



StepArray+

Self-powered digitally steerable column loudspeakers

Active
audio
L'acoustique active

Acoustics and Audio

When I started designing the StepArray range in 2006, I wanted to create a product that would bring a real added value compared to what was available on the market at that time.

The challenge was to develop a public address system that delivers perfect intelligibility in reverberant spaces. The solution of a digitally steerable column loudspeaker came to me naturally, but I wished to add some innovative features that would make our speakers unique.

The idea behind the DGRC (Digital & Geometric Radiation Control) patent was to reduce the number of channels to maximize the economic efficiency of our column speakers.

With the arrival of audio management through networking, we wanted to offer a complete solution of self-powered StepArray column speakers compatible with Dante™, the leader in the field. We are therefore pleased to present to you the StepArray+ range, which combines audio-over-IP with all the features of StepArray.

Xavier MEYNIAL

Founder and Technical Director





Public address system in large venues

The greater reverberation time and noise level in large spaces often undermine the clarity of sound messages.

To achieve the desired intelligibility, it is essential to accurately control the directivity of the sound system: the speakers should maximize the ratio of direct to reverberated sound, and provide uniform sound coverage for the entire audience.

Moreover, in places where aesthetics plays an important role, a public address system is not always welcome. Loudspeakers, which are often difficult to position due to technical and architectural constraints, must be discreet and very few in number.

The use of highly directional column speakers such as StepArray+ is the best solution to meet these requirements.

Lastly, large line array systems require column speakers suitable for this particular use. StepArray+ is the Active Audio solution that meets this increasingly widespread demand.



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.

Compared with a classic sound system in which each loudspeaker is controlled independently, the DGRC method makes it possible to decrease the number of channels to be controlled, thereby enhancing economic efficiency.

StepArray+ also allows the use of existing network cables and helps to achieve significant savings in wiring, with up to 64 channels on a single Ethernet cable.

StepArray+ combines the features of Dante™ and StepArray to achieve ever higher levels of efficiency and flexibility.

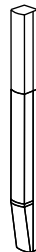
Advantages

- Optimal intelligibility
- Even sound coverage
- Acoustic comfort
- Security
- Easy maintenance



The StepArray+ range includes :

6 models of column speakers
1 m to 4 m high



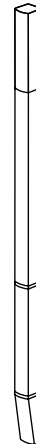
SA150P+
1.50m high
flat area, 21m²
3 channels
8Ω min.



SA230P+
2.30m high
flat area, 40m²
3 channels
8Ω min.



SA230S+
2.30m high
10° area, 29m²
3 channels
8Ω min.



SA300P+
3.00m high
flat area, 45m²
6 channels
4Ω min.



SA300S+
3.00m high
12° area, 36m²
6 channels
4Ω min.



SA450P+
4.50m high
flat area, 90m²
6 channels
8Ω min.



SA150P+

SA230P+

SA300P+

SA450P+

Standard Color Chart

Specific RAL upon request



Black RAL9005



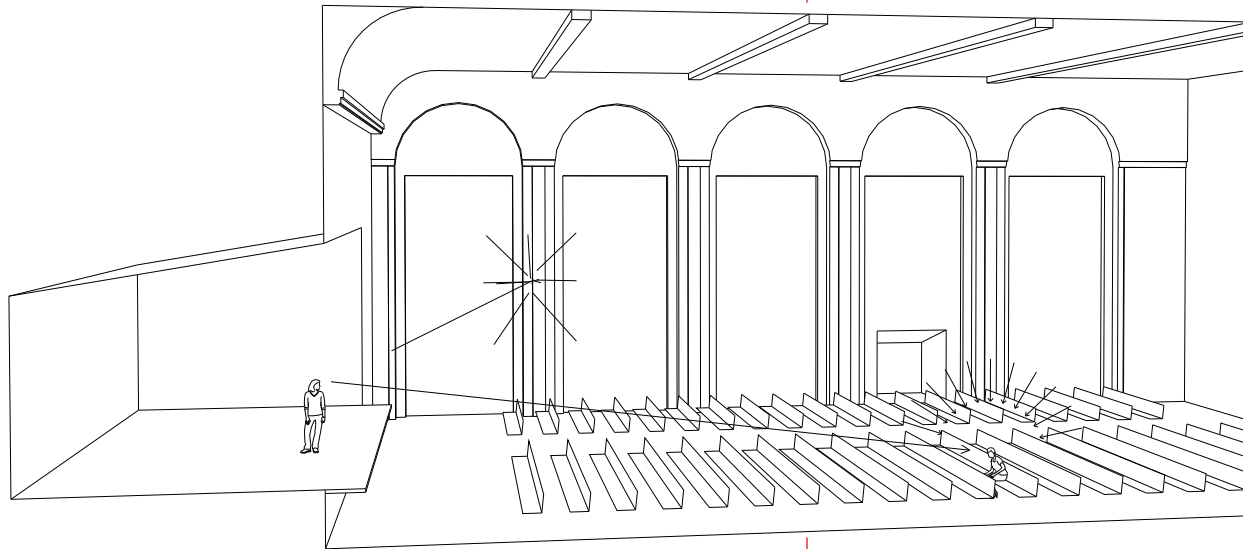
White RAL 9016



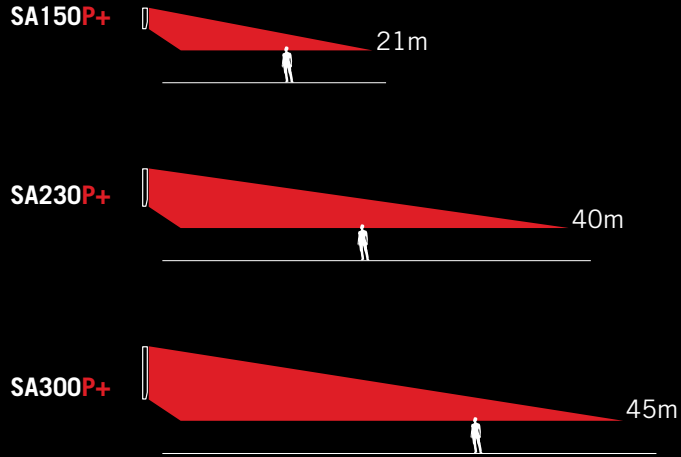
StepArray+ column speakers

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

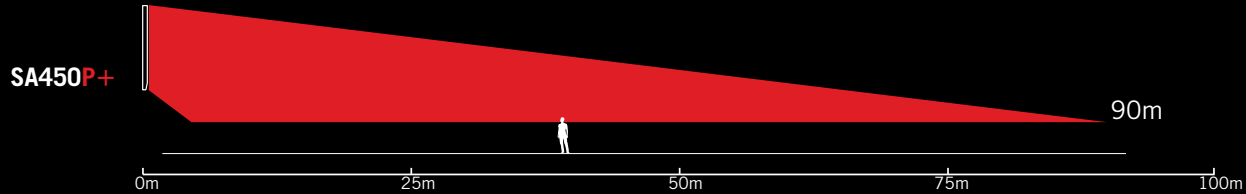
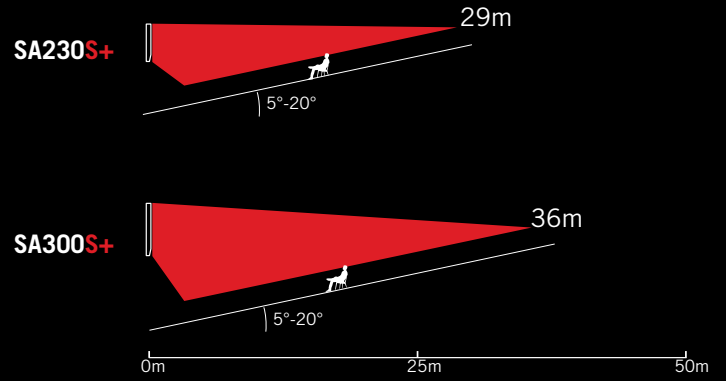
The StepArray+ range offers a wide variety of ranges and inclinations in the listening area to suit all situations.



Flat audience plane



Raked audience plane and balconies



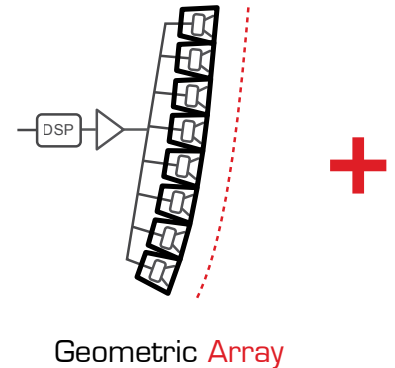
DGRC

Digital and Geometric Radiation Control

StepArray+ column speakers enjoy the benefits of the two main current technologies for directivity control by implementing a hybrid principle patented by Active Audio: DGRC, digital and geometric radiation control.

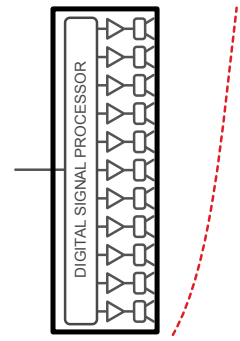
Thanks to the DGRC principle, StepArray+ speakers are extremely directional while remaining:

- Compact
- Affordable: fewer signal amplification and processing channels
- Usable via Dante™ network.



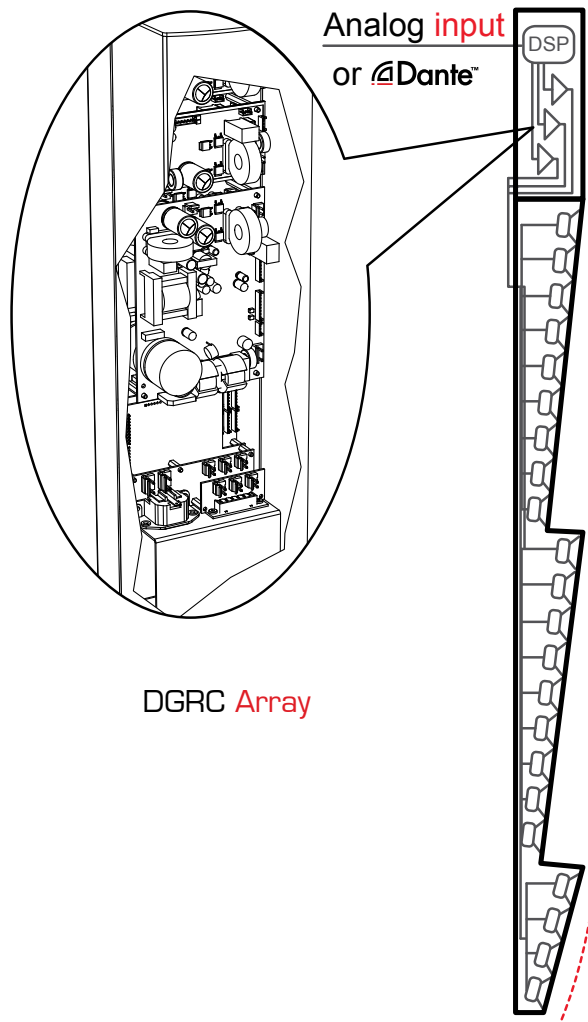
DGRC

Compact
Affordable
Secured
Intelligible



Electronic Array

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DGRC Array

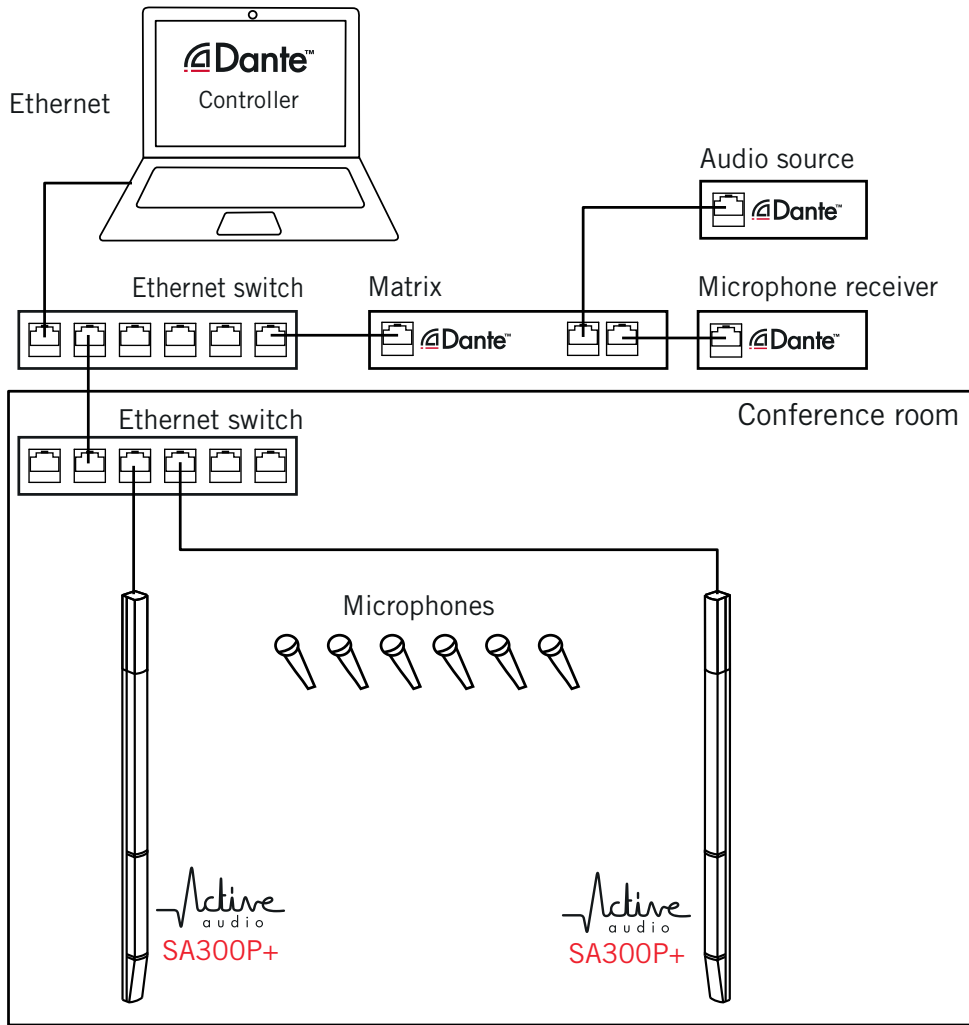
SOUND

Dante™ and Active Audio

StepArray+ is the first range of Active Audio products incorporating the Dante™ technology.

With Dante™, Audinate has revolutionized the manner in which audio-video systems are connected with each other. By transporting high-resolution signals on standard computer networks, Dante™ makes audio over IP accessible and reliable.

StepArray+ users will appreciate the sound performance achieved by loss-less transmission of digital signals as well as the virtual absence of latency – less than one millisecond. Apart from pure performance, Dante™ provides great flexibility and a real-time diagnostics of the installation.



Directivity control

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

- Instantaneous : listen to the effect of your changes in real time
- Interactive : view and compare levels in different areas
- Simple : control the full power of StepArray+ with only 2 sliders
- Secure : every change is saved automatically in real-time



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



Real-world example

The following example will help you to easily understand the StepArray+ system. It is drawn from a real use case and illustrates the challenges you often encounter.

Case study

PUBLIC PLACES

Railway stations, Airports, Shopping malls, etc.



Technical constraints

Intelligibility ●●●

Acoustic comfort ●●●●

Zoning ●●●

Reverberation ●●●●

Aesthetic ●●●●

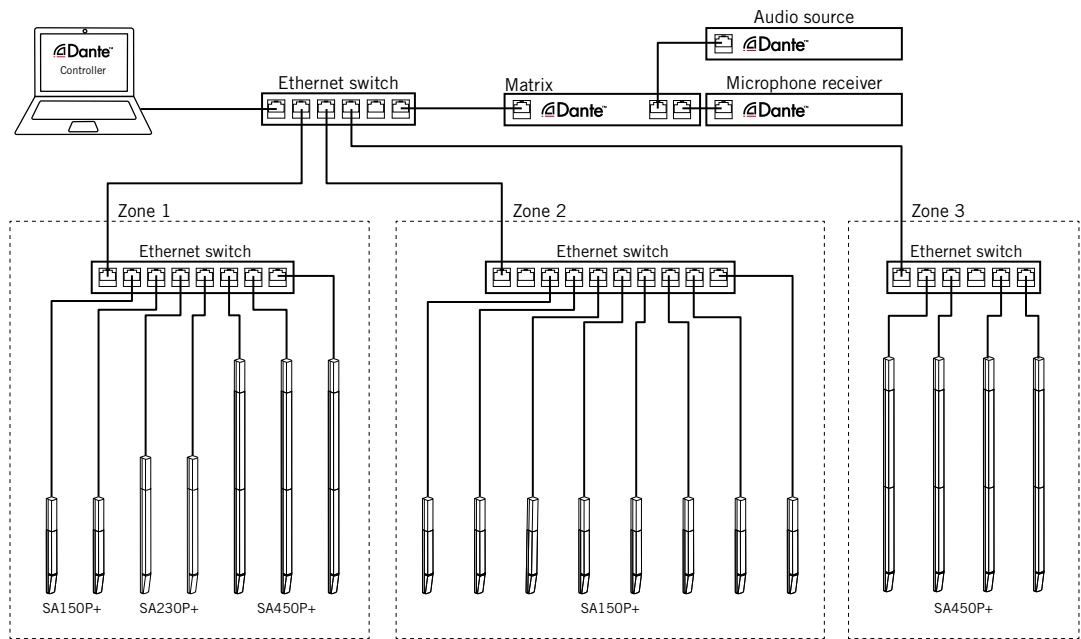


StepArray+ system



Key points

- 3 zones
- Remote control
- Simple diagnostics and maintenance

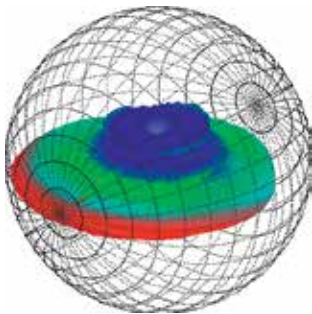


Hardware : 10 x SA150P+, 2 x SA230P+, 7 x SA450P+

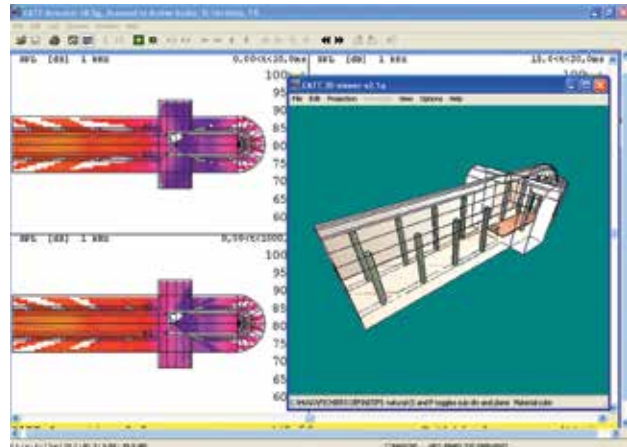
Simulation tools

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

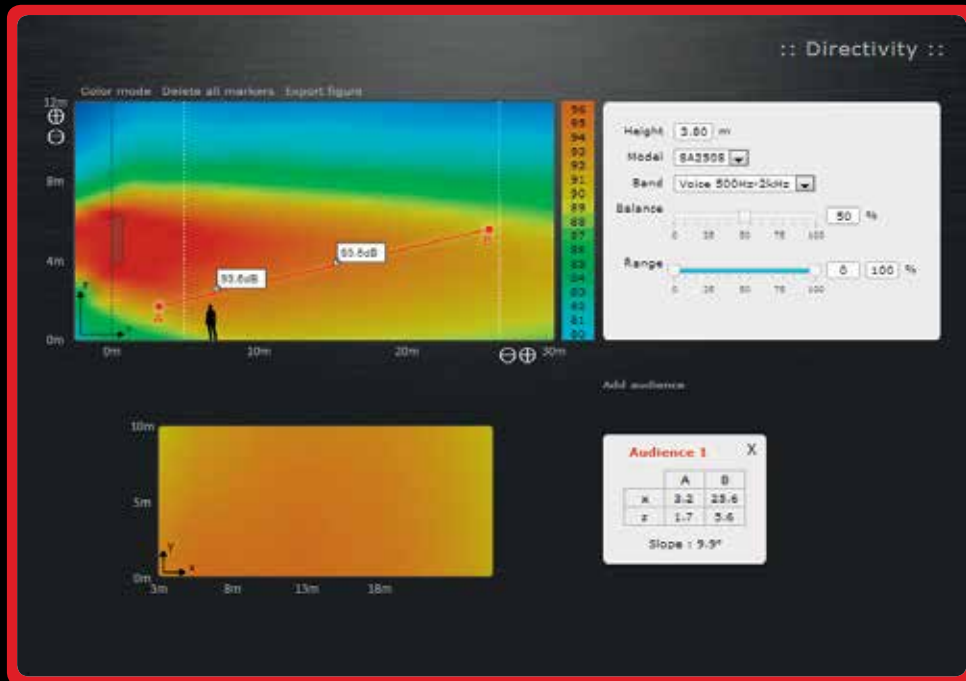
In an array, all loudspeakers emit sound in a consistent way. This must be taken into account in the modelling. To do so, software modules (DLL) which enable the CAD tools to correctly simulate the StepArray+ column speakers are included in CATT Acoustic and EASE software tools.



EASE® speaker modelling: SA250P, 1 kHz



CATT - acoustic®, church



Direct field simulation for StepArray+ column speakers is also available in the StepArray+ Control software.

SA150P+

Acoustical data

range ± 3 dB	15m
range ± 5 dB	21m
max SPL	95dB SPL à 10m
angle of audience	0°-5°
frequency bandwidth (-10dB)	110Hz-19kHz
horizontal opening angle	180°

Mechanical data

net weight	14 kg
packed weight	17 kg
height	1524mm
width	124mm
depth	131mm
standard colors	white RAL 9016 black RAL 9005

Electrical data

rated power	300W/4 Ω , 150W/8 Ω
number of channels	3
min. impedance	8 Ω

Inputs

- 1x symmetrical analog 3-pin input
- 1x Dante™ input

Network

- 1x RJ45 connector, Dante™



SA230P+

Acoustical data

range ± 3 dB	30m
range ± 5 dB	40m
max SPL	95dB SPL à 15m
angle of audience	0°-5°
frequency bandwidth (-10dB)	110Hz-19kHz
horizontal opening angle	180°

Mechanical data

net weight	22 kg
packed weight	24 kg
height	2340mm
width	124mm
depth	135mm
standard colors	white RAL 9016 black RAL 9005

Electrical data

rated power	300W/4 Ω , 150W/8 Ω
number of channels	3
min. impedance	8 Ω

Inputs

- 1x symmetrical analog 3-pin input
- 1x Dante™ input

Network

- 1x RJ45 connector, Dante™



SA230S+

Acoustical data

range ± 3 dB	22m
range ± 5 dB	29m
max SPL	95dB SPL à 15m
angle of audience	5°-20°
frequency bandwidth (-10dB)	110Hz-19kHz
horizontal opening angle	180°

Mechanical data

net weight	22 kg
packed weight	24 kg
height	2340mm
width	124mm
depth	135mm
standard colors	white RAL 9016 black RAL 9005

Electrical data

rated power	300W/4 Ω , 150W/8 Ω
number of channels	3
min. impedance	8 Ω

Inputs

- 1x symmetrical analog 3-pin input
- 1x Dante™ input

Network

- 1x RJ45 connector, Dante™



SA300P+

Acoustical data

range ± 3 dB	35m
range ± 5 dB	45m
max SPL	95dB SPL à 20m
angle of audience	0°-5°
frequency bandwidth (-10dB)	110Hz-19kHz
horizontal opening angle	180°

Mechanical data

net weight	29 kg
packed weight	33 kg
height	3005mm
width	124mm
depth	159mm
standard colors	white RAL 9016 black RAL 9005

Electrical data

rated power	300W/4 Ω , 150W/8 Ω
number of channels	6
min. impedance	4 Ω

Inputs

- 1x symmetrical analog 3-pin input
- 1x Dante™ input

Network

- 1x RJ45 connector, Dante™



SA300S+

Acoustical data

range ± 3 dB	28m
range ± 5 dB	36m
max SPL	95dB SPL à 20m
angle of audience	5°-20°
frequency bandwidth (-10dB)	110Hz-19kHz
horizontal opening angle	180°

Mechanical data

net weight	29 kg
packed weight	33 kg
height	3005mm
width	124mm
depth	159mm
standard colors	white RAL 9016 black RAL 9005

Electrical data

rated power	300W/4 Ω , 150W/8 Ω
number of channels	6
min. impedance	4 Ω

Inputs

- 1x symmetrical analog 3-pin input
- 1x Dante™ input

Network

- 1x RJ45 connector, Dante™



SA450P+

Acoustical data

range ± 3 dB	68m
range ± 5 dB	90m
max SPL	95dB SPL à 30m
angle of audience	0°-3°
frequency bandwidth (-10dB)	110Hz-19kHz
horizontal opening angle	180°

Mechanical data

net weight	44 kg
packed weight	47 kg
height	4596mm
width	124mm
depth	135mm
standard colors	white RAL 9016 black RAL 9005

Electrical data

rated power	300W/4 Ω , 150W/8 Ω
number of channels	6
min. impedance	8 Ω

Inputs

- 1x symmetrical analog 3-pin input
- 1x Dante™ input

Network

- 1x RJ45 connector, Dante™



StepArray+



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