

The Aspect® series is a range of high performance modular loudspeaker enclosures designed for use across a wide spectrum of sound reinforcement activities, easily scalable to specific acoustical and venue requirements ranging from large scale indoor or outdoor concerts to corporate events, theatre shows and nightclub applications.

The aim of any sound reinforcement system is to distribute sound evenly, with consistent frequency response and in a predictable way, across all seats of an auditorium or listening area. An optimum method of attaining this goal is through the correct application of point source arrays to create a segment of a spherical wavefront. Not only does this approach provide an exceptionally well defined and coherent acoustic source, but it also allows for considerable flexibility when assembling arrays in both horizontal and vertical dimensions.

In practice, the dispersion characteristics of a typical sound system are less than ideal because of the tendency for conventional high frequency exponential horns to 'beam' with increasing frequency. When arraying such horns, interference between adjacent sources is inevitable due to the variable curvature of the wavefront caused by the horn's geometry, and this results in undesirable comb filtering effects.

Turbosound engineers, through intensive research and the subsequent implementation of innovative and patented Polyhorn™ designs, have identified and overcome these deficiencies and implemented solutions in the Turbosound Aspect® series. Fundamental to the Polyhorn™ designs—and applied in both mid and high frequency bands—is the principle of dividing an exponential horn flare into a multiplicity of tapered waveguides. A further requirement is that all path lengths from the diaphragm surface to horn mouth are identical, and consequently

guarantees uniformity of phase of the wavefront at the horn mouth. The Polyhorn™ design effectively locates the acoustic centre well behind the motor system, forming a virtual point source whose radius coincides with the array curvature without requiring an excessively deep enclosure.

The **TA-500DP** is a networkable, digitally self-powered trapezoidal three-way enclosure designed primarily for ground-stacked concert touring and music venue applications as well as fixed installations. It houses high frequency, mid frequency and low frequency elements arranged in a vertical orientation covering the frequency range from 60Hz to 20kHz. It includes an integrated 2-channel Class D power amplifier and system control module with built-in networking capability.

The TA-500DP features a new generation of innovative lightweight Class D amplifiers, utilising revolutionary 96kHz DSP technology to give operating efficiency in excess of 90%.

The rear panel module incorporates high performance limiters set to optimise the continuous power and excursion threshold for the specific loudspeaker model. Two independent amplifier channels power the LF and MF/HF drivers separately in order to maximise headroom. A Neutrik™ Powercon connector provides mains input to the unit—the switch mode power supply is auto-sensing over a range from 100 volts to 240 volts—and 3-pin XLR's are used for input and parallel link signal connections. RJ45 network connectors enable multiple loudspeakers to be controlled and monitored over a BVNet network using TurboDrive™ software.

BVNet allows the creation of a network of powered loudspeakers which can be controlled and monitored with a PC running the TurboDrive™ control software. This allows



FEATURES

- Digitally self-powered**
- Networkable**
- Ultra low distortion**
- Very high output**
- Wide dispersion**
- Trapezoidal enclosure**
- Seamless arrayability**

APPLICATIONS

- House of Worship**
- Ground-stacked touring**
- Live music venues**
- Dance clubs**
- Hi performance contracting**

considerable flexibility in adapting the speaker system to the acoustic environment with full user control of equalisation and delay, while at the same time ensuring a high degree of security control by monitoring critical functions such as current, driver impedance and limiting.

The top section of the enclosure is dedicated to handling the high frequency band above 5kHz, being reproduced by a custom designed HF driver loaded by a high frequency Polyhorn™ device. The HF driver combines highly innovative patented design features to ensure exceptional high frequency performance and long term reliability. High-mid frequencies from 250Hz to 5kHz are handled by a custom designed 10" drive unit on a further Polyhorn™ device optimised for mid frequencies. A single 15" low-mid frequency driver loaded with a TurboBass™ device covers the remaining frequency range below 250Hz.

A key feature of the Polyhorn™ designs is the very sharp cut-off at the edges of the coverage pattern, which all but eliminates the comb filtering effects commonly experienced between adjacent sources when arraying conventional horn designs. This makes it possible to achieve seamless arrayability in a very intuitive and predictable fashion.

All drive units employ high stability neodymium magnet structures in order to provide very high motor strength—and hence fast transient response—as well as exceptional thermal performance. This also results in a useful reduction in weight which aids transportation and handling.

The cabinet is constructed from 15mm (5/8") and 18mm (3/4") birch plywood, and is trapezoidally shaped with side angles optimised at 22.5° to ensure that adjacent boxes are currently positioned relative to each other with the optimum horizontal array angle. M10 rigging points are provided on the top, bottom, sides and rear, designed to enable flying of single cabinets. In addition a fully modular rigging system is available which allows larger loudspeaker clusters up to three cabinets wide by three deep to be flown.

The cabinet is equipped with two recessed handles on the sides, with additional grab positions at the rear of the box. An optional removable, stackable wheel-board clips on to the front of the cabinet for transportation.

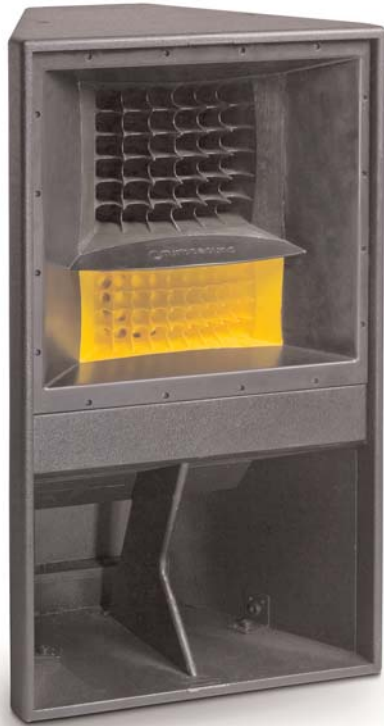
The TA-500DP is highly recommended for a wide range of professional portable sound reinforcement applications.

KEY FEATURES

- Controlled dispersion pattern of 50° x 25° generates highly focused coverage pattern in both horizontal and vertical planes with exceptional projection capabilities
- Completely integrated lightweight Class D amplifier and control electronics module provides the ultimate convenience
- HF transducer employs a high stability, high temperature neodymium magnet structure which offers higher efficiency, as well as reduced weight
- Patented HF and MF Polyhorn™ designs generate equal level across a uniformly curved wavefront identical to the array profile
- Control and monitoring of critical operating parameters over a BVNet network using TurboDrive™ software
- Directivity over 1kHz exhibits very sharp cut-off at the edges of the pattern, dramatically reducing out-of-band signal
- Unique 10" high-mid frequency driver is fabricated from a single-piece aluminium bowl, serving as a high strength frame, heatsink, rear compression chamber and high pass filter.

KEY SYSTEM BENEFITS

- Minimal destructive interference between adjacent enclosures, effectively giving seamless arrayability in both horizontal and vertical planes. All audience seats get essentially the same frequency response
- Wide horizontal dispersion pattern suits many one-box-a-side touring applications
- Intuitive 'point and shoot' characteristics make it very easy to adapt flown or ground stacked clusters to widely variable venue and audience requirements
- Very high power capability combined with high efficiency means that peak sound pressure levels of up to 141dB are easily achievable from one cabinet
- Greatly improved thermal performance from neodymium magnet structures reduces power compression to negligible levels and delivers more amplifier power into acoustic watts
- Ability to tailor the PA coverage according to extremely varied venue requirements; can achieve optimum coverage even in irregularly shaped rooms.



DIMENSIONS (HxWxD)	977mm x 574mm x 498mm (38.5" x 22.6" x 19.6")	
NET WEIGHT	54kg (118.8 lbs)	
COMPONENTS	1 x custom 15" (381mm) LF driver, 1 x custom 10" (254mm) MF driver on a midrange Polyhorn™, 1 x custom HF driver on a high frequency Polyhorn™	
FREQUENCY RESPONSE¹	60Hz - 20kHz ±4dB	
DISPERSION²	50°H x 25°V; horizontal array angle: 45°	
MAXIMUM SPL	135dB continuous ³ , 141dB peak ⁴	
CONSTRUCTION	15mm (5/8") and 18mm (3/4") birch plywood throughout; rebated, screwed and glued. Finished in black semi-matt textured paint. Two recessed carrying handles with two additional grab positions at top and bottom.	
GRILLE	Powder coated perforated steel with reticulated foam backing	
CONNECTORS	Input: (1) XLR female, Link: (1) XLR male, pin 2 hot; Neutrik Powercon; (2) RJ45 network port	
OPTIONS	Wheelboard	
AMPLIFIER	TYPE:	Class D inc SMPA and networked DSP
	POWER OUTPUT:	2 x 800 watts continuous @ 8 ohms (1kHz, 0.01% THD)
	DYNAMIC RANGE:	110dB
	INPUT CLIP:	10dBu
	BANDWIDTH:	20Hz - 20kHz ±0.5dB
	POWER REQUIREMENTS:	100V to 240V AC @ 50/60Hz
SPARES AND ACCESSORIES	MG-500	Replacement cloth/expanded metal grille
	LS-1527	15" (381mm) LF loudspeaker
	RC-1527	Recone kit
	LS-1021.2	10" (254mm) HMF loudspeaker
	RC-1021.2	Recone kit
	CD-113	HF driver
	RD-113	Replacement HF diaphragm
	WB-500	Wheelboard

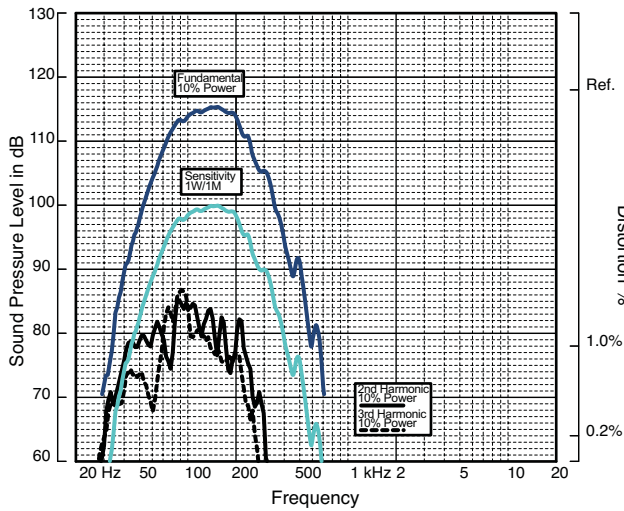
Notes

¹Measured on axis

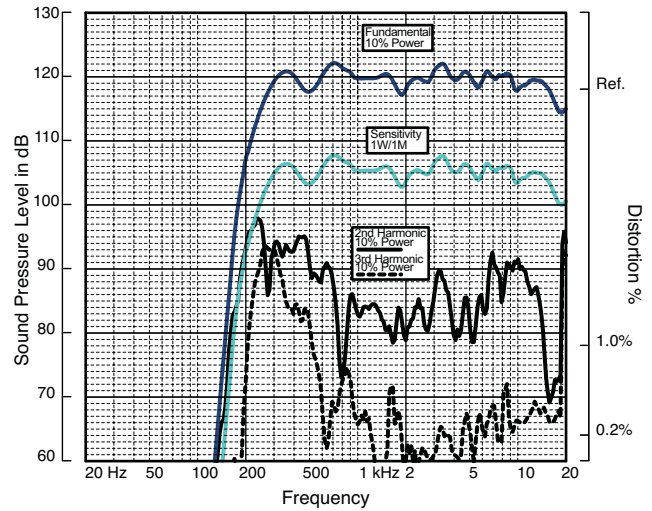
²Average over stated bandwidth

³Unweighted diode-clipped pink noise. Measured in a half space environment

⁴Verified by subjective listening tests of familiar program material, before the onset of perceived signal degradation.



LOW FREQUENCY

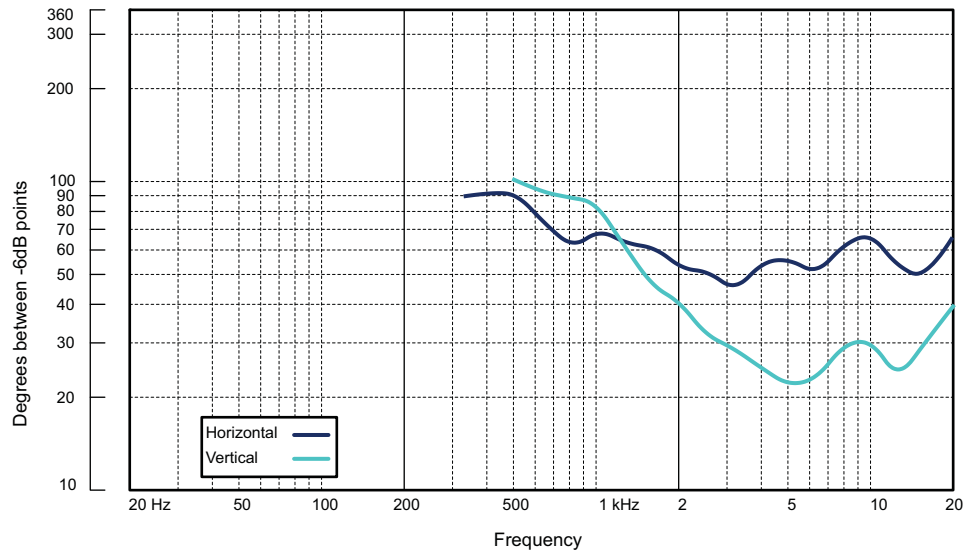


HIGH/MID FREQUENCY

Impedance A constant current circuit was used to measure the impedance. **Frequency response** The frequency response shown was obtained by feeding a swept sine wave through the system in a half space environment. The position of the microphone was vertically on-axis at a distance of 2 metres, then scaled to represent 1 metre. **2nd & 3rd Harmonic Distortion** Distortion measurements were obtained using an Audio Precision harmonic distortion analysis system and comply with AES recommendations for enclosure measurement (AES paper ANSI S4-26-1984). **Data Conversion** All graphs were digitally generated using the APEX custom software system, designed to translate data derived from Audio Precision 'System One' test equipment into AutoCAD™. This program enables graphical information to be plotted to a high degree of accuracy.

NOTES ON MEASUREMENT CONDITIONS

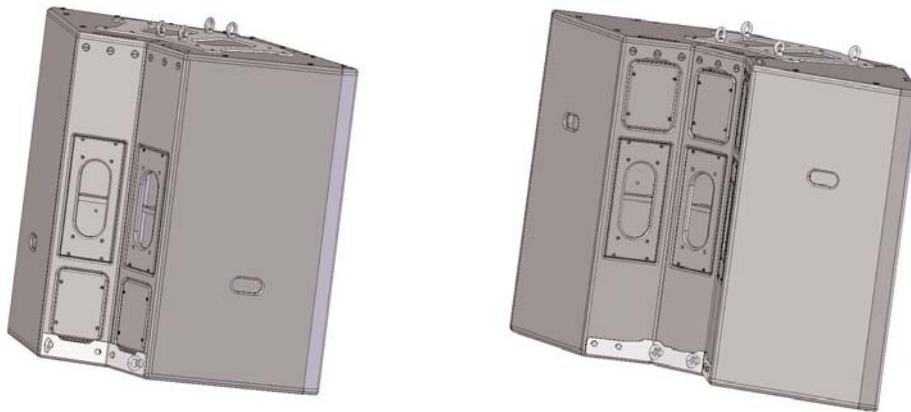
BEAMWIDTH



RIGGING HARDWARE

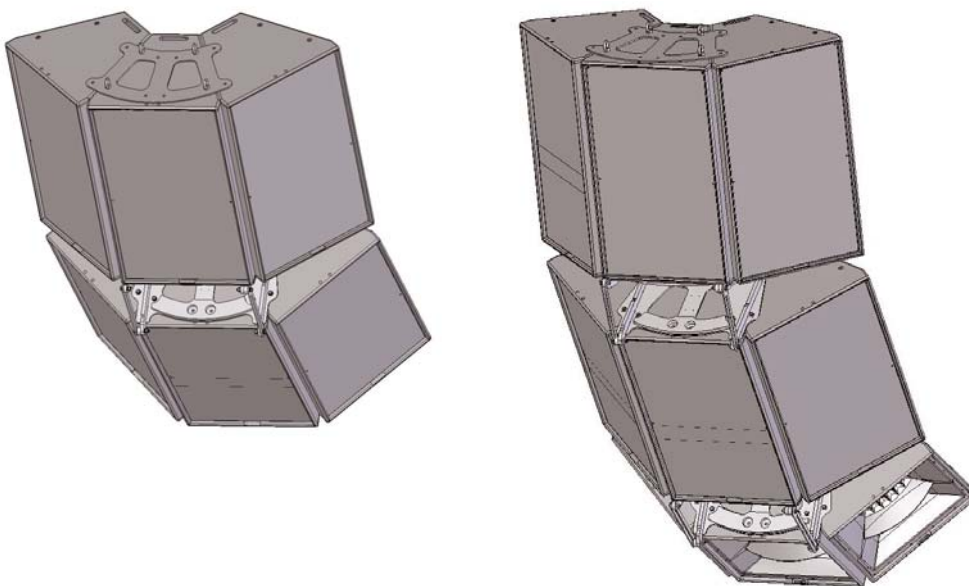
The rigging system is designed to provide one, two-wide and three-wide array configurations up to a maximum of three cabinets deep using a minimum of easy to assemble parts.

The single row system consists of two-wide and three-wide top rigging plates together with back straps to hold cabinets securely as a single block with a horizontal array angle of 45°.



Lifting an array is achieved using M10 collared eyebolts attached to the top, and the array can be tilted using rigging points on the rear. Cabinets are symmetrical as far as the rigging points are concerned, and this feature allows cabinets to be suspended upside down if required as shown above.

Flying arrays with additional rows, up to a maximum of three deep, requires the use of hinge kits between rows in either two-wide or three-wide configurations. The vertical array angle between rows is infinitely variable between 0° and 25°.



**ARCHITECTURAL
& ENGINEER'S
SPECIFICATIONS**

The loudspeaker system shall be of the networkable, digitally self-powered type comprising: one high frequency driver loaded with a patented PolyHorn™, one 10" (254mm) high-mid frequency driver loaded with a patented PolyHorn™, and one 15" (381mm) low frequency driver loaded with a TurboBass™ device. The integral power amplifier module shall provide Class D amplification, output limiting, and equalisation incorporating frequency responses optimised for speech and music. Performance specifications of a typical production unit shall meet or exceed the following:- Frequency response, measured with a swept sine wave input shall be flat within $\pm 4\text{dB}$ from 60Hz to 20kHz. Dispersion shall average $50^\circ\text{H} \times 25^\circ\text{V}$. Maximum SPL (peak), measured with music program shall be 141dB. Dimensions: 977mm x 574mm x 498mm (38.5" x 22.6" x 19.6"). Weight: 54kg (118.8lbs). The loudspeaker system shall be the Turbosound Aspect TA-500DP. No other system shall be acceptable unless the above combined performance specifications are equalled or exceeded. Flying and installation hardware shall be available comprising a range of load-certified components.

DIMENSIONS

