ARTronic®

ART Power MINI 500 (LED)
ART Power MINI 1000 (LCD)
ART Power MINI 2000 (LCD)

INVERTER

USER MANUAL

Important Safety Information

Before installing ART Power MINI 500/1000/1500/2000VA, please read the following information carefully and save this manual for further reference. Disregard of these safety notes may endanger life or health, as well as the function of the equipment. Special attention must be paid to the CAUTION and WARNING statements in this manual.

CAUTION

1. To reduce risk of injury, charge ONLY lead-acid type rechargeable batteries. Other types of batteries may cause damage and injury.
2. DO NOT operate the ART Power MINI if it has been dropped or damaged in any way.
3. DO NOT expose ART Power MINI to rain, snow or liquids of any type. ART Power MINI is designed for indoor installation only.
4. NEVER charge a frozen battery.
5. DO NOT obstruct the ventilation openings.
6. Risks of electric shock Heat-sinks are live. Disconnect the AC sources and the DC source from this unit before servicing.
7. Risk of electric shock.This unit receives power from more than one source. Disconnect the AC sources and the DC source from this unit before servicing.
8. Do not remove cover. No user serviceable parts inside. Refer servicing to qualified service personnel.
9. The sum of the leakage current of the ART POWER MINI and the connected equipment should not exceed 3.5mA.
10. Risk of explosion if battery is incorrectly connected or replaced.

WARNING

1. Provide adequate ventilation from the battery compartment. The battery enclosure should be designed to prevent accumulation and concentration of hydrogen gas at the top of the compartment.
2. Input/output AC wiring and battery cables must be rated for 75^{o}C or higher. Using cables diameter, please refer to appendix A, according to different models. The inner diameter of the copper ring terminal which is used to connect battery cables to ART Power MINI DC terminals should be no less than 6mm.
3. For battery installation and maintenance: read the battery manufacturer's installation and maintenance instructions prior to operating.

PERSONAL PRECAUTIONS

1. Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing, or eyes.
2. Avoid touching eyes while working near batteries.
3. NEVER smoke or allow a spark or flame in the near vicinity of a battery.
4. Remove personal metal items such as rings, bracelets, necklaces, and watches while working with batteries. Batteries can produce short circuit current high enough to make metal melt, and can cause severe burns.
5. If a remote or automatic generator start system is used, disable the automatic starting circuit or disconnect the generator to prevent accident during servicing.

INTRODUCTION

Thanks for purchasing the ART Power MINI 500/1000/1500/2000VA. Properly used, this product will give you many years of reliable service.

The ART Power MINI series is an electronic product that has been designed and built to take low DC voltage power from batteries and convert it to standard AC power like the current you have at home.

The ART Power MINI series is a DC-to-AC with auto line-to-battery transfer and integrated charging system,

ART Power MINI series, powers from AC power and DC source, serving as an extended run UPS. When AC cable is connected to a wall socket, utility power goes to connected equipment(s) and/or charges the battery set via charging system. In UPS mode, the ART Power MINI series automatically converts battery energy into AC power for backing up the connected devices.

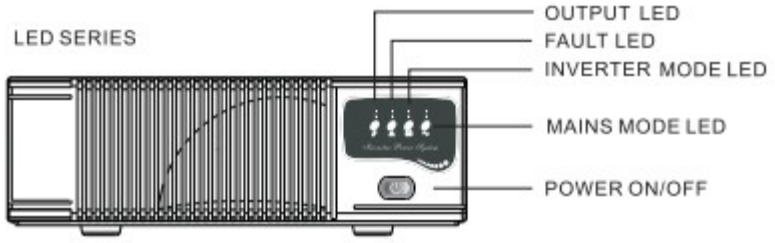
Features:

- Automatic line-to-battery switchover
- High efficient DC-to-AC conversion, minimizing energy loss.
- Rack Tower design for flexible placement
- Built-in enhanced charger
- Intelligent 2-stage charger control for efficient charging and preventing overcharger
- Provides overload protection
- Auto restart while AC recovery
- Multi-function LED/LCD indications and buzzer alarms

Operation & Installation

1. Front Panel Controls and LED Indicators

Shown below are the controls and indicator lights on the front panel of ART Power MINI series.



Power On/Off

Power ON/OFF button is shown as above. Once inverter has been properly installed and batteries are connected, press this button and Inverter will turn on automatically, and works in mains mode or inverter mode according to input AC sources status. When press this button again, Inverter will turn off automatically

Mains Mode LED

The green LED will blink or light steadily when power mains is normal.

Inverter Mode LED

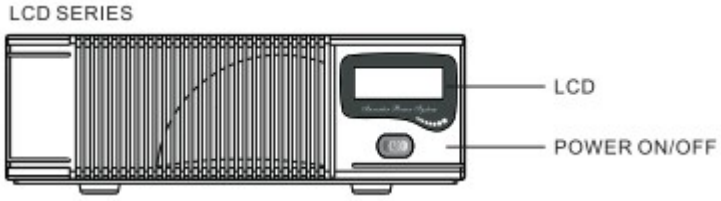
The Yellow LED will light when power mains is abnormal. And unit will work in inverter mode.

Fault LED

The red LED will light when fault occurs.

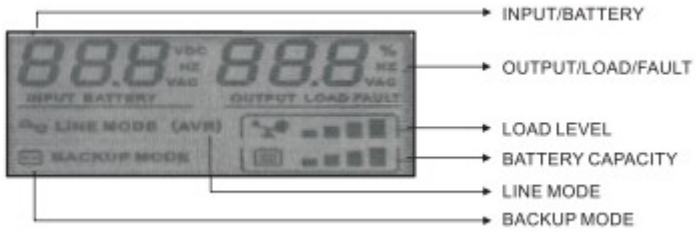
2. Front Panel Controls and LCD Indicators

Shown below are the controls and indicator lights on the front of Digital ART Power MINI.



LCD Display Specification

When press the pouer suitch lightly. the INVERTER works in normal mode. Including in off charging mode and fault mode. when LCD start to work, it will display all information for 3s.



1) When in normal mode, it will display as below.

2) When in battery mode, it will display as below. And the mark will flicker every 1 second.

3) When in fault mode, it will display as below. “FAULT” character and the reason of fault only.

Note: the fault code will be showed in fault mode.

4) Load level definition:

Load level	Load bar indication
	0%~25%
	25%~50%
	50%~75%
	75%~100%

5) Battery capacity definition:

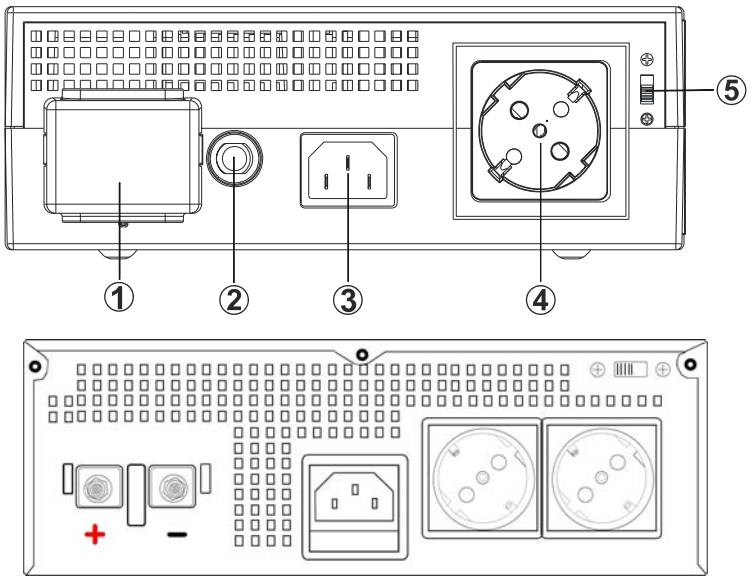
Battery level	Battery bar indication
	Battery voltage <11/22V
	Battery voltage 11~11.5V/22~23V
	Battery voltage 11.5~12.5V/23~24V
	Battery voltage <12.5/25V

6).When over load, the mark will flicker every 1 second.

7).When battery low, the mark will flicker every 1 second.

Rear Panel & Output Description

Shown below are the components on the rear panel of ART Power MINI series.



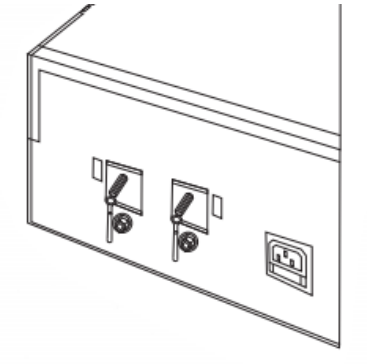
1. DC Input Connector (Battery Terminal)
2. AC Input Connector
3. Output Receptacle(s)
4. Input Voltage Range Selector:(Input voltage range is defined in

AC connection

Before having AC connection, match the power requirements of connected devices with the power output of ART Power MINI to avoid overload. Consult a qualified electrician, and follow local code for the proper wire sizes, connectors and conduit requirements.

A. Select **'Narrow'** setting for general electrical appliance such as tube light,energy saving lamp,TV,Juicer & mixer etc, but it is not suitable to meet high-power motor or inductive load ,such as the fridge of 1KW ,the motor of 800W, air cooler ,PC（having risk of rebooting）and so on. In this mode, the Inverex series operating voltage, in 'mains' mode, is within 170~280Vac with the same output voltage. The line sensitivity is higher.

B. Select “**Wide**” setting to save energy. In this mode the operating range of voltage for the Inverex is 90-280Vac, hence the output voltage will be the same as the MAINS input voltage. The Inverex unit in this mode has a lower sensitivity. You can connect and use only for some special load, such as lamp, fan.



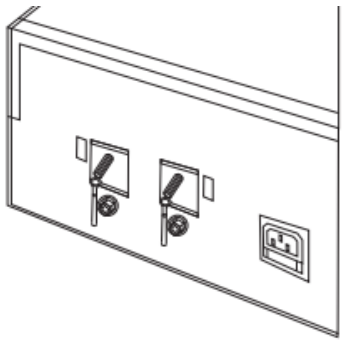
AC Input Connections

Battery Connection

Step 1-Pinch the bottom of DC input cover and Open it.

Step 2-Following battery polarity guide located near battery terminal. Tighten the M5 nut. Do not place anything between the flat part of battery terminal and the battery cable rig terminal, or overheating may occur.

Caution! DO NOT place anything between battery cable ring terminals and battery terminals. The terminal stud is not designed to carry current. Apply Anti-oxidant paste to terminals after terminals have been torqued.

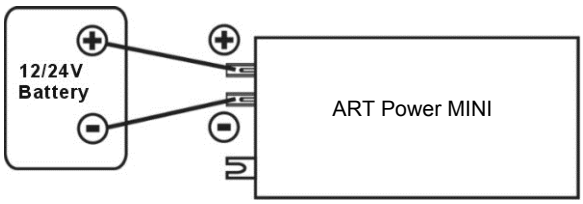


Battery Cable Connection

Step 3- Connect battery cables to your batteries

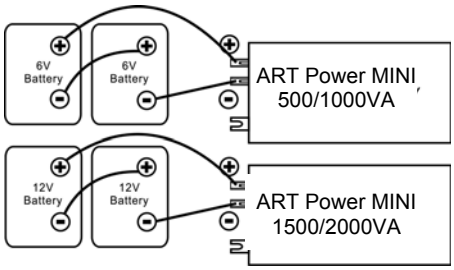
The battery must be wired to match the units DC input voltage specifications

(12V for ART Power MINI 500/1000, 24V for ART Power MINI 1500/2000)

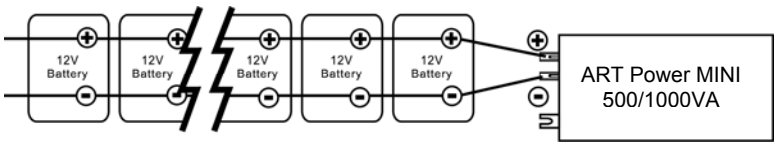


In addition, the batteries can be wired to provide additional run time. The various wiring configurations are as follows:

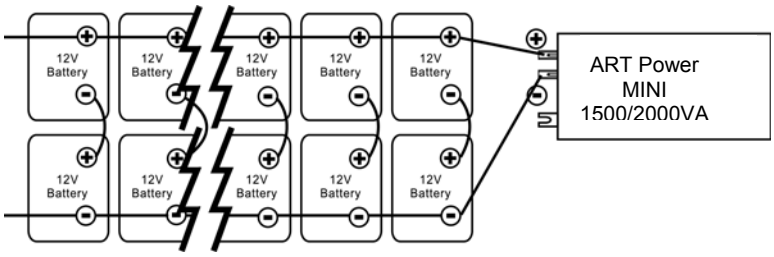
- **Series Connection:** Wiring batteries in “series” increases the total output voltage. This voltage MUST match the DC voltage requirements of the ART Power MINI unit, or it may damage both the ART Power MINI unit and/or the batteries.



- **Parallel Connection:** Wiring batteries in “parallel” increases the total run time, the batteries can operate the AC loads. The more batteries connected in parallel the longer run time the loads can be powered from the ART Power MINI unit.



- **Series-Parallel Connection:** “Series-parallel” configuration increases both the battery voltage (to match the DC requirements of ART Power MINI unit) and run time for operating the AC loads.



SPECIFICATION

MODEL		ART Power MINI 500 VA	ART Power MINI 1000 VA	ART Power MINI 1500 VA	ART Power MINI 2000 VA
CAPACITY		500VA/300W	1000VA/600W	1500VA/900W	2000VA/1200W
AC INPUT	Nominal Voltage	220/230/240VAC			
	Input Voltage Range	170~ 280 or 90~280VAC			
	Nominal Frequency	50/60Hz (Auto Detection)			
Input Voltage Range Selector	Narrow	170~280VAC			
	Wide	90~280VAC			
INVERTER MODE OUTPUT	Voltage	±10%			
	Frequency	50/60Hz ±0.1Hz			
	Waveform	Modified Sine-wave			
	Efficiency (AC to AC)	> 95%			
	Efficiency (DC to AC)	> 80%			
BATTERY	Nominal Voltage	12V DC		24V DC	
CHARGER	Charging Voltage	13.7V		27.4V	
	Charging Current	10A ± 1A Max.			
	Overcharging Protection	16V		32V	
TRANSFER	Transfer Time	Typical 8ms, 20ms max			
INDICATOR	Line Mode	Green LED blinks or lights steadily			
	Battery Mode	Yellow LED lights			
	Overload/fault	Red LED blinks or lights steadily			
AUDIBLE ALARM	Low Battery Voltage in Battery Mode	Beeps every 2 seconds			
	Overload	Beeps every 0.5 second.			
	Fault	Beeps continuously			
ENVIRONMENT	Temperature	0 ~ 40°C			
PHYSICAL	Dimension (mm) DXWXH	249x270x93			
	Net Weight (Kg)	3.1Kg	3.6Kg	3.9Kg	3.9Kg
PROTECTIONS	Deep Discharge, Overcharge, Short Circuit, Overload, Battery Short, Over Voltage, Under Voltage.				

Troubleshooting

Problem	Possible Causes	Remedy
No LED/LCD display	1. Battery Weak	1. Re-charge battery
	1. Battery defective	2. Battery replacement.
	2. Power switch is not pressed	3. Press and hold power switch.
Mains normal but works in inverter mode	1. AC Input missing	1. Check AC input connection.
	2. Input protector is effective	2. Reset the input protector.
Alarm buzzer beeps continuously	Overload	1. Verify that the load matches the capability specified in the specs.
Back up time is not enough	Overload	1. Remove some non-critical load.
	Battery voltage is too low.	2. Charge battery for 8 hours or more.

If any abnormal situations occur that are not listed above, please call service personnel immediately.

Appendix A

Models	Input/output cables (gauge copper wire)	Battery cables (gauge copper wire)
500VA/12VDC	At least 20AWG	At least 10AWG
1000VA/12VDC	At least 20AWG	At least 8AWG
1500VA24VDC	At least 18AWG	At least 8AWG
2000VA24VDC	At least 18AWG	At least 8AWG

ARTronic®

The art of electronics

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