

HSU Research HB-1 Speaker System

Trappist ale on a beer budget.



BY MARK FLEISCHMANN

I admired the HSU Research HB-1 horn-loaded loudspeaker when I first heard it at the Home Entertainment Show in Los Angeles in June 2006. Nearby demo rooms were stuffed with megabucks two-channel gear, much of which simply didn't approach the directness of this \$125 budget wonder. I blogged my first response, and it's a good thing I still feel that way, because now it's printed right on the HB-1's carton: "This speaker may become the underground bestseller of 2006." Make that 2007. Aside from the year, I stand by my original impression.

I am predisposed to like the HB-1. To me, a chunky stand-mount, monitor, or bookshelf speaker is the ideal size. Sitting on my humble

particleboard stands, the HB-1s take up almost exactly the same space as my reference monitors. And they immediately begin performing the trick that so endeared them to me at HES—they get out of the way.

As I'm typing this, Glenn Gould is muttering his way through the monumental 1981 rerecording of Bach's Goldberg Variations.

The fact that it's an early digital recording and therefore less than pristine in terms of timbre is irrelevant. The speaker has zoomed right into it and picked out the precise dynamic envelope of Gould's touch. He picks out notes as though each one were a separate miracle.

Nonconformist at Work

Dr. Poh Ser Hsu, somewhat like a certain nonconformist interpreting Bach, seems to follow his nose wherever it leads him. He first appeared on the audiophile radar in 1991 with a subwoofer rated down to 16 hertz in an unusual cylindrical enclosure. Since then, he has moved into budget-sub territory, raising the state of the art in that category, both in his own formidable product line and as a consultant to Outlaw Audio. His

innovative Ventriloquist system, reviewed here in March 2004, reinvented the sub/sat set with some interesting signal routing and a heavy, elaborate center speaker that carried the load for the other featherweight satellites.

With the HB-1, Hsu begins a new train of thought. Actually, it's an old one: the horn-loaded loudspeaker, for decades a staple in JBL's pro-cinema line and Klipsch's consumer line. The tweeter sits in the center of the horn, located about 3 inches inward from the surface of the baffle and above a 6.5-inch woofer. At first glance, the horn seems to be a rectangular box measuring 3.75 inches high by 3 inches wide. However, this is simply the middle section of a three-part construction that also includes an interior, 1-inch square part and a shallow exterior part. The highly prominent middle section also has a subtle curve that the fingertip detects more easily than the eye.

On the most basic level, horns can control directivity and achieve high efficiency. Early detractors pointed out that the sound sometimes had a honking or cupped-hands coloration. Modern horn designs have mitigated much of these effects. In general, a horn-loaded speaker can play louder than an equivalent direct-radiating speaker. In the age of home theater, where budget-receiver power supplies struggle to fuel five to seven

speakers, that efficiency gain can be a boon. Since the woofer in such a system is rarely horn loaded, though, the gains are sometimes more academic than practical. Enthusiasts also believe that horns have intrinsic qualities that go beyond efficiency and dynamics—that they achieve greater clarity and focus by reducing the tweeter's interaction with the room.

When I first saw the HB-1's horn, I wondered if it would sound beamy. So, I moved around the room, listened around the horn, and even squatted to get my ears above and below it. Although the soundstage was most solid in the prime listening position, there really wasn't a bad seat in the house. There was no gross change in tonal balance or increase in coloration when I listened off axis.

The VTF-2 MK 3, at \$499, is not HSU's cheapest sub (budget models start at \$299), but it still offers superior bang for the buck. It measures nearly 2 feet tall and deep, and the manufacturer suggests using it as an end table. HSU also offers a dedicated center-channel speaker, the HC-1 (\$180).

One unusual option is the Maximum Output mode. To engage it, remove the plug from one of the two back ports and flip the bass-extension switch on the back.

Concert DVD Festival

At home, I connected the speakers to my Rotel RSX-1065. It's been my reference A/V receiver since 2001—a record—and will remain so until Rotel gets into HDMI. My main signal source is an Integra DPS-10.5 disc player. I used Monster M1.2S speaker cables with banana plugs.

For a change, music DVDs dominated my listening sessions. One

was *Glenn Gould: Hereafter*, the latest of many films about the man. While it was more of a character study than a set of complete performances, it did sensitize me to my later adventure with the Goldberg Variations.

More challenging was the Brahms *Ein Deutsches Requiem* DVD with Kathleen Battle and José van Dam. The 1985 quad recording is yet another early-days-of-digital disappointment, delivered here in Dolby Digital. It turned the Vienna Philharmonic's famous string

sound into a bland pudding, even with Karajan conducting. But the horn-loaded speakers did bring the vocal soloists to the forefront, pulling microdynamic subtlety out of a soundtrack I've always found to be frustratingly vague.

A great guitarist sees his first major surround and video exposure with *Jan Akkerman Live*. The former guitarist of Focus presented a series of mercurially shifting moods that the HB-1 delivered with plenty of variation in tonal color. It was as rewarding to watch

AT A GLANCE HSU RESEARCH HB-1 SPEAKER SYSTEM



SUBWOOFER: VTF-2 MK 3

Connections:	Line-level LR in, speaker-level LR in/out
Enclosure Type:	Vented
Woofer	
(size in inches, type):	12, carbon fiber impregnated paper cone
Power Rating (watts):	250 RMS BASH
Crossover Bypass:	Yes
Available Finishes:	Matte Black, Rosewood, Blond Maple Vinyl
Dimensions	
(H x W x D, inches):	22 x 15 x 23
Weight (pounds):	80
Price:	\$499

SPEAKER:

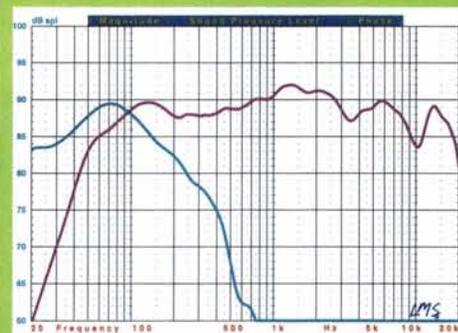
Type:	Two-way, stand-mount
Tweeter (size in inches, type):	1, aluminum dome, with constant-directivity horn
Woofer (size in inches, type):	6.5, treated paper cone
Nominal Impedance (ohms):	6
Recommended Amp Power (watts):	10–250
Available Finishes:	Matte Black, Blond Maple Vinyl
Dimensions (H x W x D, inches):	15 x 8 x 8
Weight (pounds):	12.2
Price:	\$125/each

HB-1

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These listings are based on the manufacturer's stated specs; the HT Labs box below indicates the gear's performance on our test bench.

HT Labs Measures: HSU Research HB-1 Speaker System



Satellite Sensitivity: 90.5 dB from 500 Hz to 2 kHz

This graph shows the quasi-anechoic (employing close-miking of all woofers) frequency response of the HB-1 satellites (purple trace) and VTF-2 MK3 sub

(blue trace). The passive loudspeaker was measured with its grille at a distance of 1 meter with a 2.83-volt input and scaled for display purposes.

The HB-1's listening-window response (a five-point average of axial and ± 15 -degree horizontal and vertical responses) measures $+1.57/-6.65$ decibels from 200 hertz to 10 kilohertz. An average of axial and ± 15 -degree horizontal responses measures $+1.78/-6.00$ dB from 200 Hz to 10 kHz. The -3 -dB point is at 84 Hz, and the -6 -dB point is at 55 Hz. Impedance reaches a minimum of 4.81 ohms at 186 Hz and a phase angle of -50.31 degrees at 106 Hz.

The VTF-2 MK 3's close-miked response, normalized to the level at 80 Hz, indicates that the lower -3 -dB point is at 41 Hz and the -6 -dB point is at 20 Hz with one port bugged and the Bass Extension switch set to 18 Hz. The upper -3 -dB point is at 121 Hz with the Crossover switch set to Out. —MJP

his powerful hands turn out glittering runs and soulful intonation as it was to hear them in DTS 5.1.

Twelve years after the fact, I've also added *No Quarter* (a.k.a. *Unleaded*) by Jimmy Page and Robert Plant to my library. The DTS surround remix finally fulfills the potential of this thickly layered live recording in a way my stereo tape of the old MTV broadcast never could. The new mix aggressively uses the surround channels to provide an on-stage feel, moving some elements out of the front soundstage and giving everything more breathing room. The horn-loaded speakers' tight focus abetted this bold mixing strategy.

The horn-loaded drivers precisely constructed the recording's diverse elements and distributed them throughout the soundfield. I was finally able to appreciate Page's frequent changes of instrument, the flavor that the traditional Middle Eastern instruments add, and, in the final numbers, the addition of the string orchestra. The orchestra, formerly buried, seemed to separate and float sinuously above the other instruments.

Apocalypse Again and Again

My movie sessions started with a few appetizers, most memorably *Ju-on 2*, the Japanese precursor to *The Grudge 2*. With this title, the sub lent menace to the low-frequency

jolts that punctuate key moments. But the meal was the Complete Dossier DVD set of *Apocalypse Now*, which includes both the 1979 original and the augmented version dubbed *Apocalypse Now Redux*.

This cinematic out-of-body experience comes with one of the richest soundtracks in film history, rendered in Dolby Digital EX. The HB-1 handled each ingredient like a master chef. Key to the storytelling is Martin Sheen's voice-over, delivered in an ominous low voice. The vocal equivalent of a sepia tint, this is arguably the most significant element in the soundtrack, and the HB-1 nailed it. Marlon Brando's menacing improvisations—which a speaker less fervently devoted to absolute clarity might have blurred—later came through the horns with all their tiny inflections and delicate enunciation fully intact.

With five horns firing at you, panning effects are a treat. The beating of helicopter blades circled through the soundfield and merged with the innovative Moog-synthesizer soundtrack. Brassy Wagnerian fanfares cut through the satirical battle scene led by Robert Duvall. It was fun to use the DVD's "redux marker" to identify the added footage that extends the surfing-related humor and underscores the characters' insanity. A symphony of tiny jungle noises lured me into the nervy tension that's present as Sheen stalks

HIGHLIGHTS

- Horn tweeters boost efficiency and control dispersion
- Spacious, open soundstage
- Great price/performance ratio

Brando. The sub conveyed the movie's many ballistic and percussive moments, not only catching their upper-bass harmonics but also the low-bass fundamentals.

I don't want to overrate even the best budget speaker. Manufacturers who know what they're doing can achieve greater transparency by using pricier materials and more elaborately constructed enclosures. But the HB-1's sheer clarity, and the well-organized manner in which it communicates, make nearly all similarly priced—and quite a few higher-priced—products look like underachievers.

This is the kind of speaker that transforms everything you put through it. Sit in the prime listening position, and it'll grab you. Sit off axis, and it won't let you down. The VTF-2 MK 3 subwoofer achieves the kind of bass home theater buffs crave. Together, they form the budget-speaker package to beat. 🗨️

*Audio editor Mark Fleischmann is also the author of the annually updated book *Practical Home Theater* (www.quietriverspress.com), now in its sixth edition.

HSU RESEARCH HB-1 SPEAKER SYSTEM					OVERALL RATING
Build Quality	Value	Features	Performance	Ergonomics	94
→ Neodymium magnet in fluid-cooled tweeter	→ The HB-1 is a genuine bargain at \$125 each	→ Tweeter has one of the best horns I've heard	→ Horn-loaded tweeter plays loud even with budget receiver	→ Speakers have key-hole for wall mounting	
→ Treated paper woofer with treated cloth surround	→ Images as well as pricier speaker designs	→ Sub has extra port and switch to boost headroom	→ Boosts clarity by reducing room interaction	→ With grilles off, horns exude retro tech chic	
90	97	94	96	85	
General information					
HB-1 Stand-Mount Speaker, \$125/each; VTF-2 MK 3 Subwoofer, \$499 → Hsu Research, (800) 554-0150, www.hsuresearch.com → Dealer Locator Code Hsu					

Dr. Hsu, master of the budget sub, moves into budget-speaker territory with the HB-1. The sheer clarity he gets out of his horn-loaded tweeter should inspire copycats. It sounds that good. And Hsu's top-line (but still affordable) VTF-2 MK 3 subwoofer adds true, deep bass.