72 Watt Mini Solar Farm and Cottage Kit

Specifications

Electrical Features

12V ⎓

Uses 1 rechargeable battery 12V each (battery not included)

Inverter	
Maximum Power:	400 Watts
Conversion Efficiency:	83%
Input Voltage:	10-15 Volts DC ⎓
Frequency:	60 Hz
Output waveform:	Modified Sine Wave
Dimensions:	6.3 x 4.1 x 2.2”
Weight:	1.78 Lbs

Solar Panel	
Type:	Amorphous
Maximum Power Total:	72 Watts
Maximum Current Total:	4.8 Amps
Maximum Power Each:	18 Watts
Maximum Current Each:	1.2 Amps
Frame Dimensions Each:	36 x 12.3 x 0.5”
Thickness of Glass:	0.13”
Weight Each:	6.4 Lbs

Charge Controller	
Max. Solar Panel Input Wattage:	120 Watts
Max. Solar Panel Input Current:	8 Amps
Voltage:	12 Volts
Cut-Out Voltage:	14.2 Volts
Cut-In Voltage:	13 Volts
Dimensions:	4.1 x 2.8 x 1”
Weight:	0.27 Lbs

How Solar Works

Importer:
IMPORTADORA PRIMEX, S.A. DE C.V.
Blvd. MAGNOCENTRO No. 4
San Fernando La Herradura
Huixquilucan, ESTADO DE MEXICO
C.P. 52765
RFC#: IPR-930907-S70
If you have any questions, call (5) 246-5500

Made in China

Nature Power Limited Warranty:
Proof of Purchase is Required (Receipt)
The Item is covered by a one year limited warranty that applies to the unit. The product is warranted to be free from manufacture defects in materials and workmanship from date of purchase for a period of one year. The product is warranted to the original purchaser only.

For more information:
NATURE POWER PRODUCTS
1-800-588-0590
info@naturepowerproducts.com
www.naturepowerproducts.com

72 Watt MINI SOLAR FARM AND COTTAGE KIT

READ INSTRUCTIONS BEFORE OPERATING

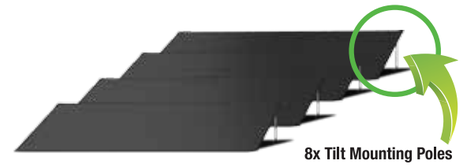
- Unit must be properly assembled in accordance with the assembly instructions before use.
- Do not tamper or alter any component of this product. Risk of fire, electric shock, or injury. Any tampering or alteration of any compo nent will void warranty.
- It is important to observe and follow industry standard and manufacturer’s safety procedures when working around batteries and other electrical equipment.
- To reduce the risk of sparking when installing solar charger please use a thick dark fabric to cover the panels or install in low light conditions.
- Make sure that your are connecting the panels in a well-ventilated area, free from flammable gases or vapours.
- These 12 Volt solar panels are designed for 12 Volt rechargeable batteries and 12 Volt configurations ONLY.
- All connections should be made in parallel, Positive (+) to Positive (+) Negative (-) to Negative (-)
- We recommend that you own a DMM (Digital Multi-Meter) to allow you to measure your voltage and amperage. It will help with understanding your system, checking proper polarities and troubleshooting.
- Do not attempt to recharge non-rechargeable batteries.
- Charge controller and inverter are NOT weatherproof and should be installed within 2 to 5 feet from battery.

To avoid electrical surges, always connect the charge controller to the battery first, and then connect the charge controller to the solar panels. Then always disconnect the solar panels first and the battery last from the controller.

Product Description

Model/Number:
72 Watt Mini Solar Farm and Cottage Kit/ **40060**
Power and Current Total: Up to 72 Watts/4.8 Amps
Power and Current Each Solar Panel: 18 Watts / 1.2 Amps

Includes


4x 18 Watt Solar Panels

8x Tilt Mounting Poles


4x Mounting Hardware


8 Amp Charge Controller


400 Watt Inverter


4 to 1 Connection Wire


J-Plug to Bare Wire Connector


J-Plug to Female DC⎓ port


J-Plug to Male DC⎓ plug


J-Plug to Battery Clamp


Battery Clamp to Female DC⎓ port

Assembly Instructions

Choose an area that will receive the most possible sunlight during the day for your solar panels. The performance of your Mini Solar Farm will be dependent on the amount of sunlight available.
The battery, charge controller and inverter must be installed in a dry, well ventilated area.
Please refer to the Installation Instructions following this section for information on mounting your solar panels in either a flat or tilted position.

Step 1: Connect the charge controller to a 12 volt battery. (Battery not included)

- Using the "J-Plug to Battery Clamp" wire, connect the battery clamps to the correct battery terminals ensuring the correct polarity is observed (Connect the positive (Red, +) battery clamp to the positive battery terminal. Then connect the negative (Black, -) battery clamp to the negative battery Terminal).
- Alternately you may use Jplug to Bare Wire Connector to hard wire the charge controller to the battery. Remember to maintain polarity.
- Then connect the J-Plug to the battery side of the charge controller ensuring connection is secure.

Connecting to a battery bank.

- When connecting to a bank of 12V batteries wired in parallel, connect the positive (Red, +) battery clamp to the positive battery terminal of the first battery in the battery bank. Then connect the negative (Black, -) battery clamp to the negative battery terminal of the last battery in the battery bank.

Step 2: Connect the charge controller to the solar panels.

- Using 4 to 1 Connection Wire, connect the four solar panels together by connecting the J-Plug of each solar panel to one of each of the four J-Plugs on one end of the 4 to 1 Connection Wire.
- Then connect the opposite end of the 4 to 1 Connection Wire to the Charge Controller on the Solar Panel side at the J-Plug ensuring all connections are secure.
- The charge controller should be located in close proximity to the battery. Distance between the solar panels and charge controller is acceptable, please refer to the wire sizing chart below.

Your solar panels are now able to charge the 12 volt battery. One LED on the Charge Controller should now be ON, either green to indicate the battery is fully charged or amber to indicate the battery is charging. If no lights come on once the solar panels are connected please ensure all connections are tight. You may also need to confirm that the solar panels are generating power. Disconnect each from the 4 to 1 Connection Wire and test with a volt or multi meter. Ensure the solar panel is receiving full and direct sunlight when testing. Each solar panel should have an output of between 16 and 26 volts. Reconnect each solar panel to the 4 to 1 Connection Wire and test the output at the single side of this wire. If you do not get correct readings or trouble continues please call us at 1-800-588-0590 for additional help.

Step 3: Connecting the inverter to the battery.

- To connect the 400 Watt Modified Sine Wave Inverter to the 12V battery, use a 10 gauge copper wire ensuring the correct polarity is observed. This wire should not be longer than 3 feet.
- Connect the wire to the inverter first, then connect to the battery.
- You may now plug your AC appliances into the inverter. (Ensure total power consumption is less than 400 watts).

WARNING: ALL Connections must be placed in order and ensure that the positive (+) matches the positive(+) and the negative (-) matches the negative (-). (Connections are in Parallel) Wrong connections may cause damage to parts or all of the system and will void the warranty.

Extending the distance between the solar panels and battery.

If you wish to extend the distance between the solar panels and the battery you may splice in an additional length of copper wire. You may remove the Jplug in order to do so, this will not void the warranty. Consult the chart below to choose the correct size required for the distance you require. Ensure that you maintain correct polarity. Using an improperly sized wire can cause the charge controller to not function properly and damage the wire, charge controller and battery.

Wiring Chart

Cable Length	American Wire Gauge (size)
20-30 Feet	#12
40-50 Feet	#10
60 Feet or more	# 8

Installation Instructions

You may choose to mount your solar panels with the mounting poles **(Option 1)** or you may choose to mount the panels flat with mounting brackets **(Option 2).**

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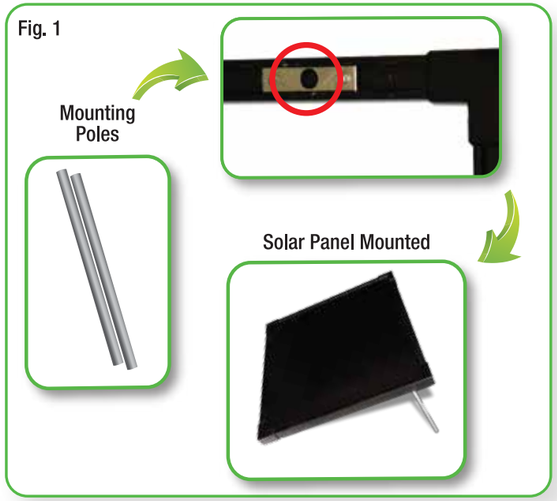
Option 1 – Tilt Mounting

No additional tools required.
(See Fig.1) Insert the threaded side of each mounting pole into the bolts on the backside of the solar panel. Location is circled in red. Then place the solar panel on a flat surface directed toward the sun. (Repeat step with remaining solar panels).

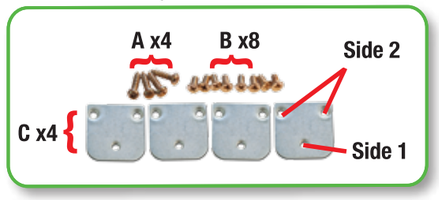
Fig. 1



Option 2 – Flat Mounting

Required tools:
- 1/8in flat screw driver.
- Small Philips screw driver.

Mounting Brackets and Screws



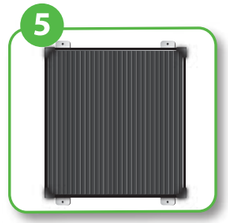
Step 1: Remove one headless screw with a 1/8in flat head screw driver.

Step 2: Align bracket C Side 2 with opening.
(Align on an angle so the other headless screw is visible)
Insert screw B.

Step 3: Remove the other headless screw and slide bracket over opening.

Step 4: Insert screw B and secure tightly.
REPEAT STEP WITH REMAINING BRACKETS AND SCREWS.

Step 5: Turn solar panel over and lay across a flat surface. Insert screw A into bracket C side 1, and secure to mounting surface. We suggest to keep a ½" space between the solar panel and the mounting surface for proper ventilation.



Solar Panel Mounted

Note: Mounting screws (A) are for wood and other pliable surfaces. To mount on brick or other surface please purchase appropriate screws at your local hardware store.

Description of Wires and Accessories

400 WATT INVERTER

- The power inverter generates 115 VAC power from your 12 volt car battery. Treat the 115 VAC output just like you treat the 115 VAC in your house.
- Keep away from children.
- Do not connect the unit to AC distribution wiring or any positive ground applications.
- Keep the inverter in a dry, cool, well ventilated and covered area.
- Keep the unit in cool environments. Ambient air temperature should be between 32 degrees and 75 degrees F.
- Make sure the opening to the fan and vent holes are not blocked.

CAUTION To reduce risk of fire, connect only to a circuit provided with 4 amperes maximum branch circuit overcurrent protection in accordance with NEC, ANSI/NFPA 70.

Keep the unit away from flammable material or in any location which may accumulate flammable fumes or gases.

With heavy use, the unit will become warm and possibly hot. Keep it away from any heat sensitive materials.

Do not open the unit - high voltages are inside and can cause electrical shock. Tampering with inverter will void warranty.

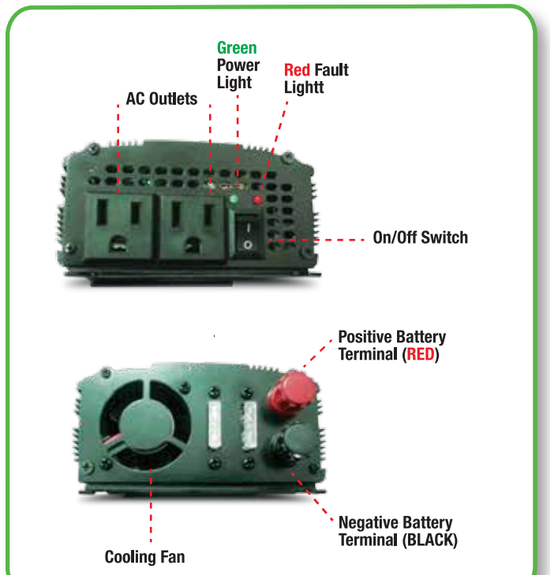
NOTE: Internal components remain charged after all power is disconnected

Use proper size wiring. High power inverters can draw many amps from the 12 volt source and can melt wires if not fused and sized properly.
Nature Power Products does not authorize any products to be used with any life support devices or medical systems.

Output Waveform
Modified sine wave output is suitable for most AC loads.
This includes lights, appliances, motors, TVs and most electronics. There are a few battery chargers that are not compatible with modified sine wave operation. These are typically small rechargeable battery-operated devices like razors and flashlights that can be plugged directly into an AC receptacle to recharge. Some chargers for battery packs used in power tools also should not be used with an inverter. These chargers typically have a warning label indicating that dangerous voltages are present at the battery terminals.

Only a true sine wave inverter should be used with these types of appliances. Damage to the device could result if you attempt to use them with any type of modified sine.

Product Features



Smooth Start Technology smoothly brings up AC power for high demand power start-ups, such as a television. SST circuitry activates under excessive loads and will cut off power temporarily during short circuits to protect the inverter plus attached units.

FUSE The inverter comes with fuses already installed; contact Nature Power Products if they become damaged.

Low Battery Alarm the inverter sounds an audible alarm then turns itself off if the source battery becomes too low.

Dual AC outlets allow you to power multiple devices at the same time.

72 Watt Mini Solar Farm and Cottage Kit

Inverter Specifications

Input Voltage	
Normal Input Voltage:	12.8-13.2 VDC
Operating Input Voltage:	10.0-15.0 VDC
Rated Output Power AC	
Continuous Output Power:	350 W
Maximum Output Power:	425 W (10 Minutes)
Surge Output Power:	700 W
Output Voltage	
Nominal Output Voltage	115 ± 5VAC~
Load Regulation 0 – 200 W	110 -120 C VAC~
Minimum at Low input Voltage	100 VAC~
Output Frequency	60 Hz ± 2 Hz
Efficiency at 400 W	85-80 %
No load current draw	0.40 ADC
Input over voltage shutdown	15.5 ± 0.5 VDC
Input Under Voltage	
Warning (Red Light)	10.7 ± 0.3 VDC
Input under voltage Shutdown (Red Light)	
Input Under Voltage Shutdown (no load)	10.0 ± 0.3 VDC
Input Under Voltage Recovery (no load)	12.0 ± 0.5 VDC
Input Fuse Protection	
Replaceable Cig Adapter Fuse	Yes
Over Temperature Shutdown	
Over Temperature Shutdown	149 ˚F + 5/-10 ˚F
Over Temperature Recovery	140 ˚F ± 5 ˚F
Output Short Circuit Protection	Yes

Lights and Alarms

Green POWER Indicator Light will illuminate when the inverter is turned On and operating properly. If the light goes out the DC power source is missing or possibly a fuse is blown.

Red FAULT Indicator Light may illuminate reasons include; overload, output short circuit, low input voltage and over temperature of the unit.

Alarm: The power inverter will make a beeping sound when the battery voltage is low. Turn the inverter OFF and disconnect the inverter from the battery.

Environmental Requirements
The inverter's small footprint reduces heat yet still generates heat while running. This is not a malfunction. If the inverter gets too hot while running it will turn off by itself, stopping damage to the inverter and to its surroundings.

Make sure to position the inverter where air flows freely around all sides to allow heat to disperse. Keep the inverter in a cool environment out of direct sunlight and away from heating vents. The inverters thermal protection prevents it from operating when its temperature exceeds 149 ˚F ± 10 ˚F; 65 ˚C ± 5 ˚C.

Nominal Ambient Temperature	77°F
Operating Ambient Temperature Range	32 to 104 ˚F
Storage Ambient Temperature Range	-4 to 140 ˚F
Humidity	
Operation	10 to 90% AH
Storage	5 to 90% AH

Mounting Installation
Mounting: The power inverter should be secured to a solid flat surface capable of handing the weight of the unit. It is very important that the unit be secured using the proper size mounting hardware (not included) to keep the unit from moving around or becoming loose.

The power inverter should be placed with space around the unit for proper ventilation. Do not block the air vents to the fan or block the exhaust holes locating on the side or bottom of the unit.

The unit must be mounted in a dry cool area. Do not allow water to drip or splash on the inverter.

The unit should be mounted as close as possible to the battery, but not in the same compartment. If you have a choice, it is better to run longer AC wires than DC cables.

The inverter must be mounted securely in any type of vehicle to prevent injury or damage. This unit may be mounted horizontally or vertically with mounting hardware (not included).

Failure to connect the correct polarity may cause damage to the inverter and/or your electrical system and is not covered by the warranty.

Do not work on AC wiring when the inverter is connected to DC power. Even if the switch is turned off. Physically remove the DC Power source from the inverter and proceed.
WIRING TIP: To minimize electrical interference keep the DC power cables as short as possible and twist them 1-3 times per foot. This minimizes interference from the cables.

Testing Installation
After you confirm the 12 Volt Power is wired properly to the power inverter with nothing plugged into the outlets, turn the power switch to the On position. The Green Power light will illuminate.

With the inverter turned to the Off position plug the device that you want to use into the AC outlet. Turn the power switch to the On position so the green POWER light is illuminated. Turn On application and should be operational.
Note: If the inverter does not operate properly and the power light does not illuminate, Turn the power switch off and check your wiring and external fuse. Check the Trouble Shooting guide.

Power Usage Operation
Use only products that draw less than the power rating of the power inverter. Use of products greater than the rated power rating may cause power inverter to shut down or blow the fuse. If that application does not operate and the inverter turns off, you may need a larger inverter.

Battery Life Operation
The power inverter can draw lot of amperage from your vehicle battery. If you are using it for extended periods of time, you will want to operate your vehicle occasionally to maintain a charge to your battery. In addition the power inverter will also draw a small current when turned off and not operating. Therefore, it should be disconnected from your battery if your vehicle will not be used for more than 24 hours.

Trouble Shooting
Poor Contact: Check contacts and parts thoroughly.
Battery Voltage is Low: Start the engine to recharge the battery or replace the battery if needed.
Shutdown Overload: Be sure load is less than rated watts.
Thermal Shutdown: Allow the inverter to cool down by turning it off.

Operations that Damage and Void the warranty:

1. Connect the inverter with Reverse Polarity.
2. Connect the inverter to a power source greater than 15 VDC.
3. Water Damage.
4. Break/Drop Damage.

8 AMP CHARGE CONTROLLER

Product Description:
Electrical: Handles up to 8 Amps = 130 Watts of Solar Power
Cut-in Voltage: 13Volts
Cut-Out Voltage: 14.2 Volts

Any solar panel that is rated 12 watts or higher requires the use of a charge controller. Nature Power Solar panels and 8 Amp charge controller comes equipped with easy to use j-plug adapters. The 8 Amp Charge controller is designed to protect your 12 Volt batteries from being overcharge by high voltage surges and prevents discharging of the battery overnight. LED lights display battery "Charged" or battery "Charging". Never deeply discharge your battery; never let your battery voltage pass below 11.0 volts. It will cause permanent damage to the battery. Use a DMM (Digital Multi-Meter) to measure your battery's voltage. When connecting and during operation it is normal for both lights to flicker for a short time.

IMPORTANT:

- Observe manufacturer's safety procedures when working around batteries and other electrical equipment.
- Always connect charge controller to the battery first and remove last.
- This product is designed to be used on 12 volt configurations in parallel, (optional 6 volt in series).
- This product is designed to receive charges from 12 Volt Solar Panels.
- This product should be placed in a well ventilated dry area, free from flammable gases, weather, and moisture. Charge controller is NOT weatherproof.
- Charge controller should not be installed further than 2 to 5 ft. way from the battery. Solar Panel length must not reach further than 20 ft way from battery or loss of current may occur.
- LED light indicates a full battery charge "green" at 14.2 Volts, at this time the charge controller will cut out to prevent overcharging.
- LED light indicates battery charging "yellow" when battery reaches below 13 Volts, charge controller will cut in and allow solar panel to being charging.
- Charge controller can handle up to 130 Watts of solar power.

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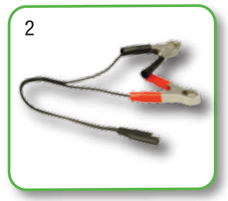
Connection Wires

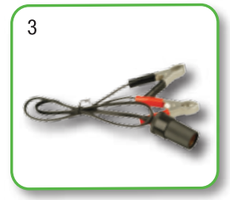
1. 4 to 1 Connection Wire – (Used for Connecting the Solar Panels to the Charge Controller). Connect each Solar Panel to the multi plug side of the wire. Ensuring that each connection is secure. Insert the single J-Plug into Solar Panel side of the charge controller.

2. J-Plug to Battery Clamp – (Used for Connecting the Charge Controller to the Battery).
Connect the J-Plug to the battery side of the Charge Controller and connect the clamps to the appropriate terminals on the battery ensuring the correct polarity is observed. (For permanent connection to the battery see 2a).



2a. J-Plug to Bare Wire Connecter (Permanent Connection) - Connect the J-Plug to the battery side of the Charge Controller. The bare wires on the other end of the wire can now be hard-wired to the battery terminals.

3. Battery Clamp to Female DC port – (For powering 12V DC devices) Connect the clamps to the appropriate terminals on the battery. The Female DC Port can now be used to charge or power 12 volt devices directly from the battery. (For permanent installation see 3a).



3a. J-Plug to Female DC port – When connected this can be used to connect your DC Devices directly to the Solar Panels for charging.

4. J-Plug to Male DC plug – By connecting the J-Plug to the battery side of the charge controller the Male DC Plug can be used to charge car 12 VDC batteries directly from the Solar Panels through the 12V port in the vehicle.