

Danish Premium Speaker

Review of the Børresen Z3 floor standing loudspeaker

We reviewed the Z3 model from the Danish manufacturer Børresen intensely and tried them out in various settings. You can find out how well the Børresen floor standing speakers performed in this review, enjoy.



Review



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Børresen Acoustics, which is still little known in Switzerland, is part of the Danish triumvirate consisting of Aavik Acoustics, Ansuz Acoustics and Børresen Acoustics. The three Danish brands are under the roof of "Audio Group Denmark" and operate in the northernmost Danish city of Aalborg. This trio emerged from the high-end loudspeaker company Raidho Acoustics. In 2017, Raidho was purchased by Dantax. The current minds behind Børresen, Aavik and Ansuz then parted ways from Raidho Acoustics and founded Audio Group Denmark (AGD).

Since last year, an investor has joined AGD and the former CFO Kent Sørensen has been promoted to CEO. Why three companies and not everything under one brand, you may be wondering right now. Sales Manager Lars Kristensen emphasizes that it is safer to operate in the market with three different brands with different product lines. If one line is no longer doing so well, it can be sold or discontinued without

affecting the other two lines. In addition, the three product lines complement each other ideally, also in terms of marketing and sound. This also allows the specialist dealer to choose just one or two lines without having to take over the entire portfolio. Honest and really smart they are, these Danes.

In this review, we will turn exclusively to the Z3 speaker model from Børresen Acoustics. The Zug-based Tonbildspinnerei, a well know High End shop under the management of Alois Kneubühler is distributing the three high-quality Danish brands from Aalborg in Switzerland since last year. We were able to listen the Børresen Z3 in the homely and spacious premises of the Tonbildspinnerei.

Michael Børresen – a short portrait

The founder of the eponymous company, Michael Børresen, is the mastermind behind his loudspeaker company and, like many high-end audio company founders, is a madman in the positive sense.



All the speakers bear his name: Michael Børresen.

One of his favorite topics is vibrations. Already his thesis as an engineering scientist dealt with resonances and vibration patterns and he first applied his knowledge outside the high-end industry. Understanding and controlling vibrations are main goals of his developments, be it loudspeakers or electronics.

He questioned everything, but really everything related to loudspeaker design. If you ask a lot of questions, you risk unpopular answers or, in a positive sense in loudspeaker design, many new ways of thinking and, in the best case, outstanding loudspeakers.

When Michael Børresen and his crew set out on this rocky and challenging road to create the ultimate loudspeaker, they set the following development goals:

- the revision of the conventional driver technology
- the optimization of the crossover
- the reduction of inductance to the absolute minimum
- the best mechanical "grounding" and resonance control

We will show you how these development goals were implemented in the Z3 model tested below.

The Børresen Z3 - our review object

The Børresen model Z3 is the second-largest speaker model in the Z-Series. Above the Z series is the 0 top series. Since recently, the Danes also offer the X-series, which is located below.

Except the compact Børresen Z1 monitor, the remaining three floor standing speakers are 2.5-way models and differ in the number of woofers/midrange drivers and cabinet dimensions. The Z1 model starts at CHF 10,000 in price, the Z2 model costs CHF 16,000, and the Z3 test model costs CHF 23,000 (without cold treatment). The top model Z5 costs 40'000 CHF.



The "Z-family" from Børresen.

The tested Børresen Z3 floor standing speakers measure a slim 22 cm, but are 40 cm deep and 102 cm high. They weigh a proud 35 kg and appear - due to the narrow front width - slim and living room-friendly. Because of the cabinet depth, the ideal listening room should have enough space for at least 50 cm distance to the rear wall.

Frequency response is listed as 35 Hz to an impressive 50 kHz, efficiency is 88 dB, and nominal impedance is 4 ohms. Børresen provides a 5-year warranty on all its products.



Børresen Speaker Z3: high quality construction, visually attractive from every angle.

Speaker Housing

The shapely case of the Børresen Z3 is available in black and white, each with a satin finish. The workmanship is absolutely impeccable. The front is always black, even in the white version. On order, Audio Group also manufactures the speakers with white front for an additional charge. The design of the Z3 is classically Scandinavian and looks noble without being ostentatious. Danish design, after all.

We noticed the "screwless" construction positively, because you look in vain for screws. Here, Børresen takes the certainly more expensive and sophisticated path and makes the difference to the mid-range, among other things. The matte black front cover is very solid and forms a horn front at the tweeter's opening. The knock test at the front attests to the unknown material's massiveness and best possible resonance freedom

If you've taken a closer look at the back of the Z3 speaker, you've surely noticed the bottle opener-like aluminum parts. These "bottle openers" are diffusers that are supposed to reduce the flow noise of the two bass reflex ports installed at the rear. As always with Børresen, these parts are custom-made and manufactured with great attention to detail.



On the left the lower of the two bass reflex ports, on the right the midrange chassis.

The ribbon tweeter

The real stars of this exceptional loudspeaker are the ribbon tweeter and the high-tech low/midrange drivers.

The tweeter is an evolution of the Philips ribbon tweeter. The open dipole magnetostatic tweeter has a foil diaphragm that weighs a mere featherweight 0.01 g and is made of a special foil "made in the UK". The efficiency of the ribbon is a fabulous 94 dB and has an impedance of 6 ohms. Interestingly, the frequency response of the Børresen ribbon extends down to 2.5 kHz. N-52 super neodymium is used as the drive magnet material. The N-52 magnet is currently the strongest neodymium ever and is also used by Børresen for the midrange and woofer.



The Børresen ribbon tweeter

Børresen woofer/midrange driver

Børresen installs one 8- and two 13-centimeter drivers of the same make in the Z3. They differ only in the chassis size.

We could probably write ten A4 pages about this driver alone, which would only be interesting for die-hard technology fans. Therefore, the short version: Since the invention of electromagnetic chassis almost exactly one hundred years ago, this exceptional chassis is one of the first loudspeaker chassis completely "iron-free". This iron-free design is important because, according to Børresen, iron has a negative effect on the electrical parameters of the voice coil. For the Z-Series, Børresen Acoustics developed a driver with an 8 mm voice coil and an inductance of only 0.06 MH (millihenry is the mass unit for inductance), which, according to the manufacturer, is about ten times lower than conventional drivers. The additional linearization of the magnetic field means that the driver is less affected by actual movement and can be more easily controlled by the amplifier.

Like the tweeter ribbon, the woofer/midrange is driven by the N-52 neodymium magnet material. The copper-plated aluminum voice coil of the mid/bass driver sits on a vented titanium carrier. So again, expensive and exotic material is used, which in turn reduces inductance - but certainly drives up production costs further.

The driver's diaphragm material is a composite: two layers of very thin carbon on both sides enclose a 4 mm thick Nomex honeycomb core. The exceptionally low weight of only 5.5 grams ensures a very high acceleration factor in the driver, resulting in both excellent resolution and increased efficiency. The composite structure used - such as that used in Formula 1 racing cars - provides the ultimate combination of stiffness and weight. Incidentally, the Japanese high-tech forge Toray Industries from Osaka manufactures the membranes for Børresen. Among other things, Toray Industries also manufactures wing parts for Formula 1, which is certainly not the worst reference.

That Børresen Acoustics does a lot of things differently than other manufacturers in loudspeaker construction can be checked off as proven after these explanations!



The midrange driver with the ironless drive.

Børresen's Cryo-Technology

Before we get to the listening test, we would like to introduce you to another special feature, namely the expansion stage or product option "cold treatment" of the Børresen Z models. Our test speaker pair is such a "Cryo-Edition". The surcharge for the cold treatment is exactly 6000 CHF for the Z3. This amount is not a pittance, and the tester was able to hear the difference between with/without cold treatment on site. The difference is especially audible in the subtleties and resolution in music playback. Whether the surcharge is worth the demanded price is something the prospective buyer will have to decide for himself - or rather, may. However, the surcharge seems understandable in terms of effort.

Cooling process à la Børresen

During the 72-hour cold treatment of the metal components of the loudspeakers, they are cooled down to minus 196 C within 24 hours, then remain at 196 C for 24 hours, before being brought back up to room temperature in a controlled manner within 24 hours. In the course of the cooling process, the crystal structure of the metal contracts more and more and becomes very similar to a monocrystalline structure.

The slow "thawing" towards the end of the process ensures that this structural change actually remains so. Insiders have told us that the "shock freezing" and then rapid thawing again - i.e. the "hair jerk" process - used by certain manufacturers does not really work, because the desired monocrystalline state of the metal changes back to the original structure. So: Not everywhere where it says "cold treated", the positive effect has really been realized. According to Michael Børresen, the structural changes in the metal caused by this cold process increase its conductivity by 6 to 8 %. Consequently, they are supposed to have a positive influence on the "audio properties". The cry-process, which is even rarer, is not done externally by Børresen Acoustics, but "in-house", respect!



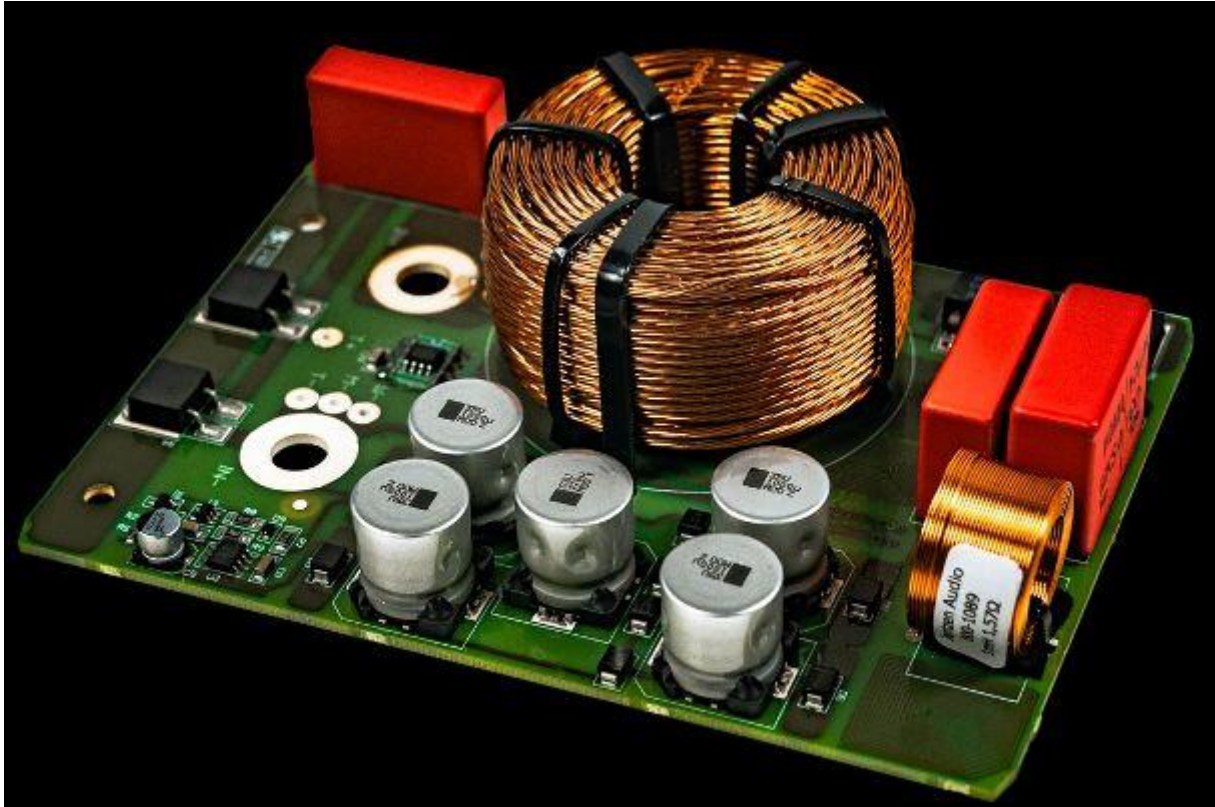
The chassis visualized in a cold bath.

Crossover, Cable and Connector Terminal

The 2.5-way Z-Series crossover features a parallel crossover configuration with the same exclusive components of the more expensive 0-Series. It has a very solid mechanical construction to minimize its self-resonance.

No details could be obtained about the internal wiring used, but it can be assumed that cables from the Ansuz range are used.

The Z3's very high-quality single-wiring connector terminal accepts banana plugs exclusively. This is somewhat unusual, but consistent.



The crossover of the Z3

Ansuz Darkz Feet for the Børresen Z3

Before we turn to the listening test, a few words about the Ansuz high-tech feet of the Børresen Z3. This model stands on the Ansuz Darkz T2s decoupling system and effectively decouples the speakers from the floor. Titanium balls are one of the important components of this sophisticated and elaborate resonance system. They can also be adjusted manually. In simple terms, the three Titanium spheres dissipate the resonances created in the speaker into the Ansuz feet. The manufacturer refers to this as mechanical grounding. According to Børresen, spikes or similar systems are at most a second choice.



The "chassis" of the Børresen Z3, with the Ansuz feet.

Listening test and conclusion

Break-in and positioning

The manufacturer Børresen recommends a minimum break-in period of 50 to 100 hours. According to his information, the speakers reach about 90% of their quality after 500 hours. Good things take time, in the high-end anyway! More about this in the listening report.

When positioning the speakers, the manufacturer recommends a minimum distance of 50 cm to the rear wall, so in the listening room of the Tonbildspinnerei the Z3 are ideally placed. The wrapping to the listening position was minimal, the manufacturer recommends a stereo triangle aligned behind the listening person. Here you can and may experiment, as well as with the distance between the speakers. Børresen recommends a minimum base width of 3 meters, even there everything fit in the tasteful room of the homely sound picture spinning.



The setup at the sound image spinner: Aavik amplifier, Ansuz cabling; Linn streamer/DAC.

Listening Test 1 - Prelude at the Tube Amplifier

Before the Z3s found their home at the Tonbildspinnerei in Zug, they made a detour via the tester's listening room. Due to the limited size and shape of the listening room, it was clear to the tester even before the first notes that the Z3s would not be able to show their full potential here. Moreover, the speakers were fresh from Denmark and had played exactly zero hours of music. Furthermore, they were transported in a cold truck. So, the first sounds out of the Z3 were relatively modest, but an unrehearsed speaker straight out of the box and also out of the cold - those are at least two audiophile deadly sins.

Breaking in a loudspeaker is not the hobby of every tester. Nevertheless, the process of breaking in is usually a "from gray duckling to proud swan" experience - which pretty much sums it up. After 50 hours the Danes found their way to the music, and after 100 hours it really started to be fun. For Michael Børresen, it should have been 500 hours of playing time, but they had something like 200 hours on the

speedometer when they started their journey to Zug. Since the listening test was planned with the in-house class-D amplifier Aavik I-180 (with 600 watts at 4 ohms), we also wanted to know how well the Danish loudspeaker bullet could cope with weaker tube amplifiers. For this purpose, they were wired to a high-quality Class A push-pull tube amplifier.

The tonality of the Z3 changed only marginally in the midrange and treble, but the bass response became a bit spongier due to the limited power of the tube amp. Then, the higher the volume level became, the more the tube amp began to sweat and lose control of the bass drivers. It became clear that Børresen speakers demand sufficient power and control. Then the deep basses also come with the necessary precision.

The second topic of the home check was the space requirements of the two Danes. The test listening room is namely with 20 square meters, no loft - and so we experimented with the Z3 in terms of positioning and bass modes. Conclusion: Although the area of the listening room with 202 is just enough, the rear wall distance to the speaker back wall is all the more important. This should be at least 80 cm, even better one meter, otherwise the bass becomes too dominant. Experimentation and trial and error is the order of the day. And you will be rewarded with a good result. Regarding the room size, we recommend a minimum area of 25 m² - we see no upper limit, provided that the amplifier has a corresponding power.



Christmas music, colorfully mixed with timeless music.

Listening test - main course in Zug, location Tonbildspinnerei

The main course of the test menu took place in the Tonbildspinnerei in Zug, as already described. As amplifier the Aavik I-180 played with the Z3, the speaker cables came from Ansuz and as streamer DAC a Linn model was doing his job.

The loudspeaker set-up was textbook stereo triangle, the base distance of 3 meters was also according to the Danes' manual. The Z3s stood on Ansuz Darkz T2s resonance absorber feet. This is not a must, but as the English say "Highly recommended".

Since the listening test took place in the pre-Christmas season, the tester played through the Qobuz Christmas playlist, among other things, and so something like Christmas mood came up in the attractive listening room.

The tester was particularly taken with the Nils Landgren sampler "Christmas with Friends". The beautiful voice of Ida Sand wafted through the homely premises of the Tonbildspinnerei with "Every day is Christmas". Then

the piano kicks in and the groove quickens. Suddenly the jazzy saxophone plays up and starts a short communication with Ida Sand, brilliant.

Because it was so nice, immediately the classic "Go Tell It on the Mountain", also sung by Ida Sand. The Z3 resolved super, kept sovereignty the overview and played nevertheless relaxed. Goosebumps and Christmas spirit in one - great cinema.

Voices were played by the Z3 with a melting sound and the necessary warmth, instruments had a realistic timbre. The used Aavik integrated amplifier I-180 could really shine in the interaction with the Børresen Speaker Z3 and the whole thing sounded almost tube-like round and organic, but never boring or over analytical - so a dream pairing.



The Aavik I-180 integrated amplifier is the congenial playing partner for the Z3 and comes from the same Danish house.

Piano, one of the most difficult disciplines for loudspeakers, was also mastered by the Z3 with flying colors. The piano strokes came with the necessary hardness and speed, the coherence was also exemplary, and there was no sign of the notorious "transition hole" from tweeter to midrange/woofer.

During the bass reproduction of fast "Electro music" impulses ("Bad Guy", Billy Eilish), the impulses came quickly, precisely and with the necessary pressure. Even the fabulously good sounding "Personal Jesus" by Will Barber had the necessary depth and drive. We would confirm the 35 Hertz as lower cutoff frequency.

The connected Aavik I-180 with its muscular 300 watts at 8 ohms seemed to be made for the Børresen speakers, it comes from the same house. The more power, the more comfortable the Z3 feel. They are not cost-conscious and react like high-performance racehorses - they want and can be challenged.

Conclusion

Michael Børresen has created great, distinctive and exclusive speakers with his drive for perfectionism and the eternal search for the perfect speaker technology. The Børresen Z3 are fully premium speakers and compete in the exciting price range of 25'000-30'000 CHF for sure with success. They do not have to hide from their competitors in this price range, on the contrary. They are perfectly matched to the in-house Aavik electronics, but also perform excellently with high-quality "third-party electronics" - the higher the quality, the better.

PROFILE

Model: Børresen Z3 Cryo

General Profile:

High-quality floor standing speaker from the manufacture of Michael Børresen. Noble design, premium workmanship and sonically dynamic, broadband and level stability. Ideal conditions for the Z3 are a medium-sized listening room and powerful electronics. Aavik electronics from the same house fits ideally.

Pro:

- Finely resolved, never annoying highs
- Midrange reproduction has melting and soul
- Bass can be really deep and powerful
- Fullrange as promised
- Manufacturing is absolutely high class

Cons:

- Feels most at home with powerful electronics
- The more space the Z3 get, the better they perform

Price per pair: 29,000.00 CHF (Cryo Version)

Manufacturer: [Borresen Acoustics](#)

Year: 2021

Swiss Dealer: [Tonbild Spinnerei](#)

Dimensions: H 1020 x B 220 x T 400 cm mm

Weight: 35 kg

Color's: White or Black, Front only black

Bass driver: 2 x 8 Inch

Speaker Design: Rear ported

Recommended Amplifier Power: >50 Watt, ideally > 100 an more Watts

Frequency Response: 35 Hz – 50 KHz ± 3dB

Tweeter: Børresen Ribbon-Tweeter

Impedance: 4 Ohm

Midrange Driver: 1 x 5 Inch

Efficiency: 89 dB