

Dx34 Digital Sound System Processor

- 16 factory presets for EV speaker systems
- Full-edit mode allows access to all parameters and saving to 30 user memories
- Adjustable parameters include crossover filter characteristics, low- and high-shelving EQ, parametric EQ, low-cut filters, input and output delays, polarity, and output limiter characteristics
- Lock-out feature stops unauthorized use
- Mutes on each output
- 18-bit resolution, 24-bit internal
- Electronically balanced inputs/outputs

SPECIFICATIONS

Conditions:

1.0 dBu = 0.775 volts rms.

OVERALL SPECIFICATIONS

Input/Output Configuration:

Two in/four out; stereo two way, dual mono two way, mono three way with a fourth full-range direct out (low and direct outs may be the sum of two input channels) or mono four way

Crossovers,

Characteristics:

Butterworth, Bessel and Linkwitz-Riley

Slopes:

6, 12, 18 and 24 dB per octave

Equalizers,

Low Shelving,

Number:

Two

Corner Frequencies:

Variable from 50 to 500 Hz

Slopes:

6 or 12 dB per octave

Gain:

0 to ± 12 dB in 1-dB steps

Parametric,

Number:

Eight

Center Frequencies,

Low and Low-Mid Outputs:

Variable from 20 Hz to 5,000 Hz

Mid Output:

Variable from 50 Hz to 12,500 Hz

Mid-High Output:

Variable from 50 Hz to 20,000 Hz

High Output:

Variable from 500 Hz to 20,000 Hz

Input (two-way configuration only):

Variable from 20 Hz to 20,000 Hz

Q:

Variable in six steps from 0.4 to 20

Gain:

0 to ± 12 dB in 1-dB steps

High Shelving,

Number:

Two

Corner Frequencies:

Variable from 500 Hz to 10,000 Hz

Slopes:

6 or 12 dB per octave

Gain,

12-dB-per-octave slope:

0 to ± 12 dB in 1-dB steps

6-dB-per-octave slope:

0 to ± 6 dB in 1-dB steps

Low Cut,

Number:

Two

Corner Frequencies:

Variable from 20 Hz to 200 Hz

Slopes:

6 or 12 dB per octave

Q (12-dB-per-octave slopes only):

Variable in six steps from 0.5 to 2.0

(Q = 2.0 suitable for B_0 alignment of vented low-frequency systems)

Frequency Resolution of Variable Crossover and Corner Frequencies (see above),

20-50 Hz:

1 Hz

50-100 Hz:

2 Hz

100-200 Hz:

4 Hz

200-500 Hz:

10 Hz

500-1,000 Hz:

20 Hz

1,000-2,000 Hz:

40 Hz

2,000-5,000 Hz:

100 Hz

5,000-10,000 Hz:

200 Hz

Lock-Out Provision:

Disable and enable access to internal functions of unit

Frequency Response:

20-20,000 Hz ± 0.3 dB

Total Harmonic Distortion, 1,000 Hz, without Transformers:

<0.01%

with Transformers:

<0.1%

Signal-to-Noise Ratio, Typical:

>102 dB

Front-Panel Controls (see Figure 2):

Input gain control; output level controls (analog) (four); endless rotary encoder/push-to-enter button; edit/two-way button; <select>/three-way button; select>/four-way button; store button; option button; mute button; power on/off switch

Front-Panel Displays (see Figure 2):

8-segment LED input level indicators (two), including clip, with peak-hold or slow-mode ballistics; 6-segment LED output level indicators (four), including clip, with peak-hold or slow-mode ballistics; output limiter status indicators (four); 2 x 16-digit back-lit alphanumeric display; edit mode LED; lock mode LED; channel(s) muted LED

Limiters:

Four digital limiters with threshold variable over a 21-dB range and variable attack and decay times

Signal Delays,

Master:

2 to 1,000 msec

Output (four):

0 to 10 msec

Increment:

21 μ sec

Data Format:

18-bit linear, 24-bit internal

A/D Conversion:

18-bit linear sigma-delta, 64-times oversampling, linear phase

D/A Conversion:

18-bit linear, eight-times oversampling, linear phase

DX34 SPECIFICATION GRAPHICS

FIGURE 1 — Dimensions

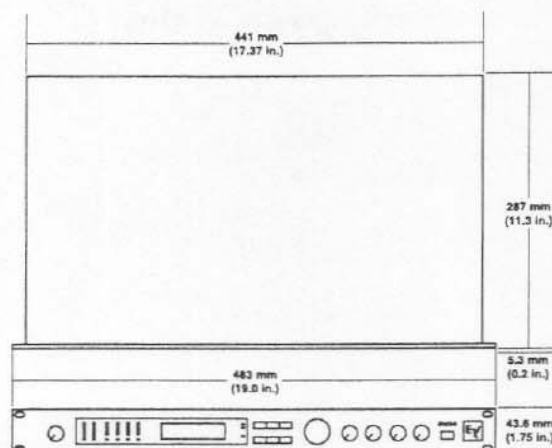


FIGURE 2 — Front and Rear Panel Views

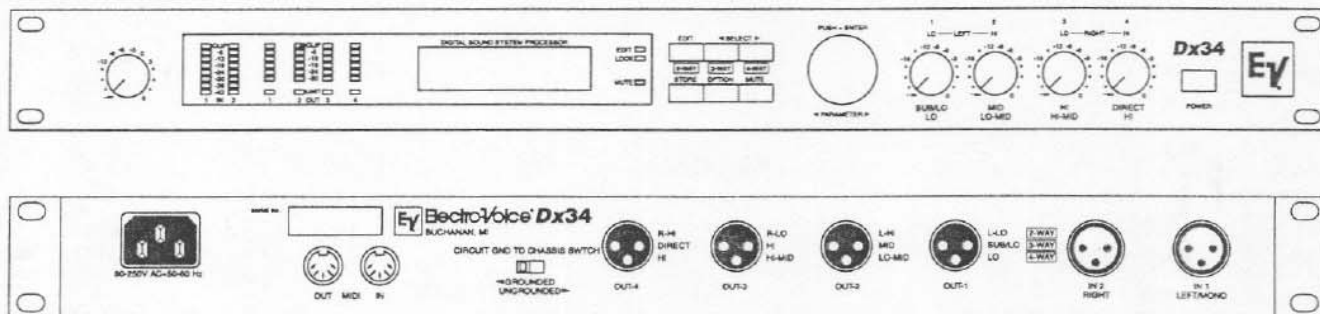


FIGURE 3 — Block Diagram

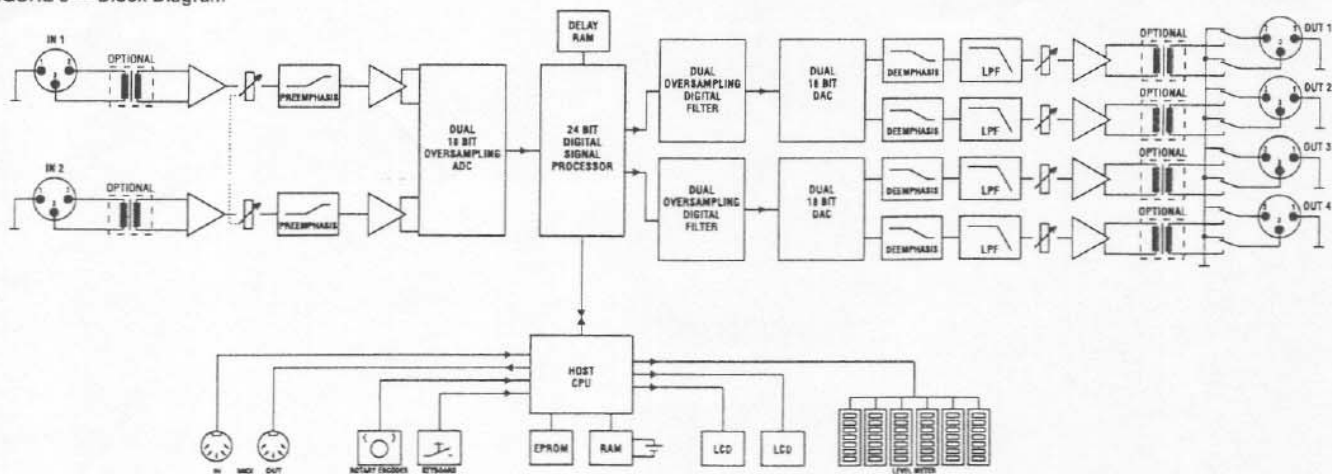
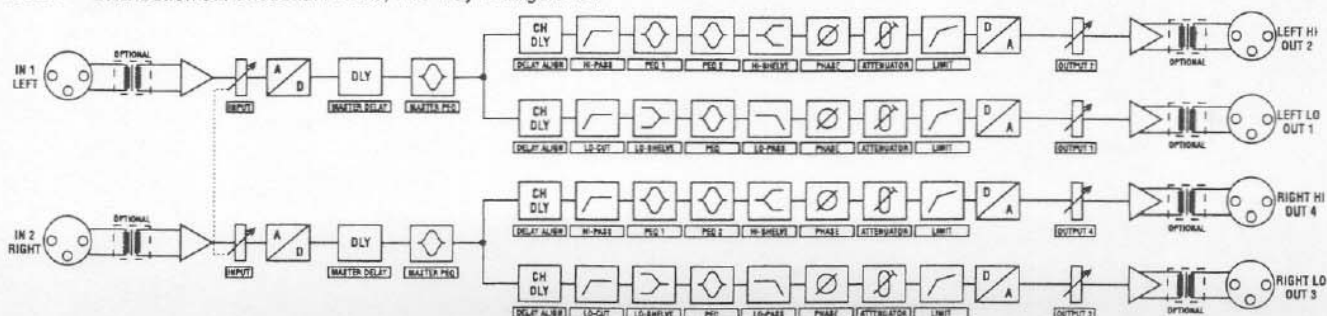


FIGURE 4 — Distribution of Functional Blocks, Two-Way Configuration



DX34 SPECIFICATION GRAPHICS

FIGURE 5 — Distribution of Functional Blocks, Three-Way Configuration

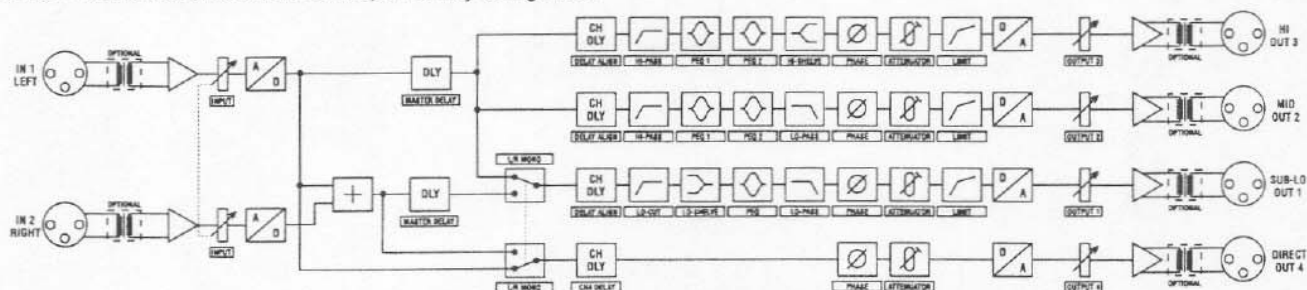
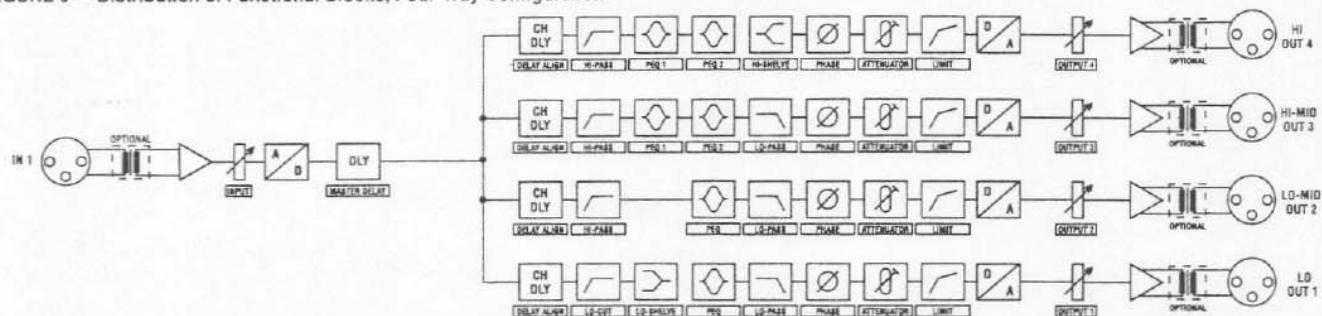


FIGURE 6 — Distribution of Functional Blocks, Four-Way Configuration



Sampling Rate:

46.875 kHz

MIDI Configuration, Functions:

Data dump;
Master/slave operation

Connectors, In and Out (see Figure 2):

5-pin DIN (180° pin pattern)

Common-Mode Rejection Ratio (CMRR),

1,000 Hz:

>70 dB

Grounding:

Ground-lift switch disconnects ground from chassis to eliminate hum

Chassis Construction:

Painted steel

Colors,

Front Panel:

Gray with red accent, with white, yellow and light blue nomenclature

Top, Sides, Input and Bottom Panels:

Gray with white nomenclature

Power Requirements:

90-250 volts, 50-60 Hz ac, no changes required, 21 watts maximum

User Memory Backup Provision:

Lithium battery with five-year life (typical)

Safety Class:

VDE/IEC Class 1

Safety and Performance Approvals:

EMI/EMC approved in accordance with all applicable European regulations (EN 50082, EN 55015, EN 55022, IEC 801 and VDE 0871); fulfills safety regulations in accordance with VDE 0860

Optional Accessories:

TRB-4 output transformer kit (four required);
TRB-5 input transformer kit (two required)

Overall Dimensions (see Figure 1),

Height:

43.6 mm (1.75 in.)

Width:

483 mm (19.0 in.)

Depth:

287 mm (11.3 in.)

Net Weight:

4.0 kg (8.8 lb)

Shipping Weight:

5.4 kg (12 lb)

INPUT SPECIFICATIONS

Number:

Two

Rated Input Voltage:

+4 dBu (1.23 V)

Maximum Input Voltage:

+21 dBu (8.7 V)

Input Impedance:

20,000 ohms

Input Configuration:

Electronically balanced (TRB-5 input transformer kit available (two required))

Insertion Loss of TRB-5 Input Transformer:

<1.5 dB

Input Connectors (see Figure 2):

Female 3-pin XLR type, pin 2 hot

OUTPUT SPECIFICATIONS

Number:

Four

Rated Output Voltage:

+4 dBu (1.23 V)

Maximum Output Voltage:

+21 dBu (8.7 V)

Output Impedance:

<100 ohms

Minimum Load Impedance:

600 ohms

Output Configuration:

Electronically balanced (TRB-4 output transformer kit available (four required))

Output Connectors (see Figure 2):

Male three-pin XLR type, pin 2 hot

DESCRIPTION

The Electro-Voice Dx34 is a multifunctional digital sound system processor. Its high degree of flexibility enables the set up and optimization of active multiway loudspeaker systems with variables previously unavailable in a single-rack-space device. The unit can be configured in two-way stereo, two-way dual mono, three-way mono with a separate full-range direct out, and four-way mono. In the three-way configuration, the low and direct outputs can be individually set to be a sum of two input channels, useful in some applications, e.g., mono subwoofers with stereo main speakers.

Functional blocks include:

1. High- and low-pass filters with Bessel, Butterworth and Linkwitz-Riley characteristics and 6-, 12-, 18- and 24-dB-per-octave slopes.
2. Tunable low-cut filters with 6- or 12-dB-per-octave slopes and Q variable (12-dB-per-octave slopes only) from 0.5 to 2.0, to provide infrasonic speaker protection and augment or extend the low-end response of low-frequency speaker systems. Q = 2 provides a 6-dB peak boost that is appropriate for "step-down" operation of Electro-Voice TL series vented low-frequency systems.

3. Parametric equalizers with Q variable from 0.4 to 20.
4. Low- and high-shelving equalizers with 6- or 12-dB-per-octave slopes.
5. Limiters on each output, with adjustable threshold, decay rate and hold time.
6. Signal delays on the inputs (2 to 1,000 msec) and each output (0 to 10 msec).

The Dx34 block diagram is shown in Figure 3. The distribution of the functional blocks described above is different for each basic configuration, as shown in Figures 4 through 6.

The Dx34 addresses many different sound-system configurations and is factory programmed for a number of Electro-Voice speaker systems. A total of 16 user presets is available, including:

1. MT-2 Manifold Technology® systems (three way).
2. MT-4 Manifold Technology® systems (four way).
3. PI Modular Series™ (three way).
4. MH stadium horn systems (two way).
5. Portable sound reinforcement systems: Sx200 with S-181 subwoofer (two way), T52 with T18 subwoofer (two way) and T53 with T18 subwoofer (three way).

Parameter values for other EV components and systems can be downloaded off the Electro-Voice BBS at 616/695-4791 (8,N,1).

The Dx34 has two basic operating modes. The "preset mode" allows the user to select the factory speaker presets and gives the user control of only the master delay and the limiter parameters at each output. The "full-edit mode" provides access to all parameters, allowing adjustment and saving of all settings. Ten user memories in each of the three configurations (two way, three way, four way) are available for this purpose.

Input and output metering in conjunction with input level controls and an analog level control on each output help to maximize the signal-to-noise ratio of the overall system.

A/D/A conversion in the Dx34 is done by linear 18-bit converters. The input A/D section is a 64-times oversampled sigma-delta converter and the output D/A is oversampled eight times. Internal resolution is 24 bits, using the Motorola DSP56004 processor. User memories are maintained in RAM backed up with a lithium battery with a life of approximately five years (the Dx34's alphanumeric display warns of a low battery condition).

All inputs and outputs are electronically balanced with 3-pin XLR-type connectors, and can be retrofitted with optional isolating transformers. Two TRB-5 input transformers and four TRB-4 output transformers are required.

ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

The unit shall be a two-in/four-out digital loudspeaker system processor, configurable for two-way stereo, two-way dual mono, three-way mono, and four-way mono operation. The three-way configuration shall have a separate full-range direct out and in this configuration both the low and direct outputs shall be optionally set to be the sum of two input channels. Each output shall be mutable.

Functional blocks shall include: high- and low-pass filters with Bessel, Butterworth and Linkwitz-Riley characteristics, 6-, 12- 18- and 24-dB-per-octave slopes and variable corner frequencies; tunable low-cut filters with Q variable from 0.5 to 2.0, 6- or 12-dB-per-octave slopes and variable corner frequencies; parametric equalizers with Q variable from 0.4 to 20; low- and high-shelving equalizers with 6- or 12-dB-per-octave slopes and variable corner frequencies; output limiters with adjustable threshold, decay rate and hold time; and signal delays on the input and on each output with a delay resolution of 21 µsec and ranges of 2 to 1,000 msec on the inputs and 0 to 10 msec on the outputs.

The unit shall have factory presets for at least 16 Electro-Voice brand loudspeaker systems. All parameters shall be fully accessible in a full-edit mode and storable in up to 10 user memories in each of the three configurations (two way, three way and four way).

The unit shall have a lock mode to prevent unauthorized changes.

Inputs and outputs shall be electronically balanced 3-pin XLR connectors, pin 2 positive. Internal receptacles shall be provided for retrofitting optional TRB-5 input and TRB-4 output transformers. The unit shall contain linear 18-bit A/D and D/A converters. The internal format shall be 24 bits. The unit shall meet the following performance specifications: frequency response, 20-20,000 Hz ± 0.3 dB; signal-to-noise ratio, >102 dB; THD, $<0.01\%$ at 1,000 Hz; nominal input and output voltages, ± 4 dBu (1.23 V); maximum input and output voltages, ± 21 dBu (8.7 V); input impedance, 20,000 ohms; output impedance, <100 ohms; and minimum load impedance, 600 ohms.

The unit shall operate on voltages from 90 V to 250 V ac, 50 to 60 Hz, without adjustment. Power consumption shall be 21 watts maximum. The unit shall be manufactured in accordance with all safety classes and fulfill all applicable interference suppression approvals (IEC and VDE specifications). The unit shall be rack mountable in one EIA/IEC standard rack space. Dimensions shall be 43.6 mm (1.75 in.) x 483 mm (19.0 in.) x 287 mm (11.3 in.) hwd. Net weight shall be 4.0 kg (8.8 lb).

The digital loudspeaker processing unit shall be the EV Dx34.

UNIFORM LIMITED WARRANTY

Electro-Voice products are guaranteed against malfunction due to defects in materials or workmanship for a specified period, as noted in the individual product-line statement(s) below, or in the individual product data sheet or owner's manual, beginning with the date of original purchase. If such malfunction occurs during the specified period, the product will be repaired or replaced (at our option) without charge. The product will be returned to the customer prepaid.

Exclusions and Limitations: The Limited Warranty does not apply to: (a) exterior finish or appearance; (b) certain specific items described in the individual product-line statement(s) below, or in the individual product data sheet or owner's manual; (c) malfunction resulting from use or operation of the product other than as specified in the product data sheet or owner's manual; (d) malfunction resulting from misuse or abuse of the product; or (e) malfunction occurring at any time after repairs have been made to the product by anyone other than Electro-Voice or any of its authorized service representatives.

Obtaining Warranty Service: To obtain warranty service, a customer must deliver the product, prepaid, to Electro-Voice or any of its authorized service representatives together with proof of purchase of the product in the form of a bill of sale or receipted invoice. A list of authorized service representatives is available from Electro-Voice at 600 Cecil Street, Buchanan, MI 49107 (616/695-6831 or 800/234-6831). **Incidental and Consequential Damages Excluded:** Product repair or replacement and return to the customer are the only remedies provided to the customer. Electro-Voice shall not be liable for any incidental or consequential damages including, without limitation, injury to persons or property or loss of use. Some states do not allow the exclusion or limitation of incidental or consequential damages so the above limitation or exclusion may not apply to you. **Other Rights:** This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Electro-Voice Electronics are guaranteed against malfunction due to defects in materials or workmanship for a period of three (3) years from the date of original purchase. Additional details are included in the Uniform Limited Warranty statement.

Service and repair address for this product: Electro-Voice, Inc., 600 Cecil Street, Buchanan, Michigan 49107 (616/695-6831 or 800/234-6831).

Specifications subject to change without notice.



ELECTRO-VOICE a MARK IV company **600 Cecil Street, Buchanan, Michigan 49107**

MANUFACTURING PLANTS AT ■ BUCHANAN, MI ■ NEWPORT, TN ■ SEVIERVILLE, TN ■ OKLAHOMA CITY, OK ■ GANANOQUE, ONT.

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