

DIRECTORY OF HIGH-END AUDIO MANUFACTURERS 2019





Never be the Same Again

Master Quality Digital Audio Player



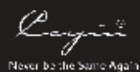
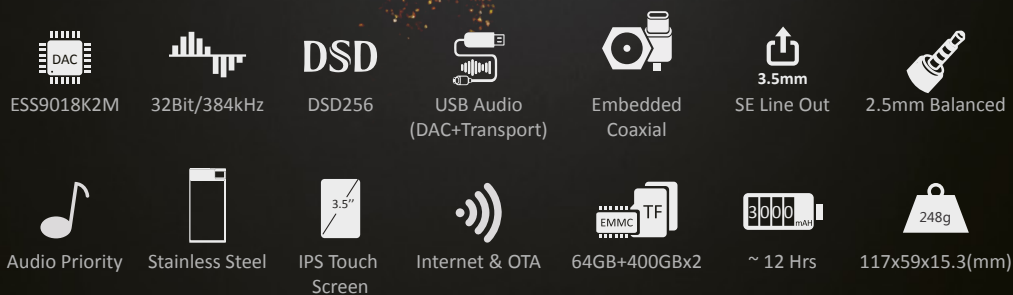
N5iiS

*Android with Google Play
Streaming App ready*



N8

*A Reference DAP
offers choice of
Triode Tube / Solid State*



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- ▶ WBT - Industrie GmbH



DIRECTORY OF HIGH-END AUDIO MANUFACTURERS 2019



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DIRECTORY OF HIGH-END AUDIO MANUFACTURERS 2019

Welcome to the *Hi-Fi+* Directory of High-End Audio Manufacturers. As publishers and editors of a respected magazine whose focal point has always been "Reproducing the Recorded Arts" we are often asked for advice on choosing new pieces of audio equipment or for our recommendations on manufacturers to turn to for help in solving audio problems. But that raises some key questions of importance for all music lovers and audio enthusiasts:

- +** *Just who are the manufacturers, whether well known or perhaps not (yet) so well known, who offer products and services geared for the needs and desires of discerning audiophiles?*
- +** *What exactly is the scope of products those worthy manufacturers have on offer? And do they have readily identifiable areas of specialisation that audiophiles need to know about?*
- +** *What are their various product design philosophies and what approaches do they take as they strive to build products that will amaze and delight music lovers?*
- +** *Further, who are the people behind the products—the 'movers and shakers' who bring product ideas to reality?*
- +** *Last but certainly not least, how can journalists and enthusiasts alike get in touch with our industry's specialty manufacturers?*

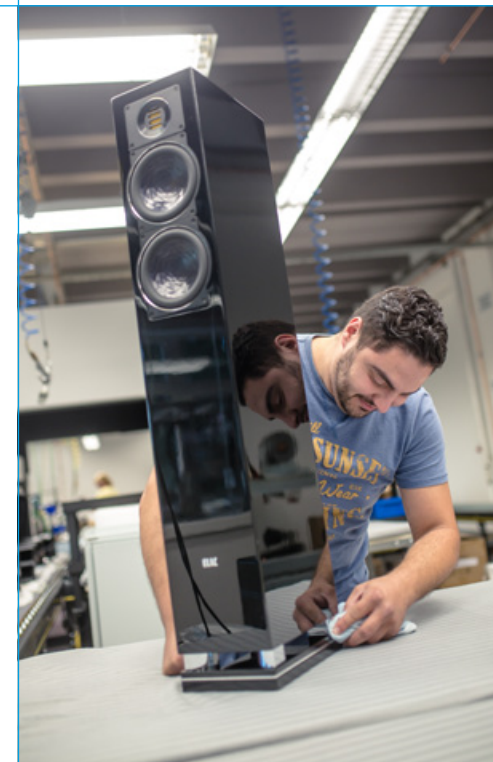
What you have before you is a directory listing, in alphabetical order, 32 manufacturers we think you'll want to know about. Each listing will give you a good idea of who the manufacturers are and what they do, but by design—and in accordance with manufacturers' wishes—some listings are more elaborate and comprehensive than others. What is more, a handful of listings include manufacturer interviews, so that, as we mentioned above, you can get to know "the people behind the products."

We hope you will find this directory useful and thought provoking in the best of ways. After all, the first step toward building an audio system that's right for you involves knowing more about what's out and from whom. We can help with that.

If manufacturers you care about are not included here, please tell them about the directory and that you'd like to see them in it. After all, we will produce future editions of the directory and, like you, would like to see it grow over time.

Best wishes,

Pete Collingwood -Trewin (Publisher)
& **Chris Martens** (Editorial Director)



THEME DIRECTORY



ACCESSORIES

- ▷ Acoustical Treatments
- ▷ Analogue Set-up/Tuning Tools, Accessories
- ▷ Digital Set-up/Tuning Tools, Accessories
- ▷ Equipment Racks, Audio Furniture
- ▷ Power-related accessories
- ▷ Speaker Stands

▶ Allnic Audio

▶ Burmester
Audiosysteme
GmbH

▶ Cardas Audio

▶ Critical Mass Systems

▶ Ensemble

▶ Grand Prix Audio

▶ Lavardin Technologies

▶ Merging Technologies

▶ Nordost Corporation

▶ Shunyata Research

▶ WBT - Industrie GmbH



ANALOGUE SOURCES

- ▷ Analogue Accessories
- ▷ FM Tuners
- ▷ Phono Cartridges
- ▷ Phono Stages
- ▷ Tape Decks
- ▷ Tonearms
- ▷ Turntables

▶ Allnic Audio

▶ Brian & Trevors

▶ Burmester
Audiosysteme GmbH

▶ Ensemble

▶ Gold Note

▶ Grand Prix Audio

▶ Lindemann Audio

▶ Linn Products

▶ SME Ltd

CABLES

- ▷ Accessories, Cable Lifts
- ▷ Analogue Interconnects
- ▷ Digital Interconnects
- ▷ Loudspeaker Cables
- ▷ Personal Audio Cables
- ▷ Power Cables

▶ Allnic Audio

▶ Burmester
Audiosysteme
GmbH

▶ Cardas Audio

▶ Cayin

▶ Crystal Cable

▶ Engström &
Engström

▶ Ensemble

▶ Lavardin
Technologies

▶ Linn Products



▶ Nordost Corporation

▶ Purist Audio Design

▶ Shunyata Research

▶ Siltech

DIGITAL SOURCES

- ▷ CD/SACD/Blu-ray players/transport
- ▷ DACs
- ▷ DAC/Preamps, DAC amps
- ▷ Digital Accessories
- ▷ Internet/DAC Tuners
- ▷ Streamers, Servers, Wireless Bridges

▶ Allnic Audio

▶ AURALiC

▶ Burmester
Audiosysteme
GmbH

▶ Cayin

▶ CH Precision

▶ Ensemble

▶ Gold Note

▶ Innuos

▶ Lindemann
Audio

▶ Linn Products

▶ Merging Technologies

▶ Roon Labs



ELECTRONICS

- ▷ Integrated Amplifiers,
- Integrated Amp/DACs
- ▷ Headphone Amplifiers
- ▷ Phono Stages
- ▷ Power Amplifiers
- ▷ Preamplifiers, Preamp/DACs

▶ Allnic Audio

▶ AURALiC

▶ Burmester
Audiosysteme GmbH

▶ Cayin

▶ CH Precision

▶ Crystal Cable

▶ Engström & Engström

▶ Ensemble

▶ Gold Note

▶ Lavardin Technologies

▶ Lindemann Audio

▶ Linn Products

▶ Siltech

▶ Warwick Acoustics



LOUDSPEAKERS

- ▷ Active (Self-Powered) Speakers
- ▷ Architectural Speakers
- ▷ Desktop Speakers
- ▷ Floorstanding Speakers
- ▷ Stand-mount Monitors

▶ Allnic Audio

▶ Burmester
Audiosysteme
GmbH

▶ Cayin

▶ Crystal Cable

▶ Engström
& Engström

▶ Ensemble

▶ Gold Note



▶ Graham Audio

▶ Lavardin
Technologies

▶ Lindemann Audio

▶ Linn Products

▶ Monitor

▶ Neat Acoustics

▶ ProAc

▶ Siltech



PERSONAL AUDIO

- ▷ Custom-Fit In-Ear Monitors
- ▷ Earphones (In-Ear Headphones)
- ▷ Full-Size Headphones
- ▷ Wireless Earphones (In-Ear)
- ▷ Wireless Full-Size Headphones

▶ Allnic Audio

PERSONAL AUDIO ELECTRONICS

- ▷ Accessories
- ▷ Desktop Headphone Amplifiers
- ▷ Desktop Headphone Amp/DACs
- ▷ Portable Digital Audio Players
- ▷ Portable Headphone Amplifiers
- ▷ Portable Headphone Amp/DACs

▶ Allnic Audio

▶ Cayin

▶ Nordost Corporation

▶ Warwick Acoustics



POWER PRODUCTS

- ▷ Grounding Systems, Noise Filters
- ▷ Other Power Accessories
- ▷ Power Cables
- ▷ Power Conditioners
- ▷ Power Regenerators
- ▷ Power Strips

▶ Allnic Audio

▶ Burmester
Audiosysteme
GmbH

▶ Cardas Audio

▶ Crystal Cable

▶ Engström &
Engström

▶ Ensemble

▶ Lavardin Technologies

▶ Merging Technologies

▶ Nordost Corporation

▶ Shunyata Research

▶ Siltech



To make the best cables takes years of experience and accumulated knowledge, the development of new techniques and proprietary technology – and a willingness still to learn...

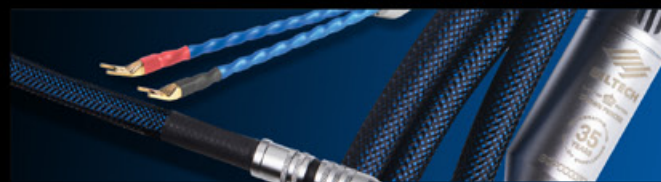
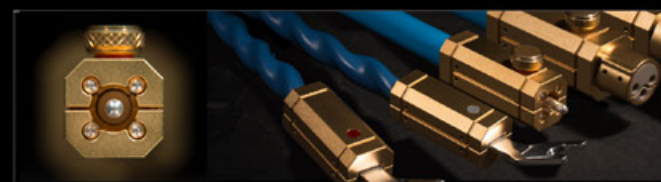
After all, years of excellence are no accident.



Siltech - Products of Sound Engineering



SILTECH



"Never think you're finished. Keep comparing. Keep innovating. In high-end audio, there is no limit to quality." Edwin Rijnveld

www.siltechcables.com



ALLNIC AUDIO

DIGITAL SOURCES

+ DACs

ANALOGUE SOURCES

+ Phono Cartridges

+ Phono Stages

+ Analogue Accessories

ELECTRONICS

+ Preamplifiers, Preamp/DACs

+ Power Amplifiers

+ Integrated Amplifiers, Integrated Amp/DACs

+ Phono Stages

+ Headphone Amplifiers

LOUDSPEAKERS

+ Stand-Mount Monitors

+ Floorstanding Speakers

CABLES

+ Analogue Interconnects

+ Digital Interconnects

+ Loudspeaker Cables

+ Power Cables

POWER PRODUCTS

+ Power Cables

PERSONAL AUDIO ELECTRONICS

+ Desktop Headphone Amplifiers

ACCESSORIES

+ Analogue Set-up/

Tuning Tools, Accessories



Allnic Audio, founded in 1990 by Mr. K.S.Park, is based in South Korea. Allnic Audio was formed with the intention of matching and, indeed, exceeding the heights achieved by any tube amp and cable company. Working with direct heated triodes, hand wound nickel alloy transformers, LCR RIAA equalisation, output transformer-less and output capacitor-less circuitry, power driving circuitry, a remote controlled 61-step 'constant impedance' attenuator, patented 'Absorb GEL tube damper' technology, Allnic Audio is one of the industry's master innovators. Also, Allnic Audio has introduced ZL-Technology in making audio & power cables, which means 'Zero-Loss' of transmitting audio signals and AC powered. ZL-Technology features hot-welding (not soldering nor clamping), heat-treated Beryllium copper terminals, patented double blade terminals, and Mu-metal shielding (in interconnect cables). Allnic Audio's amps, cartridges, and cables are distributed worldwide to the U.K., Europe, U.S.A, Canada, Israel and Thailand.

www.allnicaudio.com

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Dunchon-daero,
Junnwon-gu,
Seongnam-si,
Gyeonggi-do, Korea

Company Tel:

+82-31-777-9447

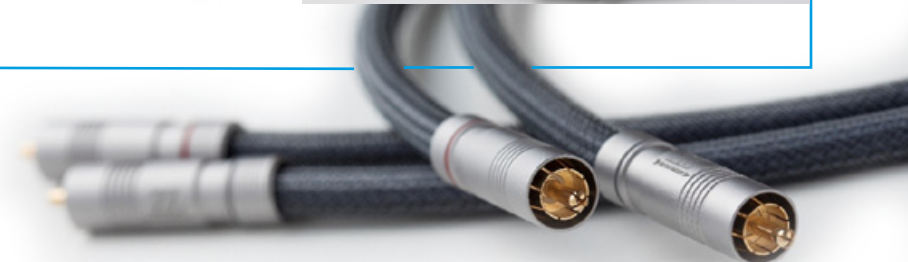
SPOTLIGHT

ALLNIC AUDIO/ZL TECHNOLOGY CABLES

WHAT IS IT?

Distinguished speaker, interconnect, digital, phono, and power cables.

ZL(Zero-Loss) Technology cables are ZL-3000, 5000 power cables, ZL-3000, 5000 speaker cables, Mu-7R RCA, XLR, digital, and phono cables. Allnic Audio uses our own technology for eliminating any audio cable signal loss by minimizing three forms of resistance: Linkage, Contact, and Wire resistance. 1000-degree hot-melt welding and some innovative contact improvements have been introduced to minimize Linkage and Contact resistance. Also, Allnic uses 'Mu-metal' as a braided shield in interconnect cables, that protects completely from both sources of noise. Allnic Audio considers that protruded midrange is the most formidable obstacle for harmonious signal transfer. Allnic's MRCT(Mid-Range Control Technology) uses metal platings for slight midrange braking and thick wire gauze for encouraging low frequencies, and controls capacitance forever evading high frequencies.



SPOTLIGHT

ALLNIC AUDIO/L-10000 OTL/OCL PREAMPLIFIER

WHAT IS IT?

A Direct Coupled OTL/OCL tube preamplifier

OTL/OCL means 'Output Transformer Less' and 'Output Capacitors Less'. In an OTL/OCL preamplifier, there is no coupling device between the preamplifier and the power amplifier. OTL/OCL has been considered the best solution for amplifiers in order to maintain signal purity. L-10000 OTL/OCL preamplifier adapts a newly developed 61-step 'Constant Impedance' bridged type attenuator, which contributes to its different dimensional sound. Allnic uses the most sophisticated 'Active Balanced Positive and

Negative Feedback Circuit', in which a 6AN8 pentode perfectly controls all the circuit's entire operation with extremely low distortion and the greatest speed.



SPOTLIGHT

ALLNIC AUDIO/H-8000 DHT

WHAT IS IT?

*A pure DHT phono-stage
with a separate power supply*

The H-8000 DHT is perhaps the world's finest Direct Heated Triode (DHT) phono-stage, which uses two HL-2s as a first gain stage and four Kr242s as second and third gain stages. Allnic's Mr. Kang Su Park has spent a lifetime studying and designing circuits and transformers for use of DHTs in audio reproduction. The main breakthrough was the design of a circuit valve, and transformer combination with astounding measured results. The H-8000 DHT also features LCR



type pre-RIAA and RIAA equalization, no negative feedback design, and high quality MC step-up transformers with Permalloy cores.

YOU WILL.....

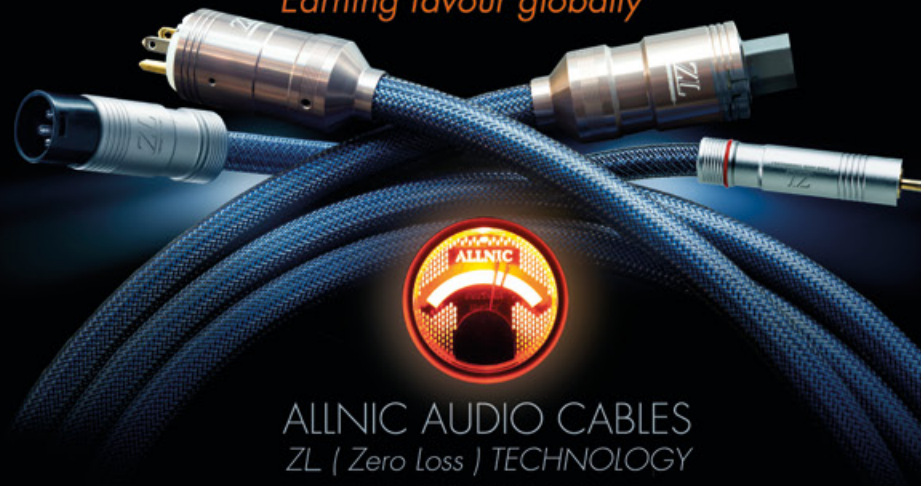


... HEAR MORE!

Allnic (Zero-Loss) Technology



ALLN/C
Earning favour globally



ALLNIC AUDIO CABLES
ZL (Zero Loss) TECHNOLOGY

TEL: +1.250.826.6872
www.hammertoneaudio.com



AURALiC

AURALiC

DIGITAL SOURCES

- + DAC/Preamps, DAC amps
- + Streamers, Servers, Wireless Bridges
- + Internet/DAC Tuners

ELECTRONICS

- + Preamplifiers, Preamp/DACs

Built around the idea that true hi-fi should be accessible to everyone, AURALiC enjoys a worldwide reputation for innovative digital and analogue components that sound as great as they look. We build devices that help you explore digital streaming, discover new music, and share experiences with friends. AURALiC connects your home by delivering high-resolution music to every room, with a mobile control app that puts you in control.

www.auralic.com

CONTACT

Company Address:
Room 102,
Building No.7
Changping District,
Beijing, China

SPOTLIGHT

AURALiC ARIES G2

WHAT IS IT?

The AURALiC Aries G2 is a network audio streaming transporter.

With the flexibility to connect to everything, the intelligence to control your musical world with a touch, and the power to deliver an exceptional signal, the ARIES G2 Wireless Streaming Transporter is the most technologically advanced, best-sounding way to bring high performance audiophile streaming to your home audio system that we've ever created. Whether your digital favourites reside on your local network, USB drives, streaming services like TIDAL and Qobuz, or Internet Radio, the ARIES G2 manages every connection so you can explore your entire digital universe right from our Lightning DS control app and take advantage of features like On-Device Playlists, Memory Caching, Gapless Playback and Bit-Perfect Multi-Room functionality.

With a supercharged hardware platform, the ARIES G2 has got the power to build an astonishingly pure, bit-perfect stream for music formats up to DSD512 over Wi-Fi for truly exceptional sound performance. Whether on its own or matched with other G Series devices from AURALiC, the ARIES G2 redefines audio connectivity and performance.



SPOTLIGHT



AURALiC VEGA G2

WHAT IS IT?

The AURALiC VEGA G2 is a Network Audio Streamer/DAC.

From the addition of integrated streaming to its unique casework, the VEGA G2 is transforming the idea of what a DAC can be. Every aspect of the VEGA G2's engineering has been designed to push the boundaries of sonic performance, reshaping data into vibrant musical performance – but its sound engineering is only half the story. The completely revamped architecture of the VEGA G2 combines high-end DAC performance and feature-rich streaming, emerging as a complete digital music solution for your home audio system. VEGA G2 streaming is based on the Lightning

Streaming framework, so favourite AURALiC features like On-Device Playlists, Memory Caching, Gapless Playback, and Bt-Perfect Multi-Room are all at your fingertips. With support for every audiophile format and resolution up to DSD512, the stellar VEGA G2 is the embodiment of what high-resolution digital music can be.

SPOTLIGHT

AURALiC LEO GX

WHAT IS IT?

LEO GX is a Reference Master Clock

LEO GX is a breakthrough in digital audio system clocking – the first master clock ever that can feed a DAC directly with a working signal so precise we had to use new benchmarks to measure its performance. Wider staging, pinpoint locational accuracy, and an expanded dynamic range are just some of the benefits you'll hear when you implement LEO GX's one-of-a-kind approach to clocking that literally bypasses the traditional limitations of internal DAC clocks.





'The Vega G1 is a hard act to beat - put it with a decent server and it will deliver results that will revise your opinion of what can be done with digital audio.'

JASON KENNEDY, THE EAR



auralic.com

Ultimate Stream Farnham	01252 759285	Igloo Audio Tunbridge Wells	01892 532995
Audio Destination Tiverton	01884 243584	Moorgate Acoustics Sheffield	0114 275 6048
Audio Emotion Levan	01333 425999	Lintone Audio Gateshead	0191 477 4167
Oxford Audio Consultants Oxford	01865 790879	Harrow Audio Harrow	020 8930 9933
Acoustica Chester	01244 344227	Audio T Brighton	01273 609431
The Audiobarn Harlow	01279 454860	Ripcaster Reading	0118 321 8292
Midland Audio Exchange Belbroughton	01562 731100	Strictly Stereo Greater Manchester	0161 917 0642
Audiovenue Ealing	020 8567 8703	Loud & Clear Edinburgh	0131 555 3963
Doug Brady Hi-Fi Warrington	01925 828009	Holburn Hifi Aberdeen	01224 585713
Vickers Hifi York	01904 691600	Hifonix Sutton Coldfield	0121 382 5444

BRIAN & TREVORS

ANALOGUE SOURCES

+ Turntables

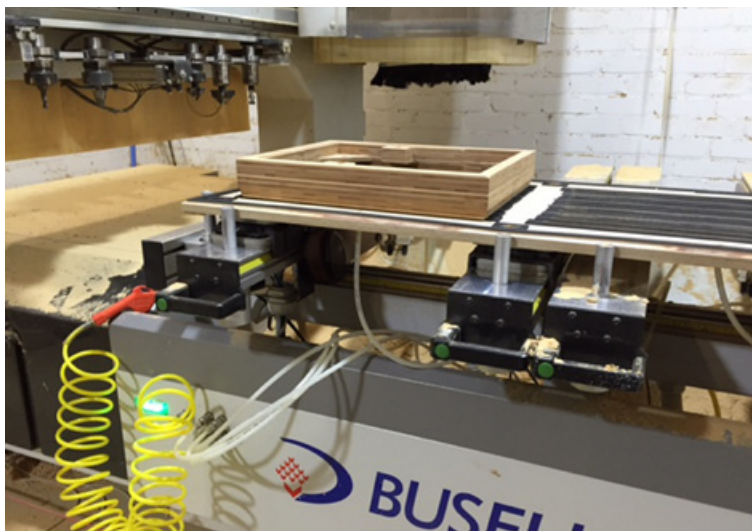
Booplenth is the first one-piece plinth construction for the Linn LP12 turntable. Booplenth is an engineered plinth, machined from solid bamboo laminate, providing the ultimate construction integrity and superior sound quality traditional LP12 plinth constructions cannot offer. Booplenth is not a simple product to machine and manufacture and is also labour intensive requiring 18 individual production and quality control stages to guarantee the uniform upgrade quality in every booplenth.

As Linn Specialists, (brianandtrevors and House of Linn in Manchester, UK), we look for ways of producing even better sound quality from our components and systems. Our passion for vinyl and the Linn Sondek LP12 turntable led us to re-design and produce a new, advanced and better engineered LP12 plinth, applying the highly effective acoustic isolation properties of bamboo to an advanced plinth design reducing vibrations by more effectively housing and isolating all of the LP12's component parts – revealing more of the LP12's authentic sound quality.

www.booplenth.com
www.brianandtrevors.com

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 M45 6GE - UK
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It's all your eyes and ears need!



The *Hi-Fi+* website is the go-to URL for all the best the magazine has to offer and more, including news, reviews, features, show reports, all the latest music, and even some unique made-for-the-net features too. Plus, it's the perfect place to subscribe to the magazine, obtain back issues and lots, lots more.

Burmester

BURMESTER AUDIOSYSTEME GmbH

DIGITAL SOURCES

- + DAC/Preamps, DAC amps
- + CD/SACD/Bu-ray players/transport
- + Streamers, Servers, Wireless Bridges

ANALOGUE SOURCES

- + Turntables

ELECTRONICS

- + Preamplifiers, Preamp/DACs
- + Power Amplifiers
- + Integrated Amplifiers, Integrated Amp/DACs
- + Phono Stages

LOUDSPEAKERS

- + Stand-Mount Monitors
- + Floorstanding Speakers
- + Architectural Speakers

CABLES

- + Analogue Interconnects
- + Loudspeaker Cables
- + Power Cables

POWER PRODUCTS

- + Power Conditioners

ACCESSORIES

- + Equipment Racks, Audio Furniture



Burmester has been manufacturing high-end audio components of unsurpassed quality since 1977. All products are entirely hand-crafted at Burmester's Berlin manufactory and are currently sold in about 40 countries on 5 continents. From the very beginning the objective has been to create a perfect blend of highest-quality sound, technological innovation, and timeless design. Following this strategy the company achieved a leading position in the international market.

For more than 15 years Burmester's expertise is also very much in demand at the high end of the automotive industry. After the successful debut of the Burmester sound system in the Bugatti Veyron, the manufacturer was able to acquire other renowned partners with Porsche and Mercedes-Benz. The experiences, the challenges, and the exciting cooperation with our partners have enabled us to set new global standards also for the automotive industry.

www.burmester.de

CONTACT

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Wilhelm-Kabus-Straße
47, 10829 Berlin,
Germany
Company Tel:
+4930 7879 680

SPOTLIGHT

BURMESTER REFERENCE LINE 175 RECORD PLAYER

WHAT IS IT?

Vinyl Player with integrated phono stage

After more than 35 years of experience in the processing of finest audio signals, Burmester now crowns its series of successful phono preamplifiers with a turntable. Recognizable as a typical Burmester even from the very first glance, the 175 turntable makes use of characteristic design elements of the Burmester Reference Line. The integrated signal processing derived from the Burmester 100 phono pre-amplifier processes the fine phono signals at the highest level.

The turntable of the 175 record player has a sandwich construction consisting of two layers of aluminum and a further layer of brass in between. This design principle ensures optimal damping and less resultant resonances. The 175 is driven by four motors located in the outer square around the sub-platter. This squaring of the circle and the use of multiple belts ensures that no irregular tension arises on the central bearing.



SPOTLIGHT



BURMESTER SIGNATURE LINE 159 MONOPOWER AMPLIFIER

WHAT IS IT?

The strongest power amplifier in the company history

After seven years of development, power and control have reached previously unattainable levels of performance and measurement. The 159 Mono Power Amplifier benefits both from the wealth of experience evidenced by Burmester's track record in power amplifier development and from the latest discoveries in analogue amplifier technology. While being forward-looking in terms of

form and technology, it remains, however, typically "Burmester". Together with the BC350 Loudspeakers, the 159 Mono Power Amplifiers are the first models of the new Burmester "Signature Line". One of the special highlights is the adjustable damping factor which offers the opportunity to adjust the amplifier to personal sound preferences and to the respective requirements of the speaker.

SPOTLIGHT

BURMESTER SIGNATURE LINE BC350 LOUDSPEAKER

WHAT IS IT?

High end loudspeaker absolutely uncompromising regarding material, quality, and performance

With irreproachable musical reproduction the BC350 loudspeaker from the new Burmester Signature Line represents the zenith of what is technically possible. The impressive shape allows this versatile loudspeaker to reach to the deepest frequencies with almost limitless dynamics - yet the BC350, with its high resolution, also produces a musical, delicate, and highly-detailed performance that fills any listening space. The BC350 Loudspeaker is able to reproduce music in two different tunings. A switchover of the discrete crossovers, which are set up in a precisely separated configuration, allows the listener to select between intricate detail in Pure Mode and high-level performance and involvement with a psycho-acoustically lifted stage in Live Mode.





CARDAS AUDIO

CABLES

- + Analogue Interconnects
- + Digital Interconnects
- + Loudspeaker Cables
- + Power Cables
- + Personal Audio Cables
- + Accessories, Cable Lifts

POWER PRODUCTS

- + Power Strips

POWER CABLES

- + Personal Audio
- + Earphones (In-Ear)

ACCESSORIES

- + Analogue Set-up/Tuning Tools, Accessories
- + Power-related accessories

George Cardas founded Cardas Audio to perfect audio cables using ultra-pure materials, innovative Golden Ratio resonance control techniques and uniquely insightful solutions to transmission line problems. The legendary connections and craftsmanship at Cardas reflect George's pursuit of perfection. Cardas produces its own ultra-pure Copper using George's proprietary method. The copper wire is arranged in multi-stranded, Golden Ratio scaled Litz conductors. Cardas connectors are machined from billet copper and brass, and plated with a flash of Rhodium over thick Silver. Cardas cables are terminated by hand in Bandon, Oregon. Cardas Audio remains a family business, with George designing products, and his youngest daughter, Angela, running the company.

www.cardas.com

CONTACT

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Bandon, Oregon
USA 97411
Company Tel:
+1 541-347-2484

SPOTLIGHT

IRIDIUM SPEAKER CABLE

WHAT IS IT?

Entry level speaker cable performing far beyond its price point

Suitable for virtually any amp/speaker combination. Perfect for long or short runs. Iridium conveys rich midrange with strong bass and smooth treble. Iridium speaker cable performs like a product costing much more. This cable is very soft and flexible for its size.

Longtime Cardas users will recognize Iridium's physical resemblance to our classic Twinlink Speaker cable. And they'll appreciate the performance enhancement. After more than 20 years as mainstays in high-end audio, Twinlink was succeeded by Iridium in 2017. The Iridium cables are evolutions of their predecessors, with improvements in dielectrics, and greatly enhanced flexibility and feel. With Iridium, natural treble is blended with a smooth midrange and quick bass response for a very musical speaker cable.





ANGELA CARDAS

Hi-Fi+: As companies evolve they inevitably pass milestones that mark particular achievements or turning points in the company's growth. What are five or six key milestones on your company's evolutionary timeline?

Angela Cardas: 1. Getting Cardas Audio started required finding a reliable, longterm source of ultra pure, virgin copper, drawn into wire using a process that had never been done before. There was - and remains - one factory in the world capable of producing Copper according to George's specifications. Early on, it wasn't clear that they'd be around very long, as demand for high quality copper wasn't great (high end audio was in its infancy, and no other industry required it). However, George promised to keep the copper orders coming, and it's been a great business relationship for over 30 years now. Securing this relationship was integral to the founding and success of the company.

2. Next, George had to convince an established cable production factory to take him seriously - bushy hair & everything - and produce his cable to his exact specifications, using his specially produced copper wire. Some of George's cable designs would require modifying antique braiding machines to operate in ways that their makers - 100 years prior - never envisioned. He had to make many visits to the company's office before they finally said "Fine, we'll make your cable!" And again, that's a relationship that dates back to the first days of Cardas Audio, and continues to thrive. When we get together with this vendor, we always laugh about the hard time they gave George back then, which is especially funny considering that images of our cables now adorn the walls of their office. Again, without forging this relationship, Cardas Audio never would have gotten off the ground.

"THE SMALL TECHNOLOGY COMPANY MOVING OUT OF THE FAMILY GARAGE AND INTO A REAL MANUFACTURING FACILITY IS SUCH A CLICHÉ, BUT IT'S PART OF OUR HISTORY"

3. The small technology company moving out of the family garage and into a real manufacturing facility is such a cliché, but it's part of our history. George started Cardas Audio in the garage behind our house in Ontario, California, which is east of Los Angeles. For the first couple years, he'd go to his day job at the phone company, and three of his buddies would work in the garage, terminating cables. One of them, Gary Dawson, is still our head terminator. Finally, things were going well enough that he could

leave the phone company and move Cardas Audio to a "real" facility in Upland.

4. A few years into it, the lease on Cardas Audio's termination facility in Upland, California was up for renewal. Rather than committing to staying in Southern California, my parents took a drive north on the Pacific Coast Highway, eventually stopping in Bandon, Oregon, and realized that that's where they wanted to be. They bought a building, and moved the company and most of its employees up to the Oregon coast. Real estate being more affordable, they could buy a large enough building to grow the business, and the employees could afford to buy homes. Taking care of the staff has always been important to George, and this was a big decision that benefited the company and the employees greatly.

5. Back in the late 90's, I was a radio DJ using Sennheiser HD600 headphones. I broke a few of the stock cables, so I suggested to my Dad that he have his guys make a custom cable for me. Little did I know that my suggestion would kick off an R&D project, which would result in the first Cardas Headphone Cable. Since then we've developed two more headphone cables (Clear & Clear Light) with even more in development. Headphone cables are a great way to introduce somebody

to cable differences, since the comparison is a closed loop that eliminates room acoustics & ambient noise. The differences are immediate, apparent, and often jaw-dropping. We've convinced more than a few cable-skeptics just by letting them borrow a Cardas headphone cable, including electrical engineers! The success of our headphone upgrade cables has introduced untold numbers of young people to Cardas Audio, many of whom have gone on to invest in two-channel stereo systems, and outfit them with Cardas cables.

Hi-Fi+: What are four or five interesting 'factoids' about your company that you think the high-end audio community might want to know about?

Angela Cardas: George has always been a tinkerer. In high school, he'd mess around with the carburetor of his parent's car on ▶



SPOTLIGHT

CLEAR BEYOND INTERCONNECT

WHAT IS IT?

Analog interconnect available in single-ended or balanced configuration

Clear Beyond Interconnect brings noteworthy improvements in spatial imaging, dynamics, and low frequency impact while retaining the classic Cardas musicality.

Clear Beyond Interconnect builds on over 30 years of Cardas Audio's relentless dedication to the perfection of high performance cables. Superior shielding and advanced air-tube suspension geometry result in an O.D. of .511", which necessitates the use of our XRCA 13 adaptor for single-ended termination, and a re-designed CG XLR for balanced cables.

More than anything, Clear Beyond Interconnect is musical. Tonal balance is completely neutral with unsurpassed speed and transparency. Each pair is made to order and hand terminated only by our senior technicians.



Friday night, go drag racing with it, and re-tune it to normal afterwards. They never caught on to what he was up to, but they did wonder why there were remnants of numbers written in soap on the side windows of the car on Saturday morning.

This led to a side-career in cart racing, which he was quite successful at. He worked with a machinist, Mike Colver, to re-design cylinder heads and exhaust systems, always using the Golden Ratio (1:1.618). Their setups would win races, and then get banned before the next race. So they definitely knew what they were doing. Their partnership extended past the racing days and into audio, as Mike would go on to produce many of our parts until he passed away just a few years ago.

George's interest in cables started long before high-end audio. He was a line engineer for the phone company in Southern California, which is where he learned about the challenges and limitations of cable. George was actually in charge of the phone company's switchover from analog to digital, which is ironic considering his passion for analog playback!

The Golden Ratio has always been one of George's obsessions, and influences the design of nearly every Cardas product. Our conductors use copper wire strands arranged according to size (AWG), and step up in size in each layer by a Golden Ratio progression. Our Myrtle Wood blocks are a Golden Cuboid. The shape of our In Ear Monitors follows a Tractrix curve, another Golden Ratio influence.

It was George's passion for music that really fueled Cardas Audio, which included recording local musicians. One of them was a talented young man whose family owned a music store in Claremont, a few miles from where we lived at the time. His name was Ben Harper. In 1992, Ben and his friend Tom Freund came to George with some songs they were working on,

“IT WAS GEORGE’S PASSION FOR MUSIC THAT REALLY FUELED CARDAS AUDIO, WHICH INCLUDED RECORDING LOCAL MUSICIANS”

and George insisted that they sit down and record them. That recording turned into Cardas Recordings' most successful record ever, with original pressings selling for several hundred dollars. We've since done a re-master, which is available through any Cardas dealer.

Another is our location - Bandon, Oregon. Which we like to emphasize as part of our marketing. We're in a tiny coastal hamlet, hours from the nearest urban center. Almost nobody in town even knows what we do - we often get calls from locals asking about renting PA's for weddings and other events. Bandon is a cute, quirky little town: it fits Cardas Audio to a tee.

Hi-Fi+: What are your firm's specific areas of product design expertise?

Angela Cardas: Well not to be obvious but... wire and cable.

Over 30 years ago, George developed a proprietary method of drawing both copper & silver into wire in a multitude of gauges. We use our own copper of course, and we ►

sell tons (literally) of copper & silver to other manufacturers in our industry and others, including laboratories that need premium wire for both electronic and thermal conductivity. Our copper is recognized as the best in the world, and it sells itself. We don't even advertise it. But the phone rings several times a week from people - many of whom we've never even heard of - who need the best metals. And they know we have it.

As for our cables, we make the finest multi-stranded Litz conductors, using the best copper in the world. Macro shots of these conductors are artwork. We put those conductors into beautifully designed, extremely complicated cables that are in and of themselves works of art. But more importantly, these products work.

Hi-Fi+: Are there particular design or manufacturing techniques that help set your products apart from the competition? Could you briefly explain what some of those techniques are?

Angela Cardas: As stated earlier, we produce our copper using a proprietary method, and it's in high demand all over the world. I'm not giving too much away by explaining that we produce our copper in a fashion similar to how silver wire has been produced for decades. Very slowly, in a hydrogen reduction



atmosphere through specially designed diamond dies. As you can see on our website, if you look at our wire through a powerful microscope, you can clearly see the lack of shredding associated with faster methods of wire production.

We produce multi-stranded Litz conductors. In a Litz conductor, each strand of wire is insulated from the rest. In most cases, we use a Single Poly Nylon coating which is invisible to the eye, and must be removed carefully and thoroughly prior to termination. Sometimes people look at the extreme complication of a Cardas conductor and ask what the point of it is, if every wire is twisted together, in full contact throughout the length of the cable. They don't realize that although it appears that way, each individual strand is isolated electronically, from one end to the other. Which is the point of a Litz conductor, and contributes to the performance benefits

therein, including the reduction of skin effect and proximity effect. Boring stuff that translates to awesome audio!

The strands in our conductors are scaled by the Golden Ratio (1:1.618). We start with the smallest wires in the center, and they step up in gauges by that ratio in each layer. This is the subject of one of George's first patents, and applies to all of our cables. There are a variety of reasons for this including the control of micro-resonance. From concert halls to recording studios to the best private listening rooms and highest performance cables, implementation of the Golden Ratio always contributes to better sound.

We make most of our own connectors, all of which are machined out of either billet copper or billet brass. We then plate the base metals with a thick layer of silver, and a flash of rhodium. We were among the first audio manufacturers to adopt this plating method, and it's no surprise that almost everybody is doing it now. We've compared every plating option available, and you can't beat the performance of silver/rhodium plating over a high quality base metal.



Hi-Fi+: What do you consider to be your firm's 'landmark' products, past or present, and what makes them landmarks?

Angela Cardas: Golden Cross interconnect and speaker stand out as significant in the early/mid days of Cardas Audio. These cables struck a near perfect balance of the warmth, musicality, and euphonic midrange on which our company's reputation was built. Golden Cross has continued to influence product design, and there are still those who remain devoted to it. Golden Cross is like the classic sports car that some guys would rather have than a modern new exotic.

The Reference Series was a significant

"THE REFERENCE SERIES WAS A SIGNIFICANT LANDMARK IN THE HISTORY OF CARDAS."

landmark in the history of Cardas. Neutral Reference, Golden Presence, and Golden Reference were huge successes for us, and bought the company from the late 90's up until about 2010. The whole thing started with a request from a customer for a cable that sounded the same at any length. George went to work, and came up with Neutral Reference. As implied by the name, it was neutral and accurate, and succeeded at its intended goal of sounding the same regardless of length. Golden Presence and Golden Reference followed, each offering a bit more of the Cardas musicality along with the transparency of Neutral Ref, and of course the benefit of sounding the same, regardless of length. ▶

In 2010, George received a patent for the Matched Propagation Conductor, which was essentially the goal he was working towards from day one. As a line engineer for the telephone company prior to starting Cardas Audio, he was well aware of the issues of amplitude and time delay distortion that resulted from the propagation mismatch of the copper conductor and the dielectric. After developing his own wire and cable for over 20 years at that point, he came upon a formula for matching the pace of the conductor/dielectric relationship in



"I HOPE PEOPLE WOULD SAY THAT THE CARDAS PEOPLE ARE FUN, FRIENDLY, AND EASY TO DEAL WITH."

and how they stand up to products costing many times as much, and that once they tried Cardas they never looked back. And actually, we do hear that quite often, and it's great.

But you did specifically mention hi-fi shows, and my husband Josh (Cardas marketing guy) and I attend a lot of them. One of the things George has instilled in both of us is that at a hi-fi show, business is done in the halls. Get out of your own showroom and visit the other rooms.

Talk to people in the halls. Day drink in the hotel bar with the rest of the people who "get" how hi-fi shows work (well he didn't mention that part...). But seriously, I hope people would say that the Cardas people are fun, friendly, and easy to deal with. I know if they're like a lot of the companies we room-share with, they'd say something like "You know, I didn't tell Cardas what cables I needed until a few days before the show, and they got them to us anyway. In fact, Angela carried them here in her suitcase!" I'd also like to think that they'd say something about my shoes. And Josh's beard gets mentioned a lot :)

Hi-Fi+: If you are at liberty to say, what kinds of new products can we expect to see from your company in the next year ►

Hi-Fi+: Suppose you overheard a group of audiophiles discussing your brand at a hi-fi show. What do you hope they would be saying about your company?

Angela Cardas: Well obviously I hope they'd be talking about how great our cables are,

SPOTLIGHT



CLEAR BEYOND XL POWER

WHAT IS IT?

High Capacity, shielded power cable with passive ground filter

To create Clear Beyond XL Power, we took our very popular Clear Beyond Power, and scaled everything up. Bigger conductors, better shielding and improved noise filtering. We then added yet another level of noise filtration, extending the path to ground to three times the length of the cable itself through a simple and graceful geometry that could only come from the mind of George Cardas.

This is our most sophisticated power cable, and is designed to provide the largest, most power hungry amplifiers with clean, high current, while also giving sensitive source components the stable, clear, and noise free power they require for the absolute highest fidelity.

Terminated with our all new premium Cardas E-5 connectors, featuring silver/rhodium plated copper contact surfaces.

or so? (We're not looking for you to reveal trade secrets, so feel free to answer in a deliberately general way, if you wish.)

Angela Cardas: We just released our Nautilus Power Strip, and we'll soon introduce a 20 amp version of that product.

We're developing an HDMI cable & connector for the new HDMI spec.

We're working on two new headphone cables, which we hope to have ready early next year.

We're a very... methodical company. And we've actually released a LOT of new products (for us) this year - if I'd been asked this question a year ago, I'd have a laundry list for you!

Hi-Fi+: Gazing into your figurative 'Crystal Ball', where do you see high-end audio heading in the next five years? If your predictions come to pass, how will your company respond?

Angela Cardas: A few years ago, at one of the first CanJams we attended, a young man came up to our booth, looked at our banner, and said, "Cardas Audio... so what do you guys do?" My initial reaction was "Well obviously not enough to market ourselves to the next generation of audiophiles!" Of course I didn't say that! But this portable audio thing is thriving. I expect it to continue to do so, and it's important for traditional high-end audio companies such as ours to get on board.

We attend most of the CanJams because of that guy (thanks for the kick in the butt, random young man at a CanJam 3 years ago!)

and there is a sense of community and a positive vibe that reminds a lot of people, including my Dad, of how high-end audio used to be. These people are passionate, informed, and they're obsessive about their portable rigs. We produce IEMs and headphone cables, as well as DIY parts that people can use to make their own cables, so it's important for us to get in front of these consumers on a regular basis.

All of us are personal-audio fans (I use Cardas IEMs, as well as those from a variety of companies), but this is also investment in the future. Some of the younger people who are so enthusiastic about portable audio today are going to go nuts over big two-channel systems in a decade or two. And, with any luck, they'll remember how much they love their Cardas headphone cable when they go shopping for interconnects and speaker cables :)

"TRUE ENTHUSIASTS WILL ALWAYS CHOOSE A WIRED SYSTEM, BECAUSE THERE'S JUST NO WAY TO BEAT THE PERFORMANCE"

I'm sure wireless speakers will continue to get better and more popular. Which is fine with me - everything needs a power cable, and every component has wire inside and connectors on the back. However I think true enthusiasts will always choose a wired system, because there's just no way to beat the performance.

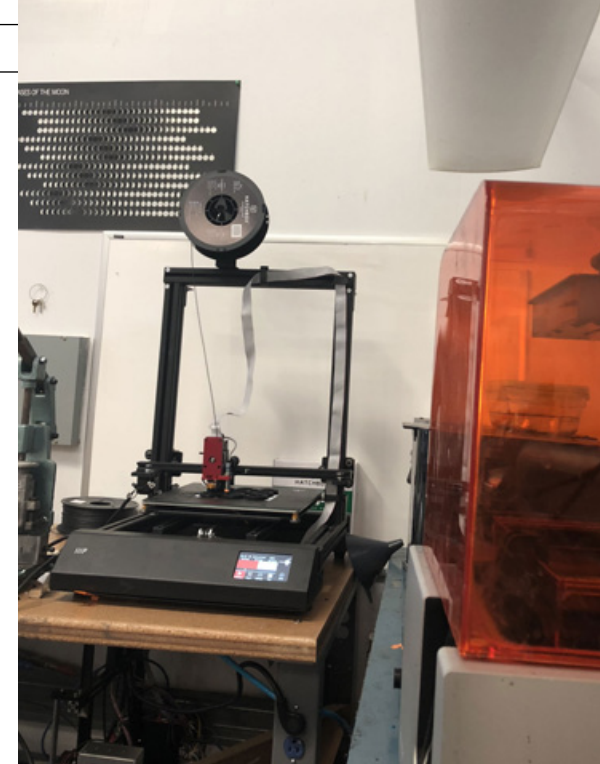
Hi-Fi+: In order for prospective buyers to fully appreciate what your products are and can do, what specific things would you encourage them to listen for?

Angela Cardas: Cardas cables such as 101 Speaker & Iridium are great at taming the fatiguing edginess common in entry-to-mid-level systems and multi-channel AV setups, while still allowing the details to shine through.

When you get to Parsec, you're getting the classic Cardas cable - warm yet detailed, smooth and euphonic with holographic imaging. To some extent, Parsec performs much like Cardas flagship cables from a previous era.

The cables in our Clear product line offer unprecedented transparency, fast dynamic swings, tight bass, strong midrange, excellent high-frequency extension and incredible 3D imaging. For no-compromise equipment setup in a perfect room, you can't do better than Clear or Clear Beyond. If budget is a concern, Clear Sky & Clear Cygnus bring a lot of that flagship performance to the table.

My personal favorite, and what we use at home, is Clear Reflection. Warm & musical, smooth and euphoric, not unlike our classic Golden Reference, but with the tighter bass, high frequency extension and holographic imaging found in the rest of the Clear line. I'm fortunate to have a wonderful system setup in a less than ideal living room, and Reflection is ideal for that application.



Hi-Fi+: Do you have three or four specific recordings you might recommend for purposes of evaluating hi-fi equipment?

Angela Cardas: I suppose the correct answer is something by Diana Krall, or a classic Miles Davis track. But that wouldn't be the truth. We listen to a variety of music at home, and although there are a few go-to tracks that I keep coming back to, we do a lot of our evaluating with whatever songs/albums we're currently listening to. The differences in equipment - be it speakers, amplifiers, DACs or cables - are apparent whether you're listening to a 96/24 recording of a jazz track, or an mp3 from Metallica's first album.

I'm a huge fan of The Decemberists. Their music is layered with electric and acoustic instruments, with a lot of breathing room ▶

between everything. Their track "Rox In The Box", from *The King Is Dead*, is one of my favorites for evaluation.

Nada Surf's "No Snow On The Mountain" is another that I keep coming back to. I like using songs in which each instrument comes in separately. "No Snow" starts with electric guitar, then the vocals & drums come in, followed by the bass. You can evaluate the guitar, then how it layers with the drums & vocals, and then how it all holds together when the rest of the band comes in. I can't tell you how many times I've listened to just the first 20 seconds of that song, made a change, and re-listened to the first 20 seconds. Over and over and over... it's quite tedious. However if the toughest part of your job is listening to parts of your favorite songs over and over, you can't really complain.

My husband Josh is obsessed with the band Portugal. The Man. Pretty much everything Cardas has put out in the last few years has been evaluated at some point with their music.

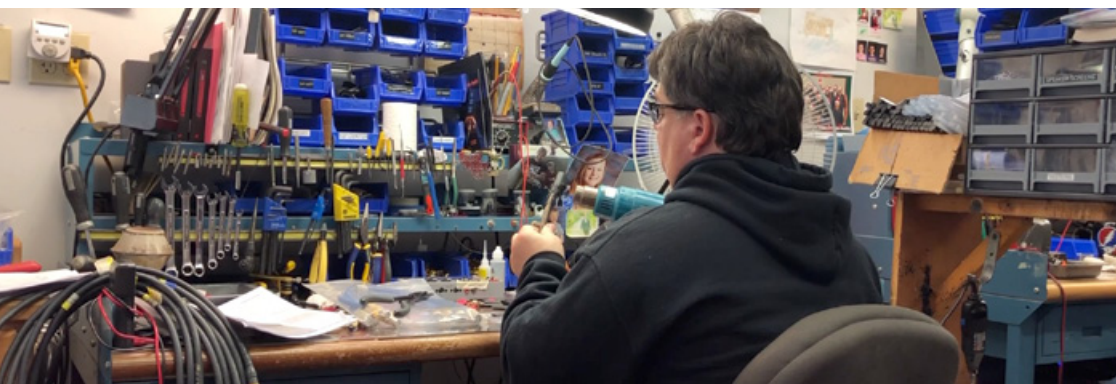
George's go-to track has got to be the title track from Willie Nelson's *Stardust* album. He's got a modified pair of Magnepan Tympani speakers,

and when everything is right, you'd swear you can tell the angle Willie was holding his head at during the recording.

Hi-Fi+: What are the two or three most important pieces of advice you would give to enthusiasts looking either to build new audio systems or improve existing ones?

Angela Cardas: Do not start with the cables! We had a guy come up to us at a show who was excited to get started down the high-end audio path. He wasn't really sure where to start, but we're super friendly so there he was talking to us first! We sent him to rooms using speakers and amps that we think are great, and told him to find the components that worked for his needs, and then come talk to us - or somebody - about cables.

You can certainly make the argument that you ought to start with speakers and work your way backwards from there. You'll know you've reached your goal when you find yourself listening to so much music that you cancel your cable or satellite television service! That's what we did about 5 years ago. I'm not sure our 8 year old son is aware that live TV even exists.



CARDAS AUDIO CLEAR BEYOND INTERCONNECTS

hi-fi+ REVIEW FROM: JULY 2017 ALAN SIRCOM

Cardas Clear has remained one of my go-to cable systems since first I heard it. Its lyricism, precision, and just plain ease of listening keep me coming back to the design. There are faster and more exciting sounding cables, more immediate and more ostensibly detailed sounding cables, but few have that laid-back charm and almost graceful overall presentation.

Clear Beyond is more of the same, in every respect. This began with the loudspeaker cable and then the power cord, and the circle is complete with the interconnect. Like Clear, it's made of strands of Cardas' own copper (Cardas has its own smelting furnace). These are wound into a quartet of 26.5 AWG copper conductors,

individually insulated using an enamel coating, and then arranged in a star-quad geometry. This geometry is suspended by carbon-impregnated air-tubes in Cardas patented Golden Section arrangement, while the conductor core itself is double-shielded, using a proprietary combination of both plated and bare copper. Between these is a pair of Litz drain wires.

In Clear, Cardas introduced its Matched Propagation technology, where the propagation rate of the copper is matched to that of the dielectric. The whole cable is terminated in a blue jacket of Alcryn. The cable is of an inherently balanced design, so ▶

CARDAS AUDIO CLEAR BEYOND INTERCONNECTS REVIEW FROM: JULY 2017

for single-ended use, Clear Beyond is supplied with the company's own XRCAs adaptors, and a redesigned proprietary XLR connection for balanced use.

Cardas isn't a fussy cable, and the run-in period seems to be about as long as it takes to remove it from its stiff plastic bag and plugging it in place. This is a refreshing change, given the product that was supposed to be reviewed this month is still in its 'conditioning' stages after several months of use. Naturally, I re-wired my whole system with Cardas Clear and directly compared Clear Beyond with Clear.

There are two schools of thought regarding Clear Beyond. The first – Cardas own, derived from the speaker cables and power cords – is that Beyond is the 'heavy lifting' version of Clear. Use it in situations that demand more meaty signal transfer (longer runs of cable between preamp and power amplifier, for example). The other is simply that it's Clear, but a bit better. Ever the fence-sitter, I think probably both concepts are right.

Beyond is the perfect upgrade for Clear users, because it gives the listener all the things they like so much about Clear, and adds a little more separation, detail, microdynamics, and image depth, without any sacrifices in performance elsewhere. This doesn't make for a massive change in many systems, in part because Clear is so damn good to begin

with, but it simply gets you that bit closer to the musical intent of the musicians (in the way Clear does so well). If this sounds like hedging my bets, it's because original Clear is so good, that it sets a very high standard. Clear Beyond betters this high standard in almost every manner, however. It doesn't make mincemeat out of Clear, but instead adds a new level of Clear-style performance at the top of the tree. What Clear Beyond does that is so great, in my opinion, is it



“IT'S WARM AND EASY TO LISTEN TO, WITHOUT BEING WARM-TONED – QUITE THE ACHIEVEMENT”

manages to better combine the two goals of 'sounding good' and 'sounding accurate' even better than Clear. This is no mean feat, as Clear was one of the few that did this without falling into the 'warmth' trap. Beyond does this to an even higher degree; it's warm and easy to listen to, without being warm-toned – quite the achievement.

Moving over to the 'heavy lifting' claim, this rings true, too. This is great used between preamp and power amp, because it's so good at rejecting noise, and because it's

CARDAS AUDIO CLEAR BEYOND INTERCONNECTS REVIEW FROM: JULY 2017

incredibly natural sounding. This is often the link in the chain that can undermine those silent 'black' backgrounds so many crave, and Beyond is exceptionally good at those 'inter-transient silences', even better than Clear, which is excellent in its own right.

If you want to find a piece of music that showcases what Clear Beyond does in either instance, here's what you do. Find a piece of music and play it. The piece of music is immaterial, what's important is how well Cardas portrays that performance. Yes, of course well-recorded audiophile cuts sound truly inviting and insightful through Clear Beyond, but it is the absolute antidote to those 'do not suffer fools gladly' cables that highlight the flaws in all recordings. Clear Beyond does not mask such flaws, but neither does it paint them in fine detail. It doesn't just get out of the way of the music, it just makes it sound as great as it can.

There's one other big bonus, which unfortunately I didn't have a chance to check. Original Clear uses just three 25.5 AWG conductors internally, where Beyond uses four. If you are running a balanced system, that additional conductor will make a fairly substantial difference in operation.

The good news – for those of us under the watchful eye of a domestic Sauron – is Clear Beyond and Clear look almost identical. Beyond has a diameter about 1.25mm thicker and it has the word 'Beyond' emblazoned on the side, but if you are looking for stealth interconnect upgrades from Clear (or even Clear Light), Clear Beyond sails in unnoticed. I know this sounds trivial in the extreme, but

it's one of the most common – if hushed – questions we get asked at shows: “what can I buy that the Other Half won't notice?”

As with the power cord and speaker cables, Clear Beyond interconnects offer a step up on the already outstanding Clear. Clear remains one of the best interconnects we have ever heard, but Clear Beyond confidently improves upon that performance in almost all aspects, without any sacrifices in performance. It might be the most expensive cable Cardas has ever made, but it is well worth it. Very highly recommended!

Alan Sircom

PRICE AND CONTACT DETAILS

Prices: £3,750/1m pair RCA (as tested).
No surcharge on XLR connection

Manufactured by: Cardas Audio

URL: www.cardas.com

Distributed in the UK by: Audiofreaks

URL: www.audiofreaks.co.uk

Tel: +44(0)20 8948 4153



CARDAS AUDIO CLEAR HEADPHONE CABLE

hi-fi+ REVIEW FROM: **ISSUE 166** MICHAEL MERCER

George Cardas is one of the most respected engineers/designers in high end audio today. He's been designing and building audio cables and parts for stereo components for over 30 years. Cardas' products serve audiophiles and musicians alike, and his passion for music also extends into the recording/ studio world. Perhaps the most intriguing aspect of Cardas designs is that everything is based around the Golden Ratio, a geometric pattern often found in nature that mathematicians have studied since the time of Euclid.

Cardas Clear is the firm's top-of-the-line headphone cable, and its design is a miniaturized version of their award-winning Clear speaker cable. Cardas says the design actually incorporates two separate cables, "one going to each ear." The cable uses eight 26.6 gauge Cardas copper conductors (litz) and features 'Matched Propagation', 'Golden Section', and 'Crossfield' technologies (see detailed descriptions at cardas.com). Clear uses a PFA and cotton dielectric, with a TPE inner jacket and a braided nylon braid outer jacket.

Effortless neutrality is what differentiates Cardas Clear from most other headphone cables and is why it deserves a "reference-level" classification. Harmonics are rich and full-bodied without any sense of bloating or haze. Clear is so resolving it sometimes gives the illusion the gain knob got turned up. Tonality and timbre are so natural that sounds become at once fascinating and pleasurable. Dynamics have intense slam and pop. Spatial cues cross the musical and frequency spectrum and are vividly rendered, creating wide, deep soundstages. Drums, keyboards, strings, and especially vocals, float in their own three-dimensional spaces, but also interweave and connect to each other in a wonderfully organic presentation. This cable has the magical quality of making you think you are hearing familiar recordings for the very first time. Clear is a clear choice for those looking to get closer to their music.

[Michael Mercer](#)

Price: £595 - 1.5 metre
cardas.com

CARDAS AUDIO CLEAR LIGHT & CROSS HEADPHONE CABLES

hi-fi+ REVIEW FROM: **ISSUE 166** MICHAEL MERCER

Cardas Audio is one of our industry's most respected high-end audio cable companies, with a 30-year history of developing and manufacturing cables for audio, music production, and recording applications. Cardas' cable designs famously apply 'Golden Ratio' geometries where possible, which indirectly explains why the company's logo shows the swirled interior of a Nautilus shell (a symbol of 'Golden Ratio' geometries occurring in nature). This design approach, along with extreme build quality, and high-purity metals from Cardas' own foundry, has won the firm devotees from around the globe.

Clear is Cardas' statement headphone cable and features the firm's proprietary 'Matched Propagation', 'Golden Section', and 'Crossfield' design technologies. In turn, Clear Light brings much of that performance to a more accessible price. Clear Light is lighter and more flexible than Clear and also Cardas' most affordable headphone cable to feature 'Matched Propagation' technology. Cardas Cross headphone cable was developed by George Cardas when his daughter Angela (a radio DJ then and who now runs Cardas Audio) asked for replacement cables for her Sennheiser HD600s. Cardas sought to make cables that sounded better and were more durable than the stock Sennheiser wires, and he succeeded with Cross.

Clear Light and Cross are both lighting fast, with leading edge transient attack that is swift and sharp. Both also showcase the tonal neutrality for which Cardas designs



are famous. Mids are coherently and vividly rendered. Low bass smacks without murkiness. Clear Light outperforms Cross in overall depth of field and transparency, but Cross isn't messy or muffled in its musical presentation. Clear Light merely goes further, as one would expect for the price.

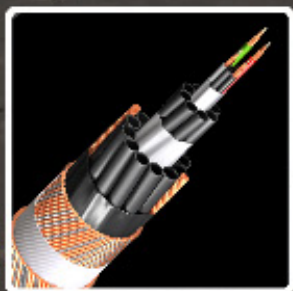
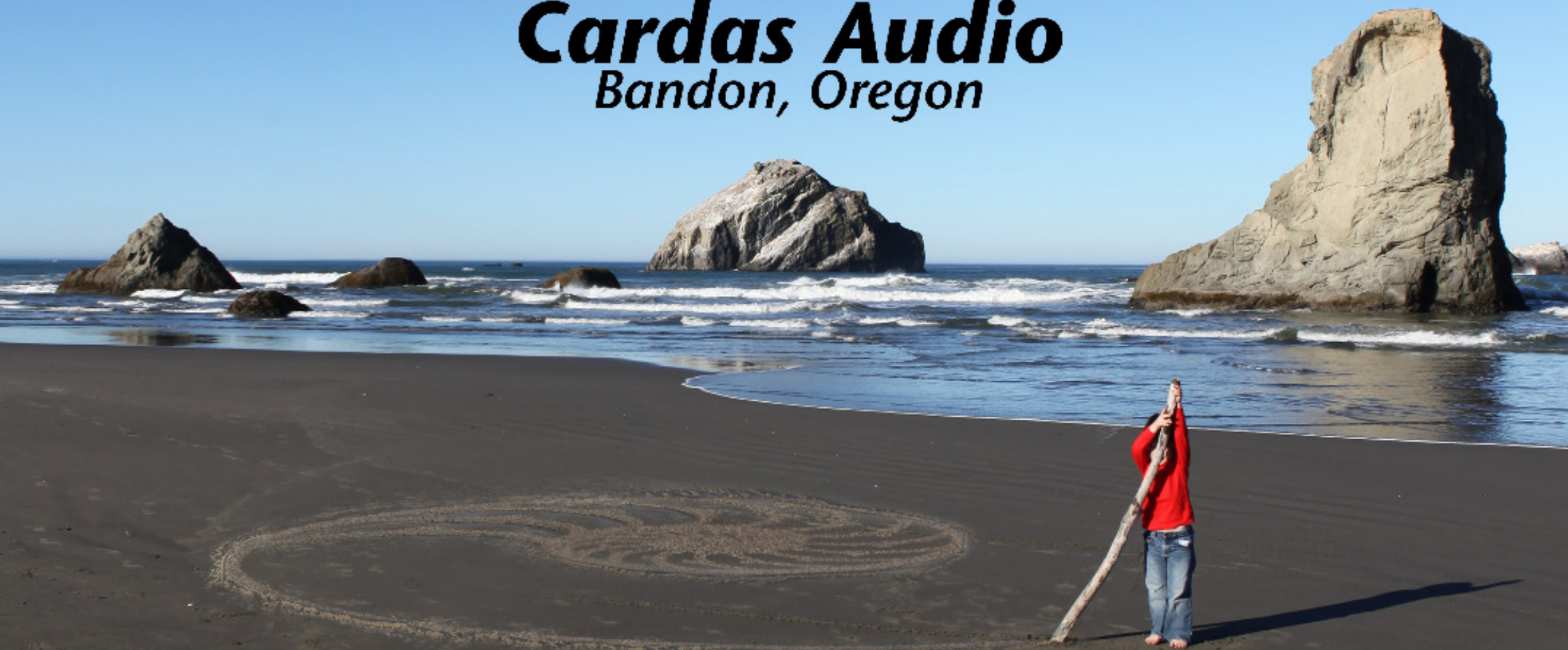
Cross is a superb performer at its price-point, and makes an excellent match for Audeze's LCD-2 headphones. Clear Light is a fantastic choice for headphone devotees seeking top-tier performance, but who lack the deep pockets needed to acquire the amazing Clear.

[Michael Mercer](#)

Price: Clear Light: From £329 (final price depends on termination and length)
Cross: starting at £219 (final price depends on termination and length)
cardas.com

Cardas Audio

Bandon, Oregon



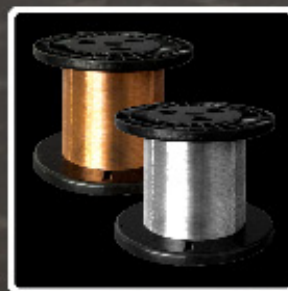
Cables



Connectors



*Solder
& Flux*



*Copper &
Silver Wire*



*Chassis Wire
& Bulk Cable*



Ear Speakers




CAYIN

Zhuhai Spark Electronic Equipment Co. Ltd

Cayin was founded in 1993. While our products carry a distinctive cultural connotation and span over a very wide price range, we are devoted to developing the best sounding audio equipment at competitive prices. We have developed over 400 products to date, ranging from CD players to speakers, all of which provide the same high-quality benchmark and attractive price to performance ratio. Our tube amplifiers have been particularly well-received within the audio community because of this commitment. We developed our first N6

DAP back in 2013 and have devoted significant resources to Personal Audio products ever since.

Cayin pays attention to detail because we believe this is what it takes to reproduce music naturally. We employ different technologies for different products, but ultimately, we serve only one purpose: to move our audience with hi-fidelity. With Cayin, your music will never be the same again.

<http://en.cayin.cn>

DIGITAL SOURCES

- + DACs
- + DAC/Preamps, DAC amps
- + CD/SACD/Blu-ray players/transport
- + Streamers, Servers, Wireless Bridges

ELECTRONICS

- + Preamplifiers, Preamp/DACs
- + Power Amplifiers
- + Integrated Amplifiers,
- + Integrated Amp/DACs
- + Headphone Amplifiers

LOUDSPEAKERS

- + Stand-Mount Monitors

CABLES

- + Analogue Interconnects
- + Digital Interconnects
- + Loudspeaker Cables
- + Power Cables
- + Personal Audio Cables

PERSONAL AUDIO ELECTRONICS

- + Desktop Headphone Amplifiers
- + Portable Headphone Amplifiers
- + Portable Headphone Amp/DACs
- + Portable Digital Audio Players
- + Accessories

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SPOTLIGHT

CAYIN 9084D MK2

WHAT IS IT?

Mono tube power amplifier

PRICE

\$7,490 (pr) £6,890.00 (pr)

9084D MK2 is a major revamp of our 20 year old classic. It is designed to work with SL-6LS MK2 as a power amplifier. The mono amplifier adopts the legendary 300B (Full Music Gold Pin) and 845 (Shuguang Nature Sound) two stages single-end amplification design and delivers 28W Class A per channel (8Ω). Each channel also uses TUNG-SOL 6SL7 and 6SN7GTB tubes for voltage amplification and 22DE4 (RCA) for power rectification. The toroidal power transformer and multi-layer EI Output transformer are designed and produced in-house. The audio circuit is hand-made and point-to-point wired with double-shield silver-plated OFC cable. BIAS adjustment (with meter) and humming adjustment are available conveniently to optimize the amplifier operation after tube rolling or interference. A soft-start circuit protects the vacuum tubes and transformer. Speaker output offers choice of 4Ω, 8Ω, and 16Ω impedance, allows you to choose your speaker with lots of flexibility.





LIANG BIN, Managing Director of Zhuhai Spark Electronic Equipment Co Ltd.

Hi-Fi+: As companies evolve they inevitably pass milestones that mark particular achievements or turning points in the company's growth. What are five or six key milestones on your company's evolutionary timeline?

Liang Bin: We just had our 25th Anniversary celebration a few months back. There are indeed several occasions that touch our soul, and we sure can call these our milestones, here are some of them:

The Company was established all the way back at 1993, we aimed at designing and building our own high fidelity audio product since day 1, and our first product was a FU29 based tube power amplifier Spark 560 released in 1994. We can still find this amplifier on second hand market occasionally and that tells us our products are built to last. Cayin never contended with single-product strategy, we started to expand our R&D

capability and in 1997, we released our first solid state amplifier 220C. In 2001, we produced our first CD player CD-12A and followed by a DAC quickly. This is an important moment because we completed our audio line up from source to amplifier, and mastered both digital and analogue product development expertise within the first 10 years of operation.

“WE MOVED INTO THE NEW PLANT IN 2006, SETTLED DOWN AND RAMPED UP OUR PRODUCTION QUICKLY”

We had tremendous growth in the next few years and started to look for a bigger facility. In 2005, we were supported by local government and leased a piece of land to build our new manufacturing plant. It is a purposively designed 4-storey 11,000 sq. meter facility with projected production capacity up to 10,000 desktop amplifiers per year. We moved into the new plant in 2006, settled down and ramped up our production quickly.

We had a major rebrand in 2010. We started to do business as Spark Audio originally, and marketed our product as Cayin to international customers. We went through a Corporate Identity exercise, adopted a new Visual Identity and traded under the Cayin brand worldwide from there on. After we gathered all our business under the Cayin brand, we received better recognition and business opportunities opened up shortly after that. Cayin ventured into personal audio in 2013 and launched a series of portable products. In 2014 we launched our first

portable Digital Audio Player N6. The player was extremely well-received and created a momentum in Cayin. Within four years we have launched six DAPs ranging from \$150 to \$3000+.

We never stopped exploring in the past 25 years and have accumulated the kind of expertise and track record that makes Cayin unique in the industry.

Hi-Fi+: What are four or five interesting 'factoids' about your company that you think the high-end audio community might want to know about?

Liang Bin: Not a lot, only a few we can think of. The commonest 'factoids' definitely is confusing Cayin as nothing more than a Tube Amplifier brand. When I run into these customers and tell them that Cayin, as of today, we produce Vacuum Tube and Solid State Amplifiers, CD players, DAC, portable DAP, portable headphone amplifiers, tube headphone amplifiers and desktop sound systems and even speakers in our own factory floor, they probably think I am bluffing.

On the other hand, because we have two separated sales networks for traditional Hi-Fi and Personal Audio products and they seldom crossover, so some of the customers aren't aware of the other side of our product

mix. Especially when our Personal Audio customers read the review and describe Cayin as a "new comer to portable audio", they just assume we are a new brand, and the C5 portable headphone amplifier (2013) or N6 DAP (2014) are probably our earliest products. They aren't aware that Cayin manufactures a wide variety of Hi-Fi products and has been in this business for 25 years already. I think we need to do better along this line to clear the myth.

Last but not least, we have seen comments on forums saying that Cayin is an entry-level brand because we only make low-cost products. We can see where they come from because all our DAPs from 2015 to 2018 were priced at the sub-\$500 range, and even our desktop products are in the sub-\$1000 range. The other side of the story is our company believes in making music accessible to all sectors, so we devoted to developing best-sounding audio equipment within budget. In fact, our products span over a very wide price ►



SPOTLIGHT



CAYIN A-845PRO

WHAT IS IT?

25th Anniversary DHT Tube Integrated Amplifier

PRICE

\$8,999

Cayin will release a special commemorative product on every 5th or 10th anniversary, and A-845PRO is a TOTL integrated tube amplifier developed specifically for our 25th Anniversary. Cayin adopts a legendary Class A single-ended approach with a pair of 300B driver tube feeding a pair of 845 output tube. The A-845PRO delivered a big and lively sound, it retains the magic midrange of 300B with terrific transient and dynamic, and offers rich harmonic that you can immerse for long hours.

A-845PRO is not a facelift version of CS-845A. We adopted a completely new design with better material and improved craftsmanship. Our engineers revised the circuitry and fine tuned the amplifier repeatedly for best possible performance. To fully explore its potential, we also worked with Full Music to custom develop a 845 vacuum tube that will solely be used in A-845PRO.

CAYIN

range and our flagship M-Series are well-received in Asian high-end audio industry.

Cayin flagship M-Series comprises of:

M50CD tube CD player (£2,990),
M11LS preamplifier (£7,899)
M845D mono power amplifier
(£16,790/pr)

Hi-Fi+: What are your firm's specific areas of product design expertise?

Liang Bin: While we cover a very wide range of products, the obvious common denominator is our analogue audio circuit development capability.

Over the years we have developed our preference on music reproduction and formulated our house sound. We are confident that we can achieve the sound signature we are aiming at through analogue audio circuit design, and it is not limited by specific platform. We can do that with vacuum tube, and we can also do that with transistor circuit.



Analogue audio circuit design is more than technical know-how. Experience plays a very important role too. Cayin is most fortunate to have a team of long-serving engineers working diligently for the past 20+ years. The following photo was taken on 15th July 1999 when the press interviewed our engineers during a factory visit.

From left to right we have Mr. Chen DeHai (joined 1994), he is currently our Chief Engineer and he oversees our amplifier products. His recent works include our flagship tube headphone amplifier HA-300 and our 25th Anniversary integrated amplifier A-845PRO. Next to him we have Mr Wu Xiandong (joined 1997) and he

serves as Marketing Director in Cayin right now. The Press representative was in the middle, and then we have Mr. Ye Maosheng (joined 1995), he is the Lead Engineer of Cayin R&D Department and is responsible for all the portable products and the i-Series. Mr. Li Aimen (joined 1998) on the far right is our Assistant General Manager. It is amazing that all four engineers stayed at Cayin ▶



for their complete career, they represented 20 years of team work, over 80 years of audio engineering experience, and Cayin's leadership and core competence that can't be replicated elsewhere.

Hi-Fi+: Are there particular design or manufacturing techniques that help set your products apart from the competition? Could you briefly explain what some of those techniques are?

Liang Bin: One of the unique features of our high-end CD player and DAC is Timbre selection. Users can choose between Vacuum Tube and Solid State output at the touch of a button. The CDT-15a (2009) was our first digital product that introduced this feature and we have done this many time ever since. N8 is the first DAP that embraces this technology, and we expect some of our forth-coming digital products will carry on this tradition.

We believe the power transformer and output transformer are the critical success factor of tube amplifier design and production, so we always pay serious attention to this part. When we designed our new facility back in 2004, we included an in-house transformer plant in our 4-storey building and from there on, each and every power and output transformers of our tube amplifiers are designed and wound by our engineers

While we have used surface mounted technology in our portable and digital products, we stick with manual production for our tube amplifier and the audio circuit of our premium tube amplifier are constructed by point-to-point wiring.



Hi-Fi+: What do you consider to be your firm's 'landmark' products, past or present, and what makes them landmarks?

Liang Bin: If I must name one product as our landmark, it will definitely be the A-88T from our A-series tube amplifier (domestic market only). This amplifier has been on sale for 15 years already, we had several rounds of refinement and face-lifting in between. As-of-today, we have sold over 50,000 units of A-88T already. We have received numerous awards and favourable reviews for the A-88T and this is definitely the best seller in our 25 year history. We produced a special limited edition A-88T at our 20th Anniversary and all 200 units were sold out within 6 months.

The A-88TMK2 Monitor Version is our current premium version of A-88T. We paired it with CDT-15AMK2 to become an attractive mid-tier system and they are still a strong seller.

**"WE HAVE RECEIVED
NUMEROUS AWARDS AND
FAVOURABLE REVIEWS
FOR THE A-88T"**

SPOTLIGHT

CAYIN CS-55A

WHAT IS IT?	PRICE
<i>Tube Integrated Amplifier</i>	\$2,199 £1990

This is Cayin's new generation tube integrated amplifier that comes with loads of features in a sweet sounding package. The amplifier is available in KT88 and EL34 version and users can interchange the output tubes any time. It offers up to 40 watts per channel (with KT88) in Class AB push pull amplification. The output stage can be switched between Triode and Ultra Linear mode. The audio circuit is hand-made with point-to-point wiring, and a soft-start circuit is in place to protect the vacuum tubes and transformer for extended product life.

The other evergreen best seller is our CDT-17A CD player. The original version was launched around 10 years ago and we updated it to CDT-17AMK2 in late 2014. This has become one of the Classics in China Hi-Fidelity Audio industry.

We can't complete Cayin's milestone product list without mentioning N6 Digital Audio Player (DAP). This is our ice-breaking product to Personal Audio. The design was controversial when N6 was launched back in late 2014, but the perfect blending of transparent and warm sound signature was extremely well received. Although N6 has been discontinued quite a while already, the word of mouth has continued to spread and the N6 has remained one of the most sought after DAP in the second hand market. ▶



The amplifier also comes with a 32-bit/384kHz USB DAC, allowing you to connect your computer to the CS-55A and stream music through it directly. The built-in phono stage and dedicated headphone output also make it extremely versatile. You can use it as the hub of your audio system.



Hi-Fi+: Suppose you overheard a group of audiophiles discussing your brand at a hi-fi show. What do you hope they would be saying about your company?

Company: I want to hear their genuine opinion and impression about our products because these are valuable raw material for our continual improvement. When they raise their concerns or tell us about the shortcomings of our products, they are sharing first-hand information that we can't obtain otherwise. Quite often, I'll collect these feedback and come out with some ideas to realise them in our products. We think it is important to establish a channel to link up our product development process with users. We must learn from them instead of detaching from the practical world.

Our product were meant to be used by general users, not just engineers, so finding a way to collect user feedback and "translate" them into product development requirement is

essential. In fact I value every opportunity to communicate with users, be it online or in person at shows and events. When I interact with users on our product or branding information, their mix and match experience or impression of their own gear, I am sharing their passion. Their knowledge and preference to Cayin products or as a brand in general is the best recognition of our effort, that's why we always design our display booth to enable interaction and discussion.

"WE ALWAYS DESIGN OUR DISPLAY BOOTH TO ENABLE INTERACTION AND DISCUSSION"

Hi-Fi+: If you are at liberty to say, what kinds of new products can we expect to see from your company in the next year or so? (We're not looking for you to reveal trade secrets, so feel free to answer in a deliberately general way, if you wish.)

Liang Bin: We are facing the problem of extended product development life cycle because Cayin insisted on innovation and technology advancement in our new products, ►

SPOTLIGHT

CAYIN CS-100DAC

WHAT IS IT?

Tube DAC with Preamplifier

PRICE

\$4,999 £4,690.00

The CS-100DAC is a reference grade DAC. It features 2xES9038Pro and decode up to DSD512 and 32Bit/768kHz. Two extremely low-noise high-precision Femtosecond Crystal Oscillators are in place to ensure low jitter in all transmission and processing. It also incorporated a genuine audiophile grade pre-amp with up to 8V single-ended and 17V balanced output, user can connect the DAC to active speakers or power amplifiers directly without worry about compression and unlively playback.



On top of the regular high quality solid state analogue section, Cayin has implemented a 4x6922 based tube output stage as an alternative. User can switch between Solid State and Vacuum Tube timbre which is available to both single-ended and balanced, line output and preamp output. CS-100DAC comes with six digital inputs including an I2S port (HDMI). Graphic UI is displayed through a 3.95" full colour AMOLED screen. An IR remote control is supplied as standard.



CAYIN HA-1AMK2

WHAT IS IT?

Tube Headphone Amplifier

PRICE

\$749.99 £599.00

The HA-1AMK2 is a re-design of our classic HA-1A which was one of the first headphone amplifiers listed on Stereophile Recommended component (2006-2011). It runs on single-ended amplification circuit with EL84EH as power tube, 12AU7 as driver tube and NOS 12DT5 as power regulation tube. It is one of the very few sub-\$1000 all-tube headphone amplifiers and its unique form factor and innovative circuit layout makes it ideal for desktop applications.

The HA-1AMK2 performs satisfactorily with most headphones available on the market. It offers five output impedance selections covering 8Ω-32Ω, 33Ω-64Ω, 65Ω-150Ω, 151Ω-300Ω and 301Ω-600Ω. The two 6.35mm headphone outputs offers a choice of dynamic or soft presentation. We can offer all these at a very affordable price because the power and output transformer are in-house designed and wound with wide-band Z11 EI-core.

and new technologies and ideas require a longer time to implement, test, and validate. For instance, we'll roll out the CS-100DAC and A-845PRO very soon. The former is our flagship digital analogue converter with built-in preamp, and the latter is our special limited edition product for 25th Anniversary celebration. These two products are undergoing extensive testing in our laboratory before we deliver them to market, both products have taken around two years to develop, a lot longer than we anticipated in our initial planning.

We have launched several headphone amplifiers in the past two years, including the recent exotic HA-300 flagship tube headphone amplifier that goes all the way to two-box design, Class A Single-ended Triode with external power supply. We are planning a less exotic but still professional grade tube headphone amplifier in 2019, it will be relatively affordable and we have selected KT88 as output tube for this new headphone amplifier.

We are also working on a very important portable product right now, it is based on Android 8.1 and we want to significantly improve the user experience in this attempt as this has been cited as our shortcoming

“THE HIGH-END AUDIO INDUSTRY SHOULD PLAY THE FACILITATOR ROLE SO THAT OUR USERS CAN ENJOY THEIR MUSIC THE WAY THEY WANTED IT WITH MINIMUM DISTRESS”

frequently. As usual, what goes under the hood will be the focus of Cayin new product. We are pushing the envelope to challenge the limitation of structural and portable analogue circuit at the same time. The functional concept is truly innovative, I promise you won't

find it anywhere right now. As of today, we have spent four months to test and validate the new product already and implemented over 100 changes in due course. This is a very difficult product for our R&D Department with massive workload, but we are confident that it will be a star product in our already impressive lineup. I won't go into detail but mark my word and you'll understand what I am referring to when you see the new product next year.

Hi-Fi+: Gazing into your figurative 'Crystal Ball', where do you see high-end audio headed in the next five years? If your predictions come to pass, how will your company respond?

Liang Bin: We notice two extremes in the current trend. On one end we observed a major come back on analogue media such as LP or even Reel-to-Reel, and on the other hand, we have seen more users resort to on-line service to acquire their Hi-res music. I think the high-end audio industry should play the facilitator role so that our users can enjoy their music the way they wanted it with minimum distress, after-all, the High Fidelity business is all about music enjoyment.

I expect more manufacturers will integrate on-line capability to their product. Network ready, streaming, MQA for online

applications, NAS support are some of the application that will make their way into high-end audio product in next few years, and Cayin will also strengthen our support and application to these emerging technologies in premium audio market. ▶

SPOTLIGHT



CAYIN HA-300

WHAT IS IT?

Direct Heated Triode Tube Headphone Amplifier

PRICE

\$3,999 £4,490.00

Cayin adopted a pragmatic Class A single-ended amplification with balanced output approach when we designed HA-300. The tube circuit is developed around the 300B Direct-Heated Triode tube and we use 6SN7 as the first stage of our push-pull circuit. We even design and build all the transformers and soft-start provide three sets of impedance matched headphone

outputs and one set of speaker output for HA-300. Since these output options are extracted from our output transformer directly, that explains why HA-300 is one of the most transparent tube headphone amplifier in the market.

HA-300 is a two-box design with a multi-stage tube regulated power supply driven by a custom-build toroidal power transformer. This is a special circuit to supply steady power independently to different gain stages, and we have used 4 pieces of NOS RCA 22DE4 Rectifier Tube to facilitate independent regulator for the voltage amplifier circuit.

Bluetooth has been around for a long time but its application to high-end audio was far from significant, the story is going to change rapidly when Qualcomm is pushing their aptX technologies to the next level and LDAC is gaining momentum. The inclusion of LDAC support into Android 8.1 system has a significant impact because high end audio hobbyists suddenly see their mobile phone as a wireless Hi-Res audio source. We believe these high quality Bluetooth applications will quickly find their way into portable devices and traditional HiFi products. They might become an alternative to RCA input when a lot of users are willing to trade a small portion of quality against the wireless convenience.

Material Science is also playing an important part in our industry especially on diaphragm applications. New material and coatings

“MATERIAL SCIENCE IS ALSO PLAYING AN IMPORTANT PART IN OUR INDUSTRY”



are emerging and traditional material has also been refined and put into new applications. These emerging materials have introduced new variables to the associated electronic equipment in terms of frequency bandwidth, current and power requirements, damping control, etc. We have to deploy a lot of resources to explore and validate the electronic and audio characteristic of these new materials and optimize our product to support these emerging materials satisfactorily.

Hi-Fi+: In order for prospective buyers to fully appreciate what your products are and can do, what specific things would you encourage them to listen for?

Liang Bin: On one hand, we don't interfere with customer's listening experience. We think this is a matter of personal preference, it can relate to choice of music, listening environment and subjective interpretation. That's why audio manufacturers have their house sound and informed customers will pick the brand that is closer to their preference.

On the other hand, instead of telling customers what to look for during their audition, we spend time to explain our concepts, why we are doing this, the pros and cons in our decision, and how we achieve this. These are areas that customers are not familiar with, and in our experience, enhancing their ▶

SPOTLIGHT



CAYIN I-SERIES DESKTOP PERSONAL SYSTEM

WHAT IS IT?

iDAP-6 Networked Digital Transport

iDAC-6 Tube Buffered DAC

iHA-6 Balanced Headphone Amplifier

PRICE

US\$799.99	TBC
US\$699.99	£599.00
US\$699.99	£599.00

The Cayin i-Series is our lifestyle solution for modern music lovers. It offers minimalist design, flexible functions, premium quality, and a total solution to personal audio. The 3-piece suite can be used as a stacked system at 10"x10" foot-print, or you can buy separately to fit into your existing system.

iDAP-6: Digital Transport playbacks Hi-Res music files from SD card, USB OTG and networked storage, supports Samba (NAS), DLNA, Airplay and Bluetooth. Versatile digital outputs: I2S, USB Audio, AES/EBU, coaxial (BNC and RCA), and optical.

iDAC-6: 2xAK4490 genuine balanced design DAC. Versatile tonal options with 4x6N16B tube buffer. Decode upto 32Bit/384kHz and DSD128 with DoP. Four digital inputs and XLR/RCA analogue outputs.

iHA-6: upto 7wpc fully balanced headphone amplifier, can handle the most demanding headphones with impressive detail and transparency. Innovative current and gain control. Accept XLR/RCA input with XLR-4, dual XLR-3, and 2x6.35mm headphones outputs.

SPOTLIGHT

CAYIN N5iIS

WHAT IS IT?

Android Based Digital Audio Player

PRICE

\$499.99 £429.00

The N5iIS is an Android based DAP with outstanding digital audio capability and superb audio performance in an extremely compact form. It is designed around the ESS9018K2m and can decode upto DSD256 and 32Bit/384kHz. It employs separated amplification circuit for 3.5mm single-ended and 2.5mm balanced headphone output and they are optimized at their best independently.

N5iIS is highly expandable with comprehensive choice of line out and digital interface. User can install applications from Google Play and enjoy online and offline streaming after connected to WiFi. The 64GB internal memory can hold thousands of songs for offline Tidal and Spotify playlist.

Cayin developed an Audio Priority mode for users looking for supreme audio performance by turning off all wireless and third party applications and optimize the Android system to bare-bone audio-related functions only. The player is solidly built by CNC stainless steel chassis, leather case is supplied as standard.



CAYIN N8

WHAT IS IT?

Reference Digital Audio Player

PRICE

\$3,299 £2,599.00

The N8 is our first price-no-object DAP with a proud mission

to deliver the best possible audio to portable users. The N8 DAP features 2x AK4497EQ and can decode up to DSD256 and 32Bit/384kHz with stellar dynamic range and resolution. This is the first DAP that employs Triode vacuum tube (KORG Nutube) in single-ended amplification. Fully balanced headphone and line outputs out are also available from its 4.4mm Pentaconn

connector. The High Impedance High Output mode is also a unique feature, with up to 750mW@32ohm, the N8 is one of the most power DAPs on market. N8 is highly expandable with three digital outputs (I2S, USB Audio, Coaxial) and can serve as USB-DAC. It can also function as wireless DAC through LDAC Bluetooth, allowing users to enjoy online streaming conveniently. You can remote control the player through a mobile phone. Leather protective case and comprehensive cable/ adapter package is supplied as standard.



understanding through sincere and profound exchanges will likely develop their appreciation without undermining their personal preference.

Hi-Fi+: What are the two or three most important pieces of advice you would give to enthusiasts looking either to build new audio systems or improve existing ones?

Liang Bin: This is a very diversified and interactive topic that we find it difficult to generalize. We have run into similar discussion frequently and when we have the luxury to sit down and discuss in detail, the final recommendation will become personal and non-standardized.

However, there are two interesting points that keep coming back. The first issue is to

improve the quality of the power supply to the sound system. Cayin believes a clean and stable power supply is the root of good audio performance. That's why we always pay serious attention to the power supply module of our product. Even with price conscious products such as desktop player iDAP-6 (retail at US\$799), we have squeezed a linear power supply with toroidal transformer into the small box. Unfortunately the expensive power supply circuit in your gears is not going to perform satisfactory if the power supply in your house is noisy and unstable, so we always recommend users improve the household power supply or invest in appropriate power conditioner when needed.

The second issue is the sequence of selection when someone wants to build a ▶



sound system from scratch. I always suggest they pick the right speaker and headphone as early as possible. There is no such thing as the best speaker or best headphone. That's why we use the word "right" in the context of meeting personal preference and practical constraints. Expensive gear is not always better when it doesn't agree with our personal

preference; a big floor-standing speaker is unlikely to perform better than a decent bookshelf speaker in a small room, a closed back headphone will perform better in a noisy environment even if they have limitations on certain audio attributes. Once we selected our transducer, we can select the appropriate amplifier and then the source equipment.

SPOTLIGHT



CAYIN SL-6LS MK2

SL-6LS MK2 is a major revamp of our 20 years old classic. It is designed to work with 9084D MK2 as a preamplifier. It employs 4x12AU7EH (Electro-Harmonix) for Class A linear amplifier, and 2x22DE4 (RCA) for power rectification. The circuit is designed with 15dB gain to enhance its compatibility with modern sources and amplifiers.

The EI Power transformer is designed and produced in-house to meet our strictest

WHAT IS IT? Tube Preamplifier **PRICE** \$2,490 £2,390.00

requirements. The audio circuit is hand-made and point-to-point wired with double-shield silver-plated OFC cable. A soft-start circuit is in place to protect the vacuum tubes and transformer for extended product life. Carefully selected premium components such as US Multicap Coupling Capacitors and Japan TAKMAN carbon film resistor are used to deliver optimized audio performance. Four sets of RCA inputs and two sets of RCA outputs are located at the back panel, and an IR remote control is supplied as standard.

Cayin® HA-300



Reference Direct Heated Triode Tube Headphone Amplifier

- Designed around 300B DHT tube
- Class A single-end amplification
- 8w + 8W speaker output
- Point-to-Point wiring
- Auto-biasing
- Extensive mute protection to ensure quiet operation
- Two boxes design with outboard tube regulated power supply
- In-house designed and Winded Dual Output Transformers
 - Optimized performance from 3 sets of impedance matched outputs
 - Direct output to 4-pin XLR (BAL) and 6.35 mm (SE) headphone

Through the HA-300, the music breathes naturally and sounds harmonically rich and full of delicate, unforced details, but with an uncanny quality of being 'illuminated' from within.
(Chris Martens, HiFi+, 161)



CAYIN HA-300

hi-fi+ REVIEW FROM: ULTIMATE HEADPHONE GUIDE – SUMMER 2018

Founded in 1993, Cayin is a performance minded audio manufacturer from China whose reputation was initially built on building affordable, high performance tube amplification components. While the firm has since branched out to build many solid-state products, including portable headphone amps, amp/DACs, digital audio players, DACs, and more, Cayin's commitment to tube-powered amplification runs deep. When it came time to launch a statement class headphone amplifier, then, Cayin chose a class A, single-ended triode design whose roots go back over 20 years. Cayin's HA-300 (\$4,000) is a beautifully made, two-chassis, tube-powered headphone amplifier. The amplifier relies upon a pair of 6SN7 driver tubes feeding 300B output tubes, which are legendary in audiophile circles; the 300B's

in turn drive a pair of proprietary Cayin-manufactured output transformers, which support both single-ended and balanced headphone outputs. These special output transformers provide, says Cayin, "three sets of impedance matched outputs for a very wide range of headphone impedance loading." Moreover, the HA-300 is capable of serving as an 8Wpc stereo integrated amplifier suitable for driving high sensitivity loudspeakers.

The larger HA-300 chassis houses the main amplifier, while the smaller chassis houses the power supply; a beefy 'umbilical cable' connects one to the other. Even the outboard power supply is tube-driven, with four NOS RCA 22DE4 rectifier tubes each feeding independent regulators for different gain stages within the voltage amplifier ▶

CAYIN HA-300 REVIEW FROM: ULTIMATE HEADPHONE GUIDE – SUMMER 2018

circuit. Completing the picture is a massive custom-made toroidal power transformer. Let me come right out and say it: The HA-300 is drop dead gorgeous. Both chassis feature nearly 0.5-inch thick milled aluminum faceplates with inset gold Cayin logos, while the chassis enclosures and transformer housings are done in a lustrous metallic grey lacquer finish. Capping the tops of the transformers are thick milled aluminum cover plates engraved with Cayin logos, while the tube sections of both the amplifier and the power supply come with handsome, removable, black wire-frame tube cages. The real magic of the HA-300, however, has far more to do with its sound than its looks.

"THROUGH EACH OF THESE HEADPHONES, THE HA-300 DELIVERED A BIG, HIGHLY EXPRESSIVE, AND DYNAMICALLY ROBUST SOUND"

I listened to the HA-300 with three of the finest planar magnetic headphones I had one hand: the HiFiMAN Susvara, the Final D8000, and the Abyss AB-1266 Phi edition. The HA-300 proved to have enough output to do justice to all three top-tier headphones, even the extremely difficult-to-drive Susvara. Through each of these headphones, the HA-300 delivered a big, highly expressive, and dynamically robust sound—one that in every case produced broad, deep soundstages with wonderfully precise placement of individual sounds within those stages. Stated simply, the HA-300 vividly shows exactly how individual instruments and voices sound, but also shows from whence those sounds are coming.

The amp delivers a slightly warmer than neutral sound coupled with excellent transient speeds, terrific dynamic agility, and disarmingly great rendition of low-level details in the music. In fact, on several occasions transient sounds seemed so real and convincing that I pulled the headphones from my head to look for the sound sources, only to realize with chagrin, "Oh, that sound was actually in the recording—not outside in my listening room." Listen to Melody Gardot's infectious laughter at the very end of "Who Will Comfort Me" from *Worrisome Heart* [Verve, 16/44.1] to hear what I mean.

The Cayin's sound is much different from the almost hyper-focused, hyper-controlled, and hyper-analytical sound of some of today's better solid-state amps. Instead, through the HA-300, the music breathes

naturally and sounds harmonically rich and full of delicate, unforced details, but with an uncanny quality of being "illuminated" from within (a hallmark of fine 300B designs). This quality, for example, beautifully underscored the emotive power of Joan Armatrading's voice on "Merchant of Love" from *What's Inside* [Savoy Jazz, 16/44.1]. Cayin's HA-300 is a wonderful, top-tier headphone amplifier that not only offers compelling technical strengths, but—more importantly—offers musical ones that constantly show how vital and alive recorded music truly can be.

Chris Martens

CAYIN HA-300 [REVIEW FROM](#): ULTIMATE HEADPHONE GUIDE – SUMMER 2018

CAYIN HA-300 TECHNICAL SPECIFICATIONS

TYPE: High performance, tube powered, balanced headphone amplifier/integrated amplifier

TUBE COMPLEMENT:

POWER SUPPLY: four NOS RCA 22DE4 rectifier tubes

AMPLIFIER: Two 6SN7 driver tubes, two 300B

power **TUBES INPUTS:** One stereo single-ended analogue input (via RCA jacks), one stereo balanced input (via XLR jacks).

OUTPUTS:

INTEGRATED AMPLIFIER: One stereo set of loudspeaker binding posts

HEADPHONE AMPLIFIER: One balanced stereo headphone output via a 4-pin XLR jack, one single-ended stereo headphone output via a 6.35mm headphone

JACK CONTROLS: Speakers/headphones output switch, XLR/RCA input switch, L/M/H headphone impedance switch, STD (single-ended)/BAL headphone output switch, illuminated on/off switch, illuminated L/R VU meters, stepped volume control Frequency

RESPONSE:

INTEGRATED AMPLIFIER: 10Hz–60kHz ± 3dB

HEADPHONE AMPLIFIER: 10Hz–50kHz ± 3dB

DISTORTION: < 1% at rated output at 1kHz

OUTPUT POWER:

INTEGRATED AMPLIFIER: 8Wpc (Class A)

HEADPHONE AMPLIFIER:

Low impedance (8-64 Ohms):

SINGLE ENDED: 1100mW/channel

BALANCED: 1800mW/channel

Medium impedance (65-250 Ohms):

SINGLE ENDED: 2400mW/channel

BALANCED: 2200mW/channel

High impedance (251-600 Ohms):

SINGLE ENDED: 5000mW/channel

BALANCED: 3700mW/channel

ACCESSORIES: Main amplifier chassis with tubes

and protective tube cage, power supply chassis with tubes and protective tube cage, AC power cord, “umbilical cord” to connect the power supply to the main chassis, Chinese language user guide, and linen gloves for handling tubes. Dimensions (H×W×D):

POWER SUPPLY: 210 × 159 × 345mm

AMPLIFIER: 210 × 286 × 368mm

WEIGHT:

POWER SUPPLY: 10kg

AMPLIFIER: 19kg

PRICE: \$3,999 US; £UK price not yet announced

MANUFACTURER INFORMATION

Cayin

Zhuhai Spark Electronics Equipment Co., Ltd.

Zhuhai City, Guangdong, China Postcode 519045

+86 (0)756-3828711

URL: www.cayin.cn

Summary

Sonic character: Fundamentally neutral, but subtly shaded toward organic warmth and harmonic richness.



(All ratings are relative to comparably priced amplifiers)

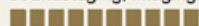
Resolution/Focus:



Dynamics/Expression:



Soundstaging/Imaging:



Freedom from Noise:



Features and Versatility:



Pros

- The sound: powerful, revealing, nuanced, and musical.
- Impeccable build quality plus handsome good looks.
- A 'statement-class' amplifier at a reasonable price, given the quality on offer.

Cons

- No remote control.
- Weight: Be careful when moving this two-chassis beast.

Cayin i-Series



A Dynamic Trio to Fit Your Every Needs

iDAC-6 2xAK44909 genuine balanced design DAC. Versatile tonal control to match with different headphones or speakers. Decode upto 32Bit/384kHz and DSD128. Support DoP. 4 digital inputs. XLR and RCA output with Pre-out mode. 4x 6N16B tube buffer.

iDAP-6 Digital Transport playback Hi-Res music files from SD card, USB OTG (2.5" HDD), wireless and networked storage. Support Samba (NAS), DLNA, Airplay and Bluetooth. Digital outputs: USB Audio, AES/EBU, Coaxial (BNC/RCA), Optical, and HDMI (I²S).

iHA-6 Upto 7wpc fully balanced headphone amplifier, designed to drive the most demanding headphones with impressive detail and transparency. Innovative current and gain control, XLR-4, 2 x XLR-3, and 2 x 6.35mm headphones outputs. XLR and RCA inputs.



If you listened to these components without knowing their identities or prices, my guess is that you might take them to be components priced north of, say, \$4,000-\$5,000, judging purely by the sound quality on offer. (Chris Martens, HiFi+, 164)



CH PRECISION

DIGITAL SOURCES

- + DACs
- + DAC/Preamps, DAC amps
- + CD/SACD/Blu-ray players/transports

ELECTRONICS

- + Preamplifiers, Preamp/DACs
- + Power Amplifiers
- + Integrated Amplifiers, Integrated Amp/DACs
- + Phono Stages

CONTACT

Company Address:
CH Precision Sarl,
ZI LE Tresi 6D, 1028
Preverenges,
Switzerland
Company Tel:
+41 (0)21 701 9040

CH Precision is a Swiss company dedicated to the design, manufacture, and commercialisation of ultra high-end audio products under the 'CH' brand. Fully designed and manufactured in Switzerland, CH products stand out for their exceptional audio performances and build quality.

Although the company itself is still relatively young, the team has an unrivalled experience in the high-end audio industry covering both digital & analogue board design, DSP software, FPGA programming as well as mechanical design. This is confirmed by the exceptional press recognition and the numerous awards received by all CH products.

CH products provide a unique blend of ultimate audio performance, timeless design, and build quality. Based on the latest technologies and open for future upgrades due to its modular approach, they make every audiophile's heart beat faster. Last but not least, the company takes enormous pride in correlating superb audio performance with excellent measured performance and reliability.

www.ch-precision.com

SPOTLIGHT

CH PRECISION A1.5 2-CHANNEL POWER AMPLIFIER

WHAT IS IT?

Power amplifier offering flexibility configurable in Stereo, Bi-amplification, Monaural or Bridge mode.

Meet the A1 successor. Featuring a huge new power supply design, the A1.5 Power Amplifier effortlessly delivers up to 150W / 8 Ohms per channel in Stereo mode or 1200W / 2 ohms in Bridge mode. The A1's flexibility of use and future-proof modularity remain untouched allowing the amplifier to be reconfigured from Stereo to Bi-amplification, Monaural or to Bridge at the push of a button. CH Precision's unique

ExactBias circuitry as well as the critically acclaimed loudspeaker matching topology forge the heart of the A1.5.

Further refined, taller, more powerful, the A1.5 is in every way an A1... and a half!

What's more, every A1 ever produced can be upgraded to an A1.5 amplifier.



SPOTLIGHT

CH PRECISION L1 DUAL MONAURAL LINE PREAMPLIFIER

WHAT IS IT?

Fully symmetrical, pure Class A discrete, ultra low noise line preamplifier.

The uttermost quality of a preamplifier is its transparency. The source is selected and the volume is applied, however the original audio characteristics and signal dynamics are fully retained. The L1, a dual monaural analogue line level preamplifier, was developed using this approach. It is a pure class A, ultra-low noise, high bandwidth, fully balanced transistor based design. It

provides the shortest path between input and output, maintaining the highest speed, transparency, and musicality, allowing the L1 to become a truly exceptional preamplifier.



SPOTLIGHT

CH PRECISION I1 UNIVERSAL INTEGRATED AMPLIFIER

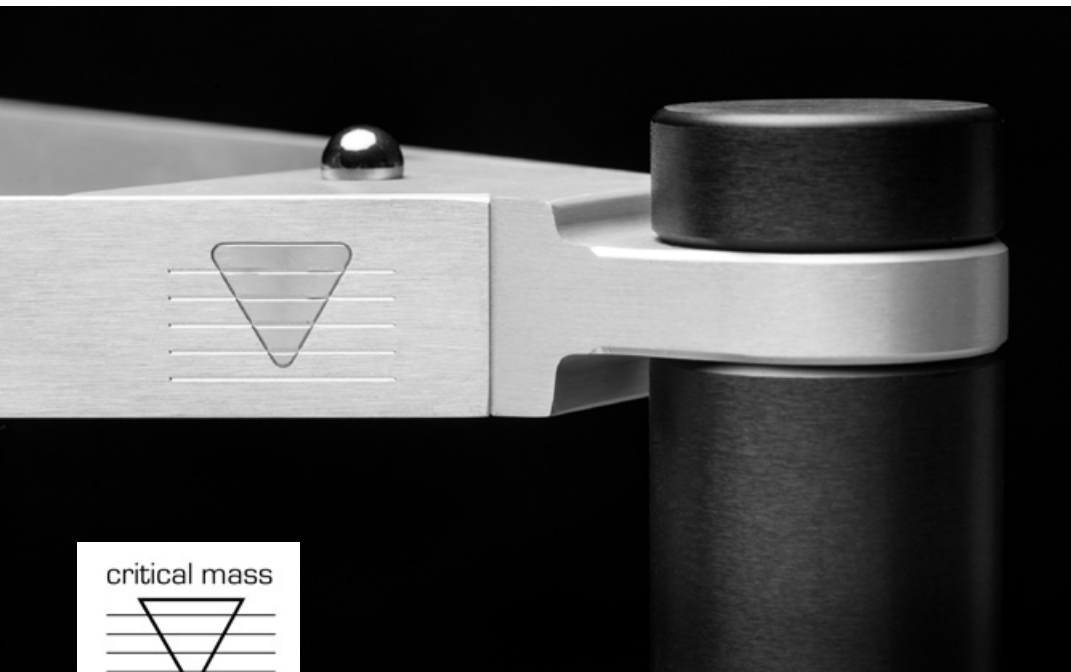
WHAT IS IT?

A gateway to the CH world combining four products from the 1-Series.

CH Precision's recipe for making the I1: Gather together an A1, C1, L1 and P1. Gently squeeze, collecting the essence and soul of each product. Delicately pour the concoction into a mould in the shape of the unique CH enclosure. Shake for perfect consistency. Season to taste with optional audio input cards. Serve with your favourite source and loudspeakers. Sit down and enjoy!

With digital, analogue, phono, USB and Ethernet streaming inputs to choose from, the I1 is the heart of your compact yet exclusive audio system. While specified at 2x 100W RMS into 8Ω, its internal 1000VA power transformer provides the amplifier output stages with ample energy to accurately and effortlessly drive any loudspeakers.





CRITICAL MASS SYSTEMS

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+ Equipment Racks, Audio Furniture

CONTACT

Company Address:
69 Windsor Dr.
Oak Brook,
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Company Tel:
+1 630.640. 3814

Critical Mass Systems crafts high-performance vibration mitigation systems for high-end audio. Critical Mass Systems racks are not isolation systems as they do not prevent the transmission of vibration. Rather, the filter system manages the flow of vibration into and out of the component as well as the rack architecture supporting it. Our proprietary internal vibration filtering materials and rack architecture operate together to mitigate vibration in the floor, the rack, the shelf and the component at the same time. This ensures even energy transfer throughout the rack architecture and filter system so your component can retain the "sound" that was intended, revealing the inner detail of the music.

www.criticalmasssystems.com

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CRYSTAL CABLE

ELECTRONICS

- + Power Amplifiers
- + Integrated Amplifiers, Integrated Amp/DACs

LOUDSPEAKERS

- + Stand-Mount Monitors
- + Floorstanding Speakers
- + Subwoofers

POWER PRODUCTS

- + Power Strips
- + Power Cables

CABLES

- + Analogue Interconnects
- + Digital Interconnects
- + Loudspeaker Cables
- + Power Cables
- + Personal Audio Cables
- + Accessories, Cable Lifts

International Audio Holding is the company behind the renowned high end audio brands Siltech and Crystal Cable. Though both are experts in high end cables and sharing the same research, technologies, and production facilities they each have distinct characteristics and styles. Siltech focusses heavily on its technology while Crystal Cable perfectly combines that with design and lifestyle. With a still widening range of products besides cables - like loudspeakers and amplifiers - Siltech and Crystal Cable keep innovating and improving to always achieve their mutual and ultimate goal: creating products of the highest sound quality coming as close as possible to live music.

www.crystalcable.com

CONTACT

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NW Elst. **HeadOffice:**
Nieuwe Stationsstraat
10, 6811KS
Arnhem, Netherlands
Company Tel:
+31 481 374 783

SPOTLIGHT

CRYSTAL CABLE MONOCRYSTAL DREAM SERIES

Crystal Cable has always been recognized for the purity of its products' sound, the lack of grain or overhang, smearing or exaggeration. With Dreamline Plus, Absolute Dream and The Ultimate Dream, Crystal Cable perfected the art of creating monocrystal silver conductors in which each solid-core wire is a single, continuous crystal structure, completely

eliminating crystal boundaries and voids – and the micro-distortions that go with them. For us, this technology was the realization of a dream, the perfect conductor we'd been working towards for years.





GABI RIJNVELD, Crystal Cable.

Hi-Fi+: As companies evolve they inevitably pass milestones that mark particular achievements or turning points in the company's growth. What are five or six key milestones on your company's evolutionary timeline?

Gabi Rijnveld: International Audio Holding is the company behind high-end brands Siltech & Crystal Cable. Siltech celebrated 35 years in 2018 and Crystal Cable 15 in 2019 so there are quite a few milestones to be proud of:

1983: Siltech was 'born' with its name deriving from the breakthrough cables using Silver Technology with Teflon insulation.

1992: Marked our first big investment in electro-technical magnetic and optical measurement devices. This meant our research became less experimental and more controlled, minimizing any distortion to the extreme leading to the worlds' first truly silent cable.

1997: Achieved major improvement in our metallurgic process which resulted in a unique silver-gold alloy conductor. High tech PEEK and Kapton insulation enabled even better performances. This was the start of continuous metallurgic improvements, resulting in our current world-renowned 'G7-technology', which we use in many of our cables.

"G7-TECHNOLOGY", WHICH WE USE IN MANY OF OUR CABLES"

2004: Crystal Cable debuted in the high end audio world with extremely thin and flexible cables though using the same high quality materials as Siltech.

2006: COMSOL Multiphysics® was implemented to take our research and development for both brands to yet another level.

2009: Introduction of our unique and very rare monocrystal silver conductors, which give our top-level cables even more transparency and musicality.

2014: Crystal Cable partnered with Astell & Kern and developed high end portable cables. Currently, Crystal Cable now very successfully produces a portable cable line under its own name. ▶

SPOTLIGHT

CRYSTAL CABLE DIAMOND SERIES

The DIAMOND SERIES is the ultimate audio expression of the 'less is more' philosophy. By using unique, high-tech materials in radically different combinations we can eliminate unnecessary elements and the undesirable side effects they entail. All cables within the DIAMOND SERIES feature a patented metallurgical process that injects pure gold in between silver crystals. This advanced metallurgy - which is a unique breakthrough

in the high-end audio market - developed by and exclusive for Crystal Cable and Siltech, prevents the crystals from oxidising. This ensures that the electrical behaviour of the sound signal remains constant over a very long period of time while simultaneously reducing micro-distortion. The DIAMOND SERIES cable's size and quality mean that it fits in every kind of room and lets you enjoy any kind of high resolution music to the fullest.



2018: Siltech celebrated 35 years.

2019: Crystal Cable celebrates 15 years.

Hi-Fi+: What are four or five interesting 'factoids' about your company that you think the high-end audio community might want to know about?

Gabi Rijnveld: We are currently very busy with the expansion of our factory in Elst, the Netherlands. Our production facilities which we have been using for the past 25 years will be doubled in size by the end of 2018.

International Audio Holding is a family-run business, led by Edwin and Gabi Rijnveld and with their son(s) working in the company.

This year, apart from the anniversary of our brands, we celebrate that two of our co-workers have been working with us for 20 years!

Siltech and Crystal Cable are patrons of the Dutch Royal Concertgebouw Orchestra to share and support our passion for (classical) music.

Hi-Fi+: What are your firm's specific areas of product design expertise?

Gabi Rijnveld: While both Siltech and Crystal Cable share the same production facility, technology, and focus on the highest quality possible there are some distinct differences regarding their design philosophy.

Siltech's products highlight the over-all technology while Crystal Cable's product design emphasizes more on lifestyle. Both

brands are specialists in cable design and through years of (shared) experience our award-winning loudspeakers and amplifiers have made both brands quite all-round high end audio specialists.

Hi-Fi+: What do you consider to be your firm's 'landmark' products, past or present, and what makes them landmarks?

Gabi Rijnveld: Siltech's G3 cable series: the first series using Siltech's revolutionary silver-gold technology.

Siltech's SEPA: Siltech's first amplifier. A revolution almost 20 years ago, still sought after today.

"A REVOLUTION ALMOST 20 YEARS AGO, STILL SOUGHT AFTER TODAY"

Crystal Cable's Piccolo: A radically different approach to cable design, creating ultra thin and flexible cables.

Arabesque GLASS MASTER: Crystal Cable's first loudspeaker and the first all glass one of this absolute high end quality. It was noticed even beyond the hifi audio world.

Crystal Cable Portable: Crystal Cable's first venture outside traditional home-audio hifi and by doing so being the first one delivering this level of high end sound quality to the portable audio world.

Triple Crown & The Ultimate Dream: Siltech's & Crystal Cable's absolute best cable to date, demonstrating our knowledge and abilities over the last 35 years. ▶

SPOTLIGHT

CRYSTAL CABLE PORTABLE

With Crystal Cable Portable DUET, DOUBLE DUET and DREAM DUET we take on the challenge of high end in portable products. The superb conductivity, shielding, and high-tech insulation materials used by Crystal Cable are perfect for the low-signal level and low-power applications which are typical in portable hifi audio systems; flexible and thin but also very strong and extremely

musical. Its high-end Oyaide connectors can be combined with all kind of headphone and IEM termination making sure Crystal Cable's trademark qualities are aligned with the same philosophy; to bring live music to the listener, be it through an audio system at home or one that you take with you.





cables in all of our products (loudspeakers, amplifiers) creates a complete audio system of the highest sound quality. Designing, developing and manufacturing everything in our own factory in The Netherlands sets us apart, [we believe...]

Hi-Fi+: Suppose you overheard a group of audiophiles discussing your brand at a hi-fi show. What do you hope they would be saying about your company?

“DESIGNING, DEVELOPING AND MANUFACTURING EVERYTHING IN OUR OWN FACTORY IN THE NETHERLANDS SETS US APART”

Gabi Rijnveld: : Crystal Cable and Siltech are high end cable brands, with true engineering, using the

highest purity materials, and exceptional design for all kind of music lovers. With their cable, speaker, and electronic products, all made in The Netherlands, music will sound the closest possible to live music heard in a concert hall, stadium, or jazz café.

Hi-Fi+: If you are at liberty to say, what kinds of new products can we expect to see from your company in the next year or so? (We're not looking for you to reveal trade secrets, so feel free to answer in a deliberately general way, if you wish.)

Hi-Fi+: Are there particular design or manufacturing techniques that help set your products apart from the competition? Could you briefly explain what some of those techniques are?

Gabi Rijnveld: : Our many years of experience - using the most advanced programs and best possible quality materials - ensures constant improvement in both sound quality and design. Through the years, we've had breakthroughs like G7 silver-gold alloys, amorphous silver wire and monocrystal silver and gold wire. Insulating those cables with Kapton, PEEK and Teflon and implanting those



Hi-Fi+: Do you have three or four specific recordings you might recommend for purposes of evaluating hi-fi equipment?

Gabi Rijnveld: : We have a specific playlist of very different kinds of music to test and improve our equipment – cables, speakers, even connectors and other parts. These recordings can be of audiophile quality, but not necessarily. This list contains jazz, classical recordings, pop, male and female voice,

Gabi Rijnveld: : There will be some news on the speaker side and certainly a special cable for Crystal Cable's 15th anniversary. As usual we will have some new and innovative materials to try for both brands.

Hi-Fi+: Gazing into your figurative 'Crystal Ball', where do you see high-end audio headed in the next five years? If your predictions come to pass, how will your company respond?

Gabi Rijnveld: : We believe the high end world will keep on growing. With a population which also keeps getting larger, people will want to differentiate, and products of true craftsmanship will become more and more desirable. That's what excites us for the future: expand our already large range of products and models, attracting an increasing younger audience in the process.

small and big ensembles, orchestra, piano etc. Often great performances, always interesting music.

The essential part of evaluating hi-fi equipment is getting the best live sound – from mediocre or high end recordings, showing the quality of the smallest parts or the whole system.

Hi-Fi+: What are the two or three most important pieces of advice you would give to enthusiasts looking either to build new audio systems or improve existing ones?

Gabi Rijnveld: : Look for synergy between the components, listen to the balance in your favorite music. With just cables, you can tremendously improve an existing system, this is even more obvious with portable cable products.



CRYSTAL CABLE SYSTEM

hi-fi+ REVIEW FROM: MAY 2018 ALAN SIRCOM

As the name suggests, Crystal Cable is best known for its range of interconnects, loudspeaker cables, and power cords. However, keen-eyed readers will note that the brand has spent all of this decade manufacturing loudspeakers, and for the past few years has been showing a distinctive amplifier (and plinth-like subwoofer) at Munich, Las Vegas, and more. Finally, that system is ready for prime-time.

However, unlike the other systems tested in this issue, we took a step-by-step approach to assembling our Crystal system. We stayed with the basics: amp, speaker, and cable, although in this case it meant CCI integrated amplifier, two flavours of two-way loudspeakers, a clever little hat thing that sits

on top of those loudspeakers, a subwoofer/loudspeaker stand, two 'families' of cable, and everything south of the dCS front end used by Crystal all made by the brand and all made in the company's factory just outside of Arnhem in the Netherlands. Each of these steps along the way made a tangible and material difference to the performance of the system – some more significant than others.

The rationale for the whole system approach is not the usual one. The company – joined at the hip to Siltech – isn't making loudspeakers to make an impact in the loudspeaker market; it's instead to deliver a design that's both revealing enough to showcase what the loudspeakers can do and is as musically

CRYSTAL CABLE SYSTEM REVIEW FROM: MAY 2018

rewarding as Gabi from Crystal Cable might choose for her home listening. That's the joy of both owning an audio brand, and having a husband who is one of the sharpest tools in the audio box; the world is your oyster. Rather than make follies or one-off projects for personal use, we all get to benefit!

The place to start is the newest addition to the Crystal Cable line-up, the CCI (or Crystal Cable Integrated) amplifier. Well, newest in terms of product launches; the amplifier has been on display and on show at audio expos for several years, going through a few perfectionist final tweaks (and that's the downside of being having the sharpest tool in the audio box on tap... the search for perfection means never signing off the design). The amplifier itself is a cube about the size of a medium-sized two-way standmount and is deceptively clever. The compact, cuboid chassis of the CCI amplifier is there for a reason: it delivers both space and thermal efficiency. So despite its 100 Watt/channel rating in Class AB, its cooling design and extensive protection means that the Cube chassis runs cool enough that it can be placed almost anywhere. Where it gets really fun is in the use of an optically-decoupled, standing bias, Class AB design. If the phrase 'optically-decoupled, standing bias' rings a bell, it's because the circuit is derived from Siltech's revolutionary Light Drive output stage used in its air-gaspingly expensive SAGA amplifier.



"ITS COOLING DESIGN AND EXTENSIVE PROTECTION MEANS THAT THE CUBE CHASSIS RUNS COOL ENOUGH THAT IT CAN BE PLACED ALMOST ANYWHERE"

CCI's fully-balanced line-stage offers six inputs, each with individual gain settings, while software controlled relays totally isolate unused source components for optimum sound quality. Each stage of the amplifier, as well as the control circuitry, has its own independent, dedicated power supply. These are sophisticated Power Factor Corrected switch-mode designs, fully enclosed and heavily shielded. In short, don't let the size fool you; this is one serious amp design.

Crystal Cable's first loudspeaker was the tower Arabesque Glass (which is still in production almost 10 years after its introduction). Subsequent designs (including the Minissimo) have been scaled down from ►

CRYSTAL CABLE SYSTEM **REVIEW FROM:** MAY 2018

that tall, glass tower, but feature very similar design principles. And those design principles are sticking closely to the parameters expressed by COMSOL Multiphysics, the modelling software used by the company. And, by treating the air inside and outside a loudspeaker as a gas (because, well, it is a gas), and using COSMOL's gas-dynamics package, Crystal Cable has created a design that has a natural resonant delay due to cabinet structure and not a forced resonant delay from cabinet damping.

For the basic Minissimo, Crystal Cable uses the same ScanSpeak Illuminator drivers it used in the Arabesque Mini; a 25mm beryllium tweeter and 150mm laminated cone paper mid-bass design, with the port firing downward, and a one-piece block matrix cabinet of resin and metal, from which the basic Minissimo shape is milled.

The last piece in the Minissimo jigsaw is the crossover, an updated variation on the theme of a second-order network that Crystal Cable calls its 'Natural Science' crossover. This is designed to create a 12dB/octave slope while trying to minimise phase and time domain distortions. This means no nasty low impedance dips, and means that while the Minissimo is 3dB down at 48Hz, the slope is very gentle and is only -6dB down at 38Hz. At the other end of the scale, the tweeter extends to 38kHz and the crossover point is 1.8kHz. The trade-off is 86dB sensitivity.

The Minissimo doesn't stop there. There's an updated model called the Minissimo Diamond. Crystal Cable and SEAS developed a diamond tweeter design that improved

high-frequency performance over the standard Minissimo while retaining in-phase output across both drivers. This loudspeaker is further improved by pair-matching the bass units, adding custom-designed capacitors in the crossover, adding bi-wire terminals, reworking the cabinet damping, and rewiring the internals with the firm's top Absolute Dream cables.

There is also a top-plate baffle and mass-loading device specifically for the Minissimo and Minissimo Diamond. Called the Scala (after the opera house, of course) its 3D shape is machined from a solid billet of aluminum. The staircase shape is modelled once again using COMSOL

CRYSTAL CABLE SYSTEM **REVIEW FROM:** MAY 2018

physics. Its acoustic behaviour is also modelled carefully to further improve the sound of Minissimo series speakers, by extending the baffle and thereby moving the baffle step further from the tweeter. This is a potential add-on at any time, to either Minissimo model, and in listening it definitely justified its place in the system.

The last component in the chain was the Submissimo subwoofer. Featuring horizontally opposed 330mm drivers

are arranged in a force-cancelling configuration, each driven by its own independent power amplifier. Rather than using electronic equalization to extend low-frequencies,

“THE ENCLOSURE ITSELF IS A CURVED WALL COMPOSITE CONSTRUCTION”

it compensates for non-linearities and variations in the drivers themselves. The enclosure itself is a curved wall composite construction, designed to absorb and dissipate the drivers' unwanted mechanical output before it can feed back into the acoustic output, distorting timing, pitch, and textural information in the process. This also makes the top-plate inert, allowing a pair of Submissimos to take over the role of loudspeaker stands. We could only muster one.

We started the listening session with Crystal Cable's lone 'off-the-reel' Special series cables, in loudspeaker, interconnect, and power cord form. They use high-purity silver-gold alloy and silver-plated oxygen-free copper conductors, and although Crystal Cable provides the hardware, this is designed to be finished in store. At

Special level, with the standard loudspeaker and no subwoofer in the mix, the system had an extremely light touch; not lightweight, but deft and delicate. It's very audiophile, but 'The Tennessee Waltz' played by Allan Taylor [*Hotels and Dreamers*, Stockfisch], gave the perfect example of what this system does best. Just him, his guitar, and a slide Dobro. OK, this can sound impressive played through a clock radio, but what the Crystal system does is make it musically communicative. Extremely musically communicative. It has surprising bass too, for small instruments played through small loudspeakers, to the point where you think at least one of those small things is a lot bigger in reality. But ▶





**“EACH STEP IN THE CHAIN MADE
A SOUND THAT YOU WOULD
STRUGGLE TO THINK CAME
FROM SO SMALL A SYSTEM”**

it's the musicality that makes it score so highly. It's clear this system is not simply a technical exercise, but a set of devices born out of sheer passion for music. Normally that would sound trite, but with Gabi Rijnveld's child prodigy musical background, it rings true.

It's strange that a system that is designed as a platform to show up changes in cables is so comfortable playing with the company's entry-level cables. The sound has dynamic range, energy, flow, and is extremely musical (that word again... get used to it). And yet, it's more than that.

It's a system that invites you to listen to a really diverse range of pieces of music, like 'Adios Amigo' by Jim Reeves [RCA single]. Because it's a great record, Jim Reeves has a lovely voice, and a friend probably buried his father's horse to the song once upon a time. It's that sort of system. You'd expect it to be more overtly resolving of difference. That is, until you change something. Then you realise that on top of that layer of wonderful, effortless music, there's something extraordinarily insightful playing. We stepped up the pace by adding the little Scala 'hat' to the Minissimos. This added greater width to the soundstage and made the mid and upper end frequency range seem considerably more engaging – on a system that was already extremely engaging in and of itself. I could have gone back to playing Jim Reeves over and over again, but moved

CRYSTAL CABLE SYSTEM REVIEW FROM: MAY 2018

over to 'Chan Chan' by the Buena Vista Social Club, from the album of the same name [World Circuit]. This had an additional sense of effortlessness compared to its Scala-free playing. Those old Cuban musicians really chugged along with an infectious rhythm, but what the Scala did was help you listen into the sound of EGREM Studios in Havana at the end of the 1990s so rich and atmospheric was the sound.

Having improved the treble, it was the turn of the bass, with the addition of a single Submissimo between the speakers. This made it a perfect plinth for the CCI amp. We played 'Father Lucifer' by Tori Amos from her Boys for Pelealbum [East West]. Not the best known track on the album, but its combination of her slightly thin sounding piano, breathy vocal, and very percussive playing style, with that distant horn playing in the second verse makes it a very subtle track to use with a sub. If the sub integrates well, it will sound like Tori Amos at her piano. If it doesn't it will sound like Jerry Lee Lewis covering a Tori Amos track. No filler, and no killer here! The Submissimo integrated perfectly. Other, more typical tracks in my arsenal of listening tests (King Curtis for example) showed the Submissimo has substance as well as lightness of touch. The best praise I can heap on any subwoofer applies here; it made a good speaker sound bigger and better.

Now it was time for a cable change, and we upgraded the full set of Special Cables for Micro Diamond. Regardless of cable

type, Micro Diamond uses annealed gold/silver alloy conductors, helically wrapped in a dual layer of ultra-thin Kapton foil as a shield. The different use cases in audio demand more or less conductors, but the basic properties of the cable remain the same.

We're cooking on gas now. Out came tracks that never see the light of day normally, like 'Stella by Starlight' from Joe Pass' Virtuosoalbum [Pablo]. This album lives up to its name and Pass' chord voicing and solo technique leaves jazz guitarists speechless. It's not a good recording to play because the jazz ennui that strikes any guitarist (no matter how good or how long it's been since they picked up a guitar), but also because on a less than perfectly poised system, it can be mistaken for jazz noodling (it goes on a bit) usually because some element in the system is a bit too enthusiastic (or too unenthusiastic) with its legato, and it either sounds too 'choppy' or 'blurred'. Here, his impossibly perfect playing is presented in all its glory. Damn him.

Around this time, I jotted down a couple of badly repetitive lines that encapsulate the whole listening process with Crystal Cable's system: "musically speaking, this is one of the most musically musical systems to play music through. It's musical integrity is only bettered by its ability to resolve the musical intent of the music playing." You get the drift!

The last part of the system update was to move to the Minissimo Diamond speaker. ►

CRYSTAL CABLE SYSTEM REVIEW FROM: MAY 2018

At this point we are really cookin'. This system moved into a new level. It retained all the good points (yes, that includes sounding 'musical'... but that was so-o-o last page), but now started to demonstrate the sort of sophistication, elegance, and high-end 'sheen' (in a positive way) that separates the good from the great. Curiously, the biggest change in improving the tweeter was a clearer and more defined bass, and more natural midrange. I played with moving the Scala 'hat' on and off at this point, and felt under the circumstances it was wholly appropriate to listen to some Maria Callas, although this time singing Mozart. I'd played this track several times during the listening test and it was clear Callas was outside her comfort zone. Her voice was forced and pinched. It was still her, but not the best of her. But on the Diamonds (with the Scala in

place, naturally), it was Callas again. What sounded child-like and screechy became soaring and powerful. So it was with every track played on the Minissimo Diamonds.

We didn't get to the end-point... not even remotely. The cables increase the performance of the system as we move from silver-gold to monocrystal and improve the lot of the whole shebang as the number of monocrystal conductors increase. We are also using just the one subwoofer, where two (one acting as a stand for each speaker) would be even better. The reason why these next steps remain untrammelled is part pragmatism (there was no second subwoofer available to test) and part practical (swapping out the already quite spendy Ultra Diamond cable for Absolute or Ultimate Dream

"CURIOUSLY, THE BIGGEST CHANGE IN IMPROVING THE TWEETER WAS A CLEARER AND MORE DEFINED BASS, AND MORE NATURAL MIDRANGE."



CRYSTAL CABLE SYSTEM REVIEW FROM: MAY 2018

could easily quadruple the cost of the whole system, which no-one in the real world is ever going to do). As it is, the refinement of the diamond tweeter, the subwoofer, and the cable change all take a substantial toll on the wallet of the owner, adding considerably more to the overall cost of the system.

It's hard to pick out one component in all this for additional praise, as each step in the chain made a sound that you would struggle to think came from so small a system, but the next step made it even better. However, if it were just the one to choose, I'd probably go with the amplifier. It was a constant companion throughout the whole test, it harnesses a lot more of the performance of the extraordinary SAGA than a solid-state cube has any right to do, and it would never run out of steam at all during the test. But this is a close-run thing. I could just as easily find the Diamond loudspeakers (with the Scala) to be the best, and of course there are those excellent, svelte, cables...

The thing about this system is even at its entry point as discussed, it's more than good enough. I suspect the reality is few will stay at this level. This is as much a proof-of-concept for Crystal Cable's cable designs as it is a fine sounding system in its own right, and I suspect many of those who buy this system would never dream of staying with the basic cables used at the start of this test.

Alan Sircom

DETAILS

Crystal Cable Integrated Amplifier black finish:

€13,000

Crystal Cable Integrated Amplifier black/gold finish:

€15,000

Crystal Cable Minissimo:

€10,000 per pair

Crystal Cable Minissimo Diamond:

€16,000 per pair

Crystal Cable Scala:

€999 per pair

Crystal Cable deep bass Subissimo:

€10,000

WE STARTED WITH

Crystal Cable Special silver/gold Interconnect:

€714/1m pair

Crystal Cable Special silver/gold speaker cable:

€1,374 (2.5m pair)

Crystal Cable Special Power silver/gold/copper:

€274/1.5m cable

NEXT LEVEL WAS

Crystal Cable Ultra Diamond Interconnect:

€2,749/1m pair

Crystal Cable Ultra Diamond Speak:

€6,239/2.5m pair

Crystal Cable Ultra Diamond Power:

€1,925/1.5m

Manufactured by: Crystal Cable

URL: www.crystalcable.com

Distributed in the UK by: Padood Ltd

URL: padood.com

Tel: +44(0)1223 653199



2019 Marks 15 years of Crystal Cable high end audio products!



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For more information about Crystal Cable home -and portable cables, loudspeakers and amplifiers visit:
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ELAC Electroacoustic GmbH is founded on a commitment to deliver the best possible sound from all types of devices. For more than 90 years, the company has stood for advanced technology, uncompromising build quality, outstanding European design, and unmistakable sound. ELAC offers a complete range of speakers and bold new electronics that bring music to life like never before. Our latest innovations complete the ELAC experience, enabling our customers to experience the passion in our products in the form of music and film.

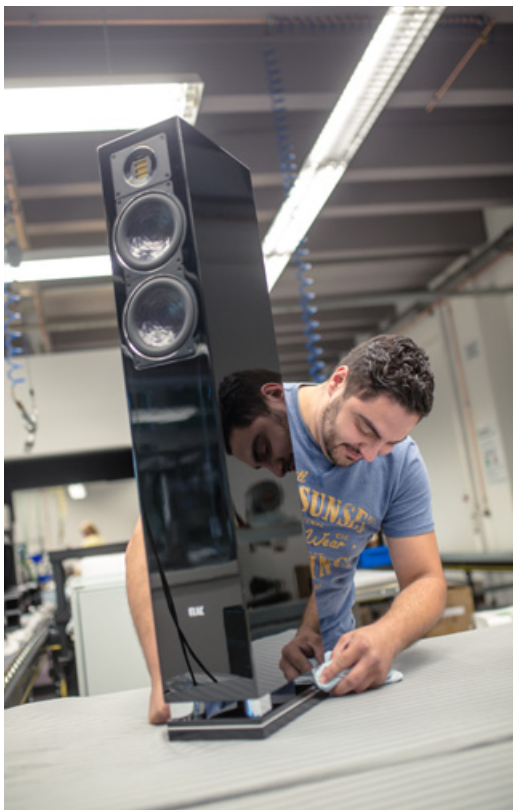
www.elac.com

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GmbH

Fraunhoferstraße 16
Wissenschaftspark,
24118 Kiel
Germany

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+49 (431) - 64774-25



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- + Power Amplifiers
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LOUDSPEAKERS

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CABLES

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- + Digital Interconnects
- + Loudspeaker Cables
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POWER PRODUCTS

- + Power Cables

Engström is a Swedish family company founded by engineer Lars Engström and industrial designer Timo Engström.

Our amplifiers are hand-assembled with an uncompromising approach to precision engineering and Scandinavian design. Everything we do – every component we use and design decision we make – is to revive music in its original, natural and purest form. We call it Scandinavian Sound.

Scandinavian design is about honesty, minimalism, and functional elegance. Just as our sound is not coated with anything additional or superficial, so the visual appearance of our amplifiers is equally pure. They look just as they should, nothing more and nothing less. They form a simple harmony with their environment. We think of our amplifiers not as tech gadgets, but rather as both musical instruments and pieces of furniture. Whether playing music or standing silent, we want them to be an intimate part of the home and the people who spend time with them.

www.engstromsound.com

CONTACT

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Hästholsvägen 25,
131 71 Nacka,
Sweden

Company Tel:
+46(0)733705151





ENSEMBLE

DIGITAL SOURCES

- + DAC/Preamps, DAC amps
- + CD/SACD/Bu-ray players/transport

ANALOGUE SOURCES

- + Phono Stages

ELECTRONICS

- + Preamplifiers, Preamp/DACs
- + Power Amplifiers
- + Integrated Amplifiers
- + Integrated Amp/DACs
- + Phono Stages

LOUDSPEAKERS

- + Stand-Mount Monitor
- + Floorstanding Speakers

CABLES

- + Analogue Interconnects
- + Digital Interconnects
- + Loudspeaker Cables
- + Power Cables
- + Accessories, Cable Lifts

POWER PRODUCTS

- + Power Strips
- + Power Conditioners
- + Power Cables

ACCESSORIES

- + Equipment Racks,
Audio Furniture
- + Speaker Stands
- + Digital Set-up/Tuning Tools, Accessories



Ensemble products share the exterior trait that users get anchored with them for good. Active since 1986, this often translates into 20+ years of continuous satisfaction.

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www.ensembleexperience.com
www.ensembleaudio.com

CONTACT

Company Address:

PO Box 215;
 Bahnhofstrasse 34,
 4147 AESCH,
 Switzerland

Company Tel:

+ 41 61 461 9191



GOLD NOTE

DIGITAL SOURCES

- + DACs
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- + Streamers, Servers, Wireless Bridges
- + Internet/DAC Tuners
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ANALOGUE SOURCES

- + Turntables
- + Tonearms
- + Phono Stages
- + Phono Cartridges

ELECTRONICS

- + Preamplifiers, Preamp/DACs
- + Power Amplifiers
- + Integrated Amplifiers,
Integrated Amp/DACs
- + Phono Stages

LOUDSPEAKERS

- + Stand-Mount Monitor
- + Floorstanding Speakers

CONTACT

Company Address:

Via della Gora 6,
 Montespertoli,
 Firenze (Italy),
 50025

Company Tel:

+39 0571 675005

Located in Tuscany on the hills surrounding Florence, Gold Note is the only Italian High End Audio manufacturer to offer a complete selection of Turntables, Cartridges and Electronics.

Mechanical Engineer Maurizio Aterini is the brain behind the brand and has been designing and developing audio equipment for over 25 years since he used to work in the OEM/ODM field of the audio industry collaborating with some of the major audio companies worldwide.

In 2012 Gold Note was founded and today it is the largest independent Italian audio company thanks to a highly specialized team of talented professionals that put passion and expertise in every piece of equipment.

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ACCESSORIES

- + Equipment Racks, Audio Furniture

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www.grandprixaudio.com



CONTACT

Company Address:

P.O. Box 1948,
Durango
CO 81302
USA

Company Tel:

+1 970 247 3872



INNUOS

DIGITAL SOURCES

+ Streamers, Servers, Wireless Bridges

Founded in 2009 in the United Kingdom, Innuos designs and manufactures a range of premium music servers and streamers that focus on an amazing user experience just as much as sound quality. We make it effortlessly easy to rip your CDs, store all your music, manage your library and listen to all your favourites through a wide variety of sound systems. Stream from premium music services including Spotify, Tidal, and Qobuz, and enjoy internet radio – all controlled via your tablet or smartphone, no computer required.

Our innuOS operating system is designed to be simple for all users, whilst bringing new levels of audiophile performance to the world of computer audio and HiFi digital sources. From start to finish we strike a precise synergy between hardware and software in our multi-disciplinary team, combining Computer Hardware, Audio Hardware, Networking, and Software engineering expertise.

By working closely with customers and partners we understand the requirements needed in a digital music solution, which has driven our research and development from the beginning.

www.innuos.com

CONTACT

Company Address:
Unit 15, The Venture
Centre, University of
Warwick, Coventry,
CV4 7EZ - UK
Company Tel:
+44 (0) 01793 384048

SPOTLIGHT



INNUOS STATEMENT

WHAT IS IT?

Music Server and Streamer

The Statement is our highest performance server and streamer to date, and is the result of our drive to push the digital audio source to new levels whilst retaining our convenient operation and usability.

Double-enclosure linear power supply

New power supply architecture designed in partnership with Dr. Sean Jacobs.

Separately enclosed AC/DC conversion stage to isolate transformer vibration and EMI emissions.

Regulation stage within main system enclosure to shorten the clean DC power path.

Custom designed components

Innuos-designed USB board with a dedicated 5v power line.

USB and Ethernet re-clocking by independently powered 3ppb OCXO clock for higher precision and lower phase noise.

EMI-optimised motherboard exclusively designed for Innuos.

8 Independent power rails

Reduces electrical noise generated by regulators' voltage conversions.

An individual dedicated power supply for each critical component.

SPOTLIGHT

INNUOS ZENITH MK3

WHAT IS IT?

Music Server and Streamer

A server streamer for audiophiles, offering a premium source for all your digital audio at no expense to simplicity or convenience. Benefitting from trickle-down technology derived from the success of our award-winning ZENith SE, the ZENith Mk3 is designed for audiophiles who want a clearer and wider soundstage to match their high-end HiFi. Like our mid-range ZEN Mk3 that comes before it, the ZENith also benefits from a newly

improved EMI-treated motherboard and tuned asymmetrical isolation but offers a superior level of performance thanks to its Premium Triple-Linear Power Supply with ultra-low noise regulators and premium Mundorf Capacitors, plus a vibration and EMI treated SSD.



SPOTLIGHT



ZENMINI MK3

WHAT IS IT?

Music Server and Streamer

The ZENmini is our gateway server that provides all the benefits of our innuOS operating system, ideal for simple integration into multi-room systems or for those making the first step to a dedicated audio server. Rip, store, manage, play. Simple.

The new Mk3 has a wide range of connectivity

options featuring USB, Digital Coaxial, Optical, and Analogue RCA Outputs, plus a new improved custom motherboard featuring twin-Ethernet ports for network passthrough. Also available to the ZENmini is our new dedicated Linear Power Supply, an optional upgrade companion housed in a matching chassis, offering improved sound quality.

innuos

Beyond Digital

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CEVL manufactures Lavardin Technologies amplifiers and cables, Lecontoure Airline loudspeakers and K-rak audio furniture

www.lavardin.com

CONTACT

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LINDEMANN

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Our vision is a music reproduction which is as natural and authentic as possible and makes us forget the technology involved. In the design process for our products we can build upon a wealth of experience gathered from 30 years of developing loudspeakers, amplifiers and digital sources. At Lindemann new products are created with the help of the most up-to-date design tools and measuring methods. Of course, we employ the latest and finest technologies the market has to offer. Yet the sound result will always come first, for our ears are the most crucial measuring instrument!

www.lindemann-audio.com

CONTACT

Company Address:

Am Anger 4,
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Woerthsee,
Germany

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+49. (0)8153 953390





LINN

LINN PRODUCTS

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- + Tonearms
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Linn design and make the best music systems in the world. Based in Scotland and established in 1973, Linn manufacture everything in-house, from the electronics in their industry-leading Linn DS technology to the loudspeakers found in homes around the world. The iconic Sondek LP12 turntable continues to set the standard for vinyl playback and the latest digital stream players outperform any CD or network music player available.

Linn systems are sold through a global network of specialist retailers who also share a passion for enriching people's lives through music. Linn were awarded a Royal Warrant in 2002 as suppliers of entertainment systems to the Royal Household, and received the Queen's Award for Enterprise in Innovation in 2012.

www.linn.co.uk

CONTACT

Company Address:
Linn Products Ltd
Glasgow Road
Waterfoot
Glasgow - Scotland
G76 0EQ
Company Tel:
+44 (0) 800 001 5111



MERGING TECHNOLOGIES

DIGITAL SOURCES

- + DACs
- + Streamers, Servers, Wireless Bridges
- + Digital Accessories

POWER PRODUCTS

- + Other Power Accessories

ACCESSORIES

- + Power-related accessories

CONTACT

Company Address:
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Puidoux, CH-1070,
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Company Tel:
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Merging Technologies is renowned as a premier provider of high-end professional recording and mastering products for more than 25 years. This expertise has now been transferred to the home with the MERGING+ range. Starting with the MERGING+NADAC in 2015, this high-quality DAC is networked and is DSD256/DXD capable. This has been joined by the MERGING+PLAYER which has identical performance with the addition of a Roon Core. In the quest for the ultimate purity of reproduction, the MERGING+POWER is an optional additional power supply that optimises the conditions for the analogue and digital circuits. The latest enhancement to the range is the MERGING+CLOCK that offers an exceptional instrument-grade crystal oscillator and a Q Damping System. The ULN version achieves an accuracy of +/-10ppb and can offer connectivity to other manufacturers' components. The MERGING+ range has received extraordinary reviews in respected publications worldwide, including *Hi-Fi+*.

<https://nadac.merging.com>



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CONTACT

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ad, Rayleigh, Essex,
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Company Tel:

+44 (0) 01268 740580



neat acoustics

NEAT ACOUSTICS

LOUDSPEAKERS

- + Stand-Mount Monitors
- + Floorstanding Speakers

CONTACT

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29 Harmire Enterprise
Park Barnard Castle
County Durham
DL12 8XT - UK

Company Tel:

+44 (0) 01833 631021



Neat Acoustics is based in Teesdale in the North of England. Founded by Bob Surgeoner, they have been engaged in the design & manufacture of loudspeakers since 1989.

Nearly thirty years on, Neat Acoustics has established a global reputation for consistent products and high levels of customer support, currently supplying to over forty countries.

Bob Surgeoner has spent most of his life playing music in a variety of different styles, such as blues, prog-rock, jazz, folk, country and bluegrass – even punk rock – and is still active in gigging and recording.

Other employees of the company are also musicians, performers, or in sound engineering & recording. So we know how live music sounds, and how recorded music should sound.

With fourteen models and a radical approach to design, Neat are a company that is suitably different offering a refreshing alternative in a 'me too' market. Listening is free!

www.neatacoustics.com

NORDOST

MAKING THE CONNECTION

NORDOST CORPORATION

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- + Analogue Interconnects
- + Digital Interconnects
- + Loudspeaker Cables
- + Power Cables
- + Personal Audio Cables
- + Accessories, Cable Lifts

POWER PRODUCTS

- + Power Strips
- + Power Cables
- + Grounding Systems, Noise Filters
- + Other Power Accessories

PERSONAL AUDIO ELECTRONICS

- + Accessories

ACCESSORIES

- + Analogue Set-up/Tuning Tools, Accessories
- + Digital Set-up/Tuning Tools, Accessories
- + Power-related accessories

For over 25 years, Nordost has been pushing "sonic boundaries" so that audiophiles can achieve their ultimate goal: great sound. Nordost has built a reputation on embracing a comprehensive approach to cable design — taking material, geometry, and performance into account with every product we develop. Nordost believes that although cables naturally act as filters, it is our aim as cable manufacturers to filter the sound as little as possible, leaving the listener with an impression of the music, not the cabling. To accomplish this goal, all Nordost cables employ a low mass cable design with optimal signal transfer and perfect impedance matching. Nordost puts a premium on research. It is through this research that we have become a vanguard of our industry, developing proprietary technology and specialized techniques that have continually put us a step ahead of our competitors. All of Nordost's products are produced using extremely precise, meticulous procedures that ensure the exceptional quality that Nordost has come to represent. From cables to power products to resonance control devices, Nordost provides the foundation needed to achieve great sound.

www.nordost.com

CONTACT

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USA
Company Tel:
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For forty years Stewart Tyler, founder and chairman of ProAc has been designing and manufacturing high quality loudspeakers, initially through Celef Audio, but since 1979 under the ProAc brand name. ProAc loudspeakers now grace the homes of many thousands of music lovers worldwide. From the Tablette to the Response range up to our new K Series we feel we have something for everyone's taste and budget.

www.proac-loudspeakers.com

CONTACT

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Celef Audio International
Ltd, Highpoint House,
Riding Road, Buckingham
Road Industrial Estate,
Brackley, Northants,
UK NN13 7BH

Company Tel:

+44 (0) 01280 700147



SPOTLIGHT

PROAC LOUDSPEAKERS TABLETTE TEN

WHAT IS IT?

*Bookshelf or stand mounted loudspeaker
with a sealed enclosure.*

ProAc Tablette Ten is a tenth generation version of the Tablette's launched in 1979. The Tablette 10 is an all new design, using a thin walled heavy damped infinite baffle enclosure which is the same as the BBC LS3/5a. This design allows the Tablette 10 to be positioned against a wall, unlike a ported enclosure. The Tablette Ten has new cutting edge drive units, the bass driver has a Pagina Mica cone which is reed leaves mixed with Mica and coated with acoustic dope. The crossover has been specially designed for a sealed enclosure and a soft dome tweeter is used as in many of the other ProAc models. We urge people to listen to the Tablette Ten as we are sure you will find the musical presentation of the Tablette 10 intoxicating.



SPOTLIGHT

PROAC LOUDSPEAKER RESPONSE DT8

WHAT IS IT?

Response Range entry level floor stander.

The new Response DT8 is the latest floor standing design to the ProAc Response range of loudspeakers utilising 2x 6.5 inch drivers with cones made from different materials one being Pulp Mica which delivers exceptional bass performance in a ported cabinet with the bass loaded via side vents. The 2nd driver has a Polypropylene cone which gives a smooth, detailed and uncoloured midrange. Both drivers work in tandem resulting in a well extended low frequency response, producing ProAc's signature natural sounding midrange quality and pinpoint imagery. A new cleverly designed crossover seamlessly integrates ProAc's proven 1 inch soft dome tweeter, offset on the front baffle and placed between the two drivers. The new Response DT8 now takes its place in the ProAc range as our entry level floor standing design.



SPOTLIGHT

PROAC LOUDSPEAKER K3

WHAT IS IT?

Floor standing K series Loudspeaker

The K Series range of speakers are called so because of the use of Kevlar in the construction of the drive units. So far we have only used Kevlar and carbon fibre for the bass and lower midrange reproduction in large enclosures. These cones have a light, stiff quality, the Kevlar has more warmth making excellent bass transients and extension. Cone material is something ProAc have been developing over the last fifteen years with an emphasis on Carbon fibre and Kevlar. A new Kevlar cone was developed which would work into the midrange far better than previously. This new Kevlar drive unit was developed for the K3 and has excellent weight to the bass as well as good extension with a detailed and uncoloured midrange. In the K3 two of these new Kevlar units are used with our ribbon tweeter placed centrally, which results in the K3 having a wonderfully electrostatic type of midrange, very clear and detailed with a dynamic bass response. We are sure the K3 will give customers who desire music from full orchestral to loud rock the desired results with ease.





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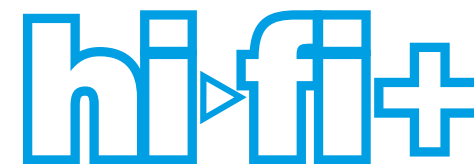
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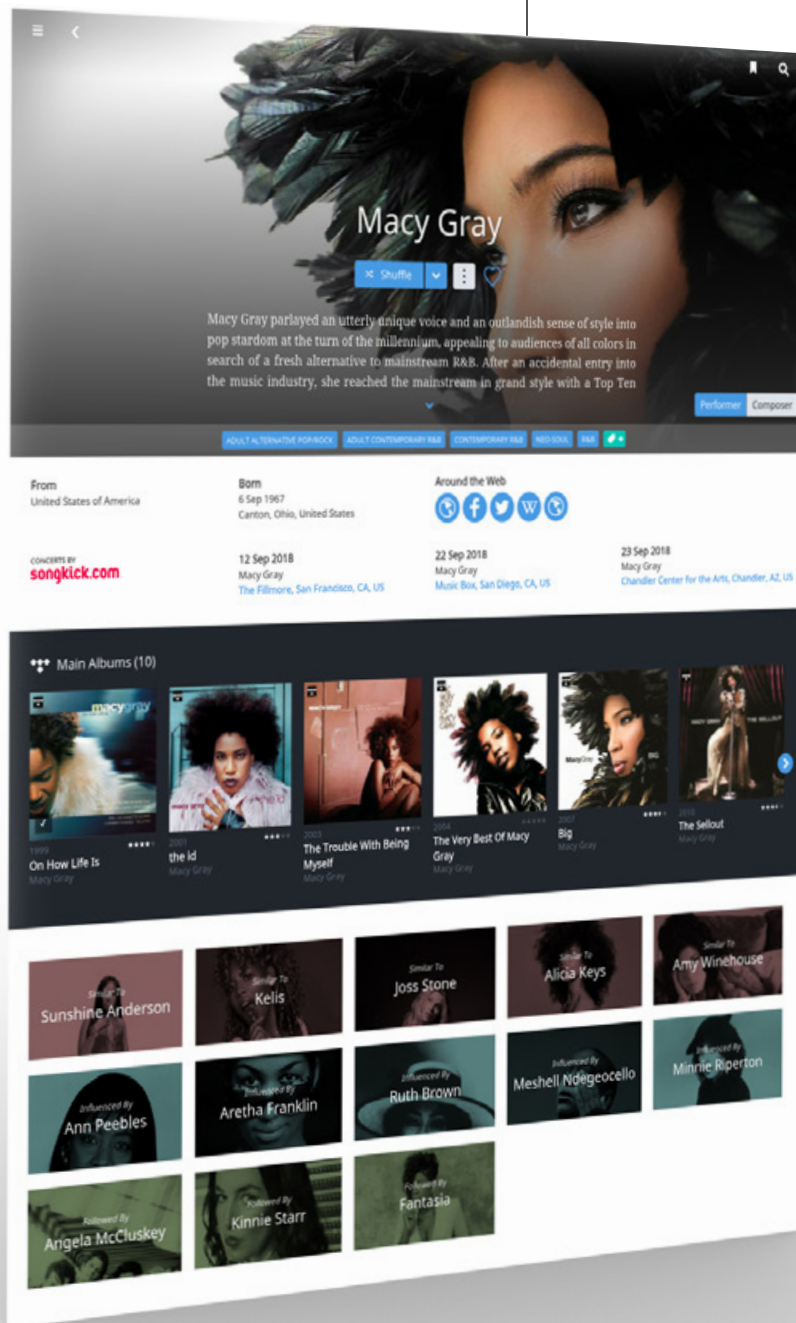
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SHUNYATA RESEARCH

CABLES

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- + Loudspeaker Cables
- + Power Cables
- + Accessories, Cable Lifts

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- + Power Strips
- + Power Conditioners
- + Power Cables
- + Grounding Systems, Noise Filters
- + Other Power Accessories

ACCESSORIES

- + Power-related accessories



Shunyata Research was founded by former military scientist Caelin Gabriel in 1998 with the goal of designing power-line and cable systems that would eliminate the deleterious effect noise has on high resolution sound and visual imaging systems. Guided by Gabriel's use of measurement, innovative science, and his many patents, Shunyata has grown to become one of the most professionally endorsed cable and power-product manufacturers in the audio/video industry. Shunyata's factory is located across the Puget Sound from Seattle, in Poulsbo, Washington. Shunyata's factory has 18,000 sq. feet of work space and offices to support 18 employees, most of whom have been with the company since its inception. Best

known for using credible science and extreme parts customisation to deliver products with the absolute highest performance and value, Shunyata Research has proven instrumental in advancing the state of high performance power conditioning and system cabling in both the audio and medical industries.

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www.shunyata-uk.com

SPOTLIGHT

UK DENALI 6000/T

WHAT IS IT?

Power conditioner providing exceptional noise reduction whilst at the same time improving instantaneous current delivery

The UK Denali 6000/T features a number of patented technologies (also used in medical imaging by Shunyata Research's sister company CIS) and proprietary components not available in any other products. QR/BB™ technology (US 10,031,536) improves system dynamics and NIC™ technology (US 8,658,892 and US 6,242,698) reduces high frequency noise without any of the reactive negatives associated with transformers, coils, and large capacitors. A non current-limiting electromagnetic breaker and massive internal wiring allow it to power entire systems including high-powered amplifiers. In addition its latest generation CCITM v4 medical-grade filters reduce noise by an astounding -60db at 1 MHz. 40,000 amps of surge and transient control are provided by the Trident module, a single field-replaceable module which also includes fault detection circuitry and LED status indicator.



SPOTLIGHT

DELTA NR**WHAT IS IT?**

*Power cable featuring
noise reduction tech*

The Delta NR (Noise Reduction) power cables feature OFE 101 copper, woven into Shunyata's own VTX™ hollow-core conductors, which are then connected to Shunyata's exclusive UK CopperCONN® connector featuring pure copper contacts.

The Delta NR incorporates CCI™ filters that provide power conditioning to each individual component. The AWG 10 gauge conductors make it ideal for both high-power amplifiers and source components.



SPOTLIGHT

VENOM UK6**WHAT IS IT?**

*High performance
power distributor*

The VENOM UK6 is a six outlet high performance power distributor designed to power entire systems including high power amplifiers. The non current-limiting electromagnetic breakers combined with massive 6 mm² gauge internal wiring

maximise instantaneous current delivery. 40,000 amps of transient protection and noise reduction is provided by the Trident module and a CCI filter reduces noise by more than -24dB from 100 KHz to 10 MHz.

TAP Polarizer

Method to reduce polarization distortion in a signal cable.
Patent Pending

SHUNYATA RESEARCH: US PATENTS

Method to reduce distortion in an audio cable using ferroelectric substances.

Patent Number:
US 6,545,213

Method to eliminate RFI, EMI and other interference in a power supply.

Patent Number:
US 7,196,892

Power conditioner that actively corrects A.C. line harmonic distortion.

Patent Number:
US 7,256,638

Cable elevator that neutralizes static electric interference.

Patent Number:
US 7,694,917

Device that reduces AC power line noise using ferroelectric substances.

Patent Number:
US 8,658,892

Method to reduce dielectric distortion in signal transmission cables.

Patent Number:
US 8,912,436

Method to improve instantaneous current delivery in an AC to DC power supply.

Patent Number:
10,031,536

PATENTED SCIENCE. OBSERVABLE MEASUREMENTS. DEFINITIVE RESULTS.

Shunyata Research's many published patents and objective measurements stand out in an industry where price inflation and hyperbole have become the norm. From the world's finest recording studios to life-saving medical imaging systems, Shunyata Research delivers on the promise of scientific innovation and dramatic results. Following, are the hallmarks of a company committed to patented science, measurements and definable achievement.



Shunyata Research Inc.
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DFSS™

Patent Number: US US 7,694,917



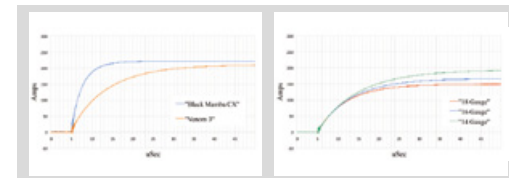
NIC™

Patent Number: US 8,658,892

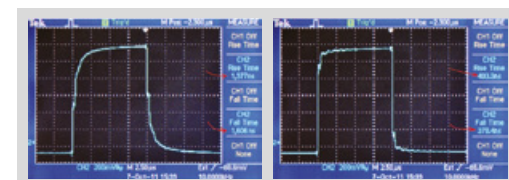


QR/BB™

Patent Number: 10,031,536

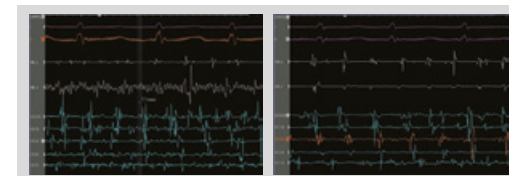


DTCD™ Measurement Comparisons



ETRON™ Measurement Comparisons

(Before & After)



Inter-Cardiac Tracing Comparisons

(Before & After)



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SILTECH

International Audio Holding is the company behind the renowned high end audio brands Siltech and Crystal Cable. Though both are experts in high end cables and share the same research, technologies, and production facilities they each have distinct characteristics and styles. Siltech focusses heavily on its technology while Crystal Cable perfectly combines that with design and lifestyle. With a still widening range of products besides cables - like loudspeakers and amplifiers - Siltech and Crystal Cable keep innovating and improving to always achieve their mutual and ultimate goal: creating products of the highest sound quality coming as close as possible to live music.

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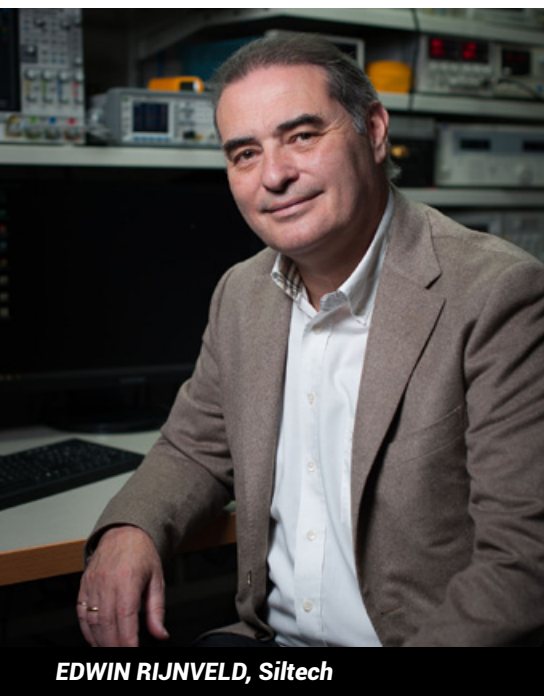
SPOTLIGHT

SILTECH TC

Siltech's Triple Crown series set a new benchmark for interconnect, speaker - and power cable performance. A new topology, the Air Cradle Construction, combines massive mono-crystal silver conductors with ultra low-density insulation created from a complex Teflon matrix, to deliver incredibly low inductance, resistance, and capacitance. This ensures absolute geometrical and mechanical consistency, no matter how the cable is curved. But it's not just a mechanical and electrical optimization of the cable, the Triple Crown

connectors are just as radically new. Their solid mono-crystal silver contacts provide perfect material continuity through the cable and connector, while the revolutionary two-part asymmetrical design of both the XLR and RCA self-centres and mechanically clamps the contacts. All resulting in a vanishingly low-loss cable performance.





EDWIN RIJNVELD, Siltech



SPOTLIGHT

SILTECH CROWN PRINCESS & PRINCE

To commemorate 35 years of cable excellence, Siltech introduced the Crown Princess interconnect cable. A pure and advanced monocrystal silver conductor cable combining many of our inventions and demonstrating our development. We believe its outstanding musicality is yet another proof of our concept. Its fantastic performance made it an easy decision to develop a brother: the Crown Prince speaker cable. Built on the same foundation of monocrystal silver

conductors, our own connectors and high-grade insulation materials, they perfectly work together to get the best out of your system.

Technological advancements and extensive research have brought Siltech's products to a whole new level, but our eagerness to reach higher remains the same; because as technology and our level of knowledge develops, our definition of perfection develops too.





SILTECH C1 PREAMPLIFIER

hi-fi+ REVIEW FROM: MARCH 2011 ALAN SIRCOM

Reviewers can wax lyrical and philosophical. Sometimes, as a method of padding out a review. Sometimes though the navel gazing is a vital part of defining the nature of the product. That's the thing about the Siltech C1 preamp.

Hang on a second... Siltech making a preamplifier? Isn't that like Nordost making a CD player, or Transparent making a record deck? Knowing the guy behind Siltech goes some way to explaining the appearance of a preamplifier among the well respected cables. Edwin van der Kley could be an engineer straight out of central casting; when you speak to him, you expect him to pull out a slide rule, even if to calculate the correct angle of French fry placement. Like any good engineer, he's going to have an engineering solution on absolutely everything, and the place where engineers in audio feel there's a gap in the market is in the production of a really good preamp. In fact, the C1 is merely the first in the SAGA line of audio electronics from the brand.

Edwin's take on the really good preamp is to build essentially a very traditional minimal hard-wired valve line preamp inside a very advanced logic controlled and battery powered chassis. It uses new old stock of a little-known valve that was only manufactured for a few years at the end of the golden age of tubes, point-to-point wired with monocrystal cables, and there is the absolute minimum of components in the signal path.

The four valves are all ECC86 double triodes. The story behind these tubes is fascinating in its own right. The ECC86 was only manufactured between 1959 and 1962 and designed for a very specific purpose. Back in the mid 1950's, car manufacturers were keen on fitting in-car radios to the latest chrome fantasy machines. The car industry wanted to fit the then-new transistors to these in-car systems, but those early solid-state devices weren't necessarily as reliable or as good

sounding as their hollowstate equivalents (most commercially available transistors in the 1950's used pure germanium instead of silicon, alloys or compounds as their semiconductor material; in pro audio circles, one of the most visible uses for germanium transistors was in the manufacture of fuzz boxes for guitars... so perhaps they had a point). So, the car industry commissioned a new valve specifically for purpose, needing to be low distortion, low powered with attendant long lifespan and very low microphony. The ECC86 was born, but was sadly short-lived, because solid-state devices quickly caught up and by the time The Beatles hit the charts, car radios were all transistorised.

Nevertheless, the ECC86 is perhaps the ideal preamp valve. It's got a 10,000 hour life expectancy, there's that low distortion and very low microphony, and the fact it was designed to work within the confines of a 6V or 12V car system means it doesn't come with crazy rail voltages. But somehow, it never got picked up; no-one makes them now, and every other preamp uses devices like the ECC82 or ECC83 instead. This has built legends around the valves – such as which brand of valve sounds best (as they were all built to the same spec off the same production line, variations are practically non-existent, but when did reality

get in the way of a good story?). But the fact remains Siltech has spent the last few years buying up remaining stocks of the Telefunken ECC86, so the 50 C1 users will have spares for a long, long time. Let's face it, the chances of a new batch of ECC86 appearing are slim.

The preamp within a preamp part is that the power and logic control circuitry are all entirely separated from the ultra-minimalist audio signal path. Given the audio circuit is the sort of thing that could be understood by an amp engineer of half a century or more ago, the control and power chains are state of the art. Things like a counter on under the rightmost vent, that shows you elapsed valve life, and things like battery power. The C1 has two big blue power switches, the left one is the conventional power button, the right one is marked 'forced charge' and switches the preamp between running off mains while charging the 25v batteries and running on batteries alone. The good thing is these are off-the-shelf batteries, with a five-year plus lifespan; finding replacements should not be difficult, even if for some reason you chose not to send the preamp back to Siltech. Battery power in tube preamps ▶



SILTECH C1 PREAMPLIFIER **REVIEW FROM:** MARCH 2011



is not unheard of, but the 6.3v heater voltage of the ECC86 makes battery life easier to contemplate.

The logic circuit drives the five single-ended and one balanced line inputs (all using Siltech connectors and using monocrystal wire throughout, naturally) and single-ended and balanced outputs. It also drives the rotary volume controller. The preamp's medium-to-high input impedance and medium-to-low output impedance makes it good for highlighting differences between cables, but not so divorced from convention that the preamp threw up problems for other connected products. I would put a practical limit of about 5m from preamp to power amp (presuming

single-ended connection and high input impedance on the part of the preamp... guaranteed in most cases). Naturally Siltech's own monocrystal cables seem an obvious match for the C1, although I couldn't help thinking I prefer Crystal Cable's Piccolo Diamond cables, despite being considerably cheaper. Still, given the connection (Crystal Cable is run by Edwin's wife, Gabi) we really aren't falling far from the tree. A Logitech remote is provided.

The preamp doesn't sound like a valve preamp, it sounds more like the best of solid-state. Now's the time for that philosophical aside. Does it matter? Will people buy a valve preamp that doesn't

**“THE PREAMP DOESN'T
SOUND LIKE A VALVE PREAMP,
IT SOUNDS MORE LIKE THE
BEST OF SOLID-STATE..”**

sound 'valvey'? And will someone wanting the best in solidstate preamps buy a valve preamp? I would hope that in reality that the physical devices used in a preamp are immaterial and that the sound is all, but I suspect that some people in the market for a top-end preamp have a pre-conceived set of notions of either tube or solid-state preamp sound, and the C1 challenges them to the very quick.

That's the thing about the C1. It's not valve-like. It's remarkably quiet in use (you could whack the gain up and put your ear to the speakers and hear almost no noise at all) and really, really accurate. Don't expect an

SILTECH C1 PREAMPLIFIER **REVIEW FROM:** MARCH 2011

easy ride for less than perfect sources or low-fi recordings, don't go hoping the C1 acts as a Band-Aid to help improve a system that shuts in imagery or lacks depth or coherence. The C1 gives or expects no quarter.

This makes it a very difficult preamp to judge, because it is a chimera. You find yourself drawing attention to aspects of the sound that you then find attribute to other parts of the chain; the thinness of a source, the topky power amp, even the puffy sound of a capacitive cable. But when the system works properly, the C1 simply vanishes. It's like a passive preamplifier with gain.

And when the system works like that, it's uncanny. You hear into the mix, the compression (musical, signal and data) and the layering and panning of the musical components in the mix are on display. A true window on the recording; play two different recordings and you'll immediately hear the different mixes, even to the point of playing a round of Spot the Producer. So, it's not just getting you closer to the music, it's placing you closer to the mastering and mixdown. And only absolute honesty can do that. It also exposes the idea that many attributes attributed to good systems (most notably timing) should be a function of the recording and not the electronics; when a recording has good timing, it comes through well here, and when it doesn't, it doesn't. No imposed beat or compromised timing. It just does what it's supposed to, nothing more, nothing less. What's surprising is how rare this seems by comparison.

I guess all of this could sound like it leaves the music cold and exposed. Stripped of any

attractive artifice, the music played could be left on the slab. That doesn't happen here, although I would imagine those who run the valve preamp gamut from Conrad to Johnson might find this more intellectually stimulating than musically impassioned. But I suspect more will praise it for its integrity than dismiss it for lack of artificial tonal colour. Oddly, if you need a bit more tonal colour, use the C1 with the batteries on charge, rather than battery powered, which can sound a trifle undynamic in the wrong setting.

Perhaps of all audio electronics, the preamp is the easiest part to make and the easiest part to make wrong. There are a lot of mediocre preamps, which either add to or subtract from the sound of the source. This is different; it's almost the traditional goal of 'straight wire with gain', even though it uses valves at its heart. Just 50 of these pieces will be made and those 50 users will be getting the unvarnished truth. Can you handle the truth?

Alan Sircom

SPECS & PRICING

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hybrid construction, they complete each other perfectly. Connectors which used to feature simple construction have become precisely defined interfaces: They are wideband capable, feature no eddy current and no mass storage, have vibration damping elements, and despite this tremendously improved performance they are also environmentally friendly.

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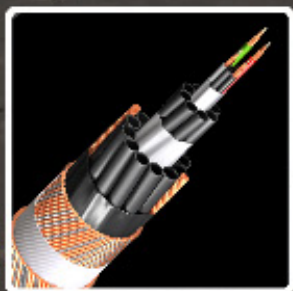
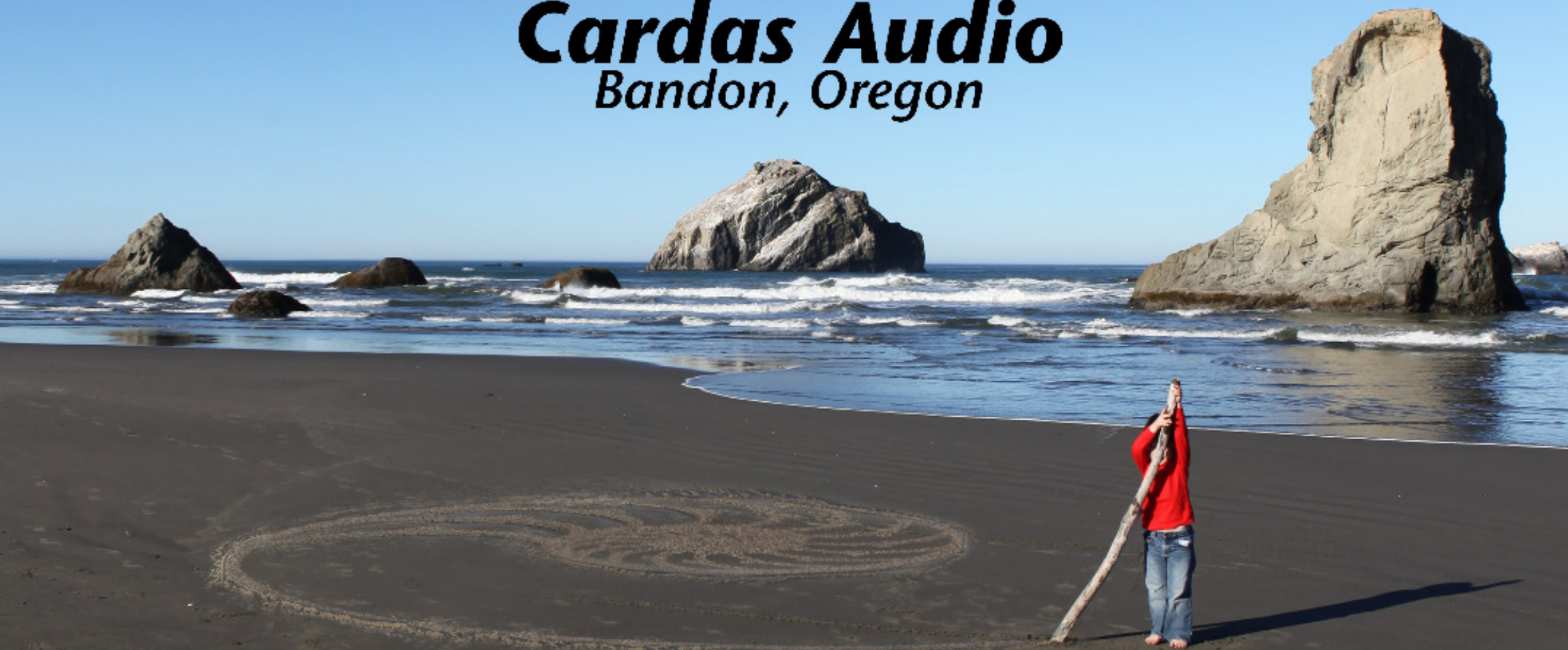
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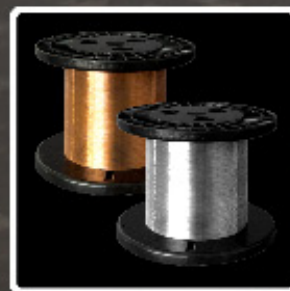
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Ear Speakers