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Bryston SP4

Immersive Sound Preamp/Processor

Doug Blackburn

This is going to be a very different review. This is the first time I have heard Bryston's newest processor. But I have reviewed it before. What? Bryston needed a new processor to deal with the newest Immersive Sound options appearing on most 4K/UHD discs. It makes all kinds of sense for medium-sized companies like Bryston to partner with another manufacturer that has already developed a processor that handles immersive audio formats, to get up and running Immersive Sound without a couple of years of development effort to design something from scratch. Bryston is not being coy at all about the fact that they have partnered with StormAudio (France) for the manufacture of the SP4 processor. This early version of Bryston's processor is much the same as Storm's ISP Elite processor, right down to the menus. Of course, everything is branded for Bryston. The faceplate is engraved with the Bryston outline font, and the menus feature Bryston's name prominently. Bryston says that over time, the Bryston version of this processor and the Storm version will have increasing numbers of differences in software and hardware. Bryston's intent is to develop hardware or software differences over time that will differentiate the SP4 and perhaps expand the performance envelope even more. The Storm platform is flexible enough to give Bryston quite a few options for putting their own ideas into this processor over time. Bryston won't make changes just for the sake of changes though. They say everything they do will be focused on improving the performance of the SP4. The SP4 is essentially a Linux computer in a box with custom software that defines what the hardware does. With access to the code and to hardware

changes, Bryston should be able to develop and "personalize" the SP4 to give it unique performance and features.

Physically, the SP4 is three rack units high while Storm's ISP is four rack units high. And, of course, the faceplate is engraved with Bryston's logo. Bryston is offering options already and those include: since the standard output connections are XLR, there is a 16-channel output option with RCA jacks; SphereAudio binaural headphone processing (requires separate headphone amplifier) for immersive headphone sound; DIRAC Live room correction suite; and StormMonitoring remote diagnostics and monitoring.

Bryston is based in Peterborough, Ontario, Canada. To support the SP4, Bryston is servicing SP4s at their facility in Canada. To make the service process simple for U.S. owners, Bryston has an office in Vermont that U.S. customers use as the shipping address. That office manages the process of getting the SP4 into Canada. This frees customers from having to deal with any of the customs export/import paperwork in the unlikely event that factory service is needed.

The Auro-Matic Rant

The Asian audio brands have all jumped into Immersive Sound with support for Dolby Atmos and DTS:X. But having support only for those two immersive formats completely misses the best and most useful Immersive Sound processing available. I'm talking about Auro Technologies' Auro-Matic™. Auro-Matic is so important because it takes any number of channels; 2, 3, 4, 5, 6, or 7 active channels and puts ambient Immersive Sound into the height chan-

nels. This works so well, you'll want to use it all the time. In fact, in many cases, discs with Atmos or DTS:X soundtracks have so little information in the height channels for the entire movie, that *not* using Atmos or DTS:X and using Auro-Matic instead actually makes the immersive listening experience better. Atmos and DTS:X can sound great, but most studios won't spend more money on an immersive mix with a sound engineer at the controls making the soundtrack make the best use of the height channels. Instead, the studios typically just run the movie's 5.1 or 7.1 soundtrack through an automated encoder to produce the immersive soundtrack. The problem is, this automated process is terrible. Almost nothing good ends up in the height channels. I reviewed two Atmos movies that had no more than 30 seconds of sound in the height channels during the entire movie. Use Auro-Matic on that soundtrack instead of Atmos, and you get ambience in the height channels for the entire movie. Huge kudos to Bryston for jumping in with a processor that supports Auro-Matic and Auro-3D™. I wouldn't own a processor that lacks Auro-3D/AuroMatic. Without Auro-Matic, you are stuck with DTS Neural:X™ and Dolby Surround™, the Dolby and DTS equivalents of Auro-Matic, but those don't work nearly as well as Auro-Matic. DTS Neural:X does a better job than Dolby Surround, but it's still not even half as good as Auro-Matic at providing convincing ambient sound in the height channels. Dolby Surround works so poorly, it actually makes everything sound worse, and it puts the least amount of ambience in the height channels. This is universal, it's not a Bryston/Storm issue. If you go to the trouble of spending money on loudspeakers and installation of height channels in your theatre, you deserve to hear the benefits of your theatre update, and so far, only Auro-Matic is going to help you achieve that when you watch a movie with one of those hobbled Atmos or DTS:X soundtracks. If you know the difference between good sound and bad sound, you won't want to use Neural:X or Dolby Surround—at least not until Dolby and DTS realize their solutions aren't very good yet. There's no reason they can't be better, they just *aren't* as good as Auro-Matic yet. This is *not* a subtle difference. Dolby Surround makes movies and music sound *worse* 100 percent of the time. DTS Neural:X makes music and movies sound maybe 10-20 percent better... that means maybe 20 percent of what Auro-Matic does. So Neural:X is at least a small improvement. Dolby has a lot of work to do before Dolby Surround is going to be of any use for anyone concerned with sound quality.

Features

Since the SP4 has the same hardware as the previously reviewed Storm ISP but with firmware that's had a little more than one year of improvements, I'm going to blend portions of the Storm ISP review with new observations and deletions of things that don't apply to this review. Comments from the original text not applicable to the SP4, and improvements since the ISP review, along with some new observations, have all been added and deleted as needed. So parts of this review may look familiar, but there's enough that is new and updated to give the best picture of the SP4 a little more than a year after the previous review. These changes are made without annotation. References to the ISP processor in the original text have been changed to reflect Bryston SP4. Bryston's SP4 is so good, it deserves full coverage, even if many of the ultimate findings are the same as the previous review from a little more than one year ago.

Features — Bryston SP4 Preamp/Processor

Supports multiple theatre configurations and unlimited presets
 16 channels decoding / upmixing
 Supports all current immersive audio formats: Auro-3D 13.1; Dolby Atmos 7.1.6; and DTS:X 7.1.4
 Up to 16 channels of post-processing including arraying, multi-way, multi-subwoofer
 Up to 10 bands Parametric EQ/crossovers per channel
 Up to 16 channels Dirac Live 2.0 Room Calibration (optional)
 Unlimited presets for combinations of settings
 Unlimited support for Theaters and zones
 SphereAudio binaural Immersive Sound headphone technology (optional)
 HDMI: 7 inputs; 2 outputs; all channels support HDMI 2.0 / HDCP 2.2
 Outputs: 16 channels plus stereo downmix outputs, all with XLR connectors
 Optional expansion modules
 Web and IP-based configuration and control (Web interface, control systems, mobile devices)
 Remote support, control, and monitoring with StormMonitoring (optional)
 IEC power cord socket
 Supports: HDR10; HLG; Dolby Vision*; 1080p 3D; Auro-3D; DTS:X; Dolby Atmos; Ethernet; Wi-Fi
 Universal power supply
 Multi-way crossover support with 6, 12, 18, and 24 dB/octave slope options
 Highly configurable and customizable
 Wide support for control systems via IP/Ethernet, RS-232, wired IR, mobile devices
 iPad control app

* Support for Dolby Vision is not "official" or recognized by Dolby, but because there is no video processing done in the SP4, the Dolby Vision metadata and flag are just passed through the SP4 without being altered. The video display gets the flag and metadata and if it supports Dolby Vision that will be displayed.

Specifications — Bryston SP4 Preamp/Processor

Dimensions: with feet installed 17.25 W x 6 H x 18.5 D (inches) – 3U Rack height
 Weight: 28.8 (pounds)
 Power requirement: 100-240 VAC; 50/60 Hz
 Power consumption: 240W
 Frequency response: 6 Hz to 24,000 Hz
 Max. THD: 0.007% (21dBu)
 Signal to Noise: 112 dB (21 dBu)
 Warranty: 5 years parts and labor
 MSRP: \$13,995 (USD)

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EQUIPMENT REVIEW

Bryston SP4 Immersive Sound Preamp/Processor

The Bryston SP4 (\$13,995 MSRP) is a 16-channel Immersive Sound processor that is fully configurable for a wide variety of systems. In fact, the configuration capabilities are so detailed that most who purchase the ISP will rely on the knowledge and experience of their integrator or installer to set up the SP4. The optional Dirac Live measurement system and correction engine is one of the two or three correction systems I've used that are always an improvement over no correction. You run DIRAC Live software on a computer using a calibrated measurement microphone. The computer calculates the corrections required, and the result is downloaded to the SP4. The SP4 can be controlled via Ethernet/IP, Wi-Fi (computers, and iOS/Android mobile devices), and via home automation/control systems. No handheld remote control is included with the SP4 processor. For this review, I used the IP address of the SP4 on my computer to access the Remote Control page of the SP4, plus installer and expert menus that provide access to many parameters, including parametric equalization and crossover creation. The SP4 has the ability to be controlled at great distances via the optional remote monitoring and diagnostics feature called StormMonitoring. The remote monitoring and diagnostic capability allows someone, anywhere in the world, to access the

Configuration Capabilities

The SP4 can do so many things; I'll undoubtedly miss some. It ranks right up there with some of the most configurable surround processors I've reviewed in the \$10,000 to \$35,000 price range. Parameters can be backed up and restored. All the settings and configurations are contained in a password-protected area. The first page in the protected area is the "System" page, containing information about your system as well as having the ability to change the password, check firmware version, etc. The Main loudspeakers page lays out the active channels, allows the creation of a headphone or other audio zone, and allows customizing which channels are active for different pre-sets (a pre-set is a group of settings like 7.1.4 for movies or L&R for stereo or other combinations of levels, crossovers, etc.). The Settings page has settings for triggers, front panel displays, limiters, and a few other settings. The Presets page lets you configure Presets by specifying your Theater setup mode, your Profile (with or without Dirac for example), whether the audio "focus" is your best seat or your entire theatre, the zone, the frequency response curve you want (i.e. flat, natural, or something else), and 12 VDC trigger behaviors. There



SP4 through a computer on the home network. This requires some setup of the home network to allow a network tunnel (or other appropriate network access) so that the remote connection can reach the SP4. Bryston or your local dealer/installer will be able to help with that setup if needed. With competitive 16- to 32-channel processors priced in the \$20,000 to \$32,000 range, the SP4 is definitely a price/performance/features leader in the high-end processor product category.

The SP4's back panel is so simple, it almost seems like something is missing—yet there are seven HDMI inputs, all HDMI 2.0 and HDCP 2.2, two HDMI outputs, a cooling fan (inaudible during the review), power cord socket, power switch, Ethernet jack, wired IR in/out, four triggers, three digital coax inputs, three digital optical inputs, four analog stereo inputs, two USB ports, and 18 XLR connections for the analog outputs. The simple front panel has three navigating buttons, one standby button, one knob, and a graphic display screen in the center.

There is no on-board video processing in the SP4 processors. They rely on the front panel and the displays on the computer, mobile device, or control system each owner/installer decides to use, so there's really no need for on-screen displays. There are also no built-in, media-playing capabilities.

are also 10 parametric equalization controls for each channel should you need to achieve some specific response that you can't achieve with Dirac Live alone. And these adjustments include the ability to define custom high-pass or low-pass (or both) filters with 12 or 24 dB/octave slopes. There is so much configuration capability, you can even setup bi- or tri-amping for loudspeakers without internal passive crossovers. Subwoofers without internal amplification or setup capabilities can be fully configured via the SP4 settings also.

One of the configuration conventions is the use of Zones, which can be conventional zones or can be something "special" like a headphone zone. There are two extra XLR connectors on the SP4's back panel labeled "downmix" that can be assigned to the headphone zone. You connect those analog outputs to the inputs of a headphone amplifier located conveniently close to the system owner's favorite listening seat, plug in your headphones, and you're ready to go. Do not attempt to operate headphones directly from the XLR analog outputs as damage could occur to the headphones or SP4. If you do have a headphone zone set up, you have the option to add SphereAudio, an Auro Technologies post-processing option. You can listen to sources with any number of channels, and the SP4 will convert non-stereo sources to stereo. If you enable SphereAudio, the signal is processed into binaural

“The Sound Of The SP4 Playing Music Was Inviting, Natural, Amazingly Detailed, And Captivating.”

stereo that supports immersive headphone listening. The key is that SphereAudio moves all channels in the original source into a binaural headphone signal that helps you move headphone listening from an inside-your-head presentation, to an immersive presentation with sound sources not confined to being inside your head. Binaural headphone listening can produce sonic images that seem to come from anywhere in your room or even beyond your room... front, back, sides, above you, or any combination. I wanted to experience SphereAudio during the review but I lacked a component I could use as a high-quality headphone amplifier.

Using The SP4

There is contextual help for the Web interface menus that can be turned on or off. This built-in help clarifies functions of just about everything you can adjust. The SP4's control page (on a Windows 10 computer in my case) contains controls for power, source selection, various volume/sound options, bass/treble, volume touch-up controls for center-surrounds-sub, a brightness control (audio brightness, not video), and lip-sync delay. Like many recent products, you can only delay audio in relation to video. I have at least one combination of components that needs to have the video delayed in relation to the audio (or audio needs to happen sooner than the 0 ms setting allows). There have been several processors here with this audio-advance capability in addition to the normal audio-delay capability. They do that by adding “negative” values below the 0 dB setting. Zone 2 controls and Trigger controls round out the remote control page. None of that will ever be seen if the SP4 is in a full custom theatre with touch-pad controller. Some may want a music zone setup only for stereo music playback. There is an amazing amount of customization that can be done between Presets and zones, as they are not linked.

The time it takes to start the SP4 is on the long side in the standard startup from completely turned off. It can take up to 80 seconds or so to be ready to go with video and audio from a “cold start.” There is a quick-start option that puts the SP4 into sleep mode. It starts up much more quickly in quick-start mode. There were zero operational glitches, bugs, or crashes during the review and every component here worked perfectly with the SP4.

Listening

The SP4 processor produced sound that is clearly the equal of other high-end processors. It definitely has the “chops” to match competitors for any evaluation parameter I could think of, from low noise floor, to a neutral sonic character that lacks any artificiality. There is: no harshness when reproducing massed stringed instru-

ments; no over-emphasized sibilants; no glassy, gritty, dull, or harsh or mechanical-sounding treble sounds; and no loss of dimensional size in stereo or multi-channel sources, even at lower volume levels. The sound is nicely dynamic, without compressing image size when the volume level goes up. For example, at the beginning of the song “Going Back To Harlan” on Emmylou Harris’ *Wrecking Ball* album, the song begins at a much lower SPL (sound-pressure level) than previous tracks or the latter half of this track, but the apparent “size” and “distance” of the instruments and vocalists remained the same when the volume level decreased. High-quality analog sources sounded just as good as high-quality digital sources. Occasionally I encounter a component that attempts to “outperform” competitors by emphasizing detail or space or by using an intentionally manipulated response curve. The SP4 does none of those things, remaining inviting and pleasurable to listen to with all sources. When called on to produce a huge stereo “space,” the SP4 acquitted itself well. The title track on the Emmylou Harris album begins with a very large sonic space created in the studio. The SP4 did a great job of re-creating that feeling of big space from just two loudspeakers with no extra processing. A quick survey of other albums that capture a great sense of space revealed that spaces from arenas, to symphony halls, to clubs were presented equally well with appropriate relative sizes. The sound of the SP4 playing music was inviting, natural, amazingly detailed, and captivating. One of my acid-tests is how quickly I can transition to “meditation mode,” where nothing exists aside from me and the music. The SP4 did a really great job of sucking me in quickly, then letting the music do the rest. As long as I picked something I was in the mood for, it took less than a minute to let go of everything else and dive into the musical pool. That just doesn’t happen (for me, anyway) unless the gear can deliver a transcendental music listening experience by delivering the music without altering anything about the recording. Everything from the deepest bass to the highest treble had honest, uncolored, and highly accurate sound. It’s as if the SP4 stepped away from the music and let the performances unfold exactly as captured.

All the immersive soundtracks were reproduced at least as well as heard with other five-figure processors. Unfortunately, the movie industry isn’t releasing many movies with immersive soundtracks that actually deserve being called immersive. We have all this technology, but we have few movies that use it effectively. The 4K UHD version of *Blade Runner* is one of the small group of movies that have some actual human intelligence behind the content in the height channels of its Dolby Atmos soundtrack. It was great to *finally* hear an immersive movie soundtrack that at least attempts to provide a measure of what’s possible with Immersive

Bryston SP4 Immersive Sound Preamp/Processor

Sound. There are a number of music titles released in Auro-3D, but none of them come close to the sonic properties Editor Gary captured in his recording, *Live N' Bernin'*, of jazz performed by The BBB Featuring Bernie Dresel (see Monstermusic.com, Amazon, or other music retailers). The Blu-ray version includes a 9.1 Auro-3D mix. Gary used a second set of microphones placed above the primary microphones for this recording. The result is so much like being in the original recording venue, it's easy to forget you are listening to a recording. Gary's second Native Auro-3D release is *Bern Bern Bern* on the Dig•It Recordings label, also with The BBB Featuring Bernie Dresel. This disc was recorded in the famous Capitol Studio in Hollywood and is quite a different listening experience than the live disc. It's amazing to hear Auro-3D with the height channels recorded with their own microphones. The other Auro-3D music titles I've heard sound more like studio manipulations of original multi-track performances. That can be amusing and even entertaining, but it doesn't end up re-creating a live performance in a real space the way Gary's recordings do. On the *Live N' Bernin'* disc, you can even pick out different instruments being captured (and played back) at different heights due to the risers used for the recording session at the club venue in the LA area. Gary's recordings show what the immersive formats are capable of when the original sound is recorded immersively with separate height microphones. I'm quite pleased with the results achieved with these two "shoulda been like this all along" tasty bits of immersive software.

Things seem to be improving in the immersive sound for movies, as more titles are coming out with better content in the height channels. Watch Editor Gary's movie reviews and check the "Immersive" rating to get an idea of how well each movie uses Immersive Sound. In the first year of Immersive Sound, there were very few releases with good immersive results. Thankfully, things seem to be improving in the last few months, with titles coming out with some regularity that are getting decent Immersive Sound scores. But poor-quality immersive releases still dominate overall.

The SP4 was great at revealing subtle sonic changes, such as differences in music tracks when they may have been recorded on different days or in different studios. The SP4 reveals subtle differences like these without hitting you in the face with them. For example, Dan Fogelberg's 1977 *Nether Lands* album has a number of tracks that sound "thinner" and "smaller" than preceding or following tracks—as if somebody forgot to mix in a couple of instruments or they didn't quite get the levels right for everything

on those tracks. The SP4 lays that right out for you, but it doesn't ruin your ability to enjoy the music in the process.

The sound quality of the SP4 processor is so good, there's no reason to spend more only to get better sound quality. If you need something one of those more expensive processors does, so be it. But if the SP4 does everything you need for your system, there's nothing out there that sounds any better, at least not in my experience so far.

Combined with top-flight amplification like Bryston's 9BSST² five-channel amplifier or the Hegel C-55 amplifier reviewed while the SP4 review was in progress, the quality and detail in the sound are so amazing that I wish the SP4 was here long enough to listen to all 4,000+ albums in my music collection and hundreds of movies. The ability of the SP4 to bring out subtle detail as long as the amplifier and loudspeakers are up to the challenge is impressive. The re-creation of subtle things like doubled or tripled instruments (the same instrument, multitracked with slight timing differences) gets lost in playback with "lesser" components, but the SP4 and Hegel amplifier revealed sounds I thought I knew quite well were actually a doubled synthesizer here or a doubled guitar there or a tripled vocal elsewhere. I happen to love listening for little things in favorite music that give hints at how the recording was made and how it was recorded. Actual reverb, digital reverb, and old-school analog electronic reverb all sound different but interesting in their own way, and the SP4 is great at revealing that subtle difference. While the SP4 does that, it keeps the music sounding naturally seductive and unimpeded, as if all the electronics between the performers and listener disappear.

That characteristic follows right to movie soundtracks, but with the video images and multiple channels of sound coming from all directions, your brain is considerably more "busy" gathering this multitude of inputs and making sense of it all. So the subtleties of the improved sound may not be as immediately obvious as they are with music. But, if you close your eyes, to remove that distraction, the sound is immediately revealed to be fabulous. This prompted me to replay favorite scenes from lots of movies to get re-calibrated about just how good they sound with the best processing and amplification.

Conclusion

Bryston's SP4 processor is the bomb. There is nothing about it I don't like. **WSR**

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