the absolute sound

NEWPORT SHOW REPORT: **THE BEST NEW HIGH-END AUDIO**

6 SUPER SPEAKERS!

B&W • Magico • Audio Physic • Raidho • Focal • Gamut

Onkyo's Amazing MQA Portable Player

McIntosh C22 & MC275
Retro Meets Modern

Music from Eric Bibb, Radiohead, Al DiMeola, Thelonius Monk, and Surrealistic Pillow on 45rpm Vinyl

Plus: The Best Hi-Res Downloads

loudspeaker focus

Audio Physic Cardeas 30 LJE

It Don't Come Easy

Andrew Quint

Non-audiophiles watching a member of our tribe move towards the purchase of a costly assault-on-the-art loudspeaker may believe that acquiring that component guarantees sonic nirvana. We members of the tribe know better. That understanding is a big part of the blend of excitement and angst that attends the decision to change out a major part of a music system. As Ringo Starr sang (when he could remember the words), sometimes "it don't come easy." I learned this lesson anew with the Audio Physic 30 Cardeas LJEs, which I used as my only speakers for a two-month stretch this spring. A good deal of diligence with choosing complementary amplification was required to get them sounding their considerable best. But that effort was assuredly worthwhile, and I was very sorry to see these world-class loudspeakers go at the end of the review period.

The LJE of the product's name stands for "Limited Jubilee Edition." In 2015, to celebrate the German company's 30th anniversary, Audio Physic announced it would be building 30 pairs, and only 30 pairs, of these loudspeakers. Of course, AP didn't design a brand-new speaker with the plan of making just 60 of them. Rather, this model represents the ultimate refinement of the Cardeas Plus+ that premiered in early 2014, which in turn evolved from

Specs & Pricing

Type: Three-and-a-half-way, sealed enclosure
Driver complement: One 1.75" Hyper Holographic Cone Tweeter (HHCT III), one 5.9" HHCM III midrange, two 5.9" HHCM III midrange/woofers, two 10.6" woofers
Frequency response: 25Hz–40Hz
Sensitivity: 89dB
Impedance: 4 ohms
Recommended amplifier power: 40–350 watts (into 4 ohms)
Dimensions: 12" x 46.9" x 23.4"
Weight: 163 lbs. each
Price: $45,995

AUDIO PHYSIC GmbH
Almerfeldweg 38
59929 Brilon
Germany
audiophysic.com
vanaltd.com

VANA LTD (U.S. Distributor)
2845 Middle Country Rd.
Lake Grove, NY 11755
vanaltd.com
631-246-4412

the original Cardeas, introduced in 2009. The Cardeas Plus+ remains in production and costs $32,995 or $35,995, depending on finish. Manfred Diestertich, who has designed Audio Physic's loudspeakers for 17 years, told me that once the thirty LJE pairs are gone, he expects that "a non-anniversary edition of the Cardeas will evolve from the latest design advances and be available for sale in the U.S." In other words, you will still be able to purchase essentially the same loudspeaker being considered here after the numbered LJE sets have all sold—it'll just have a different name. Don't you just love marketing?

With all Audio Physic loudspeakers, one design obsession stands out, namely the aim of eliminating any unwanted resonances that could negatively impact the performance of those elements that are supposed to create sound. (This emphasis on mechanical factors is completely understandable, given Manfred Diestertich's engineering background—see sidebar.) Numerous design decisions serve the goal of decoupling vibration-prone elements from the drivers, beginning with the drivers themselves. To avoid resonances associated with the metal cones that AP favors, a silicone/rubber ring is incorporated to apply direct pressure to the cone. Audio Physic calls this Active Cone Damping, maintaining that it's an effective way to eliminate ringing and the consequent "metallic sound" of the drivers. All the drivers, including the tweeters, are ceramic-coated aluminum cones built to Audio Physic's specifications by Wavecor (AP owns the tools), and this consistency of driver material and form surely contributes to the top-to-bottom seamlessness of the sound that one hears. AP's drive units incorporate a dual basket, again intended to help decouple the drivers from the cabinet: an aluminum outer frame assures strength and a plastic inner basket provides optimized damping. The Cardeas has been—and remains in the LJE version—a six driver, three-and-a-half way design. Highest up on the narrow front baffle is a 5.9" HHCM III (Hyper Holographic Cone Midrange) unit and, below that, a 1.75" HHCT III tweeter newly designed for the LJE version—and now used in many models in the line. Next comes a pair of 5.9" midrange/woofers and, closest to the floor, two side-firing 10.2" HHC woofers that are wired in a push-pull-push configuration. The tweeter, midrange, and two mid/woofer drivers each live in their own sealed chambers and are decoupled from the enclosure with Audio Physic's SSC (String Suspension Concept) technology, a construction in which the drivers are not directly connected to the baffle. Examining the loudspeaker's exterior, one might conclude that the woofers' enclosure is a rectangular box comprising the bottom 45% of the LJE's vertical dimension of approximately 47 inches. In fact, the non-ported bass chamber is much larger, extending up behind the mid/woofer, midrange, and tweeter enclosures.

For the Cardeas Plus+, Diestertich introduced a stiff ceramic foam material, used internally to provide structural stability and, because of its high porosity, acoustic absorption. The foam further adds to the inertness of the cabinet yet doesn't significantly reduce the volume of the woofer chamber. A black high-gloss aluminum front panel and bottom plate are unique to the LJE version. Otherwise, the backward-tilted cabinet, twice as deep as it is wide, has rounded side and back surfaces that can be assumed to provide the usual mechanical and acoustic advantages. The Cardeas 30 LJE is offered in two "jubilee" veneers, black ebony high-gloss and rosewood high-gloss. I can report that the latter is stunning with a level of execution that's the equal of fine furniture.

Audio Physic's devotion to acoustic isolation extends to the binding posts and the interface between speaker and floor.

The crossovers (with exclusive Clarity Cap capacitors and copper foam technology) have also been decoupled from the enclosure with SSC materials. Audio Physic has long employed a "floating" configuration for its crossovers, meaning that serial electronic components within the crossover are arranged in both the positive and negative limbs of the signal path instead of only on one side. Manfred Diestertich's observation regarding this topology is refreshingly non-German-engineer-like: "The measured performance does not change at all but the audible result is amazing," he told me. In fact, a number of other loudspeaker manufacturers have taken up the practice, including Gauder Akustik, GoldenEar, and Sonus faber.

Audio Physic's devotion to acoustic isolation extends to the binding posts and the interface between speaker and floor. On the first score, it's generally underappreciated that cables can transmit vibration back to the speaker and thus to the drivers. All the speaker models in AP's top lines are equipped with Vibration Control Terminals, (new exclusively modified versions are in the LJE) a substantial aluminum structure holding the binding

posts and fitted with a rubber gasket that assures the mechanical isolation of the connecting hardware from the enclosure. On the second score, in lieu of spikes that directly contact the supporting surface, AP's spikes are screwed downwards through the front and rear outrigger supports to terminate in a plastic ball foot. Instead of draining vibrational energy from the speaker to the floor—the usual approach—where, theoretically, it can still do sonic harm—most of that vibration is converted to heat. With the ball feet in place, it's fairly easy to move the 163-pound speakers during the positioning process without damage to floor or carpet. For the ultimate in speaker-to-floor decoupling, the LJE owner is supplied with a set of VCF V Magnetic Feet with which to replace the ball feet. These devices have repelling neodymium magnets that serve to reduce the load on the SSC material that bears the weight of the speaker. (The magnetic feet are optional with the standard Cardeas Plus+; they can be purchased separately for use with other brands of loudspeakers, as well. They're not cheap—around $1500 for a set of eight.)

The Cardeas 30 LJEs replaced my usual two-channel speaker system, a pair of Wilson Duette 2s complemented by a Wilson WATCH Dog subwoofer. My dedicated listening room is 15' by 15', with a ceiling height that varies from 11' to 13'. I hasten to reassure those concerned by the symmetric LxW dimensions that a hallway leading off from one sidewall near the front of the room serves to "unload" the space: Standing waves are not a problem. The truck that delivered the speakers to my place was met by a team of three audio pros—Roy Feldstein, the chief technical officer for VANA, Ltd. (now AP's North American distributor), VANA's managing director, Justin Feldstein, and Micah Shevaloff, a consumer electronics veteran handling Audio Physic's marketing/PR efforts. They spent several hours carefully adjusting the position of the LJE's and installing the magnetic feet, having settled on a location that had the speakers 8' apart (center-to-center) and two feet from the wall behind them. The distance from the front baffle to the sweet spot was also 8', with roughly 15 degrees of toe-in towards the listening position. This deployment, which could be viewed as a nearfield listening perspective, worked quite well and I made no changes after the three gentlemen departed. The owner's manual, which does include exceptionally helpful set-up guidelines, advises that the drivers for Audio Physic loudspeakers have been fully burned-in at the Brilon factory and that only a few hours of music or white/pink noise should be needed to bring them up to their sonic potential. Indeed, by the end of the day that they were installed, it was apparent I was hearing a top-echelon loudspeaker, competitive with other highly regarded models in their price range from Wilson, YG, Magico, Von Schweikert, and others.

The source material used to assess the APs was all-digital, coming from either an Oppo BD-103 universal player or a Baetis Reference music computer, feeding my usual Anthem D2v processor. Anthem's room-correction software was employed up to 800Hz which, as with virtually every other speaker I've used in the room, controlled any bass irregularities that speaker positioning didn't tame. Cabling was mostly current Transparent product. But which power amp(s), you

Manfred Diestertich on his Engineering Background

Manfred Diestertich, who has been responsible for the sound of Audio Physic speakers since 1999, has a technical background that's different from most other leading audio designers. I asked him to elaborate on his path to becoming a loudspeaker engineer with a singular point of view.

My technical background was originally in civil engineering and steel construction—I worked for some years as a project manager in various capacities, including 1½ years in Cairo. I took from this much valuable experience; however, my true interest was always hi-fi. I studied all available magazines and invested much money in all kinds of audio gear. I embedded myself in several DIY projects and tuning experiments, where I met Joachim Gerhard in the early 80s before he started Audio Physic. I consumed all interesting literature about loudspeaker design and basic electronic theories. While I was tuning components (exchanging capacitors, cables, operational amplifiers etc.), I found that modifying the mechanical structure or the suspension of parts quite often had a greater effect on sound quality than replacing parts.

When the CD first became available, I did not like the sound at all. I started tuning players with the usual approaches (working with op-amps became one my favorite playgrounds) and was contacted by a company that was building compact disc players to assist in its new design. During this stage of exploring ways to improve CD player performance, I decided to try something quite unusual. I took a very cheap CD player with a Philips transport, threw away all of the ancillary parts, and suspended the "naked" transport with four strings at the four corners of the chassis. For the subsequent listening tests, I used the digital output only. A second unmodified version of the same player was my comparative reference. It took only seconds to hear that the modified player had nothing in common with the original standard unit. This event forever changed my thinking about CD sound and audio component design architecture. It was the start of SSC (String Suspension Concept) and instilled in me an understanding of the vital importance of solving mechanical problems mechanically rather than electronically. If a cone tends to ring, I pre-stress it with our active cone damping. As the principal designer, I consider all mechanical solutions as I engineer and tune each Audio Physic loudspeaker. This has contributed to the success of our products and the lasting legacy of the AP brand.

ask? That's a journey you need to hear about.

Naturally, I started with my reference amplifiers, a pair of Pass XA 60.8 Class A monoblocks. To begin with the sonic metric referenced by Audio Physic's advertising slogan, "No Loss of Fine Detail," the LJEs ability to uncover musically relevant nuance—microdynamic shadings and subtle shifts in color—was as good as I've heard with any other loudspeaker, and that includes various electrostatic and ribbon designs. Want a tutorial on what was cutting-edge in studio wizardry circa 1982? Check out the 176/24 HDtracks download of Michael Jackson's *Thriller* to savor layer upon layer of instrumentals and vocals, subtleties of the decay and reverb applied to synthesizers, and Michael's distant yet clear-as-day vocal exclamations on "Beat It." Perhaps it's not necessary to hear so much of the minutiae that went into the creation of a pop masterpiece, but the point is you can. Sometimes, what we refer to as transparency in a good orchestral recording is actually a measure of detail retrieval. There's no better example than the Introduction to Part II of Stravinsky's *The Rite of Spring*, as heard with an HDtracks download of a 2013 performance from Yannick Néget-Séguin and the Philadelphia Orchestra. The music is quiet but extraordinarily atmospheric, evocative, and complex—at one point,

With well-made recordings, these speakers seem to disappear, to roll out a hoary audiophile cliché.

31 staves are required in the conductor's score and many of those have two or three parts per staff. Without seeming the least bit "analytical," the LJEs reveal every shift in light, every timbral nuance that the composer conjured up to suggest a moonless night in prehistoric times with human sacrifice on the agenda.

It's apparent, I think, that the LJE's attention to resonance/vibration issues is what's responsible for the abundance of meaningful detail, and that translates into superior spatiality as well: Temporal smearing can obliterate a consistent sense of imaging and soundstage recreation. With the mid-1970s Philips recording of Handel's Op. 4 organ concertos, on a PentaTone SACD, the mechanical action—the clicking and clacking—of the small eighteenth century instrument played by soloist Daniel Chorzempa in a Dutch church can be heard to discretely originate from a plane behind where the sound of organ and orchestra seems to come from. With well-made recordings, these speakers disappear, to roll out a hoary audiophile cliché. But it's true. Listen to Paavo Järvi's nonpareil version of *L'histoire du soldat* (another PentaTone SACD) and note the precise localization of each of the seven players, as well as the correct scaling of the diverse wind, brass, string, and percussion instruments they play.

Who's to say if the Cardeas 30 LJE tonal consistenty from top to bottom results from all six drivers in each speaker being made of the same material? But these half-dozen cones do speak with one voice. The treble is open, airy, and stress-free—a recording of, say, solo piccolo doesn't seem to originate from one part of the speaker's front baffle. Singers with the most recognizable voices, recorded in their prime—artists like Billie Holiday, Johnny Cash, Neil Young, or Adele—have the essence of their vocal sonorities reproduced with no anomalies imposed at the extremes of

their ranges. There is one disc I own that, above all others, tells me what I need to know about a loudspeaker's tonal accuracy. It's one of three CDs that accompanies a coffee table book called *The Miracle Makers*, a volume presenting the histories and photographs of 30 of the world's finest violins, 15 from the workshop of the Stradivari family, 15 made by Giuseppe Guarneri del Gesù [review in TAS Issue 125]. The CD documents the violinist Elmar Oliveira playing, unaccompanied, 30 bars of the Sibelius Violin Concerto, alternating between Strads and Guarneris. Never before, in my long experience with this recording, have I heard a better differentiation between the two brands of fiddles—the cleaner, sweeter, more focused tone of the Stradivarius instruments as opposed to the darker, earthier, more sensual, and plaintive sonority of the Guarneris. It was close to hearing the instruments themselves with no intermediary electronic technology.

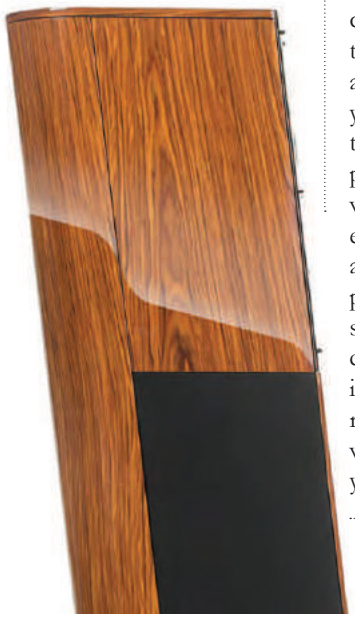
It was with dynamics and bass reproduction that the question of amplification loomed large. The Cardeas 30 LJE's performance with many—most—musical styles (chamber music, eighteenth century orchestral, jazz, folk, plenty of pop, solo piano, and others) was clearly the best I'd heard in my room. But larger-scale material seemed to be alerting me that limits were being approached. While the LJE's recommended amplifier power is 40 to 350 watts into 4 ohms and the XA 60.8s are rated at 120 watts into that load, the Pass amps don't have an especially high damping factor, and they registered to me as underpowered. I set out to try more substantial amplification.

First up was a John Curl-designed Parasound HCA-2200 II stereo amplifier I own, an exceptional value in its day (and now, on the used market) that delivers 385 watts into 4 ohms. The Parasound definitely provided more low-end control and dynamic headroom but imaging was not nearly as holographic, and there wasn't the preternatural clarity I'd heard from Day 1 with the Pass XA 60.8s. Next, I tried a Primare A60 supplied by VANA, a stereo Class D design that provides 500Wpc for a 4-ohm loudspeaker. This component simply didn't click with my system the APs—the sound lacked dimensionality and timbral accuracy. I then prevailed upon nearby audiophile friends to borrow amplifiers. A Mark Levinson 532 stereo amp provided plenty of muscle but compared to the Pass, introduced a trace of harshness and didn't scale instruments or image as effectively as my reference monoblocks. Then, I got the Bernings.

The David Berning Quadrature Z monoblocks are OTL tube amplifiers costing $30,000 per pair that deliver 270 watts into a 4-ohm load. The power supplies are regulated switching devices which explains why the amps aren't especially heavy and don't run particularly hot. The Quadrature Zs realized the full potential of the Cardeas 30 LJE speakers. Dynamics were scary-good: the eleven strokes that begin "Glorification of the Chosen One" in *Le sacre*, courtesy of four timpani and a bass drum, were cataclysmic, and I could differentiate the hits on timps from those on the big drum. Likewise, the fury of the Rondo-Burleske movement of Mahler's Symphony No. 9 (Michael Tilson Thomas/San Francisco on an SFS Media SACD) was experienced with concert hall acuity. Organ music that pulled out all the stops (so to speak)—like the final movement of Messaien's *La Nativité du Seigneur*, "Dieu Parmi Nous," as played by Mary Preston on a Reference Recordings CD titled *Organ Odyssey*—was thrilling in its dynamic and low-frequency power.

With persistence, you stand to get sound as good as most audiophiles can hope to achieve in a typical domestic environment.

I certainly don't mean to imply that the Berning monoblocks are the only amplifiers that will bring the APs fully to life with all stripes of music. I'm sure that there are dozens of others that will do so—and they won't necessarily cost $30k (though such an expenditure doesn't necessarily strike me as out of line when you've spent $45,995 for speakers). You just need to be aware that the excellent amps you already own may not be right for the Cardeas 30 LJEs. These loudspeakers are not the most benign load in the world and, more importantly, they are exceptionally revealing of what comes before them in the audio chain. They will not suffer fools, or even some very fine components that might shine in another setting.



With suitable amplification, the Cardeas 30 LJE loudspeakers will provide a majestic, full-range listening experience with the most challenging source material in both smaller and larger rooms. They do so more successfully than any other two-box floorstander I've heard in my familiar listening environment. The LFEs are such highly resolving transducers that you may have to make some difficult decisions not only about which amplifiers to mate with them, but how to use those amplifiers. As a case in point, the Quadrature Z sports a front panel switch that allows users to choose different amounts of negative feedback, depending upon the loudspeakers they are driving. The "normal" setting provides the most damping and, with many speakers including the LJEs, extremely potent and visceral bass performance—fast, tight, tuneful, and impactful. A lower setting did open up the sound higher up in the frequency spectrum, at the cost of less tightly controlled bass. Ultimately, I chose the "normal" setting. Not every speaker will make such choices so critical. But to return to Ringo's metaphorical advice, "You've got to pay your dues if you want to sing the blues." The world-class performance that's possible with Audio Physic's limited edition loudspeaker may not always "come easy." But with persistence, you stand to get sound as good as most audiophiles can hope to achieve in a typical domestic environment. And that's surely worth a little anguish, don't you think? tas