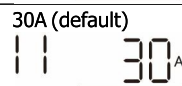
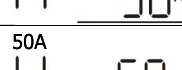
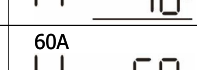
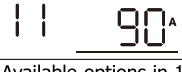
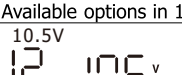
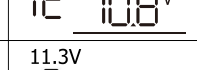
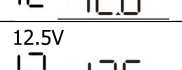
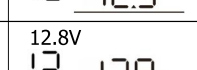
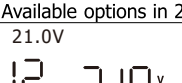
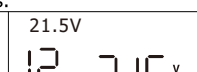
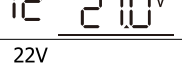
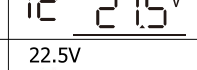
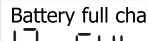
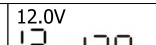
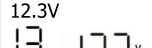
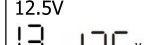
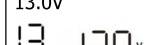
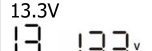
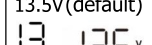
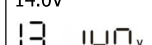
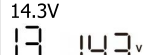
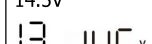
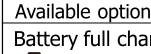
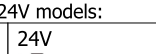
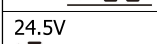
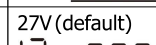
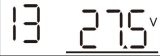
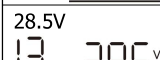
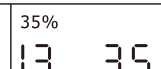
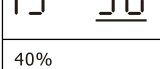
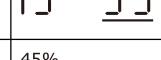
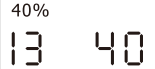
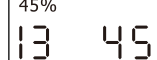
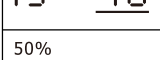
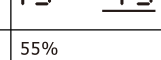
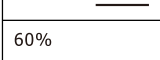
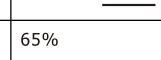
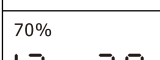
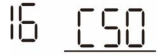
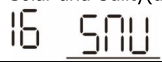
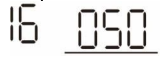
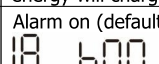
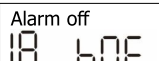
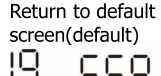
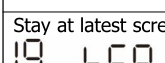
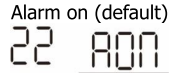
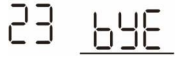
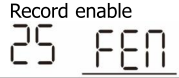
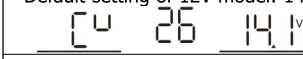
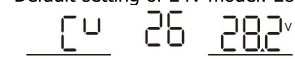
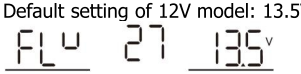
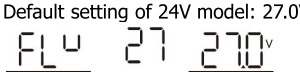
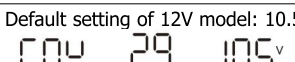
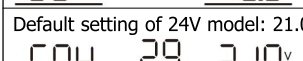
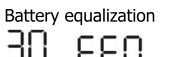
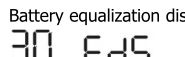
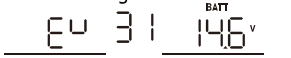
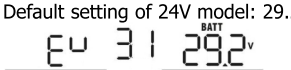
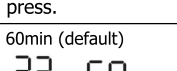
11	Maximum Utility charging current	10A 	20A 
		30A (default) 	40A 
		50A 	60A 
		70A 	80A 
		90A 	100A 
12	Setting voltage point back to utility source when selecting"SBU priority"	Available options in 12V models:	
		10.5V 	10.8V 
		11.0V 	11.3V 
		11.5V (default) 	11.8V 
		12.0V 	12.3V 
		12.5V 	12.8V 
		Available options in 24V models:	
		21.0V 	21.5V 
		22V 	22.5V 
		23V (default) 	23.5V 
		24V 	24.5V 
		25V 	25.5V 

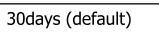
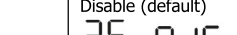
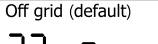
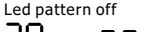
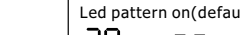
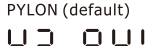
<table>
<tr><td></td><td>When "SBU" is selected in program 01 and "LIB-485" is selected in program 05, the power point is set back to the common power supply.</td><td colspan="3">Available options in 12V/24V model:</td></tr>
<tr><td></td><td></td><td>10%
</td><td>15%
</td><td rowspan="5">When the power is lower than the set value, it will auto matically 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 delay time after the power is lower than the set value.)</td></tr>
<tr><td></td><td></td><td>20%
</td><td>25%
</td></tr>
<tr><td></td><td></td><td>30%
</td><td>35%
</td></tr>
<tr><td></td><td></td><td>40%
</td><td>45%
</td></tr>
<tr><td></td><td></td><td>50%(default)
</td><td></td></tr>
<tr><td>13</td><td>Setting voltage point back to battery mode when selecting "SBU priority" in program 01</td><td colspan="3">Available options in 12V models:</td></tr>
<tr><td></td><td></td><td>Battery full charged
</td><td>12.0V
</td></tr>
<tr><td></td><td></td><td>12.3V
</td><td>12.5V
</td></tr>
<tr><td></td><td></td><td>12.8V
</td><td>13.0V
</td></tr>
<tr><td></td><td></td><td>13.3V
</td><td>13.5V(default)
</td></tr>
<tr><td></td><td></td><td>13.8V
</td><td>14.0V
</td></tr>
<tr><td></td><td></td><td>14.3V
</td><td>14.5V
</td></tr>
<tr><td></td><td></td><td colspan="2">Available options in 24V models:</td></tr>
<tr><td></td><td></td><td>Battery full charged
</td><td>24V
</td></tr>
<tr><td></td><td></td><td>24.5V
</td><td>25V
</td></tr>
<tr><td></td><td></td><td>25.5V
</td><td>26V
</td></tr>
<tr><td></td><td></td><td>26.5V
</td><td>27V(default)
</td></tr>
</table>

<table>
<tr><td rowspan="11"></td><td rowspan="2"></td><td>27.5V
</td><td colspan="2">28V
</td></tr>
<tr><td>28.5V
</td><td colspan="2">29V
</td></tr>
<tr><td rowspan="9">When"SBU" is selected in program 01 and "LIB-485" is selected in program 05, the power point is set back to battery mode.</td><td colspan="3">Available options in 12V/24V model:</td></tr>
<tr><td>30%
</td><td>35%
</td><td rowspan="8">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%.)</td></tr>
<tr><td>40%
</td><td>45%
</td></tr>
<tr><td>50%
</td><td>55%
</td></tr>
<tr><td>60%
</td><td>65%
</td></tr>
<tr><td>70%
</td><td>75%
</td></tr>
<tr><td>80%
</td><td>85%
</td></tr>
<tr><td>90%
</td><td>95%(default)
</td></tr>
<tr><td>100%
</td><td></td></tr>
</table>

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. 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.
		Only Solar 	Solar energy will be the only charger source no matter utility is available or not.
		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.	
18	Alarm control	Alarm on (default) 	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.
		Stay at latest screen 	If selected, the display screen will stay at latest screen user finally switches.
20	Backlight control	Backlight on(default) 	Backlight off 
22	Beeps while primary source is interrupted	Alarm on (default) 	Alarm off 
23	Overload bypass: When enabled, the unit will transfer to line mode if overload occurs in battery mode.	Bypass disable (default) 	Bypass enable 
25	Record fault code	Record enable 	Record disable(default) 

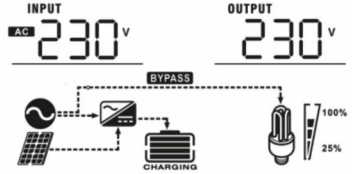
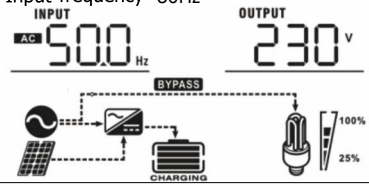
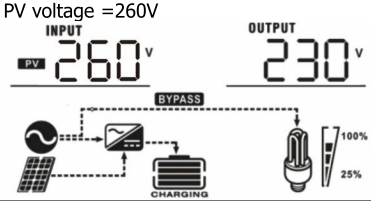
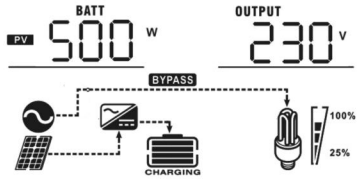
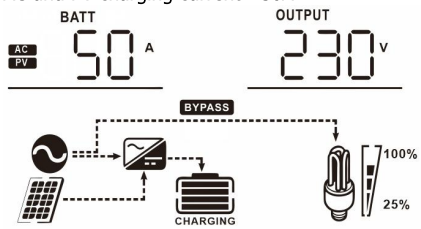
<table>
<tr><td rowspan="3">26</td><td rowspan="3">Bulk charging voltage
(C.V voltage)</td><td>Default setting of 12V model: 14.1V
</td></tr>
<tr><td>Default setting of 24V model: 28.2V
</td></tr>
<tr><td>If USE or LIB is selected in program 5, this program can be set up. Set voltage range, 12V model: from 12V to 14.6V; 24V model: from 24V to 29.2V, and each press increases by 0.1V.</td></tr>
<tr><td rowspan="3">27</td><td rowspan="3">Floating charging voltage</td><td>Default setting of 12V model: 13.5V
</td></tr>
<tr><td>Default setting of 24V model: 27.0V
</td></tr>
<tr><td>If USE or LIB is selected in program 5, this program can be set up. Set voltage range, 12V model: from 12V to 14.6V; 24V model: from 24V to 29.2V, and each press increases by 0.1V.</td></tr>
<tr><td rowspan="3">29</td><td rowspan="3">Low DC cut-off voltage</td><td>Default setting of 12V model: 10.5V
</td></tr>
<tr><td>Default setting of 24V model: 21.0V
</td></tr>
<tr><td>If USE or LIB is selected in program 5, this program can be set up. set voltage range, 12V model: from 10V to 12V; 24V model: from 20V to 24V, 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.</td></tr>
<tr><td colspan="2"></td><td>If "LIB-485" is selected in item 05. you can set the battery low SOC shutdown point.

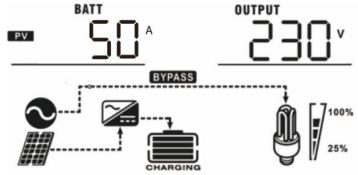
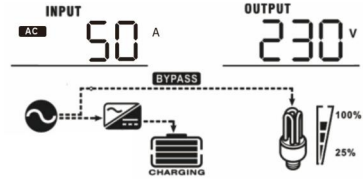
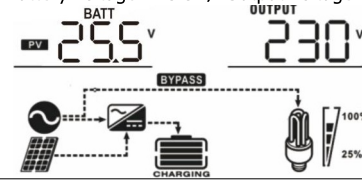
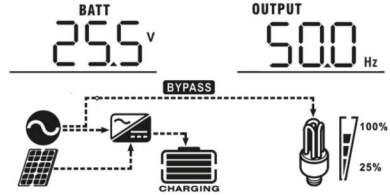
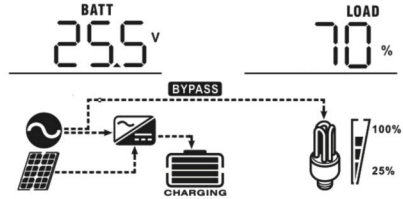
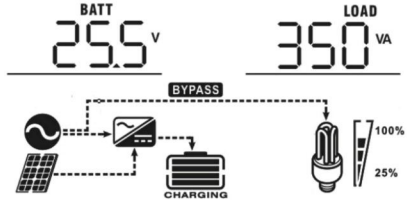
The default value is 5%, and 5% ~ 30% can be set.</td></tr>
<tr><td rowspan="2">30</td><td rowspan="2">Battery equalization</td><td>Battery equalization
</td><td>Battery equalization disable (default)
</td></tr>
<tr><td colspan="2">If “Flooded” or “User-Defined” is selected in program 05, this program can be set up.</td></tr>
<tr><td rowspan="3">31</td><td rowspan="3">Battery equalization voltage</td><td>Default setting of 12V model: 14.6V
</td></tr>
<tr><td>Default setting of 24V model: 29.2
</td></tr>
<tr><td>The setting range of 12V model is from 12.5V to 14.8V, and 24V model is from 25.0V to 29.5V . Increase by 0.1V per press.</td></tr>
<tr><td>33</td><td>Battery equalized time</td><td>60min (default)
</td><td>Setting range is from 5min to 900min.
Increment of each click is 5min.</td></tr>
</table>

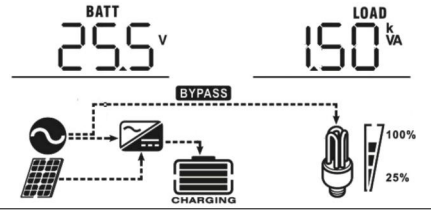
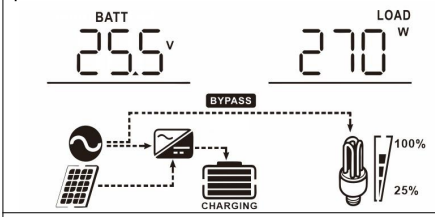
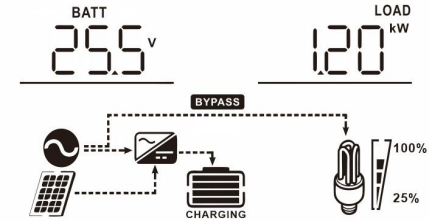
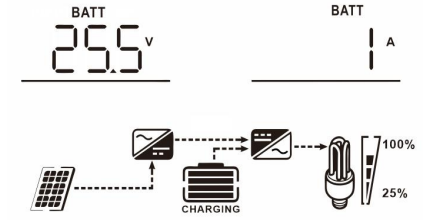
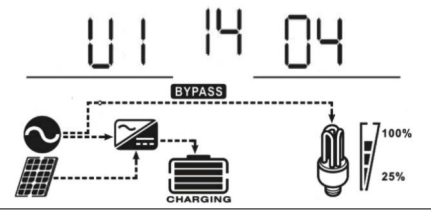
34	Battery equalized timeout	120min (default) 	Setting range is from 5min to 900 min. Increment of each click is 5 min.
35	Equalization interval	30days (default) 	Setting range is from 0 to 90 days. Increment of each click is 1 day
36	Equalization activated immediately	Enable 	Disable (default) 
		If 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 shows "". If "Disable" is selected, it will cancel equalization function until next activated equalization time arrives based on program 35 setting. At this time, "" will not be shown in LCD main page.	
37	GRID-tie operation	Off grid (default) 	Inverter operates only in off-grid mode. Solar energy provides power to the loads as first priority and charging second
		Hybrid 	Inverter operates hybrid mode. Solar energy provides power to the loads as first priority and charging second Excess energy feed to grid.
38	GRID-tie current	10A 	Increment of each click is 2A.
39	Led pattern light (option)	Led pattern off 	Led pattern on(default) 
43	Lithium battery protocol	PYLON (default) 	PACE 

Display Setting

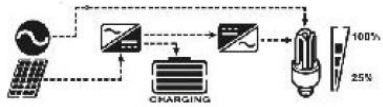
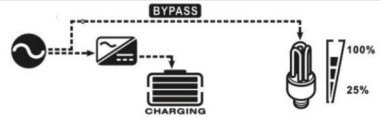
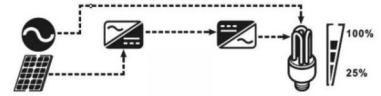
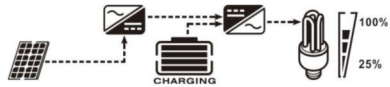
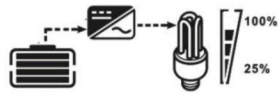
The LCD display information will be switched in turns by pressing "UP" or "DOWN" key. The selectable information is switched as below order: input voltage, input frequency, PV voltage, MPPT charging current,MPPT charging power, battery voltage, output voltage, output frequency, load percentage, load in VA,load in Watt, DC discharging current, main CPU Version and second CPU Version.

Selectable information	LCD display
Input voltage/Output voltage (Default Display Screen)	Input Voltage=230V, output voltage=230V 
Input frequency	Input frequency=50Hz 
PV voltage	PV voltage =260V 
MPPT Charging power	MPPT charging power=500W 
Charging current	AC and PV charging current=50A 

	PV charging current=50A 
	AC charging current=50A 
Battery voltage/ Output voltage	Battery voltage=25.5V, Output voltage=230V 
Output frequency	Output frequency =50Hz 
Load percentage	Load percentage =70% 
Load in VA	When connected load is lower than lkVA, load in VA will present xxxVA like below chart. 
	When load is larger than lkVA, load in VA will present x.xkVA like below chart.

<table>
<tr><td></td><td>
</td></tr>
<tr><td rowspan="2">Load in Watt</td><td>When load is lower than lkW, load in W will present xxxW like below chart.

</td></tr>
<tr><td>When load is larger than lkW, load in W will present x.xkW like below chart.

</td></tr>
<tr><td>Battery voltage/ DC discharging current</td><td>Battery voltage=25.5V, discharging current= 1A

</td></tr>
<tr><td>Main CPU version checking</td><td>Main CPU version checking

</td></tr>
</table>

Operating Mode Description

Operation mode	Description	LCD display
Standby mode / Power saving mode Note: *Standby mode: The inverter is not turned on yet but at this time, the inverter can charge battery without AC output. *Power saving mode: If enabled, the output of inverter will be off when connected load is pretty low or not detected.	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.**
Line Mode	The unit will provide output power from the mains. It will also charge the battery at line mode.	 **solar and mains supply power to loads at the same time**
		 **Mains charging**
		 **Without Battery Mode**
Battery Mode	The unit will provide output power from battery and PV power.	 **Battery and Solar supply power to loads at the same time**
		 **Battery supply power to loads**

Fault Code

Fault Code	Fault Event	Icon on
01	Fan is locked when the inverter is turned off.	
02	Over temperature	
03	Battery voltage is too high	
04	Battery voltage is too low	
05	Output short circuit or over temperature.	
06	Output voltage is too high	
07	Exceeding overload time	
08	BUS voltage is too high	
09	BUS soft start failed.	
13	PV voltage is too high	
51	Over current and surge	
52	BUS voltage is too low	
53	Inverter soft start failed.	
55	Over DC voltage in AC output	
56	Battery is disconnected	
57	Current sensor failed.	
58	Output voltage is too low	

Warning Code

Warning Code	Warning Event	Automatic Alarm	Icon flashing
01	Fan is locked when inverter is on.	Beep three times every second	
03	Battery overcharge	Beep once every second	
04	Battery low voltage	Beep once every second	
07	Overload	Beep once every 0.5 second	
10	Output power is derating	Beep twice every 3 seconds	
15	PV energy is weak	No Beep	
EQ	Battery equalization	No Beep	
bP	Battery is not connected.	No Beep	

RGB Light (option)

① **Inverter state:green light** ② **Utility state:blue light**

③ **Failure state:red light**

Battery Equalization

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.

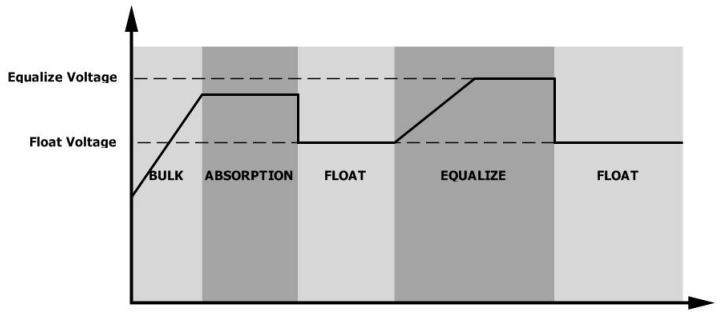
- How to Apply Equalization Function

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.

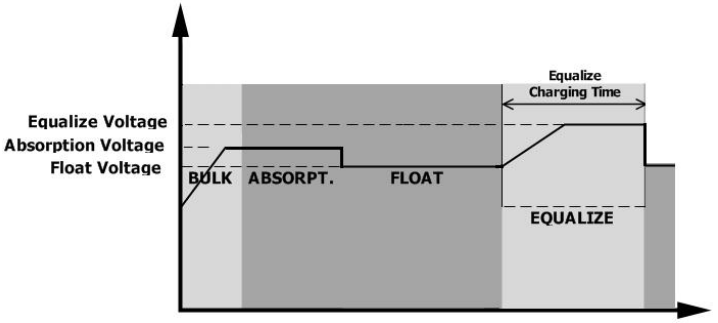
- When to Equalize

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.

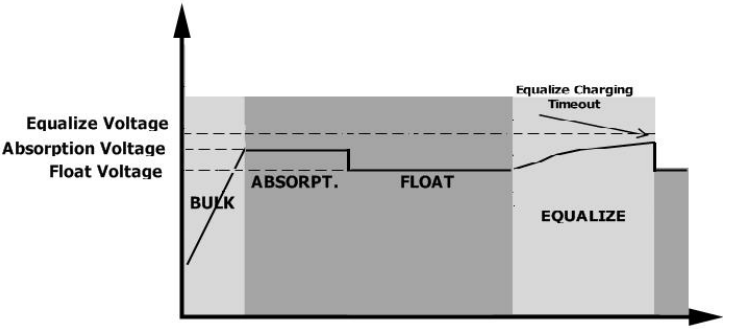


- Equalize charging time and time out

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.



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 LIb or LIb-485). After the mains is connected, the battery is not connected, and the mains activation function is automatically enabled.

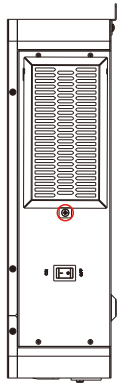
CLEARANCE AND MAINTENANCE FOR ANTI - DUST KIT

Overview

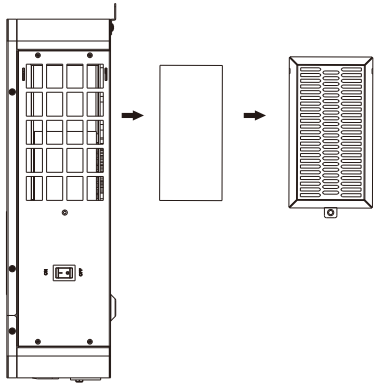
Every inverter is already installed with anti-dusk kit from factory. Inverter will automatically detect this kit and activate internal thermal sensor to adjust internal temperature. This kit also keeps dusk from your inverter and increases product reliability in harsh environment.

Clearance and Maintenance

Step 1: Please remove screws as below.



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.

SPECIFICATIONS

Table 1 Specification of LINE Mode

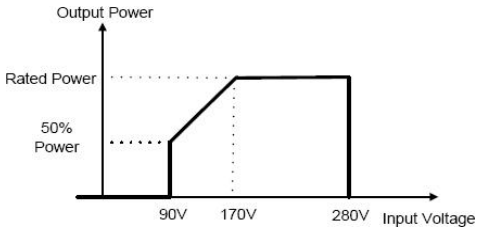
INVERTER MODEL	2.5KVA-12V	3.5KVA-24V
Input Voltage Waveform	Sinusoidal (utility or generator)	
Nominal Input Voltage	230Vac	
Low Loss Voltage	170Vac±7V (UPS) 90Vac±7V (Appliances)	
Low Loss Return Voltage	180Vac±7V (UPS); 100Vac±7V (Appliances)	
High Loss Voltage	280Vac±7V	
High Loss Return Voltage	270Vac±7V	
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	Battery mode: Electronic Circuits	
Efficiency (Line Mode)	>95% (Rated R load, battery full charged)	
Transfer Time	10ms typical(UPS); 20mstypical(Appliances)	
Output power derating: When AC input voltage drops to 95V or 170V depending on models, the output power will be derated.		

Table 2 Specification of Inverter Mode

INVERTER MODEL	2.5KVA-12V	3.5KVA-24V
Rated Output Power	1600VA/1600W	2600VA/2600W
PV+Battery Rated Output Power	2500VA/2500W	3500VA/3500W
Output Voltage Waveform	Pure Sine Wave	
Output Voltage Regulation	230Vac±5%	
Output Frequency	60Hz or 50Hz	
Peak Efficiency	92%	
Overload Protection	3s@≥150% load;20s@110%~150% load	
Surge Capacity	2* rated power for 5 seconds	
Nominal DC Input Voltage	12Vdc	24Vdc
Cold Start Voltage	11.3Vdc	23.0Vdc
Low DC Warning Voltage		
@ Load < 50%	11.0Vdc	22.0Vdc
@ Load ≥ 50%	10.5Vdc	21.0Vdc
Low DC Warning Return Voltage		
@ Load < 50%	11.5Vdc	23.0Vdc
@ Load ≥ 50%	11.0Vdc	22.0Vdc
Low DC Cut-off Voltage		
@ Load < 50%	10.2Vdc	21.0Vdc
@ Load ≥ 50%	10Vdc	20.0Vdc
High DC Recovery Voltage	16Vdc	32Vdc
High DC Cut-off Voltage	15Vdc	30Vdc
No Load Power Consumption	<25W	
Saving Mode Power Consumption	<20W	<15W

Table 3 Specification of Charging Mode

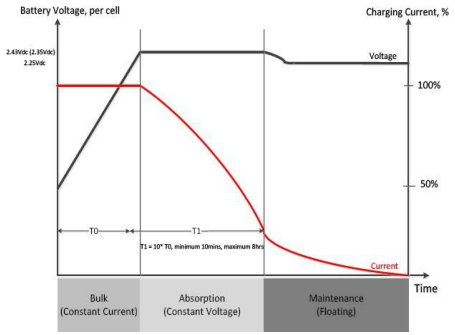
Utility Charging Mode			
INVERTER MODEL		2.5KVA-12V	3.5KVA-24V
Charging Current(UPS) @Nominal Input Voltage		100A	
Bulk Charging Voltage	**Flooded Battery**	14.6	29.2
	AGM / Gel Battery	14.1	28.2
Floating Charging Voltage		13.5Vdc	27Vdc
Charging Algorithm		3-Step	
Charging Curve			
Solar Charging Mode			
INVERTER MODEL		2.5KVA-12V	3.5KVA-24V
Rated Power		3000W	4000W
Rated Solar Voltage		240V	
PV Array MPPT Voltage Range		55V~450V	
Max. PV Array Open Circuit Voltage		500V	
IMax.PV		13A	18A
Max Charging Current		100A	

Table 4 General specifications

INVERTER MODEL	2.5KVA-12V	3.5KVA-24V
Operating Temperature Range	0°C to 55°C	
Storage temperature	-15°C~ 60°C	
Dimension (D*W*H), mm	345*255*100	
Net Weight, kg	4.6	

TROUBLE SHOOTING

Problem	LCD/Buzzer	Explanation / Possible cause	What to do
Unit shuts down automatically during startup process.	LCD and buzzer will be active for 3 seconds and then complete off.	Battery voltage is too low	1. Re-charge battery. 2. Replace battery.
No response after power on.	No indication.	1. The battery voltage is far too low. 2. Battery polarity is connected reversed.	1. Check if batteries and the wiring are connected well. 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	Input protector is tripped	Check if AC breaker is tripped and AC wiring is connected well.
	The power-on icon of LCD flashes, and the status indicator icon flashes.	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)
Buzzer beeps continuously and the status indicator icon is always on.	Fault code 07	Overload error. The inverter is overload 110% and time is up.	Reduce the connected load by switching off some equipment.
	Fault code 05	Output short circuited.	Check if wiring is connected well and remove abnormal load.
	Fault code 02	Internal temperature of inverter component are over heated.	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	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 error happens again, please return to repair center.
	Fault code 52	Bus voltage is too low.	
	Fault code 55	Output voltage is unbalanced.	

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