

# Atomic Reactor 50/50

2x50W

RACKMOUNT

TUBE POWER AMP

OWNER'S MANUAL



[www.atomicamps.com](http://www.atomicamps.com)



**WARNING!**

TO PREVENT FIRE OR SHOCK HAZARD, DO  
NOT EXPOSE THIS UNIT TO RAIN OR  
MOISTURE.

NO USER SERVICABLE PARTS INSIDE, REFER  
SERVICING TO QUALIFIED PERSONNEL ONLY.  
SERVICE BY PERSONS OTHER THAN ATOMIC  
AUTHORIZED SERVICE TECHNICIANS MAY  
VOID WARRANTY.

**THIS UNIT MUST BE  
EARTH GROUNDED.**

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**REACTOR 50/50  
STEREO POWER AMP  
USER MANUAL**

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## REACTOR 50/50 STEREO POWER AMP

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**THE ATOMIC REACTOR 50/50 STEREO POWER AMP** is a rackmount, 2 × 50W amplifier designed for use with guitar or full range speaker cabinets. The **Reactor 50/50** was inspired by the demand for a stereo version of our popular MB-50 “mono block” amplifier, created with the stage or studio guitarist in mind. It is also ideal for acoustic guitars, vocals, electronic instruments, and any other application where a high quality stereo amplifier is needed. The 50/50 delivers full-rated power over a full-frequency response, with high headroom and very low distortion. In other words, this is an amp without an opinion; it amplifies but does not alter the character of the sound.

Each channel of the 50/50 is a fully independent 50W amplifier with independent level and presence controls, balanced and unbalanced inputs, an XLR thru, plus two speaker jacks per side with independent selectable impedance, allowing a range of speaker cabinets to be connected. It comes with two 12AX7s and a stereo set of “JJ” 6L6 power tubes. The Reactor 50/50 is also capable of using EL34 tubes. Convenient frontpanel per-channel bias controls make it possible to perform fine adjustments on-the-fly and even allow the unit’s channels to operate with two different sets of tubes.

The Reactor 50/50 is ideal for the modern digital guitar rig. Together with Atomic Reactor FR Passive Cabs or Wedges (or the traditional guitar cab(s) of your choice) it ensures that your preamp, modeler or simulator will sound great, with plenty of power, presence, and punch. It is built to last, with a heavy duty steel chassis and ¼” brushed aluminum faceplate. Even as guitar tone processing technology advances, the Reactor 50/50 will remain a valuable investment in great tone.

## PANEL FEATURES & FUNCTIONS

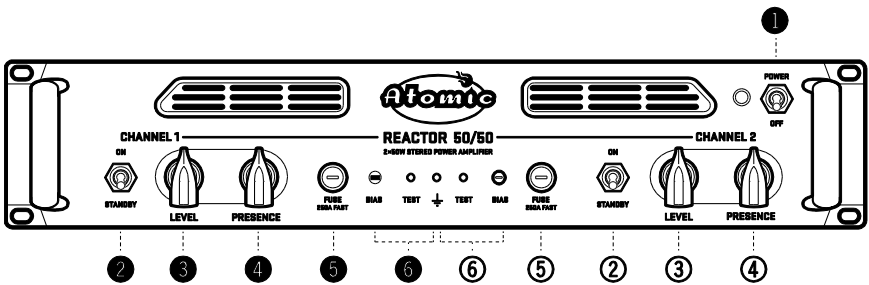


Figure 1: Controls & Connections of the REACTOR 50/50 Front Panel

**1 Power Switch** – Switches both channels of the amplifier ON or OFF. The power light will glow when power is ON.

**Unbalanced (¼") Input (x2)** – Unbalanced input of the amplifier (one per channel). The ¼" input overrides the balanced XLR input if both are connected.

**2 Standby Switches (x2)** – These control high voltages to the tubes, independently for each channel. Allow 60 seconds after powering up before setting standby to the ON position.

**Warning!** If you are only using one channel make sure that the other channel is set to **STANDBY**, regardless of whether or not input signal is present in the unused channel.

**3 Level Control (x2)** – These knobs set the output volume for each of the amplifier's 2 channels.

**4 Presence Control (x2)** The active presence circuit alters the high frequency component of a signal, adding "brightness" or "sparkle" while retaining a pleasant high-end quality. The presence circuit is completely disengaged for true flat response with the knob fully counterclockwise.

**5 Channel Fuse** – These dual compartments house the 250A Fast blow type fuses which protect the left and right channels.

**6 Bias Controls** – Each channel is equipped with a front panel bias adjust trim pot, plus its own test point. A common  $\frac{1}{2}$  ground serves both channels. For more on how to adjust the bias of the Reactor 50/50, see p. 7.

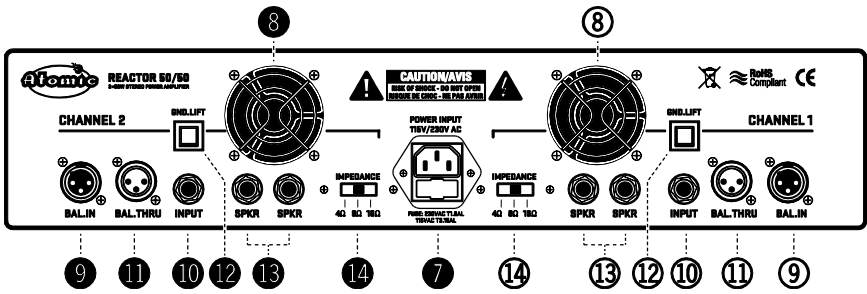


Figure 2: Controls & Connections of the REACTOR 50/50 Rear Panel

**7 7 Power Input** - Connect the supplied AC line cord here. The power inlet also houses the **Fuse Compartment** which must be opened to replace the fuse. In order to convert the power amp from 115v (US) to 230v (EU) operation (or vice versa) change the fuse to the appropriate value (see specs on pp. 13–17), then rotate and replace the fuse compartment.

**8 8 Cooling Fan (x2)** – These quiet fans spin while the amp is on.

**9 9 Balanced (XLR) Input (x2)**– This female XLR-type connector accepts a balanced or unbalanced line level signal.

**10 10 Unbalanced (1/4") Input (x2)** – Unbalanced input of the amplifier. The 1/4" input overrides the balanced XLR input if both are connected.

**11 11 Balanced (XLR) Thru (x2)** – Signals appearing at the Balanced (XLR) Ins will be output at the Balanced (XLR) THRU's for connections to a recorder, mixer, or other device. The 1/4" inputs do NOT connect to the THRU's!

**12 12 Ground Lift Switch (x2)** – May be used to eliminate the hum or buzz from a ground loop in either channel of the Reactor 50/50.

**13 13 Dual Speaker Outputs** – Each channel of the Reactor 50/50 has two speaker output jacks.

**14 14 Output Impedance Selector Switch (x2)** – 4/8/16Ω selectable per side, sets the impedance in Ohms for each of a channel's dual speaker jacks.

**WARNING! The total impedance of the speaker load connected to a jack must match that jack's switch setting, or damage may result!**

*Tip: Two 8-ohm speakers in series present a 16-ohm load,  $\Omega_t = \Omega_a + \Omega_b$  while two 8-ohm speakers in parallel present a 4-ohm load.  $\Omega_t = (\Omega_a \times \Omega_b) / (\Omega_a + \Omega_b)$*

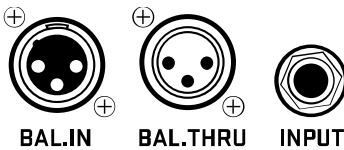
**It is safe to use a channel with speaker(s) connected to only one jack.**

## USING THE REACTOR SERIES POWER AMP

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The Reactor 50/50 is easy to use and offers the controls needed for a great range of music performance situations. *NOTE: Always lower the output level knobs on any connected devices before beginning to operate the power amp.*

1. Connect one or more speakers to the **Speaker Output Jacks** and set the **Impedance Selector Switch** to match their rating(s).
2. Using a high-quality cable, connect a signal source to either the **Unbalanced (¼") Input** or the **Balanced (XLR) Input**.



3. Connect the supplied **Power Cable** to your unit's **Power Input** located on the back panel.
4. Turn the **Power Switch** to ON. The power light should come on.
5. Wait at least 60 seconds for the amplifier to warm up, then set the **Standby Switches** to ON for ONE or BOTH channels.



**IMPORTANT!** *Never take a Reactor 50/50 channel out of standby when input signal is present and no speaker or load connected to the speaker output. Doing so will damage the amplifier.*

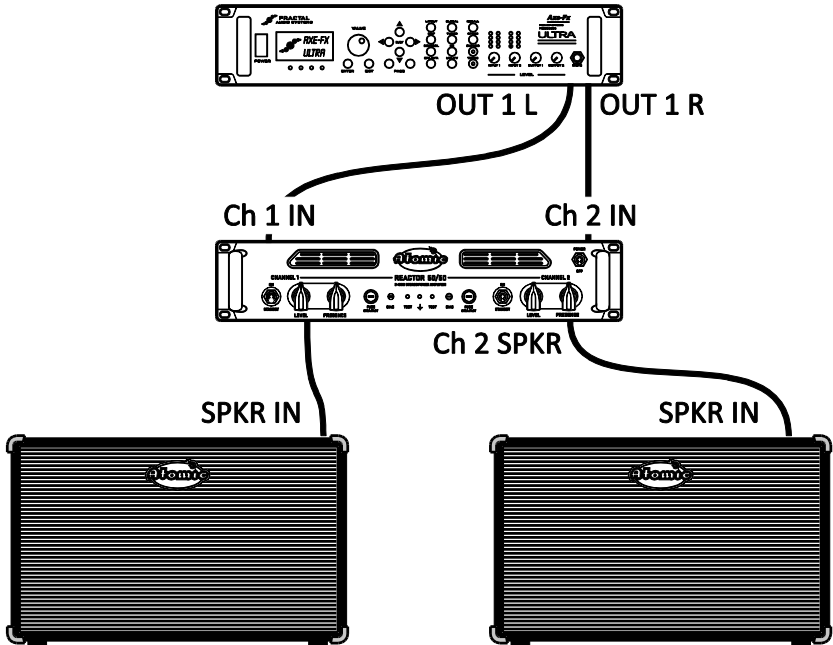
6. Increase the level of your instrument or processor and set the **Master Level** of the **Reactor 50/50** to the desired level. Adjust the tweeter level to taste.

**WHO'S DRIVING?** Whether you like to run your source signal "Hot" and lower the master volume of the Reactor, or turn up the Reactor and lower the output level of a connected instrument or processor, you will find that the Reactor operates quietly and sounds great.

## CONNECTIONS

### Reactor 50/50 w. Axe-Fx or Preamp/Processor

1/4" Unbalanced OR balanced XLR Ins/Outs may be used between the Axe-Fx/Processor and 50/50. Use XLR if you also intend to tap Reactor 50/50 THRU to feed Front of House or a recorder.



### Reactor FR Passive Cabs or Wedges

Reactor FR Active Cabs or Wedges may also be used with the onboard Speaker Selector Switch set to "EXT. AMP"



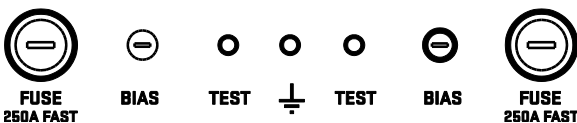
## MAINTENANCE

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Your Atomic Reactor 50/50 is vacuum tube driven, and therefore requires maintenance. Power tubes have a life expectancy of approximately 1000 hours. Regular play requires regular service.

**Tube Replacement:** The 50/50 utilizes 2 × 12AX7 tubes and four high quality JJ brand 6L6GC tubes, selected because they offer excellent sound quality. You will notice degradation when tubes need to be replaced. The power section is built to work with any properly biased 6L6 or EL34 tube. When tubes need to be replaced, use a qualified amplifier technician.

**Output Tube Bias Adjustment:** A technician will bias your amp when new tubes are installed. However, you may find bias drifts over time. You can check and adjust  $\frac{1}{2}$  this yourself. Each channel of the Reactor 50/50 is equipped with a front panel bias test point and adjustment point. A common ground serves both channels. The bias trim sets the idle current in the output tubes, properly matching the amp's performance characteristics to the type of tubes used. Each tube type and brand may require a slightly different bias, and settings should be checked when tubes are replaced. A properly biased amp will sound great and will run reliably and safely. An amp's bias can drift with extended use. To bias the Reactor 50/50, turn main power ON and take the desired channel out of STANDBY. Touch the negative lead (black) of a VU Meter to the common ground on the front panel of the Reactor 50/50. Touch the positive lead to the test point for the channel you plan to adjust. Adjust the trim with a small flathead screwdriver until the meter reads in the range of 70–90ma. Once the first channel has been properly biased, put it in standby and repeat the bias adjustment process for the second channel.



Front panel bias controls of the Reactor 50/50.



**WARNING!** The internal voltages of tube type amplifiers are potentially lethal and capacitors are capable of storing these lethal charges. The Reactor 50/50 allows you to bias the amps without removing the panel to expose componentry but you should still exercise caution or refer to the services of a qualified professional.

**The Fuse:** The fuse protects the amplifier in the event of an electrical fault or tube failure. If a fuse blows, replace it only with one of the required type and rating. The main fuse is in a compartment built into the AC inlet of the amplifier and can be accessed by opening the fuse compartment with a small flat-head screwdriver or similar tool. In order to change the voltage specification from 115v (US) to 230v (EU), or vice versa, the fuse module must be rotated 180° and the fuse changed to the correct specified value as marked above the AC inlet. The secondary per channel fuses are accessible through the front panel.



**WARNING!** Always disconnect the amplifier's power cord from the AC outlet before attempting to change the fuse. Refer to the specification pages (pp. 13-17) to determine the correct fuse type and rating. NEVER use a fuse with a higher rating as this could damage the amp and present a serious safety hazard. If the fuse blows repeatedly, the amp should be taken to an authorized service center.



## TROUBLESHOOTING

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### Reactor 50/50 does not power up.

- Is the power cord firmly inserted into the AC input socket?
- Is the power cord firmly plugged into a working electrical outlet?
- Are one or more of the fuses blown?

### The Reactor 50/50 powers up but produces no sound.

- Is the Reactor *really* turned on? (“Tubes glow and fan blows.”)
- Is the standby switch also set to the ON position?
- Is the output level control on your source device turned up?
- Is there a problem with your audio connector cable?
- Is/are your speaker(s) properly connected?

**IMPORTANT!** Operating either channel of the 50/50 in the absence of a load on the output transformer can cause serious damage and may void your warranty. ALWAYS ensure that a speaker or load is connected for any channel that is taken out of Standby.

### Amp Produces a Hum or Buzz

- Try the Ground Lift switch.

*If after performing all of the troubleshooting steps above your Reactor FR is still not performing correctly, please contact Atomic Amplifiers.*

*(See Obtaining Service on p. 10.)*

### How do I know when to replace tubes?

- When the Reactor is suddenly noisy with hiss, pops, or hum
- If your Reactor 50/50 develops a high pitch microphonic squealing.
- When you experience a loss of output power
- When the amp continually blows fuses
- When tubes visibly look “shot” (strong whitish cast, no warm glow)
- Sound is “dirty” on what you expect should be clean settings

## **OBTAINING SERVICE**

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**Q: How do I go about getting my Reactor product repaired?**

**A:** For repairs within the amp's warranty period (1 year or 90 days for tubes) please email [info@atomicamps.com](mailto:info@atomicamps.com) for service instructions. You must first contact us for a RETURN AUTHORIZATION NUMBER and shipping instructions.

**Q: Is there a charge for repairing my Reactor Series Product?**

**A:** There may or may not be. If you have not done so already, read the WARRANTY beginning on page 18 for information on coverage, duration, and what is required of you the purchaser in order to obtain Warranty Service.

## SPECIFICATIONS: REACTOR 50/50 POWER AMP

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**Intended Applications:** Guitar/FRFR Sound Reinforcement

**Power Requirements:** 115V AC, 50/60 Hz 105w  
OR 230v Ac, 50 Hz 105w

*Remove/rotate/replace fuse holder to select between 115 (US) and 230 (EU)*

**Main Fuse:** US Model 115V AC, Slow Blow, 3.15A  
EU Model 230V AC, Slow Blow, 1.6A

**Channel Fuses:** 2 x 250mA (same for US/EU)

**Amplifier Power Output:** 2x 50w into 8 ohms at 3% THD

**Power Amp Input** 2x 270 mv (-9.5db) at 1000 Hz

**Sensitivity (Return):** for 50 watts output x2

**Power Amp Input Impedance:** 2x 100K ohm

**Tubes:** (2) x 12AX7A tube  
(4) x 6L6GC tubes

**Connecting Speakers:** 2 x 1/4" jacks per side (4 total)  
4/8/16  $\Omega$  selectable impedance  
50-200W recommended

**Chassis Construction:** Heavy duty powder coated steel  
Radiused/Milled Aluminum 1/4" face

**Fan:** 2 x 80mm quiet fans

**Dimensions:** Width: 17.25" (panel 19")  
Height: 3.75"  
Depth: 11.75"  
Weight: 26 lbs.

## WARRANTY

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Atomic Amplifiers warrants to the original purchaser that this product (exclusive of tubes) will be free of defects in material and workmanship for a period of 1 year from the original date of purchase. Atomic Amplifiers warrants to the original purchaser of this product that tubes will be free of defects in material and workmanship for a period of period of 90 from the original date of purchase by the original purchaser. It is understood that Atomic Amplifiers reserves the rights to inspect any warranty part prior replacing or repairing them to insure that their defect is not a result of user error. These warranties are subject to the conditions, exclusions, and limitations hereinafter set forth.

This limited warranty is transferable and is valid only when accompanied by a copy of the original sales receipt or packing slip with legible purchase date, purchase price, and when product is purchased from an authorized dealer in the United States or Canada and must be returned to the same for any warranty services required. All exported products are subject to warranty and services to be specified and provided by the authorized distribution center for each country or region. Excluded from this warranty are defects caused by wear and tear, accident, misuse, neglect, failure to follow all operating instructions (including the OVERPOWERING of speakers), alterations and modifications, or act of nature. Such determinations will be made by Atomic Amplifiers. This limited warranty is also void if: the original retail purchase is not made directly from the company or an Authorized ATOMIC AMPLIFIERS' dealer, or if repairs, alterations, or modifications are performed by anyone other than Atomic Amplifiers or an Atomic Amplifiers Authorized Service Center, or if the original serial number affixed to the product is altered, defaced, or removed.

All parts costs for repairs covered under this limited warranty will be borne by Atomic Amplifiers so long as the repairs have been requested within the applicable warranty periods described above. It is understood that all repair charges and costs incurred by Atomic Amplifiers for all periods following the applicable warranty period will be borne and paid for by the purchaser. All labor costs incurred by Atomic Amplifiers for repairs covered under this limited warranty will be borne and paid for by Atomic Amplifiers within the applicable warranty period according to rate schedules established by Atomic Amplifiers. All labor costs and expenses above these rates will not

be the responsibility of Atomic Amplifiers. Atomic Amplifiers MUST perform all warranty services. Transportation charges involved in warranty services are the sole responsibility of the purchaser.

A copy of the original sales receipt or packing slip must accompany all products being presented to an Atomic Amplifiers Authorized Service Center for warranty service. All products being returned to Atomic Amplifiers for warranty service must be accompanied by a copy of the original sales receipt or packing slip, a detailed description as to needed repairs, and an Atomic Amplifiers Return Authorization number. Atomic Amplifiers reserves the right to repair or replace the affected piece of equipment at their option but it is understood that repair or replacement as provided under this limited warranty is the sole and exclusive remedy to the purchaser for defective or non-conforming products.

Atomic Amplifiers will not be held liable for any incidental consequential, special, punitive, or exemplary damages resulting from any defect or failure of this product other than the repair of the Atomic Amplifiers product subject to the terms of this limited warranty. Any product repaired or replaced under this limited warranty will, itself, be warranted only for the remainder of the limited warranty period of the original product being repaired or replaced. Products used for dealer rental purposes shall be warranted from the date of the original invoice to dealer and if sold will be warranted only for the remainder of the limited warranty period of the original product.

This warranty gives you specific legal rights, and you may have other rights which vary from state to state, and province to province, and to the extent required by law, any limited warranty shall be limited to the duration of this limited written warranty.

OTHER THAN AS STATED ABOVE, ATOMIC AMPLIFIERS MAKES NO WARRANTIES EITHER WRITTEN, EXPRESSED, OR IMPLIED WITH RESPECT TO THE PRODUCT. THIS WARRANTY IS EXCLUSIVE, AND ATOMIC AMPLIFIERS MAKES NO OTHER WARRANTY, EXPRESSED OR IMPLIED, INCLUDING IMPLIED WARRANTIES OR MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE, ALL OF WHICH WARRANTIES ARE HEREBY BEING DISCLAIMED.