KEN C. POHLMANN

# Yamaha

## YSP-1 Digital Sound Projector

Although many manufacturers claim their products are revolutionary, the truth is that most audio/video components are fairly generic. DVD players, surround receivers, and even speakers tend to be interchangeable parts of your system. It's rare — very rare — that a truly unique product comes along, one that radically departs from the norm. These products are generally works of genius or else colossal failures.

The Yamaha YSP-1 Digital Sound Projector is a speaker unlike any you, or I, have ever seen. At first glance, it looks like a king-sized center speaker. While it should be placed, like a center speaker, just above or below your TV, the YSP-1 is designed to deliver not just the center channel, or even stereo, but a full five channels of surround sound. It even incorporates all of its own electronics, including Dolby Digital and DTS decoding, Dolby Pro Logic II and DTS Neo:6 surround processing, plus built-in digital amplifiers for each of the 42 drivers (yes, that's right — 42!) behind the grille. In other words, no receiver required! Just plug in a multichannel digital audio feed from a DVD player or HDTV tuner, and the YSP-1 does the rest.

PHOTOS BY TONY CORDOZA

That's an attractive proposition, because one of the nagging obstacles to conventional surround sound is placing and wiring the surround speakers. While a single speaker is hardly ideal for surround sound, this is an exciting alternative for dorm rooms, bedrooms, an office, the International Space Station, or anywhere you demand surround sound but otherwise can't get it because of limited space, inflexible décor . . . whatever.

How can one speaker create a surround sound field? Digital signal processing in the YSP-1 individually varies the level and timing of its drivers to create several distinct sound beams. In the same way that stereo speakers create phantom-center images between them, these beams bounce off your room's walls to give the impression that sound is coming from all around you. More so than with other speakers, the success of the YSP-1 depends on the shape and acoustic characteristics of your room. So consider your space before you buy — this speaker craves nearby reflective surfaces to perform at its best.

Naturally, the YSP-1's complement of connections is unusual. Instead of a banana plug or a spring-loaded clip, it has multichannel digital and stereo analog audio inputs, a subwoofer output, and a composite-video output for the onscreen menus. And unlike most other speakers, the YSP-1 has its own remote control. In addition to more conventional controls, four Beam Mode buttons are used to select different sound fields:

### fast facts

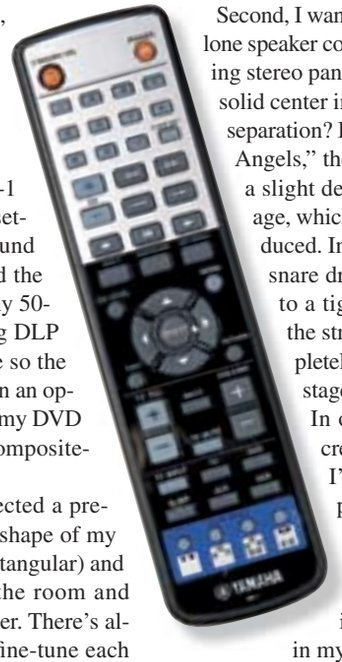
**DRIVER COMPLEMENT** 40 1⅝-inch tweeters, 2 4⅜-inch woofers
**POWER** 2 W x 40 and 20 W x 2
**FINISH** silver
**DIMENSIONS** (WxHxD) 40½ x 7¾ x 4⅝ inches
**WEIGHT** 28¾ pounds
**PRICE** $1,500
**MANUFACTURER** Yamaha Electronics USA, yamaha.com/home, 800-492-6242

### key features

- Front-panel display
- Onscreen menus
- 5.1-channel Dolby Digital, DTS, Dolby Pro Logic II, and DTS Neo:6 processing
- 3 user memory presets
- 3 Beam modes plus manual settings
- Night Listening mode
- Wall-mountable using optional brackets
- Remote control
- **inputs/outputs** coaxial and 2 optical digital audio inputs; 2 analog stereo audio inputs; subwoofer output; composite-video output (for onscreen menus); RS-232C port

Stereo, Stereo+3, 3-Beam, and 5-Beam.

In the Stereo mode, the woofers on each end of the array are combined with half of the tweeters to simulate conventional left and right speakers. In the Stereo+3 mode, which is said to be more effective than the others when the YSP-1 is placed in a corner, the left (L) and right (R) stereo channels are augmented with virtual left surround (Ls), right surround (Rs), and center (C) channels. The 3-Beam mode produces, naturally, three beams — L+Ls, R+Rs, and C — for a limited surround effect. In the 5-Beam mode, all five channels (L, R, C, Ls, Rs) are produced by beaming, each with its own orientation. Only the 5-Beam mode claims to yield truly enveloping surround sound.



**SETUP** Hooking up the YSP-1 was a whole lot easier than setting up a conventional surround sound system. First, I placed the speaker on a shelf beneath my 50-inch, wall-mounted Samsung DLP TV, leaving a little clearance so the amps could breathe easy. I ran an optical digital audio cable from my DVD player to the YSP-1 and a composite-video cable to the TV.

Once I powered up, I selected a preset that corresponded to the shape of my listening room (square or rectangular) and then indicated the size of the room and where I had placed the speaker. There's also a manual setup mode to fine-tune each of the sound beams or virtual speakers. This allowed me to adjust horizontal and vertical angles, focal length, and image location of the beams as well as the bass or treble.

Over the course of a week, I spent considerable time experimenting to get the best sound quality and most convincing surround field. Unlike most surround speaker systems, the YSP-1 doesn't include a subwoofer. So I added my own, taking pains to set the optimal crossover frequency, level, and time delay for the line-level sub output. Setup complete, I put on my ears.

**MUSIC PERFORMANCE** I started in stereo mode, listening to a number of CDs including Lenny Kravitz's *Baptism*. First, I wanted to make sure that the speaker's tonal quality was up to snuff. Could it reproduce the full frequency range without coloration? I listened to a lot of music, but it was the acoustic piano on *Baptism* that finally convinced me. It's tough to reproduce an acoustic piano, but the YSP-1 pulled it off without sounding tinny, clinky, boomy, harsh, or muffled.

Nonetheless, playing full-range music like this through the YSP-1 with the subwoofer off revealed its lack of bass. With the sub switched back in, the music had the foundation it needed.

Second, I wanted to make sure that this lone speaker could reproduce a convincing stereo panorama. Would there be a solid center image and good left/right separation? In the ballad "Calling All Angels," the piano is recorded with a slight delay to create a wide image, which was realistically reproduced. In contrast, the vocals and snare drum were solidly locked to a tight center image. When the strings came in, they completely filled the stereo soundstage with a balanced spread. In other words, the YSP-1 created the same panorama I'd expect from a normal pair of speakers. Even at moderately loud levels, the speaker showed no signs of stress or strain in this mode — at least in my small room.

I moved on to multichannel music and loaded up the Dolby Digital mix of Seal's *Seal IV*. (Since the YSP-1 lacks six-channel analog inputs, I couldn't listen to the high-resolution mixes on DVD-Audio discs or SACDs but was able to play the Dolby Digital or DTS versions.) The music was firmly placed across a wide arc before me. On "Love's Divine," lead vocals were clearly front and center, flanked by piano, brass, and backup vocals, while reverberated vocals, piano, and strings appeared at either side of my shoulders and slightly behind

## PLUS

**Unique all-in-one design eliminates need for separate speakers.**
**Simple, two-cable connection.**
**Good sound quality (with subwoofer).**

## MINUS

**Takes time to dial in optimal settings.**
**Surround sound less effective than with regular surround speakers.**
**Amplifiers not upgradable.**
**Subwoofer not included.**

— as if out of thin air. Seal's vocals had a smooth and natural sound, with just a bit of distortion at loud volumes. Sound quality, like the artist himself, was earnest and refined, and the surround mix was surprisingly expansive.

**MOVIE PERFORMANCE** Next, I loaded in *Dodgeball*, a goofy Ben Stiller comedy that's funny in a low-IQ sort of way. In stereo mode, dialogue was intelligible, and sound effects were realistically placed in the panorama. When a car drove out of a scene, I could clearly hear it move across the front and exit right.

The 3-Beam mode provided a much wider soundstage without seeming exaggerated or unnatural, and 5-Beam opened up the soundstage even more and occasionally even gave a hint of sound from behind me. In the film's finale, shouts of approval and dismay from a crowd of spectators join other sound effects in the surround channels. The YSP-1 gave the impression that there were surround speakers on the sides, just not as far back as they should be. It wasn't as enveloping as true surround sound, but it was still engaging.

Looking for the ultimate stress test, I loaded up the *Master and Commander* DVD. Being hit by a dodgeball might be humiliating, but at least it's not as painful as a cannonball. In the battle scenes, you have cannonballs, musket balls, ship's rigging, and body parts flying through the air. The 5-Beam mode really let this movie rip, conveying all the terrifying sound effects that accompany the visuals. The YSP-1 created a realistic sense of sonic space around me, though it only put me three-quarters of the way into the field compared with the total immersion I get from true surround.

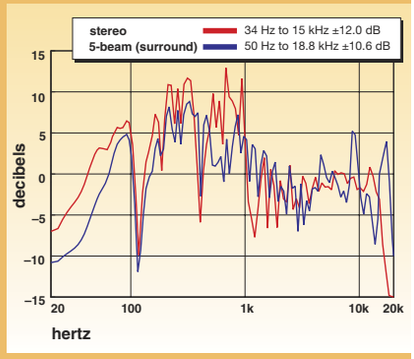
I pushed the YSP-1 to its volume limit, and I must admit it played loud enough to make even this naval mayhem seem pretty real. Nonetheless, its total output of 120 watts can't compete with a steroid-pumping 500-watt receiver. And unfortunately, there's no way to upgrade the amplifiers to get more power.

**BOTTOM LINE** Keeping in mind its limitations, Yamaha's YSP-1 is an excellent solution for some challenging situations. Are you after a very clean, minimalist installation with your on-wall flat-panel TV? Is your room too small to accommodate lots of speakers, or does its design prohibit a traditional setup? Or maybe you're just looking for that all-in-one package for watching movies in bed? If any of these apply, check out the YSP-1. This is *not* another me-too product. And it does border on genius. **S&V**

## in the lab

**Bass limits** (lowest frequency and maximum SPL with limit of 10% distortion at 2 meters in a large room)
all modes .....80 Hz at 81 dB

All measurements were taken at 2 meters directly in front of the YSP-1 in a large room with bare walls and an 8-foot ceiling. The speaker parameters were optimized for the space. The Stereo curve indicates the speaker's basic response characteristic, showing limited bass and reasonably uniform overall response up to 1 kHz and a 10-dB drop above that. The 3-Beam (not shown) and 5-Beam curves indicate more evenly balanced response. All speaker systems designed to use reflections from room surfaces will have a downward-sloping response in the far field because treble drops off more quickly with distance than lower frequencies. The typical comb filtering caused by room reflections and the interaction of multiple channels are also apparent in the graph curves. — *Tom Nousaine*




***A full lab report with extended comments and additional response curves is available on S&V's Web site.***