

In battery mode, it will present battery capacity.

Load Percentage

Battery Voltage	LCD Display
<1.717V/cell	

Load > 50%

1.717V/cell~1.8V/cell	
1.8V/cell~1.883V/cell	
>1.883 V/cell	

50% > Load > 20%

<1.817V/cell	
1.817V/cell~1.9V/cell	
1.9 V/cell ~1.983V/cell	
>1.983 V/cell	

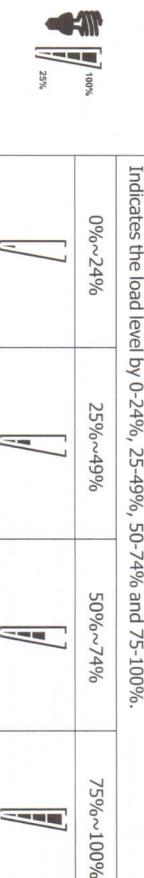
Load < 20%

1.867V/cell~1.95V/cell	
1.95V/cell~2.033V/cell	
>2.033 V/cell	

Load Information

Overload

Indicates the load level by 0-24%, 25-49%, 50-74% and 75-100%.



Mode Operation Information

Mains

Indicates unit connects to the mains.



Indicates unit connects to the PV panel.



Indicates load is supplied by utility power.



Indicates the solar charger circuit is working.



Indicates the DC/AC inverter circuit is working.



Mute Operation



Indicates unit alarm is disabled.

LCD Setting

After pressing and holding "ENTER" button for 2 seconds, the unit will enter setting mode. Press "UP" or "DOWN" button to select setting programs. And then, press "ENTER" or "MENU" button to confirm the selection and exit.

Setting Programs:

Load Percentage

Program	Description	Selectable option
00	Exit setting mode	

Solar energy provides power to the loads as first priority. If solar energy is not sufficient to power all connected loads, Utility energy will supply power to the loads at the same time. The battery energy will supply power to the load only in the condition of the utility is unavailable. If the solar is unavailable, the utility will charge the battery until the battery voltage reaches the setting point in program 21. If the solar is available, but the voltage is lower than the setting point in program 20, the utility will charge the battery until the battery voltage reaches the setting point in program 20 to protect the battery from damage.

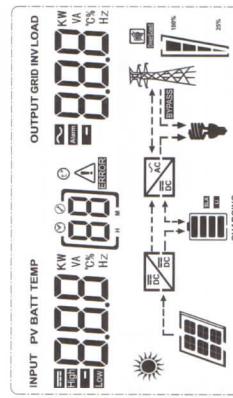
(default) 	
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Output source priority selection



01		Solar energy provides power to the loads as first priority. If solar energy is not sufficient to power all connected loads, battery energy will supply power to the loads at the same time. Utility provides power to the loads only when battery voltage drops to either low-level warning voltage or the setting point in program 20 or solar and battery is not sufficient. The battery energy will supply power to the load in the condition of the utility is unavailable or the battery voltage is higher than the setting point in program 21 (when BLU is selected) or program 20 (when LBU is selected). If the solar is available, but the voltage is lower than the setting point in program 20, the utility will charge the battery until the battery voltage reaches the setting point in program 20 to protect the battery from damage.
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LCD Display Icons



When the battery voltage drops to the setting point in program 20, the inverter will turn to bypass mode, utility provides power to the load only, and the solar will charge the battery at the same time.

[0] 50L
[02] UPS
[02] GEN
[02] VDE

Appliances (default)
[02] RPL
UPS
[02] UPS
GEN
[02] GEN
VDE

If selected, acceptable AC input voltage range will be within 170-280VAC.

When the user uses the device to connect the generator, select the generator mode.

If selected, acceptable AC input voltage range will conform to VDE4105 (184VAC-253VAC)

Set the output voltage amplitude, (220VAC-240VAC)

60HZ
50HZ(default)
[04] 50.00

In AC mode, it will present battery charging status.
Status
<2V/cell
2V/cell~2.083V/cell
2.083V/cell~2.167V/cell
>2.167V/cell
Batteries are fully charged.

Solar energy provides power to charge battery as first priority.
When the utility is available, if the battery voltage is lower than the setting point in program 21, the solar energy will never supply to the load or feed into the grid, only charge the battery.
If the battery voltage is higher than the setting point in program 21, the solar energy will supply to the load or feed into the grid or recharge the battery.

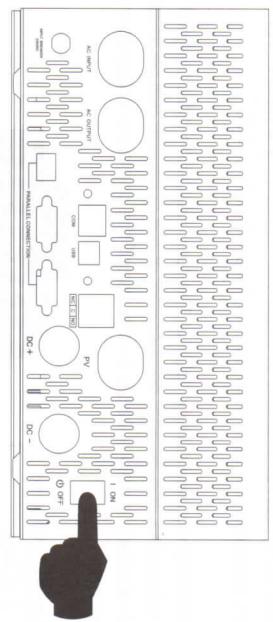
[0] 50U
[05] bLU

Solar energy provides power to the loads as first priority.

If battery voltage has been higher than the setting point in program 21 for 5 minutes, and the solar energy has been available for 5 minutes too, the inverter will turn to battery mode, solar and battery will provide power to the loads at the same time.

Icon	Function description
Input Source Information and Output Information	
	Indicates the AC information
	Indicates the DC information
	Indicate input voltage, input frequency, PV voltage, battery voltage and charger current.
	Indicate output voltage, output frequency, load in VA, load in Watt and discharging current.
Configuration Program and Fault Information	
	Indicates the setting programs
	Warning: flashing with warning code.
	Fault: lighting with fault code.
Battery Information	
	Indicates battery level by 0-24%, 25-49%, 50-74% and 75-100% in battery mode and charging status in line mode.
	In AC mode, it will present battery charging status.
Status	Battery voltage
<2V/cell	4 bars will flash in turns
2V/cell~2.083V/cell	Bottom bar will be on and the other three bars will flash in turns.
2.083V/cell~2.167V/cell	Bottom two bars will be on and the other two bars will flash in turns.
>2.167V/cell	Bottom three bars will be on and the top bar will flash.
Batteries are fully charged.	4 bars will be on.

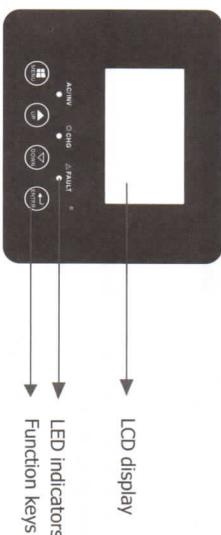
OPERATION Power ON/OFF



Once the unit has been properly installed and the batteries are connected well, simply press On/Off switch (located on the button of the case) to turn on the unit.

Operation and Display Panel

The operation and display panel, shown in below chart, is on the front panel of the inverter. It includes three indicators, four function keys and a LCD display, indicating the operating status and input/output power information.



LED Indicator		Messages
AC/INV	Solid On Flashing	Output is powered by grid in Line mode. Output is powered by battery or PV in battery mode.
CHG	Yellow	Battery is charging or discharging.
FAULT	Solid On Flashing	Fault occurs in the inverter. Warning condition occurs in the inverter.

Function Keys

Function Keys	Description
MENU	Enter reset mode or setting mode go to previous selection.
UP	Increase the setting data.
DOWN	Decrease the setting data.
ENTER	Enter setting mode and Confirm the selection in setting mode go to next selection or exit the reset mode.

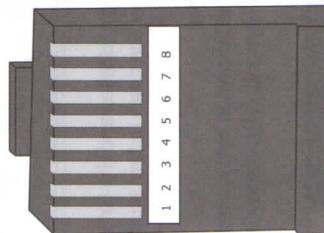
[05] 16U	Solar energy provides power to the loads as first priority. If the battery voltage is lower than the setting point in program 20, the solar energy will never supply to the load or feed into the grid, only charge the battery. If the battery voltage is higher than the setting point in program 20, the solar energy will supply to the load or feed into the grid or recharge the battery.
[06] b4d	Bypass disable Overload bypass: When enabled, the unit will transfer to line mode if overload occurs in battery mode.
[07] Lrd	Restart disable(default) Auto restart when overload occurs
[08] Lrd	Restart enable Restart disable(default) Auto restart when over temperature occurs
[09] 550	If this inverter/charger is working in Line, Standby or Fault mode, charger source can be programmed as below: Solar first Solar and Utility(default) Only Solar
[09] 570	Solar energy will charge battery as first priority, utility will charge battery only when solar energy is not available. Solar energy and utility will charge battery at the same time.
[09] 050	Solar energy will be the only charger source no matter utility is available or not
	If this inverter/charger is working in Battery mode, only solar energy can charge battery. Solar energy will charge battery if it's available and sufficient.

Communication Connection

Please use supplied communication cable to connect to inverter and PC. Insert bundled CD into a computer and follow on-screen instruction to install the monitoring software. For the detailed software operation, please check user manual of software inside of CD.

WARNING: It's forbidden to use network cable as the communication cable to directly communicate with the PC port. Otherwise, the internal components of the controller will be damaged.

WARNING: RJ45 interface is only suitable for the use of the company's supporting products or professional operation.



Below chart show RJ45 Pins definition

Pin	Definition
1	RS-485-B
2	RS-485-A
3	GND
4	
5	CANL
6	CANH
7	
8	

Dry Contact Signal

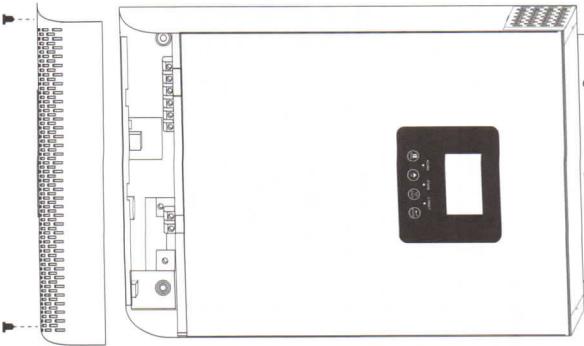
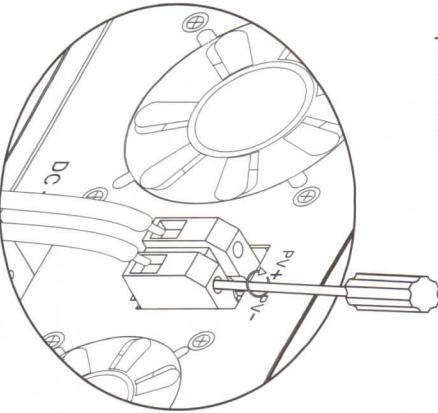
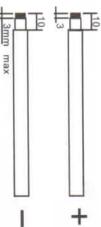
There is one dry contact (3A/250VAC) available on the rear panel. It could be used to deliver signal to external device when battery voltage reaches warning level.

Unit status	Condition	Dry contact port: NC&NO NC&C NO&C
Power Off	Unit is off and no output is powered.	Close Open
Power On	Output is powered from Utility set as utility from Battery or Solar.	Close Open
	Program 01 Battery voltage<Low DC warning voltage	Open Close
	Program 21 or battery charging reaches floating stage	Open Close
	Program 20 Battery voltage<Setting value in Program 20	Open Close
	Program 01 is set as SBU, SUB, solar first	Open Close
	Battery voltage<Setting value in Program 21 or battery charging reaches floating stage	Open Close

11	Maximum charging current: To configure total charging current for solar and utility chargers.(Max. charging current =utility charging current + solar charging current)	80A (default) [1] 80 ^	Setting range is from 1 A to 80A. Increment of each click is 1A.
13	Maximum utility charging current	30A (default) [13] 30 ^	Setting range is from 1A to 60A. Increment of each click is 1A.
14	Battery type	AGM (default) [14] RUn GEL [14] SEL Lithium Ion [14] Li	Flooded [14] Fl d LEAD [14] ER User-Defined [14] U5E If "User-Defined" Li is selected, battery charge voltage and low DC cut-off voltage can be set up in program 17, 18 and 19. 48V model default setting: 56.4V [17] Cu 56.4 ^
17	Bulk charging voltage (C.V voltage)		If self-defined is selected in program 14, this program can be set up. Setting range is from 48.0V to 58.4V for 48Vdc model. Increment of each click is 0.1V. 48V model default setting: 54.0V [18] Fl u 540 ^
18	Floating charging voltage		If self-defined is selected in program 14, this program can be set up. Setting range is from 48.0V to 58.4V for 48Vdc model. Increment of each click is 0.1V. 48V model default setting: 40.8V [19] Fu 40.8 ^
19	Low DC cut off battery voltage setting		If self-defined is selected in program 14, this program can be set up. Setting range is from 40.0V to 48.0V for 48Vdc model. Increment of each click is 0.1V. Low DC cut-off voltage will be fixed to setting value no matter what percentage of load is connected. Available options for 48V models: 46.0V (default) [20] 46.0 ^
20	Battery stop discharging voltage when grid is available		Setting range is from 44.0V to 58.0V. Increment of each click is 0.1V. Available options for 48V models: 54.0V (default) [21] 54.0 ^
21	Battery stop charging voltage when grid is available		Setting range is from 44.0V to 58.0V. Increment of each click is 0.1V.

Please follow below steps to implement PV module connection:

1. Remove insulation sleeve 10 mm for positive and negative conductors
2. Check correct polarity of connection cable from PV modules and PV input connectors. Then, connect positive pole (+) of connection cable to positive pole (+) of PV input connector. Connect negative pole (-) of connection cable to negative pole (-) of PV input connector.



3. Make sure the wires are securely connected.

Final Assembly

After connecting all wirings, please put bottom cover back by screwing two screws as shown below.

		(default)	If selected, the display screen will auto turn the display page.
22	Auto turn page	[2]P _E C	
23	Backlight control	[2]P _d D	If selected, the display screen will stay at latest screen user finally switches.
24	Alarm control	[24]b ₀ F	Backlight off (default)
25	Beeps while primary source is interrupted	[25]R ₀ M	Alarm off (default)
27	Record Fault code	[2]F ₀ M	Record enable(default)
		[2]F ₀ F	Record disable

After pressing and holding "MENU" button for 6 seconds, the unit will enter reset model. Press "UP" and "DOWN" button to select programs. And then, press "ENTER" button to exit.

	(default)		
5E _C	[d _E]n _H _C	Reset setting disable	

Fault Reference Code

Fault Code	Fault Cause	LCD Indication
01	Fan is locked when inverter is off	[0] _E ₀ ₀ [△] _{ERRO}
02	Inverter transformer over temperature	[02] _E ₀ [△] _{ERRO}
03	Battery voltage is too high	[03] _E ₀ [△] _{ERRO}
04	Battery voltage is too low	[04] _E ₀ [△] _{ERRO}
05	Output short circuited	[05] _E ₀ [△] _{ERRO}
06	Inverter output voltage is high	[06] _E ₀ [△] _{ERRO}
07	Overload time out	[07] _E ₀ [△] _{ERRO}

PV Connection
CAUTION! Before connecting to PV modules, please install separately a DC circuit breaker between inverter and PV modules.

WARNING! All wiring must be performed by a qualified personnel.
WARNING! It's very important for system safety and efficient operation to use appropriate cable for PV module connection. To reduce risk of injury, please use the proper recommended cable size as below.

Model	Typical Amperage	Cable Size	Torque
5.2KW DC48V	18A	12AWG	1.2 ~ 1.6 Nm

PV Module Selection:

When selecting proper PV modules, please be sure to consider below parameters:

1. Open circuit Voltage (Voc) of PV modules not exceeds max. PV array open circuit voltage of inverter.
2. Open circuit Voltage (Voc) of PV modules should be higher than min. battery voltage.
3. Max. Power Voltage (Vmpp) of PV modules should be close to best Vmp of inverter or within Vmp range to get best performance. If one PV module can not meet this requirement, it's necessary to have several PV modules in series connection. Refer to below table.

Note:* Vmp: panel max power point voltage.

The PV charging efficiency is maximized while PV system voltage is close to Best Vmp.

Maximum PV module numbers in Series: Vmpp of PV module*X pcs = Best Vmp of Inverter or Vmp range

PV module numbers in Parallel: Max. charging current of inverter /Impp

Total PV module numbers=maximum PV module numbers in series*PV module numbers in parallel

Solar Charging Mode

INVERTER MODEL

5.2KW

Max. PV Array Open Circuit Voltage	450Vdc max
PV Array MPPT Voltage Range	150~430Vdc
MPPT Number	1

Recommended PV module configuration

PV Module Spec (reference)	Total solar input power	Solar input	Q'ty of modules
Maximum Power (Pmax): 250W	1500W	6 pieces in series	6 pcs
Max. Power Voltage Vmpp(V):30.9V	2000W	8 pieces in series	8 pcs
Max. Power Current Imp(A):8.42A	2750W	11 pieces in series	11 pcs
Open Circuit Voltage Voc(V):37.7V	3000W	6 pieces in series 2 strings in parallel	12 pcs
Short Circuit Current Isc(A):8.89A	4000W	8 pieces in series 2 strings in parallel	16 pcs
	5000W	10 pieces in series 2 strings in parallel	20 pcs

08	Inverter bus voltage is too high	[08]
09	Bus soft start failed	[09]
11	Main relay failed	[1]
21	Inverter output voltage sensor error	[21]
22	Inverter grid voltage sensor error	[22]
23	Inverter output current sensor error	[23]
24	Inverter grid current sensor error	[24]
25	Inverter load current sensor error	[25]
26	Inverter grid over current error	[26]
27	Inverter radiator over temperature	[27]
31	Solar charger battery voltage class error	[31]
32	Solar charger current sensor error	[32]
33	Solar charger current is uncontrollable	[33]
41	Inverter grid voltage is low	[41]
42	Inverter grid voltage is high	[42]
43	Inverter grid under frequency	[43]
44	Inverter grid over frequency	[44]
51	Inverter over current protection error	[51]
52	Inverter bus voltage is too low	[52]
53	Inverter soft start failed	[53]

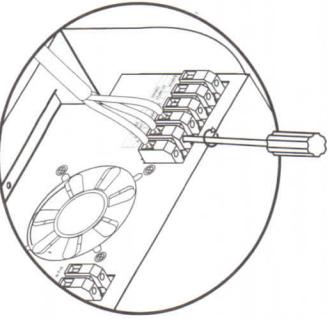
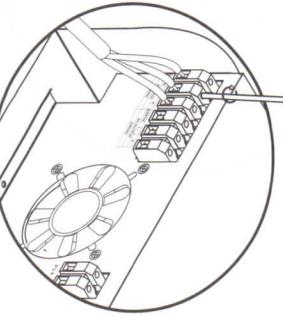
Please follow below steps to implement AC input/output connection:

1. Before making AC input/output connection, be sure to open DC protector or disconnector first.
2. Remove insulation sleeve 10mm for six conductors. And shorten phase L and neutral conductor N 3mm.
3. Insert AC input wires according to polarities indicated on terminal block and tighten the terminal screws. Be sure to connect PE protective conductor (\oplus) first.

$\ominus \rightarrow$ **Ground (yellow-green)**

L \rightarrow **LINE (brown or black)**

N \rightarrow **Neutral (blue)**



WARNING: Be sure to that AC power source is disconnected before attempting to hardwire it to the unit.	
4. Then, insert AC output wires according to polarities indicated on terminal block and tighten terminal screws.	

- Be sure to connect PE protective conductor (\oplus) first.

$\ominus \rightarrow$ **Ground (yellow-green)**

L \rightarrow **LINE (brown or black)**

N \rightarrow **Neutral (blue)**

5. Make sure the wires are securely connected.

CAUTION: Important
Be sure to connect AC wires with correct polarity. If L and N wires are connected reversely, it may cause utility short-circuited when these inverters are worked in parallel operation.

CAUTION: Appliances such as air conditioner are required at least 2~3 minutes to restart because it's required to have enough time to balance refrigerant gas inside of circuits. If a power shortage occurs and recovers in a short time, it will cause damage to your connected appliances. To prevent this kind of damage, please check manufacturer of air conditioner if it's equipped with time-delay function before installation. Otherwise, this inverter/charger will trig overload fault and cut off output to protect your appliance but sometimes it still causes internal damage to the air conditioner.

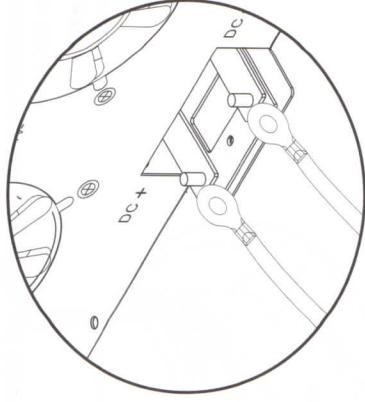
Warning Indicator	
Warning Code	Warning Event
61	Fan is locked when inverter is on.
62	Fan 2 is locked when inverter is on.
63	Battery is over-charged.
64	Low battery
67	Overload
70	Output power derating
72	Solar charger stops due to low battery
73	Solar charger stops due to high PV voltage
74	Solar charger stops due to over load
75	Solar charger over temperature
76	PV charger communication error
77	Parameter error

55	Over DC voltage in AC output
	[55] Δ
56	Battery connection is open
	[56] Δ
57	Inverter control current sensor error
	[57] Δ
58	Inverter output voltage is too low
	[58] Δ

Operating State Description

Operating State	Description
Match load state	PV energy is charger into the battery or converted by the inverter to the AC load Note: DC power produced from your solar array is converted by the inverter into AC power, which is then sent to your main electrical panel to be used by your household appliances. Any excess power generated is not sold back to the grid, but stored in battery.
Charge state	PV energy and grid can charge batteries.
Bypass state	Error are caused by inside circuit error or external reasons such as over temperature, output short circuited and so on.
Off-Grid state	The inverter will provide output power from battery and PV power. Inverter power loads from battery and PV energy. Inverter power loads from battery only.
Stop mode	The inverter stop working if you turn off the inverter by the soft key or error has occurred in the condition of no arid.

3. Insert the ring terminal of battery cable flatly into battery connector of inverter and make sure the bolts are tightened with torque of 2-3 Nm. Make sure polarity at both the battery and the inverter/charge is correctly connected and ring terminals are tightly screwed to the battery terminals.



	WARNING! Shock Hazard Installation must be performed with care due to high battery voltage in series.
	CAUTION! Do not place anything between the flat part of the inverter terminal and the ring terminal. Otherwise, overheating may occur.
	CAUTION! Do not apply anti-oxidant substance on the terminals before terminals are connected tightly.
	CAUTION! Before making the final DC connection or closing DC breaker/disconnector, be sure positive (+) must be connected to positive (+) and negative (-) must be connected to negative (-).

AC Input/Output Connection

CAUTION! Before connecting to AC input power source, please install a separate AC breaker between inverter and AC input power source. This will ensure the inverter can be securely disconnected during maintenance and fully protected from over current of AC input. The recommended spec of AC breaker is 50A for 5.2kW.

CAUTION! There are two terminal blocks with "IN" and "OUT" markings. Please do NOT-misconnect input and output connectors.

WARNING! All wiring must be performed by a qualified personnel.

WARNING! It's very important for system safety and efficient operation to use appropriate cable for AC input connection. To reduce risk of injury, please use the proper recommended cable size as below.

Suggested cable requirement for AC wires

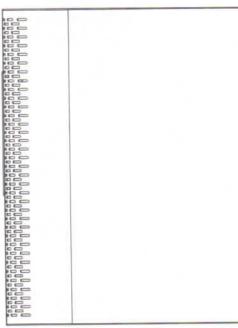
Model	Gauge	Torque Value
5.2KW DC48V	8 AWG	1.4~1.6Nm

Install the unit by screwing three screws



Display Setting

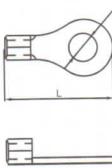
The LCD display information will be switched in turns by pressing "UP" or "DOWN" key. The selectable information is switched as below order: battery voltage, battery current, inverter voltage, inverter current, grid voltage, grid current, load in Watt, load in VA, grid frequency, inverter frequency, PV voltage, PV charging power, PV charging output voltage, PV charging current.



Battery Connection

CAUTION: For safety operation and regulation compliance, it's requested to install a separate DC over-current protector or disconnect device between battery and inverter. It may not be requested to have a disconnect device in some applications, however, it's still requested to have over-current protection installed. Please refer to typical amperage in below table as required fuse or breaker size.

Ring terminal:



SPECIFICATIONS

Table 1 Line Mode Specifications

INVERTER MODEL	5.2kW DC48V
Input Voltage Waveform	Sinusoidal (utility or generator)
Nominal Input Voltage	230Vac
Low Loss Voltage	90Vac±7V(APL, GEN); 170Vac±7V(UPS); 186Vac±7V(VDE)
Low Loss Return Voltage	100Vac±7V(APL, GEN); 180Vac±7V(UPS); 196Vac±7V(VDE)
High Loss Voltage	280Vac±7V(UPS, APL, GEN); 253Vac±7V(VDE)
High Loss Return Voltage	270Vac±7V(APL, GEN); 250Vac±7V(VDE)
Max AC Input Voltage	300Vac
Nominal Input Frequency	50Hz/60Hz(Auto detection)
Low Loss Frequency	40Hz±1Hz(UPS, APL, GEN); 47.5Hz±0.05Hz(VDE)
Low Loss Return Frequency	42Hz±1Hz(UPS, APL, GEN); 47.5Hz±0.05Hz(VDE)
High Loss Frequency	65Hz±1Hz(APL, GEN, UPS); 51.5Hz±0.05Hz(VDE)
High Loss Return Frequency	63Hz±1Hz(APL, GEN, UPS); 50.05Hz±0.05Hz(VDE)

Selectable information	LCD display
Battery voltage/DC discharging current	52.0 V BATT 48.0 A
Inverter output voltage/Inverter output current	229 V INV 130 A
Grid voltage/Grid current	229 V GRID 80 A
Load in Watt	1000 W INPUT 120 W LOAD
Grid frequency/Inverter frequency	50.0 Hz INPUT 50.0 Hz INV
PV voltage and power	360 V PV 8.06 kW
PV charger output voltage and PV charging current	430 V OUTPUT 3.20 kW

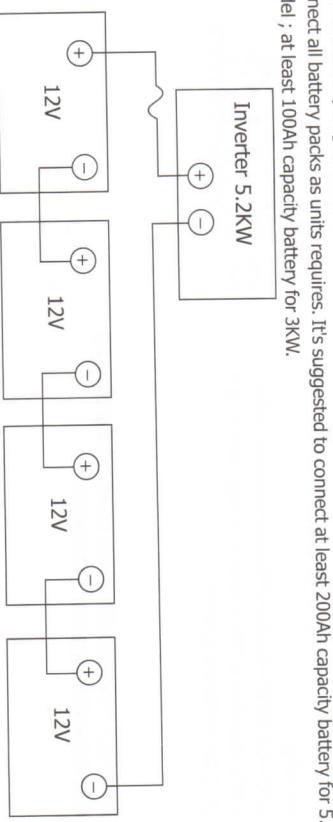
WARNING! All wiring must be performed by a qualified personnel.

WARNING! It's very important for system safety and efficient operation to use appropriate cable for battery connection. To reduce risk of injury, please use the proper recommended cable and terminal size as below.

Recommended battery cable and terminal size:

Please follow below steps to implement battery connection:

1. Assemble battery ring terminal based on recommended battery cable and terminal size.
2. Connect all battery packs as units requires. It's suggested to connect at least 200Ah capacity battery for 5.2kW model ; at least 100Ah capacity battery for 3kW.



INSTALLATION

Unpacking and Inspection

Before installation, please inspect the unit. Be sure that nothing inside the package is damaged. You should have received the following items inside of package:

- The unit x 1
- User manual x 1
- USB cable x 1
- Software CD x 1

Preparation

Before connecting all wirings, please take off bottom cover by removing two screws as shown below.

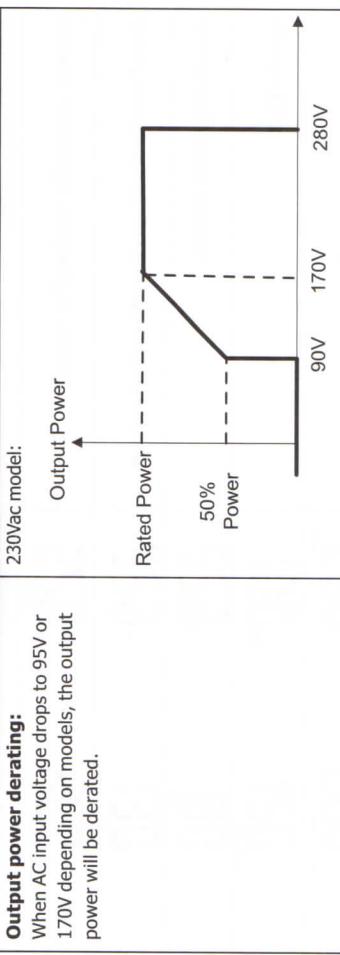
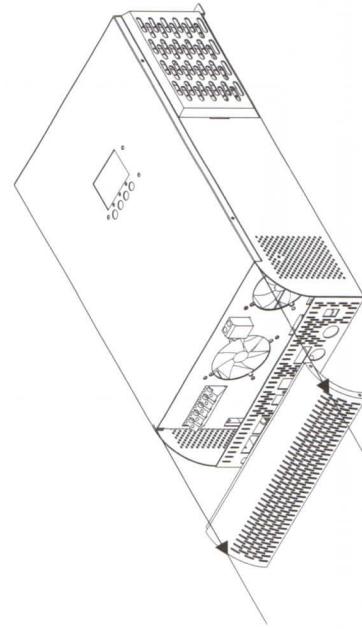
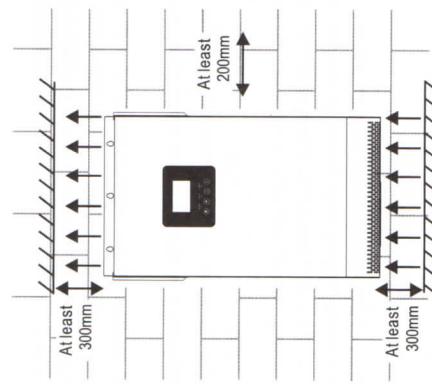


Table 2 Inverter Mode Specifications

INVERTER MODEL	5.2KW DC48V
Rated Output Power	5200W
Output Voltage Waveform	Pure Sine Wave
Output Voltage Regulation	230Vac±5%
Output Frequency	60Hz or 50Hz
Peak Efficiency	90%
Overload Protection	5s@≥150% load; 10s@110%~150% load
Surge Capacity	2 x rated power for 5 seconds
Nominal DC Input Voltage	48Vdc
Cold Start Voltage	46.0Vdc
Low DC Warning Return Voltage	@ load < 20% 44.0Vdc @ 20% ≤ load < 50% 42.8Vdc @ load ≥ 50% 40.4Vdc
Low DC Warning Return Voltage	@ load < 20% 46.0Vdc @ 20% ≤ load < 50% 44.8Vdc @ load ≥ 50% 42.4Vdc



Mounting the Unit

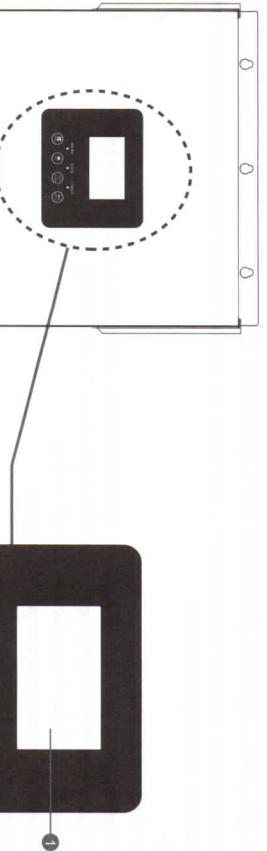
Consider the following points before selecting where to install:

- Do not mount the inverter on flammable construction materials.
- Mount on a solid surface.
- Install this inverter at eye level in order to allow the LCD display to be read at all times.
- For proper air circulation to dissipate heat, allow a clearance of approx. 200 mm to the side and approx. 300 mm above and below the unit.
- The ambient temperature should be between 0°C and 55°C to ensure optimal operation.
- The recommended installation position is to be adhered to the wall vertically.
- Be sure to keep other objects and surfaces as shown in the diagram to guarantee sufficient heat dissipation and to have enough space for removing wires



SUITABLE FOR MOUNTING ON CONCRETE OR OTHER NON-COMBUSTIBLE SURFACE ONLY.

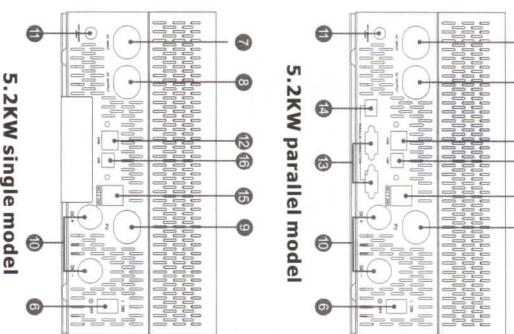
Product Overview



Low DC Cut-off Voltage	42.0Vdc @ load < 20%
@ 20% ≤ load < 50%	40.8Vdc
@ load ≥ 50%	38.4Vdc
High DC Recovery Voltage	58Vdc
High DC Cut-off Voltage	60Vdc

Table 3 Charge Mode Specifications

Utility Charging Mode	
INVERTER MODEL	5.2kW DC48V
Charging Current @ Nominal Input	1~60A
Voltage	
Floating charging	AGM / Gel / LEAD Battery
voltage	Flooded battery
Bulk charging voltage	AGM / Gel / LEAD Battery
(C.V voltage)	Flooded battery
Charging Algorithm	3-Step(Flooded Battery, AGM/Gel/LEAD Battery), 4-Step(LI)
Solar Charging Mode	
INVERTER MODEL	5.2kW DC48V
Rated Power	5000W
MPPT charger	
solar charging current	80A
Max.PV Array Open Circuit Voltage	450Vdc max
PV Array MPPT Voltage Range	150~430Vdc
Min battery voltage for PV charge	34Vdc
Standby Power Consumption	2W
Battery Voltage Accuracy	+/-0.3%
PV Voltage Accuracy	+/-2V
Charging Algorithm	3-Step(Flooded Battery, AGM/Gel/LEAD Battery), 4-Step(LI)



5.2kW parallel model

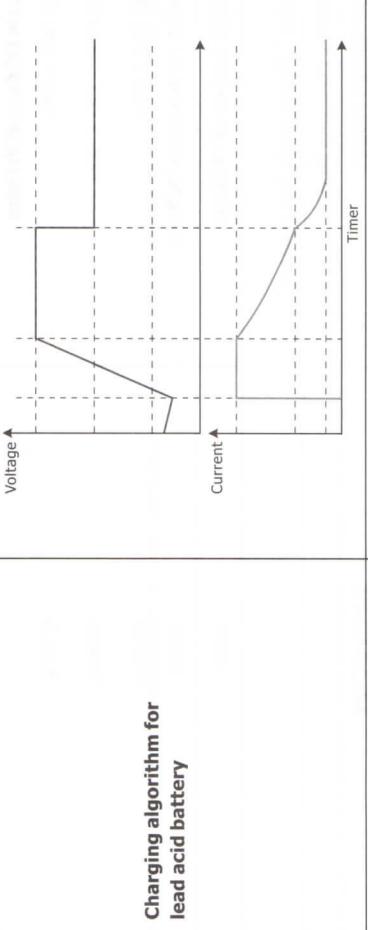
5.2kW single model

NOTE: For parallel model installation and operation, please check separate parallel installation guide for the details.

INTRODUCTION

This is a multi-function inverter/charger, combining functions of inverter, solar charger and battery charger to offer uninterrupted power support with portable size. Its comprehensive LCD display offers user-configurable and easy-accessible button operation such as battery charging current, AC/solar charger priority, and acceptable input voltage based on different applications.

Charging algorithm for lead acid battery



Charging algorithm for Lithium battery

Joint Utility and Solar Charging

INVERTER MODEL

5.2KW DC48V

Max Charging Current

80A

Default Charging Current

80A

Table 4 General Specifications

INVERTER MODEL	5.2KW DC48V
Safety Certification	CE
Operating Temperature Range	-10°C to 50°C
Storage temperature	-15°C~ 60°C
Dimension (D*W*H), mm	528 x 295 x 141
Net Weight, Kg	13.0

Basic System Architecture
The following illustration shows basic application for this inverter/charger. It also includes following devices to have a complete running system:
Generator or Utility.
PV modules (option)

Consult with your system integrator for other possible system architectures depending on your requirements.
This inverter can power all kinds of appliances in home or office environment, including motor-type appliances such as tube light, fan, refrigerator and air conditioner.

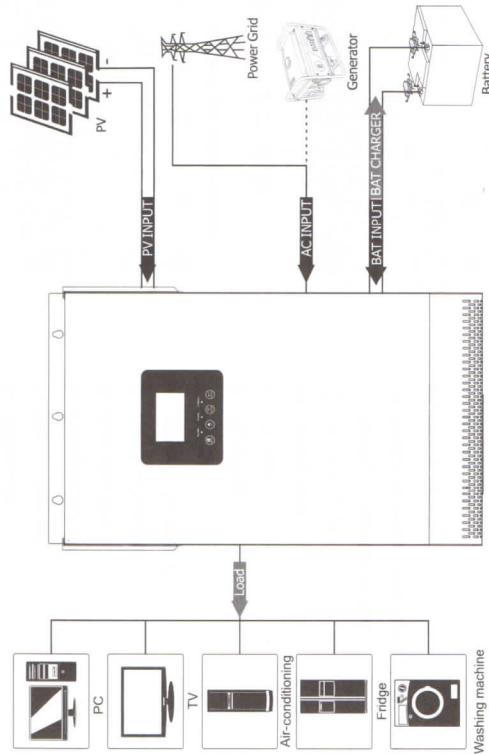


Figure 1 Hybrid Power System

ABOUT THIS MANUAL

Purpose

This manual describes the assembly, installation, operation and troubleshooting of this unit. Please read this manual carefully before installations and operations. Keep this manual for future reference.

Scope

This manual provides safety and installation guidelines as well as information on tools and wiring.

The following cases are not within the scope of warranty

1. Out of warranty.
2. Series number was changed or lost.
3. Battery capacity was declined or external damaged.
4. Inverter was damaged caused of transport shift, remissness, ect external factor
5. Inverter was damaged caused of irresistible natural disasters.
6. Not in accordance with the electrical power supply conditions or operate environment caused damage.

SAFETY INSTRUCTIONS

WARNING: This chapter contains important safety and operating instructions. Read and keep this manual for future reference.

1. Before using the unit, read all instructions and cautionary markings on the unit the batteries and all appropriate sections of this manual.
2. **CAUTION** –To reduce risk of injury, charge only deep-cycle lead acid type rechargeable batteries. Other types of batteries may burst, causing personal injury and damage.
3. Do not disassemble the unit. Take it to a qualified service center when service or repair is required. Incorrect re-assembly may result in a risk of electric shock or fire.
4. To reduce risk of electric shock, disconnect all wirings before attempting any maintenance or cleaning. Turning off the unit will not reduce this risk.
5. **CAUTION** –Only qualified personnel can install this device with battery.
6. **NEVER** charge a frozen battery.
7. For optimum operation of this inverter/charger, please follow required spec to select appropriate cable size. It's very important to correctly operate this inverter/charger.
8. Be very cautious when working with metal tools on or around batteries. A potential risk exists to drop a tool to spark or short circuit batteries or other electrical parts and could cause an explosion.
9. please strictly follow installation procedure when you want to disconnect AC or DC terminals. Please refer to INSTALLATION section of this manual for the details.
10. Fuses (1 piece of 150A, 63VDC for 5.2KW) are provided as over-current protection for the battery supply.
11. GROUNDING INSTRUCTIONS- This inverter/charger should be connected to a permanent grounded wiring system. Be sure to comply with local requirements and regulation to install this inverter.
12. NEVER cause AC output and DC input short circuited. Do NOT connect to the mains when DC input short circuits.
13. **Warning!!** Only qualified service persons are able to service this device. If errors still persist after following troubleshooting table, please send this inverter/charger back to local dealer or service center for maintenance.

TROUBLE SHOOTING

Problem	LCD/LED/Buzzer	Explanation / Possible cause	What to do
Unit shuts down automatically during startup process.	LCD/LEDs and buzzer will be active for 3 seconds and then complete off.	The battery voltage is too low (<1.4V/Cell) (<1.91V/Cell)	1. Re-charge battery. 2. Replace battery.
No response after power on.	No indication.	1. The battery voltage is far too low. (1.4V/Cell) 2. Battery polarity is connected reversed. Input protector is tripped	1. Check if batteries the wiring are connected and well. 2. Re-charge battery. 3. Replace battery.
Mains exist but the unit works in battery mode.	Green LED is flashing.	Input voltage is displayed as 0 on the LCD and green LED is flashing.	Check if AC breaker is tripped and AC wiring is connected well.
When the unit is turned on, internal relay is switched on and off repeatedly.	LCD display and LEDs are flashing	Battery is disconnected.	1. Check if AC wires are too thin and/or too long. 2. Check if generator (if applied) is working well or if input voltage range setting is correct.(Appliance=>wide)
Buzzer beeps continuously and red LED is on.	Fault code 07	Overload error. The inverter is overload 110% and time is up.	Reduce the connected load by switching off some equipment.
Fault code 05		Output short circuited.	Check if wiring is connected well and remove abnormal load.
Fault code 02		Internal temperature of inverter component is over 90°C.	Check whether the air flow of the unit is blocked or whether the ambient temperature is too high.
Fault code 03		Battery is over-charged.	Return to repair center.
Fault code 01		The battery voltage is too high.	Check if spec and quantity of batteries are meet requirements.
Fault code 06/58	Fan fault	Output abnormal (Inverter voltage below than 202Vac or is higher than 253Vac)	Replace the fan.
Fault code 01/09/15/57		Internal components failed.	Return to repair centre.
Fault code 51		Over current or surge	Restart the unit, if the error happens again, please return to repair center.
Fault code 52		Bus voltage is too low	If the battery is connected well, please return to repair center.
Fault code 55		Output voltage is unbalanced	
Fault code 56		Battery is not connected well or fuse is burnt.	

Appendix: Approximate Back-up Time Table

Model	Load(W)	Backup Time@48vdc 100Ah(min)	Backup Time@48vdc 200Ah(min)
	500	1226	2576
	1000	536	1226
	1500	316	804
	2000	222	542
	2500	180	430
	3000	152	364
	3500	130	282
	4000	100	224
	4500	88	200
	5000	80	180

Note: Backup time depends on the quality of the battery, age of battery and type of battery.

Specifications of batteries may vary depending on different manufacturers.

Table of Contents

ABOUT THIS MANUAL	1
Purpose	1
Scope	1
SAFETY INSTRUCTIONS	1
INTRODUCTION	2
Features.....	2
Basic System Architecture.....	2
Product Overview.....	3
INSTALLATION	4
Unpacking and Inspection.....	4
Preparation.....	4
Mounting the Unit.....	4
Battery Connection.....	5
AC Input/ Output Connection.....	6
PV Connection	8
Final Assembly.....	9
Communication Connection.....	10
Dry Contact Signal.....	10
OPERATION	11
Power ON/OFF.....	11
Operation and Display Panel.....	11
LCD Display Icons.....	12
LCD Setting.....	14
Fault Reference Code.....	18
Warning Indicator.....	20
Operating Mode Description.....	21
Display Setting.....	22
SPECIFICATIONS	22
Table 1 Line Mode Specifications.....	22
Table 2 Inverter Mode Specifications.....	23
Table 3 Charge Mode Specifications.....	24
Table 4 General Specifications.....	25
TROUBLE SHOOTING	26
Appendix: Approximate Back-up Time Table	27

USER'S MANUAL

SOLAR INVERTER

Please download the software "SolarPowerMonitor2.2.81".



China:<https://cn.must-ee.com>



Oversea:<https://en.must-ee.com>

MUST[®]

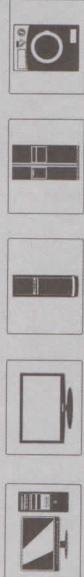
100% PURE SINE WAVE HOME INVERTER

USER'S MANUAL

SOLAR INVERTER

5.2kW

Appliances



4200-010004-00A1



Washing
machine



Fridge



Air-
conditioning



Tv



PC