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# CBT & INTELLIVOX

SCALABLE, INTEGRATED, INSTALLED AUDIO SOLUTIONS



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# About JBL

## POWER AND VERSATILITY IS ONLY THE BEGINNING.

When it comes to the listening experience, JBL never ceases to push the boundaries. From its inception over 75 years ago, the brand has grown to become synonymous with epic sound. And while the enjoyment is instinctive, the science behind each and every innovation is precise and methodical. Passionate and gifted engineers and designers around the world devote themselves to developing JBL products and solutions that take listening to the next level - and they've been doing it since day one.

Today, JBL professional solutions encompass recording studios, movie theatres, tour sound, installed sound, arenas and stadiums, and much more. At the heart of each of these solutions is a meticulous attention to detail, a willingness to develop everything from the ground up, and an absolute dedication to giving artists outstanding sound, whether they're performing at a major music festival or busking on a street corner. And the technologies that JBL develops for its professional audience benefit all of JBL's listeners as they are distilled into smaller form factors, allowing people everywhere to enjoy professional quality sound at a convenient size and an affordable price.

Over the decades, JBL has contributed a remarkable number of industry firsts and technical innovations that further cemented its reputation as an audio pioneer, garnering Grammy® awards,

Academy awards, and widespread recognition from the world's most celebrated musicians and consumers along the way.

Expertly blending a bold vision of the future with the passion and talent of its engineers and designers, JBL develops its own solutions, invents its own technologies, and creates its own tools with a pioneering spirit that has defined the brand for the past 75 years. Today, JBL is present in more than 130 countries, encompasses an increasingly diverse range of next-level products and solutions, and has over 300 patents to its name, such as VGC™ transducer technology, Slip Stream™ low frequency port, Progressive Transition™ (PT) waveguides, and Plus One™ woofer cone technology.

Thanks to a truly exceptional dedication to constantly delivering exactly what customers desire, JBL sound has become part of the fabric of people's lives. Whether it's cinema sound that makes the movie-going experience more immersive, soundbars that transform the living room into a concert hall, portables that let listeners enjoy their favourite tunes wherever they go, gaming headsets that make players swear they've just stepped into the game, or in-car audio technology that turns the daily commute into a moment of pure listening pleasure, JBL fills listeners' lives with sound as it was meant to be heard.



# A Journey of Engineering Excellence

Audio technology is at the core of everything JBL does. For over 75 years they have employed the best methodology and tools, developing everything from the ground up, guaranteeing their efforts exceed the needs and expectations of audio professionals throughout the world. Never straying from this exacting formula, this journey has produced a prolific list of audio achievements, ground-breaking technologies, revolutionary advances in the art and science of professional audio, many patents, and many awards. It's a journey that is legendary worldwide and has positioned JBL as the world leader in professional audio. Not just as a brand, but as a company known for consistently blending creativity and science as a manifestation of their passion for sound and commitment to those who create it.

## Transducers.

The technology of transducers is truly the starting place for the entire JBL engineering legacy. Company founder James B. Lansing pioneered the use of permanent magnets in pro transducers – until this point they had all dual been coil designs which were much less accurate and powerful. Building on this historic foundation, JBL engineers continue to break ground on new and better ways to design transducers, reaching beyond what is commonly understood as possible and consistently setting new performance benchmarks for the audio industry. Often developing patents in

the process, their work has resulted in technologies such as Differential Drive woofers, CMCD Cone Midrange drivers, and the D2 Dual Voice Coil Compression Driver, covering the entire practical bandwidth of professional audio devices. Simultaneously addressing performance-robbing challenges such as power compression, heat dissipation, distortion, component weight, and physical footprint, JBL has created a range of transducers that are unparalleled in their ability to deliver extraordinary performance throughout a wide range of applications.

## Logarithmic Driver Spacing

When it comes to column line arrays, the physical positioning of the transducers is just as important as the quality of the components. Intellivox takes a different approach, calling on logarithmic driver spacing. This technique provides denser driver spacing at short wavelengths and economises on the number of drivers needed for longer wavelengths by spacing them in increasingly larger logarithmic increments. For good line array behaviour, the individual elements have traditionally needed to be spaced more than 1/2 wavelength apart for a given frequency. This meant that loudspeakers reproducing longer wavelengths could be spaced farther apart without any deterioration in performance.

## Directivity.

Building better loudspeakers is only the first of many performance challenges

that face all audio design engineers. Controlling the sound as it leaves the speaker enclosure is as critical to the performance of the system as the quality of the source component. The goal is always the same: create a consistent sound pattern throughout the desired vertical and horizontal plane without introducing artifacts, while ensuring the full bandwidth and SPL capability of the transducers, and providing a seamless transition from high frequency to low frequency components. JBL engineers relentlessly test new shapes and develop new materials to achieve the desired performance, often inventing new testing methodologies to ensure that nothing is left out of a thorough and rigorous examination of the design. The resulting technology has produced such ground-breaking designs as the Progressive Transition Waveguide, Image Control Waveguide, Slip Stream Port, Radiation Boundary Integrator, and Constant Curvature Waveguide. With multiple patents, and many successful installations in use worldwide, this critical component of JBL technology continues to evolve through our continuous pursuit of better, more accurate sound.

With column loudspeakers like the CBT family, these carefully optimised acoustic waveguides can be successfully combined with other technology, such as passive beam steering. This type of combination will successfully bring out the peak performance from both elements, ensuring a superior end result.

## Radiation Boundary Integrator™ (RBI)

JBL's patented Radiation Boundary Integrator combines the high frequency and mid-range so the transition across each band is uninterrupted, undistorted and seamless. A patented, tuned resonant chamber is integrated into the waveguide itself, effectively eliminating throat-related cancellations due to back pressure from the mid-range section. Our refined RBI waveguide implementation provides improved horizontal coverage - broader and more stable.

## Constant Beamwidth Technology

JBL's patented Constant Beamwidth Technology (CBT) draws upon two key principles to deliver precise pattern control from passive column array loudspeakers. The development of Legendre Shading for sonar saw the creation of a clean and uniform beam from a sphere of transducers with gain reduction that increases in each driver as you fan out from the centre. Building on this research, JBL's major breakthrough came from the understanding that you can use a passive delay and filter network to achieve the same lobe-free beam from a straight form factor.

The combination of technologies ensures constant directivity up to the highest frequencies and reduces out-of-coverage lobing. This is particularly important for highly reflective or reverberant acoustic environments. Thanks to CBT the acoustic energy can be focused on the audience and not the walls, delivering a vastly improved experience.

## DDS Beam Shaping

Digital Directivity Synthesis (DDS) is the foundation of the beam shaping technology that defines Intellivox and marks a significant upgrade on beam steering solutions. DDS allows you to control the near and far field dispersion of a loudspeaker array, creating the best possible coverage with the maximum direct to reverberant ratio, while also defining where you want to cover and where you want to avoid. This allows custom shaping of the directivity pattern for the JBL Intellivox arrays to produce a beam which is tailored to precisely match the audience area within the space in which they are installed.

DDS relies on a complex algorithm that works to optimise arrays for consistent frequency response and SPL across listener planes. Using software to define parameters, such as the room's acoustic properties, the loudspeakers you are using and the coverage

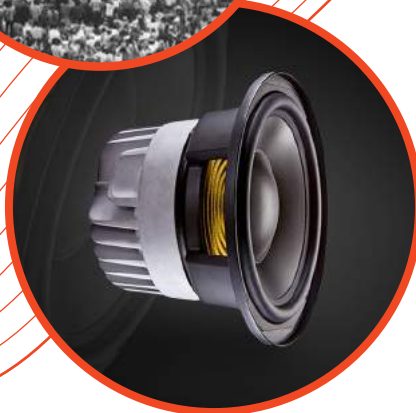
you require, the DDS algorithm will create the optimum performance for that space to meet your goals.

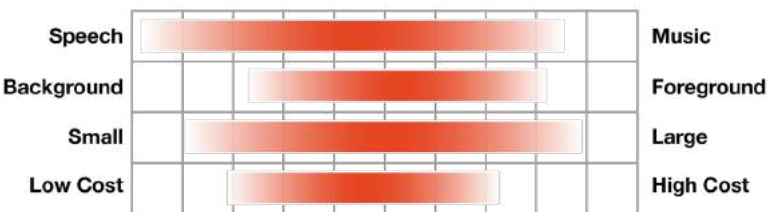
The result is a single, coherent beam that can easily cover complex audience planes, along with asymmetrical coverage allowing for improved linearity in the near field versus the far field.

## Testing.

All audio products have a useful life, and JBL engineers are committed to making that as long as possible, not only in terms of reliability, but also in terms of how good the sound is the very first time a system is turned on. Every JBL Professional product undergoes stringent testing above and beyond what the product would face when deployed in the real world.

JBL has multiple application specific anechoic testing chambers, and has developed the only known 'Speaker Shuffler' that allows rapid and precise re-positioning of speaker systems in the exact same space for truly accurate A/B testing. This rigorous, uncompromising adherence to testing results in continuous breakthroughs in performance and ensures that JBL users worldwide can always work with confidence.





# Constant Beamwidth Technology™ CBT Series

## CBT Series Passive Controlled-Coverage Columns

The CBT Series is a supremely flexible family of problem-solving passive column speakers that offer impressive audio quality. Thanks to their Constant Beamwidth Technology and their ability to focus sound on the audience, CBT columns are particularly suited challenging acoustic environments. The end result is a slim column with wide horizontal and narrow vertical coverage which delivers powerful, intelligible full-range sound both indoors and outside.



International Education City, Vietnam

# Suffix & Prefix Guide

(not all accessories are shown in brochure):

- ADC** .....Analogue Directivity Control
- CBT** .....Constant Beamwidth Technology
- DS** .....DDS Active Beam Shaping
- E** .....Extension
- H** .....Horizontal Orientation
- HP** .....High Power & High Output
- J** .....Asymmetrical Vertical Curve
- LA** .....Line Array Column Loudspeaker
- LS** .....UL Life Safety (may also have VA certification)
- V** .....Vertical Orientation

Black / White

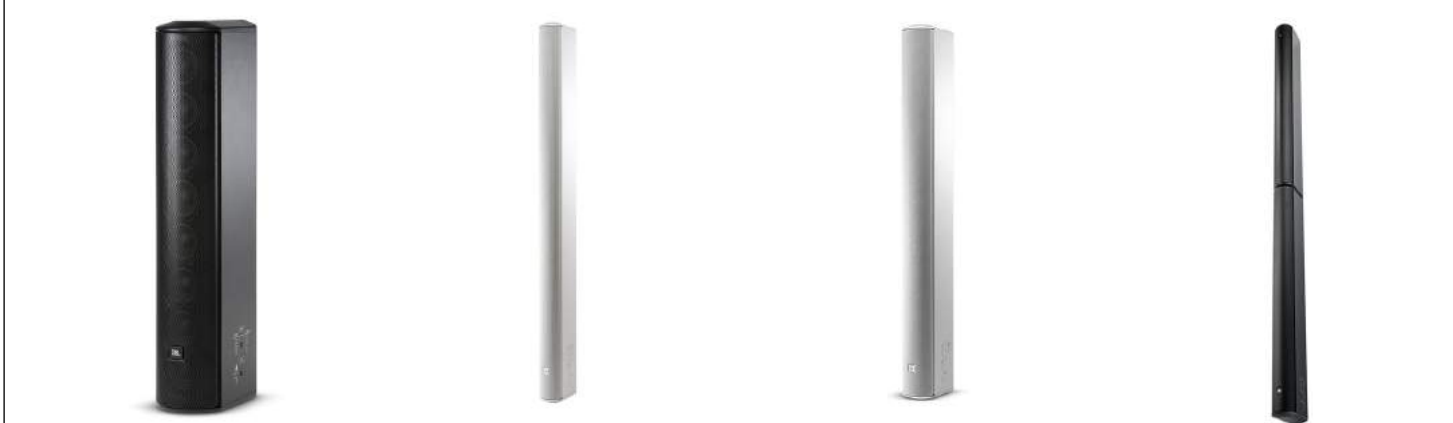
### CBT 50LA-1

Constant Beamwidth Technology™ Line Array Column Loudspeaker

**Components:**  
8 x 50mm (2-in) Full Range

**Frequency Range (-10dB):**  
80 Hz – 20 kHz

**Dimensions:**  
528 x 99 x 153mm  
20.8 x 3.9 x 6-in



<p>Black / White</p> <p><b>CBT 50LA-LS</b></p> <p>Line Array Column Loudspeaker, EN54:24 Certified</p> <p><b>Components:</b> 8 x 50 mm (2 in) Full Range</p> <p><b>Frequency Range (-10dB):</b> 120 Hz – 20 kHz</p> <p><b>Dimensions:</b> 528 x 99 x 153 mm 20.8 x 3.9 x 6 in</p>	<p>Black / White</p> <p><b>CBT 100LA-1</b></p> <p>Constant Beamwidth Technology™ Line Array Column Loudspeaker</p> <p><b>Components:</b> 16 x 50 mm (2 in) Full Range</p> <p><b>Frequency Range (-10dB):</b> 80 Hz – 20 kHz</p> <p><b>Dimensions:</b> 1000 x 98.5 x 153 mm 39.4 x 3.8 x 6 in</p>	<p>Black / White</p> <p><b>CBT 100LA-LS</b></p> <p>Line Array Column Loudspeaker, EN54:24 Certification</p> <p><b>Components:</b> 16 x 50 mm (2 in) Full Range</p> <p><b>Frequency Range (-10dB):</b> 80 Hz – 20 kHz</p> <p><b>Dimensions:</b> 1000 x 98.5 x 153 mm 39.4 x 3.8 x 6 in</p>	<p>Black / White</p> <p><b>CBT 200LA-1</b></p> <p>Constant Beamwidth Technology™ Line Array Column Speaker</p> <p><b>Components:</b> 32 x 50 mm (2 in) Full Range</p> <p><b>Frequency Range (-10dB):</b> 80 Hz – 20 kHz</p> <p><b>Dimensions:</b> 2000 x 98.5 x 153 mm 78.8 x 3.8 x 6 in</p>
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<p>Black / White</p> <p><b>CBT 70J-1</b></p> <p>Constant Beamwidth Technology™ Two-Way Line Array Column</p> <p><b>Components:</b> 4 x 130 mm (5-in) LF 16 x 25 mm (1-in) HF</p> <p><b>Frequency Range (-10dB):</b> 60 Hz – 20 kHz</p> <p><b>Dimensions:</b> 694 x 170 x 237 mm 27.4 x 6.7 x 9.3 in</p>	<p>Black / White</p> <p><b>CBT 70J-1 + 70JE-1 SYSTEM</b></p> <p>Extension for CBT 70J-1 Line Array Column Speaker</p> <p><b>Components:</b> 8 x 130 mm (5 in) LF 16 x 25 mm (1 in) HF</p> <p><b>Frequency Range (-10dB):</b> 45 Hz – 20 kHz</p> <p><b>Dimensions:</b> 1388 x 170 x 237 mm 54.8 x 6.7 x 9.3 in</p>	<p>Black / White</p> <p><b>CBT 1000</b></p> <p>Constant Beamwidth Technology™ Adjustable Coverage Line Array</p> <p><b>Components:</b> 6 x 165 mm (6.5 in) LF 24 x 25 mm (1 in) HF</p> <p><b>Frequency Range (-10dB):</b> 45 Hz – 20 kHz</p> <p><b>Dimensions:</b> 1020 x 250 x 345 mm 40.2 x 9.9 x 13.6 in</p>	<p>Black / White</p> <p><b>CBT 1000 + CBT 1000E SYSTEM</b></p> <p>Extension for CBT 1000 Line Array Column Speaker</p> <p><b>Components:</b> 12 x 165 mm (6.5 in) LF 24 x 25 mm (1 in) HF</p> <p><b>Frequency Range (-10dB):</b> 38 Hz – 20 kHz</p> <p><b>Dimensions:</b> 2040 x 250 x 345 mm 80.4 x 9.9 x 13.6 in</p>
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# Intellivox ADC Analogue Directivity Control

## Compact Loudspeaker Arrays for 70V/100V PA/VA Systems

The Intellivox ADC (Analogue Directivity Control) Mark II range has been created for 70V/100V Public Address and Voice Alarm (PA/VA) systems. The columns rely on ADC technology, a set of passive filters which has been precisely transferred into the analogue domain from the Digital Directivity Control (DDC) algorithm. The Passive filter network provides time alignment for the individual drivers, equalisation of the complete array and creates a constant wavelength line source.

Grey / White

### ADC-V90 MARK II

**Vertically Mounted  
100V Line Passively  
Powered Intellivox With  
Fixed Beam, EN54:24  
Compliant for Life  
Safety Applications**

**Components:**  
6 x 101 mm (4 in) Full Range

**Frequency Range:**  
120 Hz – 12 kHz (+/-3 dB)

**Typical Throw Distance:**  
10 – 15 m

**Dimensions:**  
865 x 134 x 92 mm  
34.1 x 5.3 x 3.6 in



Grey / White

### ADC-H90 MARK II

**Horizontally Mounted  
100V Line Passively  
Powered Intellivox With  
Fixed Beam, EN54:24  
Compliant for Life  
Safety Applications**

**Components:**  
6 x 101 mm (4 in) Full Range

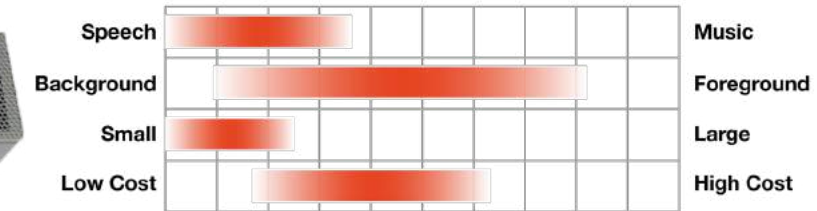
**Frequency Range:**  
150 Hz – 14 kHz (+/-3 dB)

**Typical Throw Distance:**  
10 – 15 m

**Dimensions:**  
865 x 134 x 92 mm  
34.1 x 5.3 x 3.6 in



## COLUMN



Dushanbe Central Mosque, Tajikistan





Kings Cross, London, UK



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- Product training available in-house or by manufacturer
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