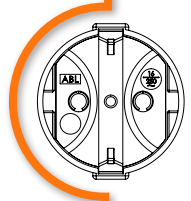
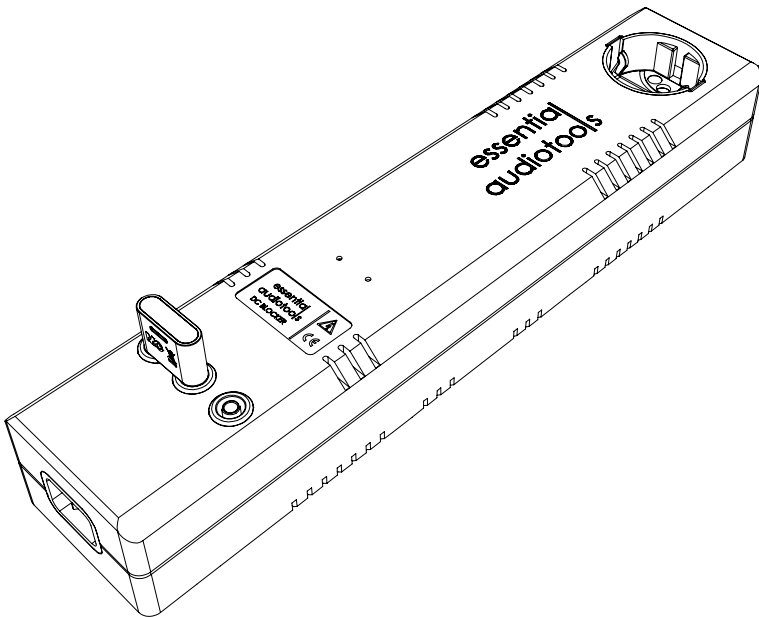


essentia
audiotools

User Manual

Rev 1.0 November 2024

DC Blocker



Introduction	.....	page 2
Description	.....	page 3
Safety precautions	.....	page 4
Connections	.....	page 5
Specifications	.....	page 6
Problem solving	.....	page 7
Warranty	.....	page 7

Introduction

Thank you for purchasing our Essential Audio Tools DC Blocker!

'Essential Audio Tools' is a Square Audio brand name. The name speaks for itself, Tools which are very Essential for Audio reproduction. Our products are specifically designed to improve the sound of your audio equipment where it all begins: the mains power supply. The power from the mains socket is being "abused" even before it enters your audio set. The past decades switching power supplies have made their way into all our home appliances, LED lights replaced tungsten bulbs, electric vehicles are charged and solar panels are filling roofs. They all pollute the mains power supply with electrical distortion. This "Trojan Horse" enters your equipment without you being aware of it and has to be eliminated from the mains supply before it reaches your precious audio set. We invest a lot of time and effort to make our products as good as they can be. They are all made with use of a precision CNC machine. Essential Audio Tools' cables, power strips, filters and tools make any audio set perform better, and better reproduction means more involvement. Beautifully shaped, well-designed and manufactured from top-quality material by music lovers, made in Holland.

Experience the quality of our products yourself, listen to the results and enjoy your music!

DC offset

The mains supply coming from your wall socket should be a pure AC symmetrical sine wave, but in fact the mains supply is being compromised. DC offset and non-linear distortion are generated by equipment connected to the same power grid, negatively affecting the mains supply. Many appliances load the AC mains cycle unequally for a period of time. This causes an unequal peak voltage of the negative and positive wave and when the sine wave area is not equal in both phases, DC offset is present (see fig 1). There are many ways DC offset is generated, with most being totally outside your control.

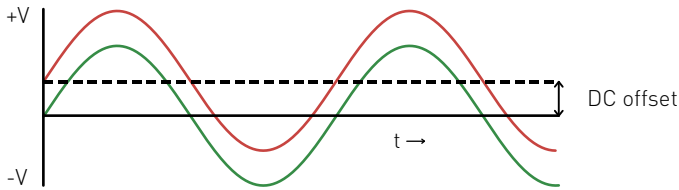


Figure 1. Sine wave & DC offset

Transformer hum

An electrical transformer is a passive device which transfers electrical energy between circuits through a magnetic field. Transformer core shapes are generally classified into solenoids and toroids. A toroidal transformer has a donut shaped core. The primary and secondary windings are wrapped around the entire surface of this core, with an insulating material in between. This design significantly reduces magnetic flux leakage, making it ideal for sensitive and critical electronic circuits due to their advantages over traditional square and rectangular transformers. The benefits also include high efficiency, quiet operation, minimal heat generation and a compact size. Transformers, especially toroids, can not handle the presence of DC offset in the AC mains supply. Even a small DC offset will give undesirable effects, such as increased core saturation, increased transformer heating, mechanical noise (buzz), reduced power capacity and potential damage to other components. Transformers with a (partially) saturated core will also significantly degrade the performance of your audio set.

How it works - the solution

The Essential Audio Tools DC blocker blocks DC offset and rebalances the AC mains supply sine wave, without limiting the current drawn by the connected equipment.

Our DC blocker is also equipped with a high performance, low impedance filter which significantly reduces electrical distortion. The Common Mode filter effectively removes electromagnetic interference and hum by filtering out noise that appears equally on both power lines induced by radiated EMI (like mobile phones, Wi-Fi, GPS and Bluetooth).

The Differential Mode filter removes noise that flows in opposite directions in both lines, induced by many appliances connected to the mains supply itself.

What to expect

The synergy of blocking DC and filter technology guarantees that our DC Blocker effectively resolves transformer saturation caused by a DC component on the mains supply. It also provides a clean, better audio reproduction by filtering out electromagnetic distortion. The result will be an improvement in dynamics, greater precision, a much better sound image and a lower hum level.

Safety precautions

For your protection and safe operation of the unit, please read the following:

Avoid condensation

If the device is moved from a cold to a warmer area, allow the product to warm up to room temperature before connecting it to the mains supply. This is to avoid condensation inside the device.

Avoid water and other liquids

To avoid risk of fire and electrical shock: do not expose this device to moisture. Use indoors and in dry locations only. Do not expose to dripping and/or splashing. Do not place objects filled with liquids -such as vases- on or near the device. Do not operate the unit if any liquid is spilled on or into the unit; return it to your dealer for servicing.

Unplug before cleaning

Always unplug the unit before cleaning. Only clean the unit with a dry cloth or duster. Do not use any cleaning solutions, sprays or water.

Don't open the device

To avoid risk of electrical shock: do not open the device. There are no user serviceable parts inside. Repairs are to be performed by qualified personnel only.

Check your supply voltage

This device is designed for 220-240V~ @ 50/60 Hz mains supply. Connecting to a different voltage may damage the device and warranty will be void.

Connect to mains ground

For safety reasons and to protect connected equipment, this product MUST be connected to mains ground. Either through a three conductor power cord with the Ground-Bridge connected as shown in figure 3 (see *Connections* page 6) or with an external ground connected to the green socket. Using this product without mains ground may result in personal injury or damage to your equipment.

Do not exceed maximum load

The total maximum current is 6 Amps. At 230 Volts mains supply this is equivalent to 1380VA. Possible damages due to exceeding maximum ratings will void warranty.

Heat

The DC Blocker may generate heat. This is normal if the DC Blocker is required to power a large amplifier. Caution should be taken to keep the DC Blocker's ventilation holes free from obstruction. These ventilation holes are necessary for passive air flow to cool the product. Do NOT cover the product and place it on a hard floor (not on carpet) to ensure the air ventilation holes on the bottom of the product are not obstructed. Maintain a minimum of 10cm clearance around the unit.

Connect power cords safely

Power cords should be routed in such a way that they are not likely to be walked on or pinched by items. Do not route power cords near heat sources. To disconnect the power cord, pull it out by the plug (wall outlet side first). Do not pull the cable itself, doing so may result in damage which can lead to fire or electric shock.

Connecting equipment

Integrating your new DC Blocker is as easy as can be.

Just connect the DC Blocker to your wall socket. Don't bother about the phase of the wall socket, you don't have to check it. The DC Blocker has an integrated LED indicator which shows the following indications:

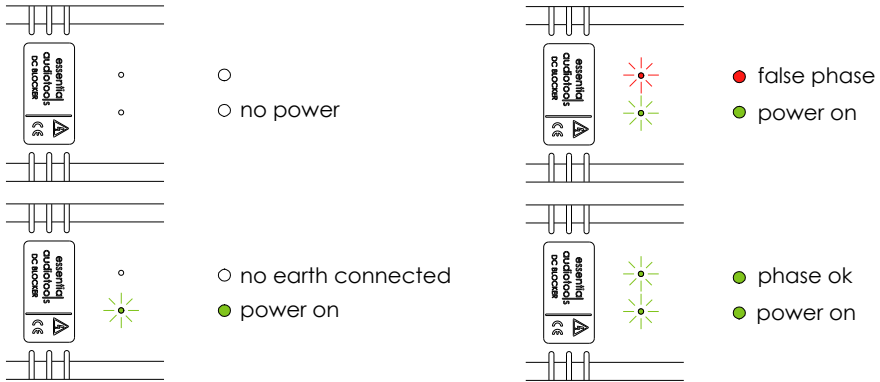


Figure 2. LED indications DC Blocker

If you get a false phase indication by a red light, you should reverse the power plug in the wall socket. You will notice that both indicators will light green which means that power is on, there is a proper earth connection and phase is ok. For countries with an earth pin in the middle of the wall socket (e.g. France, Belgium) it is not possible to reverse the power plug in the wall socket. You should ask a electrician to reverse the neutral and phase in your wall socket, NOT in your power cord. Don't do this yourself, the mains voltage is dangerous!

After connecting the mains supply to your DC Blocker you can connect your audio equipment to the unit. The phase of the DC Blocker's schuko outlet is indicated by a red dot. Make sure your audio equipment is turned off before connecting it to the DC Blocker.

The DC Blocker has a built-in slot for a fuse. This fuse will protect the DC Blocker from malfunctions. The slot is easily accessible from the bottom of the product. Before replacing the fuse ensure that the DC Blocker is disconnected from the mains supply and your audio equipment (see *Problem Solving* page 7).

Connecting Earth

The DC Blocker has a tool which is unique in the world of high-end audio equipment. It is called the 'Ground-Bridge'. It consists of three terminals (one green, two black) which can be connected in two ways. With the Ground-Bridge you are able to choose between the earth supplied by your wall socket or an external earth you supply yourself. This external earth is an earth pole which is/must be installed by a specialized company. The earth pole (outside your house, deep in the ground) should have an exclusive connection to your DC Blocker. Nothing else should be connected to this special earth pole. The DC Blocker's green socket must be used to connect your external earth.



Figure 3. Wall socket earth applied



Figure 4. Setup for external earth

Do not plug or unplug the Ground-Bridge when the DC Blocker is powered!

Figure 3 The Ground-Bridge connects the earth contact of the wall socket with the earth connection inside the DC Blocker.

Figure 4 The Ground-Bridge is placed in the two black sockets so the green socket can be used to connect the external earth.

Tips

- For maximum noise reduction, it is best to keep power cords and audio cables in your setup separated by some distance from each other, also avoid routing cables in parallel.
- Use high-quality double shielded power cords (our Current Conductor cables for example) to connect your equipment. The screenings will prevent stray-fields reaching your audio cables. Order your power cords as short as possible for best results.
- Feed ALL your equipment from the same power source. Having an extra external power feed to one device will possibly cause interference and/or hum.

Specifications

Rated voltage	220-240V~ @ 50/60 Hz
Max. continuous current	6A
Max. total power	1380VA
Fuse	T6A
Input connector	IEC C14
Output connector	Schuko
Number of output connectors	1
Internal wiring	Silver plated copper with Teflon isolation
Dimensions (w/o bridge)	329(l) x 70(w) x 53.5(h) in mm
Weight	1,1 kg

Protecting Phase-Neutral

Maximum voltage	250V~
Maximum peak-voltage	2500V
Maximum peak-current	4500A
Maximum peak-energy	2x65 Joule
Response time	<25 nanoseconds

There are no serviceable parts inside. Do not open your DC Blocker!

Please check the following before requesting service:

- 1 – Check if the power cord is plugged deep enough into the DC Blocker's input.
- 2 – Check the wall socket by plugging in a light or load to check if the power is present.
- 3 – Check your equipment and power cords by connecting them directly to a wall socket to test if they work without the DC Blocker in between.
- 4 – Before replacing the fuse ensure that the DC Blocker is disconnected from the mains supply and your audio equipment. Turn the DC Blocker upside down, at the bottom you'll find a fuse holder. Unscrew the cap of the fuse holder with a flathead screwdriver. If the fuse has blown, please replace it with an **Antisurge** fuse of **T6A/250V ONLY**.

- If the fuse blows immediately after replacement, do not replace again -

Please contact your local dealer if all of the above is tested and working, but the unit is still not functioning.

Warranty

Essential Audio Tools products have a warranty period of two years from date of purchase. This warranty covers manufacturing defects and failures within products specifications.

When warranty is claimed the original bill with the buyer's name and date of purchase should be presented.

Warranty will void if:

- The device has not been used in conformance with the user manual.
- The device has been used in an industrial environment.
- The bill has been altered or made illegible.
- Modifications or repairs have been performed by non-authorized persons.
- Malfunction is caused by device-external conditions, such as: overloading, atmospheric discharges and fire or water damages etc.

Warranty is limited to damages regarding the DC Blocker itself: all eventual consequential damages are not covered by warranty.

More information about our products:
www.essentialaudiotools.com



essential audiotools

MORE INFORMATION:
WWW.ESSENTIALAUDIOTOOLS.COM

