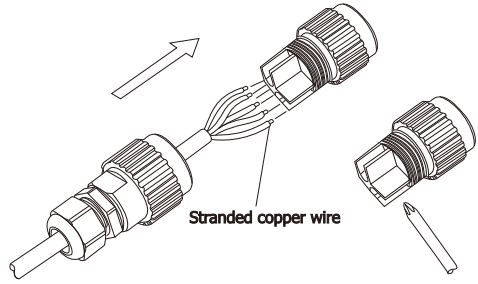
3.6KW	25A/230V
4KW	28A/230V
4.6KW	28A/230V
5KW	30A/230V
6KW	40A/230V

• Connecting to the grid.

1.The grid connection is contains using 5 conductors (L1,L2,L3, N,PE).



2.Insert the stripped and bared conductors (EPS_L,EPS_N,GRID_L,GRID_N,PE); into the screw terminals with sign L1,N,L2,L3,PE(⏚) on the socket element and tighten the screws firmly.



L1	EPS-L
N	EPS-N
L2	GRID-L
L3	GRID-N
PE	PE

WARNING

• You must install a separate AC circuit-breaker or other load disconnection unit between the inverter and utility, in order to ensure that the inverter can be safely disconnected under load. The separate disconnection unit has below requirement:
Voltage: the voltage must not be less than the AC grid voltage which you connect.
Current: the current must not be less than 1.2 times of the inverter max output current which defined in the inverter spec.
• The inverter has leakage current detection and protection functions. If a leakage current detection function AC circuit breaker is selected, the rated residual current of the circuit breaker must be more than 300 mA.
• Single-phase AC circuit breakers are selected according to Table 5-3.

• Connecting to the back-up.

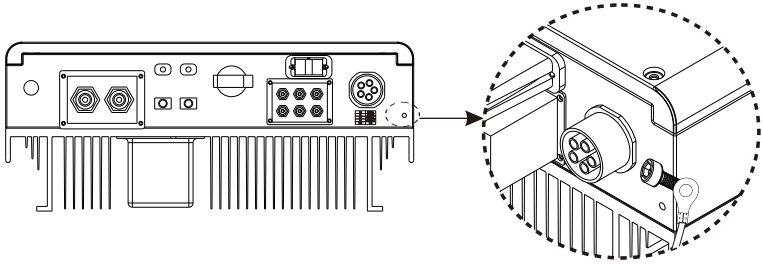
you can connect the important load to the back-up terminal, however you must install a AC separate circuit-breaker or other load disconnection unit between the inverter back-up output and the important load, in order to ensure that the inverter can be safely disconnected under load.

WARNING

The back-up MAX output power is Nominal AC output power, if the load greater than Nominal AC output power, and after overload fault happen 3 times, the inverter will stop output.
The output power of back-up also depends on the battery capacity.

• Grounding the inverter

The inverter must be connected to the AC grounding conductor of the power distribution gridvia the ground terminal (PE)⏚, The symbol "PE" is shown in Figure 5-14 and Figure 5-15. If necessary, ground the chassis as shown below.The diameter of PE wire is greater than 6mm².



5.6.4 Connect to PV Panel

DANGER

Risk of electric shock and fire, use only with PV modules, and with a maximum system voltage of 500Vdc.

DANGER

Electric shock hazard, the DC conductors of this PV system are normally ungrounded but will become intermittently grounded without indication when the inverter detects the PV array isolation.

DANGER

Do not disconnect the DC connectors under load.

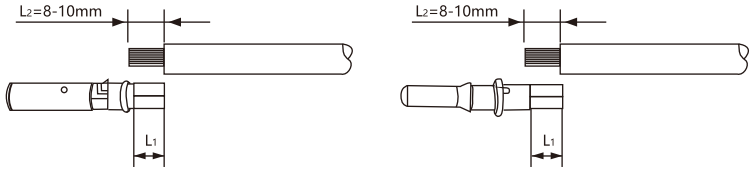
DANGER

Because of the transformerless design, the DC positive pole and DC negative pole of PV arrays are not permitted to be grounded.

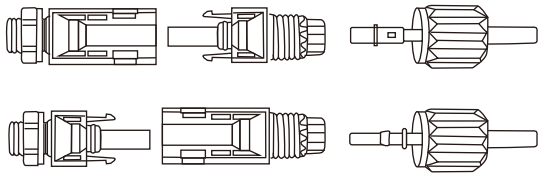
• **Connecting PV Input Power Cables**

Step1 Remove cable glands from the positive and negative connectors.

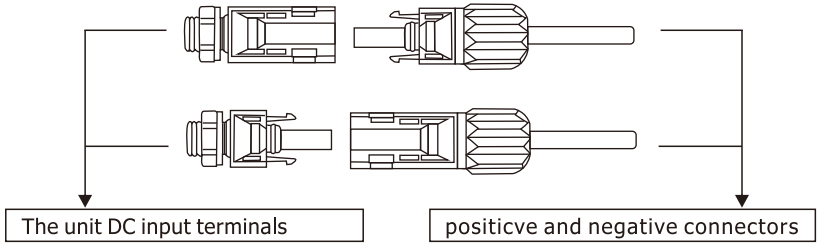
Step2 Take out metal terminals from accessory package,Wiring as illustrated in image.



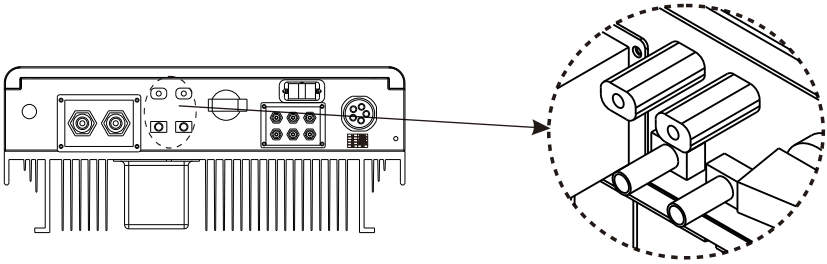
Step3 Insert the positive and negative power cables into corresponding cable glands.
Step4 Insert the stripped positive and negative power cables into the positive and negative metal terminals respectively and crimp them using a clamping tool. Ensure that the cables are crimped until they cannot be pulled out by force less than 400 N, as shown in image.



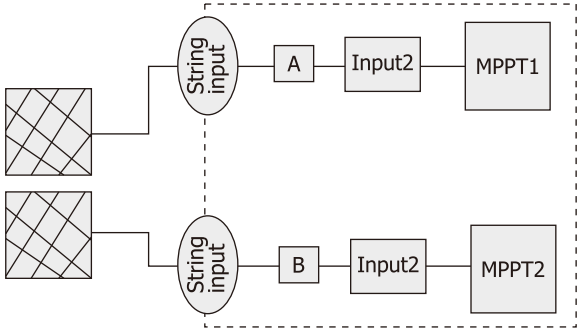
Step5 Insert the positive and negative connectors into corresponding DC input terminals of the PH1100 until you hear a "click" sound.



• Conditions for DC Connection
The PH1100pro ennegy storage inverter has 2 independent input : input A & input B.



The diagram drawing of DC side is shown as below, notice that the connectors are in paired(male and female connectors). The connectors for PV arrays and inverters are H4 connectors.



Suggestions for the PV modules of the connected strings:
A. A.Use the same type of PV module.
B. Same quantity of PV modules connected in series
C. The following limit values at the PV input of the inverter must not be exceeded:

Product Model	Max.current input A	Max.current input B
3.6KW	15A	15A
4KW		
4.6KW		
5KW		
6KW		

- **Conditions for DC Connection**

CAUTION	Before connecting the PV array, ensure that the DC switch and AC breaker are disconnect from the inverter. NEVER connect or disconnect the DC connectors under load. Makesure the maximum open circuit voltage(Voc) of each PV stringis Less than 500Vdc. Check the design of the PV plant. The Max. open circuit voltage, which can occur at solar panels temperature of -25℃, must not exceed the Max.input voltage of the inverter.
WARNING	Improper operation during the wiring process can cause fatal injury tooperator or unrecoverable damage to the inverter. Only qualified personnel can perform the wiring work.
WARNING	Because of the transformerless design, the DC positive pole and DC negative pole of PV arrays are not permitted to be grounded.

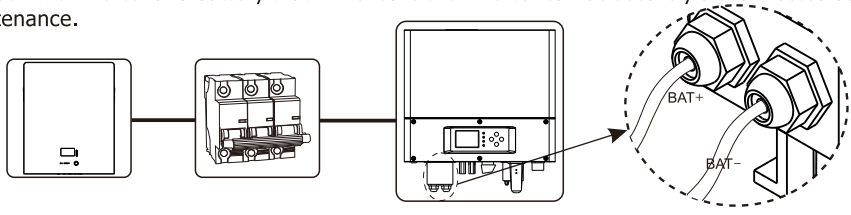
Cable requirements:

Product Model	Area(mm^2) B	AWG No.
3.6KW	5.26~9.0	8~10
4KW		
4.6KW		
5KW		
6KW		

5.6.5 connect to the battery

5.6.5.1 Battery power line connection

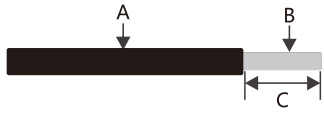
Before connecting to the battery, you much install a separate DC breaker between the inverter and battery that will ensure the inverter can be securely disconnected during maintenance.



DANGER

Reversed polarity will damage the inverter!!!

It is very important for system safety and efficient operation to use appropriate cable for battery connection. To reduce risk of injury, you much use the recommended cable size, refer to the below chart.



Grade	Description	Value
A	O.D.	10~12mm
B	Conductor Material Sectional Area	20~25mm2
C	Bare Wire Length	10mm around

5.6.5.2 Battery communication cable connection

PIN1 : NC(Empty)
PIN2 : NC(Empty)
PIN3 : NC(Empty)
PIN4 : CANL
PIN5 : CANH
PIN6 : NC(Empty)
PIN7 : NC(Empty)
PIN8 : NC(Empty)

PIN1 : CANL
PIN2 : CANH

Battery:The communication connection of the lithium battery pack is shown in the left connector in the figure above,This method is only used for the connection of the MUST lithium battery, Other brand refer to their wiring requirements.
Inverter:Connect to the inverter communication board CN7(CANL,CANH,Figure 5-25)

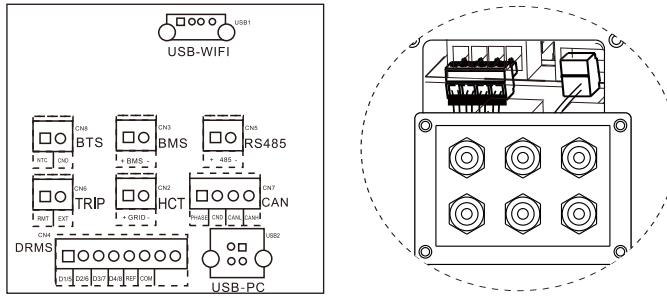
The battery installation must comply with the manufacturer's user manual, include installing indoor or outdoor and the distance to the inverter.
The maximum charge/discharge current base on the inverter nominal power; check the battery current in the spec.As the inverter's battery rated voltage is 48V, the battery series connection voltage much not exceed 48V or it will damage the inverter.
The following steps must be adhered to in order to implement the battery connection:
(1)Disconnect the breaker between inverter and battery.
(2)Check the polarity of the battery and the inverter.
(3)Compress the terminal head by professional tool.
(4)Screw the wire cable to the inverter's battery input terminal.
(5)If the inverter connects to a lead-acid type battery, you must connect BTS to the inverter, the CN8 BTS connection terminal in the COM connection port. (Figure 5-25)
(6)If the inverter connects to a lithium battery, you can connect the BMS to the CN3 BMS com.
Note: we recommend using the appointed lithium battery, because the battery BMS communication has been designed to be compatible with the energy storage Inverter.

DANGER

Danger to life due to voltages!
Before you install the BAT. NTC, you must turn off the inverter, check all the separate breakers are off, and the inverter's LED is off. Then you can safely install the BAT.NTC terminal to the I nverter.

5.6.6 Communication terminal connection

Communication terminal as shown in the figure below:



(Figure 5-25)

5.6.6.1 CT Load monitor connect to the inverter

In single inverter system, a CT must be installed to monitor the power of the house to decide the inverter status: charge or discharge.

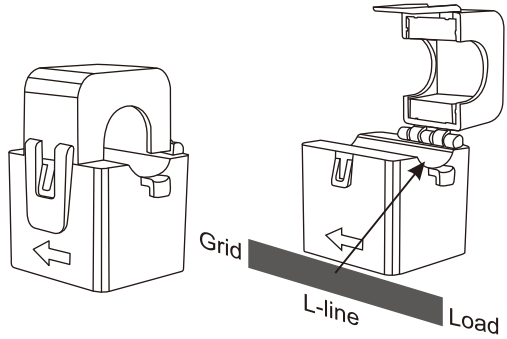
The CT must be installed at the beginning from the grid to the house, in this case, the inverter can monitor all household consumption of power. According to the sensor, the inverter will control the PV power feeding to the grid to balance the level of household power use. (Figure5-9)

The CT installation directions are as follows:

● The direction of the CT-marked arrow points to the grid.

● Connect the white and black leads of the CT to the "CN2" CT terminals "+" and "-" on the COM port of the inverter. (Figure 5-25)

Note: The white line is connected with "+" and the black line with "-", it cannot be reversed.



(Figure 5-9)

WARNING

The load monitor input L-line must be the same as the CT sensor L-line, and the input of the load monitor L&N cannot reverse. If this occurs the inverter will do the reverse direction power control, which means PV power will not store to the battery and the battery cannot discharge the power to the house load.

5.6.6.2 PC connected to inverter

Connect the USB cable to the USB2 USB-PC terminal on the inverter COM port. (Figure 5-25)

Note: Special monitoring software can be installed on the PC. You can set up and monitor the inverter by connecting the inverter via USB. Remove the communication terminal cover when connecting the PC.

5.6.6.3 The DRM0 function for SAA certification

The DMR0 function of the energy storage Inverter be provided for SAA.

The DRM0 is located on the CN6 DMR0 terminal of the inverter's front panel COM port. (See Figure 5-25)

When receive the order from DRM0 connection, the inverter will acting responding to the order, the inverter must POWER OFF or POWER ON.

6 Start-Up and shut down the inverter

6.1 Start-Up the inverter

(1) Connect the AC circuit breaker
(2) Turn on the DC switch
(3) Turn on the battery breaker
(4) The inverter will start automatically when the PV voltage is higher than 150V and the battery voltage is higher than 44V.

6.2 Turn-off the Inverter

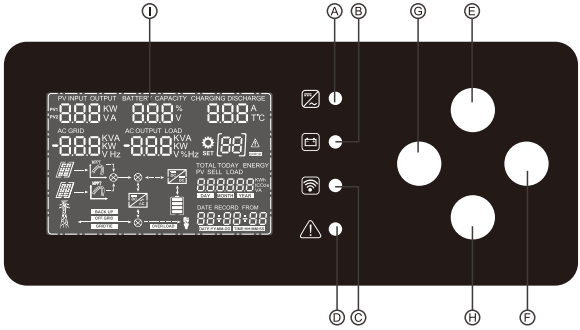
DANGER

Do not disconnect the DC connectors under load.

Turn –off the inverter step:
(1) Disconnect the AC circuit breaker and prevent it from being reactivated.
(2) Disconnect the Battery breaker and prevent it from being reactivated.
(3) Turn off the PV switch.
(4) Check the inverter operating status.
(5) Wait until LED and LCD display has gone out, this will indicate the inverter is shut down.

7 Display panel and LCD display and settings

7.1 Display panel

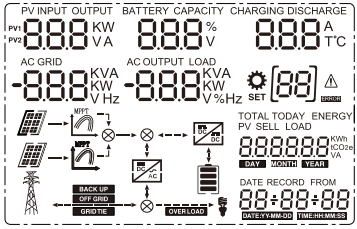


The display interface is operated by four functional buttons, which are defined as follows:

No.	Name	Describe
A	LED	Green: Normal Status
B		Yellow: Battery charge or discharge
C		Blue: Wi-Fi or GPRS Communication status
D		Red: Fault Status
E	Button	UP :UP turn or Value increase
F		ENTER :OK
G		ESC : Go to the main menu or leave the current interface
H		Down :Down turn or Value abate
I	LCD	Display machine work information

7.2 LCD display and settings

7.2.1 LCD Information Definition



Display	Function
PV INPUT OUTPUT	Indicating the input voltage or current or power of the PV1/PV2. KW: Power; V: Voltage; A: Current.
BATTERY CAPACITY	Indicating battery voltage or percentage of battery capacity. V: Voltage; %: Percentage.
CHARGING DISCHARGE	Indicating the charge current or discharge current of battery or battery temperature of battery.
AC GRID	Indicating of power or voltage or frequency of AC Grid. KVA/KW: Power; V: Voltage; Hz: Frequency.
AC OUTPUT LOAD	Indicating AC output power or voltage or frequency or percentage with load. KVA/KW: Power; V: Voltage; Hz: Frequency; %: Loaded Percentage.
SET	Indicating setup interface page number.
	Indicating warning or Fault codes. Warning Code: . Fault Code: .
TOTAL TODAY ENERGY PV SELL LOAD DAY MONTH YEAR	Indicating of electricity generation. TOTAL ENERGY PV : Total PV input; TOTAL ENERGY SELL : Total electricity sale; TOTAL ENERGY LOAD : Total load power; TODAY ENERGY PV : PV input today; TODAY ENERGY SELL : Electricity sale today; TODAY ENERGY LOAD : Load power today;
DATE RECORD FROM	Indicating date and time.
	Indicating solar panel; Flicker refers to PV input voltage out of range.
	Indicating the state of the public grid.
	Indicating battery capacity (0-24%, 25-49%, 50-74% and 75-100%) And charging status.
	Indicating the state of the load.
	Indicating the state of charge or discharge.
	Indicating the state of the inverter or rectifier.

7.2.2 LCD Display Step

The main interface is the default interface for the system, when the inverter is start on, default display primary interface. There are seven information display blocks in the main interface, (failure and energy flow chart excepted) press "UP" or "DOWN" to page for the following information:(all blocks turn over at the same time)

(1) PV input voltage, current and power.(Figure 1)

(2) Percentage of battery voltage and capacity.(Figure 2)

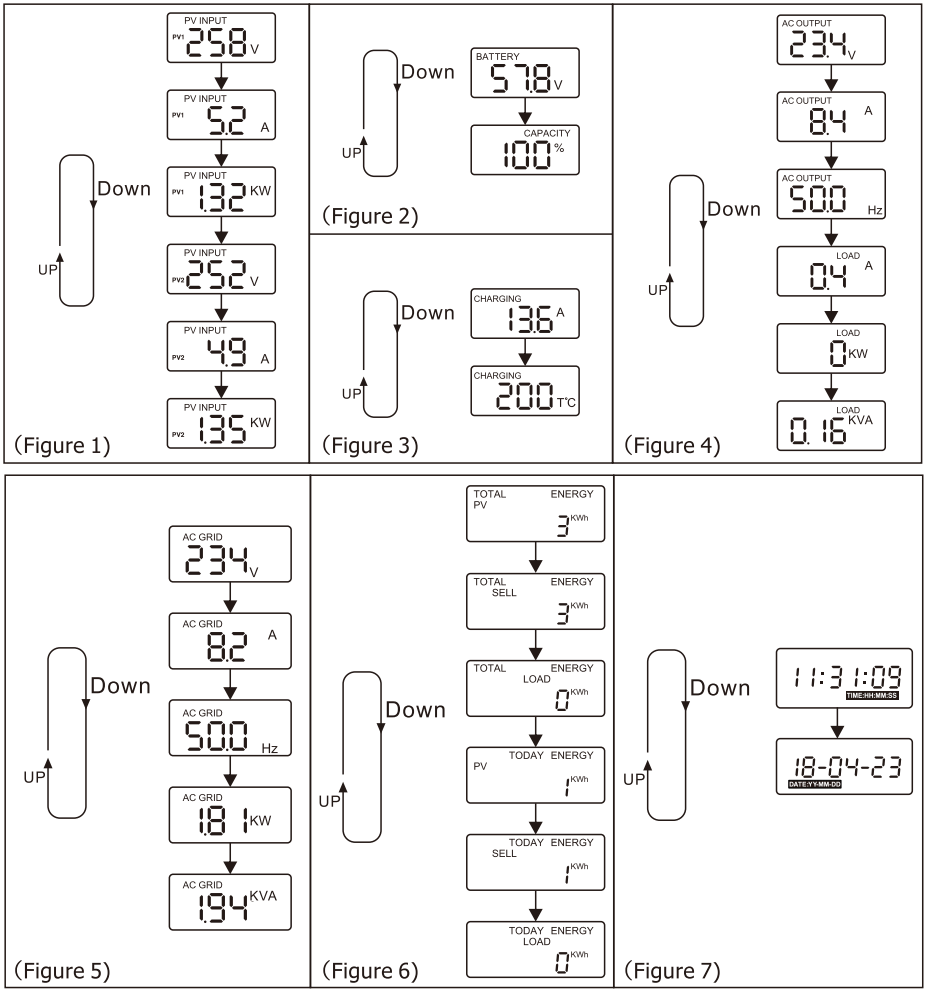
(3) Battery charge or discharge current, temperature.(Figure 3)

(4) Inverter output power, voltage, frequency and load current, power.(Figure 4)

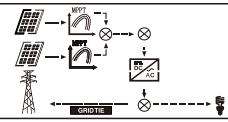
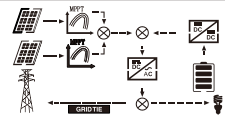
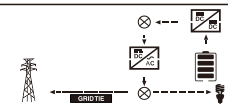
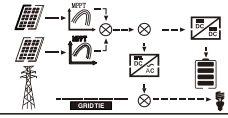
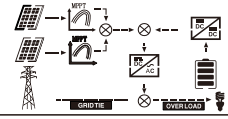
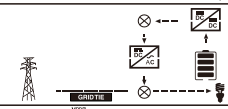
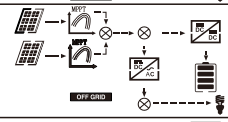
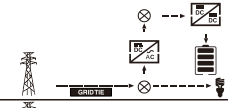
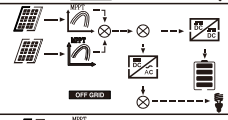
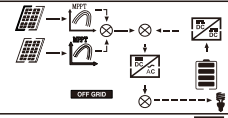
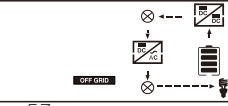
(5) Electric power, voltage, current and frequency.(Figure 5)

(6) Power or total power generation.(Figure 6)

(7) Time and date.(Figure 7)

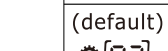


7.2.3 LCD Run status display

Run status		
Sell power to grid	Only PV supply and sell power to grid and load	
	PV and battery supply power to grid and load together	
	Only Battery supply power to grid and load	
Match Load	PV power is not enough, so only supply power to battery and load, no power to grid	
	PV and battery power supply power to load, no power to grid	
	No pv, only battery match load to supply power, no power to grid	
Battery Charge	PV supply power to load and battery charging	
	The grid supply power to battery for charging, and load	
standby	When invert happen fault, the grid supply power to load	
Off grid	PV power is enough, supply power to battery for charge , supply power to load	
	PV and battery power supply power to load	
	Only battery discharge and supply power to load	
Stop	Inverter shut down or fault happen	

7.2.4 LCD display settings

Press the "ENTER" key to enter the settings menu, press "UP" or "DOWN" to select different settings, press "ENTER" in the current setting to enter the parameter settings, at the same time, the icon will flash, press "UP" or "DOWN" to select different parameters, press "ENTER" to confirm the modified parameters, "ESC" to cancel the modified parameters, press "ESC" to exit the settings .

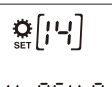
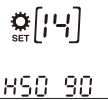
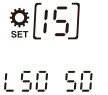
No.	Describe	Option	
01	Manual On/Off Control		Manual shut down inverter
		(default) 	Manual starting up inverter
02	User Mode		0:Store Mode 1.In the case of battery and mains only: load bypass, mains charges the battery; 2.In the case of battery, mains and PV: load bypass, when the battery energy is insufficient, PV and mains charge the battery, and when the battery energy is sufficient, PV is connected to the grid to sell electricity
		(default) 	1:Load Priority Mode: (Battery Maintains Minimun Capacity)(default) ①VBat > V1【Setting15】 1.In the case of battery and mains only: the battery participates in the load, and the insufficient power is provided by the mains; 2.In the case of battery, mains and PV: PV and battery are jointly loaded, and the deficiency is supplemented by mains, and PV is given priority to supply load/battery/sell electricity. ②VBat < V1【Setting15】 1.In the case of battery and mains only: mains power participates in loading, and batteries do not participate in loading; 2.In the case of battery, mains and PV: PV and mains combined load, PV priority load/battery/ power sales; If mains charging is enabled, the battery will be charged to V1 (Low).
			2: Battery Priority Mode: (Battery Maintains Maximun Capacity) ① VBat > V2(Setting14) 1.In the case of battery and mains only: the battery participates in the load, and the insufficient power is supplemented by the mains. 1.In the case of battery ,mains and PV: PV and battery are jointly loaded, and the insufficient power is supplemented by the mains, and PV is given priority to supply load/battery/sell electricity. ② VBat < V2(Setting14) 1.In the case of battery and mains only: mains participates in loading, and batteries do not participate in loading; 1.In the case of battery ,mains and PV:PV charges the battery, the mains participates in the load, and PV gives priority to the battery/load/sale. If mains charging is enabled, the battery will be charged to V2 (high).

		SET 02 GFn	3:Mains priority mode: (PV power generation is mainly sent to the grid) ①VBat > 0.5*(V2 + V1) 1.In the case of battery and mains only: the battery is sold at full power. The power sold is not related to the load power; 2.In the case of battery ,mains and PV : the inverter sells electricity at full power, PV sells electricity first, and the battery is charged when the PV power is greater than the inverter power. ②VBat < 0.5*(V2 + V1) and VBat > Setting13 1.In the case of battery and mains only: the battery is not charged, and the output power of the battery is equal to the load power; 2.In the case of battery ,mains and PV :the output power of the battery is equal to the load power, and the PV sells electricity at full power, and when the PV power is greater than the inverter power, the PV charges the battery. ③VBat < Setting13 1.In the case of battery and mains only: mains power participates in loading, and batteries do not participate in loading; 2.In the case of battery ,mains and PV :PV charges the battery, the mains participates in the load, and the PV gives priority to the battery/load/sells electricity. If mains charging is enabled, the mains will charge the battery to Setting13
		SET 02 AdA	4: Advanced Mode: 1. There are six intermittent time periods for setting different modes (load priority/battery priority/mains priority); 2.Time outside of six time periods is the default mode set (Load Priority/Battery Priority/Mains Priority). As: The default mode is load-first mode: At the same time, set the time period mode as follows 00:00~07:00 is the battery priority mode; 08:00~12:00 is the load priority mode; 13:00~16:00 is the priority mode of mains; 18:00~24:00 is the battery priority mode; The rest of the time defaults to load-first mode.

03	Power Satety Regulation		
			1:EN_50549
			2:50549_B(Belgium)
			3:50549_P(Poland)
			4:G99
			5:NRS
			6:UNE
			7:NTS
			8:VDE
			9:BRF_230V
			10:BRN_127V
			11:FRM_50HZ
			12:FRI_50HZ
			13:FRI_60HZ

04	PV Source Input mode	(default)IND 	Dual Independent input mode
			Dual parallel input mode
			DC Source input mode
05	Battery type		Lead-acid
		(default) 	Lithium no bms
			Lithium
06	Maximum charging current range setting		3.6KW: 80A(default) 0-80A 4KW: 85A(default) 0-85A 4.6KW: 100A(default) 0-100A 5KW: 110A(default) 0-110A 6KW: 125A(default) 0-125A
07	Maximum discharging current range setting		3.6KW: 80A(default) 0-80A 4KW: 85A(default) 0-85A 4.6KW: 100A(default) 0-100A 5KW: 110A(default) 0-110A 6KW: 125A(default) 0-125A

08	Maximum charging current of grid	SET 08 GCC 2 17	3.6KW: 15.6A(default) 0-15.6A 4KW: 17.5A(default) 0-17.5A 4.6KW: 20A(default) 0-20A 5KW: 21.7A(default) 0-21.7A 6KW: 26A(default) 0-26A
09	Trickle charging current range setting	SET 09 bAC 10.0	10A(default) Set the value 0 and 50.0A
10	Min. current to Max. current in charging conditions	SET 10 bLu49.0	LEAD or LI-U:49.0V(default) Set the value between Setting13 and Setting 11 Note:Not less than Setting13,Not more than Setting11
		SET 10 SOL 10	LI-S:10(default) Set the value between Setting 13 and Setting 11 Note:Not less than Setting13,Not more than Setting 11
11	Const charging voltage range setting	SET 11 bCu54.5	LI-U:54.5V(default) Set the value between Setting13 and Setting 12 Note:Not less than Setting13,Not more than Setting12 LEAD:56.5V(default) Set the value between Setting12 and Setting 16 Note:Not less than Setting12,Not more than Setting16
		SET 11 SOH 90	90(default) Set the value between 0 and 100 Note:Not less than 0,Not more than 100
12	Float charging voltage range setting	SET 12 bFu55.5	LI-U:55.5V(default) Set the value between Setting11 and Setting 16 Note:Not less than Setting11,Not more than Setting16 LEAD:54.5V(default) Set the value between Setting13 and Setting 11 Note:Not less than Setting13,Not more than Setting11
13	Battery low voltage alarm	SET 13 bSu48.5	LI-U:48.5V(default) Set the value between Setting17 and Setting 11 Note:Not less than Setting17,Not more than Setting11 LEAD:44.0V(default) Set the value between Setting17 and Setting 12 Note:Not less than Setting17,Not more than Setting12
		SET 13 SOC 15	15(default) Set the value between Setting 17 and 100 Note:Not less than Setting 17,Not more than 100

14	User mode high value setting		LI-U:54V(default) Set the value between Setting15 and Setting 11 Note:Not less than Setting15,Not more than Setting11 LEAD:54V(default) Set the value between Setting15 and Setting 12 Note:Not less than Setting15,Not more than Setting12
			90(default) Set the value between Setting 15 and 100 Note:Not less than Setting 15,Not more than 100
15	User mode low value setting		LI-U or LEAD:50V(default) Set the value between Setting13 and Setting 14 Note:Not less than Setting13,Not more than Setting14
			50(default) Set the value between Setting 13 and Setting 14 Note:Not less than Setting 13,Not more than Setting 14
16	Battery overvoltage value setting		LI-U or LU-S:60V(default) Set the value between Setting12 and 60V Note:Not less than Setting12,Not more than 60V LEAD:60V(default) Set the value between Setting11 and 60V Note:Not less than Setting11,Not more than 60V
17	Battery undervoltage value setting		44V(default) Set the value between 40V and Setting13 Note:Not less than 40V,Not more than Setting13
			5(default) Set the value between 0 and Setting 18 Note:Not less than 0,Not more than Setting 18
18	Battery under voltage recovery		LEAD or LI-U:48.0V(default) Set the value between Setting17 and Setting 16 Note:Not less than Setting17,Not more than Setting16
			20(default) Set the value between Setting 17 and 100 Note:Not less than Setting 17,Not more than 100
19	Off-grid inverter voltage		230V(default) Set the value between Standard grid -30V and +30V Note:Not less than Standard grid -30V,Not more than Standard grid +30V
20	Anti backflow setting		OFF(default) 1.ON:Enable anti backflow 2.OFF:Disable anti backflow

21	Mains charging setting		ON(default) 1.ON:Enable Mains charging 2.OFF:Disable Mains charging
22	BMS protocol selection ite		0(default) 0:MUST(OLD) 17:MUST(NEW) 1~16 other
23	Gen charging setting		ON(default) 1.ON:Enable Gen charging 2.OFF:Disable Gen charging
24	Generator shutdown current		5.0A(default) Set the value between 0A and inv rated current Note:Not less than 0A,Not more than inv rated current
25	Rated power of generator		3.6KW : (default) 0-3.6KW 4KW : (default) 0-4KW 4.6KW : (default) 0-4.6KW 5KW : (default) 0-5KW 6KW : (default) 0-6KW
26	Reset fuction		Restore some factory default settings Note:Effective setting in standby mode

7.2.5 Generator mode

1: When the mains power is normal, the generator is not running.

2: In the case of no PV, when the battery voltage is lower than the battery voltage low-voltage alarm value (Setting13), the generator will be turned on and charged to V2 (Setting14), and the generator current is less than the power generator shutdown current(Setting24), and the power generation will be stopped

3: In the case of PV, when the battery is lower than the low voltage alarm value below the battery voltage (Setting13), the generator will be turned on and charged to V1 (Setting15), and the generator current is less than the power generation shutdown current(Setting24), and the power generation will be stopped.

7.3 Use Wi-Fi parameter settings

With the Wi-Fi app, you can go through the local mode to set up the battery parameters, and the grid charging time, inverter discharging time etc. If you are not setting parameters, the inverter will work in default mode.

WARNING

Ensure that all wire connections are OK before turning on the battery breaker and the AC breaker. The PV switch should be turned on first to light the inverter and the battery parameters must be set according to your battery system and work status times. Otherwise the inverter will work at default status that may not conform to the battery voltage and the capacity.

8 Communication

This energy storage inverter uses Wi-Fi as the standard wireless communication. For details on the connection method, please refer to the "Wi-Fi Plug14 Data Acquisition Quick Installation Guide".

9 Trouble shooting

Sometimes, the PV inverter does not work normally, we recommend the following solutions for common troubleshooting. The following table can help the technician to understand the problem and take action.

error code	Error message	Description	Suggestion
01	Communication Fault	CPU Communication Fault	1.Restart inverter. 2.If error message still exists, contact the installation contractor or supplier.
02	BMS Communication Fault	BMS Communication Fault	1.Check whether the BMS communication interface connection is normal and re-plug the BMS communication line. 2.If error message still exists, contact the installation contractor or supplier.
03	InvOcpTzFault	InvOcpTzFault	1.Restart inverter. 2.If error message still exists, contact the installation contractor or supplier.
04	PvOcpTzFault	PvOcpTzFault	1.Restart inverter. 2.If error message still exists, contact the installation contractor or supplier.
05	BattOcpTzFault	BattOcpTzFault	1.Restart inverter. 2.If error message still exists, contact the installation contractor or supplier.
06	InvOverCurrent	InvOverCurrent	1.Restart inverter. 2.If error message still exists, contact the installation contractor or supplier.
07	BatOverCurrCurrent	BatOverCurrCurrent	1.Restart inverter. 2.If error message still exists, contact the installation contractor or supplier.
08	PvOverCurrCurrent	PvOverCurrCurrent	1.Restart inverter. 2.If error message still exists, contact the installation contractor or supplier.

09	BusVoltageHigh	Bus overvoltage fault	1.Check if the PV voltage exceeds the inverter input voltage range. 2.Restart the inverter. 3.If error message still exists, contact the installation contractor or supplier.
10	BusVoltLow	Bus lowvoltage fault	1.Restart inverter. 2.If error message still exists, contact the installation contractor or supplier.
11	BatVoltHigh	BatVoltHigh fault	1.Check if the battery voltage is orrect; 2.Restart inverter 3.If error message still exists, contact the installation contactor or supplier
12	BatVoltLow	BatVoltLow	1.Check if the battery voltage is orrect; 2.Restart inverter 3.If error message still exists, contact the installation contactor or supplier
13	GridVoltage Fault	GridVoltage Fault	1.Check if the GridVoltage is orrect; 2.Restart inverter 3.If error message still exists, contact the installation contactor or supplier
14	GridFrequency Fault	GridFrequency Fault	1.Check if the GridFrequency is orrect; 2.Restart inverter 3.If error message still exists, contact the installation contactor or supplier
15	InvVoltage Fault	InvVoltage Fault	1.Check if the load is overload or short circuited 2.Restart inverter 3.If error message still exists, contact the installation contactor or supplier
16	Pv VoltHigh Fault	Pv VoltHigh Fault	1.Check if the Pv VoltHig is orrect; 2.Restart inverter 3.If error message still exists, contact the installation contactor or supplier
17	EPS OverLoad Fault	EPS OverLoad Fault	1.Check if the load is overload or short circuited 2.Restart inverter 3.If error message still exists, contact the installation contactor or supplier
18	PV OverLoad Fault	PV OverLoad Fault	1.Restart inverter 2.If error message still exists, contact the installation contactor or supplier
19	Inernal ambient temperature too high	Inernal ambient temperature too high Fault	1.Check istallation environment; 2.Restart inverter 3.If error message still exists, contact the installation contactor or supplier
20	Inv_temperature too high	Inv_temperature too high Fault	1.Check istallation environment; 2.Restart inverter 3.If error message still exists, contact the installation contactor or supplier

21	Transformer temperature too high	Transformer temperature too high	1.Check istallation environment; 2.Restart inverter 3.If error message still exists, contact the installation contactor or supplier
22	DC_temperature too high	DC_temperature too high Fault	1.Check istallation environment; 2.Restart inverter 3.If error message still exists, contact the installation contactor or supplier
23	DCI High	DCI High Fault	1.Restart inverter 2.If error message still exists, contact the installation contactor or supplier
24	GFCI High	GFCI High Fault	1.Check if the solar power wiring is damaged 2.Restart inverter 3.If error message still exists, contact the installation contactor or supplier
25	ISO Fault	ISO Fault	1.Check if the solar power wiring is damaged 2.Restart inverter 3.If error message still exists, contact the installation contactor or supplier
26	PE_Fault	PE_Fault	1.Check the ground wire connection 2.Check the Grid L/N wire connection 3.Restart inverter 4.If error message still exists, contact
27	InvRelay	InvRelay Fault	1.Restart inverter 2.If error message still exists, contact the installation contactor or supplier
28	GrideRelay	GrideRelay	1.Restart inverter 2.If error message still exists, contact the installation contactor or supplier
29	BypassRelay	BypassRelay	1.Restart inverter 2.If error message still exists, contact the installation contactor or supplier

Alarm code	Alarm message	Description	Suggestion
1	GridPowerLimitFlag	GridPowerLimitFlag alarm	1.Check if the GridVoltage is orrect;
2	GridOvFreqDecFlag	GridOvFreqDecFlag alarm	1.Check if the GridFrequency is orrect;
3	GridUnFreqIncFlag	GridUnFreqIncFlag alarm	1.Check if the GridFrequency is orrect;
4	GridOvVoltDecFlag	GridOvVoltDecFlag alarm	1.Check if the GridVoltage is orrect;
5	GridOvTempDecFlag	GridOvTempDecFlag alarm	1.Check istallation environment;
6	FanWarningFlag	FanWarningFlag alarm	1.Checking the Fan
17	BMS Voltage Hight	BMS Voltage Hight alarm	1.Check the battery pack; 2.Set the inverter parameters to operate according to the battery pack parameters.
18	BMS Voltage Low	BMS Voltage Low alarm	1.Check the battery pack; 2.Set the inverter parameters to operate according to the battery pack parameters.
19	BMS Charging Overcurrent	BMS Charging Overcurrent alarm	1.Check the battery pack; 2.Set the inverter parameters to operate according to the battery pack parameters.
20	BMS Disharging Overcurrent	BMS Disharging Overcurrent alarm	1.Check the battery pack; 2.Set the inverter parameters to operate according to the battery pack parameters.
21	BMS Temperature Hight	BMS Temperature Hight alarm	1.Check the battery pack; 2.Set the inverter parameters to operate according to the battery pack parameters.
22	BMS Temperature Low	BMS Temperature Low alarm	1.Check the battery pack; 2.Set the inverter parameters to operate according to the battery pack parameters.
23	BMS ShortCircuit	BMS ShortCircuit alarm	1.Check the battery pack; 2.Set the inverter parameters to operate according to the battery pack parameters.
24	BMS system failure	BMS system failure alarm	1.Check the battery pack; 2.Set the inverter parameters to operate according to the battery pack parameters.
25	BMS OtherError	BMS OtherError alarm	1.Check the battery pack; 2.Set the inverter parameters to operate according to the battery pack parameters.

Note:If the suggestions do not work, please connect to the the installation contractor or supplier

10 Maintenance and Cleaning

10.1 Checking Heat Dissipation

If the inverter regularly reduces its output power due to high temperature, please improve the heat dissipation conditions. The heat sink may need to be cleaned as part of this process.

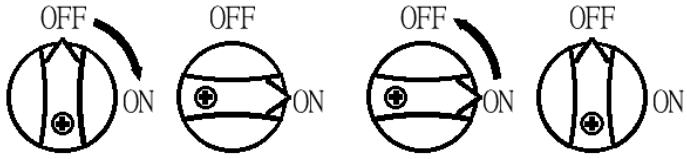
10.2 Cleaning the Inverter

If the inverter is dirty, turn-off the AC breaker and DC switch, waiting the inverter shut down ,then clean the enclosure lid, the display, and the LCD using only a wet cloth. Do not use any cleaning agents.(e.g. solvents or abrasives)

10.3 Checking the DC Disconnect

Check for externally visible damage and discoloration of the breaker and the cables at regular intervals. If there is any visible damage to the breaker, or visible discoloration or damage to the cables, please contact professional staff for maintenance.

Once a year, turn the rotary switch of the DC switch from the ON position to the OFF position 5 times in succession. This cleans the contacts of the rotary switch and prolongs the electrical endurance of the DC Disconnect.



11 Decommissioning

11.1 Dismantling the Inverter

(1)Disconnect the inverter from the grid, PV and battery.
(2)Remove all connection cables from the inverter.
(3)Screw off all projecting cable glands.
(4)Lift the inverter off the bracket and unscrew the bracket screws.

WARNING

Danger of burn injuries due to hot enclosure parts!
Wait 20 minutes before disassembling until the housing has cooled down.

11.2 Packing the Inverter

If possible, always pack the inverter in its original carton and secure it with tension belts. If it is no longer available, you can also use an equivalent carton. The box must be capable of being closed completely and supporting both the weight and the size of the inverter.

11.3 Storing the Inverter

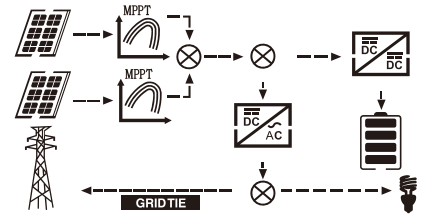
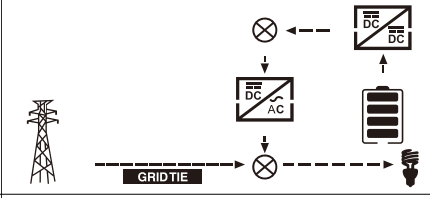
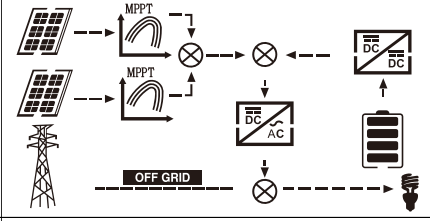
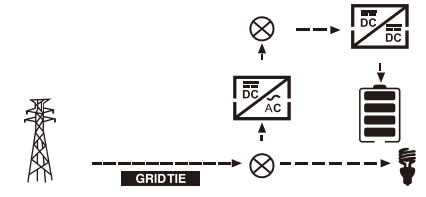
Store the inverter in a dry place where ambient temperatures are always between -25°C and +60°C.

11.4 Disposing of the Inverter

Do not dispose of faulty inverters or accessories together with household waste. Please comply with the disposal regulations for electronic waste which apply at the installation site at that time. Ensure that the old unit and any accessories are disposed of in a proper manner.

12 Working status

According to different conditions, The energy storage inverter mainly has the following kinds of working status.

description	LCD display operation diagram
State 1: The energy produced by the PV system is used to optimize self-consumption. The excess energy is used to recharge the batteries, then exported to grid.	
State 2: When there is no PV, and the battery is sufficient, it can supply the load together with grid power.	
State 3: When grid fails, the system automatically switches to offline grid mode. The EPS load can be supported by PV and battery.	
State 4: Battery can be force charged by grid, and charging time/power can be set flexibly on PV Master APP.	

13 specification

MODEL	ULTRA HYBRID 3600	ULTRA HYBRID 4000	ULTRA HYBRID 4600	ULTRA HYBRID 5000	ULTRA HYBRID 6000
RATED POWER(W)	3600	4000	4600	5000	6000
PV INPUT (DC)					
Maximum recommended DC power(W)	5400	6000	7000	7500	9000
Nominal DC operating voltage(V)	360				
Maximum DC voltage(V)	500				
Full Load Voltage range(tracker A/B)	180~500	200~500	235~500	235~500	235~500
Start voltage(V)①	120				
MPPT voltage range(V)	120~500				
Maximum input current(A)	15/15				
No.of MPP tracker	2				
Strings per MPP tracker	1				
GRID OUTPUT(AC)					
Nominal AC output power(W)	3600	4000	4600	5000	6000
Maximum output current(A)	15.6	17.5	20	21.7	26
Nominal output voltage(V); range(V)	220/230/240;180-280				
AC gridfrequency(Hz); range(Hz)	50/60;45～55/55-65				
Nominal output current(A)	15.6	17.5	20	21.7	26

Inrush current (spike/ duration)	32.6	36.2	41.8	43.4	54.4
Total harmonic distortion i(THDi)	＜3%				
Power factor at rated power	1				
Displacement power factor	0.8leading～0.8lagging				
Grid type	Single phase				
BATTERY MODE OUTPUT(AC)					
Output Rated power(VA)	3600	4000	4600	5000	6000
Nominal output voltage(V); accuracy range	230;±1%				
Output frequency(Hz); accuracy range	50/60(optional); ±0.2%				
Output rated current(A)	15.6	17.5	20	21.7	26
Output waveform	Pure sine wave				
Peak power(VA)	6000,10s			7500,10s	9000,10s
Total harmonic distortion v(linear load)	＜3%				
BATTERY & CHARGER					
Battery type	Lead-acid battery/ Lithium battery				
Nominal DC voltage(V)	48				

Battery voltage range(V)	40～60				
Charging curve	3-stage adaptive with maintenance				
Over-current protection/ Over-temperature protection	YES/YES				
Maximum charging rated power(W)	3600	4000	4600	5000	6000
Maximum charging current(A)	75	85	95	105	125
Model	ULTRA HYBRID 3600	ULTRA HYBRID 4000	ULTRA HYBRID 4600	ULTRA HYBRID 5000	ULTRA HYBRID 6000
General Data					
Noise（dB）	<65dB				
Operating Temperature Rande（℃）	-25~60℃,>45℃ Derating				
Cooling	Natural cooling				
Altitude Without Derating	>2000m				
Interface	RS485,Wifi				
Size（mm）	480W×198.7D×420H				
Weight（kg）	27kg				
Protection Degree	Ip65				
Certifications and standards					
Grid Regulation	EN50549-1,Poland,C10/11:2021,NRS2017				
Safety Regulation	IEC/EN62109-1,IEC/EN62109-2				
EMC	EN61000-6-1,EN61000-6-3				

Note: *(1) Backup output power depends on of the battery.*
(2) Specifications are subject to change without further notice.

Efficiency	
Maximum efficiency	97.1%
Euro-efficiency	96.5%
MPPT efficiency	99.5%
PROTECTION DEVICES	
DC reverse polarity protection	Yes
DC switch rating for each MPPT	Yes
Output over current protection	Yes
Output overvoltage protection-varistor	Yes
Ground fault monitoring	Yes
Grid monitoring	Yes
Integrated all-pole sensitive leakage current	Yes

14 Contact

If you have technical problems about our products, contact the installation contractor or supplier . We need the following information in order to provide you with the necessary assistance:

- Inverter type;
- Inverter error messages;
- Inverter LED & LCD display;
- Type and number of PV modules connected;
- Optional equipment.

WARRANTY CARD

DATE OF PURCHASE	
SHIPPING ADDRESS	
SIGNATURE / STAMP	
DAMAGE DESCRIPTION	
SERVICE COMMENTS	

FILL IN IF NEEDEED
(*) Cross incorrect
I agree to pay the cost of inverter repair due to:
* expiration of the warranty period / * warranty void

Before proceeding with the repair, service will inform by phone about the exact costs of the repair.
Please attach a copy of the purchase document (receipt or invoice) to the complaint.
The full regulations of service repairs can be found on our website **www.voltpolska.pl**

Proper disposal of the product (waste electrical and electronic equipment)

The marking placed on the product or in the texts related to it indicates that it should not be disposed of with other household waste at the end of its useful life. To avoid harmful effects to the environment and human health from uncontrolled disposal, please separate this product from other types of waste and recycle responsibly to promote the reuse of material resources as a continuing practice. For information on where and how to recycle this product in an environmentally safe manner, residential users should contact the retailer where they purchased the product, or their local government authority. Business users should contact their supplier and check the terms and conditions of their purchase contract. The product should not be disposed of with other commercial waste.