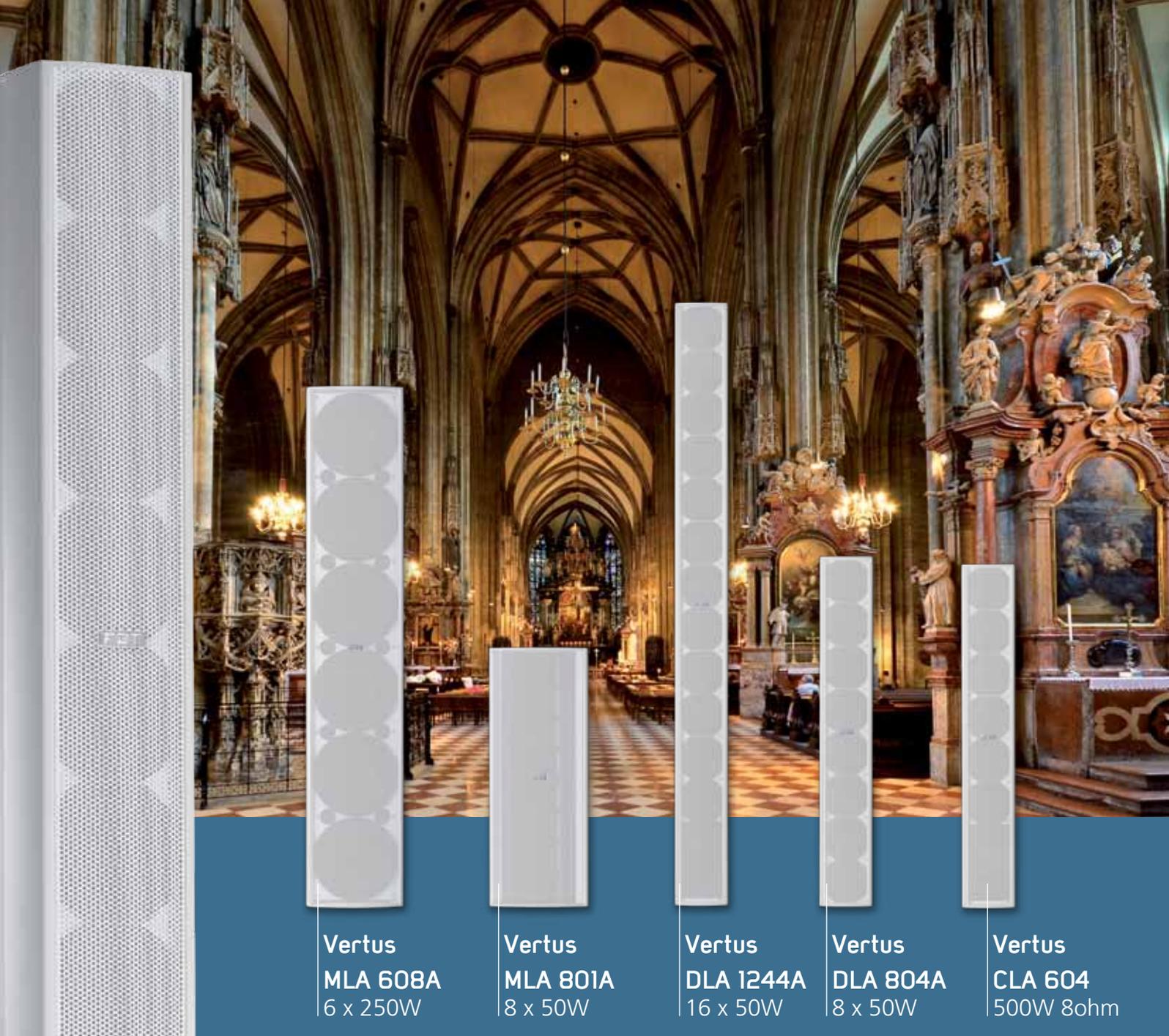


Vertus
Line Array Systems



Vertus
MLA 608A
6 x 250W



Vertus
MLA 801A
8 x 50W



Vertus
DLA 1244A
16 x 50W



Vertus
DLA 804A
8 x 50W



Vertus
CLA 604
500W 8ohm

Vertus extend true line array technology

The **new VERTUS series** is aimed at breaking the limits traditionally associated with the column line array systems, proposing an innovative and highly professional solution. Refined in fine details both in design and acoustic solutions, the new VERTUS series has been created in order to extend true line array technology, which has achieved unquestionable success in the professional audio industry, towards new applications both in live performance and fixed installation. It proposes column speaker systems differing one another both in size and application yet united by high quality, stylish features and by the passion and dedication of those who conceived the series.

VERTUS is composed of three systems named **MLA** (Mixed control Line Array), **DLA** (Digital control Line Array) and **CLA** (Column Line Array), which are all characterized by an extruded aluminum chassis of considerable width with internal ribbing creating an absolute structural rigidity. They are all modular and through a rapid latching system it is possible to connect different elements in order to increase and extend the vertical directivity at low frequencies as well as to boost the acoustic pressure available.

Vertus MLA

Is composed of a minimum of two modules:

- **MLA608a** for Mid/Low frequencies (60Hz - 2KHz)
- **MLA801a** for High frequencies (2KHz - 20KHz)

It is possible to emulate the directivity of a classic J-form line array, either curved or straight. Starting from the analysis of known line array systems with digital directivity control (columns with small wide-band speakers) or mechanical directivity (all systems with inclinable cabinets that form a curved or straight J-form array), we decided to condense into one product the advantages of both types of controls, while at the same time surpassing their traditional limits.

The principle behind the operation of **MLA** is based on the **combined mechanical/digital control of directivity**. Digital allows for the control of directivity up to around 4KHz; mechanical, assisted by digital, from 4KHz to over 15KHz. This enables the system to reach the following targets:

- **An aesthetically non-intrusive vertical column** that is readily adaptable to any environment
- **Control of full-range directivity** from the lower frequencies (depending upon the length of the column) up to and over 15KHz
- **Elevated SPL**, thanks to the usage of a compression drivers e wave guide at high frequencies
- **Limited number of transducers** and therefore

DSP channels and amplifiers associated with “no compromise” systems of exclusively digital steering with drastic reduction of cost.

The digital control part is activated by discrete amplification channels (one for each transducer) and DSP which operates in signal processing management sent to each speaker and driver. The mechanical part is entrusted to **8 hybrid stepped motors**, each of which is dedicated to the rotation of wave guide by 0,01° steps on the horizontal axis. It is thus possible to **activate any radiation pattern** in the maximum rotation range of the wave guide which goes from +35 to -35 with respect to the horizontal axis.

The MLA system features a **RS-485 network connection for total control through PC** (with FBT USB-RS485 Converter) **and dedicated software** with which it is possible to simulate the environment to sound reinforce, select the appropriate dispersion pattern for the audience, transfer all the aiming parameters of the system through the network with a single button.

Various types of autoplay routine enable a totally automatic configuration of the system, without precluding for the possibility of aiming ‘fine-tuning’ in manual mode.

In mainly Live situations, when time is limited and it isn't possible to connect to a PC, it is possible to manage steering, lobe width and equalization through 3 switch controls available on the back panel of the MLA column.

VERTUS MLA is a column speaker system with vertical directional characteristics fully controllable by the user both for the steering of the radiation lobe and for the width and form of the lobe itself.



The modularity of the system allows for the construction of a column composed of a maximum of two MLA801a modules and 3 ML608A modules for a total of 4000W and a minimum frequency control of 100hz!

For usage in fixed installations, bars are provided for the close-fitting installation adjacent to walls. For live usage, an accessory is available for positioning on the 118Sa and 121Sa subwoofers of the FBT MITUS series.

The characteristics of the lobe radiation directional controls, the high SPL, the Hi-Fi frequency range, the elegance and overall dimensions, make the MLA system particularly suitable for high quality sound even in acoustically difficult environments, reverberating and very large, given the capacity of the wavefront to soften of about 3 dB upon doubling the distance from the source. Thus, it is ideal in large churches, theatres, auditoriums, large convention and multimedia halls, as well as in public places such as airports, railroad stations, etc...



Why MLA?

Currently, known line array systems activate directivity control in a digital or mechanical manner.

Digital steering allows to maintain the sources as fixed (column systems) and control the directivity associating delays and different filters in each transducer. This requires the usage of a number of channels of amplification and signal processing (DSP) equal to the number of transducers available in the column.

The physical limits to this approach are that the maximum frequency of control is strictly tied to the distance between the sources and that it is necessary to have NON DIRECTIVE sources, given the fact that control is based precisely upon reciprocal interference between sources. This implicates that on one side, to have control over high frequencies, the acoustic centers of the sources need to be very close (less than 17mm @ 10KHz), and on the other side, the impossibility to utilize wave guides in order to have an adequate SPL. For however much it is possible to create very small sources (10-15mm diameter), in order to have an adequate SPL it would be necessary to utilize a too high number of sources - and the fact that one would need to designate a channel of amplification to each source would increase costs and complexity of realization to unacceptable commercial levels. Notwithstanding that the market offers



us examples of products manufactured in this manner, they are, for the major part, compromises and very expensive.

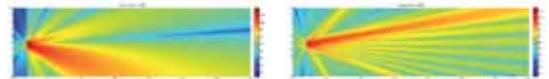
Mechanical steering adjustments, the dominant traditional method present in the major part of modular PA systems, consists of the angling of the array speakers to form a geometrical curve between each element, variable according to area to sound reinforce, and to a general aiming of the speaker column. This approach has the advantage of creating systems having a large SPL, thanks to the utilization of waveguides and the ability to control the full-range directivity in an accurate way. On the other hand, the system's geometry imposes a difficult and invasive positioning, especially in fixed installations and the modular construction of the cabinets and hardware imposes generally high costs.

To summarize:

- **Digital control:** Straight column, limited bandwidth or full-range but with low SPL and high cost.
- **Mechanical control:** Curved column, J-array or straight but inclined (high- impact aesthetics and difficulty in installation), limited control possibility, high SPL, high costs for hardware and angling.
- **Mixed Mechanical/Digital Control:** Straight column, full control on all the audio frequency bandwidth, high SPL, limited costs.

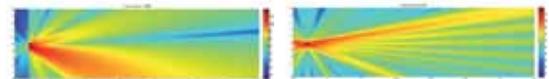
Let us try to understand the behavior of directivity control systems with graphics obtained from product simulations currently present on the market:

Full-range 4" column, - 20° steering, 1K – 6.3KHz



As one can see, the steering is good at 1KHz but inexistent at 6.3 KHz

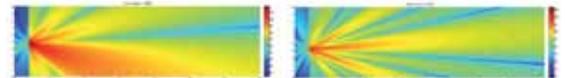
• **Coaxial 4" column, - 20° steering, 1K - 6K3**



As above, at 6.3 kHz, steering is inefficient

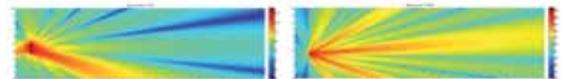
• **5 x 6.5" Woofer Column with 3 x 1" driver, - 20° steering, 1K - 6K3**

At 6.3 KHz, one of the three lobes is effectively



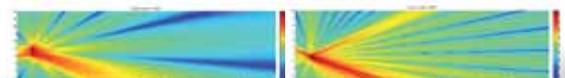
steered at - 20°, but the major part of energy is dispersed on the other two lobes.

• **7 x 8" Woofer Column and 4 x 1" driver, - 20° aiming, 1K - 6K3**



Here as well at 6.3 KHz, very important secondary lobes are present

VERTUS MLA, - 20° steering, 1K - 6K3



At 6.3 KHz, notwithstanding the presence of a small secondary superior lobe, the greater part of energy is directed to the desired point

Vertus MLA 608A

Mixed Control Active Line Array
6 x 250W RMS - 137dB SPL

- 6-way active Mid/Low Line Array Column, in bass reflex with digital directivity aiming
- **6 x 8"** (200mm) custom **neodymium** woofers with 2" (50 mm) voice coil
- 60Hz to 2KHz frequency response
- **6 class D 250Wrms amplifiers** with three switch mode power supplies for a **total of 1500W** power
- **Completely controllable directional features**, through control switches on the back panel or through PC software and dedicated RS-485 network
- Digital full-range aiming from **+5 to -25°** with included beamwidth between 5° and 25/40°
- PC/Slave function for aiming control via PC or other MLA module in the network
- Frontal status LED
- Possibility of mounting on subwoofer from the MITUS series through the optional mounting accessory and of wall-mount installation with the supplied bars

Vertus MLA 801A

Mixed Control Active Line Array
8 x 50W - 139dB SPL

- 8-way active HF Line Array Column, with digital/mechanical directivity aiming
- **8 x 0,75"** (20mm) **B&C neodymium drivers** with 1" (25 mm) voice coil on wave guide
- 1.8KHz to 20KHz frequency response
- **8 class D 50Wrms amplifiers for a total of 400W power**
- **Completely controllable directional features**, through control switches on the back panel or through PC software and dedicated network
- **Revolutionary combined aiming digital/mechanical full-range system from +5 a -25°** with included lobe width between 5° and 25/40°
- **8 hybrid stepped motor controlled by a microprocessor for the mechanical aiming of wave guides**
- PC/Slave function for aiming control via PC or other MLA module
- Frontal status LED

DSP processor for the management of digital aiming and signal processing, 4 available presets

Control panel with XLR input and XLR link, XLR HP-filtered output, volume, presets, 7-step angle aiming, 8-step lobe width, HP filter, ground-lift, RJ45 in/out for **RS-485 network**, screw connectors for in/out audio and for installation

90° Digital-Mechanical controlled dispersion

Extruded-aluminum powder-coated cabinets. Superior latching system as well as inferior for the MLA series, allowing for great component modularity

Standard white finish
RAL 9016





Vertus DLA

VERTUS series is enriched by two new models, DLA804A and DLA1244A, digital directivity aiming column arrays. The experience gained during the development of our leading MLA series has been transferred to these two new exclusively digital beamsteering models using the same innovative algorithms for steering and beamwidth control. Built in elegant aluminum scratch-resistant cabinet, the DLA series can solve many problems of sound related to difficult and reverberant environments. DLA804A is composed of 8 x 100mm (4") full-range column loudspeakers matched with 8 x 50W power amplifiers in Class D and switching mode power supply. Designed especially for voice reproduction, DLA804A has a frequency response from 120Hz to 10kHz. It can be used alone or together with other DLA804A modules in order to extend the SPL and the minimum control frequency as well as to reduce beamwidth of radiation lobe.

DLA1244A is composed of 12 x 100mm (4") loudspeakers and 4 x 25mm (1") dome tweeters combined to waveguides to improve efficiency, 16 x 50W power amplifiers in Class D, switching mode power supply and a powerful DSP processor in floating point.



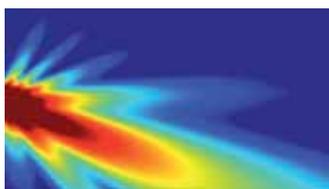
With a 100Hz to 20kHz frequency response, it is recommended both for voice and high-quality music reproduction. It can be used in association with DLA804A in order to create a full-range system with even better directivity control and increased SPL.

Both DLA models have a dedicated SUB output on the Euroblock connector, to extend performance at low frequencies. It is possible to use any active subwoofer within the wide range proposed by FBT. The wide range of controls and connections include: IN on XLR, IN/Link and SUB OUT on euroblock connectors, HP filter, volume, 2 switches for steering and beamwidth angle in 8 steps for a quick set up of the directional characteristics without the need of connecting a PC, and 4 equalization presets.

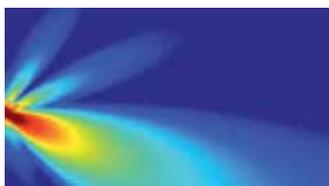
The PC-slave position allows control and configuration via PC (with FBT USB-RS485 Converter). RJ45 connectors for RS-485 network data configuration via provided software. Power connection through neutrik Powerconn.

The range of accessories allows wall-mount and stand mounting.

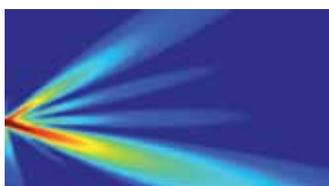
Examples of directivity aiming with DLA1244A



1kHz

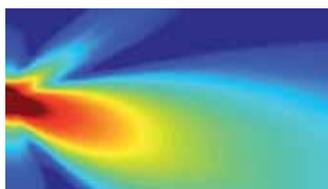


4kHz

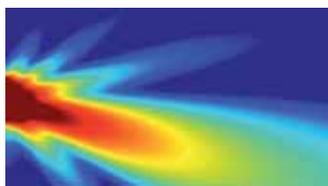


10kHz

By connecting a DLA1244A system with a DLA804A the lobe beamwidth reduces even further.



500Hz – DLA1244A only



500Hz – DLA1244A+DLA804A



Key features

- High intelligibility even in reverberant environments
- Homogeneous SPL in the listening zone for a better acoustic comfort
- High direct to reverberant ratio
- Wide selection of directivity adjustments for a better adaptation to any environment
- Quick and simple setup even without a PC
- High quality transducers
- Modularity
- Elegant aesthetic design for the most demanding installations



Vertus DLA
Line Array Systems

Vertus DLA

Perfect for the reproduction of high-quality speech/vocal application in reverberant environments, it can be used also for sound reinforcement as well as for fixed installations

Possibility of stacking on a subwoofer from the MITUS range through the optional mounting accessory and of wall-mount installation with the supplied bars

Standard white finish
RAL 9016

Vertus DLA 1244A

Digital Control Active Line Array
16 x 50W RMS - 126dB SPL

- 2-way active column line array with digital beam steering technology
- 12 x 100mm (4") full-range custom speakers with 25mm (1") voice coil
- 4 x 25mm (1") dome neodymium tweeter on waveguides
- Frequency response from 100Hz to 20kHz
- 16 x 50W RMS power amplifiers in Class D with switching mode power supply for a total of 800 W RMS
- the 2 way system design allows a high-quality full-range reproduction of the musical signal

Vertus DLA 804A

Digital Control Active Line Array
8 x 50W RMS - 123dB SPL

- Active column line array with digital beam steering technology
- 8 x 100mm (4") full-range custom speakers with 25mm (1") voice coil
- Frequency response from 120Hz to 10kHz
- 8 x 50W RMS power amplifiers in Class D with switching mode power supply for a total power of 400 W RMS

Vertus DLA

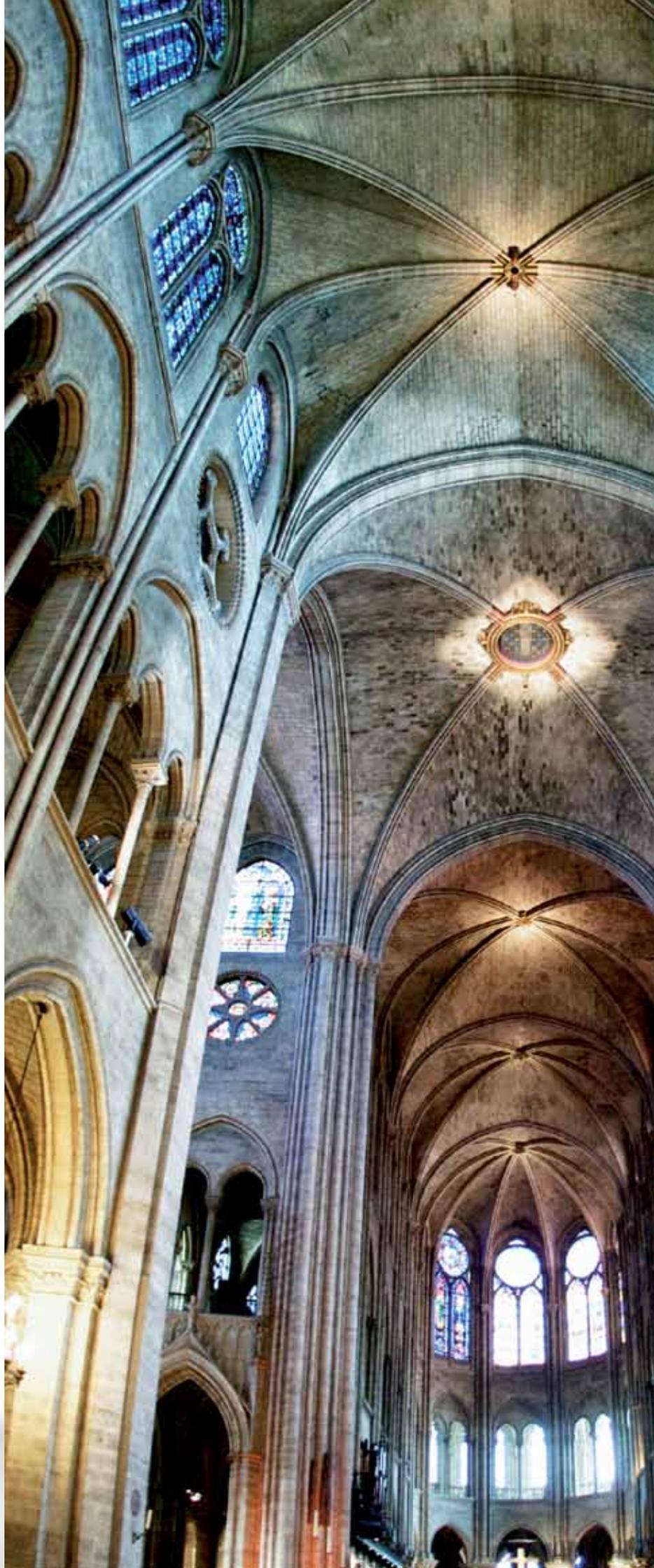
Line Array Systems



Vertus CLA 604

Passive Column Line Array
500W 8ohm 123dB SPL

- 2-way passive column line array
- 6 x 100mm (4") custom woofer with 25mm (1") voice coil
- 4 x 25mm (1") dome neodymium tweeter on a waveguide
- Frequency response from 130Hz to 20kHz
- 100V transformer with 2 levels of power, 100 and 200W
- 100°H x 20°V dispersion
- 4-pole Euroblock input connector: 8ohm – 100W/100V – 200W/100V
- Extruded-aluminum powder-coated cabinets
- Wall-mount installation bars are supplied
- Expandable line array by adding CLA604 modules in order to increase SPL and reduce the vertical radiation lobe width
- Ideal for fixed installation in reverberant environments, it can improve both music and voice intelligibility by improving direct/ reflected sound quality
- EN 54-24 EC Certificate of Conformity



VERTUS		MLA 801A	MLA 608A	DLA 1244A	DLA 804A
Configuration	way	8	6	16	8
Built-in amplifier cont. rms LF/HF	W	8 x 40	6 x 230	16 x 40	8 x 40
Built-in amplifier max. rms LF/HF	W	8 x 50	6 x 250	16 x 50	8 x 50
Built-in amplifier max. peak LF/HF	W	8 x 100	6 x 500	16 x 100	8 x 100
Frequency response	@-6dB	1.8KHz - 20KHz	60Hz - 2KHz	100Hz - 20KHz	120Hz - 20KHz
Low frequency woofer	inch	-	6 x 8 - 2 coil - neodymium	12 x 4 - 1 coil	8 x 4 - 1 coil
High frequency driver	inch	8 x 0.75 - 1 coil - neodymium	-	4 x 1 - 1 coil - neodymium	-
Maximum SPL cont/peak	dB	135 / 139	133 / 137	123 / 126	120 / 123
Dispersion	H x V	90° x Digital-Mechanical Controlled	90° x Digital Controlled	100° x Digital Controlled	100° x Digital Controlled
Steering Angle	V	+5 / -25	+5 / -25	+30 / -30	+30 / -30
Beamwidth Angle	V	5 / 40	5 / 40	10 / 40	10 / 40
Input impedance	kOhm	22	22	22	22
Crossover frequency	kHz	1.8	1.8	3	3
AC Power requirements	VA	300	1350	650	400
Input connectors		XLR with loop	XLR with loop, SUB out	Euroblock with loop and SUB OUT	Euroblock with loop and SUB OUT
Power cord	mm/inch	5 / 16.4	5 / 16.4	5 / 16.4	5 / 16.4
Net dimensions (WxHxD)	mm/inch	240x625x242 9.5x24.6x9.52	240x1285x242 9.5x50.6x9.52	130x1685x131 5.11x66.33x5.15	130x965x131 5.11x38x5.15
Net weight	kg/lb	18 / 39.7	27 / 59.5	5 / 16.4	22 / 48,5
Transport dimensions(WxHxD)	mm inch	320x725x322 12.6x28.54x12.67	320x1385x322 12.6x54.5x12.67	220x1760x220 8.66x69.29x8.66	220x1040x220 8.66x40.94x8.66
Transport weight	kg/lb	20.5 / 45.2	31 / 68.4	13 / 28,6	25 / 55

VERTUS		CLA 604
Configuration	way	2
Recommended amplifier	W rms	500
Long term power	W	250
Short term power IEC 268-5	W	1000
Transformer	V/W	100 / 200
Nominal impedance	Ohm	8
Frequency response	@-6dB	100Hz - 20KHz
Low frequency woofer	inch	6 x 4 - 1 coil
High frequency driver	inch	4 x 1 - 1 coil - neodymium
Sensitivity (@1W/1m)	dB	93
Maximum SPL cont/peak (Bi-Amp)	dB	120 / 123
Dispersion	H x V	100° x 20°
Crossover frequency	kHz	3
Recommended HP filter		80hz - 24dboct
Input connectors		4 x Euroblock
Net dimensions (WxHxD)	mm/inch	130x841x130 5.12x33.1x5.12
Net weight	kg/lb	8/17,6
Transport dimensions(WxHxD)	mm/inch	170x900x170 6.7x35.4x6.7
Transport weight	kg/lb	10/22

			
	VT-S 604/VT-S 604W	VT-W 604/VT-W 604W	VT-DS 604/VT-DS 604W
	35723 / 37044	35722 / 37043	37053 / 37054
	Stand Adapter ø 35mm black / white	Directional wall mount bracket black / white	Directional stand adapter black / white
	Vertus CLA 604	Vertus CLA 604	Vertus CLA 604

USB-RS485 Converter

F36959

Use one FBT USB-RS485 Converter per installation

Vertus MLA, DLA