

New Directions for Live Sound

Magnificent architecture adds excitement and allure to any live event. But it can also create acoustical problems. IC Live arrays use advanced digital beam steering technology to deliver impeccable sound while staying in the background visually.

IC Live arrays provide an elegant solution to long standing acoustical problems with slim enclosures that blend into any environment. Individual driver control maximizes the acoustical advantages of this design. The result is unsurpassed vertical pattern control – essential for delivering intelligible speech in reverberant spaces. IC Live beams can be steered up or down while the array remains vertical – and nearly invisible.

IC Live arrays are also powerful. Their 6.5 inch neodymium low frequency transducers and 1 inch throat titanium nitrate coated high frequency drivers produce surprisingly high sound levels for their size. They are equally at home delivering a quiet sermon in a reverberant cathedral, cutting through the crowd noise in a gym during a close basketball game or shaking the walls with rock music in a club.

Transparent Solutions

- Houses of Worship: traditional & modern.
- Transport Terminals: train stations, airports, etc.
- Stadiums & Arenas: lobbies & forecourts.
- Convention Centers, warehouses, gymnasiums, etc.
- Museums: lobbies, galleries, etc.
- Performing Arts Centers: vocal/orchestral “lift,” lobbies, etc.
- Any highly reverberant environment where powerful, enjoyable music and/or intelligible speech are as important as the architectural design.

POWERFUL • MUSICAL • INTELLIGIBLE

Adaptable, Articulate, Invisible

Digital beam steering puts IC Live output where it belongs: on the audience, not walls or ceilings. Computer software lets you define the opening angles for as many as four sonic beams from each IC Live array module (up to 8 beams when stacked) and aim them up or down. Meanwhile, the slim enclosure stays vertical and inconspicuous. Two ICL-FR modules can be stacked for even tighter control and higher output.

Powerful, Accurate, Musical

Iconyx transparent technology controls sound with DSP intelligence, not cumbersome brute-force techniques. Multi-channel class D digital amplifiers with Integral DSP engines control every single array element with programmable precision. High-current audiophile output stages power each light, efficient transducer in the Iconyx array individually. Even at 100 feet, SPL is an impressive 105 dB (108 dB when stacked). Output is flat from 80 Hz to 20 kHz. Low frequency energy can be extended to 40 Hz or below with matching subwoofers.

RHAON Empowered

All Iconyx ICL-FR arrays are equipped with RHAON, the Renkus-Heinz Audio Operations Network. RHAON offers multi-channel digital audio distribution, user controlled DSP, user selectable preset configurations and comprehensive remote system management and control - all using standard Ethernet hardware and cabling.

Easy To Install

IC Live ICL-FR installation models are equipped with attachment points making them easy to suspend from the ceiling. Hinged mounting hardware is available for wall mounting. It allows the cabinet to be turned away from the wall for easy signal and power connections and then locked into place against the wall after installation.



ICL-FR ICL-FR-DUAL

(For Permanent Installations)



ICL-FR Array

ICL-FR-DUAL Array

Intimate Sound for Imposing Spaces

"Up close and personal" communication happens when sound arriving directly from the source, whether it's a live person or a loudspeaker, is much louder than sound that's reflected off the walls, windows, floor and ceiling. As you move farther away from the source, the direct sound loses volume twice as fast as the reflected sound. This is why in very reverberant spaces, it can be hard to understand someone speaking in a normal tone of voice more than a couple of arm's lengths away.

IC Live digitally steerable arrays produce tightly focused, precisely aimed beams of acoustic energy that maintain their intensity over long distances. Because most of the highly directional sound from an IC Live digitally steerable array is focused on the listeners, very little is left to bounce around the room and confuse the ears. That's how Iconyx IC Live arrays let you sit hundreds of feet away from the speaker or musicians and still hear the words and music as if they were right "in your face."

The software algorithms that shape and aim the output of an Iconyx array are complex, but the user interface is intuitively simple. Renkus-Heinz BeamWare, a Windows application, lets you model the audience area and then choreograph the beams until the coverage is optimized. Beamware allows you to choose the number of beams (up to 4 in an ICL-FR or 8 in a stacked array), their aiming points and sharpness, and their relative level.

Different configurations can also be stored as presets allowing users to quickly and easily adjust the sound coverage to accommodate different room setups and configurations by push button selection of the desired setup.

The improvement in sound quality and clarity provided by Iconyx digitally steerable arrays over conventional loudspeaker systems is truly remarkable, especially in highly reverberant rooms. The coverage patterns of conventional loudspeaker systems bounces too much energy off the walls and ceiling which interferes with intelligibility.

High Performance Woofers and Drivers



Low frequency woofer with neodymium magnet

IC Live transducers were chosen for their light weight and high performance. Both the low frequency woofers and the high frequency drivers feature Neodymium magnets known for their high efficiency and low weight.

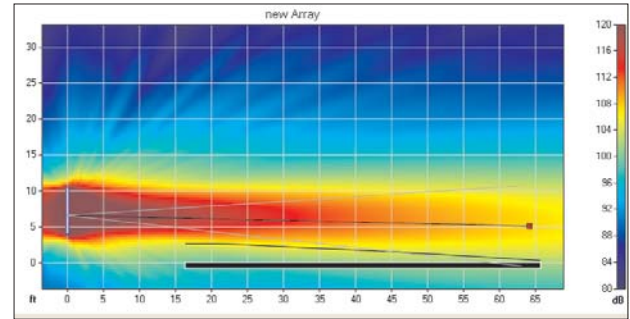
The high-power 6.5 inch woofers have a 1.5 inch copper voice coil and a stiff cone with a soft supple surround.



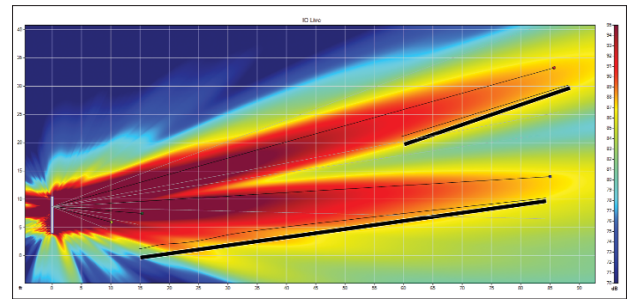
High frequency driver with neodymium magnet and titanium nitride coated dome

The high frequency drivers have a titanium coated dome which dramatically increases stiffness for improves transient response and reduced intermodulation distortion. An edge wound copper clad aluminum voice coil wound on Nomex completes the diaphragm assembly.

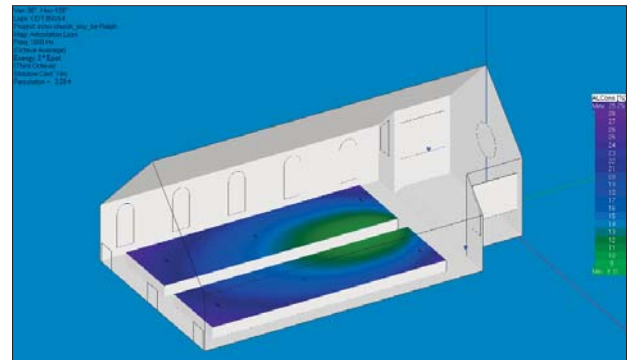
ICL-FR & ICL-FR-DUAL



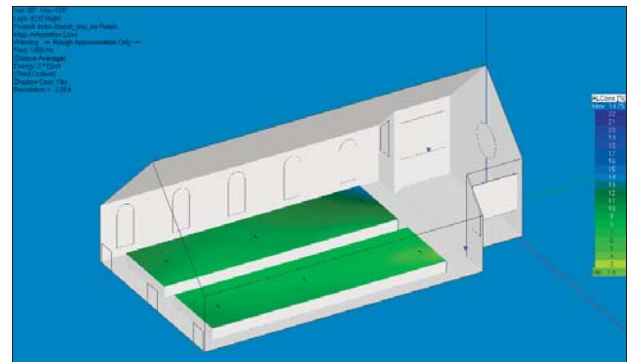
BeamWare display of a tightly focused ICL-FR digitally steerable array. Notice how the beam distributes sound evenly over the audience area.



BeamWare display showing one application of the multi-beam capability of ICL-FR Iconyx digitally steerable arrays. Notice the smooth coverage of both the main floor and balcony areas.



EASE Intelligibility map of a typical reverberant worship facility (3 to 3.5 Sec. RT60) with a conventional 2-way loudspeaker suspended above the altar. Dark green areas indicate 9% to 12% ALcons or fair to barely acceptable intelligibility; the blue areas indicate poor to unacceptable intelligibility.



EASE Intelligibility map of a typical reverberant worship facility (3 to 3.5 Sec. RT60) with an Iconyx array placed at the side of the chancel area. The green areas indicate good to excellent intelligibility across the bulk of the audience area.

MAXIMUM CONTROL



RHAON is the culmination of more than 20 years experience integrating electronics with loudspeakers. RHAON makes it easy to connect, control and monitor multiple ICL-FR arrays and a mixture

of other Renkus-Heinz powered loudspeakers using standard Ethernet cabling and switches. On one network, you can distribute multi-channel digital audio with CobraNet, control array-specific DSP functions, and supervise the entire loudspeaker system from a centrally location computer.

RHAON's comprehensive network capabilities make it easy to add one-touch presets, zone control and life safety functions to any ICL-FR system.

RHAON gives you maximum control of:

- Real time digital audio distribution over standard Ethernet using proven CobraNet technology to deliver multiple channels of high quality digital audio over a single CAT 5 cable.

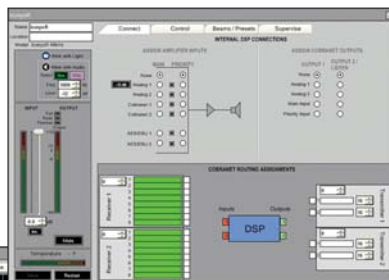
- A powerful DSP inside each ICL-FR array on the network. Adjust eight bands of parametric EQ, high and low frequency shelving filters, input level control, muting and delay in real time; store up to 10 preset configurations.

- Our Beamware software with its ability to individually shape, steer and control multiple sonic beams to cover almost any audience area.

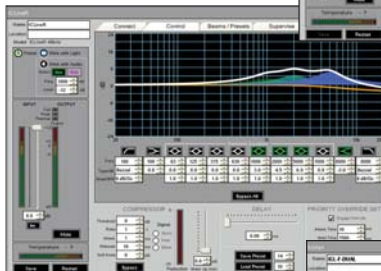
- Monitoring and supervisory functions. RHAON tracks critical operating parameters such as signal clipping, amplifier output voltage and current and temperature with automatic alert functions.

RHAON is not pre-certified as a life-safety system, but it has been designed to meet the requirement of most local authorities. Redundant signal paths and programmable priority override functions are built in. Continual monitoring of each networked loudspeaker, with automatic operator alert and logging functions, help you make sure the system is available when it's most urgently needed.

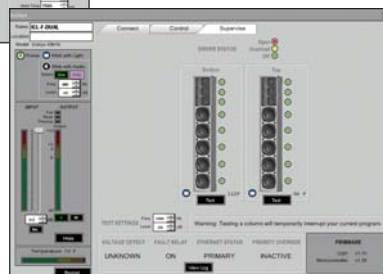
A typical ICL-FR loudspeaker array connection window. Notice the wide range of inputs available.



Individual Control windows for each ICL-FR array allow easy adjustment of EQ and Shelving, Delay, Etc.



Individual Supervise windows for each ICL-FR loudspeaker array help to identify problems and take remedial action.



ARRAY CONFIGURATION SOFTWARE

Powerful Algorithms, Intuitive Interface

The software algorithms that shape and aim the output of an Iconyx array are complex, but the user interface is intuitively simple. Our BeamWare software, an integral part of RHAON, lets you model the audience area, then drag and drop beams until coverage is optimized. BeamWare then calculates a set of FIR (Finite Infinite Response) filters that control the array's beams. At installation time, simply download the full set of FIR filters from your computer to the IC Series modules over the Ethernet network.

The beams can be easily adjusted from your computer after the Iconyx array is installed.

RHAON also allows you to adjust the output level, EQ, high and low frequency shelving, muting and delay of ICL-FR arrays from your computer.

Multiple Presets, Easy Selection

ICL-FR can store up to 10 different configurations in the loudspeakers DSP memory. For example, you might optimize one configuration for small events on the main audience area, and another for larger occasions with listeners in the balcony. Once the configurations are stored, it's easy to switch from one to another. Up/Down buttons and a readout on the rear panel allow an operator to scroll through the available presets. This function can also be performed remotely from the central control computer or by means of a remote control panel if a central computer is not being used.



IC-RC1 Remote Control

Advanced DSP Processor / Amplifier

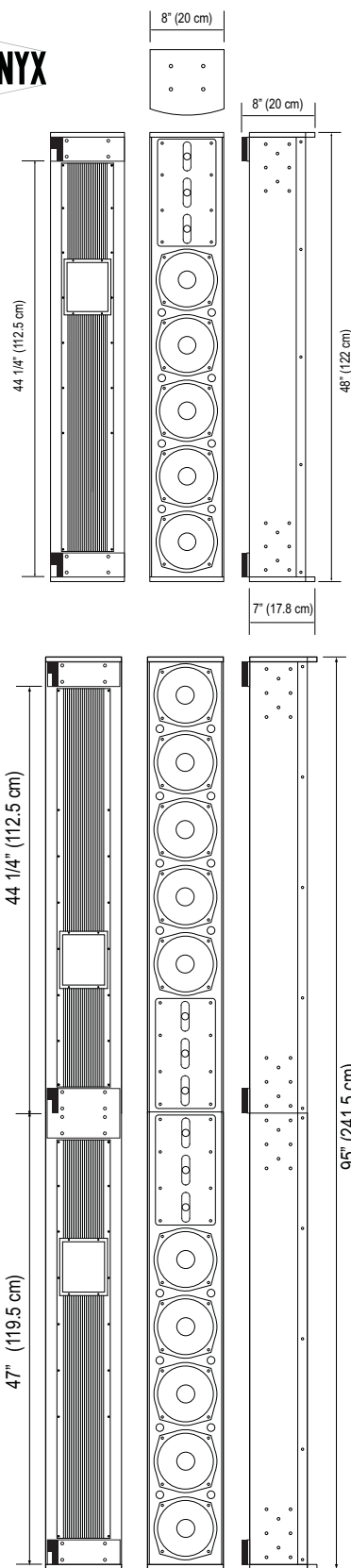
The brain of each ICL-FR module is the 8-channel DSP processor / amplifier developed specifically for Iconyx. It not only performs the complex digital signal processing needed to shape and aim the beams without creating side lobes, but also provides 8 channels of Class D digital amplification. Its audiophile, high-current output section and integral DSP engine control each high-performance coaxial transducer with total precision. The Class D digital amplifiers are lightweight, efficient and cool: no fan noise. Fully regulated switching power supplies operate from 90 to 260 Volts, 50/60 Hz AC.



Multiple Input Options

ICL-F-R arrays offer a variety of input options. Dual analog inputs are standard equipment along with a choice of two digital inputs, Multi-channel digital audio signal distribution via CobraNet and a serial AES/EBU digital input.

ICL-FR & ICL-FR-DUAL



Sensitivity: 1.0 V (for rated power output)

Freq. Range: 80 Hz to 20 kHz

Max SPL: ICL-FR: 105 dB peak @ 100 Ft. (30.5 m),
ICL-FR-DUAL: 108 dB peak @ 100 Ft. (30.5 m)
(3-octave bandwidth centered at 2 kHz)

Horiz. Dispersion: 150° up to 3 kHz; 120° above 3 kHz

Vert. Opening Angles: ICL-FR: 20°, 25° and 30°
ICL-FR-DUAL: 5°, 10°, 15° and 20°

Aiming Angle: Adjustable from -30° to +30°

Typical Throw: ICL-FR: 80 Ft. (25 meters)
ICL-FR-DUAL: 160 Ft. (50 meters)

Beam Control: ICL-FR: Effective down to 800 Hz
ICL-FR-DUAL: Effective down to 400 Hz

№. Transducers

-Each Module: Five 6.5-inch cone transducers with neodymium magnets
Three 1-inch HF titanium nitride compression drivers

№. Amp. Channels: 8 per module

Dimensions: ICL-FR: 48" H x 8" W x 7" D (121.5 cm x 20. cm x 17.8 cm)

ICL-FR-DUAL: 95" H x 8" W x 7" D (241.5 cm x 20. cm x 17.8 cm)

Weight: ICL-FR: 61 Lbs (27.7 Kg)

ICL-FR-DUAL: 122 Lbs (55.4 Kg)

Hardware: Metric M10 attachment points and hinge kits

Enclosure: Finnish Birch with perforated steel grille

Inputs: Analog Audio: 2 inputs (primary & secondary), Phoenix 3-pin connectors (looping 3-in, 3-out)
CobraNet: Dual RJ45 connectors (for CAT 5 copper cable)
AES/EBU: Phoenix connector

Controls (Rear Mounted): Mute button
Up & Down Output Level buttons
10 dB pad (on Analog 1 input)
Push-To-Reset circuit breaker
Preset Configuration Selector (10 configurations)

Computer Controls: Gain, Mute, On/Standby, Input Selection;
Compression, 8-Band Parametric EQ, Shelving & Rolloff Filters,
Delay, Preset Configuration Selection

Status Indicators: Power, Signal, Overdrive, Thermal, Mute, Input Pad, Preset Configuration Readout

Power Connector: IEC power connector

Finish: Standard finish: white paint
Optional finishes: black and custom color paint, weather resistant

Network Digital Format: 16 or 24 bit PCM; 48 or 96 kHz sample rate; selectable network latency.

DSP/AMPLIFIER

Type: 8-channel, Class D amplifier/DSP processor

Input Impedance: >20K Ohm balanced differential

Max Input: +24 dBu (Pad in); +14 dBu @ 1V sensitivity (Pad out)

Power Rating: 100 Watts RMS per channel, 150 Watts Burst

Freq. Range: +3, -3 dB, 80 Hz to 20 kHz

THD Distortion: < 0.05% typical

Hum & Noise: <100 dB (A weighted)

Power Required: Universal 90/260 VAC, 50/60Hz.

(per module) 24 VA Idle; 500 VA @ rated output per module
(250 ma Idle, 4.2 Amps @ RPO at 120 V)

Note: All analog inputs and outputs comply with AES Standard 48-2005 on interconnecting, grounding and shielding.