# Multifunction Portable Power Station

# User Manual



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#### 1 SAFETY INSTRUCTIONS

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

# 1. Before using the unit, read all instructions and cautionary markings on the unit, the batteries and all appropriate sections of this manual.

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

#### 2 INTRODUCTION

This is a multi-function inverter/charger combining functions of inverter, solar charger and battery charger to oer uninterruptible 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.

#### 2.1Features

- · Pure sine wave inverter
- · Configurable input voltage range for home appliances and personal computers 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
- WIFI(Optional)
- Intelligent fan speed adjustment

### 2.2Product description

# 1.Front:



#### **3INSTALLATION**

#### 3.1Unpacking 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.

1\*The Unit

#### 1\*User Manual;

#### 3.2Installing the unit

Consider the following points before selecting where to install:

- 1. The portable power station device should be placed in a well-ventilated place away from water, flammable gases and corrosive substances.
- 2. The ambient temperature should be between 0\*C and 55\*C to ensure optimal operation.
- 3. Do not place it on its side. For proper air circulation to dissipate heat, allow a clearance of approx.20 cm to the side and approx. 50 cm before and after the unit.

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.

#### **3.3Battery Connection**

CAUTION; For safety operation and regulation compliance, it's requested to install a separate DC overcurrent 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 overcurrent protection installed. Please refer to typical amperage in below table as required fuse or breaker size.

#### Recommended battery cable size:

Model	Wire Size	Cable (mm <sup>2</sup> )
B-3000 External battery cable	1 x 5AWG	16

Connect external battery packs as below chart. Make sure polarity at both the battery and the inverter/charge is correctly connected and conductors are tightly screwed into the battery terminals





### 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 (-).

3.4 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.

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

#### Suggested cable requirement for AC wires

Model	Gauge
B-3000 AC input and output cable	12 AWG

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

- 1. Before making AC input/output connection, please be sure to disconnect the input switch first and turn off the inverter
- 2. Insert AC input wires according to polarities indicated on terminal block and tighten the terminal screws. Be sure to connect PE protective conductor ( ) first.
  - Ground (yellow-green)
    - 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.

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

#### 4. 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 its equipped with time-delay function before installation. Otherwise, this inverter/charger will trig overload fault and cut off output to protect your appliance but sometimes it still causes internal damage to the air conditioner

#### 3.5 PV Connection

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

Mode1	Cable Size
B-3000 Solar panel connection cable	14AWG

#### Suggested cable requirement for solar panel

#### **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.

Max, PV Array Open Circuit Voltage	450Vdc
PV Array MPPT Voltage Range	90Vdc-430Vdc

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: 4 pcs, max. in serial: 12 pcs)		
- Imp: 8.3A	4 pcs in serial	4 pcs	1000W
-Imp: 8.3A	6 pcs in serial	6 pcs	1500W
- Voc:37.7Vdc	6 pcs in serial	8 pcs	2000W
-1sc:8.4A - Cells:60	12 pcs in serial	12 pcs	3000W

2. 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.

#### **40PERATION**

4.1Instructions for turning on and off the machine

1. DC power on: Click the "DC power on switch" on the panel and the DC output indicator light will light up. At this time, DC12V/USB5V will be output.

2. DC power off: Press the "DC power on switch" on the panel for about 3 seconds and then release, the DC output indicator light will go out, and the DC12V/USB5V will be turned off.

3. AC power on: When there is no mains power input, press the "AC power on switch" on the panel and the LCD screen will light up and wait for about 10 seconds, then there will be AC power output.

4. AC power off: When there is no mains power input, press the "AC power on switch" on the panel and wait for about 10 seconds, the AC output will be turned off.

5. When there is AC or solar energy input, the LCD screen will automatically light up regardless of whether the "AC power on switch" is pressed. At this time, the "AC power on switch" controls AC output.

Note: DC output and AC output are controlled independently, and DC power on/off has nothing to do with the LCD screen.

#### 4.2Operation and Display Panel

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





LED Indicator:

LCD display

LED	Indicator	1.8	Messages
AC / Se INV	Cream	Solid On	Output is powered by utility in Line mode.
Sr AC/ AC/ AC INV Gr	Green	Flashing	Output is powered by battery or PV in battery mode.
👾 CHG	Green Solid C Flashin	Solid On	Battery is fully charged.
		Flashing	Battery is charging.
▲ FAULT	Red Solid On Flashing	Solid On	Fault occurs in the inverter.
		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

# 4.3LCD Display Icons



Icon	Function description			
Input Source In	formation			
AC	Indicates the AC input.	Indicates the AC input.		
PV	Indicates the PV input			
	Indicate input voltage, input charging for 2.2KVA models),	Indicate input voltage, input frequency, PV voltage, charger current (if PV in charging for 2.2KVA models), charger power, battery voltage.		
Configuration P	rogram and Fault Informat	ion		
88	Indicates the setting programs.			
	Indicates the warning and fault codes.			
88	Warning: BBA flashing with warning code.			
Output Informa	ition			
OUTPUTBATTLOAD	Indicate output voltage, output frequency, load percent, load in VA, load in Watt and discharging current.			
Battery Informa	ation			
CHARGING	Indicates battery level by 0-24%, 25-49%, 50-74% and 75-100% in battery mode and charging status in line mode.			
In AC mode, it wi	Il present battery charging state	JS.		
Status	Battery voltage	LCD Display		
	<2V/cell	4 bars will flash in turns.		
Constant	2 ~ 2.083V/cell	bars will flash in turns.		
Current mode / Constant	2.083 ~ 2.167V/cell	Bottom two bars will be on and the other two bars will flash in turns.		
Voltage mode	> 2.167 V/cell	Bottom three bars will be on and the top bar will flash.		
Floating mode. E	Batteries are fully charged.	4 bars will be on.		

In battery mode, it will present battery capacity.					
Load Percentage	Batte	Battery Voltage		) Display	
	< 1.8	< 1.85V/cell			
	1.85	1.85V/cell ~ 1.933V/cell			
Load >50%	1.933	3V/cell ~ 2.017V/cell			
	> 2.0	)17V/cell	[		
	< 1.8	392V/cell			
n no ceres	1.892	2V/cell ~ 1.975V/cell			
Load < 50%	1.975	1.975V/cell ~ 2.058V/cell			
	> 2.0	)58V/cell			
Load Information	1				
OVERLOAD	Indicates overload				
	Indicates the load level by 0-24%, 25-49%, 50-74% and 75-100%.				
100%	0%~24%	25%~49%	50%~74%	75%~100%	
25%	7	7	7	7	
Mode Operation	Information				
$\sim$	Indicates unit connects to the mains.				
	Indicates unit connects to the PV panel.				
BYPASS	Indicates load is supplied by utility power.				
<b>7</b>	Indicates the utility charger circuit is working.				
	Indicates the DC/AC inverter circuit is working.				
Mute Operation					
<b>N</b>	Indicates unit alarm is disabled.				

## 4.4LCD 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.

Program	Description	Selectable option	
00	Exit setting mode		
01	Output source priority: To configure load power source priority	SUB priority (default)	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.
		SBU priority	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.
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 ^ 30A 02 30 ^ 50A 02 50 ^	20A 02 20 * 40A 02 40 * 60A (default) 02 60 *
		02 <u>-10</u>	<u>0</u> § <u>80 ·</u>

			If selected, acceptable AC input voltage range will be within 90-280VAC.
03	AC input voltage range	UPS_UPS_	If selected, acceptable AC input voltage range will be within 170-280VAC.
	Power saving mode	Saving mode disable (default) $O_{\odot}$ <u>SdS</u>	If disabled, no matter connected load is low or high, the on/off status of inverter output will not be effected.
04	enable/disable	Saving mode enable $04 \underline{560}$	If enabled, the output of inverter will be off when connected load is pretty low or not detected.
		AGM (default)	FLd
05	Battery type		If "User-Defined" is selected, battery charge voltage and low DC cut-off voltage can be set up in program 26, 27 and 29.
06	Auto restart when overload occurs		
07	Auto restart when over temperature occurs		Restart enable
08	Output voltage	220V 08_220Y 240V 08_240Y	230V (default)
09	Output frequency	50Hz (default)	<sup>60Hz</sup>
	Maximum utility charging	<sup>2A</sup> <u>28</u>	
11	current Note: If setting value in program 02 is smaller than that in program in 11, the inverter will apply charging current from program 02 for utility charger.	1 <u>01_208</u>	
		<sup>₄₀</sup> ∧   <u> </u>   <u></u> ЧОЯ	
		<sup>60A</sup>	

12	Setting voltage point back to utility source when selecting "SBU priority"	22.0V 12.0V 12.0V 23.0V (default) 12.0V 23.0V (default) 23.0V 24.0V 24.0V 24.0V 25.0V 12.0V 8ATT 25.0V	$22.5V$ $I \gtrsim 23.5V$ $23.5V$ $I \gtrsim 23.5V$ $24.5V$ $24.5V$ $I \approx 24.5V$ $25.5V$ $I \approx 25.5V$ $I \approx 25.5V$
13	Setting voltage point back to battery mode when selecting "SBU priority"	Battery fully charged $I \bigcirc F \sqcup L$ 24.5V $I \bigcirc 24.5V$ $I \bigcirc 24.5V$ $I \bigcirc 24.5V$ $I \bigcirc 25.5V$ $I \bigcirc 25.5V$	24V $I \bigcirc 24V$ 25V $I \bigcirc 25V$ $I \bigcirc 25V$ $I \bigcirc 25V$ 26V $I \bigcirc 26V$ 27V (default) $I \bigcirc 26V$ 27V (default) $I \bigcirc 27V (default)$ 28V $I \bigcirc 28V$ 28V $I \bigcirc 28V$ 29V $I \bigcirc 28V$ 29V

		If this inverter/charger is working in Line, Standby or Fault mode, charger source can be programmed as below:	
	Charger source priority:	Solar first	Solar energy will charge battery as first priority. Utility will charge battery only when solar energy is not available. Solar energy and utility will charge battery at the same time.
16	source priority	Only Solar	Solar energy will be the only charger source no matter utility is available or not. Ing in Battery mode or Power saving charge battery. Solar energy will and sufficient.
18	Alarm control		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. If selected, the display screen will
_		I§_⊢ <u>EP</u>	stay at latest screen user finally switches.
20	Backlight control	Backlight on (default)	
22	Beeps while primary source is interrupted		
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)

26	Bulk charging voltage (C.V voltage)	default setting: 28.2V
		If self-defined is selected in program 5,this program can be set up. $25.0V$ to $29.2$ V. Increment of each click is 0.1V.
27	Floating charging voltage	
		If self-defined is selected in program 5,this program can be set up. 25.0V to 29.2 V. Increment of each click is 0.1V.
29	Low DC cut-off voltage	
		If self-defined is selected in program 5, this program can be set up. 20.0V to 24.0V for3.2KVA 24V model. Increment of each click is 0.1V. Low DC cut-off voltagewill be fixed to setting value no matter what percentage of load is connected
33	Battery equalization	B       B       B       B       C

34	Battery equalization voltage	default setting: 29.2V $\underline{E} = \underbrace{34}_{0} \underbrace{29.2}_{0}$ Setting range is from 25.0V to 29.5V. Increment of each click is 0.1V.	
		60min (default)	Setting range is from 5min to 900min
35	Battery equalized time	3 <u>5</u> 60	Increment of each click is 5min.
36	Battery equalized timeout	120min (default)	Setting range is from 5min to 900 min. Increment of each click is 5 min.
37	Equalization interval	30days (default)	Setting range is from 0 to 90 days. Increment of each click is 1 day
39	Equalization activated immediately	Enable 39 REN 39 REN 39 REN 39 ReS 39 ReS 39 ReS 39 ReS 39 ReS 39 ReS 39 ReS 39 ReS 39 ReS 33, this program 33, this progra	

#### 4.5 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, PV power, battery voltage, output voltage, output frequency, load percentage load in Watt, load in VA, DC discharging current, 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
PV power	PV power = 500W $\begin{array}{r} 100\% \\ \hline \\ 100\% \\ \hline \\ 100\% \\ \hline \\ 100\% \\ \hline \\ 25\% \\ \hline \\ 100\% \\ \hline \\ 25\% \\ \hline \\ 100\% \\ \hline \\ 25\% \\ \hline \\ \hline \\ 100\% \\ \hline \\ 25\% \\ \hline \end{array}$





## 4.6 Operating Mode Description

Operation mode	Description	LCD display
Standby mode / Power saving mode <b>Note:</b> *Standby mode: The inverter		Charging by utility and PV energy.
is not turned on yet but at this time, the inverter can charge battery without AC output.	No output is supplied by the unit but it still can charge	
*Power saving mode: If enabled, the output of inverter will be off when connected load is pretty low or not	batteries.	Charging by PV energy.
detected.	8	No charging.
		Charging by utility and PV energy.
Fault mode	3	Charging by utility.
Note: *Fault mode: Errors are caused by inside circuit error	PV energy and utility can charge batteries.	<b>⊘</b>
or external reasons such as over temperature, output short circuited and so on.	energe botter test	Charging by PV energy.
		No charging.

Operation mode	Description	LCD display
Line Mode	The unit will provide output power from the mains. It will also charge the battery at line mode.	Charging by utility and PV energy.
Battery Mode	The unit will provide output power from battery and PV power.	Power from battery and PV energy. PV energy will supply power to the loads and charge battery at the same time. Power from battery only. Power from battery only.

#### 4.7 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, its recommended to equalize battery periodically.

#### **How to Apply Equalization Function**



You must enable battery equalization function in monitoring LCD setting program 33 first, Then, you may apply this function in device by either one of following methods:



- 1. Check the program 5 is user-defined or flooded mode.
- 2. Check program 33 is enabled.
- **3**. Setting equalization in the program 34 to program 37, that is depend on your battery requirements.

(detailed information in LCD Setting part).

4. Active equalization immediately in program 39.

#### Wen 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.

#### 4.8 Fault Reference Code

Fault Code	Fault Event	Icon on
01	Fan is locked when inverter is off	
02	Over temperature	_50
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	[]Sj=
06	Output voltage is too high	06,
07	Overload time out	<u>ر</u> ا
08	Bus voltage is too high	08,
09	Bus soft start failed	09,-
11	Main relay failed	
13	Solar charger stops due to high PV voltage	[  <b>]</b>
51	Over current or surge	5 J
52	Bus voltage is too low	[52]
53	Inverter soft start failed	<u>[53]</u>
55	Over DC voltage in AC output	<u>[55]</u>
57	Current sensor failed	5]
58	Output voltage is too low	[58]

# 4.9 Warning Indicator

Warning Code	Warning Event	Audible Alarm	Icon flashing
01	Fan is locked when inverter is on.	Beep three times every second	
03	Battery is over-charged	Beep once every second	ĴĴÅ
04	Low battery	Beep once every second	<u>[]</u> Y_
07	Overload	Beep once every 0.5 second	
10	Output power derating	Beep twice every 3 seconds	[ID] <sup>▲</sup>

# Warning Code

Warning Code	Warning Event	Warning Event
21	Battery Cell Over Voltage	, Ĵ]ª
22	Battery Cell Low Voltage	
23	Battery Pack Over Voltage	, 2J^
24	Battery Pack Low Voltage	<u> </u>
25	Charging Over Current	,25ª
26	Discharging Over Current	,26ª
27	Charging Cell High Temperature	[_]^
28	Discharging Cell High Temperature	<u>_68</u>
29	Charging Cell Low Temperature	, <u>29</u> 4
30	Discharging Cell Low Temperature	<u>,</u> 30^▲
31	Environment High Temperature	€]
32	Environment Low Temperature	<u>^</u> 2€
33	MOSFET High Temperature	<u>[</u> 33^

## Fault Code

Falut Code	Warning Event	Warning Event
21	Battery Cell Over Voltage	
22	Battery Cell Low Voltage	
23	Battery Pack Over Voltage	
24	Battery Pack Low Voltage	
25	Charging Over Current	
26	Discharging Over Current	[][]
27	Charging Cell High Temperature	
28	Discharging Cell High Temperature	
29	Charging Cell Low Temperature	
30	Discharging Cell Low Temperature	30.
31	Environment High Temperature	Ĵ.
32	Environment Low Temperature	
33	MOSFET High Temperature	[]]
35	Short Circuit	35
36	Charger Over Voltage	<u>36</u>

#### **5.SPECIFICATIONS**

Table 1 Line Mode Specifications

INVERTER MODEL	B-3000	
Input Voltage Waveform	Sinusoidal (utility or generator)	
Nominal Input Voltage	230Vac	
Low Loss Voltage	170Vac±7V (UPS);	
Low Loss Voltage	90Vac±7V (Appliances)	
Low Loss Return Voltage	180Vac±7V (UPS);	
High Loss Voltage	280Vac±7V (Appliances)	
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	
<b>Output Short Circuit Protection</b>	n Circuit Breaker	
Efficiency (Line Mode) >95% (Rated R load, battery full charge		
Transfer Time	10ms typical (UPS); 20ms typical (Appliances)	
Output power derating: When AC input voltage drops to 170V, the output power will be derated.	Output Power Rated Power 50% Power 90V 170V 280V Input Voltage	

Table 2 Inverter Mode Specifications

INVERTER MODEL	B-3000	
Rated Output Power	3000W	
Output Voltage Waveform	Pure Sine Wave	
Output Voltage Regulation	230Vac±5%	
Output Frequency	50Hz	
Peak Efficiency	94%	
Overload Protection	5s@ ${\geq}150\%$ lo ad; $10s@110\%\sim150\%$ lo ad	
Surge Capacity	2 <sup>+</sup> rated power for 5 seconds	
Nominal DC Input Voltage	24Vdc	
Cold Start Voltage	23.0Vdc	
Low DC Warning Voltage		
@ lo ad < 50%	22.0Vdc	
@ load ≥50%	21.0Vdc	
Low DC Warning Return Voltage		
@ load < 50%	22.5Vdc	
@ load >50%	22.0Vdc	
Low DC Cut-off Voltage		
@ load < 50%	20.5 Vdc	
@ load ≥50%	20.0Vdc	
High DC Recovery Voltage	29Vdc	
High DC Cut-off Voltage	31Vdc	
No Load Power Consumption	<35W	

Table 3 Charge Mode Specifications

Utility Chargin	g Mode			
INVERTER MODEL		B-3000		
Charging Algorithm		3-Step		
AC Charging Current (Max)		60Amp (@V <sub>1/P</sub> = 230Vac)		
Bulk Charging Flooded Battery		29.2		
Voltage	AGM / Gel Battery	28.2		
Floating Charg	ing Voltage	27Vdc		
Charging Curve		To - 10" To Immediate Solution of Contract Voltage / Disasting		
INVERTER MOI	DEL	B-3000		
Max. PV Array	Power	3000W		
Nominal PV Vo	Itage	240Vdc		
PV Array MPPT	Voltage Range	55~430Vdc		
Max. PV Array	Open Circuit Voltage	450Vdc		
Max Charging	Current	80Amp		

Table 4 General Specifications

INVERTER MODEL	B-3000	
Operating Temperature Range	-10°C to 50°C	
Storage temperature	-15° C~ 60° C	
Humidity	5% to 95% Relative Humidity (Non-condensing)	
Dimension (D * W* H), mm	520*346*450	
Net Weight, kg	76.3 Kg	

### 6.TROUBLESHOOTING

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)	<ol> <li>Re-charge battery.</li> <li>Replace battery.</li> </ol>	
No response after power on.	No indication.	<ol> <li>The battery voltage is far too low. (&lt;1.4V/Cell)</li> <li>Internal fuse tripped.</li> </ol>	<ol> <li>Contact repair center for replacing the fuse.</li> <li>Re-charge battery.</li> <li>Replace battery.</li> </ol>	
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)	<ol> <li>Check if AC wires are too thin and/or too long.</li> <li>Check if generator (if applied) is working well or if input voltage range setting is correct. (UPS A Appliance)</li> </ol>	
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.	
		Temperature of internal converter component is over 120°C.	Check whether the air flow of the unit is blocked or whether	
	Fault code 02	Internal temperature of inverter component is over 100°C.	the ambient temperature is too high.	
Buzzer beeps	zer beeps tinuously and Fault code 03 LED is on.	Battery is over-charged.	Return to repair center.	
continuously and red LED is on.		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 (Inverter voltage below than 190Vac or is higher than 260Vac)	<ol> <li>Reduce the connected load.</li> <li>Return to repair center</li> </ol>	
	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.		