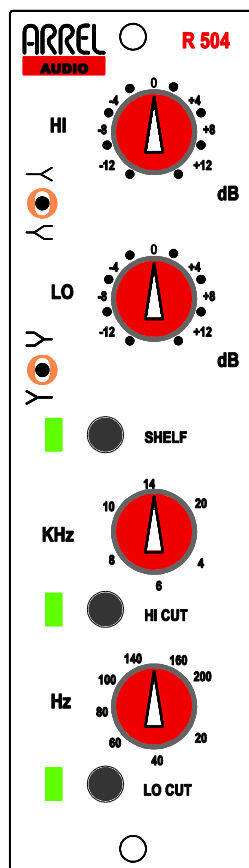




R-504 2 Band Shelf Equalizer + LO-CUT and HI-CUT



User Manual

Issue 0.2

SAFETY INSTRUCTIONS



WARNING

Always follow the precautions listed below to avoid any possibility of serious injury or even death from electrical shock, short-circuiting, damages, fire or other hazards. These precautions include, but are not limited to, the following:

- Do not expose the instrument to liquids and rain. Do not use it near water or in damp or wet conditions, or place containers on it containing liquids. If any liquid seeps turn off the power and unplug the power cord from the AC outlet.
- Do not put burning items, such as candles, on the unit. A burning item may fall over and cause a fire.
- This instrument contains no user-serviceable parts. Do not open the instrument or attempt to disassemble or modify the internal circuit.
- Never insert or remove an electric plug with wet hands.
- Check the electric plug periodically and remove any dirt or dust which may have accumulated on it.
- Do not place the power cord near heat sources such as heaters or radiators, and do not excessively bend or otherwise damage the cord, place heavy objects on it, or place it in a position where anyone could walk on, trip over, or roll anything over it.



CAUTION

Always follow the precautions listed below to avoid any possibility of serious injury or even death from electrical shock, short-circuiting, damages, fire or other hazards. These precautions include, but are not limited to, the following:

- Do not connect the instrument to an electrical outlet using a multiple-connector. Doing so can result in lower sound quality, or possibly cause overheating in the outlet itself.
- When removing the electric plug from the instrument or an outlet, hold the plug itself and not the cord. Pulling by the cord can damage it.
- Remove the electric plug from the outlet when the instrument is not to be used for extended periods of time, or during electrical storms.
- Do not place the instrument in an unstable position where it might accidentally fall over.
- Before moving the instrument, remove all connected cables.
- When setting up the product, make sure that the AC outlet you are using is easily accessible. If some trouble or malfunction occurs, immediately turn off the power switch and disconnect the plug from the outlet. Even when the power switch is turned off, electricity is still flowing to the product at the minimum level.
- When you are not using the product for a long time, make sure to unplug the power cord from the wall AC outlet.
- Use only the stand/rack specified for the instrument. When attaching the stand or rack, use the provided screws only. Failure to do so could cause damage to the internal components or result in the instrument falling over.



Information for Users on Collection and Disposal of Old Equipment

This special symbol on the products, packaging, and/or accompanying documents means that used electrical and electronic products should not be mixed with general household waste.

For proper treatment, recovery and recycling of old products, please take them to applicable collection points, in accordance with your national legislation and the Directives 2002/96/EC.

By disposing of these products correctly, you will help to save valuable resources and prevent any potential negative effects on human health and the environment which could otherwise arise from inappropriate waste handling.

For more information about collection and recycling of old products, please contact your local municipality, your waste disposal service or the point of sale where you purchased the items.

[For business users in the European Union]

If you wish to discard electrical and electronic equipment, please contact your dealer or supplier for further information.

[Information on Disposal in other Countries outside the European Union]

This symbol is only valid in the European Union. If you wish to discard these items, please contact your local authorities or dealer and ask for the correct method of disposal.

ARREL Audio Contacts

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ARREL Audio is continuously working to the improvement of its systems and related documentation.
In any case, we reserve the right to change the specifications without notice but in the respect to the current legislation.

Disclaimer:

The information contained in this manual has been carefully checked and we believed is accurate at the time of publication.
In any case, we do not assume any responsibility for inaccuracies, errors or omissions nor any liability for any loss or damage resulting either directly or indirectly from use of the information contained in this manual.

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INTRODUCTION

ARREL Audio R-504 is an advanced single-channel equalizer conceived to offer to the 500 series user the superior audio performance of the ARREL audio high level products. The **R-504** is characterized by high reliability, rugged design, outstanding audio quality, versatility and ease of use typical of the tradition of ARREL Audio products.

The **R-504** equalizer is based on the Livio Agentini' s "Single-Stage Parallel Configuration" patented design. This innovative phase coherent EQ design offers the lowest distortion/noise specifications, not available in other products.

The **R-504** filtering section offers LO, HI shelving filters with two switchable shapes. The Emphasis/De-Emphasis control range is ± 14 dB. The HI-CUT and LO-CUT filters are characterized by 12/dB Oct. slopes and variable cut-off frequency control.

Each filter section can be individually activated by a button (LED). A bypass button is used for a true analog by-pass function (LED).

To obtain an outstanding audio quality, no servo amplifiers are used in the **R-504** so

IT IS NOT POSSIBLE TO UNBALANCE THE SEND OUT OF THE R-504.

If you need an unbalanced connection for the **SEND** out follow the indications shown in APPENDIX B.

R-504 is one of the models of the serie of equalizer that ARREL Audio conceived for the 500 series (the other models are R-502, R-503, R-505) in order to give to the user the best choice for its application.

The **R-504**, offers a very cool satin finish stainless steel front panel and a semi closed stainless steel enclosure.

R-504 is dedicated (due to his absolute sonic level quality) to high professional vocal recordings, classical instruments, high dynamic range instruments such as drums and percussions.

ARREL Audio products are designed and manufactured in Italy.

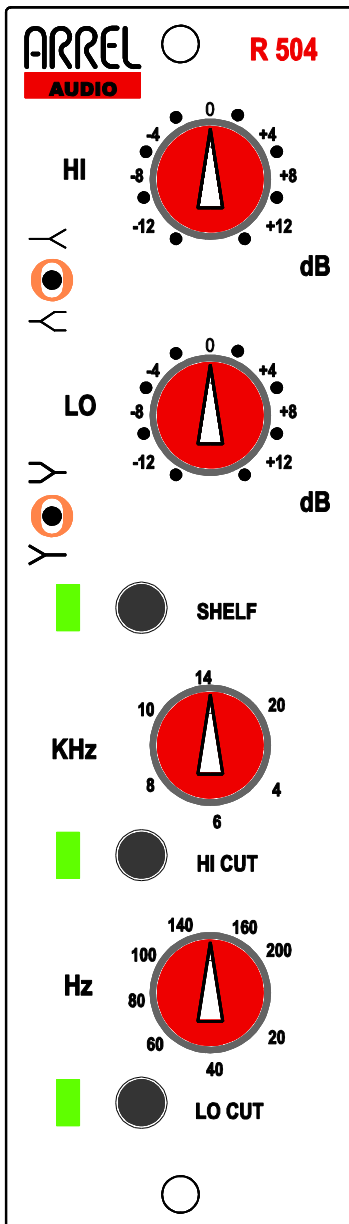
Housing

The **R-504** 2 Band Shelf Equalizer + LO-CUT and HI-CUT module has been designed to be compliant with the 500-series standard.

Installation Instructions

- Remove the R-504 module from the packaging.
- Turn off the 500-series enclosure and remove mains power.
- Find an empty slot in the 500-series rack and remove the 2 fastening screws, positioned one on the top of the enclosure and one the the bottom of the enclosure.
- Insert the R-504 into the empty slot in the 500-series enclosure, Be sure that the rear edge connector on the R-504 module mates correctly with the edge connector of the 500-series enclosure.
- Replace the 2 fastening screws through the top & bottom holes in the R-504 module and screw into the 500-series enclosure. The module must be secured into the enclosure before turning the mains on.
- Apply mains power into the 500-series enclosure and turn on.
- Connect the microphone, audio source or instrument and select the correct settings.
- The module is not designed to be hot-plugged, so please ensure the power to the 500-series enclosure is OFF before inserting or removing a module (this recommendation is useful in order to protect the 500 enclosure circuits, our product due to a very robust construction could be hot-plugged without problems).

R-504 Front Panel Controls and Operations



SHELVING SHAPES FOR HI AND LO LO SWITCH

The shape of the shelving curves for the HI and LO bands is controlled by a switch. Two positions are available.

EMPHASIS/DE-EMPHASIS CONTROL KNOB (HI, LO SHELVING)

Rotate the emphasis-de-emphasis control knob to change the frequency content in a range of range of ± 14 dB for the two shelving bands.

CUT-OFF FREQUENCY HI CUT AND LO CUT.

Rotate the cut off frequency knob to change the cut off frequency of the HI CUT (4000/16000 Hz, Slope 12 dB/Oct) and LO CUT filters 20/200 Hz, Slope 12 dB/Oct ().

ON BUTTONS (SHELF, HI CUT AND LO CUT)

Push the buttons to turn on the different sections on (green LED on). Press again to switches to turn off the equalizer sections off (green LED off).

APPENDIX A: Front Panel

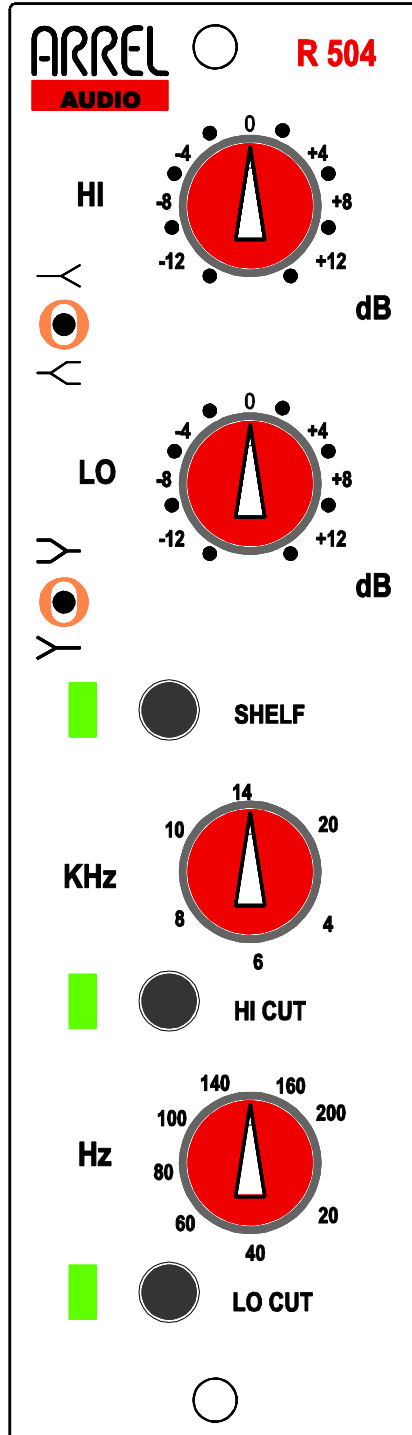


FIG. 1 R-504 Front Panel

APPENDIX B: EXTERNAL CONNECTIONS

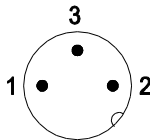


WIRING R - 504

LINE INPUT

XLR

On the back



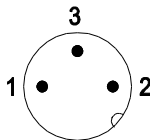
- 1 = Ground
- 2 = PHASE +
- 3 = PHASE -

Balanced line - Can be unbalanced

MAIN OUTPUT

XLR

On the back



- 1 = Ground
- 2 = PHASE +
- 3 = PHASE -

Balanced line only - To use unbalanced lines
disconnect pin 3

FIG. 3 External connections

APPENDIX C: 500 series module edge connector

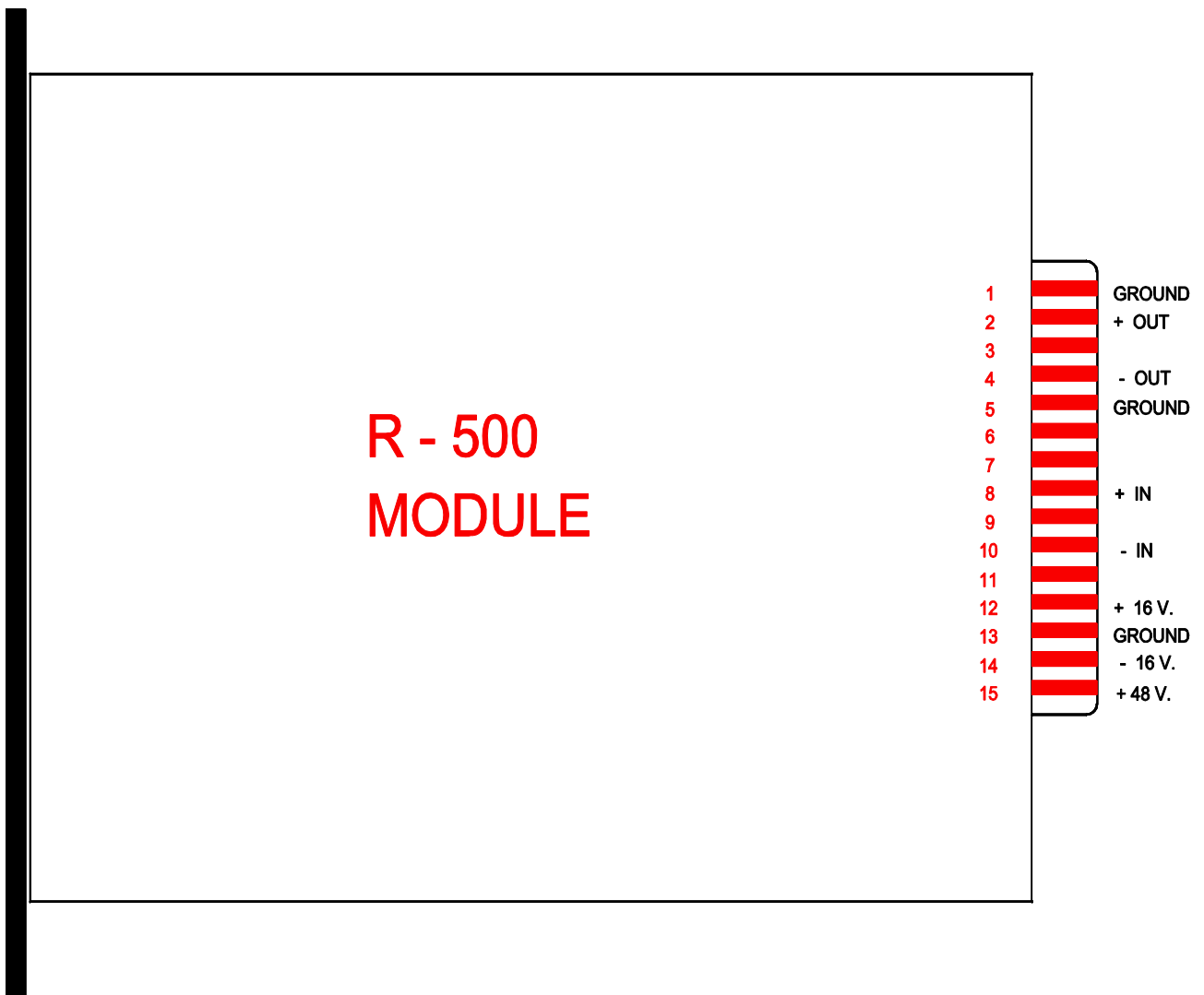


FIG. 3 500 Series module edge connector

TECHNICAL SPECIFICATIONS

Number of Channels:	1
Power Supply	± 16 VDC, very low power supply currents with respect to the 500 series standard
Line Input	Electronically Balanced, Impedance 20KΩ, Input Level +4dBu, Max +20 dBu.
Output Level	Electronically Balanced, Level +4 dBu, Max +24 dBu, Output Impedance 100 Ω
Bandwidth	5 - 150 KHz ±1 dB, perfect square wave up to 20 KHz
Distortion + Noise	<0.003% (typical 0.001%).
Front Panel Controls	True By-Pass button (LEDs) for the three filter sections (SHELF, HI-CUT, LO-CUT), Shelf Gain (Emphasis/De-Emphasis) pot control, Range ± 14 dB with center detect (2 controls), Shelving shape control (LO and HI) switchable (2 shapes), Cut-Off Frequency control for LO-CUT and HI-CUT(2 controls).
Frequency Bands	LO: Shelf Shape, two position switch (two shapes), HI: Shelf shape, two position switch (two shapes), LO-CUT: 20/200 Hz, Slope 12 dB/Oct, Cut-Off frequency continuous control, HI-CUT: 4000/16000 Hz, Slope 12 dB/Oct, Cut-Off frequency continuous control.
Rear Panel Input Connectors	500 series compatible connector
Construction	Compliant 500-series rack with PSU and external audio connections, Single 500-series rack slot required for each R-501 module.
Dimensions	Series 500 compatible module
Weight	500 g