

575W

SWITCHING POWER SUPPLY

12VDC, 47A



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WARNING

These power supplies are capable of sourcing large amounts of power. Improper use of this equipment can result in fire or electric shock. The configurable design incorporated into these power supplies also requires careful attention to proper setup and configuration when combining power supplies for higher output power to ensure safe operation.

The instruction manual is brief and will not take much of your time to review before using this equipment. To ensure your safety, please read the instructions completely and be sure to follow all of the procedures when using this equipment.

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General Description

This AC/DC power supply is designed to use your standard household power outlet to power equipment that requires clean, stable and reliable DC power. This power supply converts 100-240V AC power to 12V (nominal) DC power and can source up to 47A of continuous current.

This unit is a used server power supply that has been modified from its original design. The modification incorporates standard 0.75" spacing binding posts that accept ¼" fork connectors as well as standard 4mm banana plugs. The negative DC output of this unit has also been internally isolated from earth ground. This unit includes a unique feature that grounds the negative DC terminal to earth ground externally. This unit is capable of being run in series with identical units for higher output voltage by removing the factory installed ground strap and installing the included jumper cable to connect the negative DC terminal to the positive DC terminal of another unit. This unit is also capable of being run in parallel with identical units for higher output current capacity.

This unit has also been modified internally to operate the fan at the lowest safe speed to reduce fan noise generated by the unit. The internal fan will automatically increase speed for higher cooling capacity as the DC load increases and ambient temperatures rise.

Features

One main DC power output @ 12V, up to 47A

Active Power Factor Correction (APFC)

¼" binding posts accept standard 4mm bullet connectors

Automatic fan speed for lower power supply noise

Over temperature protection

Over current protection

Short circuit protection

Over voltage protection

Under voltage protection

Stackable design for increased power output

Package Contents

One (1) Power Supply

One (1) Standard US Power Cable, 18AWG, 10A

One (1) Jumper Cable

Two (2) Pieces of Double Sided Tape



Figure 1

Important Safety Instructions

This manual contains important safety and operating instructions for this power supply. Before you use this power supply, read all the instructions and cautionary markings in this manual, on the power supply, and on the product that you will connect to the power supply to reduce the risk of injury.

Danger: To reduce the risk of fire or electric shock, carefully follow these instructions.

- Do not use the power supply near water (for example, a bathtub, washbowl, kitchen sink, laundry tub, wet basement, or swimming pool).
- Do not use the power supply outdoors.
- Do not place the power supply on an unstable cart, stand or table. If the power supply falls it could injure a person or cause serious damage to the power supply.
- Do not overload power outlets or extension cords. An overload can result in fire or electric shock.
- Do not disassemble this unit. The internal capacitors are very large and can store a significant charge for a long time. Even when not connected to AC power these units can cause electric shock if opened.
- Do not use an attachment that is not recommended. This could result in a risk of fire, electric shock or injury to persons.
- Never push any object into any openings on the power supply. Doing so could touch dangerous voltage points or short out parts resulting in a fire or electrical shock.

- Never change the configuration of the power supply, including installing or removing the ground strap or jumper cable, while the unit is powered.
- Never connect the negative wire of a load (battery charger, etc.) to intermediate jumpers of multiple supplies wired in series. The negative wire of a load should always be connected to a black negative terminal that is connected to earth ground (ground strap). This ensures that your equipment is properly grounded and is required for safe operation.

Caution: To reduce the risk of damage

- Do not operate the power supply if it has been dropped or damaged in any way.
- The power supply should be operated only from a standard AC outlet that provides 100-240V AC, 50/60 Hz. If you are not sure of the type of power supplied to your home, consult your local power company.
- To protect the power supply during a lightning storm or when it is left unattended and unused for long periods of time, unplug it from the AC outlet. This will prevent damage to the power supply from lightning and power surges.
- Unplug the power supply from the outlet before attempting any configuration changes, maintenance or cleaning. Do not use liquid or aerosol cleaners.
- If your power supply does not operate normally, in particular if any unusual sounds or smells come from it, unplug it immediately.

Connections

Caution: Make all other connections before you connect the power supply to standard AC power

Single Supply Configuration

This power supply is already configured for single supply use. Be sure to observe polarity when connecting a load. The RED binding post is the positive (+) DC terminal and the BLACK binding post is the negative (-) DC terminal.

Multiple Supply Configuration

These power supplies can be combined in series or parallel to increase total output power. Each power supply can output up to 575W of continuous power. However, power supplies are not 100% efficient. For example, if a power supply is 80% efficient under all load conditions then it will be capable of an output that is only 80% of the input power. Under this example, a power supply that draws 100W on the input can only output 80W. Like all AC/DC power supplies, these power supplies are not 100% efficient. Therefore, you must ensure that as you combine units for higher output power that you 1) have a sufficient household circuit to supply power to all of the combined units and 2) you have the appropriate power cords for the current they will draw from the outlet.

Caution: Connecting combined power supplies to separate household circuits is NOT recommended

Note that standard household circuits are only rated for 80% of the circuit breaker capacity. Therefore, a 120VAC, 15A household circuit is only rated for 1440W ($120\text{VAC} * 15\text{A} * 0.8$) and standard 120VAC, 20A household circuits are only rated for 1920W ($120\text{VAC} * 20\text{A} * 0.8$). Each power supply can provide up to 575W of output power. As a general rule, no more than two (2) power supplies should be powered from a 120VAC, 15A circuit. Additionally, no more than three (3) power supplies should be powered from a 120VAC, 20A circuit. More than 3 supplies should only be powered from a minimum of a 120VAC, 25A circuit or a minimum of a 240VAC, 15A circuit.

When combining multiple power supplies, it is important that you understand what voltage your load can safely operate on and how combining power supplies affects the output voltage and current. Here are three very simple rules to help you understand the effects of combining power supplies:

- When run in series, add the voltage (V)
- When run in parallel, add the current (A)
- In both cases, add the power (W)

For example, if you connect two power supplies in series and each power supply outputs 12V @ 47A, the resulting voltage when measured from the negative terminal of the first supply (earth ground) to the positive terminal of the second supply will be 24V @ 47A. If you connect two power supplies in parallel and each power supply is capable of sourcing 12V @ 47A, the combination of the two supplies will be capable of sourcing 12V @ 94A. In both cases, if both supplies are capable of outputting 575W, the combination of two supplies will be capable of outputting 1150W.

Series Configuration

To connect power supplies in series, you must leave the ground strap installed on the first unit and remove the ground strap on each additional unit. Do so by removing the screw through the ground strap and loosening the black negative (-) binding post. Once the screw is removed and the binding post is loose, the ground strap should easily lift off the supply. Be sure to replace the screw and tighten the binding post once the strap has been removed.

Now use the jumper wire to connect the red positive (+) binding post of the grounded supply (the one that still has the ground strap installed) to the black negative (-) binding post of the second supply. Continue to jumper the negative (-) binding post of each unit to the positive (+) binding post of the next unit until all units have been connected together in a series.

Up to four (4) power supplies can be safely connected in series for up to 2300W of total output power capacity. Proper series supply configuration of three (3) power supplies is shown in Figure 2. This configuration will nominally provide 36V at 47A, capable of a maximum output of 1725W of power.



Figure 2

Parallel Configuration

To connect power supplies in parallel, simply jumper the negative terminals together and the positive terminals together. It is strongly recommended that the ground strap be installed on only one power supply and the negative lead wire of the load (i.e. battery charger) is connected to the terminal with the ground strap installed. At least one ground strap is required to be installed for safe operation.

Up to two (2) power supplies can be safely connected in parallel for up to 1150W of total output power capacity. Proper parallel supply configuration of two (2) power supplies is shown in Figure 3. This configuration will nominally provide 12V at 94A, capable of a maximum output of 1150W of power.



Figure 3

Series-Parallel Configuration

These units can also be configured in a combined series-parallel configuration. To do so, configure equal sets of power supplies in a parallel configuration with the ground straps installed in only one parallel set. Treat each parallel set as one single power supply and combine them in a series configuration. Only one jumper is required between parallel sets for the series connection. Note that this configuration requires five (5) jumper wires with a minimum 10AWG stranded wire.

Only four (4) power supplies can be safely connected in a series-parallel configuration for up to 2300W of total output power capacity. Proper series-parallel supply configuration of four (4) power supplies is shown in Figure 4. This configuration will nominally provide 24V at 94A, capable of a maximum output of 2300W of power.

Caution: This configuration requires an equal number of power supplies in parallel sets for safe operation because the load will attempt to draw an equal amount of current from each parallel set. As an example, two (2) parallel power supplies in series with one (1) power supply will limit the load current to 47A because the single power supply will go into overcurrent protection above 47A.



Figure 4

Securing Multiple Units Together

Each unit includes two (2) pieces of high bond strength double sided tape. This tape can be used to secure this unit to another adjacent unit. Figure 5 shows suggested placement of the tape for best bond strength. For optimal bonding, be sure the surfaces are clean and dry. Also be sure your placement of the tape will mate with a smooth, solid surface on both sides.

When installing the tape, do not to block the housing holes highlighted in Figure 6. The springs of the adjacent power supply fit into these holes for flush mating between supplies which ensures optimal bond strength of the tape. The springs and their alignment with the holes can be seen in Figure 7.



Figure 5



Figure 6

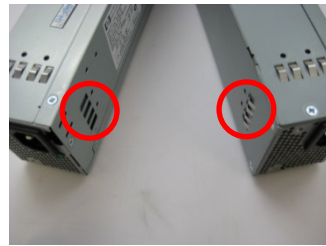


Figure 7

Operation

To use your power supply all you have to do is plug it in. There is no power switch. Please make sure all of your connections are properly wired to the power supply before plugging it in.

For power supplies run in series, be sure to plug in the power supply with the ground strap installed first. Then plug in the second supply in the series and so on.

It is also acceptable to plug all of the supplies into an appropriately sized and rated power strip or extension cord first and then plug the power strip or extension cord in powering all units at the same time. It is your responsibility to make sure you are using a power strip or extension cord that is appropriately rated for the amount of current these power supplies will draw.

Specifications

Total Output Power	575 Watts
Input Voltage	100-240V AC
Input AC Frequency	50-60Hz
Maximum Input Current	8.6A
Output Voltage	12V DC
Maximum Output Current	47A
Dimensions	12.5" x 2.25" x 3.25" (317 x 57 x 83 mm)
Weight	4 lbs (1.8 kg)

Technical Support

You may contact technical support at any time by email. Please also visit our website for FAQs, configuration videos and other technical information.

support@2zo-rc.com

Warranty

These units have proven to be very reliable. Every unit is load tested and proper operation is verified before packaging. However failure is still a possibility as is always the case with electronic equipment.

Your power supply is warranted for thirty (30) days from date of purchase to be free from manufacturing and component defects. This warranty does not cover damages caused by improper use or abuse. Any attempts to open and/or modify the unit yourself will void the warranty.



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