



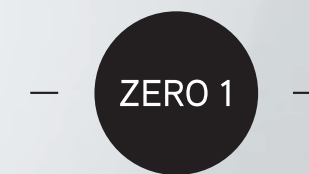
ZERO 1

*A new era
in high-end audio.*



avantgarde
ACOUSTIC

A revolution in active horn loudspeaker design.
A milestone in the development of fully digital high-end systems.
A new era in high-end audio.



by Avantgarde Acoustic

01
—
RADICALLY
SIMPLE

02
—
ABSOLUTELY
NO COMPROMISE

03
—
EXTREMELY
POWERFUL

04
—
INCREDIBLY
AMAZING



01

RADICALLY SIMPLE. TIME FOR A NEW DIMENSION.

More integrated, compact and simple, and yet a veritable horn loudspeaker. The ZERO 1 is a dream come true—one that we have shared with many friends of our horn loudspeaker factory for over twenty years. After all, as fascinated, moved and amazed as we may be by our larger acoustic transducers, we have always longed for a more compact horn loudspeaker to make the incomparable experience of Avantgarde Acoustic accessible to a wider audience of audio enthusiasts.

The ZERO 1 opens up this new road with a revolutionary design, simplified shape, hassle-free setup and fully integrated processor and amplifier technology.



Compact size and purist design

Despite its clear, simplified shape and compact size, the ZERO 1 is full of self confidence as it seamlessly integrates itself into its owner's living environment. Moreover, its recessed spherical wave horn is a perfect example of no-frills functionalism.



Fully active all-in-one system

The ZERO 1 is a fully active all-in-one system, ready to be fed an acoustic signal. All of an audiophile stereo system's components—digital processors, analogue-to-digital converters, power amplifiers and the loudspeaker—are integrated in the ZERO 1. Moreover, they are all of level of high-end quality that is unprecedented in its class.



Plug & Play installation

The loudspeakers communicate with each other via a radio link. They only need to be connected to the mains and the digital input of the master loudspeaker to the music signal (e.g. wirelessly via AirPort Express* or directly via USB, Toslink, SPDIF or the AES/EBU interface). That's it.



* AirPort Express is a registered trademark of Apple Inc., Cupertino California, USA.

ABSOLUTELY NO COMPROMISE. TIME FOR DIGITAL BIONICS.

Bionic horn loudspeakers meet 66-bit FPGA processing — it can't be any less uncompromising or trailblazing than this!

A full-fledged spherical wave horn system, the ZERO 1 has all of the tonal advantages provided by the horn technology—the most original and natural acoustic transducer principle. The diaphragms, which are much smaller than those of conventional loudspeakers, have less moving mass, which translates into reduced inertia. This results in a sound characterized above all by its effortlessness, absence of distortion and explosive vitality—with a phenomenal efficiency of 104 dB.

However, what actually makes the ZERO 1 fascinating is that it combines the ingenuity of the horn with the possibilities of digital sound processing. In fact, the technological quantum leap taken by the ZERO 1 comes courtesy of the perfect digital audio chain. The ZERO 1 succeeds in processing digital signals without compromising sound quality and transmitting them directly to the drivers without loss-making detours via passive filters. As a result, the horns receive a perfectly processed and amplified music signal. This is made possible by extremely sophisticated digital FPGA processing which is absolutely unique in this combination.



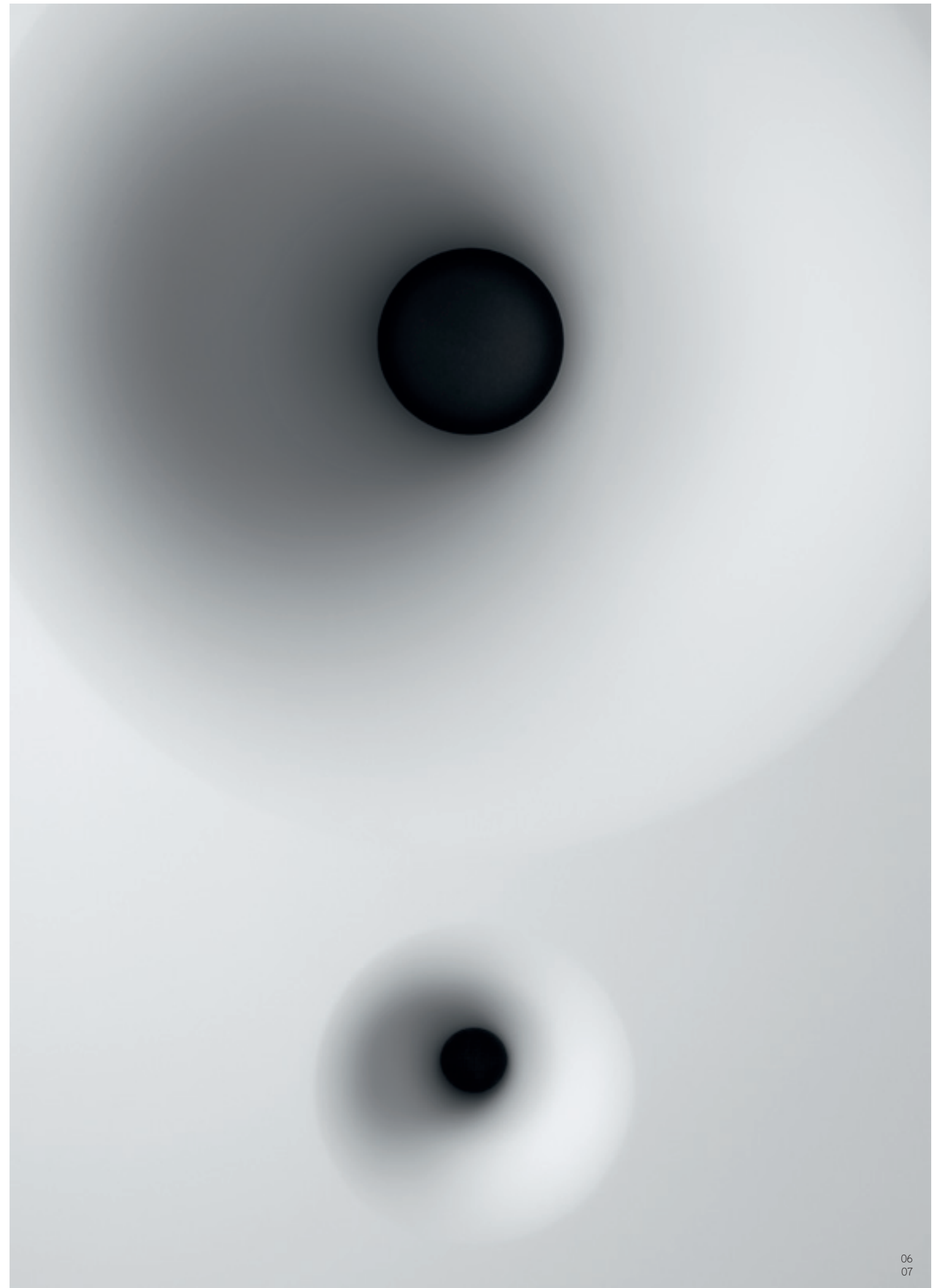
Real spherical horns system



104 dB efficiency



Perfect digital audio chain





The fully active ZERO 1 – an absolutely no compromise all-in-one speaker system.

02.02

ABSOLUTELY NO COMPROMISE. DIGITAL PERFECTION IN DETAIL.

The ZERO 1's digital perfection is a result of the quality, combination and plurality of the innovations it unites, the most important of which are showcased in this overview:

3
AMP

01
3-way active system

The ZERO 1 is a 3-way active loudspeaker in a 2 x 50 watt and 1 x 400 watt power amplifier configuration, with each of the driver stages receiving a signal that is digitally filtered and then converted to analogue, amplified, and directly connected to the voice coil of the driver systems without any passive filters inbetween. A 'one-size-fits-all' power amplifier covering the entire frequency range is renounced in favor of amplifier stages optimized for each of the dedicated frequency ranges. Moreover, the strict division into 3 ranges prevents bass signals from affecting midrange and treble reproduction and vice-versa.

↔

02
Digital crossover network

With a precision and bit accuracy unattainable using analogue technology, the ZERO 1's digital crossover network eliminates all the passive filter elements in the signal path, thus circumventing a series of tonal problems caused by analogue filter technology (e.g. capacitors, resistors and coils in the signal path, phase shifts and associated negative impulse responses).

FPGA

03
FPGA based
digital processing

A common challenge faced by digital signal processing is the amount of data needed to perform complex calculations. This is why the bit rate is usually reduced in conventional DSPs, resulting in rounding errors and what is known as rounding noise. The ZERO 1 solves this elementary problem with more intelligent and powerful 66-bit FPGA processing. Precise to one-millionth of a second, it achieves mathematical accuracy right down to 10 Hz.

📈

04
Finite impulse
response filter

Employing sophisticated FIR filter algorithms, the ZERO 1's amplitude curve can be optimized without affecting timing. This gives the ZERO 1 a perfectly smooth frequency response along with an optimized impulse and phase response. This means that all 3 channels (bass, midrange and treble) are equally loud and absolutely synchronous in time.

📉

05
Progressive
steepness filter

The ZERO 1 uses progressive steepness filters. To obtain optimum impulse characteristics, a 6 dB filter is used at the crossover point, after which it becomes progressively steeper until 100 dB. The tonal advantages run the gamut from an outstanding impulse response via an extremely strong filtering and blocking effect to the elimination of unnecessary driver strain and ringing effects.

24
BIT

06
24-Bit converter chips

The digital signal is processed for each of the analogue power amplifiers courtesy of 3 digital-to-analogue converters by the renowned manufacturer Burr & Brown. The 24-bit D/A converters work with a 352.8 kHz upsampling rate and are equipped with premium-quality anti-aliasing filters. Each of the power amplifiers is gain-adjusted to its dedicated driver in order to maximize the transducer's bit resolution.


EXTREMELY POWERFUL. TIME FOR ZERO FEEDBACK.

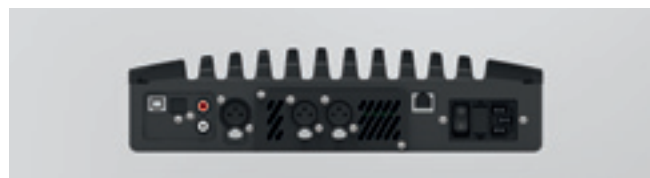
Award-winning amplification technology—the ZERO 1's power amplifiers deliver an incredibly dynamic, clear and powerful performance—down to the tiniest detail.


Achieving sensational test results and awards, Avantgarde Acoustic's XA amplifier series has evolved into the ultimate amplifier design benchmark in less than two years. Its patented technology can now be found inside the ZERO 1. In particular, the 50-watt midrange and treble amplifiers are guarantors of the impressive efficiency of 104 dB coming to full fruition. After all, these ultra-wideband amplifiers are optimized for maximum resolution and thus capable of reproducing the most minute of details both cleanly and devoid of distortion.

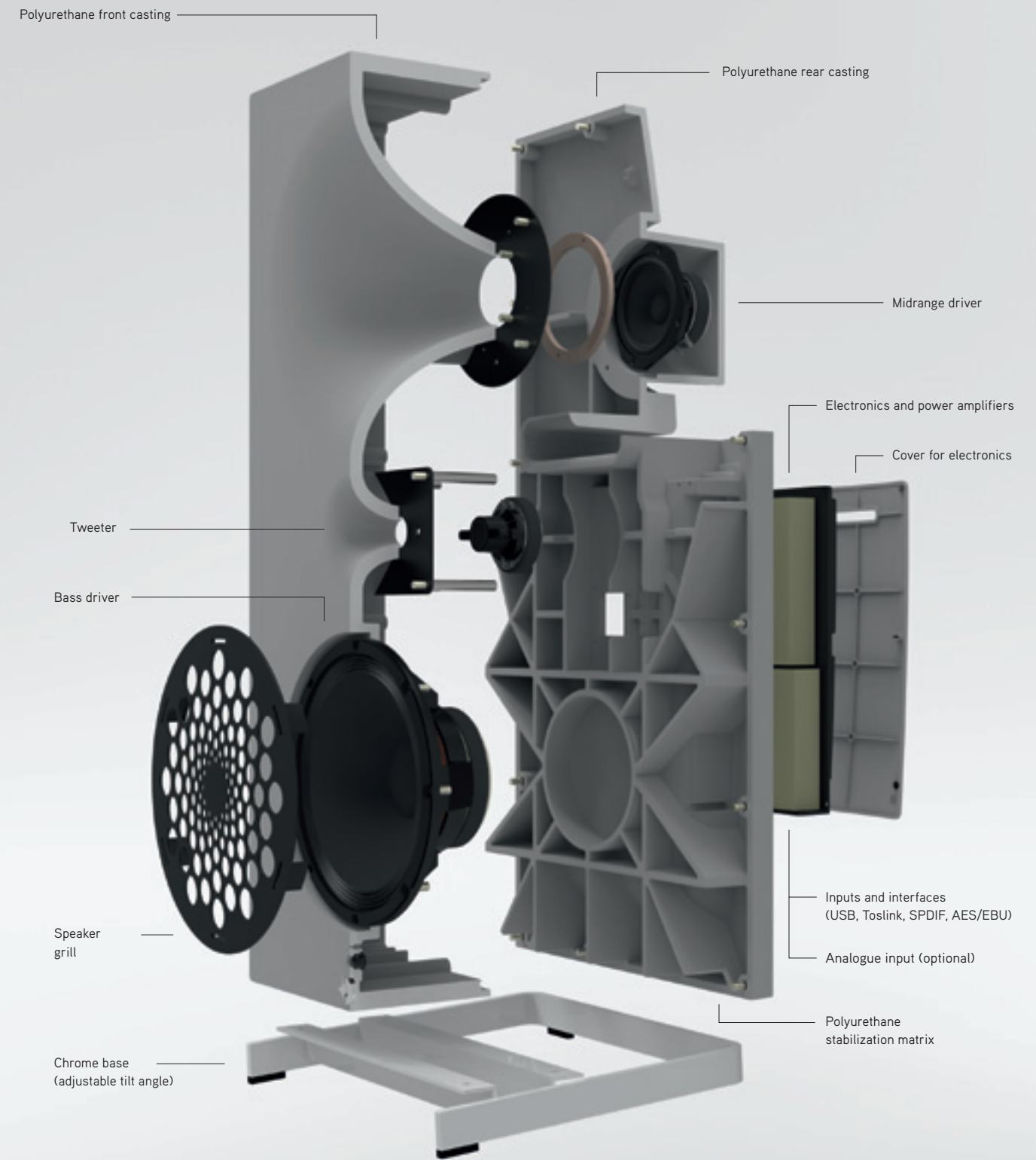
Furthermore, these are pure Class A power amplifiers which operate without negative feedback (zero feedback). The supply voltage of the XA Series power amplifier passes through both primary and secondary filters, after which it is actively regulated and made available in huge energy storage units within the circuit. This eliminates any degradation in sound quality caused by mains pollution.

A massive power amplifier with a rated output of 400 watts ensures that ample power is on tap for bass duties—naturally running in the energy-efficient Class D mode.

- 0** Zero feedback
- A** Class A power amplifiers
-  Active voltage regulation



 Watch the XA amplifier video at: www.avantgarde-acoustic.de



INCREDIBLY AMAZING. TIME FOR A NEW ERA.

“Purity Meets Performance”
—when listening to the ZERO 1,
we immediately realise that its
an Avantgarde Acoustics horn
loudspeaker.

The ZERO 1 is completely different from anything else we have produced so far. And yet it sounds so amazingly familiar, making us realise immediately that we have an Avantgarde Acoustics horn loudspeaker in front of us. An acoustic transducer from a high-end

factory, which has been drawing on its understanding of tonal perfection for over 20 years turning the superlative into a benchmark. An ambition that has left its mark on each and every detail of the process of creating the ZERO 1. From the material used to craft the cabinet and horn—a polyurethane-based sandwich-structured integral rigid foam with outstanding tonal properties—via groundbreaking FPGA processing which redefines digital quality through a series of filtering features to top-notch amplification technology, every component radiates our passionate and uncompromising approach. This culminates in an acoustic transducer with a convincing concept and amazing tonal presentation. A loudspeaker that is the first of its kind. Because it was created for an era that has just begun.



Watch the Avantgarde Acoustic video at: www.avantgarde-acoustic.de

TECHNICAL SPECIFICATIONS

SYSTEM DATA

Frequency response	subwoofer	30 – 250 Hz
Frequency response	mid range	250 – 2.000 Hz
Frequency response	high range	2.000 – 20.000 Hz
Sensitivity (1 Watt / 1m)		> 104 dB

ELECTRONICS

Digital processing	6 channel, 66 Bit FPGA
Filter steepness	up to 100 dB/octave
Filter type	FIR progressive filters
Phase optimized	yes
Digital-analogue-converter	3 x 24 Bit Burr & Brown
Power amplifiers	2 x 50 Watt + 1 x 400 Watt

RADIO LINK

Radio Link frequency	2,4 GHz ISM/SRD
Uncompressed audio data transfer	On all 3 radio channels
Separate radio channel for volume control	Yes

HORNS & DRIVERS

Horn type	Spherical horn
Horn mouth diameter	mid range 400 mm / 15.7 in
Horn mouth diameter	high range 130 mm / 5.1 in
Horn length	mid range 190 mm / 7.5 in
Horn length	high range 77 mm / 3.0 in
Driver diameter	subwoofer 300 mm / 11.8 in
Driver diameter	mid range 125 mm / 4.9 in
Driver diameter	high range 25 mm / 1.0 in

SOFTWARE (optional)

Amplitude linearization	Yes
Phase linearization	Yes
Room equalization	Yes
Equalization	100 EQs with 16.000 frequency points each

INPUTS

USB input	1 x
OPT. TOSLINK input	1 x
SPDIF input	2 x
AES/EBU input	1 x
Analogue input	Optional

DIMENSIONS & WEIGHT

Width x height x depth (cabinet)	490 x 1040 x 318 mm / 19.3 x 40.9 x 12.5 in
Weight	40 kg / 88.2 lbs

COLORS / MATERIAL

Colors	matte white and matte black
Material / surface	Polyurethane cabinet with high-end soft-touch finish



Front view



Side view

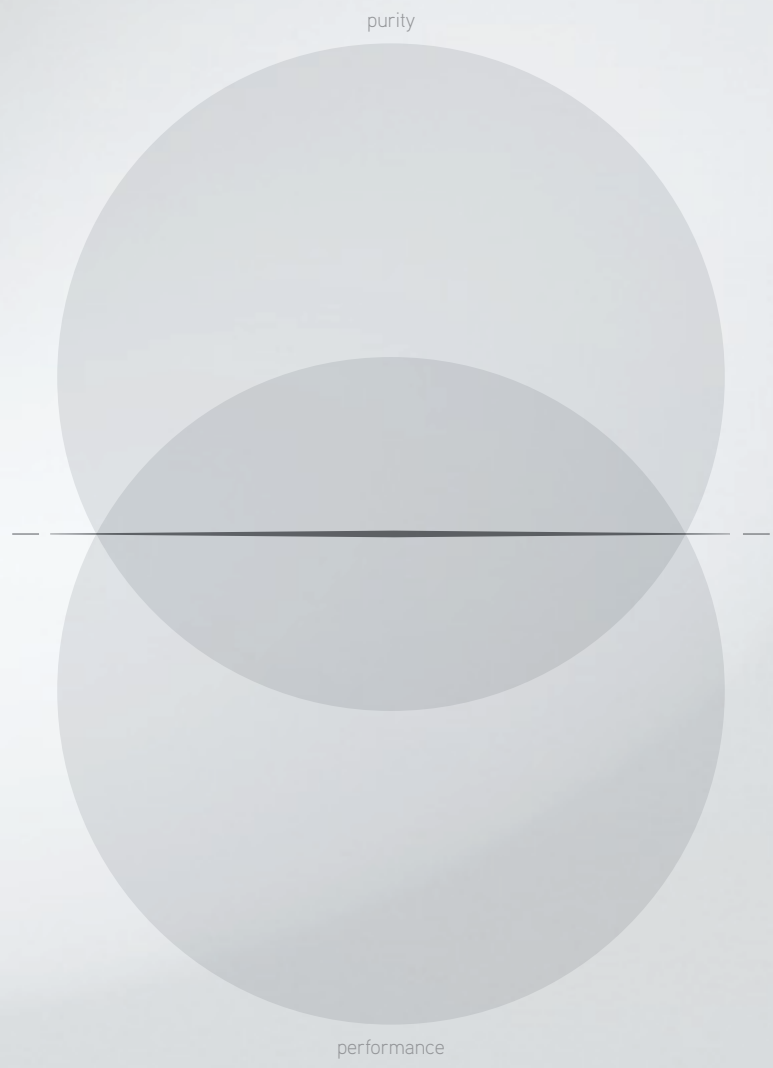


Rear view

ZERO 1

by Avantgarde Acoustic





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