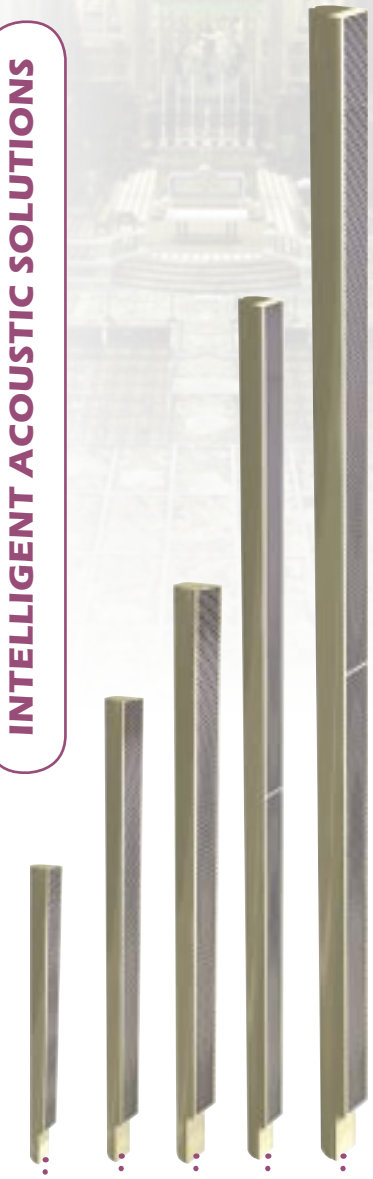
DSP CONTROLLED SIDE LOBE FREE LINE ARRAY

MESSENGER®

INTELLIGENT ACOUSTIC SOLUTIONS



12 Loudspeakers - 169 cm - 94 dB à 25 m.
18 Loudspeakers - 237 cm - 94 dB à 30 m.
24 Loudspeakers - 304 cm - 94 dB à 40 m.
36 Loudspeakers - 474 cm - 94 dB à 60 m.
48 Loudspeakers - 608 cm - 94 dB à 70 m.

The Messenger series is a range of fully digital sidelobe-free speaker array. These unique units features the latest technology and are based on a patented algorithmic technique, which makes it ideal for high quality speech and background music applications, especially in reverberant acoustic environments where it is difficult to meet contractual speech intelligibility requirements.

Each Messenger array has a very tightly controlled beam, which can be shaped as required for specific applications or environments requiring symmetrical or asymmetrical, single, dual or triple lobe design. The availability of high powered DSP's such as the Texas Instruments™ which provides 24 channels of precise control by means of additional process channels, results in a very powerful array, where the SPL stays within +/- 3 dB over a distance of 100 m.

The Messenger range is completely software controlled, this lobe control/ variable acoustical centre can compensate for architectural requirements and can be easily adapted for specific types of application. Its flexible mounting height of between 1.2 and 4m above ground level ensures the array can be securely positioned out of reach.

The Messenger series offers a Q factor of up to 72, (10 V by 145 H) or even higher with smaller vertical opening angles up to 5 degrees, which compares very favorably with good horn loudspeakers. Good horn loudspeakers are noted for their directional characteristics (but normally within significantly smaller horizontal opening angles and therefore covering range). Equal coverage and no side lobes results in a precisely controlled listening field and high intelligibility with a maximum signal to reverb ratio.

The Messenger series is ideal for use in Life-Safety applications where special requirements are necessary for Voice Evacuation systems. Each Messenger is equipped as standard with a 24 VDC battery backup input, amplifier and loudspeaker-element surveillance based on internal HF-carrier detection.
20 kHz input signal surveillance on audio input 2 is provided on an optional expansion board. (SD-1)

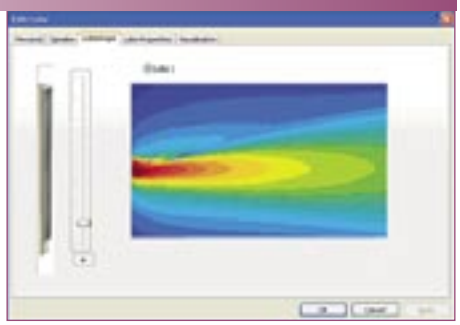
MAIN PROPERTIES

- Fully digital sidelobe-free speakerarray. Triple-lobe feature for the ultimate accuracy in lobe design.
- Features the latest technology based on a patented algorithmic technique.
- Specially designed for high quality speech and background music applications in reverberant acoustic environments where it is difficult to meet contractual speech intelligibility requirements.
- More flexible than earlier array technology because of the 'Linear-Spacing' technique and easy to install without a direct need for lobe fine tuning.
- Tightly controlled beam, up to 5 degrees, which can be shaped in nine steps to meet each specific application or environment.
- A-symmetrical and Symmetrical arrangement by means of software control.
- Integrated DSP control with 7 band parametric EQ, noise gate, delay rooms, peak limiter, VOX-control on priority input and level raising microphone for ambient noise sensing.
- Adaptable ACOUSTIC centre. Acoustic centre can be freely moved over the array to match lobe shape with the listening area.
- Q factor of >72 (10 V x 145 H).
- Equal coverage and no side lobes results in a precisely controlled listening field and high intelligibility even with a minimum S/N ratio.
- Consistently high sound quality across the coverage area and, because the sound is restricted to the area required, it can be louder than in earlier array technology.
- Designed to be environmentally friendly in build and application.
- Equipped for Voice evacuation applications.
- 24 VDC input for battery backup, 20 kHz Input surveillance. Internal HF carrier loudspeaker surveillance.
- Ambient noise sensor. Temperature sensor with frost protection. Battery surveillance. Fault report contacts.
- RS485 data bus for full detailed status report and PC based remote setup (up to 32 Messengers on the bus).
- EASE DLL, for advanced room acoustic simulations.
- SPL stays within +/- 2 dB variation over a distance of at least 60 m.

The **Messenger** arrays are one of the only active array's that can be used for these specialist kind of sound-applications where high intelligibility is the No.1 priority!

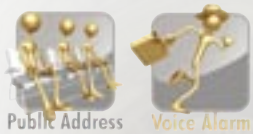
Windows based PC Setup

M-Control

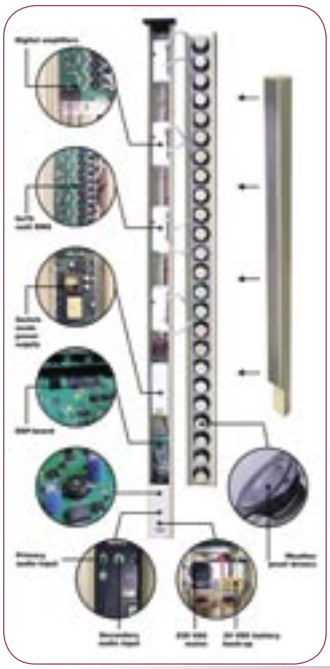


Lobe assembler

DSP CONTROLLED SIDE LOBE FREE LINE ARRAY



MESSENGER®

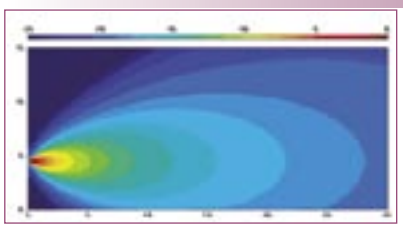


State of the Art Directional Sound.
The accurate sound direction and the highly controlled sound level within the beam are due to the well controlled conversion of the energy being directed in the desired area, while featuring at least 20 dB signal drop outside the beam. This allows one to achieve better STI (Speech Transmission Index) levels (intelligibility) in comparison with other speaker technologies while minimizing noise pollution outside the desired area.

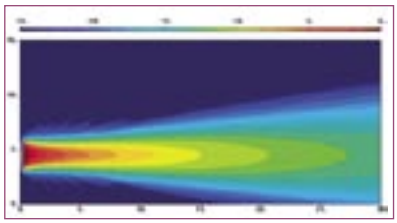
Software controlled Lobe Shaping with the Messenger's Lobe Assembly program.
The Messenger series has a unique feature, which has great installation and application benefits. The acoustical centre can be moved over the array to match and compensate in relation to the required installation, mounting height and environmental need.

Each driver is separately powered and processed, therefore all lobe shape variations between a Symmetrical and an Asymmetrical arrangement can be made with the simple push of a button. This beneficial feature separates the Messenger from other line-array speakers, making it one of the most flexible options available with its unique software controlled directivity pattern with the Messenger's Lobe Assembly program.

Variable vertical dispersion from 45 down to 5 degrees

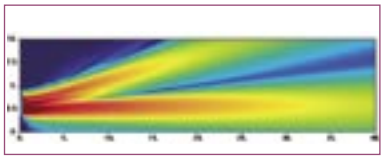


45° opening angle

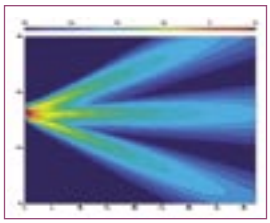


5° opening angle

Multiple lobes up to 3 simultaneous lobes

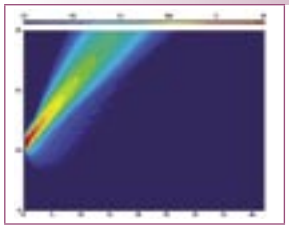


Doble lobe

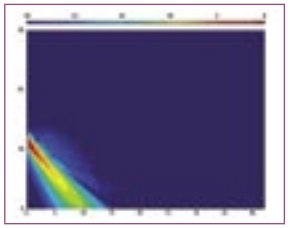


Triple lobe

Beam stearing

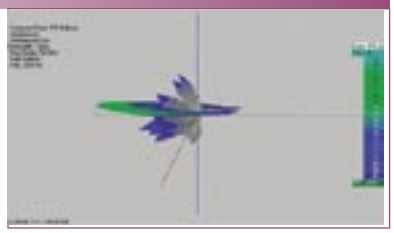


+45° Azimut

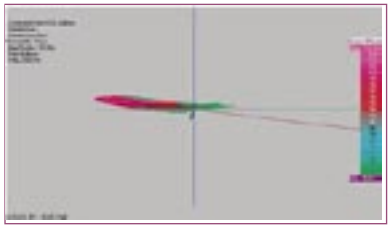


-45° Azimut

Side lobe suppression

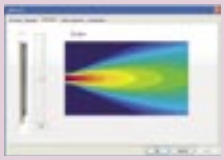


Conventional arrays

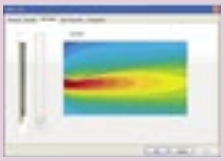


Messenger

Variable Acoustic Centre. In nine-steps from Asymmetrical to Symmetrical.



Symetrical lobe



Asymetrical lobe

LOBE CONTROL

- Symmetrical lobe is centred in the middle. The Asymmetrical lobe is centred at the bottom or the top of the array.
- Any other position of the acoustical centre between the middle and the bottom of the array is fading the lobe-shape from a purely Symmetrical shape to an Asymmetrical shape.
- Symmetrical lobes are used for mounting heights at 1.2 m from the floor and effects in a sharp defined directive shape with vertical opening-angles adjustable in steps from 5 to 45 degrees. The lobe shape guarantees an equal coverage even when situated very near to the source. Symmetrical lobes are also ideal to address high raised balcony seating areas.
- Asymmetrical lobes are used for mounting heights between 2.5 and 4 m from the floor and results in a lobe that starts at 5 m distance from the array at ear level and ends in a sharp lobe at 60 m and further
- The Asymmetrical lobe has the ability to keep the sound deviation within 2 dB from 5 to 60 m. Its mounting height is NOT critical and therefore it is the most used system solution. The vertical opening angle can be adjusted in steps from 5 to 45 degrees.

STEERABLE BASS-ARRAY DSP CONTROLLER

8-CHANNEL BASS-ARRAY CONTROLLER

MAIN PROPERTIES

- Controlled directivity.
- Low and Sub-Low steering.
- Variable opening angles.
- Controlled freq. 25 - 400 Hz.
- Signal decay, ± 1dB @ 100 m.
- Long throw.
- High SPL, 97 dB @ 100 m.
- High clarity.
- Effective size: 7 to 14 m.

The Bass-Array Controller or Lambda Array is one of the latest technical creations of ATEÏS INTERNATIONAL that fits perfectly in the 'Intelligent audio solution' range of products and has proven to be a real add-on to the third generation Messenger® line arrays.

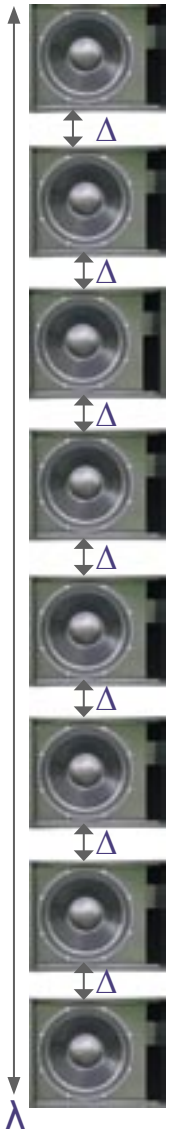
The combination of Messenger line arrays and a Bass-Array offers the perfect solution for speech and musical performance in any difficult acoustic environment.
By applying the same patent Messenger® technology to the Bass-Array, makes it the first array of its kind that carries bass frequencies over long distances and keep the signal deviation within 2 dB over 100 m.

The technology:
The Bass-Array is based on the Messenger® patent algorithm that was introduced in 1999 by Johan van der Werff and is now owned by ATEÏS INTERNATIONAL. Using a controlled power and frequency shading model, full directivity control and side-lobe suppression can be obtained. Upper and lower frequencies of this controlled directivity concept are defined by means of extending the total length for the lower frequencies by having multiple sources of which their acoustic centres are within ½ distance of the upper frequencies spaced. With a total length of 14 meter and only 8 cabinets, lobe steering and directivity control can be achievedown to 35 Hz up to 400 Hz.

With the use of the powerful Messenger® LOBE-ASSEMBLER software you can built and shape the Bass-Array-Lobe to fit perfectly in the acoustic difficult environment. Use a dual or triple lobe and the Bass-Array-Lobe can cover both ground level and balcony with the highest directivity possible and with the lowest signal deviation. Variable opening angles for variable throws and symmetrical and/or asymmetrical lobes can be constructed. By changing the ½ distance, the Bass-Array can be adapted to fit with required cross-over frequencies with any midd-high tone array available in the market.

The bass cabinets used in the Bass-Array can be of any brand and any size. The lobe assembler software can be easily adapted to any size and brand. For this we can adapt the Lobe Assembler software to meet the 3rd part brand specifications. The processor for the Bass-Array is delivered as 19-inch rack mount frame that provides analogue as well as AES interfacing with the self-powered third party Bass-cabinets.

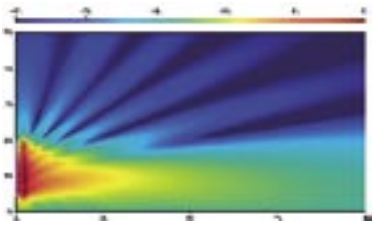
λambda-Array



DIMENSIONS

Length	700 cm	Frequency respond	50-340 Hz, Delta – spacing Δ 100 cm
		Width	43.6 cm
		Steering	± 15°
		Vertical opening	10 - 25
Length	1400 cm	Frequency respond	35-200 Hz, Delta - spacing: Δ 200 cm
		Width	43.6 cm
		Steering	± 10°
		Vertical opening	5°-25°
		Power rating	8 x 500 Watt Self powered
		Max SPL@125 Hz	95 dB@ 5-100 m ±2 dB
		3rd party engine	15" long excursion cone driver, ferrofluid cooled Cabinet resonance <45 Hz

LOBE ASSEMBLE for BASS-ARRAY



In this example we have constructed a 14 m Array with 8 bass-cabinets. The Δ-spacing is set to 2 m. The lowest cabinet is positioned at a height of 4 m above ear level. The lobe has an asymmetrical base-FIR that is centred at speaker no. 3. With an opening angle of 7 degrees and an azimuth of -2 degrees, this lobe has only 2 db variation from 5 to 100 m, measured at a listening height of 1.80 m. This would result in an SPL @ 100 m of 94dB at 120 Hz. The signal that reach the ceiling at a height of 30 m is more than 10 dB down from the signal level at listening plane.