

WARRANTY CARD

DATE OF PURCHASE	
SHIPPING ADDRESS	
SIGNATURE / STAMP	
DAMAGE DESCRIPTION	
SERVICE COMMENTS	

FILL IN IF NEEDED

(*) Cross incorrect

I agree to pay the cost of inverter repair due to:

* expiration of the warranty period / * warranty void

Before proceeding with the repair, service will inform by phone about the exact costs of the repair.

Please attach a copy of the purchase document (receipt or invoice) to the complaint.

The full regulations of service repairs can be found on our website www.voltpolska.pl



PRODUCT MANUAL

PURE SINE WAVE SOLAR INVERTERS
WITH EMERGENCY POWER SUPPLY FUNCTION AND
BUILT-IN SOLAR REGULATOR

sinusPRO S

VOLT
POLSKA

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INTRODUCTION

Thank you for purchasing a solar inverter from the sinusPRO S series. Please read these operating instructions before starting up the device.

Device characteristics

- One device includes the functions of a DC / AC converter, UPS, automatic battery charger and built-in PWM / MPPT solar controller.
- Toroidal transformer used in the converter ensures high efficiency and low no-load current. The device is much more energy-efficient than older designs that used E - type transformers.
- Fast 32-bit microprocessor ensures accurate and trouble-free operation
- Intuitive and simple operation thanks to LED display that informs about the current operating status of the device (input and output voltage, battery status, charging, etc.)
- Inverter outputs pure sinusoidal voltage
- High battery charging current (exact values in the table with technical specifications)
- Quick switching from mains power to UPS mode ensures uninterruptible operation of connected devices
- Intelligent control of the cooling fan, depending on the actual temperature of the device and the operating status of the inverter
- AC (mains) / SOLAR (battery) operation priority switch
- Built-in high-quality PWM / MPPT solar controller

GENERAL SAFETY INFORMATIONS

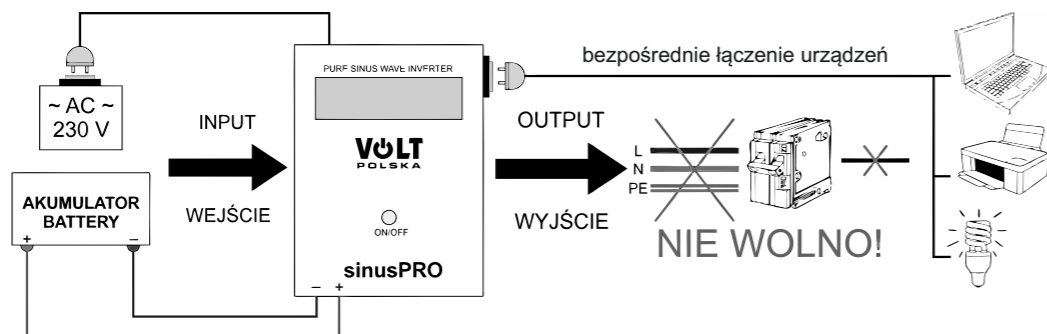
THE MANUAL IS AN INTEGRAL PART OF THE SINUS PRO SERIES DEVICES. DO NOT THROW IT AWAY AND KEEP IT ACCESSIBLE. READ ITS CONTENTS BEFORE FIRST USE OF THE APPLIANCE. THE MANUAL IS SUBJECT TO CHANGE. YOU CAN ALWAYS FIND IT ON THE MANUFACTURER'S WEBSITE (www.voltpolska.pl).

- Do not expose the inverter to rain, snow, dust, chemicals, oils, etc.
- It is forbidden to connect the AC output to the existing electrical installation.
- Do not cover the ventilation openings. The inverter should be installed in an easily accessible place with a minimum 30 cm of free space around the housing to ensure free air circulation, otherwise the device may be exposed to overheating. The minimum airflow value is 145 CFM.
- To reduce the risk of fire or electric shock, make sure existing wiring is in good condition and that all wires are properly sized (size, length, etc.). Do not run the inverter with damaged or sub-standard wiring.
- This device contains components that could cause arcing. To avoid fire and / or explosion, do not install the device in rooms containing flammable batteries or materials or in a place where there are devices that cannot come into contact with fire. This includes any storage space for gasoline powered machines, fuel tanks, fittings, adhesives, or other connections between fuel system components.
- Do not open / remove the housing from the inverter. The device does not contain any parts that require maintenance. Attempting to repair may result in electric shock or fire. The capacitors inside the device remain charged after power is disconnected.
- To reduce the risk of electric shock, disconnect both AC and DC power before performing maintenance or cleaning. Switching off the device with the button does not reduce the risk. The AC power plug should always be connected to the mains (AC outlet) so that the unit is properly grounded. Failure to ground the AC adapter exposes you to electric shock.
- The output part of the AC cabling should under no circumstances be connected to the mains or generator. Such a connection may cause damage greater than a short circuit in the circuit. The AC output of the inverter must under no circumstances be connected to an AC input. In particular, remember that the inverter should not be used to power life support systems or other medical equipment. We do not guarantee the correct operation of the inverter with such types of devices, in such a system you use it only at your own risk.
- Do not overload the device. Operation with a load greater than the rated load may damage the inverter. The power supply should have approx. 15-25% more power than the connected load.
- To reduce the risk of damage, only charge the batteries described on page 4.

IMPORTANT INFO ABOUT DEVICE CONNECTION

1. Battery charger built into the converters of the sinusPRO S series works on the principle of buffer charging. We recommend using batteries adapted to buffer charging and deep discharge, e.g. dedicated AGM VPRO, gel, acid closed DEEP CYCLE etc. Connecting car batteries (acid, AGM, starter) to the inverter, which are not adapted to such operation, may result in incorrect operation of the converter and / or damage to the battery. For cyclic operation with the use of the regulator, it is best to use gel type batteries.

2. AC output of the inverter is used for direct supply of connected devices in the so-called „island” system. It is forbidden to connect the AC output to the existing electrical installation (even through residual current protection), in particular to phase, neutral N and residual current conductors. This connection can result in a reverse voltage applied to the inverter output. Damage caused by such a connection will void the warranty !!!



3. If there are any distortions on the AC mains voltage in the user's home installation, power supply will switch to battery mode for the duration of the distortion. This situation is not harmful either for the power supply or for the connected ones.
4. The voltage at the PSU output may differ from the input voltage.
5. Other important information on, for example: the selection of batteries, the requirements for the required power or capacity of the battery set can be found on our website www.voltpolska.pl.

FIRST START

STARTING THE EMERGENCY POWER SUPPLY

1. Open the carton and check that all components are included and that the device is not damaged. Disconnect the network cable from the device.
2. Correctly connect the battery to the device with correct + - polarity.
3. Correctly connect the set of photovoltaic panels to the device, with correct polarity + -.
4. Select the appropriate priority of the UPS operation. With panels connected, select SOLAR PRIORITY, otherwise select AC PRIORITY.
5. Start the device by pressing the ON / OFF button (hold for 5s until you hear a beep) and connect the plug to the mains.
6. Switch the contactor that starts charging from the photovoltaic panels on the side of the device to the ON position.
7. Connect all the devices you want to use with the power adapter, make sure they are turned off, and turn them on one by one after connecting.

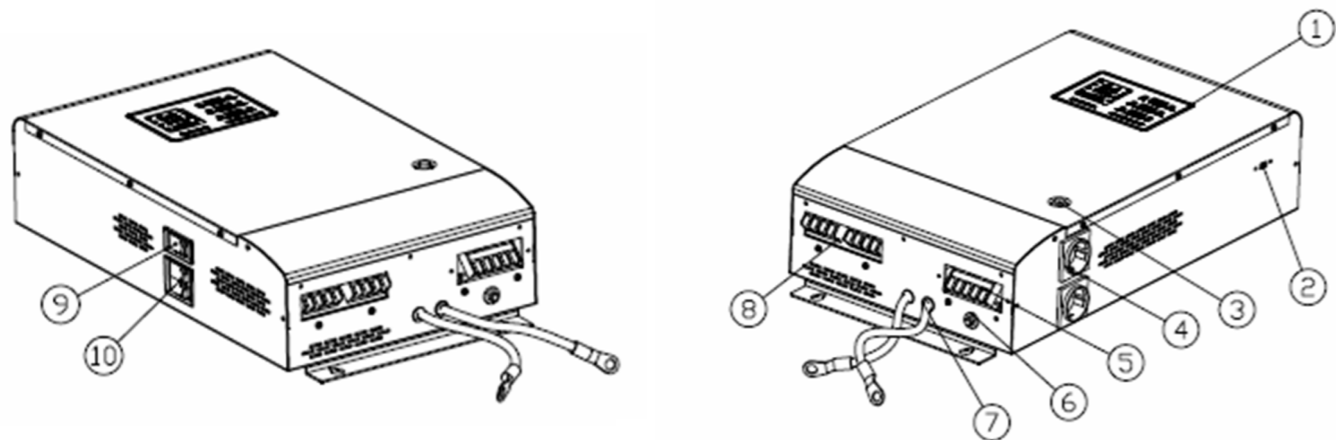
SWITCHING OFF THE EMERGENCY POWER SUPPLY

1. Turn off devices connected to the power supply in sequence
2. Hold the power switch on the power supply for 3 seconds to disconnect the power supply output.
3. Disconnect the network cable
4. Turn off the contactor on the panels and the batteries, and disconnect the batteries and the PV array

ATTENTION

1. Be careful when connecting the panels and the battery, voltage generated in reverse polarity may damage the inverters.
2. Do not overload the device above its nominal power. When connecting refrigerators, freezers and other induction / power consuming appliances, remember not to exceed 30% of the total nominal power of the PSU.
4. Do not connect the device in the open air, avoid contact of the power adapter with water.
5. Remember to place the power supply in a suitable place, with access to fresh air and a minimum distance of 30 cm on each side of the housing.
6. In the event of noticing incorrect operation / damage of the inverter, contact the manufacturer's service.
7. Test the correctness of the device operation after starting the power supply (observing the safety notes and information in the manual) with the load. We carry out the test by switching off the mains voltage using a phase fuse.
8. Disconnecting the power plug during operation of the power supply will disconnect the ground and neutral wire. This can cause problems when working with some devices that require a neutral input.
9. Do not use surge protectors (with fuses or chokes on the sockets) on the input and output of the power supply, as they may lead to a short circuit on the power supply.

ELEMENTS ON THE CHASSIS



1. LCD display showing the current parameters and operating status of the solar inverter.
2. Operation mode switch (power supply has 3 operating modes: PV → AC → BAT, AC → PV → BAT and PV → BAT → AC)
3. Power supply switch for starting the device.
4. AC output power sockets. The maximum current for a single socket is 15A.
5. AC input / output plugs.
6. Overload fuse.
7. Battery cables + (red) and - (black) DC.
8. Input plugs for solar panels. 4 positive + pins (connected in parallel) and 4 negative - pins (connected in parallel).
9. Power switch from a set of solar panels.
10. Power switch from the battery pack.

LCD DISPLAY
























In the left part of the display (the part concerning the power supply and built-in converter) there is information about the AC input voltage (☞) and output voltage (☞), current power supply load (☞) and battery capacity (☞). In this section, you can also see the icons that indicate active battery charging (☞), UNUSUAL FAULT (☞), overheating of transistors, a problem on the DC batteries side), overheating of the power supply (☞), too high voltage at AC input (☞), too low voltage at AC input (☞), input frequency (☞) or overload (☞).

In the right part of the display (the part relating to the built-in solar controller) there is information about the voltage of the connected set of solar panels (PV VOLTAGE), voltage of the connected battery pack (BATTERY VOLTAGE) and the charging current of the connected set of solar panels (CHARGING CURRENT). Additionally, from this section we can read whether the solar regulator is active (SOLAR), whether the connected batteries have the correct voltage (BATTERY), or if battery charging process is active (CHARGING). On the right side there are 3 LEDs which indicate the active DC output of the controller (DC OUTPUT), controller overheating (OVERHEAT) or working fault (FAULT).

ELEMENTS ON THE CHASSIS

LCD DISPLAY

ICONS REMARK

	mains power working status	 SOLAR	The solar available status, it will be lighting when solar panel is properly connected and the switch is turned on
	Inverter working status	 BATTERY	The battery available status, it will be lighting when the battery is properly connected and the switch is turned on, (the solar panel should be turned on at the same time)
	Fault status	 CHARGING	The solar panel charging status; it will have light flashes when the battery is not charging full; it will be lighting when the battery is charging full
	Over temperature status	 DC OUTPUT	DC output status, when the DC output is turned on, the indicator will be lighting
	mains power voltage too high	 OVERHEAT	Solar controller overload protection
	mains power voltage too low	 FAULT	Solar controller fault status
	mains input / output frequency display	 PV VOLTAGE	Solar panel voltage value display
	Red icon indicates inverter overloading output	 BATTERY VOLTAGE	Battery voltage value display
	Mains input voltage value display	 CHARGING CURRENT	charging current value display from solar panel to battery
	Inverter output voltage value display		
	Load capacity display		
	The battery capacity level display, It will have scrolls when the utility charges the battery		

Working Status	Warning explanation
Normal working	When the mains and battery are normal, no alarm will be given regardless of the battery power mode or the mains power supply mode.
Mains abnormal switched battery mode or mains recovery	Five Alarming
Battery lower limit operation or output overload	Short Alarming
Protection or output unusual	Hurrying or continuous alarming
Battery low voltage undervoltage protection	The machine rang until it was turned off.

PRODUCT USING INFORMATION

Follow the information in order to keep the solar inverter safe and remain efficient:

1. Install the solar inverter in a dry, cool, ventilated, safe and clean place.
2. Before use, make sure that all switches are in the OFF position.
3. Apply the appropriate type of battery to inverter (VRLA, AGM, GEL etc.).
4. Connect the solar panels, checking, if the maximum current and voltage range are proper for built-in regulator.
5. Set the inverter working mode correctly, according to connected items.
6. While connecting mains electricity, connect the wire to inverter first and next to house mains.
7. When connecting load device to the inverter, run them one by one, starting with the devices that require more power.
8. Do not turn on the inverter without, connecting the batteries first.

FAULT	POSSIBLE REASON	SOLUTION
Starting with alarm, no display	Battery voltage too high or too low	Recheck the battery voltage and connect properly
Starting with no output, show unusual	Short circuit for output or overload	Remove short circuit appliance and ensure the total loading not exceed the rated power for the inverter
Unable to charge in AC mode	Mains electricity not connect properly	Reconnect the mains power and ensure the mains voltage is within the input voltage range allowed by the inverter
Switching machine on/OFF failed	Pressing switch time short	Press and hold switch 3s for on; press and hold 2s for off
Inverter solar charging failed	Solar panel anomaly or input switch disconnected	Connect the solar panels correctly and turn on the solar panel input switch

PRODUCT WORKING MODE SWITCH

There are three working modes:

- **PV→AC→BAT**
- **AC→PV→BAT**
- **PV→BAT→AC**

PV→AC→BAT - The first priority is to use solar panel power supply. When the solar panel energy is too low, the second priority is to use AC mains to supply power. When the solar panel energy is too small and the mains is abnormal, restart battery inverter power supply.

AC→PV→BAT - The first priority is to use the mains supply. When the mains is abnormal, the second priority is to use the solar panel to supply power. When the mains is abnormal and the solar panel energy is too low, the battery inverter is powered on again.

PV→BAT→AC - The first priority is to use solar panel power supply. When the solar panel energy is too low, the battery inverter is used for power supply. When the battery voltage becomes low and the discharge depth is about 50%, the machine automatically switches to the mains, and meantime charging the battery.

SPECIFICATION TABLE

8. Specification Table

MODEL	Sinus PRO 1500 S	Sinus PRO 2000 S	Sinus PRO 2200S	Sinus PRO 2500 S
Max Power	1500 VA	2000 VA	2200 VA	2500 VA
Current Power	1050 W	1400 W	1400 W	1800 W
Working mode	(PV-->BAT-->AC)/(AC-->PV-->BAT)/(PV-->AC-->BAT)			
Battery Voltage	12VDC	24VDC	12VDC	24VDC
Indicator	Panel indicator Light	LED graphic screen+LED lights		
PV(Photovoltaic)	Input Voltage range	15-VDC-75VDC	25VDC-100VDC	15-VDC-75VDC
	Max.Charge Current	40 A MPPT		40 A MPPT
	Max.conversion Efficiency	98%		
AC Main status	Input Voltage range	140-275 Vac		
	Frequency	45-65 Hz		
	Output Voltage Range	190Vac-245Vac		
	Input PF.(AC/DC)	98%		
	Efficiency	mains mode>=96% (AC mode working efficiency)		
	Charge Current	20A	20A	
	Mains Overload	warning until decrease load		
	Short Circuit	Yes		
Inverter mode output	Inverter Output voltage	230V+-3%		
	Output Frequency	50Hz/60Hz adaptive		
	Output Power Factor	>=0.8		
	Wave Form Distortion	Linear Load<=3%		
	PV--AC Transfer Time	4ms&Max. 6ms		
	Efficiency	inverter mode>=80% (inverter mode working efficiency)		
	Inverter Overload	110-150% shutdown at 30S, 150-250% shut down at 15s, over 250V at 0s		
	Short Circuit	System auto shut down		
Environmental	Operating temperature	0 - 40		
	Relative humidity	10%-90% RH, non-condensing		
	Storage temperature	15 - 45		
Appearance	Inverter size (mm)	312x310x167	410x345x216	312x310x167
	Weight	14kg	15kg	17kg

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