dV-DOSC™

THE INCREDIBLE INNOVATION OF
WAVEFRONT SCULPTURE TECHNOLOGY®

APPLICATIONS

L-ACOUSTICS® dV-DOSC™ provides the same performance benefits as V-DOSC® and ARCS® in an extremely compact format suitable for both fixed installation and touring applications. The 120° horizontal coverage of dV-DOSC combined with the power of Wavefront Sculpture Technology® in adapting vertical system directivity to match the audience area results in well-defined, predictable coverage combined with exceptionally even frequency response and SPL.

As a full-range, two-way system, dV-DOSC can be used for speech reinforcement in corporate applications or as a voice-only system for television and theatrical productions. The compact profile of dV-DOSC is ideal for installations where visually unobtrusive sound design is an important issue.

dV-DOSC is also well-suited to large-scale fixed installations such as single or multiple distributed arrays for stadium and arena sound reinforcement. For these applications, the generous 120° horizontal pattern combined with the seamless transition between short- to long-throw zones obtained using Wavefront Sculpture principles allows the sound designer to achieve excellent intelligibility and cost-effective coverage even under difficult, highly reverberant acoustic conditions.

When combined with subwoofers for extended bandwidth applications, dV-DOSC can be used as a front-of-house system for small, medium and large venues. For these applications, the 120° horizontal coverage pattern provides excellent stereo imaging in the standard left-right format while the flexibility provided by Wavefront Sculpture allows the sound designer to cover virtually any room geometry.

For touring applications, dV-DOSC can be used as a down-fill enclosure for flying underneath V-DOSC arrays or as a long-throw extension of the system when stacked on top of the flying bumper. Other applications include flown dV-DOSC arrays for center cluster or offstage fill, and stacked configurations for stereo front-fill. When operated in conjunction with subwoofers, dV-DOSC can also be used for stage monitoring applications.

Given all these possibilities, that's why the "dV" in dV-DOSC stands for "Definitely Versatile".

L-ACOUSTICS PROFESSIONAL SOUND SYSTEM

- **WST-based active two-way enclosure**
- **Perfect coupling, predictable coverage**
- **Ergonomic, fast, secure rigging system**
- **Medium- and long-throw applications**
- **Excellent speech intelligibility**
- **Extremely compact**
- **Trapezoidal design for curved vertical arrays**
- **Highly versatile for both installation and touring**
- **Perfect for corporate, theatre, club and concert reinforcement**

SPECIFICATIONS

L-ACOUSTICS specifications are based on measurement procedures which produce unbiased results and allow for realistic performance prediction and simulations. Some of these specifications will appear very conservative when compared with other manufacturer's specifications. All measurements are conducted under free field conditions and scaled to a 1 m reference distance unless otherwise indicated.

Frequency Response

Frequency response	160 - 18k Hz (±3dB)	single unit
	100 - 18k Hz (±3dB)	coupled array
Full system bandwidth[1]	25 - 18k Hz (±3dB)	

Sensitivity[2]

LF (2.83 Vrms @ 1m)	99 dB SPL	100 - 800 Hz
HF (2.83 Vrms @ 1m)	109 dB SPL	800 - 18k Hz

Power Rating[3]

(Long Term)			Amplification (Recommended)	Impedance (Nominal)
LF 49 Vrms	300 Wrms	1200 Wpeak	600 W	8 ohms
HF 25 Vrms	75 Wrms	300 Wpeak	300 W	8 ohms

Nominal Directivity (-6dB)[4]

Horizontal	symmetrical	120°
Vertical	defined by the array	

Array[5]

	Continuous SPL (flat array)	Continuous SPL (maximum curvature array)	
One enclosure	128 dB	128 dB	
Two enclosures	134 dB	132 dB	15° vertical coverage
Four enclosures	140 dB	136 dB	30° vertical coverage

Components

LF 2 x 8" weather-resistant loudspeaker (2" voice coil)
HF 1 x 1.4" neodymium compression driver mounted on custom DOSC waveguide and acoustic lens

[1] Full system bandwidth with SB218 subwoofer
[2] Sensitivity is the average SPL measured over the component's rated bandwidth
[3] Power rating displays the long term RMS voltage handling capacity using pink noise with a 6 dB crest factor over the component's rated bandwidth
[4] Directivity is averaged over the 1-10 kHz range
[5] Array data gives the continuous unweighted SPL output of the system referenced to 1 m, including preset equalization and band-leveling adjustment using pink noise with a 6 dB crest factor over the system's rated bandwidth

Enclosure

• Width	695 mm	27.4 in
• Front height	257 mm	10.1 in
• Rear height	171 mm	6.7 in
• Depth	476 mm	18.7 in
• Trap angle	2 x 3.75°	
• Shipping dims	800 x 360 x 560 mm	
	31.5 x 14.2 x 22 in	
• Weight (net)	31.8 kg	70.1 lbs
• Shipping weight	35 kg	77.2 lbs

- Connectors : 2x 4-pin Neutrik speakon
- Material : Baltic birch plywood, aluminum top and bottom plates
- Finish : Maroon-gray™
- Grill : Black epoxy-coated perforated steel with acoustically-transparent foam
- Rigging : Integrated flying hardware and handles

Additional Equipment

- L-ACOUSTICS approved digital crossover with custom presets
- L-ACOUSTICS SB218 subwoofer
- L-ACOUSTICS LA 24 or LA 48 power amplifier

ARCHITECT SPECIFICATIONS

The loudspeaker shall be a full-range active two-way enclosure covering the frequency range of 160 Hz - 18 kHz (± 3 dB). For coupled arrays of more than six elements, low-frequency response shall extend to 75 Hz / 100 Hz depending on preset. The loudspeaker shall be used with an approved digital crossover and dedicated software presets. The loudspeaker shall function as either a standalonesystem for speech reinforcement applications or be used in conjunction with subwoofers for extended bandwidth operation.

The loudspeaker enclosure shall consist of two high-efficiency, high power- handling 8-inch speakers mounted in V-shaped configuration combined with a 1.4-inch neodymium compression driver coupled to a waveguide. The waveguide employed in the loudspeaker system shall generate a flat isophasic wavefront. Components shall be configured in a coplanar symmetrical arrangement and provide stable 120-degree horizontal coverage independent of the number of vertically arrayed elements.

When vertically arrayed, multiple enclosures shall function according to the principles of Wavefront Sculpture Technology, whereby the distance of separation between acoustic centers of individual sound sources shall be less than the size of half the wavelength at the highest frequency of its operating bandwidth, or the sum of the individual areas of the isophasic radiating elements shall be greater than 80 percent of the target radiating area.

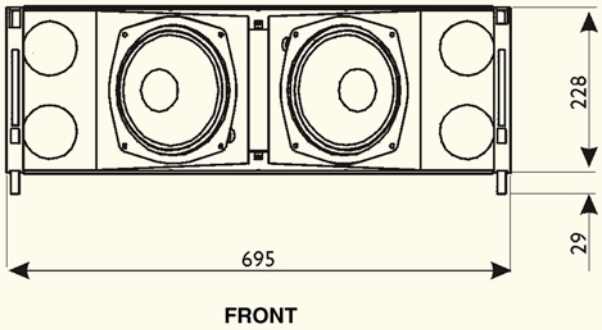
When multiple loudspeakers are arrayed vertically, they shall radiate a wavefront that varies from flat to a maximum of 7.5 degrees of curvature per element with optimized high-frequency coupling performance that is free of destructive interference effects. When installed according to Wavefront Sculpture Technology principles, the combination of cylindrical wavefront generation produced by the waveguide and proper focus of the arrayelements shall allow the system to produce 1/R attenuation properties(-3 dB per doubling of distance).

The loudspeaker shall have low profile, trapezoidal cabinet construction and an integral rigging system that allows arrays to be assembled with variable angles between enclosures up to a maximum of 7.5 degrees. Cabinet finish shall be maroon-gray, high-resilience paint and all external hardware shallbe stainless steel or black powder-coated to protect against rust.The front of the enclosure shall be covered with open-cell, acoustically-transparent foam.

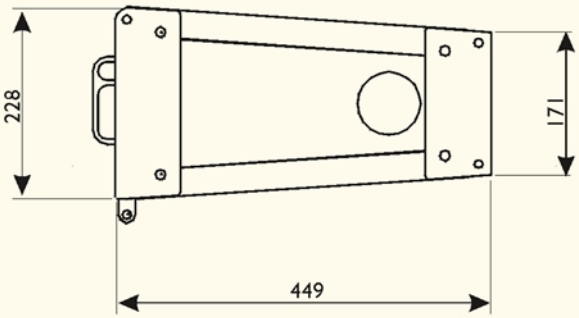
The loudspeaker system shall be the L-ACOUSTICS dV-DOSC.

ACCESSORIES

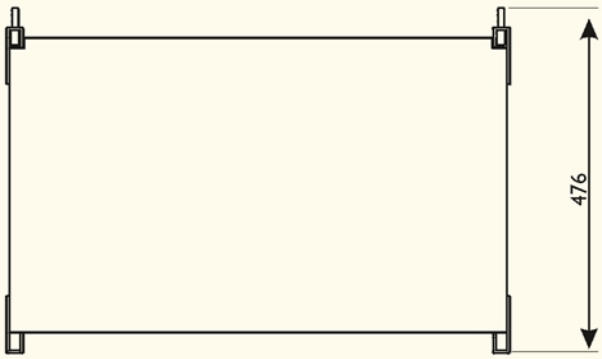
dV-PIN25	Locking quick release pin (25 mm grip length) for dV-DOSC enclosure interconnection and connection to dV-BUMP
dV-PIN81	Locking quick release pin (81 mm grip length) for attaching dV-DOSC to dV-DOWN
dV-ANGLEP	Rear angle bar for varying vertical angle between dV-DOSC enclosures to form convex arrays (positive curvature) dV-ANGLEP1 values: 0, 2, 3.75, 5.5, 7.5 degrees dV-ANGLEP2 values: 1, 3, 4.5, 6.5 degrees
dV-ANGLEN	Rear angle bar for varying vertical angle between dV-DOSC enclosures to form concave arrays (negative curvature)
dV-BUMP	Flying bumper for standalone rigging or flying on top of V-DOSC
dV-DOWN	Flying bars (two) for rigging dV-DOSC under V-DOSC for down-fill applications
dV-FLIGHT	Flight case for three dV-DOSC



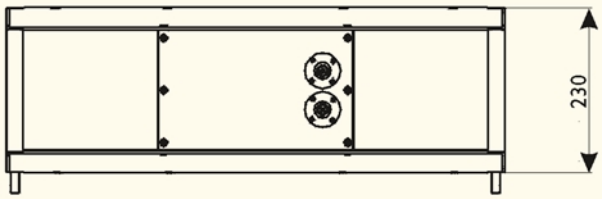
FRONT



SIDE



TOP

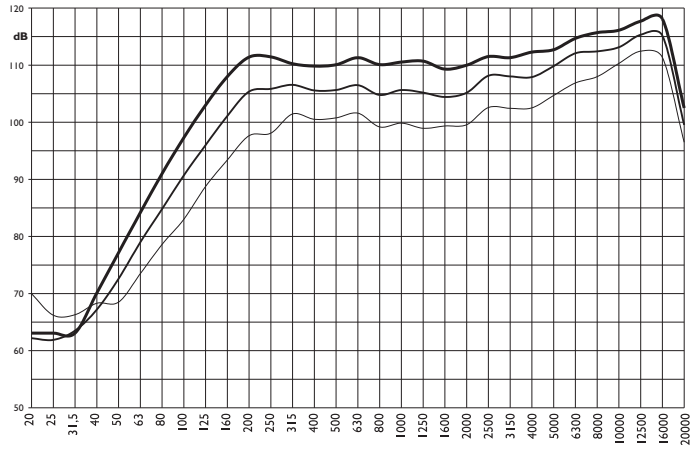


REAR

dV-DOSC™

PERFORMANCE DATA

FREQUENCY RESPONSE

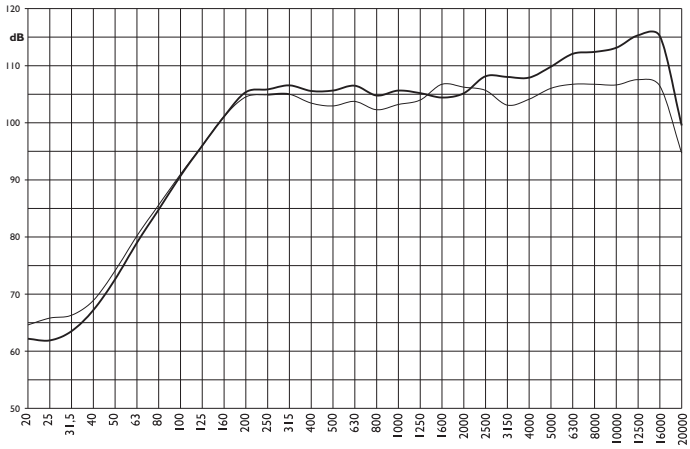


On axis response : 1 dV-DOSC

On axis response : 2 dV-DOSC 0°

On axis response : 4 dV-DOSC 0°

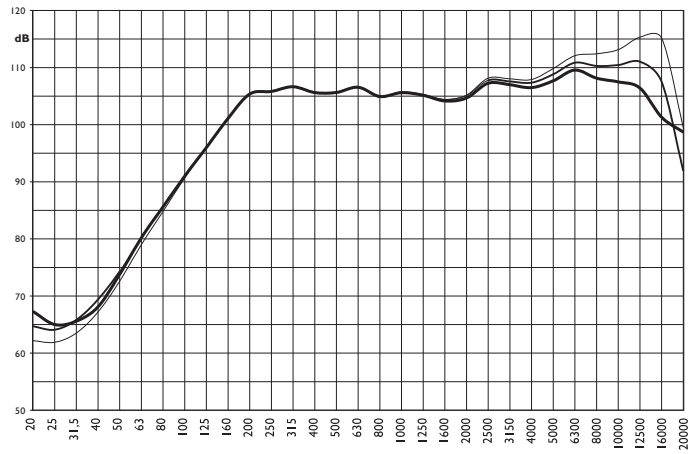
FREQUENCY RESPONSE



On axis response : 2 dV-DOSC 0°

Response averaged over beamwidth : 2 dV-DOSC 0°

FREQUENCY RESPONSE

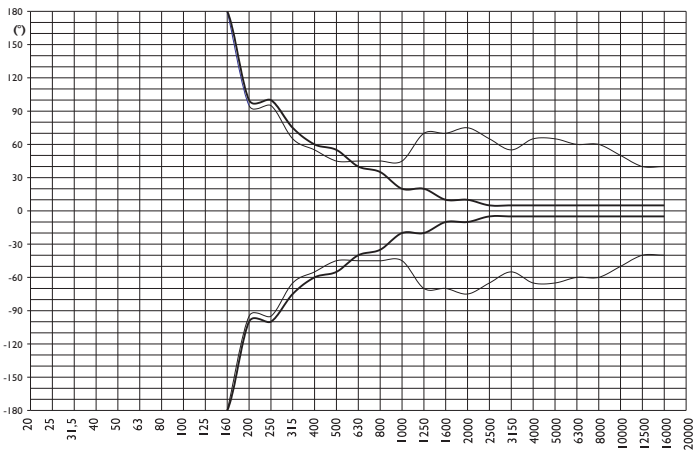


On axis response : 2 dV-DOSC 0°

On axis response : 2 dV-DOSC 3.75°

On axis response : 2 dV-DOSC 7.5°

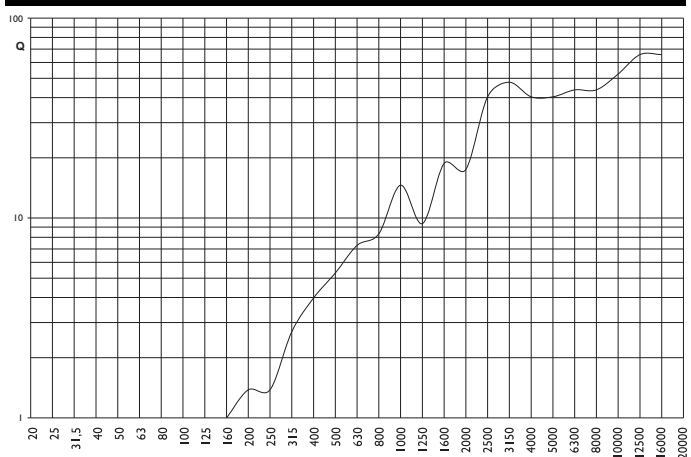
BEAMWIDTH



Horizontal beamwidth : 2 dV-DOSC 3.75°

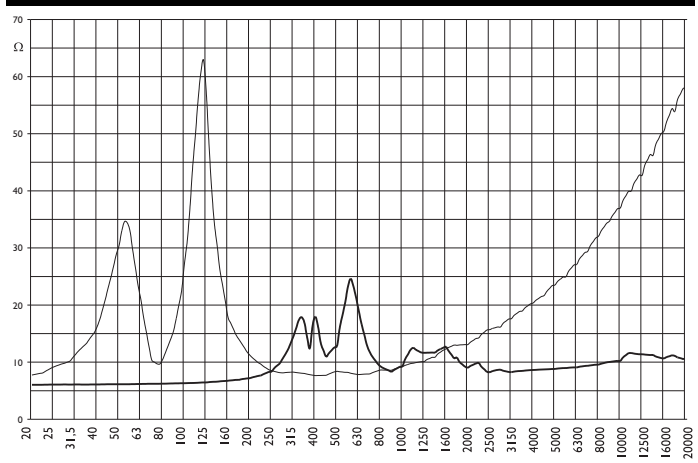
Vertical beamwidth : 2 dV-DOSC 3.75°

DIRECTIVITY FACTOR Q



Directivity factor : 2 dV-DOSC 3.75°

IMPEDANCE



LF

HF

WAVEFRONT SCULPTURE TECHNOLOGY®

The first task of sound engineers and audio consultants is to design sound reinforcement systems for a predefined audience area. As measuring techniques advance and speaker systems perform better, requirements in terms of clarity, coherence, sound pressure level and consistency are increasing while at the same time the size of the audience area is growing.

This inevitably leads to an increase in the number of loudspeakers. A common practice is to configure many loudspeakers in arrays or clusters in order to achieve the required SPL. The result for most sound reinforcement systems is that the sound waves radiated by individual loudspeakers do not couple properly and therefore interfere uncontrollably. This creates non-uniform coverage, inconsistency in frequency response, poor intelligibility and reduced overall sonic quality. The chaotic sound fields created by these interfering sound sources also waste acoustic energy, thus requiring more total power than would be needed to power a single, coherent source in achieving the same desired SPL.

As an illustration of this principle, imagine throwing some pebbles in a pool of water. If one pebble is thrown into the water, circular waves will expand concentrically from the point where it entered. If a handful of pebbles are thrown into the water, we can observe the equivalent of a chaotic wavefield. If we throw in a single larger stone, having a total size and weight equal to the handful of pebbles, then we again see circular waves as in the case of the single pebble — only now with a larger amplitude.

A Single Sound Source From Many Speakers

This leads to the thinking behind the development of Wavefront Sculpture Technology® (WST). If we can construct a single sound source emanating from many speakers (which can then be separated for ease of handling and transport), then we have achieved the goal of providing a totally coherent, predictable wavefield.

Line arrays have been regarded as the best approach to serve the diverse requirements of covering large audience fields. However, until now it has not been possible to make a line array operate properly because of:

1) the interference produced by multiple sound sources radiating over the same coverage area, and

2) an inability to achieve line array coupling in the high-frequency range.

The initial specification of the research and development program was the design of a single acoustic source that is completely modular and adjustable. In 1988, an early L-ACOUSTICS system called "DOSC" proved the project's feasibility. Based on this experimental concept, Professor Marcel Urban and Dr. Christian Heil began theoretical research and presented their findings at the 92nd AES Convention in Vienna in 1992 (Preprint # 3269). The theory that was developed defines the acoustic coupling conditions for successfully arraying individual sound sources — including wavelength, the shape of each source, their surface areas and their relative separation.

Briefly, the coupling conditions can be summarized as follows:

An assembly of individual sound sources arrayed following a regular step distance on a planar or curved continuous surface is equivalent to a single sound source having the same dimensions as the total assembly if one or both of the following two conditions are fulfilled :

1) Frequency : The step distance (distance between the acoustic centers of individual sources) is smaller than half the wavelength over the operating bandwidth.

2) Shape : The wavefronts generated by individual sources are planar and together fill at least 80 percent of the total radiating surface area.

L-ACOUSTICS defines the practical implications of these criteria as Wavefront Sculpture Technology (WST). WST dictates the design constraints for achieving a single sound source with respect to speaker component arrangement at lower frequencies. By loading the high-frequency drivers with the patented L-ACOUSTICS "DOSC" waveguide it is possible to meet the second WST condition at higher frequencies. By satisfying WST criteria over the entire audio bandwidth, the engineer or designer is provided with a "single" loudspeaker with well-defined coverage and wavefront shape, thus allowing the geometrical distribution of energy to be precisely installed to match the geometry of the audience seating area.

L-ACOUSTICS V-DOSC®, ARCS® and dV-DOSC™ are true arrayable systems. V-DOSC and dV-DOSC are designed for large audiences and long-throw applications, while ARCS is suitable for medium-throw needs. All use the heart of Wavefront Sculpture Technology — the patented DOSC Waveguide — to achieve remarkable results.

Specifications subject to change without notice

L-ACOUSTICS
Parc de la Fontaine de Jouvence • 91462 Marcoussis - cedex • France
Tel : +33 (0)1 69 63 69 63 • Fax : +33 (0)1 69 63 69 64
e-mail : info@l-acoustics.com
http : //www.l-acoustics.com