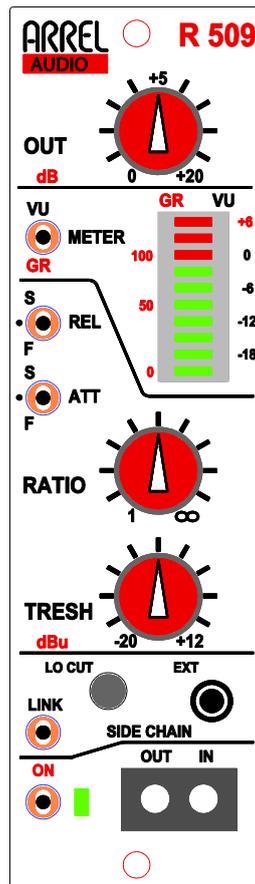




# R-509

## Mono Band VCA Compressor



## User Manual

Issue 0.1

## SAFETY INSTRUCTIONS



### WARNING

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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

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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.

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**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-509** Single Band VCA based compressor has been conceived to offer to the 500 series user the superior audio performance of the ARREL audio high end products. The R-509 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-509** is characterized by an extreme flexibility in a single slot 500 module. It includes the following features.

- ARREL high audio quality input and output buffers
- New topology for the envelope detector and new VCA architecture
- Attack and Release three position switches
- Compression Ratio from 1:1 to  $\infty/1$  (limiter) and variable Threshold (-20 dBu, 12 dBu) knobs
- Flexible metering system (Gain Reduction, Output level)
- Side Chain External input
- Side chain stereo link input
- True By-Pass function
- Front panel IN-OUT BANTAM connectors

**R-509** is the one of the ARREL 500 series modules (the other models are R-501, R-501 ELITE, R-502, R-503, R-504, R-505, R-506, R-507) designed to give to the professional user the best audio units for its application. To obtain an outstanding audio quality, no servo amplifiers are used in the **R-509**. To use unbalanced lines see APPENDIX B. The **R-509**, offers a very cool white front panel and a semi closed stainless steel enclosure. **R-509** is suitable for professional recordings of voice, classical instruments, high dynamic range instruments such as drums and percussions.

**ARREL Audio** products are designed and manufactured in Italy.

## Housing

The **R-509** Single band VCA compressor module has been designed to be compliant with the 500-series standard.

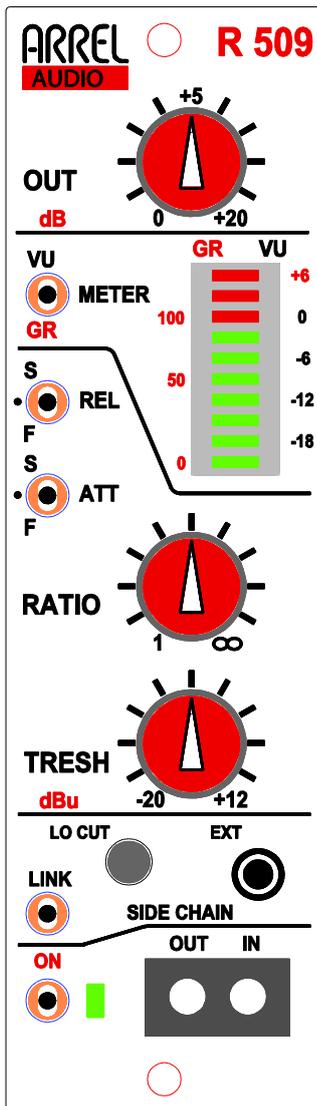
## Installation Instructions

- Remove the R-509 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 bottom of the enclosure.
- Set the link connection on the lunch box backplane by following the manufacturer instructions

## ARREL Audio

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- Insert the R-509 into the empty slot in the 500-series enclosure, Be sure that the rear edge connector on the R-509 mates correctly with the edge connector of the 500-series enclosure.
- Replace the 2 fastening screws through the top & bottom holes in the R-509 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.
- 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-509 Front Panel Controls and Operations

### OUT LEVEL KNOB

The OUT knob is used to set the gain in the range 0 to 20 dB.

### GR/VU SWITCH

It is used to select the kind of measurement on the display bar. Select GR to visualize the compressor Gain Reduction. Select VU to visualize the level at the output of the compressor.

When the compressor is bypassed the VU meter is able to measure the input signal level (OUT potentiometer set to 0 dB)

### RATIO KNOB

It is used to set the compression ratio of the compressor. The compression ratio range goes from 1:1 to  $\infty$ :1 (limiter).

### THRESH(OLD) KNOB

It is used to set the threshold of the compressor. The threshold range is -20 dBu, +12 dBu.

### REL(EASE) SWITCH

Select one of the three positions to select slow, medium and fast.

### ATT(ACK) SWITCH

Select one of the three positions to select slow, medium and fast.

### SIDE JACK (3.5 MM MONO JACK)

This connection is used to control the VCAs by an external side chain signal. If a stereo jack is used the ring must be connected to ground.

### LO CUT SWITCH

Used to insert a Low Cut filter on the side chain.

### TRUE BY-PASS ON SWITCH (LED)

The compressor is activated when the switch is in the ON position (true by-pass).

## **R-509 External connections**

The R-509 can be connected in many different ways for the maximum flexibility.

### **LINK CONNECTION**

The link is used to link two R-509 units. In this way the R-509 can be linked to obtain stereo compression. The left channel side chain in the first unit is sent via the link connection in the lunchbox backplane to the side chain of the second unit (right channel) and added to the right channel to generate the control signal to the right channel compressor. The same happens to the right channel that is sent to the first unit (left channel) and added to the left channel for the generation of the left channel control signal. Each channel can be in any way controlled with the front panel controls.

### **R-509 SIDE Jack**

By using the 3.5 mm mono jack the side chain section of the compressor can be controlled by an external signal. In this way the user can “build” the side chain signal by using external units (for example a multiband equalizer controlled by the same signal at the input of the R-509).

### **R-509 FRONT PANEL BANTAM CONNECTORS**

By using the front panel IN and OUT bantam connectors the R-509 can be easily “patched” with other modules of the R-500 series (R-501 ELITE, R-509, or other units) without the needs to access to the back panel of the launch box.

If the input Bantam is connected and the out Bantam is disconnected to the system output is disconnected and the operator will be able to set up the compressor parameters with no output signal.

APPENDIX A: Front Panel

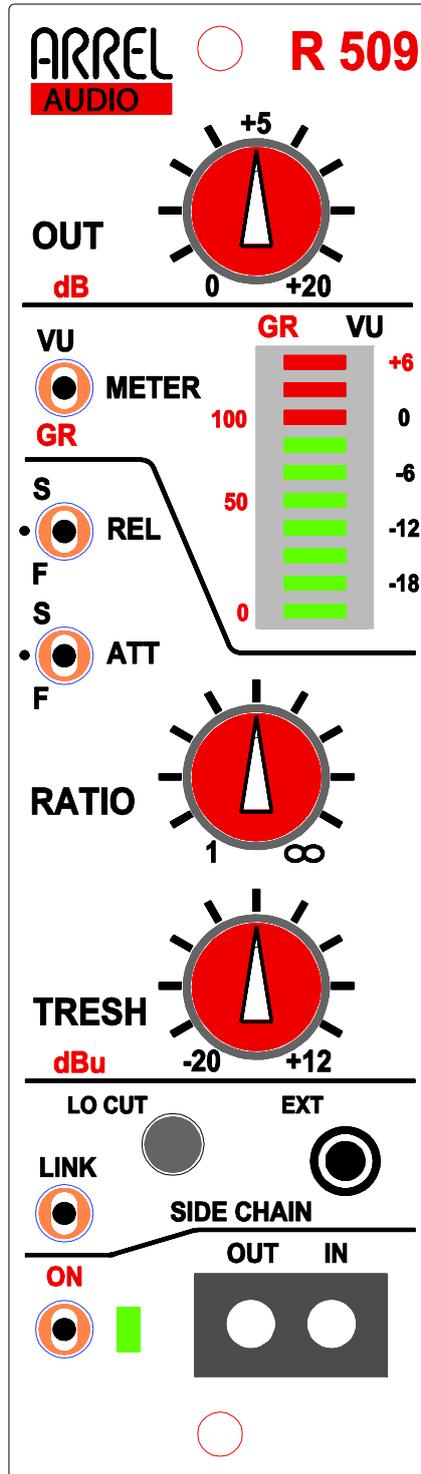


FIG. 1 R-509 Front Panel

APPENDIX B: EXTERNAL CONNECTIONS

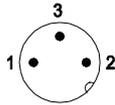


WIRING R - 509

LINE INPUT

XLR

On the back



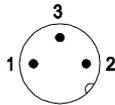
- 1 = Ground
- 2 = PHASE +
- 3 = PHASE -

Balanced line - Can be unbalance

OUTPUT

XLR

On the back



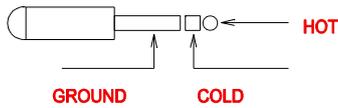
- 1 = Ground
- 2 = PHASE +
- 3 = PHASE -

Balanced line only - To use unbalanced lines disconnect pin 3

INSERT SEND

BANTAM

On the front panel

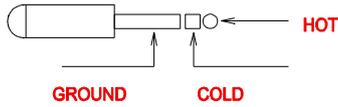


Balanced line only - To use unbalanced lines disconnect RING

INSERT RETURN

BANTAM

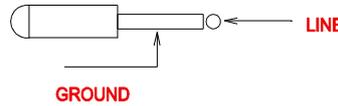
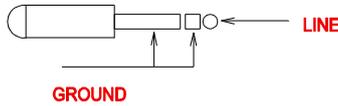
On the front panel



Balanced line Can be unbalanced

SIDE CHAIN INPUT

3.5mm STEREO/MONO JACK On the front panel



Unbalanced line

FIG. 2 External connections

**APPENDIX C: 500 series module edge connector**

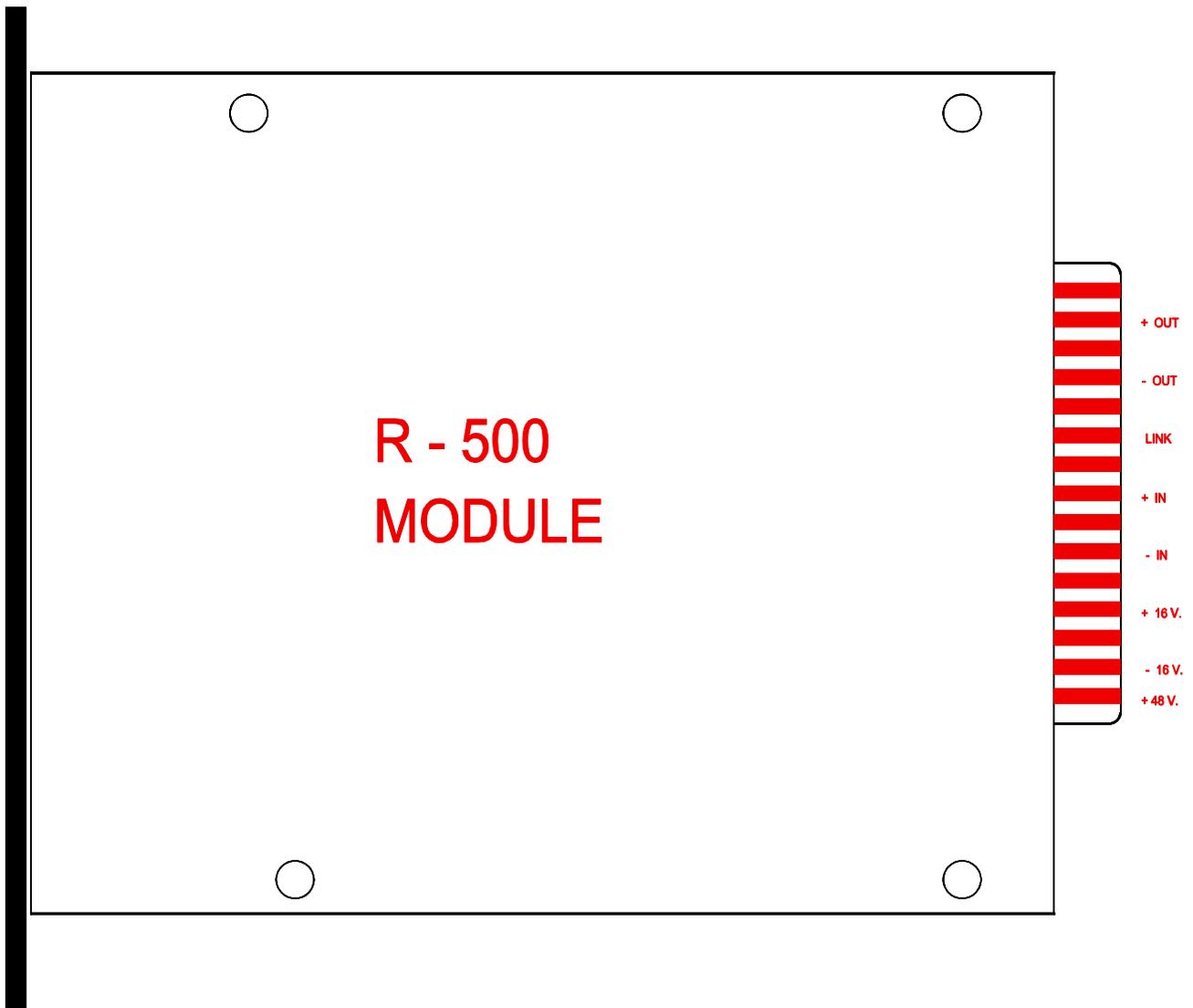


FIG. 3 500 Series module edge connector

## 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 +24 dBu.
Output Level	Electronically Balanced, Level +4 dBu, Max +28 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 switch (LED), OUT level knob Ratio knob from 1:1 to ∞:1 (limiter) Threshold knob – 20 dBu, +12 dBu Attack switch: three positions (slow, mid, high) Release switch: three positions (slow, mid, high) Metering selection switch: two positions (GR Gain Reduction, Output level) Side chain LO-CUT switch
Front panel connectors	3.5 mm SIDE mono/stereo jack IN and OUT Bantam connectors
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 standard
Weight	500 g