

TECHNICAL SPECIFICATIONS
PN102/HO & PNX102/HO LINE ARRAY LOUDSPEAKERS

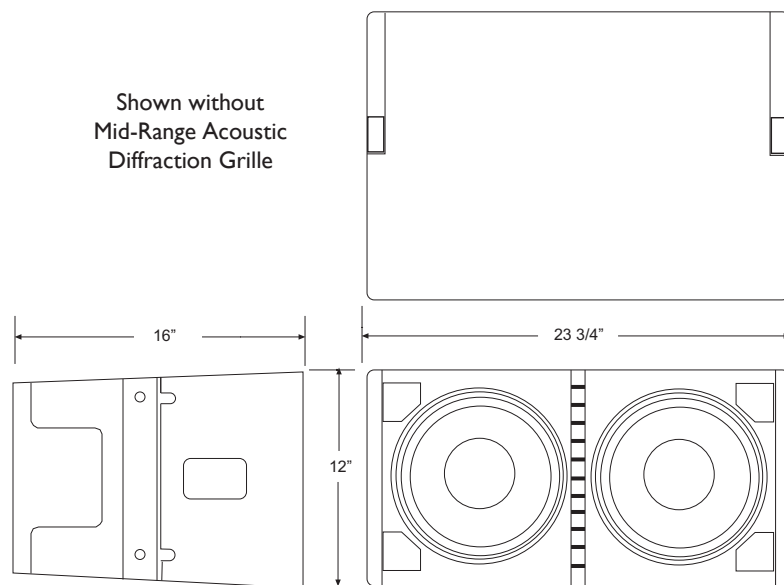
SENSITIVITY – PN102/HO: 1.4 V for rated power output	POWER – PNX102/HO: Lows – 800 Watts pgm at 16 Ohms Highs – 200 Watts pgm at 16 Ohms
PNX102/HO: 100 dB (1W/1m)	ENCLOSURE: Multi-ply hardwood, perforated metal grille
MAXIMUM SPL:	CONNECTORS – PNX102/HO: Neutrik 4-pin connectors Screw terminals
PN102/HO: Highs; 132 dB program, 135 dB peak Lows; 129 dB program, 132 dB peak	FINISH OPTIONS: Black, white or custom paint Natural (unfinished) Weather resistant (PNX102/HOonly)
PNX102/HO: Highs; 133 dB program, 136 dB peak Lows; 130 dB program, 133 dB peak	ASSOCIATED HARDWARE: RHANG102/LA Fly Bar 102 Dolly
DISPERSION: 150° Horizontal. Vertical dispersion is a function of Array design	DIMENSIONS: 12" H x 23 3/4" W x 16" D (30.5 cm x 60.3 cm x 40.6 cm)
FREQUENCY RESPONSE: 60 Hz to 18 kHz	NET WEIGHT – PN102/HO: 82 Lbs. (37.2 Kg) net PNX102/HO: 72 Lbs (32.7 Kg) net
HF DRIVER: Two 1" SSD1803-8 compression drivers, 8 Ohms; 50 W RMS, 100 W program each	
LF DRIVER: Two 10" model SSL10-7 woofers, 200 W RMS @ 8 Ohms; 400 W program each	
CROSSOVER POINT: 1.0 kHz	

PN-I AMPLIFIER

POWER RATING: 600 Watts Burst @ 4 Ohms,	ANALOG INPUT (STANDARD): 10K Ohm balanced differential input <i>Common Mode Rejection:</i> 74 dB
FREQUENCY RESPONSE: +0.0, -5 dB, 20 Hz to 20 kHz	Connectors: Input; female XLR, Looping; male XLR (pin 1 chassis, pin 2 +, pin 3 signal)
THD DISTORTION: < 0.02% typical	Controls: Rotary Gain Ground Lift Switch
HUM & NOISE: <100 dB (A weighted)	R-CONTROL CARD: Computer Supervision & Control of: Gain, Polarity, Mute, Input-Output VU Meters, Heatsink Temperature, Groups, Scenes, Error Logs, Alarms
DAMPING: >100	Input: 2-pin Phoenix R14 connector
INPUT SENSITIVITY: 1.4 V for RPO	
POWER CONNECTOR: PowerCon locking connector	
POWER REQUIREMENTS: 90 – 136 VAC or 180 – 260 VAC, 50/60 Hz 4 Amps @ 120 V, 2 Amps @ 240 V <i>Idle Current:</i> 300 mA @ 120 V; 150 @ 240 V <i>Max Inrush Current:</i> 10 Amps	

Note: The PN-I amplifier also includes loudspeaker specific equalization and protection circuitry.

Dimensional Information



5/8" thick metal Tie Bars and quick-disconnect pins are supplied with each cabinet. They provide easy assembly and metal-to-metal reliability with 0° and 5° splay.

The associated RHANG/LA Fly Bar attaches easily to the line array using quick-disconnect pins. It provides a choice of suspension (aiming) points and can support up to 12 PN/PNX102/HO cabinets.

Optional 102Dolly allows up to four PN/PNX102/HO cabinets to be stacked and easily moved about.



PN102/HO • PNX102/HO
POWERNET NON-POWERED

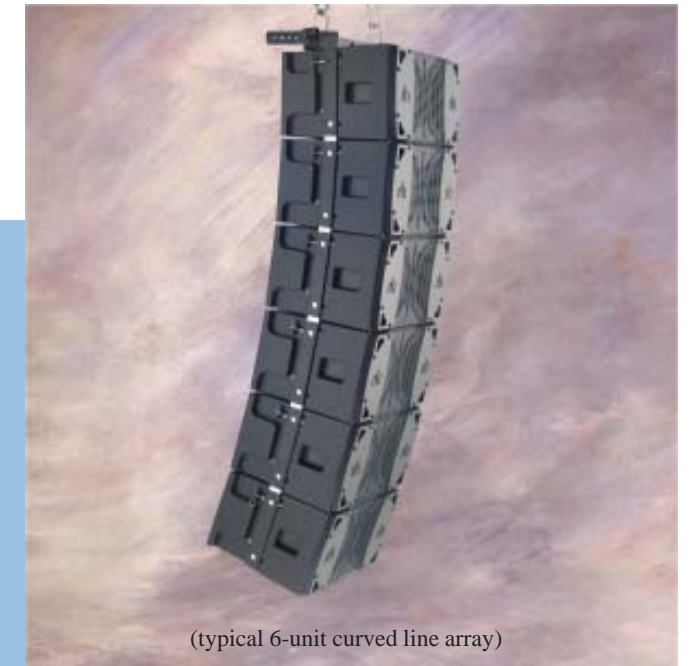
LINE ARRAY
LOUDSPEAKERS

Outstanding Sound Quality
Unequaled Versatility

The PN102/HO and PNX102/HO use advanced technology and application-driven engineering to bring vertical arrays closer to the ultimate reference point (reality) in demanding environments. Fully integrated electro-acoustic systems with all elements optimized deliver superior fidelity and coverage. Wherever the venue geometry is appropriate for a vertical array, a PN102/HO or PNX102/HO line array is the logical choice for demanding designers, operators and audiences

Applications

- Virtually any application where outstanding sonic performance is required and sound level and coverage needs cannot be satisfied with a conventional horizontal loudspeaker array.
- Sound reinforcement systems in Houses of Worship, Performing Arts Centers, Sports Arenas, Theaters and other similar venues.
- Portable concert sound systems for both small and large venues



(typical 6-unit curved line array)

PN102/HO and PNX102/HO Line Array Loudspeaker Modules

The PN102/HO and PNX102/HO are the basic building blocks in the Renkus-Heinz PN and PNX Series of line arrays. Their unique design allows line arrays of all sizes to be simply assembled and quickly installed safely and securely.

Isophasic Plane Wave Generator

The Isophasic Plane Wave Generator is the key to the outstanding performance of the PN102/HO and PNX102/HO line array loudspeakers. Path Length Equalization Technology produces a flat high frequency wavefront that couples coherently to assure true line array performance.

Acoustic Diffraction Baffle

The PN102/HO and PNX102/HO's unique diffractor baffle provides mid range diffraction loading. It eliminates mid range narrowing of the horizontal dispersion to provide consistent wide angle coverage across the entire frequency range.

PN-I PowerNet Amplifier

The PN-I, the heart of PowerNet performance, is a new kind of intelligent electronics system. It combines low feedback Class A/B amplification and comprehensive signal processing into a single compact unit. Crossovers and parametric EQ are integrated into the signal path. Loudspeaker Specific Processing senses when output current and voltage are about to damage the system and limits them to safe levels.

• **PN102/HO PowerNet Loudspeakers**
 Include power amplification with integral loudspeaker specific signal processing and protection – can be easily upgraded for R-Control computer supervision and control.

• **PNX102/HO Non-Powered Loudspeakers**
 Are intended for active bi-amplified power with two channel amplifiers.

• **Exceptional Performance**
 Accurate 60 Hz to 18 kHz Response

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RH521, Rev. C 10/07

ADVANCED AUDIO TECHNOLOGY
ISOPHASIC PLANE WAVE GENERATOR
PATH LENGTH EQUALIZATION



A Few Words About Line Array Module Design

“Line Arrays” (more properly, vertical arrays) have become popular because they can provide consistent SPL from the front to the rear of a deep rectangular area with a flat floor. In the vast majority of applications, this requires three key factors: hanging points high above the audience, a slight downward aiming angle and a progressively curved “J” shaped array.

A line source has narrow vertical dispersion: the low frequency limit of the pattern control and the dispersion angle both depend on the length of the line. The flattened output of a vertical array behaves more like a plane wave (whose output diminishes 3 dB every time the distance doubles) than a spherical wave (which loses 6 dB each time the distance doubles). Line source coupling occurs when adjacent sources are less than 1/2 wavelength apart: this is fairly easy to achieve at low frequencies because of the relatively long wave lengths involved, but as frequencies rise, wavelengths become shorter: it is not possible to build a line source of high output compress-

sion drivers. The problem is to control the output of each high frequency transducer so that it approximates a plane wave (has less than 1/8 wavelength curvature)

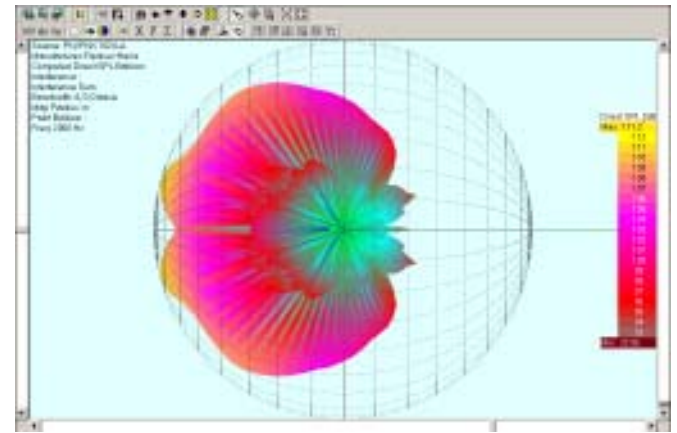
A second problem is that the high frequency waveguides must be almost as tall as the enclosure height, so that multiple enclosures will radiate a continuous wavefront whose curvature is the same as that of the array. The Isophasic Plane Wave Generator with its Path Length Equalization Technology is our answer to both problems. It allows the designer to control high frequency dispersion by varying the curvature of the array.



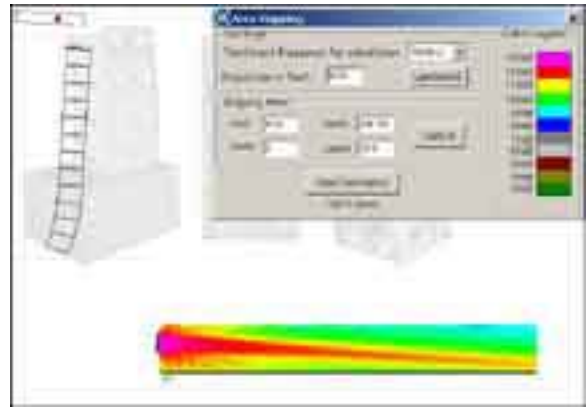
Horizontal dispersion is also important: many line array modules produce a narrowing through the mid range transition from the woofers to the high frequency section. The Acoustic Diffractor Baffle moves the woofers' acoustic centers closer together and prevents pattern collapse.



These innovative technologies have created advanced line array modules that deliver outstanding performance with configurable vertical dispersion and constant horizontal dispersion across the entire frequency spectrum.

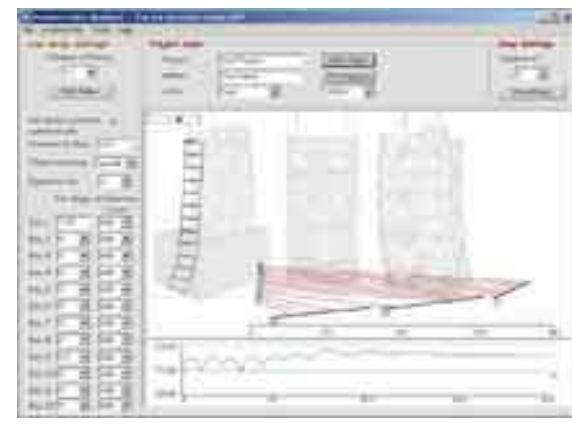


EASE directivity balloon showing the wide horizontal coverage provided by a 6 unit curved line array

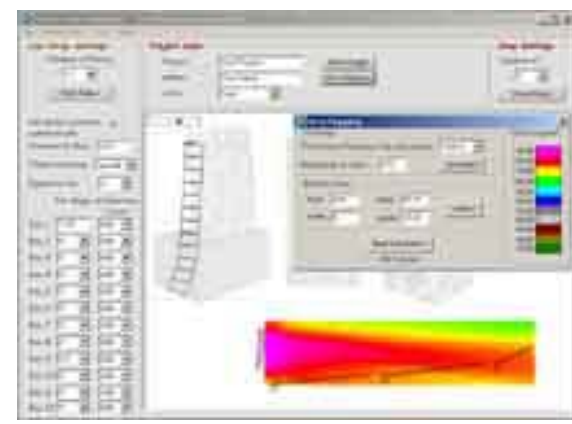


4000 Hz Direct SPL plot for the same line array showing the excellent high frequency control.

RENKUS-HEINZ AIMWARE
ARRAY AIMING SOFTWARE
SPEEDS SYSTEM DESIGN
ELIMINATES ERRORS
REDUCES INSTALLATION TIME



Aimware display showing the aiming angles and projected SPL levels



Aimware display with graphical SPL display.

R-H AIMWARE Array Aiming Software

Effective sound system design using vertical arrays is typically an iterative process. Simple “point and shoot” models almost never provide the optimum solution. Renkus-Heinz AimWare takes the guesswork out of “line array” design and installation by providing a graphical user interface and a comprehensive mathematical model of array performance.

Designing with AimWare is a simple 3-step process. First, specify up to three audience areas. Second, determine the height and aiming angle of the array. Third, specify the number of modules and the array curvature. AimWare then calculates coverage at various frequencies for the specified audience areas, and displays the results in a graphical format. In minutes, AimWare displays virtual results that would take hours of setup and measurement to duplicate in the actual venue, making it easy to optimize your array configuration. The final configuration can be saved for future reference, or imported into EASE JR & EASE (v4.0 and higher).

Renkus-Heinz Aimware array aiming software is available for download at www.renkus-heinz.com. For a free copy of the software on CD-ROM, call us at 949 588 9997 or e-mail sales@renkus-heinz.com.



R-Control Remote Systems Supervision Network

R-Control, an optional feature of PN102/HO and PNX102/HO arrays allows gain control and monitoring of amplifier and loudspeaker performance from a central computer. Based on Echelon's LonWorks protocol (ANSI/EIA Standard 790.1) and programmed in Microsoft Visual Basic, R-Control is a powerful tool for the remote management of installed or portable systems. Event Scheduler, Fault Logger, Operator Alerts for critical conditions, Scene Store and Recall and more, make the management of large systems easy.

R-Control circuitry is available as an option with both PN-1 PowerNet amplifiers and all P-Series rack mount amplifiers.



CobraNet® Digital Audio Network Compatible

PN102/HO and PNX102/HO arrays can also be connected to a CobraNet Digital Audio Network using the Renkus-Heinz CobraNet Breakout Box shown above. It selects from up to 64 channels of digital audio delivered from CAT 5 copper or fiber optic fiber cable and delivers 6 analog outputs.

With CobraNet, PN102/LA and PNX102/LA systems are fully compatible with dozens of CobraNet products from over 20 major pro audio manufacturers.