

Professional Microphones



E 100

Studio Condenser Microphone

**Specifications
and
User's Guide**



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E 100

The Equitek E-100 combines a dual electret condenser capsule design with advanced electronics. Typical FET (field effect transistor) condenser microphones use discrete designs. This means they use individual transistors that must be carefully matched for proper characteristics. Even with careful matching, discrete designs are inherently nonlinear. Equitek microphones use a different approach. We do not use any discrete FETs. Instead, we use advanced high speed OpAmps (Operational Amplifiers). These OpAmps are individually laser trimmed for optimum performance and have very high gain. This allows a large amount of negative feedback to be used to significantly reduce any non-linearity. During transients, these OpAmps may require more current than typical phantom power supplies can deliver. The extra current demands are accommodated by our unique power supply design. Instead of using phantom power to operate the microphone, we use it to charge a pair of rechargeable batteries. This system creates a huge current reserve for the microphone's electronics, yet there is no maintenance involved because the microphone automatically keeps the batteries charged during use. The use of OpAmps is not the only unique feature of Equitek microphones. For example, we also employ servo circuitry to minimize dc offset and eliminate interstage coupling capacitors. The bottom line is we believe you will find the Equitek E-100 to have a remarkably open and clean sound that will enhance any project.

Bob Eaton
Senior Microphone Engineer

Made with pride in Conneaut,
Ohio U.S.A.

Description

The Equitek E-100 from CAD is a single pattern supercardioid side address microphone designed for recording, broadcast and live applications. The implementation of high speed, low noise, low distortion electronics makes the Equitek E-100 the ideal candidate for the most critical applications.

The Equitek E-100 incorporates a number of unique features including:

- Servoed head amplifiers.
- High SPL Capability (148 dB SPL with pad).
- Transformerless balanced output circuits.
- Internal power reservoir system that can supply ten times the current available from phantom powering alone.
- Dual cantilevered capsule shock isolators.
- Remote operation without phantom power using internal batteries.
- 20 dB non capacitive pad.
- Stainless steel internal pop/EMI filter.
- Automatic power shut down circuit.

Switch Functions



- Power** ON = Microphone Power On
OFF = Microphone Power Off (Use this switch position for fastest charging of batteries. See below.)
- Hi-Pass** Left position = Low end roll off below 80 Hz.
Right Position = Flat low end response
- Pad** 0dB = Full gain (Highest Sensitivity)
-20dB = 20dB Gain reduction (Highest Clipping Level)

Getting Started

The E-100 requires 48 volt phantom power and the internal batteries must be charged for proper operation. Although the internal batteries were charged at the factory, the batteries will gradually self-discharge if the microphone has been in storage for a long time. It may be necessary to charge the batteries before initial use. Please see the section below on powering the Equitek E-100.

Caution!

The high gain and wide bandwidth of the E-100 microphone will easily overload the inputs of many professional mixing consoles if adequate precautions are not taken. This is especially true if the mic is going to be used on percussion or amplified electronic instruments. If you have never used this microphone before, we strongly recommend that you initially reduce the system gain by doing one or more of the following:

- Enable the pad switch on the input of your mixing console.
- Start with the input trim control on your mixing console turned down to a low level.
- Enable the -20 dB pad switch on the E-100 microphone.

Powering the Equitek E-100

The Equitek E-100 is powered by a combination of 48 Volt phantom power and a pair of rechargeable 9 volt batteries. This powering arrangement overcomes the inherent current limiting associated with most phantom power supplies. The batteries are trickle charged by the phantom supply. When needed, the batteries provide the extra current necessary during high SPL transients. The microphone will not function properly without the batteries present. The microphone can be used without phantom power for periods of up to 6 hours provided the batteries are fully charged. Standard 9 volt alkaline batteries can also be used if extended operation is needed when no phantom power is available.* (Auto power shut off circuit must be disabled for battery operation without phantom power.) The minimum requirement for the phantom supply is a regulated 48 volts with the capability of supplying at least 8 mA. of current. Supplies that do not meet this requirement will not allow continuous operation of the microphone. Before initial use, the batteries may need to be fully charged. Once the batteries have received this initial charge, they should not need to be charged in this manner again, unless the microphone is unused for a long time. The batteries can be charged by two different means:

- Connect the microphone to a phantom supply and allow the batteries to charge 12 - 14 hours with the mic turned off.
- Remove the batteries from the microphone and charge using a standard battery charger.

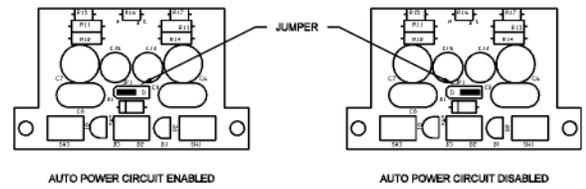
* See the section on Auto Power Shut Off. IF USING ALKALINE 9 VOLT BATTERIES, DO NOT APPLY PHANTOM POWER TO THE MICROPHONE! DOING SO COULD CAUSE PERMANENT DAMAGE TO THE MICROPHONE AND VOID YOUR WARRANTY!

NOTE: If you normally operate the microphone from phantom power, it is best to leave the microphone power switch in the "on" position at all times. (The microphone automatically shuts off to conserve battery power when phantom is power removed.)

Auto Power Shut Off Configuration

The following instructions are only important if you plan on using the E-100 without a phantom power supply, such as for remote DAT recording. The Equitek E-100 incorporates a circuit which shuts the microphone off if phantom power is removed. This is done so that battery power will be conserved if the user forgets to turn the microphone off. If it is desired to operate the microphone using only the batteries, this feature must be disabled or the microphone will not function. This is easily done by means of a small movable configuration jumper located inside the microphone. To gain access to the inside of the microphone, remove the grille screen by removing the two top screws. Then remove the switch cover by removing the two screws in the back of the mic behind the switch cover. The jumper is labeled JP1 and is located near the center of the printed circuit board. (See diagram.) The jumper shorts two of three available pins

to select the proper mode. From the factory, the two pins towards the left are shorted to enable the auto shut off circuit. To disable the circuit, pull off the jumper and replace it so that the two pins towards the right are shorted. The microphone can also be used with phantom power when it is in this mode, however you must remember to turn the microphone off when not in use or the batteries will be depleted.



A Special Note About Batteries

The high quality rechargeable batteries used in the Equitek E-100 are Nickel Metal Hydride type. They were selected to provide long life with virtually no maintenance and have a number of properties that make them superior to most commonly available rechargeable "9 volt" batteries:

- 1) Higher output voltage
- 2) Lower self discharge rate
- 3) High immunity to overcharging

If the E-100 is operated with a 48 volt phantom power supply it is unlikely they will ever need to be recharged, even if the microphone is unused for months. If it should ever become necessary to replace the batteries or if you simply want a spare set, we suggest that you buy replacements from us. This is not because we are trying to sell batteries, but because we want you to continue to realize the maximum performance capability of your Equitek microphone. Contact the CAD sales department to purchase replacement or additional batteries.

User Techniques and Applications

The Equitek E-100 has a built in swivel that allows easy microphone positioning and mates to any microphone stand that has standard 5/8" X 27 threads. Loosen the large thumb screw on the back of the mic to change the mic position. The E-100 can be used in a broad number of applications, ranging from live reinforcement to the most critical studio situations. The E-100 is ideal for vocals and voice overs, yet it also excels at some of the most demanding instrumental projects. The E-100 is great for virtually all acoustic, wind, and amplified instruments. One of the most popular uses for the E-100 is in miking drum sets, especially kick drums. The E-100 has been proven to be outstanding in all of these applications and more. Its uncolored sonic characteristics allow you to decide how an instrument or vocal will sound in the mix. The supercardioid polar pattern is very useful in live applications where feedback control and tight miking are required. The E-100 is available in hand selected, electronically matched pairs for stereo recording applications. The model number is E-100MP. The microphones come in a hard shell carrying case and are matched for output level and frequency response. (See photo below.)

Specifications

Type:

Side Address, Supercardioid Electret Condenser.

Frequency Response:

10-18 kHz (See Back Cover).

Polar Pattern:

Supercardioid (See Back Cover).

Impedance:

Low (200 ohms nominal).

Output Level At 1 kHz.:

Power Level:

-34 dB (0 dB = 1 mW per 10 microbars).

Open Circuit Voltage:

-55 dB (0 dB = 1 volt per microbar).

17.8 mV/Pascal.

Dynamic Range:

132 dB.

Equivalent Noise Level:

16 dB Equivalent SPL, A weighted.

Maximum Output Level:

With pad, .89 dBV.

Without pad, 8.9 dBV.

Maximum SPL:

148 dB SPL (With pad on).

Total Harmonic Distortion:

Less than 0.15%.

Signal-To-Noise Ratio:

78 dB (At 94 dB SPL).

Capsule Capacitance:

60 pF.

Powering:

Minimum Requirements are 48 - 52 Volts Phantom Power capable of delivering at least 8 mA.

Connector:

Three pin male XLR type.

Finish:

Durable black urethane. Brass plated front screen.

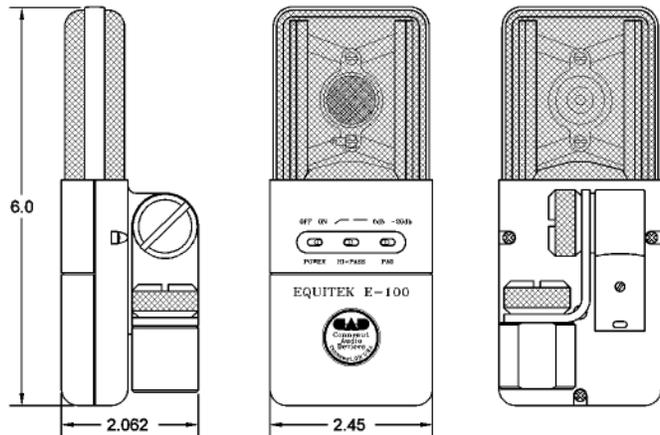
Dimensions:

2.45" (62.2 mm) Wide., x 6" (153.4 mm) High x 2.175 (55.2 mm) Deep.

Net Weight:

18 oz. (510 grams).

E-100MP Matched pair

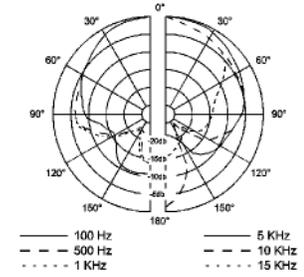
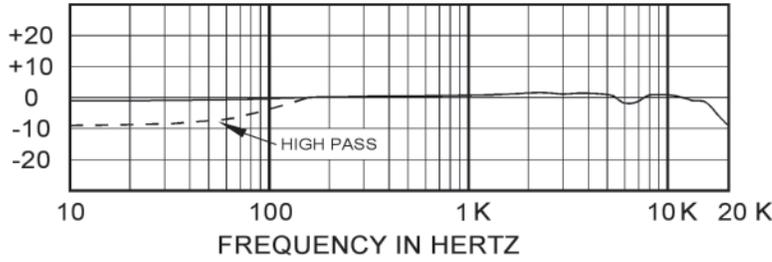


Optional Accessories:

- EPF-15 ... P-pop filter mounted on 15" gooseneck with standard bracket
- 40-350 50 ft. broadcast quality extension cable ..terminated with professional 3 pin male/female connectors.
- 40-351 100 ft. broadcast quality extension cable.
- 40-352 25 ft. broadcast quality extension cable.

Equitek E-100 Frequency and Polar Response

Supercardioid



TWO-YEAR LIMITED WARRANTY

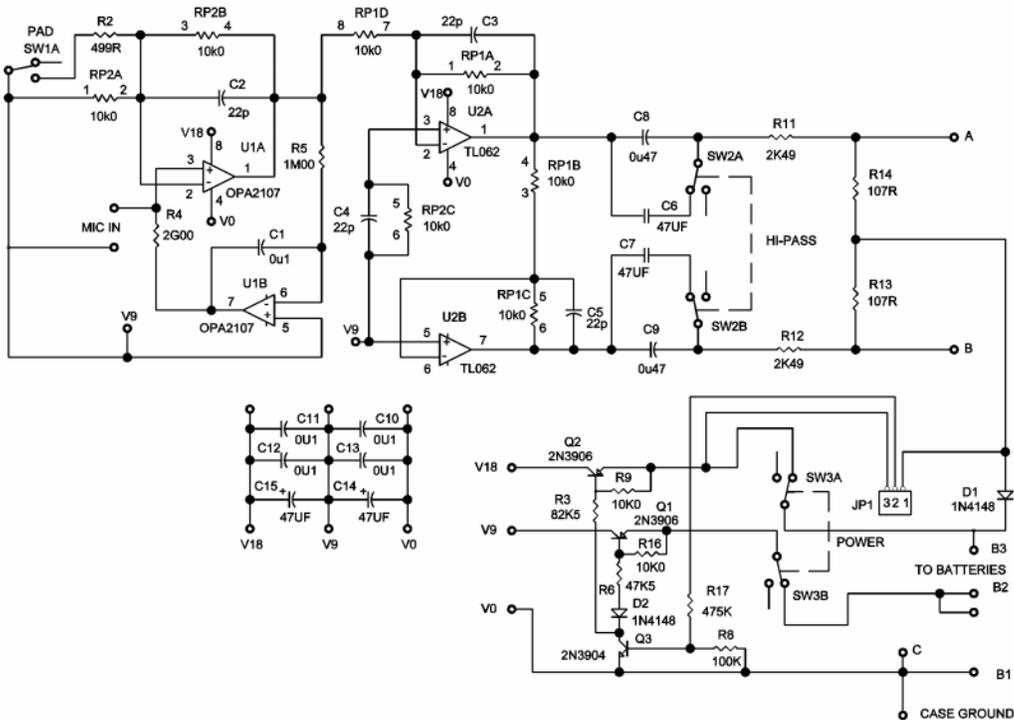
CTI Audio, Inc. ("CAD") hereby warrants that this product will be free of defects in material and workmanship for a period of two years from the date of purchase. In the unlikely event a defect occurs CAD will, at its option, either repair or replace it with a new unit of equal or greater value. You should retain proof of purchase to validate the purchase date and return it with any warranty claim. Return warranty claims carefully packed, insured and prepaid to the Service Department at the address listed below.

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Note: No other warranty, written or oral is authorized by CTI Audio, Inc.

Equitek E-100 Schematic



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