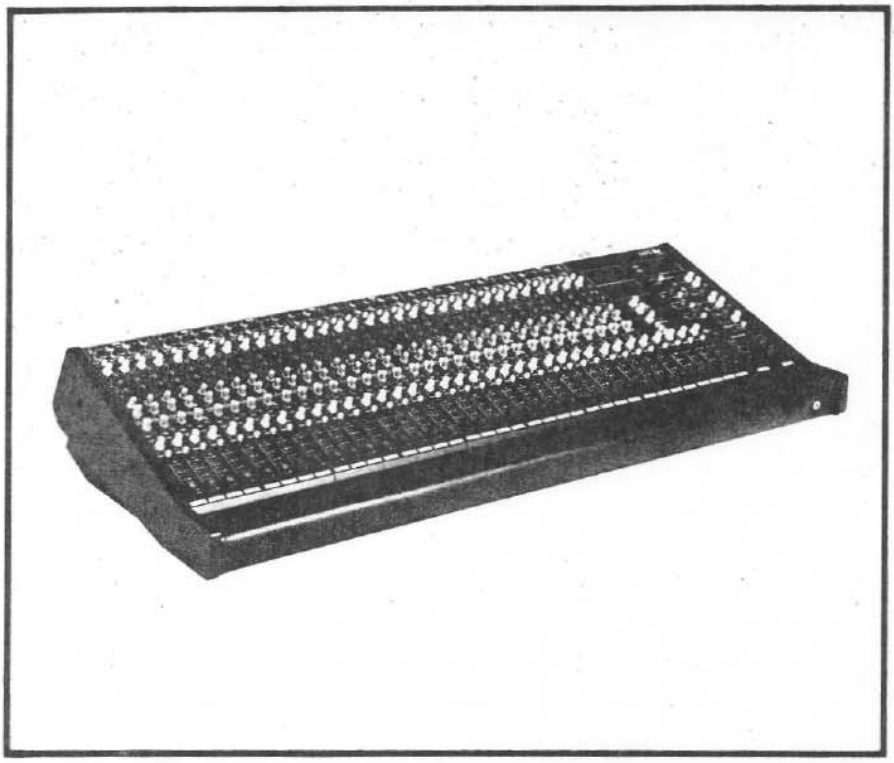


Electro-Voice®
a gulton company

8400 Series
High-Performance Mixing Consoles

GENERAL SPECIFICATIONS

Frequency Response,
Mic Input at Maximum Gain or Line Input at Unity Gain to Any Output:
20-20,000 Hz ±2 dB
50-20,000 Hz ±1 dB
Any Other Input (except talkback) to Any Output:
20-20,000 Hz ±0.5 dB

Total Harmonic Distortion, Transformer Isolated Outputs, 600-Ohm Load,
20-20,000 Hz at +4 dBu Output:[1]
Less than 0.1%
50-20,000 Hz at +24 dBu Output:
Less than 0.1%

Equivalent Input Noise (150-ohm source):[2]
−129 dBu typical

Output Noise at Transformer Isolated Left and Right Outputs, All Faders Down Except as Indicated,
Stereo Masters at Nominal ("0"):[3]
−76 dBu maximum
Stereo Masters and Subgroups at Nominal:
−76 dBu Maximum
One Input, Stereo Masters and Subgroups at Nominal (64-dB gain):[3]
−65 dBu typical

Output Noise at Transformer Isolated Monitor or Auxiliary Outputs, Masters at Nominal ("0"), All Other Faders Down:[3]
−80 dBu maximum

Maximum Voltage Gain,
Mic Input to Channel Send Output:
58 dB typical
Line Input to Channel Send Output:
22 dB typical
Tape Input and Effects Returns to Transformer Isolated Left and Right Outputs:
38 dB typical
Talkback Input to Transformer Isolated Left and Right Outputs:
68 dB typical
Mic Input to Transformer Isolated Left and Right Outputs:
100 dB typical

Slide Fader Reserve Gain:
12 dB

Pan Control Center Attenuation:
3 dB

Adjacent Channel Crosstalk at 1,000 Hz:
−68 dB

Channel Feedthrough at 1,000 Hz, Nominal ("O") Control Settings, Channel Unassigned:
−68 dB

Power Requirements:
95-125 volts, 60 Hz[4], 90 watts maximum

Colors, Materials, and Finishes,
Chassis:
Black painted metal with light grey graphics
Knobs and Switches:
Black and grey (3 shades)
End Caps:
Black painted wood
Arm Rest:
Black textured vinyl, padded

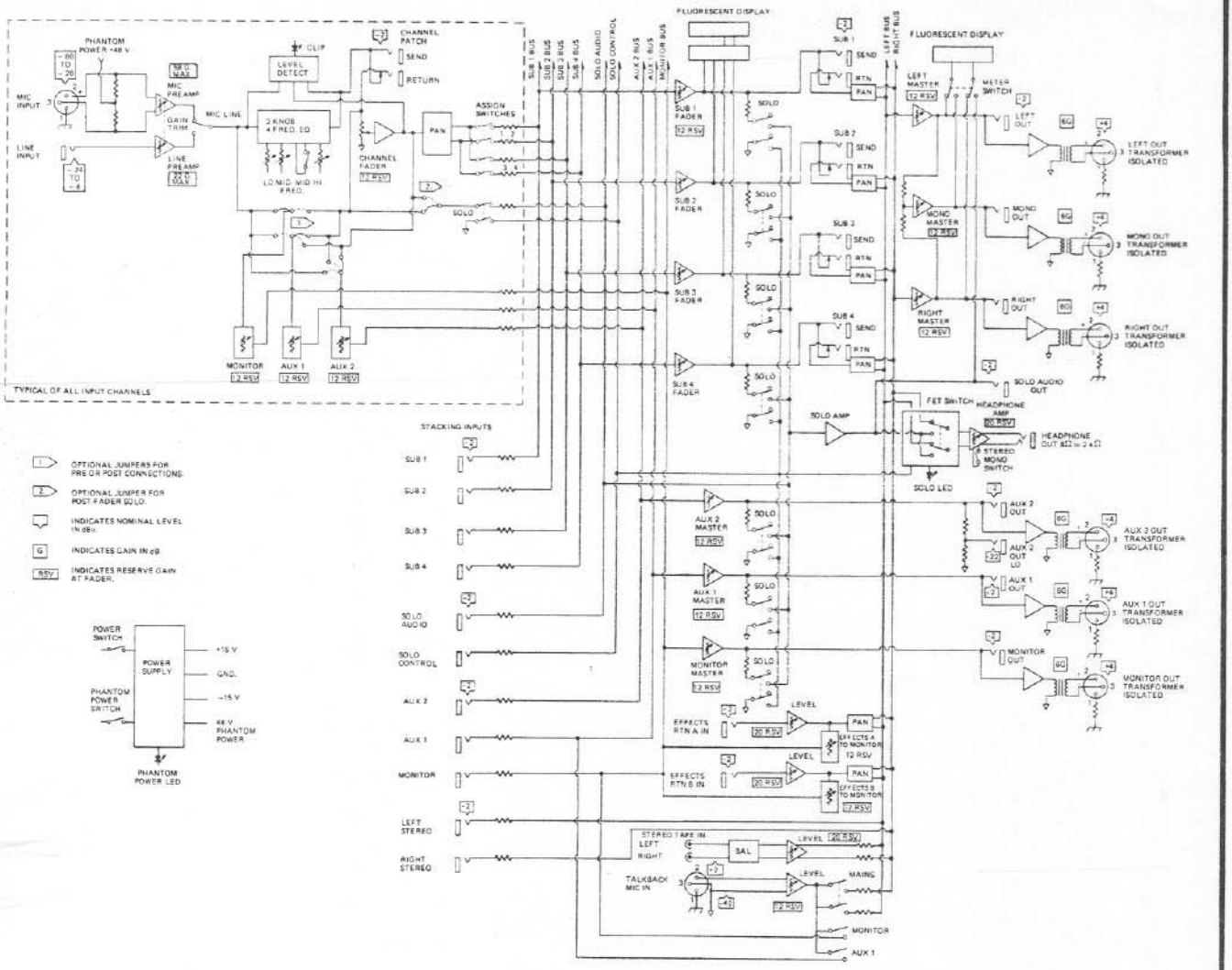
Dimensions,
Height:
22 cm (8.5 in.)
Depth:
46.7 cm (18.4 in.)
Width,
8408:
54.6 cm (21.5 in.)
8416:
80.0 cm (31.5 in.)
8424:
105 cm (41.5 in.)
8432:
131 cm (51.5 in.)

Net Weight,
8408:
17 kg (37 lb)
8416:
24kg (52 lb)
8424:
30 kg (67 lb)
8432:
37 kg (82 lb)

Shipping Weight,
8408:
20 kg (43 lb)
8416:
26 kg (58 lb)
8424:
34 kg (74 lb)
8432:
41 kg (90 lb)

1. 0 dBU is 0.775 volts RMS sine wave. Since the load is specified at 600 ohms, dBu figures may also be read as dBm, a power measure where 0 dBm is 1 mW into 600 ohms.
2. 20-20,000-Hz bandwidth, input gain at "60."
3. Input gain at "60," 20-20,000-Hz bandwidth, 150-ohm source.
4. On special order, models for 100, 120, 220 and 240 volts, 50-60 Hz, are available.

For Input and Output Specifications see back page.



8400 SERIES BLOCK DIAGRAM

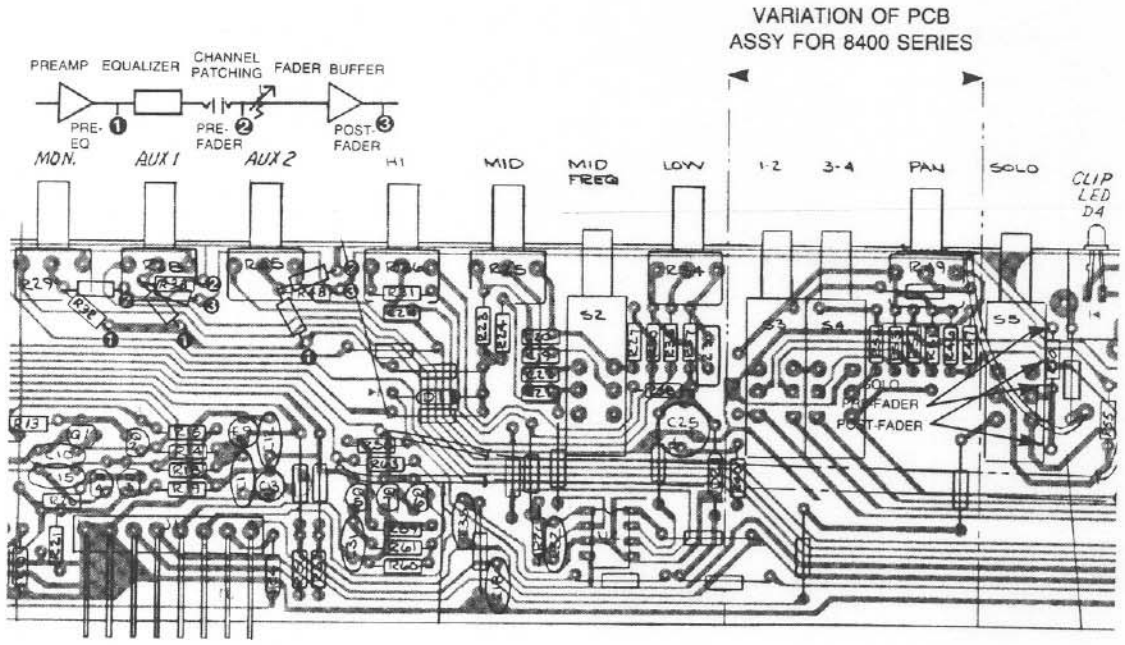


FIGURE 1 — Location of Input Channel Board Modifications

The Electro-Voice 8400 Series Mixers are high-performance/high-value consoles designed for fixed or portable professional sound reinforcement systems. Features and performance also make them appropriate for broadcasting and recording applications.

All models have left, right, mono, monitor, auxiliary 1 and auxiliary 2 outputs, all with unbalanced and transformer isolated connections. Transformer isolation reduces hum and noise caused by ground loops.

GENERAL FEATURES

- Equal headroom in all stages for optimum noise performance.
- Gain-calibrated level controls for visual check of mixer stage gain.
- Optimum circuit design to reduce harmonic and intermodulation distortion to inaudible levels.
- Transient performance not slew-rate or power-bandwidth limited under any operating conditions, 20-20,000 Hz.
- Space-saving compact design with optimum tilt.
- Six fluorescent bargraph meters calibrated for O dB = +4 dBm at transformer isolated outputs (−2 dBu unbalanced outputs).

INPUT SECTION FEATURES

- Separate microphone and line preamps and connectors, switch selectable.
- 48-volt phantom power for microphone inputs.
- Circuitry to accommodate input levels from speech with distant microphones to close miking of rock music.
- Continuously variable input gain controls with 11 detents for quick and accurate resetting.
- Preamplifiers with −129 dBu equivalent input noise, high gain and very low distortion.
- Three-band EQ with switchable midrange center frequency. Shelving frequencies are 100 Hz and 10 kHz; midrange center frequencies are 600 Hz and 3.5 kHz.
- Three auxiliary send controls modifiable at each input for pre- or post-EQ or -fader.
- Center detents for equalizer and pan controls.
- Send and return jacks on each input, for insertion of external signal processing devices.
- Pre-fader solo system modifiable to post-fader, with LED indicator and metering.

SUBGROUP SECTION FEATURES

- Fader, pan control, send/return jacks and solo switch for each subgroup.
- Separate tape input with level and balance controls.
- Assignable "talkback" input for house or stage communications.

OUTPUT SECTION FEATURES

- Independently adjustable mono output, plus stereo.
- Stacking input jacks for all buses, to link with other mixers.
- Powerful headphone amp with level control, mono switch and solo interrupt.
- Two effects-return inputs with level, pan and monitor-send controls.

CONNECTIONS

- All microphone inputs have female XLR-3-type connectors. Pin 2 is positive, pin 3 is negative.
- The six transformer-isolated outputs have male XLR-3 type connectors. Pin 2 is positive, pin 3 is negative.
- The left and right tape input jacks are RCA phono jacks.
- The headphone connection is a three-conductor ¼" phone jack. The tip is the left channel; the ring is the right channel.
- All other connections on the mixer are two-conductor ¼" phone jacks.
- All stacking jacks are line-level inputs except the solo control jack, which will switch the headphones and light the indicator LED when a 10,000-ohm resistance is connected from the tip contact to ground.

CIRCUIT BOARD MODIFICATIONS

These modifications are for changing the signal takeoff point for the monitor, auxiliary 1 and auxiliary 2 send controls, and the solo push-button. Any combination of these modifications can be performed on any number of the inputs.

To remove circuit boards:

1. Set the mixer on its right end (with the power cord at the bottom). Sixteen-channel and larger mixers should be supported so that they won't fall.
2. Remove the bottom cover held by #6 Phillips screws.
3. Unfasten the bottom pan held by #8 Phillips screws. There are two at each end of the bottom pan and the rest are along the front and back edges. Then swing the bottom pan open around the back edge so that the wiring connections are maintained.
4. Starting at channel one, remove the bus connectors down to the highest-number channel to be modified. Pull off the knobs from each channel and remove the nuts from the pots and the send and return jacks. Remove the hex screws at each end of the slide fader and then the #6 screw next to the line input jack. A slight push on the microphone connector will loosen the circuit board for removal.
5. To reinstall the boards, reverse this procedure. Be sure all pots have lockwashers, slide fader spacer is properly installed, and the clip LED if fitted into its hole.

To modify circuit board (refer to Figure 1):

1. The monitor-send control is set at the factory for pre-equalizer operation. To change it to post-equalizer, pre-fader, move one lead of R32 from the pre-equalizer position to the pre-fader position. Do not move the other lead.
2. The auxiliary 1 send control is set at the factory for post-equalizer, pre-fader operation. To change this, move one lead of R33 to the pre-equalizer or post-fader position. Do not move the other lead.
3. The auxiliary 2 send control is set at the factory for post-fader operation. To change this, move one lead of R48 from the post-fader position to the pre-fader or pre-equalizer position. Do not move the other lead.
4. The solo switch is set at the factory for pre-fader operation. To change it to post-fader, move R50—both leads—to the position marked "post-fader" in Figure 1.

ARCHITECT'S AND ENGINEER'S SPECIFICATIONS

The mixer shall have 8 [16, 24, or 32] input channels, each with two rear-panel inputs: (1) an electronically balanced female XLR-3-type connector for low-level sources and (2) an unbalanced ¼-inch jack for line-level sources; a front panel switch shall select the active input to the channel. Each input channel shall have these front-panel controls: input selector switch for line or microphone input; preamp gain control with continuous action and eleven click positions; monitor, auxiliary 1 and auxiliary 2 mix controls with 12-dB reserve gain; a four-band, three-knob equalizer with 15-dB shelving capability at 100 and 10,000 Hz, 12-dB peak or dip at 600 or 3,500 Hz, selector switch for peak/dip frequency selection; two channel-assign switches; pan control with 3-dB center attenuation; solo switch; and a slide fader with calibrated gain settings. Each input channel shall have a normalled pair of post-equalizer pre-fader patching jacks, and a clip indicator with three-point clip sensing.

There shall be four subgroups; each with a pan control, solo switch, slide fader with calibrated gain settings, and fluorescent bargraph meter. Each subgroup shall have a normalled pair of post-fader ¼" patching jacks.

There shall be output level controls and solo switches for the monitor, auxiliary 1 and auxiliary 2 outputs; a mono output control; a headphone level control with stereo/mono switch and solo/headphone-interrupt status indicator; left and right master slide faders with calibrated gain settings; and two fluorescent bargraph meters with a selector switch for metering the left and right outputs or the mono and solo outputs.

There shall be left and right input connections with RCA-type jacks for a tape recorder (or other line level source), and level and balance controls for this input; a female XLR-3-type connector for a talkback microphone, a talkback level control, and three momentary pushbutton switches for sending the talkback signal to the main (left, right, and mono), monitor, or auxiliary 1 outputs; two effect return channels with ¼" jacks for input connections; and level, pan and monitor send controls for each effect return channel.

Output connections shall be provided as follows: male XLR-3-type connectors for left, right, mono, monitor, auxiliary 1, and auxiliary 2 transformer isolated outputs; ¼-inch jacks for left, right, mono, monitor, auxiliary 1, auxiliary 2 high-level, auxiliary 2 low-level, and solo balanced outputs; and a three-conductor ¼-inch jack for headphones.

Stacking inputs with ¼-inch jacks shall be provided for the following mix buses: left, right, mono, monitor, auxiliary 1, auxiliary 2, solo audio, and solo control, and subgroups 1, 2, 3 and 4.

A main power switch and a phantom-power switch shall be located on the rear panel.

Phantom power for the microphone inputs shall be 48 Vdc and a phantom-power indicator shall be located on the control panel.

The mixer shall operate on 120 Vac (or 100, 220, or 240 V) and draw less than 90 watts.

The mixer shall meet or exceed the following performance specifications: frequency response from microphone or line input to any output, ±2 dB 20 Hz to 20 kHz, ±1 dB 50 Hz to 20 kHz; any other input (except talkback input) to any output, +0, −1 dB 20 Hz to 20 kHz; total harmonic distortion of less than 0.1% 20 Hz to 20 kHz at +4-dBu output level, less than 0.1% 50 Hz to 20 kHz at +24-dBu output level; equivalent input noise of −129 dBu 20 Hz to 20 kHz with 150-ohm source and maximum preamp gain; maximum voltage gain of 100 dB (microphone input to stereo output); and adjacent channel crosstalk of −68 dB at 1 kHz. The cabinet shall be made of black painted sheet metal with painted wood end panels and a vinyl covered padded armrest, and shall have the following dimensions: height, 22 cm (8.5 in.); depth, 46.7 cm (18.4 in.); width, 54.6 cm (21.5 in.) [16 channel, 80.0 cm (31.5 in.) wide; 24 channel, 105 cm (41.5 in.) wide; 32 channel, 131 cm (51.5 in.) wide]. The weight shall be 17 kg (37 lb) [16 channel, 24 kg (52 lb); 24 channel, 30 kg (67 lb); 32 channel, 37 kg (82 lbs)]. The mixer shall be an Electro-Voice model 8408 (8416, 8424, or 8432).

WARRANTY (Limited) —
Electro-Voice Professional Sound Reinforcement Electronic Products are 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 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 Electro-Voice West, 8234 Doe Avenue, Visalia, CA 93277 (Phone: 209/651-7777).

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

Service and repair address for this product: Electro-Voice, Inc., 3810 148th Avenue, N.E., Redmond, Washington 98052 (Phone: 206/881-9555).

Specifications subject to change without notice.

INPUT SPECIFICATIONS

Input Impedance,
- Mic: 8,300 ohms
- Line: 26,000 ohms
- Channel Returns: 5,000 ohms
- Subgroup Returns: 8,000 ohms
- Effects Return A and B: 20,000 ohms
- Tape In Right, Left: 24,000 ohms
- Talkback Mic In: 10,000 ohms
- Stacking,
  - Left, Right, Subgroup 1-4: 47,000 ohms
  - Solo Audio: 20,000 ohms
  - Mon, Aux 1 and Aux 2: 30,000 ohms

Nominal Level,
- Mic,
  - Gain Control at "60": −60 dBu
  - Gain Control at "20": −20 dBu
- Line,
  - Gain Control Maximum: −24 dBu
  - Gain Control Minimum: +8 dBu
- Channel Returns: −2 dBu
- Subgroup Returns: −2 dBu
- Effects Return A and B: −2 dBu
- Stacking,
  - Left, Right, Subgroup 1-4: −2 dBu
  - Solo Audio: −2 dBu
  - Mon, Aux 1, and Aux 2: −2 dBu

Maximum Level,
- Mic,
  - Gain Control at "60": −40 dBu
  - Gain Control at "20": 0 dBu
- Line,
  - Gain Control Maximum: −4 dBu
  - Gain Control Minimum: +28 dBu
- Channel Returns: +18 dBu
- Subgroup Returns: +36 dBu
- Tape In Right, Left: +30 dBu
- Talkback Mic In: +6 dBu
- Stacking,
  - Left, Right, Subgroup 1-4: +36 dBu
  - Solo Audio: +18 dBu

OUTPUT SPECIFICATIONS

Output Impedance,
- Channel Sends: 560 ohms
- Unbalanced Mains, Mon, Aux, Solo, Subgroup Sends:[1] 68 ohms
- Transformer Isolated Mains: 100 ohms
- Headphone: 68 ohms

Load Impedance,
- Channel Sends: 10,000 ohms
- Unbalanced Mains, Mon, Aux, Solo, Subgroup Sends:[1] 2,000 ohms
- Transformer Isolated Mains: 600 ohms
- Headphone: Any impedance

Nominal Output,
- Channel Sends: −2 dBu
- Unbalanced Mains, Mon, Aux, Solo, Subgroup Sends:[1] −2 dBu
- Transformer Isolated Mains: +4 dBu
- Headphone,
  - 8-ohm Load: −22 dBu
  - 600-ohm Load: −2 dBu

Maximum Output,
- Channel Sends: +18 dBu
- Unbalanced Mains, Mon, Aux, Solo, Subgroup Sends:[1] +18 dBu
- Transformer Isolated Mains: +24 dBu
- Headphone,
  - 8-ohm Load: −2 dBu
  - 600-ohm Load: +18 dBu

1. The auxiliary 2 low output is preceded by a 20 dB pad. Output impedance is 1,800 ohms.

ELECTRO-VOICE, INC., 600 Cecil Street, Buchanan, Michigan 49107
MANUFACTURING PLANTS AT ■ BUCHANAN, MI ■ NEWPORT, TN ■ SEVIERVILLE, TN ■ REDMOND, WA ■ GANANOQUE, ONT.

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