

Raidho TD3.10 Loudspeaker

Simply Gorgeous

Jonathan Valin

It has been quite a while since I've reviewed a Raidho Acoustics loudspeaker from the Danish firm Dantax A/S, not since Michael Børresen and his partner Lars Kristensen left the company to found Audio Group Denmark in 2017. Though employing a proprietary, completely redesigned version of Børresen's remarkable planar-magnetic tweeter (along with MBL's carbon-fiber spherical tweeter, the best treble-range transducer I've heard), the TD3.10 (the "TD" stands for tantalum and diamond) three-way, five-driver floorstander is a different critter than the towering Raidho D-4.1 I last reviewed in TAS so many moons ago, as it should be, since these new Raidhos are the product of a different team headed by CEO Morten Kim Nielsen and Chief Acoustic Designer Benno Baun Meldgaard.

The latest offering in the TD Series, the TD3.10 features aluminum cone drivers coated with layers of ceramic, tantalum, and diamond. The various coatings are applied via a magnetron in a 12-hour "sputtering process." The different materials are said to have different physical and acoustic properties that balance each other out, increasing diaphragm stiffness and shifting cone breakup well beyond each driver's operating range.

The cone-driver complement of the TD3.10 comprises two multi-layered 10" woofers (the largest diamond-coated bass drivers used in a production loudspeaker) and two 5.25" multi-layered midranges, the latter flanking the planar-magnetic tweeter in an MTM configuration.

Both the cone midranges and the cone woofers are driven by powerful N52 neodymium magnets coupled to underhung titanium voice coils using square (rather than round) wire, which increases winding density by minimizing the air space between the turns. The entire magnet system, as well as the basket itself, is shaped like a turbine—a doughnut-like form "which eliminates any reflections *[from the back waves of the drivers]* that would otherwise smear the sound." Solid copper is applied over the inner pole pieces to "minimize inductance and linearize impedance." Suspension parts are as soft as possible "to ensure no mechanical restraints to the movement of the diaphragm." All Raidho drivers are designed and built in-house.

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The three-way crossover created by Meldgaard and his team uses second- and fourth-order slopes with hinge points at 240Hz and 2.7kHz. With "custom filter techniques" developed by Raidho, Mundorf high-end component parts, air-core inductors, polypropylene capacitors, and Nordost Norse internal wiring, the crossover is said to ensure "ultra-low distortion and pure signal transmission."

As is Raidho's custom, the TD3.10's cabinet is a gorgeous, boat-tailed concoction, with curved, CNC-milled, and elaborately mirror-finished (16 layers of high-gloss lacquer) slabs of walnut burl on each of its tapered sides, five 20mm-thick cast-aluminum panels (into each of which one of the drivers is seamlessly mounted) bolted to the enclosure's front, and a narrow, hemispherical tailpiece that houses the four tubular ports of this bass-reflex design. Two sets of heavy-duty, binding posts for bi-amping or bi-wiring are also situated

at the bottom of the tailpiece. (The posts can easily be bridged via a supplied length of Nordost cable if you choose.) Large, fully adjustable feet, said to decouple the speakers from the floor via internal ceramic balls upon which the enclosures rest, are attached to the bottom of the TD3.10's cabinet.

Fully 5' tall but a mere 19" wide at its front (much narrower as it tapers to the rear), this new Raidho isn't nearly as imposing as the giant D-4.1, though it remains a handful at 231 pounds per side. The speaker is claimed to reach down to the bottommost octave (20Hz ±3dB), while the response of its planar-magnetic tweeter extends out to 50kHz (±3dB). That is quite the gamut!

Though designed by different engineers, the TD3.10 still has a very Raidho-like sonic signature. Which is to say that it is gorgeously dense in timbre in the midband, gently rolled (though lace-like in detail and jackrabbit quick) through the top octaves, and just a bit uptilted but exceedingly well-defined and powerful in the bass (right down to the deepest octave). In my room, this profile gives it a sweet, warm, slightly dark overall tonal balance that is simply beguiling.

The thing about Raidhos is that, while not quite as boxlessly neutral and invisible as sound sources as some planar or electrostatic transducers, they are very nearly as finely resolving, every bit as holistic (blending extremely fine sonic detail into near-palpable three-dimensional sonic wholes), and almost as spine-chillingly realistic, with an octave-to-octave presence, coherence, and liquidity that, for the most part, belie the fact that their sound is coming from a mix of ribbons and cones in a svelte wooden box.

While I honestly believe that neutrality is one of the keys to triggering the gestalt shift that turns electromechanically generated images into almost visible facsimiles of the real things (and the venues in which they were recorded), the somewhat "bottom-up" tonal balance of Raidhos (and of so many other box speakers) doesn't prevent them from sounding fool-ya realistic. The reason for this may have to do with the generally "bottom-up" acoustic of many concert halls and recording studios, where the omnidirectional lower octaves are augmented by wall and floor reflections and by the very large dimensions of the venue, while the more directional upper octaves are slightly rolled-off due to frictional losses owed to the immense volume of air in the recording space.



He seemed so physically present I almost jumped out of my chair. There he was—alive again.

Indeed, as I noted in my review of the MBL 101-Extreme MKIIs, this kind of bottom-up balance with extension to 20Hz is (according to Jürgen Reis) what the AES currently recommends that speakers be voiced to (to handle today's extremely wideband, deep-reaching recordings). It is, it is claimed, more faithful to what we hear in life (and what is recorded in studios or concert halls) than the proverbially neutral, anechoically measured, flat from 20Hz-to-20kHz balance that many engineers still design for. Be this as it may, I have heard truly neutral transducers produce startlingly lifelike three-dimensional images of musicians and singers at least as often as (if not more often than) bottom-up ones do. Both sonic profiles are capable of the transformative trick of making recorded musicians sound real—the advantages of a neutral transducer being a more complete (often more clearly and finely detailed, less veiled by cabinet/driver coloration, more free-standingly holographic and present, less bass- and alto-darkened) realism that is arguably truer to the source, the advantages of a bottom-up balance being a more gemütlich and consistently enjoyable illusion of the real thing that touches the heart as well as the head.

To hear what I mean, just put on the new Blue Note Tone Poet LP version of Frank Sinatra's 1956 hit album *Songs for Swingin' Lovers* (Capitol/Blue Note W 653) and listen to the first cut on Side Two, "I've Got You Under My Skin." Hell, listen to any cut on either side of this extremely well-recorded and remastered (by Kevin Gray) 1956 mono album and marvel at the sensationally realistic illusion of Sinatra's voice (which is becoming ever more gruffly *and* tenderly baritone with each passing year, turning more and more the deep auburn color of tobacco leaf with a viscous coat of whiskey in the throat and on the palette).

I heard Sinatra toward the end of his career in a wonderful venue—pre-remodeled Music Hall in Cincinnati, Ohio (the rich, dark, lovely sonics of which those of you who own Telarcs are quite familiar with)—and in that bottom-up venue, this is how Ol' Blue Eyes sounded (with the addition of 30-some years of wear and tear on The Voice). With the TD3.10s toed in toward each of my ears, his

sprightly delivery of "You Make Me Feel So Young" sounded so much like what I remembered from 40-some years ago—and he himself seemed so physically present—that I almost jumped out of my chair. There he was—alive again.

What made this listening session even more delightful was that the instruments backing Sinatra up in Nelson Riddle's wonderfully expressive arrangements were just as holographic and lifelike. Just as "there." The great Joe Comfort's standup bass sounded particularly clear and present, almost as if it were spotlit—unusually well defined in pitch, fully transparent to Comfort's propulsive, four-to-the-bar, "walking bass" playing style, and startlingly lifelike in timbre right down to the four-string fiddle's 41Hz E_1. (There were no other double basses in the session's rather large ensemble, making his the sole true *basso* voice—and time keeper—in the string section.)

Every instrument in Riddle's score from George Roberts' bass trombone to Kathryn Julye's harp to Justin Gordon's delicate celeste was not just clearly audible but three-dimensionally imaged—a thing apart as well as a part of the ensemble—bringing back the thrill that the audience and the musicians at the recording session felt on first hearing Riddle's arrangement and Sinatra's performance. ("After they'd rehearsed 'I've Got You Under My Skin,' everybody just sat there. It was an old song, been recorded a thousand times, not a new song, right? An old song… but all the women had tears in their eyes and the whole orchestra, when they were done playing, stood up and applauded [facebook.com/groups/1197148210866148/posts/1506397593274540/0].")

I had virtually the same transporting experience listening to the reissue of Blossom Dearie's self-titled mono album (Verve MG V-2037), remastered by Ryan Smith at Sterling Sound and originally recorded (also in 1956) at WQR Recording Studios in New York City. This famous venue has a sound somewhat removed from that of KHJ Studios and Capitol's Studio A in which Sinatra's album was made—a bit drier, brighter acoustic that rather suits Dearie's kittenish voice and arch delivery, mixing little girl naivete with grownup naughtiness. If Sinatra's baritone timbre combines the dark earthy richness of tobacco leaf with a viscous amber coat of booze, Dearie's light, wispy soprano is all Shirley Temples and champagne. As a vocalist, she is rather like the female version of Chet Baker, although her style is less downbeat and her voice always perfectly on pitch. Like Baker, she is also a superior instrumentalist, in her case a true master of jazz piano.

As was the case with Frank, the Raidho TD3.10 reproduced Blossom's disingenuously childlike voice with a level of presence and dimensionality that made her seem to be "there" in front of a U47 condenser microphone (paired with an RCA ribbon mic for her piano). You could not only hear and virtually see her; you could also understand the playful logic of her phrasing—the charm, intimacy, laughter, and occasional pathos she was after—along with little, previously less obvious details of her vocal style (such as her almost apologetically soft vibrato on certain sustained notes or phrases).

As with the Sinatra album, the TD3.10 reproduced Blossom's stellar trio of backup musicians—Herb Ellis on guitar, Ray Brown on bass, and Jo Jones on drums—with near-visible presence. Brown's instrument, like Comfort's standup, sounded particularly prominent—as if, once again, it was individually miked. The separation in space and sonority between it and Jones' kickdrum was well defined, making the contributions of each musician consistently easy to parse (a thing that is not often the case with bass and kickdrum).

The unusual presence of both bass fiddles on these recordings was agreeable (and in keeping with the speaker's bottom-up tonal balance), but it was pronounced enough to make me wonder if the TD3.10s were slightly exag-

Specs & Pricing

Type: 3-way bass-reflex tower loudspeaker
Drivers: One Raidho planar-magnetic ribbon tweeter; two 5.25" TD midranges; two 10" TD woofers
Crossover points: 240Hz, 2.7kHz
Frequency response: 20Hz–50kHz (±3 dB)
Sensitivity: 89 dB (2.83 V/1 m)
Nominal impedance: 4 ohms
Power requirement: 50–300W
Dimensions: 485mm x 1520mm x 700mm (incl. feet)
Weight: 105 kg each
Price: $120,000

JV's Reference System
Loudspeakers: MBL 101 X-Treme MKII, Magico S5 2024, Metaxas & Sins Emperor, Magnepan LRS+, 1.7i, and 30.7
Subwoofers: JL Audio Gotham (pair)
Linestage preamps: Soulution 727, Audio Research Corporation Reference 10, MBL 6010 D, Siltech SAGA System C1, Vitus Audio SL-103, JMF Audio PRS 1.5
Phonostage preamps: Soulution 757, DS Audio Grand Master EQ
Power amplifiers: Audio Research Corporation 330M, Soulution 717, Vitus Audio SM-103 Mk.II, JMF Audio HQS 7001, Soulution 711, MBL 9008 A, Siltech SAGA System V1/P1, Odyssey Audio Stratos
Analog source: Clearaudio Master Innovation, Acoustic Signature Invictus Neo/T-10000 Neo, TW Acustic Black Knight/TW Raven 10.5
Tape deck: United Home Audio Ultima Apollo Z, Metaxas & Sins Tourbillon and Papillon, Analog Audio Design TP-1000
Phono cartridge: DS Audio Grand Master EX, DS Audio Grand Master, DS Audio DS-W3, Clearaudio Goldfinger Statement v2.1, Air Tight Opus 1, Ortofon MC Anna, Ortofon MC A90, London Reference Type II
Digital source: Kalista Mantax and DreamPlay XC, MBL C41, MSB Reference DAC, Soulution 760, Berkeley Alpha DAC 2
Cable and interconnect: Synergistic Research Galileo SRX (2023), Crystal Cable Art Series da Vinci, Crystal Cable Ultimate Dream

gerating the lower octaves. This wasn't the kind of problem that the D-4.1 (and every other large, three-way Raidho floorstander built in the Børresen/Kristensen era) exhibited, whereby, for example, something like Norman Keenan's standup bass on *Sinatra at the Sands* was so loud, boomy, and distorted on 60–80Hz notes that I resorted to damping the speakers' ports, which not only didn't solve the problem but also robbed the rest of the speaker's gamut of color, power, and realism. (Nearfield measurements subsequently showed that the D-4.1s were generating a 10–12dB peak in the midbass!)

The TD3.10s' low end didn't sound as if it was suffering from a steep port-and-room-induced hump in a specific frequency band—there was no audible boominess or ringing on any bass or midbass notes. Rather, it sounded a bit as if the *entire* output of the woofers was elevated a few dBs more than it should have been. This didn't make for a timbral discontinuity with the midrange or treble but did make those double basses (and other bass-range instruments) sound louder and more prominent than I was used to.

I wondered if the new diamond-coated 10" woofers could be a bit more efficient than the smaller, more tried-and-true diamond midrange drivers or the Raidho planar-magnetic tweeter. At least, I wondered that until I put on a full-range orchestral recording—the famous Stokowski stereo LP *Rhapsodies* (Analogue Productions/RCA LSC-2471). Though the bottom octaves on this sensational recording are famously prodigious, they did not sound spotlighted (as the solo double basses on the Sinatra and Dearie albums did). They were full and powerful, of course, as they should have been, and detailed and dimensional enough for me to clearly note (for the first time) the way plucked cello and double bass notes briefly but clearly reverberated off the floor of the Manhattan Center ballroom at the tail end of sforzando tuttis. Most importantly, their bottom octaves were completely "of a piece" with the timbre and sonority of the orchestra's mid- and high-pitched instruments, making for a dark, liquid, seamless wall of sound, in which solo instruments could clearly be discerned within the ensemble like illustrations dotting a dense page of text.

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The sheer majestic beauty of the TD3.10s' presentation, particularly on Enescu's delightful Romanian Rhapsody No. 1, was breathtaking, as was the way the Raidhos parsed the various instrumental choirs, turning that swooping, downward orchestral tutti at the close of the *Hora lui Dobrica* into an almost bagpipe-like drone that raised goosebumps.

With its clear, dark, rich, powerful, deep-reaching low end, its liquid midrange and treble, in which inner detail is subsumed into lifelike semblances of vocalists and instrumentalists, its overall three-dimensional imaging, there isn't much to criticize about the TD3.10's way with timbre, durations, intensities, and pitches. It is a music lover's delight on any repertoire.

Yes, it is darkish in balance. Yes, its low end can sound a bit prominent on certain recordings—at least it could in my smallish digs. In a larger space, things might be different. And yes (although I haven't yet mentioned it), its soundstaging, particularly when it is toed in for best focus, presence, and bass, is somewhat limited in breadth, depth, and height. Though they will image a bit "outside the boxes" when listened to only slightly toed, the TD3.10s do not disappear as sound sources, vanishing into an immense soundstage the way MBLs do. Still, the sheer beauty and realism of their presentation should win over anyone, even the most devout fidelity-to-source listeners. Highly recommended (and highly delightful). tas

