

USER MANUAL

HYBRID INVERTER 3.6KW/4.2KW/6.2KW

327-100126-08G

VERSION: 1.0

3 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.

3.1 Features

- ☑ Pure sine wave inverter
- ☑ Configurable input voltage range for home appliances and personal computers via LCD setting
- ☑ Configurable battery charging current based on applications via LCD setting
- ☑ Configurable AC/Solar Charger priority via LCD setting
- ☑ Compatible to mains voltage or generator power
- ☑ Auto restart while AC is recovering
- ☑ Overload/ Over temperature/ short circuit protection
- ☑ Smart battery charger design for optimized battery performance
- ☑ Cold start function

3.2 Basic System Architecture

The following illustration shows basic application for this inverter/charger. It also includes following devices to have a complete running system:

- ☑ PV modules
- ☑ Generator or Utility.

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.

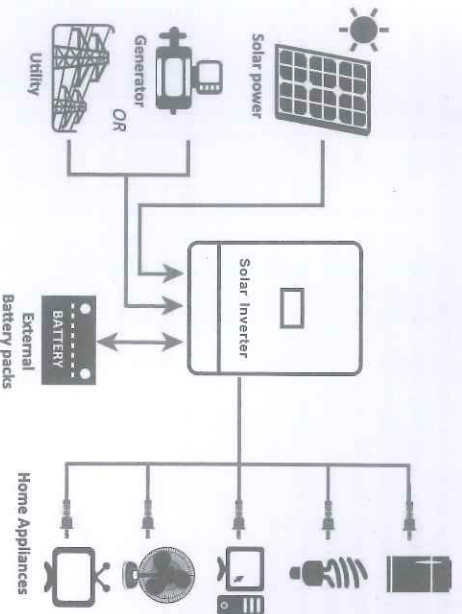
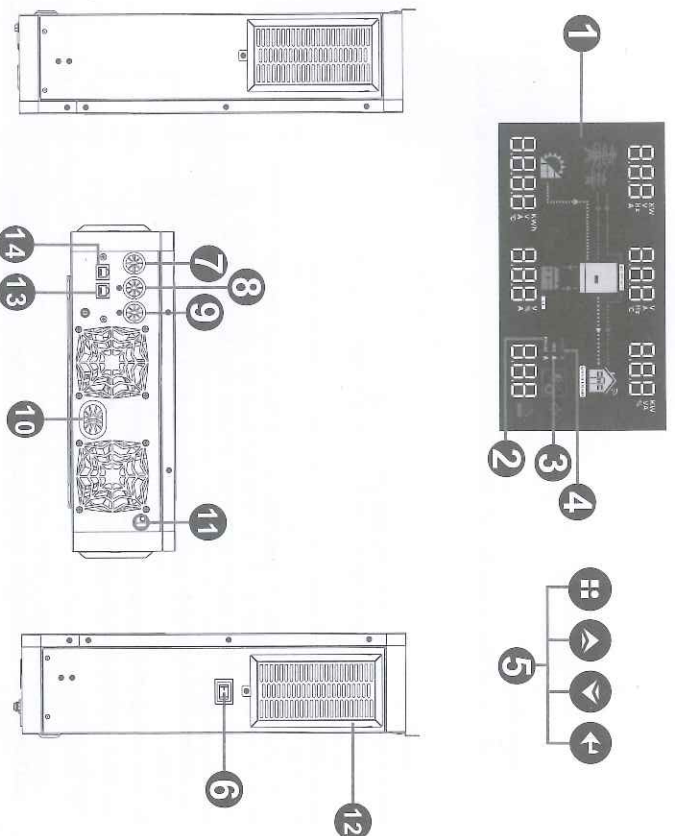


Figure 1 Hybrid Power System

3.3 Product Overview



1. LCD display
2. Status indicator
3. Charging indicator
4. Fault indicator
5. Function buttons
6. Power on/off switch
7. AC input
8. Main output
9. Second output
10. Battery input
11. PV input
12. Anti dust kit
13. WIFI communication/RS-232 port
14. Battery communication/RS-485 port

4 INSTALLATION

4.1 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

4.2 Preparation

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

4.3 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. 20 cm to the side and approx. 50 cm 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.

Install the unit by screwing two screws. It's recommended to use M6 screws.

4.4 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.

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

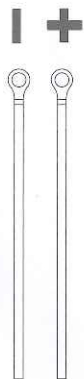
WARNING! It's very important for system safety and efficient operation to use appropriate cable for battery connection. To reduce risk of injury, please use the proper recommended cable as below.

Recommended battery cable size:

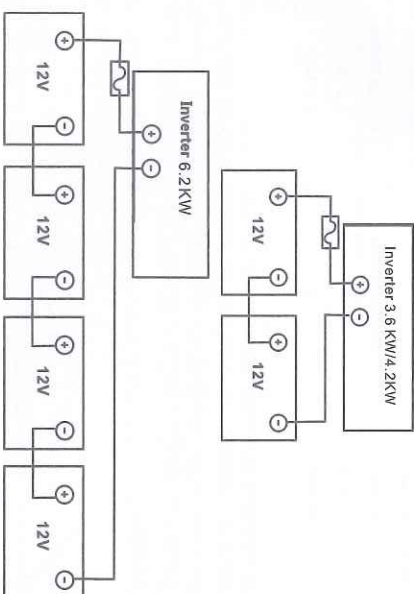
Model	Wire Size	Cable (mm ²)	Torque value (max)
3.6KW/4.2KW/6.2KW	1 x 2AWG	25	2 Nm

Please follow below steps to implement battery connection:

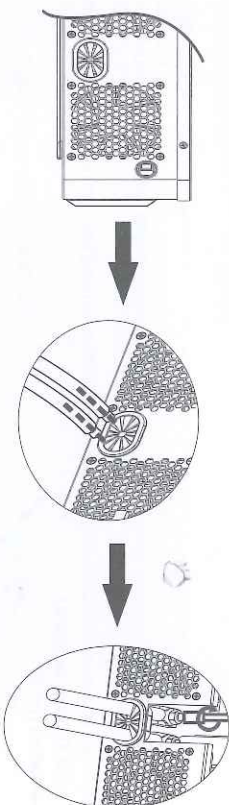
1. Remove insulation sleeve 18 mm for positive and negative conductors.
2. Suggest to put bootlace ferrules on the end of positive and negative wires with a proper crimping tool.



3. Connect all battery packs as below chart.



4. Insert the battery wires flatly into battery connectors of inverter and make sure the bolts are tightened with torque of 2 Nm in clockwise direction. Make sure polarity at both the battery and the inverter/charge is correctly connected and conductors are tightly screwed into the battery terminals.
Recommended tool: #2 Pozzi Screwdriver



WARNING: Shock Hazard

Installation must be performed with care due to high battery voltage in series.

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 (-).

4.5 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 32A for 3.6KW/4.2KW and 50A for 6.2KW.

CAUTION!! There are two terminal blocks with "IN" and "OUT" markings. Please do NOT mis-connect 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

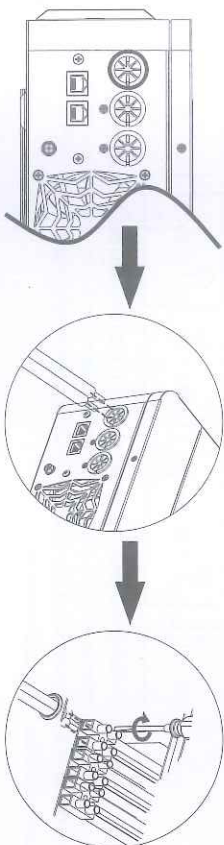
Model	Gauge	Cable (mm ²)	Torque Value
3.6KW/4.2KW	12 AWG	4	1.2 Nm
6.2KW	10 AWG	6	1.2 Nm

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

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

L→LINE (brown or black)

N→Neutral (blue)



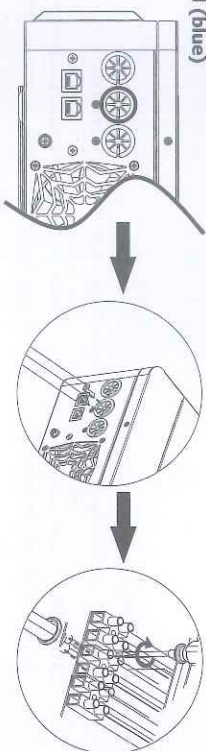
WARNING:

Be sure 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.

L→LINE (brown or black)

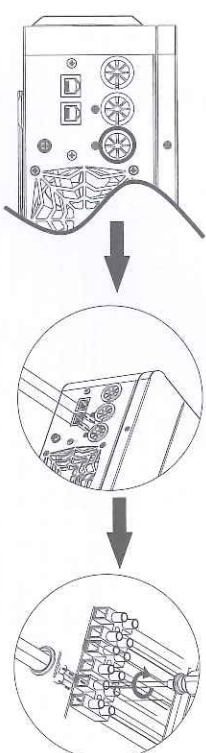
N→Neutral (blue)



5. Then, insert AC output wires according to polarities indicated on terminal block and tighten terminal screws.

L→LINE (brown or black)

N→Neutral (blue)



6. Make sure the wires are securely connected.

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 trigger overload fault and cut off output to protect your appliance but sometimes it still causes internal damage to the air conditioner.

4.6 PV Connection

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

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	Wire Size	Cable (mm ²)	Torque value (max)
3.6KW/4.2KW/6.2KW	1 x 12AWG	4	1.2 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.

INVERTER MODEL	3.6KW/4.2KW	6.2KW
Max. PV Array Open Circuit Voltage	500Vdc	
PV Array MPPT Voltage Range	60Vdc~450Vdc	

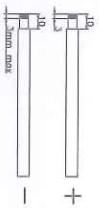
Take 250Wp PV module as an example. After considering above two parameters, the recommended module configurations are listed as below table.

Solar Panel Spec. (reference)	SOLAR INPUT	Qty of panels	Total input power
- 250Wp	(Min in serial: 6 pcs, max. in serial: 13 pcs)	6 pcs	1500W
- Vmp: 30.1Vdc	6 pcs in serial	8 pcs	2000W
- Imp: 8.3A	8 pcs in serial	12 pcs	3000W
- Voc: 37.7Vdc	12 pcs in serial	13 pcs	3250W
- Isc: 8.4A	13 pcs in serial	16 pcs	4000W
- Cells: 60	8 pieces in serial and 2 sets in parallel	20 pcs	5000W
	10 pieces in serial and 2 sets in parallel	24 pcs	6200W
	12 pieces in serial and 2 sets in parallel	30 pcs	7500W
	10 pieces in serial and 3 sets in parallel		

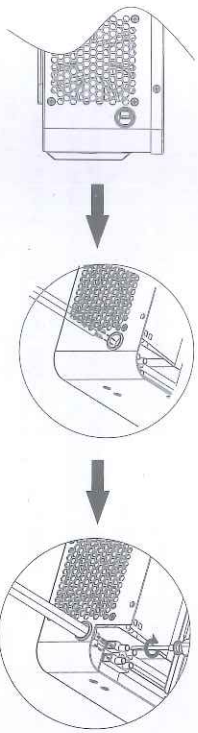
PV Module Wire Connection

Please follow below steps to implement PV module connection:

1. Remove insulation sleeve 10 mm for positive and negative conductors.
2. Suggest to put bootlace ferrules on the end of positive and negative wires with a proper crimping tool.



3. Check correct polarity of wire connection from PV modules and PV input connectors. Then, connect positive pole (+) of connection wire to positive pole (+) of PV input connector. Connect negative pole (-) of connection wire to negative pole (-) of PV input connector. Recommended tool: 4mm blade screwdriver



4.7 Final Assembly

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

4.8 Communication Connection

1. Wi-Fi cloud communication (option):

Please use supplied communication cable to connect to inverter and Wi-Fi module. Download APP and installed from APP store, and Refer to "Wi-Fi Plug Quick Installation Guideline" to set up network and registering. The inverter status would be shown by mobile phone APP or webpage of computer.

2. GPRS cloud communication (option):

Please use supplied communication cable to connect to inverter and GPRS module, and then applied external power to GPRS module. Download APP and installed from APP store, and Refer to "GPRS RTU Quick Installation Guideline" to set up network and registering. The inverter status would be shown by mobile phone APP or webpage of computer.

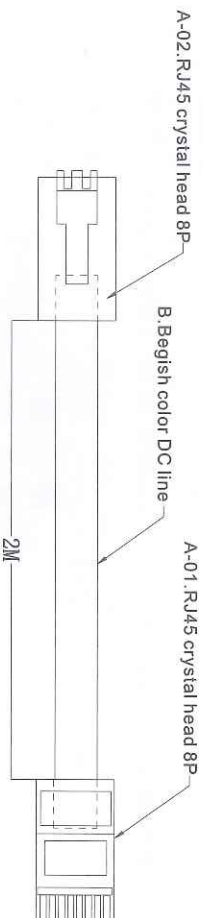
3. Battery communication

The communication between the battery and the inverter can be realized through the battery communication interface, so that the inverter and the lithium battery can exchange information (Baud rate : 9600)

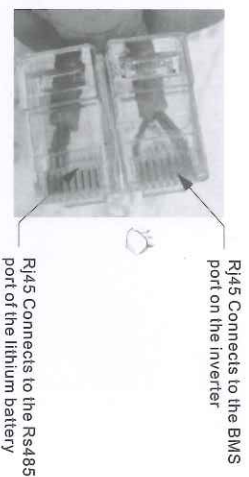
4. Lithium battery and inverter connection:

Use power cables, communication cables for lithium batteries, and inverters to connect.

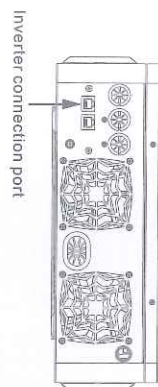
Note: Lithium battery and inverter positive and negative positions, check the correct installation. The RJ45 connector of the communication cable connects to the BMS port of the inverter, and the other RJ45 connector connects to the RS485 port of the lithium battery. Before connecting, make sure that the lithium battery and inverter are turned off. (It is recommended to install a circuit breaker for the power cables of the lithium battery and the inverter battery interface. Otherwise, a spark may occur.)



CONNECTION METHOD	
A-01	A-02
1	7
2	8
8	6
EMPTY PIN IS NOT CONNECTED	



The lithium battery communication cable interface is shown in the figure



Lithium battery connection diagram

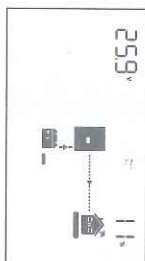
Lithium battery mode display interface entry mode: Set item 05 Switch to the LIP/PAGE FOR 485 FOR lithium battery communication) mode, LIL(PYLON FOR 485 for lithium battery communication) mode, and return to the main interface and turn to page 6.



LIP mode demonstration diagram



LIL mode demonstration diagram



BMS communication interface display diagram (take LIP as an example)

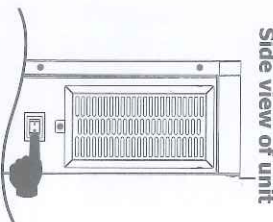
5 OPERATION

5.1 Power ON/OFF

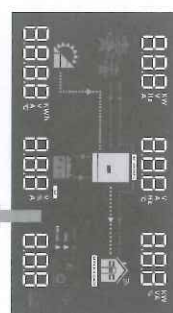
Once the unit has been properly installed and the batteries are connected well, simply press On/Off switch (located on the button of the case) to turn on the unit.

5.2 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.



Side view of unit



Function keys

LCD display

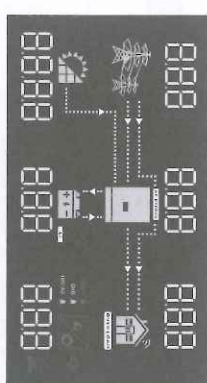
LED Indicator

LED Indicator		Messages	
INV/AC	Green	Solid On	Output is powered by utility in Line mode.
		Flashing	Output is powered by battery or PV in battery mode.
CHG	Green	Solid On	Battery is fully charged.
		Flashing	Battery is charging.
FAULT	Red	Solid On	Fault occurs in the inverter.
		Flashing	Warning condition occurs in the inverter.














Function Keys

Function Key	Description
ESC	To exit setting mode
UP	To go to previous selection
DOWN	To go to next selection
ENTER	To confirm the selection in setting mode or enter setting mode

5.3 LCD Display Icons



Icon	Function description
Input Source Information	
	Indicates the AC input.
	Indicates the PV input
	Indicate input voltage, input frequency, PV voltage, charger current (if PV in charging for 3.6KW models), charger power, battery voltage.

Configuration Program and Fault Information	
 8.8.8	Indicates the setting programs.
	Indicates the warning and fault codes.
8.8.8 	Warning: 8.8.8  flashing with warning code.
	Fault: 8.8.8  lighting with fault code
Output Information	
8.8.8 	Indicate output voltage, output frequency, load percent, load in VA, load in Watt and discharging current.
Battery Information	
	
Load Information	
	Indicates overload.
Mode Operation Information	
	Indicates unit connects to the mains.
	Indicates unit connects to the PV panel.
AC BYPASS 	Indicates load is supplied by utility power.
	Indicates the utility charger circuit is working.
	Indicates the DC/AC inverter circuit is working.
Mute Operation	
	Indicates unit alarm is disabled.

5.4 LCD Setting

After pressing and holding ENTER button for 3 seconds, the unit will enter setting mode. Press "UP" or "DOWN" button to select setting programs. And then, press "ENTER" button to confirm the selection or ESC button to exit.

Setting Programs:

Program	Description	Selectable option	
00	Exit setting mode	Escape (default) 00 G0E 00 G0H	One-button restore setting options
01	Output source priority: To configure load power source priority	Utility first 01 U5b	Utility will provide power to the loads as first priority. Solar and battery energy will provide power to the loads only when utility power is not available. Solar energy provides power to the loads as first priority. If solar energy is not sufficient to power all connected loads, utility will supply power to the loads at the same time. Battery provides power to the loads only when any one condition happens: - Solar energy and utility is not available. - Solar energy is not sufficient and utility is not available.
		Solar first (default) 01 S0b	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 12.
		SBU priority 01 Sbu	
02	Maximum charging current: To configure total charging current for solar and utility chargers. (Max. charging current = utility charging current + solar charging current)	10A 02 10. 40A 02 40. 50A 02 50. 60A (default) 02 60.	20A 02 20. 30A 02 30.

02		70A	02 70 ⁺	80A	02 80 ⁺	90A	02 90 ⁺
		100A	02 100 ⁺	110A	02 110 ⁺	120A	02 120 ⁺
		Appliances (default)					
		03 RPL					
03	AC input voltage range	If selected, acceptable AC input voltage range will be within 90-280VAC.					
		03 UPS					
		If selected, acceptable AC input voltage range will be within 170-280VAC.					
		03 UPS					
05	Battery type	AGW (default)					
		05 AGW					
		User-Defined					
		05 USE					
		If "User-Defined" is selected, battery charge voltage and low DC cut-off voltage can be set up in program 26, 27 and 29.					
		User-Defined					
		05 LIB					
		When the solar energy or Line exists, Set this item to LIB, and the lithium battery will be activated for 3 second.					
		User-Defined					
		05 LIC					
06	Auto restart when overload occurs	If selected, lithium battery communication connection for PACE 232 BMS. The lithium battery activation function is automatically enabled. (LIB function has built in)					
		User-Defined					
		05 LIP					
		If selected, lithium battery communication connection for PACE 485 BMS. The lithium battery activation function is automatically enabled. (LIB function has built in)					
		User-Defined					
		05 LIL					
		If selected, lithium battery communication connection for PACE 485 BMS. The lithium battery activation function is automatically enabled. (LIB function has built in)					
		User-Defined					
		06 LLD					
		Restart disable (default)					
07	Auto restart when over temperature occurs	Restart enable					
		06 LLE					
09	Output frequency	Restart enable					
		07 LFE					
10	Output voltage	50Hz (default)					
		09 50 _{Hz}					
		220V					
		10 220 ⁺					
11	Maximum utility charging current	230V (default)					
		10 230 ⁺					
		240V					
		10 240 ⁺					
11	Note: If setting value in program 02 is smaller than that in program in 11, the inverter will apply charging	10A					
		11 10A					
		2A					
		11 2A					
11		30A (default)					
		11 30A					

12	Setting voltage point back to utility source when selecting "SBU priority" or "Solar first" in program 01.	current from program 02 for utility charger.					
		40A 11 40R		50A 11 50R			
		60A 11 60R		70A 11 70R		80A 11 80R	
		90A 11 90R		100A 11 100R			
		Available options in 3.6KW/4.2KW model:					
		21.0V 12 21.0 ⁺		21.5V 12 21.5 ⁺		22.0V 12 22.0 ⁺	
		22.5V 12 22.5 ⁺		23.0V (default) 12 23.0 ⁺		23.5V 12 23.5 ⁺	
		24.0V 12 24.0 ⁺		24.5V 12 24.5 ⁺			
		25.0V 12 25.0 ⁺		25.5V 12 25.5 ⁺			
		Available options in 6.2KW model:					
		42V 12 42 ⁺		43V 12 43 ⁺		44V 12 44 ⁺	
		45V 12 45 ⁺		46V (default) 12 46 ⁺		47V 12 47 ⁺	
		48V 12 48 ⁺		49V 12 49 ⁺			
		50V 12 50 ⁺		51V 12 51 ⁺			

Available options in 3.6KW/4.2KW/6.2KW model:		
5%	12 5	10% 12 10
15%	12 15	20% 12 20
25%	12 25	30% (default) 12 30
35%	12 35	40% 12 40
45%	12 45	50% 12 50
55%	12 55	60% 12 60
65%	12 65	70% 12 70
75%	12 75	80% 12 80
85%	12 85	90% 12 90
95%	12 95	

When "SBU" is selected in program 01 and "LLP" or "LL" is selected in program 05, the power point is set back to the common power supply.

When the power is lower than the set value, it will automatically switch back to the public power output (if the public power access has a delay, it will be switched to the public power after the power is lower than the set value.)

Available options in 3.6KW/4.2KW model:		
Battery fully charged	24V	13 240 ^{BATT}
24.5V	25V	13 245 ^{BATT}
25.5V	26V	13 250 ^{BATT}
26.5V	27V (default)	13 255 ^{BATT}
27.5V	28V	13 260 ^{BATT}
28.5V	29V	13 265 ^{BATT}
29.5V	30V	13 270 ^{BATT}
30.5V	31V	13 275 ^{BATT}
31.5V	32V	13 280 ^{BATT}
32.5V	33V	13 285 ^{BATT}
33.5V	34V	13 290 ^{BATT}
34.5V	35V	13 295 ^{BATT}
35.5V	36V	13 300 ^{BATT}
36.5V	37V	13 305 ^{BATT}
37.5V	38V	13 310 ^{BATT}
38.5V	39V	13 315 ^{BATT}
39.5V	40V	13 320 ^{BATT}
40.5V	41V	13 325 ^{BATT}
41.5V	42V	13 330 ^{BATT}
42.5V	43V	13 335 ^{BATT}
43.5V	44V	13 340 ^{BATT}
44.5V	45V	13 345 ^{BATT}
45.5V	46V	13 350 ^{BATT}
46.5V	47V	13 355 ^{BATT}
47.5V	48V	13 360 ^{BATT}
48.5V	49V	13 365 ^{BATT}
49.5V	50V	13 370 ^{BATT}
50.5V	51V	13 375 ^{BATT}
51.5V	52V	13 380 ^{BATT}
52.5V	53V	13 385 ^{BATT}
53.5V	54V (default)	13 390 ^{BATT}
54.5V	55V	13 395 ^{BATT}
55.5V	56V	13 400 ^{BATT}
56.5V	57V	13 405 ^{BATT}
57.5V	58V	13 410 ^{BATT}
58.5V	59V	13 415 ^{BATT}
59.5V	60V	13 420 ^{BATT}
60.5V	61V	13 425 ^{BATT}
61.5V	62V	13 430 ^{BATT}
62.5V	63V	13 435 ^{BATT}
63.5V	64V	13 440 ^{BATT}
64.5V	65V	13 445 ^{BATT}
65.5V	66V	13 450 ^{BATT}
66.5V	67V	13 455 ^{BATT}
67.5V	68V	13 460 ^{BATT}
68.5V	69V	13 465 ^{BATT}
69.5V	70V	13 470 ^{BATT}
70.5V	71V	13 475 ^{BATT}
71.5V	72V	13 480 ^{BATT}
72.5V	73V	13 485 ^{BATT}
73.5V	74V	13 490 ^{BATT}
74.5V	75V	13 495 ^{BATT}
75.5V	76V	13 500 ^{BATT}
76.5V	77V	13 505 ^{BATT}
77.5V	78V	13 510 ^{BATT}
78.5V	79V	13 515 ^{BATT}
79.5V	80V	13 520 ^{BATT}
80.5V	81V	13 525 ^{BATT}
81.5V	82V	13 530 ^{BATT}
82.5V	83V	13 535 ^{BATT}
83.5V	84V	13 540 ^{BATT}
84.5V	85V	13 545 ^{BATT}
85.5V	86V	13 550 ^{BATT}
86.5V	87V	13 555 ^{BATT}
87.5V	88V	13 560 ^{BATT}
88.5V	89V	13 565 ^{BATT}
89.5V	90V	13 570 ^{BATT}
90.5V	91V	13 575 ^{BATT}
91.5V	92V	13 580 ^{BATT}
92.5V	93V	13 585 ^{BATT}
93.5V	94V	13 590 ^{BATT}
94.5V	95V	13 595 ^{BATT}
95.5V	96V	13 600 ^{BATT}
96.5V	97V	13 605 ^{BATT}
97.5V	98V	13 610 ^{BATT}
98.5V	99V	13 615 ^{BATT}
99.5V	100V	13 620 ^{BATT}

Setting voltage point back to battery mode when selecting "SBU priority" or "Solar first" in program 01.

Available options in 6.2KW model:

Battery fully charged 48V

55V	13 <u>550</u> ^{BATT}	56V	13 <u>560</u> ^{BATT}
57V	13 <u>570</u> ^{BATT}	58V	13 <u>580</u> ^{BATT}
Available options in 3.6KW/4.2KW/6.2KW model:			
10%	13 <u>10</u>	15%	13 <u>15</u>
20%	13 <u>20</u>	25%	13 <u>25</u>
30%	13 <u>30</u>	35%	13 <u>35</u>
40%	13 <u>40</u>	45%	13 <u>45</u>
50%	13 <u>50</u>	55%	13 <u>55</u>
60%(default)	13 <u>60</u>	65%	13 <u>65</u>
70%	13 <u>70</u>	75%	13 <u>75</u>
80%	13 <u>80</u>	85%	13 <u>85</u>
90%	13 <u>90</u>	95%	13 <u>95</u>
100%	13 <u>100</u>		

When "SBU" is selected in program 01 and "LIP" or "LL" is selected in program 05, the power point is set back to battery mode.

When the battery power is higher than the set value, it will automatically switch back to the battery mode output (when the set value is 100, it will automatically switch when the battery power is 100%.)

16	Charger source priority: To configure charger source priority	If this inverter/charger is working in Line, Standby or Fault mode, charger source can be programmed as below:	
		Solar first	Solar energy will charge battery as first priority.
		16 <u>C50</u>	Utility will charge battery only when solar energy is not available.
		Solar and Utility (default)	Solar energy and utility will charge battery at the same time.
		16 <u>SNU</u>	
		Only Solar	Solar energy will be the only charger source no matter utility is available or not.
		16 <u>050</u>	
		If this inverter/charger is working in Battery mode or Power saving mode, only solar energy can charge battery. Solar energy will charge battery if it's available and sufficient.	
		Alarm on (default)	When the buzzer beeps for more than 90 seconds without action, it will automatically turn off.
18	Alarm control	18 <u>60N</u>	
		Alarm off	
19	Auto return to default display screen	Return to default display screen (default)	If selected, no matter how users switch display screen, it will automatically return to default display screen (input voltage /output voltage) after no button is pressed for 1 minute.
		19 <u>ESP</u>	
		Stay at latest screen	If selected, the display screen will stay at latest screen user finally switches.
		19 <u>PEP</u>	
		Backlight on (default)	Backlight off
20	Backlight control	20 <u>LON</u>	20 <u>LOF</u>
22	Beeps while primary source is interrupted	Alarm on (default)	Alarm off
		22 <u>RON</u>	22 <u>ROF</u>
		Bypass disable (default)	Bypass enable
		23 <u>BYD</u>	23 <u>BYE</u>
23	Overload bypass: When enabled, the unit will transfer to line mode if overload occurs in battery mode.	Record enable (default)	Record disable
25	Record Fault code	25 <u>FEN</u>	25 <u>FDS</u>

26	Bulk charging voltage (C.V voltage)	3.6KW/4.2KW default setting: 28.2V <u>CU</u> <u>26</u> <u>28.2</u> ^{MMT} V
		6.2KW default setting: 56.4V <u>CU</u> <u>26</u> <u>56.4</u> ^{MMT} V
		If self-defined is selected in program 5, this program can be set up. Setting range is from 25.0V to 30.0V for 3.6KW/4.2KW model and 48.0V to 60.0V for 6.2KW model. Increment of each click is 0.1V.
27	Floating charging voltage	3.6KW/4.2KW default setting: 27.0V <u>FLU</u> <u>27</u> <u>27.0</u> ^{MMT} V
		6.2KW default setting: 54.0V <u>FLU</u> <u>27</u> <u>54.0</u> ^{MMT} V
		If self-defined is selected in program 5, this program can be set up. Setting range is from 25.0V to 30.0V for 3.6KW/4.2KW model and 48.0V to 60.0V for 6.2KW model. Increment of each click is 0.1V.
29	Low DC cut-off voltage	3.6KW/4.2KW default setting: 20.0V <u>COU</u> <u>29</u> <u>20.0</u> ^{MMT} V
		6.2KW default setting: 40.0V <u>COU</u> <u>29</u> <u>40.0</u> ^{MMT} V
		If self-defined is selected in program 5, this program can be set up. Setting range is from 20.0V to 25.0V for 3.6KW/4.2KW model and 40.0V to 50.0V for 6.2KW 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.
30	Battery equalization	Battery equalization <u>30</u> <u>EEU</u> <u>30</u> <u>ED5</u>
		Battery equalization disable (default) If "Hooded" or "User-Defined" is selected in program 05, this program can be set up.
31	Battery equalization voltage	3.6KW/4.2KW default setting: 29.2V <u>CU</u> <u>31</u> <u>29.2</u> ^{MMT} V

33	Battery equalized time	6.2KW default setting: 58.4V <u>CU</u> <u>31</u> <u>58.4</u> ^{MMT} V
		Setting range is from 25.0V to 31.5V for 3.6KW/4.2KW model and 48.0V to 61.0V for 6.2KW model. Increment of each click is 0.1V.
		60min (default) <u>33</u> <u>60</u>
34	Battery equalized timeout	120min (default) <u>34</u> <u>120</u>
		Setting range is from 5min to 900min. Increment of each click is 5min.
35	Equalization interval	30days (default) <u>35</u> <u>30d</u>
		Setting range is from 0 to 90 days. Increment of each click is 1 day.
36	Equalization activated immediately	Enable <u>36</u> <u>REN</u>
		Disable (default) <u>36</u> <u>RD5</u>
37	GRID-tie operation	If equalization function is enabled in program 30, this program can be set up. If "Enable" is selected in this program, it's to activate battery equalization immediately and LCD main page will show "E9". If "Disable" is selected, it will cancel equalization function until next activated equalization time arrives based on program 35 setting. At this time, "E9" will not be shown in LCD main page.
		Off grid (default) <u>37</u> <u>OFF</u>
38	GRID-tie current	Inverter operates only in off-grid mode. Solar energy provides power to the loads as first priority and charging second <u>38</u> <u>10A</u>
		Inverter operates hybrid mode. Solar energy provides power to the loads as first priority and charging second <u>38</u> <u>10A</u>
39	Led pattern light	Increment of each click is 2A. <u>39</u> <u>LOF</u>
		Led pattern on (default) <u>39</u> <u>LON</u>
41	Dual output	disable (default) <u>41</u> <u>L2F</u>
		use <u>41</u> <u>L2O</u>
42	Enter the dual output functional voltage point	3.6KW/4.2KW default setting: 22.0V <u>42</u> <u>22.0</u>

	6.2KW default setting: 44.0V 42 44.0		
	Setting range is from 20.0V to 26.0V for 24VDC model and 40.0V to 52.0V for 48VDC model. Increment of each click is 0.1V.		
	Available options in 3.6KW/4.2KW/6.2KW model:		
	5%	10%	42 5 42 10
	15%	20%	42 15 42 20
	25%	30%	42 25 42 30
	35%	40%	42 35 42 40
	45%	50%	42 45 42 50
	55%(default)	60%	42 55 42 60
	65%	70%	42 65 42 70
43	75%	80%	42 75 42 80
	85%		42 85
	48 (default)	49	50
	51	52	53
BMS Communication address 48-70 setting	54	55	56
	57	58	59

Enter the power point of dual output function

When the power is lower than the set value, the main output of the inverter is disconnected and the main output no longer supplies power to the external.

If the 05 setting item is in LIL mode, you can change the mailing address. The corresponding address of 48 is 02, the corresponding address of 49 is 12, and so on.

	60	61	62	
	63	64	65	
	66	67	68	
	69	70		

5.5 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: input voltage, input frequency, PV voltage, charging current, charging power, battery voltage, output voltage, output frequency, load percentage, load in Watt, load in VA, load in Watt, DC discharging current, main CPU Version.

Selectable information	LCD display
Charged state, and the power is less than 1kw	
Input voltage=222V, PV voltage=168V, Battery voltage=25V, Output voltage=222V, Load in Watt=188W, Chg(Flashing), Inv/ac(bright)	
Input voltage=223V, PV current=2.3A, Battery current=20A, Output voltage=224V, Load in VA=188VA, Chg(Flashing), Inv/ac(bright)	
Input voltage=223V, P v ntc temperature=71.0°C, Battery voltage=25V, Inv ntc temperature=35.0°C, Load percentage=12%, Chg(Flashing), Inv/ac(bright)	
Input frequency=50.0Hz, PV power=0.434KWh, Battery current=20A, Output frequency=50.0Hz, Load in watt=188W, Chg(Flashing), Inv/ac(bright)	

Charged state, and the power is greater than 1kw	
Input voltage=222V , PV voltage=168V, Battery voltage=25V, Output voltage=222V, Load in Watt=1.18KW, Chg(Flashing), Inv/ac(bright)	
Input voltage=224V , PV current=8.6A, Battery current=12.5A, Output voltage=222V, Load in VA=1.88KVA, Chg(Flashing), Inv/ac(bright)	
Input voltage=223V , P v ntc temperature=71.0°C, Battery voltage=25V, Inv ntc temperature=35.0°C, Load percentage=82% , Chg(Flashing), Inv/ac(bright)	
Input frequency=50.0Hz , PV power=1.434KWh, Battery current=20A, Output frequency=50.0Hz, Load in watt=1.88KW, Chg(Flashing), Inv/ac(bright)	

Discharged state, and the power is less than 1kw	
Input voltage=0V , PV voltage=0V, Battery voltage=25V, Output voltage=222V, Load in Watt=188W, Chg(lum off), Inv/ac(Flashing)	
Input voltage=0V , PV current=0A, Battery current=12.5A, Output voltage=222V, Load in VA=188VA, Chg(lum off), Inv/ac(Flashing)	
Input voltage=0V , P v ntc temperature=60.0°C, Battery voltage=24V, Inv ntc temperature=36.0°C, Load percentage=13% , Chg(lum off), Inv/ac(Flashing)	
Input frequency=0Hz , PV power=0KWh, Battery current=12A, Output frequency=50.0Hz, Load in watt=188W, Chg(lum off), Inv/ac(Flashing)	

Discharged state, and the power is greater than 1kw

Input voltage=0V, PV voltage=0V, Battery voltage=25V, Output voltage=222V, Load in Watt=1.88KW, Chg(turn off), Inv/ac(Flash)	0 ^v 222 ^v 188 ^W
Input voltage=0V, PV current=0A, Battery current=111A, Output voltage=222V, Load in VA=1.88KVA, Chg(turn off), Inv/ac(Flash)	0 ^v 222 ^v 188 ^W
Input voltage=0V, Pv ntc temperature=68.0°C, Battery voltage=24V, Inv ntc temperature=30.0°C, Load percentage=81%, Chg(turn off), Inv/ac(Flash)	0 ^v 300 ^v 81 [%]
Input frequency=0Hz, PV power=0KWh, Battery current=111A, Output frequency=50.0Hz, Load in watt=1.21KW, Chg(turn off), Inv/ac(Flash)	0 ^{Hz} 500 ^W 121 ^W
Main CPU version checking	Main CPU version 24.00

5.6 Operating Mode Description

Operation mode	Selectable information	LCD display
Standby mode	Input voltage=222V, PV voltage=210V, Battery voltage=25V, Output voltage=0V, Load in Watt=0W, Chg(Flash), Inv/ac(bright)	222 ^v 0 ^v 0 ^v
	Input voltage=223V, PV voltage=0V, Battery voltage=25V, Output voltage=0V, Load in Watt=0W, Chg(Flash), Inv/ac(bright)	223 ^v 0 ^v 0 ^v
Line mode	Input voltage=224V, PV voltage=0V, Battery voltage=25V, Output voltage=222V, Load in Watt=188W, Chg(Flash), Inv/ac(bright)	224 ^v 222 ^v 188 ^W
	Input voltage=224V, PV voltage=0V, Battery voltage=25V, Output voltage=222V, Load in Watt=188W, Chg(Flash), Inv/ac(bright)	224 ^v 222 ^v 188 ^W
Grid-Tie Operation	Input voltage=224V, PV current=8.6A, Battery current=25A, Output voltage=222V, Load in VA=1.88KVA, Chg(Flash), Inv/ac(bright)	224 ^v 222 ^v 188 ^W
	Input voltage=224V, PV current=8.6A, Battery current=25A, Output voltage=222V, Load in VA=1.88KVA, Chg(Flash), Inv/ac(bright)	224 ^v 222 ^v 188 ^W

When working in Grid-Tie mode, the will be flash 3S/times.

Operation mode	Selectable information	LCD display
Battery mode	Input voltage=0V, PV voltage=180V, Battery voltage=25V, Output voltage=230V, Load in Watt=388W, Inv/ac(Flashing)	
	Input voltage=0V, PV voltage=180V, Battery voltage=25V, Output voltage=230V, Load in Watt=388W, Chg(Flashing), Inv/ac(Flashing)	
Selectable information		LCD display
LIC(Lithium battery communication connection PACE 232 BMS)		
Total battery voltage=52.4V Battery residual capacity=23%		
Battery charging current=0A Battery discharge current=1A		
Nominal battery voltage=48V Total battery capacity=100AH		
Battery remaining capacity=23% Battery charger/discharge Times =8		

Battery ambient temperature=28.2°C Battery MOS temperature=28.9°C	28.2 28.9
Single battery voltage=3.27V Single battery temperature=28.5°C	3.27 28.5

LIP mode lithium battery display interface detailed description(PACE 485 BMS)		
The data is displayed in the upper left corner of the LCD	The data is displayed in the upper right corner of the LCD	LCD display interface
Total battery voltage = 25.9V	Remaining battery capacity =11%	
Battery charging current = 0A	Battery discharge current =1A	
Rated battery capacity =100AH	Battery charge cycles =12	
Minimum MOS temperature of battery =29.4°C	Maximum MOS temperature of battery =44.5°C	

The maximum voltage of a single battery cell =3.24V	Minimum voltage of a single battery cell =3.24V	
Maximum temperature of battery cell =32.8℃	Minimum temperature of battery cell =31.5℃	

LIL mode lithium battery display interface detailed description (PYLON 485 BMS)		
The data is displayed in the upper left corner of the LCD	The data is displayed in the upper right corner of the LCD	LCD display interface
Total battery voltage = 48.9V	Remaining battery capacity =11%	
Battery charging current = 0A	Battery discharge current =1A	
Rated battery voltage =48V	Battery charge cycles =12	
The maximum voltage of a single battery cell =3.24V	Minimum voltage of a single battery cell =3.24V	

Maximum temperature of battery cell =29.4℃	Minimum temperature of battery cell =44.5℃	
Minimum MOS temperature of battery =32.8℃	Maximum MOS temperature of battery =31.5℃	

RGB Light (option)

- ① Battery Mode:red Light ② Utility Mode:blue Light
③ PV Mode:purple Light

5.7 Battery Equalization Description

Equalization function is added into charge controller. It reverses the buildup of negative chemical effects like stratification, a condition where acid concentration is greater at the bottom of the battery than at the top. Equalization also helps to remove sulfate crystals that might have built up on the plates. If left unchecked, this condition, called sulfation, will reduce the overall capacity of the battery. Therefore, it's recommended to equalize battery periodically.

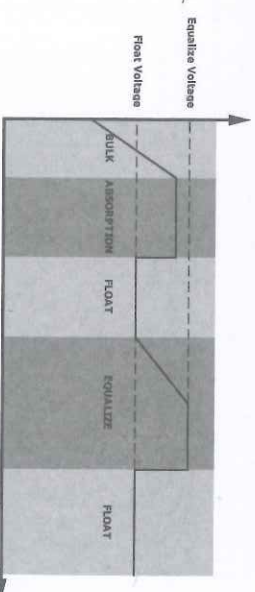
※ How to Apply Equalization Function

You must enable battery equalization function in monitoring LCD setting program 30 first. Then, you may apply this function in device by either one of following methods:

1. Setting equalization interval in program 35.
2. Active equalization immediately in program 36.

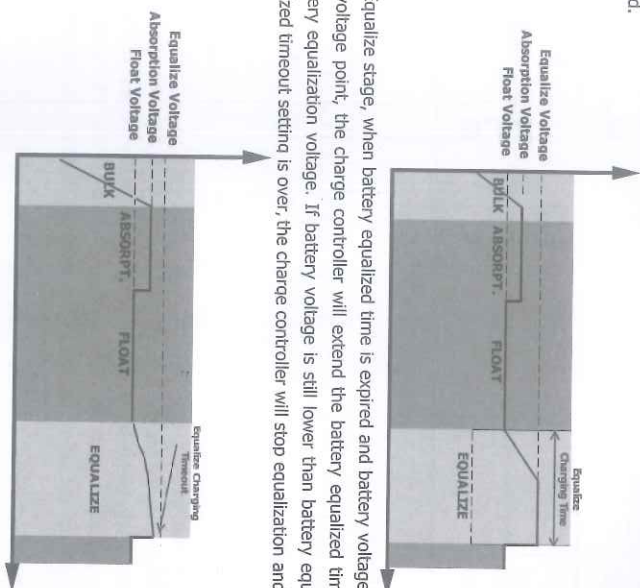
※ When to Equalize

In float stage, when the setting equalization interval (battery equalization cycle) is arrived, or equalization is active immediately, the controller will start to enter Equalize stage.



⌘ Equalize charging time and timeout

In Equalize stage, the controller will supply power to charge battery as much as possible until battery voltage raises to battery equalization voltage. Then, constant-voltage regulation is applied to maintain battery voltage at the battery equalization voltage. The battery will remain in the Equalize stage until setting battery equalized time is arrived.



However, in Equalize stage, when battery equalized time is expired and battery voltage doesn't rise to battery equalization voltage point, the charge controller will extend the battery equalized time until battery voltage achieves battery equalization voltage. If battery voltage is still lower than battery equalization voltage when battery equalized timeout setting is over, the charge controller will stop equalization and return to float stage.

5.8 Mains and lithium battery activation function

1. After 90s of mains power connection to the inverter, the machine is connected to the mains and starts to work.
2. The inverter is in lithium battery mode (Item 05 is LIP or LIL). After the mains is connected, the battery is not connected, and the mains activation function is automatically enabled.

5.9 Fault Reference Code

Fault Code	Fault Event	Icon on
01	Fan is locked when inverter is off.	01 ERROR
02	Over temperature	02 ERROR
03	Battery voltage is too high	03 ERROR
04	Battery voltage is too low	04 ERROR
05	Output short circuited or over temperature is detected by internal converter components.	05 ERROR
06	Output voltage is too high.	06 ERROR
07	Overload time out	07 ERROR
08	Bus voltage is too high	08 ERROR
09	Bus soft start failed	09 ERROR
51	Over current or surge	51 ERROR
52	Bus voltage is too low	52 ERROR
53	Inverter soft start failed	53 ERROR
55	Over DC voltage in AC output	55 ERROR
57	Current sensor failed	57 ERROR
58	Output voltage is too low	58 ERROR
59	PV voltage is over limitation	59 ERROR

The battery fault code is added in lithium battery mode

Fault code	Fault event	Fault condition
02	The battery temperature is too high Procedure	Lithium battery charging battery temperature $\geq 65^{\circ}\text{C}$; The discharge temperature of the lithium battery is higher than 70°C .
03	The battery voltage is too high Procedure	Lithium battery maximum single cell voltage $> 3.65\text{V}$; Total voltage of lithium battery $> 54.6\text{V}$ (48V lithium battery); Total voltage of lithium battery $> 29.1\text{V}$ (24V lithium battery).
04	The battery voltage is too low Procedure	Minimum voltage of a lithium battery cell $< 2.7\text{V}$; Lithium battery total voltage $< 40.4\text{V}$ (48V lithium battery); Lithium battery voltage $< 21.5\text{V}$ (24V lithium battery).

5.10 Warning Indicator

Warning Code	Warning Event	Audible Alarm	Icon flashing
01	Fan is locked when inverter is on.	Beep three times every second	01 [Ⓢ]
03	Battery is over-charged	Beep once every second	03 [Ⓢ]
04	Low battery	Beep once every second	04 [Ⓢ]
07	Overload	Beep once every 0.5 second	07 [Ⓢ]
10	Output power derating	Beep twice every 3 seconds	10 [Ⓢ]
15	PV energy is low.	Beep twice every 3 seconds	15 [Ⓢ]
E9	Battery equalization	None	E9 [Ⓢ]
bP	Battery is not connected	None	bP [Ⓢ]

Added a battery warning code in lithium battery mode

Warning code	Warning event	Warning condition
04	The battery voltage is too low	Minimum voltage of a lithium battery cell < 2.85V; Lithium battery total voltage < 42V (48V lithium battery); Lithium battery voltage < 22.4V (24V lithium battery).
05	The battery voltage is too high	Lithium battery maximum single cell voltage > 3.55V; Total voltage of lithium battery > 54V (48V lithium battery); Total voltage of lithium battery > 28.8V (24V lithium battery).
06	The battery is low warning	Remaining battery capacity ≤ 10%

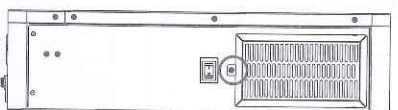
6 CLEARANCE AND MAINTENANCE FOR ANTI-DUST KIT

6.1 Overview

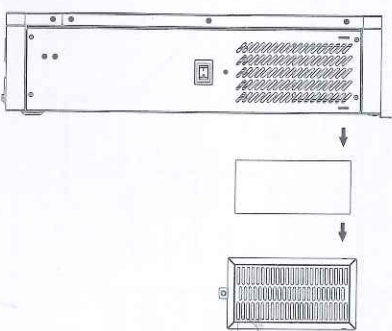
Every inverter is already installed with anti-dust kit from factory. Inverter will automatically detect this kit and activate internal thermal sensor to adjust internal temperature. This kit also keeps dust from your inverter and increases product reliability in harsh environment.

6.2 Clearance and Maintenance

Step 1: Please loosen the screw in counterclockwise direction on the top of the inverter.



Step 2: Then, dustproof case can be removed and take out air filter foam as shown in below chart.



Step 3: Clean air filter foam and dustproof case. After clearance, re-assemble the dust-kit back to the inverter.

NOTICE: The anti-dust kit should be cleaned from dust every one month.

7 SPECIFICATIONS

Table 1 Line Mode Specifications

INVERTER MODEL	3.6KW	4.2KW	6.2KW
Input Voltage Waveform	Sinusoidal (utility or generator)		
Nominal Input Voltage	230Vac		
Low Loss Voltage	170Vac±7V (UPS); 90Vac±7V (Appliances)		
Low Loss Return Voltage	180Vac±7V (UPS); 100Vac±7V (Appliances)		
High Loss Voltage	280Vac±7V		
High Loss Return Voltage	270Vac±7V		
Max AC Input Voltage	300Vac		
Nominal Input Frequency	50Hz / 60Hz (Auto detection)		
Low Loss Frequency	40±1Hz		
Low Loss Return Frequency	42±1Hz		
High Loss Frequency	65±1Hz		
High Loss Return Frequency	63±1Hz		
Output Short Circuit Protection	Circuit Breaker		
Efficiency (Line Mode)	>95% (Rated R load, battery full charged)		
Transfer Time	10ms typical (UPS); 20ms typical (Appliances)		
Output power derating: When AC input voltage drops to 170V, the output power will be derated.			

Table 2 Inverter Mode Specifications

INVERTER MODEL	3.6KW	4.2KW	6.2KW
Rated Output Power	3.6KW	4.2KW	6.2KW
Output Voltage Waveform	Pure Sine Wave		
Output Voltage Regulation	230Vac±5%		
Output Frequency	50Hz		
Peak Efficiency	93%		
Overload Protection	3s@≥150% load; 5s@101%~150% load		
Surge Capacity	2* rated power for 5 seconds		
Nominal DC Input Voltage	24Vdc	24Vdc	48Vdc
Cold Start Voltage	23.0Vdc	23.0Vdc	46.0Vdc
Low DC Warning Voltage	22.0Vdc	22.0Vdc	44.0Vdc
@ load < 50%	21.0Vdc	21.0Vdc	42.0Vdc
Low DC Warning Return Voltage	22.5Vdc	22.5Vdc	45.0Vdc
@ load < 50%	22.0Vdc	22.0Vdc	44.0Vdc
Low DC Cut-off Voltage	20.5Vdc	20.5Vdc	41.0Vdc
@ load < 50%	20.0Vdc	20.0Vdc	40.0Vdc
High DC Recovery Voltage	32Vdc	32Vdc	62Vdc
High DC Cut-off Voltage	33Vdc	33Vdc	63Vdc
No Load Power Consumption	30W	35W	50W

Table 3 Two Load Output Power

INVERTER MODEL	3.6KW	4.2KW	6.2KW
Full Load	3600W	4200W	6200W
Maximum Main Load	3600W	4200W	6200W
Maximum Second Load(battery model)	1200W	1400W	2066W
Main Load Cut Off Voltage	26VDC	26VDC	52VDC
Main Load Return Voltage	27VDC	27VDC	54VDC

Table 4 Charge Mode Specifications

Utility Charging Mode			
INVERTER MODEL	3.6KW	4.2KW	6.2KW
Charging Algorithm	3-Step		
AC Charging Current (Max)	100Amp (@ V_{in} =230V _{ac})		
Bulk Charging	Flooded Battery	29.2	58.4
	AGM / Gel Battery	28.2	56.4
Floating Charging Voltage		27Vdc	54Vdc

Charging Curve

MPPT Solar Charging Mode			
INVERTER MODEL	3.6KW	4.2KW	6.2KW
Max. PV Array Power	6200W		6500W
Nominal PV Voltage	240Vdc		360Vdc
PV Array MPPT Voltage Range	60Vdc~500Vdc		
Max. PV Array Open Circuit Voltage	500Vdc		
Max Charging Current (AC charger plus solar charger)	120Amp	120Amp	120Amp

Table 5 Grid-Tie Operation

INVERTER MODEL			
Nominal Output Voltage	3.6KW	4.2KW	6.2KW
Feed-in Grid Voltage Range	220/230/240VAC		
Feed-in Grid Frequency Range	195~253VAC		
Nominal Output Current	15.7A	18.2A	26.9A
Power Factor Range	>0.99		
Maximum Conversion Efficiency (DC/AC)	97%		

Table 6 General Specifications

INVERTER MODEL			
Safety Certification	3.6KW	4.2KW	6.2KW
Operating Temperature Range	CE		
Storage temperature	-10°C to 50°C		
Humidity	-15°C~60°C		
Dimension (D*W*H), mm	5% to 95% Relative Humidity (Non-condensing)		
Net Weight, kg	8.0	8.0	8.9

8 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 (<1.91V/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. Internal fuse tripped.	1. Contact repair center for replacing the fuse. 2. Re-charge battery. 3. Replace battery.
Mains exist but the unit works in battery mode.	Input voltage is displayed as 0 on the LCD and green LED is flashing.	Input protector is tripped	Check if AC breaker is tripped and AC wiring is connected well.
	Green LED is flashing.	Insufficient quality of AC power. (Shore or Generator)	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. (UPS& Appliance)
	Green LED is flashing.	Set "Solar First" as the priority of output source.	Change output source priority to Utility first.
When the unit is turned on, internal relay is switched on and off repeatedly.	LCD display and LEDs are flashing	Battery is disconnected.	Check if battery wires are connected well.
	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	Temperature of internal converter component is over 120°C. Internal temperature of inverter component is over 100°C.	Check whether the air flow of the unit is blocked or whether the ambient temperature is too high.
Buzzer beeps continuously and red LED is on.	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	Replace the fan.
	Fault code 08/09/53/57	Output abnormal (Inverter voltage below 190V _{ac} or is higher than 260V _{ac})	1. Reduce the connected load. 2. Return to repair center
	Fault code 51	Internal components failed.	Return to repair center.
	Fault code 52	Over current or surge.	
	Fault code 55	Bus voltage is too low.	Restart the unit, if the error happens again, please return to repair center.
		Output voltage is unbalanced.	

9 Appendix: Approximate Back-up Time Table

Model	Load (W)	Backup Time @ 24Vdc 100Ah (min)	Backup Time @ 24Vdc 200Ah (min)
3.6KW 4.2KW	300	449	1100
	600	222	525
	900	124	303
	1200	95	227
	1500	68	164
	1800	56	126
	2100	48	108
	2400	35	94
	2700	31	74
	3200	28	67
	3600	25	60
	4200	22	53

Model	Load (W)	Backup Time @ 48Vdc 100Ah (min)	Backup Time @ 48Vdc 200Ah (min)
6.2KW	500	613	1288
	1000	268	613
	1500	158	402
	2000	111	271
	2500	90	215
	3200	76	182
	3500	65	141
	4000	50	112
	4500	44	100
	5000	40	90
	6200	36	80

Note: 1. 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.
2. The final interpretation right of this product belongs to the company.