

# EXTC™ 500

## REAMP®

### 500 Series Module



## User Guide

# Radial® EXTC™ 500 Reamp® User Guide

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**Congratulations and thank you** for purchasing the Radial EXTC 500 Reamp® module. The EXTC is a unique 500 series interface designed to allow you to introduce guitar pedals and effects into the recording world with relative ease while keeping the signal quiet. With the EXTC in your rig you are now set to add wah to a Hammond, tube distortion to a vocal track or an envelope filter to the snare drum. The EXTC is all about creativity and making sure your recording stands above the rest.

This manual describes installing and operating your EXTC 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 EXTC, please read through this guide 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 an email to [info@radialeng.com](mailto:info@radialeng.com) and we will do our very best to respond as quickly as possible.

The Radial EXTC 500 module opens creative options to your recording world.

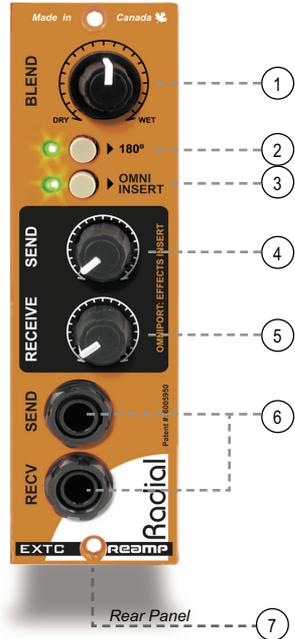


## **WARNING NOTICE TO USER!**

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.

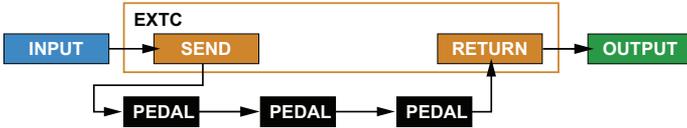
## FEATURE SET

1. **BLEND** - Lets you adjust the wet-dry mix between the original unprocessed signal and the EXTC's effects loop.
2. **180° POLARITY REVERSE** - Lets you adjust the polarity of the wet signal path and bring it into phase with the dry signal when they are being mixed together.
3. **OMNI INSERT (with Workhorse)** - Turns on the Workhorse TRS Omniport insert jack. This is used to add a second unbalanced effects insert path, wired in series after the front-panel loop.
4. **SEND LEVEL** - Used to adjust the output level going to the pedals and optimize signal-to-noise for best performance.
5. **RECEIVE LEVEL** - Used to set the effects loop return path level and further optimize signal-to-noise.
6. **1/4" SEND and RECV** - Separate send and receive jacks used to connect guitar pedals to the EXTC. Front panel mounted to make connections easy for use on the desktop and transformer isolated to eliminate hum and buzz caused by ground loops.
7. **OMNIPORT (with Workhorse)** - TRS insert jack lets you connect effects to a second unbalanced effects insert path, wired in series after the front-panel insert loop.

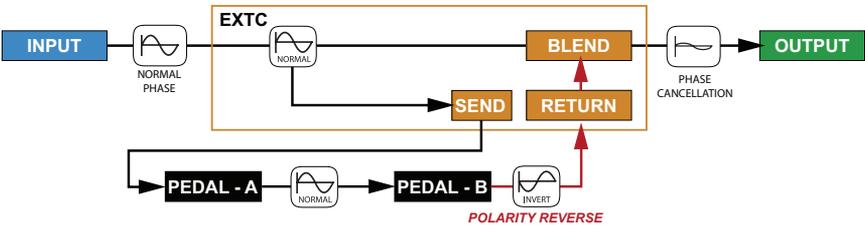


## OVERVIEW

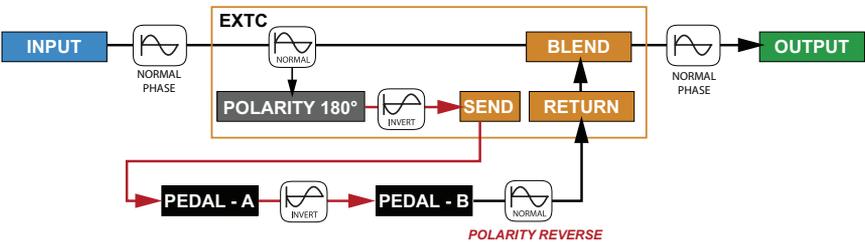
The Radial EXTC is a professional audio interface that takes a balanced line level signal and converts it to a guitar-level effects loop and then re-converts it back to a balanced line level for processing. In other words, you send in a balanced signal from your recorder, adjust the send level that drives the pedals. Set the return level from the pedals as it comes back and send the resulting sound to your recording system.



Although simple in principle, the key to the EXTC's performance is how quietly it does the task. This is achieved by employing full sized discrete electronic components, class-A circuitry and transformer isolation to help eliminate the hum and buzz that is common with pedals and guitars. The other cool 'trick' inside the EXTC is the blend control. This mixes the original dry signal with the newly introduced effects created by the pedals. Something to think about here is how some effect pedals will reverse the polarity of the signal passing through them. When you mix a dry signal with a wet signal and one is polarity reversed, you will of course end up with cancellation. The diagram below illustrates a setup where one pedal "B" is inverting the polarity creating cancellation where two out-of-phase signals come together.



The 180° polarity reverse switch plays an important role by ensuring both the dry and wet signals are in phase. The next diagram shows how the 180° switch inverts the signal before it gets to the offending pedal. Pedal "B" gets tricked into re-inverting the signal back to normal phase.



Once you get the EXTC hooked up, you will find it to be loads of fun! All of a sudden, you will be going back into the attic looking for that box of forgotten pedals, dusting them off and plugging them in. Some will sound fantastic, others will sound bad in a good way. Who knows, only those brave enough to enter blindly into these cold waters may live to tell the tale.

## 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 EXTC 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.

Connections between the EXTC and your pedals 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 EXTC 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 EXTC) turns the Omniport into a second effects loop.

### Start by setting up the X-amp panel controls as follows:

1. Set the blend control to the wet position (fully-clockwise).
2. Make sure the 180° is off (switch outward) so that everything is in phase.
3. Set the Omniport insert switch to off (switch outward).
4. Set the send and receive level controls at mid-way (12 o'clock).

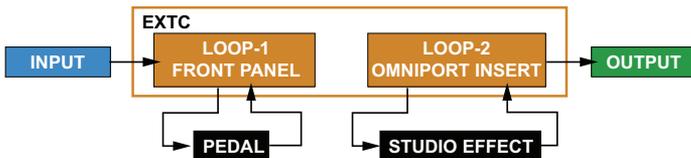
Connect the output from your recorder to the XLR input on the rear panel. To connect your pedals, simply plug the ¼" send to your pedal chain and the output of the pedal chain back to the EXTC receive input. We suggest you start with one pedal first before using a complete chain. This will make it easier to trouble shoot when setting up the EXTC in your system.

Turn on the effects and play the desired track. You should be able to monitor the return path in your recording system and hear the effect. Separate send & receive controls make it easy to adjust the levels to suit. Now, try varying the blend control by rotating it counter-clockwise towards the dry setting to hear how the effect mixes in with the original track. If you notice that the signal is 'thinning out' when you are adjusting the mix, the wet and dry signals may be out-of-phase with each other, thus causing cancellation. Try depressing the 180° polarity reverse to fix the problem. If all is well, try adding more pedals.

One of the most common applications for the EXTC is using it to add grit to a vocal track. This can easily be done with a distortion or overdrive pedal. You will find that the most realistic effects are created by introducing slight distortion. But you can also have loads of fun creating Nine Inch Nails type of tones by going crazy. There are no rules, only guidelines.

### Adding A Second Loop

If you have a Workhorse, you can use the Omniport to add a second effects loop in series after the front panel pedal chain. This is ideally suited for studio effects or to connect to a studio patchbay. The Workhorse TRS jack is wired tip-send, ring-receive following convention. To turn on, depress the OMNI INSERT switch on the front panel.



### RADIAL EXTC SPECIFICATIONS

Circuit type: Class-A discrete, transformer coupled

Power requirement: 60mA, +/-16VDC

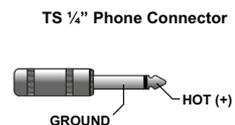
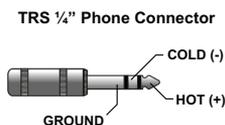
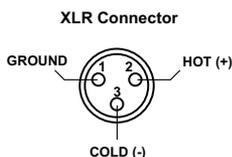
	DRY	WET
Frequency Response:	20Hz ~ 20kHz +/- 1.5dB	20Hz ~ 10kHz +/- 3.5dB (-8dB @ 20kHz) Shaped for musical instruments
Voltage Gain:	0dB	12dB - send & receive at max 6dB - send minimum, receive max 0dB - send & receive set at 12 o'clock
THD+N (1kHz):	<0.005% @ 0dBu	<0.002% @ 0dBu
Noise:	-93dB	-84dB
Intermodulation Distortion:	<0.003% @ 0dBu input	<0.02% @ 0dBu input
Maximum input:	+26dBu	+20dBu

Effects Loop I/O	SEND 1/4" output (front panel)	RECEIVE 1/4" input (front panel)
Type:	Unbalanced 1/4"	Unbalanced 1/4"
Impedance:	1.5k Ohms	10K ohms
Gain (variable):	From -14dB ~ +3dB (0dB at center point)	From -99dB ~ +9dB (0dB at center point)
Maximum Gain:	+3dB	+9dB

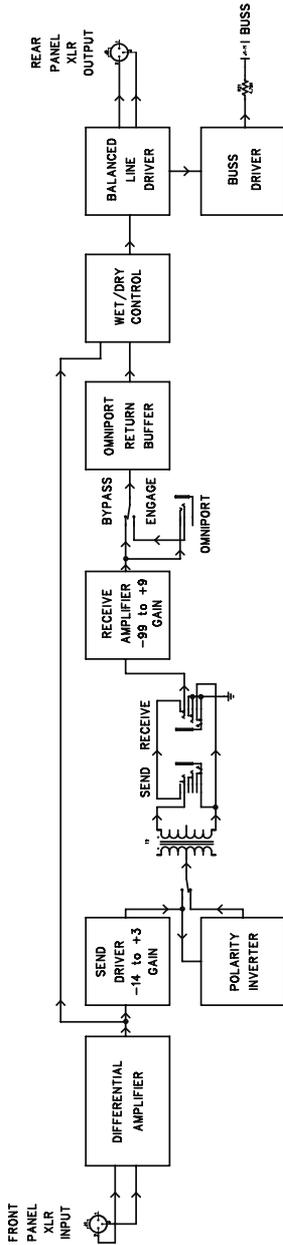
Line Level I/O	INPUT (500 series rack)	OUTPUT (500 series rack)
Type:	Rear Panel Input - Balanced XLR Female	Rear Panel Output - Balanced XLR Male
Impedance:	15k Ohms	200 Ohms
Headroom:	-	+25dBu

All voltage gain specs with both effect loops bypassed. Insertion of effects units will vary gain somewhat due to their particular input and output impedances.

### CONNECTOR WIRING



**RADIAL EXTC BLOCK DIAGRAM**



## 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](mailto: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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