

382i Sonic Maximizer

User Guide and Reference Manual



BBE[®]
Sound Inc.

Important Safeguards



WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

ATTENTION: RISQUE DE CHOC ELECTRIC- NE PAS OUVRIR.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point, within a equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

For your protection, please read these safety instructions completely before operating the appliance, and keep this manual for future reference.

Carefully observe all warnings, precautions and instructions on the appliance and described in the operating instructions supplied with the appliance.

INSTALLATION

Water and Moisture - Do not install the appliance near water: for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool.

Heat - Do not install the appliance near sources of heat such as radiators, heat registers, stoves, or other appliances that produce heat.

Ventilation - Situate the product so its location or position does not interfere with its proper ventilation. For example, you should not place the product on a bed, sofa, rug, or similar surface that might block the vent openings, or placed in a built-in installation, such as a bookcase or cabinet that might impede the flow of air through the ventilation openings.

Wall or Ceiling Mounting - If your appliance can be mounted to a wall or ceiling, mount it only as recommended.

Accessories - Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious injury to a child or adult, and serious damage to the product. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer, or sold with the product. Any mounting of the product should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer.

USE

Power Source - Connect the appliance to a power supply only of the type described in the operating instructions or as marked on the appliance.

Power-Cord Protection - Route the power cord so that it is not likely to be walked on or pinched by having objects placed on it, paying particular attention to the plugs, receptacles, and the point where the cord exits from the appliance.

Grounding or Polarization - Do not defeat the grounding or polarization feature of the AC power cord. If your AC receptacle will not accept the power cord plug, contact your electrician to install a proper AC receptacle.

When not in use - Unplug the power cord of the appliance from the outlet when left unused for a long period of time.

To disconnect the cord, pull it out by grasping the plug. Never pull the plug out by the cord.

AC Receptacle - Check to make sure that the AC receptacle holds the power cord plug firmly and securely. If the power cord plug is loose, contact your electrician to replace the defective and unsafe AC

Foreign Objects - Be careful that foreign objects and liquids do not enter the enclosure through openings.

Cleaning - unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

SERVICE

Unplug the appliance from the wall outlet and consult qualified service personnel when:

- the power cord or the plug has been damaged.
- a solid object or liquid has fallen into the cabinet.
- the appliance has been exposed to rain or moisture.
- the appliance does not appear to operate normally or exhibits a marked change in performance.
- the appliance has been dropped, or the enclosure damaged.

Do not attempt to service the appliance beyond that described in the operating instructions. For all other servicing, refer to qualified service personnel only.

Thank you for your purchase of the 382i, and for the trust that you've placed in BBE. We are committed to bringing you the finest products, with useful and unique features to serve your audio needs.

The BBE Sonic Maximizer is a two channel signal processor that will benefit any recording or sound reproduction system. Whether you purchased the Sonic Maximizer for your home studio, P.A., DJ system, or instrument rack, you will find the Sonic Maximizer's rugged construction and careful electronic design a welcome addition to your sonic arsenal.

The BBE Process — “What it Is”

Loudspeakers have difficulty working with the electronic signals supplied by an amplifier. These difficulties cause such major phase and amplitude distortion that the sound reproduced by a speaker differs significantly from the sound produced by the original source.

In the past, these problems proved unsolvable and were thus delegated to a position of secondary importance in audio system design. However, phase and amplitude integrity is essential to accurate sound reproduction. Research shows that the information which the listener translates into the recognizable characteristics of a live performance are intimately tied into complex time and amplitude relationships between the fundamental and harmonic components of a given musical note or sound. These relationships define a sound's “sound”.

When these complex relationships pass through a speaker, the proper order is lost. The higher frequencies are delayed. A lower frequency may reach the listener's ear first or perhaps simultaneously with that of a higher frequency. In some cases, the fundamental components may be so time-shifted that they reach the listener's ear ahead of some or all of the harmonic components.

This change in the phase and amplitude relationship on the harmonic and fundamental frequencies is technically called “envelope distortion.” The listener perceives this loss of sound integrity in the reproduced sound as “muddy” and “smeared.” In the extreme, it can become difficult to tell the difference between musical instruments, for example, an oboe and a clarinet.

BBE Sound, Inc. conducted extensive studies of numerous speaker systems over a ten year period. With this knowledge, it became possible to identify the characteristics of an ideal speaker and to distill the corrections necessary to return the fundamental and harmonic frequency structures to their correct order. While there are differences among various speaker designs in the magnitude of their correction, the overall pattern of correction needed is remarkably consistent.

PRODUCT DESCRIPTION

The BBE 382i is a dual channel, single rack space device for use in -10dBu unbalanced level applications. There are two separate channels that share the same front panel Lo Contour control and Process controls for ganged-stereo operation. A single function button switches the BBE process on or off in both channels, which is useful for comparing the processed sound to the unprocessed sound. An LED next to the function button glows green when the BBE process is on and red when the process is off. The Lo Contour control is for adjusting the level of phase corrected low frequencies in the program material. The Process control is for adjusting the level of phase corrected high frequencies in the program material.

APPLICATIONS

Music and P.A. Systems

The BBE Sonic Maximizer is a welcome addition to any live sound P.A. system because the BBE circuit dramatically improves the clarity and intelligibility of vocals and musical instruments. Night club and mobile DJ systems will also benefit greatly from the BBE Process, with more depth, detail and punch over the entire mix. The BBE Sonic Maximizer can be hooked up to any P.A. or DJ sound system exactly like an equalizer would. When using in conjunction with an equalizer, the Sonic Maximizer should be added after the equalizer in the signal chain. In the event that the equalizer is being used for drastic tone alteration, then insert the Sonic Maximizer before the equalizer in the signal chain. Placement either before or after an equalizer should have no negative effect on the unit or its processing ability, however most users find they prefer more modest use of their equalizers once the BBE Sonic Maximizer has been added to their sound systems.

Instrument Racks

The BBE Sonic Maximizer will deliver surprisingly good results in guitar, bass and keyboard rack systems. Electric guitars have added “bite”, “chunk” and improved definition. As Guitar Player magazine said, “BBE is the most cost effective improvement you can add to your rig”. Acoustic guitars processed with the BBE Sonic Maximizer have a breathtakingly natural sparkle and presence. Bassists will delight in the BBE Sonic Maximizer’s ability to bring much more punch to the bottom end without muddying up the midrange. The BBE Sonic Maximizer is also great for keyboard rigs, with everything from the latest samples to a vintage Rhodes benefiting equally from the patented BBE process.

Recording Systems

The BBE Sonic Maximizer can be used as an effect on individual tracks or applied overall during mixdown. The BBE process works very well to liven up the final mix, which is why the BBE 382i model is popular for use in both project and professional recording studios.

SET-UP

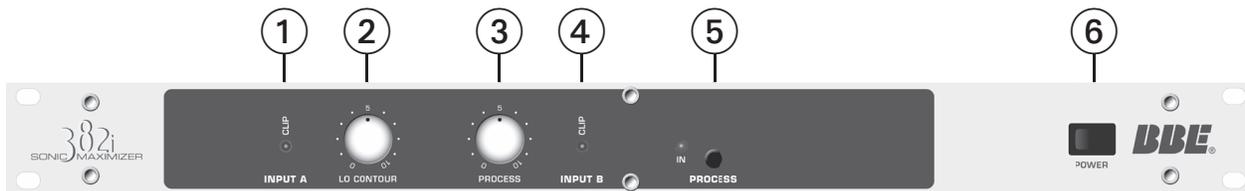
The BBE Sonic Maximizer is connected into the chain in series with the signal path the same way a graphic equalizer or limiter would be connected. The output of a mixer, pre-amp, or other sound source feeds the input of the Sonic Maximizer. Setting up the Sonic Maximizer as an echo send device like a digital reverb is not recommended as the processed effect is not fully realized when summed with the original source audio. In order to reduce the risk of damage to any equipment, properly connect all cables and power cables before turning on any components in the system.

Things to Remember

The BBE 382i is designed to work with -10dBu line levels. This is suitable for professional and semi-pro mixers, P.A. consoles, recording studios, or D.J. equipment. The 382i drives load impedances down to 1K Ohm and supplies a maximum output level of +20dBu. Plugging a guitar or other high impedance device directly into the 382i will not work properly as its input impedance is less than 50K ohms.

WARNING! To prevent possible speaker or amplifier damage, always power-up peripheral devices first, wait 10 seconds, and then turn on the power amplifier. Turn off power amplifier first, then power-down peripheral devices.

Front Panel Controls



1. CLIP LED INPUT A: When illuminated this LED indicates that the output of the 382i has reached +15dBu.
2. LO CONTOUR: Each channel shares a common LO CONTOUR CONTROL. This control regulates the amount of phase corrected bass frequencies. This adjustment ranges from 0dBu (fully counter-clockwise) to +12dBu (fully clockwise) at 50Hz relative to the input.
3. PROCESS: Each channel shares a common PROCESS CONTROL. This control regulates the amount of phase corrected treble frequencies. This adjustment ranges from 0dB (fully counter-clockwise) to +12dBu (fully clockwise) at 5kHz relative to the input.
4. CLIP LED INPUT B: When illuminated this LED indicates that the output of the 382i has reached +15dBu.
5. PROCESS SWITCH: This push button switch allows for quick comparison of processed with unprocessed sound. When the switch is pushed in, the process is on and the indicator LED is green. When the switch is out, the process is off and the indicator LED is red.
6. POWER: This switch controls primary power to the BBE 382i.

Rear Panel Connections



1. AC POWER CORD INLET: Plugs into AC power receptacle. U.S. Model, 100-120Vac, 50/60Hz. All other models, 200~240Vac, 50/60Hz.
2. FUSE: Insert a flat blade screwdriver into the fuse holder located in the bottom portion of the AC Power Cord inlet. Carefully pry the fuse holder free from its compartment to access fuse. (Note: Replace with 250VAC, 200mA fastblow type fuse.
3. AC SELECTOR SWITCH: This switch is set at the factory to match the AC power requirements of the country where it will be sold and should only be adjusted by a qualified technician.
4. OUTPUT CHANNEL B: Each channel is equipped with an unbalanced 1/4" line level output jack that can deliver up to +20dBu into 1K Ohms.
5. INPUT CHANNEL B: Each channel is equipped with an unbalanced 1/4" -10dBu line level input jack. The input impedance of the 382i is 47k Ohms. The maximum signal level before clipping is +20dBu.
6. CHANNEL A: These connections function the same as CHANNEL B.

SPECIFICATIONS

Frequency Response	process mode	Program controlled
	bypass mode	5Hz to 30kHz +/-0.5dBu, -10dBu input
THD in process mode		less than 0.1% at -10dBu input, 20-20kHz
Maximum Output		+20dBu (may vary due to control settings)
Input Impedance		47k Ohms, unbalanced 1/4" phone jack or RCA jack
Output Impedance		1k Ohms, unbalanced 1/4" phone jack or RCA jack
Sensitivity		-45dBu for maximum process
Maximum Process		+12dBu boost at 5kHz
Lo Contour		+12dBu boost at 50Hz
Power Requirements		U.S., Canada & Japan models: 120VAC, 50/60Hz, 8 WATTS
		Standard model: 220VAC, 50/60Hz, 8 WATTS
Fuse		Replace with 250VAC, 200mA fastblow type fuse
Dimensions		19"(W) x 5.5"(D) x 1.7"(H)
Shipping Weight		6.5 lbs.

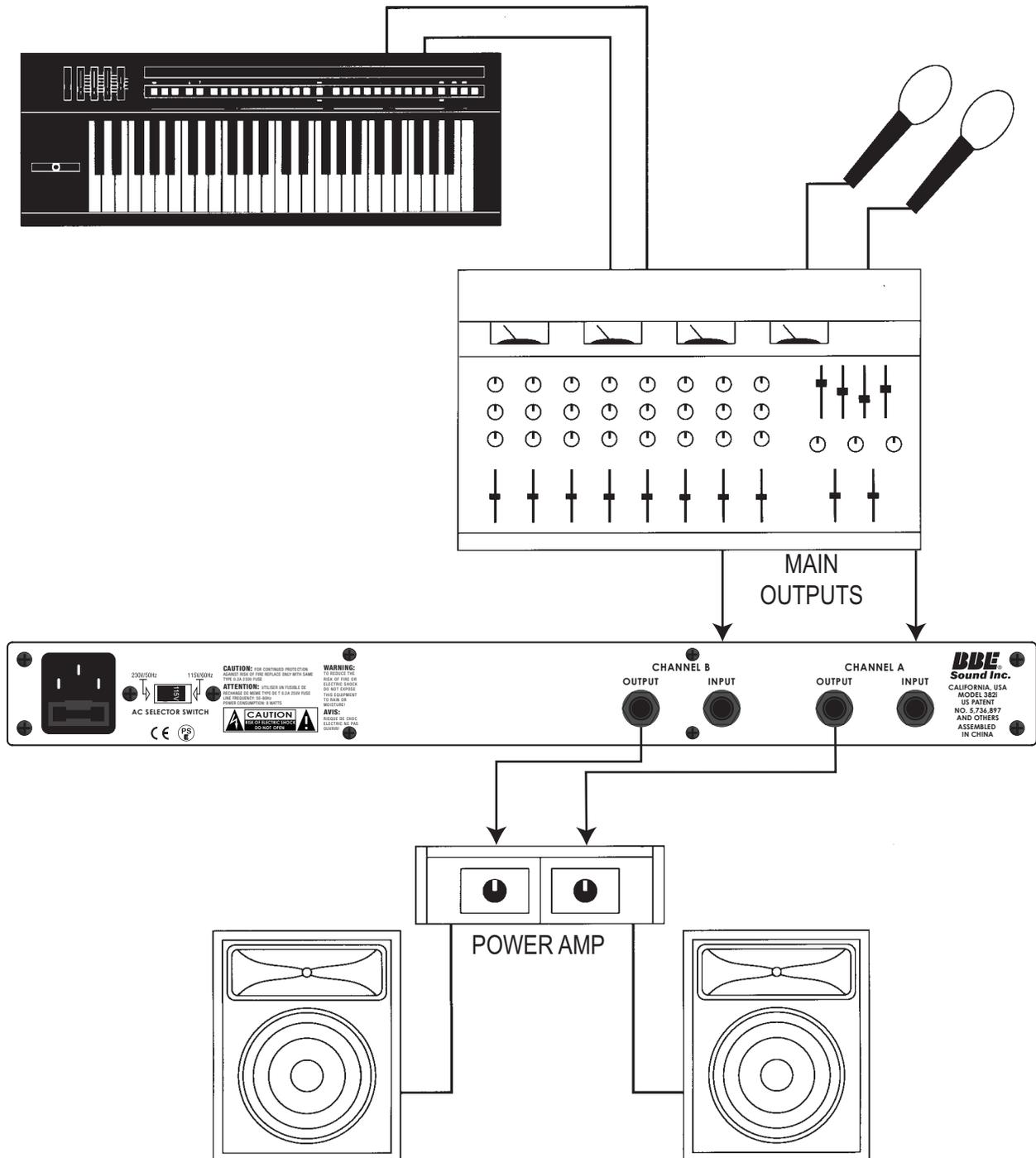
* 0dBu = 0.775mVrms

Note: Due to continuing product improvement, specifications and design are subject to change without notice.

The BBE Sonic Maximizer is a line level signal processor and is to be connected prior to the power amp in any audio system. Significant damage may be inflicted to the bbe sonic maximizer or any subsequent component in the system in the event the output of a power amp is connected directly to the input of the BBE Sonic Maximizer.

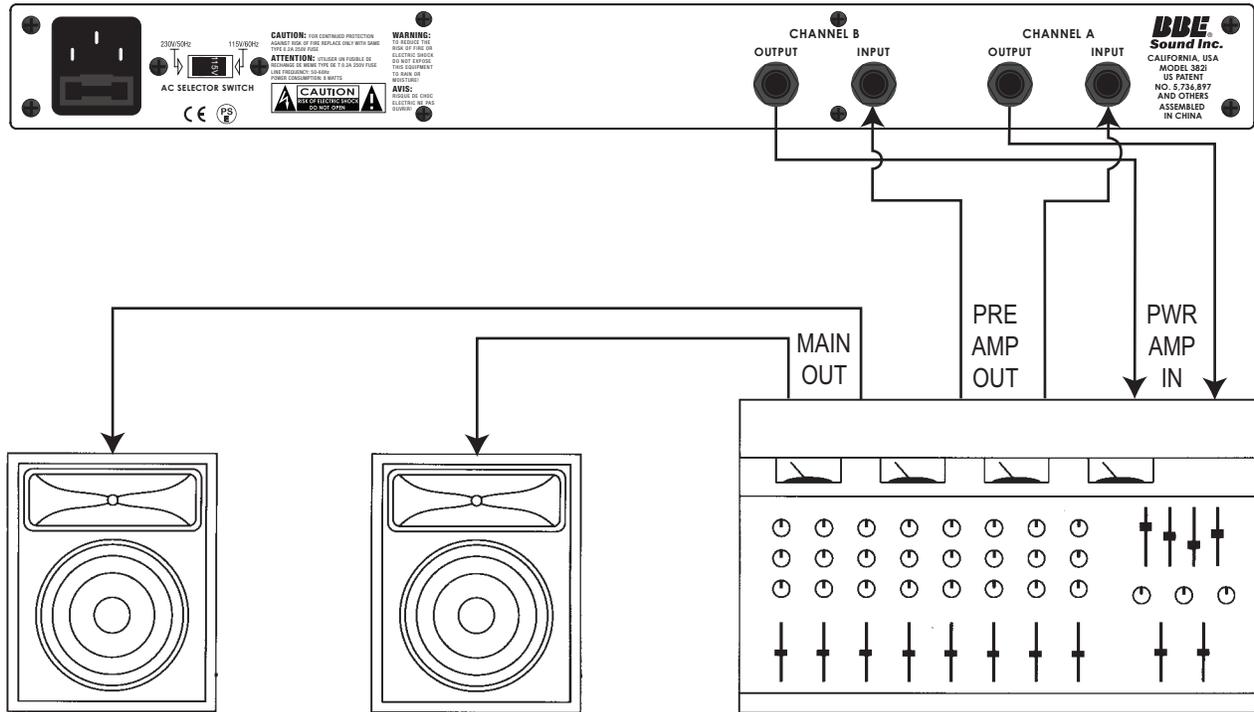
LIVE APPLICATION: NON-POWERED MIXER

Connect the BBE 382i to the output of the mixing console or external equalization, if used. The output of the BBE will drive either a crossover or a power amplifier directly.

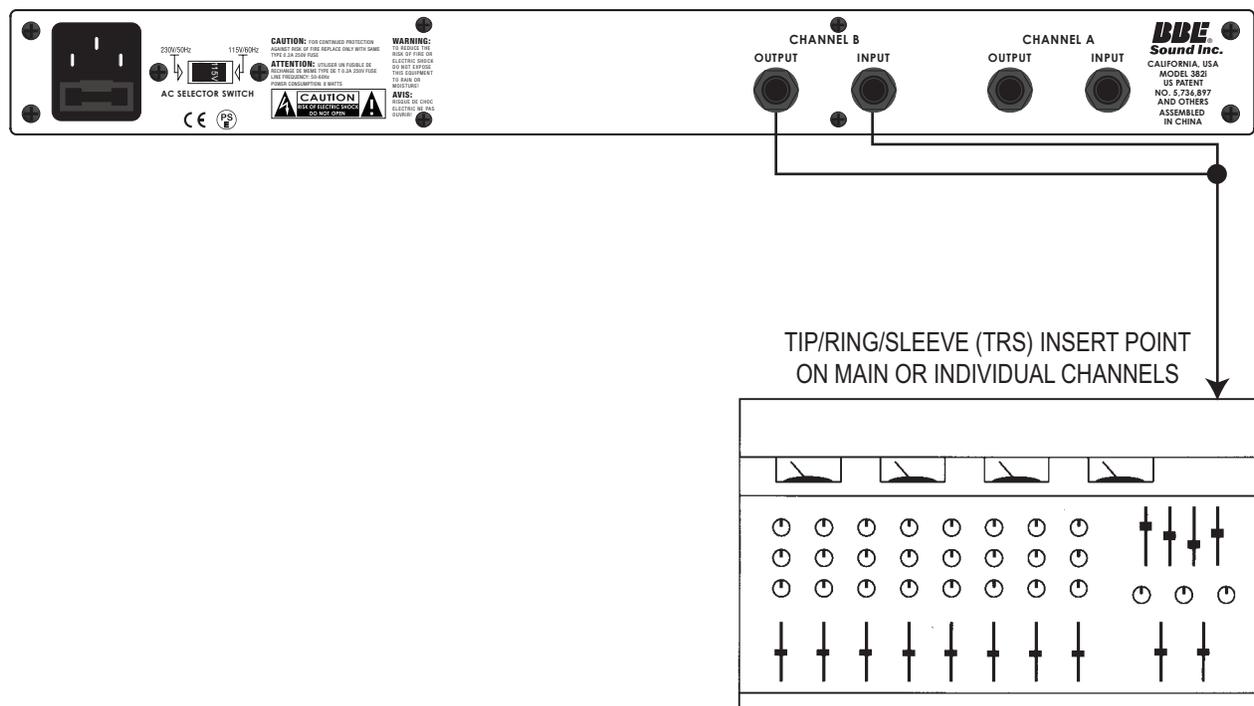


LIVE APPLICATION: POWERED MIXER

Option 1: Connect via the “pre-amp out/power amp in” section of the mixing console.

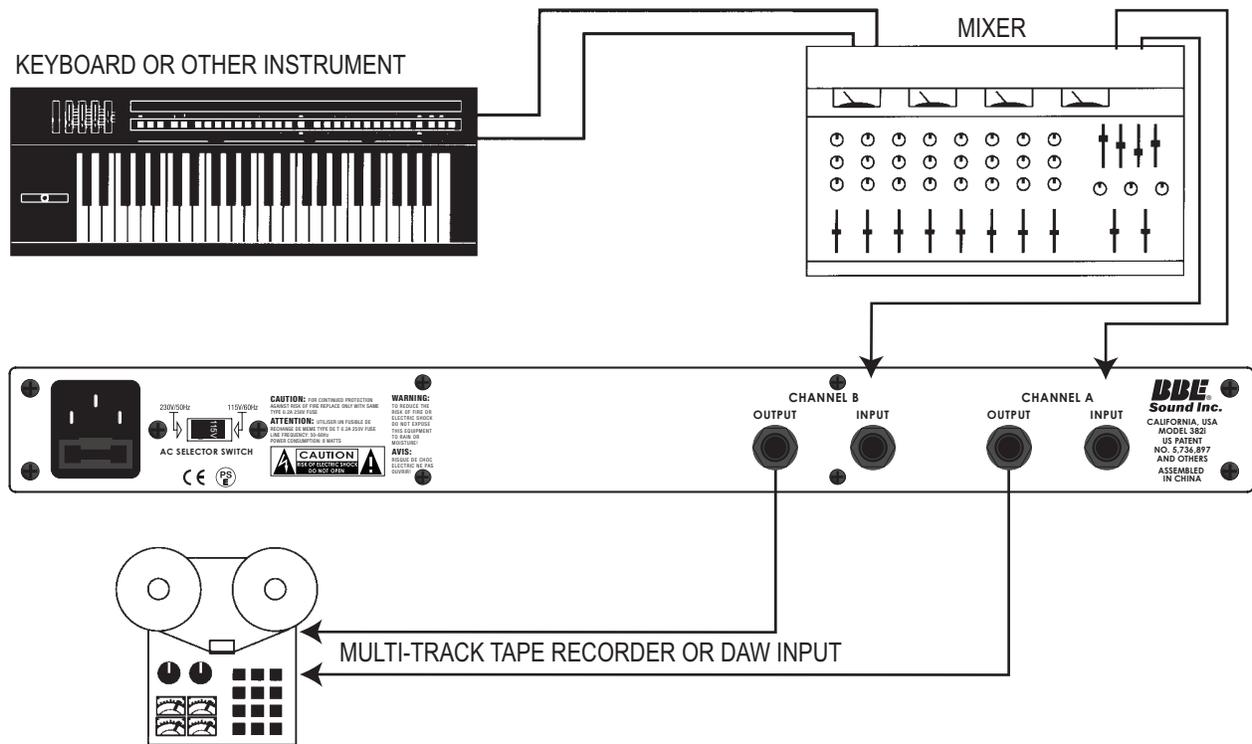


Option 2: Connect using individual channel or main insert points.



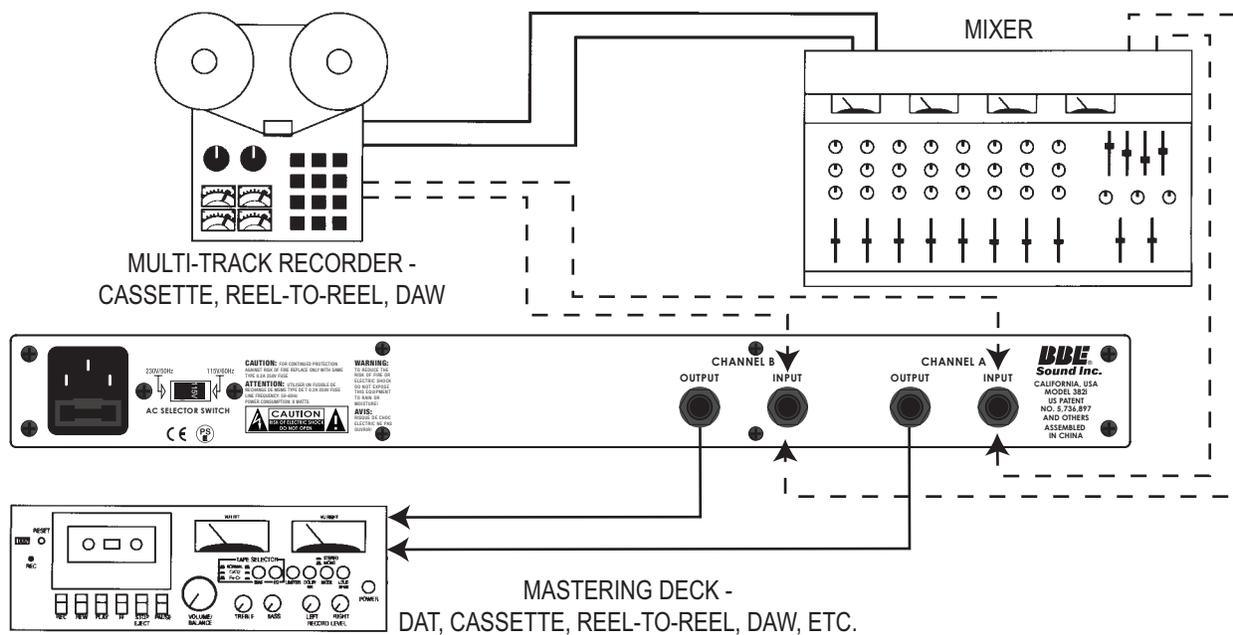
RECORDING

The BBE 382i can be utilized in the recording studio on individual instruments or on groups on instruments to improve the sound quality.



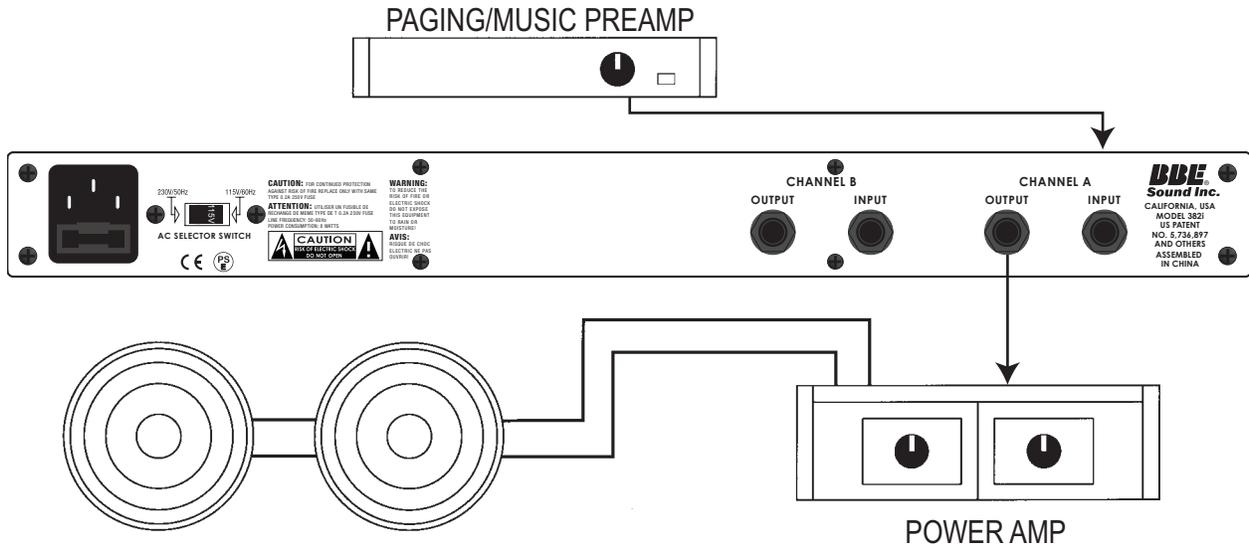
MASTERING OR DUBBING

Use the BBE 382i for mastering the recording. Even if the BBE Process has been used on individual tracks, an improvement on the total mix will be noticed.



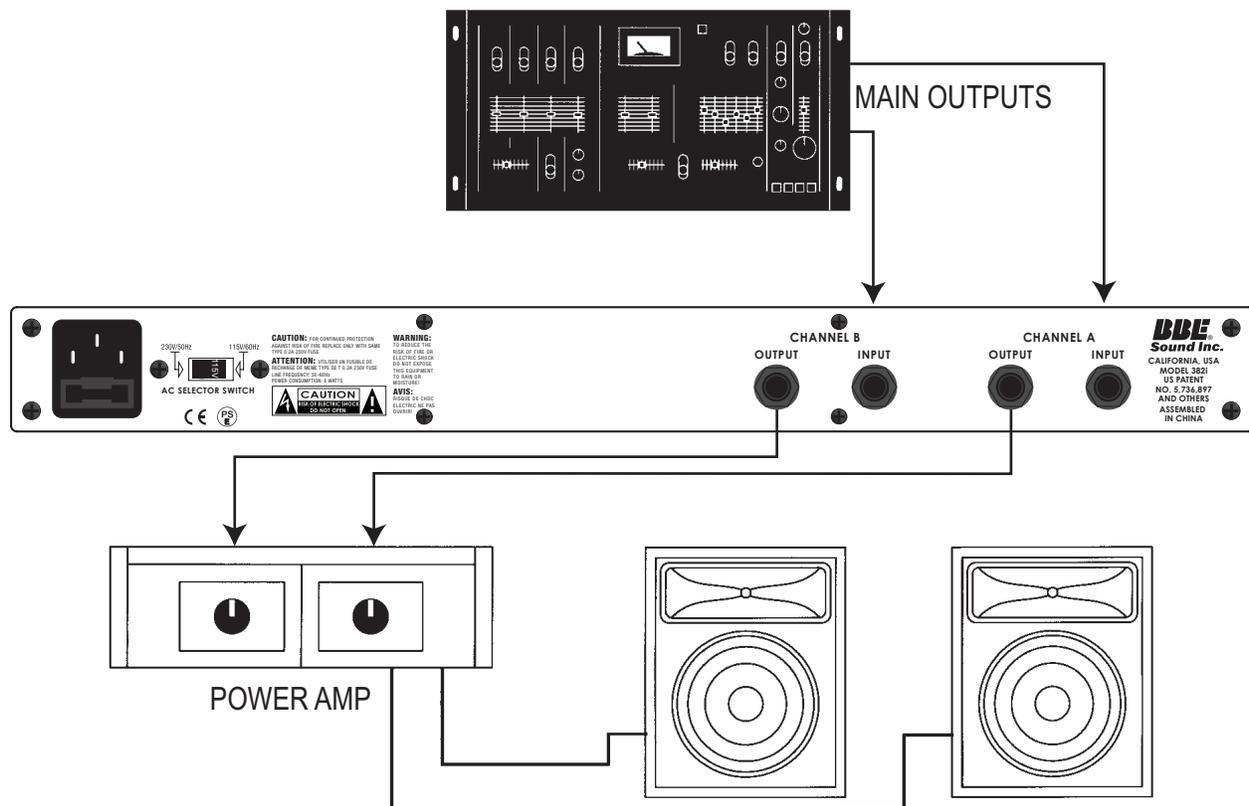
SOUND CONTRACTORS

The BBE 382i will accept the output level of most sound contractor type mixers and provides a dramatic improvement in the intelligibility of music and the spoken word..



DJ APPLICATION

The BBE 382i with its ganged-stereo controls is the perfect complement to any DJ system.



Service

We recommend that if at all possible, a BBE Sonic Maximizer which requires service be sent to our facility in Huntington Beach, California. We request that a "RETURN AUTHORIZATION" be issued by the dealer from whom you purchased the unit. If this is not possible, call BBE Sound, Inc. directly at (714) 897-6766, extension 116 to obtain a "RETURN AUTHORIZATION". Include a copy of the bill of sale with the unit when it is shipped to BBE Sound, Inc. so that the service can be expedited.

As the repair turnaround time is minimal, we request that the unit be sent to BBE Sound, Inc. We also need to add reliability data to our files so that future revision may be undertaken, if necessary, to improve the product. If unit has been purchased outside the US, please contact your national distributor.

Warranty

Warranty registration of the unit to BBE Sound, Inc. is not necessary. It is strongly recommended that you retain a copy of the bill of sale for future reference.

IT IS THE SOLE RESPONSIBILITY OF THE END USER TO PROVIDE THE BILL OF SALE OR OTHER MEANS OF PROOF OF PURCHASE TO VALIDATE THE WARRANTY IF WARRANTY SERVICE IS REQUESTED.

The BBE Sonic Maximizer is warranted against defects in material and workmanship for a period of five (5) years from date of purchase from BBE Sound Inc. or from an authorized dealer. During this period, we will repair units free of charge providing that they are shipped prepaid to BBE Sound, Inc., 5381 Production Drive, Huntington Beach, CA 92649. We will pay return UPS shipping charges within the USA. All charges related to non-UPS shipping, including customs clearance, will be billed. The warranty will be honored for the longer of either 90 days from the date of any service or the remainder of the original 5 Year factory warranty.

This warranty will be consider null and void by BBE Sound, Inc. if any of the following is found:

1. The equipment has been physically damaged.
2. The equipment shows signs of abuse.
3. The equipment has been electrically damaged by improper connection or attempted repair by the customer or a third party.
4. The equipment has been modified without authorization.
5. The bill of sales indicates that the purchase date of the equipment is not within the warranty period.

All non-warranty repairs are warranted for a period of 90 days from the date of service.

BBE Sound, Inc. is NOT LIABLE FOR CONSEQUENTIAL DAMAGES. Should the unit fail to operate for any reason, our sole obligation is to repair it as described above. DO NOT RETURN ANY PRODUCT TO THE ABOVE ADDRESS WITHOUT INSTRUCTIONS AND AUTHORIZATION ISSUED BY THE ABOVE LOCATION.

Maintenance

Maintenance of the BBE Sonic Maximizer is limited to proper cleaning of the unit with mild household cleaner such as Formula 409™ or Windex™. The chassis and cover are steel finished with a durable polyurethane paint, while the front panel is an anodized aluminum extrusion.

There are no user replaceable parts and the unit should not be opened for any reason unless you are a qualified technician. Calibration should be performed if parts are replaced or if a performance check-out indicates a problem with calibration. Long term use has shown that over the life of this unit there is little or no drift of the components in the BBE Sonic Maximizer which would cause a change in calibration. A very conservative design philosophy has resulted in a piece of equipment which runs very cool and should give years of trouble-free service.



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covered by U.S. Patent 5,736,897 and other U.S. and foreign patents pending.

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