

Contact



www.activeaudio.fr

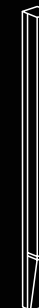
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Active
audio

www.Eureka-design.fr / Photos produits : Maryfermoulin



StepArray

Digitally steerable column loudspeakers

Active
audio
L'acoustique active

Acoustics and Audio

When I started the design of the StepArray range, in 2006, I wanted to create a product bringing a real improvement and differentiation with what was existing on the market at that time.

The requirements were to have a public address system delivering a perfect intelligibility in reverberant spaces.

The solution of a digitally steerable column loudspeaker came to me naturally, but I wished to bring some innovation that would make our speakers unique. The principal drawback of the products on the market is to have all the control electronics inside the loudspeakers, generating expensive price, heavy weight, and difficulty to install and set up.

The idea behind DGRC patent was to reduce the number of channels and hence being able to externalize electronics. Now with DGRC, it becomes possible to share electronics between several columns.

StepArray became the technical window of Active Audio and we are all very proud of it.

Xavier MEYNIAL



Sound reinforcement in larges volumes

Speech reinforcement in large venues must ensure perfect understanding of messages despite big reverberation time and often important noise levels.

To obtain the desired intelligibility, accurate control of the directivity of the sound system is essential : the speakers should maximize the direct over reverberated sound ratio, and provide uniform sound coverage of the entire audience.

Moreover, in places where aesthetics is important, the sound system is not often welcomed. Therefore, the positioning of the speakers are often limited due to technical and architectural constraints; hence the speakers have to be discreet and very few in numbers. The use of highly directional speaker columns such as StepArray columns is the best solution to meet these requirements.



The StepArray range

StepArray column speakers ensure perfect speech intelligibility and optimal acoustic comfort, even in noisy and reverberant venues.

They are based on the DGRC (Digital & Geometric Radiation Control) principle patented by Active Audio.

The main difference of DGRC columns, compared with the other classic DSP columns, is to decrease the number of channels to be controlled independantly.

Like this, it is possible to place the electronics outside the columns, which has the following key advantages :

- security : electronics can be placed in a secure room, with uninterruptible power supply (UPS)
- sharing of electronic between multiple columns
- easier installation and maintenance

StepArray advantages

- optimal intelligibility
- even sound coverage
- acoustic comfort
- security
- easy maintenance

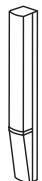
The StepArray range includes :



NUT
8 x 8 digital signal processor
with StepArray control



MPA6150
6 x 150 w multichannel amplifier



SA100P
1m high
flat area, 21m
3 channels
8Ω min.



SA180P
1.8m high
flat area, 40m
3 channels
8Ω min.



SA180S
1.8m high
10° area, 29m
3 channels
8Ω min.



SA250P
2.5m high
flat area, 45m
6 channels
4Ω min.



SA250S
2.5m high
12° area, 36m
6 channels
4Ω min.



SA400P
4m high
flat area, 90m
6 channels
8Ω min.

NUT audio DSP



MPA6150 multichannel amplifier

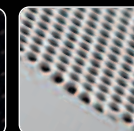


Standard Color Chart

Specific RAL upon request



Black RAL9005



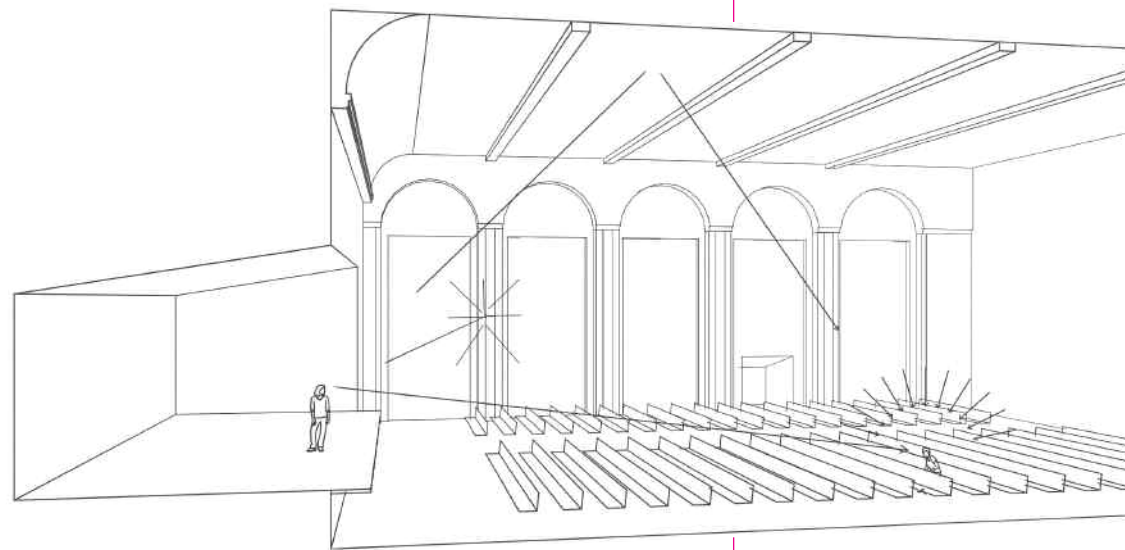
White RAL 9016

6 column models, from 1m to 4m

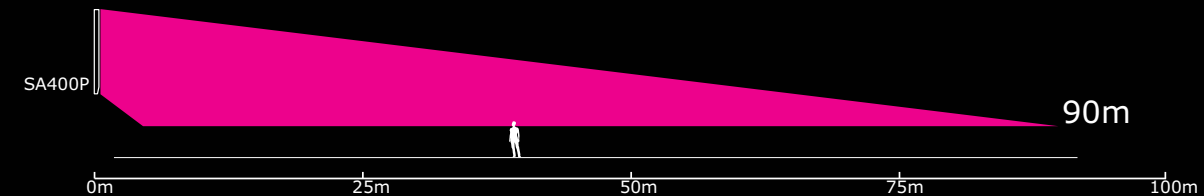
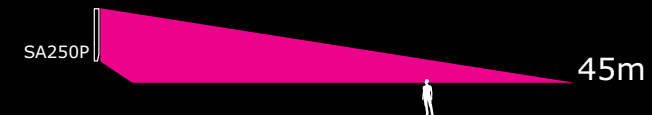
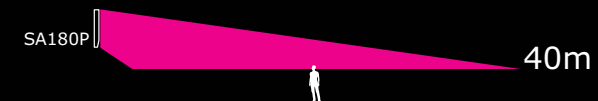
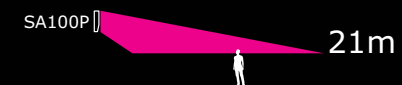
The StepArray columns

In room acoustics, when column speakers are highly directional, it is necessary to have several sizes of columns to fit all kind of venues.

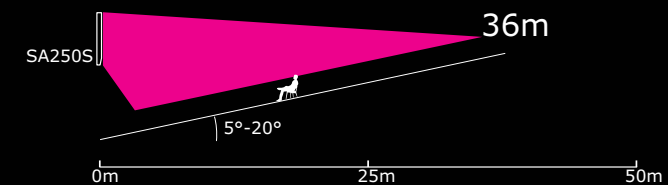
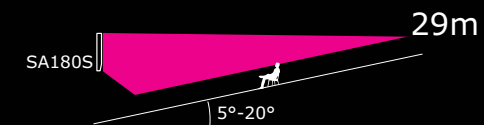
The StepArray range offers a wide variety of listening area sizes and inclinations to suit all situations.



Flat Audience



Tilted audience and balconies



DGRC

Digital and Geometric Radiation Control

StepArray columns enjoy the benefits of the two main existing technologies for directivity control by implementing an hybrid scheme patented by Active Audio : DGRC digital and geometric radiation control.

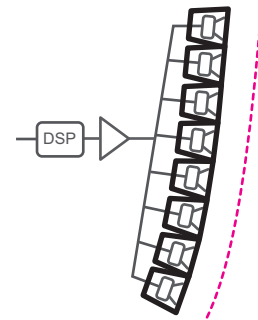
Thanks to the DGRC principle, StepArray speakers are extremely directive while remaining :

- Compacts
- Affordable : fewer amplification and processing channels are needed
- Secure : all the electronics is outside the columns

Thus, all the speakers of the StepArray range provide excellent music reinforcement and speech intelligibility, even in reverberant and noisy spaces.

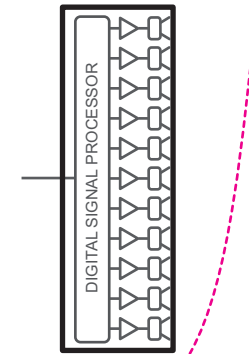
DGRC

- Compact
- Affordable
- Secured : external electronics
- Intelligible



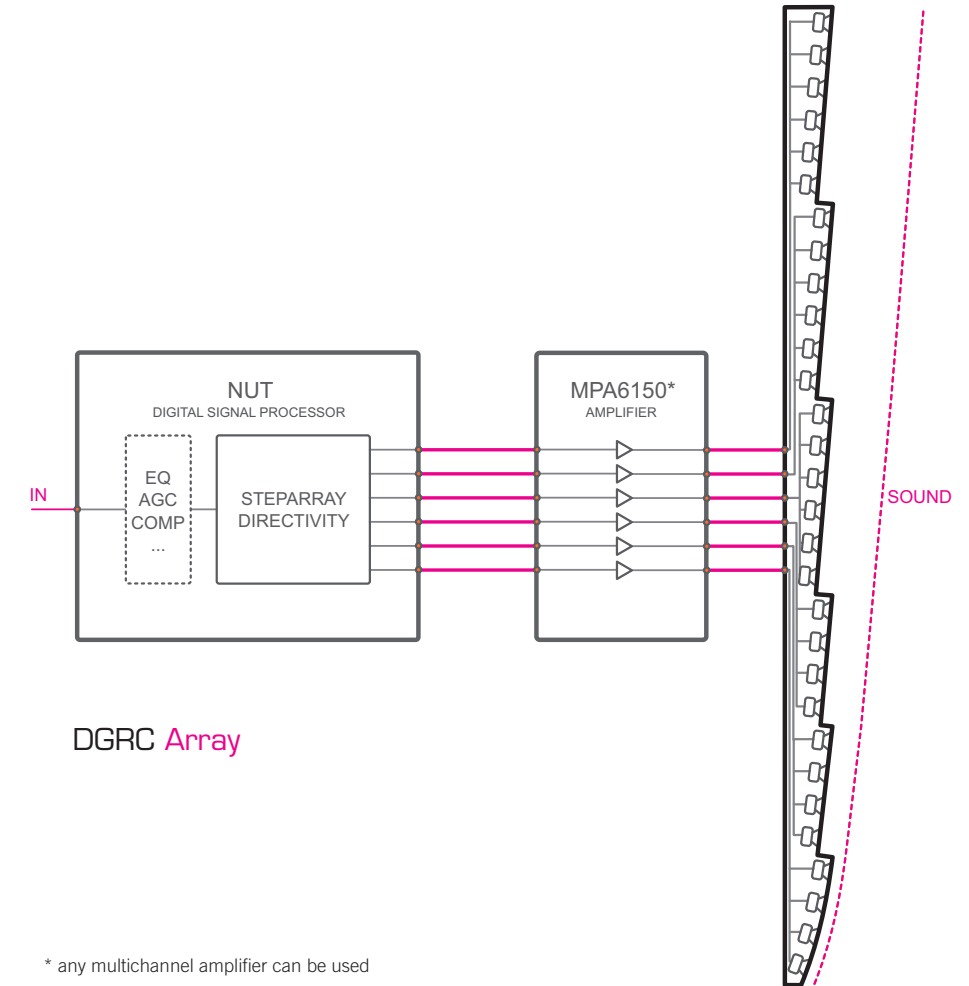
Geometric Array

+



Electronic Array

=



* any multichannel amplifier can be used

NUT

An audio DSP « à la carte »

NUT is a DSP processor simple of use and versatile. The user can take advantage of the full NUT power. With a simple drag'n drop, each application dedicates NUT to a specific task, allowing the user to concentrate immediately on its speciality : the reinforcement system.

NUT is accessible from a smartphone, a tablet, or a desktop computer, and settings can be made from any device having a web browser.

The NUT audio DSP can drive StepArray columns while also providing all the functions needed for public address systems. NUT includes everything needed in a modern installation: automix, AGC, equalization, filtering, mixing, remote control.



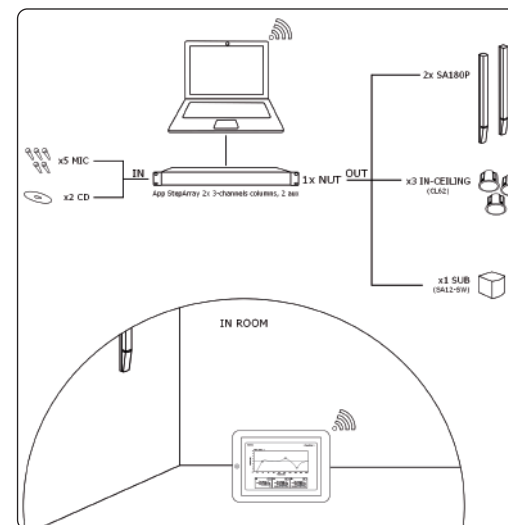
Hardware

- 8 inputs line/mic
- 8 outputs
- USB/Ethernet
- Remote control

Software

- Free applications
- Automatic gain control
- Equalization
- Automix
- StepArray directivity
- Subwoofer management

Installation example in a conference room

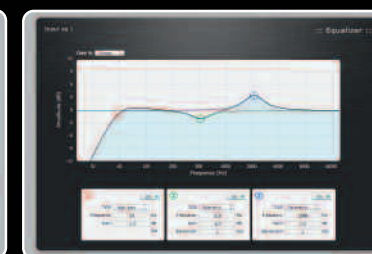


DSP applications: A processor «à la carte»

- Many applications available and free
- New applications upon request
- Take advantage of the full NUT power
- Remote control

Compatible with tablets, PC and Mac.

Nut is simple of use and doesn't need time to learn its software, what allows the user to focus on the audio.



The directivity control

The technical capabilities of StepArray directivity control are easily accessible. StepArray directivity control is:

- Instantaneous: listen in real time the effect of your changes
- Interactive: visualize and compare levels in different areas
- simple: control the full power of StepArray with only 2 sliders

NOTICE

StepArray directivity control is available in several NUT applications. It is possible to choose the NUT application that suits the best your needs.



- *Manages stepped floor audiences*
- *Displays SPL maps in horizontal and vertical planes*
- *Displays SPL maps in all octave bands and in the voice band (500Hz-2kHz)*
- *Allows tuning by moving slider*



Real-World examples

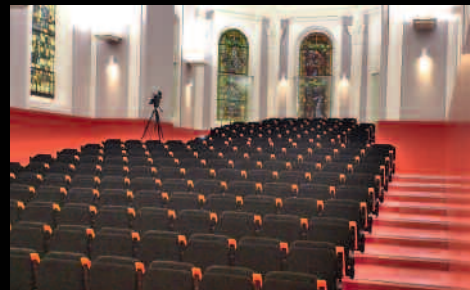
The following examples are intended to help you to understand easily the StepArray system.

These installations examples are drawn from real use cases and illustrate situation you often encounter.

Case Study

CONFERENCE

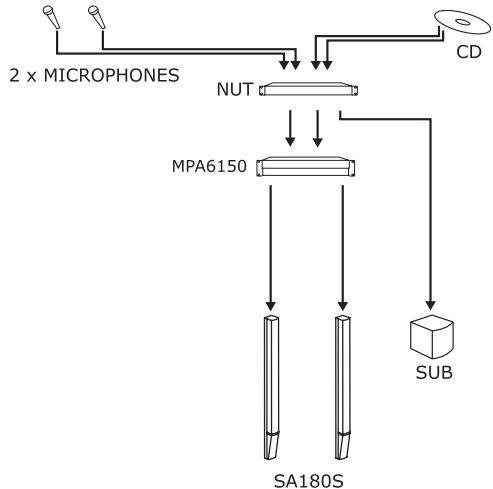
rooms, amphitheaters, classrooms



Technical constraints

- Intelligibility ●●●
- Acoustic comfort ●●●●
- Feedback ●●●
- Zoning ●●●
- Reverberation ●●●●
- Aesthetic ●●●

StepArray system



Key points

- Subwoofer output
- Excellent acoustic comfort
- Architectural integration



SA 180S



Subwoofer output

NUT delivers an optimized filtering for an optional subwoofer, which improves listening comfort for music

Material : 1 x NUT – 1 x MPA6150 – 2 x SA180S – 1 x SUB

Case study

HOUSES OF WORSHIP

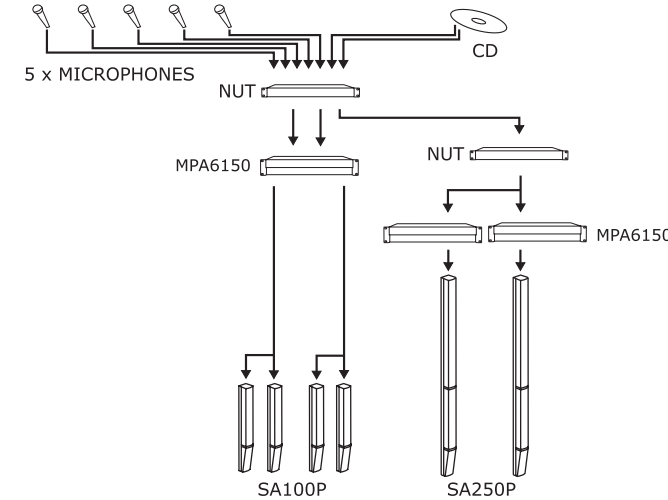
churches, cathedrals, mosques, temples



Technical constraints:

- Intelligibility ●●●
- Acoustic comfort ●●●
- Feedback ●●●
- Zoning ●●●
- Reverberation ●●●
- Aesthetic ●●●

StepArray system



Key Points

- Amplifier sharing
- DSP sharing
- No supplementary matrix



Feedback immunity

The smart automix of NUT provides excellent feedback immunity by automatically switching microphones.

Material : 2 x NUT – 3 x MPA6150 – 4 x SA100P – 2 x SA250P

Case study

PUBLIC PLACES railway stations, airports, shopping malls



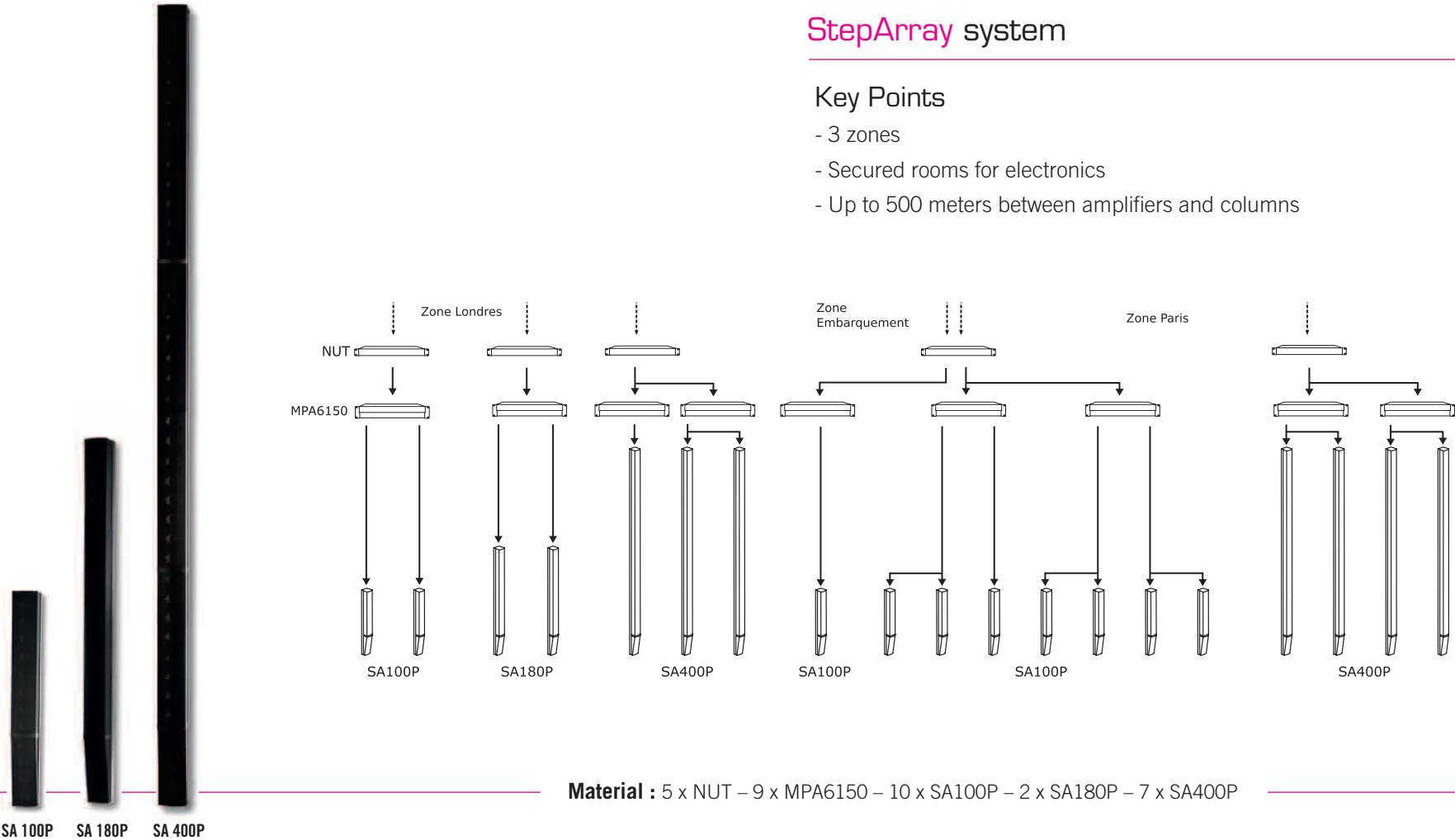
Technical constraints

- Intelligibility ●●●
- Acoustic comfort ●●●●
- Feedback ●●●●
- Zoning ●●●●
- Aesthetic ●●●●

StepArray system

Key Points

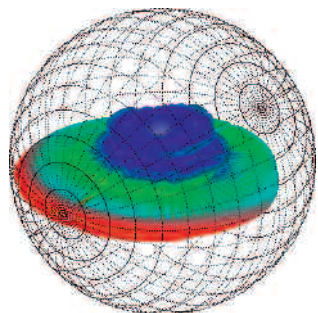
- 3 zones
- Secured rooms for electronics
- Up to 500 meters between amplifiers and columns



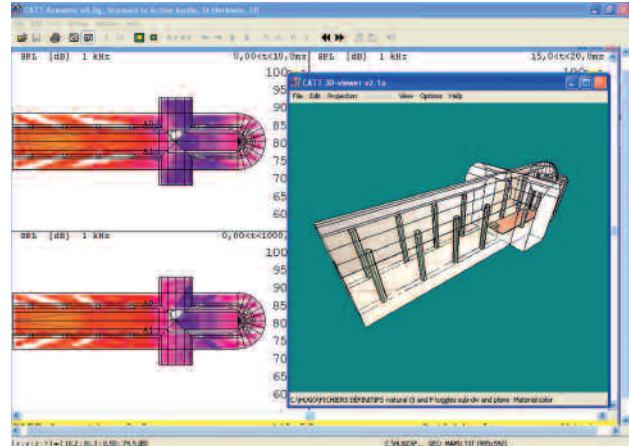
Simulation tools

There are powerful CAD software tools that can predict the acoustics of a room and accurately model the radiation of loudspeaker arrays. These tools can calculate various acoustic index, such as reverberation time, sound pressure level, STI...

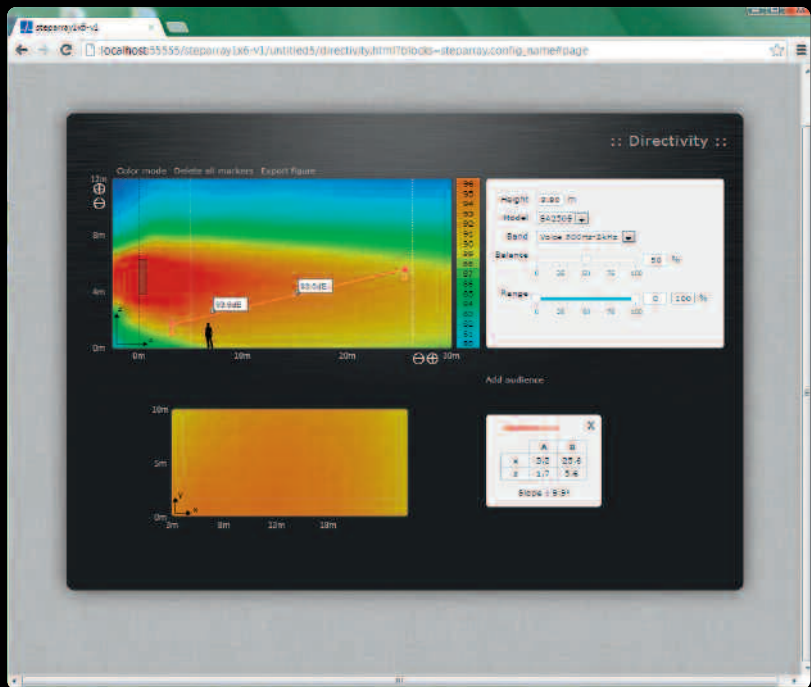
In a loudspeaker array, all loudspeakers operate in a coherent way. This must be taken into account in the modeling. To do so, software modules (DLL) which enables the CAD tools to properly simulate the StepArray columns are included in CATTAcoustic® and EASE®.



EASE® speaker modeling: SA250P, 1kHz



CATT - acoustic®, church



Direct field simulation for StepArray columns is also available on the NUT audio processor control software.

SA100P

Acoustical data	
range ±3dB	15m
range ±5dB	21m
angle of audience	0°-5°
frequency bandwidth (-10dB)	110Hz-19kHz
horizontal opening angle	180°
Mechanical data	
net weigh	9 kg
packed weight	12 kg
height	1024mm
width	124mm
depth	131mm
standard colors	white RAL9016 black RAL9005
Electrical data	
number of channels	3
Impedence	8Ω
cabling lenght	4G
connector	12 points

SA180P

Acoustical data	
range ±3dB	30m
range ±5dB	40m
angle of audience	0°-5°
frequency bandwidth (-10dB)	110Hz-19kHz
horizontal opening angle	180°
Mechanical data	
net weigh	17 kg
packed weight	21 kg
height	1840mm
width	124mm
depth	135mm
standard colors	white RAL9016 black RAL9005
Electrical data	
number of channels	3
Impedence	8Ω
cabling lenght	4G
connector	12 points

SA180S

Acoustical data	
range ±3dB	22m
range ±5dB	29m
angle of audience	5°-20°
frequency bandwidth (-10dB)	110Hz-19kHz
horizontal opening angle	180°
Mechanical data	
net weigh	17 kg
packed weight	21 kg
height	1840mm
width	124mm
depth	135mm
standard colors	white RAL9016 black RAL9005
Electrical data	
number of channels	3
Impedence	8Ω
cabling lenght	4G
connector	12 point

SA250P

Acoustical data	
range ±3dB	35m
range ±5dB	45m
angle of audience	0°-5°
frequency bandwidth (-10dB)	110Hz-19kHz
horizontal opening angle	180°
Mechanical data	
net weigh	24 kg
packed weight	29 kg
height	2505mm
width	124mm
depth	159mm
standard colors	white RAL9016 black RAL9005
Electrical data	
number of channels	6
Impedence	4Ω
cabling lenght	7G
connector	12 point

SA250S

Acoustical data	
range ±3dB	28m
range ±5dB	36m
angle of audience	5°-20°
frequency bandwidth (-10dB)	110Hz-19kHz
horizontal opening angle	180°
Mechanical data	
net weight	24 kg
packed weight	29 kg
height	2505mm
width	124mm
depth	159mm
standard colors	white RAL9016 black RAL9005
Electrical data	
number of channels	6
Impedence	4Ω
cabling lenght	7G
connector	12 points

SA400P

Acoustical data	
range ±3dB	68m
range ±5dB	90m
angle of audience	0°-3°
frequency bandwidth (-10dB)	110Hz-19kHz
horizontal opening angle	180°
Mechanical data	
net weight	39 kg
packed weight	46 kg
height	4096mm
width	124mm
depth	135mm
standard colors	white RAL9016 black RAL9005
Electrical data	
number of channels	6
Impedence	8Ω
cabling lenght	7G
connector	12 point

NUT

Audio data	
inputs/ output	8 in / 8 out analog. sym. euroblock conn.
input/output levels	max 8Vrms (+20dBu)
dip-switchs	phantom on/off
inputs	mic/line levels
dynamic range	114dB
bandwidth	20Hz-20kHz (±1dB)
processing power	28 bits 48kHz-192kHz
Mechanical data	
packed weight	5.5 kg
dimension	44 x 480 x 251 mm rack 19"-1U
Electrical data	
power supply	24V DC included adapt. 230V/50Hz
power consumption	< 8W
computer interface	USB (no driver) ethernet 10/100MB RS232 for remot

MPA6150

Audio data	
power	6 x 100W / 8Ω 6 x 150W / 4Ω
bridged power	3 x 300W / 8Ω
input impedance	10kΩ sym. 20kΩ asym.
input sensitivity	1Veff
dynamic range	95dB
harmonic distorsion	0.1% @ 1kHz
Mechanical data	
packed weight	14.5 kg
dimension	88 x 483 x 420 mm rack 19"-2U
Electrical data	
mains	230V - 50Hz Fuse 5 Amp slow 115V-60Hz Fuse 10A-T Connector CEE22 Cord supplied
power consumption	80W idle 150W prog. 900W max.

