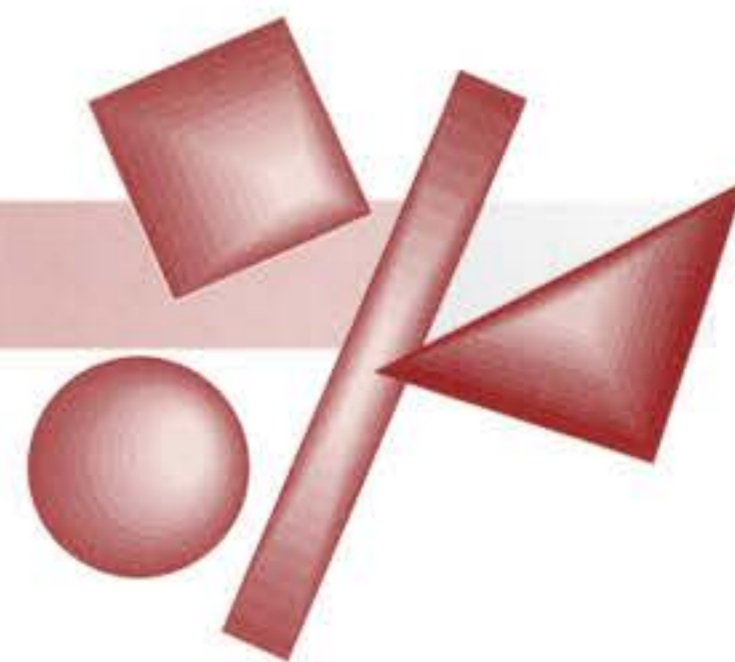


FORSYTHE SERIES

MX800i CCEP™ Signal Processing Unit



Features

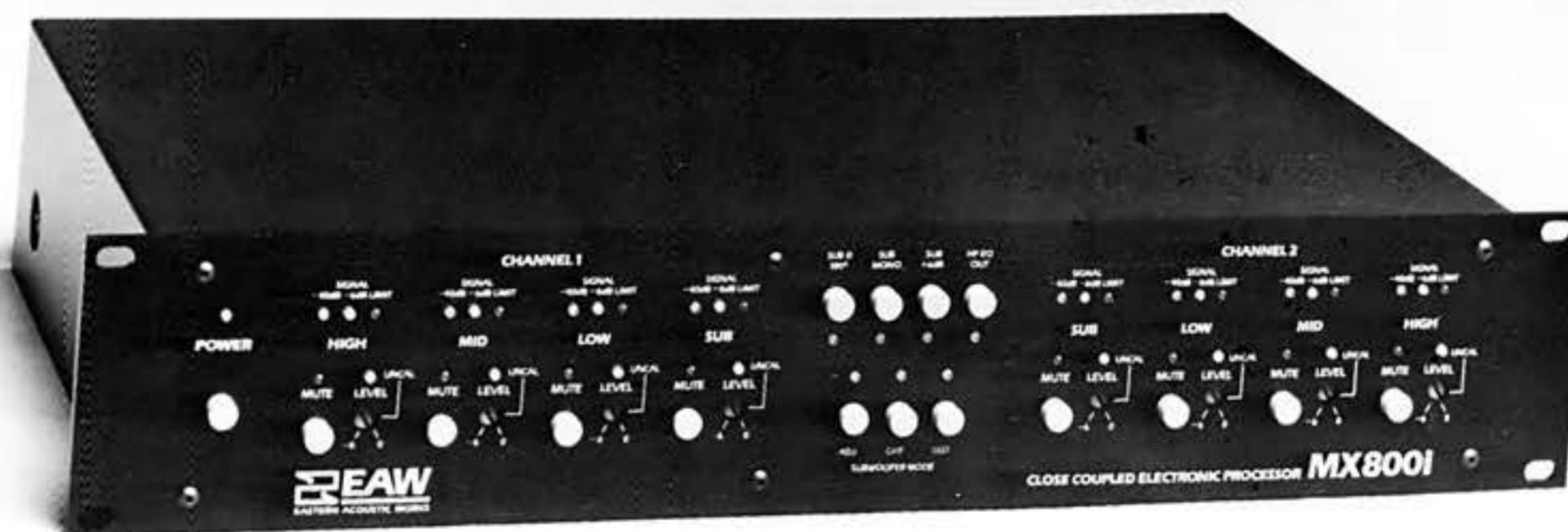
- **Front Panel Output Adjustments** — up to 6 dB level reduction on each band, with automatic tracking of protection thresholds.
- **Quick Configuration Programming** — all closely coupled system-specific functions are located on an internal plug-in PC board for easy re-configuration.
- **Improved Output Line Drive Capability** — 10 Ω output impedance: no need to adjust output balances.
- **Meets UL, CSA & European Safety Standards.**
- **Full Transient Protection** — for safe, quiet turn-ons and -offs.
- **Enhanced Subwoofer Operating Modes** — allows true three-way operation with or without subwoofers.
- **Front Panel Indicators** — each band has LED indicators for signal presence, maximum safe output level and output level calibration.
- **Rugged Mechanical Construction** — built in the USA with heavy gauge materials for improved reliability on the road.

The MX800i CCEP™ two channel, four-way electronic crossover is designed for fixed installations and touring sound systems. It is supplied configured for use with specific EAW systems. This ensures optimum system performance under all conditions, without the burden of "setting up." The unit is compact, robust and very reliable, yet simple to service should the need arise.

Overload Protection — Each frequency band has an independent true-RMS above threshold infinite compressor to reduce gain momentarily whenever the preset output limit is approached. This limit is normally set to prevent the power amplifiers from clipping, but may also be set lower to protect particularly vulnerable drivers.

Low Frequency Control — The MX800i's lowest operating output band incorporates a low frequency control circuit that provides stepdown alignment equalization along with high pass filtering to prevent operation below system cutoff. This equalized filter is controlled to provide maximally extended distortion-free low frequency response at all power levels.

Sub-Bass Mode — Front panel switches select "OFF", "ADJacent" and "DISTant" sub-bass modes. This maintains the correct sound



balance and source localization regardless of whether or not you use subwoofers, and if used, whether the subwoofer systems are mounted adjacent to the main speaker stacks or located remotely. This function is particularly useful when subwoofers are mounted at ground level and the rest of the system is "flown".

Phase Compensation — At the crossover points of any multi-way system, the sum of the upper and lower output bands should be flat so as not to cause any peaks or dips in the overall system response. However, this state of affairs occurs only when the two signals being summed are in phase with each other.

The amplitude responses of the filter and loudspeaker may each be correct. But when they are combined, phase errors are almost certain to occur so that the overall response is not flat. Many manufacturers use equalization in an attempt to combat this shortcoming but equalization only attempts to hide the problem; it doesn't cure it. The result might look acceptable on paper, but listening tests confirm that an equalized system does not yield the sound quality required and is not consistent.

The MX800i CCEP™ incorporates phase correction circuitry, tailored to the specific system for which it is configured. This circuit compensates for the phase response of the drivers and their relative placement in the enclosure to present the listener with accurate, phase coherent sound. Without phase correction, the high frequency drivers in a multi-way system tend to lag behind the low frequency drivers, causing a significant loss of definition and intelligibility.

Asymmetrical Filters — The MX800i CCEP™ incorporates independent internal settings for each of the six filters on each channel. Using each filter's individual settings, we are able to independently adjust both pairs of second order filters used to create the ultimate fourth order slope. This asymmetrical filter design is a key element in the close coupling of the crossover to a particular speaker system to compensate for the acoustical characteristics of individual elements.



Audio Performance

Dynamic Range: 115 dB typical (≥ 108 dB)

THD+N (0 dBu 20-20k Hz): 0.03% typical ($\leq 0.08\%$)

Input

Connectors: Female XLR (Locking)

Type: Electronically Balanced Differential

Differential Input: $>10k \Omega$

Common-Mode Input: $30k \Omega$

Input Overload 20-20k Hz: +14 dBu typical ($\geq +10$ dBu)

Output

Connectors: Male XLR (Locking)

Type: Single-Ended

Output Impedance: 10Ω

Max Output Voltage: +18 dBu typical ($\geq +14$ dBu)

RMS Output Voltage: +14 dBu (max. internal limiter threshold)

Minimum Resistive Load: 300Ω

Maximum Capacitive Load: 22 nF (Outputs are stable with any capacitive load.)

Output Offset Voltage: ± 1.5 mV (± 10 mV limit)

Output Noise (20-20k Hz, $R_s = 600\Omega$)

Sub & LF Bands: -100 dBu typical (≥ -97 dBu)

MF Band: -100 dBu typical (≥ -97 dBu)

HF Band: -97 dBu typical (≥ -94 dBu)

Electrical/Environmental

Dimensions: 19" W x 3.5" H x 10" D

Line Input Power: 30 W

Line Voltage Requirements

115 VAC Setting: 90 - 135 VAC, 50 - 60 Hz

230 VAC Setting: 195 - 270 VAC, 50 - 60 Hz

Line Input/ Fuse Holder: IEC 320 socket with 5 x 20 mm fuseholder

Operating Temperature: 0 - 50° Celsius

Accessories Included: UL/CSA Line Cord

Spare Line Fuse (in fuseholder)

Crossover Functions

HF Lowpass Filter Type: Third-Order Butterworth

HF Lowpass Frequency: 48k Hz -3 dB

HF/MF/LF Highpass Filters: Cascaded Second-Order Sections

MF/LF/SW Lowpass Filters: Cascaded Second-Order Sections

LF Highpass Filter Type

SUB ADJacent Mode: Cascaded Second-Order Sections

SUB DISTant & OFF Modes: 2nd-Order Section, $Q = .54$, $f_n = 40$ Hz

CROSSOVER FREQUENCIES

HF/MF: 1.6k Hz Nominal (KF850)
(400-6.4k Hz via internal SIP)

MF/LF: 250 Hz Nominal (KF850)
(85 - 1.4k Hz via internal SIP)

LF/SW Crossover Frequency

SUB ADJacent Mode: 80 Hz Nominal (KF850)
(31 - 640 Hz via internal SIP)

SUB DISTant & OFF Modes: 35 Hz Nominal (KF850)
(31 - 1.6k Hz via internal plug-in PCB)

Pass Band Gain

HF: -3.5 dB KF850 (± 10 dB range via internal HF Gain resistors, 0 to -10 dB front panel override)

MF: +1 dB KF850 (± 10 dB range via internal MF Gain resistors, 0 to -10 dB front panel override)

LF: +3.5 dB KF850 (± 10 dB range via internal LF Gain resistors, 0 to -10 dB front panel override)

SW: +4.7 dB KF850 (± 10 dB range via internal SW Gain resistors, 0 to -10 dB front panel override)

System Highpass Filter Alignment

ADJacent & DISTant Modes: 2nd-Order, $Q=2$, $f_n=32.7$ Hz

SUB OFF Mode: 2nd-Order, $Q=1.3$, $f_n=40$ Hz

System Highpass Response

ADJacent & DISTant Modes: +6 dB @ 35 Hz (KF850)

SUB OFF Mode: +3 dB @ 48 Hz (KF850)

Both modes independently adjustable

12 - 300 Hz via internal plug-in PCB

Limiter Functions

Limiter Type: True-RMS Above-Threshold

Infinite Compressor

HF Limiter Time Constant: 18 msec

MF Limiter Time Constant: 39 msec

LF Limiter Time Constant: 85 msec

SW Limiter Time Constant: 182 msec

HF Limiter Threshold: 0.5 Vrms (KF850 set via plug in PCB)

(0.25 - 4 Vrms adjustable via internal Master Threshold Control & HF Threshold resistor)

MF/LF/SW Limiter Threshold: 1 Vrms (KF850 set via plug in PCB)

(0.25 - 4 Vrms adjustable via internal Master Threshold Control & MF Threshold resistor)

Low Frequency Protection

Protection Circuit Type: Sliding 2nd-Order Highpass Filter

Controlled by True-RMS detector to yield 2:1 compression of energy below 80 Hz above threshold set via internal Master Limit Control)

Phase Adjustment

Phase Network Type: 1st-Order Allpass

MF/HF Phase Adjustment: $0^\circ - 180^\circ$ (via internal plug-in PCB)

LF/MF Phase Adjustment: $0^\circ - 180^\circ$ (via internal plug-in PCB)

SW/LF Phase Adjustment: $0^\circ - 180^\circ$ (via internal plug-in PCB)

Sub Mono Switch: Sums both SW bands, each attenuated -3 dB



EA800i

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