



Dear MC-220 Owner:

Thank you for your purchase of the MC-220 Active Direct Injection Box. The MC-220 is a quality product, made of the finest components in the U.S.A.

This owners manual contains several of the most common questions asked about the MC-220 and its uses and operation. Please read it carefully, as it covers how the box works, its applications, specifications and warranty. Please also fill out the warranty card and return it to us at AES.

We hope the following dialogue answers your questions about the MC-220 Active Direct Injection Box.

We wish you many happy years of music making with the MC-220. If you have any other questions about the MC-220 or any of the other fine AES products, such as the Tubecube Series of direct boxes, processors, and preamps, or our incomparable axrac modular signal processing system, contact your dealer, or write us directly.

Specifications:

Frequency Response: +0dB - 1dB: 10hz. - 30Khz.

Distortion: (9V Battery 0dBm @ 1Khz) 0.08%
Line Output - 15dB
Low Impedance Output Unity Gain

Noise: Band Limited 20hz - 20Khz, -103 dBm

Gain: Unity

Clip Level: 9V Battery +6dBm, 48V Phantom +20dBm

Input Impedance: Normal 10 Ω

Output Impedance: Suitable for loads of 1K or greater.

MC-220 Active Direct Injection (D.I.) Box

Question: What is the MC-220 Active Direct Injection Box?

Answer: The MC-220 Active D.I. Box is for directly connecting (injecting) any instrument or amplifier into a studio or Sound Reinforcement mixing console. As such, it eliminates the need to amplify the instrument, and then use the proper microphone to pick it up.

If you connect your guitar, bass, or electric keyboard straight into a mixer, much of the "presence" and "brilliance" disappears, and the instrument sounds "muddy". This is because mixers have a low input impedance, which means the output of your instrument is "loaded" down, altering the tonal balance. The MC-220 overcomes this problem by electronically isolating and matching your instrument to the mixing console. As such, your instrument "sees" no load at all (because of the extremely high input impedance) while a low impedance source is provided to drive the mixing console.

Question: How should I use the MC-220?

Answer: There are many varied uses for a D.I. Box.

Some of them are:

- A. To plug your instrument directly into a mixer, enabling you to play in the control room over the monitor loudspeakers.
- B. To plug your instrument directly into a sound reinforcement

mixer, eliminating the need to haul around an amplifier, while you listen through the stage monitor and main P.A. speakers.

- C. Between the Instrument and Instrument Amplifier. By taking a feed from the Low.Imp. Out put Jack into the musicians own amplifier/speaker, and a feed from the balanced output into the mixing console, you can get a clean undistorted sound and combine it with the distortion of the amplifier. This also enables you to have a console feed while monitoring on your own amp.
- D. Between the speaker output of an instrument amplifier and the mixing console. By plugging your amplifiers speaker output into the amplifier input jack on the MC-220, you can capture the sound of a particular amplifier without the attendant miking problems and limitations.
- E. Any time, in any studio, because the MC-220 offers superb performance, equal to the finest microphones while being far less expensive than keeping the necessary range of microphones.

Question: Why is the MC-220 Active (Transformerless), while most D.I.

Boxes are of the transformer type?


Answer: Because the easiest way to build a direct box is with a transformer. However, transformers have many drawbacks that can be eliminated by using the sophisticated active electronic circuitry that is found in the MC-220. As a result, the MC-220 has


* NO PHASE SHIFT - as such it retains proper phase relationships in subsequent mixes.

- * NO LOADING PROBLEMS - avoids the ringing problems inherent in transformers.
- * NO LOSS OF SIGNAL LEVEL - due to our unity gain active impedance converter.
- * NO TRANSFORMER DISTORTION - good clean sound down to 25hz.
- * IMPROVED TRANSIENT RESPONSE - wide band width.
- * SUPERB GROUND ISOLATION - from our automatic ground isolation active circuitry.
- * LOW CURRENT CONSUMPTION - for prolonged battery life and phantom powering flexibility.

Question: How do I power my MC-220?

Answer: The MC-220 may be powered by either one 9 Volt battery, or by the mixing console phantom power supply. Its low current consumption results in extremely long battery life.

Question: What is the  switch for?

Answer: When the  switch is pushed in, an active LOW PASS FILTER is inserted into the balanced output. This filter simulates the high end roll off characteristics of a typical guitar amplifier speaker.

Question: What is the "GND. LIFT" Switch for?

Answer: "GND." is the abbreviation of ground. This switch when pushed disconnects PIN ONE of the balanced output jack from ground. This is useful to eliminate "buzzing" and "hum" caused by a ground loop. The MC-220 offers superb ground isolation from the two outputs to the input jack to protect you from shock and to protect its circuitry. However, ground currents may exist.

This is usually caused by the instrument amplifier whose inputs may be plugged into the Low Imp. out and the mixing console, plugged into the balanced output. Typically the problem is caused by the A.C. power supply ground being the same on the instrument amplifier and the mixing console thus resulting in a ground loop. By pushing the switch, the GND terminal of the balanced out is disconnected, thus breaking the loop.

Question: How do I insert the 9 Volt battery into the MC-220?

Answer: The case of the MC-220 consist of two cover plates, each fastened to the front and rear panels by eight phillips head machine screws. To insert the battery, remove the eight screws from the top cover plate (the one with the words "audio envelope systems" and our logo on the top) and remove the cover plate. Upon removal you will see the metal battery clip, and the 9 Volt battery connector. Simply push the battery connector on to the battery, and carefully slide the battery into the metal clip (be carefull its a tight fit). Then replace the cover and screws, and you're done.

Question: If I use the MC-220 with Phantom Power, should I remove the battery.

Answer: It is not necessary to remove the battery when using phantom power, however, if you are using phantom power, and you push the ground lift switch, the unit will not operate. This is because the ground side of the phantom power has been disconnected. If the ground lift switch is pushed, the MC-220 must be operated via battery power.

Question: What if there's a problem with my MC-220?

Answer: First check and replace all your cables to be sure there's a problem with the MC-220, then contact your dealer. The MC-220 is covered by the following limited warranty by Audio Envelope Systems.

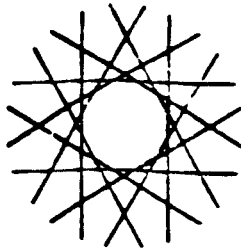
LIMITED WARRANTY STATEMENT

Audio Envelope Systems, Inc. (AES) warrants this product for a period of one year on parts and ninety days on labor from date of purchase. Proof of purchase date is considered to be the burden of the consumer. If this product is powered by batteries: batteries, or any damage to the unit caused by battery leakage are not covered by this warranty. NOTE: Please remove batteries prior to shipment to prevent corrosion damage. This warranty does not cover cosmetics or finish of the unit, or units that have been abused, modified or repaired by anyone other than AES or its authorized service centers. This warranty shall in no event include incidental or consequential damages of any kind. All implied warranties with respect to products sold by AES, including but not limiting to implied warranties are hereby excluded. This warranty does not cover acts of God.

Call or write to receive a return authorization number if repair of a unit is needed. Audio Envelope Systems will repair a unit under warranty, provided the unit is returned in the original carton, insured and postage prepaid, and provided the said return authorization number is first obtained. The unit will then be repaired or replaced at the sole discretion of AES, and returned to the user, postage prepaid. AES cannot be responsible for damage incurred during shipping, so please pack the unit carefully. You must receive a return authorization number prior to shipping the unit back to the factory. No units shipped to the factory without a return authorization number will be accepted. To obtain a return authorization number, contact:

Audio Envelope Systems Inc.
Service Department
P.O. Box 113
Scottsdale Az.
85252

(602) 834-3588



MINICUBE MC-220 WARRANTY REGISTRATION

FORM

**MC-220
Serial # _____**

NAME _____

ADDRESS _____

CITY _____ **STATE** _____ **ZIP** _____

Date Purchased _____

Dealer's Name _____

Address _____

City _____ **State** _____ **Zip** _____

I am a: **Musician**

 (instrument)

Recording Engineer

Recording Studio Owner/Manager,
or _____

Touring Sound Reinforcement Co. Owner/Manager,
or _____

Industrial Sound Contractor

Other

We would appreciate your comments on the MC-220 and your suggestions for future products. We listen.

Where did you hear about the Minicube MC-220 _____

Why did you purchase the sweet little thing? _____

Other comments? _____
