X-AMP™ 500
Reamp®
500 Series Module

User Guide

Made in Canada

Radial® X-AMP™ 500 User Guide

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Congratulations and thank you for purchasing the Radial X-Amp 500 Reamp® module. The X-Amp is a unique 500 series amplifier interface designed to allow you to re-amplify a prerecorded guitar track and send it to two amplifiers. This 'old trick' has been used for years and is part of the magic that has made some of the most memorable recordings of all time.

But don't just think of Reamping guitars. With the X-Amp 500, you can Reamp bass, keyboards, drums and just about any other instrument. Reamping brings consistency to recordings while eliminating the stress and frustration musicians must endure while engineers work out the details.

This manual describes installing and operating your X-Amp in the Radial Workhorse or other 500 series module power racks. To take full advantage of the unique features that have been incorporated into the X-Amp, please read through this manual before using it. This user guide will give you a broader sense of the module's capabilities. If you have questions that are not covered in this manual, please visit the FAQ section on our website. This is where we post answers to questions from users. If you cannot find the answer to your question please feel free to send us an email at info@radialeng.com and we will do our very best to respond as quickly as possible.

The Radial X-Amp 500 module brings the magic of Reamping to the masses.

⚠️ **WARNING NOTICE TO USER!**

Although preventative safety measures have been designed into Radial 500 series products **we strictly advise against hot-swapping modules** or plugging and unplugging them when the Workhorse or other 500 series rack is powered on. Hot swapping can cause connection sparks at the card-edge connector that could send damaging transients to other equipment. This also greatly reduces the life span of the contacts. Damage due to hot swapping is not covered under warranty. There are no user serviceable parts inside.

FEATURE SET

1. OUTPUT-1 LEVEL - Lets you adjust the output level to amp-1 right from the control room. This is particularly useful for fine-tuning front end drive distortion.

2. ON-OFF - Switch lets you mute the output going to amp-1.

3. LIFT- Lifts the ground on the OUT-1 ¼" output so that it eliminates a potential ground loop between the 500 series rack and the guitar amp.

4. OUTPUT-2 LEVEL - Lets you adjust the output level to amp-2.

5. ON-OFF - Switch lets you mute the output going to amp-2

6. 180º - Lets you reverse the polarity going to amp-2 to phase-align the two amps if needed. Can also be used to create interesting effects.

7. LIFT- Lifts the ground on OUT-2 ¼" output.

8. ¼" OUT-1 and 2 - Two outputs let you drive two amps at the same time. These are transformer isolated to help eliminate hum and buzz caused by ground loops. Class-A buffered to let you drive long cables.

9. OMNIPORT (with Workhorse) - Configured as a hi-Z guitar input to allow the X-Amp to be used to record a clean track for Reamping. It can also be used like an ABY box to allow a guitarist to play two amps at once.
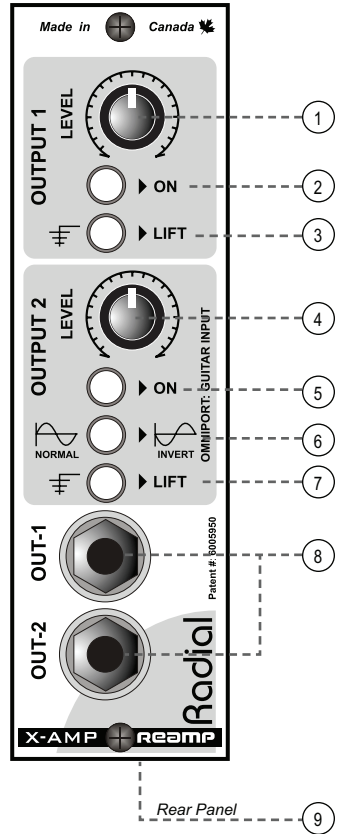
Warning: Never remove or lift the 3rd prong or ground on your amplifier's power cable. This safety ground is there to protect you from serious shock. If you are using an older or vintage amp, check to make sure it is connected in phase. If you are not sure, consult a technician. Only use guitar amps that have been properly tested for safe use in your country.

INTRODUCTION TO REAMPING

Reamping is a two-stage process whereby you first record a dry or clean track and then re-record the track afterwards by sending the clean track back through your amps and effects. The benefits of Reamping are tremendous: From the musician's perspective, the best performance is usually captured when the artist is fresh. Before Reamping, the guitarist would have to play for hours while the engineers moved mics in effort to find the perfect sound. By the time the engineer was ready to record, the guitarist was tired and their performance suffered.

With Reamping, you record the performance and worry about the sound later. In other words, capture the performance when the musician is at his or her best. You can then take your time to move the microphones around the room, change amps or add effects as needed. This also enables you to go back and change the sound of the track to fit the mix as the production advances. For instance you may find that a rhythm guitar track is too fat and taking up too much space in the bass region. With Reamping, you can cut the track again with a different amp that suits the mix better.

Step-1 Recording

Start by connecting the guitar using a Radial J48 or other direct box. *(The X-Amp will also work but requires connecting the input via the Omniport on the Workhorse.)* The thru-connection on the DI box is used to feed the guitar amp. The DI box XLR output is recorded on track-1 (clean track). While you are at it, you may as well put a mic up in front of the guitar amp and record it. This would be recorded on track-2 (the performance track).
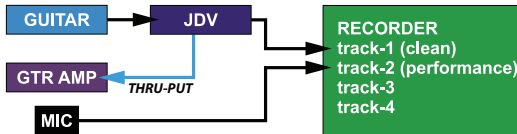
Recording a performance track has several benefits. The first is that the guitar player will be comfortable and familiar with the sound. This generally means that the performance will be better. Second, when the guitarist generates sustaining feedback, the sustaining notes will also be captured on track-1 only here they will be clean. Should the guitarist flub a note, this can easily be moved or pitch corrected in the digital domain. You may also find that mixing the original performance with a Reamped track can deliver amazing results. Best of all, you can make these decisions as the production develops. Reamping leaves your options open.

Step-2 Reamping

Now that you have captured the performance with a clean track, you can send the guitarist to the beach. You are ready to roll up your sleeves and get to work. Send the track-1 clean output to the Radial X-Amp. From there, you can split the signal off to two amplifiers and mic each one independently. Add another mic in the room or even add guitar effects as needed.
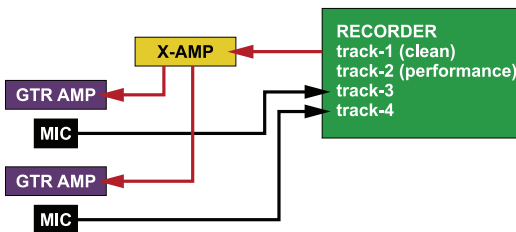
The cool thing about Reamping is that once you have the track, you can hit play for hours as you move the mics around and change the amps until you get exactly what you are looking for. Where things really become cool is during the production stage… you can hire all kinds of guitarists, let them use whatever amp they like and then Reamp the signals so that all of the tracks on the album sound uniform. This is the trick that Roger Nichols (Steely Dan) figured out and why they could use 3 or 4 different players and still retain the distinct Steely Dan sound. Reamping has been around for a long time. The Radial X-Amp is a device that makes it easy.

GETTING STARTED

Before making any connections, start by turning off your audio system and turning all volume levels down. This helps protect equipment from turn-on transients that could damage loudspeakers and other sensitive equipment. We recommend using a power bar with an on-off switch as this makes it easy to turn on and off the 500 series rack, monitors and so on, using a single switch. Carefully plug the X-Amp into your 500 series rack to avoid stress on the card-edge connector. Screw the module in to ensure it does not accidentally get dislodged.

Guitar and amp connections to and from the X-Amp are made on the front panel while connections to the recording system are done on the rear panel. Most 500 series racks are equipped with XLR connectors. When you plug the X-Amp into your 500 series rack it will automatically route the input and output to the module. With the Workhorse, this is augmented with ¼" TRS connectors, D-Subs and a signal to feed the Workhorse mixer. It also activates the Omniport which in this instance (with X-Amp) turns the Omniport into a guitar input.

Start by setting up the X-amp panel controls as follows:
1. Turn both output levels controls fully counter-clockwise.
2. The ground-lift switches should grounded (switch outward).
3. Outputs turned off (switches outward with LEDs off).
4. Ensure output-2 polarity reverse is set to normal (switch outward).

Connect the output from your recorder to the XLR input on the rear panel of your 500 series rack. Connect OUT-1 from the X-Amp to your first guitar amp. It is a good idea that you test signal levels first with a basic set-up before adding effects and a second amp. This makes trouble shooting easier.
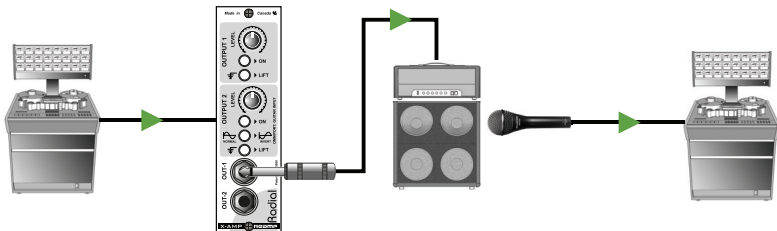
We will assume that you have a prerecorded clean track ready. Hit play. Turn X-Amp output-1 on by depressing the on switch. The LED should illuminate. Now, slowly increase the level from output 1 on the X-Amp to no more than 12 o'clock. You should be hearing plenty of volume. If not, check your amp by connecting your guitar and testing as it may not be set up correctly. You should be good to go.

Using the ground lift switch
Both of the front panel guitar outputs on the X-Amp are transformer isolated to help eliminate hum and buzz caused by ground loops. If you hear hum or buzz, the LIFT switch disconnects the ground at the ¼" output jack to further reduce noise.

Adding a second amp
If all is good, mute output-1 by setting the on switch to the outward position, connect amp number 2 and repeat the test process. If all is good, turn both amps on. The volume controls on the X-Amp are designed to let you adjust the signal going to each amp from the comfort of your control room chair. In fact, the X-Amp's buffered guitar outputs can easily drive a 15 meter (50 ft) cable.

Adjusting the polarity
When your two guitar amps are in phase, the sound will tend to be richer and warmer sounding. An easy way to test is to face both amps together and play low frequency bass notes. Depress the polarity reverse and listen. If out of phase, the bass will disappear.

Reamping with the X-Amp and the Workhorse
As described earlier, Reamping is a two stage process whereby you must first record a clean track. This is normally done using a direct box like the Radial J48, JDV or JDI. The clean track is then played back and routed to amps via a Reamper like the X-Amp. If you have a Workhorse, both recording and Reamping can be performed using the X-Amp. To make this work, we turned the Workhorse ¼" TRS Omniport into an instrument input. This way, you connect your guitar to the Omniport and it feeds the two ¼" front panel outputs which feed the amps. This will also send the signal to the X-Amp XLR out on the rear panel and the Workhorse mixer.
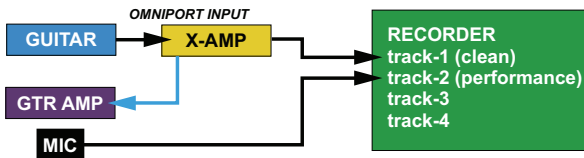
Using the X-Amp as a guitar distro
With a Workhorse, you can also use the Omniport (guitar level input) to feed two amps simultaneously to create a mini version of our popular Radial JD7 Injector. You can of course still capture the clean track as detailed above. The cool thing here is that when you isolate and buffer the guitar signal going to the amps and pedals, you will find that in almost all cases, you will end up with a quieter setup.
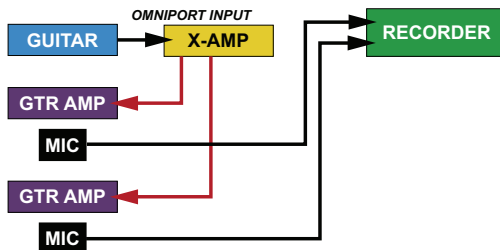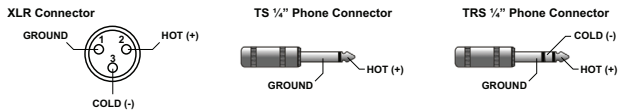
RADIAL X-AMP SPECIFICATIONS*

Circuit type: Class-A discrete, transformer coupled
Power Requirement: 40mA, +/-16VDC
Frequency Response: 20Hz to 20kHz (adjusted for guitar signals -5dB@20kHz) - 100K Load

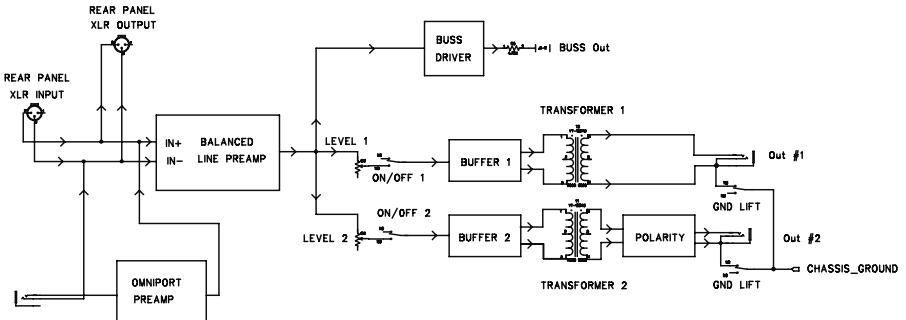|	XLR Input to XLR Output	Omniport to XLR Output	XLR Input to ¼" outputs
Voltage Gain:	0dB +/- 0.5dB	-3dB +/- 0.5dB	-0.6dB +/- 0.5dB
THD+N:	<0.002% @ 0dBu (20Hz~20kHz)	<0.002% @ 0dBu (20Hz~20kHz)	<0.006% @ 0dB (1KHz)
Noise:	-114dB below 0dBu	-95dB below 0dBu	-98dB below 0dBu
Intermodulation Distortion:	<0.04% @ 0dBu input	<0.005% @ 0dBu input	<0.027% @ 0dB input
Maximum input:	+26dBu	+20dBu	+19 dBu

Connector I/O details:
XLR input type**:   +4dB, balanced female XLR, AES standard, input impedance 1.2k Ohms
XLR output type**:   Parallel 'thru-put' with XLR input, +4dB balanced, output impedance 600 Ohms
                        ** Typical connectors found on most 500 series racks
OUT-1 type: Instrument-level (variable), unbalanced ¼", transformer isolated, impedance 3k Ohms
OUT-2 type: Instrument-level (variable), unbalanced ¼", transformer isolated, impedance 3k Ohms
Omniport type: Instrument-level input, unbalanced ¼", (on Workhorse), input impedance 220K Ohms
Shipping Weight: 1.5lbs (0.7kg)
Size: Standard 500 series rack format
Warranty: 3 years, transferable

CONNECTOR WIRING

XLR Connector — GROUND, HOT (+), COLD (-)
TS ¼" Phone Connector — GROUND, HOT (+)
TRS ¼" Phone Connector — COLD (-), GROUND, HOT (+)

X-AMP BLOCK DIAGRAM

Subject to change without notice.

THREE YEAR TRANSFERABLE LIMITED WARRANTY

RADIAL ENGINEERING LTD. ("Radial") warrants this product to be free from defects in material and workmanship and will remedy any such defects free of charge according to the terms of this warranty. Radial will repair or replace (at its option) any defective component(s) of this product (excluding finish and wear and tear on components under normal use) for a period of three (3) years from the original date of purchase. In the event that a particular product is no longer available, Radial reserves the right to replace the product with a similar product of equal or greater value. In the unlikely event that a defect is uncovered, please call 604-942-1001 or email service@radialeng.com to obtain an RA number (Return Authorization number) before the 3 year warranty period expires. The product must be returned prepaid in the original shipping container (or equivalent) to Radial or to an authorized Radial repair center and you must assume the risk of loss or damage. A copy of the original invoice showing date of purchase and the dealer name must accompany any request for work to be performed under this limited and transferable warranty. This warranty shall not apply if the product has been damaged due to abuse, misuse, misapplication, accident or as a result of service or modification by any other than an authorized Radial repair center.

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This product is intended for professional use only. The user should be familiar and experienced with the 500 series rack and module format

True to the Music

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