

SPECIFICATIONS

Logic Channels

Minimum Triggering Signal: 140 mV

Maximum Input Signal:

40 V RMS continuous

Switching Time:

0.5 second, maximum

Input Impedance, Each Channel:

4700 ohms

Audio Signal Channels (20-20,000 Hz, 5000 ohm load, unless noted)

Gain:

Frequency Response (flat):

±0.1 dB 10-100,000 Hz

Maximum Input Level:

8 V RMS

High Level Bandwidth:

20-20,000 Hz at full output

(no slewing)

Minimum Load Resistance:

600 ohms

Total Harmonic and Intermodulation Distortion:

Less than 0.01% typical;

0.025% maximum

Channel Separation,

up to 1000 Hz: 65 dB minimum

10,000 Hz:

45 dB typical

Noise Output, Wideband Unweighted:

80 microvolts maximum

Equalization,

Second-order under-damped filter with plus-6-dB boost to complement Thiele Alignment 15 requirements Peak-Boost Frequencies:

39 Hz, Interface: A;

35 Hz, Interface: B/C;

32 Hz, Interface: D/SEQ.

Output in phase with input

General

Mounting:

Standard 19" rack panel, 1¾" high, 5½" deep

(including terminals)

Power Requirements:

100 to 130 V, 50/60 Hz, 12 watts, maximum

Net Weight:

4 lb

DESCRIPTION AND APPLICATION

The Electro-Voice Conquest IV is a twochannel (stereo), automatic-switching equalizer. It allows A-B comparisons among those Electro-Voice Interface speaker systems which require low-level equalization, where existing facilities do not provide the required equalizer switching capability. The Conquest IV is intended for use in conjunction with existing demonstration switching equipment, such as found in a typical dealer showroom or listening salon. Conquest IV also accommodates Electro-Voice Sentry systems in the "step down" mode (SEQ equalizer) as

unequalized speakers which may be in the showroom.

When properly installed, the Conquest IV will sense the presence of a signal on whichever speaker system is operating · and automatically provide the appropriate equalization for that system. Great care has been exercised in design so that no signal degradation takes place in any of the flat or equalized modes of operation. In addition to any number of unequalized systems, a maximum of five equalized systems may be accommodated by the built-in equalizers as follows:

- 1. One Interface: A Series III system.
- 2. Two Interface: B Series III or Interface: C Series II systems (any combination).
- 3. Two Interface: D or Sentry systems (any combination).

Also, an external equalizer may be added to provide any desired response for a sixth equalized system.

Since there are no operating controls on the unit, it may be placed out of the way in any convenient location. However, the five indicator lights on the front panel will aid in system check-out during installation and will serve to verify correct operation of the system at any time. Because of its very low AC power consumption the unit may be left on continuously or it may be controlled by the master nower switch

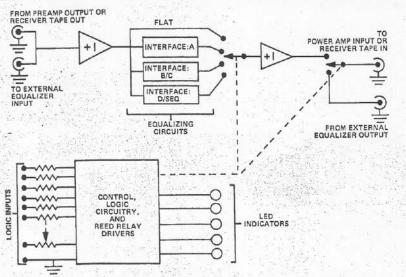


FIGURE 1 - Conquest IV Block Diagram, One Channel Only

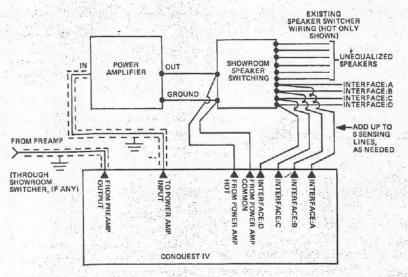


FIGURE 2 - Typical Conquest IV Connections, One Channel Only

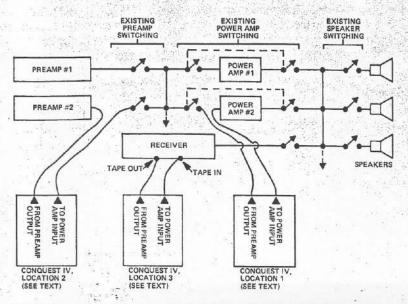


FIGURE 3 — Three Locations for Insertion of Conquest IV Equalization
Circuits into a Typical Showroom Switching System,
One Channel Shown

CIRCUITRY

Figure 1 shows a block diagram for one channel of the Conquest IV. To avoid the possibility of signal degradation, however minor, reed relay switching was chosen over totally electronic gating. The actual equalizing circuits are the same active, second-order configuration employed in the various Interface and Sentry equalizers. The latest generation of low-noise, high-speed operational amplifiers are employed for the active circuitry. They allow low distortion and freedom from slew limitation to well above the audio spectrum.

The signal-sensing comparator inputs monitor the signal voltage on each speaker line, and turn on the appropriate equalization when its level is within about 2 dB of the amplifier output. (This 2 dB allows for possible contact and wiring loss in the showroom speaker switcher circuitry.) In the absence of any speaker sensing signal while there is amplifier output, the logic turns on the "flat" channel. A latching action is provided so that in the absence of amplifier output the equalization channel will not change. Therefore, a pause in the signal will not result in "back and forth" or random equalization changes.

INSTALLATION

Logic (Signal Sensing) Connections The comparator inputs, as identified on the top panel, should be connected directly to the existing showroom speaker-switching terminals. The type of wire or cable used is not critical and it need not be shielded nor of heavy gauge. For neatness, it may be desirable to use multi-conductor cable or to bundle and tape the individual wires together. 20- to 28-gauge conductors are satisfactory but should be stranded for good flex life. Any terminals not required on the Conquest IV should simply be left unconnected. Specifically, do not attach any sensing (comparator) lines to the Conquest IV unless they are ultimately connected to a speaker or amplifier at the other end. There is no restriction on the length of the cable, although long, unnecessary lengths should be avoided. See Figure 2 for a typical connection. For clarity, some system wiring has been omitted (e.g., speaker system return leads).

Audio Signal Connections
The audio signal section of the
Conquest IV (which contains the
equalizing circuits) should be connected





into the system using high-quality, low-capacitance, single-conductor shielded cable, terminated in an RCA-type phono plug. Figure 3 shows three basic ways of connecting this equalizer portion into a typical showroom system. Again, for simplicity, some system wiring details have not been shown:

- At the input of power amplifier.
 This location requires that the same power amplifier be used at all times when the Conquest IV switcher is to be operative but allows freedom of selecting various preamps and program sources.
- At the output of a preamplifier.
 This location requires that this particular preamplifier be used at all times when the Conquest IV switcher must be operative but allows freedom in selecting various power amplifiers.
- In the tape loop of a receiver or integrated control amplifier. This, similarly, demands that the receiver be selected whenever it is required that the Conquest IV be operational.

The decision of which one of these three connections to adopt depends primarily on which one showroom component, i.e., preamplifier, power amplifier, or receiver, one wishes to "dedicate" to the automatic equalizing system.

Grounding

To prevent false triggering (more than one equalizer turning on at one time), it is important that the ground (or "common" or "return") wires from the speakers and the Conquest IV be returned to the point at which all the speaker ground wires are joined. Figure 4 shows the idealized proper connection. Figure 5 shows a "common bus" system which should not be used. Such an improper situation might be encountered where speakers are placed on a long shelf along which a "common ground" wire is strung for convenience. The minute resistance of the several feet of wire between each individual "grounding point" may result in false equalizer triggering.

Figure 6 shows an appropriate hookup where the single ground point of Figure 4 is replaced by its practical equivalent: the "speaker ground" terminals of the existing speaker switcher, all on one chassis and wired together. Logic connections are not shown, for clarity.

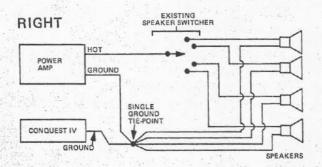


FIGURE 4 — Proper "Single-point" Grounding of Conquest IV
Installation (idealized), One Channel Only

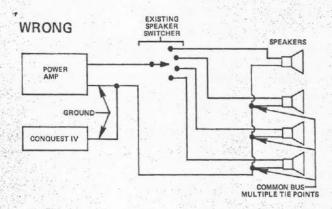


FIGURE 5 – Improper "Common bus" Grounding of Conquest IV
Installation, One Channel Only

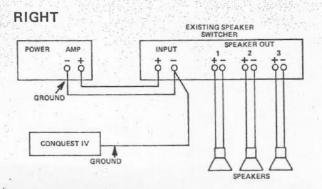


FIGURE 6 - Proper "Single-point" Ground of Conquest IV
Installation (practical example), One Channel Only

Symptom	Possible Cause	Remedy
More than one LED on at a time	AC power just applied.	Apply normal signal.
	Comparator leads from power amp disconnected.	Connect leads and check for an open.
	System improperly grounded.	See "Grounding" section.
	No speaker system connected to one or more comparator leads.	Disconnect unused leads at Conquest IV terminal strip.
No LED's light.	No AC power to unit.	Check plug and AC outlet.
EXT light comes on, but audio is dead.	No external equalizer is plugged in.	Install equalizer (jumper cable may be used for a test).
	External equalizer inputs and outputs are reversed.	Check and correct wiring.
	No AC power to external equalizer.	Check equalizer plug and AC outlet
One channel LED will not light.	Comparator leads for that channel not connected.	Check connections at both ends of leads.
	Comparator leads accidentally grounded.	Check for signal with AC voltmeter.
LED comes on when corresponding speaker cone is tapped by hand.	This is normal.	The LED will latch "on" until a signal is fed to power amp.



TROUBLE SHOOTING

Figure 7 is a trouble-shooting chart which should be useful in diagnosing and remedying any operational difficulties which are encountered after Conquest IV hookup is complete.

WARRANTY (Limited) -

Electro-Voice Conquest IV is guaranteed for two years from date of original purchase against malfunction due to defects in workmanship and materials. If such malfunction occurs, unit will be repaired or replaced (at our option) without charge for materials or labor if delivered prepaid to the proper Electro-Voice service facility. Unit will be returned prepaid. Warranty does not cover finish or appearance items or malfunction due to abuse or operation at other than specified conditions. Repair by other than Electro-Voice or its authorized service agencies will void this guarantee.

For shipping address and instructions on return of Electro-Voice products for repair and locations of authorized service agencies, please write: Service Department, Electro-Voice, Inc., 600 Cecil Street, Buchanan, Michigan 49107 (Phone 616/695-6831) or 8234 Doe Avenue, Visalia, CA 93277 (209/625-1330, -1).

Electro-Voice also maintains complete facilities for non-warranty service.

Service and repair address for this product: Electro-Voice, Inc., 600 Cecil St., Buchanan, Michigan 49107.

Specifications subject to change without notice.



