



## DX810 8X10 DIGITAL MATRIX MIXER AND SIGNAL PROCESSOR

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### FEATURES

- 32-bit DSP and 24-bit Analog/Digital Conversion
- 8 balanced XDR™ Mic/Line inputs with trim
- 2 balanced Line inputs direct to mix buses A and B
- 10 Independent Mix Buses and balanced Outputs
- 2 unbalanced Record Outputs
- 8 unbalanced Direct Channel Outputs
- Individual Level/Peak (PPM) metering on Inputs and Outputs
- 2-band sweepable High and Low shelving EQ with a parametric Mid control on each Input
- Gating on each Input
- Solo button on each Input
- 31-band Graphic EQ or 8-band Parametric EQ on each Output
- Fully variable Compressor on each Input and Output
- Variable delay on each Output
- Configurable crossover for up to five bands
- 10 Programmable Logic Inputs
- 10 Programmable Logic Outputs
- 2 independent RS-232 interface ports
- 48 VDC Phantom Power switch per input
- 24 VDC Backup Power input
- PC software application included
- Remote Mapping feature provides individual button assignments for the DX-SW4 remote control

### DIGITAL SERIES

EAW Commercial's DX810 is a DSP-based digital audio mixer and signal processor. It is designed for use in a variety of installations such as churches, courtrooms, convention centers, and hotels. It provides eight balanced mic/line inputs and ten balanced outputs allowing true 8x10 mixing.

Each of the eight mic/line input channels is accessed by means of two Phoenix-type detachable connectors. Each input is optimized to accept either mic or line-level signals. Microphone preamplifiers use XDR™ technology to offer studio-grade audio performance. Phantom power of 48 VDC is switchable individually on each mic input. Two auxiliary line-level inputs with trim are provided. This allows analog signals to be mixed with the A and B outputs. Master outputs provide balanced line-level signals to Phoenix-type connectors.

Each of the ten outputs represents a discrete mix of the eight inputs, resulting in a true 8x10 mixing matrix with virtual faders at each crosspoint. Any combination of gain elements can be assigned to one of 32 groups.

The DX810 offers an intuitive front panel user interface, consisting of dual-function LED bar graph meters for each input and the A and B outputs (all ten outputs can be monitored in the software interface). Input meters indicate the presence of signal prior to any signal processing (pre-fader). Output A and B meters



indicate actual level at the output (post-fader). Levels for Mix A and B are set by means of UP/DOWN pushbuttons dedicated to each input and output. A MODE button is used to select between Mix A and B. This allows adjustment of levels to two mix outputs from the same set of input controls. A third function of the MODE button allows the user to LOCK the front panel controls until a security unlock code is entered.

Two independent RS232 connectors are provided, one on the front panel and one on the rear. This allows for connection to a computer or control system. A DB25 connector on the rear panel allows for interfacing with the 10 Logic Inputs and 10 Logic Outputs. Logic I/O enables hardware control and indication from custom control panels. All logic inputs and outputs are programmable in software.

A proprietary remote control bus allows connection of the optional DX wired remotes. These remotes can use a variety of three-conductor cable. Remotes are available in Volume Control (DX-RVC) and 4-switch versions (DX-SW4), and may be combined to provide flexible configurations.

The DX810 is supplied with the DX-810-PC software that allows access to all of the system's settings and configurations. The software provides access to the three-band input EQ, eight-band parametric or 31-band graphic EQ for the outputs, compressors, gates, delays, and crossover configuration. In addition, the software allows saving and recalling up to 32 presets, configuration for 32 control groups, for input force on/force off functions with priority, and for the logic input and output connections. All settings and text labels are retained in the DX810 as well as stored on the computer's local drive.

The DX810 is UL and CE approved and designed for continuous use in professional fixed installation systems. An internal auto-ranging power supply allows connection to mains voltages from 90-240 VAC at 50/60 Hz. This requires no jumper or switch setting changes. A 24 VDC input is provided for applications where backup battery power is required. Switchover to backup power is automatic and silent.

### APPLICATIONS

- Meeting Rooms
- Houses of Worship
- Courtrooms
- Multizone Paging/Music Systems
- Hotels
- Boardrooms
- Multi-Purpose Facilities



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## SPECIFICATIONS

### INPUTS / OUTPUTS

Inputs 1-8:	Balanced, Phoenix-type connectors
Bus A and B:	Balanced, Phoenix-type connectors, Direct to Mix Buses
Outputs A-J:	Balanced, Phoenix-type connectors
Record Outputs A/B:	Unbalanced, RCA
Direct Outputs 1-8:	Unbalanced on DB15 (bottom row is signal return)
Logic Inputs:	10 Inputs on DB25 Series resistance: 570 $\Omega$ Internal pull-up: 47 k $\Omega$ to +5 VDC Input voltage: +5.5 VDC maximum Active voltage: +1.0 VDC maximum
Logic Outputs:	10 open-collector outputs on DB25 Series resistance: 550 $\Omega$ Internal pull-up: 10 k $\Omega$ to +5 VDC Active current: 10 mA maximum Active voltage: +0.8 VDC max @ 1 mA
Serial Ports:	2 RS-232C on DB9 (COMM PORTS)

### PANEL CONTROLS

Input Trim:	8 Rotary Potentiometers
Input Gain:	2 Pushbuttons per Input
Master Output Gain:	2 Pushbuttons per Output
Mode Select:	1 Pushbutton
Power:	Rocker Switch
Phantom Power Select:	8 DIP Switches

### PANEL INDICATORS

Input Levels:	12-segment LEDs per ch.
Mode Status:	3 LEDs; A/B/LOCK
Output Levels:	12-segment LEDs per ch.
Volume Setting:	12-segment LED Bar Graph

### SIGNAL PROCESSING

General:	Five 32-bit floating-point DSP 24-bit A/D and D/A converters 512Kx16 Flash ROM 128Kx32 SRAM (with battery backup)
Inputs:	3-band shelving EQ with parametric mid Gain: $\pm 15$ dB Corner Frequency: LO: 20 Hz-500 Hz variable HI: 500 Hz-20 kHz variable Center Frequency: MID: 20 Hz-20 kHz variable BW: 0.1 octave to 6 octaves Gate on each Input: Threshold: -60 dBfs to -1 dBfs Hold: 0 ms to 2550 ms Release: 10 ms to 2500 ms Range: -100 dB to -1 dB
Outputs:	Delay on each Output: Temp: -40°F to 122°F (-40°C to 50°C) Coarse: 0 ms to 200 ms Fine: 0 $\mu$ s to 997 $\mu$ s Crossover: Polarity: 0°, 180° Filter Type: High-Pass, Low-Pass, Band-Pass Alignment: Linkwitz-Riley, Butterworth Filter Slope: 12 dB/octave, 18 dB/octave, 24 dB/octave (Butterworth only) Frequency: 20 Hz-20 kHz

### 1/3-Octave Graphic EQ on each Output:

Gain:	$\pm 15$ dB
ISO-Centered Frequencies:	20, 25, 31.5, 40, 50, 63, 80, 100, 125, 60, 200, 250, 315, 400, 500, 630, 800, 1 k, 1.25 k, 1.6 k, 2 k, 2.5 k, 3.15 k, 4 k, 5 k, 6.3 k, 8 k, 10 k, 12.5 k, 16 k, 20 k

### 5-Band Parametric EQ on each Output:

Gain:	$\pm 15$ dB
Center Frequency:	20 Hz-20 kHz variable
BW:	0.1 octave to 6 octaves

### Compressor/Limiter on each Input and Output:

Threshold:	-60.0 dB to -1.0 dB
Attack:	0.1 ms to 2500 ms
Release:	10 ms to 2500 ms
Ratio:	1:1 to 20:1
Output:	0 dB to +20.0 dB

### AUDIO

#### Noise

(20 Hz-20 kHz bandwidth, Master Out, channel Trims @ unity gain, channel EQs flat, all odd channels panned left, even channels panned right):

Master level @ unity, channel levels @ unity:	-82 dBu
Single channel to Master Out:	-100 dBu (referenced to 1% THD+N)

#### Total Harmonic Distortion (THD+N)

(1 kHz @ +10 dBu (unity level) 20 Hz-20 kHz):

Mic in to Master Out:	< 0.005%
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#### Crosstalk

(1 kHz relative to 0 dBu, 20 Hz-20 kHz bandwidth, any line input to adjacent Direct Out, Trim to unity):

	< -90 dB
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#### Frequency Response

Mic input to any output: 20 Hz-20 kHz,  $\pm 0.5$  dB

#### Equivalent Input Noise (EIN)

Mic in to Direct out, max gain, 150 ohm termination: -129.5 dBm unweighted

#### Common Mode Rejection (CMR)

Mic in to Direct out, max gain, 1 kHz signal: better than 80 dB

#### Maximum and Nominal Levels and Ranges

Mic inputs:	+18 dBu, +4 dBu, 0 to +60 dB gain
Line inputs:	+18 dBu, +4 dBu, -30 to +30 dB gain
Bus A/B inputs:	+18 dBu, +4 dBu, -20 to +20 dB gain
All outputs:	+18 dBu, +4 dBu

#### Impedances

Mic inputs:	1.3 K ohms
Line inputs:	40 K ohms
All other inputs:	10 K ohms or greater
All outputs:	120 ohms

### PHYSICAL

Dimensions (HxWxD):	3.5" / 2 RU x 19" x 13.25" (89 mm x 483 mm x 337 mm)
Net Weight:	12.9 lbs. (5.9 kg)

### ELECTRICAL

AC Power:	90-240 VAC, 50/60 Hz, 1.0 A
DC Power:	24 VDC, 3 A
Phantom Power:	+48 VDC, current limited to 7 mA per input channel
Fuse Ratings:	1.6 A Slo Blo, 250 V



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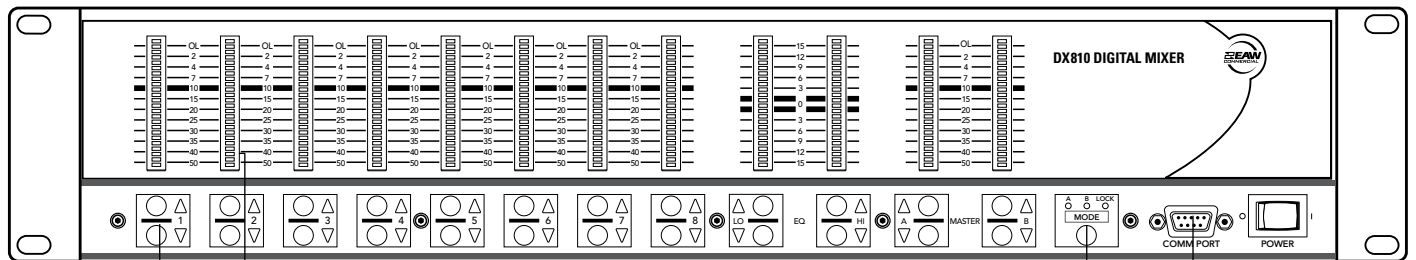
## SPECIFICATIONS

### PC SYSTEM REQUIREMENTS

OS:	Windows® 95, 98, NT®, 2000, XP
Processor:	Pentium® or faster
RAM:	16 MB minimum 32 MB recommended
Storage:	10 MB free disk space
Display:	800x600 pixels, 256 colors minimum

### LED METER VALUES

1.	Red (scale: 0L):	>-2dB full-scale (>16dBu)
2.	Yellow (scale: 2):	>-4dB full-scale (>14dBu)
3.	Yellow (scale: 4):	>-7dB full-scale (>11dBu)
4.	Yellow (scale: 7):	>-10dB full-scale (>8dBu)
5.	Green (scale: 10):	>-15dB full-scale (>3dBu)
6.	Green (scale: 15):	>-20dB full-scale (>-2dBu)
7.	Green (scale: 20):	>-25dB full-scale (>-7dBu)
8.	Green (scale: 25):	>-30dB full-scale (>-12dBu)
9.	Green (scale: 30):	>-35dB full-scale (>-17dBu)
10.	Green (scale: 35):	>-40dB full-scale (>-22dBu)
11.	Green (scale: 40):	>-50dB full-scale (>-32dBu)
12.	Green (scale: 50):	>-60dB full-scale (>-42dBu)

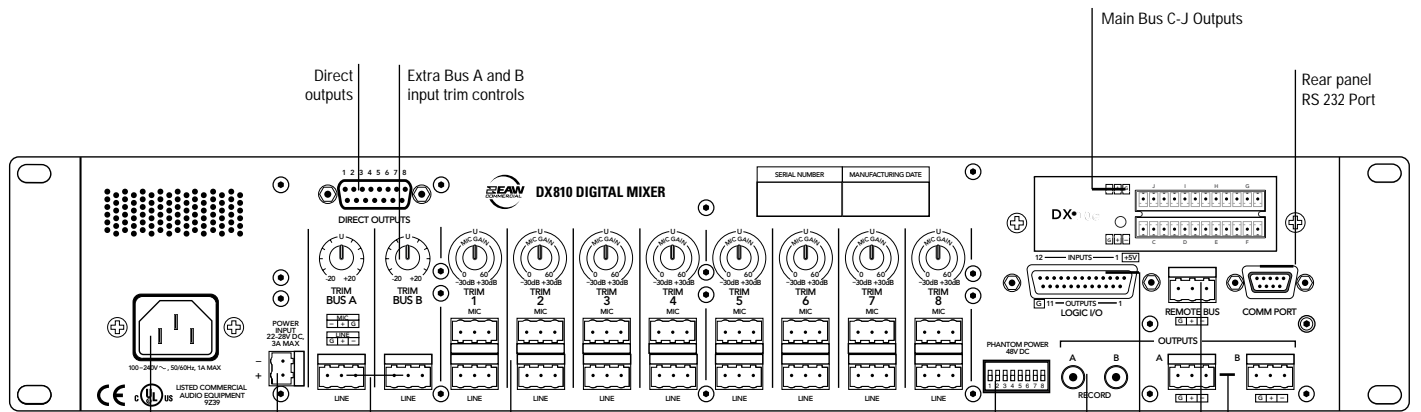


front panel manual adjustments via UP/DOWN pushbuttons

12 segment LED ladders

A/B/Lockout selector

Front panel RS232 port



Direct outputs

Extra Bus A and B input trim controls

Main Bus C-J Outputs

Rear panel RS 232 Port

Universal Power Input 90-240 volt 50/60Hz

24VDC power input

Extra inputs fed directly to Bus A and B

Input Phoenix-type terminals

Recording output from Bus A and B

Remote control bus

Individual 48 VDC phantom power selectors for each mic input channel

Logic I/O expansion port

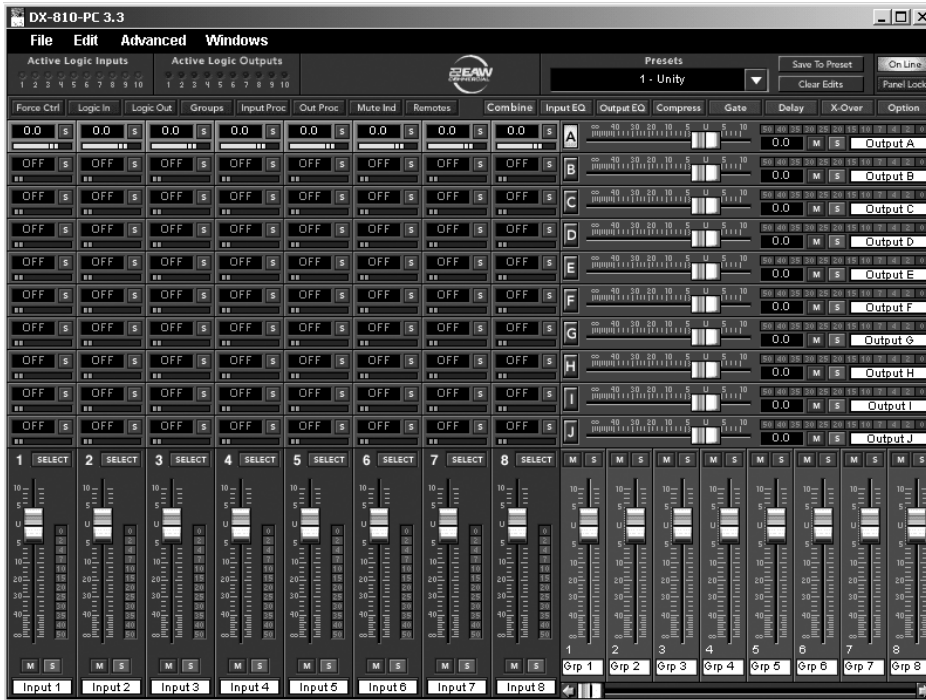
Main Bus A & B outputs



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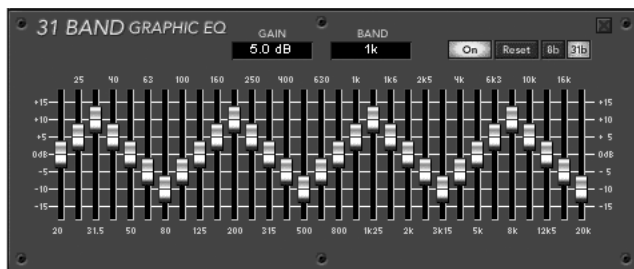
## DX-810-PC SOFTWARE

The DX810 real-time DX-810-PC software application provides access to all of the DX810's controls. The user interface employs a full-matrix mixer, making settings and operation clear and intuitive. The input, output, crosspoint, and group faders are visible at the same time, allowing immediate access to all level controls. Indicators for Active Logic Inputs and Mute Groups are always visible, as are the input and output signal meters. Equalizer, compressor, gate, delay, crossover, and setup screen views are recalled from direct-select buttons.

The main interface screen offers 8 input faders, 10 output faders, 80 crosspoint faders, and 32 group faders



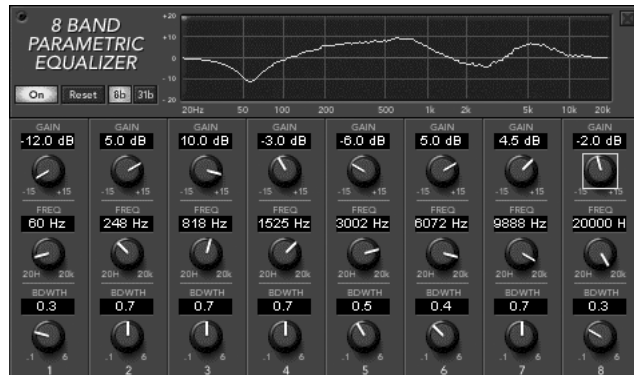
The input EQ view offers three filters for each input, with rotary gain and frequency controls for the High and Low Shelving filters, and gain, frequency, and bandwidth controls for the Bandpass filter



The Graphic EQ view offers 31 bands of control on ISO-centered frequencies for each of the ten outputs



A full-featured compressor is provided for each input and output, and a full-featured gate is provided for each input



The Parametric EQ view includes five bands of control for each output, as well as a display window that graphically represents the parameter settings



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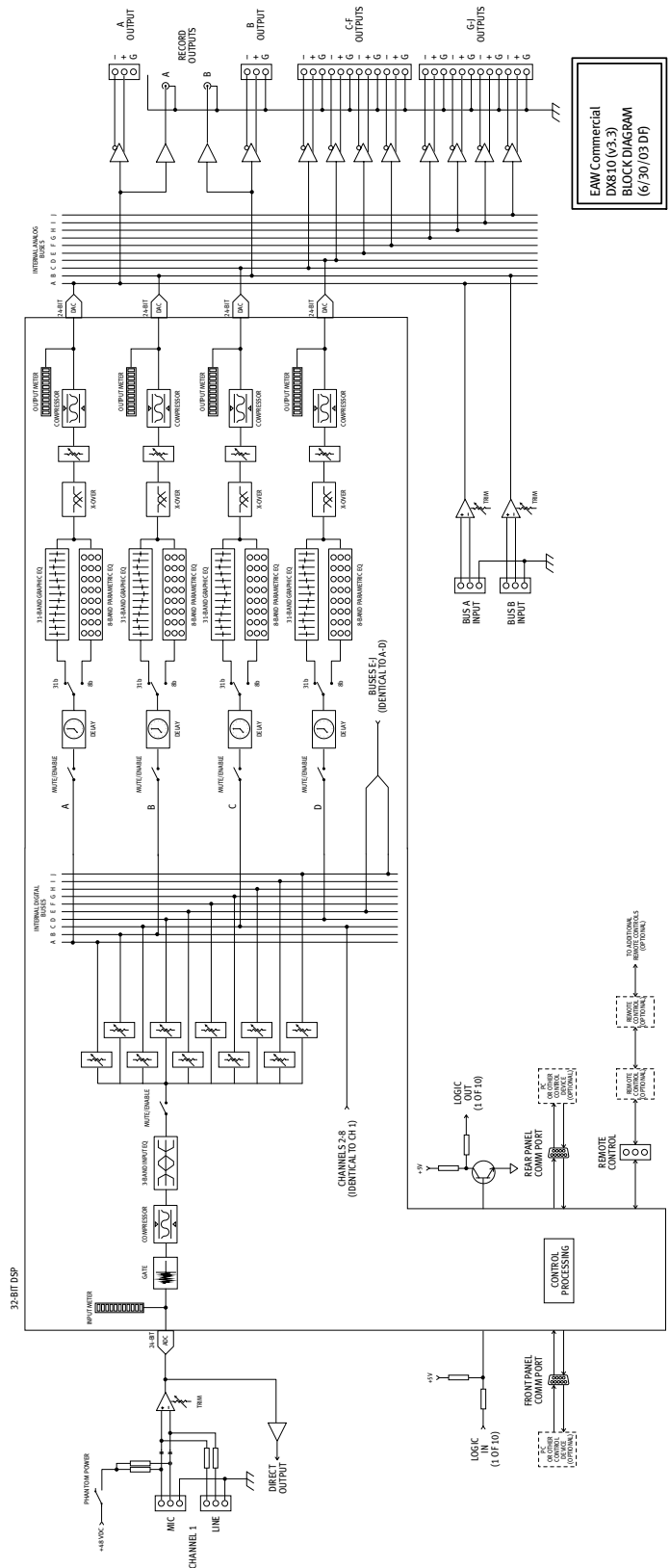
The X-over view allows grouping two or more outputs into crossover groups, with adjustable parameters including time delay, center frequency, bandwidth, three filter types, three filter slopes, and the choice of Linkwitz-Riley, Butterworth, and Bessel filter characteristics



The Delay screen provides coarse and fine time delay in milliseconds and microseconds for each of the ten outputs



Room combining allows multiple outputs to be combined to output a single mix. Up to sixteen user-configurable combinations are available, which can be selected by remote control or a logic input



**CSI PRODUCT SPECIFICATIONS FOR DESIGNERS, SPECIFIERS, AND CONSULTANTS**

(Also known as "A&E Specifications")

The following are "Part 2 Products" CSI-type specifications. It is assumed that "Part 1 General – Administrative and Procedures" and "Part 3 Execution – Installation and Maintenance" are part of an overall audio system or project specification.

**PART 2 PRODUCTS****2.01 Approved Manufacturer/Product**

- A. EAW Commercial, One Main Street, Whitinsville, MA 01588 USA
- B. Model number: DX810

**2.02 Design**

- A. Configuration: 8-channel digital audio mixer
  - 1. Inputs:
    - a. Eight balanced mono mic inputs (Eight 3-pin Phoenix-type connectors)
    - b. Ten balanced mono line inputs (Ten 3-pin Phoenix-type connectors)
  - 2. Outputs:
    - a. Ten balanced line outputs (Two 3-pin and two 12-pin Phoenix-type connectors)
    - b. Eight unbalanced direct line outputs (one DB15 connector)
    - c. Two unbalanced RECORD outputs (two RCA line-level output jacks)
  - 3. Other
    - a. Ten logic inputs and ten logic outputs (one DB25 connector)
    - b. One remote bus connector (one 3-pin Phoenix-type connector)
    - c. Two RS-232C serial ports (two DB9 connectors)
- B. Powering Mode
  - 1. Internal AC power supply, 90 - 240 VAC, 50/60 Hz, 1 A
  - 2. External DC power supply, 22 - 28 VDC, 3 A

**2.03 Electrical Properties**

- A. Frequency Response ( $\pm 0.5$  dB):
  - 20 Hz to 20 kHz
- B. Total Harmonic Distortion (20 Hz to 20 kHz @ 0 dBu output):
  - < 0.005%
- C. Noise (20 Hz to 20 kHz BW, 150 ohm source impedance):
  - 1. Equivalent Input Noise (EIN):
    - 129.5 dBm unweighted
  - 2. Output Noise
    - a. Master level at unity, channel levels at unity:
      - 82 dBu
    - b. Single channel to Master out:
      - 100 dBu
- D. Common Mode Rejection (@ 1 kHz, Gain at maximum):
  - 80 dB
- E. Crosstalk (@ 1 kHz, any input to adjacent direct output):
  - 90 dB
- F. Input Gain Control Range:
  - 1. Mic In: 0 dB to +60 dB
  - 2. Line In: -30 dB to +30 dB
- G. Phantom Power: +48 VDC @ 7 mA per input channel
- H. Rated Output:
  - 1. Nominal Output: +4 dBu
  - 2. Maximum Output: +18 dBu

**2.04 Physical Properties**

- A. Dimensions
  - 1. Height: 3.5 in/89 mm
  - 2. Width: 19 in/483 mm
  - 3. Depth: 13.25 in/337 mm
- B. Weight
  - 1. Net Weight: 12.9 lb/5.9 kg