Bag End Loudspeakers Studio-A
MONITOR SYSTEM

The field of studio monitor design is fraught with recycled ideas, and truly new concepts rarely come along. So when Bag End - an innovator in subwoofer technology for studios and touring rigs- announced that it was developing a full-range studio monitor system, I was interested. And true to form, they've come up with a clever new approach.

The system is available in two standard packages, Studio-A and Studio-B. Both combine two MM-8 mid/high cabinets and one or two subwoofer boxes using Bag End's patented ELF (Extended Low Frequency) technology. ELF also requires a Bag End system integrator, a single-rackspace processor that installs between the mixer and amplifiers, providing active equalization, frequency dividing and speaker-protection functions.

Designed for mastering facilities, larger control rooms and film-mixing stages and priced at $5,584, Studio-A includes two MM-8s, and ELF-1 system integrator and two D10E-S double-10-inch subs for performance down to 8 Hz. Intended for smaller studios, post-production suites and project rooms, the $3,368 Studio-B has two MM-8s, but substitutes the ELF-M integrator (fewer crossover controls and a single mono sub output) and comes with one D10E-S subwoofer that goes as los as 18 Hz.

Although the MM-8s are also sold separately, they are optimized for use with a subwoofer. By selecting other ELF subwoofer products in the Bag End line, users can custom-configure a system to just about any specific application.

The MM-8s use a single 8-inch coaxial driver, mounted in a 12x18x8-inch ported enclosure. Mounted on the rear of the woofer is a full-size, 1-inch throat compression driver. The woofer cone forms the outside of the HF horn flare, so the dispersion is extremely wide.

The MM-8s have a variety of useful front panel controls. An absolute polarity switch allows for a quick check of the acoustical polarity of program material. An EQ switch offers the choice of three brightness settings. In most applications, I preferred the Nearfield /Final setting, which seemed most natutral when listening at close quarters, with the monitors placed on the console meter bridge. By the way, Bag End, markets a number of mounting options for the MM-8s, including adjustable floor stands and wall-mounting plates.

The Studio-A system pairs two MM-8 coaxial monitors, two subwoofers and an electronics controller.

The ELF-1 dual-channel controller is a complex device, with 45 DIP switches per channel crammed onto its front panel. It's somewhat intimidating, but once you're set up, you have no need to change the controls again. A security cover is included to keep prying fingers off your favorite settings. The ELF-M (mono subwoofer output) eliminates the 90 switches and replaces them with factory set parameters suitable for most applications.

BY GEORGE PETERSEN

Installation is fairly simple and requires two channels of amplification for the MM-8s and another amp to drive the sub(s). The MM-8s have a sensitivity rating of 93 dB (1watt/1 meter)and perform nicely with a 150-to 200-watt/channel amp. The D10E-S sub has a rather efficient 94 dB (1W/1m) sensitivity at 80 Hz, but this rating plummets to 71 dB (1W/1m) at 20 Hz. Obviously, to get the maximum benefit out of an ELF subwoofer, you'll need LOTS of amp power. With stereo subs, I used a 450 W/channel amp, which proved ideal.

Be warned. If you're used to mixing on typical near-field studio speakers, you're in for a shock when you use and ELF system for the first time. Suddenly, you'll actually hear the rumble, grunge, dirt, and LF clatter (such as air-conditioning systems, background subways, earthquakes and A-bomb tests) that show up on your digital recordings, and you may not be happy with what's on the tape. However, because you're actually aware of the situation, you can remedy

your mixes before they go to disk, on film or off to broadcast. And the system is capable of reproducing ultra low bass material that's a physical sensation you can feel before you start hearing it.

I tested the stereo subwoofer Studio-A system. In my small, irregularly shaped 17x17 foot control room, a single D10E-S sub provided plenty of punch. Of course, the correct amount of bass is subject to taste. Most of my work is pop and acoustic albums and broadcast production; I suspect that rap and hip hop producers would really go for the dual-sub system even in smaller control rooms. The crossover's transition from the subs to the MM-8s was absolutely free of any harshness or other artifacts, and the balance of bass to MF and HF elements was even and accurate, whether mixing jazz, rock or broadcast material.

Above 100 Hz, the MM-8s are smooth and quite flat, even extending beyond 20kHz. The passive dividing network that crosses the woofer to the HF driver is also smooth, and the 2.9 kHz crossover point is high enough to keep out of the critical 1.5 to 2.5 kHz vocal range. I wasn't wild about the shape of the MM-8 enclosure. Standing up, it seems a bit top-heavy; perhaps a deeper, less-rectangular shape could provide more stability while retaining the same internal volume. The dispersion, however, is very nice: When mixing on the MM-8s, the sonic character of the system doesn't change just because you reached to EQ that kick drum in channel 1. The "sweet spot" at the listening position is quite wide, yet the combination of MM-8's point-source design and Ed Long-developed Time Aligned crossover provides excellent stereo imaging.

Overall, the Bag End Studio-A system is a winner. With an 8 to 20k Hz response, this is probably the widest range monitoring system on the market. And in today's studio environment, where more and more gear is being pumped into ever-smaller control rooms, post suites and remote trucks, size is a major consideration. At $5,584, the Studio-A system is definitely not for everyone. Fortunately for those on a budget, the (single-sub) Studio-B provides 90% of the larger system's versatility at a more affordable $3,368.

Bag End, manufactured by Modular Sound Systems; Box 488, Barrington , IL 60011; 847/382/4550; fax 847/382/4551.

MM-8 Specifications

System type:
Coaxial, 2-way, vented enclosure

Drivers:
One 8" low frequency cone One 1.75" aluminum compression high frequency

Crossover:
Time-Align® equalizer filter type at 2.9 kHz

Frequency response: (4 p Steradians) ±3dB 100Hz to 20kHz

Sensitivity: 84 dB SPL 1 Volt / 1 Meter

Power required:
1 Watt for 93 dB SPL @ 1 Meter

Power handling:
150 Watts continuous (below 2kHz)
40 Watts continuous (above 2kHz)
600 Watts instantaneous (below 2kHz)
160 Watts instantaneous (above 2kHz)

Weight: 31lbs

Distortion: Less than 1% THD (100 Hz to 20 kHz 94 dB SPL @ 1 m)

Impedance:
8 ohms nominal, 7 ohms minimum

Polarity: With the switch set to +, a positive asymmetrical signal applied to the red input terminal will result in a positive
asymmetrical acoustical output.

Enclosure volume: .54 ft^3

Dimensions: 17.5"h x 12.25"w x 8"d

Weight: 31 lbs.

D10E-S Specifications

System type: ELF sealed enclosure

Drivers:
2 EL-10's 10" ELF low frequency cone

Crossover: ELF Type 95Hz (-6dB)

Frequency response: (2 p Steradians)
±3 dB from 8 Hz to 95 Hz
±.5 dB from 12 Hz to 76 Hz

Power required: 1 Watt for 94 dB SPL @ 80 Hz @ 1 Meter (2 p Steradians)

Power required: 1 Watt for 83 dB SPL @ 40 Hz @ 1 Meter (2 p Steradians)

Power required: 1 Watt for 71 dB SPL @ 20 Hz @ 1 Meter (2 p Steradians)

Power handling:
400 Watts continuous sine wave

Impedance: 4 ohms nominal

Polarity: A positive asymmetrical signal applied to the red input terminal will result in a positive asymmetrical acoustical output.

Enclosure volume: 1.43 ft^3

Dimensions: 13"h x 22.5"w x 13"d

Weight: 50 lbs.

ELF-1 Specifications

Input connectors: XLR-type female

Input configuration: Balanced

Maximum input signal balanced:
+20 dBu

Output connectors: XLR-type male

Output configuration: Balanced

ELF mode: Stereo/Mono Sum

Minimum ELF cutoff frequency: 8Hz

Maximum concealment reduction:
44 dB @ 8Hz

Maximum concealment threshold:
+22 dBu /+16 dBu unbalanced

Concealment threshold range:
41.5 dB in .5 dB steps

Maximum output signal:
+24 dBm / +25 dBu
(with concealment disabled)

ELF dynamic range:
110 dB (20 Hz to 20 kHz)
(Band width unweighted)

Hi Pass mode: Stereo

Hi Pass filter slope: 12dB/octave

Minimum Hi Pass filter frequency:
-3dB @ 50 Hz

Maximum Hi Pass filter frequency:
-3dB @ 205 Hz

Anti-fiddle feature:
Security cover provided

Dimensions: 1.75"h x 19"w x 8.5"d

ELF-M Specifications

Input connectors: XLR-type female

Input configuration: Balanced

Maximum input signal:
3 V (+10 dBu)

Output connectors: XLR-type Male

Output configuration: Unbalanced

ELF mode: Mono Sum

Maximum output signal:
3 V (+10 dBu)

Minimum suggested load impedance:
2.5 KOhms

Nominal ELF cutoff: 18 Hz

Concealment reduction capability:
30 dB

ELF dynamic range >95 dB (20 Hz to 20 KHz) (Band width unweighted)

Hi Pass mode: Stereo

Hi Pass filter frequency programming: Plug in resistors

Hi Pass filter slope: 12 dB/octave

Factory set Hi Pass filter frequency: -3dB @ 130 Hz/ -6dB @ 97 Hz

Hi Pass filter frequency range: 50 Hz to 200 Hz. internally changeable