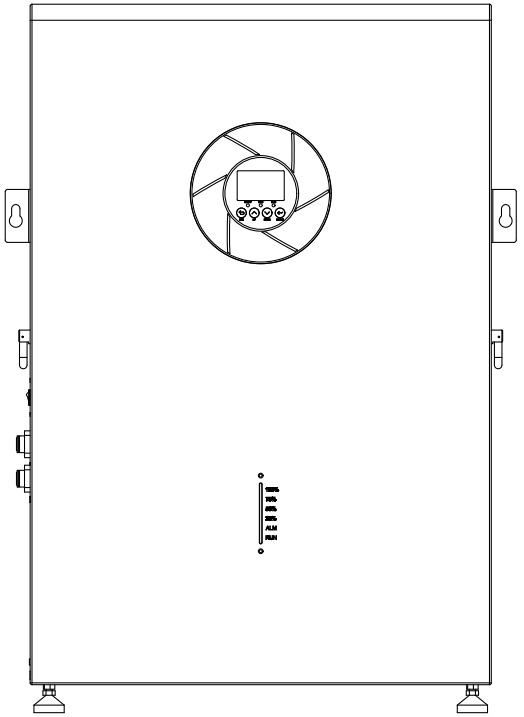
USER MANUAL

OFF-Grid Single Phase Hybrid Inverter

DOA01-5K_XFM5K-US



Document version: 0 1

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1. ABOUT THIS MANUAL

1.1 Purpose

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

1.2 scope

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

2. SAFETY INSTRUCTIONS

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

●Before using the unit, read all instructions and cautionary markings on the unit, the batteries and alappropriate sections of this manual.
●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.
●To reduce risk of electric shock, disconnect all wirings before attempting any maintenance or cleaningTurning off the unit will not reduce this risk.
●**CAUTION**-Only qualified personnel can install this device with battery.
●For optimum operation of this please follow reguired spec to select appropriate cable size.
It's veryimportant to correctly operate this This product.
●Be very cautious when working with metal tools on or around batteries. A potential risk exists to dropa tool to spark or short circuit batteries or other electrical parts and could cause an explosion.
●Please strictly follow installation procedure when you want to disconnect AC or DC terminals. Pleaserefer to INSTALLATION section of this manual for the details.
●One piece of 150A fuse is provided as over-current protection for the battery supply
●GROUNDINGINSTRUCTIONS .This should be connected to a permashould be connected to a permanent groundedwiring system.Be sure to comply with local requirements and regulation to install this This product
●**NEVER** cause AC output and DC input short circuited, Do NOT connect to the mains when DC inputshort circuits.
●**WARNIING:** Only qualified service persons are able to service this device. If errors still persist afterfollowing troubleshooting table, please send this inverter/charger back to local dealer or service centerfor maintenance.
●**WARNING:** Because this This product is non-isolated, only three types of pV modules are acceptablesingle crystalline, poly crystalline with class A-rated and CIGS modules. To avoid any malfunction,donot connect any PV modules with possible currentleakage to theThis product.
For example, grounded PV modules will cause currentleakage to the This product.When using CIGS modulesplease be sure NO grounding
●**CAUTION: I**t's requested to use PV junction box with surge protection. Otherwise, it will causedamage on inverter when lightning occurs on PV module

3. INTRODUCTION

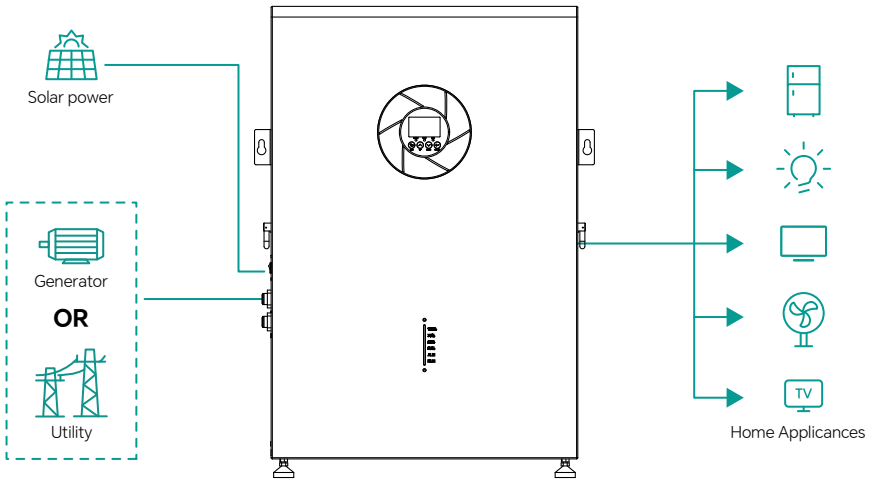
This is a multi-function product , combining functions of inverter, solar charger and battery charger to offeruninterruptible power support with portable size. its comprehensive LCD display offers user-configurable and easy.accessible button operation such as battery charging current, AC/solar charger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

3.1 Features

- Pure sine wave inverter.
- 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/Overtemperature/short circuit protection.
- Smart battery charger design for optimized battery performance.

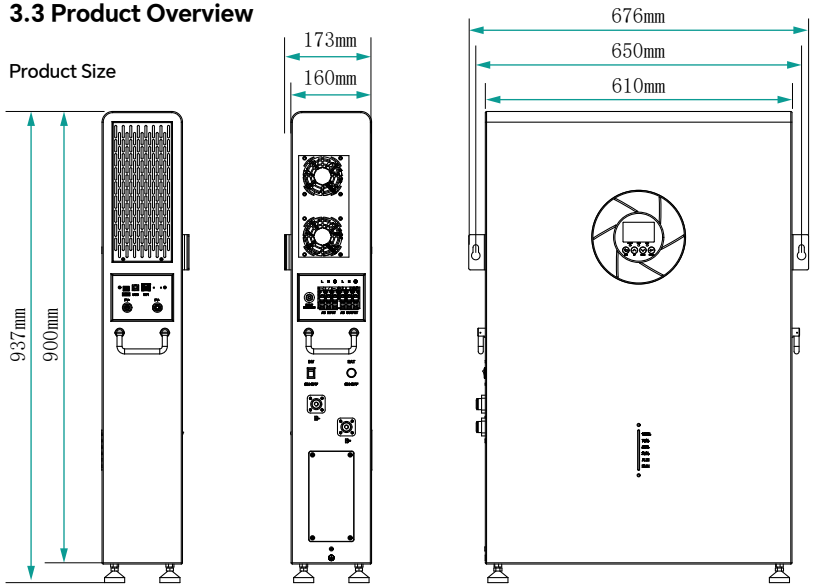
3.2 Basic System Architecture

The following illustration shows basic application for this product. It also includes fallowing devices to havea complete running system:
Generator or Utility.
PV modules
Consult with your system integrator for other possible system architectures depending on your requirementsThis inverter can power all kinds of appliances in home or office environment, including motor-type appliancessuch as tube light, fan,refrigerator and air conditioner

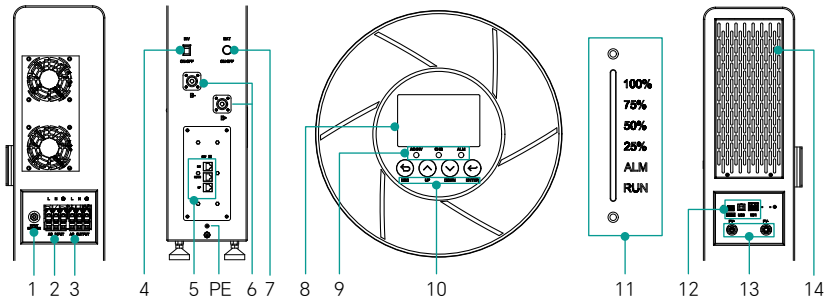


3.3 Product Overview

Product Size



Product Definition



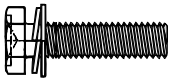
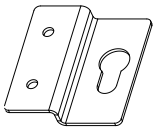
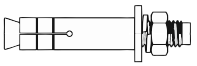
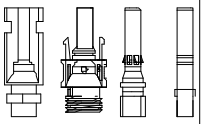
No.	Name	No.	Symbolic Meaning
1	INPUT BREAKER	8	LCD
2	AC INPUT	9	LED Indicator Light
3	AC OUTPUT	10	Function Keys
4	Inverter Switch	11	Battery Light Indicato
5	Battery Communication Ports	12	Inverter Communication Port
6	Battery interface	13	PV Input Port
7	Battery Switch	14	Anti-Dust Kit

*11.RUN:Battery normal operation light ALM:Battery malfunction light 25%:S0C25%-50%:S0C50%-75%:S0C75%-100%:S0C100%

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:

			
user manual ×1	M5*10X4	M4*10X1	2mm hanging ear X2
			
M8*100expansion screwX2	OFF-Grid Single Phase Hybrid Inverter	Quality Assurance CardX1 Certificate of ConformityX1	PV connector wire endx2 PV connector metal core x2

4.2 Mounting the Unit

Consider the following points before selecting where to install:

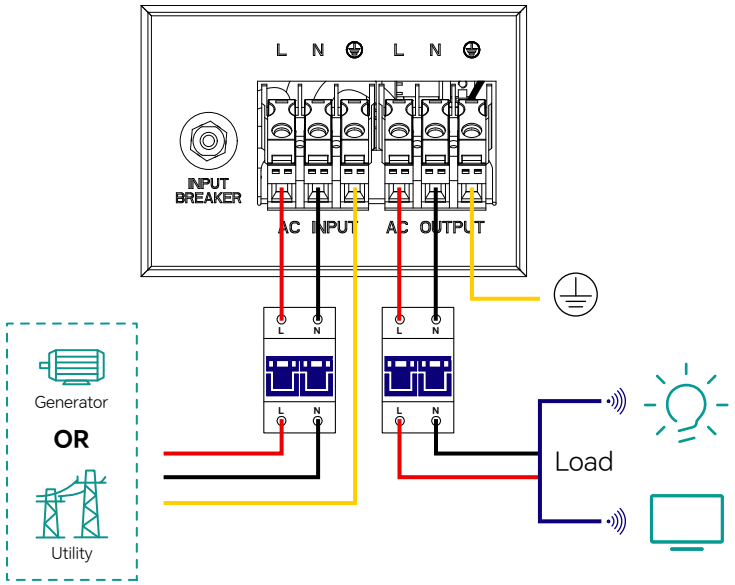
1. Do not mount the product on flammable construction materials.
2. Mount on a solid surface.
3. Install this product at eye level in order to allow the LCD display to beread at all times.
4. For proper air circulation to dissipate heat, allow a clearance of approx.20 m to the side and approx. 50 cm above and below the unit.5.The ambient temperature should be between 0"C and 55*C to ensureoptimal operation.
6.The recommended installation position is to be adhered to the wallvertically.
7. install the unit by screwing two screws. it's recommended to use M4 or 5 screws.
SUITABLE FOR MOUNTING ON CONCRETE OR OTHER NON-COMBUSTIBLE SURFACE ONLY

4.3 AC input/Output Connection

CAUTiON!! Before connecting to AC input/output power source, please install a separate AC breaker betweenAC input/output portand AC input/output power source. can be securely disconnected duringmaintenance and fully protected fromover current ofACinput/output.The recommended spec ofAc breaker is 63Afor 5KVA.
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.
WARNIING! it's very important for system safety and efficient operation to use appropriate cable for AC inputconnection, To reduce risk of injury, please use the proper recommended cable size as below.

Model	Gauge	Cable(mm^2)	Torque Value
DOA01-5K_XFM5K-US	7AWG	10	1.2 Nm

Please follow below steps to implement AC input/output connection
1.Remove insulation sleeve 10mm for six conductors.
2.And shorten phase l and neutral conductor N 3 mm.
Insert AC input wires according to polarities indicated on terminal block and tighten the terminal screws. Be sure to connect PE protective conductor (⏚) first.



⚠	**WARNING:** Be sure that AC power source is disconnected before attempting to hardwire it to the unit.
⚠	Please check to ensure that the wire connection is stable and correct.
⚠	Appliances such as air conditioner are requiredat least 2~3 minutes torestartbecause it's required to have enough time to balance refrigerant gas inside ofcircuitsf a power shortage occurs and recovers in a short time, it will cause damage toyourconnected appliances. To prevent this kind of damage, please check manufacturerofair conditioner ifit's equipped with time-delay function before installation.

4.4 PV Connection

CAUTION: Before connecting to PV modules, please install separately a DC circuit breakerbetweenPV connection terminal and PV modules. Timely protection in case of malfunction.
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 PVmodule connection. To reduce risk of injury, please use the proper recommended cable size as below.

Model	Wire Size	Cable(mm^2)	Torque Value
DOA01-5K_XFM5K-US	10AWG	5	1.5 Nm

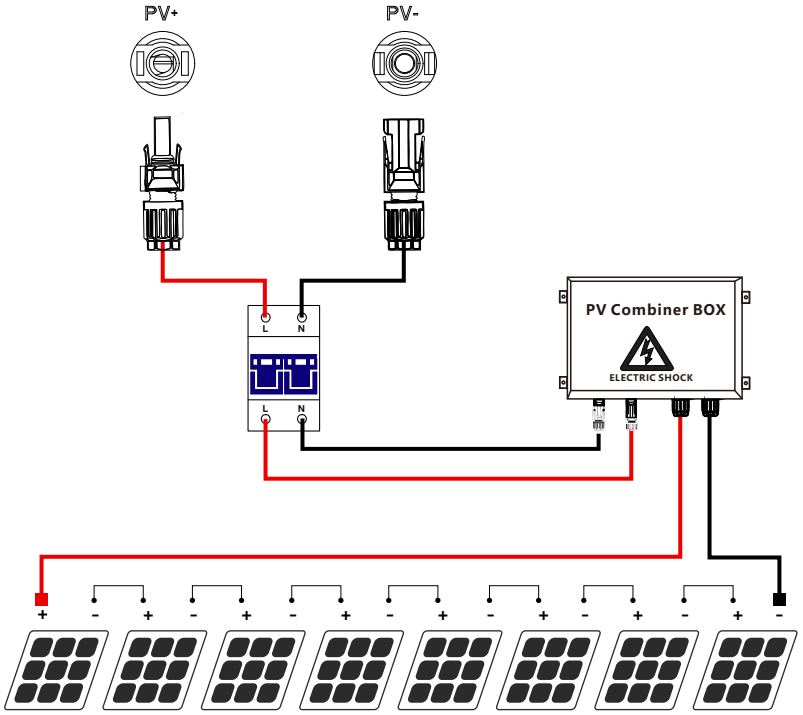
WARNING: Because this This product is non-isolated, only three types of PV modules are acceptable:single crystalline, poly crystalline with class A-rated and ClGS modules.To avoid any malfunction, do not connect any Py modules with possible current leakage to theThis product. Forexample, grounded pV modules will cause current leakage to the This product. When using ClGs modules, pleasebe sure NO grounding.
CAUTION: It's requested to use pV junction box with surge protection, Otherwise, it will cause damage onThis product when lightning occurs on PV modules.

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 This product.
2. Open circuit Voltage (Voc) of PV modules should be higher than min. battery voltage.

Model	DOA01-5K_XFM5K-US
Max, PV Array Open Circuit Voltage	500Vdc
PV Array MPPT Voltage Range	120Vdc~450Vdc

Please follow the steps below to connectthe photovoltaic modules:

1. After installing the photovoltaic connection line using the matching MC4 connector,insert the positive terminal (+) of the MC4 connector into the positive terminal (+) ofthe PV input connecto-rand then insert the positive terminal (+) of the MC4 connectorinsert the pole (-) into the negative pole (-) ofthe PVinput connector.
2.Ensure a secure connection.



	Before connecting AC inputand output, the circuit breaker must be disconnected toavoid the risk of electric shock,and live operation is not allowed.
	Please checkif the cables used are sufficientto meetthe requirements,as cables that are too thin or of poor quality can pose serious safetyhazards.

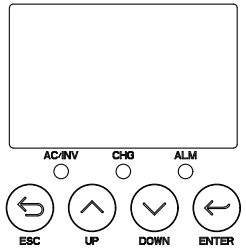
5. OPERATION

5.1 Power ON/OFF

Checkifallconnectionlines are reliably connected.
1.Turn on the battery switch.
2.Turn on theinverter switch

5.2 Operation and Display Panel

The operation and display panel, shown in below chart. It includesthree indicators.
four fun ction buttons and a LCD display, indicating the operating status and input/outputpower information.

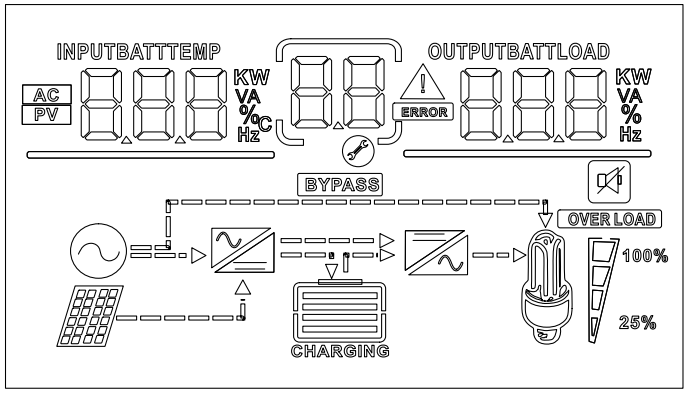


ESC	To exit setup mode
UP	To go to previous item
DOWN	To go to next item
ENTER	To confirm the selection in setting mode or enter setting mode

LED Indicator Functions:

LED Indicator			Message
AC/INV	Green	Solid on	Output is powered by utility in line mode
		Flashing	Output is powered by battery or PV in battery mode
CHG	Yellow	Solid on	Battery is fully charged
		Flashing	Battery is charging
ALM	Red	Solid on	Fault occurs
		Flashing	Warning condition occurs

5.3. LCD Display Icons



Icon	Function Description
Output is powered by utility in line mode	
AC	Indicates the AC input.
PV	Indicates the PV input.
INPUTBAT 888 KW VA % Hz	Indicates input voltage, input frequency, PV voltage, charge current, charge power battery voltage.
Configuration Program and Fault information	
88	Indicates the setting programs.
88 ERROR	Indicates the warning and fault codes.
	Warning: 88 Flashing with warning code.
	Fault: 88 Lighting with fault code.
Output Information	
OUTPUTBATTLOAD 888 KW VA % Hz	Indicates output voltage, output frequency, output power, load voltage and discharge current

Battery Information	
CHARGING	Indicates battery level by 0-24%,25-49%,50-74%,75-100% in battery mode and charging status in line mode.

In AC Model, It Will Present Battery Charging Status

Status	Battery Voltage	LCD Display
Constant current mode/constant voltage mode	< 2V/cell	Four bars will flash in turns
	2~2.083V/cell	Bottom bar will be on and other three bars flash in turns
	2.083~2.167V/cell	Bottom two bars will be on and other two bars flash in turns
	> 2.167 V/cell	Bottom three bars will be on and the top bar will flash
Float charge mode, Batteries are full charged		Four bars will be on

In Battery Mode, It Will Present Battery Capacity

Load percentage	Battery Voltage	LCD Display
Load>50%	< 1.85V/cel	
	1.85V/cell~ 1.933V/cell	
	1.933V/cell~ 2.017V/cell	
	>2.017V/cel	
Load < 50%	< 1.892V/cell	
	1.892V/cell~ 1.975V/cel	
	1.975V/cell~2.058V/cel	
	>2.058V/cel	

Load Information				
OVER LOAD	Indicates overload			
100% 25%	Indicatestheloadlevelby0~24%，25~50%，50%~75%,75%~100%			
	0%~24%	25%~49%	50%~74%	75%~100%

Mode Operation Information	
	indicates unit connects to the mains.
	Indicates unit connects to the PV panel.
BYPASS	Indicatesload is powered by utility power.
	indicates the load charger circuit is working
	Indicates the DC/AC inverter circuit is working
Mode Operation	
	Indicates unit alarm is disabled

5.3.1 LCD Display page

Under normal circumstances, the indicator has 15 pages. Press the query button UP/DOWN to switch the interface, which will display the information of PV, AC input/output voltage, battery voltage, battery charging/discharging power, and inverter software version etc. If there is an alarm, the alarm information page will be displayed; if the inverter is faulty, the fault code page will be displayed. By default, the main panel displays fault information. When there is no fault or alarm in the inverter, the main page displays voltage and rate information by default.

Display Page 1 (main display page): Display the inverter input frequency and output voltage, as shown in Figure 1-1.

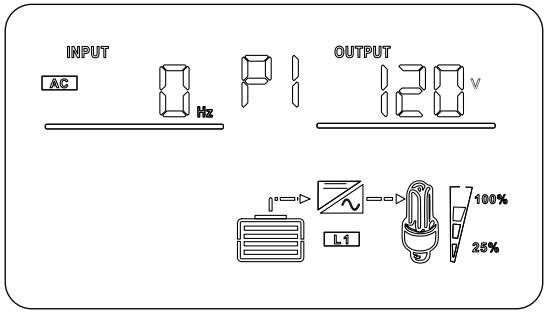


Figure 1-1 display page 1

Display Page 2 : Display the PV input and output voltage, as shown in Figure 1-2.

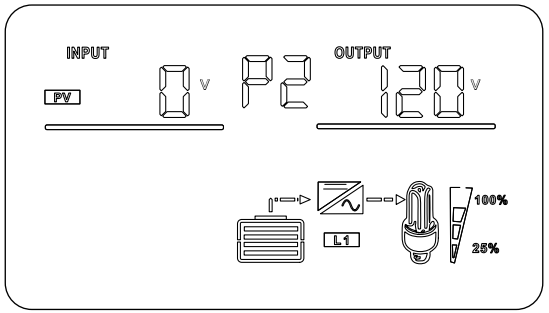


Figure 1-2 display page 2

Display Page 3 : Display the inverter PV input current and output voltage ,as shown in Figure 1-3.

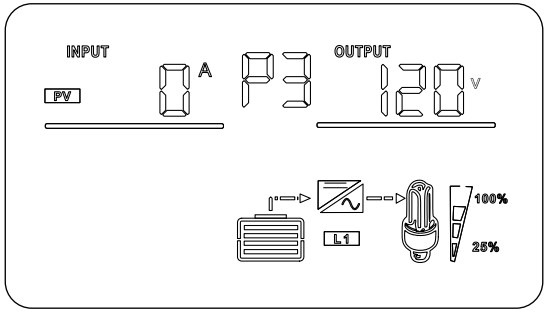


Figure 1-3 display page 3

Display Page 4 : Display the inverter PV input power and output voltage, as shown in Figure1-4.

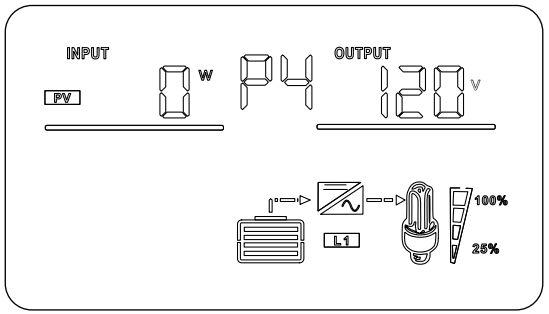


Figure 1-4 display page 4

Display Page 5 : Battery information, display the battery charging current and output voltage , as shown in Figure 1-5.

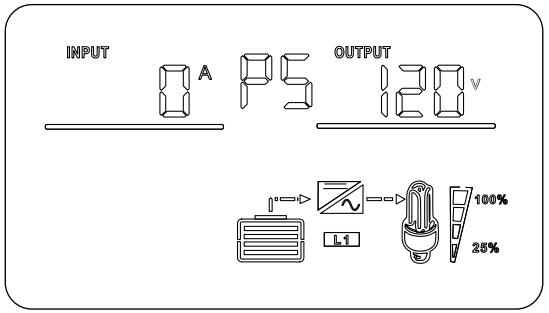


Figure 1-5 display page 5

Display Page 6 : Battery information, display the battery charging power and output voltage , as shown in Figures1-6.

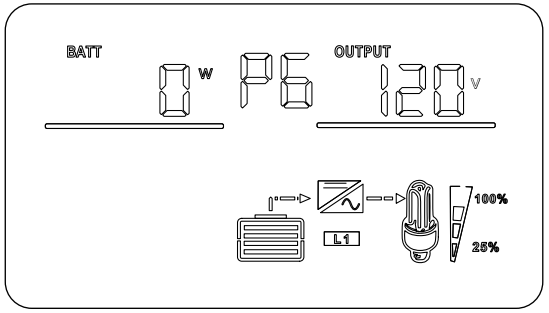


Figure 1-6 display page 6

Display Page 7 : Battery information,display the battery voltage and output voltage, as shown in Figure 1-7.

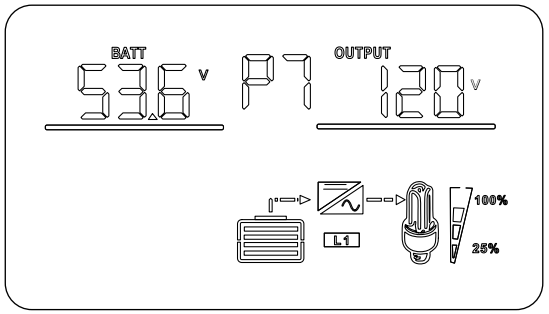


Figure 1-7 display page 7

Display Page 8 : Battery information,display the battery voltage and output frequency, as shown in Figure 1-8.

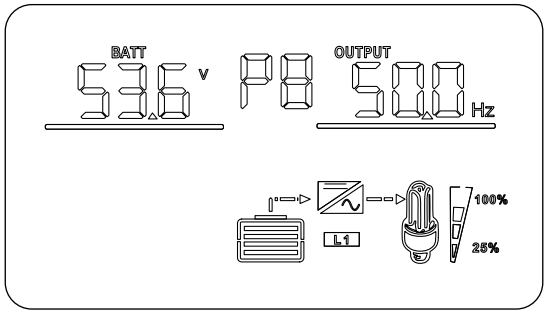


Figure 1-8 display page 8

Display Page 9 : Battery Information, display the battery voltage and load percentage, as shown in Figure 1-9.

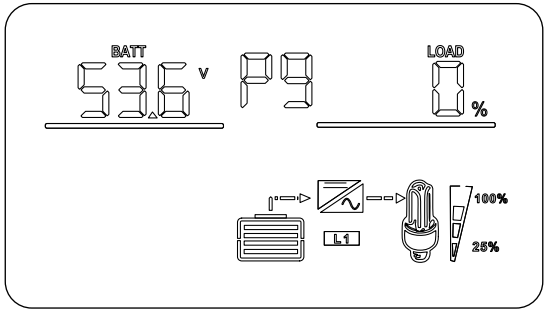


Figure 1-9 display page 9

Display Page 10 : The upper left corner displays the battery voltage, and upper right corner displays the output power capacity, as shown in Figure 1-10.

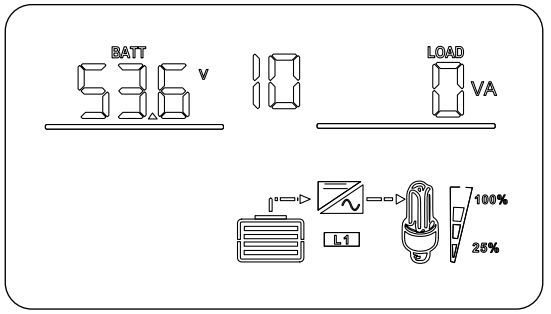


Figure 1-10 display page10

Display Page 11 : Battery information, display the battery voltage and output power, as shown in Figure 1-11.

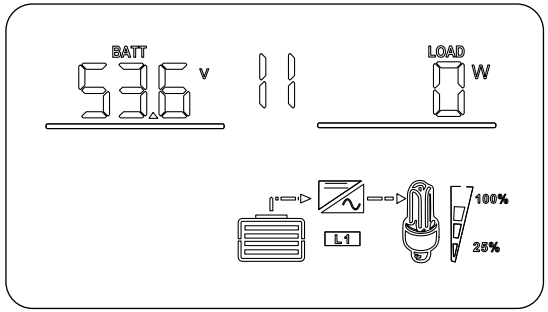


Figure 1-11 display page11

Display Page 12 : Battery information,the upper left corner displays the battery voltage, and the upper right corner displays the battery discharging current, as shown in Figure 1-12.

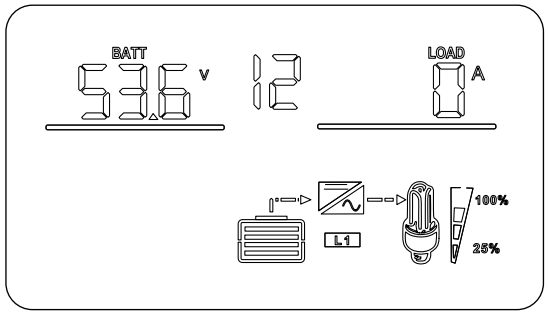


Figure 1-12 display page12

Display Page 13 : Software version displays the inverter system software version, as shown in Figure 1-13.

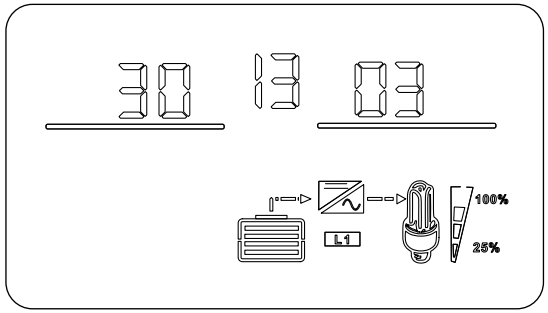


Figure 1-13 display page13

Display Page 14 : Lithium battery temperature, SOC; when the BMS communication successfully, the upper left corner displays BMS temperature information; the upper right corner displays BMS SOC information,as shown in Figure 1-14.If the BMS communication fails, this page is not available.

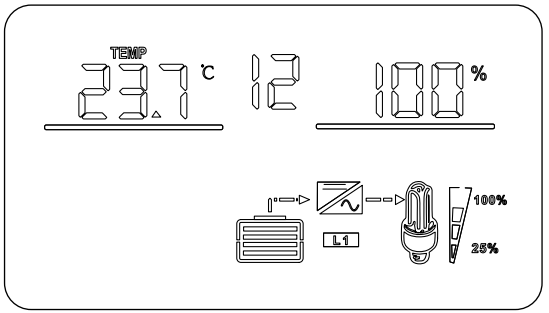


Figure 1-14 display page14 (battery temperature, SOC information of lithium battery)

Display Page 15 : After the successful BMS communication , the upper left corner shows the maximum battery voltage value that the battery charge is allowed to reach,and the upper right corner shows the maximum allowable charging current of the battery,as shown in Figure 1-15. If the BMS communication fails, this page is not available.(These two parameters are automatically set by the lithium battery BMS according to the battery's own conditions, and have nothing to do with the inverter parameters).

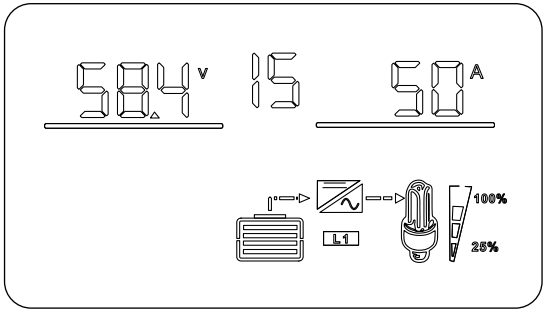
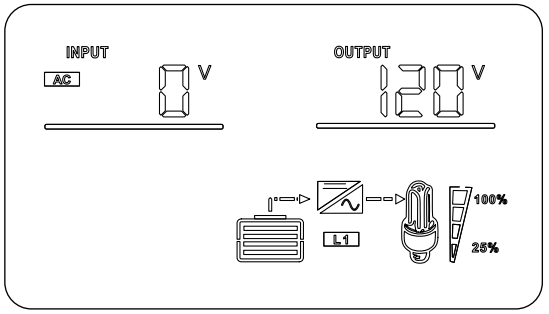


Figure 1-15 display page15

Display Page 5 : Battery information, display the battery charging current and output voltage , as shown in Figure 1-5.



5.4 LCD setting

LCD display information switching is achieved by pressing the "Up" or "Down" button. The optionalinformation switching commands are as follows:Press and hold the button for 3 seconds and the device will enter the setting mode. Press the "Up" or"Down" key to select the setting item. Then press the "ENTER" button to confirm the selection or press theESC button to exit.

Setting Programs:

Program	Description	Selectable option	
00	Exit setting mode	[00] ESC	Escape
01	Output source priority:To configure load powersource priority	[01] UTL	Utility will provide power to the loads as first priority.Solar and battery energy will provide power to the loads onlywhen utility power is not available.
		[01] SOL	Solar energy provides power to the loads as first priority.If solar energy is not sufficient to power all connected loads, Utilityenergy will supply power to the loads at the same time.The battery will provide energy in anyof the following conditions Solar and mains power unavailable Solar power is low and mains poweris not available
		[01] SBU	Solar energy provides power to the loads as first priority.If solar energy is not sufficient to power all connected loads, batteryenergy 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.
02	Maximum charging current: To configure total chargingcurrent for solar and utility chargers. (Max, charging current = utility charging current + solar charging current)	[02]60A (default)	Setting range is from 10-100A

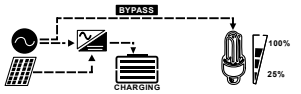
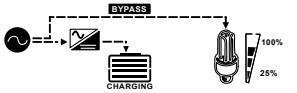
Program	Description	Selectable option	
05	Battery type	[05] AGM (default)	Constant voltage charging voltage is 56.4V, float charging voltage is 54V.
		[05] USE	If"User-Defined" is selected,battery charge voltage and low DCcut-off voltage can be set up inprogram 26,27 and 29.
		[05] FLD	Flooded, Constant voltage charging voltage is 58.4V, float charging voltage is 54V.
06	Auto restart when overload occurs	[06] LRD (default)	Restart disable
		[06] LRE	Restart enable
07	Auto restart when over temperature occurs	[07] TRD (default)	Restart disable
		[07] TFE	Restart enable
09	Output frequency	[09] 60Hz (default)	When utility power is available, the device automatically adapts to the utility frequency. When utility power is unavail-able, the output frequency can be set.
		[09] 50Hz	
10	Output voltage	[10]120V (default)	Setting range is from 100V to 120V
11	Maximum utility charging current Note: If setting value in program 02 is smaller than that in program in 11, the inverter will apply chargingcurrent from program 02 for utility charger.	[11] 30A (default)	Setting range is from 10 to 80A
12	Setting voltage point back to utility source when selecting "sBU priority" in program 01.	[12]46V (default)	Setting range is from 44V to 51V

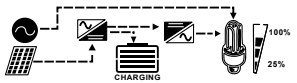
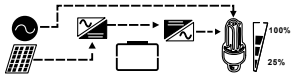
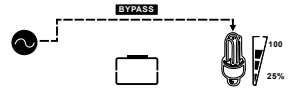
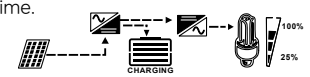
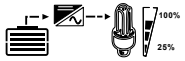
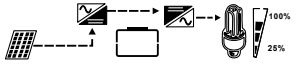
Program	Description	Selectable option	
13	Setting voltage point back to battery mode when selecting “SBU priority" in program 01.	[13] 54V (default)	Setting range is from 48-58V
16	Charger source priority: To configure charger source priority	[16] CUT	Utility will charge battery as first priority. Solar energy will charge batteryonly when utility power is notavailable.
		[16] CSO	Solar energy will charge battery as first priority.Utility will charge battery onlywhen solar energy is not available.
		[16] SNU (default)	Solar energy and utility will charge battery at the same time.
		[16] OSO	Solar energy will be the only charger source no matter utility is available or not.
		If this is working in Battery mode, only solarenergy can charge battery, Solar energy will charge battery if it'savailable and sufficient.	
18	Alarm control	[18] BON (default)	Alarm on
		[18] BOF	Alarm off
19	Auto return to default display screen	[19] ESP (default)	If selected, no matter how users switch display screen, it will automatically return to defauitdisplay screen (input voltage/output voltage) after no button ispressed for 1 minute.
		[19] REP	If selected, the display screen will stay at latest screen user finally switches.
20	Backlight control	[20] LON (default)	Backlight on
		[20] LOF	Backlight on

Program	Description	Selectable option	
22	Beeps while primary source is interrupted	[22] AON (default)	Alarm on
		[16] CUT	Alarm on
23	Overload bypass:When enabled, the unit will transfer to line mode if overload occurs in battery mode.	[23] BYD (default)	Bypass disable
		[23] BYE	Bypass enable
25	Record Fauit code	[25] FEN (default)	Record enable
		[25] FDS	Record disable
26	Bulk chargingvolt-age(C.V voltage)	[26]56.4V (default)	If self-defined is selected in program 5,this program can be set up.Settingrange is from 48.0V to58.4V.increment of each click is 0.1V.
27	Floating charging	default setting: 54V	If self-defined is selected in program 5, this program can be set up.Setting range is from 48.0V to 58.4V.Increment of each click is 0.1V.
29	Low DC cut-off	default setting: 42V	If self-defined is selected in program 5, this program can be set up. Setting range is from42.0V to 48.0V.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 equalizationIf “Flooded" or “User-De-fined" is selected inprogram 05, this program can be set up.	EDS (default)	Battery equalization disable (default)
		[30]EEN	Battery equalization
31	Battery equalization voltage	[31] 58.4V (default)	Setting range is from 48.0V to 59.0V.Increment of each click is 0.1V.

Program	Description	Selectable option	
33	Battery equalized time	[33] 60 mins (default)	Setting range is from 5mins to 900mins. Increment of each click is 5mins.
34	Battery equalized time out	[34] 120 min (default)	Setting range is from 5mins to 900mins. increment of each click is 5mins.
35	Equalization interval	[35] 30 day (default)	Setting range is from 0~90 days Increment of each click is 1 day.
36	Equalization activated immediately	[36]ADS (disable default)	If equalization function is enabled inprogram 30, this program canbe set up. If “Enable" is selected in thisprogram, it's to activate battery equalization immediately andLCD main page will shows”E9”.If “Disable" is selected, it will cancel equalization functionuntil next activated equalization timearrives based on program 35 setting. At this time, “E9”will not be shown in LCD main page.
		[36] AEN	Enable
37	Discharge alarm soc Settings	[37] 15% (Disable)	When the capacity is below the specified value, the SOC alarm is triggered (valid when BMs communication is normal).
38	Discharge cut-off SOC setting	[38]5% (default)	When the capacity is below the specified value,the discharge stops(valid when BMs communication is normal).
39	Charging cut-off SOC setting	[39] 100% (default)	When the capacity is greater than the specified value, the charging stops(valid when BMS communication is normal).
40	Switch inverter output SOC setting	[40]10% (default)	When the capacity is greater than the specified value, switch to inverter output mode (valid when BMS communication is normal).
41	Switch utility SOC setting	[41]10% (default)	When the capacity is below the specified value, switch to utility (validwhen BMS communication is normal).

5.5 Operating Mode Description

Operation mode	Operation mode	LCD display
Standby mode/Power save mode Note: *Standby mode: The inverter is not turned on yet but at this time, the inverter can charge battery without AC output. *Power save mode:In power	No output is supplied by the unit but it still can charge batteries.	Charging by utility and PV energy 
		Charging by utility 
		Charging by PV energy 
save mode, when the load power is lower than 50W or the load cannot be detected,the inverter without AC output.		No Charging 
Fault mode Note: *Fault mode: Errors are caused by inside circuit erroror external reasons, such asover tempera-ture, output short circuited and so on.	PV energy and utility can charge batteries.	Charging by utility and PV energy 
		Charging by utility 
		Charging by PV energy 
		No Charging 
Line Mode	The unit will provide outputpower from the mains. it will also charge the battery at line mode.	Charging by utility and PV energy 
		Charging by utility 

Operation mode	Operation mode	LCD display
	The unit will provide outputpower from the mains. It will also charge the battery at line mode.	If "solar first" is selected as output source priority and solar energy is not sufficient toprovide the load, solar energy and the utility willprovide the loads and charge the battery at the same time. 
Line Mode		If “solar first" is selected as output source priority and battery is not connected, solarenergy and the utility will provide the loads. 
		Power from utility. 
Battery Mode	The unit will provide outputpower from battery and PV power.	Power from utility. 
		PV energy will supply power to the loads and charge battery at the same time. 
		Power from battery only. 
Solar Mode	The unit will provide output power from PV power.	Power from PV energy only. 

5.6 Battery Equalization Description

Equalization function is added into charge controller. It reverses the buildup of negative chemical effectslike stratification, a condition where acid concentration is greater at the bottom of the battery than at the top.

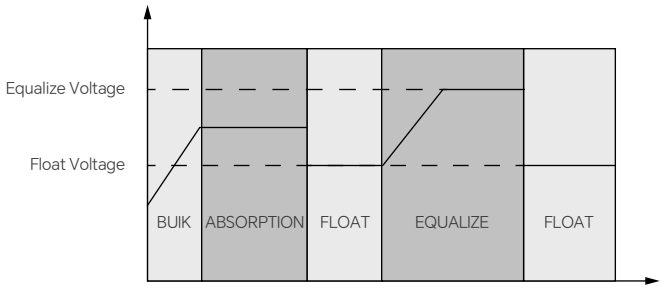
Equalization also helps to remove sulfate crystals that might have built up on the plates. If left unchecked,this condition, called sulfation, will reduce the overall capacity of the battery. Therefore, it's recommendedto equalize battery periodically.

How to Apply Equalization Function

You must enable battery equalization function in monitoring LCD setting program 30 first, Then, you mayapply this function in device by either one of following methods:
1.Setting equalization interval in program 35.
2.Active equalization immediately in program 36.

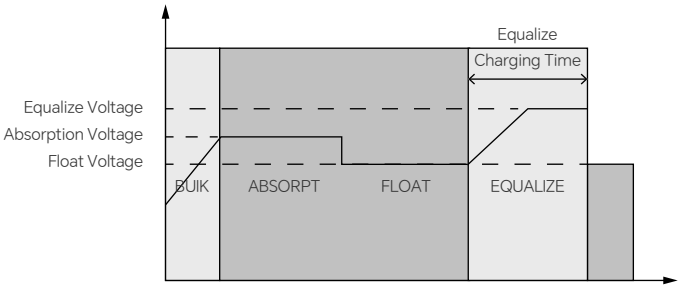
When to Equalize

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.

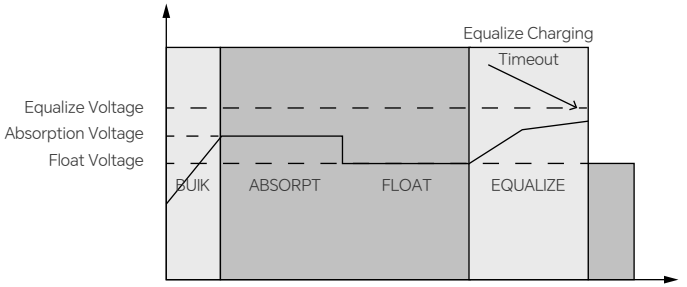


Equalize charging time and timeout

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



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



5.7 Fault Code

Fault Code	Fault Event	Icon on
01	an is locked when inverter is off	
02	Over temperature or NTC is not connected well.	
03	Battery voltage is too high	
04	Battery voltage is too low	
05	Output short circuited or over temperature is detected by internal converter components.	
06	Output voltage is too high.	
07	Overload time out	
08	Bus voltage is too high	
09	Bus soft start failed	
51	Over current or surge	
52	Bus voltage is too low	
53	Inverter soft start failed	
55	Over DC voltage in AC output	
57	Current sensor failed	
58	Output voltage is too low	
59	PV voltage is over limitation	

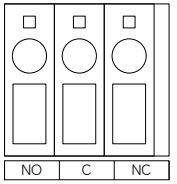
5.8 Warning indicator

Fault Code	Warning Event	Audible Alarm	Icon on
01	Fan is locked when inverter is on.	Beep three times every second	
02	over-temperature	None	
03	Battery is over-charged	Beep once every second	
04	Low battery	Beep once every second	
07	Overload	Beep once every 0.5 second	
10	Output power derating	Beep twice every 3 seconds	
15	PV energy is low.	Beep twice every 3 seconds	
16	High Ac input (>280VAC) duringBUS soft start	None	
E9	Battery equalization	None	
bP	Battery is not connected	None	

6. OTHER FUNCTION

6.1 Dry contact signal

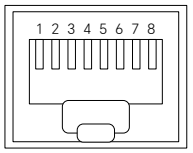
This dry contact could be used to deliver signal to external device when battery voltagereaches warning level.
1.In normal,NC-C close,NO-C open
2.When battery voltage reach to low voltage disconnect point,NO-C close,NC-C open,at thistime, the NO-C point can drive the resistive load of 125VAC/0.5A and 30VDC/2A



6.2 Communication Connection

Provide two communication interfaces: one for Wlfl and the other for direct communication with lithium battery.
BMS.Below chart show RJ45 Pins definition:

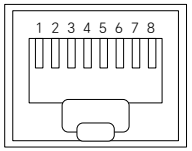
WIFI communication port:RJ 45



RS485

Pin	Definition	Description
1	TXD233	WIFI send port
2	RXD232	WIFI receive Port
3	NC	
4	VCC	power supply
5	NC	
6	NC	
7	NC	
8	GND	Ground

BMS port:RJ45

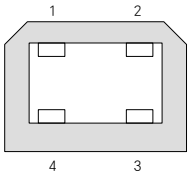


RS485

Pin	Definition	Description
1	RS485B	485B Communication interface
2	RS485A	485A Communication interface
3	NC	
4	CAN-BUS+	CAN+ Communication interface
5	CAN-BUS-	CAN-Communication interface
6	NC	
7	NC	
8	NC	

6.3 USB communication

This is a UsB communication port through which you can communicate with the optional host software. To usethis port, you need to install the corresponding USB-to-serial port chip CH340T driver on the computer.



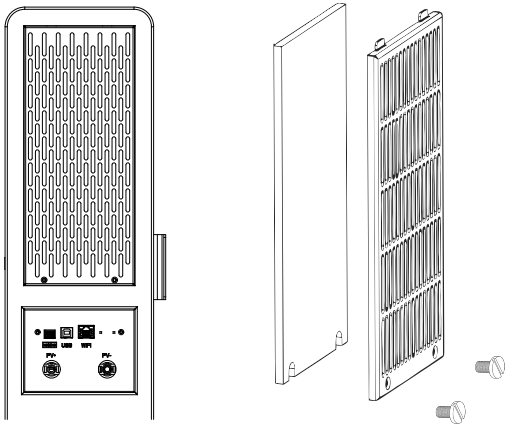
Pin	Definition	Description
1	VCC	power supply
2	D-	USB communication port
3	D+	USB communication port
4	GND	Ground

7. CLEARANCE AND MAINTENANCE FOR ANTI-DUST KIT

7.1 Overview

Every product is already installed with anti-dusk kit from factory.product wil automatically detect this kiandactivate internal thermal sensor to adjust internal temperature. This kit also keeps dusk from youroroductinternal and increases product reliability in harsh environment.

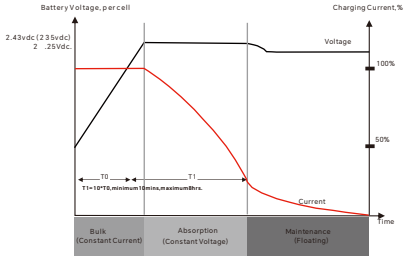
7.2 Clearance and Maintenance



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.

8. SPECIFICATIONS

Model	DOA01-5K_XFM5K-US
Line Mode	
Nominal input Voltage	110/120Vac
Input Voltage Range	(90Vac~140Vac)±2%
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
Low Loss Voltage	90Vac+7V(Appliances)
Low Loss Return Voltage	95Vac+7V(Appliances)
High Loss Voltage	140Vac±7V
High Loss Return Voltage	135Vac±7V
Max AC Input Voltage	150Vac
Output Short Circuit Protection	Circuit Breaker
Max. Efficiency (Line Mode)	92%
Maximum bypass overload current	63A
Inverter Mode	
Output Voltage Waveform	Pure Sine Wave
Rated Output Power(W)	5000W
PF	1
Output Voltage(Vac)	120Vac±5%
Frequency(Hz)	50Hz/60Hz
Peak Efficiency	92%
Overload Protection	0.2S@≥200%;5s@>130%load; 10s@105%~130%load;
Peak Power	10000VA
Motor load capacity	4HP
Output Short Circuit Protection	Yes
Bypass breaker current	63A
Rated battery voltage	48V
Battery voltage range	40.0Vdc-60Vdc ±0.6Vdc
Save power mode	load≤50W
AC Output	
Rated power(W)	5000V
Apparent power(VA	5000VA
Max. Output current(A)	41.7A
THDI	<3%
Rated voltage	120Vac

FrequenCy	50Hz/60HZ
Utility Charging	
Battery type	Lithium/Lead-acid
Max. charging current	40A
Charging current error range	± 5Adc
Charging Voltage range	40-58.4Vdc
Short Circuit Protection	Breaker&fuse
breaker current	63A
MPPT Solar Charging	
Maximum PV Array Open Circuit Voltage	500Vdc
MPPT Voltage Range	120-450Vdc
Start-up Voltage	150Vdc +/-10Vdc
Battery voltage range	40-60Vdc
Max.PV Array Power	5500W
Max. PV input current	22A
PV charging current range	100A
Charging Short Circuit protection	fuse
MPPT Solar Charging	
Max. Combined charging current	100A
Charging Algorithm	3-Step
Charging voltage	Flooded battery (58.4Vdc) AGM/Gel battery (56.4Vdc)
Floating Charging Voltage	54.0Vdc
Charging Curve	
General Specifications	
EMC certificate levels	EN61000
Operating Temperature Range	-10°C~55°C
Storage temperature	-25°C~60°C
Humidity	5% to 95% Relative Humidity (Non-condensing)
Noise	≤60dB
Thermal Methods	Fan cooling
Communication	USB/RS485/RS232(WiFi)/Dry contact
Dimension(L*WV*D)	441mm*350mm*124.5mm
Weight (kg)	64.5KG

Battery parameters	
Battery Type	LiFePO4
Capacity	100Ah
Nominal voltage	52Vdc
Energy	Quasi 5120W
Charge mode	Two stage/three-stage charging
Maximum charging current	100A
Maximum discharge current	100A
Charging cutoff voltage	58.4V
Discharge Cut-off Voltage	41.6V
Cycle life	≥3,000 times
Internal resistance	≤0.4mQ
Storage temperature	-30~60℃(recommended -10℃~35 ℃)
Charge Temperature	0-60℃
Discharge temperature	-30-60℃

[1]:The Battery mode output is as follows: 3000W at 55°C; 4000W at 50°C; 5000W at 40°C.
[2]:If the output power exceeds the derating limit within this temperature range,will shut down due to over-temperature protection. Users must wait for the temperature to drop andsimultaneously reduce the load before restarting .
[3]:There may be some deviation in ambient temperature sampling,leading to a few degrees of variation in the temperature points for derating.

9. 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 the ncomplete 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 forreplacing the fuse. 2.Re-charge battery. 3. Replace battery.
Mains exist but the unit works inbattery mode.	Input voltage isdisplayed as 0 on theLCD and green LED isflashing	Input protector is tripped.	Check if AC breaker is trippedand AC wiring is connectedwell.
	Green LED is flashing.	Insufficient quality of AC power.(Shore or Generator)	1. Check if AC wires are toothin or too long.2. Check if generator (if applied)is working well or if input voltagerange setting is correct.(UPS/Appliance)
	Green LED is flashing.	Set “Solar First” as thepriority of output source.	Change output source priorityto Utility first.

When the unit isturned on, internalrelay is switched onand off repeatedly.	LCD display and LEDS are flashing.	Battery is disconnected.	Check if battery wires are connected well.
Buzzer beeps continuously andred LED is on.	Fault code 07	Overload error. Theinverter is overload 110%and time is up.	Reduce the connected load byswitching off some equipment.
	Fault code 05	Output short circuited.	Check if wiring is connectedwell and remove abnormal load.
		Temperature of internal converter component is over 120°C.	Check if wiring is connectedwell and remove abnormal load.
	Fault code 02	Internal temperature ofinverter component isover 100°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.
		The battery voltage is too high.	Check if spec and quantity of batteries are meet requirements
	Fault code 01	Fan fault	Replace the fan.
	Fault code 06/58	Output abnormal(In-verter voltage below than 95Vac or is higherthan 135Vac)	1.Reduce the connected-load.2. Return to repair center
	Fault code 08/09/53/57	internal components failed.	Return to repair center.
	Fault code 51	Over current or surge.	Restart the unit, if the errorhappens again, please returnto repair center.
	Fault code 52	Bus voltage is too low.	
	Fault code 55	Output voltage is unbalanced	
	Fault code 59	PV input voltage is beyond the specification.	Reduce the number of PV modules in series.

Appendix: Approximate Back-up Time Table

Modei	Load(VA)	Backup Time @ 48Vdc 100Ah (min)
5KW	500	490
	1000	214
	1500	126
	2000	89
	2500	72
	3000	61
	3500	52
	4000	40
	4500	35
	5000	32