Coherency applies to sound system transparency in the three-dimensional context of Time, Space and Frequency. At issue are Comb Filters, the audible, undesirable sound that occurs when the raw concert makes its transition through the digital and analog world. Most naturally occurring sound sources however, such as unamplified singers or instrumentalists, never present listeners with multiple arrivals (i.e. comb filters) and it is daytime for the brain to resonate with the real sound. In short, at NEXO, our pursuit of coherency drove the three years of R&D that delivered GEO. We’re extremely proud of the results.

**COHERENCY, TRANSPARENCY, FIDELITY**

Today, bigger sound is easy. Nearly every touring loudspeaker system offers overwhelming power and full-range frequency response. “Better” however, remains elusive, and the current mantra in the music business when it comes to sound reinforcement is the overriding design criteria behind GEO S and GEO T. This is why transparent, coherent sound reinforcement is the prevailing design criteria behind GEO S and GEO T.

The added access to capital markets gained by this public offering strengthened NEXO’s ability to pursue aggressively audio innovation. With the fruits of its research on audio design, NEXO has introduced the GEO Tangent technology, which incorporates several fundamental wave-source patents. GEO Tangent sound reinforcement systems also include the compact, versatile GEO Sub-Bass, GEO CD12, GEO CD18, GEO S805, GEO S830, GEO T2815, GEO T4805 and GEO Soft. GEO Tangent systems combine unparalleled low frequency extension with high frequency performance for a wide frequency response.

**TIME, SPACE, FREQUENCY**

Coherency applies to sound system transparency in the three-dimensional context of Time, Space and Frequency. At issue are Comb Filters, the audible, undesirable sound artifacts caused by delays, spectral peaks and notches in the frequency domain. These artifacts are the result of the raw concert making its transition through the digital and analog world. In short, at NEXO, our pursuit of coherency drove the three years of R&D that delivered GEO. We’re extremely proud of the results.

**Coherency is easy to achieve in controlled, direct-field environments such as car stereos or HIVefts. Toxical ways, performance is easy to achieve in controlled, direct-field environments such as car stereos or HIVefts. Toxical ways, performance is easy to achieve in controlled, direct-field environments such as car stereos or HIVefts. Toxical ways, performance is easy to achieve in controlled, direct-field environments such as car stereos or HIVefts. Toxical ways, performance is easy to achieve in controlled, direct-field environments such as car stereos or HIVefts. Toxical ways, performance is easy to achieve in controlled, direct-field environments such as car stereos or HIVefts. Toxical ways, performance is easy to achieve in controlled, direct-field environments such as car stereos or HIVefts. Toxical ways, performance is easy to achieve in controlled, direct-field environments such as car stereos or HIVefts. Toxical ways, performance is easy to achieve in controlled, direct-field environments such as car stereos or HIVefts. Toxical ways, performance is easy to achieve in controlled, direct-field environments such as car stereos or HIVefts. Toxical ways, performance is easy to achieve in controlled, direct-field environments such as car stereos or HIVefts. Toxical ways, performance is easy to achieve in controlled, direct-field environments such as car stereos or HIVefts. Toxical ways, performance is easy to achieve in controlled, direct-field environments such as car stereos or HIVefts. Toxical ways, performance is easy to achieve in controlled, direct-field environments such as car stereos or HIVefts. Toxical ways, performance is easy to achieve in controlled, direct-field environments such as car stereos or HIVefts. Toxical ways, performance is easy to achieve in controlled, direct-field environments such as car stereos or HIVefts. Toxical ways, performance is easy to achieve in controlled, direct-field environments such as car stereos or HIVefts. Toxical ways, performance is easy to achieve in controlled, direct-field environments such as car stereos or HIVefts. Toxical ways, performance is easy to achieve in controlled, direct-field environments such as car stereos or HIVefts. Toxical ways, performance is easy to achieve in controlled, direct-field environments such as car stereos or HIVefts. Toxical ways, performance is easy to achieve in controlled, direct-field environments such as car stereos or HIVefts. Toxical ways, performance is easy to achieve in controlled, direct-field environments such as car stereos or HIVefts. Toxical ways, performance is easy to achieve in controlled, direct-field environments.
MEASURED AND CONFIRMED

To achieve coherency, our most pressing design challenge was development of a sound system that allowed a multiple full-range cabinets to behave as if they share a single sound source. Traditionally, this required acoustic coupling between multiple speakers, but GEO Technology goes beyond the traditional line array. In fact, GEO Series loudspeakers ship with a virtual sound source “behind” the physical enclosure. It includes acoustic wavefronts that mathematically describe the phase relationships between multiple speakers, allowing them to be perceived as a single coherent source regardless of physical proximity.

This patented technique allows the designer to control the real source (the compression driver) almost anywhere in the enclosure. It also allows control of acoustic energy with an acoustical reflector (i.e. mathematically calculated hyperbolic acoustic mirror, derived from a rigorous set of geometrical transformations). Thus the HRW creates a virtual acoustic wavesource that is “outside” the loudspeaker cabinet.

Two GEO HRW virtual acoustic wavefronts (see Figure 1 & Photo 1) control acoustic energy with an acoustical reflector (i.e. mathematically calculated hyperbolic acoustic mirror, derived from a rigorous set of geometrical transformations). Thus the HRW creates a virtual acoustic wavesource that is “outside” the loudspeaker cabinet.

This is the critical concept. Where the physical source is “behind” the rear of the enclosure. It also provides a virtual source that is “outside” the loudspeaker cabinet. The HRW wavesource (see Figure 1 & Photo 1) controls acoustic energy with an acoustical reflector (i.e. mathematically calculated hyperbolic acoustic mirror, derived from a rigorous set of geometrical transformations). Thus the HRW creates a virtual acoustic wavesource that is “outside” the loudspeaker cabinet.

THE GEO HYPERBOLOID REFLECTIVE WAVESOURCE

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As mentioned, GEO devices can use an HRW to position virtual sound sources “behind” the physical enclosure. The HRW wavesource measures display a high degree of correspondence between mathematical predictions and real world results.

KEYWORDS

As mentioned, GEO devices can use an HRW to position virtual sound sources “behind” the physical enclosure. The HRW wavesource measures display a high degree of correspondence between mathematical predictions and real world results.

The point is that a Brüel and Kjær Acoustic Analysis system doesn’t care what system you place in front of its calibration microphone. Nor does advanced W1AW software care whether you feed it. So when these advanced measurement tools confirmed that GEO and GEO Technology displayed superior performance that exceeded our rigorous standards, it was clear that GEO’s unique wavecontrol had reduced the control of acoustic energy. Simply put, GEO technology produces precise and predictable results so that GEO wavesources couple optimally without destructive interference. This is why GEO Technology is described as a “cardioid mic in reverse”. NEXO’s approach uses the interference between two sources of identical amplitude and phase (at the same frequency) to create destructive interference, which when coherently, interferes with the virtual source to create a virtual wavesource.

One other GEO innovation that must be mentioned is the Configurable Directivity Device flanges (CDD). (see Photo 1) An unprecedented NEXO development that is easy to use. GEO Tech has always been about extreme loudspeaker designers, extremely well-known for their permanent installation expertise. GEO technology produces precise and predictable results so that GEO wavesources couple optimally without destructive interference. This is why GEO Technology is described as a “cardioid mic in reverse”. NEXO’s approach uses the interference between two sources of identical amplitude and phase (at the same frequency) to create destructive interference, which when coherently, interferes with the virtual source to create a virtual wavesource.

The solution was GEO’s Directivity/Phase Device (DRD) (see Photo 3). An unprecedented NEXO development that is easy to use. GEO Tech has always been about extreme loudspeaker designers, extremely well-known for their permanent installation expertise. GEO technology produces precise and predictable results so that GEO wavesources couple optimally without destructive interference. This is why GEO Technology is described as a “cardioid mic in reverse”. NEXO’s approach uses the interference between two sources of identical amplitude and phase (at the same frequency) to create destructive interference, which when coherently, interferes with the virtual source to create a virtual wavesource.

GEO HRW (reflective) Wavesources are:

- Exceptionally versatile
- Extremely compact
- Captured Perfect Array Coupling Through Configurable Directivity Device Flanges
- Very accurate

The GEO HRW wavesource (see Photo 1) controls acoustic energy with an acoustical reflector (i.e. mathematically calculated hyperbolic acoustic mirror, derived from a rigorous set of geometrical transformations). Thus the HRW creates a virtual acoustic wavesource that is “outside” the loudspeaker cabinet.

The cardioid works in the vertical as well as the horizontal plane and it is therefore pretty obvious that the effect will be much more impressive in a small space. As the array becomes larger the range (and time delay as a consequence of its length) that the interference can cover increases, becoming an ever more effective and more evenly-distributed virtual source.

Other GEO innovations that must be mentioned are the Configurable Directivity Device flanges (CDD). (see Photo 1) An unprecedented NEXO development that is easy to use. GEO Tech has always been about extreme loudspeaker designers, extremely well-known for their permanent installation expertise. GEO technology produces precise and predictable results so that GEO wavesources couple optimally without destructive interference. This is why GEO Technology is described as a “cardioid mic in reverse”. NEXO’s approach uses the interference between two sources of identical amplitude and phase (at the same frequency) to create destructive interference, which when coherently, interferes with the virtual source to create a virtual wavesource.

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To achieve this, NEXO R&D designed advanced electronic control algorithms to allow NX242 TDcontrollers to maximise SubBass pattern control for CD12 and CD18 cabinets. For more information regarding sub-bass control please see pg 20. For more information on NX242 please see pg 22.

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Fig 2: Coherency through GEO Wave Propogration. Targeted soundfields: mobile, fixed-frame virtual array source mutually exclusive of each other.
As part of a policy of continual improvement, NEXO reserves the right to change specifications without notice.

**GEO T4805 PRODUCT FEATURES**

- **Components**
  - HF: 1.4" voice coil, 1.4" throat neodymium 16Ω driver on a heterodyne reflective Wavesource.
  - LF front section: 2 x 8" (20cm) neodymium 16Ω drivers in series.
  - LF rear section: 2 x 8" (20cm) neodymium 16Ω drivers in series.

- **Height**
  - LF front section: 250 x 750 x 627 mm (9 7/8" x 29 9/16" x 24 11/16"
  - LF rear section: 250 x 627 x 903 mm (9 7/8" x 24 11/16" x 35 1/2"

- **Shape**
  - T "Triangular"

- **Weight**
  - 52 kg (114.6 lbs) net, including flying system.

- **Connectors**
  - 1 x AMPHENOL 6-pole EP6 socket In, 1 x AMPHENOL AP6 6 pole cable + connector Through.

- **Construction**
  - Baltic birch ply finish with structured black coating for the main structure.

- **Enclosure**
  - 250 x 750 x 627 mm (9 7/8" x 29 9/16" x 24 11/16"

**NEXO GEO NoTab.QXD 5/7/05 3:36 pm Page 6**
The GEO T2815 is a versatile tangent array module that can be used in traditional configurations or as part of a vertical tangent array. It features a hyperboloid reflective wavesource with two 8" (20cm) neodymium hi-flux cone transducers wired in series, providing exceptional coverage across all coverage areas.

**Components**
- HF: 1 x 3" voice coil, 1.4" throat neodymium 16Ω driver on a hyperboloid reflective wavesource.
- LF/MB: 2x 8" (20cm) neodymium drivers in series.

**Height/Width/Depth**
- 2896mm (H) x 530mm (W) x 365mm (D) excluding array assembly system.
- 35° tapered.

**Cables**
- MF/LF front: 32 16Ω cables per amp channel.
- HF: 16 16Ω cables per amp channel.

**Nominal Impedance**
- HF: 16Ω.
- LF/MB: 32Ω.

**Cross-over Frequency**
- MF/LF – HF (front): 1.3kHz active.

**Dispersion**
- Vertical plane: Configuration dependent.
- LF: 30°.
- LF/MB: 60°.

**Coverage**
- MF/LF rear-firing: 2x passive acoustic resistors.
- MF/LF front-firing: 2x 8" (20cm) neodymium hi-flux 16Ω drivers on a hyperboloid reflective wavesource.

**Architectural Features**
- The GEO T2815 is often used at the bottom of GEO T4805 vertical tangent arrays (see pg #9) and in traditional configurations.

**System Operation**
- MF/LF front section: 3000Watts into ~32Ω; MF/LF rear section: 3000Watts into ~256Ω.

**Shipping Weight & Volume**
- 1x T2815 = 30.5kg (67.2lbs), 0.15 cu m (5.3 cu ft).

**Electronic Controller**
- NX242 Digital TDcontroller presets are precisely matched to the GEO T Series cabinets and can be configured digitally.

**Rigging System**
- Please refer to the GEO user manual before any operation.

**Packaging**
- GEO T2815 is delivered in a complete array system with NX242 Digital TDcontroller and cables.

**Dispersion**
- Vertical plane. Configuration dependent.

**Usable Range**
- LF: 77Hz – 20kHz (nominal) peak SPL.
- MF/LF: 80Hz – 20kHz (nominal) peak SPL.

**Directivity Curves**
- 1/3 octave smoothed frequency response normalized to on-axis response.

**Response Curves**
- Peak SPL @ 1m configuration dependent.

**Recommended Amplifiers**
- HF: 3000Watts into ~32Ω; LF/MB: 6000Watts into ~64Ω.

**Shipping & Ordering**
- Order as GEO T2815 (includes 4x BLGEOT12-30 quick release pins).

**Technical Data**
- Sensitivity: 1W @ 1m: 107dB SPL nominal (105dB SPL wideband).
- Usable range @-6dB: 77Hz – 20kHz.

**Applications**
- The GEO T2815 is often used as a lower section in vertical tangent arrays or as a stand-alone system to provide exceptional coverage across all coverage areas.

**Protection Systems**
- Twin rear-firing passive resistors provide exceptional, passive midbass directional control.

**Construction & Finish**
- Baltic birch ply finish with structured black coating for the main structure.
- Injected polyurethane flange with metallic grey coating.

**Dimensions**
- Shape: 15° Trapezoid.
- Weight: 29kg (63.9 lbs) net, including array assembly system.

**Connectors**
- 1x AMPHENOL 6-pole EP6 socket In; 1x AMPHENOL AP6 6-pole connector Through.

**Cabinet Materials**
- Construction: Baltic birch ply finish with structured black coating for the main structure.
- Front Finish: Injection molded polyurethane with metallic grey coating.

**Impedance**
- MF/LF (front-firing): 16Ω; MF/LF (rear-firing): 32Ω.

**Crossover Frequency**
- MF/LF (front): 3.2kHz.

**Nominal Frequency Response**
- 2kHz, 1kHz, 500Hz, 100Hz, 1kHz, 10kHz.
Vertical and horizontal arrays are unique in their behavior and intended applications. Vertical GEO Arrays are intended for applications where the horizontal coverage (GEO-T4805 or GEO-T2815) is suitable in an arena or from the front of a theatre to the back wall, depending on the desired coverage.

Properly deployed, GEO Series arrays can provide extremely even SPL throughout the depth of your audience including coverage of rear barriers.

Horizontal arrays deliver equal power to equal angles, with SPL decreasing as distance increases. Horizontal arrays of GEO-T4805 and GEO-T2815 cabinets provide exceptional control of horizontal coverage at an array angle intended to optimize the even coverage of GEO tangent vertical arrays.

FIRING CONTROL

The GEO Series Array/Assembly System requires three experience persons for set-up, typically one hoist operator, one GEO-T operator, and one GEO-T operator per side of the cluster when properly and maintained. This will provide a system of reliability. Vertical angle adjustment between cabinets has been limited to specific settings to ensure coherent control and acoustical integration. There are six major parts to the GEO Firing system:

1. The main fuselage
2. The main firing bumper
3. The main firing beam
4. The main firing plate or lower pull-up assembly
5. The main firing chain and clutch assembly
6. The GEO-T Array Module

CABLING

Compared to the precision aiming required by GEO T Series cabinets attached to a front-of-the-house computer, GEO CD 18 SubBass rigging is relatively simple. Each CD18 SubBass is designed to receive a pull-back force applied from bottom to top of the array. When the array is lifted into position, each module will automatically settle into the proper angle. GEO T Series cabinets are designed to allow a pull-back force applied from bottom to top of the array. When the array is lifted into position, each module will automatically settle into the proper angle.

CD18 RIGGING

Because GEO T Arrays require extremely high accuracy and very fine control, precise alignment can be achieved using a logarithmic scale. The vertical angles required can be achieved using a logarithmic scale. Angle setting values can be set as follows:

GEO T Arrays:
- GEO T4805 to GEO T2815: 6.30° - 8.00° - 10.0° - 12.5° - 15°
- GEO T2815 to GEO T2815: 6.30° - 8.00° - 10.0° - 12.5° - 15°

Horizontal arrays deliver equal power to equal angles, with SPL decreasing as distance increases. Horizontal arrays of GEO-T4805 and GEO-T2815 cabinets provide exceptional control of horizontal coverage at an array angle intended to optimize the even coverage of GEO tangent vertical arrays.

PRECISION FOCUS - HOW IT WORKS

For more information see pg 13.
GEO S805  PRODUCT FEATURES

Components
- 1x 8” (20cm) Neodymium Hi-flux 16Ω Driver
- 1x 1” Throat Neodymium Driver on a Hyperboloid Reflective Wavesource

Height x Width x Depth: 428 x 276 x 303mm (16 7/8” x 10 7/8” x 11 7/8”)

Shape: 5° Trapezoid

Weight: 13kg (28.6lbs) net

Connectors: 2x NL4MP 4-pole SPEAKON (In & Through)

Construction: Baltic Birch Ply finish with structured black coating. Dark grey carpet is optional.

Fittings: Grill Perforated Steel Flying Integral flying system. Intercabinet Angle Adjustments = ±0.31° to 5° (logarithmic steps).

SYSTEM SPECIFICATIONS GEO S805 with NX242 TDcontroller

Frequency Response
- 67Hz – 19kHz ± 3dB

Usable Range @-6dB
- 60Hz – 20kHz

Sensitivity 1W @ 1m
- 99dB SPL Nominal - 97dB SPL Wideband

Peak SPL @ 1m
- Configuration dependent

Dispersion
- Coupling Plane: Not usable as a single cabinet. Configuration dependent
- Non-Coupling Plane 120° (configurable to 80°).

Crossover Frequency
- 1.6kHz Passive

Nominal Impedance
- 16Ω

Recommended Amplifiers
- 1500 to 3000Watts into 4Ω / 4x cabinets per channel. Up to 6x cabinets per channel may be connected to large amplifiers capable of operating into low impedance loads.

SYSTEM OPERATION

Electronic Controller
- The NX242 Digital TDcontroller presets are precisely matched to the GEO S8 Series cabinets and include sophisticated protection systems. Using GEO S8 Series cabinets without a properly-connected NX242 Digital TDcontroller will result in severe loudspeaker damage. The GEO S8 and CD12 cabinets must be installed within the specified operational limits. GEO S8 cabinets and each sub-channel require unique configuration and operation controls.

HF Dispersion Configuration
- After release of the front grill from its fittings, the HF Waveguide can be configured for 80° or 120° dispersion in the non-coupling plane.

Array Design
- S805 and S830 cabinets, having tangent waveguides, can be mixed in the same array.
- Minimum configuration or Vertical Tangent Arrays is 5x S805 & 1x S830 (4x S805 for paging applications only). CD12s are optional. A ratio of 1x CD12 per 3x full-range GEO modules is required for proper subbass output.

Speaker Cables
- The GEO S805 and S830 are wired 1- & 1+ on both Speakon connectors, 2- & 2+ are not connected.

Rigging System
- Please refer to the GEO User Manual before any operation.

SHIPPING & ORDERING

Packaging
- S805s are packaged in pairs.

Shipping Weight & Volume
- 2x S805s: 29.2kg (64.2 lbs) 0.135 cu m (4.8 cu ft)

As part of a policy of continual improvement, NEXO reserves the right to change specifications without notice.

(a) Response Curves and Data: Anechoic Far Field above 300Hz, Half-space below 300Hz. Usable Range Data: Frequency Response Capability with TD crossover slopes removed.

(b) Sensitivity & Peak SPL: will depend on spectral distribution. Measured with band limited Pink Noise. Refers to the specified +/- 3dB range. Data are for Speaker + Processor + recommended amplifier combinations.

(c) Directivity Curves and Data: 1/3 octave smoothed frequency response, normalized to On-Axis response. Data obtained by computer processing of off-axis response curves. Configuration dependent.

(d) Please refer to the GEO User Manual.

ARCHITECT’S AND ENGINEERING SPECIFICATIONS

The 2-way full-range tangent array module shall have one 8” long-excursion neodymium hi-flux cone transducer and a 1” neodymium compression driver on a hyperboloid reflective wavesource. The system’s coverage shall be consistent with the specified coverage angles and maximum frequency response. The system’s frequency response shall be free of resonances. The system shall be capable of 1500 to 3000 watts into 4Ω, with an operational range of 10Hz – 20kHz. The system shall incorporate low THD levels, high efficiency, and low noise. The system shall be capable of 125dB to 128dB peak SPL (for a single enclosure: configuration-dependent when arrayed), with a frequency response of 10Hz – 20kHz.

The system’s coverage shall be acceptable, provided independent laboratory test results verify these specifications are equalled or exceeded.
**GEO S Series loudspeakers ship with 120° dispersion in the non-coupling plane. Configuration dependent [d].**

**Dispersion**
- **Non Coupling Plane** 120° (configurable to 80°).
- **Coupling Plane** 30°.

**Frequency Response**
- **Usable Range** @-3dB: 60Hz – 20kHz
- **Nominal** -97dB SPL Wideband
- **Peak SPL @ 1m** Configuration dependent [d].

**Sensitivity**
- **1W @ 1m**: 99dB SPL Nominal -97dB SPL Wideband

**System Specifications** GEO S830 with NX242 TD controller

**Components**
- LF: 1x 8" (20cm) Neodymium Hi-flux cone transducer
- HF: 1x 1" Throat Neodymium Driver on a Hyperboloid Reflective Wavesource

**Nominal Impedance**: 16 Ohm

**Crossover Frequency**: 1.6kHz Passive

**Recommended Amplifiers**: 1500 to 3000Watts into 4 Ohm per channel. Up to 6 \( \times \) cabinets per channel may be connected to large multiple-channel amplifiers operating in slave/bridge mode.

**Shipping & Ordering**
- **Recommended Configuration**
  - 2x GEO S830 cabinets
  - 1x GEO S805 cabinet

**Rigging System**
- Please refer to the GEO User Manual before any operation.

**Electronic Controller**
- The GEO S Series cabinets are equipped with a 16-bit digital signal processor. The GEO S8 Series cabinets include a sophisticated protection system. Using GEO S Series cabinets without a properly-connected NX242 Digital TD controller will result in poor sound quality and damage to the speaker components. The GEO S8 Series cabinets can be configured to work in conventional TD mode or in the cascaded GEO configuration, which is the default setting. For detailed information, refer to the GEO User Manual.

**Architect’s and Engineering Specifications**

**Sound Pressure Level (SPL)**
- **Peak SPL** @ 1m, with a frequency response of 67Hz – 19kHz ± 3dB, shall be acceptable, provided independent laboratory test results verify these specifications are equalled or exceeded.

**Shipping Weight & Volume**
- 2x GEO S830s: 29.2kg (64.2 lbs) 0.135 cu m (4.8 cu ft)

**System Operation**
- GEO S Series cabinets and include sophisticated protection systems. Using GEO S Series cabinets without a properly-connected NX242 Digital TD controller will result in poor sound quality and damage to the speaker components. The GEO S8 Series cabinets can be configured to work in conventional TD mode or in the cascaded GEO configuration, which is the default setting. For detailed information, refer to the GEO User Manual.

**Directivity**
- **Directivity Index** [c] Not usable as a single cabinet. Configuration dependent [d].

**Peak SPL** @ 1m [b] Configuration dependent [d].

**Sensitivity** 1W @ 1m [b] 99dB SPL Nominal -97dB SPL Wideband

**Usable Range** @-6dB [a]: 60Hz – 20kHz

**Frequency Response** [a]: 67Hz – 19kHz ± 3dB

**GEO S805**
- **Dispersion** 120° (configurable to 80°). Configuration dependent [d].
- **Peak SPL** @ 1m Configuration dependent [d].
- **Sensitivity** 1W @ 1m Configuration dependent [d].

**Modules**
- GEO S Series modules are intended for horizontal tangent arrays or as a downfill element in curved (tangent) vertical arrays. Configuration dependent [d].

**Packaging**
- GEO S830s are packaged in pairs.

**Construction**
- **Height x Width x Depth**: 406 x 250 x 219mm (16" x 9 7/8" x 5 5/8")
- **Weight**: 13kg (28.6lbs) net
- **Fittings**: Grill Perforated Steel
- **Flying Integral** flying system. Intercabinet Angle Adjustments = 17.5° & 30°
- **Dark grey carpet** is optional.

**Dimensions**
- **Components**
  - LF: 1x 8" (20cm) Neodymium Hi-flux cone transducer
  - HF: 1x 1" Throat Neodymium Driver on a Hyperboloid Reflective Wavesource

**Driver**
- **Nominal Impedance**: 16 Ohm
- **Crossover Frequency**: 1.6kHz Passive

**Recommended Amplifiers**
- 1500 to 3000Watts into 4 Ohm per channel. Up to 6 \( \times \) cabinets per channel may be connected to large multiple-channel amplifiers operating in slave/bridge mode.

**Usable Range**
- **@-6dB Usable Range Data**: Frequency Response Capability with TD crossover slopes removed. Configuration dependent [d].
- **Directivity Curves and Data**: 1/3 octave smoothed frequency response, normalized to On-Axis response. Data obtained by computer processing of off-axis response curves. [d] Please refer to the GEO User Manual.

**Non Coupling Plane Coverage (°)**
- 120° (configurable to 80°).

**Coupling Plane Coverage (°)**
- 30°.
HORIZONTAL ARRAYS
The GEO S830 is designed to array
vertically with adjacent GEO cabinets to provide a
more coherent wavefront from an array of multiple cabinets than
conventional arrayable cabinets. Where the best
quality of the GEO S830 system is symmetrical, enabling you to use GEO S830 cabinets in a left-right stereo configuration. The connection between the top
GEO S830 enclosure and the bumper determines the
left-right orientation for the entire array.

GEO ARRAY & DEPLOYMENT FACTS
- GEO S830 loudspeakers are shipped from the factory with identical
 configurations on each side (see Photo). The points in the front connect each GEO cabinet to the proper hole in the horizontal rigging plate. The rear of the cabinet also has three
attachment points on each side (see Photo). The points in the rear connect each GEO cabinet to three
 equally horizontal coverage angles.

GEO S TECHNOLOGY IN GEOSoft 2.0 Display
GEOSoft v2 creates/predicts system pressure levels to determine the number of GEO loudspeaker cabinets needed for the application, as well as mechanical constraints for safety/standards, in agreement with Structural Analysis Reports, (available in the Help section): dimensions, weight, gravity center position, forces, moments, working load and safety factor.

GEOSoft v2 also precisely
creates/predicts pressure levels to determine the number of GEO loudspeaker cabinets needed for the application, as well as mechanical constraints for safety/standards, in agreement with Structural Analysis Reports, (available in the Help section): dimensions, weight, gravity center position, forces, moments, working load and safety factor.

Still, the required design logic is far
more complex than looking at a section drawing of the venue, measuring the overall angle needed to cover the coverage area from the cluster location, and adding the required number of GEO cabinets.

COLD HARD ELECTRO-ACOUSTIC FACTS
- Due to the complex interaction between multiple loudspeaker cabinets, it is simply
impossible to design curved vertical arrays, reliably without using computer processing to
predict the phenomena accurately for any real-world audience
geometry.

Instead, GEO S830 and GEO T4804 arrays deliver a coherent wavefront in the midrange and high frequencies.
- GEO S830 allows users to provide 30º increments of horizontal coverage as needed. Where the geometry is suitable, GEO S830 will deliver a coherent wavefront in the midrange and high frequencies.

Do not think of GEO S830 as only a vertical array system. Horizontal arrays of GEO S830 cabinets have relatively high power (because of the narrow 30º horizontal array elements) and wide front to back coverage of 80º to 120º.

GEO S830 is designed to array
tangentially with adjacent GEO cabinets to provide a
more coherent wavefront from an array of multiple cabinets than
conventional arrayable cabinets. Where the best
quality of the GEO S830 system is symmetrical, enabling you to use GEO S830 cabinets in a left-right stereo configuration. The connection between the top
GEO S830 enclosure and the bumper determines the
left-right orientation for the entire array.

Because acoustic centers are in perfect
alignment, GEO S830 horizontal arrays do not display the interference and lack of coherency that is observed in conventional horn arrays.
- GEO S830 loudspeakers are shipped from the factory with identical
 configurations on each side (see Photo). The points in the front connect each GEO cabinet to the proper hole in the horizontal rigging plate. The rear of the cabinet also has three
attachment points on each side (see Photo). The points in the rear connect each GEO cabinet to three
 equally horizontal coverage angles.

GEO SOFT 2.0
Simply put, GEOSoft v2 is another component of NEXO’s integrated systems technology and a design tool that advances GEO loudspeaker performance. Alternatively GEO S830 is three dimensional, powerful and highly predictive simulation software that processes measured speaker data with complex mathematical algorithms. The GEO S830 series of GEO loudspeaker array deployment tools deliver uniform 90º throughout the width and depth of any venue.

Due to the complex interaction between multiple loudspeaker cabinets, it is simply
impossible to design curved vertical arrays, reliably without using computer processing to
predict the phenomena accurately for any real-world audience
geometry.

Still, the required design logic is far
more complex than looking at a section drawing of the venue, measuring the overall angle needed to cover the coverage area from the cluster location, and adding the required number of GEO cabinets.

COLD HARD ELECTRO-ACOUSTIC FACTS
- Due to the complex interaction between multiple loudspeaker cabinets, it is simply
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predict the phenomena accurately for any real-world audience
geometry.

Instead, GEO S830 and GEO T4804 arrays deliver a coherent wavefront in the midrange and high frequencies.
- GEO S830 allows users to provide 30º increments of horizontal coverage as needed. Where the geometry is suitable, GEO S830 will deliver a coherent wavefront in the midrange and high frequencies.

Do not think of GEO S830 as only a vertical array system. Horizontal arrays of GEO S830 cabinets have relatively high power (because of the narrow 30º horizontal array elements) and wide front to back coverage of 80º to 120º.

GEO S830 is designed to array
tangentially with adjacent GEO cabinets to provide a
more coherent wavefront from an array of multiple cabinets than
conventional arrayable cabinets. Where the best
quality of the GEO S830 system is symmetrical, enabling you to use GEO S830 cabinets in a left-right stereo configuration. The connection between the top
GEO S830 enclosure and the bumper determines the
left-right orientation for the entire array.

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impossible to design curved vertical arrays, reliably without using computer processing to
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Our CD18 SubBass has re-defined the art of VLF sound reinforcement in significant ways. The sophisticated throat design profile is optimized to reduce unwanted “swooshing” at high SPL, hence improving the CD18’s fan-cooled “swivel arm” microphone designed to either produce a stronger cardioid pattern or a full 360° horizontally-opposed voicing.

DSP algorithms from NEXO’s new generation NEXO Digital TDcontroller allow individually-applied full-sub dispersion control, 32-bit high resolution, and consistent on- and off-axis listening. Neither sub-bass system can better direct VLF energy away from open microphones and unpleasant surfaces, especially the rear wall.

The subwoofer loudspeaker system shall have two 18” long-excursion 8Ω cone transducers. The system’s horizontal and vertical coverage shall both range from 110° (supercardioid) to 120° (cardioid). The system shall have a Q of 4.3 | DI=6.3 dB and Q=5.3 | DI=7.2 dB over the entire usable bandwidth for respectively cardioid and supercardioid mode. The system shall have a Nominal Impedance of 2x 8Ω (nominal) and a Recommended Amplifiers of 2x amplifier channels are required for cardioid operation, each rated at 1500 to 3000 Watts into 4Ω per channel. Up to 2x complete CD18s per channel may be connected to a two-channel amplifier.

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**COMPONENTS**

- **Drivers:** 2 x 18” (46cm) long-excursion neodymium 8Ω drivers
- **Height x Width x Depth:** 750 x 1200 x 750mm (29 1/2” x 47 1/4” x 29 1/2”)
- **Shape:** Rectangular
- **Weight:** 116kg (255.7lbs) net
- **Connectors:** 2 x NL4MP 4-pole SPEAKON (In & Through)

**Construction**

Baltic birch ply finish with structured black coating. Dark grey carpet is optional.

**Flying Points**

Integral flying system.

**SYSTEM SPECIFICATIONS** CD18 with NX242 TDcontroller

- **Frequency Response @-3dB [a]** 32Hz–100Hz ±3dB
- **Usable Range @-6dB [a]** 29Hz–120Hz
- **Sensitivity 1W @ 1m [b]** 05dB SPL Nominal
- **Peak SPL @ 1m [b]** 145dB
- **Dispersion:** Cardioid or supercardioid pattern determined by the NX242 Digital TDcontroller. (In one channel of the NX242 are applied in-phase crossover processing.)
- **Directivity Index [c]** Q=4.3 | DI=6.3 dB and Q=5.3 | DI=7.2 dB over the entire usable bandwidth for respectively cardioid and supercardioid mode.
- **Crossover Frequency** 75 or 100Hz active through NX242 Digital TDcontroller.
- **Nominal Impedance** 2x 8Ω
- **Recommended Amplifiers** 2x amplifier channels are required for cardioid operation, each rated at 1500 to 3000 Watts into 4Ω per channel. Up to 2x complete CD18s per channel may be connected to a two-channel amplifier.

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**SYSTEM OPERATION**

**Electronic Controller**

The NEXO Digital TDcontroller presets are precisely matched to the CD18 and include sophisticated protection systems. Using CD18 SubBass without a properly-connected NEXO Digital TDcontroller may result in poor sound quality and can damage components.

**Speaker Cables**

The front loudspeaker of the CD18 is wired + & - while the rear loudspeaker is wired 1- & 1+. The CD18 must use separate cables to the main system.

**Rigging System [d]**

Please refer to the user manual before any operation.

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**SHIPPING & ORDERING**

**Packaging**

CD18s are packaged individually. Order as CD18-C (finished in grey carpeting) or CD18-P (finished in black structured coating).

**Shipping Weight & Volume**

1x CD18 = 131.5 kg (289.8lbs), .98 cu m (34.4 cu ft)

The CD12 is a hypercardioid subwoofer providing directional low-frequency output with dramatic LF reduction behind the cabinet(s). This is achieved through the interaction of two independently driven 12-inch drivers, highly specialized waveports, and DSP control of the NX242 Digital TDcontroller.

**SYSTEM SPECIFICATIONS CD12 with NX242 TDcontroller**

- **Nominal Impedance**: 2x 6Ω
- **Crossover Frequency**: 90 or 130Hz Active through NX242 Digital TDcontroller
- **Dispersion** [c] Hypercardiod pattern 120° x 120° over the entire usable bandwidth. Directivity Control is achieved through DSP algorithms in the NX242 Digital TDcontroller (two channels of the NX242 are used for the process).
- **Peak SPL @ 1m** [b] 131 to 134dB Peak (500 to 1200W RMS Amp)
- **Sensitivity** 1W @ 1m [b] 102dB SPL Nominal
- **Usable Range @-6dB** [a] 39Hz – 150Hz
- **Frequency Response** [a] 42Hz – 130Hz ±3dB
- **Directivity Index** [c] Q = 3.773DI = 5.7dB over the entire usable bandwidth.
- **COVERAGE** (°)
  - 1kHz: 120°
  - 100Hz: 75°
  - 30Hz: 60°

**PRODUCT FEATURES**

- **Construction**: Baltic Birch Ply finish with structured black coating.
- **Weight**: 35kg (78.4lbs) net
- **Shape**: Rectangular
- **Dimensions**: 750mm (29 1/4") W x 750mm (29 1/4") D x 800mm (31 1/2") H
- **Driver**: 2x 12" (30cm) Long-excursion Neodymium
- **Components**: 2x 12" (30cm) Long-excursion Neodymium
- **Connectors**: 2x NL4MP 4-pole SPEAKON (In & Through)
- **Packaging**: CD12s are packaged individually in 44cm x 44cm x 10cm (17.3" x 17.3" x 3.9") corrugated boxes. CD12s are optional, but a ratio of 1x CD12 per 3x full-range GEO modules is required for proper directional low-frequency output.
- **Shipping & Order Information**: CD12s are shipped with internal subwoofer cables. For flying or stacking applications, optional CD12 Hypercardioid Sub is available.
- **Shipping Weight & Volume**: 1x CD12 = 42.35kg (93.4 lbs), 0.29cu m (10.2cu ft)

**SYSTEM OPERATION**

- **Nominal Impedance**: 2x 6Ω
- **Recommended Amplifiers**: 2x amplifier channels are required for Hypercardioid operation, each rated at 1500 to 3000Watts into 4Ω. Outputs of connected CD12s are balanced and require a properly-connected NX242 Digital TDcontroller.
- **Nominal Impedance**: 2x 6Ω
- **Connectors**: 2x NL4MP 4-pole SPEAKON (In & Through)

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**SUB-BASS**

The CD12 is a hypercardioid subwoofer providing directional low-frequency output with dramatic LF reduction behind the cabinet(s). This is achieved through the interaction of two independently driven 12-inch drivers, highly specialized waveports, and DSP control of the NX242 Digital TDcontroller.

**CD12 SUB-BASS**

The compact CD12 exhibits innovative technology and design to achieve a powerful, full-range GEO subwoofer system. The compact CD12 is designed to provide a powerful, full-range GEO subwoofer system. The compact CD12 is designed to provide a powerful, full-range GEO subwoofer system. The compact CD12 is designed to provide a powerful, full-range GEO subwoofer system.
NEXO’s new NX242 Digital TD Controller is an advanced proprietary digital processor that maintains exceptional performance and reliability with its Dual Digital Signal Processing system and extensive internal circuitry. The NX242 provides a comprehensive,แรง-uniformed control and interconnection with a newly developed Ethernet and IN/BUS component. The NX242 complex software is automatically calibrated to cater with continuous digital networking and measurement settings, while alternative and newly available data in real-time with high-speed Digital Audio Distribution System and Dynamic Control over the Ethernetnet via EtherSound® connection with the Mension® controller board.

USER CONTROLS

Each controller provides a host of features, such as:
- Sense Inputs 4x Amplifier Sense-Inputs, 18bit converters; Floating 150kOhm. 8-Pole Removable floating, 20kOhm. CMMR=80dB. 2x XLR 3 connectors.
- Digital Outputs with 16bit and 20kHz sample rates.
- Analog Outputs with 24bit and 20kHz sample rates.
- 24bit digital audio outputs; 48kHz sample rates.
- Dynamic Range All Channels = 110dB.
- Dynamic Force All Channels = 110dB.
- Sample Rate 48kHz.
- Total Harmonic Distortion THD = 0.003%.
- Crossover Filters 2x 12bit, adjustable by 1dB increments.
- Continuous Peak Level Monitoring.
- 3x XLR-3M connectors.
- Rear panel On/Off Mains switch; mains IEC socket; RS232 serial communications connector; Select Wheel and Enter Button; Four MUTE/SOLO Buttons.
- 3x XLR-3M connectors.
- AES/EBU inputs and outputs enable easy connection to other devices.
- Ethernet connection allows control of subsequent Vortex Amplifiers & NX242 Digital TD controllers daisy-chained through the CAI RS485 Network.
- NX242 FEATURES

The NX242 features advanced features and capabilities such as:
- Dynamic Range All Channels = 110dB.
- Dynamic Force All Channels = 110dB.
- Sample Rate 48kHz.
- Total Harmonic Distortion THD = 0.003%.
- Crossover Filters 2x 12bit, adjustable by 1dB increments.
- Continuous Peak Level Monitoring.
- 3x XLR-3M connectors.
- Rear panel On/Off Mains switch; mains IEC socket; RS232 serial communications connector; Select Wheel and Enter Button; Four MUTE/SOLO Buttons.

The NX242 is designed to be used in conjunction with the Mension® controller board, which offers several advantages such as:
- Dynamic Range All Channels = 110dB.
- Dynamic Force All Channels = 110dB.
- Sample Rate 48kHz.
- Total Harmonic Distortion THD = 0.003%.
- Crossover Filters 2x 12bit, adjustable by 1dB increments.
- Continuous Peak Level Monitoring.
- 3x XLR-3M connectors.
- Rear panel On/Off Mains switch; mains IEC socket; RS232 serial communications connector; Select Wheel and Enter Button; Four MUTE/SOLO Buttons.

The NX242 provides a comprehensive solution for managing multiple loudspeaker systems, with its advanced features and capabilities, offering unparalleled performance and reliability in a wide range of applications.