

AKG C-451E modular condenser microphone system



C-451E
Combination

DESCRIPTION

The AKG C-451E Condenser Microphone Modular System (CMS) represents the most unique, practical and economical approach in keeping pace with current ever-changing requirements encountered in the Recording, Broadcast, Motion Picture and Sound Reinforcement Industries.

The CMS is based on the C-451E preamplifier, using audio frequency circuitry with Field Effect Transistors. A choice of high quality, matched condenser microphone capsules, each with a different type of response characteristic and pick-up pattern may be freely interchanged on the C-451E preamplifier (see following page).

A complete selection of components and accessories, such as attenuation pads, suspensions, windscreens, etc., further illustrates the broad flexibility of the CMS.

The C-451E preamplifier may be phantom powered directly off the B+ supply of the associated (mixing console, tape recorder, etc.) equipments amplifier (for details on phantom powering technique see opposite page). Separate power supplies, such as the N-46E or N-6E a.c. power supplies and B-46E d.c. battery power supply are also available.

SPECIFICATIONS

Sensitivity	: —41 dB (1mw/10 dynes/cm ²) 1.1 mv/μbar	Current consumption	: 3-12 mA
Distortion	: 0.5% (200 μbar = 120 dB SPL)	Temperature range	: —5 to +160° F
Equivalent noise level	: 22 dB (DIN 45405) (RMS)	Humidity	: 90%/+80° F
Impedance	: 200 ohms	Dimension	: 5-7/16" X 3/4" dia.
Supply voltage	: 7.5-52v	Weight	: 4-1/2 oz.
		Connections	: XLR-3



C-451E C-452E C-451EB

Pre-amplifiers

DESCRIPTION

C-451E. Preamplifier with F.E.T. circuitry for phantom powering. For use with all capsules.

C-451EB. Preamplifier same as above but with two-step bass attenuator: at 50 Hz and 150 Hz.

C-452E. Preamplifier—Requires 48 v (+ 6 v; —8 v) phantom power supply (cannot be used with N-46E, N-6E, B-46E or AKG phantom powering; see opposite page).

powering technique

AKG C-412, C-414 and C-451E operate on voltage supplied by a phantom circuit. Standard low impedance, balanced microphone input receptacles are easily modified to simplex both operating voltage and audio output signal.

This unique powering feature offers several advantages in reduced cost and ease of condenser microphone operation.

- 1 Special, external power supplies and separate multiconductor cables formerly required with condenser microphones can be eliminated.
- 2 The B+ supply in associated recorders, audio consoles and commercial sound amplifiers can be used to directly power the C-412, C-414 and C-451E.
- 3 Dynamic, ribbon and condenser microphones can be used interchangeably on standard, low impedance, balanced microphone circuits.
- 4 Any recording, broadcast and commercial installation can be inexpensively upgraded to condenser microphone operation using existing, two-conductor microphone cables and electronics.

DIRECT AMPLIFIER POWERING

Phantom circuit use of C-412, C-414 and C-451 requires only that the microphone operating voltage be applied equally to pins #2 and #3 of the amplifier low impedance input receptacle. Pin #1 remains ground and circuit minus. The polarity of standard microphone cable wiring is not important except for the usual audio phasing requirement.

Dynamic, ribbon, and self-powered condenser microphones may be connected to the modified amplifier input without defeating the C-412, C-414 and C-451E operating voltage. Two equally effective methods of amplifier powering can be used:

- 1 Connect an amplifier B+ supply of 7.5 to 12 volts directly to the ungrounded center tap of the microphone input transformer. See DIAGRAM 1. A series dropping resistor is required for above 12 and up to 52 volts. See RESISTOR VALUE CHART 3. With a typical 24 volt B+ supply use a 4700 ohm 5% tolerance resistor for minimum current consumption.
- 2 A two-resistor, artificial center tap powering circuit is required when the microphone input transformer is not center-tapped, or input attenuation networks are used across the input transformer primary.

Connect a B+ supply of 7.5 to 12 volts directly to the artificial center of two 332 ohm, 1% tolerance precision resistors. Input transformer center tap is not grounded. See DIAGRAM 2 and RESISTOR VALUE CHART 3 for above 12 and up to 52 volts. Double chart resistor value. With a typical 24 volt B+ supply use two 9310 ohm precision resistors for minimum current consumption.

Any number of units may be powered by either method from a single B+ source according to the current available. Use of the largest resistor value shown (Rv max.) for various voltages in CHART 3 is recommended for minimum current consumption (J min.). Current consumption (J min. to J max.) is shown in CHART 4.

When minimum current consumption is not a consideration note that an intermediate series resistor value will permit operating units from a wider range of B+ supply voltage. For example: 1000 ohms resistor with 13 to 15 volts; 1500 ohms with 14 to 18 volts; 2200 ohms with 17 to 26 volts; 3300 ohms with 20 to 46 volts; 4700 ohms with 24 to 52 volts. Double these values for both precision resistors when using the artificial center tap method.



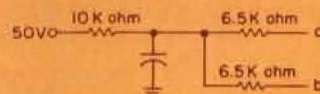
A-52 accessory IC powering module will conveniently modify any amplifier low impedance balanced input and will phantom feed one C-412, C-414 or C-451E.

A-52 module includes the two, 1% dropping resistors required for artificial center powering as in DIAGRAM 2. The input voltage lead connects to any amplifier B+ supply from 13 to 61 volts. A Zener diode stabilizes C-412, C-414 and C-451E powering voltage.

A-52 output leads are connected to pins #2 and #3 on the amplifier microphone input receptacle. Microphone transformer center tap is not grounded when using A-52.

One A-52 is required for each input modified to power C-412, C-414 or C-451E. Dynamic, ribbon and self-powered condenser microphones may be used interchangeably on inputs using A-52, as on all AKG phantom powering circuits.

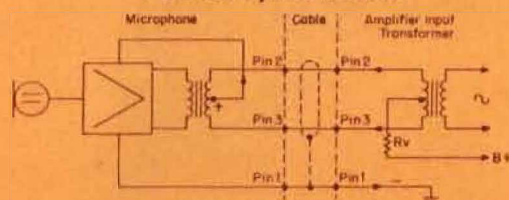
In order to facilitate phantom powering of AKG models C-412, C-414, C-451E and F.E.T. condenser microphones requiring 48v (+6v, -8v), a 50v tap is required and the following circuit should be employed:



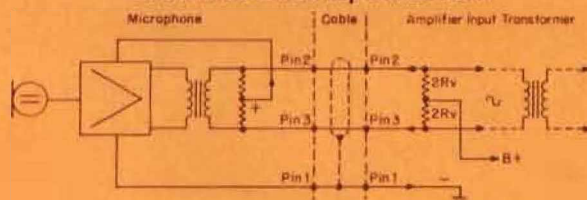
The effective series resistance is 10 K ohm plus two 6.5 K ohm resistors in parallel, for a total of 13.25 K ohm. For microphones with a load current of 3 mA the voltage drop will be 39.75v, resulting in a microphone operating voltage of 10.25v, required for the AKG C-412, C-414 and C-451E.

For microphones with a load of 0.4 mA the voltage drop will be 5.3v, resulting in a microphone voltage of 44.7v, suitable to operate F.E.T. condenser microphones requiring 48v (+6v, -8v) operating voltage.

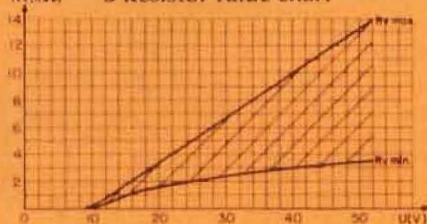
1 Center tap connection



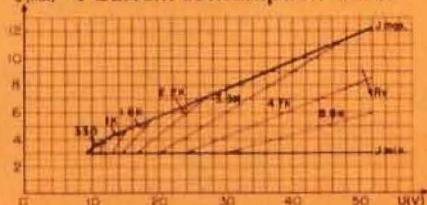
2 Artificial center tap connection



3 Resistor value chart



4 Current consumption chart



5 Multiple microphone connection; common tap

