



**Outline**

**miniCOM.P.A.S.S.**  
**iMode**

outline

## 2005: OUTLINE INVENTS THE ROBOT-ARRAY...

Following the wishes of founder Guido Noselli, Outline patented the first robotized loudspeaker enclosure of all time: **COM.P.A.S.S.** In fact, the **COMpact Polar Adjustable Sound System** received Europe's most coveted acknowledgment: **the Award for Product Innovation** at London's 2005 Plasa Show.

Its revolutionary peculiarity consists in the fact that its dispersion can be remote controlled as required on both planes; all by means of motorized actuators and control software, once the element has been positioned (alone or in multiples) when used for sound reinforcement.

So 2005 saw the beginning of a new chapter in Sound Reinforcement history, and the ambitious corporate mission aimed at combining "**Mind, PC and Enclosure**" in fact became a reality.

## TODAY...

The latest "iMode" version of today's Mini-COM.P.A.S.S. takes its form from the COM.P.A.S.S., which can be considered an exemplary "concept".

A compact, ultra-light (24kg / 52.9lb) **self-powered** element, equipped with six loudspeakers: **four high-efficiency 5" mid-woofers** with a twin neodymium magnetic circuit and **two compression drivers, each with a 1.75" diaphragm** and loaded with a D.P.R.W.G. waveguide (Outline patent – see specific paragraph). Mini-COM.P.A.S.S. is the only compact VLA on the world market that ensures a fundamental feature:

- Adjustable horizontal directivity with a very wide angle of variation, from 60° to 150° in 15° steps per side in relation to the axis, even asymmetrically (see diagrams and illustrations).

## iMODE: THE INTELLIGENT AUDIO PLATFORM

In the latest generation of its Mini-COM.P.A.S.S., Outline has fitted an '**embedded**' computer (with Web server and sophisticated network facilities), for a control that could be described as "with no geographic limits".

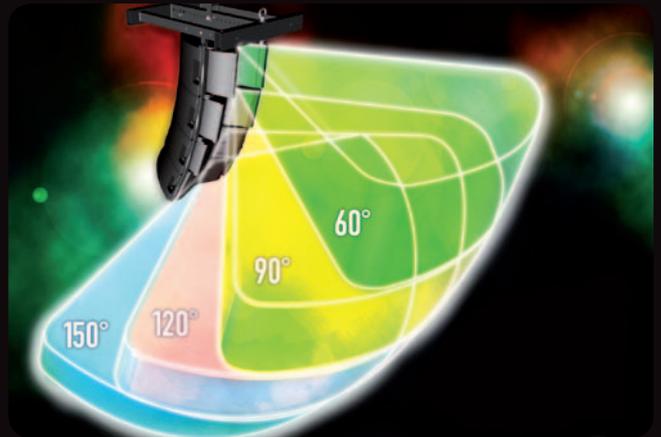
Christened "iMode" and launched in 2009, this innovative (proprietary) Outline platform is the company's top technology. Developed with these criteria, it is unbeatable worldwide. In fact, each enclosure has its own "intelligence", which, thanks to the Web, is able to **receive feedback** from users (FOH and system engineers, audio consultants etc.): for example, settings or any other parameters they need to "communicate" to the enclosure. At the same time, the system is able to **send feedback**, providing

## HOW...?

By means of a simple, reliable mechanical movement, it is possible to move the system's "wings" (or the sides of the waveguide) and aim them as required, thus modifying the system's acoustic dispersion characteristics to meet the most varied needs.

## SOUND IS ONLY AIMED WHERE IT'S NEEDED

Mini-COM.P.A.S.S. iMode has 16 combinations of horizontal dispersion (including asymmetric ones), for use according to the size and position of the audience, but also according to venues' acoustic properties. For example, in arenas with excessive reverberation, it is very useful for avoiding reflections from walls. Audio technicians are well aware that the "intelligibility" factor is decisive for a show's success or failure from an acoustic point of view. **Because sound is only aimed where it's needed.**



users information on its operating status, with an unprecedented level of precision, data quantity and quality.

To understand iMode's potential, it's sufficient to imagine the operation of a Web site, which can be consulted and updated in every aspect (parameter), from anywhere in the world, via a standard Web browser. This same principle holds for iMode.

Everything "runs" on a **Linux operating system**, with the advantages that this logic means in terms of **stability** and **interoperability** (already well known in the most important IP applications, from military to hospitals). Mini-COM.P.A.S.S. iMode is in fact a highly flexible far-sighted object looking to the future, ready to "interact" with modern digital consoles, SmartPhones and "intelligent" devices of today and tomorrow.

## AN ALL-IN-ONE CONCEPT, PUSHED TO THE MAXIMUM.

### FROM THE CONSOLE TO THE ENCLOSURES - DIRECTLY.

It is sufficient to consider a live concert. Then a modern digital console, i.e. the main control centre for the signals. Thanks to its digital inputs and the use of plug-ins, all Mini-COM.P.A.S.S. iMode parameters will be able to be controlled by the desk:

- Gain
- Mute
- Polarity
- Delay
- Filters
- Limiters
- Bypass of all functions
- Ghost technology (creation of "steered" arrays; separate control of a group of speakers/single enclosure)
- Network settings (static/dynamic IP)
- Bonjour (Zeroconfig) technology compatibility
- Network communication speed to ensure the best network topology match
- Enclosure description (the enclosure's name)
- 3-level system update (application, presets, operating system)
- Type of input: analogue/AES3 digital
- Sensitivity: +10dBu / +20dBu
- Amplifier Mute
- Power LED
- Flat
- Input Overload
- Signal
- Temperature
- Protection
- Limit
- Quantity of intervention of the limiters
- RMS VU meter
- Peak VU meter with highest value stored
- Number of clips through time
- Preset management (import, export, save)

The system has everything on-board. No software, matrix, DSP, amplifier or any other device is required in the audio chain, with obvious advantages in terms of costs and practicality. Mini-COM.P.A.S.S. iMode ensures top grade audio (24 bit/192 kHz), the highest quality currently available.

## UP TO 2 SECONDS' DELAY AND A TWIN COMPRESSOR-LIMITER PER CHANNEL

In the event of the PA to control being complicated – for example in the case of multiple VLAs – and a delay being required, Mini-COM.P.A.S.S. iMode provides a delay time of up to 2 seconds for each channel; an operation normally only possible with a matrix. This is yet another feature that clearly distinguishes it from competitors (which offer a few milliseconds to align the enclosures' LF and HF sections).

Mini-COM.P.A.S.S. iMode can also count on a twin dynamic processor for each channel (peak/RMS), guaranteeing its reliability.

## FIR AND IIR FILTERS WITH A RESOLUTION OF UP TO 64 BIT

To obtain the maximum phase linearity and ensure even coverage of the area in question, Mini-COM.P.A.S.S. iMode uses FIR and IIR filters with a resolution of up to 64 bit. Another unique characteristic among compact VLAs on the international market that contributes to making this system a unit for no-nonsense professional Sound Reinforcement applications.



FROM THE  
CONSOLE  
TO THE  
ENCLOSURES:  
DIRECTLY.

## SENSORS AND DIAGNOSTICS: TOTAL CONTROL

Positioning the “wings” (or the sides of the waveguide) in sixteen possible ways means changing the acoustic radiation (directivity) conditions each time. No problem. At this point, an ingenious sensor-based recognition unit comes into play, which has the job of “informing” iMode of the dispersion angle chosen by the users (e.g. system engineers). On-axis response is automatically adjusted in real time. The position of the “wings” (or sides of the waveguide) can be viewed by just visiting the Mini-COM.P.A.S.S. iMode Web page. The system “perceives” the physical movement and displays it in real time on the screen. This view is a perfect demonstration of the concept of sensor technology.

Plus, by means of a useful “power LED” (on the front of the system) the position of each individual enclosure can be identified from a distance, even among one or more arrays made up of numerous elements. From an audio technician's point of view, knowing that the system shown on the screen is an accurate representation of the one mounted for the concert soon to be held is reassuring. Mini-COM.P.A.S.S. iMode is compatible with Outline's (proprietary) “Openarray 3D” acoustic simulation software, a remarkably powerful precise tool (outline.it).



## D.P.R.W.G. WAVEGUIDE: REFERENCE HF SECTION

The section for the reproduction of the high frequencies on the Mini-COM.P.A.S.S. Live iMode is entrusted to two compression drivers, each with a 1.75” diaphragm and loaded with a D.P.R.W.G. (Double Parabolic Reflective Wave Guide), an Outline international patent, already used successfully on the other VLAs manufactured

by the company. The result of three years' research and trials, the D.P.R.W.G. is a truly original device, the design of which is based firmly on mathematical calculations. Further information can be found in the White Paper by Guido Noselli, which can be downloaded from (www.outline.it).

## HIGH-PRECISION MECHANICS

No matter how many enclosures are used, setting up the VLA is a job that takes just a few minutes and does not require any physical strain. The mechanics of the flying system offers the necessary precision for the foreseen adjustments with resolution of 0.5° per step between the elements, in spite of the capacity being over-sized compared to the load. The mechanics' intelligent design facilitates individual elements' positioning.



Outline uses top-grade mechanisms: the result of a skilful combination of top quality material and treatment used, in order to ensure the structure superlative hardness (500 HV) and for extremely high resistance to corrosion and abrasion, as well as high resistance to stress. All with a really low weight.



1.



2.



3.

1. **COMPONENT FLIGHT CASES:** for Mini-COM.P.A.S.S. transport and protection, dedicated flight cases with sturdy smooth-running wheels have been built. A four-unit case protects the enclosures and provides a perfect trolley for facilitating VLA transport and set-up (no physical strain is required to raise the elements).

2. - 3. **VLA SET-UP:** it takes just a few minutes and does not require any physical strain. System for setting the systems' splay angle (from 0 to 7.5°)

# miniCOM.P.A.S.S. iMode

## KEY FEATURES

- Adjustable horizontal directivity (60° to 150°, even asymmetrically)
- 16 different horizontal pattern controls
- Built-in Outline's proprietary 'iMode' technology (Intelligent Audio Platform)
- Extremely high audio quality (192 kHz minimum, 24-bit A/D and D/A conversion)
- Analogue/AES3 digital inputs (from the console to the enclosures – directly)
- Linux OS with Outline-customized kernel for great stability and flexibility
- Fitted with Web server and sophisticated network facilities
- Bonjour (Zeroconfig) technology compatibility
- FIR and IIR filters with a resolution of up to 64 bit
- Ghost technology (creation of "steered" arrays; separate control of a group of speakers/single enclosure)
- Twin dynamic processor for each channel (peak/RMS)
- Up to 2 seconds' delay and a twin compressor-limiter per channel
- Feedback circuit from transducers and diagnostic capabilities
- Self-powered loudspeaker system (500+500 Watts)
- Components: 4 x 5" (LF/MF); 2 x 1.75" (HF) diaphragms
- 2 Outline's D.P.R.W.G. waveguides
- Very high SPL (4 modules): 141 dB @ 1 m (peak)
- Very low weight (including flying hardware): 24 kg - 52.9 lb



## APPLICATIONS

- Both permanent and portable systems
- Mobile and touring applications, medium-sized PA companies
- Corporate AV, Houses of Worship, Performing Arts Centres, Concert Halls, Theatres and other similar applications.

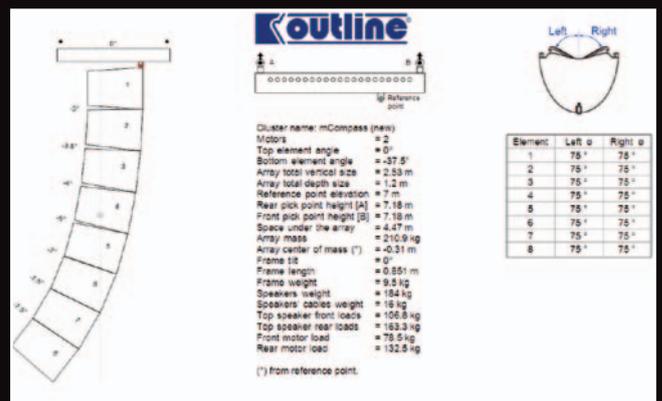
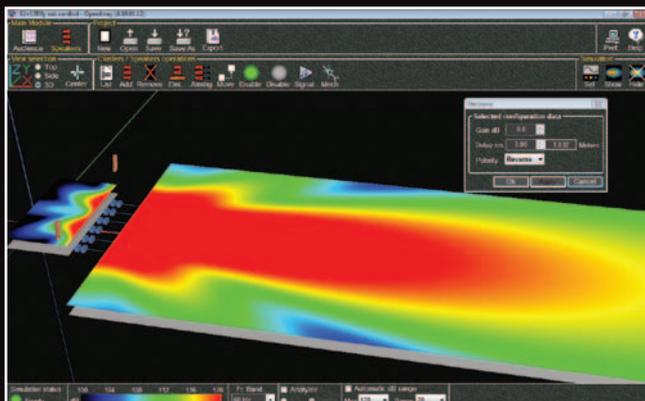
## OPENARRAY 3D SIMULATION SOFTWARE

**OPENARRAY** is the avant-garde control and 3D simulation software, written by Outline's R&D team.

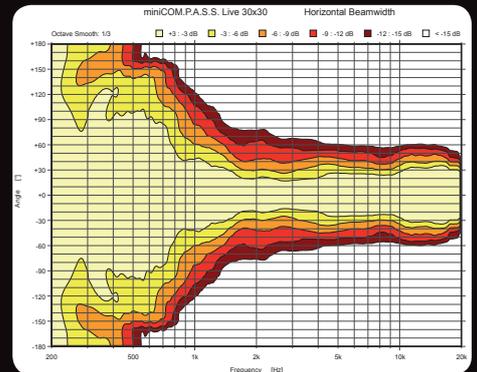
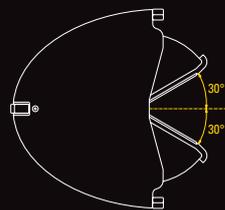
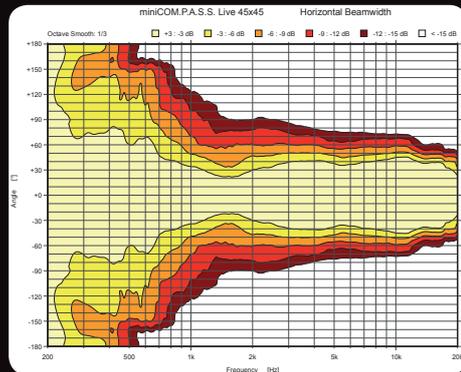
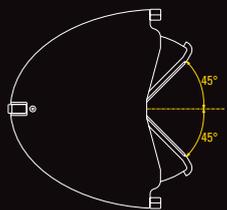
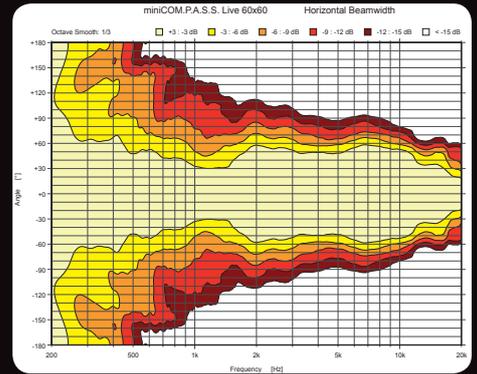
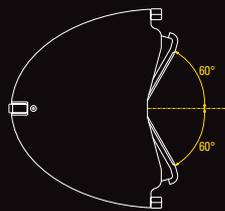
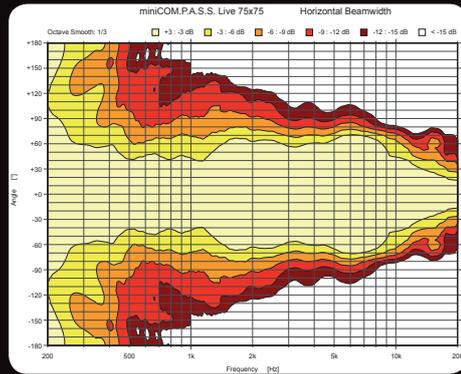
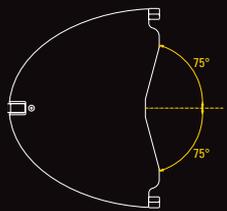
It's a three dimensional software program that can predict the results expected from either a live performance or an installation of a wide range of Outline products, including all the Line Arrays and subwoofers models as well Outline's most popular point source systems. The result is a 'tool' able to guide PA system engineers through correct set-up procedure from an acoustic and mechanical point of view while fully respecting safety norms.

**OPENARRAY** greatly facilitates installation, setting and aiming of Line Array elements: the risk of poor results is thus drastically reduced. The technology behind **OPENARRAY** is based on a GL platform and features incredibly fast rendering time from input of data to final design.

**OPENARRAY** also has the ability to import DXF files, thus giving engineers a head start to final deployment of the intended system. This, and many other features, makes **OPENARRAY** one of the most exclusive product on the international scenario.



# MINI-COM.P.A.S.S. iMODE - HORIZONTAL DISPERSIONS



## TECH SPECS - DIMENSIONS - WEIGHTS

### TRANSDUCERS & LOADING

LOW/MID  
HIGH

4 x 5" NdFeB woofers with vented loading  
2 x 1.75" diaphragm NdFeB compression drivers, D.P.R.W.G. (Double Parabolic Reflective Wave Guide) loaded

### ACOUSTICAL "Flat" preset, free-field measurement

FREQUENCY RANGE (-10 dB) 100 Hz ÷ 20 kHz  
MAX PEAK (Short Term) SPL @ 1m  
1 Enclosure 131 dB-SPL  
4 Enclosures 141 dB-SPL

### COVERAGE ANGLE

Vertical Depends on array length and configuration  
Horizontal Depends on geometrical configuration (16 combinations)

### AUDIO INPUT

INPUT TYPE Analogue/Digital AES3  
CONNECTORS 1 XLR + 1 Link Out  
INPUT IMPEDANCE 10 kOhms  
INPUT SENSITIVITY Adjustable via Software

### POWER AMPLIFIERS

TYPE Class D (Digital)  
RATED POWER 2 x 500 W/EIAJ on 4 Ohm  
RATED DISTORTION (THD, DIM, SMPTE) < 0.5 %  
COOLING Two fans controlled via temperature sensor

### AC POWER REQUIREMENTS

CONNECTORS 1 PowerCon + 1 Link Out  
VOLTAGE SELECTION Manually selectable - two ranges (115 V / 230 V)  
CURRENT CONS. (Continuous) 1.6 A (230/240 VAC)  
Recommended max number of enclosures on the same AC Line: 2.6 A (115/120 VAC) 3

### REMOTE CONTROL

CONNECTORS 2 x EtherCon (RJ 45 Socket)  
FEATURES Built-in iMode Technology

### RIGGING (Mounting Information)

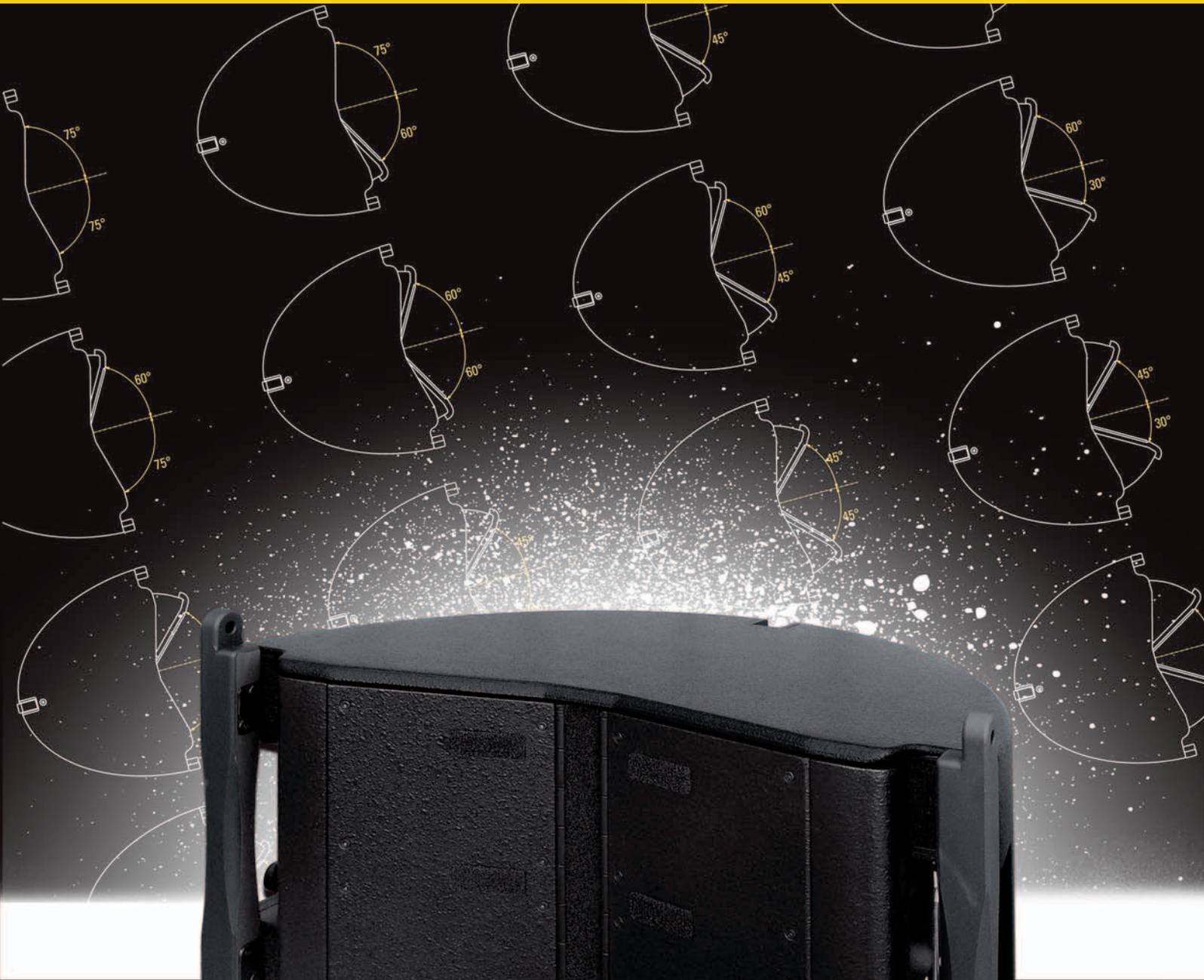
FLYING SYSTEM Integrated hardware  
MAX ARRAY LENGTH 12 enclosures  
SPRAY ANGLES BETWEEN ENCLOSURES (°) 0/ 0.5 / 1 / 1.5 / 2 / 2.5 / 3 / 3.5 / 4 / 4.5 / 5 / 6 / 7 / 7.5  
FRAME MATERIAL Light-weight, high-strength aluminium alloy  
DIMENSIONS (H x W x D) 10 x 70 x 85 cm (3.9 x 27.6 x 33.5 inches)  
WEIGHT 12 kg (26.5 lb)

### PHYSICAL

DIMENSIONS (H x W x D) 35 x 55 x 41.6 cm (13.8 x 21.7 x 16.4 inches)  
WEIGHT 24 kg (52.9 lb)

### SHIPPING DIMENSIONS AND WEIGHT

DIMENSIONS (H x W x D) 43.5 x 64.5 x 49 cm (17.1 x 25.4 x 19.3 inches)  
WEIGHT 26.5 kg (58.4 lb)



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**OUTLINE ITALY**  
Tel.: ++39 030 35.81.341 - Fax ++39 030 35.80.431  
mail to: info@outline.it  
www.outline.it

**OUTLINE UK**  
Tel.: ++44 (0) 1778 42.03.30  
Mob.: ++44 (0) 7770 33.60.44  
mail to: peterb@outlineuk.com

**OUTLINE NORTH AMERICA LLC**  
Tel.: 516.249.0013 - Fax: 516.249.8870  
Mob.: 1.917.873.3602  
mail to: na\_sales@outline.it

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