

NEUTRAL AUDIO

Owner Manual **X-DREi**

Now possible



NEUTRAL AUDIO wants to thank you for the trust you have placed in us by purchasing this product and we hope it will fill you with satisfaction for a very long time.

You should know that we have made every effort to be an exclusive and unique audio industry leader, with our advanced analog technology.

Signed J. M. Jimenez

Important safety instructions

- Please read all the instructions.
- Don't use this equipment in humid environments.
- Do not use cleaning fluids. Use a dry or slightly damp cloth.
- Do not install near any heat sources or equipment that generates much heat.
- Inside there is no component that needs adjustment. Do not handle it, and refer to qualified service personnel in case of failure to prevent electrical accidents.
- Place the equipment on a flat surface with enough space for ventilation
- Do not cover rear ventilation vents.
- Before connecting the power outlet, be sure that you have the proper voltage and the earth is of good quality.
- Contact with Neutral Audio for any question not contained in this guide.
- Always disconnect the amplifier before handling connecting cables.

This product has been assembled by hand in Spain, member of the European Community. Audio and D.R.E.I. Neutral technology are trademarks and may not be used without permission from the owner. The system D.R.E.I. technology is patented and cannot be used without having been licensed by the owner.

This NEUTRAL AUDIO electric device has been
Certified for use with the integrate D.R.E.I. system

Certified



INDEX

A short description of the external module, 4
Alternative connection, 9

Built to Last, 5

Connecting X-DREI, 5

Designed by D.R.E.I. technology, 5

Everything is analog, 5

Front, 10

Guarantee conditions, 15

Headphones amplifier, 14

Important safety instructions, 2
Inputs lines, 6

Multi-buffers, 5

Note for technicals experts:, 16

Output to amplifier, 7

Recommended connection, 7

Switch on of equipment, 10
Synergy Control, 11

Technical features, 16

A short description of the external module

In the first place we are proud that NEUTRAL AUDIO is a part of your highly valued musical system. With this external Module DREI, Stereo and Analog, we have taken a big step forward in the audio industry.

This new and essential product is designed to increase the listening quality of your stereo audio and movie soundtracks, to levels well beyond currently normal. Our sound will give you many more hours of warm, friendly enjoyment. If the rest of your audio system is at an appropriate level, we are convinced that it will sound more neutral, transparent, detailed, warm and musical than you could ever have imagined.

A preamplifier is the element in the music reproduction system that lets you select the source you want to hear, to change its output level or volume and connect to the associated amplification. Neutral Audio is aware that this is the step where the musical signal deteriorates most due to the extremely low levels with which they work and the electrical problems inherent in this and therefore should be chosen with great care as overall outcome of the entire system depends on it. For this reason we developed the Multi Pre amplification technology, which with several preamps modules in parallel per channel commanded by the DREI module the problems we have talked about are greatly reduced obtaining a pure sound you will never have heard before. There are several Neutral Audio Multi-preamp models with DREI tech. and they are undoubtedly the best choice if you want to have the best sound possible, as they have been designed from scratch to eliminate any electronic interaction in the sound signal.

The X-DREI **is not a preamp**. It is designed for those cases in which there may not be a need or desire to replace the existing preamplifier but where there is a desire to include the DREI technology in the final sound. To do this it is necessary to insert this external module between your preamp output and the amplifier input.

Internally it uses a simplified Multi-preamps technology, using 6 high-precision buffers operating in parallel with no gain or volume control and controlled by the incorporated DREI with the objective of neutralize intermodulation, correct errors in the electronics and increase the overall performance of the amplification, filters and speakers.

PRO AUDIO, in this sector this device has an important use in indoor or outdoor concerts and nightclubs and the extraordinary control it exercises over power and amplification allows higher sound levels without saturating rooms, produces fewer problems of sound transmission to adjacent rooms and floors and increases the intelligibility of the music. Less power is needed to achieve the required sound level, therefore facilitating compliance with acoustic regulations, increasing acoustic efficiency and extending the life of the power equipment and speakers thus increasing their profitability. In Recording studios the properties our technology confers to the sound is reflected in the Master.

The audio tone is not modified, it keeps the characteristic "sound" of your equipment but at a much higher level.

The main function is as described but has other interesting features:

- You can change the soundstage using an external switch.
- It includes a high end headphone amplifier, (only in the HighEnd version).
- It's an active adapter between input and output RCA-balanced which does not cause deterioration in the musical signal.
- You can use it as a split for bi-amping your speakers or to a second system in another room.
- In the interior, (on the exterior in the Pro model), there is a switch to change into Duplex mode, thus quadrupling its output and doubling the X-DREI effect using only one input per device.
- Bypass. When Off it bypasses input to output completely unchanged.

Designed by D.R.E.I. technology

The insertion of the D.R.E.I. technology module, (described at the end of this manual), included in all the analog models manufactured by Neutral Audio makes our products exceptional and us pioneers because our devices incorporate this technology.

To bring out the full power of "humanizing" sound and reducing electronic interactions that this module is able to offer, Neutral Audio has had to develop new amplification circuits and ingenious solutions to adapt them to each other.

For more information please visit our website.

Multi-buffers

Similar to a prism that separates white light into many colors, DREI tech separates sound into several musical signals and redirects them to 6 high precision buffers operating in parallel to finally get back to the stereo signal. Each of these buffers is managed by the DREI module.

It is a simplified circuit of the Multi-preamp, patented by the brand.

Do not confuse multi-channel systems used in home theatres with our product, which is only STEREO, even though we use various amplifiers per channel.

Everything is analog

One of the fundamental aspects of the X series and its exceptional sound is that it does not use any digital devices at any point and shows utmost respect to content. We have exclusively used analog technology; there is no digitalization used in any process.

Built to Last

Being top-level equipment, its construction and design has been done without cost concessions of any kind. We have used the most modern means available to make each of the component parts, using first quality components, the printed circuit boards and the connectors are gold plated, the toroidal transformer is sealed and isolated, and Premium electronic components etc.

The audio signal does not use internal wires and the signal track has been reduced to minimum on a single circuit board.

Sturdy, durable, anodized aluminum chassis in the HighEnd model and a high strength treated steel and aluminum chassis in the PRO model

Connecting X-DREI



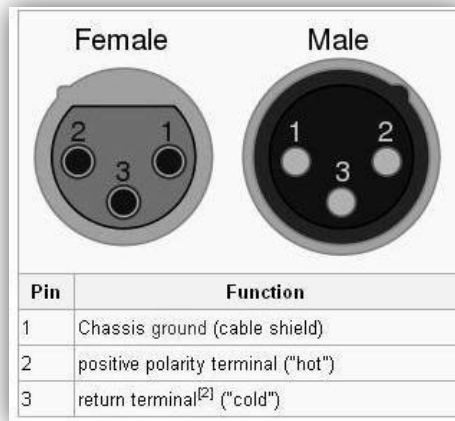
CAUTION. Before making connections, turn off the associated amplification and disconnect the plug from the outlet.

Make sure the voltage of the device matches that of your power supply. For safety the

earthing of your electrical system must work properly; otherwise unwanted noise and interference may invade the audio system.

Note that the unit when off connects "bypass", the input signal is directly available to the output connecting RCA/RCA and XLR/XLR. After switching on, the blinking blue power LED lights dimly until all internal modules are operational, (5 sec. approx.), after which it gives a stronger light and DREI tech. starts to function, (CHECK LED in the PRO model). This is not a fault but protects your speakers from inappropriate signals.

We strongly recommend you to use good quality, clean, dry, rust free interconnect cables. Periodically check the status of these connections.



Our connections are very high quality and gold plated. We recommend periodic application of a specific product, (ask the dealer), to the connectors to prevent rust and loss of contact.

Balanced connections of input and output XLR connectors are the standard in
 The pin 1 = Ground
 The pin 2 = Hot
 The pin 3 = Cold

Inputs lines

The equipment has a pair of RCA inputs, (only in the HighEnd version) and another pair of XLR (balanced). You can connect either one or the other. Normally, you use only one of them.

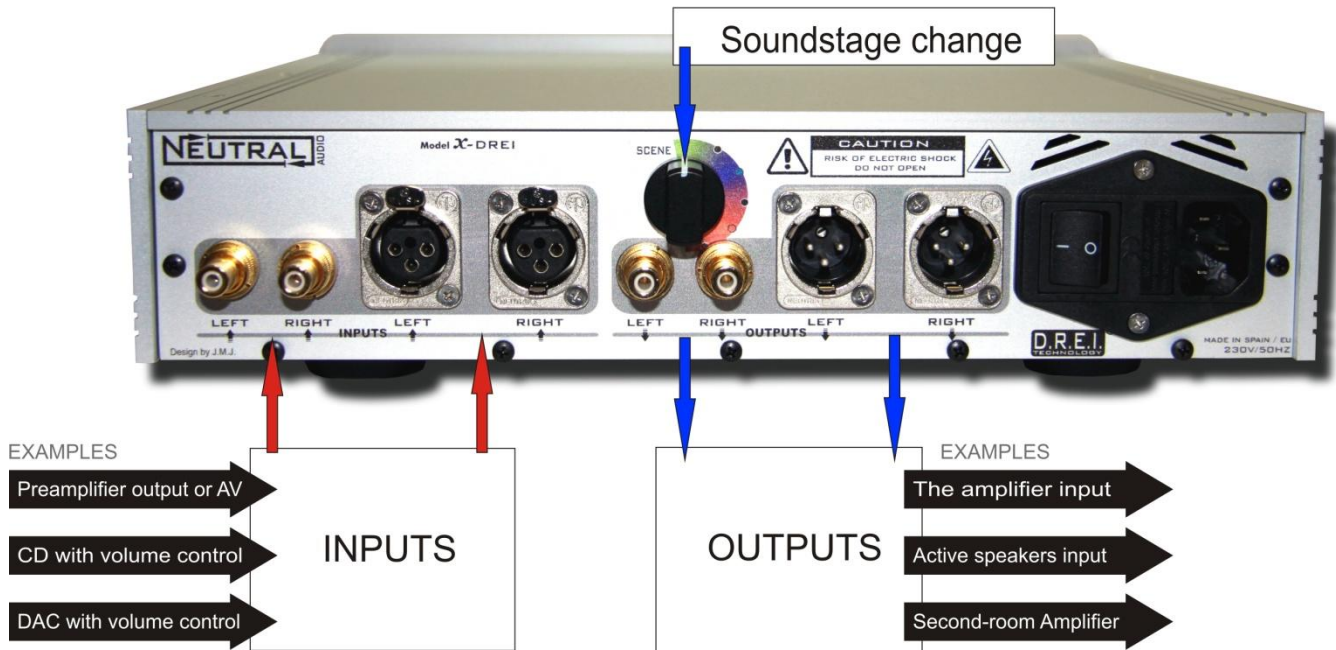
In the case of connecting two different devices, (ex. Stereo and AV), in the two inputs simultaneously, it is usual that the sound of the two mix at the start and do not cause damage. In some cases there may be no sound output, usually in the unit connected to a RCA input.

You should connect the left channel to the "LEFT" (white) and the right channel to the "RIGHT" (red), but this is not obligatory.

It is normal for the balanced (XLR) input signal to be louder than the RCA and this is not a malfunction. XLR also has a higher output volume level (+6 db.) than the RCA.

Input	Output	Output gain	
		STEREO	MONO
RCA	RCA	=	=
RCA	XLR	+6 db	+6 db
XLR	RCA	-6 db	=
XLR	XLR	=	+6 db

Recommended connection



The usual and recommended way to connect the X-DREI in your current stereo system is as shown in the illustration above.

The X-DREI is inserted between the preamplifier and amplifier. In this mode with a single appliance, the X-DREI serves all the sources used.

At the input you can connect any preamp of any brand, transistor or valve, or any source (CD player, DAC, etc.) but it is very important that it has VOLUME CONTROL.



Remember that this device does not have any gain or volume control, so the volume level of the output is the same as the input. If you connect a source directly, the sound is very loud and could damage your speakers.

Output to amplifier

You should connect the output marked "OUTPUTS" directly to the respective amplifier and can use any unbalanced connections (RCA) or balanced (XLR), since both are always active and deliver the same signal.

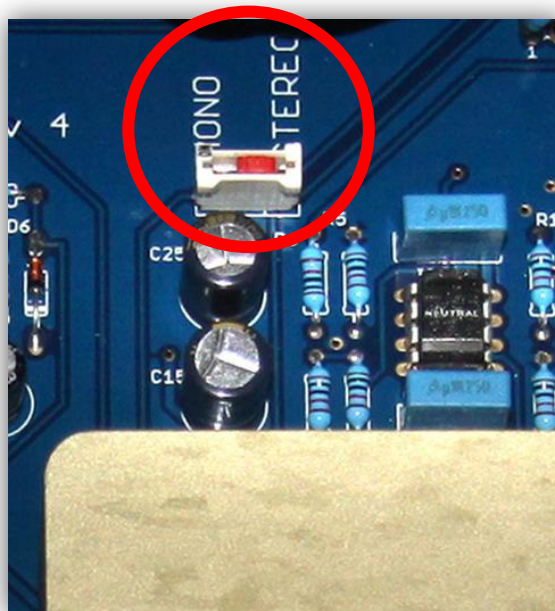
- If you have active speakers directly connect the X-DREI at the input to the internal amplifier.
- For bi-amping your speakers connect the RCA to the amplifier of middles and trebles and the XLR (balanced) to the bass amplifier. Note that this product is not a filter and the entire musical signal is on both outputs. You may need to adjust the internal gain of the amplifiers.
- To connect a second system in another room use the RCA for the nearest amplifier and Balanced (XLR) to the farthest.
- For a duplex system in mono, connect only one input to the corresponding left channel and use any of the four outputs in the desired configuration. Repeat with another X-DREI on the other channel. The advantages of this configuration are obvious when looking for the complete separation of channels, including separate preamps as in the case of model X-QUANTUM Neutral Audio. Do not forget to change the internal switch to “mono”.
- The output is muted when you connect headphones.

DUPLEX/MONOPHONIC MODE

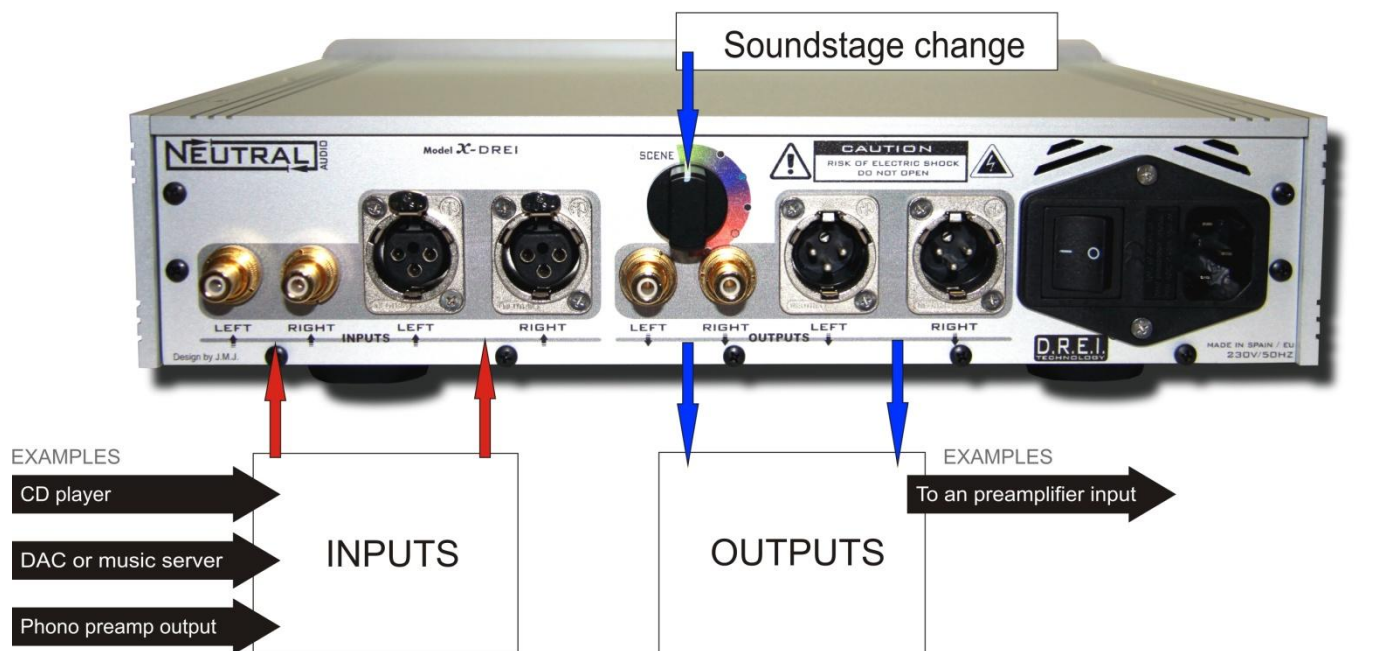
To set this up in mono reposition the internal switch found inside the HighEnd Model or the outside MONO switch on the PRO model. Only can connect the Left input.



Before opening the lid **DISCONNECT** the device from the energy supply to keep you safe from injury.



Alternative connection



There is another way to connect the X-DREI into your current stereo system, indicated in the illustration above, although it is generally less efficient than the previous way. It inserts the X-DREI between a source and preamp. It is not necessary that the source has a volume control.

You may wish to connect it this way for various reasons, including:

- Do not want any of your sources to be directed to the DREI (although you can always turn it off thanks to its internal bypass).
- You want to set a different soundstage in each source.
- To enhance the sound with several X-DREI, both on the inputs and the outputs.
- To send a source to two preamplifiers.
- To have a headphone amplifier from a single source.
- To get an extra output for recording.

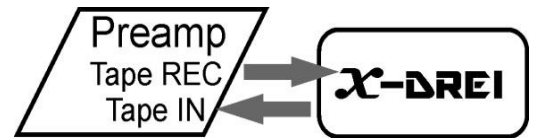
At the input you can connect any source whether transistor or valve from any manufacturer.

Remember that this device does not have any gain or volume control, so the volume level of the output is the same as the input.

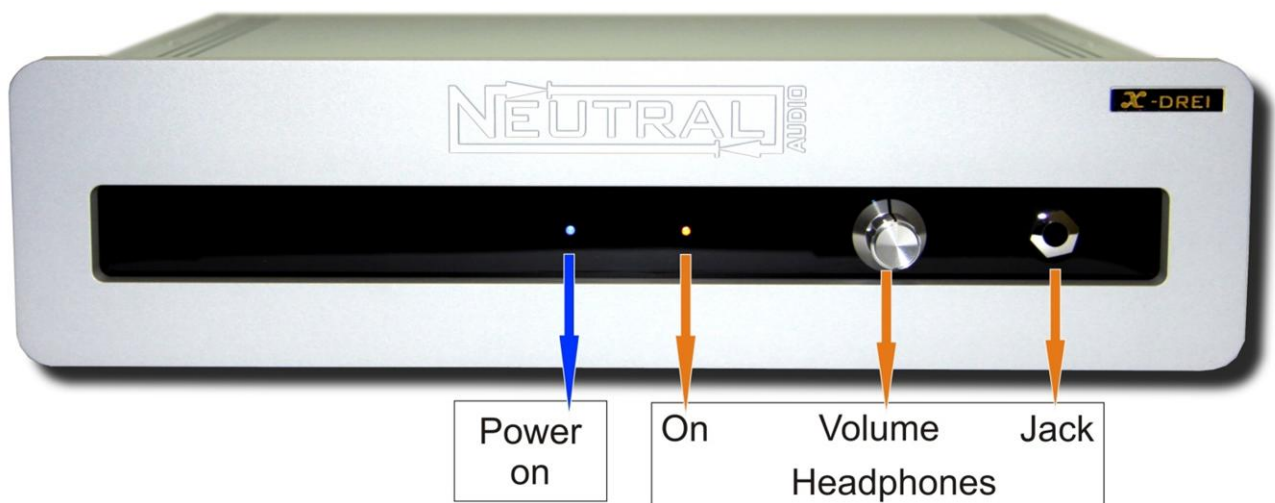


Do not connect in this way, unless the connected source has a volume control, directly to an amplifier or the sound will be very loud and could damage your speakers.

Finally there is another possible connection mode, the Loop Tape. If your preamp has an input / output recording tape, you can connect the X-DREI here as indicated in the instruction manual of your preamp, as if it were a recording system, processor or equalizer.



Front



As you can see the design of the X-DREI is extremely simple, as befits a device of its range where ease of use and high sound quality should dominate.

While "off" the bypass redirects each input to its output (RCA-RCA and Balanced-Balanced). There is no change in the connected equipment's impedance values when in bypass.

Switching on the equipment

If you've already got to here, you must have the equipment fully installed, tested and connected.

It is common sense to avoid damage to your speakers by turning the amplifier stage on last, and also switching them off first!

When you press the power button located on the rear panel, the blue LED will light dimly. After a while, when all the internal modules are stabilized, the LED will light up brightly, indicating that it is fully operational.

Synergy Control

One of the advantages of the technology developed by Audio Neutral is that it allows you to vary the impulse response of each of the various buffers that make up each channel. Thanks to this unique and novel technique the Synergy and Soundstage can be adapted to your taste with a simple click in the position of the switch.

What led Neutral Audio to design this feature is very important. Bear in mind that the room/hall where music is played always alters the overall sound. Depending on the physical characteristics and elements of the room/hall and the type of speakers you have in your installation, the resulting sound can be far from ideal. It would be endless to explain all the possible situations and that is not the goal of this manual but generalizing, all equipment + room/hall may deliver a less crisp and more confused sound with severely uncontrolled base areas with little detail, in addition to lack of amplitude and focus on the stage, including lack of "life" and realism. All this can be improved by using this device.

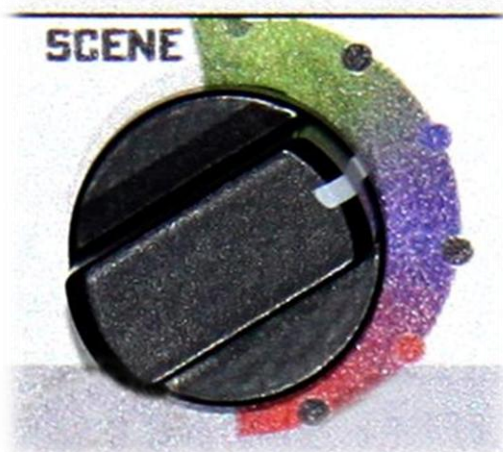
To achieve maximum synergy between the room/hall and your High End equipment (especially the speakers), try using the different positions (6) by turning the switch to the one that best suits your preferences. There is no need to turn off the appliance.

Inherited from our Multi-preamps, we have continued with the colour system for ease of use but on this occasion have intermediate positions between the different colours to achieve a greater setting accuracy.

The last position (red) is where you will least notice the effect of Synergy change and will be the closest to your current installation. The DREI tech always operates at 100% and its effects are independent of this adjustment.

Our recommendation is not to make any radical changes in the beginning. For example start at Blue (No. 3) and eventually turn the switch until you reach the optimal position. You might be interested in other positions when using different sources. The button design makes it easy to change without seeing it.

This image will help you select the position you like best. The following explanations should not be taken too literally as they are only intended to explain as simply and graphically as



possible what to expect from this technology and its results will largely depend on the associated elements and listening quality of the room/hall.

As you can see in our example, the **Green** position gives you a close sound, with great base detail and only the first wave reflections the middles and trebles will be clean and straightforward, widely spaced and with plenty of air between the instruments as might be perceived by an orchestra director. Everything seems to become otherworldly and listening becomes pleasanter and less tiring.

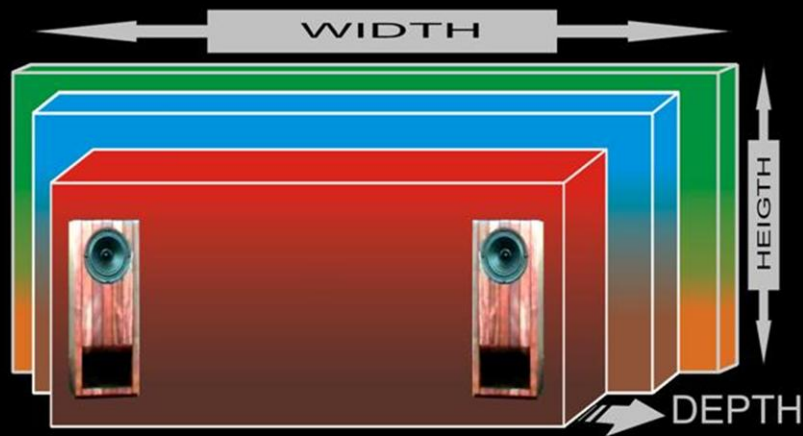
On **Blue** you will seem to move back a few rows into the audience, the bass will become more present and more instruments are fused together. The soundstage becomes a bit narrower.

In **Red** the feeling of the room/hall becomes more present. The reverberations seem to increase, the bass becomes more powerful and confused and some details are lost. The middles and trebles attenuate because of the effect of the stored energy, in general the room/hall and the speakers are more easily saturated and the sound pressure level can't be so high and produces more listening fatigue.

SOUNDSTAGE

To ensure maximum synergy with your current hifi system and your personal tastes regarding the type of music you usually hear, you can vary the dynamic response of multiple preamps using Neutral Audio's exclusive technology, simply changing the colour elements supplied as standard to the color that best suits your needs.

It is not a tone control or equalization. The controlled change of the impulser on each of the preamps on both channels produces clear differences in the three-dimensional sound response and the strength and intensity of the bass area, which is reflected in the following graph:



GREEN element

- Extreme openness and less depth.
- Bass less intense.
- Suitable for rooms with reverberation problems or speakers with a lot of bass pressure or poorly controlled bass.
- Recommended for Classical, orchestral masses, Jazz instrumental, big band, electronic music etc.



BLUE element

- More natural and balanced openness and depth.
- Natural and intense basses.
- Suitable for most situations. Installed as standard.
- Recommended for general Classical, Opera and Vocals, Vocal Jazz, Pop, Rock, etc.



RED element

- Less openness and maximum depth.
- Very intense basses.
- Suitable for rooms with no problems or speakers with little bass pressure on some monitor types.
- Recommended for Pop, Rock, Metal, etc.

On the back: Instructions to change the colour features.

- This chart is not to scale, and is purely informative.
- In each case the answer may be more or less pronounced especially depending on the loudspeakers.

Headphones amplifier



As a bonus, the X-DREI HighEnd model has a high performance internal headphone amplifier to take advantage of the DREI technology in this sphere.

The connection is made with a standard 6.35mm, (1/4"), stereo Jack

On introducing the headset plug, the music signal is diverted to the headphone amplifier and the output disconnects the speakers. To avoid damaging it, the signal is never connected to the headset when they are not connected.

The orange LED light indicates that the headset is connected.

It has been equipped with a high gain of 15 db, so we recommend that you turn down the volume on your amp before connecting. It is designed to prevent your speakers from being damaged by excessive db's when you unplug the headphones.

Because of the special characteristics of D.R.E.I. technology we recommend you not use sharp sounding headphones. It is better to have a flat natural response.

Guarantee conditions

- NEUTRAL AUDIO guarantees this product for a period of 2 years, or the time legally established in the country where it is purchased, as long as it is purchased from an authorized dealer.
- This guarantee covers any manufacturing defects.
- To qualify for this guarantee, you must go to a service centre authorized by NEUTRALAUDIO or the store where you purchased it, presenting your purchase invoice.

The Guarantee DOES NOT COVER:

- Damage caused by accident, misuse or abuse.
- Damage caused by external factors or natural tragedies.
- Theft or robbery.
- Damage caused by handling by persons not authorized by NEUTRAL AUDIO.
- Damage caused by other non-product components.
- Products purchased from unauthorized distributors.
- The shipment rates for the repair and return of the device to the customer.
- Any costs arising from installation or desinstallation of the product.

Any manipulation of the product by any person not authorized by NEUTRAL AUDIO, automatically makes this guarantee null and void.

Consult your distributor as to your nearest technical assistance provider and how to contact him.

Technical features

All technical specifications contained in this manual are correct at the time of printing. However NEUTRAL AUDIO may have made modifications to them without notice.

- Line RCA unbalanced and XLR balanced
- RCA line outputs unbalanced and XLR balanced
- Frequency response 0-200000 Hz (extended up to 500,000 Hz)
- Total Distortion 0.04%
- Recommended maximum input voltage 3.2Vpp RCA / 6.2Vpp balanced
- Maximum output voltage Vpp 3.2Vpp RCA / 6.2Vpp balanced
- Input impedance 20 Kohms RCA / 50 kohms balanced
- Output impedance 600 ohms RCA / 300 Ohm balanced
- Signal to noise ratio better than 110 dB
- Channel separation better than 100 dB
- Headphone amplifier 15db.
- IEC socket for power supply
- Maximum Consumption > 6 W
- Supply voltage 230VAC 50/60Hz. (or 115VAC), (using an interior switch).
- Dimensions HighEnd Width: 305 mm, Depth: 261 mm, Height: 85 mm
- Approximate HighEnd Net Weight 4.5 kg
- Dimensions PRO model standart 19" 1U
- Approximate PRO model Net Weight 3.8 kg

For more information contact your local Neutral Audio distributor .

Note for technical experts:

This unit challenges the traditional method of the electronic measurement of sound. If you want to correctly interpret these values, consider talking to Neutral Audio regarding them.

D.R.E.I. TECHNOLOGY

DYNAMICS REDUCTION OF ELECTRONIC INTERACTIONS

What is it?

Is a great step forward in exception sound, new and original in its technical approach.

D.R.E.I. Technology (Dynamic Reduction of Electronic Interactions), developed by Neutral Audio is an advanced implementation of analog circuits to get the most enjoyment in musical reproduction.

It's complexity is higher when the first requirement of development is the use of only analogical components of the highest quality, without using digital components of any kind, and without cost considerations in the search for excellence.

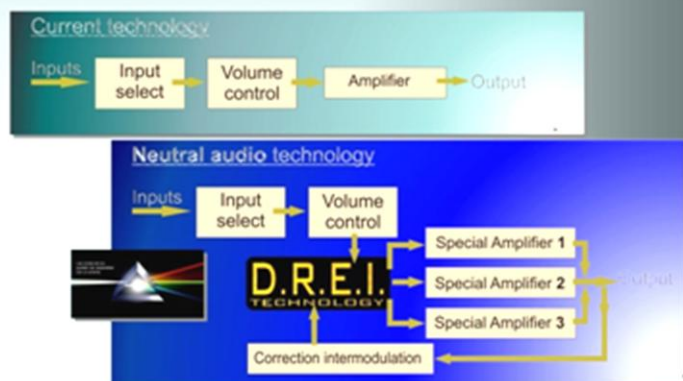
The result of so much effort and dedication is an independent module that can be inserted into audio equipment that has been especially designed to allow its installation and it can be inserted into audio sources such as CD players, or preamplifiers - where it shows its highest potential -, in phono-preamps and in power stages, amongst other things.

How does it work?

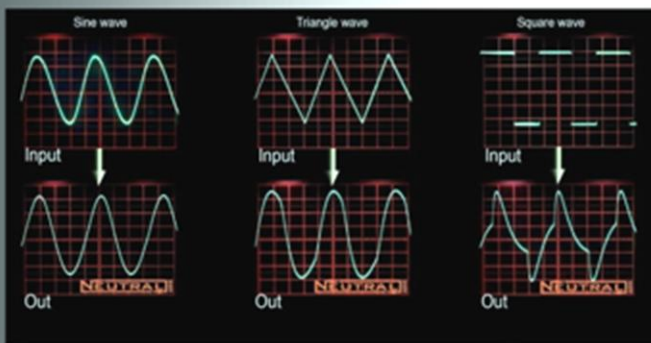
Some aspects of its internal operations can not be spread by a secret of the company, others because they are easily verifiable in any laboratory technician and necessary for our customers understand the scope of this new design itself will be explained below.

One of its functions is reflected in this graph, which allows the **Multi-Preamp**.

For a better understanding for our less technical readers suggest as an example a prism, which is capable of separating light into its primary colors without loss. It is similar to what happens inside our module, but at electronic music signals specifically.

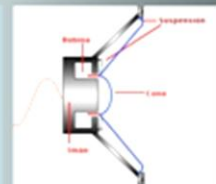


Musical signals enter the device and once amplified and processed are sent to various independent preamplifiers, between 2 and 6 which are dynamically controlled by D.R.E.I. The outputs of the different preamplifiers are remixed in a wholly passive way and without any other additional active circuits, so as not to add electronic interactions outside the D.R.E.I.'s control.



The electrical wave entered the DREI (top) and output (below).

Another process that we have is the graph on the left. These are real images taken with an electronic oscilloscope, a device that graphically displays real-time electrical waves.



The speakers can only reproduce sinusoidal type waves due to electromechanical limitations. DREI get to send only the pure music signal without loss of information. Is directed to amplifiers, filters and speakers to increase their overall performance and dynamics. No digital techniques are used.

What does it do?

You get more natural sounds, clear and precise, the dynamics are drastically increased, the space between channels is even greater and the different sound levels are realer. You will be able to hear sounds out of the angle of the loud-speakers that were always there but could not be heard. Live sounds really come alive. Minimizing acoustic problems in rooms and can increase the sound pressure before saturate.

Adjust and correct the errors caused by the electronics due to its inevitable errors of tolerance and accumulate. Small musical details that are normally fuzzed because of the electronic interactions that happen in any circuit, suddenly appear with great strength and realism. It separates the different instrument and voice tones and it enhances them to the point of being able to discern great orchestral and coral masses.

It gives voices, affected by the digital circuits used for recording and reproduction and obscured by the fuzz of instruments, their texture back. The deep notes are stronger, perfectly defined and harmonious and there is an absolute control of the reproduction of the complex sounds.

To sum up, music flows smoothly, crystal clear and neutral.

NOTES:

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