

USER MANUAL

INVERTER

LAL-600W-PLUS

Dear Valued Customer

Thank you for purchasing the LAL-600W-PLUS Inverter. We hope you will enjoy the product.

This is the First Inverter Trolley that is designed specifically to work with LiFePO₄ (Lithium iron phosphate) batteries. However, the inverter can work with both LiFePO₄ (Lithium iron phosphate) as well as Lead Acid Batteries (Flooded / AGM/ GEL). You just change the battery type by holding down the Battery Button (Refer to the diagram on page 4) on the Inverter – Li means the charging algorithm and profile are set to LifePO₄ whilst PB means the charging algorithm and profile are set to Lead Acid / Gel / AGM.

How to use the Inverter

1. Plug the power cable from the box into the AC input socket (Refer number 6 on page 5) at the back of the device and into the wall and turn the wall socket on.
2. Plug your multiplug / devices you want to power from the inverter into the AC output of the Inverter. (Refer number 6 on page 5).
3. Turn the inverter power button on. (Refer number 2 on page 5).
4. The Inverter will automatically charge the batteries to full capacity.
5. **The Fan will come on whilst the batteries are being charged and when more than 38% capacity is being used on the inverter during backup (battery mode).**
6. **When the batteries are fully charged (the charging current going into the battery is less than 4A) the fan will turn off.**
7. The inverter will switch seamlessly between Eskom power and backup power to ensure you are always powered up.
8. Power surges are not covered under the warranty for the Lalela Inverters. It is recommended that customer invests in power surge protection, although as indicated by Eskom, even this may not protect appliances if the surge is high enough. It is therefore recommended to remove the unit entirely during load shedding. Once the power has returned and stabilised, the plug can be returned to the wall socket. Your battery will then recharge using Eskom power
9. There is a button called Silent (Refer to the diagram on page 4) that you can push it to turn the alarm buzzer on / off. If the alarm buzzer is set on, then the Inverter will beep during backup mode. Most users prefer to keep the alarm buzzer off. The default setting for the alarm buzzer is off.

Advantages of LifePO₄ (Lithium iron phosphate batteries)

Lithium iron phosphate batteries (LiFePO₄) offer lots of benefits compared to lead-acid batteries, namely: Longer life span, no maintenance, lightweight, improved discharge and charge efficiency.

Lithium has a long lifespan

Lithium iron phosphate batteries live up to 2000 cycles at 80 percent depth of discharge, without decreasing in performance. The average lifetime of Lead acid is 150 - 200 cycles.

High Efficiency

Lithium iron phosphate batteries (LiFePO₄) have 100% of their capacity available. Additionally, their fast charge and discharge rates cause them to be a great fit for all sorts of applications. Fast charging reduces any downtime and increases efficiency.

Lightweight

Lithium iron phosphate batteries (LiFePO₄) offer high power density which causes lithium batteries to be relatively small and light. Compared to lead-acid batteries lithium provides great energy density and are at least half the mass.

No Active Maintenance

Lithium iron phosphate batteries (LiFePO₄) don't require active maintenance to extend their service life. Also, the batteries show no memory effects and due to low self-discharge (<3% per month), you can store for months. Lead-acid batteries need to be cycled every 2 months as the acid will start to sulphate on the top of the battery and will start decreasing the life of the battery.

Pure Sine Wave Inverter

The LAL-600W-PLUS is a pure sinewave inverter. A pure sinewave inverter produces AC power which very closely matches an actual sine wave (Eskom Power). Many inverters on the market are modified sinewave. The pure sinewave inverters are far superior to the modified sinewave inverters.

What does one need a pure sine wave inverter to run?

- Sensitive electronics
- Medical equipment, such as a CPAP Machine
- Laser printers
- Newer Tv's
- Appliances with electronic timers or digital clocks

If you have medical equipment that you need to power, such as a CPAP machine, it will work with this inverter as it is a Pure Sinewave Inverter.

Warranty

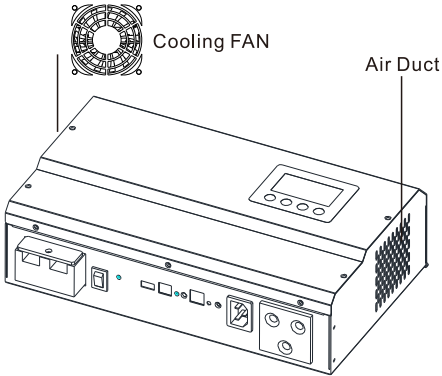
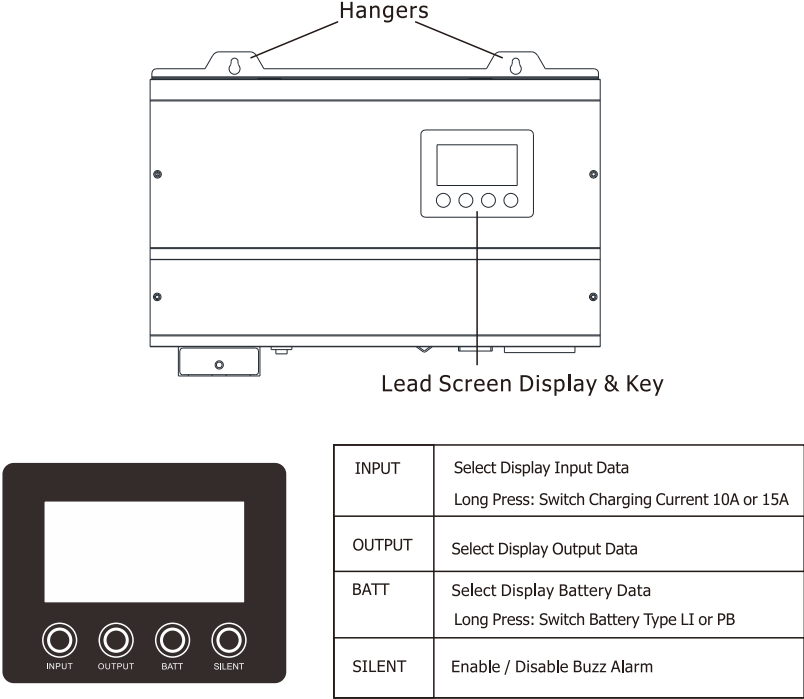
Please note that the Inverter trolley comes with a 12-month manufacturing warranty (inverter and battery). The warranty covers manufacturing and material defects only. **The warranty does not cover power surges or lightning damage.**

Power Surges

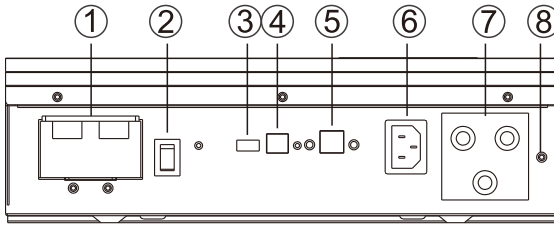
The unprecedented power shortages have presented the problem as communicated by Eskom as well of power surges. Power surges occur when the flow of electricity is interrupted, then started again, or when something sends electricity flowing back into the system.

Inverter heads carry a 12-month warranty from date of purchase against manufacturing and material defect and hence failure as a result of a power surge, that is not covered, will attract a repair cost to return the unit to working condition.

PRODUCT OVERVIEW



FRONT PANEL OF INVERTER



1. DC input connector bar (Connect to the battery)
2. Power button
3. Power Button-A type WIFI Socket (not active in current Model)
4. USB-B type COM Socket (not active in current Model)
5. RJ11 type BMS Socket (not active in current Model)
6. IEC Socket AC Grid Input
7. AC Output Socket
8. Link Ground



Note that when the power button is in the "ON" position, voltage may still be present at the output terminals even when the input terminals are disconnected from power button. DO NOT transport or attempt to make connections to the terminals when the power button is in the "ON" position.

WARNING

Only plug in the following devices, Laptop, Desktop, Monitor, Router, ONT (Fibre Box), TV, Lamp, TV, DSTV Decoder, CPAP machine

Do not plug in any high wattage items into the inverter such as but not limited to heaters, hair dryers, fridges, vacuum cleaners, microwaves, compressors as this will void the warranty.

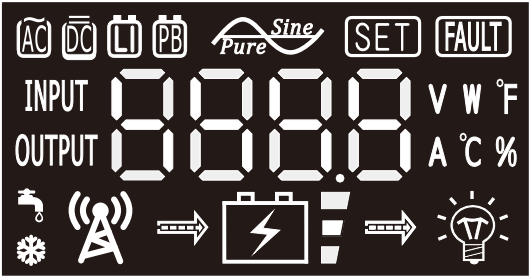
The warranty does not cover lightning damage or power surges

Lalela will accept no responsibility for damage or harm cause to any person and device as a result of negligent use

Do not connect the unit to your DB Board, as this will void your warranty.

OPERATION

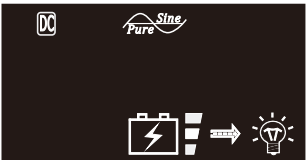
Lead Screen Full Display



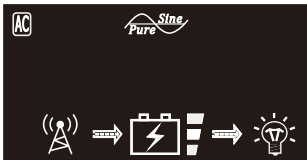
Operating Mode Description



Standby Mode



Battery Inverter Mode



AC Mode

Error Flash Display Indicate

Battery Under Voltage Protect

Error Code : E - b L



Battery Over Voltage Protect

Error Code : E - b H



AC Input exist, but Voltage
or Frequency Error
Error Code : E - A C



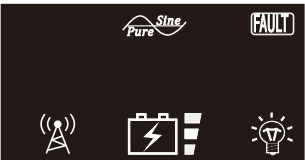
Load Output Overload Protect

Error Code : E - o P



Bios Temperature High Protect

Error Code : E - o C / E - o F



TROUBLE SHOOTING

If machine enters into fault mode, please remove input power.
And according to the table, deal with the following problems.

Explanation / Possible cause	What to do
Battery voltage is too Low.	Charge the unit at least 8 hours.
Over load.	Decrease your load.
Temperature of machine is too high.	Power off and wait for 30 minutes.
Battery voltage is too high	Check the battery specifications.
Battery voltage is too low	Check the battery specifications.
Output short circuited.	Remove your load and restart.
Inverter output voltage is high.	Return to repair center.
Over load.	Decrease your load.
Input voltage too low.	Check input power.
Input voltage too high.	
Input frequency too low.	
Input frequency too high.	
Output short circuited.	Check if wiring is connected well and remove abnormal load.
Output voltage is too low.	Decrease your load.

Key Functions and Display Data

-----Input Parameters Display-----



Input Eskom Voltage



Input Charging Current

-----Output Parameters Display-----

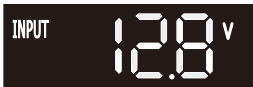


Output Inverter Voltage



Output Power

-----Battery Parameters Display-----



Input Battery Voltage



Input Battery Percent

-----Alarm Warning Display-----



Set alarm On



Set alarm Off

Battery Type Display & How to Change the Settings



Li Battery :
Default is LiFePO4 battery



Pb Battery :
Lead Acid (Flooded / Gel / AGM)



Long Press

If the battery type is not right, hold down the BATT button to change the battery type.

Charging Current Display & Change Set



Long Press



Max Charging Current Set

If the charging current is not right, hold down the INPUT button to change the max charging current. The screen can display the setting at the same time for a few seconds.

SPECIFICATIONS

MODEL		LAL-600W-PLUS	
Nominal Battery System Voltage		12VDC	
INVERTER OUTPUT	Rated Power	600VA / 600W	
	Waveform	Pure Sine Wave	
	Nominal Output Voltage RMS	230VAC	
	Output Voltage Regulation	+10/-18%	
	Output Frequency	50Hz / 60Hz ± 1Hz	
	Inverter Efficiency (Peak)	>90%	
	Line Mode Efficiency	>95%	
	Typical Transfer Time	Typical <10ms , 15ms max	
AC INPUT	Voltage	230VAC	
	Voltage Range	184 ~ 278VAC ± 3%	
	Frequency Range	45 ~ 65Hz ± 2Hz	
BATTERY	Note: Below Parameters (PB) Lead-acid Battery / (LI) 4 series LiFePO4 Lithium Battery Pack		
	Nominal Input Voltage	12VDC	
	Low Battery Cutoff	10.5VDC(PB)	11.5VDC(LI)
	Low Battery Alarm	11.0VDC(PB)	12.0VDC(LI)
	Low Battery Voltage Recover	12.5VDC(PB)	12.8VDC(LI)
	High Battery Voltage Recover	14.5VDC(PB)	14.3VDC(LI)
	High Battery Voltage Cutoff	15.0VDC(PB)	14.8VDC(LI)
	CHARGER	Charger Voltage Boost	14.4VDC(PB)
Charger Voltage Standby		13.8VDC(PB)	14.4VDC(LI)
Charging Current		10A / 15A ± 2A @ 12V	
Overcharge Protection S.D.		15.5VDC	
BYPASS & PROTECTION	Nominal Input Frequency	50Hz / 60Hz 【auto detection】	
	Overload Protection (SMPS Load)	FUSE	
	Output Short Circuit Protection	7A	
	Bypass Fuse Rating	7A	
	Max Bypass Current	7A	
MECHANICAL SPECIFICATIONS	Dimensions (W*H*D) (mm)	320 x 231 x 96	
	Shipping Dimensions (W*H*D) (mm)	415 x 280 x 166	
	Shipping Weight (kg)	3.4	
OTHER	Operation Temperature Range	0°C to 40°C	
	Audible Noise	60dB MAX	
	Display	Lead Screen	