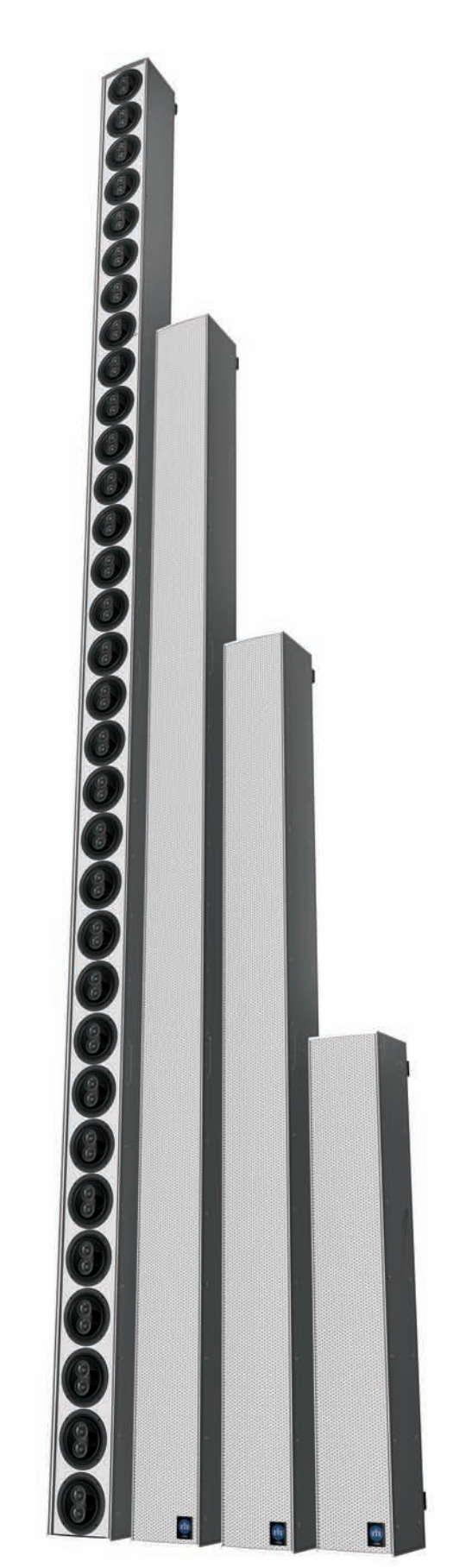


ICONYX

DIGITALLY STEERABLE LINE ARRAY LOUDSPEAKER SYSTEMS

F A Q

Frequently Asked Questions

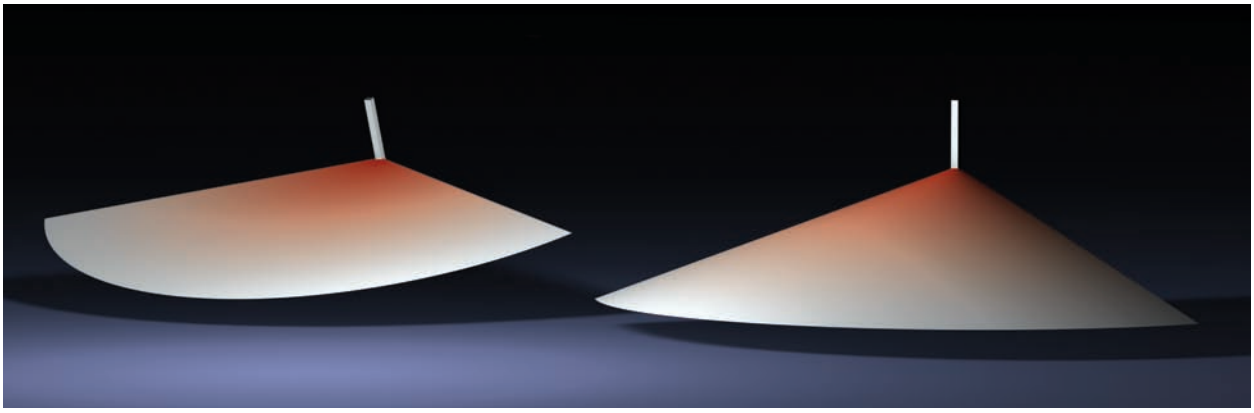
RENKUS-HEINZ

Q. What are the benefits of a digitally steerable column over a traditional column array?

Digitally steered columns can produce significantly better and more intelligible results than traditional passive column arrays.

While a traditional passive column array can create a relatively controlled beam the whole column must be pointed down onto the desired listener area. This can be both acoustically and aesthetically undesirable. Tilting a passive column is like tilting a disc or Frisbee of sound, as the beam is tilted down the sides of the beam tilt up onto the side walls increasing reflections.

A digitally steerable solution like Iconyx can be mounted flat against a wall or column and the sound is then steered electronically by digital signal processing. Steering the beam instead of tilting the beam brings the beam down more like an umbrella of sound than a Frisbee with the extremes enveloping the coverage area rather than tilting up to the side walls, very much improving intelligibility.



Passive Column tilted down

Iconyx Column steered down

Q. Why does Iconyx use coaxial transducers instead of separate LF and HF sections?

By using closely spaced coaxial transducers Iconyx builds a continuous array of full range sources allowing maximum flexibility, and maximum control, to the system designer. The designer can choose an acoustic center for the beam at any point within the column, or in the case of multiple beams create multiple acoustic centers.

If a project requires multiple beams, one for the main floor and one for a balcony, the column can be installed at a height that works well both aesthetically and acoustically for both areas to be covered. In competing designs using fixed acoustic centers both beams MUST share the same acoustic center limiting their flexibility. If the ideal beam for the balcony needs to originate from 17 feet above the floor but the ideal beam for the floor should originate from 9 feet Iconyx can accommodate this without compromise.

Q. How tight a beam can I get from an Iconyx array?

Iconyx offers beams with opening angles of 5 to 30 degrees depending on the model chosen.

The ability of an array to create a “beam” depends on its height in comparison to the wavelengths being controlled. While short arrays can create beams at very high frequencies their effectiveness falls off as frequency goes down. An IC8 module at almost 1 meter tall offers a choice of 20,25 and 30 degree beams while an IC32 at almost 4 meters can achieve 5 degree beams. Iconyx ONLY offers beams that provide consistent frequency response and even coverage.

Q. What is Q, and why is a High Q beam better than a Low Q beam in reverberant spaces?

Q is a measure of a loudspeaker's directivity, the higher the Q the more directional the source. When discussing beams, narrow beams are termed High Q and wider, less directional beams, are termed Low Q.

In reverberant spaces Low Q sources, like a person talking or a small loudspeaker, excite the reverberant field all around them making it difficult to understand what is being said. This effect becomes worse and worse the further away from the source the listener is. A High Q source, such as Iconyx, controls the acoustic energy into a much narrower field pointing it at the listener and not at the rest of the reverberant space. This very much improves intelligibility at much greater distances than that from Low Q sources.

Q. How many beams can an Iconyx provide?

An IC8 can deliver 4 beams, an IC16 8 beams, and IC24 12 beams and an IC32 16 beams.

In many applications it is better to use multiple narrow beams than one wider beam. These narrow, High Q beams, are more controllable than wider, Low Q beams, even when covering the same listening area, and give more intelligibility in reverberant spaces.

Q. How much can I steer an Iconyx beam?

Iconyx offers up to +/- 30 degrees of steering for each individual beam.

The goal in an Iconyx project is to provide intelligibility while maintaining excellent sound quality. To achieve this narrow, High Q, beams are used to keep the sound on the audience area minimizing leakage into the rest of the space. Greater steering angles require wider, Low Q, beams and higher elevation to provide the same coverage as a High Q beam can at lower elevation. Lower Q means worse signal to noise and lower intelligibility in reverberant spaces.

Q. What is an acoustic center?

Acoustic Center is the term used to describe the point on the column from which the beam originates. As Iconyx uses a continuous array of full range drivers the acoustic center can be set at any driver within the array, or in the case of multiple beams, multiple acoustic centers can be chosen.

Q. Iconyx allows the designer to select acoustic centers anywhere on the column, why is this important?

Iconyx is designed to integrate both acoustically and aesthetically into architectural spaces. Having the ability to choose an acoustic center anywhere on the column allows the designer to place the column at a height that works aesthetically while still creating beams at the ideal height acoustically. Other designs with fixed high frequency sections MUST use this as the acoustic center. In such cases the column must be installed at a height determined by this center.

From a mechanical design point of view, the ability to move the acoustic center makes mounting height less critical. If, for example, a column is installed at the wrong height, or unforeseen acoustic challenges require the acoustic center to be raised or lowered , an Iconyx designer can simply achieve this in software. With other solutions the entire column may need to be raised or lowered, including the need to drill additional holes in the beautiful marble walls that you fought hard to get agreement to in the first place.

Q. What are the benefits of multiple beams and multiple acoustic centers?

Iconyx is a tool and has been designed to give the system designer the maximum amount of control and flexibility. Our goal of high intelligibility mandates the use of High Q, well defined beams. To cover large spaces our philosophy is to use multiple narrow, High Q, beams rather than a single wide, Low Q, beam. This High Q approach gives improved signal to noise and hence better intelligibility in reverberant spaces.

The ability to create multiple beams allows the designer to sculpt the system coverage in a way that cannot be achieved with traditional horn based loudspeakers. Multiple beams of varying intensities can be designed to cover every part of the desired coverage region with fewer compromises. Because Iconyx uses a continuous array of full range drivers the acoustic centers of these multiple beams can be independently placed anywhere within the length of the array.

Q. Is Iconyx only for use in reverberant spaces?

The Iconyx series is suited to many installations where high quality audio is needed. It's clean, low profile design, makes it aesthetically more appealing than traditional clusters of loudspeakers. The ability to shape, aim and control multiple beams enables the designer to get better, more consistent coverage than can be achieved with traditional designs.

In projects where higher output is required IC Live offers many of the benefits of Iconyx but in a higher powered package.

Q. What's the difference between Iconyx and IC Live?

Iconyx arrays are ideally suited to voice and light music reproduction. Where higher output is required, or portability is important, IC Live should be used. Instead of an Iconyx array of custom 4" coaxial drivers IC Live employs 6.5" Woofers and 1" Compression drivers to give higher output with improved low frequency response.

Full details on IC Live can be found at www.renkus-heinz.com/loudspeakers/iclive/index.html

Q. Can Iconyx be used in spaces with low ceilings?

Iconyx can work very well in rooms with low ceilings. The movable acoustic center allows a tall column to be used, giving good beam control at lower frequencies, while still placing the beams origin at the desired height. In a system with a fixed acoustic center or high frequency section this would govern the mounting height and may compromise the ability to install a tall array.

Q. What are Grating Lobes?

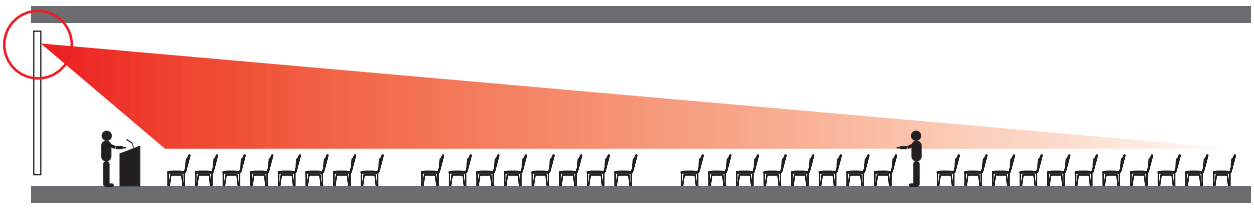
Grating lobes are secondary lobes that appear outside of the desired beam caused by interference between drivers, and in practice have little effect on the final results. However, the unique Iconyx 4" coaxial driver with its dual tweeter high frequency array has been specifically designed to reduce the strength of these secondary lobes while also pushing their onset to higher more benign frequencies.

The new dual tweeter driver with its closer spaced HF elements and vertical directivity actually gives similar results to designs based on close packed tweeters with regards to these grating lobes, while still allowing the primary benefits of movable and multiple acoustic centers.

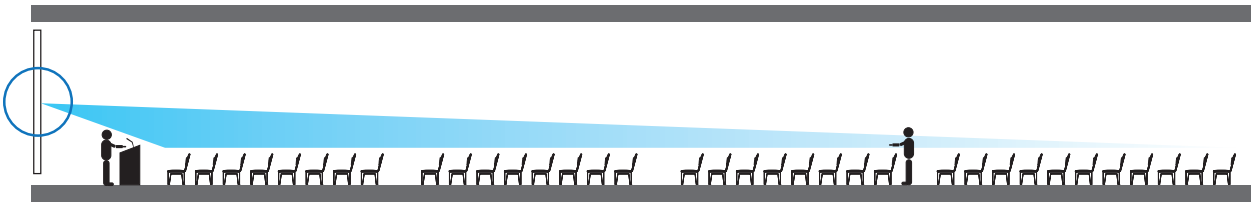
Q. How does Iconyx compare to competing solutions in spaces with low ceiling height?

Iconyx offers considerably more flexibility in spaces with low ceiling height than many competing designs. The graphic below demonstrates the benefit of our ability to move the acoustic center to any point within the array while other designs with fixed centers must either accept compromised performance, or shorten the array thus reducing the frequency range over which they can control the beam.

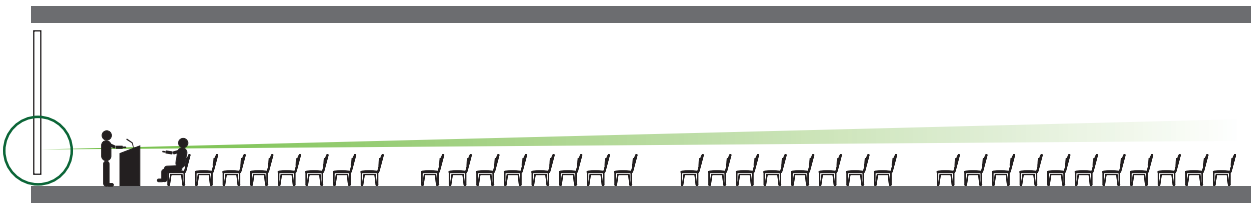
ICONYX - Adjustable (Movable) Acoustic Center



Fixed Acoustic Center - Center of Array



Fixed Acoustic Center - Bottom of Array

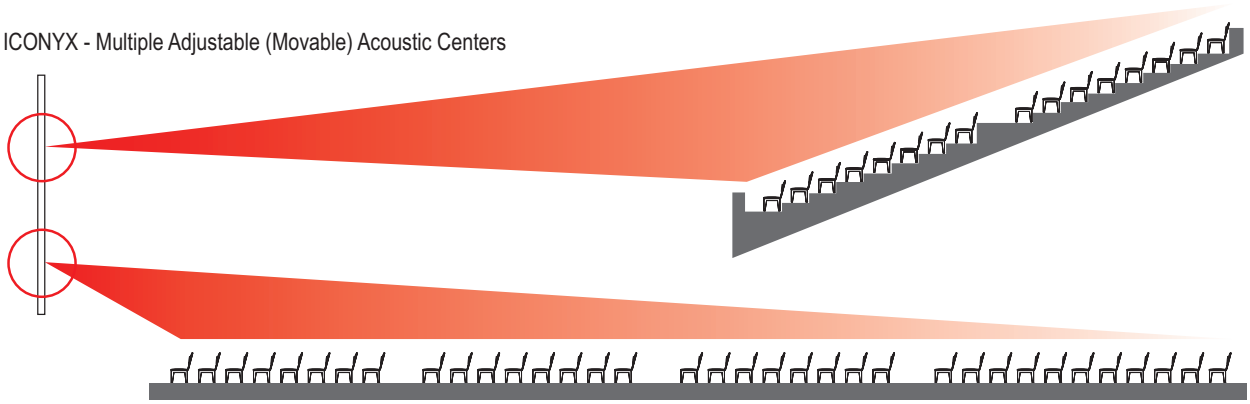


Iconyx can of course be configured with the acoustic center in any of the above locations. Clearly the ability to install a tall array and move the acoustic center to the best position within it is a major advantage in such applications.

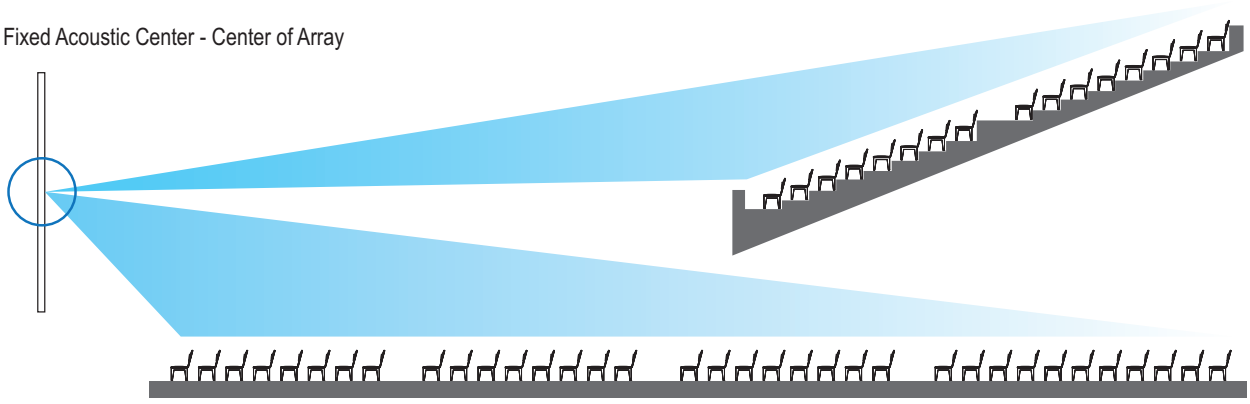
Q. How does Iconyx compare to competing solutions in spaces requiring multiple beams?

In projects requiring multiple beams the flexibility of Iconyx multiple and movable acoustic centers allows the designer the maximum in flexibility and control. In the example below Iconyx can deliver beams originating from the ideal height for the project without compromising on mounting height or using wider, Low Q, beams.

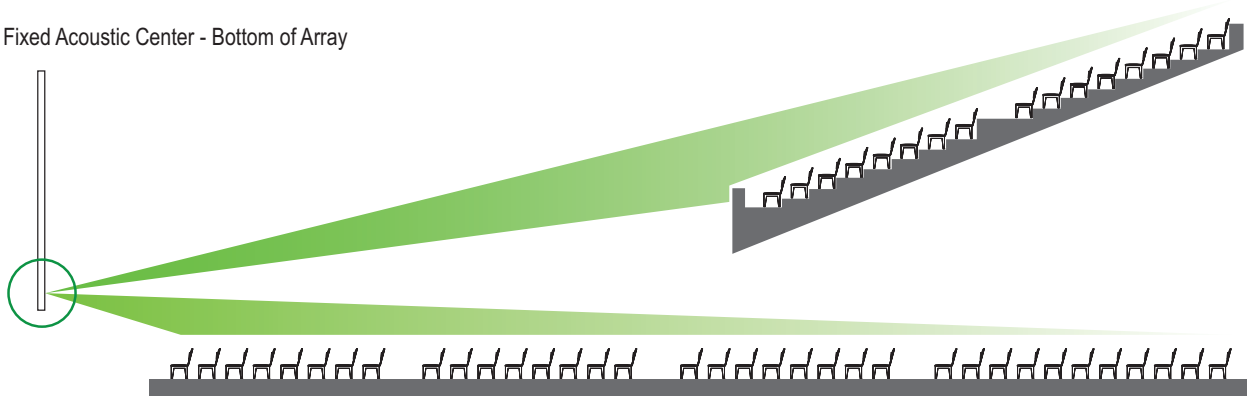
ICONYX - Multiple Adjustable (Movable) Acoustic Centers



Fixed Acoustic Center - Center of Array



Fixed Acoustic Center - Bottom of Array



Iconyx can of course be configured to match any of the above examples but columns with fixed acoustic centers cannot match the configuration of the Iconyx.

Q. Can Iconyx be custom color matched?

As your Iconyx speaker is built to order we are able to offer a custom paint color matching service with very little time penalty, 15 business days from order instead of our standard 10 days. For a color match we require a physical sample of the paint color to be matched, or a well recognized color code such as RAL.

Q. Can Iconyx be flush mounted?

Although Iconyx speakers are very low profile and are designed to integrate seamlessly there are situations where they must be flush mounted. Our application note "IC-1 Flush Mounting the Iconyx Series" provided detailed instructions and recommendations to eliminate any guesswork.

Q. How do I service an Iconyx array?

Iconyx arrays are designed to be easily serviced. Our wall mount Hinge Kit allows the entire column to be simply swung away from the wall for access to its amplifier module, power, signal and network connections. Full field service instructions are provided in the Iconyx User Manual.

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