

N-audio Powerbox series user manual



Contents

I. What is Powerbox?	2
II. Powering up for the first time	2
III. Connecting effects to Powerbox	3
IV. Configuring outpus	4
V. Output parameters	5
VI. Types of power supply cables	6
VII.Center positive, center negative and negative ground effects	6
VIII. Specification	10

I. What is Powerbox?

Powerbox is a universal guitar effects power supply. It is built in a compact box, which can fit into most pedalboards. This device has been designed with high quality transformers and low noise, low-dropout voltage regulators, which guarantees reliable operation. In addition, the device has been designed with galvanically isolated groups. In this way the typical ground loop problems are eliminated to achieve very low levels of noise. Each group is fitted with its own control LED, situated between the two output connectors. It indicates the presence of output voltage. For flexibility most of the outputs can be configured for the desired output voltage via DIP switches.

II. Powering up for the first time

WARNING! Check the local mains voltage where you are going to be using the Powerbox. **DO NOT POWER THE POWERBOX WITH THE WRONG MAINS VOLTAGE!** Powerbox is shipped pre-configured to work at 230V. For the US market at 115V. A mains selector switch can be added on request. If for any reason none of the LEDs work, it is most likely that the fuse has blown, or a short circuit has occurred. The fuse is located at the lower part of the mains socket and can be easily replaced. First, unplug the power supply cable from the outlet, and with the help of a screwdriver pull out the fuse holder. Replace the fuse with a new one. You don't have to search for a new one at the moment; there is a spare one in there. This way, you will be sure, that in case you need one, you have it at hand. Powerbox works with a standard 20x5mm fuse.

III. Connecting effects to Powerbox

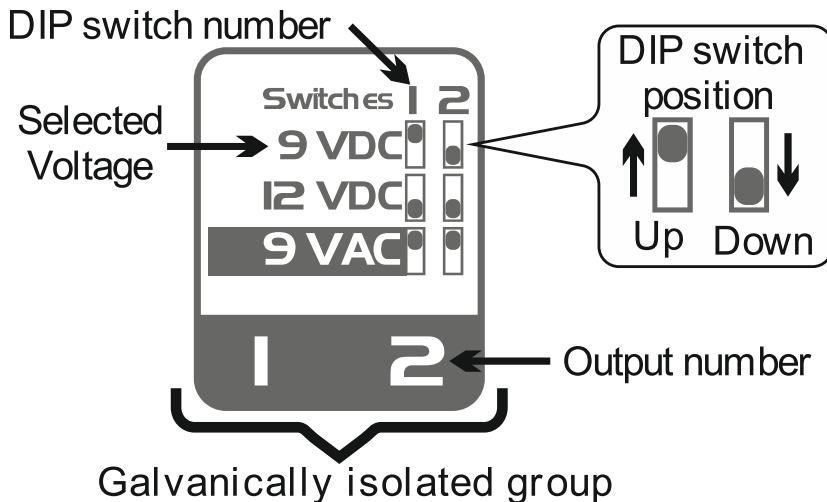
Powerbox can power both effects with low current consumption and effects requiring more current or higher voltage. For this purpose, the outputs are divided in groups with different options. There are groups designed for supplying higher current consumption and DC or AC voltages like delay pedals, processors, tube effects, loop systems, etc. They are, of course, universal and you can power lower consumption effects too - chorus, tremolo, compressor, distortion, overdrive, etc. The last two isolated groups are specifically provided for supplying low-consumption, noise-sensitive effects. Here the output voltage is fixed to 9,5VDC - exactly the same as a fresh 9-volt alkaline battery. They are specially designed for incredibly low noise with maximum power consumption of 100mA per group. They are designed for use with effects like wah-wah pedal, overdrive, distortion, compressor, booster and the like. For proper connection of all effects and minimizing ground loops and to reduce unnecessary loading of Powerbox, it is good to follow some recommendations. Refer to all user manuals of all your effects and check their requirements.

- You can combine two effects which require the same voltage in one group. It is better if they have similar current consumption.
- Positive ground effects must be in a separate group.
- Avoid combining two effects with high and low power consumption, for example delay and overdrive in the same group.

Connecting effects to a combined power block must be well considered. If you think you can't do it on your own, don't hesitate to contact us for help.

IV. Configuring outputs

Changing the output voltages of the Powerbox series is done with the help of DIP switches located on top of the device. Selectors can be switched while the device is either switched on or off. Be careful when switching! Maximum output voltages of 15-24VDC or AC voltages can damage effects which operate at lower voltage! Before making any changes to the output voltages, make sure the effects can work with the desired voltage! Don't forget the output voltage is changed for the two outputs in the particular group! Check both effects when switching voltage. Each group has specific capabilities. A table placed on top of Powerbox shows them. An example shown here is the first group of Powerbox PRO:





Powerbox PRO

Powerbox Mk2

This is the safest configuration! It's good to start your Powerbox with DIP switch positions shown here where all outputs give 9VDC.

V. Output parameters

Powerbox PRO		
Outputs	Voltage	Current
1&2	9VAC	1300 mA
	9 VDC	650 mA
	12 VDC	210 mA
3&4	9VAC	1300 mA
	9 VDC	650 mA
	12 VDC	210 mA
5 & 6	9 VDC	520 mA
	12 VDC	240 mA
7 & 8	9 VDC	520 mA
	12 VDC	240 mA
9&10	9 VDC	600 mA
	15 VDC	400 mA
	18 VDC	300 mA
	24 VDC	100 mA
11&12	9.5 VDC	100 mA
13&14	9.5 VDC	100 mA

Powerbox Mk2		
Outputs	Voltage	Current
1&2	9 VDC	520 mA
	12 VDC	240 mA
3&4	9 VDC	520 mA
	12 VDC	240 mA
5 & 6	9 VDC	600 mA
	15 VDC	400 mA
	18 VDC	300 mA
	24 VDC	100 mA
7&8	9.5 VDC	100 mA
9&10	9.5 VDC	100 mA

Tables of Powerbox series maximum voltage and current capabilities

VI. Types of power supply cables

Powerbox comes supplied with a set of all necessary cables for powering effects, which consist of:

- Standard IEC power cord with EU, UK or US plug
- Eight black cables with a diameter of $\varnothing 5.5/\varnothing 2.1$ mm and a length of 50cm
- Two (red and blue) 35 cm cables with diameter of $\varnothing 5.5/\varnothing 2.5$ mm
- One black 35 cm 3.5mm mono jack output cable
- Three reverse polarity cables with a length of 15cm
- One Y parallel cable with a length of 23cm

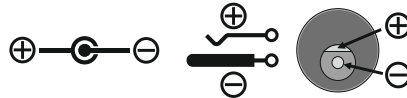
NOTE! Most effects using 3.5mm mono jack are center-positive. The cable with a small jack is center negative. For this reason, you have to check the polarity of your effects. In general, in order for the effect to work, you have to use one reverse polarity cable, to switch polarities. You have to use the reverse polarity cord together with the 3.5mm jack cable with old Electro-Harmonix, Pro Co Rat, Vintage DOD, etc.

VII. Center-positive, center-negative and negative ground effects

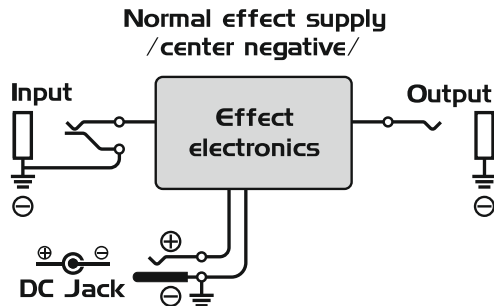
The majority of guitar effects are produced to be able to use a 9V battery or an external 9VDC adapter. Of course, due to the specifics of the schematic, there are effects which require different power supply. That is the reason why there are differences in their power connectors. When using external power adapter, usually the jack has an external diameter of $\varnothing 5.5$ mm and internal - $\varnothing 2.1$ mm. Effects which require higher current use similar jacks, but with bigger inner diameter - $\varnothing 2.5$ mm. That is because these power supply connectors can withstand the stronger current. There is also a small group of effects, which use 3.5mm mono jack.

- *Normal polarity effects - center-negative.*

Guitar effects have standardized connectors and location of poles. They usually use center negative $\varnothing 5.5\text{mm}/\varnothing 2.1\text{mm}$ jack. The symbol, which indicates the location of the poles, is this:



In this category we can put most guitar effects of manufacturers like Boss, Digitech, Ibanez, Maxon, Strymon, Tech21, TC Electronics, MXR, EBS, Xotic, Behringer, Fulltone, Carl Martin and many others. With all of them, schematic representation looks like this:



Note that the negative of this effect is connected to the ground of the input and output jacks.

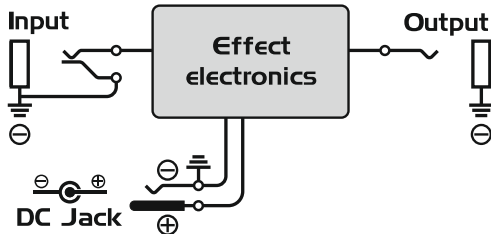
- *Reverse polarity effects - center-positive.*

There are effects which operate with reverse polarity. The symbol, which indicates the location of the poles, is this:



There are a relatively small number of effects in this category. The most notable example of this type are Moog's Moogerfooger line of effects, some Eventide and Radial effects. Here we also include effects powered with a 3.5mm mono jack. Most of them are reverse polarity effects. Effects which utilize this type of supply are Vintage Electro Harmonix, Pro Co Rat, Vintage DOD, etc. With all of them, schematic representation looks like this:

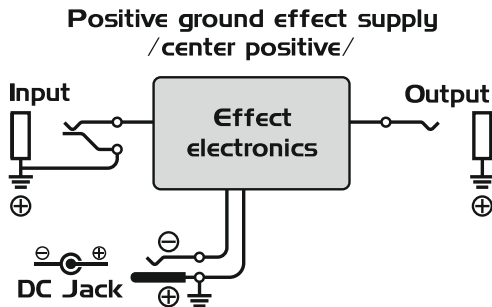
Reverse polarity effect supply
/center positive/



The difference with normal polarity effects - center negative is only that the polarity is reversed. The negative of the power supply is connected to the ground, connecting the input and output of the effect. These effects can be used with Powerbox, with the addition of a reverse polarity cord to the normal supply cable. When you power such effect with Powerbox, the second output can be used to power either a normal center negative or center positive effect.

- *Positive ground effects.*

A bit of history: After the radio lamps, the era of the first guitar effects begins with Germanium transistors. They are two types: PNP and NPN. Due to the technological features in the development of germanium transistors, PNP transistors were cheaper to produce and more widespread. This is why many effects utilized exactly such transistors. PNP transistors are characterized by the fact that the positive pole is connected to ground. In the group of positive ground effects we can find Dallas Rangemaster, Fuzz Face, Tone Bender, some versions of Tycobrahe octavia and others; in general - effects built with PNP transistors. For safety reasons, in most of them a supply connector for an external adapter is omitted, but nevertheless there are some with supply jacks. Schematic representation for them looks like this:



Note that the ground is connected to the positive pole. Such effects can also be powered by Powerbox. In almost all cases, the power supply has reverse polarity, and a normal cable with a reverse polarity cord has to be used. It is important to know that **when you are powering such effect, the other free output in the same group should not be used with a normal or reverse polarity effect.** In it you can power only a center positive effect.

VIII. Specification

Dimensions: Powerbox PRO: 19x5x9cm
Powerbox Mk2: 11x5x9cm

Weight: Powerbox PRO: 1,8kg
Powerbox Mk2: 1kg

Power supply: 220-230VAC 50/60Hz or 110-120VAC 50/60Hz

Outputs: 14/10 outputs $\varnothing 5.5/\varnothing 2.1$ mm divided in 7/5 isolated groups

Indication: Independent LEDs for each group

Warranty: 5 years

