

# USER MANUAL

# EDECOA®

**HYBRID INVERTER / CHARGER**

**MODEL:**

EG-624B

EG-422B

VERSION:2.3

**Language:** English/Deutsch/Français/Español/Italian

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# ABOUT THIS MANUAL

This manual describes the assembly, installation, operation and troubleshooting of this unit, it also provides safety and installation guidelines as well as information on tools and wiring. Please read this manual carefully before installations and operations. Keep this manual for future reference.

## SAFETY INSTRUCTIONS



**WARNING:** This chapter contains important safety and operation 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 avoid danger, charge only deep-cycle lead acid-type rechargeable batteries. Charging other types of batteries may cause 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 electric shock or fire. If you need to use other types of batteries, you can contact the after-sales service for guidance.
4. You must disconnect all wirings before attempting any maintenance or cleaning to reduce the risk of electric shock.
5. **CAUTION** - Only qualified personnel can install this device with battery.
6. **NEVER** charge a frozen battery.
7. For optimum operation of this inverter/charge, please follow the required specs to select the appropriate cable size. It's very important to correctly operate this inverter/ charger.
8. Be 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 which could cause an explosion.
9. Please strictly follow the installation procedure when you want to disconnect AC or DC terminals. Please refer to the 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 or DC input short-circuited. Do NOT connect to utility when DC input short circuits.
12. **Warning!!** Only qualified service persons are allowed to service this device. If errors still occur after following the troubleshooting table, please send this inverter/charger back to the local dealer or service center for maintenance.

## INTRODUCTION

This is a multi-function inverter/charger, combining functions of inverter, solar charger and battery charger to provide uninterruptible power support. LCD display offers user-configurable and easy-accessible button operation.

## Features

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

# Basic System Architecture

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

- Generator or Utility.
- PV modules

Consult with your system integrator for other possible system architectures depending on your requirements.

This inverter can power all kinds of appliances at home or in an office environment, including motor-type appliances such as fan, refrigerator and air conditioner.

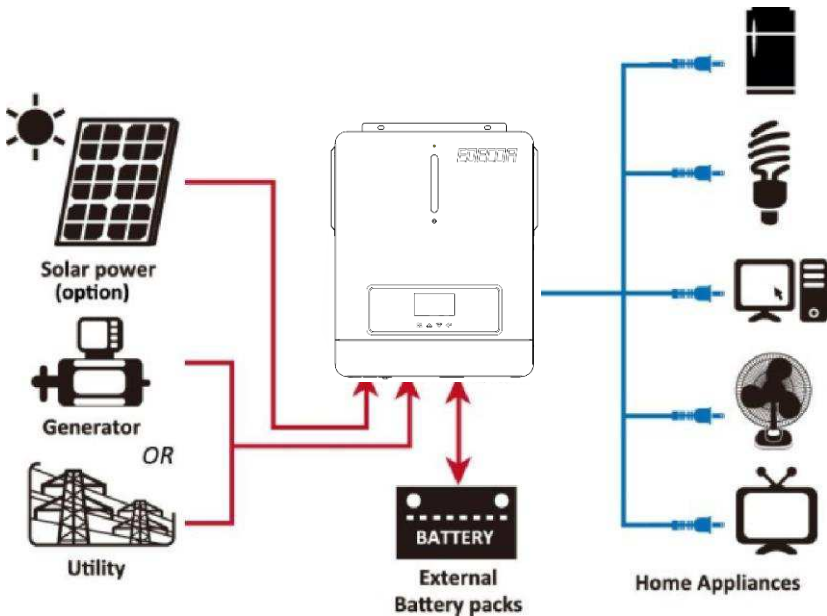
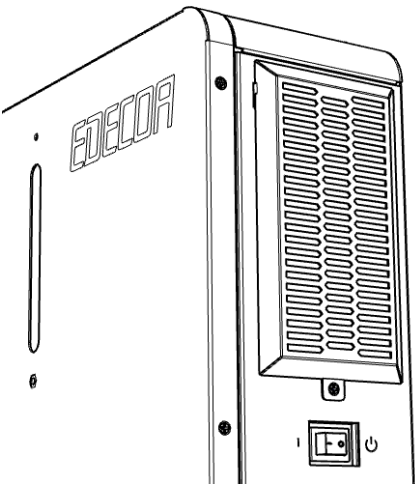


Figure 1 Hybrid Power System

# OPERATION

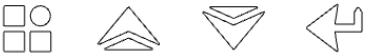
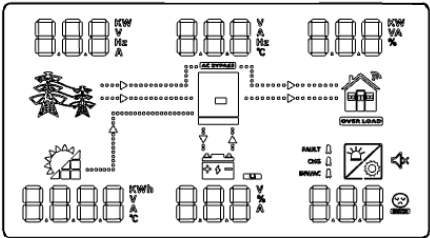
## Power ON/OFF







Once the unit has been properly installed and the batteries are connected well, simply press the ON/OFF switch (located on the side of the case) to turn on the inverter.

## Operation and Display Panel

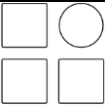
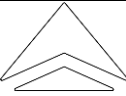


The operation and display panel shown below is on the front panel of the inverter. It includes three indicators, four function keys, and one LCD screen indicates the operating status and input/output power information.



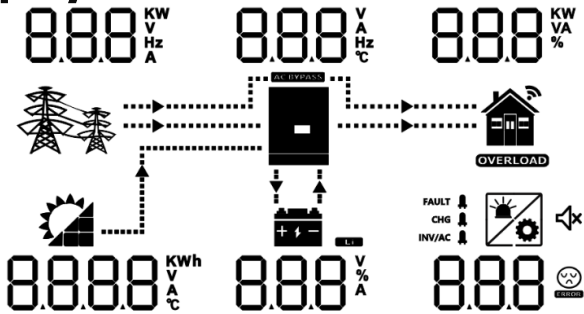
LED Indicator

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

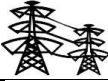










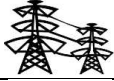

Function keys

Function Key	Description
	Exit setting mode
	Go to previous selection
	Go to next selection
	Confirm the selection in setting mode or enter setting mode

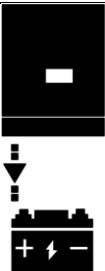
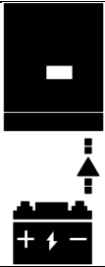

LCD Display Icons



Icon	Function description
Input Source Information	

	Indicates the AC input.
	Indicates the PV input
	Indicate input voltage, input frequency, PV voltage, battery voltage, and charger current.
<b>Configuration Program and Fault Information</b>	
 	Indicates the setting programs.
	<p>Indicates the warning and fault codes.</p> <p>Warning:  flashing with warning code.</p> <p>Fault:  lighting with fault code</p>
<b>Output Information</b>	
	Indicate output voltage, output frequency, load percent, load in VA, load in Watt, and discharging current.
<b>Battery Information</b>	
	
<b>Load Information</b>	
	Indicates overload.
<b>Mode Operation Information</b>	
	Unit connected to the utility.
	Unit connected to the PV panel.



<b>AC BYPASS</b>	Load is supplied by utility power.
	Utility charger circuit is working.
	DC/AC inverter circuit is working.
<b>Mute Operation</b>	
	Unit alarm is disabled.

LCD Setting

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

Setting Programs:

Program	Description	Available option(s)	
00	Exit setting mode	00H	Default
		00E	When selected, restore all programs to default.
01	Output source priority: To configure load power source priority	(Default) 506	Solar energy provides power to the loads as priority. If solar energy is not sufficient to power all connected loads; utility energy will be

			<p>supplement.</p> <p>Battery provides power to the loads only under either following conditions:</p> <ul style="list-style-type: none"> <li>- Solar energy and utility are both not available.</li> <li>- Solar energy is not sufficient and utility is not available.</li> </ul>
		SbU	<p>Solar energy provides power to the loads as first priority.</p> <p>If solar energy is not sufficient to power all connected loads, battery energy will supply power the loads at the same time.</p> <p>Utility provides power to the load only when battery voltage drops to either low-level warning voltage or the setting point in program 12.</p>
		ntS	<p>When solar power is available, priority sequence is Solar → battery → utility.</p> <p>When solar power is not available, priority sequence is utility → battery, while battery is the backup power source.</p>
		USb	<p>Utility provides power to the loads as the first priority.</p> <p>Solar and battery will provide power when utility is not available.</p>
	Maximum charging current:	10A	60A

02	To configure total charging current for solar and utility chargers. (Max. charging current = utility charging current + solar charging current)	10 <sub>A</sub>	60 <sub>A</sub>
		120A (Maximum) 120 <sub>A</sub>	
03	AC input voltage range	Appliances (default) APL	AC input voltage range becomes within 90-280VAC.
		UPS UPS	AC input voltage range becomes within 170-280VAC.
05	Battery type	AGM (default) AGM	Flooded FLD
		User-Defined USE	If "User-Defined" is selected, battery charging voltage and low DC cut-off voltage can be set up in program 26, 27 and 29.
		LIB	When the solar energy or utility are available, set this item to LIB, the lithium battery will be activated in 3 second.
		LIC	If selected, Lithium battery communication connection is specified for PACE 232 BMS. Lithium battery activation function is automatically enabled.
		LIP	If selected, Lithium battery communication connection is specified for PACE 485 BMS.

			Lithium battery activation function is automatically enabled.
		L I L	If selected, Lithium battery communication connection is specified for PYLON 485 BMS. Lithium battery activation function is automatically enabled.
06	Auto restart when overload occurs	Restart disabled (default) L t d	Restart enabled L t E
07	Auto restart when over temperature occurs	Restart disabled (default) L t d	Restart enabled L t E
09	Output frequency	50Hz (default) 50 Hz	60Hz 60 Hz
10	Output voltage	Default: 230V 230 V	220V 220 V
			240V 240 V
11	Maximum utility charging current	2A (Minimum) 2 A	30A (Default) 30 A
		100A (Maximum) 100 A	
12	Setting voltage point back to utility source when selecting "SBU priority" or	Available options for EG-422B: default is 23.0V, range from 22.0V to 25.5V.	
		Minimum 2 10 V	Default 230 V

	"Solar first" in program 01.	Maximum 25.5 <sup>v</sup>	
		Available options for EG-624B: default is 46.0V, range from 42.0V to 51.0V.	
		Minimum 42.0 <sup>v</sup>	Default 46.0 <sup>v</sup>
		Maximum 51.0 <sup>v</sup>	
12	When SBU in program 01 and LIP or LIL in program 05 are selected, you can set the battery level where power supply will be switched to utility.	5% (Minimum) 5	When battery level is lower than this value, inverter will automatically switch back to the utility (if the utility access has a delay, it will be switched to the utility after the delay)
		95% (Maximum) 95	
13	Setting voltage point back to battery mode when selecting "SBU priority" or "Solar first" in program 01	Available options for EG-422B	
		Minimum 24.0 <sup>v</sup>	Maximum 29.0 <sup>v</sup>
		Default 27.0 <sup>v</sup>	
		Available options for EG-624B	
		Minimum 48.0 <sup>v</sup>	Maximum 58.0 <sup>v</sup>
		Default 54.0 <sup>v</sup>	
	When SBU in program 01 and LIP or LIL in	5% (Minimum) 5	When battery level is higher than this value, inverter will switch to

	program 05 are selected, you can set up the battery level where inverter goes back to battery mode.	100% (Maximum) 100	battery mode automatically.
16	Charger source priority	If this inverter/charger is working in Line, Standby or Fault mode, charger source can be programmed as below:	
		Solar and Utility SNU	Solar energy and utility will charge battery at the same time
		Solar first CSO	Solar energy will charge battery as priority. Utility will charge battery only when solar energy is not available.
		Only Solar OSO	Solar energy will be the only supplying source of energy disregard utility is available or not.
		If this inverter/charger is in Battery mode or Power saving mode, only solar energy is available for battery charging. Solar energy will charge battery if it's available and sufficient.	
18	Alarm control	Alarm on (default) 60n	Alarm OFF 60F
19	Automatically return to default display screen	Return to default display screen (default) ESP	If selected, no matter how users switch display screen, it will automatically return to default display screen (Input voltage /output voltage) in 1 minute after no button is pressed
		Stay at previous screen	If selected, the display screen will stay at previous screen user

		1EP	finally switches.
20	Backlight control	Backlight on (default) LON	Backlight OFF LOF
22	Beeps while primary source is interrupted	Alarm ON (default) RON	Alarm OFF ROF
23	Overload bypass: When enabled, the unit will transfer to line mode if overload occurs in battery mode.	Bypass disabled (default) bYd	Bypass enabled bYE
25	Record Fault code	Record enabled (default) FEN	Record disabled FdS
26	Bulk charging voltage (C.V voltage)	EG-422B default setting: 28.2V 28.2 <sup>v</sup>	
		EG-624B default setting: 56.4V 56.4 <sup>v</sup>	
		Only when self-defined is selected in Program 5 will this program become available. Setting range is from 24.0V to 29.2V for EG-422B, 48.0V to 58.4V for EG-624B. Increment of each click is 0.1V.	
27	Floating charging voltage	24V model default setting: 27V 27.0 <sup>v</sup>	
		48V model default setting: 54V 54.0 <sup>v</sup>	

		Only when self-defined is selected in program 5, this program can be set up. Setting range is from 24.0V to 29.2V for EG-422B, 48.0V to 58.4V for EG-624B. Increment of each click is 0.1V.	
29	Low DC cut-off voltage	EG-422B default setting: 20.0V 20.0 <sup>v</sup>	
		EG-624B default setting: 40.0V 40.0 <sup>v</sup>	
30	Battery equalization	EEN	EdS
		Only when “Flooded” or “User-Defined” is selected in program 05 will this program become available.	
31	Battery equalization voltage	29.4 <sup>v</sup>	Setting range is from 25.0V to 31.5V. Increment of each click is 0.1V
		58.4 <sup>v</sup>	Setting range is from 48.0V to 61.0V. Increment of each click is 0.1V
33	Battery equalization time	60min (default) 60	Setting range is from 5min to 900min. Increment of each click is 5min.
34	Battery equalization timeout	120min (default) 120	Setting range is from 5min to 900min. Increment of each click is 5 min.
35	Equalization interval	30days (default) 30	Setting range is from 0 to 90 days. Increment of each click is 1 day.
36	Activate equalization immediately	Enable AEN	Disable (default) AdS

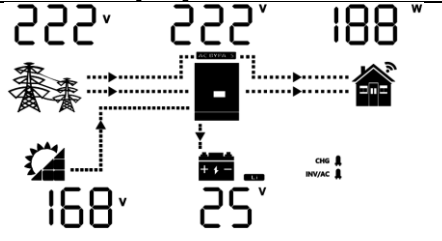
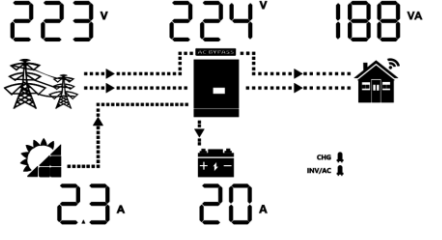


		<p>Only when equalization function is enabled in program 30 will this program be available. If "Enable" is selected in this program, it's to activate battery equalization immediately and LCD main page will show "E9". If "Disable" is selected, it will cancel equalization function until next activated equalization time arrives based on program 35 setting. At this time, "E9" will not be shown in LCD main page.</p>	
37	Grid-tie operation	OFF	Inverter in off-grid mode. No energy is fed to grid.
		HYD	Inverter in on-grid mode. Solar system provides power to the loads as first priority, to battery charging as second priority and extra energy will be fed to the grid.
38	Grid-tie current	10 <sub>A</sub>	Limitation of current fed into the grid. Increment of each click is 2A.
39	LED pattern lights	LED lights ON (default) LON	LED lights OFF LOF
		Disabled (default) L2F	Enabled L2O
42	Voltage points where inverter switches to dual output	For EG-422B: 22.0 <sub>V</sub> Setting range is from 20.0V to 26.0V	For EG-624B: 44.0 <sub>V</sub> Setting range is from 40.0V to 52.0V.
		<p>This program only works when program 41 was set to LZO. When battery voltage is lower than setting value, main output will be cut off and secondary output will still work. Note: Default maximum secondary output is only 33% of the full load, which is 1400W for EG-422B and 2067W for EG-624B.</p>	

43	BMS communication address 48-70	If program 05 is in LIL mode, you can change the mailing address. The corresponding address of 48 is 02, for 49 it is 12, etc.	
44	Delayed grid power input	Disabled (default) d 15	Enabled E n A
		When enabled, there will be a 5s delay for grid power input.	
45	Maximum secondary load	By default, the maximum secondary load is 33% of maximum power output. Setting range is from 20% to 70%.	

## Display Setting

The LCD display information will be switched in turns by pressing "UP" or "DOWN" key. The information display 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.

Information display	LCD display
Input AC voltage = 222V PV voltage = 168V Battery voltage = 25V Output voltage = 222V Load = 188W CHG – Flashing INV/AC - ON	
Input AC voltage = 222V PV current = 2.3A Battery current = 20A Output voltage = 224V Load = 188VA CHG – Flashing INV/AC – ON	

Input AC voltage = 223V PV NTC temperature = 71.0°C Battery voltage = 25V INV NTC temperature = 35.0°C Load percentage= 12% CHG – Flashing INV/AC – ON	<p>223<sup>v</sup> 350<sup>°C</sup> 12%</p> <p>71.0<sup>°C</sup> 25<sup>v</sup></p> <p>CHG INV/AC</p>
Input AC frequency = 50.0Hz PV power = 0.434 kWh Battery current = 20A Output frequency = 50.0Hz Load = 188W CHG – Flashing INV/AC – ON	<p>500<sup>Hz</sup> 500<sup>Hz</sup> 188<sup>W</sup></p> <p>0.434<sup>kWh</sup> 20<sup>A</sup></p> <p>CHG INV/AC</p>
Battery is being charged and load is more than 1 kW	
Input AC voltage = 222V PV voltage = 168V Battery voltage = 25V Output voltage = 232V Load = 1.18 kW CHG – Flashing INV/AC - ON	<p>222<sup>v</sup> 232<sup>v</sup> 1.18<sup>KW</sup></p> <p>168<sup>v</sup> 25<sup>v</sup></p> <p>CHG INV/AC</p>
Input AC voltage = 224V PV current = 2.3A Battery current = 12.5A Output voltage = 222V Load = 1.88 kVA CHG – Flashing INV/AC – ON	<p>224<sup>v</sup> 222<sup>v</sup> 1.88<sup>KVA</sup></p> <p>86<sup>A</sup> 12.5<sup>A</sup></p> <p>CHG INV/AC</p>
Input AC voltage = 223V PV NTC temperature = 71.0°C Battery voltage = 25V INV NTC temperature = 35.0°C Load percentage= 82% CHG – Flashing INV/AC – ON	<p>223<sup>v</sup> 350<sup>°C</sup> 82%</p> <p>71.0<sup>°C</sup> 25<sup>v</sup></p> <p>CHG INV/AC</p>

Input AC frequency = 50.0Hz PV power = 0.434 kWh Battery current = 20A Output frequency = 50.0Hz Load = 1.88kW CHG – Flashing INV/AC – ON	
Battery is discharging and the load is less than 1 kW.	
Input AC voltage = 0V PV voltage = 0V Battery voltage = 25V Output voltage = 222V Load = 188W CHG – Flashing INV/AC - ON	
Input AC voltage = 0V PV current = 0A Battery current = 12.5A Output voltage = 222V Load = 188 VA CHG – Flashing INV/AC – ON	
Input AC voltage = 0V PV NTC temperature = 36.0°C Battery voltage = 24V INV NTC temperature = 60.0°C Load percentage= 13% CHG – Flashing INV/AC – ON	
Input AC frequency = 0Hz PV power = 0 kWh Battery current = 20A Output frequency = 50.0Hz Load = 188W CHG – Flashing INV/AC – ON	

## Operating Mode Description

Operation mode	Description	LCD display
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Standby mode <b>Note:</b> The inverter is not turned on yet but at this time, the inverter can charge battery without AC output.	Input AC voltage = 222V PV voltage = 210V Battery voltage = 25V Output voltage = 0V Load = 0W CHG – Flashing INV/AC - ON	
	Input AC voltage = 223V PV voltage = 0V Battery voltage = 25V Output voltage = 0V Load = 0W CHG – Flashing INV/AC - ON	
	Input AC voltage = 0V PV voltage = 210V Battery voltage = 25V Output voltage = 0V Load = 0W CHG – Flashing	
Line Mode	Input AC voltage = 224V PV current = 8.6A Battery current = 25A Output voltage = 222V Load = 1.88kVA CHG – Flashing INV/AC – ON	
	Input AC voltage = 224V PV voltage = 0V Battery voltage = 25V Output voltage = 222V Load = 188W CHG – Flashing INV/AC - ON	
Grid-tie Operation	Input AC voltage = 224V PV current = 8.6A Battery current = 25A Output voltage = 222V Load = 1.88kVA CHG – Flashing INV/AC – ON	

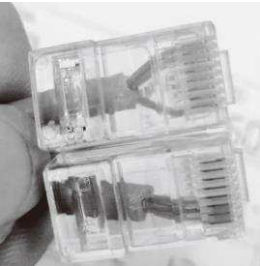
		When working in grid-tie mode, the utility icon will flash every 3 seconds.
Battery Mode	Input AC voltage = 0V PV voltage = 180V Battery voltage = 25V Output voltage = 230V Load = 388W INV/AC – Flashing	
	Input AC voltage = 0V PV voltage = 180V Battery voltage = 25V Output voltage = 230V Load = 388W CHG – Flashing INV/AC - Flashing	

Lithium Battery Information

Lithium Battery Connection

Connection of Lithium battery is the same as **Battery Connection**. Please read the following direction of connection of BMS.

- Before connecting, make sure that the lithium battery and inverter are turned off. (It is recommended to install a circuit breaker for the power cables of the lithium battery and the inverter battery interface.)
- The RJ45 connector of the communication cable connects to the **BMS** port of the inverter, and the other RJ45 connector connects to the RS485 port of the lithium battery.



- You will find two types of connector as were shown on the left.  
The top one is the RJ45 to be connected to the BMS port on the battery.  
The bottem one is the RJ45 to be connected to the BMS port on the inverter.

Description	LCD display
LIC (Lithium battery communication connection PACE 232 BMS)	

<p>Total battery voltage = 52.4V</p> <p>Battery remaining capacity = 23%</p>	
<p>Battery charging current = 0A</p> <p>Battery discharging current = 1A</p>	
<p>Nominal battery voltage = 48V</p> <p>Total battery capacity = 100Ah</p>	
<p>Battery remaining capacity = 23%</p> <p>Battery charger/discharge times = 8</p>	
<p>Battery ambient temperature = 28.2°C</p> <p>Battery MOS temperature = 28.9°C</p>	
<p>Voltage of one single battery cell = 32.7V</p> <p>Temperature of one single battery cell = 28.5°C</p>	
<p><b>LIP Mode (PACE 485 BMS)</b></p>	

<p>Total battery voltage = 25.9V</p> <p>Battery remaining capacity = 11%</p>	
<p>Battery charging current = 0A</p> <p>Battery discharging current = 1A</p>	
<p>Battery charge cycles = 12</p> <p>Rated battery capacity = 100Ah</p>	
<p>Minimum MOS temperature of battery =28.2°C</p> <p>Maximum MOS temperature of battery =28.9°C</p>	
<p>Maximum voltage of one single battery cell = 3.24V</p> <p>Minimum voltage of one single battery cell = 3.24V</p>	
<p>Maximum temperature of one single battery cell = 32.8°C</p> <p>Minimum temperature of one single battery cell = 31.5°C</p>	
<p><b>LIL Mode (Pylon 485 BMS)</b></p>	



<p>Total battery voltage = 48.9V</p> <p>Battery remaining capacity = 11%</p>	
<p>Battery charging current = 0A</p> <p>Battery discharging current = 1A</p>	
<p>Rate battery voltage = 48V</p> <p>Battery charge cycles = 12</p>	
<p>Maximum voltage of one single battery cell = 3.24V</p> <p>Minimum voltage of one single battery cell = 3.24V</p>	
<p>Minimum temperature of battery cells = 29.4°C</p> <p>Maximum temperature of battery cells = 44.5°C</p>	
<p>Minimum MOS temperature of battery = 32.8°C</p> <p>Maximum MOS temperature of battery = 31.5°C</p>	

# Battery Equalization Description

Equalization function 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. This condition – sulfation - will reduce the overall capacity of the battery. Therefore, it's recommended to equalize the battery periodically. Equalization also helps to remove sulfate crystals that might have but up on the plates.

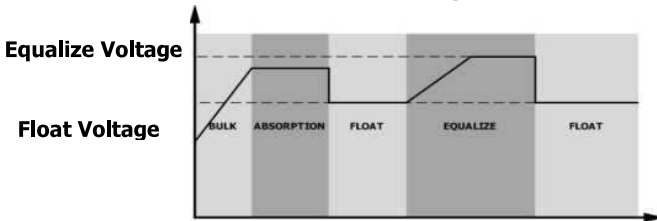
### ● How to Apply Equalization Function

Enable the battery equalization function in monitoring LCD setting program 33 first. Then apply this function in the device by either one of the following methods:

1. Setting equalization interval in program 34.
2. Active equalization immediately in program 39.

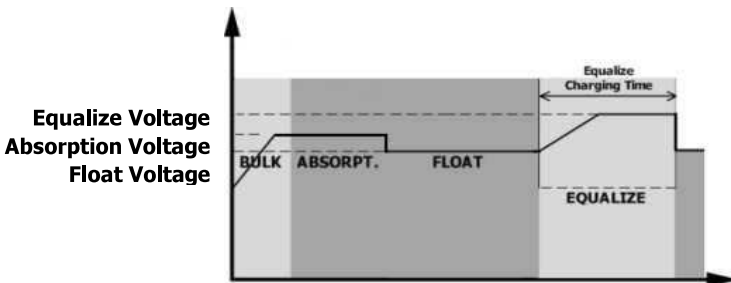
### ● When to Equalize

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



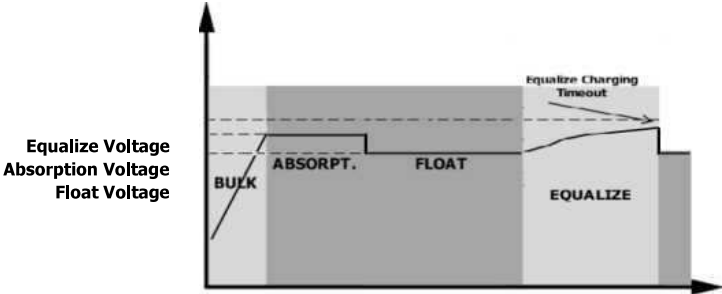
### ● Equalize charging time and time-out

In Equalize stage, the controller will supply power to charge the battery as much as possible until the battery voltage raises to the battery equalization voltage. Then, constant-voltage regulation is applied to maintain the 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.











## Fault Reference Code

Fault Code	Fault Event	Icon
01	Fan is locked when inverter is OFF	01 <small>ERROR</small>
02	Over temperature	02 <small>ERROR</small>
03	Battery voltage is too high	03 <small>ERROR</small>
04	Battery voltage is too low	04 <small>ERROR</small>
05	Output short circuited or over temperature is detected on internal converter components	05 <small>ERROR</small>
06	Output voltage is too high	06 <small>ERROR</small>
07	Overload time out	07 <small>ERROR</small>
08	Bus voltage is too high	08 <small>ERROR</small>
09	Bus soft start failed	09 <small>ERROR</small>
11	Main relay failed	11 <small>ERROR</small>
13	Solar charger stops due to high PV voltage	13 <small>ERROR</small>
51	Over current/Surge	51 <small>ERROR</small>

52	Bus voltage is too low	52 
53	Soft start failure	53 
55	Over DC voltage	55 
57	Current sensor failure	57 
58	Output voltage is too low	58 

Warning Indicator

Warning Code	Warning Event	Audible Alarm	Icon flashing
01	Fan is locked when inverter is on.	Beep three times every second	01 
03	Battery over-charged	Beep once every second	03 
04	Low battery	Beep once every second	04 
07	Overload	Beep once every 0.5 second	07 
10	Output power derating	Beep twice every 3 seconds	10 
15	PV energy is low	Beep twice every 3 seconds	15 
Eq	Battery equalization in process	-	E9 
bp	Battery connection issue	-	69 

Warning codes in lithium battery mode		
Warning Code	Warning Event	Cause of Event
04	Low battery voltage	Minimum voltage of a lithium battery cell< 2.85V; Lithium battery total voltage<42V (48V lithium

		battery); Lithium battery voltage<22.4V (24V lithium battery).
05	High battery voltage	Lithium battery maximum single cell voltage >3.55V; Total voltage of lithium battery >54V (48V lithium battery); Total voltage of lithium battery >28.8V (24V lithium battery).
06	Low battery level	Current battery level ≤10%

# SPECIFICATIONS

Table 1 Line Mode Specifications

INVERTER MODEL	EG-422B	EG-624B
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)	
Cut-off Low Frequency	40±1Hz	
Recovery (Low) Frequency	42±1Hz	
Cut-off High Frequency	65±1Hz	
Recovery (High) Frequency	63±1Hz	
Output Short Circuit Protection	Circuit Breaker	
Efficiency (Line Mode)	>95% (Rated R load, battery full charged)	
Transfer Time	10ms typical (UPS); 20ms typical (Appliances)	

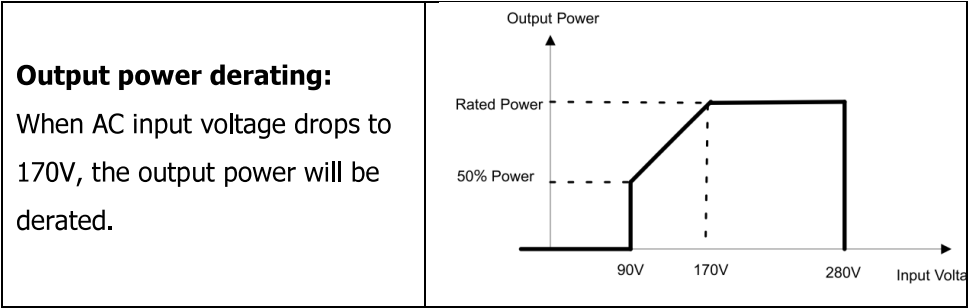


Table 2 Inverter Mode Specifications

INVERTER MODEL	EG-422B	EG-624B
Rated Output	4.2kW	6.2kW
Output Voltage Waveform	Pure Sine Wave	
Output Voltage Regulation	230VAC±5%	
Output Frequency	50Hz	
Peak Efficiency	93%	
Overload Protection	5s@≥150% load; 10s@≥ 110% ~ 150% load	
Surge Capacity	2 * rated power for 5 seconds	
Nominal DC Input Voltage	24 VDC	48 VDC
Cold Start Voltage	23.0 VDC	46.0VDC
Low DC Warning Voltage		
@ load < 20%	22.0VDC	44.0VDC
@ load ≥ 50%	20.2VDC	40.4VDC
Low DC Warning Return Voltage		
@ load < 20%	22.5VDC	45.0VDC
@ load ≥ 50%	21.0VDC	42.0VDC
Low DC Cut-off Voltage		
@load < 20%	20.5VDC	41.0VDC
@ load ≥50%	20.0VDC	40.0VDC
High DC Recovery Voltage	32VDC	62VDC
High DC Cut-off Voltage	33VDC	63VDC

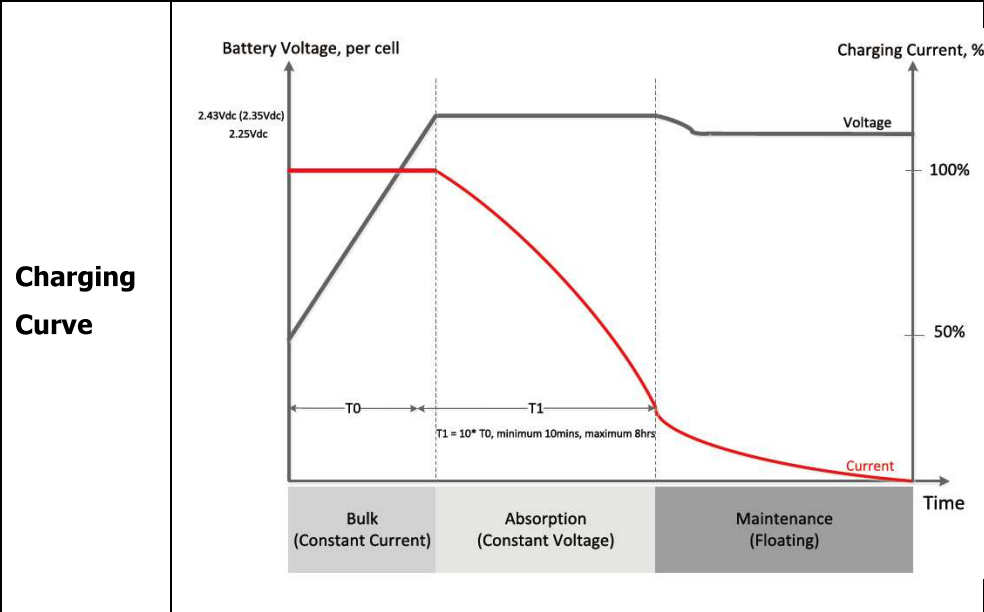
No-Load Power Consumption	35W	50W
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Table 3 Two-output Specifications

Model	EG-422B	EG-624B
Full Load	4200W	6200W
Max. Main load	4200W	6200W
Max. Secondary load	1400W	2066W
Main load cut-off voltage	26VDC	52VDC
Main load return voltage	27VDC	54VDC

Table 4 Charge Mode Specifications

Utility Charging Mode			
INVERTER MODEL		EG-422B	EG-624B
Charging Algorithm		3-Step	
AC Charging Current		100 Amp (@ $V_{input} = 230V$ )	
Bulk Charging Voltage (V)	Flooded Battery	29.2	58.4
	AGM / Gel Battery	28.2	56.4
Floating Charging Voltage		27.0VDC	54.0VDC



Solar Charging Mode (MPPT)

INVERTER MODEL	EG-422B	EG-624B
Rated Out Power	6200W	6500W
Max. PV array open circuit voltage	500VDC	
Max. Charging Current (AC charger + Solar charger)	120 Amp	
PV array MPPT voltage range	60-500VDC	

Table 5 Grid-Tie Specifications

Model	EG-422B	EG-624B
Nominal Output Voltage	220/230/240 VDC	
Feed-in Grid Voltage Range	195~253VAC	
Feed-in Grid Frequency Range	49~51±1Hz/59~61±1Hz	
Nominal Output Current	18.2A	26.9A
Power Factor Range	>0.99	
Max. Conversion Efficiency	97%	

Table 6 General Specifications

Model	EG-422B	EG-624B
Safety Certification	CE	
Operating temperature range	-10~50℃	
Storage temperature	-15~60℃	
Humidity	5%~95% Relative humidity (non-condensing)	
Dimension(D*W*H) (mm)	358*442*116	
Net weight (kg)	8.0	8.9

TROUBLE SHOOTING

Problem	LCD/LED/Buzzer	Explanation /Possible cause	What to do
Shuts down automatically during startup process.	LCD/LEDs and buzzer activated for 3 seconds and then complete off.	The battery voltage is too low (<1.91V/Cell)	1. Re-charge battery. 2. Replace battery.
No response after power on.	No indication.	1. The battery voltage is far too low (<1.4V/Cell)	1. Check if batteries and the wiring are connected firmly. 2. Replacing the fuse.



		2. Battery polarity is connected reversed.	3. Re-charge battery. 4. Replace battery.
Mains exist but the unit works in battery mode.	Input voltage is displayed as 0 on the LCD and green LED flash.	Input protector is tripped.	Check if AC breaker is tripped and AC wiring is connected well.
	Green LED 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)
	Green LED flashes.	"Solar First" is selected	Change output source priority to utility.
When the unit is turned on, internal relay keeps ON and OFF repeatedly.	LCD display and LEDs flash.	Battery is disconnected.	Check if battery wires are connected well.
Buzzer beeps continuously and red LED is on.	Fault code 07	Overload error. The inverter is overload 110% and time is up.	Reduce the connected load by switching off some equipment.
	Fault code 05	Output short circuited.	Check if wiring is connected well and remove abnormal load.
		Temperature of internal converter component is over 120°C.	Check whether the air flow of the unit is blocked or whether the ambient temperature is too high.
	Fault code 02	Internal temperature of inverter component is over 100°C.	
	Fault code 03	Battery is over-charged.	Return to service 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 (Inverter voltage below than 190VAC or is higher than 260VAC)	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 and if happens again, return to repair center.
	Fault code 52	Bus voltage too low	
	Fault code 55	Output voltage imbalance	
	Fault code 56	Battery connection issue or fuse burnt	Check battery connection.