



CODA
CODA AUDIO



Next Generation





Objectives

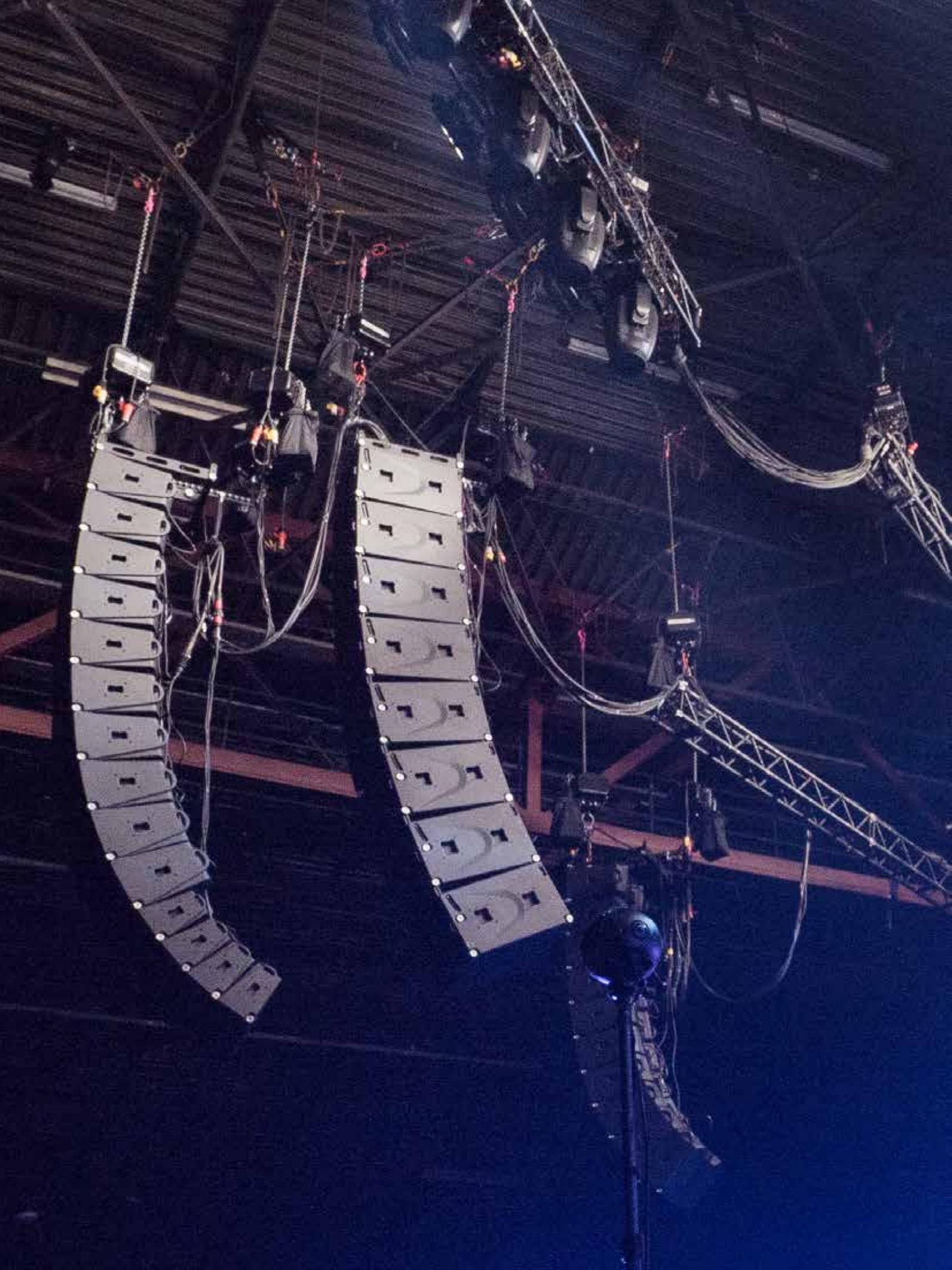
Since the company's inception, the sole objective has been to bring the best possible audio to the masses, and become the number one choice in professional sound systems around the globe. It's easier said than done, of course, but hearing is believing: We want to make a real statement with our products so that Sound Engineers, Installers, Audio Consultants, system engineers, and anyone else with a passion for audio will only see CODA as their go-to brand for any application: music clubs to full-scale international tours, West End and Broadway productions, permanent and temporary installs, AV events, exhibitions, Houses of Worship. No job is too big or too small.

Philosophy

As live shows continue to grow and evolve, so must the sonics. Be it a rock and roll night at the local club or a massive stadium tour, the demand is now universal – deliver great sound. The same can also be said for any music exhibition, theatre production, or AV event: as these productions and setups get bigger, smarter, and bolder, the expectation on the shoulders of the guys and girls flying the faders and specifying the spaces increases, and there are less and less excuses for bad audio.

And that is why CODA Audio refuses to compromise. In order to be number one, you simply cannot afford to be conventional; and when you're talking about sound reproduction, you have to think outside the box to fine tune what will happen inside the box. In CODA's case, it starts with the drivers: a whole new range of bespoke, ultra-efficient drivers, which feature none of the fundamental flaws found in traditional equivalents. In short, it means CODA's sonic prowess is unparalleled, as only the most accurate and pure high-fidelity audio is produced.







The Team

It's one thing having the potential, it's quite another executing that potential, and that's why CODA's key crew members have been carefully selected from the top drawer. It's a passionate and meticulous team effort all round.

From concept to completion, everything is done from scratch at CODA, in fitting with the company ethos: in manufacturing, it's those cool little touches, such as the specially-designed pins that make stacking and arraying the boxes quick and easy, as well as the mind-blowing driver technologies and electronics at the heart of the loudspeakers themselves, that make this company unique – and every piece has been designed and constructed in-house.

Then there's CODA's unique twist on technical support – an area which can so often let a good product down in practice. With technical teams deployed in all key territories for direct customer support and distribution, you'll never be far away from a helping hand. And, of course, people invest in people: Enter CODA's smart-thinking marketing and sales team, and product specialists: a core team of committed, vastly experienced, knowledgeable professionals, all of whom share that same CODA head-space.

DDP & DDC-Driver

DDP & DDC Driver redefines the performance expectations for high-powered reinforcement of mid and high frequencies.

DDP Dual Diaphragm Planar Wave Driver

CODA's patented Dual Diaphragm coaxial Planar wave driver (Fig. 1) and COUPLER technology is at the heart of the high-output, full-range AiRAY and compact ViRAY line array systems.

Discarding the traditional dome diaphragm compression driver design, CODA Audio utilises a two-way coaxial system employing two concentric annular ring diaphragms. Each diaphragm covers a smaller frequency range for increased power handling, high dynamics and extremely low distortion. This Dual Diaphragm coaxial Planar wave driver technology provides several advantages:

Fidelity: Unlike dome diaphragms, annular ring diaphragms feature wings that are smaller than the wavelengths they reproduce. The diaphragms move in phase, creating far less audible and measurable intermodulation distortion than speakers equipped with traditional drivers, especially at high frequencies.

Frequency Range: The outer wings of planar ring diaphragms extend the radius of the diaphragm when compared to traditional compression drivers of equal voice coil size. This greater surface area allows for a lower crossover point and more consistent overall directivity.

Sensitivity: CODA DDP wave drivers are far more efficient than traditional compression wave drivers. They boast 3–5 dB higher sensitivity than the top quality conventional alternatives. The low-profile annular ring diaphragms have a double surround supporting a reduced moving mass resulting in a much stiffer and far more efficient transducer with no breakup modes.



Fig. 1. Dual Diaphragm coaxial Planar wave driver (DDP)

DDC Dual Diaphragm Curved Wave Driver

At the heart of the APS is a patented 9" Dual Diaphragm 20° Curved wave driver (as above and in Fig. 2). Each driver is in fact a 2-way coaxial system employing two concentric annular ring diaphragms. Each diaphragm covers a smaller frequency range for increased power handling, high dynamic and extremely low distortion.

The larger annular midrange diaphragm covers the frequency range 400 – 6500 Hz with a smooth, linear response. The extended diaphragm excursion of max. + / - 0.8 mm results in high output and increased power handling up to 1300 W peak. The ultra light annular diaphragm for the high range offers exceptional transient response with very high efficiency from 6 to 22 kHz.

This distinctive new transducer was engineered to radiate a true coherent 20° curved wave front from a rectangular piston without internal diffraction for superior dispersion control and high fidelity sound.

The patented design is a result of extensive, dedicated research and development providing dramatic improvement in dynamic response, clarity and transparency.



Fig. 2. Dual Diaphragm coaxial Curved wave driver (DDC)

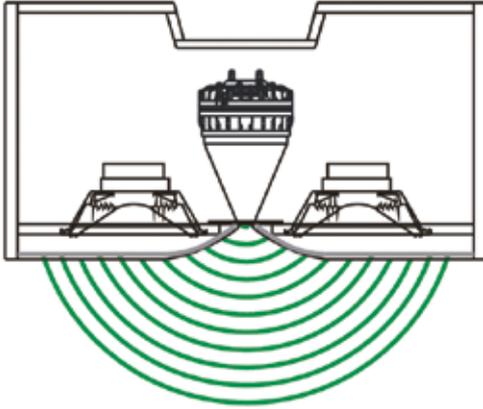
Technology



Couplers

Couplers for AiRAY, ViRAY and APS solve a common problem for Line Arrays.

Coverage: Once the mid and high frequencies behave correctly it is necessary to tackle the inconsistent horizontal coverage of line arrays. A typical narrowing of coverage between 150 and 1000 Hz (Fig. 4) is the main reason users count on a “90 degree” line array for much less than its specifications, leading to extra outfills being specified.



All drivers in CODA line arrays are loaded to a Coupler. This design combines the energy produced and allows the element to perform as a single source without phase destruction, achieving a coherent and uniform wavefront (Fig. 3). The Coupler design also determines the horizontal on-axis and off-axis frequency response (Fig. 5).

Fig. 3. CODA COUPLER behaves as a single waveguide, producing a unified wavefront without diffraction

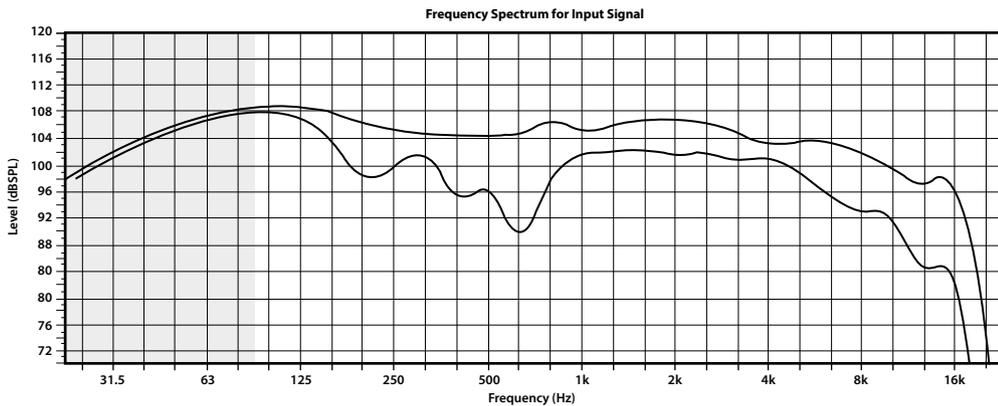


Fig. 4. Frequency response of a typical 90° line array system comprising of 12 enclosures. Upper trace is measured on axis; lower trace is measured 30° off axis

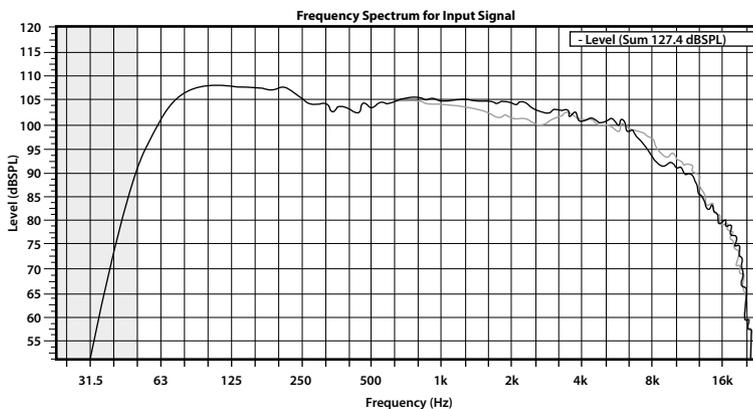


Fig. 5. Frequency response of a CODA line array system comprising of 12 enclosures with ViCOUPLER. Upper trace is measured on axis; lower trace is measured 30° off axis



Technology



Technology



Sensor Control

The performance of subwoofers can be unpredictable due to the non-linear distortion produced by the subwoofer itself, especially under high-power conditions. CODA subwoofers have been designed to overcome this problem. The transducers in CODA's sensor-controlled low frequency elements contain an integrated velocity sensor that measures LF diaphragm movement in real time and compares it with the input audio signal. This proprietary sensor-controlled technology is a self-optimising, closed feedback loop that precisely determines how much power the driver needs to accurately reproduce the original audio signal. Any distortion produced by the driver or the enclosure is instantly corrected.

The result is a line of well-behaved, high-fidelity, high powered CODA subwoofers that allow the system designer to approach low frequency reinforcement with the same detail, sophistication, and confidence as the rest of the audio spectrum.

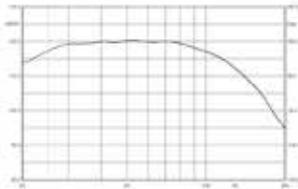
Audio Signal Input



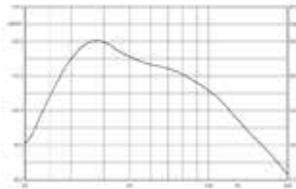
Excursion Sensor



Frequency response

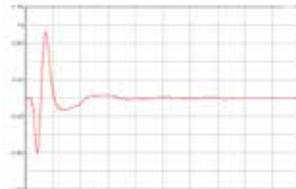


6.1 Sensor controlled woofer incl. LPF 90 Hz 24 dB Link/Riley Frequency response measures 5 cm from the loudspeaker

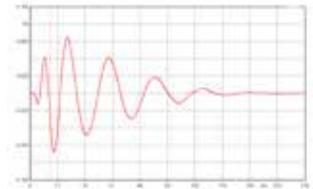


6.2 Conventional port loaded subwoofer including processing Frequency response measured 5 cm from the loudspeaker port

Impulse response



7.1 Sensor controlled woofer incl. LPF 90 Hz 24 dB Link/Riley Impulse response measured 5 cm from the loudspeaker

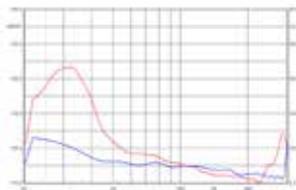


7.2 Conventional port loaded subwoofer including processing Impulse response measured 5 cm from the loudspeaker port

Group delay

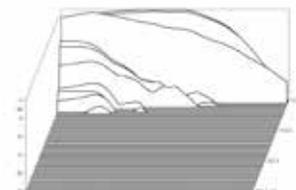


8.1 Sensor controlled subwoofer incl. LPF 90 Hz 24 dB Link/Riley Group delay measured 5 cm from the loudspeaker

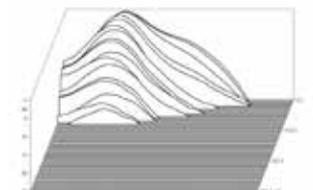


8.2 SC woofer vs. conventional port loaded woofer Group delay measured 5 cm from the loudspeaker port

Waterfall



9.1 Sensor controlled woofer incl. LPF 90 Hz 24 dB Link/Riley Waterfall measured 5cm from the loudspeaker



9.2 SC woofer vs. conventional port loaded woofer Waterfall measured 5 cm from the loudspeaker port



LINUS 14D

ESC

STORE

UP

DOWN



LINUS 14D

ESC

STORE

UP

DOWN



Technology

Phase Linearity

All CODA systems are phase-linear and will work together without compromise. This eliminates the need to apply destructive processing when combining different elements in complex systems (Fig. 10).

- Ease of use
- Compatibility between products
- Fewer potential reliability issues in complex systems
- Better fidelity and more faithful imaging

Attaining phase linearity is no simple task. A heavier processing load with a longer time window (typically 45 – 60 ms) is normally required to achieve a linear phase response that extends to the lower frequency range.

The secret to CODA's DS-FIR is multi-sampling with a combination of filters, each set to a length that is precisely adapted to the virtual and acoustical crossover points. CODA's proprietary combination of filters results in a loudspeaker system with incredible fidelity throughout its operating range and a reduced latency of 11 ms that is acceptable in PA practice.

While many of today's professional loudspeakers feature a linear frequency response — exhibiting a frequency response that remains the same regardless of output level — very few feature a linear phase response, and are often not phase-compatible with other loudspeakers in their own product lines. Such arrangements require additional, time-intensive system tuning. CODA systems offer linearity not just for each individual element, but for the entire system, right out of the box.

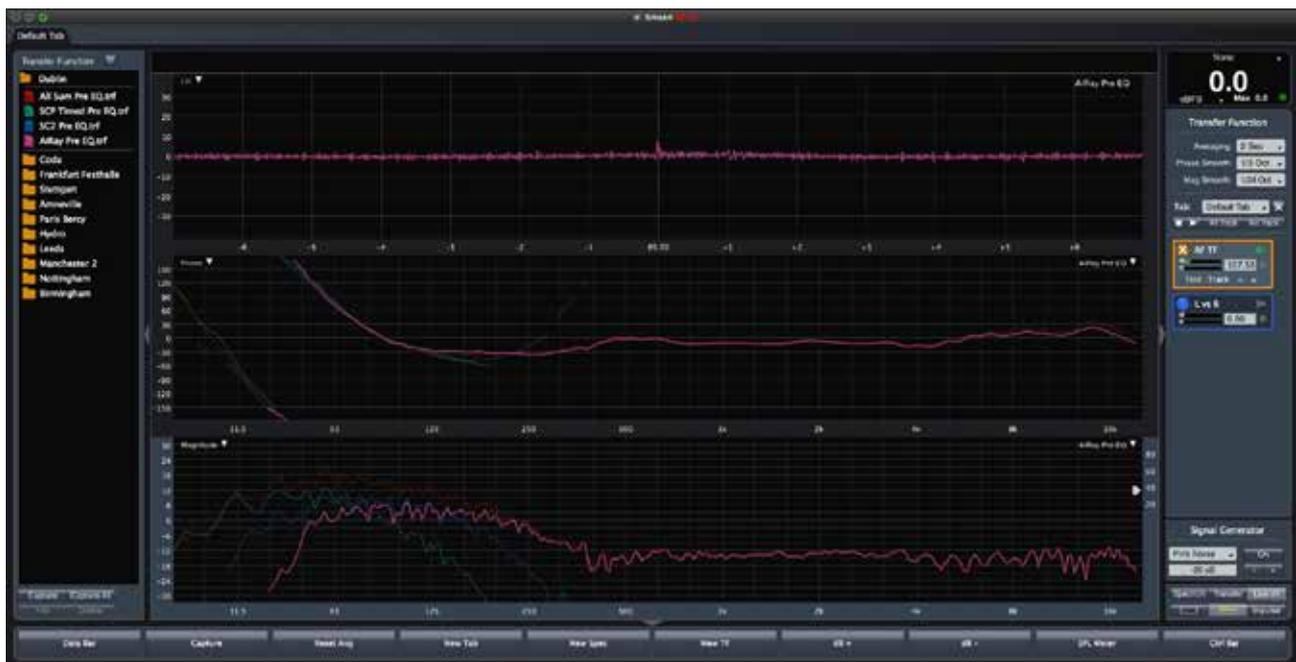


Fig. 10. Impulse response, phase response, and frequency response graphs of AiRAY system. AiRAY (magenta), SC2-F (blue), and SCP-F (green). Sum trace is shown in red. Measurements taken in an arena 30 m from the system, with no processing applied.

Line Arrays

AiRAY Series

High Output, Full Range Line Array System

Audio quality, power, efficiency, size and weight are the key determinants of sound system choice.

CODA Audio's Line Arrays meet the combined requirements of these criteria ahead of any other manufacturer. With our patented DDP driver (Dual Diaphragm Planar wave driver) and SC (Sensor Controlled) subs, CODA Audio leads the way in meeting the exacting demands of today's global market.

CODA Audio has a range of line array systems which cover every type and scale of application. For small venues of every kind, the ultra-compact TiRAY delivers unparalleled high fidelity and intelligibility. In medium to large venues ViRAY continues the theme of exceptional clarity with high SPL, whilst AiRAY sets a completely new standard in power and flexibility to cover everything up to Arena and Stadium applications. Unique to CODA is that the form factor (width-wise) of both ViRAY and AiRAY is identical, allowing them to be flown in the same hang. Further to that, the sensor controlled bass extensions also share the same form factor. This enables them to be flown in the same hang or directly behind, avoiding interference with sight lines to video screens and stage sets. Their flexibility, adaptability and sheer quality, makes CODA Audio line arrays the perfect multi purpose systems for any rental or installation company.



TiRAY Series

Small. Powerful. Flexible.

ViRAY Series

Compact Line Array System



AiRAY Series

From epic stadium shows to arena tours, rock and roll clubs to intimate theatre settings, mega-churches to large corporate events, AiRAY will deliver, and some. CODA's flagship is a three-way, full-range line array system, but with a seriously cool twist.

AiRAY is different: It's louder and prouder than any conventional large-format system, and vastly more accurate sonically, yet its shell is one you'd ordinarily associate with a way more compact system. AiRAY is unique: It cannot be pigeon-holed due to its uber-intelligent proprietary technologies, so this box literally creates a new category in large-scale reinforcement, delivering a genuinely unique audio experience.

Every FOH engineer is used to the familiar distortion found in systems and at soundcheck this seems acceptable. However, as the night goes on and the system gets louder, as do the band, this becomes a major problem. Instruments fighting with each other through the distortion that is inherent in conventional drivers. This creates havoc for the FOH engineer trying to keep a stable coherent mix. That literally cannot happen with AiRAY. And that's all down to what's under the hood.

AiRAY is fitted out with the best of the best in CODA's advanced technologies: the DDP-Driver (Dual Diaphragm Planar wave driver), the AiCOUPLER, award-winning sensor controlled subwoofers, and linear phase DSP processing.

So what does this mean? A few things, actually.

Because AiRAY can be rigged by one person, you can take a conventional 2 x 12 inch line array system spec, and halve everything. AiRAY is half the size, half the weight, takes half the setup time, takes up half the space, and uses half the amplifier channels and multicore cables as any conventional system, yet it retains its full output and bandwidth.

And because AiRAY shares the same system components as ViRAY (SC2-F low extension and SCV-F flyable sub, for example), costs for touring or installs is vastly reduced.

At the heart of AiRAY are its two super-smart 6 inch DDP drivers. In a nutshell, they improve directivity and efficiency massively: rather than your double - 12 lows, 6.5 inch midrange speakers, and compression drivers for the highs, CODA's mids and highs are captured in one small transducer, which allows for 12 - 15 dB more headroom than a standard system.

Also, each DDP driver is a two-way coaxial system with two concentric ring diaphragms instead of domes, where all pieces of the diaphragm are very close to the voice coil. So when the voice coil moves, the diaphragm moves as a piston, because the wavelength is larger than the diaphragm itself; and that means it can constantly accept the wavelengths without any distortion. In other words, it delivers the purest audio you can get. And because there are two diaphragms on the ring (one inside the voice coil, one outside), it's actually



Fig11. Transportation of AiRAY (top) versus competing 2x12" line array (bottom)

larger than a dome. The higher frequencies are produced from one diaphragm, and for the lows, both diaphragms are working in phase.

Talking of low-end, the AiRAY has double 12 inch neodymium cone drivers with 4 inch coils. They're long excursion drivers with high flux linear motors, which means they're extremely efficient, and provide ultra-low distortion, with reduced power compression. The carbon fibre diaphragm minimises the moving mass, and improves cone stiffness and internal damping, which results in high sensitivity, and pristine sonic clarity.

Then there is the AiCOUPLER, which basically sums all the energy from the transducers into a large mutual horn. This occupies the entire front of the cabinet, which means there is no phase destructions, and users will get a perfectly coherent and uniform wavefront, power response, and directivity over a wide frequency range.

The large waveguide for the two DDP drivers means perfect acoustical loading can be achieved right down to 350 Hz, along with supreme horizontal pattern control in the mids and highs.

The two 12 inch cone drivers are symmetrically loaded to the AiCOUPLER using optimised slots to increase the distance between their acoustical centres. This means there is consistent coverage down to 250 Hz, and additional sensitivity of 6 dB over 200 Hz. At the rear, the two cone drivers are port loaded, to extend the low range of the system down to 50 Hz.

The two DDP drivers work from 350 Hz all the way to 22 kHz, while the double 12 inch drivers work from 50 Hz to 700 Hz. And in the 350 - 700 Hz range, all the drivers work together, which dramatically increases the maximum SPL of this unique system.



AiRAY Series



AiRAY Line Array

High Output, Full Range Line Array System

Exceptionally compact, 2 x 12", 3 - way high output system with high power handling of 2000 W

The AiRAY is a fully integrated compact 2x 12" / 3-way line array system, designed for wide varieties of applications where high output, even coverage and outstanding intelligibility is required. The AiRAY unique package brings together the high output of a large system with the flexibility of a compact system creating a new category in large reinforcement systems.



SC2-F

Sensor Controlled Bass Extension

Compact 2x 15" sensor controlled bass extension, extended frequency range 35 - 200 Hz (-6 dB)

The SC2-F is NOT a subwoofer, it is a sensor controlled bass extension system operating in the range 35 - 200 Hz which overlaps both the low range of AiRAY, ViRAY and the SCV/SCP subwoofers providing essentially more energy and control in the lower range of the system.



SCP-F

Sensor Controlled Subwoofer. High Output 2 x 18" Sensor Controlled Subwoofer

2 x 18" extreme high excursion woofers, integrated velocity sensor measures the voice coil movement

The SCP-F is perfectly suited as a subwoofer for touring systems, extending the performance down to 25 Hz. SCP-F is also an addition to AiRAY High Output line array systems. Typical applications are touring sound, theaters, houses of worship, dance clubs and live sound venues.



LINUS T-RACK

12 Channel Touring Rack

3 x LINUS14D amplifiers in a 10U heavy-duty rack

19" / 10U System Rack including 3 x LINUS14D, LINUS PAN-T, Internal Cable set, PDU-T



LINUS RACK40

8 Channel Touring Rack

4 x LINUS10 amplifiers in a 11U Touring Case

19"/11U System Rack including 4 x LINUS10, LINUS PAN8, Internal Cable set, PD32-6





ViRAY Series

ViRAY is just as at home on a touring production as it is inside any live venue or installation. The fact this compact 3-way box is exactly the same width as CODA's flagship AiRAY system means it can also serve perfectly as a down-fill to its bigger brother, making it the ultimate companion, as well as a flexible and powerful line array solution in itself.

ViRAY shares many of AiRAY's unique CODA technologies, which means it packs a similar punch, but in a smaller footprint. These include the DDP Driver (Dual Diaphragm Planar wave driver), the ViCOUPLER (which sums all the energy from the transducers into a large mutual horn, allowing for a perfectly coherent and uniform wavefront, power response, and directivity over a wide frequency range), award-winning sensor controlled subwoofers, and linear phase DSP processing.

Furthermore, ViRAY's system components – such as the SC2-F low extension, and SCV-F flyable sub are also compatible with AiRAY, therefore costs for touring or installs is vastly reduced.

At the heart of ViRAY is its unique 8-inch coaxial mid/high planar wave driver, and dual 8-inch neodymium ultra low distortion cone drivers, which deliver increased power and flexibility, and outstanding intelligibility; this all comes courtesy of the drivers' high flux linear motors and triple demodulation rings. Again, all unique to CODA.

ViRAY's small footprint and lightweight frame makes it as easy to rig as it is to plug and play, and what's also cool is, up to 24 of these units can be flown or ground stacked, thanks to CODA's smart integrated rigging system. Better still, a built-in passive crossover means multiple units can be driven by a single channel of CODA's proprietary LINUS14D 4-channel DSP amplifier.

The real beauty of ViRAY is, it works for everyone: whether deployed on its own, coupled with one of CODA's super-smart subs, or as AiRAY's trusted wingman, you will always be guaranteed pure, unparalleled, transparent audio, and the truest low end, whether you're working on a major tour, a theatre production, a rock and roll show in a music club, or an installation.

ViRAY Series



ViRAY Line Array

Compact 3-way Symmetrical Line Array System

Unique 8" coaxial mid/high planar wave driver, Dual 8" neodymium ultra low distortion cone drivers

The ViRAY is a compact 3-way symmetrical line array module, designed for small to medium venues where high fidelity sound and outstanding intelligibility is required.



SC2-F

Sensor Controlled Bass Extension

Compact 2 x 15" sensor controlled bass extension, extended frequency range 35 - 200 Hz (-6 dB)

The SC2-F is NOT a subwoofer, it is a sensor controlled bass extension system operating in the range 35 - 200 Hz which overlaps both the low range of ViRAY, AIRAY and the SCV/SCP subwoofers providing essential more energy and control in the lower range of the system.



SCV-F

Compact 18" Sensor Controlled Subwoofer

Compact 18" sensor controlled subwoofer, extended frequency range down to 25 Hz (-6 dB)

The CODA Audio award winning sensor controlled technology is extended with the compact SCV-F subwoofer. Combining a closed feedback-loop control with large, low noise laminar flow ports the SCV-F subwoofer offers increased output and well controlled response.



SCP-F

Sensor Controlled Subwoofer High Output 2 x 18" Sensor Controlled Subwoofer

2 x 18" extreme high excursion woofers, integrated velocity sensor measures the voice coil movement

The SCP-F is perfectly suited as a subwoofer for touring systems, extending the performance down to 25 Hz. SCP-F is also an addition to High Output line array systems. Typical applications are touring sound, theaters, houses of worship, dance clubs and live sound venues.



LINUS M-RACK

Compact 4 Channel Rack

1 x LINUS14D amplifier in a 3U Case

19"/3U Mobile Rack including 1 x LINUS14D, LINUS PAN-M, Internal Cable set



LINUS T-RACK

12 Channel Touring Rack

3 x LINUS14D amplifiers in a 10U heavy-duty Rack

19"/10U System Rack including 3 x LINUS14D, LINUS PAN-T, Internal Cable set, PDU-T

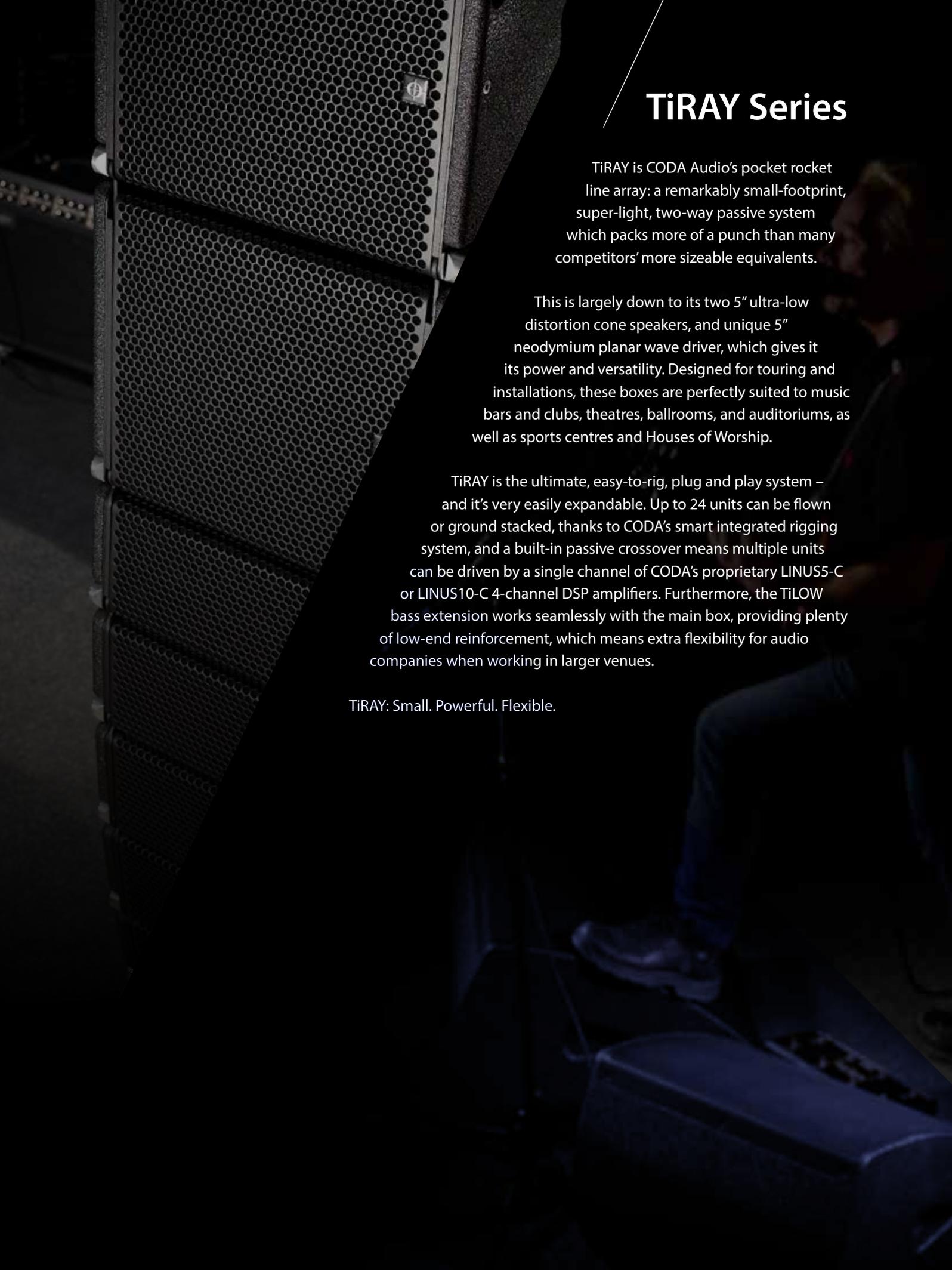


LINUS RACK40

8 Channel Touring Rack

4 x LINUS10 amplifiers in a 11U Touring Case

19"/11U System Rack including 4 x LINUS10, LINUS PAN8, Internal Cable set, PD32-6



TiRAY Series

TiRAY is CODA Audio's pocket rocket line array: a remarkably small-footprint, super-light, two-way passive system which packs more of a punch than many competitors' more sizeable equivalents.

This is largely down to its two 5" ultra-low distortion cone speakers, and unique 5" neodymium planar wave driver, which gives it its power and versatility. Designed for touring and installations, these boxes are perfectly suited to music bars and clubs, theatres, ballrooms, and auditoriums, as well as sports centres and Houses of Worship.

TiRAY is the ultimate, easy-to-rig, plug and play system – and it's very easily expandable. Up to 24 units can be flown or ground stacked, thanks to CODA's smart integrated rigging system, and a built-in passive crossover means multiple units can be driven by a single channel of CODA's proprietary LINUS5-C or LINUS10-C 4-channel DSP amplifiers. Furthermore, the TiLOW bass extension works seamlessly with the main box, providing plenty of low-end reinforcement, which means extra flexibility for audio companies when working in larger venues.

TiRAY: Small. Powerful. Flexible.



TiRAY Series



TiRAY Line Array

2 - way Full Range Line Array Module

2 - way full range line array, 300 W,
2 x 5" ultra low distortion cone
drivers + 5" HF neodymium planar
wave driver

The TiRAY is an ultra compact, passive two-way full range line array module, designed for small venues where high fidelity sound and outstanding intelligibility are required. The system contains two 5" ultra low distortion cone speakers and a 5" neodymium planar wave driver.



LINUS M-RACK

Compact 4 Channel Rack

1 x LINUS14D amplifier in a 3U case

19" / 3U Mobile Rack including
1 x LINUS14D, LINUS PAN-M,
Internal Cable set



LINUS10-C

4 Channel Loudspeaker
Management Amplifier

Integrated DSP, network and
amplifier solution, High efficiency
Class D amplifier engine

19" / 2U 4 channel DSP amplifier for
fixed installations, small touring and
portable applications, delivers
4 x 2500 W / 2 Ohms



TiLOW Line Array

Ultra Compact Bass Extension
For TiRAY

**Ultra compact 12" bass extension,
Extended frequency range 44 -
500 Hz (-6 dB)**

The TiLOW is NOT a subwoofer, it is a bass extension system operating in the range 44 - 200 Hz which overlaps both the low range of TiRAY and the subwoofers providing more essential energy and control in the lower range of the system.



Sensor Controlled Subwoofers

CODA Audio takes subwoofers to the next level with our sensor controlled SC Series. The technological breakthrough contained within these patented designs is highly significant.

The presence of a patented velocity sensor in the driver, with a feedback loop comparator, reduces total harmonic distortion by an amazing 80 - 90% at low frequencies, giving extended frequency response.

In turn, group delay is drastically reduced to deliver extremely accurate and musical bass reproduction. This ground breaking technology is housed in a notably compact enclosure, offering very real space-saving advantages in a truck and venue.

Then, as with all CODA SC products, comes the unique driver capabilities: each woofer has a built in 'velocity sensor' within its driver, which measures the exact movement of the voice coil by sending information over XLR cable to the Comparator built in to the LINUS DSP Amplifier about velocity, excursion and speed of the voice coil itself. In turn, the Comparator then compares the original input signal to the movement measurement from the 'velocity sensor', and adjusts the amplifier driving voltage and/or current, so the diaphragm can move the way it should move.

The Comparator brings Total Harmonic Distortion (THD) down by a massive 80 - 90%, which means this speaker can be modified without any equaliser or high pass filters: the Comparator not only compensates for the non-linearities of the speaker, but the frequency response as well.





SCP & SCP-F



The SCP/SCP-F are equipped with two extremely long excursion 18 inch neodymium ultra low distortion woofers with integrated velocity sensor that measure, compare and control cone movements. The neodymium motor delivers extreme high magnetic flux for increased efficiency. The 4 inch voice coil is 50 mm high, ensuring ultra linear excursion of 40 mm / pp at consistent magnetic force. State of the art carbon-fibre cone ensure maximum stiffness and low moving mass. Three aluminium shorting rings reduce inter-modulation distortion; minimise induction variation while reducing thermal compression. This design reduces dramatically the distortion of a typical subwoofer at longer excursion levels, and improves the overall sound quality and performance characteristics of the cabinet. The sensor is in fact an additional voice coil connected to the loudspeakers voice coil in a high precision, magnetically shielded system.

The SCP/SCP-F is the perfect LF extension extending the system performance down to 25 Hz; and also as an extension to the AiRAY line array. It's perfect for a wide variety of applications: tour sound, theatres, Houses of Worship, dance clubs, and small music venues.

SCV-F

At the core of SCV-F (which works in Cardio or Omni mode) are its very efficient, high output double 18-inch long neodymium excursion woofers, which provide a completely flat response down to 20 Hz (-6 dB), and hardly any distortion at all.

SCV-F was primarily designed to be the perfect LF extension to CODA's ViRAY line arrays, though it is also suited for a variety of applications in touring and installations, particularly where small footprint, pristine sonic coverage, and controllable bass are paramount.



SC2-F

The SC2-F is NOT a subwoofer, it is a sensor controlled bass extension system operating in the range 35 – 200 Hz which overlaps both the low range of the AiRAY, ViRAY and the SCV/SCP subwoofers providing essentially more energy and control in the lower range of the system. Incorporating dual 15 inch drivers in a compact, vented enclosure it provides a distinctive 15 inch signature punch to the system.

The SC2-F is equipped with two extremely long excursion 15 inch neodymium ultra low distortion drivers with integrated velocity sensor that measures, compares and controls cone movements. The neodymium motor delivers extreme high magnetic flux for increased efficiency. The 4 inch voice coil is 36 mm high, ensuring ultra linear excursion of 26 mm / pp at consistent magnetic force.

State-of-the-art carbon fibre cones ensure maximum stiffness and low moving mass. Three aluminium shorting rings reduce inter-modulation distortion, minimising induction variation whilst reducing thermal compression. This design reduces dramatically the distortion of a typical subwoofer at longer excursion levels, and improves the overall sound quality and performance characteristics of the cabinet.



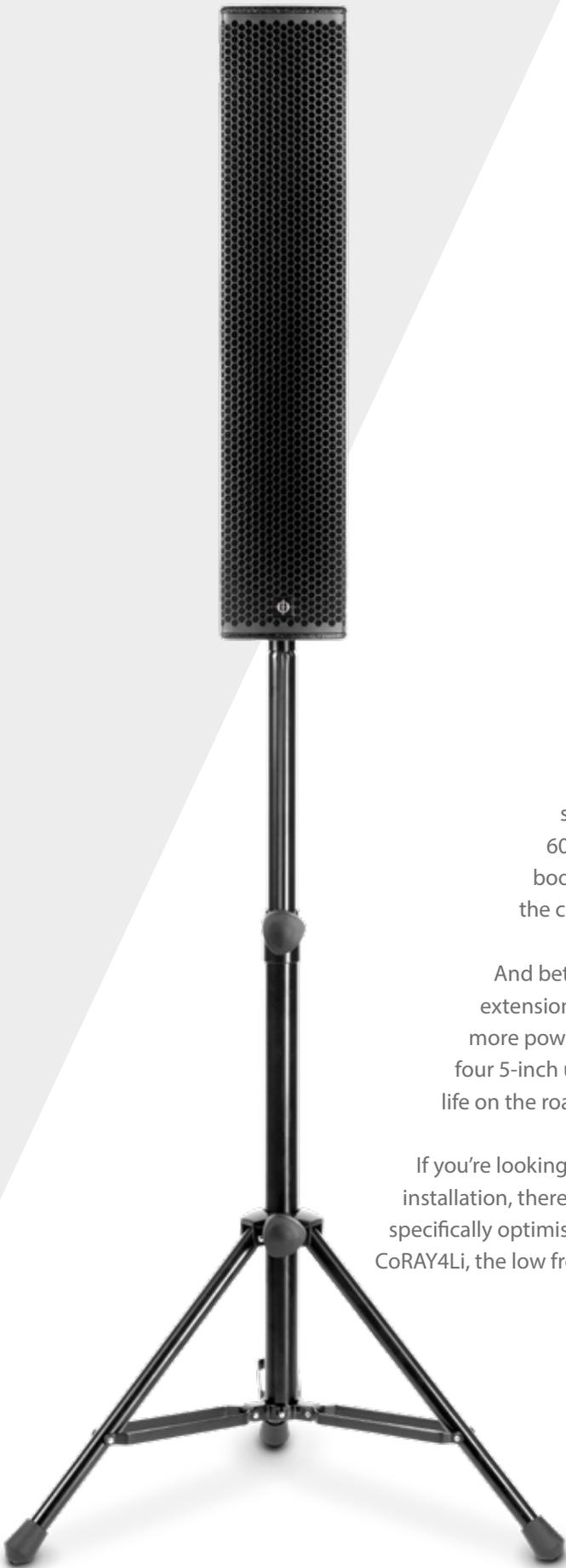
CoRAY Series

This 2-way system may look slender, but there's a lot going on inside: high power handling of 700 W is achievable thanks to its dual 4-inch HF neodymium planar wave drivers and four 5-inch ultra-low distortion cone speakers. Also, CoRAY4 is smart: you can easily eliminate any unwanted reflections in tricky spaces, and tailor your sound for your audience from venue to venue, by altering the horizontal and asymmetrical coverage, for greater intelligibility.

Staying on coverage, it gets better: for a bigger show, why not link two CoRAY4s together to create CoRAY4 Twin? This will guarantee a perfectly consistent symmetrical vertical coverage of 24° with zero interference between the cabinets, with switchable horizontal coverage: 120° for short throw, or 60° for long throw. In this format, the output gets a 6 dB boost, and narrow vertical control in the low end, extending the capabilities of the system further.

And better still, there's the CoRAY4L, the low frequency extension, which gives you that rich bottom end, and even more power: again, a high power handling of 700 W, with four 5-inch ultra-low distortion cone speakers, and built for life on the road.

If you're looking at specifying your sonics for a permanent installation, there is also CoRAY4i, which has been specifically optimised for those applications and also CoRAY4Li, the low frequency extension for installation.





The CoRAY4L is an ultra compact low frequency extension for the CoRAY4. The cabinet contains four 5 inch ultra low distortion cone speakers and features the same CMS (CODA Mobile Suspension) as the CoRAY4 for an integrated fixing solution.





APS Series



APS is CODA's most flexible three-way solution when it comes to medium size applications, and is a true hybrid of point source and line array.

At the heart of APS is a string of CODA Audio's uber-advanced technologies, the highlight perhaps being the unique DDC (Dual Diaphragm Curved-wave-driver) – similar to CODA's DDP driver, but with a bit of a twist, in that the wavefront is curved. This ultimately means there is no distortion, and no reshaping required, so it offers extraordinary sonic precision. As a result, when you put more APS together, they perform as one single cabinet, with no interference whatsoever.

Also, each DDC driver is a two-way coaxial system with two concentric ring diaphragms instead of domes, where all pieces of the diaphragm are very close to the voice coil. So when the voice coil moves, the diaphragm moves as a piston, because the wavelength is larger than the diaphragm itself; and that means it can constantly accept the wavelengths without any distortion. In other words, it delivers the purest audio you can get. And because there are two diaphragms on the ring (one inside the voice coil, one outside), it's actually larger than a dome. The higher frequencies are produced from one diaphragm, and for the lows, both diaphragms are working in phase.

Then there is the APS-COUPLER, which basically sums all the energy from the transducers into a large mutual horn. This occupies the entire front of the cabinet, which means there is no phase destructions, and users will get a perfectly coherent and uniform wavefront, power response, and directivity over a wide frequency range.

Add to this the APS-SUB, which goes down to 28 Hz, and you have a fully integrated solution for DSP control, amplification, I/O audio routing, network remote control, and diagnostics.



Unique 9 inch Dual Diaphragm
Curved-wave-driver (DDC), Dual 10 inch
neodymium ultra low distortion
cone drivers

The APS is a compact 2 x 10 inch / 3-way
arrayable point source that combines the
user-friendliness of a point source with the
perfect arrayability of a line array creating a unique
category reinforcement system for medium
size venues.



APS Series

The **APS-SUB** is an 18 inch high output subwoofer that provides powerful and extended low frequency response with immense headroom. Low port compression and optimised enclosure design give a tight, accurate bass response that is ideally suited for Dance Clubs, Mobile or Installation applications. The integrated rigging system allows quick and easy flying or ground stacking.

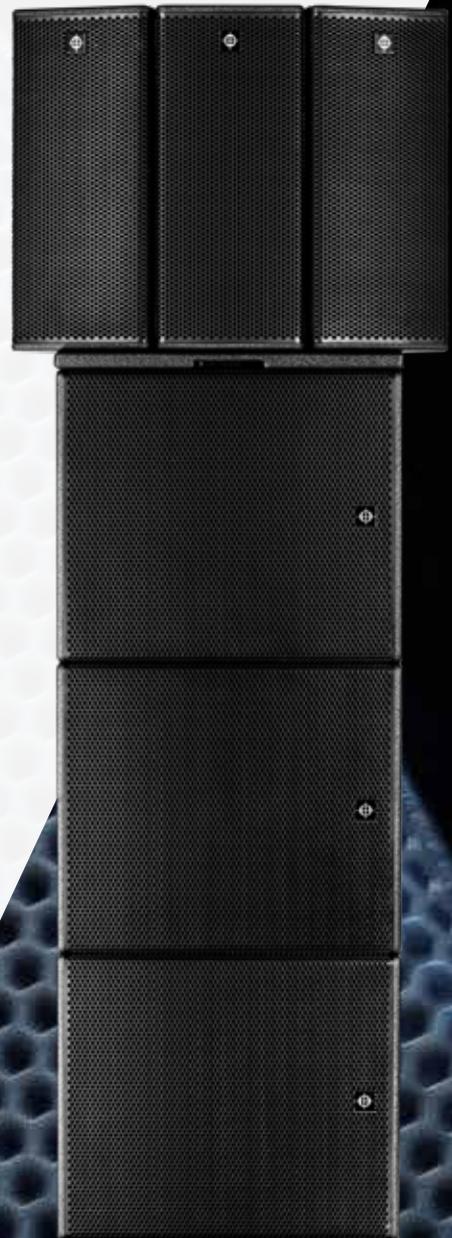
The APS-SUB is equipped with an extremely long excursion 18 inch ultra low distortion driver. The strong motor delivers extreme high magnetic flux for increased efficiency. The 4 inch voice coil ensures ultra linear excursion of 20 mm / pp at consistent magnetic force.

The state-of-the-art carbon fibre cone ensures maximum stiffness and low moving mass. Three aluminium shorting rings reduce intermodulation distortion, minimising induction variation whilst reducing thermal compression. This design dramatically reduces the distortion of a typical subwoofer at longer excursion levels, and improves the overall sound quality and performance characteristics of the cabinet.

The APS-SUB is designed to work exclusively with CODA Audio LINUS amplifiers as an integrated solution for DSP control, amplification, network remote control and diagnostics. The integrated solution ensures optimal performance and protection.

Primarily designed as a subwoofer extension for APS, the APS-SUB is also suited for a variety of applications in Touring and Installations where compact size, high precision, deep bass with directivity control is needed.

Typical applications are Dance Clubs, theaters, Houses of Worship and Live sound Venues.



HOPS Series

There are two main products in the HOPS Series. The HOPS8 and the HOPS5.

The **HOPS8** is a 450 W dual 8 inch coaxial system whilst the **HOPS5** is a 300 W dual 5 inch coaxial system. Both products are 100° conical, with CMS (CODA mobile suspension flange adapter).

Both the HOPS8 and HOPS 5 (High Output Point Source) are super-powerful, passive 2-way systems with immense output-to-size ratio, and 100° x 100° coverage. If you're looking to kit out a small to medium size venue where you're in need of high fidelity sonics and plenty of kick, HOPS Series is the option for you.

There are two HOPS options: HOPST, for mobile applications; and HOPSi, for permanent installations, both of which are phenomenally versatile. These speakers can be used for corporate events or exhibitions, DJ foldback, sound reinforcement for small clubs, or even as stage monitors or front fills at a live show. In the theatre, they work great as under balcony fills.

HOPS8 has a double 8-inch coaxial system at its core, high power handling of 450 W, and a symmetrical coverage of 100°. At the heart of HOPS8 are its two super-smart drivers: one 8-inch/1.75-inch coaxial, and an additional LF driver. The 8-inch cone covers the 60-1500 Hz frequency range with extremely high efficiency and a silky smooth linear response. HOPS5 has a double 5-inch coaxial system, high power handling of 300W, and a symmetrical coverage of 100°. At the heart of HOPS5 are its two super-smart drivers: one 5-inch/1.75-inch neodymium coaxial driver, and an additional 5-inch LF driver. The 5-inch cone covers the frequency range 60 - 1500 Hz. What's particularly clever with these products is the design: two aluminium shorting rings reduce inter-modulation distortion, which minimises induction variation while reducing thermal compression at the same time. In a nutshell, it reduces the distortion massively at longer excursion levels and in doing so, improves the overall sound quality, providing deep and punchy bass.

The high frequency driver contains an ultra-light 1.75 - inch annular diaphragm which produces an exceptional transient response with very high efficiency from 1 kHz to 20 kHz. This new transducer was engineered to radiate a single source, coherent 100° wave front for superior dispersion control and pristine and transparent high fidelity sound. Together, they guarantee uniform coverage with perfect time alignment between the components.

HOPS8 and HOPS5 are designed to work with dedicated CODA Audio LINUS5-C or LINUS10-C amplifiers as an integrated solution for DSP control, amplification, network remote control, and diagnostics. This integrated solution guarantees optimal performance as well as protection.





Multi purpose Subwoofers

U12/U12i

Ultra compact subwoofer

The U12 is a 12 inch ultra compact subwoofer that provides powerful low frequency response. Low port compression and optimised enclosure design give a tight, accurate bass response that is ideally suited for mobile and installation applications.

The U12 is equipped with an extremely long excursion 12 inch neodymium ultra low distortion woofer. The neodymium motor delivers extreme high magnetic flux for increased efficiency. The 3 inch voice coil is 26 mm high, ensuring ultra linear excursion of 16 mm / pp at consistent magnetic force. State-of-the-art carbon fibre cone ensures maximum stiffness and low moving mass.

The aluminium shorting rings reduce intermodulation distortion, minimise induction variation while reducing thermal compression. This design dramatically reduces the distortion of a typical subwoofer at longer excursion levels, and improves the overall sound quality and performance characteristics of the cabinet.

The U12i is a slim, wall mounted version of the U12.



U12



U12i

U15

Compact subwoofer

The U15 is a 15 inch compact subwoofer that provides powerful low frequency response. Low port compression and optimised enclosure design give a tight, accurate bass response that is ideally suited for mobile and installation applications.

The U15 is equipped with an extremely long excursion 15 inch ultra low distortion woofer. The motor delivers extreme high magnetic flux for increased efficiency. The 3 inch voice coil is 32 mm high, ensuring ultra linear excursion of 22 mm / pp at consistent magnetic force. State-of-the-art carbon-fibre cone ensures maximum stiffness and low moving mass. The aluminium shorting rings reduce intermodulation distortion, minimise induction variation while reducing thermal compression. This design dramatically reduces the distortion of a typical subwoofer at longer excursion levels, and improves the overall sound quality and performance characteristics of the cabinet.



U4-SUB

High Output Subwoofer

Double 18 inch ultra low distortion woofer, very high power handling of 2500 W, extended low frequency reproduction.

The U4 is equipped with twin extremely long excursion 18 inch ultra low distortion woofers. The strong motor delivers extreme high magnetic flux for increased efficiency. The 4 inch voice coil is 32 mm high, ensuring ultra linear excursion of 20 mm / pp at consistent magnetic force.

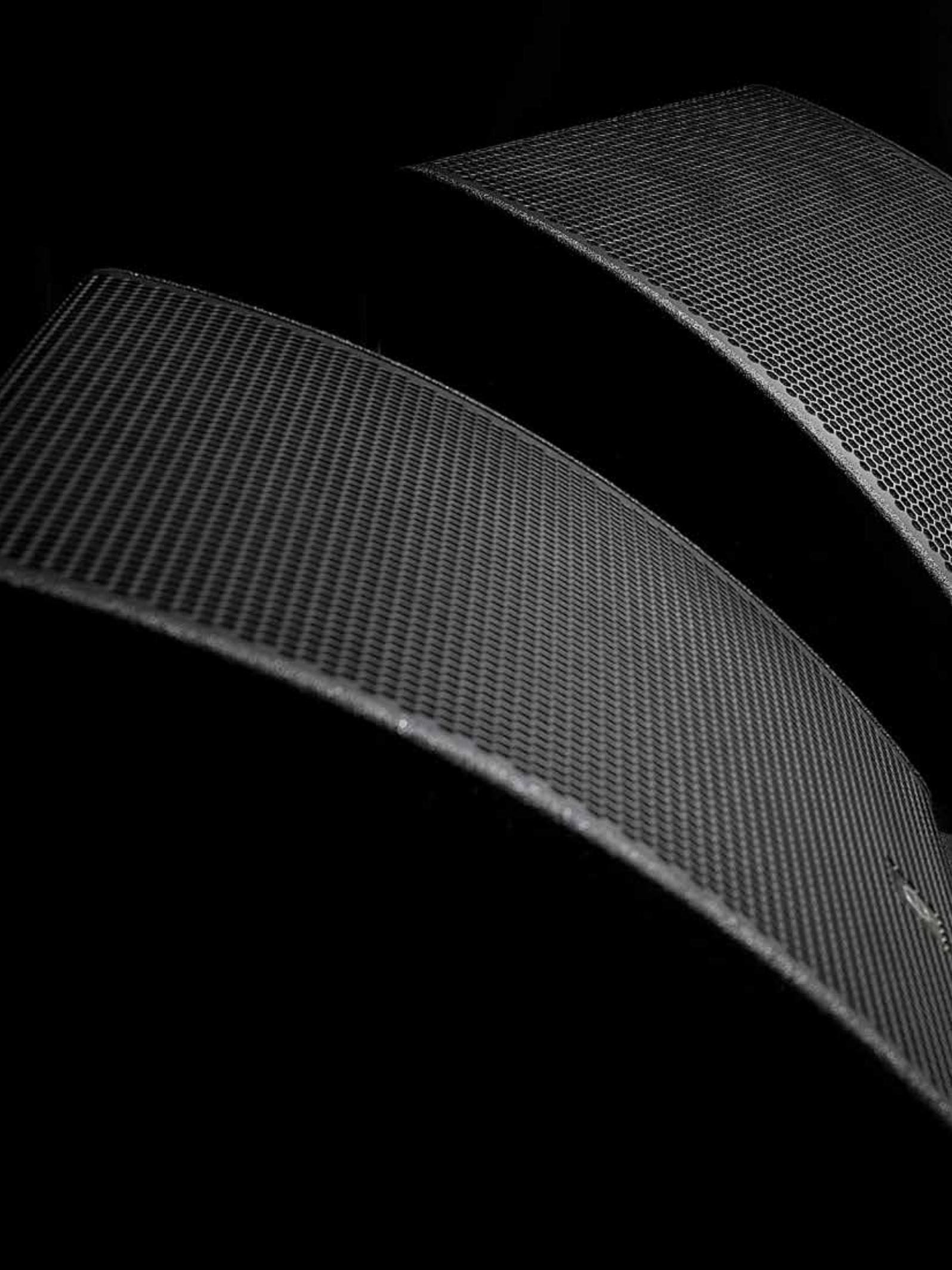
The state-of-the-art carbon-fibre cone ensures maximum stiffness and low moving mass. Three aluminium shorting rings reduce intermodulation distortion, minimising induction variation whilst reducing thermal compression. This design dramatically reduces the distortion of a typical subwoofer at longer excursion levels, and improves the overall sound quality and performance characteristics of the cabinet.

The U4 is designed to work exclusively with CODA Audio LINUS amplifiers as an integrated solution for DSP control, amplification, network remote control and diagnostic.

The integrated solution ensures optimal performance and protection.

The U4 is perfectly suited as a sub-extension for HOPS Series, CUE-Series and TiRAY, extending the system performance down to 30 Hz. Typical applications are Dance Clubs, Theatres, Houses of Worship and Live sound Venues.





CUE Series



The CUE Series takes stage monitoring to another level for several reasons: exceptionally high output, phenomenal sound quality, and a triaxial transducer design which provides a true one point source. They are also very portable and lightweight, perfect for taking out on the road.

As an artist, what you're looking for out of a stage monitor is volume, clarity, and feel, the technology in this box provides all of this and more. Thanks to its powerful neodymium woofers and compression driver: Feedback is extremely minimal, integrated hardware provides increased dispersion, and the low end frequency response is immense.

This entirely unique loudspeaker technology offers a perfectly coherent wavefront with no hot spots in sight, resulting in precise directivity and uniform coverage, providing perfect time alignment between the components.

CUE ONE is a 3-way, high output, coherent low profile monitor built for the stage. It's a double 12-inch box with a 1.4-inch coaxial compression driver, loaded by an asymmetrical 60° x 55° + 40° elliptical waveguide.

CUE Series





CUE TWO is a 3-way, high output, coherent low profile monitor built for the stage. It's a super-high power box thanks to its 15-inch neodymium cone driver and 1.4-inch coaxial compression driver concentrically mounted to the woofer, loaded by a 60° x 90° elliptical waveguide.



CUE FOUR is a 3-way, high output, coherent low profile monitor built for the stage. It benefits from double 8-inch neodymium woofer and 1.4-inch coaxial compression driver, loaded by an asymmetrical 60° x 55° + 40° elliptical waveguide.

	AiRAY	ViRAY	TiRAY	CoRAY	
Type:	3-way Bi-amplified line array module	Compact 3-way Bi-amplified line array module	Ultra compact 2-way full range system	2-way passive column loudspeaker	
Dimensions (WxHxD):	674x356x555 mm / 26.54x14.02x21.85"	674x242x362 mm / 26.54x9.53x14.25"	404x155 x 253 mm / 15.91x6.10x9.96"	152x758x214 mm / 5.98x29.84x8.42"	
Net weight:	40 kg / 88.18 lb	25.5 kg / 56.22 lb	9.9 kg / 21.83 lb	15.7 kg / 34.61 lb	
Frequency response:	50 Hz – 22 kHz (-6 dB)	55 Hz – 22 kHz (-6 dB)	70 Hz – 20 kHz (-6 dB)	80 Hz - 20 kHz (-6 dB)	
Power handling AES / peak (passive):	Bi-amplified only	600 W / 2400 W	300 W / 1200 W	700 W / 2800 W	
- Low AES / peak:	2000 W / 8000 W	600 W / 2400 W	N/A	N/A	
- Mid / High AES / peak:	300 W / 2600 W	150 W / 1300 W	N/A	N/A	
Max. peak SPL (with LINUS10):*	148 dB	142 dB	139 dB	144 dB	
Amplification, Cabinets per Amplifier					
LINUS5-C Optimum / Maximum:	N/A	N/A	8 / 12	4 / 8	
LINUS10-C Optimum / Maximum:	N/A	N/A	8 / 12	4 / 8	
LINUS14D Optimum / Maximum:	4 / 6	8 / 12 (bi-amp) or 16 / 24 (passive)	8 / 12	4 / 8	
LINUS10 Optimum / Maximum:	2 / 3	4 / 6 (bi-amp) or 8 / 12 (passive)	4 / 6	2 / 4	
Dispersion Horizontal:	90°, 120° or asym. 105°	120°, 80° or 100° (60° + 40° or 40° + 60°)	100°	Sym. 120° or 60° or asym. 90° (60°+30°)"	
Dispersion Vertical:	Array dependent: 0°, 0.5°, 1°, 2°, 2.5°, 3° to 8° in 1°-steps"	Array dependent: 0°-10° in 1°-steps"	Array dependent: 0°-12° (in steps 0°, 1°, 3°, 5°, 7°, 9°, 12°)	12° (1° up, 11° down)	
Components Low frequency:	2x12" Nd woofer, 4" (101.6 mm) VC, 1000 W (AES) each	2x8" Nd woofer, 2" (50.8 mm) VC, 300 W (AES) each	2x5" woofer, 1.5" (38 mm) VC, 150 W (AES) each	4x5" woofer, 1.5" (38 mm) VC, 170 W (AES)	
Components Mid/High frequency:	2x6" DDP (Double Diaphragm Planar-wave-drivers) Mid: 3.5" (90 mm) VC, 150 W (AES) each Hi: 1.75" (44.4mm) VC, 80 W (AES) each	8" coax. Nd Planar-wave-driver Mid: 3.5" (90 mm) VC, 150 W (AES) Hi: 1.75" (44.4mm) VC, 80 W (AES)	5" Nd Planar-wave-driver Hi: 1.75" (44.4mm) VC, 80 W (AES)	2x4" Nd Planar-wave-drivers Hi: 1.75" (44.4mm) VC, 80 W (AES)	
Crossover point:	400 Hz bi-amp, 6.3 kHz passive	600 Hz passive or bi-amp (internal connector), 6.3 kHz passive	950 Hz passive	1.3 kHz passive	
Input Connectors:	2x Neutrik™: 1x Input + 1x Link Cable	2x Neutrik™: 1x Input + 1x Link Cable	2x Neutrik™: 1x Input + 1x Link Cable	2x Neutrik™ NL4MP	
Nominal impedance LF / MF+HF:	8 Ω (+1/-1) / 16 Ω (+2/-2)	16 Ω (+1/-1) / 16 Ω (+2/-2) 3-way-passive: 16 Ω (+2/-2)	8 Ω (+2/-2)	4 Ω (+1/-1)	
Enclosure material:	Birch plywood	Birch plywood	Birch plywood	Birch plywood	
Suspension	Flying hardware integrated	Flying hardware integrated	Flying hardware integrated	CoRAY4: CMS**+flange adapter CoRAY4i M6 threaded points	

* Measured with pink noise 6 dB crest factor

** CMS = CODA Mobile Suspension

Product Comparison Chart

	APS	HOPS 8	HOPS 5	CUE One	CUE Two	CUE Four
	3-way Arrayable Point Source	Ultra compact 2-way full range versatile system	Ultra compact 2-way full range versatile system	3-way high output stage monitor	3-way high output stage monitor	3-way high output stage monitor
	674x291x492 mm / 26.54x11.46x19.37"	230x540x270 mm / 9.05x21.26x10.63"	146x349x200 mm / 5.75x13.74x7.87"	670x322x627 mm / 26.38x12.68x24.69"	540x379x574 mm / 21.26x14.92x22.6"	545x272x450 mm / 21.46x10.71x17.72"
	27 kg / 59.52 lb	12 kg / 26.46 lb	6.4 kg / 14.11 lb	32 kg / 70.55 lb	29 kg / 63.93 lb	19 kg / 41.89 lb
	50 Hz - 22 kHz (-6 dB)	60 Hz - 20 kHz (-6 dB)	80 Hz - 20 kHz (-6 dB)	50 Hz - 22 kHz (-6 dB)	50 Hz - 22 kHz (-6 dB)	54 Hz - 22 kHz (-6 dB)
	1200 W / 4800 W	450 W / 1800 W	300 W / 1200 W	2000 W / 8000 W	1000 W / 4000 W	500 W / 2000 W
	N/A	N/A	N/A	2000 W / 8000 W	1000 W / 4000 W	500 W / 2000 W
	N/A	N/A	N/A	150 W / 1300 W	150 W / 1300 W	150 W / 1300 W
	146 dB	131 dB	124 dB	143 dB	143 dB	143 dB
	N/A	4 / 12	8 / 16	2 / 2 (bi-amp) or 4 / 4 (passive)	2 / 2 (bi-amp) or 4 / 4 (passive)	2 / 2 (bi-amp) or 4 / 4 (passive)
	8 / 12	8 / 16	8 / 16	2 / 2 (bi-amp) or 4 / 4 (passive)	2 / 4 (bi-amp) or 4 / 8 (passive)	2 / 8 (bi-amp) or 4 / 16 (passive)
	8 / 12	8 / 16	8 / 16	2 / 4 (bi-amp) or 4 / 8 (passive)	2 / 8 (bi-amp) or 4 / 16 (passive)	2 / 8 (bi-amp) or 4 / 16 (passive)
	4 / 8	4 / 8	4 / 8	1 / 2 (bi-amp) or 2 / 4 (passive)	1 / 4 (bi-amp) or 2 / 8 (passive)	1 / 4 (bi-amp) or 2 / 8 (passive)
	120°, 90°, 60° or 105° (45°+60°); 90° (30°+60°); 75° (30°+45°)"	100° conical	100° conical	60°	60°	60°
	20°	100° conical	100° conical	95° (40° up, 55° down)	90°	95° (40° up, 55° down)
	2x10" Nd woofer, 3" (77 mm) VC, 600 W (AES) each	8" woofer, 2" (51 mm) VC, 225 W (AES)	5" woofer, 1.5" (38 mm) VC, 150 W (AES)	2x12" Nd woofer, 4" (101.6 mm) VC, 1000 W (AES)	15" Nd triaxial woofer, 4" (101.6 mm) VC, 1000 W (AES)	2x8" Nd woofer, 2" (52 mm) VC, 250 W (AES)
	9" coax. Nd 20° Curved-wave-driver Mid: 3.5" (90 mm) VC, 150 W (AES) Hi: 1.75" (44.4mm) VC, 80 W (AES)	8"/1.75" coax. driver Hi: 1.75" (44.4 mm) VC, 80 W (AES)	5"/1.75" Nd coax. driver Hi: 1.75" (44.4 mm) VC, 80 W (AES)	1.4" Nd coax. driver Mid: 3.5" (90 mm) VC, 150 W (AES) Hi: 1.75" (44.4 mm) VC, 80 W (AES)"	1.4" Nd coax. driver Mid: 3.5" (90 mm) VC, 150 W (AES) 750 Hz passive / bi-amp (internal connector) Hi: 1.75" (44.4 mm) VC, 80 W (AES)	1.4" Nd coax. Driver Mid: 3.5" (90 mm) VC, 150 W (AES) Hi: 1.75" (44.4 mm) VC, 80 W (AES)
	500 Hz, 6.3 kHz passive	1.5 kHz passive	1.5 kHz passive	750 Hz passive or bi-amp (internal connector), 6.3 kHz passive	750 Hz passive or bi-amp (internal connector), 6.3 kHz passive	750 Hz passive or bi-amp (internal connector), 6.3 kHz passive
	2x Neutrik™ NL4MP	2x Neutrik™ NL4MP	2x Neutrik™ NL4MP	2x Neutrik™ NL4MP	2x Neutrik™ NL4MP	2x Neutrik™ NL4MP
	8 Ω (+2/-2)	8 Ω (+1/-1)	8 Ω (+1/-1)	4 Ω (+1/-1) / 8 Ω (+2/-2) 3-way-passive: 4 Ω (+1/-1)	8 Ω (+1/-1) / 8 Ω (+2/-2) 3-way-passive: 8 Ω (+1/-1)	8 Ω (+1/-1) / 8 Ω (+2/-2) 3-way-passive: 8 Ω (+1/-1)
	Birch plywood	Birch plywood	Birch plywood	Birch plywood	Birch plywood	Birch plywood
	Flying hardware integrated	HOPS8T: CMS**+flange adapter HOPS8i: M6 threaded points	HOPS5: M6, M8, M10 fixing points	M6 fixing points	M6 fixing points	M6 fixing points

	SC2-F	SCV-F	SCP-F	SCP	
Type:	Sensor controlled bass extension and sub	Sensor controlled sub	Sensor controlled sub	Sensor controlled sub	
Dimensions (WxHxD):	674x490x790 mm / 26.54x19.29x31.1"	674x490x790 mm / 26.54x19.29x31.1"	1108x550x800 mm / 43.62x21.65x31.5"	1190x547x800 mm / 46.85x21.54x31.1"	
Net weight:	70 kg / 154.32 lb	57 kg / 125.66 lb	95 kg / 209.44 lb	95 kg / 209.44 lb	
Frequency response:	35 Hz- 200 Hz (-6 dB)	25 Hz - 150 Hz (-6 dB)	25 Hz - 120 Hz (-6 dB)	25 Hz - 120 Hz (-6 dB)	
Power handling AES / Peak:	2500 W / 10000 W	1500 W / 6000 W	3000 W / 12000 W	3000 W / 12000 W	
Max. peak SPL (LINUS10):*	143 dB	138 dB	144 dB	144 dB	
Amplification, Cabinets per Amplifier					
LINUS5-C Optimum / Maximum:	N/A	N/A	N/A	N/A	
LINUS10-C Optimum / Maximum:	N/A	N/A	N/A	N/A	
LINUS14D Optimum / Maximum:	4 / 4	8 / 12	4 / 4	4 / 4	
LINUS10 Optimum / Maximum:	2 / 4	4 / 8	2 / 4	2 / 4	
Components Low frequency:	2x15" Nd ultra low distortion woofer, 4" (101.6 mm) VC, 1250 W (AES) each	18" Nd ultra low distortion woofer, 4" (101.6 mm) VC, 1500 W (AES) each	2x18" Nd ultra low distortion woofer, 4" (101.6 mm) VC, 1500 W (AES) each	2x18" Nd ultra low distortion woofer, 4" (101.6 mm) VC, 1500 W (AES)	
Input connectors:	2x Neutrik™NL4MP (rear) +1 x Neutrik™NL4MP (front)	2x Neutrik™NL4MP (rear) +1 x Neutrik™NL4MP (front)	2x Neutrik™NL4MP (rear) +1 x Neutrik™NL4MP (front)	2x Neutrik™NL4MP (rear) +1 x Neutrik™NL4MP (front)	
Velocity sensors output (SUBS):	"Neutrik™NC3MAV (rear) +Neutrik™NC3MAV (front)"	"Neutrik™NC3MAV (rear) +Neutrik™NC3MAV (front)"	"Neutrik™NC3MAV (rear) +Neutrik™NC3MAV (front)"	"Neutrik™NC3MAV (rear) +Neutrik™NC3MAV (front)"	
Nominal impedance LF / MF+HF:	4 Ω (+1/-1)	8 Ω (+1/-1)	4 Ω (+1/-1)	4 Ω (+1/-1)	
Enclosure material:	Birch plywood	Birch plywood	Birch plywood	Birch plywood	
Suspension	Flying Hardware Integrated Allows curving (0°, 2.5°, 5°)	Flying Hardware Integrated Allows curving (0°, 2.5°, 5°)	Flying Hardware Integrated	N/A	

* Measured with pink noise 6 dB crest factor

** CMS = CODA Mobile Suspension

Product Comparison Chart

	TiLOW	CoRAYL	APS-SUB	U4	U15	U12/i
	Ultra compact bass extension	Low frequency extension	Multi purpose subwoofer	Hi output subwoofer	Multi purpose subwoofer	Multi purpose subwoofer
	404x344x490 mm / 15.91x13.54x19.29"	152x758x214 mm / 5.98x29.84x8.42"	674x570x596 mm / 26.54x22.44x23.46"	1108x497x750 mm / 43.62x19.57x29.53"	520x420x596 mm / 20.47x16.54x23.46"	404/580x350/342x493/350 mm 15.91/22.83x13.78/13.46x19.41/13.78"
	20 kg / 44.09 lb	13.2 kg / 29.1 lb	45 kg / 99.21 lb	77 kg / 169.76 lb	26 kg / 57.32 lb	19/17 kg 41.89/37.48 lb
	40 Hz - 500 Hz (-6 dB)	80 Hz - 1300 Hz (-6 dB)	28 Hz - 150 Hz (-6 dB)	30 Hz - 150 Hz (-6 dB)	35 Hz - 150 Hz (-6 dB)	38 Hz - 150 Hz (-6 dB)
	1000 / 4000 W	700 W / 2800 W	1300 / 5000 W	2500 W / 10000 W	1000 W / 4000 W	800 W / 3200 W
	135 dB	131 dB	138 dB	144 dB	133 dB	130 dB
	8 / 12	4 / 8	N/A	N/A	4 / 8	4 / 8
	8 / 12	4 / 8	8 / 12	4 / 4	4 / 8	4 / 8
	8 / 16	4 / 8	8 / 12	4 / 4	4 / 8	4 / 8
	4 / 8	2 / 4	4 / 8	2 / 4	2 / 4	2 / 4
	12" ultra low distortion woofer, 4" (101.6 mm) VC, 1000 W (AES)	4x5" woofer, 1.5" (38 mm) VC, 170 W (AES)	18" ultra low distortion woofer, 4" (101.6 mm) VC, 1300 W (AES)	2x18" ultra low distortion woofer, 4" (101.6 mm) VC, 1250 W (AES) each	15" ultra low distortion woofer, 3" (77 mm) VC, 1000 W (AES)	12" ultra low distortion woofer, 3" (77 mm) VC, 800 W (AES)
	2x Neutrik™ NL4MP	2x Neutrik™ NL4MP	2x Neutrik™ NL4MP	2x Neutrik™ NL4MP	1x Neutrik™ NL4MP	1x Neutrik™ NL4MP
	N/A	N/A	N/A	N/A	N/A	N/A
	8 Ω (+1/-1)	4 Ω (+1/-1)	8 Ω (+1/-1)	4 Ω (+1/-1)	4 Ω (+1/-1)	4 Ω (+1/-1)
	Birch plywood	Birch plywood	Birch plywood	Birch plywood	Birch plywood	Birch plywood
	Flying Hardware Integrated	CoRAY4L: CMS+flange adapter CoRAY4Li: M6 threaded points	Flying Hardware Integrated	N/A	N/A	N/A



CODA

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