

## *Introducing O-Line™ from Martin Audio*

O-Line™ is a versatile, micro-line array designed for installation in a wide variety of architectural and challenging acoustic environments. Its modular approach and scalability extend its use from foreground applications to sound reinforcement in large acoustic spaces.

# O-LINE™



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## *principle*

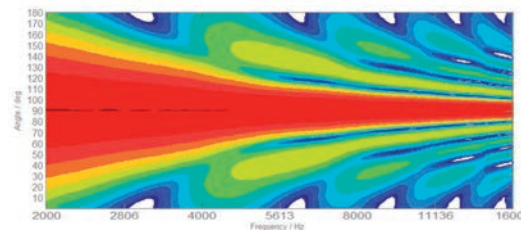
Each O-Line array is constructed by connecting together multiple array modules. Up to 24 modules can be connected where both high output and vertical focussing down to low/mid frequencies are required. Smaller numbers of modules (down to 4) can be used for shorter-throw applications, where vertical focussing of the low/mid frequencies is less important. This scalability means that O-Line can be used in an extremely wide variety of applications – from bars to sports venues and churches. Visually, an O-Line array is slim and unobtrusive, with soft lines that minimise its visual presence in an architectural environment.

## *precise vertical focussing*

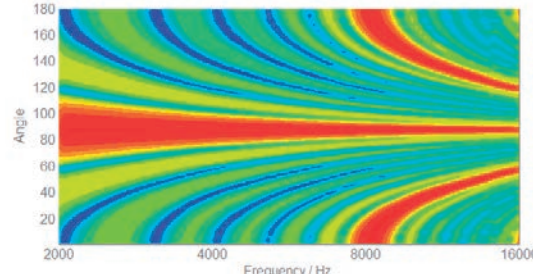
Rather than applying DSP to a traditional column, O-Line's vertical beam-forming is achieved by physically articulating individual array modules to curve the array. The actual array configuration for a specific venue is determined by powerful, patent-pending optimisation software which makes intelligent judgements about the 'goodness' of the array's SPL distribution against objective target functions. This enables focussed sound energy to be delivered precisely where it is needed and kept away from reflective surfaces and ceilings. It also means that all the energy produced by the array transducers is utilised additively, at all times, unlike some flat, steered columns which need to taper the output of the outer drivers to produce wider beams. By configuring the array physically in accordance with the optimisation software, the SPL distribution of an O-Line array can be exactly contoured to the shape of the venue, at all frequencies.

## *sidelobe-free*

O-Line uses a line of five custom-designed dome tweeters, with a spacing of only 21mm between each element. The result is sidelobe-free vertical dispersion from the high frequency section.

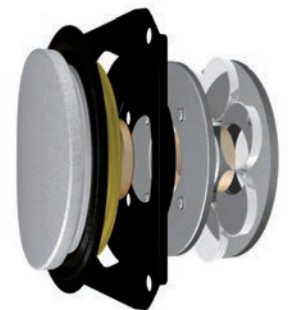


Compare this to using off-the-shelf 1" (25mm) dome tweeters. Sidelobes as loud as the main (red) lobe appear at frequencies as low as 8kHz; well within the audio band!



## *LF drivers*

The "cones" of the LF drivers are sculpted from an ultra-light, stiff material and precisely follow the ideal contour of the HF horn walls (patent pending). This provides constant horizontal directivity from low mid, right up to extreme high frequencies. Conventional cross-firing driver configurations typically yield non-optimal HF horn profiles, which causes significant disturbance to HF dispersion that also varies with frequency. In short, anything but constant directivity!







## *modular construction*

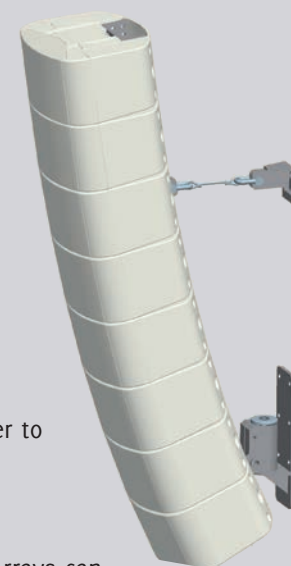
Each array is constructed in multiples of 4 modules to make up arrays of 4, 8, 12, 16, or 24 modules. Resultant array lengths are 0.47m, 0.94m, 1.4m, 1.9m, 2.8m and 3.7m respectively.

## *inter-cabinet connection*

Inter-cabinet angles are set via captive, rear-mounted brackets and linking plates. Angles of  $0^{\circ}$  to  $5^{\circ}$  are set in  $1^{\circ}$  steps by fitting two pin clamps into the respective holes in each cabinet's bracket. Once each angle is set, an orange 'safety clip' is fitted to lock the pin clamps in place. Finally the rear covers are fitted to maintain the sleek, unobtrusive appearance required of an architectural loudspeaker product.

## *deployment*

Arrays can be wall mounted or flown via optional brackets. They are designed to be unobtrusive and adaptable in order to blend in with their environment.



## *wall mounting*

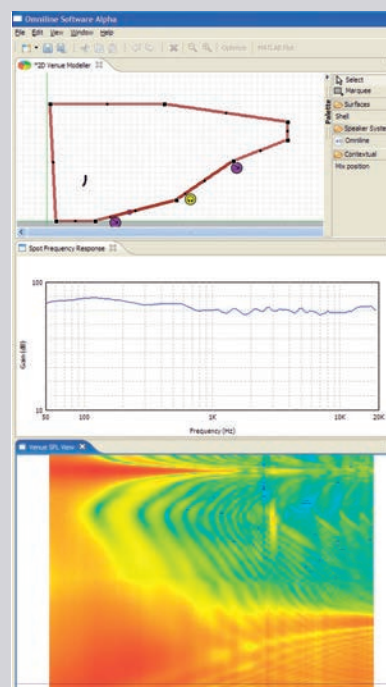
Up to 16 cabinets can be wall mounted using the optional brackets. Pan and tilt are easily achievable. Arrays can be panned left or right and then the bracket locked in position. Tilt is achieved by setting the length of a wire rope or chain 'pull-back' strap, allowing accurate on-site adjustment of array aiming. The brackets are designed as 1st/2nd fix components in accordance with typical installation methods.

## *software*

A new intelligent optimisation process (patent-pending) has been specifically developed for configuring O-Line arrays.

This process starts with a new way of looking at things. The frequency response of a candidate array is 'measured' virtually at 100 or more 'microphone positions' in the venue - taking in both the audience planes where the sound is required - and planes, such as the ceiling, where it is not. These responses are viewed in IndexPlot - a new proprietary 2D presentation format, which shows clearly how loud the array is at all the 'microphone positions' in the venue and at all frequencies.

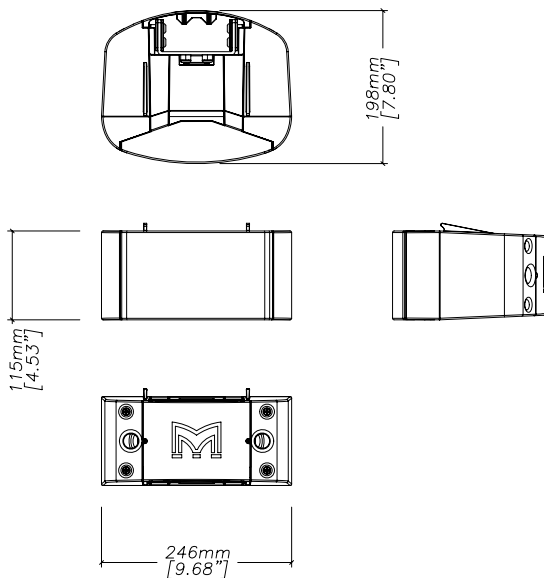
The intelligent optimisation process iterates configurations of candidate arrays against various target functions - such as overall shape and level, response flatness and sound leakage into non-audience areas. Indicators of 'goodness' for the SPL distribution are presented to the user as 'levers' for array design to enable the user to influence the array design process according to priorities.



## application

Because 0-Line is scalable from 4 to 24 modules, it can be used in a very wide variety of applications and its ability to reproduce very high frequencies makes it ideal for high-quality music reproduction as well as speech. The overall output of the array is determined by the number of modules in the array and whether it is used with or without sub-bass augmentation.

0-Line is capable of surprisingly high output for its size, even though it uses small, direct radiators rather than compression drivers to produce high frequencies. High output is possible because there are five HF devices in each module – resulting in an effective HF voice coil diameter of 3 inches (75mm) with a corresponding increase in power handling. This is important, since it is the HF section in a line array that has the most demanded of it, due to increased air absorption at high frequencies.



## typical applications

Churches, Museums, Sports venues, Conference centres, Theatres, Auditoria, Shopping malls, Transport terminals, Concert halls, Bars, Restaurants, Lecture theatres

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## technical specifications: one module

TYPE	Two-way micro-line array module
FREQUENCY RESPONSE (5)	85Hz-20kHz $\pm$ 3dB -10dB @ 76Hz
DRIVERS	2 x 3.5" (87mm)/1" (25mm) voice coil LF drivers 5 x 0.55" (14mm) soft dome tweeters
RATED POWER (2)	50W AES, 200W peak
RECOMMENDED AMPLIFIER	100W-200W in to 16 ohms
SENSITIVITY (6)	84dB at LF rising to 92dB at HF
MAXIMUM SPL (7)	104dB continuous, 110dB peak
NOMINAL IMPEDANCE	16 ohms
DISPERSION (-6dB)	100° horizontal, 5° vertical
CROSSOVER	2.5 kHz passive
ENCLOSURE	4 litre ported cabinet, moulded in ABS
FINISH	Light grey
PROTECTIVE GRILLE	Light grey perforated steel
CONNECTORS	4 pole socket
PIN CONNECTIONS	+/- in, +/- link out
FITTINGS	Captive inter-connecting bracket assembly 6 x M8 fixings for wall and flying brackets
DIMENSIONS	(W) 246mm x (H) 115mm x (D) 198mm (W) 9.7ins x (H) 4.5ins x (D) 7.8ins
WEIGHT	3.6kg (7.9lbs)

## technical specifications: array

No. of modules	4	8	16
Sensitivity (6), (2.83V)	96dB	96dB	102dB
Impedance	4 ohms	8 ohms	4 ohms
Power handling (Watts, AES)	200 cont. 800 peak	400 cont. 1600 peak	800 cont. 3200 peak
Maximum SPL (cont./peak)	116dB/122dB	122dB/128dB	128dB/134dB
Max coverage distance	8-12m	16-25m	25-40m
Array length	0.47m	0.94m	1.9m
Array mass	14.4kg	28.8kg	57.6kg



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