



## ***APS Power Supply***

### **15, 30, 45, 55, 75, 90 and 100 Amp Installation Guide**



**Congratulations and thank you** for purchasing a Cascade Audio Engineering APS Power Supply. It is designed to provide years of efficient, trouble free service.

All Cascade Audio Engineering APS power supplies feature regulated and filtered outputs that provide clean power without the slightest hint of noise. The advanced circuitry utilized in our APS power supplies offer efficiency ratings of 86-90%. Their super light weight (6 - 7 lbs.), low-profile design allows for convenient mounting in or under a display vehicle (car, boat, plane, armored personnel carrier, etc.) or behind a display board.

Your new APS power supply may be used with or without a battery. However, when combined with a high quality battery, APS power supplies can supply transient surges up to 1000 amps. In display applications where use of a battery are not possible, installation of a Cascade Audio CAP-1 (1 Farad) or CAP-0.5 (1/2 Farad) capacitor is recommended. APS power supplies may also be connected in parallel for even higher current operation!

Because all APS Power Supplies utilize an advanced switching design, there is no low frequency transformer hum. Every power supply is equipped with a quiet running cooling fan.

When not in use APS Series Power Supplies are essentially off, reducing electricity usage.

## Protection

All Cascade Audio Engineering APS Power Supplies feature temperature, overcurrent and reverse-polarity protection circuitry. They will provide stable regulated DC output voltage (13.6V or 14.2V, relative to jumper connection - The APS-100 is 13.4V only) regardless of the load by varying output current to compensate. AC input protection against damaging spikes of up to 190VAC and brown-out input protection are also provided.

All APS Power Supplies feature an automatic, thermally triggered, current controlled fan (APS-90 and APS-100 have two). When the internal circuitry reaches a specified maximum operating temperature, the fan will turn on. The speed of the fan will vary with current draw.

In an overcurrent condition (typically caused by use of an APS power Supply smaller than needed for a particular application), APS Models 75, 90 and 100 will automatically roll back current and voltage to prevent damage. Full power will be restored when the overcurrent condition is corrected. If an overcurrent condition is encountered with APS Models 15, 30, 45 and 55, and high current draw causes voltage to drop to approximately 2V, the fuse on the end panel of the power supply will blow. If the fuse blows repeatedly, contact Cascade Audio for assistance.

All APS Power Supplies are protected against reverse-polarity connection by use of internal diodes. If the outputs are connected in reverse, the fuse(s) will blow to protect the unit.

## Mounting

APS converter/power supplies can be mounted in any position. Allow sufficient space to provide unrestricted airflow in and around the unit.

**Note:** Care must be taken to allow proper airflow when installing in an enclosed compartment. Failure to provide proper airflow will result in poor performance, or even product failure.

Never install electronics in a battery compartment or other area where flammable fumes may exist, such as fuel storage areas.

## Display Board Installation

Mount the power supply to allow use of short positive and negative cables. Use power distribution blocks if necessary. Easy access to the main fuse or circuit breaker should be considered as well.

Your new APS Power Supply can be used with or without an additional battery. Use of a battery connected in parallel with your APS power supply will greatly increase the current available for transients. For installations where use of a battery is not possible, capacitors may be used.

## Vehicle Installation

Two methods of vehicle installation are commonly used. One is to mount the positive and negative battery cables to the vehicle and to place the power supply under the vehicle when necessary. Ease of connection is accomplished through use of an additional quick-release type connector such as that provided with our HK-4 Hook-up Kit (see illustration below).



The other method is to mount the power supply permanently into the vehicle. In this installation, the power supply is hidden from view behind a panel in the vehicle. A three prong male weatherproof recessed switchplate (available from your local electrical supply house) can be mounted to the bottom of the vehicle allowing use of a standard grounded outdoor extension cord to power the unit. Installation of a manual-reset circuit breaker in the positive cable between the power supply and the battery is recommended to prevent battery drain when the vehicle is stored for long periods of time without being plugged-in.

## DC Output Terminals

Before making any connections, be sure that the AC cord of your APS Power Supply is unplugged. If installing a battery, disconnect the positive side of the battery before installation.

Locate the two (2) screw terminals on the end of the APS Power Supply labeled **POS** and **NEG**. (refer to the photo; right)

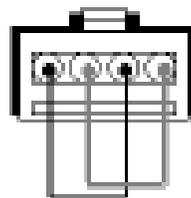


Cut the positive and negative cables that will go from the power supply to the load (battery, display board, distribution blocks, etc.) to the desired length. Always use the proper sized cable based on the amperage of the power supply and the distance between the power supply and the load (Please refer to the chart at the end of this manual). Allow for proper routing of the cables. Strip approx. 1" of insulation from one end of each cable. Insert the stripped end of the positive (red) cable into the POS terminal on the end of the power supply, and the stripped end of the negative (black) cable into the NEG terminal. Firmly tighten the terminal screws. Strip approx. ½" of insulation from the other end of the positive and negative cables, terminate the ends as necessary, and attach the cables to the load. You may connect, although not required for most installations, the ground terminal to chassis or any other grounding source. The grounding terminal is located close to one of the mounting tabs.

**Note:** The grounding terminal is primarily used for RV installations. If installing your power supply into an RV, an additional cable (as short as possible) needs to go from this terminal to the chassis ground of the RV. **If ground loop noise is present, a wire connected from the NEG terminal to the chassis ground connection may correct the condition.**

## Dual Voltage Switching

The output voltage of any APS power supply (Except APS-100) may be adjusted from 13.6 volts to 14.2 volts when necessary. APS Power Supplies feature an RJ45 phone jack on the top of the unit located by the cooling fans (see photo below left). The unit is shipped with a jumper taped to the unit. With the jumper removed, the output is 13.6V. With the jumper inserted, the output is 14.2V. (Jumper wiring is shown in the following diagram; right).



### Warning!

It is recommended that switching the output voltage on any APS power supply to 14.2 volts be done **ONLY** when rapid recharging of the battery is required. **Long term connection at the 14.2V output level will result in permanent battery damage.**

## Connecting Multiple APS Power Supplies

APS power supplies may be connected in parallel to increase their current capability. There are a few important steps to follow:

1. APS power supplies must only be connected to other APS units of the same model.

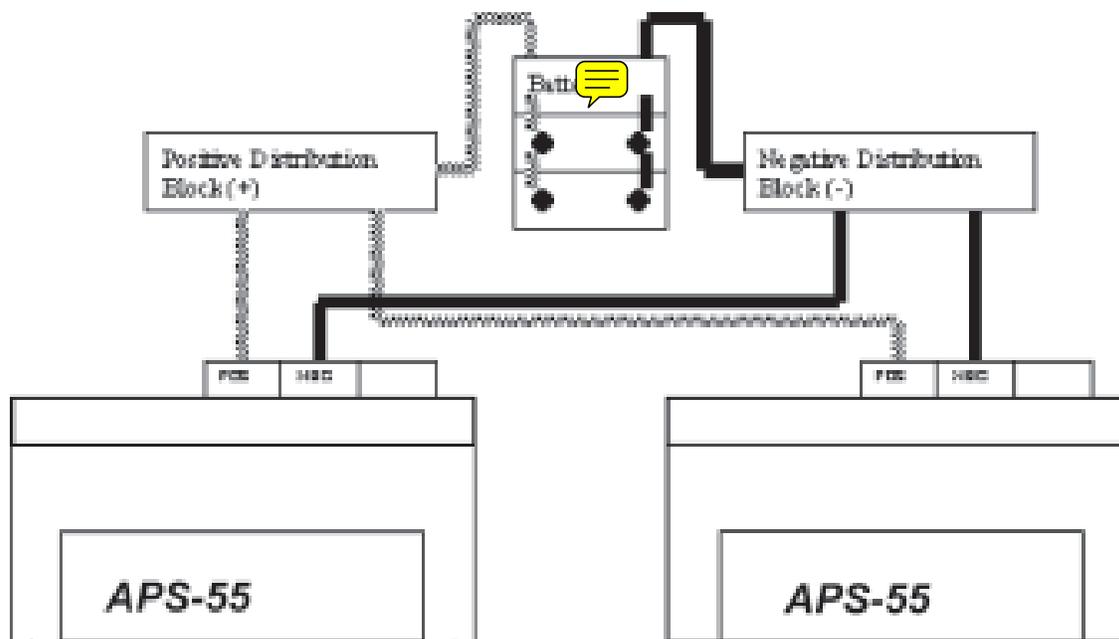
*Example:* An APS-55 can ONLY be connected to other APS-55 power supplies. Failure to comply with this step will void your warranty.

2. APS power supplies must be connected in parallel (Positive to positive and negative to negative).

3. It is possible to connect up to six (6) APS power supplies in parallel at one time. Make sure the units are as close together as possible and that the power cables from the outputs are of equal length to provide maximum performance.

**NOTE: Make sure that the AC circuit is capable of the current required by multiple APS power supplies or damage may result. Units larger than 55 amp need a dedicated circuit for EACH UNIT.**

Please refer to the following diagram when connecting multiple APS Power Supplies (up to a maximum of six). Use of positive and negative distribution blocks is highly recommended.



## Fuses

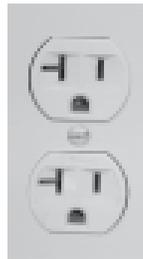
Your APS Power Supply is protected against reverse polarity. If the battery or the APS unit is hooked up incorrectly, the fuse on the end panel will blow and can easily be replaced. **When replacing fuses, always use the same size AGC style fuses that came with your power supply.** The fuses are located next to the DC output terminals (Refer to the picture below).



## AC Input Cord

All APS Power Supplies must be plugged into a 120V AC outlet. They are not equipped with on/off switches. Do not plug the unit in until all connections are made.

Plug the AC input cord into a 120 volt, three (3) wire grounded source. APS-15, 30, 45, 55, 90 and 100 feature standard 3 prong grounded AC power cords. The APS-75 is UL listed and is equipped with a polarized 20A male AC power plug per new UL code (following photo; left). Polarized wall receptacles compliant with the new UL code for 20A circuits are available at your local electrical supply house (see following photo; right).



## Specifications

Model	APS-15	APS-30	APS-45	APS-55	APS-75	APS-90	APS-100
Input Voltage	96-140 VAC	96-140 VAC	96-140 VAC				
Input Frequency	47-63 Hz	47-63 Hz	47-63 Hz				
Max. Continuous Output	200 Watts	400 Watts	600 Watts	740 Watts	1000 Watts	1200 Watts	1340 Watts
Current Draw (Max Load)	4 Amps	8 Amps	12 Amps	15 Amps	18 Amps	22 Amps	24 Amps
Output Voltage	13.4/14.1	13.4/14.1	13.4/14.1	13.4/14.1	13.4/14.1	13.4/14.1	13.4
Output Amperage (DC)	15 Amps	30 Amps	45 Amps	55 Amps	75 Amps	90 Amps	100 Amps
Dimensions	7"x6.5"x3.5"	7"x6.5"x3.5"	7"x6.5"x3.5"	7"x6.5"x3.5"	10"x6.5"x3.5"	10"x6.5"x3.5"	10"x6.5"x3.5"
Weight	6.2 lbs.	6.88 lbs.	6.92 lbs.	6.92 lbs.	7.8 lbs.	7.8 lbs.	7.8 lbs.

# 12VDC Cable Calculator

MINIMUM wire gauge shown. For MAXIMUM PERFORMANCE, use LARGER wire gauge.										
POWER	3600	225 - 300								
	2700	150 - 225								1/0 GA
	1800	125 - 150								
	1500	105 - 125								
	1260	85 - 105								
	1020	65 - 85								4 GA
	780	50 - 65								
	600	35 - 50								
	420	20 - 35								
	240	0 - 20								8 GA
WATTS	AMPS	4 FT	4 - 7 FT	7 - 10'	10 - 13'	13 - 16'	16 - 19'	19 - 22'	22 - 28'	
CABLE LENGTH										

## Available Accessories

### CAP-01/CAP-0.5:

Cascade Audio Engineering also offers our **CAP-1** One Farad and **CAP-0.5** One-Half Farad capacitors as well as our bolt-on **CAP-DVM** Digital Voltage Monitor Kit for the CAP-1. (refer to photo below)

### CAP Specifications

- Capacitance CAP 1:1.0 / CAP 0.5:0.47 Farad (+/- 15%)
- ESR: -0.004 Ohms (+/- 20%)
- Operating Voltage: 20V (Intended for 12V mobile applications)
- Operating Temperature: 95 Degrees Celcius Max.

### HK-4 Hook-Up Kit:

Our **HK-4 Hook-up Kit** provides everything necessary to connect an APS unit to a vehicle or display. This pre-assembled kit includes one 4ft. length of black & red 4ga. cables pre-terminated with ring connectors for the battery, a heavy duty quick release connector and one 4ft. length of black & red 4ga. cable to be terminated at the power supply DC outputs. (refer to photo at right)



## **Two Year Warranty**

Cascade Audio Engineering warrants its APS Power Supplies against any electronic or mechanical defects under normal use for a period of two (2) years from the date of original purchase.

If, during the first year, it is determined by Cascade Audio Engineering that the unit is defective, it will be directly exchanged for a new unit.

If, during the second year, it is determined by Cascade Audio Engineering that the unit is defective, it will be replaced or repaired at the discretion of Cascade Audio Engineering.

**If an APS Power Supply fails for any reason,  
please call Cascade Audio Engineering at:  
541-389-6821**

Replacement units will be warranted for the remaining portion  
of the original warranty period.

If the power supply is out of warranty, please call Cascade Audio Engineering at 1-541-389-6821 and arrangements will be made for the repair of the unit. Please attach a letter with your name, return address, daytime phone number and a brief description of the problem. When returning a unit to the factory, pack the unit in its original packaging if at all possible. If the original packaging is not available, please pack the unit so that it will not be damaged in transit.

This warranty does not cover the installation or damage from abuse, accident, incorrect application, misuse, incorrect wiring, water damage, acts of God, or operating the unit against instructed in these instructions. This warranty does not cover any power supply that has been opened, tampered with, or altered in any way by anyone other than Cascade Audio Engineering. It does not cover costs of installation or removal of the product or transportation to Cascade Audio Engineering or damage in transit.

Cascade Audio Engineering shall not be liable for any special or consequential damages or for any other expenses incurred by reason of use or sales of this product. This warranty is in lieu of any other warranties expressed or implied.

This warranty gives the consumer specific legal rights and they may have other rights which vary from state to state. Some states do not follow the exclusion or limitation of incidental or consequential damages, the above exclusion may not apply.

**Cascade Audio Engineering**  
**Tel: (541)389-6821 Fax: (541)389-5273**  
**[www.cascadeaudio.com](http://www.cascadeaudio.com)**